

Noise Study Report

Old Lake Wilson Road PD&E Study From N. of CR 532 to Sinclair Road Osceola County, Florida

PS-20-11842-DG



Prepared For:

Osceola County

January 2024

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

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**Prepared For:
Osceola County**

**Prepared By:
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January 2024

EXECUTIVE SUMMARY

In coordination with the Florida Department of Transportation (FDOT) District Five, Osceola County is conducting a Project Development and Environment (PD&E) study to evaluate the two-lane to four-lane widening of Old Lake Wilson Road from north of CR 532 to Sinclair Road, a distance of approximately 2.5 miles. The project also involves widening or replacing the existing bridge over Interstate 4 (I-4) and evaluating the addition of bicycle and pedestrian features throughout the project corridor. The project's location is illustrated in **Figure 1**, with the full project design layout illustrated in **Appendix D**.

The Noise Impact Comparison Matrix in **Appendix C** of this Noise Study Report (NSR) summarizes the traffic noise impact analysis conducted for 470 noise sensitive sites (receptors) for the 2020 existing condition and the 2050 No-Build and Build Alternatives. The analysis results indicate that fifteen receptors are currently experiencing exterior noise levels that meet or exceed the FDOT Noise Abatement Criterion (NAC). The highest noise level is 68.5 dB(A) in Heritage Crossing. With the No-Build Alternative, 22 receptors are predicted to meet or exceed the NAC, with the highest noise level being 69.5 dB(A) in Heritage Crossing. Project noise levels with the Build Alternative are predicted to meet or exceed the NAC at 28 receptors, with the highest noise level being 70.2 dB(A) in Heritage Crossing. When compared to the existing condition, the proposed project increases exterior noise levels throughout the corridor by an average of 2.0 dB(A). While none of the noise increases are considered substantial (i.e., 15 dB(A) or more over existing levels), the project exceeds the NAC and requires abatement consideration of the impacts.

To mitigate these impacts, noise barriers were considered as an abatement measure. For a noise barrier to be considered acoustically feasible, at least two impacted receptor sites must achieve at least a 5.0 dB(A) reduction in traffic noise. Consequently, noise barriers were not evaluated for the four isolated/single impacted receptors, identified in this report as receptors 4-7, 6-1c, 7-16, and 10-7.

Of the two analyzed noise barriers, one barrier (NB1) is not cost-reasonable. Based on the noise analyses performed to date, no reasonable solutions are available to mitigate the noise impacts on the two Seven Eagles townhomes represented in this NSR by receptor 2-4.

However, further evaluation of Barrier SB1 summarized in **Table A** is recommended. This barrier provides an average noise reduction of 6.4 dB(A) to 15 of the 21 impacted receptors, represented by receptors 3-1 and 3-2. This barrier meets FDOT's required 7.0 dB(A) noise reduction design goal (NRDG) and the \$42,000 per benefited receptor cost-reasonableness criterion.

Table A: Potentially Reasonable and Feasible Noise Barrier Summary

Noise Study Area	Impacted Development	Barrier ID		Barrier Height (ft)	Barrier Length (ft)	Impacted/Benefitted Receptors	Impacted/Not-Benefitted Receptors	Average Noise Reduction (dB(A))	Barrier Offset	Estimated Barrier Cost ^{*1}	Cost per Benefitted Receptor ^{*2}
NSA 3	Heritage Crossing	SB1	Figure 3	14	360	15	6	6.4	Behind SB Sidewalk	\$151,200	\$9,450
<p>*1 Based on FDOT Statewide average of \$30/square foot.</p> <p>*2 Cost reasonable criterion is \$42,000 per benefitted receptor.</p>											

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 four isolated/single impacted receptors, identified in this report as receptors 4-7, 6-1c, 7-16, and 10-7; and for the townhomes represented in this NSR by receptor 2-4.

Osceola County is committed to the construction of feasible and reasonable noise abatement measures identified in **Table A**, contingent upon the following conditions:

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

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
STATEMENT OF LIKELIHOOD	iii
1.0 PROJECT DESCRIPTION	1
1.1 PROPOSED IMPROVEMENTS	1
1.2 NO-BUILD ALTERNATIVE	1
2.0 METHODOLOGY	3
2.1 NOISE METRICS.....	3
2.2 TRAFFIC DATA.....	3
2.3 NOISE ABATEMENT CRITERIA	3
2.4 NOISE ABATEMENT MEASURES	5
2.4.1 Traffic Management	5
2.4.2 Alignment Modifications	6
2.4.3 Buffer Zones	6
2.4.4 Noise Barriers	6
2.4.4.1 Feasibility Factors.....	6
2.4.4.2 Reasonableness Factors	7
3.0 TRAFFIC NOISE ANALYSIS	7
3.1 MODEL VALIDATION	8
3.2 PREDICTED NOISE LEVELS AND ABATEMENT ANALYSIS.....	9
3.2.1 Noise Study Area 1	10
3.2.2 Noise Study Area 2	10
3.2.2.1 Noise Abatement Consideration - Barrier NB1	11
3.2.3 Noise Study Area 3	14
3.2.3.1 Noise Abatement Consideration - Barrier SB1.....	15
3.2.4 Noise Study Area 4	18
3.2.5 Noise Study Area 5	18
3.2.6 Noise Study Area 6	19
3.2.7 Noise Study Area 7	20
3.2.8 Noise Study Area 8	20
3.2.9 Noise Study Area 9	20
3.2.10 Noise Study Area 10	21

4.0	CONCLUSIONS.....	21
4.1	STATEMENT OF LIKELIHOOD.....	23
5.0	CONSTRUCTION NOISE AND VIBRATION	23
6.0	COMMUNITY COORDINATION	23
6.1	NOISE IMPACT CONTOURS	23
6.2	PUBLIC COORDINATION.....	24
7.0	REFERENCES.....	29

LIST OF TABLES

Table A: Potentially Reasonable and Feasible Noise Barrier Summary	ii
Table 1: Noise Abatement Criteria	4
Table 2: Comparative Noise Levels.....	5
Table 3: Noise Model Validation	9
Table 4: Noise Barrier NB1	12
Table 5: Noise Barrier SB1	16
Table 6: Potentially Reasonable and Feasible Noise Barrier Summary.....	22

LIST OF FIGURES

Figure 1: Project Location Map	2
Figure 2: Analyzed Noise Barrier NB1.....	13
Figure 3: Recommended Barrier SB1	17
Figure 4: Noise Impact Contours.....	26

LIST OF APPENDICES

- Appendix A: Project Typical Section
- Appendix B: Project Traffic Data
- Appendix C: Predicted Noise Levels
- Appendix D: Project Aerials

1.0 PROJECT DESCRIPTION

The Old Lake Wilson Road Project Development and Environment (PD&E) Study evaluated capacity and systems linkage from north of CR 532 to Sinclair Road in Osceola County, a distance of approximately 2.5 miles. The project limits are shown in **Figure 1**.

In the existing condition, Old Lake Wilson Road, also known as CR 545, hereinafter referred to as Old Lake Wilson Road, is a two-lane undivided, rural roadway from CR 532 to approximately one-quarter mile south of Sinclair Road, the project's northern terminus. The existing typical section includes two 12-foot wide travel lanes, one in each direction, and four-foot-wide unpaved shoulders. The right-of-way width (ROW) is generally 130 feet; however, beginning approximately 900 feet south of Assembly Court to approximately 1,230 feet south of Fairfax Drive/Marker Avenue, the ROW increases incrementally and ultimately reaches a maximum of 250 feet in the vicinity of the I-4 overpass.

Starting approximately one-quarter mile south of Sinclair Road, Old Lake Wilson transitions to an urban roadway with type E curb on the inside shoulders and type F curb on the outside shoulders. Approaching Sinclair Road, two 12-foot travel lanes are provided in the northbound direction, while one 12-foot wide travel lane is provided in the southbound direction.

Both termini, CR 532 and Sinclair Road, are signalized intersections. Additionally, there are five unsignalized intersections within the study limits. These include Excitement Drive, Spine Road, Assembly Court, Fairfax Drive / Marker Avenue, and Pendant Court.

There are three bridges within the study limits: Gathering Drive/Reunion Boulevard over Old Lake Wilson Road, the southbound onramp from SR 429 to eastbound I-4, and Old Lake Wilson Road over I-4. Additionally, there are three bridge culverts within the study limits: Old Lake Wilson Road over Golf Cart Crossing #1, Old Lake Wilson Road over Golf Cart Crossing #2, and Old Lake Wilson over Davenport Creek.

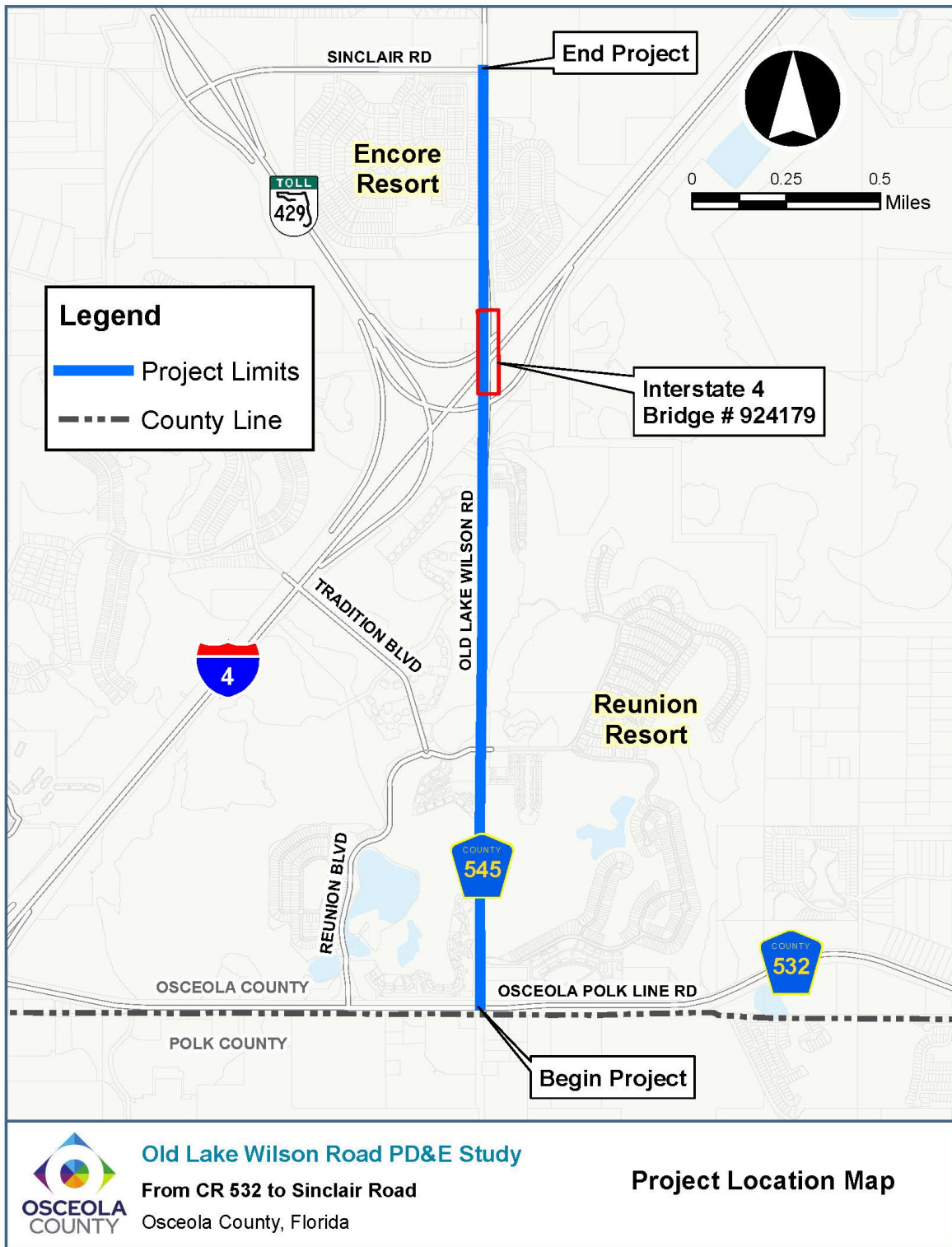
1.1 PROPOSED IMPROVEMENTS

The project involves evaluating the widening of the existing two-lane undivided rural roadway to a four-lane divided roadway with two 11-foot travel lanes in each direction separated by a grassed median. The project also includes a 5-foot bicycle lane in each direction, a 5-foot pedestrian sidewalk in the northbound direction, and a 10-foot sidewalk in the southbound direction. An illustration of the proposed typical section is included in **Appendix A**.

1.2 NO-BUILD ALTERNATIVE

Consistent with Federal Highway Administration (FHWA) guidelines, this analysis also considers an alternative that assesses what would happen to the environment in the future if this proposed improvement was not built. This alternative, called the No-Build Alternative, does not meet project needs, but it provides a baseline condition to compare and measure the proposed project's effects.

Figure 1: Project Location Map



2.0 METHODOLOGY

The traffic noise study was conducted in accordance with Title 23, *Code of Federal Regulations* (CFR), § 772¹, Part II, Chapter 18 of the FDOT *Project Development and Environment Manual*², and Chapter 335, Section 335.17, *Florida Statutes*³. This assessment also adheres to the FHWA traffic noise analysis guidelines in *FHWA-HEP-10-025*⁴. The FHWA Traffic Noise Model (TNM) - version 2.5 was used to predict traffic noise levels for this project following guidelines outlined in the FDOT *Traffic Noise Modeling and Analysis Practitioners Handbook*⁵. The analysis evaluated noise levels for the 2020 Existing Condition and the 2050 No-Build and Build Alternatives.

Noise receptor coordinates used in the TNM are located in exterior areas where frequent human use may occur, usually at the edge of the residential structure closest to the project roadways, unless the analyst's professional judgment determined otherwise.

The MicroStation design files, georeferenced to the ortho-rectified 2021 State Plane imagery for Orange County, were used to determine the design alternative's location for input into TNM. Elevation data for noise receptors and existing roadways were obtained from the project's engineering plans and Google Earth⁶.

