STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TECHNICAL REPORT COVERSHEET

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ENVIRONMENTAL
MANAGEMENT
06/17

NOISE STUDY REPORT

Florida Department of Transportation

District 7

SR 56 Southbound C-D Road/Ramps to I-75/I-275

Project Development and Environment (PD&E) Study

Limits of Project: South of the I-75/I-275 Apex to SR 56

Hillsborough and Pasco Counties, Florida

Work Program Item Segment No.: 430573-4

ETDM Number: 14330

Date: July 2022

The environmental review, consultation, and other actions required by 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 dated May 26, 2022 and executed by FHWA and FDOT.

SR 56 Southbound C-D Road/Ramps to I-75/I-275

Project Development & Environment (PD&E) Study

Noise Study Report

Work Program Item Segment No. 430573-4
ETDM Project No. 14330
Hillsborough and Pasco Counties, Florida

Prepared for:

Florida Department of Transportation
District Seven

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EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT), District Seven, is conducting a Project Development and Environment (PD&E) study to evaluate location and design concepts for constructing a southbound collector-distributor (C-D) road system to carry the southbound on-ramps from State Road (SR) 56 to Interstate 75 (I-75) and I-275. The limits of the study are along I-75 from south of the I-75/I-275 Apex to SR 56 in Hillsborough and Pasco Counties. The project will improve the southbound operations between the I-75/I-275 and I-75/SR 56 interchanges and eliminate undesirable weaving movements. The design year for the improvements is 2045.

The PD&E study objectives include: determine proposed typical sections and develop preliminary conceptual design plans for proposed improvements, while minimizing impacts to the environment; consider agency and public comments; and ensure project compliance with all applicable federal and state laws. A Type 2 Categorical Exclusion was prepared as part of this study. The proposed improvements will include construction of stormwater management and floodplain compensation facilities. The PD&E study satisfies all applicable requirements, including the National Environmental Policy Act (NEPA), to qualify for federal-aid funding of subsequent development phases [design, right of way (ROW) acquisition, and construction].

This highway traffic noise impact analysis was performed as part of the PD&E Study for the project as required by the FDOT's PD&E Manual, and in accordance with the Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772). This Noise Study Report (NSR) presents the results of the noise analysis.

A total of 19 discrete noise sensitive receptors were evaluated in the Traffic Noise Model (TNM – Version 2.5). The evaluated receptors consisted of 19 single family residences. Of the 19 evaluated receptors, six receptors are currently impacted by traffic noise in the existing condition. With the proposed improvements (Build alternative), two additional receptors are predicted to be impacted by traffic noise, for a total of eight impacted receptors.

Traffic management measures, modifications to the roadway alignment and buffer zones are not feasible alternatives for providing noise abatement for this project. Noise barriers were analyzed as potential noise abatement for the impacted receptors. Based on the results of the analysis, noise barriers, evaluated five feet within the FDOT's ROW, were determined to not be a cost reasonable or feasible traffic noise abatement method.

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SECTION 1 INTRODUCTION

1.1 PD&E STUDY PURPOSE

The objective of the PD&E study is to assist the FDOT's Office of Environmental Management (OEM) in reaching a decision on the type, location, and conceptual design of the necessary improvements for the southbound on-ramps from State Road (SR) 56 to Interstate 75 (I-75) and I-275 to safely and efficiently accommodate future travel demand. This study documents the need for the improvements as well as the procedures utilized to develop and evaluate various improvements, including elements such as proposed typical sections, preliminary horizontal alignments, and interchange enhancement alternatives.

The PD&E study satisfies all applicable requirements, including the National Environmental Policy Act (NEPA), to qualify for federal-aid funding of subsequent development phases [design, right of way (ROW) acquisition, and construction]. This project was screened through the FDOT's Efficient Transportation Decision Making (ETDM) process as ETDM Project No. 14330. An ETDM Programming Screen Summary Report was published on February 21, 2018, containing comments from the Environmental Technical Advisory Team (ETAT) on the project's effects on various natural, physical, and social resources. A Type 2 Categorical Exclusion was prepared as part of this PD&E study.

1.2 PROJECT PURPOSE AND NEED

1.2.1 Purpose

The purpose of the project is to improve operations on I-75 southbound between SR 56 and the southbound off-ramp to I-275 (I-75/I-275 interchange).

1.2.2 Need

This project is needed to address the effect on operations by reducing the number of weaving vehicles in the project area.

1.2.3 Roadway Capacity/Deficiencies

I-75 currently operates at an acceptable level of service (LOS C). It is expected that by 2040 the study segment of I-75 will operate at an unacceptable level of service (LOS F).

1.2.4 Safety

The distribution of crash types on this segment of I-75 between 2014 and 2018 show that rear end crashes make up 35% of the crashes and sideswipe crashes make up 20%. These crash types are indicative of an inadequate weaving segment.

1.3 PROJECT DESCRIPTION

This project consists of operational improvements on I-75/I-275 from south of County Line Road to SR 56 in Hillsborough and Pasco Counties, a distance of approximately 2.2 miles. See **Figure 1-1** for project location. This project consists of the construction of a southbound collector-distributor (C-D) road and the addition of new ramps to improve the southbound operations between the I-75/I-275 and I-75/SR 56 interchanges and eliminate undesirable weaving movements. This portion of I-75/I-275 is functionally classified by the FDOT as an urban principal arterial/interstate and is part of FDOT's Strategic Intermodal System (SIS).

1.4 EXISTING FACILITY AND PROPOSED IMPROVEMENTS

Southbound I-75 from north of SR 56 consists of four through lanes. At the connection of the SR 56 southbound ramps to I-75, there are six lanes of traffic. The six lanes of traffic separate to four lanes that continue southbound on I-75 and three lanes that exit to southbound I-275. For vehicles entering I-75 from SR 56 to proceed on southbound I-75, they must weave with southbound I-75 vehicles that are exiting onto southbound I-275. The crash types in this area are indicative of an inadequate weave segment.

