NOISE STUDY REPORT

Florida Department of Transportation

District One

State Road 544(Lucerne Park Road) from Martin Luther King Boulevard to State Road 17

Project Development and Environment Study

Polk County, Florida

Financial Management Number: 440273-1-22-01

ETDM Number: 5873

Date: 11/8/2023

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 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022 and executed by the Federal Highway Administration and FDOT.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT), District One, is conducting a Project Development and Environment (PD&E) Study to evaluate the improvements to SR 544 (Lucerne Park Road) from Martin Luther King Boulevard to State Road (SR) 17 in Polk County, a length of 7.96 miles. This Noise Study Report (NSR) documents the results of an analysis that was performed for the PD&E Study to identify land uses for which there are Noise Abatement Criteria (NAC) that would be impacted by highway traffic noise in the design year with the improved roadway. Traffic noise levels were predicted for the existing conditions (2019), and future conditions (2045) without the proposed improvements (the No-Build Alternative) and with the improvements (the Build Alternative).

The purpose of this Noise Study Report (NSR) is to identify land uses adjacent to the project corridor for which there are NAC, to evaluate future traffic noise levels at the properties with and without the proposed improvements, and to evaluate the need for, and effectiveness of, noise abatement measures. Additional objectives include the consideration of potential construction noise impacts and the identification of noise impact "contours" adjacent to the corridor.

The analysis was performed following FDOT procedures that comply with Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772), Procedures for Abatement of Highway Traffic Noise and Construction Noise. The evaluation uses methodologies established by the FDOT's traffic noise policy in the FDOT PD&E Manual – Highway Traffic Noise.

The results of the highway traffic noise analysis indicate that 116 residences, a park, and the outdoor use area of a place of worship would be impacted in the future with the Preferred Alternative. Noise abatement measures were considered for the impacted properties.

The Florida Department of Transportation and Polk County are committed to the construction of feasible and reasonable noise abatement measures at noise-impacted locations contingent upon the following conditions:

1. Final recommendations on the construction of abatement measures is 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 District Office; and

5. Safety and engineering aspects as related to the roadway user and the adjacent property owner have been reviewed and any conflicts or issues resolved.

Based on the results of the PD&E Study, the following noise barriers are a potentially reasonable and feasible noise abatement measure:

- Noise Barrier E1: Winter Ridge Condominiums. The optimal barrier is 453 feet long, and 16 feet tall. It benefits all 12 of the impacted receptors and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $217,440 or $18,120 per benefited receptor.

- Noise Barrier E2: Lake Point Landing and Adjacent Residence. The optimal barrier is 472 feet long and 10 feet tall. It benefits all 10 of the impacted receptors and an additional 6 receptors and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $141,600 or $8,850 per benefited receptor.

- Noise Barrier E4: Lake Smart Estates. The optimal barrier is 755 feet long and 10 feet tall. It benefits all 10 of the impacted receptors and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $226,500 or $22,650 per benefited receptor.

- Noise Barrier E5: Brookhaven Village. The optimal barrier is 992 feet long and 12 feet tall. It benefits all 10 of the impacted receptors, and five additional receptors, and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $357,120 or $23,808 per benefited receptor.

- Noise Barrier W2: Lake Rochelle Estates. The optimal barrier is 567 feet long and 12 feet tall. It benefits all 3 of the impacted receptors, and 3 additional receptors, and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $204,120 or $34,020 per benefited receptor.

- Noise Barrier W3: Lake'n Golf Estates, Fairview Village, and Lakeside Ranch. The optimal barrier is 1,455 feet long and 12 feet tall. It benefits 13 of the 16 impacted receptors, and 8 additional receptors, and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $523,800 or $24,943 per benefited receptor.

- Noise Barrier W4: Residences from Pomona Street to 5th Street South. The optimal barrier is 876 feet long and 14 feet tall. It benefits 4 of the 11 impacted receptors, and 6 additional receptors, and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $367,920 or $36,792 per benefited receptor.

Section 6.0 of this NSR provides distances from the edge of the nearest travel lane with the proposed improvements at which noise levels are predicted to approach, meet, or exceed the NAC for the land uses designated as Activity Category A, B/C, and E for the project. This information is provided to assist local officials and developers in promoting noise compatible land uses.

1.0 INTRODUCTION

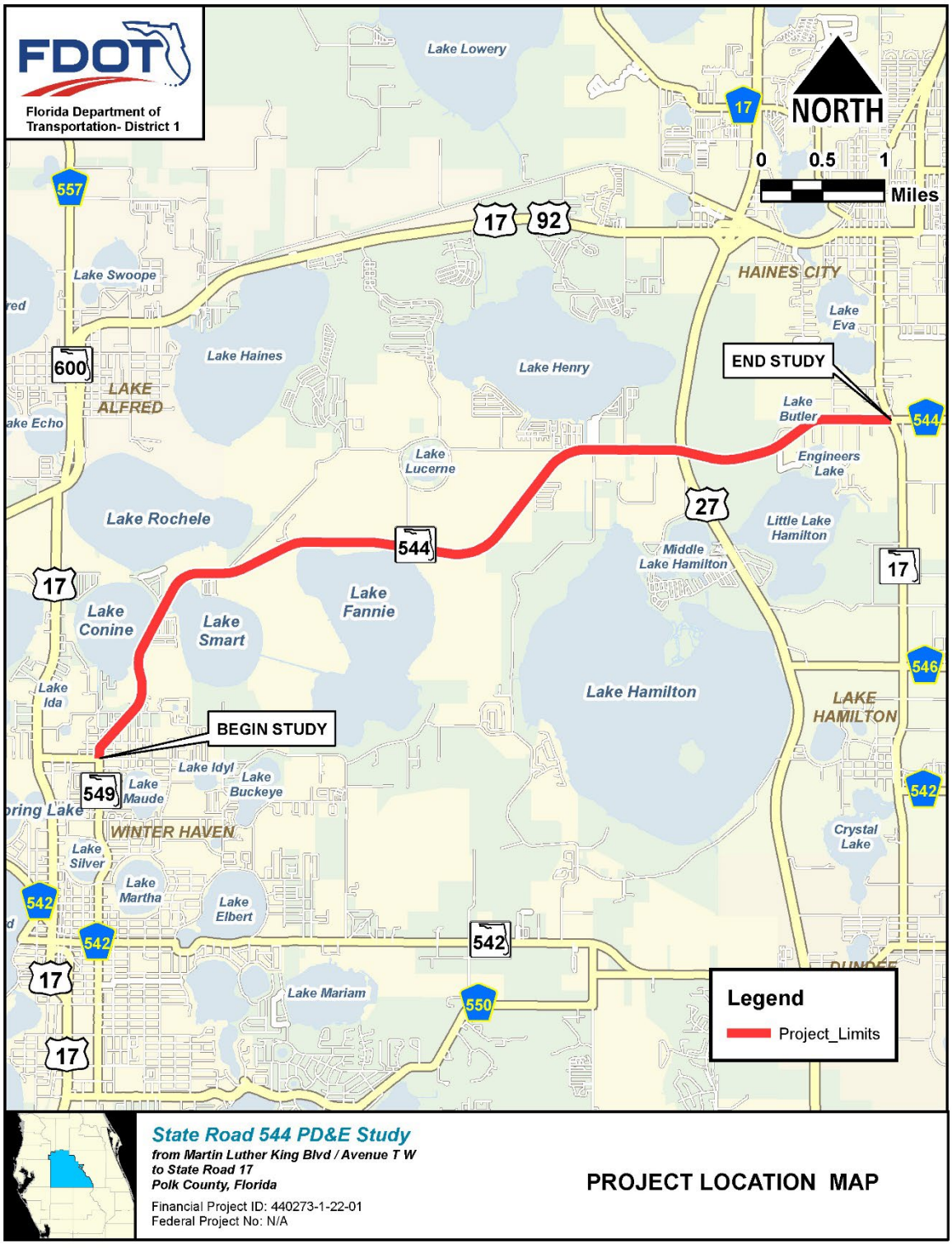
This project involves capacity and multi-modal improvements to SR 544 (Lucerne Park Road) from Martin Luther King Boulevard to State Road (SR) 17 in Polk County, a length of 7.96 miles. The project location map is provided in **Figure 1-1**. The project corridor traverses three jurisdictions: the City of Winter Haven, Polk County, and Haines City. SR 544 plays an important role in the regional network by providing east-west access for a growing area of east-central Polk County. It links two north-south principal arterials of Polk County (US 17 and US 27), US 27 being part of Florida's Strategic Intermodal System (SIS) and connects the cities of Winter Haven and Haines City, the second and third most populated cities within Polk County, respectively.

SR 544 is classified as a two-lane urban minor arterial from Martin Luther King Boulevard to US 27 and as an urban collector from US 27 to SR 17. The roadway features two twelve-foot travel lanes with center and right turn lanes dispersed throughout the length of the corridor. The roadway also features an open drainage system; however, curbs and gutters exist from Martin Luther King Boulevard to Avenue Y and from La Vista Drive to SR 17 and in other areas where sidewalks are present.

Paved shoulders are present for the majority of the corridor and marked bicycle lanes exist on both sides of the roadway from 0.10 mile west of Brenton Manor Avenue to 0.2 mile east of US 27. The posted speed limit along the corridor ranges from 35 miles per hour to 55 miles per hour. Citrus Connection Route #60 (Winter Haven Northeast) operates along the eastern portion of the project corridor. Existing right-of-way along SR 544 ranges from 50 feet to 85 feet from Martin Luther King Boulevard to Avenue Y, 90 feet to 170 feet from Avenue Y to US 27, and 60 feet to 140 feet from US 27 to SR 17.

In addition to widening from two to four lanes, the proposed improvements may include paved shoulders/marked bicycle lanes, sidewalks, and/or a shared-use path to provide safe bicycle and pedestrian mobility and meet objectives of the Polk Transportation Planning Organization (TPO) in transforming this corridor into a Complete Street. Additional right-of-way may be required depending on the proposed improvements and specific right-of-way requirements will be determined during this Project Development and Environment (PD&E) Study.

Figure 1-1: Project Location Map



2.0 PURPOSE AND NEED

The purpose of this project is to address roadway capacity deficiency along SR 544 (Lucerne Park Road) from Martin Luther King Boulevard to SR 17 in Polk County to accommodate future travel demand as a result of projected population and employment growth in the area. Other goals of the project include enhancing mobility options and multi-modal access as well as supporting local economic development initiatives. The need for the project is based on the following criteria:

CAPACITY/TRANSPORTATION DEMAND: Improve Operational Conditions and Accommodate Projected Travel Demand

This project is anticipated to improve traffic operations along SR 544 by increasing operational capacity to meet the projected travel demand as a result of Polk County population and employment growth and increased regional travel in the corridor.

The project segment occurs within two of the eight Polk County planning areas [Central Planning Area and East Planning Area] as depicted in Momentum 2040 [the Polk Transportation Planning Organization's (TPO) Long Range Transportation Plan (LRTP)]. Of the eight planning areas, the East Planning Area is expected to experience the highest increase in population growth between 2010 and 2040 with a 29% increase in single-family dwelling units and a 34% increase in multi-family dwelling units. The Central Planning Area is anticipated to experience the second highest increase in single family dwelling units (25% increase) during the same time period. Accordingly, the Central Planning Area will experience the highest increase in employment growth between 2010 and 2040 with a 42% increase in industrial employment, 34% increase in commercial employment, and a 32% increase in service employment. Likewise, the East Planning Area will experience the second highest increase in commercial employment (26% increase) and the third highest increase in service employment (21% increase) during the same time period. Countywide employment is expected to increase by 79% between 2010 and 2040. Growth within the project area may be attributed to the numerous developments that have been approved and continue to be approved by the City of Haines City.