2.1 NOISE METRICS

Noise levels developed for this analysis are expressed in decibels (dB) using an "A"-scale weighting, expressed as dB(A). This scale most closely approximates the response characteristics of the human ear to typical traffic noise levels. All reported noise levels are hourly equivalent noise levels [Leq(h)]. The Leq(h) is defined as the equivalent steady-state sound level that, in a given hourly period, contains the same acoustic energy as the time-varying sound level for the same hourly period.

2.2 TRAFFIC DATA

Traffic noise is heavily dependent on traffic volume and speed, with the amount of noise generated by traffic increasing as the vehicle speed and number of vehicles increase. Characteristics contributing to the 2050 Design Year's highest traffic noise levels were used to predict project noise levels. Worst-case noise conditions occur with the maximum traffic traveling at the posted speed and represent a Level of Service (LOS) C operating condition. However, if the traffic analysis indicates the roadway will operate below LOS C, the project's Demand peak-hour directional traffic volumes are used per Chapter 18 of the FDOT PD&E Manual. Traffic volumes and speeds used in the analysis are included in **Appendix B**.

2.3 NOISE ABATEMENT CRITERIA

Land use also plays an important role in traffic noise analyses. Noise sensitive receptors are any property where frequent exterior or interior human use occurs and where a lowered noise level would provide a benefit. The FHWA has established noise levels at which noise abatement must be considered for various types of land uses. As shown in **Table 1**, these levels are used to evaluate traffic noise and are referred to as Noise Abatement Criteria (NAC). The FDOT requires

noise abatement consideration for noise levels that approach the FHWA criteria by one dB(A) for the corresponding Activity Category. One additional criterion for determining project impacts that warrant abatement consideration occurs when project noise levels are below the NAC but show a substantial increase (15.0 dB(A) or more) over existing levels.

Table 1: Noise Abatement Criteria

Hourly A-Weighted Sound Level-decibels (dB(A))				Description of Activity Category
Activity Category	Activity Leq(h) ¹		Evaluation Location	
	FHWA	FDOT		
A	57.0	56.0	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	67.0	66.0	Exterior	Residential.
C ²	67.0	66.0	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, golf courses, places of worship, playgrounds, public meeting rooms, public/nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52.0	51.0	Interior	Auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public/nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E ²	72.0	71.0	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.

(Based on Table 1 of 23 CFR Part 772)

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.

An illustration of typical exterior and interior noises and their corresponding decibel reading is presented in **Table 2**. This table provides the reader with a better understanding of the noise levels discussed herein.

Table 2: Comparative Noise Levels

Common Outdoor Activities	dB(A)	Common Inside Activities
Jet Flyover at 1,000 ft. Gas Lawn Mower at 3 ft.	-110- -100-	Rock Band
Diesel Truck at 50 ft. (at 50 mph) Busy Urban Area Daytime	-90- -80-	Food Blender at 3 ft. Garbage Disposal at 3 ft.
Gas Mower at 100 ft. Commercial Area Heavy Traffic at 300 ft.	-70- -60-	Vacuum Cleaner at 10 ft. Normal Speech at 3 ft. Large Business Office
Quiet Urban Daytime Quiet Urban Nighttime Quiet Suburban Nighttime	-50- -40-	Dishwasher Next Room Theater, Large Conference Room (Background)
Quiet Rural Nighttime	-30- -20-	Library
Lowest Threshold of Human Hearing	-10- -0-	Lowest Threshold of Human Hearing
<i>Source: California Dept. of Transportation Technical Noise Supplement, Oct. 1998, Page 18.</i>		

2.4 NOISE ABATEMENT MEASURES

Noise abatement measures are considered when traffic noise impacts are identified as part of the traffic noise analysis. Potential abatement alternatives may include traffic management techniques, alternative roadway alignments, buffer zones, and noise barriers.

2.4.1 Traffic Management

Traffic management measures that limit motor vehicle speeds and reduce volumes can be effective as a noise mitigation option. However, these measures may also negate a project's ability to meet its stated purpose and need. Consequently, while feasible, traffic management measures are not considered a reasonable noise mitigation measure for this project.

2.4.2 Alignment Modifications

The proposed project follows the same alignment as the existing facility to minimize the need for additional ROW within the project corridor. Consequently, an alternative roadway alignment is not a reasonable noise abatement measure.

2.4.3 Buffer Zones

Noise buffer zones that separate the roadway and noise sensitive land uses can minimize or eliminate noise impacts. This measure requires local land use planning not currently in place within the project corridor. Because the noise impact analysis applies to existing land uses, buffer zones are not an applicable abatement measure at this time. However, for any new development or redevelopment occurring in the future, local planning authorities can use the noise contour information provided in **Section 6.0** of this NSR to establish buffer zones, thereby minimizing or avoiding noise impacts on future sensitive land uses.

2.4.4 Noise Barriers

Due to the limited ROW and proposed typical section, noise barrier walls are the only measure considered for this project. The following feasibility and reasonableness factors must be evaluated when evaluating noise barriers.

2.4.4.1 Feasibility Factors

The FDOT PD&E Manual stipulates that a noise barrier must meet acoustic and engineering criteria to be considered feasible, as summarized below.

1. Acoustic feasibility: The barrier must provide a minimum of 5.0 dB(A) reduction in traffic noise for at least two impacted receptors. Consequently, noise barriers are not evaluated for isolated and single impacted receptors.
2. Engineering feasibility: The engineering review identifies whether other factors must be evaluated for the barrier to be considered feasible.
 - a. Safety: If a conflict between a noise barrier and safety exists, primary consideration must be given to safety. An example of such a conflict is losing a safe sight distance (line of sight) at an intersection or driveway resulting from a noise barrier placement.
 - b. Accessibility to adjacent properties: On non-limited access roadways, the noise barrier placement cannot block ingress and egress. Other access issues to be considered include access to a local sidewalk or normal routes of travel. Neither applies to noise barriers on limited-access roadways.
 - c. Right-of-way needs: Does the noise barrier require additional land, access rights, or easements for construction and maintenance?
 - d. Maintenance: Maintenance crews must have reasonable access to both sides of the barrier for personnel and equipment using standard practices.
 - e. Drainage: Does the barrier impact existing or planned drainage?
 - f. Utilities: Does the barrier impact existing utilities?

2.4.4.2 Reasonableness Factors

If a noise barrier meets the feasibility criteria, the following reasonableness factors must collectively be achieved for the noise abatement measure to be deemed reasonable.

1. Acoustic reasonableness: The barrier must attain the FDOT noise reduction design goal (NRDG) of 7.0 dB(A) for at least one benefited receptor. (Note: to be considered “benefited,” the receptor must receive a minimum of 5.0 dB(A) in traffic noise reduction from the barrier.) Failure to achieve the NRDG results in the noise abatement measure being deemed not reasonable.
2. Cost reasonableness: Using the current \$30.00 per square foot statewide average, a cost of \$42,000 per benefited receptor is looked upon as the upper limit for cost-reasonableness.
3. Benefited property owner and resident viewpoints: During project development, Osceola County solicits the opinion of benefited owners and residents regarding noise abatement. Affected owners and residents are given the opportunity to provide input regarding their desires to have the proposed noise abatement measure constructed. This process aims to obtain a response for or against the noise barrier from a majority of respondents to the survey. If a majority consensus is not obtained in favor of the barrier, the noise barrier is not deemed reasonable.

3.0 TRAFFIC NOISE ANALYSIS

Old Lake Wilson Road traverses the Reunion Community Development, which contains single-family, and multi-family units and recreational uses such as golf courses, pools, racquet courts, and playgrounds. Osceola County’s land development code identifies the Reunion Community Development as a short-term rental overlay area with existing and future land use plans identifying it as tourism/commercial and defined as properties with both residential and commercial uses. All overlay district property owners that wish to rent their property as vacation rentals must obtain a short-term rental/hotelier’s license from the County.

Using **Table 1** as a guide, all houses and condos used year-round by the owner or a long-term renter fall under Activity Category B – Residential. However, dwellings with an active hotelier’s license for short-term rental-use fall under Activity Category E land uses. To distinguish between the two categories, the analyzed dwellings were cross-referenced with the County’s tax collector business tax site on March 22, 2022, to identify those with active hotelier permits. There are no other Category E land uses within the corridor.

The Activity Category C land uses within the project study corridor include the tee boxes and holes at the Palmer Legacy Golf Course and the Independence Golf Course. The Center Court racquet complex is also considered a Category C land use. The remainder of the Category C land uses are the pools and playgrounds associated with the various neighborhoods. Analysis of interior noise levels (Activity Category D) is not required for this project as all Category C locations have areas of exterior use.

There are no land uses in the study corridor that warrant an Activity Category A analysis. A permit search on the vacant parcel south of Simpson Road identified this as a future commercial land use, which is now under construction. There are no other vacant parcels within the study corridor.

3.1 MODEL VALIDATION

Field measurements were taken within the project limits to verify the accuracy of the computer noise model (TNM 2.5). On January 6, 2022, sound measurements were collected using an Extech Instruments Model 407780 Type 2 Integrating Sound Level Meter. The meter, calibrated with an Extech Instruments Model 407766 calibrator, was adjusted to the A-weighted frequency scale, which approximates the frequency sensitivity of the human ear. Traffic data, including vehicle volumes and speeds by type, and meteorological conditions, were recorded during each measurement session. The data collection effort also recorded the travel speed for each type of vehicle using a Bushnell Speedster handheld radar gun.

One location within the study corridor was selected to undergo a series of three 10-minute measurements. The validation site, illustrated on page **D4** in Appendix D, is located in the Encore at Reunion neighborhood adjacent to the Old Lake Wilson Road northbound (NB) lane. The predominant noise source at this location is Old Lake Wilson Road. During the monitoring session, the temperature ranged from 73° to 69° under clear skies, with 54% humidity, and winds out of the South/Southwest at 4 mph. No unusual noise events occurred during the three 10-minute sessions at this location.

Validation of the TNM occurs when the model-predicted noise levels are within three decibels of the field-measured levels. As shown in **Table 3**, TNM predicted within the 3.0-decibel acceptance range for each 10-minute session. Consequently, the model is acceptable for predicting noise levels on this project.

Table 3: Noise Model Validation

Validation Date: 1/6/22										
Run 1: Start Time -11:44 AM										
Old Lake Wilson Rd.	Cars		Medium Trucks		Heavy Trucks		Buses		Motorcycles	
	Vol. Count	Avg. Speed	Vol. Count	Avg. Speed	Vol. Count	Avg. Speed	Vol. Count	Avg. Speed	Vol. Count	Avg. Speed
SB	43	43	9	36	3	35	0	0	0	0
NB	81	43	4	36	2	35	0	0	0	0
Field Measurement (dB(A)):					60.3					
TNM Prediction (dB(A)):					59.4					
Variance (dB(A)):					-0.9					
Run 2: Start Time -11:55 AM										
Old Lake Wilson Rd.	Cars		Medium Trucks		Heavy Trucks		Buses		Motorcycles	
	Vol. Count	Avg. Speed	Vol. Count	Avg. Speed	Vol. Count	Avg. Speed	Vol. Count	Avg. Speed	Vol. Count	Avg. Speed
SB	57	43	7	36	2	35	0	0	0	0
NB	104	43	7	36	5	35	0	0	0	0
Field Measurement (dB(A)):					60.8					
TNM Prediction (dB(A)):					60.3					
Variance (dB(A)):					-0.5					
Run 3: Start Time -12:08 PM										
Old Lake Wilson Rd.	Cars		Medium Trucks		Heavy Trucks		Buses		Motorcycles	
	Vol. Count	Avg. Speed	Vol. Count	Avg. Speed	Vol. Count	Avg. Speed	Vol. Count	Avg. Speed	Vol. Count	Avg. Speed
SB	77	43	5	36	0	0	0	0	0	0
NB	74	43	4	36	5	0	0	0	1	41
Field Measurement (dB(A)):					60.2					
TNM Prediction (dB(A)):					59.7					
Variance (dB(A)):					-0.5					

3.2 PREDICTED NOISE LEVELS AND ABATEMENT ANALYSIS

For this project, a total of 470 noise sensitive sites were evaluated for project-related noise impacts. Due to the number of receptors and the rolling terrain within the corridor, the analysis divided the study corridor into ten Noise Study Areas (NSA). The reporting of project noise levels was further simplified by using receptors representing similar adjacent noise sensitive sites. The grouping within a representative receptor is referred to as a Common Noise Environment (CNE), which FDOT defines as a group of receptors within the same Activity Category exposed to similar noise sources and levels; traffic volumes, traffic mix, speed; and topographic features. There may be several CNEs within one NSA.

There are several multi-story condominium buildings in the study corridor. The noise analysis assigned a specific letter to indicate the floor on which a unit is located. The letter “a” represents ground-floor units, “b” represents 2nd-floor units, “c” represents 3rd-floor units, and “d” represents 4th-floor units.

The 2020 existing condition, the 2050 No-Build Alternative, and the 2050 Build Alternative noise analysis results discussed in this section are also presented in a noise impact comparison matrix provided in **Appendix C**.

Overall, 15 residential (Category B) receptors currently experience noise levels that meet or exceed the FDOT 66.0 dB(A) NAC. Under the No-Build Alternative, noise levels are predicted to meet or exceed the Category B NAC at 22 receptors. By comparison, predicted noise levels for the Build Alternative meet or exceed the Category B NAC at 28 receptors with an average 2.0 dB(A) increase in noise over the existing condition. The greatest increase, 5.4 dB(A), occurs in NSA 10 at receptors 10-7 and 10-8 and is not considered substantial (defined as 15 dB(A) or higher).

When discussing noise level increases, the general rule that applies to perception is:

- A 3 dB(A) increase is barely perceptible to most people.
- A 5 dB(A) increase is noticeable to most people.
- A 10 dB(A) increase is perceived as twice as loud and is considered a doubling of noise.
- FDOT considers a 15 dB(A) increase as substantial.

A discussion of each NSA and its corresponding impact and abatement analysis is provided in the following sections. A set of project aerials illustrating the NSAs, representative receptors, and the analyzed sites within each CNE, is included in **Appendix D**.

3.2.1 Noise Study Area 1

NSA 1 is located east of Old Lake Wilson Road from Osceola Polk Line Road to Excitement Drive, as illustrated in Appendix D on page **D1**. Land use in this NSA is commercial, with no noise sensitive sites.