The Build Alternative proposes separating vehicles from the SR 56 southbound ramp and I-75 to eliminate the weave condition. Traffic from SR 56 would enter a southbound C-D road, separated from I-75 traffic. Lanes on the southbound C-D road would split traffic to I-75 and I-275 and enter the interstates downstream from the existing apex of the I-75/I-275 lane split. Southbound I-75 traffic would exit to southbound I-275 without the influence of southbound traffic from SR 56. A new bridge would be constructed south of County Line Road to carry the I-75 ramp to I-275 over the C-D road ramp to I-75. The proposed improvements would eliminate the traffic weave along I-75 between the entrance ramp to SR 56 and the exit to I-275. **Figure 1-2** shows a simplified schematic of the differences between the existing and proposed traffic routes for southbound I-75 and SR 56 ramp to I-275 and I-75 and the elimination of the existing weave zone. Additional details are found in the Preliminary Engineering Report (PER) and concept plans developed for this PD&E study.

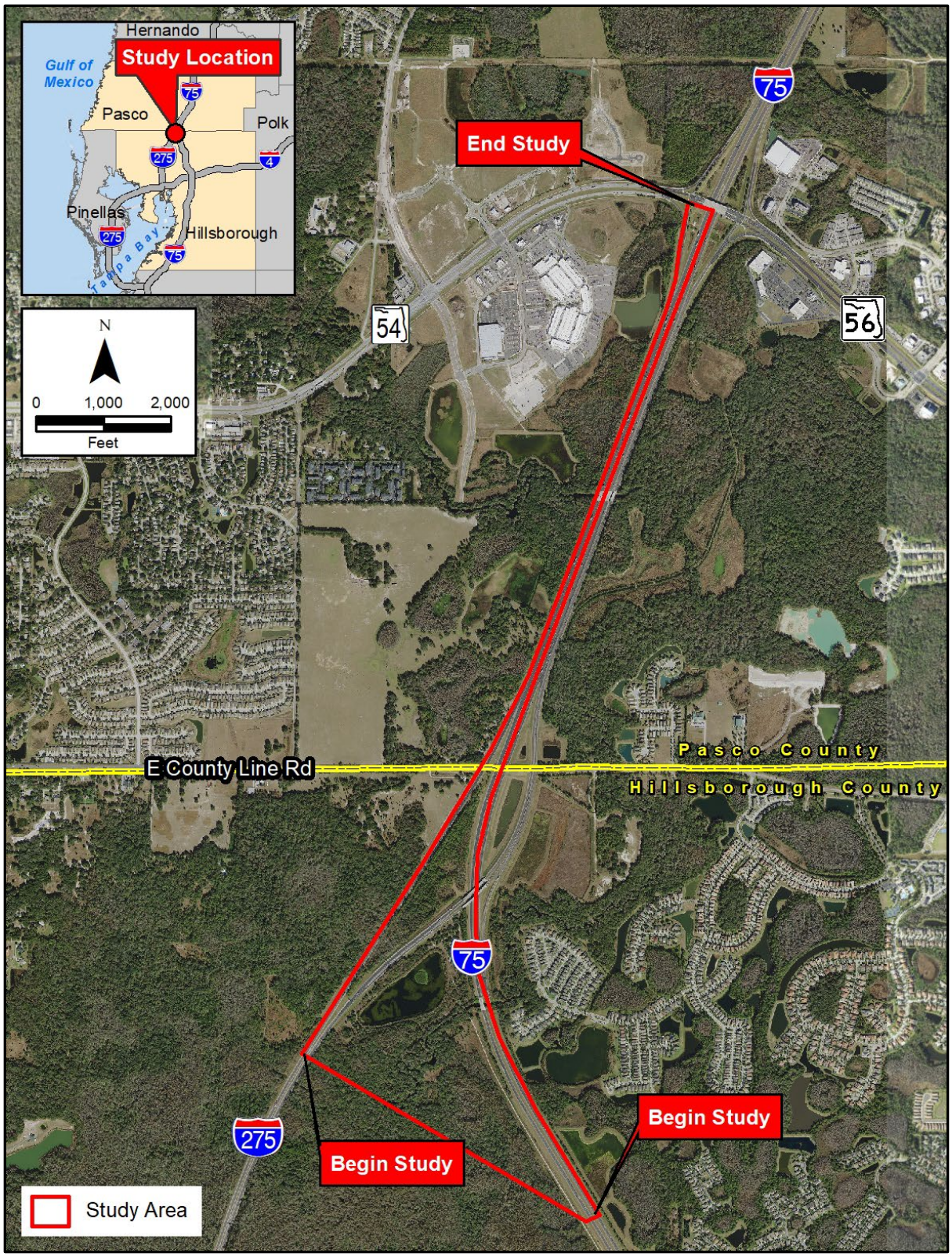

Figure 1-1 Study Location Map

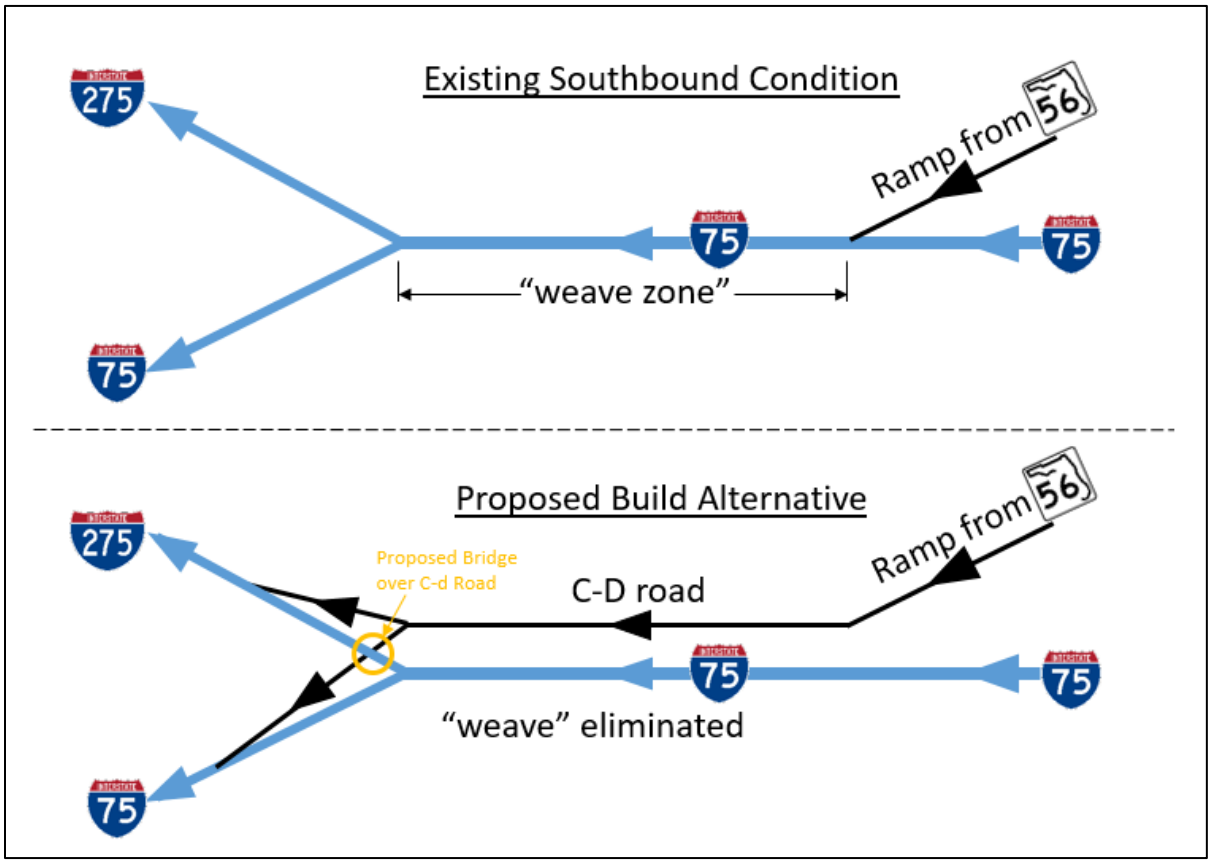

Figure 1-2 Existing and Proposed Traffic Routes for I-75, I-275 & SR 56 Ramp

1.5 REPORT PURPOSE

This Noise Study Report (NSR) is one of several documents prepared as part of this PD&E study. This NSR presents the assumptions, data, procedures, and results of the highway traffic noise analysis that was conducted to evaluate the proposed improvements to the interchange. The objectives of the NSR are to identify land uses within the project corridor for which there are Noise Abatement Criteria (NAC); to predict and evaluate future traffic noise levels at the receptors with and without the improvements; and to evaluate the need for, and effectiveness of, noise abatement measures. Additional objectives include the identification of sites for potential construction noise and vibration impacts and the identification of traffic noise impact areas for future compatible land use planning adjacent to the corridor.

SECTION 2 METHODOLOGY

This traffic noise analysis was prepared in accordance with all applicable guidelines as stated within both Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) and the FDOT PD&E Manual. The analysis was performed using the Federal Highway Administration's (FHWA) Traffic Noise Model (TNM, Version 2.5). Use of the TNM is required when evaluating the potential for traffic noise impacts during the design year of roadway improvement projects for which the regulations, policies and guidelines within 23 CFR 772 and the PD&E Manual are applicable.

To identify potential noise sensitive receptors, land use reviews were conducted for the project area and consisted of a field review, review of available land use data and other available resources. For purposes of this NSR, the land use review and building permit review has been conducted through June 2022.

For properties with uses other than residential, the highway traffic noise analysis methodologies are used as described in the FDOT's A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations. There are no special land uses identified within the limits of this PD&E study.

Potential noise impacts were evaluated for the existing (2019) conditions and the preferred Build (2045) alternative. The preferred Build alternative includes the proposed improvements to the SR 56 and I-75/I-275 interchange with the projected traffic for the design year 2045.

