

DRAFT

NOISE STUDY REPORT

Florida Department of Transportation (FDOT)

District 4

Cove Road Project Development & Environment (PD&E) Study

From State Road (SR) 76/Kanner Highway to SR 5/US 1

Martin County, Florida

Financial Management Number: 441700-1-22-02

ETDM Number: 14479

February 2025

The environmental review, consultation, and other actions required under applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. §327 and a Memorandum of Understanding (MOU) dated May 26, 2022, and executed by the Federal Highway Administration (FHWA) and FDOT.

Executive Summary

This project involves the proposed widening of Cove Road, from State Road (SR) 76/Kanner Highway to SR 5/US 1/Federal Highway in Martin County, Florida. This 3.2-mile segment of Cove Road is currently a two-lane, undivided, rural roadway with 12-foot-wide travel lanes. A six-foot sidewalk is located on the north side of the roadway for the entire project limits and a six-foot sidewalk is located on the south side of the roadway from Kanner Highway to Atlantic Ridge Drive and from west of Montego Cove to Federal Highway. There are no existing bike lanes or shared-use paths within the project limits. Signalized intersections within the project limits are located at Kanner Highway, Atlantic Ridge, Legacy Cove Circle/Classical Way, Willoughby Boulevard, and Federal Highway. Martin County also classifies Cove Road as a major arterial roadway.

The proposed improvements include widening Cove Road from Kanner Highway to Federal Highway from a two-lane undivided to a four-lane divided roadway with accommodations for bicyclists and pedestrians through the entire project limits. Stormwater management needs will be determined, and the addition of roadway lighting will be considered. Intersection improvements within the project limits will also be evaluated to accommodate anticipated future traffic needs.

Within the project limits, noise levels were predicted at 114 receptors, representing 350 residences and seven Special Land Use (SLU) sites. Noise levels are predicted to approach or exceed the Noise Abatement Criteria (NAC) in Design Year 2045 for the Build condition at 21 NAC B residences in Hibiscus Park. No impacts were predicted at any SLUs, so noise abatement was not considered for any SLU locations.

Noise barriers were evaluated for the impacted residences in Hibiscus Park. This analysis found noise barriers to be a feasible and reasonable method to mitigate traffic noise. The noise barrier system will benefit 20 impacted and five non-impacted NAC B residences with at least a 5 dB(A) reduction in noise levels, with 18 of those residences meeting the Noise Reduction Design Goal (NRDG) with at least a 7 dB(A) reduction in traffic noise.

Statement of Likelihood

FDOT is committed to constructing feasible and reasonable noise abatement measures. One potentially feasible and reasonable noise barrier system has been identified for this project contingent upon the following conditions:

- Final recommendations on the construction of abatement measures are determined during the project's final design and through the public involvement process.
- Detailed noise analyses during the final design process support the need, feasibility, and reasonableness of providing abatement.
- Cost analysis indicates that the cost of the noise barrier(s) will not exceed the cost reasonable criterion.
- Community input supporting types, heights, and locations of the noise barrier(s) is provided to FDOT.
- Safety and engineering aspects have been reviewed and any conflicts or issues resolved.

A land use review will be performed during the design phase to identify all noise sensitive sites that may have received a building permit after the noise study but prior to the Date of Public Knowledge (DOPK). The date that the Type 2 Categorical Exclusion is approved by FDOT will be the DOPK. If the review identifies noise sensitive sites that have been permitted prior to the DOPK, then those sensitive sites will be evaluated during the design phase for traffic noise impacts and abatement considerations.

Table of Contents

1.0	INTRODUCTION	1
1.1	Purpose & Need.....	1
1.1.1	Purpose	1
1.1.2	Need	1
2.0	METHODOLOGY	3
2.1	Noise Metrics.....	3
2.2	Traffic Data	4
2.3	Noise Abatement Criteria and Considerations.....	4
3.0	TRAFFIC NOISE ANALYSIS AND ABATEMENT ASSESSMENT	7
3.1	Model Verification	7
3.2	Noise Sensitive Sites and Impact Analysis	8
3.2.1	Receptor Naming System:.....	8
3.3	Noise Abatement Analysis.....	8
3.4	Special Land Use (SLU) Analysis	9
3.5	Common Noise Environments on the Eastbound Side of Cove Road	9
3.5.1	Tres Belle (CNE EB01).....	9
3.5.2	Dr. David L. Anderson Middle School (CNE EB02).....	9
3.5.3	Cove Royale, & Single-Family Residences (CNE EB03)	9
3.5.4	Treasure Coast Classical Academy (CNE EB04)	10
3.5.5	Saint Andrew Catholic Church (CNE EB05).....	10
3.5.6	Summerfield & Single-Family Residence (CNE EB06).....	10
3.5.7	Montego Cove (CNE EB07).....	10
3.6	Common Noise Environments on the Westbound Side of Cove Road.....	10
3.6.1	Crestwood, & Salerno Reserve (CNE WB01)	10
3.6.2	Multiple Single-Family Residences (CNE WB02)	10
3.6.3	Legacy Cove (CNE WB03)	11
3.6.4	Multiple Single-Family Residences (CNE WB04)	11
3.6.5	Discovery Village (CNE WB05).....	11
3.6.6	Multiple Single-Family Residences (CNE WB05)	11
3.6.7	Hibiscus Park (WB06)	11
4.0	CONCLUSIONS	12
4.1	Statement of Likelihood	12
5.0	CONSTRUCTION NOISE AND VIBRATION	14
6.0	PUBLIC INVOLVEMENT	14
7.0	REFERENCES	15

List of Figures

Figure 1 – Project Location Map 2
Figure 2 – Typical Noise Levels..... 6

List of Tables

Table 2-1 – FHWA Noise Abatement Criteria5
Table 3-1 – TNM Validation Results Summary7
Table 3-2 – Hibiscus Park (WB06)..... 12

Appendices

Appendix A.....Traffic Data
Appendix B.....Predicted Noise Levels
Appendix C..... Project Aerials
Appendix D..... Noise Contours

1.0 INTRODUCTION

This project involves the proposed widening of Cove Road, from State Road (SR) 76/Kanner Highway to SR 5/US 1/Federal Highway in Martin County, Florida. This 3.2-mile segment of Cove Road is a two-lane, undivided, rural roadway with 12-foot-wide travel lanes. A six-foot sidewalk is located on the north side of the roadway for the entire project limits and a six-foot sidewalk is located on the south side of the roadway from Kanner Highway to Atlantic Ridge Drive and from west of Montego Cove to Federal Highway. There are no existing bike lanes or shared-use paths within the project limits. Signalized intersections within the project limits are located at Kanner Highway, Atlantic Ridge, Legacy Cove Circle/Classical Way, Willoughby Boulevard, and Federal Highway. Martin County also classifies Cove Road as a major arterial roadway.

The proposed improvements include widening Cove Road from Kanner Highway to Federal Highway from a two-lane undivided to a four-lane divided roadway with accommodations for bicyclists and pedestrians through the entire project limits. Stormwater management needs will be determined, and the addition of roadway lighting will be considered. Intersection improvements within the project limits will also be evaluated to accommodate anticipated future traffic needs. The proposed project limits are shown in **Figure 1**.

1.1 Purpose & Need

1.1.1 Purpose

The primary purpose of widening Cove Road from two lanes to four lanes is to add capacity and improve the local transportation network. Additional elements provided by the proposed project will include support for economic and social demands along Cove Road, enhanced multimodal connectivity, and improved emergency evacuation.