3.2.2 Noise Study Area 2

NSA 2 is located east of Old Lake Wilson Road from Excitement Drive to Gathering Drive, as illustrated in Appendix D on pages **D1** and . Noise sensitive land uses within this NSA are The Terraces single-family neighborhood, the Palmer Legacy Golf Course, and the Seven Eagles townhomes.

The Terraces: Analysis receptors 2-1 and 2-2 represent the two townhomes closest to Old Lake Wilson Road. Receptor 2-1 is currently licensed as a short-term rental and is considered a Category E receptor. Receptor 2-2 is not licensed and is a Category B receptor.

Future noise levels predicted for these receptors do not approach or exceed the respective NAC at either receptor. The highest traffic noise increase over the existing condition is 3.9 dB(A), which is not considered substantial. Consequently, this neighborhood is not impacted by the project.

Seven Eagles: Analysis receptors 2-3 and 2-4 represent the four townhomes closest to Old Lake Wilson Road, with receptor 2-5 representing the second-row building behind receptor 2-3. These townhomes have a ground-floor and 2nd-floor patio; consequently, each patio was analyzed for impacts. The two townhomes represented by receptor 2-3 and the townhome represented by 2-5 are currently licensed as short-term rentals and are considered Category E receptors. The two townhomes represented by receptor 2-4 are not licensed; thus, they were analyzed as Category B receptors.

The highest traffic noise level increase over the existing condition is 3.5 dB(A), which is not considered substantial. However, future noise levels predicted for the Category B townhomes represented by receptor 2-4 exceed the 66.0 dB(A) NAC at their 2nd-floor patios. Noise abatement was considered to mitigate these impacts, as summarized in Section **3.2.2.1**.

Other Sites: The other noise sensitive sites in NSA 2 are recreational, Category C land uses. Receptors SLU2-1 through SLU2-5 represent the tee boxes and holes closest to Old Lake Wilson Road. Future noise levels are not predicted to meet or exceed the corresponding NAC. Consequently, these five receptors are not impacted by the project.

The noise levels discussed for this NSA are also summarized in the noise impact comparison matrix provided in **Appendix C**.

3.2.2.1 Noise Abatement Consideration - Barrier NB1

To abate project impacts to the 2nd-floor patios of two Seven Eagles townhomes represented by receptor 2-4, noise barrier NB1 was evaluated parallel to Old Lake Wilson Road and placed five feet inside the northbound ROW. Several height and length combinations were evaluated to determine the dimensions where the greatest insertion loss/noise reduction is achieved within the \$42,000 per benefited receptor cost-reasonable criterion.

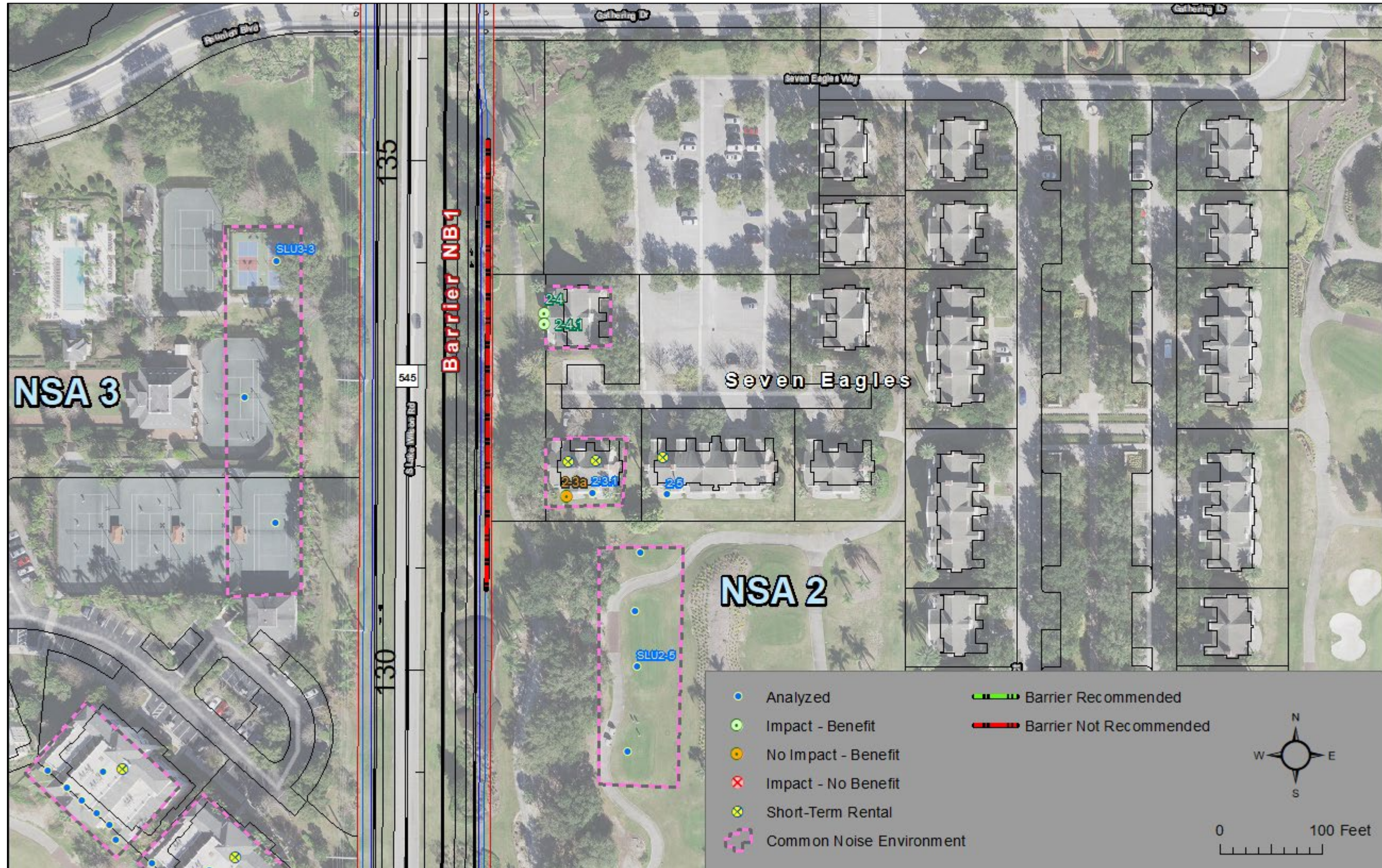
Receptors 2-3 and 2-4 were subdivided into smaller groupings to understand project impacts and potential abatement benefits better. As summarized in **Table 4**, only a maximum-height 22-foot-tall barrier meets the acoustic feasibility requirement and achieves the FDOT 7.0 dB(A) NRDG. However, the barrier does not meet the cost criterion and is not considered reasonable. An illustration of this barrier is provided in **Figure 2**.

Table 4: Noise Barrier NB1

NSA 2: Seven Eagles Residential (Category B) Noise Abatement												
Evaluated Barrier Options			Number of Impacted Sites	Number of Impacted Sites Within a Noise Reduction Range			Number of Benefited Sites ^{*1}				Total Estimated Cost ^{*4}	Cost per Benefited Receptor ^{*5}
Option	Height (feet)	Length (feet)		5-5.9 dB(A)	6-6.9 dB(A)	≥ 7.0 dB(A) ^{*2}	Impacted	Other ^{*3}	Total	Avg. Noise Reduction dB(A)		
1	8	561	2	0	0	0	0	0	0	0.6	\$134,640	N/A
2	10	561	2	0	0	0	0	0	0	1.1	\$168,300	N/A
3	12	561	2	0	0	0	0	0	0	1.9	\$201,960	N/A
4	14	561	2	0	0	0	0	0	0	2.8	\$235,620	N/A
5	16	561	2	0	0	0	0	1	1	5.3	\$269,280	\$269,280
6	18	561	2	1	0	0	1	1	2	5.9	\$302,940	\$151,470
7	20	561	2	0	2	0	2	1	3	6.7	\$336,600	\$112,200
8 Illustrated	22	440	2	0	0	2	2	1	3	7.0	\$290,400	\$96,800

*1 = Minimum of 5.0 dB(A) required to be considered benefited by a noise barrier.
 *2 = FDOT Noise Reduction Design Goal is 7.0 dB(A) at a minimum of 1 benefited receptor.
 *3 = Refers to non-impacted noise-sensitive sites.
 *4 = Based on FDOT Statewide average of \$30 per square foot.
 *5 = FDOT Reasonable Cost Guideline is \$42,000.

Figure 2: Analyzed Noise Barrier NB1



3.2.3 Noise Study Area 3

NSA 3 is located west of Old Lake Wilson Road from Osceola Polk Line Road to Gathering Drive, as illustrated in Appendix D on pages **D1** and **D-2**. This NSA contains the Heritage Crossing condos, the Center Court Ridge condos, and two recreational facilities: the Palmer Legacy Golf Course and the Center Court racquet courts.

Heritage Crossing: Receptors 3-1 and 3-2 represent the two condominium buildings closest to Old Lake Wilson Road, as illustrated in Appendix D on page **D1**. Each building has six ground-floor units, four 2nd-floor units, and four 3rd-floor units, all with patios facing Old Lake Wilson Road. Receptor 3-1 represents 12 Category B units and 2 Category E short-term rentals. Receptor 3-2 represents 10 Category B units and 4 Category E short-term rentals.

The highest traffic noise increase over the existing condition in this NSA is 3.1 dB(A), which is not considered substantial. However, future noise levels predicted for 22 of the Category B condos exceed the 66.0 dB(A) NAC. Noise abatement was considered to mitigate these impacts, as summarized in **Section 3.2.2.1**.

Center Court Ridge: Receptors 3-3 and 3-4 represent the 44 units in the two condominium buildings closest to Old Lake Wilson Road, as illustrated in Appendix D on page **D-2**. Each building has six ground-floor units, four 2nd-floor units, and four 3rd-floor units. Due to irregularities in address reporting for the hotelier licenses, the noise analyst could not discern the individual units with short-term rental permits. However, the building represented by receptor 3-3 has 8 of the 22 units permitted, and the building represented by receptor 3-4 has 10 of the 22 units permitted as short-term rentals.

The highest traffic noise increase over the existing condition is 3.0 dB(A), which is not considered substantial. Additionally, with the predicted project noise levels ranging between 53.4 and 63.5 dB(A), the project noise levels do not meet or exceed the NAC for any Category B or Category E unit.

Other Sites: The other noise sensitive sites in NSA 3 are recreational, Category C land uses. Receptors SLU3-1 and SLU3-2 represent the Palmer Legacy course tee boxes and holes closest to Old Lake Wilson Road. SLU3-3 represents the racquet courts. Future noise levels are not predicted to meet or exceed the corresponding NAC at these facilities. Consequently, these three receptors are not impacted by the project.

The noise levels discussed for this NSA are also summarized in the noise impact comparison matrix provided in **Appendix C**.

3.2.3.1 Noise Abatement Consideration - Barrier SB1

To abate for project impacts on the Heritage Crossing receptors represented by receptors 3-1 and 3-2, noise barrier SB1 was evaluated behind the southbound sidewalk to avoid conflict with the overhead powerline and poles. Several height and length combinations were evaluated to determine the dimensions where the greatest insertion loss/noise reduction is achieved within the \$42,000 per benefited receptor cost-reasonable criterion.

The representative receptors were subdivided into individual condo units to better understand project impacts and potential abatement benefits. As summarized in **Table 5** Error! Reference source not found., beginning with a height of 12 feet, the barrier meets all FDOT abatement requirements and is considered feasible and reasonable. An illustration of this barrier at the 14-foot height is provided in **Figure 3**. Please note that none of the Category E short-term rentals were included in the cost-benefit calculations.

The noise levels discussed for this NSA are also summarized in the noise impact comparison matrix provided in **Appendix C**.

Table 5: Noise Barrier SB1

NSA 3: Heritage Crossing Residential (Category B) Noise Abatement												
Evaluated Barrier Options			Number of Impacted Sites	Number of Impacted Sites Within a Noise Reduction Range			Number of Benefited Sites ^{*1}				Total Estimated Cost ^{*4}	Cost per Benefited Receptor ^{*5}
Option	Height (feet)	Length (feet)		5-5.9 dB(A)	6-6.9 dB(A)	≥ 7.0 dB(A) ^{*2}	Impacted	Other ^{*3}	Total	Avg. Noise Reduction dB(A)		
1	8	540	21	3	0	0	3	0	3	5.2	\$129,600	\$43,200
2	10	540	21	4	5	0	9	1	10	6.0	\$162,000	\$16,200
3	12	540	21	1	0	9	10	1	11	7.2	\$194,400	\$17,673
4 Illustrated	14	360	21	6	5	4	15	1	16	6.4	\$151,200	\$9,450
5	16	340	21	1	4	10	15	1	16	6.9	\$163,200	\$10,200
6	18	340	21	0	2	13	15	1	16	7.3	\$183,600	\$11,475
7	20	360	21	5	0	15	20	1	21	7.3	\$216,000	\$10,286
8	22	320	21	3	4	14	21	1	22	6.9	\$211,200	\$9,600

*1 = Minimum of 5.0 dB(A) required to be considered benefited by a noise barrier.