2.1 NOISE SENSITIVE RECEPTORS

A receptor is a discrete or representative location of a noise sensitive area or land use. Land use field reviews were conducted in June 2022 to identify noise sensitive receptors within the study area. The receptors within the study area include single family residences. For evaluation of receptors in TNM to determine traffic noise impacts, primary consideration was given to exterior areas where frequent human use occurs.

Receptor heights were evaluated at five feet above ground. Receptor elevations and other elevations along the study area were obtained utilizing Google Earth Pro and other available similar resources. Elevation data for the roadway was based on previous survey data, as well as use of Google Earth Pro. The use of the elevation data, proposed concept plans, and other existing and proposed project factors are included in TNM in order to predict noise levels at receptor locations. The noise levels are discussed in the following section of this NSR.

2.2 NOISE METRICS

The predicted highway traffic noise levels presented in this report are expressed in decibels on the "A"-weighted scale [dB(A)]. This scale most closely approximates the response characteristics of the human ear to traffic noise. All traffic noise levels are reported as equivalent levels [Leq(h)]. Levels

reported as Leq(h) are equivalent steady-state sound levels that contain the same acoustic energy as time-varying sound levels over a period of one hour.

2.3 TRAFFIC DATA

Noise levels are low when traffic volumes are low and operating conditions are good [level of service (LOS) A or B] and when traffic is so congested that movement is slow (LOS D, E, or F). Generally, the maximum hourly noise level occurs with LOS C traffic volumes. For analysis of the existing condition (2019) and Build alternative (2045), LOS C traffic volumes were used for the I-75 mainline and demand volumes were used for the ramps. The traffic data used to perform the noise analysis are provided in **Appendix A** of this NSR.

2.4 NOISE ABATEMENT CRITERIA

For the purpose of evaluating traffic noise, the FHWA established NAC. As shown in **Table 2-1**, these criteria vary according to a property's activity category, which is identified as the type of property or its land use. Following 23 CFR 772, highway traffic noise is predicted to impact a noise sensitive activity when design year traffic noise levels with a roadway improvement approach, meet, or exceed the NAC when compared to existing levels. For the purpose of determining impact, the FDOT considers the NAC to be "approached" when a predicted level is within 1 dB(A) of an applicable NAC (**Table 2-1**).

FHWA regulations also state that a traffic noise impact is predicted to occur when predicted traffic noise levels with a proposed improvement are considered substantial when compared to existing levels. The FDOT considers a substantial increase to be when traffic noise levels are predicted to increase 15 dB(A) or more above existing conditions as a direct result of a transportation improvement project.

Table 2-1 Noise Abatement Criteria

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.

Sources: Table 1 of 23 CFR Part 772 and Figure 18-1 of Chapter 18 of the FDOT's PD&E Manual (effective July 1, 2020).
[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.