1.1.2 Need

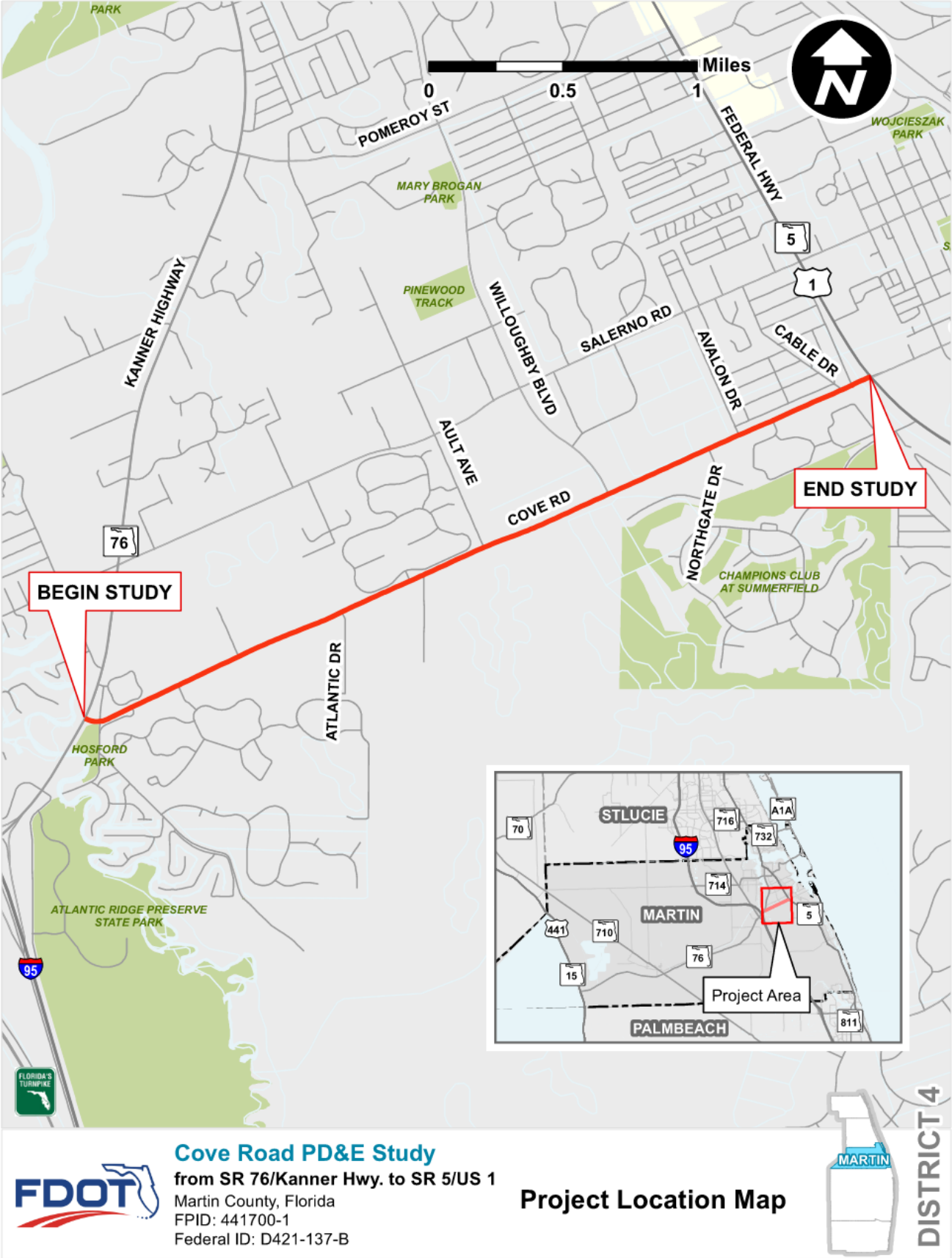
1.1.2.1 Project Status

Within the project limits, Cove Road is located within the Martin Metropolitan Planning Organization (MPO). This project is identified as Priority Project #1 within the Martin MPO Transportation Improvement Program (TIP) Fiscal Year (FY) 2020/21-2024/25. The project is also included within Martin MPO's Martin in Motion 2045 Long Range Transportation Plan (LRTP). This project is currently funded for a Project Development and Environment (PD&E) Study for FY 2022/23, FY 2023/24, and FY 2024/25. Project funding includes Other Federal Aid - Regular Funds. The segment of Cove Road from Kanner Highway to Willoughby Boulevard has an estimated construction date of 2026-2030. The segment of Cove Road from Willoughby Boulevard to Federal Highway has an estimated construction date of 2031-2035.

1.1.2.2 System Linkage

Cove Road is a rural, undivided roadway that connects Stuart and Port Salerno to I-95 and other areas within unincorporated Martin County. Although Cove Road is not designated as a Highway Corridor or Highway Connector within the Florida Strategic Intermodal System (SIS), it provides access to I-95 via Kanner Highway, which is part of the SIS network. The reconstruction of Cove Road is expected to reduce congestion along Cove Road and surrounding local roads. The proposed improvements will enhance connectivity within both the local and regional transportation network.

Figure 1 – Project Location Map



1.1.2.3 Capacity

According to the FDOT District 4 2020 Level of Service (LOS) Update, Cove Road is currently operating at an overall Level of Service of a D with Annual Average Daily Traffic (AADT) of 15,500 vehicles. In the past four years, the AADT has increased by 1,500 vehicles. Additionally, according to Martin County MPO's Martin in Motion 2045 LRTP, within the Cost Feasible Plan, the proposed two additional lanes along Cove Road are needed to address capacity deficiencies. According to the Volume to Capacity (V/C) Ratio Map within the LRTP, Cove Road from Kanner Highway to Federal Highway is over capacity (V/C is between 1.01 and 1.25) by 2045. Roadways are deemed deficient if the V/C ratio exceeds 0.9. Therefore, Cove Road within the project limits will experience congestion by 2045 if additional improvements are not made.

The future traffic demand is projected to increase due to population growth along Cove Road. According to the Martin County Roadway Level of Service Inventory Reports, Cove Road from Kanner Highway to Willoughby Boulevard is experiencing an average annual growth rate of 1.5%. This growth can be attributed to planned developments along Cove Road, including a residential development called Cove Royal. The AADT is expected to increase by the year 2045, triggering the need for additional lanes of traffic along Cove Road.

1.1.2.4 Modal Interrelationships

Cove Road includes a sidewalk along the entire north side, but intermittently along the south side of the road. Cove Road also does not provide designated bike lanes within the entire project limits. Two schools are located along Cove Road: Dr. David L. Anderson Middle School and Treasure Coast Classical Academy. According to the Martin County Bicycle and Pedestrian Safety Action Plan (2016), Cove Road at Dr. David L. Anderson Middle is a bicycle and pedestrian crash hot spot. The Martin County Bicycle and Pedestrian Safety Action Plan includes countermeasures for reducing conflicts with bicycles, pedestrians, and vehicles, which will be considered for the project improvements. Adding multimodal improvements to Cove Road within the project limits will increase safety of the local community.

1.1.2.5 Emergency Evacuation

Based on Martin County's Evacuation Routes Map, Cove Road is classified as an evacuation route within the entire project limits. Therefore, improvements to Cove Road, will help to improve mobility to I-95 and decrease evacuation times. Additionally, emergency response times will be decreased by the proposed improvements.

2.0 METHODOLOGY

The traffic noise study was conducted in accordance with Title 23, Part 772 of the Code of Federal Regulations (23 CFR Part 772) *Procedures for Abatement of Highway Traffic Noise and Construction Noise*¹. The methodology follows guidelines established by FDOT in the *PD&E Manual*, Part 2, Chapter 18², and the *Traffic Noise Modeling and Analysis Practitioners Handbook*³. Predicted noise levels were generated using the FHWA Traffic Noise Model (TNM), version 2.5.

2.1 Noise Metrics

Noise levels for this analysis are expressed in decibels (dB) using an A-weighted scale[dB(A)], which closely approximates the human ear's response. All reported noise levels represent the hourly equivalent noise levels [Leq(h)]. The Leq is defined as *"the equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with Leq(h) being the hourly value of Leq."*². Use of the dB(A) and Leq(h) metrics to evaluate traffic noise is consistent with 23 CFR 772¹.

2.2 Traffic Data

Traffic noise is primarily influenced by traffic speed and volume, with noise levels increasing as both vehicle speed and traffic density rise. The highest roadway noise levels typically occur under Level of Service (LOS) C conditions, where traffic volumes are maximized while maintaining free-flow speeds.

For this analysis, traffic volumes and vehicle mix (e.g., cars, medium trucks, heavy trucks, motorcycles, and buses) were projected for the 2045 Build Condition. LOS C hourly traffic volumes were compared with predicted design-year demand hourly volumes, and used the lower of the two in the model, per Section 18.2.1.5 of the FDOT PD&E Manual².

The existing posted speed limit begins at 45 miles per hour (mph) on the west end of the project area and reduces to 35 mph toward the east end. The proposed modification includes reducing the posted speed limit on the west end to 40 mph. The typical section package summarizes both existing and proposed speed limits for various project segments. Traffic volumes and speed data used in this analysis are provided in **Appendix A**.

2.3 Noise Abatement Criteria and Considerations

A noise-sensitive site is any property where frequent exterior or interior human use occurs and where a reduction in noise would be beneficial. FHWA has established Noise Abatement Criteria (NAC) for various types of noise-sensitive sites. These criteria, adopted by FDOT for traffic noise evaluation, are shown in **Table 2-1**.

Noise abatement measures are considered when predicted noise levels approach or exceed the NAC. FDOT defines "approach" as being within one dB(A) of the applicable FHWA criterion. **Figure 2** provides a comparison of typical noise levels for common indoor and outdoor activities. Predicted traffic noise levels, NAC classification, and impact criteria for all residential receptors are documented in **Appendix B-1**.

Noise abatement must also be considered if a transportation project results in a substantial increase in traffic noise. According to the FDOT PD&E Manual², a substantial increase is defined as an increase of 15 dB(A) or more above existing conditions. A substantial increase typically occurs in areas where traffic noise is currently a minor component of the existing noise environment but would become a dominant factor after project completion (e.g., a new alignment project). Because this project follows the existing alignment of Cove Road, the PD&E noise analysis determined that a substantial increase in traffic noise will not occur. Predicted traffic noise levels, NAC classification, and impact criteria for all SLU receptors are documented in **Appendix B-2**.

Table 2-1 – FHWA Noise Abatement Criteria

NOISE ABATEMENT CRITERIA (NAC) [Hourly A-Weighted Sound Level-decibels (dB(A))]				
Activity Category	Activity Leq(h) ¹		Evaluation location	Description of activity category
	FHWA	FDOT		
A	57	56	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	66	Exterior	Residential
C ²	67	66	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	51	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	71	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.
<i>(Based on Table 1 of 23 CFR Part 772)</i> ¹ The Leq(h) Activity Criteria values are for impact determination only and are not design standards for noise abatement measures. ² Includes undeveloped lands permitted for this activity category. Note: FDOT defines that a substantial noise increase occurs when the existing noise level is predicted to be exceeded by 15 decibels or more as a result of the transportation improvement project. When this occurs, the requirement for abatement consideration will be followed.				

Figure 2 – Typical Noise Levels

Common Outdoor Activities	Noise Level dB(A)	Common Indoor Activities
Jet Fly-Over 1000 ft.	---110---	Rock Band
Gas Lawn Mower at 3 ft.	---100---	
Diesel Truck at 50 ft., at 50 mph	---90---	Food Blender at 3 ft.
Noise Urban Area (Daytime)	---80---	Garbage Disposal at 3 ft.
Gas Lawn Mower at 100 ft.	---70---	Vacuum Cleaner at 10 ft.
Commercial Area	---60---	Normal Speech at 3 ft.
Heavy Traffic at 300 ft.	---50---	Large Business Office
Quiet Urban Daytime	---40---	Dishwasher Next Room
Quiet Urban Nighttime	---30---	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	---20---	Library
Quiet Rural Nighttime	---10---	Bedroom at Night, Concert Hall (Background)
Lowest Threshold of Human Hearing	---0---	Lowest Threshold of Human Hearing
Source: California Dept. of Transportation; Technical Noise Supplement; Oct 1998; Page 18.		