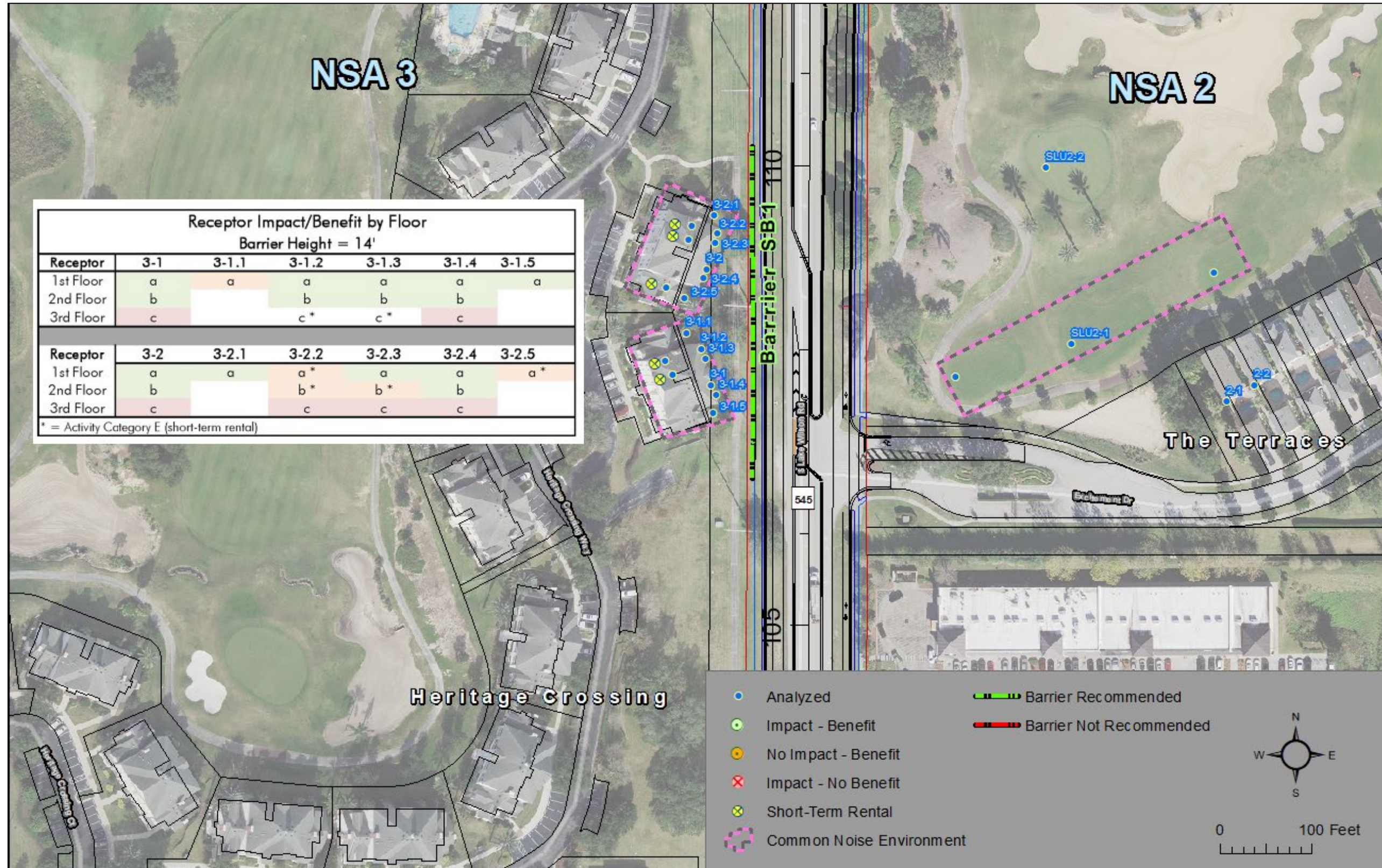
*2 = FDOT Noise Reduction Design Goal is 7.0 dB(A) at a minimum of 1 benefited receptor.

*3 = Refers to non-impacted noise-sensitive sites.

*4 = Based on FDOT Statewide average of \$30 per square foot.

*5 = FDOT Reasonable Cost Guideline is \$42,000.

Figure 3: Recommended Barrier SB1



3.2.4 Noise Study Area 4

NSA 4 is located east of Old Lake Wilson Rd from Gathering Drive to Assembly Court, as illustrated in Appendix D on pages **D-2** and **D3**

. This NSA contains The Grande Tower high-rise condominium building, the Carriage Pointe townhomes, and the Independence Golf Course tee boxes and holes closest to Old Lake Wilson Road.

Carriage Pointe: Analysis receptors 4-1 through 4-8 represent 52 analyzed townhomes comprising both Category B residential units and Category E short-term rentals. Each townhome has a ground-floor patio and a 2nd-floor patio; consequently, each patio was analyzed for impacts.

The highest traffic noise increase over the existing condition is 2.9 dB(A), which is not considered substantial. However, future noise levels predicted for the Category B townhome represented by receptor 4-7 exceed the 66.0 dB(A) NAC at the 2nd-floor patio.

Since the project's 67.5 dB(A) noise level at receptor 4-7 exceeds the NAC, noise abatement consideration is required. However, there are no other project impacts in this area. Therefore, this is an isolated impact, and a potential noise barrier cannot meet the acoustic requirement of 5.0 dB(A) noise reduction at two impacted sites.

The Grande Tower: Analysis receptor 4-9 represents the 54 units in this high-rise building whose patios face Old Lake Wilson Road. The analyzed units begin on the 2nd floor (4-9b) and continue to the 10th floor (represented by 4-9j). All of the units are Category E short-term rentals.

Future noise levels predicted for these receptors do not approach or exceed the respective NAC at any of the 54 units, with the highest noise level being 64.2 dB(A). The highest traffic noise increase over the existing condition is 1.7 dB(A), which is not considered substantial. Consequently, this building is not impacted by the project.

Other Sites: The other noise sensitive sites in NSA 4 are recreational, Category C land uses. Receptors SLU4-1 through SLU4-3 represent the tee boxes and holes closest to Old Lake Wilson Road. Future noise levels are not predicted to meet or exceed the corresponding NAC. Consequently, these three receptors are not impacted by the project.

The noise levels discussed for this NSA are also summarized in the noise impact comparison matrix provided in **Appendix C**.

3.2.5 Noise Study Area 5

NSA 5 is located west of Old Lake Wilson Rd from Gathering Drive to Spine Road, as illustrated in Appendix D on pages **D2** and **D3**

- . This NSA contains The Villas South condominiums and the Independence Golf Course.

The Villas South: Three buildings with patios facing Old Lake Wilson Road were included in the analysis and are represented by receptors 5-1 through 5-3. Each of the buildings has both Category B and E units.

Future noise levels predicted for these receptors do not approach or exceed the respective NAC at any of the 66 analyzed units, with the highest noise level being 61.0 dB(A). The highest traffic noise increase over the existing condition is 2.7 dB(A), which is not considered substantial. Consequently, this building is not impacted by the project.

Other Sites: The other noise sensitive site in NSA 5 is a recreational, Category C land use. Receptor SLU5-1 represents the hole south of Spine Road and closest to Old Lake Wilson Road. Future noise levels are not predicted to meet or exceed the corresponding NAC. Consequently, this receptor is not impacted by the project.

The noise levels discussed for this NSA are also summarized in the noise impact comparison matrix provided in **Appendix C**.

3.2.6 Noise Study Area 6

NSA 6 is located west of Old Lake Wilson Rd from Spine Road to Assembly Court, as illustrated in Appendix D on page **D3**

- . This NSA contains The Villas North condominiums and the Independence Golf Course.

The Villas North: Eighty-eight condos in the four buildings closest to Old Lake Wilson Road were included in the analysis and are represented by receptors 6-1 through 6-12. Each building has Category B and E units separately identified for the analysis.

The highest traffic noise increase over the existing condition in NSA 6 is 4.8 dB(A), which is not considered substantial. However, future noise levels predicted for the Category B third-floor condo represented by receptor 6-1c exceed the 66.0 dB(A) NAC.

Since the project's 66.9 dB(A) noise level at receptor 6-1c exceeds the NAC, noise abatement consideration is required. However, there are no other project impacts in this area. Therefore, this is an isolated impact, and a potential noise barrier cannot meet the acoustic requirement of 5.0 dB(A) noise reduction at two impacted sites.

Other Sites: The other noise sensitive site in NSA 6 are recreational, Category C land uses. Receptor SLU6-1 represents the hole closest to Old Lake Wilson Road, and SLU6-2 represents The Villas North pool area. Future noise levels are not predicted to meet or exceed the corresponding NAC. Consequently, these receptors are not impacted by the project.

The noise levels discussed for this NSA are also summarized in the noise impact comparison matrix provided in **Appendix C**.

3.2.7 Noise Study Area 7

NSA 7 is located east of Old Lake Wilson Rd from Assembly Court to Marker Avenue, as illustrated in Appendix D on page **D4**. This NSA contains the Encore Resort (East) subdivision represented by receptors 7-1 through 7-18. Fifteen of the 19 analyzed houses are short-term rentals (Category E).

The highest traffic noise increase over the existing condition is 5.1 dB(A), which is not considered substantial. However, future noise levels predicted for the Category B house represented by receptor 7-16 exceeds the 66.0 dB(A) NAC.

Since the project's 68.2 dB(A) noise level at receptor 7-16 exceeds the NAC, noise abatement consideration is required. However, there are no other project impacts in this area. Therefore, this is an isolated impact, and a potential noise barrier cannot meet the acoustic requirement of 5.0 dB(A) noise reduction at two impacted sites.

The noise levels discussed for this NSA are also summarized in the noise impact comparison matrix provided in **Appendix C**.

3.2.8 Noise Study Area 8

NSA 8 is located east of Old Lake Wilson Rd from Marker Avenue to Sinclair Road and is a continuation of Encore Resort (East), as illustrated in Appendix D on page **D5**. The noise sensitive sites in NSA 8 are identified as receptors 8-1 through 8-12. These receptors represent 27 houses, with all but one being short-term rentals (Category E). The other land use in this NSA is the Horizon West Industrial Park at the Sinclair Road and Old Lake Wilson Road intersection. This site is not noise-sensitive.

Future noise levels predicted in this NSA do not meet or exceed the respective NAC at any of the analyzed houses. The highest project noise level is 67.7 dB(A) at the Category E houses and 61.2 dB(A) at the Category B residence. Compared to the existing condition, the highest traffic noise increase is 4.1 dB(A), which is not considered substantial. Consequently, there are no project impacts in NSA 8.

The noise levels discussed for this NSA are also summarized in the noise impact comparison matrix provided in **Appendix C**.

3.2.9 Noise Study Area 9

NSA 9 is located west of Old Lake Wilson Rd from Assembly Court to Fairfax Drive, as illustrated in Appendix D on page **D4**. This NSA contains the Encore Resort (West) subdivision represented by receptors 9-1 through 9-19. Twenty-four of the 31 analyzed houses in NSA 9 are short-term rentals (Category E).

Future noise levels predicted for these receptors do not meet or exceed the respective NAC at any of the 31 analyzed houses, with the highest noise level being 65.3 dB(A). Over the existing

condition, the highest traffic noise increase is 3.7 dB(A), which is not considered substantial. Consequently, there are no project impacts in NSA 9.

The noise levels discussed for this NSA are also summarized in the noise impact comparison matrix provided in **Appendix C**.

3.2.10 Noise Study Area 10

NSA 10 is located west of Old Lake Wilson Rd from Fairfax Drive to Sinclair Road and is a continuation of Encore Resort (West), as illustrated in Appendix D on page **D5**. Receptors 10-1 through 10-19 represent 40 houses, with all but one being short-term rentals (Category E).

The highest traffic noise increase over the existing condition in NSA 10 is 5.7 dB(A), which is not considered substantial. The highest predicted noise level at the Category E rentals is 69.6 dB(A) which is below the 71.0 dB(A) NAC. However, future noise levels predicted for the one Category B residence represented by receptor 10-7 exceed the 66.0 dB(A) NAC.

Since the project's 69.1 dB(A) noise level at receptor 10-7 exceeds the NAC, noise abatement consideration is required. However, there are no other project impacts in this area. Therefore, this is an isolated impact, and a potential noise barrier cannot meet the acoustic requirement of 5.0 dB(A) noise reduction at two impacted sites.

The noise levels discussed for this NSA are also summarized in the noise impact comparison matrix provided in **Appendix C**.

4.0 CONCLUSIONS

The noise impact analysis results show that Build Alternative increases noise levels throughout the project corridor by an average of 2.0 dB(A). While none of the noise increases are considered substantial (i.e., 15 dB(A) or more over existing levels), project noise levels are predicted to meet or exceed the Activity Category B 66.0 dB(A) NAC at 28 receptors.

Abatement for four of these impacts is not feasible because each receptor is an isolated impact where a noise barrier cannot meet the required 5.0 dB(A) reduction at two impacted receptors. Of the two analyzed noise barriers, one barrier (NB1) is not cost-reasonable. However, further evaluation of Barrier SB1 summarized in **Table 6** is recommended.

Table 6: Potentially Reasonable and Feasible Noise Barrier Summary

Noise Study Area	Impacted Development	Barrier ID		Barrier Height (ft)	Barrier Length (ft)	Impacted/Benefited Receptors	Impacted/Not-Benefited Receptors	Average Noise Reduction (dB(A))	Barrier Offset	Estimated Barrier Cost ^{*1}	Cost per Benefitted Receptor ^{*2}
NSA 3	Heritage Crossing	SB1	Figure 3	14	360	15	6	6.4	Behind SB Sidewalk	\$151,200	\$9,450
<p>*1 Based on FDOT Statewide average of \$30/square foot. *2 Cost reasonable criterion is \$42,000 per benefitted receptor.</p>											

4.1 STATEMENT OF LIKELIHOOD

Osceola County is committed to the construction of feasible and reasonable noise abatement measures identified in **Table 6**, 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 the County; and
- Safety and engineering aspects related to the roadway user and the adjacent property owner have been reviewed, and any conflicts or issues have been resolved.

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

5.0 CONSTRUCTION NOISE AND VIBRATION

Based on the existing land use within the limits of this project, construction of the proposed roadway improvements may have noise or vibration impacts. If noise sensitive land uses develop adjacent to the roadway prior to construction, additional impacts could result. It is anticipated that applying the *FDOT Standard Specifications for Road and Bridge Construction*⁷ will minimize or eliminate most of the potential construction noise and vibration impacts. However, should unanticipated noise or vibration issues arise during the construction process, the Project Engineer, in concert with Osceola County's Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

6.0 COMMUNITY COORDINATION

6.1 NOISE IMPACT CONTOURS

Generalized future noise impact contours have been developed for NAC Activity Categories A, B, C, and E. These contours represent the approximate distance from the nearest edge of pavement to the limits of the area predicted to meet or exceed the NAC in the 2050 Design Year. These contours do not consider any shielding of noise provided by structures or vegetation between the receptor site and the proposed travel lanes.

Within the project corridor, the distance between the proposed edge of the pavement and the noise impact contour line at various locations is presented in **Figure 4**. Noise sensitive land uses should be located beyond these distances to minimize the potential for incompatible land use.

This Noise Study Report provides information that can be used to protect future land development from becoming incompatible with anticipated traffic noise levels. A copy will be made available to local planning officials to promote future land use compatibility.