Table 2-2 Common Indoor/Outdoor Activity Typical Noise Levels

Common Outdoor Activities	Noise Level dB(A)	Common Indoor Activities
	110	Rock Band
Jet Fly-over at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area (Daytime)		
Gas lawnmower at 100 feet	70	Vacuum cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy traffic at 300 feet	60	
		Large business office
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
	0	
Lowest Threshold of Human Hearing		Lowest Threshold of Human Hearing

Source: California Dept. of Transportation Technical Noise Supplement, Oct. 1998, Page 18.

2.5 NOISE ABATEMENT MEASURES

When traffic noise impacts are predicted, noise abatement measures are considered for the impacted properties and the feasibility and reasonableness of providing an abatement measure are considered. As previously stated, a traffic noise impact is considered when the traffic noise levels approach, meet or exceed the NAC, provided above in **Table 2-1**, or there is a substantial increase in traffic noise for any given receptor. Feasibility factors are related to the acoustical and engineering properties of an abatement measure (noise reduction, design, construction, safety, drainage, access, and utility impacts, among others) while reasonableness factors relate to the social, economic and environmental properties of a measure (viewpoints of benefited receptors, cost effectiveness, and noise reduction goal).

Traffic noise abatement measures were considered in the PD&E study for the 19 residences that are predicted to be impacted by traffic noise with the planned improvements. The measures were traffic management, alternative roadway alignment, buffer zones, and noise barriers. The results of the

PD&E study indicated that only noise barriers were potentially a feasible and reasonable abatement measure.

2.5.1 Noise Barriers

The most common type of noise abatement measure is the construction of a noise barrier. Noise barriers have the potential to reduce traffic noise levels by blocking the sound path between the motor vehicles on the roadway (the source) and the noise sensitive land uses adjacent to the roadway.

In order to effectively reduce traffic noise, a noise barrier must be relatively long, continuous (without intermittent openings) and of sufficient height. Noise barriers must meet the feasibility and reasonableness factors established by the FDOT. For a noise barrier to be considered a potential abatement measure, the barrier must meet the following FDOT criteria:

- Minimum Noise Reduction Requirements - A barrier must provide at least a 5 dB(A) reduction in traffic noise for two or more impacted noise sensitive receptors and also meet the FDOT's noise reduction design goal, which includes providing at least a 7 dB(A) reduction for at least one impacted receptor. Receptors are discrete representative locations on a property that has noise sensitive land uses for which there are NAC (see **Table 2-1**).
- Cost Effectiveness Criteria – The current estimated cost to construct noise barriers (i.e., materials and labor) is $30 per square foot. As stipulated in FDOT's Noise Policy, a barrier should not cost more than $42,000 per benefited noise sensitive receptor (a benefited receptor is a receptor that receives at least a 5 dB(A) reduction in noise from a mitigation measure).

After considering the amount of reduction that may be provided and the cost effectiveness of a noise barrier, additional factors may also be considered. These factors address both the feasibility and reasonableness of a barrier as an abatement measure and include factors that relate to design and construction (i.e., given site-specific details, can a barrier actually be constructed), safety, accessibility, ROW requirements, maintenance, and impacts on utilities and drainage.

SECTION 3 TRAFFIC NOISE ANALYSIS

3.1 MODEL VALIDATION

For the purpose of verifying that the TNM accurately predicts existing traffic noise levels, field measurements of sound levels are taken. During each measurement period, average vehicle travel speeds, vehicle count and fleet identification (i.e., automobiles, medium/heavy trucks, buses, and motorcycles), site conditions [i.e., typography, distance from the roadway(s)] and sources of sound other than motor vehicles (e.g., aircraft flyovers, birds, barking dogs) are noted. The motor vehicle data and site conditions are used to create input for the TNM and the model is executed. Following FDOT's methodology, the TNM is considered validated if the field measured sound levels are within 3 dB(A) of the TNM predicted highway traffic noise levels. Field measured sound levels were taken on June 14, 2022, using a Larson Davis SoundTrack LxT2 sound level meter. Three 10-minute runs were taken at one central location, as shown on **Figure 3-1**. **Table 3-1** shows the results of the model validation, and the field notes can be found in **Appendix B**.

Table 3-1 TNM Validation Results

Validation Location	Measurement Period (time of day- AM)	Modeled dB(A)	Measured dB(A)	Difference dB(A) [Measured – Modeled]
Validation Site 1 Adjacent to Grand Hampton	9:21 – 9:31	77.6	77.2	-0.4
	9:37 – 9:47	77.8	77.2	-0.5
	9:54 – 10:54	78.5	77.4	-1.1

The model was validated per FDOT criteria for all runs. Based on the field conditions and the TNM results, it has been determined the TNM was validated.