The greater SR 544 corridor serves commuters of the area as it provides access to regional transportation facilities [including US 92, US 17, US 27, and SR 17] as well as residential and commercial hubs within central Polk County. The project segment of SR 544 specifically facilitates local commuter traffic between the population and employment centers of Winter Haven and Haines City. Identified as a Secondary Freight Network Highway Corridor by the Polk TPO, SR 544 additionally serves as a freight distribution route as it connects to a Strategic Intermodal System (SIS) Highway Corridor [US 27], Regional Freight Network Highway Corridors as designated by the Polk TPO [US 92, US 27, and SR 17], and another designated Polk TPO Secondary Freight Network Highway Corridor [US 17]. Truck traffic composes between 7.0% and 9.9 % of the total daily traffic present along the project segment of SR 544. As such, this roadway plays an important role in facilitating truck traffic and the distribution of goods to both local and regional destinations.

While the roadway currently operates at an acceptable LOS, conditions are anticipated to deteriorate below established standards if no improvements occur by 2040 as the roadway lacks the capacity to accommodate the projected travel demand. With the proposed improvement, the corridor is expected to continue to operate at acceptable LOS or improved LOS.

MODAL INTERRELATIONSHIPS: Enhance Mobility Options and Multi-Modal Access

Notable pedestrian and bicycle traffic in the corridor was observed in the field despite the fact that sidewalks and bicycle lanes are intermittent and disconnected along the corridor. In addition, a large transit dependent population is present, composed primarily of minority and low-income populations as well as housing units with no vehicle available. Compared to the demographic characteristics for Polk County, the project analysis area [which consists of United States census block groups within a 500-foot buffer surrounding the project] contains a significantly higher minority population percentage [20.1% higher], a higher percentage of housing units with no vehicle available [1.2% higher], and a notably lower median family income [$11,246 less]. This indicates a population with a higher propensity to walk, bike, or take transit to access essential services. The need for multi-modal options within the corridor is critical as growth in the area has created a latent demand for increased bicycle and pedestrian activity.

It should be noted that a portion of the project segment [from Ave T to Old Lucerne Park Road] is identified by the Polk TPO as a Future Complete Streets Corridor. A Complete Street is defined as a corridor that is designed to provide safe access and travel for all users [pedestrians, bicyclists, motorists, and transit riders] of all ages and abilities. Some of the treatments proposed as part of the Future Complete Streets Corridor have been applied to a section immediately south/adjacent to the project corridor [from Ave T to Ave O] and to the westernmost/southernmost section of the project segment [Ave T to Ave Y]. These treatments included the reconstruction of driveways to meet Americans with Disabilities Act (ADA) standards, the addition of pedestrian street lighting, and the construction of crosswalks on intersecting minor streets. New or enhanced sidewalks, landscaping, enhanced bus stops, improved signage, as well as a shared use path [Old Dixie Trail – ETDM Project #14328] are some of the additional improvements being considered/evaluated along the project corridor.

Overall, the proposed project is anticipated to meet the mobility needs of the area by alleviating future congestion on the corridor, providing multimodal travel options, and improving east-west access within east-central Polk County. The proposed bicycle and pedestrian facilities are to enhance multi-modal access and connections between community points of interest and to the regional trail network.

SOCIAL DEMANDS AND ECONOMIC DEVELOPMENT: Support Economic Development

One Florida Opportunity Zone [formerly titled Florida Enterprise Zone] borders the northern portion of the project corridor from Old Lucerne Park Road to US 27. This program provides tax incentives for investments in low-income communities. In addition, the easternmost/northernmost section of the project corridor occurs within the Haines City Community Redevelopment Area. Further, the westernmost/ southernmost section of the project [Ave T to Ware Ave] occurs within the Florence Villa Community Redevelopment Area; the Winter Haven Community Redevelopment Agency fosters and promotes community redevelopment activities within this designated district of the City of Winter Haven. Community Redevelopment Areas are recognized as special districts under Florida Statute created to encourage investment within the district through a series of strategic and timely public investments; activities that occur within them are detailed in customized redevelopment plans and include: infrastructure improvements, streetscaping or beautification treatments, affordable housing, recreation and park facility improvements, economic development/redevelopment strategies, transportation improvements, and neighborhood enhancement.

The roadway operational conditions resulting from the project along with the bicycle and pedestrian facilities proposed for the corridor are intended to provide infrastructure to support commerce and customers as well as modal options to serve the Florida Opportunity Zone and other communities along the corridor. It will also renew the aesthetic appeal of the surrounding area, thereby stimulating economic growth/revitalization and investment in the adjacent communities. As such, the project aligns with the economic development initiatives of the proximate, local communities.

3.0 PREFERRED ALTERNATIVE

Below is a summary of the preferred alternative for each roadway segment and intersection.

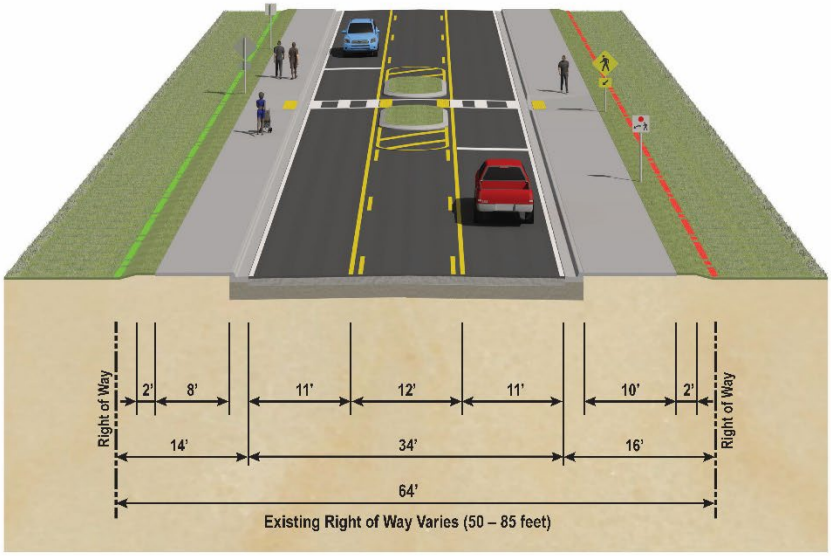
3.1 SEGMENT 1 – MARTIN LUTHER KING BOULEVARD TO NORTH OF AVENUE Y

The preferred typical section in Segment 1 is the three-lane typical section with a best fit alignment. It is slightly wider and will have minor right-of-way impacts (no residential relocations) than the two-lane alternative but will provide additional safety and capacity for turning vehicles with the center turn lane. **Figure 3-1** illustrates this typical section.

The preferred improvement at the Martin Luther King Boulevard intersection is to maintain the existing traffic signal but add a new southbound right turn lane at the intersection. Improvements also include realigning the 1st Street NW intersection with SR 544 farther away from the Martin Luther King Boulevard intersection.

The mini-roundabout with the 90-foot inscribed diameter is recommended at Avenue Y. This concept will minimize impacts to the residences, businesses and church located at this intersection while providing an opportunity for an entrance feature to the historic Florence Villa neighborhood and speed control for vehicles entering the neighborhood.

Figure 3-1: Segment 1 Preferred Typical Section



3.2 SEGMENT 2 – NORTH OF AVENUE Y TO EAST OF LAKE CONINE CANAL

The four-lane divided roadway is proposed with widening to the south side of the road. This alignment is recommended to avoid impacts to the Lake Conine Wetland Restoration Area and due to the proximity of the

road to Lake Conine and wetlands along the lake. **Figure 3-2** illustrates the proposed four-lane divided roadway typical section for Segments 2 through 7.

3.3 SEGMENT 3 – EAST OF LAKE CONINE CANAL TO EAST OF OLD LUCERNE PARK ROAD (WEST END)

The four-lane divided roadway is proposed with widening to the north side of the road. This alignment is recommended to avoid impacts to existing residential developments on the south side of SR 544 and due to the proximity of the road to Lake Smart and wetlands along the lake.

The preferred concept at this intersection is to realign Old Lucerne Park Road (west end) to align with Vista Del Lago Drive and to provide a roundabout at the intersection. The roundabout will help with speed control along SR 544 and improve safety when compared to the traffic signal option.

3.4 SEGMENT 4 – EAST OF OLD LUCERNE PARK ROAD (WEST END) TO EAST OF LUCERNE LOOP ROAD

The four-lane divided roadway is proposed with centered widening. The existing road right-of-way can accommodate the proposed four-lane divided roadway in this segment.

The preferred improvement at this intersection is the roundabout. It will help with speed control along SR 544 and improve safety when compared to the traffic signal option.

3.5 SEGMENT 5 – EAST OF LUCERNE LOOP ROAD TO EAST OF LAKE HAMILTON CANAL

The four-lane divided roadway is proposed with widening to the north side of the road. This alignment is recommended to avoid impacts to the Lake Region Lakes Management District boat ramp on the south side of the road and also to avoid impacts to the proposed Duke Energy transmission easement/poles on the south side of the road.

The preferred improvement at this intersection is the roundabout. It will help with speed control SR 544 and increase safety when compared to the traffic signal option at this skewed intersection.

3.6 SEGMENT 6 – East OF LAKE HAMILTON CANAL TO WEST OF BRENTON MANOR AVENUE

The four-lane divided roadway is proposed with widening to the north side of the road. This alignment is recommended to avoid impacts to the Duke Energy transmission easement/poles and existing commercial development on the south side of the road.

The signalized thru-cut alternative is recommended at this intersection. This option includes realigning the two internal roads for the developments on the north side of SR 544 so that they intersect SR 544 in a single location (north leg of the intersection).