3.0 TRAFFIC NOISE ANALYSIS AND ABATEMENT ASSESSMENT

3.1 Model Verification

To verify the accuracy of the TNM 2.5 noise model, field measurements were conducted within the project limits, following procedures outlined in the FHWA Noise Measurement Handbook⁵. Noise monitoring was performed on December 9, 2024, using Larson Davis LxT noise monitors. Each monitoring event consisted of three intervals of 10 minutes, in accordance with the FDOT PD&E Manual². The monitors were calibrated with a CAL200 calibrator before and after each event to ensure accuracy. Typical vehicle speeds were found using a Decatur Scout handheld radar gun. Most vehicles traveled within ± 5 mph of the 45-mph posted speed limit on Cove Road. Traffic volumes, categorized by vehicle classification, were recorded during each monitoring event and extrapolated to one-hour equivalent volumes for input into the TNM model.

Three validation locations were selected to assess the TNM model's predictive accuracy. The locations are shown on project aerials in Appendix C as receptor points VS-01, VS-02, and VS-03. Noise measurements were taken during three separate validation events at each site:

- VS-01: Located within the right-of-way (ROW) on the eastbound side of Cove Road, near Anderson Middle School at Station 238+00.
- VS-02: Located within the ROW on the westbound side of Cove Road, near Discovery Village at Stuart at Station 326+00.
- VS-03: Located within the ROW on the westbound side of Cove Road, near SE Ault Avenue at Station 288+00.

The results, summarized in Table 3-1, show that the variance between measured and predicted noise levels was less than 3.0 dB for all validation events. This finding confirms that the TNM model predicts traffic-related noise levels within the accuracy standard specified in the FDOT PD&E Manual².

Table 3-1 – TNM Validation Results Summary

Location	Validation Event	TNM Predicted (dB(A))	Field Measured (dB(A))	Variance (dB(A))
VS-01 ¹ (Location 1)	VS-01-R1	65.8	64.2	1.6
	VS-01-R2	66.4	64.5	1.9
	VS-01-R3	66.0	64.2	1.8
VS-02 ¹ (Location 2)	VS-02-R1	67.1	67.2	-0.1
	VS-02-R2	67.0	67.1	-0.1
	VS-02-R3	66.5	67.7	-1.2
VS-03 ¹ (Location 3)	VS-03-R1	65.7	65.2	0.5
	VS-03-R2	65.4	64.0	1.4
	VS-03-R3	65.3	64.1	1.2

¹ Measurements Taken 12/09/2024

3.2 Noise Sensitive Sites and Impact Analysis

Within the project limits, residential and non-residential sites were evaluated. Receptors representing noise-sensitive sites were digitized in the noise model following the FDOT PD&E Manual² as follows:

- **Residential receptors:** Placed at areas of frequent exterior use (e.g., patio or lanai) or at the corner of the residential building closest to the primary traffic noise source.
- **Special Land Use (SLU) receptors:** Located in areas with frequent outdoor human use. For large spaces, such as parks, receptors are arranged in a grid pattern.
- **Representative receptor:** For clusters of residences, a single representative receptor is analyzed for a group of similar sites.
- **Ground floor receptors:** Assumed to be 5 feet above ground elevation.

The locations of the receptors are shown on project aerials in **Appendix C**.

3.2.1 Receptor Naming System:

Each receptor is identified by a unique code:

- **First Letter:** "R" for residential receptors or "S" for SLU receptors.
- **Next Two Letters:** indicate the roadway side (e.g., "EB" for eastbound, "WB" for westbound).
- **Next Two-Digit Number:** Represents the Common Noise Environment (CNE) identifier.
- **Final Three-Digit Number:** Separated by a dash, this denotes the specific receptor (e.g., RWB02-012 is the 12th residential receptor in the 2nd CNE on the westbound side).

A total of 114 receptors represent 350 residences and 11 non-residential sites in the project corridor. Twenty-one residences are projected to approach or exceed the NAC of 66 dB(A) for Activity Category B for the 2045 Build Condition. These impacted residences are located in the first row of homes adjacent to Cove Road in Hibiscus Park. Within the project limits, SLU sites include parks, playgrounds, and schools; however, no noise impacts are predicted at these locations.

Predicted noise levels for the design year (2045) Build condition are included in **Appendix B-1** (residential receptors) and **Appendix B-2** (SLU receptors), while receptor locations are illustrated in **Appendix C**.

3.3 Noise Abatement Analysis

Receptors were grouped into CNEs to evaluate the feasibility and reasonableness of noise abatement measures. Noise barriers mitigate traffic noise by blocking the sound path between the roadway and noise-sensitive sites. Effective noise barriers are sufficiently long, continuous (without gaps), and of adequate height. For a noise barrier to be considered for construction, it must meet feasibility and reasonableness criteria:

Feasibility Criteria:

- Must provide at least a 5 dB(A) reduction in traffic noise to at least two impacted receptors.
- Must consider design, construction, safety, access, ROW constraints, maintenance, drainage, and utility factors.

Reasonableness Criteria:

- Must meet FDOT's Noise Reduction Design Goal (NRDG), by reducing noise at least 7 dB(A) for at least one benefited receptor.

- Must satisfy FDOT's cost threshold of \$64,000 per benefited receptor (defined as a receptor receiving at least a 5 dB(A) reduction). The current unit cost used to evaluate cost reasonableness is \$40 per square foot, covering materials and labor.
- Must incorporate community feedback from affected property owners and residents.

For CNEs with impacted receptors, noise barriers were evaluated at heights between 8 to 14 feet (in 2-foot increments) placed outside the clear recovery zone but within the ROW. This approach identifies the maximum number of impacted receptors that could achieve at least a 5 dB(A) reduction in traffic-related noise. Barrier placement is often constrained by conditions such as overhead utilities.

In some areas, barriers may also benefit receptors that do not approach the NAC. Because abatement is not required for these receptors, barrier height or length is not increased solely for their benefit. However, when these receptors receive a benefit due to their proximity to an impacted receptor, they are included in the cost reasonableness evaluation, which is calculated on a cost-per-benefited-receptor basis. This methodology aligns with Federal Highway Administration (FHWA) policy and guidance.

3.4 Special Land Use (SLU) Analysis

Evaluating SLU sites differs from the approach used for residential locations. The standard procedure is detailed in *Methodology to Evaluate Highway Traffic Noise at Special Land Uses*⁴. Step 1 of this procedure states that if no impacts are identified at SLU receptors, a noise abatement analysis is not required. Because no SLU receptors within the project area are impacted, no abatement measures were evaluated for SLUs.

3.5 Common Noise Environments on the Eastbound Side of Cove Road

3.5.1 Tres Belle (CNE EB01)

Tres Belle is located on the eastbound side of Cove Road between SR 76 (Kanner Highway) and Tres Belle Circle. This area is shown on Sheets 1 and 2 of the project aerials in **Appendix C**. Existing 5-foot-tall concrete privacy walls are located near the property line separating the neighborhood from Cove Road, extending approximately 2,500 feet east and 700 feet west of the neighborhood entrance. In this area, 12 NAC B receptors, representing 32 residences, were added to the model. Noise levels are predicted to range between 48.2 to 57.7 dB(A) and therefore are not expected to approach or exceed the NAC for the Build Condition in Design Year 2045. Predicted noise levels are provided in **Appendix B-1**.

3.5.2 Dr. David L. Anderson Middle School (CNE EB02)

Dr. David L. Anderson Middle School is located on the eastbound side of Cove Road, between Tres Belle Avenue and SE Atlantic Ridge Drive. This area is shown on Sheet 2 of the project aerials in **Appendix C**. The noise model includes four NAC C receptors representing outdoor play areas on school's sports fields. Predicted noise levels range from 48.9 to 52.7 dB(A) and are not expected to approach or exceed the NAC for the Build Condition in Design Year 2045. Predicted noise levels are provided in **Appendix B-2**.

3.5.3 Cove Royale, & Single-Family Residences (CNE EB03)

Cove Royale and several single-family residences are located on the eastbound side of Cove Road between SE Atlantic Ridge Drive and Willoughby Boulevard. This area is shown on Sheet 3 of the project aerials in **Appendix C**. The noise model includes 17 NAC B receptors, representing 20 residences. Predicted noise levels range between 51.5 to 62.1 dB(A) and are not expected to approach or exceed the NAC for the Build Condition in Design Year 2045. The predicted noise levels are provided in **Appendix B-1**.

3.5.4 Treasure Coast Classical Academy (CNE EB04)

Treasure Coast Classical Academy is located on the eastbound side of Cove Road between SE Atlantic Ridge Drive and Willoughby Boulevard. This area is shown on Sheet 3 of the project aerials in **Appendix C**. The noise model includes two NAC C receptors placed on the school basketball courts. Predicted noise levels range from 47.9 to 49.5 dB(A) and are not expected to approach or exceed the NAC for the Build Condition in Design Year 2045. Predicted noise levels are provided in **Appendix B-2**.

3.5.5 Saint Andrew Catholic Church (CNE EB05)

Saint Andrew Catholic Church is located on the eastbound side of Cove Road between SE Atlantic Ridge Drive and Willoughby Boulevard. This area is shown on Sheet 4 of the project aerials in **Appendix C**. The noise model includes one NAC C receptor placed on an outdoor seating area. The predicted noise level is 53.2 dB(A), which does not approach or exceed the NAC for the Build Condition in Design Year 2045. The predicted noise level is provided in **Appendix B-2**.

3.5.6 Summerfield & Single-Family Residence (CNE EB06)

Summerfield and a single-family residence are located on the eastbound side of Cove Road between Willoughby Boulevard and SE Martinique Drive. This area is shown on Sheets 4 and 5 of the project aerials in **Appendix C**. The noise model includes 12 NAC B receptors representing 58 residences. Predicted noise levels range from 48.4 to 57.1 dB(A) and are not expected to approach or exceed the NAC for the Build Condition in Design Year 2045. Predicted noise levels are provided in **Appendix B-1**.