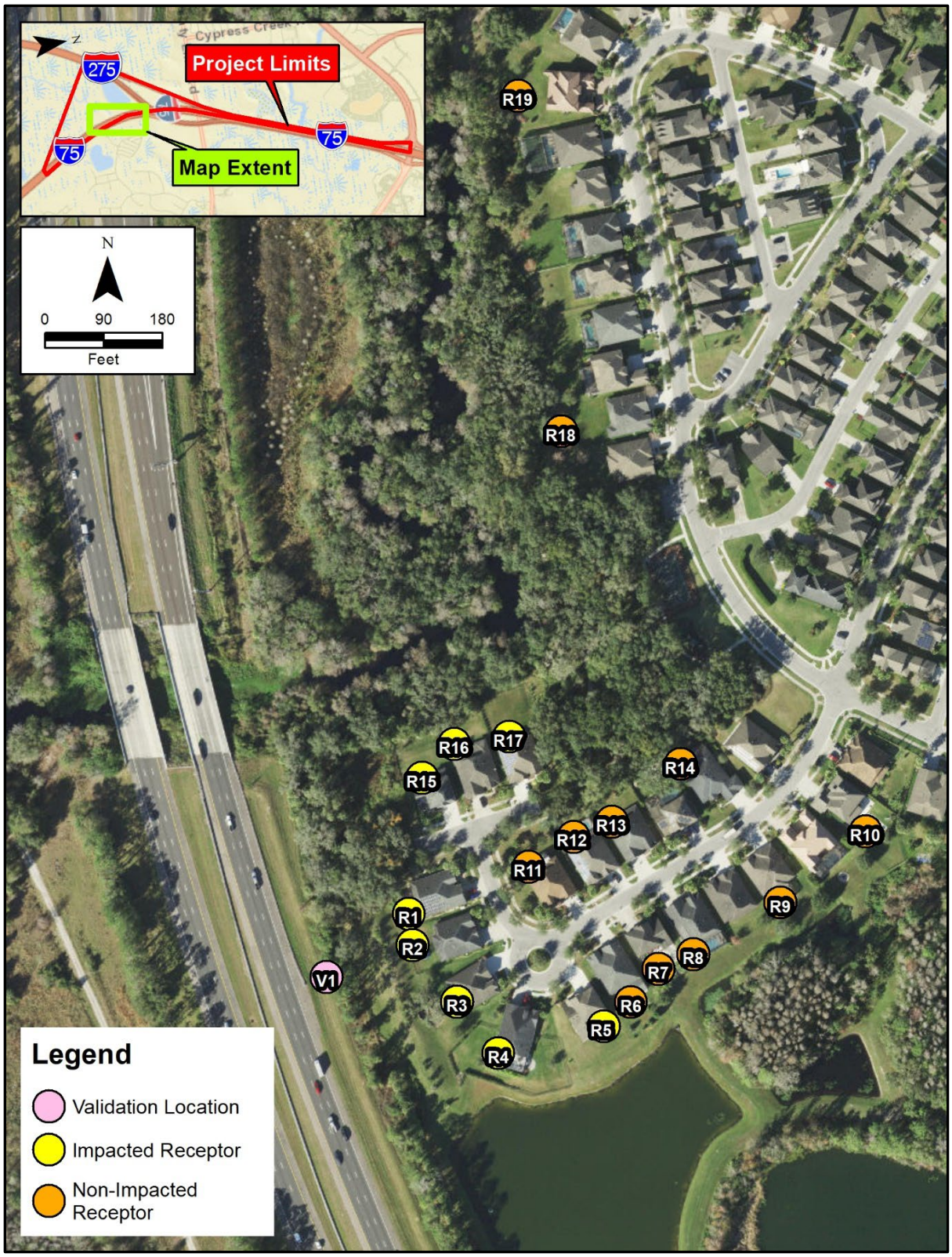

Figure 3-1 Noise Sensitive Receptors

3.2 NOISE SENSITIVE RECEPTORS

As previously stated, receptors are discrete representative locations of a noise sensitive land use. The locations of the receptors evaluated for the study area are shown on aerials provided above in **Figure 3-1**. A total of 19 receptors were evaluated in the TNM.

Following FHWA/FDOT guidance, the receptors were evaluated as Activity Category "B", residences, and abatement was considered if the predicted future traffic noise level with the improvements was 66 dB(A) or greater.

3.3 EXISTING NOISE BARRIERS

There are no existing noise barriers within the study area. There is an existing berm along the east side of I-75, outside of FDOT ROW. The berm is approximately six to eight feet in height, verified during a field review in June 2022. The berm was modeled at six feet in height to be conservative, since detailed project survey data was not available at the time of this study.

3.4 PREDICTED TRAFFIC NOISE LEVELS

Table 3-2 presents the results of the traffic noise analysis for the proposed improvements. As shown, with the existing (2019) conditions, traffic noise is predicted to range from 59.6 to 70.1 dB(A). In the future year (2045) with the No-Build Alternative, traffic noise is predicted to range from 59.6 to 70.1 dB(A). In the future with the Build Alternative, traffic is predicted to range from 59.9 to 71.0 dB(A) with eight of the evaluated receptors, all residences, predicted to be impacted by traffic noise that would exceed the NAC. Traffic noise is not predicted to increase substantially at any of the evaluated receptors.

Table 3-2 Summary of Traffic Noise Analyses

Receptor ID	Description of Activity Category	Activity Category	FDOT NAC	Existing (2019)	No-Build (2045)	Build (2045)	Increase over Existing	Approaches, Meets, or Exceeds the NAC?
R1	Residential	B	66	69.7	69.7	70.2	0.5	Yes
R2	Residential	B	66	67.3	67.3	67.7	0.4	Yes
R3	Residential	B	66	70.1	70.1	71.0	0.9	Yes
R4	Residential	B	66	66.9	66.9	67.5	0.6	Yes
R5	Residential	B	66	65.9	65.9	66.4	0.5	Yes
R6	Residential	B	66	64.9	64.9	65.2	0.3	—
R7	Residential	B	66	64.1	64.1	64.3	0.2	—
R8	Residential	B	66	63.5	63.5	63.7	0.2	—
R9	Residential	B	66	61.6	61.6	61.8	0.2	—
R10	Residential	B	66	59.6	59.6	59.9	0.3	—
R11	Residential	B	66	65.6	65.6	65.8	0.2	—
R12	Residential	B	66	64.5	64.5	64.7	0.2	—

Receptor ID	Description of Activity Category	Activity Category	FDOT NAC	Existing (2019)	No-Build (2045)	Build (2045)	Increase over Existing	Approaches, Meets, or Exceeds the NAC?
R13	Residential	B	66	63.7	63.7	63.9	0.2	—
R14	Residential	B	66	62.3	62.3	62.5	0.2	—
R15	Residential	B	66	68.8	68.8	69.2	0.4	Yes
R16	Residential	B	66	67.6	67.6	67.7	0.1	Yes
R17	Residential	B	66	65.9	65.9	66.1	0.2	Yes
R18	Residential	B	66	63.2	63.2	63.2	0	—
R19	Residential	B	66	62.0	62.0	61.7	-0.3	—

3.5 ABATEMENT CONSIDERATIONS

As previously stated, when traffic noise impacts are predicted, noise abatement measures are considered for the impacted properties. Noise abatement measures are only evaluated for receptors that have traffic noise impacts with the Build alternative. Abatement measures are not evaluated for traffic noise impacts in the existing condition.

3.5.1 Noise Barriers

TNM was used to evaluate the ability of noise barriers to reduce traffic noise levels for the impacted noise sensitive receptors adjacent to I-75. The barriers were evaluated at heights from eight to 22 feet (in two-foot increments). The length of each barrier was optimized to determine if at least minimum noise reduction requirements (i.e., a minimum reduction of 5 dB(A) for two impacted receptors and a minimum reduction of 7 dB(A) for one benefitted receptor) could be achieved. Noise barriers were evaluated five feet within the FDOT's ROW.