3.7 SEGMENT 7 – WEST OF BRENTON MANOR AVENUE TO LAVISTA DRIVE

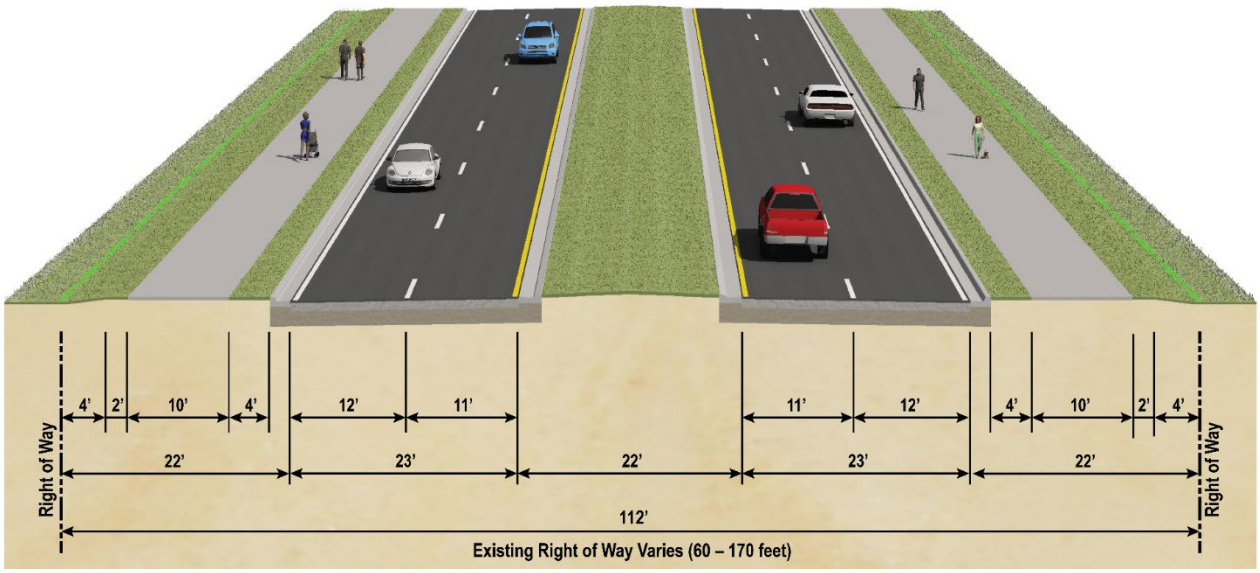
The four-lane divided roadway is proposed with widening to the north side of the road west of US 27 and to the south side of the road east of US 27. This alignment is recommended to avoid impacts to Duke Energy

transmission easement/poles that switch from the south side of the road to the north side of the road through the US 27 intersection.

The preferred intersection improvement at Brenton Manor Avenue is the roundabout. This intersection concept is paired with the recommended single point urban interchange at US 27.

The single point urban interchange is the recommended improvement at this intersection due to the lower predicted life cycle crash costs with this concept compared to the northwest quadrant roadway with three signalized intersections.

Figure 3-2: Segment 2 through 7 Preferred Typical Section

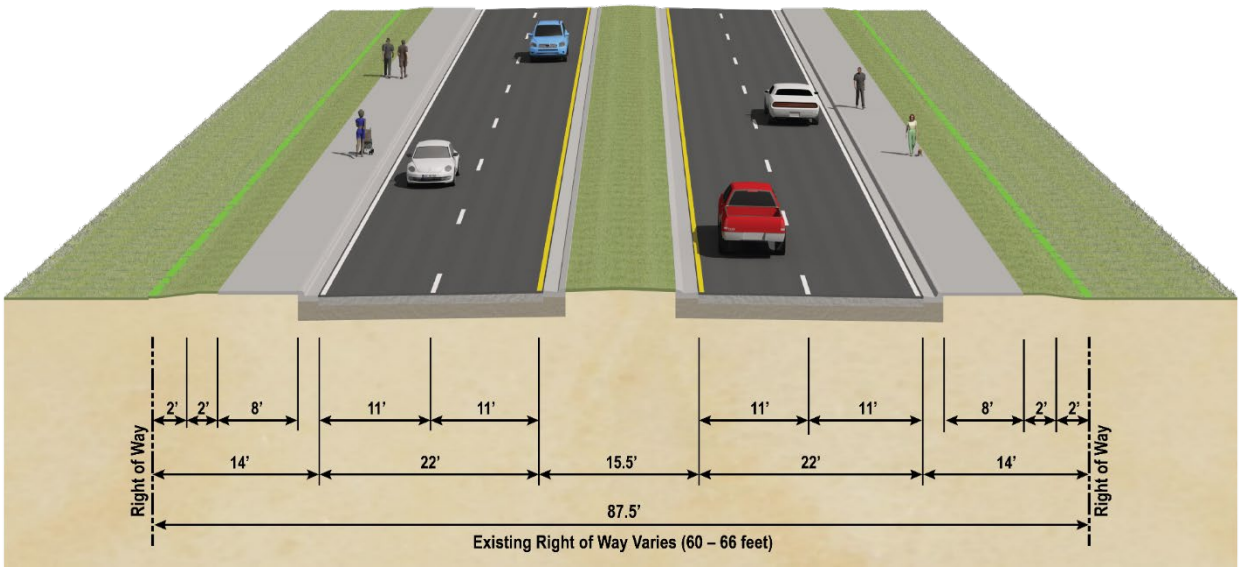


3.8 SEGMENT 8 – LAVISTA DRIVE TO SR 17

The reduced four-lane divided roadway is proposed with centered widening through this segment. This alignment is recommended to minimize residential relocations through this segment of the project but providing access control with the raised median. **Figure 3-3** illustrates this typical section.

The preferred concept is a traffic signal with only improvements to the west leg of the intersection.

Figure 3-3: Segment 8 Preferred Typical Section



4.0 METHODOLOGY

The methodologies used to prepare the highway traffic noise analysis are documented in Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772), the FDOT's Noise Policy (FDOT PD&E Manual – Highway Traffic Noise), and the FDOT's Traffic Noise Modeling and Analysis Practitioners Handbook.

This Noise Study Report (NSR) section describes the sound level metrics and motor vehicle traffic data that were used to prepare the analysis and the criteria used to determine if a future design year (2045) traffic noise level with the new roadway would be considered an impact. Potential noise abatement measures are also described.

4.1 NOISE METRICS

The predicted highway traffic noise levels presented in this NSR are expressed in decibels on the A-weighted scale (dB(A)). The A-weighted 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.

4.2 TRAFFIC DATA

Highway traffic noise levels are low when traffic volumes are low and operating conditions are good (LOS A or B). Highway traffic noise levels are also low when traffic is so congested that movement is slow (LOS D, E, or F). Generally, the maximum hourly noise level occurs between these two conditions (i.e., LOS C). For these reasons, when demand volumes are forecast to be less than LOS C conditions, LOS A or B conditions are modeled (because the demand volume is not forecast to reach the LOS C level). Conversely, when demand volumes are forecast to be greater than LOS C conditions, LOS C conditions are modeled because use of the LOS C data provides conservative results.

The traffic data (i.e., vehicle volume, fleet mix, and motor vehicle speeds) that was used to predict existing year (2019) and future year (2045) conditions both with and without the proposed improvements for SR 544 are provided in **Appendix A** of this NSR.

4.3 NOISE ABATEMENT CRITERIA

To evaluate highway traffic noise, the Federal Highway Administration (FHWA) established Noise Abatement Criteria (NAC). As shown in **Table 4-1**, these criteria vary according to a land use's activity category. For comparative purposes, typical sound levels produced by common indoor and outdoor activities are provided in **Table 4-2**. Following Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772), highway traffic noise is predicted to impact a land use for which there is a NAC when design year traffic noise levels with a roadway improvement approach, meet, or exceed the NAC or when design year levels with an improvement increase substantially when compared to existing levels. FDOT's Noise Policy considers a NAC to be "approached" when a traffic noise level is predicted to be within 1 dB(A) of the NAC and a substantial increase is predicted when future highway traffic noise levels with a roadway improvement increase 15 dB(A) or more when compared to existing levels.

Table 4-1: FHWA and FDOT Noise Abatement Criteria

Activity Category	Description of Activity Category	Activity Leq(h)[1]	
		FHWA	FDOT
A	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.	57 (Exterior)	56 (Exterior)
B[2]	Residential	67 (Exterior)	66 (Exterior)
C[2]	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.	67 (Exterior)	66 (Exterior)
D	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.	52 (Interior)	51 (Interior)
E[2]	Hotels, motels, offices, restaurants/bars and other developed lands, properties or activities not included in A-D or F.	72 (Exterior)	71 (Exterior)
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 Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) and Figure 18-1 of Chapter 18 of the FDOT's PD&E Manual (dated July 1, 2023).

[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 4-2: Typical Sound Levels

Common Outdoor Activities	Sound Level dB(A)	Common Indoor Activities
	110	Rock band
Jet flyover 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	

Source: California Dept. of Transportation Technical Noise Supplement, November 2009, Page 2-21.

5.0 TRAFFIC NOISE ANALYSIS

This section discusses sound level measurements that were obtained within the study area to validate the TNM and provides the results of the traffic noise analysis for the land uses within the project limits for which there are NAC. The on-site land use review for this project was conducted on May 30, 2023.

5.1 MODEL VALIDATION

The purpose of model validation is to ensure that motor vehicle traffic is the primary source of noise within a project's study area and to verify that the TNM predicts existing traffic noise levels that are within an acceptable range. The validation process involves obtaining sound level measurements adjacent to the existing roadway and during each measurement period noting the average vehicle travel speeds, vehicle counts, and fleet identification (e.g., automobiles, trucks, buses, and motorcycles), and site conditions (e.g., topography and distance from the roadway). Sources of sound other than motor vehicles (e.g., aircraft flyovers, birds, barking dogs, etc.) are also noted during each measurement period because the presence of such sound sources could result in measured levels exceeding the modeled levels. These data are then used to create input for the TNM, and the model is executed. Following FDOT's methodology, the TNM is considered valid to predict existing conditions if the field measured sound levels are within +/- 3.0 dB(A) of the TNM predicted highway traffic noise levels.

Field measurements were conducted in accordance with the FHWA's Noise Measurement Handbook (FHWA-HEP-18-065). The measurements were obtained using a Larson Davis (LD) 831 Type 1 integrating sound level meter (SLM), and the SLM was calibrated before and after each period with an LD CAL200 calibrator.

Based on the field measurements and validation results the ability of TNM to predict traffic noise levels for the project was confirmed (see **Table 5-1**). Documentation in support of the validation is provided in **Appendix B** of this NSR. Measured levels were slightly higher than the modeled levels due to the SLM measuring traffic noise as well as background noise whereas the TNM only predicts traffic noise. The locations at which the measurements were obtained are illustrated on project aerials in **Appendix C**.

Table 5-1: Noise Validation Summary

Location		Measurement Period	Measured dB(A)	Modeled dB(A)	Difference dB(A)
Site 1	100 ft from edge of pavement	1	64.0	63.1	0.9
		2	64.1	63.8	0.3
		3	63.5	62.4	1.1
Site 2	100 ft from edge of pavement	1	61.4	62.9	-1.5
		2	59.8	62.1	-2.3
		3	60.0	62.5	-2.5

5.2 PREDICTED NOISE LEVELS AND ABATEMENT ANALYSIS

Traffic noise levels were predicted at properties with land uses for which there are NAC in proximity to SR 544. A total of 300 receptors were evaluated. The locations of the receptors are depicted on aerials in **Appendix C**. These 300 receptors represent 327 residences, 6 outdoor areas, 14 interior sites (churches/schools), and 2 hotel pools.

Receptors were predicted to be impacted by traffic noise if the TNM results with the proposed improvements were equal to or greater than 66 dB(A) for NAC B and C. Traffic noise impacts were predicted for NAC D (interior) if the TNM results with the proposed improvements were greater or equal to 51 dB(A). To determine interior noise levels, an exterior noise level is first predicted at an impacted building, and the building noise reduction factor of 25 dB(A) (masonry building with single glazed windows) The building noise reduction factor is from FDOT's PD&E Manual Chapter 18 Table 18-3 Building Noise Reduction Factors. The noise reduction fact is then subtracted from the exterior noise level to predict the interior noise level. Traffic noise impacts were predicted for NAC E if the TNM results with the proposed improvements were greater than or equal to 71 dB(A).