3.5.7 Montego Cove (CNE EB07)

Montego Cove is located on the eastbound side of Cove Road between Willoughby Boulevard and SE Martinique Drive. This area is shown on Sheets 5 and 6 of the project aerials in **Appendix C**. Existing 5-foot-tall concrete privacy walls are located near the property line separating the neighborhood from Cove Road, extending approximately 400 feet east and west of the neighborhood entrance. The noise model includes 18 NAC B receptors representing 66 residences and two NAC C receptors representing the outdoor use areas at a community pool and tennis courts. Predicted noise levels range from 48.8 to 64.0 dB(A) and are not expected to approach or exceed the NAC for the Build Condition in Design Year 2045. Predicted noise levels are provided in **Appendix B-1** and **Appendix B-2**.

3.6 Common Noise Environments on the Westbound Side of Cove Road

3.6.1 Crestwood, & Salerno Reserve (CNE WB01)

Crestwood and Salerno Reserve are located on the westbound side of Cove Road between Kanner Highway and Burnett Avenue. This area is shown on Sheets 1 and 2 of the project aerials in **Appendix C**. The noise model includes 13 NAC B receptors representing 53 residences and one NAC C receptor representing the swimming pool at Crestwood. Predicted noise levels range from 54.3 to 58.8 dB(A) and are not expected to approach or exceed the NAC for the Build Condition in Design Year 2045. Salerno Reserve is currently under construction; only residences with building permits as of October 2024 (the date of the noise analysis) were included in the model and shown on the project aerials. Predicted noise levels are provided in **Appendix B-1** and **Appendix B-2**.

3.6.2 Multiple Single-Family Residences (CNE WB02)

Multiple isolated single-family residences are located on the westbound side of Cove Road between Burnett Avenue and SE Legacy Cove Circle. This area is shown on Sheet 3 of the project aerials in **Appendix C**. The noise

model includes three NAC B receptors representing three residences. Predicted noise levels range from 49.4 to 54.6 dB(A) and are not expected to approach or exceed the NAC for the Build Condition in Design Year 2045. Predicted noise levels are provided in **Appendix B-1**.

3.6.3 Legacy Cove (CNE WB03)

Legacy Cove is located on the westbound side of Cove Road between SE Legacy Cove Circle and SE Ault Avenue. This area is shown on Sheet 3 of the project aerials in **Appendix C**. Existing 5-foot-tall concrete privacy walls are located near the property line separating the neighborhood from Cove Road, extending approximately 900 feet east and 1,500 feet west of the neighborhood entrance. The noise model includes 15 NAC B receptors representing 73 residences. Predicted noise levels range from 50.5 to 57.2 dB(A) and are not expected to approach or exceed the NAC for the Build Condition in Design Year 2045. Predicted noise levels are provided in **Appendix B-1**.

3.6.4 Multiple Single-Family Residences (CNE WB04)

Multiple isolated single-family residences are located on the westbound side of Cove Road between SE Ault Avenue and SE Willoughby Road. This area is shown on Sheet 4 of the project aerials in **Appendix C**. The noise model includes three NAC B receptors representing three residences. Predicted noise levels range from 56.3 to 61.0 dB(A) and are not expected to approach or exceed the NAC for the Build Condition in Design Year 2045. Predicted noise levels are provided in **Appendix B-1**.

3.6.5 Discovery Village (CNE WB05)

Discovery Village is located on the westbound side of Cove Road just east of SE Willoughby Road. This area is shown on Sheet 5 of the project aerials in **Appendix C**. The noise model includes one NAC C receptor representing the outdoor cabana at Discovery Village. The predicted noise level is 53.2 dB(A), which does not approach or exceed the NAC for the Build Condition in Design Year 2045. The predicted noise level is provided in **Appendix B-2**.

3.6.6 Multiple Single-Family Residences (CNE WB05)

Two isolated single-family residences are located on the westbound side of Cove Road between SE Willoughby Road and Avalon Drive. This area is shown on Sheet 5 of the project aerials in **Appendix C**. The noise model includes two NAC B receptors representing two residences. Predicted noise levels range from 56.7 to 60.8 dB(A) and are not expected to approach or exceed the NAC for the Build Condition in Design Year 2045. Predicted noise levels are provided in **Appendix B-1**.

3.6.7 Hibiscus Park (WB06)

Hibiscus Park is located on the westbound side of Cove Road between Avalon Drive and State Road 5 / US 1. This area is shown on Sheets 5 and 6 of the project aerials in **Appendix C**. The noise model includes 18 NAC B receptors representing 65 residences. Predicted noise levels range from 53.0 to 68.9 dB(A) and are expected to approach or exceed the NAC for the Build Condition in Design Year 2045 at 26 residences. Predicted noise levels are provided in **Appendix B-1**.

Noise barriers were evaluated to abate traffic-related noise. The analysis indicates that a 10-foot-tall noise barrier system could provide a 7 dB(A) reduction at one or more receptors and a 5 dB(A) reduction at two or more impacted receptors. This barrier system satisfies the cost reasonableness criteria, staying within the \$64,000 per benefited receptor limit. See **Table 3-1** for evaluated barriers.

Table 3-2 – Hibiscus Park (WB06)

Height (feet)	Length ¹ (feet)	Noise Barrier Approx. Begin Station	Noise Barrier Approx. End Station	No. of Impacts	Noise Reduction at Impacted Residences			Number of Benefited Residences				Impacted Res. Not Benefited ⁴	Total Estimated Cost ⁵	Cost per Benefited Residence
					5-5.9 dB(A)	6.0-6.9 dB(A)	> 7 dB(A)	Impacted ²	Not Impacted ³	Total	Average Reduction dB(A)			
14	155	339+00	340+55	26	0	1	25	26	14	40	9.9	0	\$1,293,600	\$32,340
14	2155	341+00	362+55		0	1	25	26	14	40	9.9	0	\$1,293,600	\$32,340
12	155	339+00	340+55	26	0	3	23	26	14	40	9.1	0	\$1,108,800	\$27,720
12	2155	341+00	362+55		0	3	23	26	14	40	9.1	0	\$1,108,800	\$27,720
10	155	339+00	340+55	26	0	3	23	26	0	26	8.0	0	\$924,000	\$35,538
10	2155	341+00	362+55		0	3	23	26	0	26	8.0	0	\$924,000	\$35,538
8	155	339+00	340+55	26	3	13	10	26	0	26	6.4	0	\$739,200	\$28,431
8	2155	341+00	362+55		3	13	10	26	0	26	6.4	0	\$739,200	\$28,431
6	155	339+00	340+55	26	10	0	0	n/a ⁶	n/a ⁶	n/a ⁶	n/a ⁶	n/a ⁶	n/a ⁶	n/a ⁶
6	2155	341+00	362+55		10	0	0	n/a ⁶	n/a ⁶	n/a ⁶	n/a ⁶	n/a ⁶	n/a ⁶	n/a ⁶

¹ Full height is for the length indicated. If a shoulder noise barrier location is indicated, the length of vertical height tapers at the shoulder barrier's terminus (See FDOT Standard Plans) would be in addition to the length indicated.

² Benefited residences with predicted noise levels that approach or exceed the NAC.

³ Benefited residences with predicted noise levels that do not approach the NAC.

⁴ Impacted residences that do not received a minimum 5 dB(A) reduction from proposed noise barrier.

⁵ Unit cost of \$40/ft2

⁶ Noise barrier system did not meet the NRDG of at least one 7 dB(A) benefit, so no further analysis was conducted.

4.0 CONCLUSIONS

Within the project limits, noise levels were predicted at 114 receptors, representing 350 residences and seven SLU sites. Noise levels are predicted to approach or exceed the NAC in Design Year 2045 for the Build condition at 21 NAC B residences in Hibiscus Park. No impacts were predicted at any SLUs; therefore, noise abatement was not considered for those locations.

Noise barriers were evaluated for the impacted residences in Hibiscus Park. This analysis found noise barriers to be a feasible and reasonable method to mitigate traffic noise. The noise barrier system will benefit 20 impacted and five non-impacted NAC B residences by providing at least a 5 dB(A) reduction in noise levels. Of these residences, 18 will meet the NRDG with at least a 7 dB(A) reduction in traffic noise.

4.1 Statement of Likelihood

FDOT is committed to constructing feasible and reasonable noise abatement measures. One potentially feasible and reasonable noise barrier system has been identified for this project (see **Table 4-1** for more detail on the noise barriers) contingent upon the following conditions:

- Final recommendations on the construction of abatement measures are determined during the project's final design and through the public involvement process.
- Detailed noise analyses during the final design process support the need, feasibility, and reasonableness of providing abatement.
- Cost analysis indicates that the cost of the noise barrier(s) will not exceed the cost reasonable criterion.
- Community input supporting types, heights, and locations of the noise barrier(s) is provided to FDOT.
- Safety and engineering aspects have been reviewed and any conflicts or issues resolved.

FDOT will conduct a land use review during the design phase to identify all noise sensitive sites that may have received a building permit after the noise study but prior to the Date of Public Knowledge (DOPK). The date that the Type 2 Categorical Exclusion is approved will be the DOPK. If the review identifies additional noise sensitive sites permitted prior to the DOPK, FDOT will evaluate those sites during the design phase for traffic noise impacts and noise abatement considerations.

Table 4-1 – Noise Barrier Evaluation Summary

Noise Sensitive Area	Number of Impacted Residences	Noise Barrier Approx. Begin Station	Noise Barrier Approx. End Station	Noise Barrier Height (ft.)	Noise Barrier Length (ft.) ¹	Noise Reduction at Impacted Residences			Number of Benefited Residences ²				Impacted Res. Not Benefited	Noise Barrier Cost ³	Cost Per Benefited Residence
						5-5.9 dB(A)	6.0-6.9 dB(A)	> 7 dB(A)	Impacted	Not Impacted	Total	Average Reduction dB(A)			
Hibiscus Park (WB06)	26	339+00	340+55	8	155	3	13	10	26	0	26	6.4	0	\$739,200	\$28,431
		341+00	362+55	8	2155										

¹ Full height is for length indicated. The length for any required taper in height at a shoulder noise barrier termination would be in addition to the length indicated.

² Total includes impacted/benefited residences and residences with a predicted noise level that does not approach or exceed 67 dBA but are incidentally benefited.