The Grand Hampton subdivision was the one location evaluated for a potential noise barrier. The results of the noise barrier analysis are provided in **Table 3-3**. As shown in the table, no impacted receptors would achieve a 5 dB(A) reduction or more with barrier heights of 12 feet or less. At barrier heights of 14 and 16 feet, two receptors were predicted to receive a 5 dB(A) reduction or greater, but the barriers would not achieve the design goal of 7 dB(A) reduction for at least one impacted receptor. At barrier heights of 18-22 feet, the barrier would provide a 5 dB(A) reduction or greater for at least two receptors and also achieve the design goal of 7 dB(A). However, since the barriers at these heights exceed the FDOT's cost reasonable limits, a noise barrier is not considered a reasonable noise abatement measure.

Table 3-3 Summary of Barrier Analysis Results

Barrier Height (feet)	Barrier Length (feet)	Noise Reduction at Impacted Receptors (dB(A))[1]			Number of Benefited Receptors[2]			Total Estimated Cost[3]	Cost per Benefited Receptor[4]	Cost Reasonable Yes/No
		5 -5.9	6 – 6.9	≥7	Impacted	Not Impacted	Total			
8	999	0	0	0	0	0	0	NA[5]	NA[5]	NA[5]
10	999	0	0	0	0	0	0	NA[5]	NA[5]	NA[5]
12	999	0	0	0	0	0	0	NA[5]	NA[5]	NA[5]
14	999	2	0	0	2	0	2	$419,527	$209,763	No
16	999	1	1	0	2	0	2	$479,460	$239,730	No
18	999	0	1	1	2	0	2	$539,392	$269,696	No
20	999	2	1	1	4	0	4	$599,325	$149,831	No
22	999	2	0	2	4	0	4	$659,257	$164,814	No
Number of Impacted Receptors = 8										

[1] Receptors with a predicted noise level of 66 dB(A) or greater.
[2] Receptors with a predicted reduction of 5 dB(A) or more are considered benefited.
[3] Based on a unit cost of $30 per square foot.
[4] FDOT cost reasonable criterion is $42,000 per benefited receptor.
[5] Minimum 5 dB(A) reduction at two or more receptors not achieved.

SECTION 4 CONCLUSIONS

A highway traffic noise analysis was performed to evaluate proposed improvements to SR 56 Southbound C-D Road/Ramps to I-75/I-275. The results of the analysis indicate that although there are a total of eight impacted receptors with the preferred Build alternative; however, there are no reasonable and feasible options to provide noise abatement. The evaluated barrier design is able to achieve the noise reduction goals, but is not reasonable or feasible.

4.1 STATEMENT OF LIKELIHOOD

Based on the noise analyses performed to date, there are no feasible solutions available to mitigate the noise impacts at the locations identified in **Figure 3-1.** Traffic management, alignment modifications, buffer zones, and noise barriers are not reasonable or feasible options to provide noise abatement for the traffic noise impacts to the evaluated noise sensitive receptors.

SECTION 5 NOISE CONTOURS

Coordination with local agencies and officials has been accomplished during the development of this project. To aid in promoting land use compatibility, a copy of the NSR, which provides information that can be used to protect future land development from becoming incompatible with anticipated traffic noise level, will be provided to Hillsborough and Pasco Counties. In addition, generalized future noise impact contours for the properties in the immediate vicinity of the project have been developed for Noise Abatement Activity Categories A, B/C and E, as shown in **Table 2-1** for the Build condition. 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 1dB(A)] or exceed the NAC in the design year (2045), see **Table 4-1**. The contours do not consider any shielding of noise provided by structures between the receptor sites and the proposed travel lanes. To minimize potential for incompatible land use, noise sensitive land uses should be located beyond this distance.

Table 5-1 Design Year (2045) Noise Impact Contour Distances

Modeled Locations	Distance from Proposed Nearest Travel Lane to Noise Contour (feet)		
	Activity Category A 56dB(A)	Activity Category B/C 66dB(A)	Activity Category E 71 dB(A)
East of I-75 near the Grand Hampton Neighborhood	1,000+	410	170
West of I-275, South of County Line Road	920	280	140
West of I-75, just South of Cypress Creek	1,000+	600	340

SECTION 6 CONSTRUCTION NOISE AND VIBRATIONS

Some land uses adjacent to this project are identified on the FDOT listing of noise- and vibration-sensitive sites (e.g., residential use). Construction of the proposed roadway improvements is not expected to have a significant noise or vibration effect. Additionally, the application of the FDOT Standard Specifications for Road and Bridge Construction may minimize or eliminate potential issues. Should unanticipated noise or vibration issues arise during the construction process, the Project Engineer, in coordination with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

SECTION 7 COMMUNITY COORDINATION

A notice for public opportunity was advertised in several local newspapers, including the Florida Sentinel, La Gaceta, and the Tampa Bay Times in September 2021, as well as the Florida Administrative Record (FAR). No request to hold a public hearing was received by the District within the 21 days requested in the advertisements. Even though no noise barriers are proposed, additional public coordination specific to potential noise barriers may be conducted during the design phase as needed.

SECTION 8 REFERENCES

California Department of Transportation. September 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol.