The predicted traffic noise levels for each of the evaluated receptors are provided in **Appendix D**. In addition to predicting future (2045) traffic noise with the Preferred Alternative (as described in Sections 3.0 of this NSR), traffic noise was predicted for the existing year (2019) with the existing roadway geometry and for the future without the proposed improvements (i.e., the No-Build Alternative).

In the existing year (2019), traffic noise is predicted to range from 47.6 to 71.7 dB(A) for all exterior land uses (NAC B, C and E). For NAC D receptors (interior) traffic noise is predicted to range from 30.1 to 43.5 dB(A). The project's design year (2045) with the No-Build Alternative traffic noise at the exterior land uses is predicted to range from 47.7 to 73.1 dB(A), and from 30.1 to 46.1 dB(A) for interior land uses. In the design year with the Preferred Alternative traffic noise is predicted to range from 50.0 to 73.9 dB(A) at the outdoor land uses, exceeding the NAC at 101 receptors representing 116 residences, and two outdoor land uses (Harry King Park and the basketball court at the First Apostolic Pentecostal Church). As also shown in **Appendix D**, traffic noise along the project corridor is not predicted to increase substantially from existing levels with the maximum increase being 7.5 dB(A) at receptor W76.

5.3 NOISE ABATEMENT MEASURES

5.3.1 TRAFFIC MANAGEMENT

Some traffic management measures can reduce motor vehicle-related noise. For example, trucks can be prohibited from certain streets and roads, or be permitted to only use certain streets and roads during daylight hours. The timing of traffic lights can also be changed to smooth out the flow of traffic and eliminate the need for frequent stops and starts. Reducing speed limits and increasing enforcement of speed limits is also an effective method of reducing motor vehicle noise.

5.3.2 ALIGNMENT MODIFICATIONS

Modifying the alignment of a roadway can also be an effective traffic noise mitigation measure. When the horizontal alignment is shifted away from a noise sensitive land use, the sound level is reduced for the land uses that are farther from the roadway than before the shift. In certain circumstances, when a change is made to the vertical alignment (i.e., shifting the alignment so that it is below or above the elevation of a land use), highway traffic noise may be reduced due to shielding.

5.3.3 BUFFER ZONES

Providing a buffer between a roadway and future noise sensitive land uses is an abatement measure that can minimize/eliminate noise impacts in areas of future development. To encourage use of this abatement measure through local land use planning, noise contours have been developed and are further discussed in Section 6 of this

NSR. To abate traffic noise for an existing land use using this abatement measure, the property would have to be acquired.

5.3.4 NOISE BARRIERS

Noise barriers have the potential to reduce traffic noise by interrupting the sound path between the motor vehicles on a roadway and a noise sensitive land use next to the roadway. To effectively reduce traffic noise, a barrier must be relatively long, continuous, and sufficiently tall. Use of noise barriers is the most common traffic noise abatement measure. Generally, noise barriers are most effective when placed as close to the noise source or as close to the noise receptor as possible.

5.3.5 FEASIBLE AND REASONABLE ABATEMENT MEASURES

For PD&E studies, a measure is considered a potential noise abatement measure if the following criteria are met:

- Minimum Noise Reduction – To meet the minimum noise reduction criteria, an abatement measure must provide at least a 5 dB(A) reduction in traffic noise for two or more impacted receptors and provide a 7 dB(A) reduction, the FDOT's Noise Reduction Design Goal (NRDG), for one or more benefited receptors. Failure of a measure to provide at least a 5 dB(A) reduction for two or more impacted receptors results in a measure being deemed not feasible. Failure to achieve the NRDG results in a measure being deemed not reasonable.

- Cost Effectiveness Criterion – Based on FDOT's Noise Policy, to be considered a reasonable abatement measure for a residence, the measure should cost no more than $42,000 per benefited receptor (i.e., per benefited property for which the land use has a NAC). For the cost of an abatement measure for a special land use (e.g., Harry King Park) to be considered reasonable, the measure should cost no more than $995,935 per person-hour per square foot. The FDOT currently uses an estimated cost of $30 per square foot for noise barrier-related materials and labor.

If the results of an abatement measure evaluation indicate that a measure would provide at least the minimum required reduction in traffic noise at a cost that is less than the cost effectiveness criterion, additional factors are considered. Depending on the measure, feasibility factors relate to design and construction (i.e., given site-specific details, can an abatement measure be implemented), safety, accessibility, ROW requirements, maintenance, and impacts on utilities and/or drainage. Because the analysis is performed on conceptual designs for roadway improvements, noise abatement measures are only identified as being potentially feasible and reasonable at the conclusion of a project's PD&E phase. For such measures, the FDOT makes a commitment to perform detailed analysis in the project's design phase (including obtaining the viewpoints of the property owners and/or residents of the benefited properties) when the final construction plans for an improvement are prepared.

5.4 ABATEMENT CONSIDERATIONS

As previously stated, when traffic noise impacts are predicted, noise abatement measures are considered for the impacted properties. The following discusses the FDOT's consideration of each of the measures for the impacted receptors with the improvements to SR 544.

5.4.1 TRAFFIC MANAGEMENT

Reducing traffic speeds and/or the traffic volume or changing the motor vehicle fleet is inconsistent with the goal of increasing operational capacity of the roadway. Therefore, traffic management is not considered to be a reasonable measure to abate the predicted traffic noise impacts for the SR 544 Project.

5.4.2 ALIGNMENT MODIFICATION

As discussed in Section 2.0 the project is planned to improve operational capacity along an existing roadway. A significant change in the alignment (i.e., a doubling of the distance between the roadway and the receptor) would be needed to provide a 3 dB(A) change in noise level and the alignment change would require the acquisition of additional ROW for the improvement. A review of data from the Polk County Property Appraiser indicates that the cost to acquire the additional ROW would exceed the cost-effective limit. Therefore, a modification of the alignment of the roadway is not considered to be a reasonable noise abatement measure.

5.4.3 BUFFER ZONES

As previously stated, to abate predicted traffic noise at an existing noise sensitive land use, the impacted property would have to be acquired. As also previously stated, to be considered a cost-effective measure, the cost of abatement should cost no more than $42,000 per benefited residential receptor. A review of data from the Polk County Property Appraiser indicates that the cost to acquire the impacted properties adjacent to the SR 544 Project would exceed the cost-effective limit. Therefore, creating a buffer zone by acquiring the properties is not considered to be a reasonable noise abatement measure.

5.4.4 NOISE BARRIERS

The TNM was used to evaluate the potential for noise barriers to reduce traffic noise levels for the impacted receptors. The noise barrier results are presented for the eight barriers evaluated for the impacted receptors along the eastbound side of SR 544 (e.g., Noise Barrier E1, Noise Barrier E2, etc.), followed by the four barriers evaluated for the impacted receptors along the westbound side of SR 544 (e.g., Noise Barrier W1, Noise Barrier W2, etc.), and finally for the single barrier evaluated for the impacted receptor along US 27 (e.g., Noise Barrier U1).

The lengths of the barriers were optimized in an attempt to benefit all of the impacted receptors. Once optimized, the reduction in traffic noise at each impacted receptor was reviewed to determine if the acoustic feasibility requirement (i.e., a reduction of at least 5 dB(A) for two impacted receptors) and the acoustic reasonableness requirement (i.e., a reduction of at least 7 dB(A) for one benefited receptor) could be achieved. If the noise reduction requirements were met, the cost reasonableness of providing a noise barrier as an abatement measure was also considered (i.e., not to exceed $42,000 per benefited receptor).

As stated in the introduction to this NSR, the proposed project is currently in the PD&E phase. As such, the roadway elevations and alignment information used to perform the traffic noise analysis are not finalized. Therefore, the results of the analysis presented in this report should be considered preliminary (i.e., the locations of the noise barriers are potential). A final determination regarding the reasonable and feasible barriers in this NSR as traffic noise abatement measures will be made during the project's design phase.

FDOT's noise policy states that the number of impacted receptors required to achieve a 5 dB(A) reduction or greater in order for a noise barrier to be considered feasible will be two or greater. Therefore, noise barriers were not

evaluated for isolated impacted receptors. Based on the noise analyses, there appear to be no feasible mitigation solutions available for the impacted isolated residential receptors E63 and E150.

Due to the numerous direct access driveways and cross streets between Martin Luther King Boulevard and Avenue Y, a continuous noise barrier could not be evaluated for two or more adjacent impacted receptors. As such, noise barriers for impacted receptors in this section of the project are not considered to be a reasonable and feasible noise abatement measure. These twenty impacted receptors include E3-E10, E17, E20-E22, and W3-W10.

5.4.4.1 NOISE BARRIER E1: WINTER RIDGE CONDOMINIUMS

A noise barrier was evaluated for the 12 impacted residences represented by receptors E33-E38. The barrier was evaluated at the back of the proposed shared use path. This placed the barrier six feet inside the FDOT ROW. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The results of the barrier evaluation are shown in **Table 5-2**. As shown, the barrier could reduce traffic noise by at least 5 dB(A) at all the impacted receptors and achieve the NRDG of 7 dB(A) to at least one benefited receptor at heights ranging from 16 to 22 feet. The cost of the noise barrier would be below the FDOT's cost reasonable criterion of $42,000 per benefited receptor. The limits of the optimal barrier (highlighted below) are depicted on page 2 of the project aerials in **Appendix C**.

Table 5-2: Noise Barrier E1 Evaluation Results

Noise Barrier		Number of Impacted Receptors	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
Height (feet)	Length (feet)		5 -6.9	≥7	Impacted	Not Impacted	Total			
8	NA[5]	12	0	0	0	0	0	NA[5]	NA[5]	NA[5]
10	NA[5]		0	0	0	0	0	NA[5]	NA[5]	NA[5]
12	NA[6]		10	0	10	0	10	NA[6]	NA[6]	NA[6]
14	440		8	2	10	0	10	$184,800	$18,480	Yes
16	453		4	8	12	0	12	$217,440	$18,120	Yes
18	453		4	8	12	0	12	$244,620	$20,385	Yes
20	443		4	8	12	2	14	$265,800	$18,986	Yes
22	443		4	8	12	2	14	$292,380	$20,884	Yes

[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] The FDOT cost reasonable criterion is $42,000 per benefited receptor.
[5] A reduction of at least 5 dB(A) for two or more impacted receptors could not be achieved at any length at this height.
[6] The NRDG could not be achieved at any length at this height.

5.4.4.2 NOISE BARRIER E2: LAKE POINT LANDING AND ADJACENT RESIDENCE

A noise barrier was evaluated for the 10 impacted residences represented by receptors E55, E58, E61, and E62. The barrier was evaluated at the back of the proposed shared use path. This placed the barrier six feet inside the FDOT ROW. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The results of the barrier evaluation are shown in **Table 5-3**. As shown, the barrier could reduce traffic noise by at least 5 dB(A) at all the impacted receptors and achieve the NRDG of 7 dB(A) to at least one benefited receptor at all evaluated heights. The cost of the noise barrier would be below the FDOT's cost reasonable criterion of $42,000 per benefited receptor. The limits of the optimal barrier (highlighted below) are depicted on page 2 of the project aerials in **Appendix C**.