6.2 PUBLIC COORDINATION

A hybrid public hearing was held June 13, 2023, at Kenzie's at the Clubhouse and held virtually simultaneously via GoToWebinar. The purpose of the public hearing was to present information regarding the preferred alternative and receive input from the public and other stakeholders regarding the proposed improvements. Several noise-related comments were received.

Comment 1: How did you determine Heritage Crossing was the only housing development that would warrant a noise wall? What about the other developments along Old Lake Wilson Road?

- Response: A Noise Study was conducted for this project to evaluate the impact of traffic noise on surrounding properties. The report analyzed 470 noise sensitive sites for the 2020 existing condition and the 2050 No-Build and Build Alternatives. The analysis results indicated that fifteen noise sensitive sites are currently experiencing levels that meet or exceed the FDOT criterion, and twenty-eight sites are predicted to meet or exceed noise levels with the Build Alternative. For a noise wall to be recommended, at least two impacted sites must achieve at least a 5.0 dB(A) reduction in traffic noise. The feasibility of noise walls will be reevaluated during the design phase to see if other noise walls will be included. A copy of the full Noise Study Report can be found on the project website at <http://improveoldlakewilsonroad.com/documents.html>.

A copy of the full Noise Study Report can be found on the project website at <http://improveoldlakewilsonroad.com/documents.html>.

Comment 2: Noise and devaluation of condos in Centre Court

- Response: A Noise Study was conducted for this project using the FDOT Noise Abatement Criterion. The report analyzed 470 noise sensitive sites for the 2020 existing condition and the 2050 No-Build and Build Alternatives. The analysis results indicated that fifteen noise sensitive sites are currently experiencing levels that meet or exceed the FDOT criterion, and twenty-eight sites are predicted to meet or exceed noise levels with the Build Alternative. For a noise wall to be recommended, at least two impacted sites must achieve at least a 5.0 dB(A) reduction in traffic noise. The feasibility of noise walls will be reevaluated during the design phase to see if other noise walls will be included.

Comment 3: What is planned to shield the Reunion community from additional road noise and traffic?

- Response: A Noise Study was conducted as part of this PD&E Study and has identified one potential noise barrier location adjacent to Heritage Crossing on the west side of Old Lake

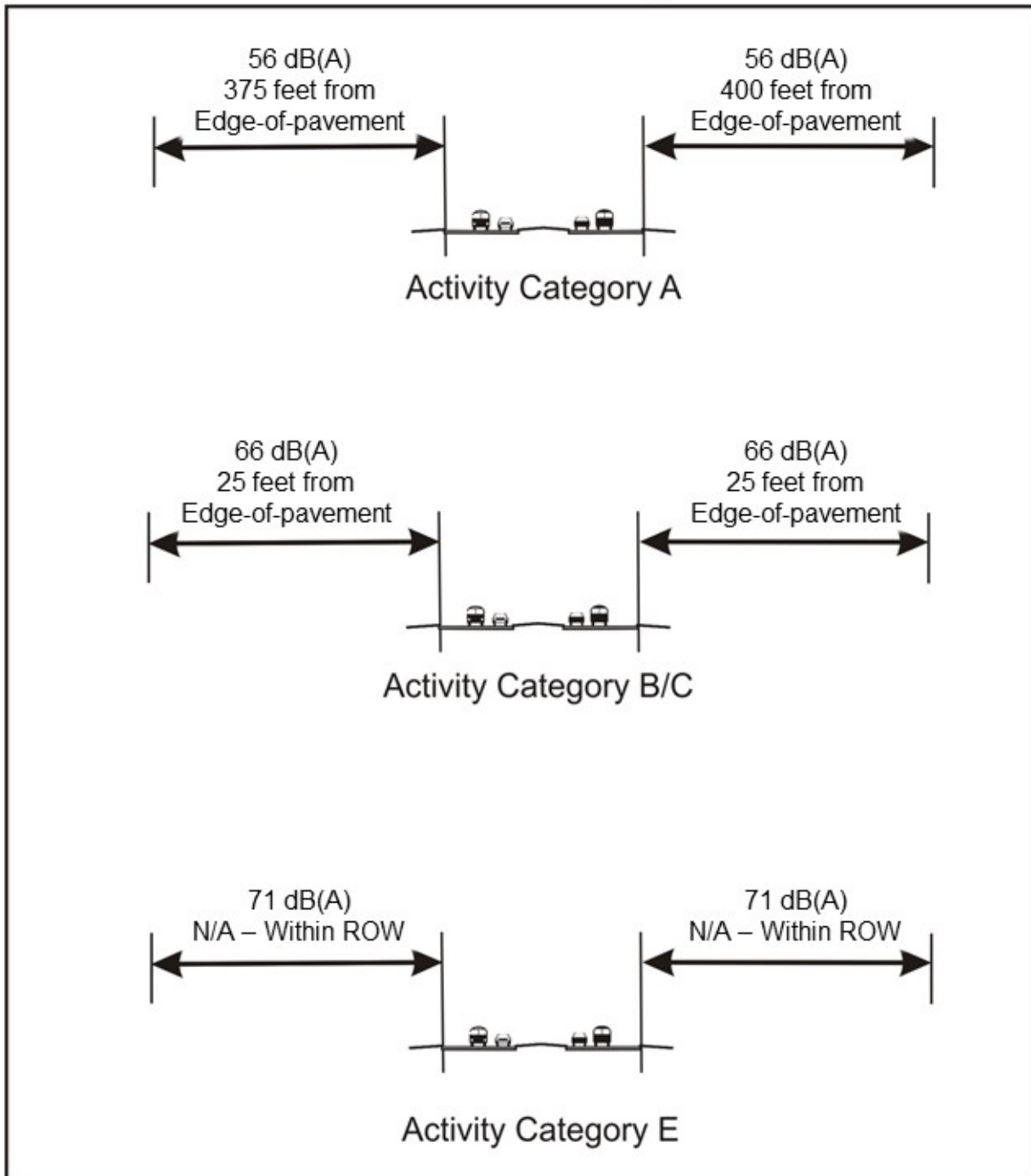
Wilson Road, north of County Road 532. The feasibility of noise walls will be re-evaluated during the design phase to determine if noise walls will be included.

Comment 4: Our second request is to ask the city to consider providing a new or extend the existing, noise barrier wall to the end of Heritage Crossing Way past the golf cart underpass/bridge which connects the two sides of Reunion. Currently, with the latest road construction, many residents and renters spoke to owners about the noise, and more importantly the vibration, from the work being done on the road over the last month.

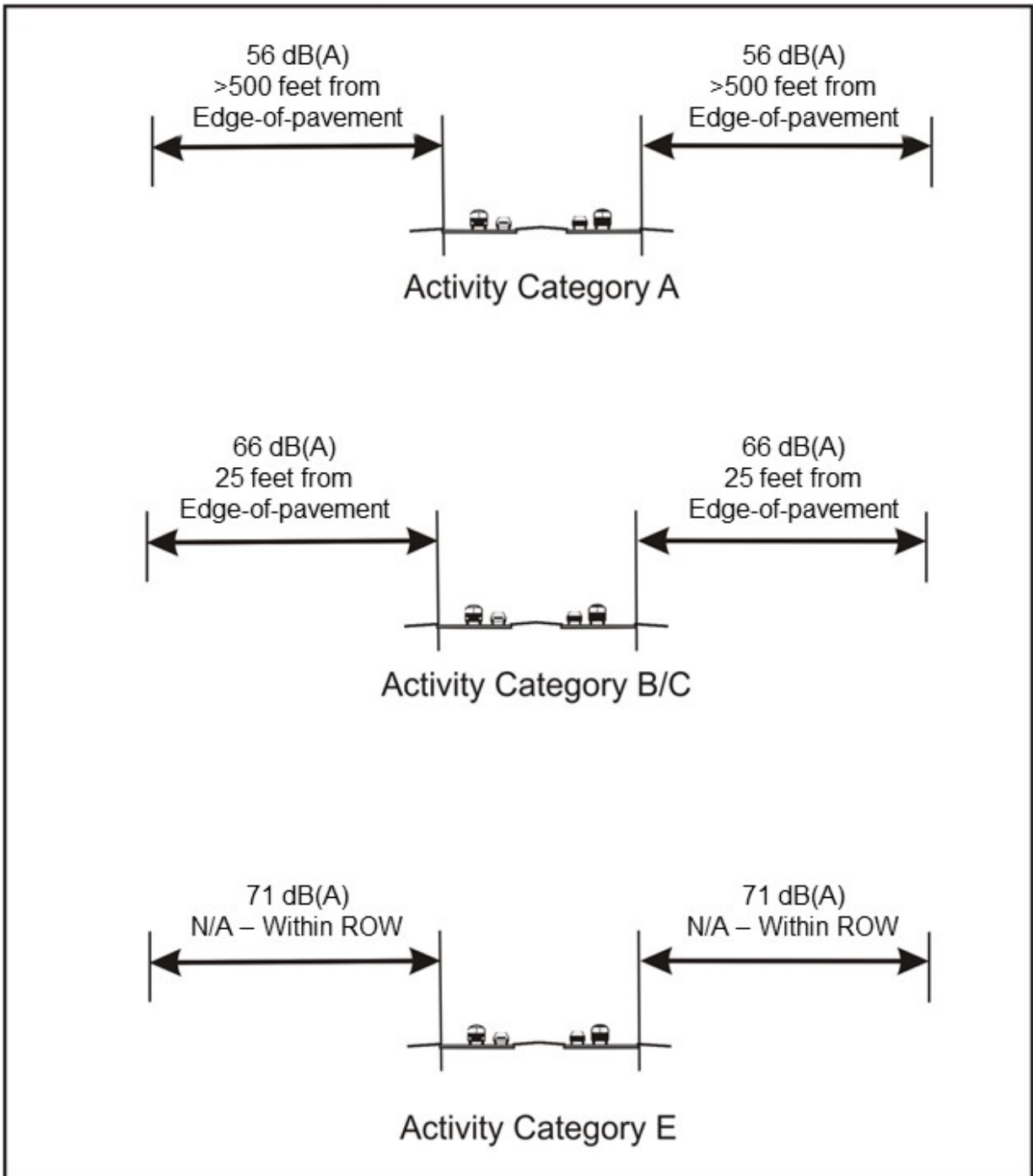
- Response: The noise analysis completed during the PD&E Study will be reevaluated during the design phase, including the proposed noise wall limits adjacent to the Heritage Crossings development.

Figure 4: Noise Impact Contours

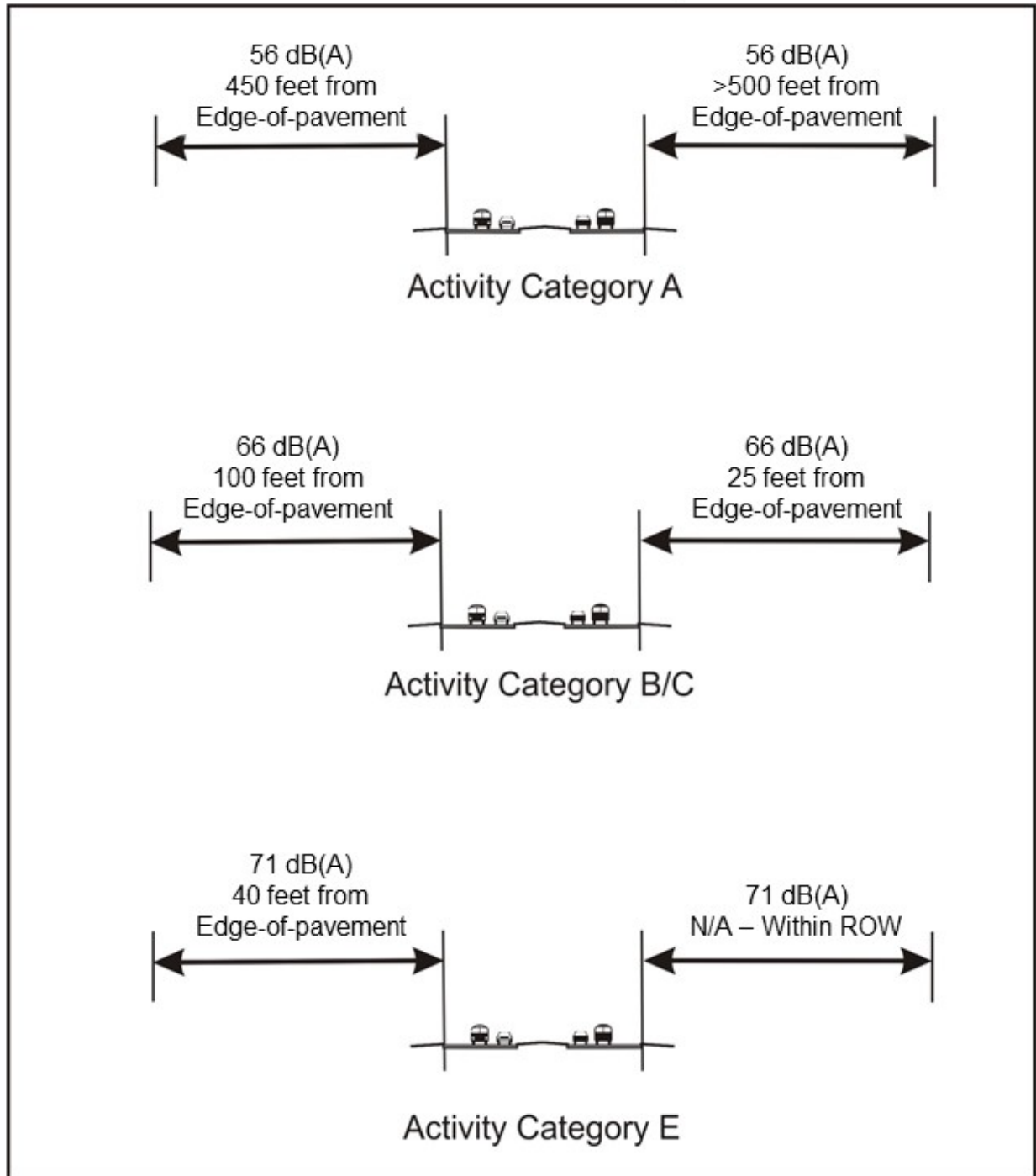
From Osceola Polk Line Rd. to Spine Rd.



Noise Impact Contours
From Spine Rd. to Fairfax Dr./Marker Ave.