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APPENDICES

Appendix A Noise Traffic Data

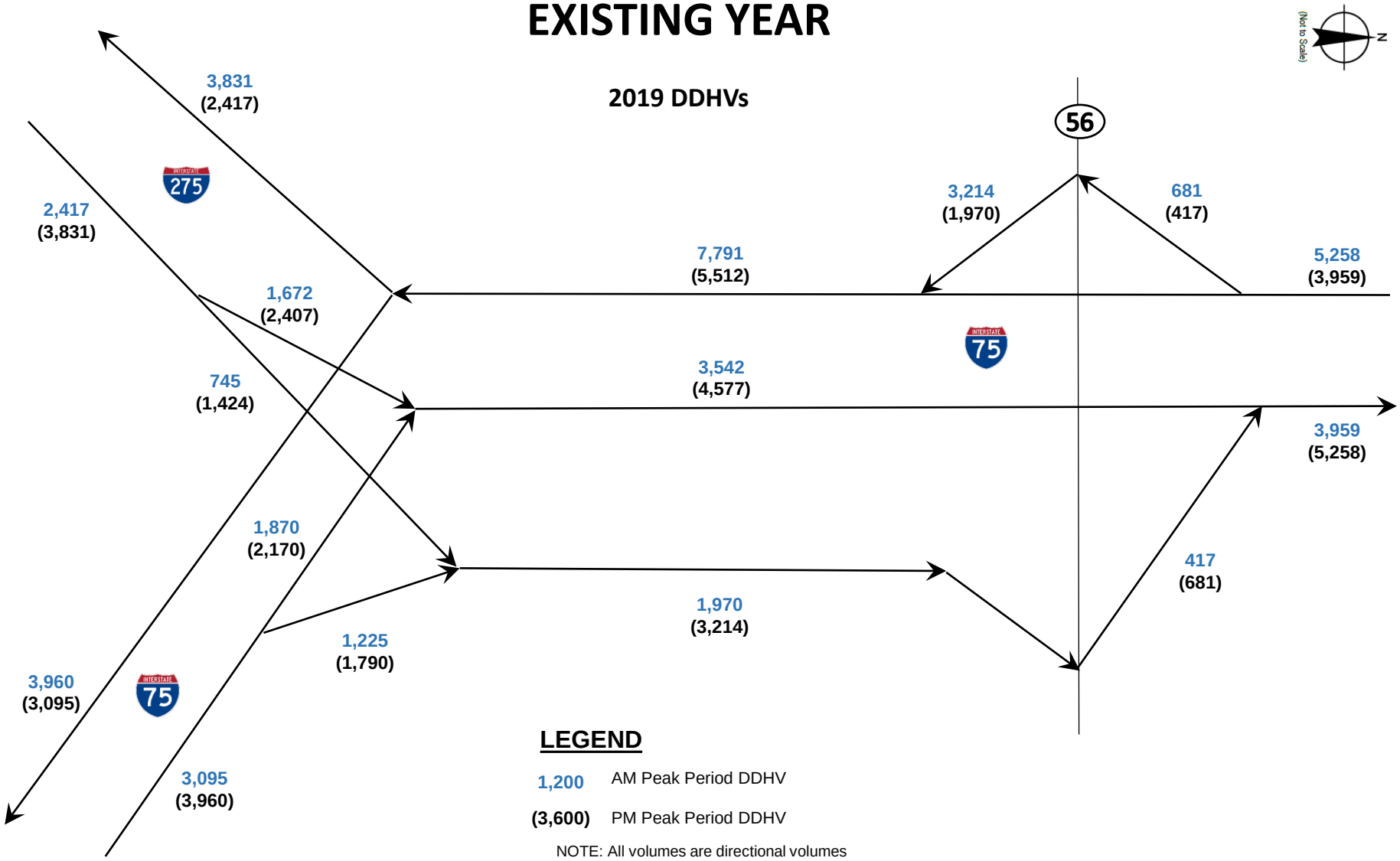
Appendix B Model Validation Field Data

Appendix C TNM Files (Located in FDOT Project Files – SWEPT)