Table 5-3: Noise Barrier E2 Evaluation Results

Noise Barrier		Number of Impacted Receptors	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
Height (feet)	Length (feet)		5 -6.9	≥7	Impacted	Not Impacted	Total			
8	492	10	5	5	10	0	10	$118,080	$11,808	Yes
10	472		3	7	10	6	16	$141,600	$8,850	Yes
12	472		1	9	10	6	16	$169,920	$10,620	Yes
14	472		1	9	10	6	16	$198,240	$12,390	Yes
16	472		1	9	10	6	16	$226,560	$14,160	Yes
18	472		1	9	10	6	16	$254,880	$15,930	Yes
20	472		1	9	10	6	16	$283,200	$17,700	Yes
22	472		1	9	10	6	16	$311,520	$19,470	Yes

[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] The FDOT cost reasonable criterion is $42,000 per benefited receptor.

5.4.4.3 NOISE BARRIER E3: LUCERNE LAKESIDE

A noise barrier was evaluated for the seven impacted residences represented by receptors E64-E70. The barrier was evaluated at the back of the proposed shared use path. This placed the barrier 11 feet inside the FDOT ROW. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The results of the barrier evaluation are shown in **Table 5-4**. As shown, although the barrier could reduce traffic noise by at least 5 dB(A) at all seven of the impacted receptors at a height of 22 feet, the barrier could not achieve the NRDG of 7 dB(A) at any height. This is due to the gaps in the barrier required to accommodate the four access roads to the community. As such, the barrier is not considered a reasonable noise abatement measure for the impacted receptors.

Table 5-4: Noise Barrier E3 Evaluation Results

Noise Barrier		Number of Impacted Receptors	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
Height (feet)	Length (feet)		5 -6.9	≥7	Impacted	Not Impacted	Total			
8	NA[5]	7	0	0	0	0	0	NA[5]	NA[5]	NA[5]
10	NA[6]		1	0	1	0	1	NA[6]	NA[6]	NA[6]
12	NA[6]		6	0	6	4	10	NA[6]	NA[6]	NA[6]
14	NA[6]		6	0	6	6	12	NA[6]	NA[6]	NA[6]
16	NA[6]		6	0	6	7	13	NA[6]	NA[6]	NA[6]
18	NA[6]		6	0	6	8	14	NA[6]	NA[6]	NA[6]
20	NA[6]		6	0	6	9	15	NA[6]	NA[6]	NA[6]
22	NA[6]		7	0	7	10	17	NA[6]	NA[6]	NA[6]

[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] The FDOT cost reasonable criterion is $42,000 per benefited receptor.
[5] A reduction of at least 5 dB(A) for two or more impacted receptors could not be achieved at any length at this height.
[6] The NRDG could not be achieved at any length at this height.

5.4.4.4 NOISE BARRIER E4: LAKE SMART ESTATES

A noise barrier was evaluated for the 10 impacted residences represented by receptors E86-E95. The barrier was evaluated 12 feet within the FDOT ROW. This placed the barrier four to eight feet behind the back of the proposed shared use path. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The results of the barrier evaluation are shown in **Table 5-5**. As shown, the barrier could reduce traffic noise by at least 5 dB(A) at all the impacted receptors and achieve the NRDG of 7 dB(A) to at least one benefited receptor at heights ranging from 10 to 22 feet. The cost of the noise barrier would be below the FDOT's cost reasonable criterion of $42,000 per benefited receptor. The limits of the optimal barrier (highlighted below) are depicted on page 3 of the project aerials in **Appendix C**.

Table 5-5: Noise Barrier E4 Evaluation Results

Noise Barrier		Number of Impacted Receptors	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
Height (feet)	Length (feet)		5 – 6.9	≥7	Impacted	Not Impacted	Total			
8	907	10	7	1	8	0	8	$217,680	$27,210	Yes
10	755		7	6	10	0	10	$226,500	$22,650	Yes
12	755		3	7	10	0	10	$271,800	$27,180	Yes
14	735		3	7	10	0	10	$308,700	$30,870	Yes
16	735		3	7	10	1	11	$352,800	$32,073	Yes
18	715		2	8	10	0	10	$386,100	$38,610	Yes
20	715		2	8	10	3	13	$429,000	$33,000	Yes
22	715		2	8	10	5	15	$471,900	$31,460	Yes

[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] The FDOT cost reasonable criterion is $42,000 per benefited receptor.

5.4.4.5 NOISE BARRIER E5: BROOKHAVEN VILLAGE

A noise barrier was evaluated for the 10 impacted residences represented by receptors E110-E119. The barrier was evaluated at the back of the proposed shared use path. The barrier segment west of the access road was placed six feet inside the FDOT ROW and the barrier segment east of the access road was 10 feet inside the FDOT ROW. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The results of the barrier evaluation are shown in **Table 5-6**. As shown, the barrier could reduce traffic noise by at least 5 dB(A) at all the impacted receptors and achieve the NRDG of 7 dB(A) to at least one benefited receptor at heights ranging from 12 to 22 feet. The cost of the noise barrier would be below the FDOT's cost reasonable criterion of $42,000 per benefited receptor. The limits of the optimal reasonable barrier (highlighted below) are depicted on page 6 of the project aerials in **Appendix C**.

Table 5-6: Noise Barrier E5 Evaluation Results

Noise Barrier		Number of Impacted Receptors	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
Height (feet)	Length (feet)		5– 6.9	≥7	Impacted	Not Impacted	Total			
8	NA[5]	10	0	0	0	0	0	NA[5]	NA[5]	NA[5]
10	NA[6]		9	0	9	1	10	NA[6]	NA[6]	NA[6]
12	992		2	8	10	5	15	$357,120	$23,808	Yes
14	992		2	8	10	6	16	$416,640	$26,040	Yes
16	972		2	8	10	6	16	$466,560	$29,160	Yes
18	952		1	9	10	6	16	$514,080	$32,130	Yes
20	952		1	9	10	7	17	$571,200	$33,600	Yes
22	932		1	9	10	7	17	$615,120	$36,184	Yes

[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] The FDOT cost reasonable criterion is $42,000 per benefited receptor.
[5] A reduction of at least 5 dB(A) for two or more impacted receptors could not be achieved at any length at this height.
[6] The NRDG could not be achieved at any length at this height.

5.4.4.6 NOISE BARRIER E6: RESIDENCES BETWEEN LA VISTA DRIVE TO EAST OF MYRTLE AVENUE

A noise barrier was evaluated for the seven impacted residences represented by receptors E131-E137. The barrier was evaluated at the back of the proposed sidewalk. This placed the barrier four feet inside the FDOT ROW. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The results of the barrier evaluation are shown in **Table 5-7**. As shown, the barrier could not reduce traffic noise by at least 5 dB(A) at two or more impacted receptors at any height. This was due to the five side streets and direct access driveways. Due to line-of-sight constraints, only one barrier segment could be evaluated for the impacted receptors, which resulted in only one impacted receptor receiving a noise reduction of at least 5 dB(A). As such, the barrier is not considered a feasible noise abatement measure for the impacted receptors.

Table 5-7: Noise Barrier E6 Evaluation Results

Noise Barrier		Number of Impacted Receptors	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
Height (feet)	Length (feet)		5 – 6.9	≥7	Impacted	Not Impacted	Total			
8	NA[5]	7	1	0	1	0	1	NA[5]	NA[5]	NA[5]
10	NA[5]		0	1	1	0	1	NA[5]	NA[5]	NA[5]
12	NA[5]		0	1	1	0	1	NA[5]	NA[5]	NA[5]
14	NA[5]		0	1	1	0	1	NA[5]	NA[5]	NA[5]
16	NA[5]		0	1	1	0	1	NA[5]	NA[5]	NA[5]
18	NA[5]		0	1	1	0	1	NA[5]	NA[5]	NA[5]
20	NA[5]		0	1	1	0	1	NA[5]	NA[5]	NA[5]
22	NA[5]		0	1	1	0	1	NA[5]	NA[5]	NA[5]

[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] The FDOT cost reasonable criterion is $42,000 per benefited receptor.
[5] A reduction of at least 5 dB(A) for two or more impacted receptors could not be achieved at any length at this height.

5.4.4.7 NOISE BARRIER E7: RESIDENCES AT CREST DRIVE

A noise barrier was evaluated for the three impacted residences represented by receptors E145-E147. The barrier was evaluated at the back of the proposed sidewalk. This placed the barrier four feet inside the FDOT ROW. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The results of the barrier evaluation are shown in **Table 5-8**. As shown, the barrier could reduce traffic noise by at least 5 dB(A) at all the impacted receptors and achieve the NRDG of 7 dB(A) to at least one benefited receptor at heights ranging from 12 to 22 feet. However, the cost of the barrier would exceed the FDOT's cost reasonable criterion of $42,000 per benefited receptor at all evaluated heights. This is due to a required gap in the barrier to accommodate a driveway. The extent of the east end of the barrier is constrained by Crest Drive. Since the barrier is predicted to exceed the cost-effective criterion, the barrier is not considered a reasonable noise abatement measure for the impacted receptors.

Table 5-8: Noise Barrier E7 Evaluation Results

Noise Barrier		Number of Impacted Receptors	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
Height (feet)	Length (feet)		5 – 6.9	≥7	Impacted	Not Impacted	Total			
8	NA[5]	3	1	0	1	0	1	NA[5]	NA[5]	NA[5]
10	NA[6]		2	0	2	0	2	NA[6]	NA[6]	NA[6]
12	368		2	1	3	0	3	$132,480	$44,160	No
14	348		2	1	3	0	3	$146,160	$48,720	No
16	328		2	1	3	0	3	$157,440	$52,480	No
18	328		2	1	3	0	3	$177,120	$59,040	No
20	328		2	1	3	0	3	$196,800	$65,600	No
22	328		2	1	3	0	3	$216,480	$72,160	No

[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] The FDOT cost reasonable criterion is $42,000 per benefited receptor.
[5] A reduction of at least 5 dB(A) for two or more impacted receptors could not be achieved at any length at this height.
[6] The NRDG could not be achieved at any length at this height.

5.4.4.8 Noise Barrier E8: Residences in the Southwest Quadrant of the SR 544/SR 17 Intersection

A noise barrier was evaluated for the two impacted residences represented by receptors E152 and E153. The barrier was evaluated at the back of the proposed sidewalk. This placed the barrier four feet inside the FDOT ROW. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The results of the barrier evaluation are shown in **Table 5-9**. As shown, the barrier could reduce traffic noise by at least 5 dB(A) at all the impacted receptors and achieve the NRDG of 7 dB(A) to at least one benefited receptor at heights ranging from 12 to 22 feet. However, the cost of the barrier would exceed the FDOT's cost reasonable criterion of $42,000 per benefited receptor at all evaluated heights. This is due to a required gap in the barrier to accommodate a direct access driveway and the long distance between the residences requiring a long barrier. Since the barrier is predicted to exceed the cost-effective criterion, the barrier is not considered a reasonable noise abatement measure for the impacted receptors.