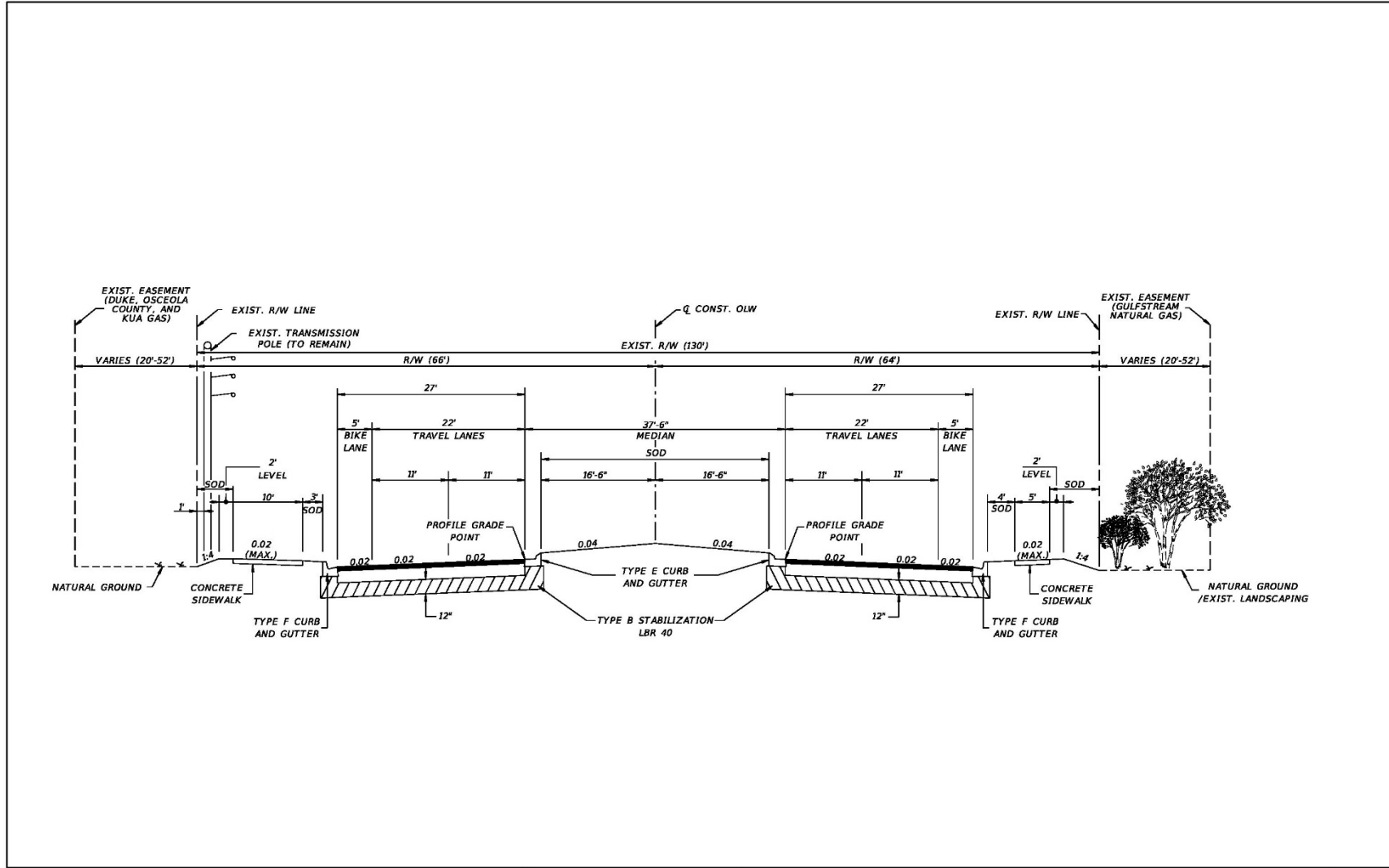
Noise Impact Contours
From Fairfax Dr./Marker Ave. to Simpson Rd.



7.0 REFERENCES

1. Federal Highway Administration, *Code of Federal Regulations*, Title 23 Part 772, "Procedures for Abatement of Highway Traffic Noise and Construction Noise," (July 13, 2010)
2. Florida Department of Transportation, *Project Development and Environment Manual*, Part 2, Chapter 18, (July 1, 2020)
3. *Florida Statutes*, Chapter 335, § 335.17
4. FHWA, FHWA-HEP-10-025: Highway Traffic Noise: Analysis and Abatement Guidance, (December 2011)
5. FDOT, Traffic Noise Modeling and Analysis Practitioners Handbook, (December 31, 2018)
6. ©Google 2022. Google Earth Pro
7. FDOT, Standard Specifications for Road and Bridge Construction.

Appendix A: Project Typical Section



REVISIONS				ENGINEER OF RECORD		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION ALTERNATIVE 1	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	Kevin Joseph Iannarone, PE PE No. 71527 Inwood Consulting Engineers, Inc. 3000 Davera Drive, Suite 200 Oviedo, Florida 32765		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
						OLD LAKE WILSON	OSCEOLA	448781-1-22-01		

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Appendix B: Project Traffic Data

Noise Analysis Traffic Data - Old Lake Wilson Road PD&E from Osceola Polk Line Road (CR 532) to Sinclair Road
Existing (2020) Conditions

Old Lake Wilson Road														
Mainline Traffic Segment	Number of Lanes	AADT	LOS C AADT	Peak Hour Peak Direction	Off Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	Standard K-factor	D-factor	Posted Speed (m ph)
Old Lake Wilson Road, South of Osceola Polk Line Road (CR 532)	2	20,000	15,100	900	560	750	2.05%	1.32%	0.53%	0.19%	0.10%	9.0%	51.0%	45
Old Lake Wilson Road from Osceola Polk Line Road (CR 532) to Shoppes at Reunion	2	14,500	15,900	850	420	780	5.00%	3.23%	1.30%	0.48%	0.25%	9.0%	63.0%	45
Old Lake Wilson Road from Shoppes at Reunion to Excitement Drive	2	14,500	15,900	850	420	780	5.00%	3.23%	1.30%	0.48%	0.25%	9.0%	63.0%	45
Old Lake Wilson Road from Excitement Drive to Spine Road	2	14,500	15,100	850	420	750	5.00%	3.23%	1.30%	0.48%	0.25%	9.0%	63.0%	55
Old Lake Wilson Road from Spine Road to Assembly Court	2	15,500	15,900	930	420	780	3.75%	1.85%	1.53%	0.38%	0.30%	9.0%	63.0%	55
Old Lake Wilson Road from Assembly Court to Fairfax Drive/Marker Avenue	2	15,500	15,900	930	420	780	3.75%	1.85%	1.53%	0.38%	0.30%	9.0%	63.0%	45
Old Lake Wilson Road from Fairfax Drive/Marker Avenue to Sinclair Road	2	15,500	15,900	900	380	780	3.75%	1.93%	1.50%	0.33%	0.25%	9.0%	63.0%	45
Old Lake Wilson Road, North of Sinclair Road	4	14,000	35,800	1,130	330	1,800	1.25%	0.84%	0.50%	0.11%	0.08%	9.0%	69.0%	45
Intersecting Roadways														
Arterial Traffic Segment	Number of Lanes	AADT	LOS C AADT	Peak Hour Peak Direction	Off Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	K-factor	D-factor	Posted Speed (m ph)
Osceola Polk Line Road (CR 532)														
Osceola Polk Line Road (CR 532) - West of Old Lake Wilson Road	4	28,000	35,800	890	870	1,800	3.40%	2.19%	0.88%	0.32%	0.17%	9.0%	54.0%	45
Osceola Polk Line Road (CR 532) - East of Old Lake Wilson Road	2	22,000	15,900	940	680	780	3.90%	2.52%	1.01%	0.37%	0.20%	9.0%	58.0%	50
Excitement Drive														
Excitement Drive - East of Old Lake Wilson Road	2	850	6,900	40	30	300	0.00%	0.00%	0.00%	0.00%	0.00%	9.0%	58.0%	25
Spine Road														
Spine Road - West of Old Lake Wilson Road	2	1,400	6,900	60	50	300	1.70%	0.97%	0.57%	0.17%	0.11%	9.0%	58.0%	25
Assembly Court														
Assembly Court - East of Old Lake Wilson Road	2	500	6,900	20	20	300	0.00%	0.00%	0.00%	0.00%	0.00%	9.0%	-	25
Fairfax Drive/Marker Avenue														
Fairfax Drive - West of Old Lake Wilson Road	2	1,300	6,900	80	30	300	1.55%	0.78%	0.63%	0.14%	0.11%	9.0%	-	25
Marker Avenue - East of Old Lake Wilson Road	2	1,100	6,900	60	40	300	2.25%	1.13%	0.91%	0.21%	0.17%	9.0%	-	25
Sinclair Road														
Sinclair Road - West of Old Lake Wilson Road	4	7,700	13,700	460	290	700	4.30%	2.21%	1.72%	0.37%	0.29%	9.0%	57.0%	35
I-4														
I-4 Traffic Segment (Existing Geometry)	Number of Lanes	AADT	LOS C AADT	Peak Hour Peak Direction	Off Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	Standard K-factor	D-factor	Posted Speed (m ph)
I-4 EB	3	-	-	-	-	4,650	4.88%	1.63%	3.25%	-	-	-	-	65
I-4 WB	3	-	-	-	-	4,650	4.88%	1.63%	3.25%	-	-	-	-	65
I-4 WB ramp to SR 429 NB	1	-	-	291	-	-	2.06%	0.69%	1.37%	-	-	-	-	40
SR 429 SB ramp to EB I-4	1	-	-	388	-	-	2.06%	1.03%	1.03%	-	-	-	-	40

Notes

- (1) Posted speed data are obtained by field observation.
- (2) Arterial design hour LOS C maximum service volumes are obtained from *FDOT 2020 Generalized Service Volume Tables*.
- (3) Arterial K and D factors are obtained from the Project Traffic Analysis Report.
- (4) Number of lanes are obtained by field observation.
- (5) Classification counts were only collected on Old Lake Wilson Road from Osceola Polk Line Road (CR 532) to Sinclair Road. Classification counts were not collected on side streets, so sidestreet specific vehicle classification data were not available.
- (6) Truck percentages by category on side streets were estimated by using the peak hour intersection sidestreet approach heavy vehicle percentages. The breakdown of heavy vehicle types were assumed to be proportional to that of Old Lake Wilson Road.
- (7) Axle data for I-4 mainline and ramp, and I-4 ramp DDHV, obtained from Noise Study Addendum: Segment 1 (west of CR 532/Polk/Osceola County Line) to west of SR 528), Stantec Consulting, Inc.

Noise Analysis Traffic Data - Old Lake Wilson Road PD&E from Osceola Polk Line Road (CR 532) to Sinclair Road
No Build (2050) Conditions

Old Lake Wilson Road														
Mainline Traffic Segment	Number of Lanes	AADT	LOS C AADT	Peak Hour Peak Direction	Off Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	Standard K-factor	D-factor	Posted Speed (mph)
Old Lake Wilson Road, South of Osceola Polk Line Road (CR 532)	4	31,000	34,100	1,400	1,300	1,720	4.10%	2.85%	1.06%	0.39%	0.21%	9.0%	51.0%	45
Old Lake Wilson Road from Osceola Polk Line Road (CR 532) to Shoppes at Reunion	4	35,500	35,800	2,000	1,200	1,800	10.03%	6.48%	2.60%	0.95%	0.52%	9.0%	63.0%	45
Old Lake Wilson Road from Shoppes at Reunion to Excitement Drive	2	35,500	15,900	2,000	1,200	780	10.03%	6.48%	2.60%	0.95%	0.52%	9.0%	63.0%	45
Old Lake Wilson Road from Excitement Drive to Spine Road	2	35,500	15,100	2,000	1,200	750	10.03%	6.48%	2.60%	0.95%	0.52%	9.0%	63.0%	55
Old Lake Wilson Road from Spine Road to Assembly Court	2	33,500	15,900	1,900	1,100	780	7.56%	3.73%	3.08%	0.75%	0.60%	9.0%	63.0%	55
Old Lake Wilson Road from Assembly Court to Fairfax Drive/Marker Avenue	2	33,500	15,900	1,900	1,100	780	7.56%	3.73%	3.08%	0.75%	0.60%	9.0%	63.0%	45
Old Lake Wilson Road from Fairfax Drive/Marker Avenue to Sinclair Road	2	34,500	15,900	2,000	1,200	780	7.52%	3.85%	2.99%	0.68%	0.53%	9.0%	63.0%	45
Old Lake Wilson Road, North of Sinclair Road	4	38,000	35,800	2,400	1,100	1,800	2.50%	1.28%	0.99%	0.23%	0.18%	9.0%	69.0%	45
Intersecting Roadways														
Arterial Traffic Segment	Number of Lanes	AADT	LOS C AADT	Peak Hour Peak Direction	Off Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	K-factor	D-factor	Posted Speed (mph)
Osceola Polk Line Road (CR 532)														
Osceola Polk Line Road (CR 532) - West of Old Lake Wilson Road	4	40,500	35,800	2,000	1,700	1,800	6.80%	4.38%	1.77%	0.64%	0.35%	9.0%	54.0%	45
Osceola Polk Line Road (CR 532) - East of Old Lake Wilson Road	4	43,000	35,800	2,200	1,600	1,800	7.80%	5.04%	2.02%	0.74%	0.40%	9.0%	58.0%	50
Excitement Drive														
Excitement Drive - East of Old Lake Wilson Road	2	2,000	6,900	100	80	300	0.00%	0.00%	0.00%	0.00%	0.00%	9.0%	58.0%	25
Spine Road														
Spine Road - West of Old Lake Wilson Road	2	11,500	6,900	550	300	300	1.70%	0.97%	0.57%	0.17%	0.11%	9.0%	56.0%	25
Assembly Court														
Assembly Court - East of Old Lake Wilson Road	2	600	6,900	30	20	300	0.00%	0.00%	0.00%	0.00%	0.00%	9.0%	-	25
Fairfax Drive/Marker Avenue														
Fairfax Drive - West of Old Lake Wilson Road	2	2,000	6,900	100	80	300	3.10%	1.56%	1.25%	0.30%	0.23%	9.0%	-	25
Marker Avenue - East of Old Lake Wilson Road	2	1,500	6,900	90	50	300	4.50%	2.26%	1.81%	0.43%	0.34%	9.0%	-	25
Sinclair Road														
Sinclair Road - West of Old Lake Wilson Road	4	22,500	13,700	1,200	900	700	8.60%	4.40%	3.42%	0.78%	0.61%	9.0%	57.0%	35
I-4														
I-4 Traffic Segment (Existing Geometry)	Number of Lanes	AADT	LOS C AADT	Peak Hour Peak Direction	Off Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	Standard K-factor	D-factor	Posted Speed (mph)
I-4 EB	3	-	-	-	-	4,650	4.88%	1.83%	3.25%	-	-	-	-	65
I-4 WB	3	-	-	-	-	4,650	4.88%	1.83%	3.25%	-	-	-	-	65
I-4 WB ramp to SR 429 NB	1	-	-	291	-	-	2.06%	0.69%	1.37%	-	-	-	-	40
SR 429 ramp to EB I-4	1	-	-	388	-	-	2.06%	1.03%	1.03%	-	-	-	-	40

Notes

- (1) Posted speed data are obtained by field observation.
- (2) Arterial design hour LOS C maximum service volumes are obtained from *FDOT 2020 Generalized Service Volume Tables*.
- (3) Arterial K and D factors are obtained from the Project Traffic Analysis Report.
- (4) Number of lanes are obtained by field observation.
- (5) Classification counts were only collected on Old Lake Wilson Road from Osceola Polk Line Road (CR 532) to Sinclair Road. Classification counts were not collected on side streets, so side street specific vehicle classification data were not available.
- (6) Truck percentages by category on side streets were estimated by using the peak hour intersection side street approach heavy vehicle percentages. The breakdown of heavy vehicle types were assumed to be proportional to that of Old Lake Wilson Road.
- (7) Axle data for I-4 mainline and ramp, and I-4 ramp DDHV, obtained from Noise Study Addendum: Segment 1 (west of CR 532/Polk/Osceola County Line) to west of SR 528), Stantec Consulting, Inc.