³ Unit cost of \$40/ft² for all non-shoulder noise barriers.

5.0 CONSTRUCTION NOISE AND VIBRATION

During project construction, noise impacts may be substantially greater than those from normal traffic operations due to the use of heavy equipment required for roadway construction. Additionally, construction activities may generate vibration impacts. Therefore, early identification of noise- and vibration-sensitive sites along the project corridor is essential to minimizing these impacts. The project area includes residences, schools, parks, and places of worship that may be affected by construction-related noise and vibration. These sites are listed in **Appendix B-1** and **Appendix B-2**.

To mitigate noise and vibration impacts, construction activities will adhere to the controls outlined in the latest edition of the FDOT Standard Specifications for Road and Bridge Construction. While Section 335.02 of the Florida Statutes exempts FDOT from compliance with local ordinances, FDOT policy is to follow local requirements to the extent considered reasonable. Additionally, the contractor will be required to coordinate with the project engineer and the District Noise Specialist if unexpected noise or vibration issues arise during construction.

6.0 PUBLIC INVOLVEMENT

Agency coordination to obtain noise-related information for this project was conducted through the Efficient Transportation Decision Making (ETDM) Programming Screening (ETDM #14479) and the Advance Notification process. The Programming Screen Summary Report was published in the Environmental Screening Tool (EST) on February 14, 2022. The purpose of the Programming Screen was to present the proposed project to federal, state, and local governments and agencies for their review. The Environmental Technical Advisory Team (ETAT) did not find any substantial impacts to resources.

Coordination between FDOT, local agencies, community officials, and the public was ongoing throughout project development. Stakeholders were offered multiple opportunities to comment on project-related traffic noise through various public engagement events, including:

- The Public Kickoff Meeting, held virtually via Zoom on March 29, 2024, and in person on March 30, 2024, at Indian State College Chastain Campus.
- The Alternatives Public Meeting, held virtually on May 21, 2024, and in person on May 22, 2024, at Indian State College Chastain Campus.
- Meetings with governmental and community groups, including:
 - Martin TAC/BAC/BPAC Meeting – April 3, 2023
 - MPO Board Meeting – April 17, 2023
 - MPO Joint Committees Meeting – April 29, 2024
 - MPO Board Presentation – May 6, 2024
 - Martin County MPO FTAC Presentation – June 7, 2024
 - South Fork Estates Community Meeting – May 31, 2023

To promote land use compatibility, a copy of the Noise Study Report (NSR)—which provides guidance on protecting future land development from potential incompatibility with predicted traffic noise levels—will be provided to Martin County. Additionally, generalized future noise impact contours have been developed for properties in the immediate vicinity of the project for Noise Abatement Activity Categories B/C and E (i.e., residential/other sensitive land uses and sensitive commercial uses, respectively).

These contours represent the approximate distance from the edge of the nearest proposed travel lane to the limits of the area predicted to approach (i.e., within 1 dB(A)) or exceed the NAC in the Design Year 2040. The contours do not account for noise shielding provided by structures located between the receiver and the proposed travel lanes. They were primarily developed for portions of the project corridor located away from significant ground features, such as existing noise barriers. The distance between the proposed outside travel lane edge and the contour at various locations is presented in **Appendix D**. To minimize the potential for incompatible land use, noise-sensitive land uses should be located beyond this distance.

7.0 REFERENCES

1. **23 CFR Part 772**, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*; Federal Highway Administration; Washington, D.C.; October 18, 2024.
2. **Project Development and Environment Manual**; Part 2, Chapter 18; Florida Department of Transportation; Tallahassee, Florida; July 31, 2024.
3. **Traffic Noise Modeling and Analysis Practitioners Handbook**; Florida Department of Transportation; Tallahassee, Florida; December 2018.
4. **Noise Measurement Handbook**; Federal Highway Administration; Washington, D.C.; June 2018.
5. **Standard Specifications for Road and Bridge Construction**; Florida Department of Transportation; Tallahassee, Florida; July 2023.

Appendix A

Traffic Data

Highway Traffic Noise: Traffic Data																
Project Name	Cove Road from SR-76/Kanner Highway to SR-5/US-1/SE Federal Highway															
Project Number	FPID: 441700-1-22-01															
Condition	Existing															
Year	2021															
Roadway Details					Traffic Details											
Roadway Name	From	To	Roadway Type	Number of Lanes (in 1 direction)	Two-Way LOS C AADT (if applicable)	LOS C Peak Hour Peak Direction (PHPD)	K	D	AAOT	Demand Hourly Volumes (DHV) Peak Hour Peak Direction (PHPD)	% Automobiles	% Medium Trucks	% Heavy Trucks	% Buses	% Motorcycles	Posted Speed (mph)
SR 76	Cove Road	North	Arterial	3	52,000	2,620	8.9%	53.5%	41,000	1,952	95.3%	2.7%	1.1%	0.7%	0.2%	45
SR 76	Cove Road	South	Arterial	3	52,000	2,620	8.8%	52.9%	54,000	2,514	95.3%	2.7%	1.1%	0.7%	0.2%	45
Cove Road	SR 76	Gaines Ave	Arterial	2	34,300	1,700	9.0%	53.0%	16,000	840	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	Gaines Ave	Tres Belle Cir	Arterial	1	19,600	970	9.3%	53.0%	15,500	764	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	Tres Belle Cir	School Entrance	Arterial	1	19,600	970	9.3%	53.0%	15,500	764	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	School Entrance	SE Atlantic Ridge Dr	Arterial	1	19,600	970	9.2%	53.0%	15,500	756	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	SE Atlantic Ridge Dr	SE Legacy Cove	Arterial	1	19,600	970	9.3%	53.0%	16,000	789	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	SE Legacy Cove	SE Ault Ave	Arterial	1	19,600	970	10.7%	53.0%	16,500	936	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	SE Ault Ave	Willoughby Blvd	Arterial	1	19,600	970	9.8%	53.0%	16,000	831	93.6%	3.3%	2.0%	0.6%	0.5%	40
Cove Road	Willoughby Blvd	Northgate Dr	Arterial	1	19,600	970	9.0%	52.3%	17,500	824	94.8%	2.9%	1.5%	0.6%	0.3%	40
Cove Road	Northgate Dr	Montego Cove	Arterial	1	19,600	970	9.0%	52.3%	17,500	824	94.8%	2.9%	1.5%	0.6%	0.3%	35
Cove Road	Montego Cove	Cable Dr	Arterial	1	19,600	970	8.9%	52.3%	17,500	815	94.8%	2.9%	1.5%	0.6%	0.3%	35
Cove Road	Cable Dr	US 1	Arterial	1	19,600	970	8.8%	52.3%	17,500	805	94.8%	2.9%	1.5%	0.6%	0.3%	35
Ault Ave	Cove Road	North	Arterial	1	19,000	970	21.3%	67.2%	1,300	186	95.8%	2.2%	0.4%	1.3%	0.3%	30
Willoughby Blvd	Cove Road	North	Arterial	1	15,300	760	9.4%	57.8%	5,700	310	95.8%	2.2%	0.4%	1.3%	0.3%	45
US 1	Cove Road	North	Arterial	3	44,700	2,210	8.0%	53.7%	34,500	1,482	92.3%	6.2%	0.9%	0.3%	0.3%	45
US 1	Cove Road	South	Arterial	3	47,700	2,360	8.5%	55.2%	39,900	1,853	92.3%	6.2%	0.9%	0.3%	0.3%	45

Notes:

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Ian Bairden, P.E.  12/10/24
Signature Date:

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis.

FDOT Reviewer: _____ Date: _____
Signature

Highway Traffic Noise: Traffic Data

Project Name Cove Road from SR-76/Kanner Highway to SR-5/US-1/SE Federal Highway
 Project Number FPID: 441700-1-22-01
 Condition No-Build
 Year 2045

Roadway Details					Traffic Details											
Roadway Name	From	To	Roadway Type	Number of Lanes (in 1 direction)	Two-Way LOS C AADT (if applicable)	LOS C Peak Hour Peak Direction (PHPD)	K	D	AADT	Demand Hourly Volumes (DHV) Peak Hour Peak Direction (PHPD)	% Automobiles	% Medium Trucks	% Heavy Trucks	% Buses	% Motorcycles	Posted Speed (mph)
SR 76	Cove Road	North	Arterial	3	52,900	2,620	9.0%	53.5%	53,800	2,560	95.3%	2.7%	1.1%	0.7%	0.2%	45
SR 76	Cove Road	South	Arterial	3	52,000	2,620	9.0%	52.9%	60,600	3,314	95.3%	2.7%	1.1%	0.7%	0.2%	45
Cove Road	SR 76	Gaines Ave	Arterial	2	34,300	1,700	9.0%	53%	22,800	1,088	93.0%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	Gaines Ave	Tres Belle Cir	Arterial	1	19,600	970	9.0%	53%	22,000	1,040	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	Tres Belle Cir	School Entrance	Arterial	1	19,600	970	9.0%	53%	22,000	1,040	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	School Entrance	SE Atlantic Ridge Dr	Arterial	1	19,600	970	9.0%	53%	22,000	1,040	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	SE Atlantic Ridge Dr	SE Legacy Cove	Arterial	1	19,600	970	9.0%	53%	22,800	1,088	93.0%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	SE Legacy Cove	SE Aull Ave	Arterial	1	19,600	970	9.0%	53%	23,500	1,121	93.0%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	SE Aull Ave	Willoughby Blvd	Arterial	1	19,600	970	9.0%	53%	22,800	1,088	93.0%	3.3%	2.0%	0.6%	0.5%	40
Cove Road	Willoughby Blvd	Northgate Dr	Arterial	1	19,600	970	9.0%	52.3%	24,900	1,172	94.8%	2.9%	1.5%	0.6%	0.3%	40
Cove Road	Northgate Dr	Montego Cove	Arterial	1	19,600	970	9.0%	52.3%	24,900	1,172	94.8%	2.9%	1.5%	0.6%	0.3%	35
Cove Road	Montego Cove	Cable Dr	Arterial	1	19,600	970	9.0%	52.3%	24,900	1,172	94.8%	2.9%	1.5%	0.6%	0.3%	35
Cove Road	Cable Dr	US 1	Arterial	1	19,600	970	9.0%	52.3%	24,900	1,172	94.8%	2.9%	1.5%	0.6%	0.3%	35
Aull Ave	Cove Road	North	Arterial	1	19,600	970	9.0%	67.1%	1,600	97	95.8%	2.2%	0.4%	1.3%	0.3%	30
Willoughby Blvd	Cove Road	North	Arterial	1	15,300	760	9.0%	57.8%	7,100	369	95.8%	2.2%	0.4%	1.3%	0.3%	45
US 1	Cove Road	North	Arterial	3	44,700	2,210	8.5%	53.7%	38900	1,762	92.3%	6.2%	0.9%	0.3%	0.3%	45
US 1	Cove Road	South	Arterial	3	47,700	2,360	8.5%	55.2%	44200	2,074	92.3%	6.2%	0.9%	0.3%	0.3%	45

Notes:

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By:

Ian Bairden, P.E.