Table 5-9: Noise Barrier E8 Evaluation Results

Noise Barrier		Number of Impacted Receptors	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
Height (feet)	Length (feet)		5 – 6.9	≥7	Impacted	Not Impacted	Total			
8	NA[5]	2	0	0	0	0	0	NA[5]	NA[5]	NA[5]
10	NA[5]		1	0	1	0	1	NA[5]	NA[5]	NA[5]
12	428		1	1	2	0	2	$154,080	$77,040	No
14	408		1	1	2	0	2	$171,360	$85,680	No
16	388		1	1	2	0	2	$186,240	$93,120	No
18	388		1	1	2	0	2	$209,520	$104,760	No
20	388		1	1	2	0	2	$232,800	$116,400	No
22	388		1	1	2	0	2	$256,080	$128,040	No

[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] The FDOT cost reasonable criterion is $42,000 per benefited receptor.
[5] A reduction of at least 5 dB(A) for two or more impacted receptors could not be achieved at any length at this height.

5.4.4.9 NOISE BARRIER W1: HARRY KING PARK AND PUBLIC BOAT RAMP

A noise barrier was analyzed for the impacted park represented by receptor W38 using FDOT's Special Land Use Methodology. The barrier was evaluated at the back of the proposed shared use path. This placed the barrier six feet inside the FDOT ROW. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The impacted area of the park represents approximately 30% of the entire area of the park. At an optimal height of 10 feet and an optimal length of 496 feet, a noise barrier would reduce predicted traffic noise levels within the impacted area a minimum of 5 dB(A) and achieve the NRDG of 7 dB(A). Because it is not known how long the park would be used and by how many people, the minimum number of person-hours of use on an average day to have the cost be considered effective was calculated (not to exceed $995,935 per person-hour per square foot).

The cost calculations were based on the formulas for evaluating cost effectiveness from the special land use procedures. Assuming the optimal barrier height and length above, the minimum daily use required in order for a noise barrier to be considered cost effective is 444 person-hours (i.e., 444 people would have to use the park for one hour each day of the year). Because the park has only two picnic tables and a small gravel parking area, it is not reasonable to assume that this level of activity would occur every day. Therefore, a noise barrier is not considered a reasonable noise abatement measure for the park.

5.4.4.10 NOISE BARRIER W2: LAKE ROCHELLE ESTATES

A noise barrier was evaluated for the three impacted residences represented by receptors W53-W55. The barrier was evaluated at the back of the proposed shared use path. This placed the barrier six feet inside the FDOT ROW. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The results of the barrier evaluation are shown in **Table 5-10**. As shown, the barrier could reduce traffic noise by at least 5 dB(A) at all the impacted receptors and achieve the NRDG of 7 dB(A) to at least one benefited receptor. The cost of the barrier would be below the FDOT's cost reasonable criterion of $42,000 per benefited receptor at heights ranging from 12 to 20 feet. The limits of the optimal barrier (highlighted below) are depicted on page 3 of the project aerials in **Appendix C**.

Table 5-10: Noise Barrier W2 Evaluation Results

Noise Barrier		Number of Impacted Receptors	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
Height (feet)	Length (feet)		5 – 6.9	≥7	Impacted	Not Impacted	Total			
8	NA[5]	3	0	0	0	0	0	NA[5]	NA[5]	NA[5]
10	NA[6]		3	0	3	0	3	NA[6]	NA[6]	NA[6]
12	567		1	2	3	3	6	$204,120	$34,020	Yes
14	719		0	3	3	5	8	$301,980	$37,748	Yes
16	772		0	3	3	7	10	$370,560	$37,056	Yes
18	720		0	3	3	7	10	$388,800	$38,880	Yes
20	695		0	3	3	7	10	$417,000	$41,700	Yes
22	722		0	3	3	8	11	$476,520	$43,320	No

[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] The FDOT cost reasonable criterion is $42,000 per benefited receptor.
[5] A reduction of at least 5 dB(A) for two or more impacted receptors could not be achieved at any length at this height.
[6] The NRDG could not be achieved at any length at this height.

5.4.4.11 NOISE BARRIER W3: LAKE'N GOLF ESTATES, FAIRVIEW VILLAGE, AND LAKESIDE RANCH

A noise barrier was evaluated for the 16 impacted residences represented by receptors W72-W82 and W96-W100. The barrier was evaluated at the back of the proposed shared use path. This placed the barrier six feet within the FDOT ROW. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The results of the barrier evaluation are shown in **Table 5-11**. As shown, the barrier could reduce traffic noise by at least 5 dB(A) at 13 of the 16 impacted receptors and achieve the NRDG of 7 dB(A) to at least one benefited receptor at heights ranging from 12 to 22 feet. The cost of the noise barrier would be below the FDOT's cost reasonable criterion of $42,000 per benefited receptor. The three impacted receptors that could not be benefited are in vicinity of a gap in the barrier to accommodate the proposed combined access road to both Fairview Village and Lakeside Ranch. The limits of the optimal barrier (highlighted below) are depicted on page 7 of the project aerials in **Appendix C**.

Table 5-11: Noise Barrier W3 Evaluation Results

Noise Barrier		Number of Impacted Receptors	Noise Reduction at mpacted Receptor (dB(A))[1]		Number of Benefited Receptors[2]			Total Estimated Cost[3]	Cost per Benefited Receptor[4]	Cost Reasonable Yes/No
Height (feet)	Length (feet)		5 – 6.9	≥7	Impacted	Not Impacted	Total			
8	944	16	6	3	9	1	10	$226,560	$22,656	Yes
10	1,480		3	9	12	2	14	$444,000	$31,714	Yes
12	1,455		3	10	13	8	21	$523,800	$24,943	Yes
14	1,455		3	10	13	10	23	$611,100	$26,570	Yes
16	1,505		3	10	13	12	25	$722,400	$28,896	Yes
18	1,480		2	11	13	12	25	$799,200	$31,968	Yes
20	1,455		3	10	13	13	26	$873,000	$33,577	Yes
22	1,430		3	10	13	13	26	$943,800	$36,300	Yes

[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] The FDOT cost reasonable criterion is $42,000 per benefited receptor.

5.4.4.12 Noise Barrier W4: Residences between Pomona Street and 5th Street South

A noise barrier was evaluated for the 11 impacted residences represented by receptors W110-W120. The barrier was evaluated at the back of the proposed sidewalk. This placed the barrier four feet inside the FDOT ROW. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The results of the barrier evaluation are shown in **Table 5-12**. As shown, the barrier could reduce traffic noise by at least 5 dB(A) at four of the 11 impacted receptors and achieve the NRDG of 7 dB(A) to at least one benefited receptor. The cost of the barrier would be below the FDOT's cost reasonable criterion of $42,000 per benefited receptor at heights ranging from 14 to 20 feet. Due to line-of-sight constraints, the barrier was evaluated in two segments for the impacted receptors. The limits of the optimal reasonable (highlighted below) are depicted on page 10 of the project aerials in **Appendix C**.

Table 5-12: Noise Barrier W4 Evaluation Results

Noise Barrier		Number of Impacted Receptors	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
Height (feet)	Length (feet)		5 – 6.9	≥7	Impacted	Not Impacted	Total			
8	NA[5]	11	0	0	0	0	0	NA[5]	NA[5]	NA[5]
10	NA[6]		3	0	3	0	3	NA[6]	NA[6]	NA[6]
12	825		0	4	4	1	5	$297,000	$59,400	No
14	876		0	4	4	6	10	$367,920	$36,792	Yes
16	1,008		0	4	4	8	12	$483,840	$40,320	Yes
18	980		0	4	4	10	14	$529,200	$37,800	Yes
20	980		0	4	4	10	14	$588,000	$42,000	Yes
22	980		0	4	4	10	14	$646,800	$46,200	No

[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] The FDOT cost reasonable criterion is $42,000 per benefited receptor.
[5] A reduction of at least 5 dB(A) for two or more impacted receptors could not be achieved at any length at this height.
[6] The NRDG could not be achieved at any length at this height.

5.4.4.13 Noise Barrier U1: Outdoor Use Area at the First Apostolic Pentecostal Church

A noise barrier was analyzed for the impacted outdoor use area (basketball court) represented by receptor U2a using FDOT's Special Land Use Methodology. The barrier was evaluated 12 feet within the FDOT ROW. The barrier was evaluated at a minimum height of 8 feet to the maximum allowable height of 22 feet in two-foot increments. The entire area of the basketball court was impacted. At an optimal height of 14 feet and an optimal length of 282 feet, a noise barrier would reduce predicted traffic noise levels for the entire impacted area by at least 5 dB(A) and achieve the noise reduction design goal of 7 dB(A). Because it is not known how long the basketball would be used and by how many people, the minimum number of person-hours of use on an average day to have the cost be considered effective was calculated (i.e., cost not to exceed $995,935 per person-hour per square foot).

The cost calculations were based on the formulas for evaluating cost effectiveness from the special land use procedures. Assuming the optimal barrier height and length above, the minimum daily use required in order for a noise barrier to be considered cost effective is 166 person-hours (i.e., 166 people would have to use the basketball court for one hour each day of the year). Because the basketball court is a small area and located on private property, it is not reasonable to assume that this level of activity would occur every day. Therefore, a noise barrier is not considered a reasonable noise abatement measure for the basketball court.

6.0 NOISE CONTOURS

The land uses in Table 4-1 of this NSR are considered incompatible with highway noise levels that approach, meet, or exceed the NAC. To reduce the potential for these land uses to be permitted for construction in areas where traffic noise impacts have been predicted with the proposed improvements noise contours were developed. The contours delineate a distance from the improved roadway's edge-of-pavement where a traffic noise level of 56 dB(A)—the FDOT approach criteria for land uses classified as Activity Category A, 66 dB(A)—the approach criteria for land uses classified as Activity Category B and C, and 71 dB(A)—the approach criteria for land uses classified as Activity Category E, are predicted.

The distance at which the NAC would be approached for each Activity Category is shown in **Table 6-1** and **Figures 6-1** through **6-3.**

Table 6-1: Distance at Which NAC Would be Approached, Met, or Exceeded

Roadway Segment	Distance From Improved Roadway's Edge-of-Pavement (feet)*		
	Activity Category A 56 dB(A)	Activity Category B/C 66 dB(A)	Activity Category E 71 dB(A)
Martin Luther King Blvd to Ave Y	220	60	10
Ave Y to Lake Conine Dr	350	100	50
Lake Conine Dr to Old Lucerne Park Rd (west)	340	90	40
Old Lucerne Park Rd (west) to Lucerne Loop Rd	320	90	70
Lucerne Loop Rd to Old Lucerne Park Rd (east)	350	100	40
Old Lucerne Park Rd (east) to Lake Hamilton Dr	350	100	50
Lake Hamilton Dr to Brenton Manor Ave	350	100	40
Brenton Manor Ave to US 27	340	90	40
US 27 to Speed Limit Change (Milepost 10.773)	340	90	40
Speed Limit Change (Milepost 10.773) to SR 17	400	110	50
US 27	640	220	110

*See Table 4-1 for a description of the activities that occur within each category. Distances do not reflect any reduction in noise levels that would occur from existing structures (shielding) and should be used for planning purposes only.