Noise Analysis Traffic Data - Old Lake Wilson Road PD&E from Osceola Polk Line Road (CR 532) to Sinclair Road
Build (2050) Conditions

Old Lake Wilson Road														
Mainline Traffic Segment	Number of Lanes	AADT	LOS C AADT	Peak Hour Peak Direction	Off Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	Standard K-factor	D-factor	Posted Speed (mph)
Old Lake Wilson Road, South of Osceola Polk Line Road (CR 532)	4	31,000	35,800	1,400	1,300	1,800	2.05%	1.32%	0.53%	0.19%	0.10%	9.0%	51.0%	45
Old Lake Wilson Road from Osceola Polk Line Road (CR 532) to Shoppes at Reunion	4	35,500	35,800	2,000	1,200	1,800	5.00%	3.23%	1.30%	0.48%	0.25%	9.0%	63.0%	45
Old Lake Wilson Road from Shoppes at Reunion to Excitement Drive	4	35,500	35,800	2,000	1,200	1,800	5.00%	3.23%	1.30%	0.48%	0.25%	9.0%	63.0%	45
Old Lake Wilson Road from Excitement Drive to Spine Road	4	35,500	34,100	2,000	1,200	1,720	5.00%	3.23%	1.30%	0.48%	0.25%	9.0%	63.0%	45
Old Lake Wilson Road from Spine Road to Assembly Court	4	33,500	35,800	1,900	1,100	1,800	3.75%	1.85%	1.53%	0.38%	0.30%	9.0%	63.0%	45
Old Lake Wilson Road from Assembly Court to Fairfax Drive/Marker Avenue	4	33,500	35,800	1,900	1,100	1,800	3.75%	1.85%	1.53%	0.38%	0.30%	9.0%	63.0%	45
Old Lake Wilson Road from Fairfax Drive/Marker Avenue to Sinclair Road	4	34,500	35,800	2,000	1,200	1,800	3.75%	1.93%	1.50%	0.33%	0.25%	9.0%	63.0%	45
Old Lake Wilson Road, North of Sinclair Road	4	38,000	35,800	2,400	1,100	1,800	1.25%	0.64%	0.50%	0.11%	0.08%	9.0%	69.0%	45
Intersecting Roadways														
Arterial Traffic Segment	Number of Lanes	AADT	LOS C AADT	Peak Hour Peak Direction	Off Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	K-factor	D-factor	Posted Speed (mph)
Osceola Polk Line Road (CR 532)														
Osceola Polk Line Road (CR 532) - West of Old Lake Wilson Road	4	40,500	35,800	2,000	1,700	1,800	3.40%	2.19%	0.88%	0.32%	0.17%	9.0%	54.0%	45
Osceola Polk Line Road (CR 532) - East of Old Lake Wilson Road	4	43,000	35,800	2,200	1,600	1,800	3.90%	2.52%	1.01%	0.37%	0.20%	9.0%	58.0%	50
Excitement Drive														
Excitement Drive - East of Old Lake Wilson Road	2	2,000	6,900	100	60	300	0.00%	0.00%	0.00%	0.00%	0.00%	9.0%	56.0%	25
Spine Road														
Spine Road - West of Old Lake Wilson Road	2	11,500	6,900	550	300	300	1.70%	0.97%	0.57%	0.17%	0.11%	9.0%	56.0%	25
Assembly Court														
Assembly Court - East of Old Lake Wilson Road	2	800	6,900	30	20	300	0.00%	0.00%	0.00%	0.00%	0.00%	9.0%	-	25
Fairfax Drive/Marker Avenue														
Fairfax Drive - West of Old Lake Wilson Road	2	2,000	6,900	100	60	300	1.55%	0.78%	0.63%	0.14%	0.11%	9.0%	-	25
Marker Avenue - East of Old Lake Wilson Road	2	1,500	6,900	90	50	300	2.25%	1.13%	0.91%	0.21%	0.17%	9.0%	-	25
Sinclair Road														
Sinclair Road - West of Old Lake Wilson Road	4	22,500	13,700	1,200	900	700	4.30%	2.21%	1.72%	0.37%	0.29%	9.0%	57.0%	35
I-4														
I-4 Traffic Segment (Existing Geometry)	Number of Lanes	AADT	LOS C AADT	Peak Hour Peak Direction	Off Peak Hour Peak Direction	LOS C Peak Hour Peak Direction	Design Hr. % T	Design Hr. % MT	Design Hr. % HT	Design Hr. % Buses	Design Hr. % Motorcycles	Standard K-factor	D-factor	Posted Speed (mph)
I-4 EB	3	-	-	-	-	4,650	4.88%	1.63%	3.25%	-	-	-	-	65
I-4 WB	3	-	-	-	-	4,650	4.88%	1.63%	3.25%	-	-	-	-	65
I-4 WB ramp to SR 429 NB	1	-	-	291	-	-	2.06%	0.69%	1.37%	-	-	-	-	40
SR 429 ramp to EB I-4	1	-	-	388	-	-	2.06%	1.03%	1.03%	-	-	-	-	40

Notes

- Posted speed data are obtained by field observation.
- Arterial design hour LOS C maximum service volumes are obtained from *FDOT 2020 Generalized Service Volume Tables*.
- Arterial K and D factors are obtained from the Project Traffic Analysis Report.
- Number of lanes are obtained by field observation.
- Classification counts were only collected on Old Lake Wilson Road from Osceola Polk Line Road (CR 532) to Sinclair Road. Classification counts were not collected on side streets, so sidestreet specific vehicle classification data were not available.
- Truck percentages by category on side streets were estimated by using the peak hour intersection sidestreet approach heavy vehicle percentages. The breakdown of heavy vehicle types were assumed to be proportional to that of Old Lake Wilson Road.
- Axle data for I-4 mainline and ramp, and I-4 ramp DDHV, obtained from Noise Study Addendum: Segment 1 (west of CR 532/Polk/Osceola County Line) to west of SR 528), Stantec Consulting, Inc.

Appendix C: Predicted Noise Levels



Noise Sensitive Sites				Predicted Noise Levels dB(A)				
				2020 Existing	2050 No-Build	2050 Build Design Year		
Representative Receptor	# Sites	Activity Category	NAC Impact Criterion [dB(A)]			Project Noise Level	Change From Existing	Consider Abatement
NSA 1: East of Old Lake Wilson Rd from Osceola Polk Line Rd to Excitement Dr- Illustrated on Appendix D page D-1								
No Noise Sensitive Sites are located in this NSA								
NSA 2: East of Old Lake Wilson Rd from Excitement Dr to Gathering Dr - Illustrated on Appendix D pages D-1 and D-2								
THE TERRACES - Illustrated on page D-1								
2-1	1	E	71.0	53.9	57.3	57.5	3.6	
2-2	1	B	66.0	53.3	56.7	57.2	3.9	
Community Summary (Totals/Averages)	2			53.6	57.0	57.4	3.8	0
SEVEN EAGLES - Illustrated on page D-2								
2-3a	2	E	71.0	57.3	58.8	60.8	3.5	
2-3b				65.0	65.9	66.0	1.0	
2-4a	2	B	66.0	64.3	65.2	65.8	1.5	
2-4b				67.5	68.2	69.3	1.8	Yes
2-5a	1	E	71.0	54.2	55.7	57.4	3.2	
2-5b				58.0	59.2	60.2	2.2	
Community Summary (Totals/Averages)	5			61.1	62.2	63.3	2.2	2
RECREATIONAL - Illustrated on pages D-1 and D-2								
SLU2-1 (Golf)	1	C	66.0	56.4	58.7	59.0	2.6	
SLU2-2 (Golf)	1	C	66.0	56.9	58.4	58.0	1.1	
SLU2-3 (Golf)	1	C	66.0	58.2	59.7	59.0	0.8	
SLU2-4 (Golf)	1	C	66.0	55.6	57.4	57.8	2.2	
SLU2-5 (Golf)	1	C	66.0	53.7	55.1	57.1	3.4	
Community Summary (Totals/Averages)	5			56.2	57.9	58.2	2.0	0
NSA 2 Summary	11							2
NSA 3: West of Old Lake Wilson Rd from Osceola Polk Line Rd to Gathering Dr- Illustrated on Appendix D pages D-1 and D-2								
HERITAGE CROSSING - Illustrated on page D-1								
3-1a	6	B	66.0	64.7	66.0	67.8	3.1	Yes
3-1b	4	B	66.0	68.4	69.5	70.2	1.8	Yes
3-1c	2	B	66.0	68.2	69.5	70.1	1.9	Yes
3-1c	2	E	71.0	68.2	69.5	70.1	1.9	
3-2a	4	B	66.0	64.6	65.8	67.3	2.7	Yes
3-2a	2	E	71.0	64.6	65.8	67.3	2.7	
3-2b	2	B	66.0	68.5	69.5	69.7	1.2	Yes
3-2b	2	E	71.0	68.5	69.5	69.7	1.2	
3-2c	4	B	66.0	68.4	69.5	69.8	1.4	Yes
Community Summary (Totals/Averages)	28			67.1	68.3	69.1	2.0	22
CENTER COURT RIDGE - Illustrated on page D-2								
3-3a	6	B/E	66.0/71.0	55.5	56.9	58.1	2.6	
3-3b	6	B/E	66.0/71.0	59.9	60.9	61.5	1.6	

Noise Sensitive Sites				Predicted Noise Levels dB(A)				
				2020 Existing	2050 No-Build	2050 Build Design Year		
Representative Receptor	# Sites	Activity Category	NAC Impact Criterion [dB(A)]			Project Noise Level	Change From Existing	Consider Abatement
3-3c	6	B/E	66.0/71.0	62.4	63.2	62.9	0.5	
3-3d	4	B/E	66.0/71.0	62.5	63.4	63.5	1.0	
3-4a	6	B/E	66.0/71.0	50.4	51.8	53.4	3.0	
3-4b	6	B/E	66.0/71.0	54.3	55.4	56.3	2.0	
3-4c	6	B/E	66.0/71.0	56.2	57.2	57.7	1.5	
3-4d	4	B/E	66.0/71.0	57.9	58.7	58.5	0.6	
Community Summary (Totals/Averages)	44			57.4	58.4	59.0	1.6	0
RECREATIONAL - Illustrated on pages D-1 and D-2								
SLU3-1 (Golf)	1	C	66.0	57.7	59.1	58.9	1.2	
SLU3-2 (Golf)	1	C	66.0	50.0	51.8	52.1	2.1	
SLU3-3 (Racquet)	1	C	66.0	62.8	63.8	64.2	1.4	
Community Summary (Totals/Averages)	3			56.8	58.2	58.4	1.6	0
NSA 3 Summary	75							22
NSA 4: East of Old Lake Wilson Rd from Gathering Dr to Assembly Ct - Illustrated on Appendix D pages D-2 thru D-3								
CARRIAGE POINTE- Illustrated on page D-3								
4-1a	12	B/E	66.0/71.0	54.0	55.1	56.2	2.2	
4-1b				58.2	58.9	60.0	1.8	
4-2a	12	B/E	66.0/71.0	53.9	54.9	56.6	2.7	
4-2b				58.0	58.8	60.3	2.3	
4-3a	13	B/E	66.0/71.0	53.8	54.8	56.7	2.9	
4-3b				57.9	58.7	59.8	1.9	
4-4a	3	B/E	66.0/71.0	54.5	55.5	57.8	3.3	
4-4b				58.9	59.7	60.8	1.9	
4-5a	5	B/E	66.0/71.0	59.1	59.8	61.0	1.9	
4-5b				62.9	63.4	64.1	1.2	
4-6a	5	B/E	66.0/71.0	59.8	60.7	60.9	1.1	
4-6b				63.2	63.9	64.6	1.4	
4-7a	1	B	66.0	63.6	64.4	64.4	0.8	
4-7b				66.8	67.5	67.5	0.7	Yes
4-8a	1	E	71.0	63.7	64.5	65.0	1.3	
4-8b				67.0	67.6	67.5	0.5	
Community Summary (Totals/Averages)	52			59.7	60.5	61.5	1.7	1
THE GRANDE TOWER- Illustrated on page D-2								
4-9b	6	E	71.0	60.9	61.7	62.6	1.7	
4-9c	6	E	71.0	61.9	62.8	63.3	1.4	
4-9d	6	E	71.0	62.9	63.7	63.9	1.0	
4-9e	6	E	71.0	63.1	63.9	64.1	1.0	
4-9f	6	E	71.0	63.1	63.9	64.1	1.0	
4-9g	6	E	71.0	63.0	63.8	64.1	1.1	
4-9h	6	E	71.0	63.0	63.8	64.2	1.2	
4-9i	6	E	71.0	62.9	63.8	64.2	1.3	
4-9j	6	E	71.0	63.0	63.8	64.1	1.1	
Community Summary (Totals/Averages)	54			62.6	63.5	63.8	1.2	0