12-10-24

Date:

Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis.

FDOT Reviewer:

Date:

Signature

Highway Traffic Noise: Traffic Data

Project Name Cove Road from SR-76/Kanner Highway to SR-5/US-1/SE Federal Highway
 Project Number FPID: 441700-1-22-01
 Condition Build
 Year 2045

Roadway Details					Traffic Details											
Roadway Name	From	To	Roadway Type	Number of Lanes (in 1 direction)	Two-Way LOS C AADT (if applicable)	LOS C Peak Hour Peak Direction (PHPD)	K	D	AADT	Demand Hourly Volumes (DHV) Peak Hour Peak Direction (PHPD)	% Automobiles	% Medium Trucks	% Heavy Trucks	% Buses	% Motorcycles	Posted Speed (mph)
SR 76	Cove Road	North	Arterial	3	52,900	2,620	0.0%	53.5%	47,500	2,287	95.3%	2.7%	1.1%	0.7%	0.2%	45
SR 76	Cove Road	South	Arterial	3	52,900	2,620	0.0%	52.9%	66,500	3,166	95.3%	2.7%	1.1%	0.7%	0.2%	45
Cove Road	SR 76	Gaines Ave	Arterial	2	34,300	1,700	0.0%	53%	24,000	1,145	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	Gaines Ave	Tres Belle Cir	Arterial	2	34,300	1,700	0.0%	53%	23,000	1,097	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	Tres Belle Cir	School Entrance	Arterial	2	34,300	1,700	0.0%	53%	21,000	1,002	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	School Entrance	SE Atlantic Ridge Dr	Arterial	2	34,300	1,700	0.0%	53%	21,000	1,002	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	SE Atlantic Ridge Dr	SE Legacy Cove	Arterial	2	34,300	1,700	0.0%	53%	22,000	1,049	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	SE Legacy Cove	SE Ault Ave	Arterial	2	34,300	1,700	0.0%	53%	22,500	1,073	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	SE Ault Ave	Willoughby Blvd	Arterial	2	34,300	1,700	0.0%	53%	23,000	1,097	93.6%	3.3%	2.0%	0.6%	0.5%	45
Cove Road	Willoughby Blvd	Northgate Dr	Arterial	2	34,300	1,700	0.0%	52.3%	22,000	1,036	94.8%	2.9%	1.5%	0.6%	0.3%	45
Cove Road	Northgate Dr	Montego Cove	Arterial	2	34,300	1,700	0.0%	52.3%	23,500	1,106	94.8%	2.9%	1.5%	0.6%	0.3%	45
Cove Road	Montego Cove	Cable Dr	Arterial	2	34,300	1,700	0.0%	52.3%	23,500	1,106	94.8%	2.9%	1.5%	0.6%	0.3%	45
Cove Road	Cable Dr	US 1	Arterial	2	34,300	1,700	0.0%	52.3%	23,500	1,106	94.8%	2.9%	1.5%	0.6%	0.3%	45
Ault Ave	Cove Road	North	Arterial	1	19,600	970	0.0%	67.1%	1,600	97	90%	2%	0%	1%	0%	30
Willoughby Blvd	Cove Road	North	Arterial	1	15,300	760	0.0%	57.8%	9,600	499	95.8%	2.2%	0.4%	1.3%	0.3%	45
US 1	Cove Road	North	Arterial	3	44,700	2,210	8.5%	53.7%	38,500	1,757	92.3%	6.2%	0.9%	0.3%	0.3%	45
US 1	Cove Road	South	Arterial	3	47,700	2,360	8.5%	55.2%	44,000	2,064	92.3%	6.2%	0.9%	0.3%	0.3%	45

Notes:

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By:

Ian Rairden, P.E. 
 Signature

12-10-24
 Date:

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis.

FDOT Reviewer:

 Signature Date:

Appendix B-1 – Residential Properties

Predicted Noise Levels

Predicted Noise Levels

Noise Sensitive Area (NSA)	Rec. Point	No. of Units	NAC	NAC Criteria (dBA)	FDOT Criteria (dBA)	2017 Existing LAeq1h (dBA)	2045 No-Build LAeq1h (dBA)	2045 Build LAeq1h (dBA)	NAC Approach or Exceeded	Subst. Increase (>15dB(A))	Description
XX.X	Impacted Receptor										
EB01	REB01-001	3	B	67	66	52.2	52.9	55.8	No	No	Tres Belle
EB01	REB01-002	1	B	67	66	54.9	55.7	60.4	No	No	Tres Belle
EB01	REB01-003	2	B	67	66	55	55.9	60.1	No	No	Tres Belle
EB01	REB01-004	3	B	67	66	52.1	53.1	55.5	No	No	Tres Belle
EB01	REB01-005	3	B	67	66	50.4	51.3	53.5	No	No	Tres Belle
EB01	REB01-006	2	B	67	66	52.8	53.7	53.4	No	No	Tres Belle
EB01	REB01-007	3	B	67	66	51.9	52.9	54.8	No	No	Tres Belle
EB01	REB01-008	2	B	67	66	47.9	48.9	51.0	No	No	Tres Belle
EB01	REB01-009	2	B	67	66	51.8	52.8	54.3	No	No	Tres Belle
EB01	REB01-010	3	B	67	66	48.5	49.4	51.4	No	No	Tres Belle
EB01	REB01-011	5	B	67	66	47.6	48.6	50.7	No	No	Tres Belle
EB01	REB01-012	3	B	67	66	45.4	46.4	48.2	No	No	Tres Belle
EB03	REB03-001	1	B	67	66	51.3	52.3	53.1	No	No	Single Family Residence
EB03	REB03-002	1	B	67	66	50.4	51.3	52.4	No	No	Single Family Residence
EB03	REB03-003	1	B	67	66	51.5	52.5	54.6	No	No	Single Family Residence
EB03	REB03-004	1	B	67	66	56.6	57.5	58.6	No	No	Single Family Residence
EB03	REB03-007	1	B	67	66	55.8	56.6	57.8	No	No	Single Family Residence
EB03	REB03-008	1	B	67	66	56	56.5	58.3	No	No	Single Family Residence
EB03	REB03-009	2	B	67	66	52.4	52.8	55.1	No	No	Single Family Residence
EB03	REB03-010	2	B	67	66	55.6	55.9	58.0	No	No	Single Family Residence
EB03	REB03-011	1	B	67	66	53.2	53.4	55.5	No	No	Single Family Residence
EB03	REB03-012	1	B	67	66	53.4	53.7	55.4	No	No	Single Family Residence
EB03	REB03-013	2	B	67	66	53.1	53.3	54.8	No	No	Single Family Residence
EB03	REB03-014	1	B	67	66	59.3	59.9	62.1	No	No	Single Family Residence
EB03	REB03-015	1	B	67	66	49.3	49.7	51.5	No	No	Single Family Residence
EB03	REB03-016	1	B	67	66	53.2	53.9	56.4	No	No	Single Family Residence
EB03	REB03-017	1	B	67	66	54.9	55.5	58.1	No	No	Single Family Residence
EB03	REB03-019	1	B	67	66	51.8	52.5	54.5	No	No	Single Family Residence
EB03	REB03-020	1	B	67	66	54.3	55	56.7	No	No	Single Family Residence
EB06	REB06-001	1	B	67	66	55.9	56.6	57.1	No	No	Single Family Residence
EB06	REB06-002	2	B	67	66	46.2	46.8	48.9	No	No	Summerfield
EB06	REB06-003	1	B	67	66	52	52.6	54.3	No	No	Summerfield
EB06	REB06-004	5	B	67	66	48.6	49.3	51.4	No	No	Summerfield
EB06	REB06-005	3	B	67	66	52.1	52.8	55.1	No	No	Summerfield
EB06	REB06-006	16	B	67	66	48.4	49.1	51.8	No	No	Summerfield
EB06	REB06-007	1	B	67	66	51.5	52.2	55.0	No	No	Summerfield
EB06	REB06-008	9	B	67	66	49.7	50.4	53.2	No	No	Summerfield
EB06	REB06-009	8	B	67	66	44.8	45.4	48.4	No	No	Summerfield
EB06	REB06-010	4	B	67	66	46.2	46.9	49.7	No	No	Summerfield
EB06	REB06-011	3	B	67	66	48.7	49.4	52.0	No	No	Summerfield
EB06	REB06-012	5	B	67	66	45.1	45.7	48.5	No	No	Summerfield
EB07	REB07-002	4	B	67	66	57.6	58.3	62.6	No	No	Montego Cove
EB07	REB07-004	4	B	67	66	57.8	58.4	62.8	No	No	Montego Cove
EB07	REB07-005	4	B	67	66	47	47.7	50.3	No	No	Montego Cove
EB07	REB07-006	8	B	67	66	60.4	61.1	65.3	No	No	Montego Cove
EB07	REB07-007	8	B	67	66	52.2	52.9	55.6	No	No	Montego Cove
EB07	REB07-008	4	B	67	66	46.4	47	49.0	No	No	Montego Cove
EB07	REB07-009	4	B	67	66	47.3	47.9	49.8	No	No	Montego Cove
EB07	REB07-010	4	B	67	66	49.5	50	51.6	No	No	Montego Cove
EB07	REB07-011	4	B	67	66	52.6	53.2	55.0	No	No	Montego Cove
WB01	RWB01-001	4	B	67	66	56.9	57.9	57.8	No	No	Crestwood
WB01	RWB01-003	4	B	67	66	57.3	58.2	58.3	No	No	Crestwood
WB01	RWB01-004	8	B	67	66	59.4	60.4	58.8	No	No	Crestwood
WB01	RWB01-005	4	B	67	66	54.7	55.6	55.3	No	No	Crestwood
WB01	RWB01-006	4	B	67	66	55.8	56.8	56.6	No	No	Crestwood
WB01	RWB01-007	1	B	67	66	59.9	60.9	58.5	No	No	Salerno Reserve
WB01	RWB01-008	5	B	67	66	54.3	55.3	54.3	No	No	Salerno Reserve
WB01	RWB01-009	5	B	67	66	59.8	60.8	58.1	No	No	Salerno Reserve
WB01	RWB01-010	2	B	67	66	56.2	57.2	55.3	No	No	Salerno Reserve
WB01	RWB01-011	5	B	67	66	56.1	57.1	55.0	No	No	Salerno Reserve
WB01	RWB01-012	5	B	67	66	60.1	61.1	58.3	No	No	Salerno Reserve
WB01	RWB01-013	1	B	67	66	60.2	61.2	58.1	No	No	Salerno Reserve
WB01	RWB01-014	5	B	67	66	56.1	57.1	55.2	No	No	Salerno Reserve
WB02	RWB02-001	1	B	67	66	50.6	51.6	51.5	No	No	Single Family Residence
WB02	RWB02-002	1	B	67	66	49.3	50.3	49.4	No	No	Single Family Residence
WB02	RWB02-003	1	B	67	66	53.2	54.1	54.6	No	No	Single Family Residence
WB03	RWB03-001	3	B	67	66	50.6	51.5	51.9	No	No	Legacy Cove
WB03	RWB03-002	2	B	67	66	56.5	57.4	57.6	No	No	Legacy Cove
WB03	RWB03-003	3	B	67	66	56.9	57.8	58.8	No	No	Legacy Cove
WB03	RWB03-004	3	B	67	66	54.2	55.1	56.0	No	No	Legacy Cove
WB03	RWB03-005	12	B	67	66	50	50.6	51.0	No	No	Legacy Cove
WB03	RWB03-006	5	B	67	66	53.7	54.4	54.7	No	No	Legacy Cove
WB03	RWB03-007	5	B	67	66	53.9	54.4	55.2	No	No	Legacy Cove
WB03	RWB03-008	7	B	67	66	54.3	54.6	55.7	No	No	Legacy Cove
WB03	RWB03-009	10	B	67	66	49.4	49.8	50.8	No	No	Legacy Cove
WB03	RWB03-010	6	B	67	66	57.6	57.8	58.2	No	No	Legacy Cove
WB03	RWB03-011	6	B	67	66	50.8	51.1	51.5	No	No	Legacy Cove
WB03	RWB03-012	2	B	67	66	57.2	57.4	58.0	No	No	Legacy Cove
WB03	RWB03-013	2	B	67	66	52.2	52.5	53.0	No	No	Legacy Cove
WB03	RWB03-014	1	B	67	66	56.9	57.1	57.2	No	No	Legacy Cove
WB03	RWB03-015	6	B	67	66	58.1	58.2	58.8	No	No	Legacy Cove