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Figure 6-1: Noise Contours: Martin Luther King Boulevard to Avenue Y

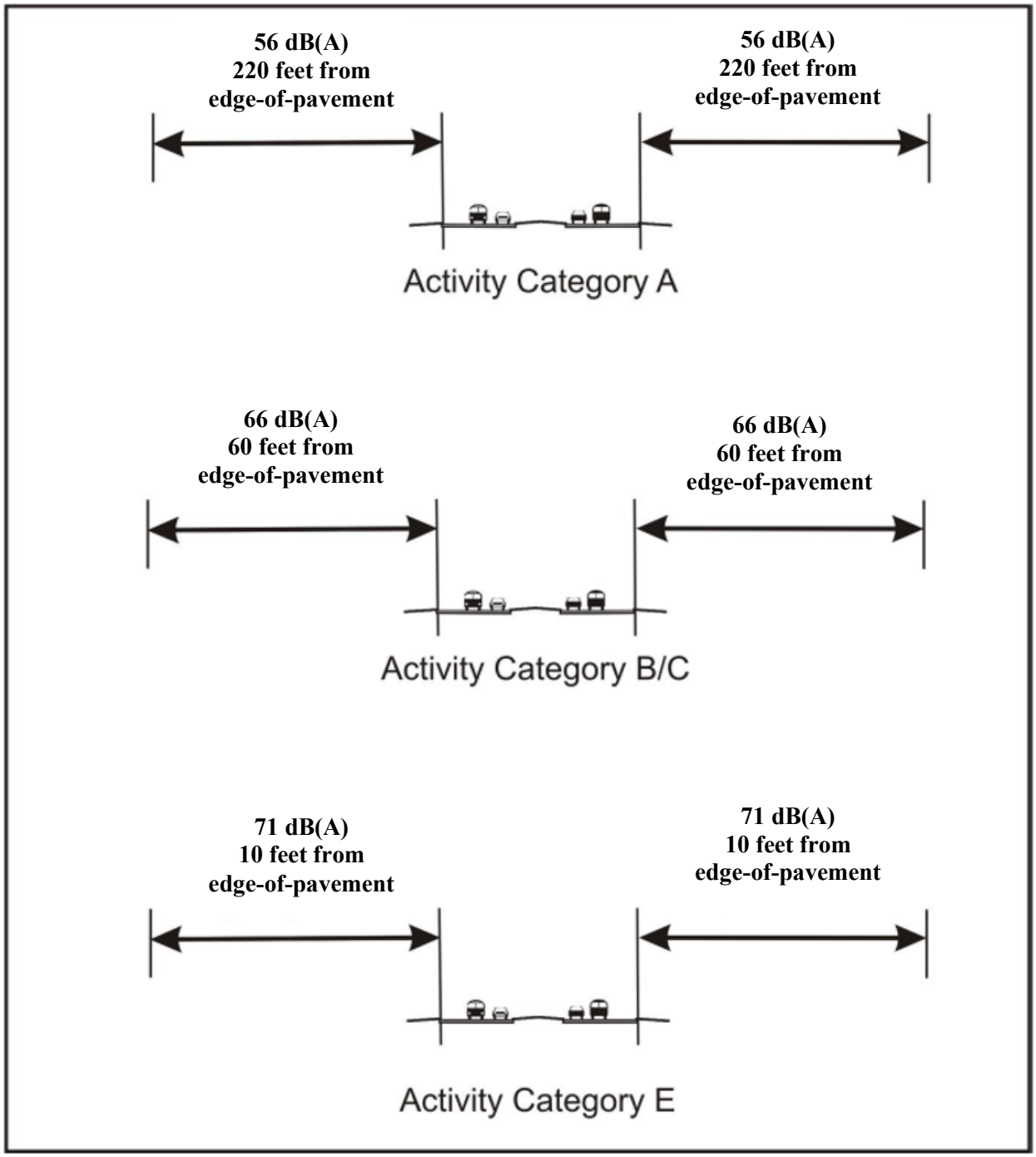


Figure 6-2: Noise Contours: Avenue Y to SR 17

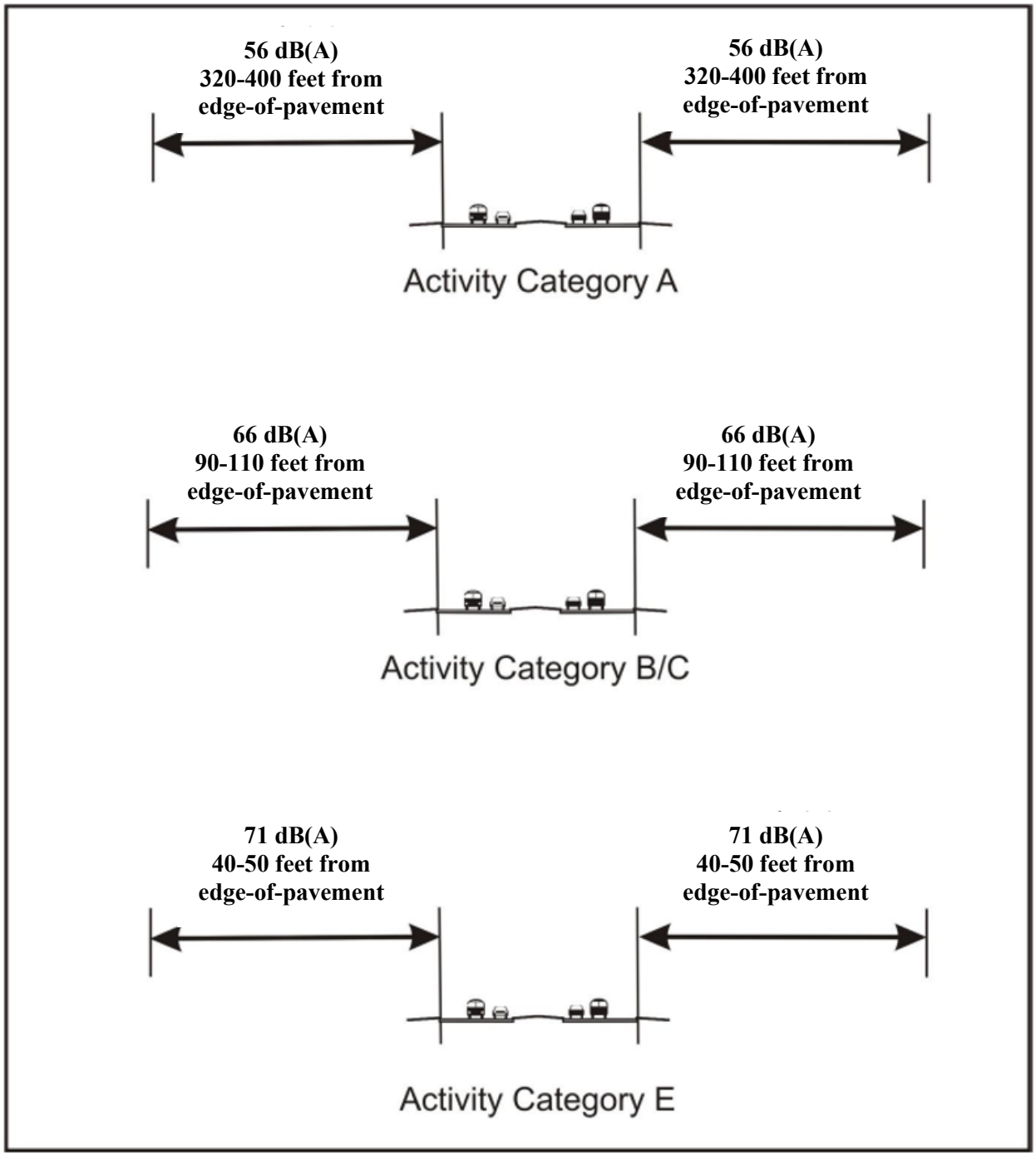
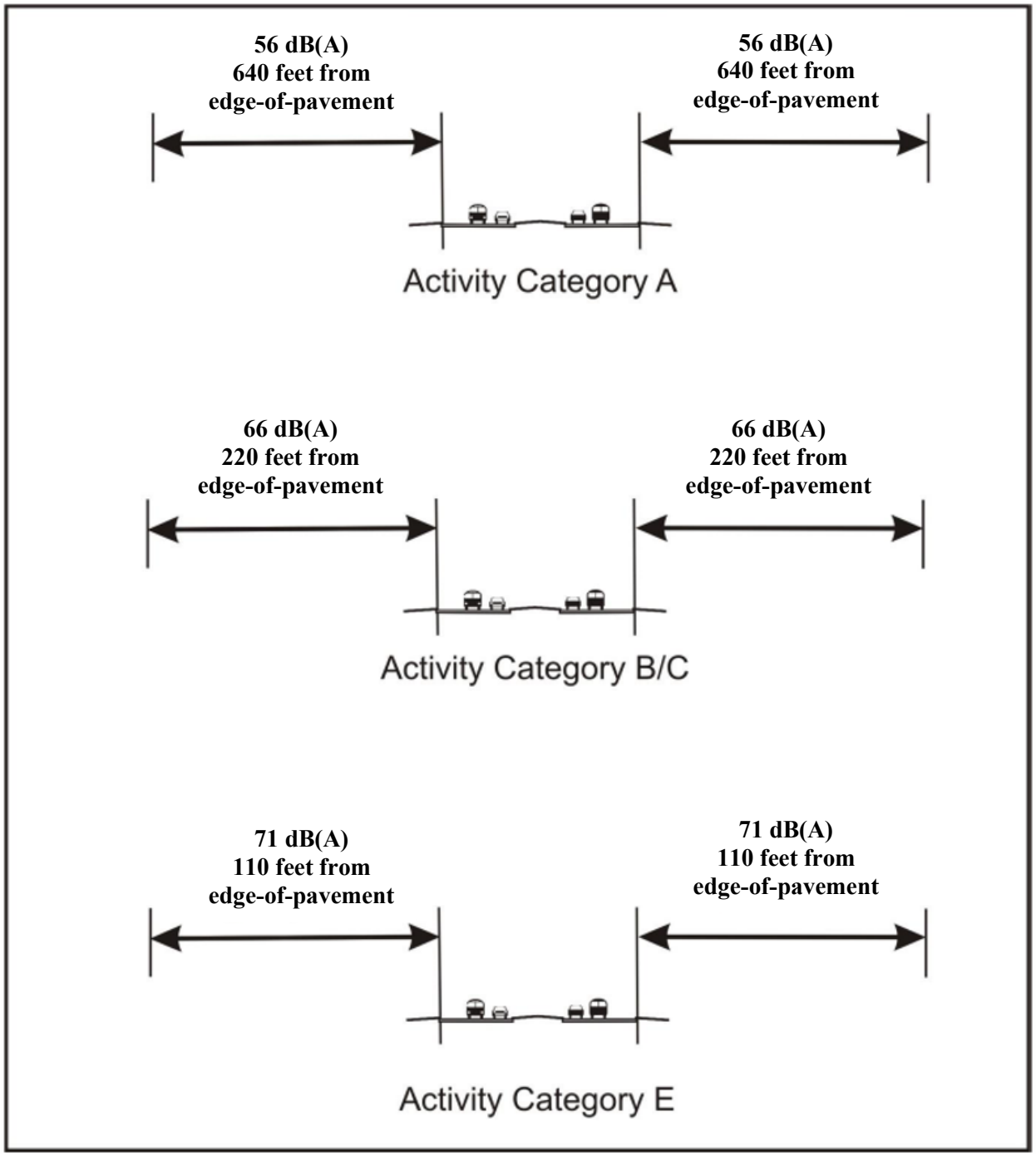


Figure 6-3: Noise Contours: US 27



7.0 CONSTRUCTION NOISE AND VIBRATION

Construction of the roadway improvements is not expected to have a substantial noise or vibration impact. If noise-sensitive land uses develop adjacent to the roadway prior to construction, additional impacts could result. It is anticipated that application of the FDOT *Standard Plans for Road and Bridge Construction* 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 Manager, in coordination with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

8.0 CONCLUSIONS

This NSR documents the results of an analysis that was performed for the PD&E Study for SR 544. Traffic noise levels were predicted for the existing conditions (2019) and future conditions without the proposed improvements (the No-Build Alternative) and with the improvements (the Preferred Alternative).