APPENDIX A

Noise Traffic Data

EXISTING YEAR

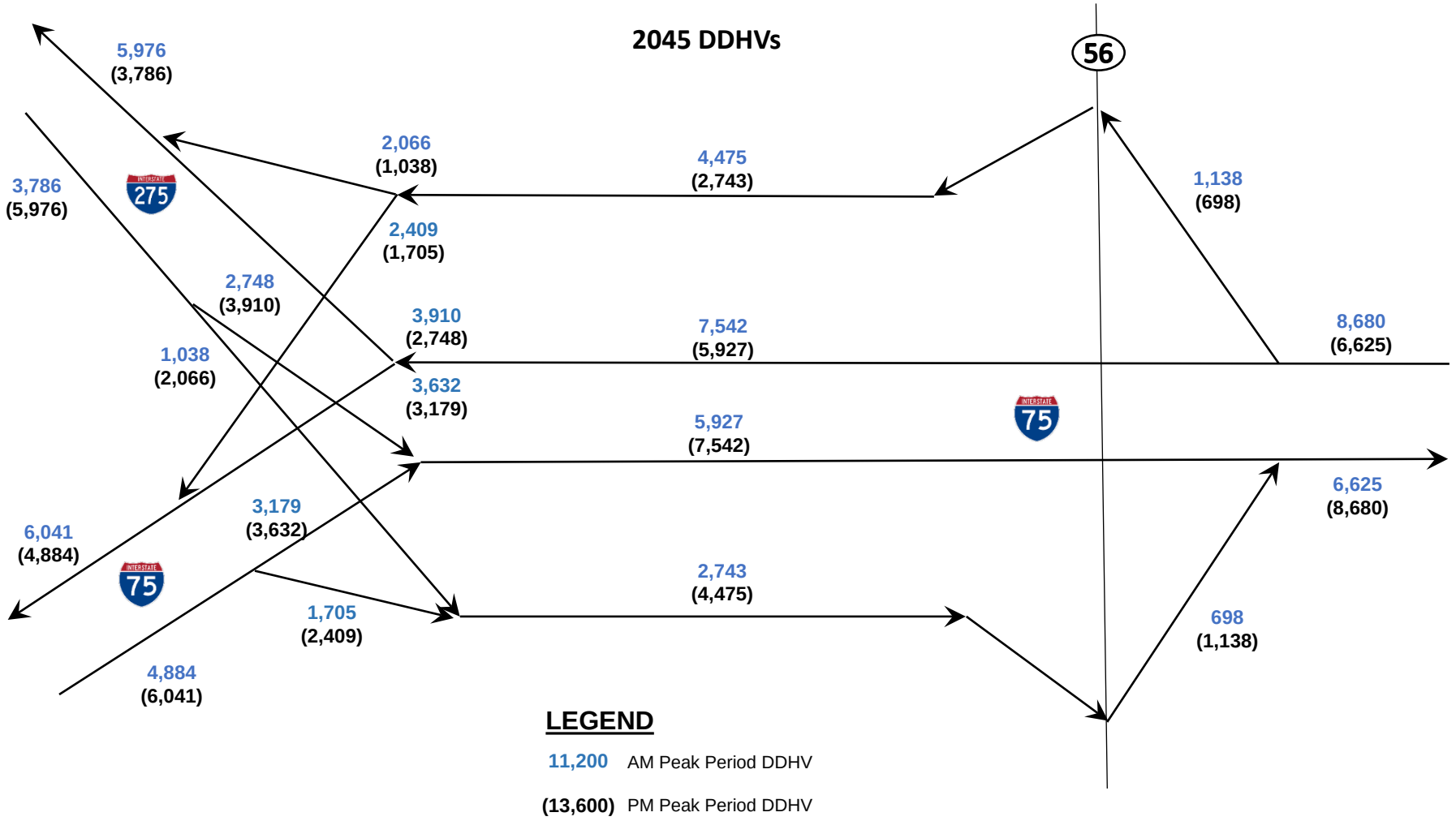


SR 56 Southbound C-D Roads/Ramps to I-75/I-275

WPI No.: 430573-4
Hillsborough and Pasco Counties

Existing Year (2019) DDHVs

BUILD ALTERNATIVE



SR 56 Southbound C-D Roads/Ramps to I-75/I-275

WPI No.: 430573-4
Hillsborough and Pasco Counties

Build Design Year (2045) DDHVs

APPENDIX B

Model Validation Field Data

Noise Validation Data

Location (Address and County)/Site Identification	Station Number	Survey No.
SR 56 Ramps CD Road	1	1

Date	Calibration Begin	Calibration End	Time Begin	Time End	Measured dB(A)
6/14/22	~~94.0~~ 114.0	114.01 ~~94.0~~	9:21	9:31	77.2

Weather Data

Temperature	Cloud/Sun Cover	Precipitation/ Humidity	Wind Speed Direction
82	Mostly Sunny	No precip High humid	1 mph SE

Traffic Classification - (NB) SB WB EB

Cars	Med Trucks	Heavy Trucks	Buses	Motorcycles
264	30	45	1	1

Traffic Classifications - NB (SB) WB EB

Cars	Med Trucks	Heavy Trucks	Buses	Motorcycles
401	23	44	5	0

Measurements Taken By: Thomas Daniel

Other Comments: typical conditions

Noise Validation Vehicle Speeds

Location (Address and County)/Site Identification	Station Number	Survey No.
SR 56 Ramps CD Road	1	1

Speed Counts - ~~NB~~ SB WB EB

Cars	Cars	Cars	Cars	M. Trucks	M. Trucks	H. Trucks	H. Trucks	Buses	M. Cycles
67	72	72		64		72			
76	64			64		66			
55	78			59		66			
56	69					72			
58	80					68			
68	76					71			
67	74					68			
82	73					64			
84	66								
75	74								
68	75								
71	76								

Speed Counts - NB ~~SB~~ WB EB

Cars	Cars	Cars	Cars	M. Trucks	M. Trucks	H. Trucks	H. Trucks	Buses	M. Cycles
76	69			67		68		64	
72	74			68		67			
73	76			65		63			
75	69					68			
73						70			
77									
74									
78									
68									
73									
74									
73									

Noise Validation Data

Location (Address and County)/Site Identification	Station Number	Survey No.
SR 56 Ramps C-D Road	1	2

Date	Calibration Begin	Calibration End	Time Begin	Time End	Measured dB(A)
6/14/22	114.0	114.07	9:37	9:47	77.2

Weather Data

Temperature	Cloud/Sun Cover	Precipitation/ Humidity	Wind Speed Direction
82	Mostly Sunny	None / High	light / 1mph SE

Traffic Classification - NB SB WB EB

Cars	Med Trucks	Heavy Trucks	Buses	Motorcycles
292	~~26~~ 25	71	~~0~~ 1	2

Traffic Classifications - NB SB WB EB

Cars	Med Trucks	Heavy Trucks	Buses	Motorcycles
336	19	51	2	0

Measurements Taken By: Thomas Daniel

Other Comments: Unusually loud exhaust at certain times.

Noise Validation Vehicle Speeds

Location (Address and County)/Site Identification	Station Number	Survey No.
SR 56 Ramps CD Road	1	2

Speed Counts - (NB) SB WB EB

Cars	Cars	Cars	Cars	M. Trucks	M. Trucks	H. Trucks	H. Trucks	Buses	M. Cycles
66	74			67		65		77	75
78	74			68		64			73
67	67			63		72			
71	63			60		49			
46	75			53		71			
48	77			68		72			
47	70			69		53			
71	67								
64	63								
67	59								
73	70								
49									

Speed Counts - NB (SB) WB EB

Cars	Cars	Cars	Cars	M. Trucks	M. Trucks	H. Trucks	H. Trucks	Buses	M. Cycles
74	76			58		65		58	7
70	79			67		65			
66	67			64		63			
64	68			62					
69	67			[illegible]					
61	76								
73	72								
72	67								
74	59								
70	63								
66									
80									

Noise Validation Data

Location (Address and County)/Site Identification	Station Number	Survey No.
SR 56 Ramps C-D Road	1	3

Date	Calibration Begin	Calibration End	Time Begin	Time End	Measured dB(A)
6/14/22	114.0	113.94	9:54	10:54	77.4

Weather Data

Temperature	Cloud/Sun Cover	Precipitation/ Humidity	Wind Speed Direction
83	Mostly Sunny	None / High	1mph SE

Traffic Classification - NB SB WB EB

Cars	Med Trucks	Heavy Trucks	Buses	Motorcycles
299	23	74	1	2

Traffic Classifications - NB SB WB EB

Cars	Med Trucks	Heavy Trucks	Buses	Motorcycles
308	21	45	3	1

Measurements Taken By: Thomas Daniel

Other Comments: typical conditions.

Noise Validation Vehicle Speeds

Location (Address and County)/Site Identification	Station Number	Survey No.
SR 56 Ramps CD Road	1	3

Speed Counts - ~~NB~~ SB WB EB

Cars	Cars	Cars	Cars	M. Trucks	M. Trucks	H. Trucks	H. Trucks	Buses	M. Cycles
64	77	63		70		67			68
69	73			67		70			
65	74			68		71			
66	68			60		73			
70	72			61		71			
66	74					75			
67	68					66			
74	68					63			
77	67					67			
73	67								
80	66								
81	64								

Speed Counts - NB ~~SB~~ WB EB

Cars	Cars	Cars	Cars	M. Trucks	M. Trucks	H. Trucks	H. Trucks	Buses	M. Cycles
64	76	68		67		74			73
73	69	67		67		71			
72	70	74		62		68			
65	79	65		68		71			
73	73	68				67			
68	68					63			
68	72					68			
69	75					68			
74	74					64			
67	68								
66	73								
68	74								

APPENDIX C

TNM Files (Located in Project Files – SWEPT)