Predicted Noise Levels

Noise Sensitive Area (NSA)	Rec. Point	No. of Units	NAC	NAC Criteria (dBA)	FDOT Criteria (dBA)	2017 Existing LAeq1h (dBA)	2045 No-Build LAeq1h (dBA)	2045 Build LAeq1h (dBA)	NAC Approach or Exceeded	Subst. Increase (>15dB(A))	Description
XX.X	Impacted Receptor										
WB04	RWB04-001	1	B	67	66	57.8	58.5	58.0	No	No	Single Family Residence
WB04	RWB04-002	1	B	67	66	61.4	62	61.0	No	No	Single Family Residence
WB04	RWB04-003	1	B	67	66	57.3	58	56.3	No	No	Single Family Residence
WB05	RWB05-002	1	B	67	66	54.8	55.4	56.6	No	No	Single Family Residence
WB05	RWB05-003	1	B	67	66	58.7	59.4	60.6	No	No	Single Family Residence
WB06	RWB06-001	3	B	67	66	55.8	56.5	60.3	No	No	Hibiscus Park
WB06	RWB06-002	1	B	67	66	66.1	66.9	68.9	Yes	No	Hibiscus Park
WB06	RWB06-003	2	B	67	66	65.3	66	67.8	Yes	No	Hibiscus Park
WB06	RWB06-004	3	B	67	66	54	54.7	56.5	No	No	Hibiscus Park
WB06	RWB06-005	5	B	67	66	62.2	62.9	66.5	Yes	No	Hibiscus Park
WB06	RWB06-006	7	B	67	66	54.7	55.4	57.0	No	No	Hibiscus Park
WB06	RWB06-007	8	B	67	66	65.1	65.8	67.8	Yes	No	Hibiscus Park
WB06	RWB06-008	3	B	67	66	51.3	52	53.5	No	No	Hibiscus Park
WB06	RWB06-009	2	B	67	66	65.9	66.6	67.9	Yes	No	Hibiscus Park
WB06	RWB06-010	4	B	67	66	56	56.7	57.9	No	No	Hibiscus Park
WB06	RWB06-011	3	B	67	66	65.5	66.2	67.0	Yes	No	Hibiscus Park
WB06	RWB06-012	6	B	67	66	51.9	53.0	53.0	No	No	Hibiscus Park
WB06	RWB06-013	3	B	67	66	64.5	65.2	66.0	Yes	No	Hibiscus Park
WB06	RWB06-014	3	B	67	66	52.4	53	54.0	No	No	Hibiscus Park
WB06	RWB06-015	2	B	67	66	65.5	66.2	67.0	Yes	No	Hibiscus Park
WB06	RWB06-016	5	B	67	66	57.2	57.9	58.4	No	No	Hibiscus Park
WB06	RWB06-017	2	B	67	66	54.3	54.7	54.9	No	No	Hibiscus Park

Appendix B-2 – Special Land Use Sites

Predicted Noise Levels

Predicted Noise Levels

Noise Sensitive Area (NSA)	Rec. Point	No. of Units	NAC	NAC Criteria (dBA)	FDOT Criteria (dBA)	2016 Existing LAeq1h (dBA)	2042 No-Build LAeq1h (dBA)	2042 Build LAeq1h (dBA)	NAC Approach or Exceeded	Subst. Increase (>15dB(A))	Description
XX.X	Impacted Receptor										
EB02	SEB02-001	1	C	67	66	46.2	47.2	48.9	No	No	Dr. David L. Anderson Middle School
EB02	SEB02-002	1	C	67	66	49.9	50.9	52.7	No	No	Dr. David L. Anderson Middle School
EB02	SEB02-003	1	C	67	66	49	50	51.0	No	No	Dr. David L. Anderson Middle School
EB02	SEB02-004	1	C	67	66	47.4	48.4	48.9	No	No	Dr. David L. Anderson Middle School
EB04	SEB04-001	1	C	67	66	46.8	47.6	49.5	No	No	Treasure Coast Classical Academy
EB04	SEB04-002	1	C	67	66	45.6	46.5	47.9	No	No	Treasure Coast Classical Academy
EB05	SEB05-001	1	C	67	66	50.2	50.8	53.2	No	No	St Andrew Catholic Church
EB07	SEB07-001	1	C	67	66	47.6	48.3	51.2	No	No	Montego Cove Tennis Courts
EB07	SEB07-003	1	C	67	66	43.8	44.5	46.7	No	No	Montego Cove Pool
WB01	SWB01-002	1	C	67	66	61.6	62.6	61.3	No	No	Crestwood Pool
WB05	SWB05-001	1	C	67	66	52.1	52.7	53.2	No	No	Discovery Village