Noise Sensitive Sites				Predicted Noise Levels dB(A)				
				2020 Existing	2050 No-Build	2050 Build Design Year		
Representative Receptor	# Sites	Activity Category	NAC Impact Criterion [dB(A)]			Project Noise Level	Change From Existing	Consider Abatement
RECREATIONAL - Illustrated on pages D-2 and D-3								
SLU4-1 (Golf)	1	C	66.0	55.8	56.9	57.5	1.7	
SLU4-2 (Golf)	1	C	66.0	56.3	57.5	59.7	3.4	
SLU4-3 (Golf)	1	C	66.0	60.7	61.4	62.3	1.6	
Community Summary (Totals/Averages)	3			57.6	58.6	59.8	2.2	0
NSA 4 Summary	109							1
NSA 5: West of Old Lake Wilson Rd from Gathering Dr to Spine Rd - Illustrated on Appendix D pages D-2 thru D-3								
VILLAS SOUTH - Illustrated on pages D-2								
5-1a	6	B/E	66.0/71.0	53.1	54.2	55.4	2.3	
5-1b	6	B/E	66.0/71.0	57.5	58.3	59.1	1.6	
5-1c	6	B/E	66.0/71.0	58.8	59.6	60.1	1.3	
5-1d	4	B/E	66.0/71.0	59.4	60.2	60.6	1.2	
5-2a	6	B/E	66.0/71.0	53.9	55.0	56.4	2.5	
5-2b	6	B/E	66.0/71.0	58.5	59.3	59.9	1.4	
5-2c	6	B/E	66.0/71.0	59.6	60.4	60.9	1.3	
5-2d	4	B/E	66.0/71.0	60.3	61.0	61.4	1.1	
5-3a	6	B/E	66.0/71.0	53.8	54.9	56.5	2.7	
5-3b	6	B/E	66.0/71.0	58.4	59.2	60.0	1.6	
5-3c	6	B/E	66.0/71.0	59.6	60.4	61.0	1.4	
5-3d	4	B/E	66.0/71.0	60.3	61.0	61.4	1.1	
Community Summary (Totals/Averages)	66			57.8	58.6	59.4	1.6	0
RECREATIONAL - Illustrated on page D-3								
SLU5-1 (Golf)	1	C	66.0	54.4	55.6	56.0	1.6	
Community Summary (Totals/Averages)	1			54.4	55.6	56.0	1.6	0
NSA 5 Summary (Totals/Averages)	67							0
NSA 6: West of Old Lake Wilson Rd from Spine Rd to Assembly Ct - Illustrated on Appendix D page D-3								
VILLAS NORTH - Illustrated on page D-3								
6-1a	1	B	66.0	60.0	61.0	61.7	1.7	
6-1b	1	B	66.0	64.2	64.9	65.8	1.6	
6-1c	1	B	66.0	65.8	66.5	66.9	1.1	Yes
6-2a	3	B	66.0	56.1	57.0	58.3	2.2	
6-2a	1	E	71.0	56.1	57.0	58.3	2.2	
6-2b	2	B	66.0	60.2	60.9	62.0	1.8	
6-2b	2	E	71.0	60.2	60.9	62.0	1.8	
6-2c	2	B	66.0	62.1	62.7	63.5	1.4	
6-2c	2	E	71.0	62.1	62.7	63.5	1.4	
6-2d	4	B	66.0	63.2	63.8	64.3	1.1	
6-3a	1	B	66.0	54.5	55.1	56.5	2.0	
6-3b	1	B	66.0	58.1	58.6	59.7	1.6	
6-3c	1	B	66.0	59.9	60.3	61.3	1.4	
6-4a	1	B	66.0	54.7	55.3	57.1	2.4	



Noise Sensitive Sites				Predicted Noise Levels dB(A)				
				2020 Existing	2050 No-Build	2050 Build Design Year		
Representative Receptor	# Sites	Activity Category	NAC Impact Criterion [dB(A)]			Project Noise Level	Change From Existing	Consider Abatement
6-4b	1	B	66.0	58.4	59.0	59.8	1.4	
6-4c	1	B	66.0	60.0	60.4	61.4	1.4	
6-5a	3	B	66.0	54.1	54.6	56.2	2.1	
6-5a	1	E	71.0	54.1	54.6	56.2	2.1	
6-5b	3	B	66.0	57.5	57.9	58.6	1.1	
6-5b	1	E	71.0	57.5	57.9	58.6	1.1	
6-5c	4	B	66.0	59.2	59.6	60.4	1.2	
6-5d	4	B	66.0	60.8	61.1	61.9	1.1	
6-6a	1	B	66.0	53.9	54.2	55.6	1.7	
6-6b	1	B	66.0	57.1	57.5	58.0	0.9	
6-6c	1	B	66.0	59.2	59.5	60.1	0.9	
6-7a	1	B	66.0	56.6	57.6	61.4	4.8	
6-7b	1	B	66.0	62.1	62.7	64.8	2.7	
6-7c	1	B	66.0	64.9	65.5	65.9	1.0	
6-8a	3	B	66.0	55.8	56.5	59.5	3.7	
6-8a	1	E	71.0	55.8	56.5	59.5	3.7	
6-8b	4	B	66.0	59.6	60.1	62.5	2.9	
6-8c	4	B	66.0	63.3	63.8	64.2	0.9	
6-8d	4	B	66.0	64.6	65.0	65.2	0.6	
6-9a	1	B	66.0	55.9	56.4	59.1	3.2	
6-9b	1	B	66.0	59.3	59.7	61.8	2.5	
6-9c	1	B	66.0	62.1	62.4	63.7	1.6	
6-10a	1	B	66.0	53.7	54.6	57.6	3.9	
6-10b	1	B	66.0	57.6	58.1	60.6	3.0	
6-10c	1	E	71.0	60.2	60.6	62.2	2.0	
6-11a	1	B	66.0	54.1	54.6	57.1	3.0	
6-11a	3	E	71.0	54.1	54.6	57.1	3.0	
6-11b	4	B	66.0	57.5	57.9	60.0	2.5	
6-11c	3	B	66.0	60.3	60.5	62.0	1.7	
6-11c	1	E	71.0	60.3	60.5	62.0	1.7	
6-11d	4	B	66.0	62.7	62.9	63.9	1.2	
6-12a	1	B	66.0	56.5	56.7	57.9	1.4	
6-12b	1	B	66.0	59.9	60.1	61.0	1.1	
6-12c	1	B	66.0	62.8	62.9	63.6	0.8	
Community Summary (Totals/Averages)	88			58.9	59.4	60.8	1.9	1
RECREATIONAL - Illustrated on page D-3								
SLU 6-1 (Golf)	1	C	66.0	55.9	56.6	59.8	3.9	
SLU 6-2 (Pool)	1	C	66.0	55.7	56.3	59.0	3.3	
Community Summary (Totals/Averages)	2			55.8	56.5	59.4	3.6	0
NSA 6 Summary (Totals/Averages)	90							1
NSA 7: East of Old Lake Wilson Rd from Assembly Ct to Marker Ave- Illustrated on Appendix D page D-4								
ENCORE RESORT (EAST)								
7-1	1	E	71.0	67.8	67.8	67.9	0.1	
7-2	1	E	71.0	66.5	66.6	66.7	0.2	
7-3	1	E	71.0	65.5	65.7	65.9	0.4	
7-4	1	E	71.0	65.3	65.6	65.9	0.6	

Noise Sensitive Sites				Predicted Noise Levels dB(A)				
				2020 Existing	2050 No-Build	2050 Build Design Year		
Representative Receptor	# Sites	Activity Category	NAC Impact Criterion [dB(A)]			Project Noise Level	Change From Existing	Consider Abatement
7-5	2	E	71.0	63.5	64.1	64.9	1.4	
7-6	1	B	66.0	62.9	63.7	65.5	2.6	
7-7	1	E	71.0	62.5	63.3	65.2	2.7	
7-8	1	B	66.0	62.3	63.1	65.2	2.9	
7-9	1	E	71.0	61.9	62.8	64.9	3.0	
7-10	1	E	71.0	61.5	62.5	64.4	2.9	
7-11	1	E	71.0	57.9	58.9	59.8	1.9	
7-12	1	E	71.0	56.5	57.4	58.0	1.5	
7-13	1	B	66.0	58.0	59.2	59.6	1.6	
7-14	1	E	71.0	59.7	60.9	63.0	3.3	
7-15	1	E	71.0	61.1	62.3	65.5	4.4	
7-16	1	B	66.0	63.1	64.4	68.2	5.1	Yes
7-17	1	E	71.0	60.8	62.0	64.6	3.8	
7-18	1	E	71.0	58.3	59.4	60.6	2.3	
NSA 7/Community Summary (Totals/Averages)	19			61.9	62.7	64.2	2.3	1
NSA 8: East of Old Lake Wilson Rd from Marker Ave to Sinclair Rd - Illustrated on Appendix D page D-5								
ENCORE RESORT (EAST)								
8-1	1	E	71.0	60.8	62.1	64.7	3.9	
8-2	6	E	71.0	63.7	64.7	66.5	2.8	
8-3	1	E	71.0	62.2	63.3	63.7	1.5	
8-4	1	E	71.0	60.0	61.1	60.4	0.4	
8-5	1	B	66.0	60.1	61.2	61.2	1.1	
8-6	6	E	71.0	64.3	65.2	67.7	3.4	
8-7	3	E	71.0	63.7	64.7	67.7	4.0	
8-8	3	E	71.0	63.4	64.4	67.5	4.1	
8-9	2	E	71.0	62.5	63.5	64.9	2.4	
8-10	1	E	71.0	53.8	55.0	57.0	3.2	
8-11	1	E	71.0	54.2	55.4	57.5	3.3	
8-12	1	E	71.0	54.6	55.8	58.1	3.5	
NSA 8/Community Summary (Totals/Averages)	27			60.3	61.4	63.1	2.8	0
NSA 9: West of Old Lake Wilson Rd from Assembly Ct to Fairfax Dr - Illustrated on Appendix D page D-4								
ENCORE RESORT (WEST)								
9-1a	1	E	71.0	61.8	62.0	61.3	-0.5	
9-1b				66.0	66.1	64.4	-1.6	
9-2a	1	E	71.0	62.2	62.4	61.3	-0.9	
9-2b				67.3	67.4	65.3	-2.0	
9-3a	1	E	71.0	61.5	61.8	60.9	-0.6	
9-3b				68.1	68.2	65.3	-2.8	
9-4a	1	E	71.0	61.3	61.8	60.3	-1.0	
9-4b				68.5	68.6	65.1	-3.4	
9-5	2	E	71.0	59.8	60.1	59.5	-0.3	
9-6	1	B	66.0	59.7	60.0	59.6	-0.1	
9-7	2	E	71.0	60.2	60.6	60.1	-0.1	
9-8	2	B	66.0	59.9	60.6	59.5	-0.4	
9-9	2	E	71.0	60.1	60.8	60.1	0.0	
9-10	1	B	66.0	61.9	62.6	61.7	-0.2	
9-11	1	E	71.0	61.8	62.5	61.6	-0.2	

Noise Sensitive Sites				Predicted Noise Levels dB(A)				
				2020 Existing	2050 No-Build	2050 Build Design Year		
Representative Receptor	# Sites	Activity Category	NAC Impact Criterion [dB(A)]			Project Noise Level	Change From Existing	Consider Abatement
9-12	1	B	66.0	61.0	61.7	61.3	0.3	
9-13	6	E	71.0	62.1	62.8	64.1	2.0	
9-14	1	B	66.0	60.7	61.5	63.6	2.9	
9-15	3	E	71.0	61.2	62.0	64.5	3.3	
9-16	1	B	66.0	61.1	62.1	64.8	3.7	
9-17a	1	E	71.0	59.5	60.9	63.0	3.5	
9-17b				62.0	63.2	65.2	3.2	
9-18a	1	E	71.0	57.7	59.5	61.5	3.8	
9-18b				60.9	62.3	64.2	3.3	
9-19	2	E	71.0	55.9	58.1	59.8	3.9	
NSA 9/Community Summary (Totals/Averages)	31			61.7	62.4	62.3	0.6	0
NSA 10: West of Old Lake Wilson Rd from Fairfax Dr to Sinclair Rd - Illustrated on Appendix D page D-5								
ENCORE RESORT (WEST)								
10-1	1	E	71.0	59.4	61.3	62.5	3.1	
10-2	1	E	71.0	60.4	61.7	63.2	2.8	
10-3	1	E	71.0	61.7	62.8	64.7	3.0	
10-4	1	E	71.0	63.5	64.6	68.0	4.5	
10-5	4	E	71.0	65.0	66.0	70.1	5.1	
10-6	9	E	71.0	63.6	64.6	69.0	5.4	
10-7	1	B	66.0	63.5	64.4	69.1	5.6	Yes
10-8	5	E	71.0	63.1	64.1	68.8	5.7	
10-9	3	E	71.0	62.7	63.6	67.3	4.6	
10-10	3	E	71.0	62.9	63.8	67.2	4.3	
10-11	1	E	71.0	65.0	65.8	69.2	4.2	
10-12	1	E	71.0	53.4	55.0	57.8	4.4	
10-13	1	E	71.0	53.4	55.0	58.0	4.6	
10-14	1	E	71.0	54.0	55.7	58.6	4.6	
10-15	2	E	71.0	55.0	56.8	59.5	4.5	
10-16	2	E	71.0	51.2	53.6	55.5	4.3	
10-17	1	E	71.0	64.8	68.0	68.6	3.8	
10-18	1	E	71.0	64.7	68.1	68.4	3.7	
10-19	1	E	71.0	64.7	68.0	68.3	3.6	
NSA 10/Community Summary (Totals/Averages)	40			60.6	62.3	64.9	4.3	1

Appendix D: Project Aerials