Appendix C

Project Aerials



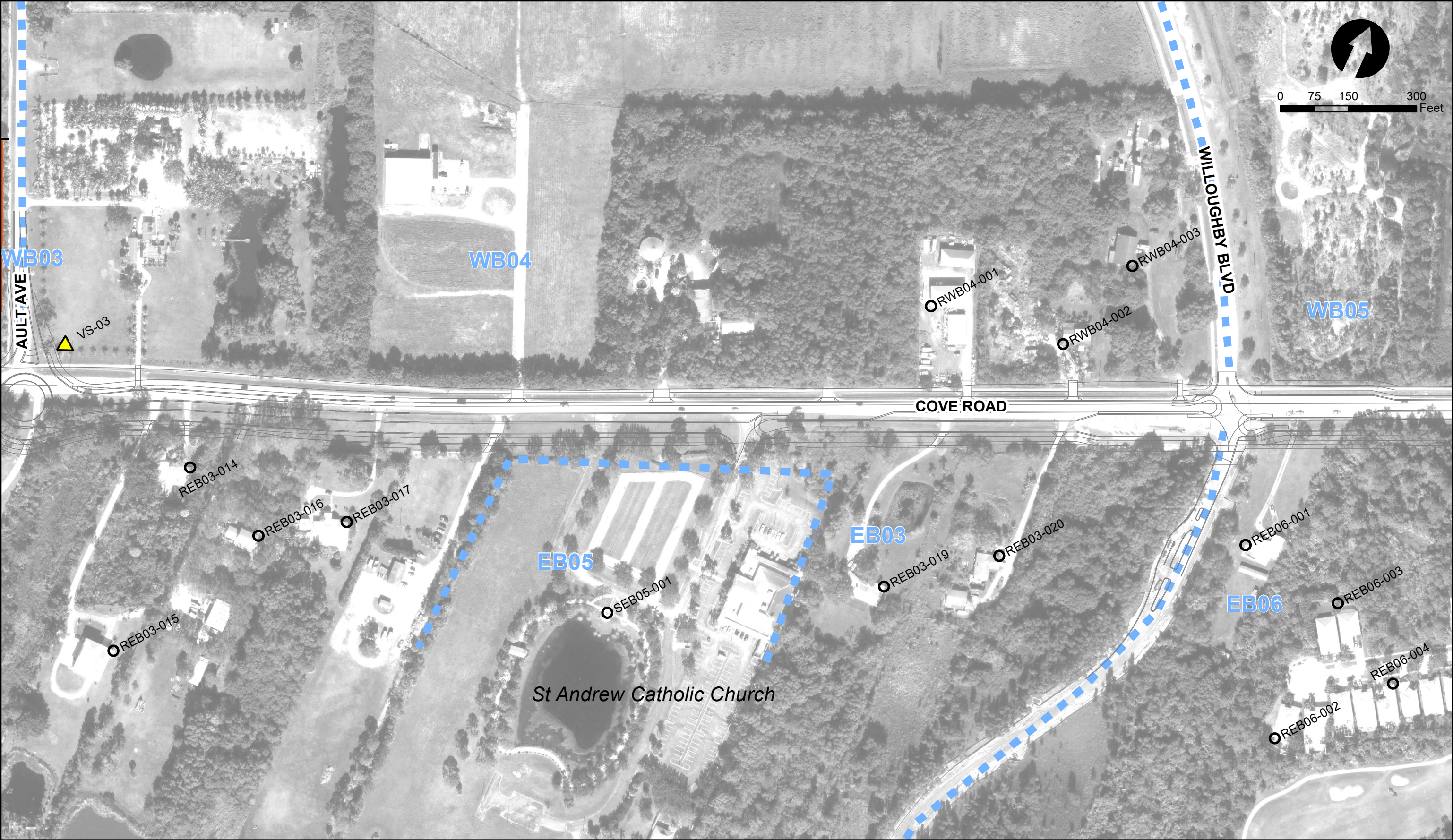
Impacted-Benefited Impacted-Not Benefited Not Impacted-Not Benefited Validation Site	Potential Noise Barrier Privacy Walls	CAD Roadway Lines Common Noise Environment	NOISE SPECIALIST			STATE OF FLORIDA			PROJECT AERIALS	Sheet No.
			Jeff Jones, GISP. Ardurra 3000 Dovera Drive, Suite 200 Oviedo, Florida 32765 P 407.971.8850			DEPARTMENT OF TRANSPORTATION				
						ROAD NAME	COUNTY	FINANCIAL PROJECT ID		
			COVE RD	MARTIN	441700-1				1	



Impacted-Benefited Impacted-Not Benefited Not Impacted-Not Benefited Validation Site	Potential Noise Barrier Privacy Walls	CAD Roadway Lines Common Noise Environment	NOISE SPECIALIST			STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PROJECT AERIALS Cove Road PD&E Study from SR 76 (Kanner Hwy) to SR 5 / US 1	Sheet No.
			Jeff Jones, GISP. Ardurra 3000 Dovera Drive, Suite 200 Oviedo, Florida 32765 P 407.971.8850			ROAD NAME	COUNTY	FINANCIAL PROJECT ID		
						COVE RD	MARTIN	441700-1		2



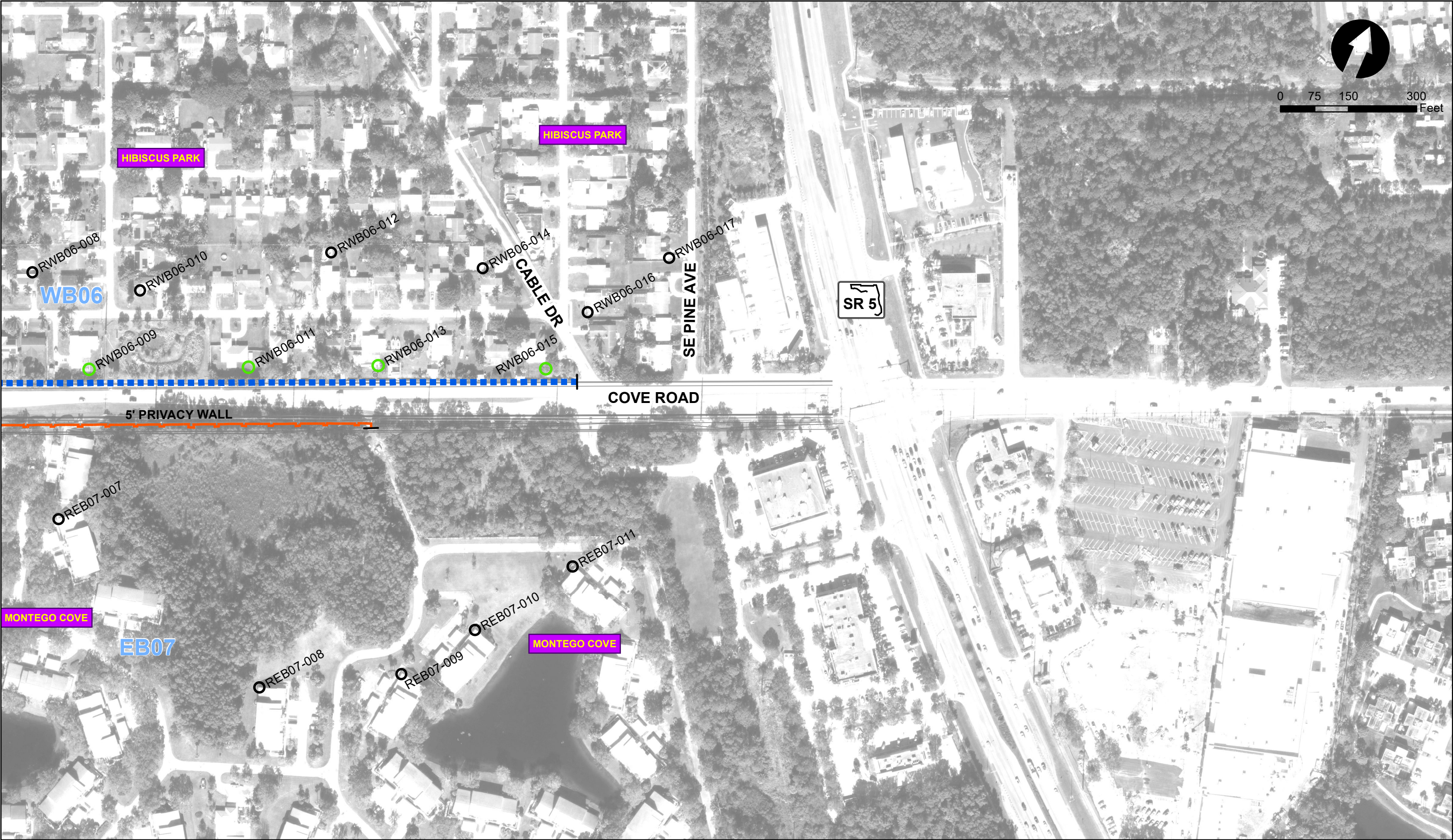
Impacted-Benefited Impacted-Not Benefited Not Impacted-Not Benefited Validation Site	Potential Noise Barrier Privacy Walls	CAD Roadway Lines Common Noise Environment	NOISE SPECIALIST			STATE OF FLORIDA			PROJECT AERIALS	Sheet No.
			Jeff Jones, GISP. Ardurra 3000 Dovera Drive, Suite 200 Oviedo, Florida 32765 P 407.971.8850			DEPARTMENT OF TRANSPORTATION				
						ROAD NAME	COUNTY	FINANCIAL PROJECT ID		
			COVE RD	MARTIN	441700-1				3	



Impacted-Benefited Impacted-Not Benefited Not Impacted-Not Benefited Validation Site	Potential Noise Barrier Privacy Walls	CAD Roadway Lines Common Noise Environment	NOISE SPECIALIST			STATE OF FLORIDA			PROJECT AERIALS	Sheet No.
			Jeff Jones, GISP. Ardurra 3000 Dovera Drive, Suite 200 Oviedo, Florida 32765 P 407.971.8850			DEPARTMENT OF TRANSPORTATION				
						ROAD NAME	COUNTY	FINANCIAL PROJECT ID		
			COVE RD	MARTIN	441700-1				4	



Impacted-Benefited Impacted-Not Benefited Not Impacted-Not Benefited Validation Site	Potential Noise Barrier Privacy Walls	CAD Roadway Lines Common Noise Environment	NOISE SPECIALIST			STATE OF FLORIDA			PROJECT AERIALS	Sheet No.	
			Jeff Jones, GISP. Ardurra 3000 Dovera Drive, Suite 200 Oviedo, Florida 32765 P 407.971.8850			DEPARTMENT OF TRANSPORTATION					Cove Road PD&E Study from SR 76 (Kanner Hwy) to SR 5 / US 1
						ROAD NAME	COUNTY	FINANCIAL PROJECT ID			
						COVE RD	MARTIN	441700-1	5		



Impacted-Benefited Impacted-Not Benefited Not Impacted-Not Benefited Validation Site	Potential Noise Barrier Privacy Walls	CAD Roadway Lines Common Noise Environment	NOISE SPECIALIST			STATE OF FLORIDA			PROJECT AERIALS	Sheet No.
			Jeff Jones, GISP. Ardurra 3000 Dovera Drive, Suite 200 Oviedo, Florida 32765 P 407.971.8850			DEPARTMENT OF TRANSPORTATION				
						ROAD NAME	COUNTY	FINANCIAL PROJECT ID		SR 76 (Kanner Hwy) to SR 5 / US 1
			COVE RD	MARTIN	441700-1				6	

Appendix D

Project Noise Contours

Cove Road Noise Contours

From SR 76/Kanner Hwy to SR 5/US 1/Federal Hwy