The results of the highway traffic noise analysis indicate that 116 residences, a park, and an outdoor use area of a place of worship would be impacted in the future (2045) with the Preferred Alternative for the proposed improvements. Following FDOT's Noise Policy, noise abatement measures were considered for the impacted properties.

The FDOT is committed to the construction of feasible and reasonable noise abatement measures at noise-impacted locations contingent upon the following conditions:

1. Final recommendations on the construction of abatement measures is 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 District Office; and

5. Safety and engineering aspects as related to the roadway user and the adjacent property owner have been reviewed and any conflicts or issues resolved.

Based on the results of the PD&E Study, the following noise barriers are a potentially reasonable and feasible noise abatement measure:

- Noise Barrier E1: Winter Ridge Condominiums. The optimal barrier is 453 feet long, and 16 feet tall. It benefits all 12 of the impacted receptors and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $217,440 or $18,120 per benefited receptor.

- Noise Barrier E2: Lake Point Landing and Adjacent Residence. The optimal barrier is 472 feet long and 10 feet tall. It benefits all 10 of the impacted receptors and an additional 6 receptors and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $141,600 or $8,850 per benefited receptor.

- Noise Barrier E4: Lake Smart Estates. The optimal barrier is 755 feet long and 10 feet tall. It benefits all 10 of the impacted receptors and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $226,500 or $22,650 per benefited receptor.

- Noise Barrier E5: Brookhaven Village. The optimal barrier is 992 feet long and 12 feet tall. It benefits all 10 of the impacted receptors, and five additional receptors, and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $357,120 or $23,808 per benefited receptor.

- Noise Barrier W2: Lake Rochelle Estates. The optimal barrier is 567 feet long and 12 feet tall. It benefits all 3 of the impacted receptors, and 3 additional receptors, and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $204,120 or $34,020 per benefited receptor.

- Noise Barrier W3: Lake'n Golf Estates, Fairview Village, and Lakeside Ranch. The optimal barrier is 1,455 feet long and 12 feet tall. It benefits 13 of the 16 impacted receptors, and 8 additional receptors, and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $523,800 or $24,943 per benefited receptor.

- Noise Barrier W4: Residences from Pomona Street to 5th Street South. The optimal barrier is 876 feet long and 14 feet tall. It benefits 4 of the 11 impacted receptors, and 6 additional receptors, and meets the NRDG of achieving a 7 dB(A) reduction for at least one of the benefited receptors. The barrier costs a total of $367,920 or $36,792 per benefited receptor.

Section 6.0 of this NSR provides distances from the edge-of-pavement with the proposed improvements at which noise levels are predicted to approach, meet, or exceed the NAC for the land uses designated as Activity Category A, B/C, and E for the project. This information is provided to assist local officials and developers in promoting noise compatible land uses.

9.0 REFERENCES

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FDOT. Traffic Noise Modeling and Analysis Practitioners Handbook, December 2018. https://www.fdot.gov/environment/publications.shtm

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FDOT. Standard Plans for Road and Bridge Construction. July 2023. https://www.fdot.gov/design/standardplans/default.shtm

APPENDIX A

TRAFFIC DATA

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From Martin Luther King Boulevard to Avenue Y (From Milepost 3.693 to Milepost 4.169) - Context Classification = C4

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 19,400 Posted Speed = 35 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 22,500 Posted Speed = 35 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 27,000 Posted Speed = 35 mph No. of Lanes = 2 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	864	Peak Direction	Autos	1,002	1,203
		Medium Trucks	16		Medium Trucks	18	22
		Heavy Trucks	32		Heavy Trucks	37	45
		Buses	5		Buses	6	7
		Motorcycles	9		Motorcycles	10	12
		Total[1]	925		Total[1]	1,073	1,288
	Off-Peak Direction	Autos	766	Off-Peak Direction	Autos	889	1,066
		Medium Trucks	14		Medium Trucks	16	20
		Heavy Trucks	29		Heavy Trucks	33	40
		Buses	4		Buses	5	6
		Motorcycles	8		Motorcycles	9	11
		Total[1]	821		Total[1]	952	1,142
LOS C	Peak Direction	Autos	**628**	Peak Direction	Autos	**628**	**824**
		Medium Trucks	**12**		Medium Trucks	**12**	**15**
		Heavy Trucks	**23**		Heavy Trucks	**23**	**31**
		Buses	**3**		Buses	**3**	**5**
		Motorcycles	**6**		Motorcycles	**6**	**8**
		Total[2]	**673**		Total[2]	**673**	**882**
	Off-Peak Direction	Autos	**557**	Off-Peak Direction	Autos	**557**	**731**
		Medium Trucks	**10**		Medium Trucks	**10**	**13**
		Heavy Trucks	**21**		Heavy Trucks	**21**	**27**
		Buses	**3**		Buses	**3**	**4**
		Motorcycles	**5**		Motorcycles	**5**	**7**
		Total[2]	**596**		Total[2]	**596**	**783**

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with no exclusive left-turn lanes (Existing) LOS D AADT volume = 17,600 X 0.80 = 14,100
2-lane divided roadway with two-way center left-turn lane (Proposed) LOS D AADT volume = 17,600 X 1.05 = 18,500
**Note: As a conservative approach, the LOS D service volume is being used since the 2023 Quality/LOS Handbook does not provide a LOS C service volume for this context classification.*

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

Prepared By: Greg Root (Print Name) _____ (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) _____ (Signature) Date: 06/21/2023 | 10:23 AM EDT

DocuSigned by:
Kyle Purvis
35E9D52E12B14A4...

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From Avenue Y to Speed Limit Change (From Milepost 4.169 to Milepost 4.919) - Context Classification = C3R

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 20,000 Posted Speed = 45 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 23,000 Posted Speed = 45 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 37,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	**889**	Peak Direction	Autos	1,023	1,645
		Medium Trucks	**19**		Medium Trucks	22	35
		Heavy Trucks	**38**		Heavy Trucks	44	70
		Buses	**5**		Buses	5	9
		Motorcycles	**3**		Motorcycles	4	6
		Total[1]	**954**		Total[1]	1,097	1,765
	Off-Peak Direction	Autos	**789**	Off-Peak Direction	Autos	907	1,459
		Medium Trucks	**17**		Medium Trucks	19	31
		Heavy Trucks	**34**		Heavy Trucks	39	62
		Buses	**4**		Buses	5	8
		Motorcycles	**3**		Motorcycles	3	5
		Total[1]	**846**		Total[1]	973	1,565
LOS C	Peak Direction	Autos	916	Peak Direction	Autos	**916**	**1,525**
		Medium Trucks	19		Medium Trucks	**19**	**32**
		Heavy Trucks	39		Heavy Trucks	**39**	**65**
		Buses	5		Buses	**5**	**8**
		Motorcycles	3		Motorcycles	**3**	**6**
		Total[2]	983		Total[2]	**983**	**1,636**
	Off-Peak Direction	Autos	812	Off-Peak Direction	Autos	**812**	**1,353**
		Medium Trucks	17		Medium Trucks	**17**	**28**
		Heavy Trucks	35		Heavy Trucks	**35**	**58**
		Buses	4		Buses	**4**	**7**
		Motorcycles	3		Motorcycles	**3**	**5**
		Total[2]	871		Total[2]	**871**	**1,451**

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with left-turn & right-turn lanes (Existing) LOS C AADT volume = 19,600 x 1.05 = 20,600
4-lane divided roadway with left-turn lanes (Proposed) LOS C AADT volume = 34,300

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

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) DocuSigned by: Kyle Purvis 35E9D52E12B14A4... (Signature) Date: 06/21/2023 | 10:23 AM EDT

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From Speed Limit Change to Lake Conine Drive (From Milepost 4.919 to Milepost 5.075) - Context Classification = C3R

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 20,000 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 23,000 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 37,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	889	Peak Direction	Autos	1,023	1,645
		Medium Trucks	19		Medium Trucks	22	35
		Heavy Trucks	38		Heavy Trucks	44	70
		Buses	5		Buses	5	9
		Motorcycles	3		Motorcycles	4	6
		Total[1]	954		Total[1]	1,097	1,765
	Off-Peak Direction	Autos	789	Off-Peak Direction	Autos	907	1,459
		Medium Trucks	17		Medium Trucks	19	31
		Heavy Trucks	34		Heavy Trucks	39	62
		Buses	4		Buses	5	8
		Motorcycles	3		Motorcycles	3	5
		Total[1]	846		Total[1]	973	1,565
LOS C	Peak Direction	Autos	**872**	Peak Direction	Autos	**872**	**1,525**
		Medium Trucks	**18**		Medium Trucks	**18**	**32**
		Heavy Trucks	**37**		Heavy Trucks	**37**	**65**
		Buses	**5**		Buses	**5**	**8**
		Motorcycles	**3**		Motorcycles	**3**	**6**
		Total[2]	**935**		Total[2]	**935**	**1,636**
	Off-Peak Direction	Autos	**773**	Off-Peak Direction	Autos	**773**	**1,353**
		Medium Trucks	**16**		Medium Trucks	**16**	**28**
		Heavy Trucks	**33**		Heavy Trucks	**33**	**58**
		Buses	**4**		Buses	**4**	**7**
		Motorcycles	**3**		Motorcycles	**3**	**5**
		Total[2]	**829**		Total[2]	**829**	**1,451**

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with no turn lanes but only one connection (Existing) LOS C AADT volume = 19,600
4-Lane divided roadway with no turn lanes but only one connection (Proposed) LOS C AADT volume = 34,300

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

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) DocuSigned by: Kyle Purvis 35E9D52E12B14A4... (Signature) Date: 06/21/2023 | 10:23 AM EDT

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From Lake Conine Drive to Old Lucerne Park Road (west end)(From Milepost 5.075 to Milepost 5.749) - Context Classification = C3R

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 17,600 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 23,000 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 37,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	**794**	Peak Direction	Autos	1,038	1,670
		Medium Trucks	**13**		Medium Trucks	16	26
		Heavy Trucks	**26**		Heavy Trucks	33	54
		Buses	**4**		Buses	5	9
		Motorcycles	**3**		Motorcycles	4	6
		Total[1]	**840**		Total[1]	1,097	1,765
	Off-Peak Direction	Autos	**704**	Off-Peak Direction	Autos	921	1,481
		Medium Trucks	**11**		Medium Trucks	15	23
		Heavy Trucks	**23**		Heavy Trucks	30	48
		Buses	**4**		Buses	5	8
		Motorcycles	**3**		Motorcycles	3	5
		Total[1]	**744**		Total[1]	973	1,565
LOS C	Peak Direction	Autos	885	Peak Direction	Autos	**885**	**1,548**
		Medium Trucks	14		Medium Trucks	**14**	**25**
		Heavy Trucks	28		Heavy Trucks	**28**	**50**
		Buses	5		Buses	**5**	**8**
		Motorcycles	3		Motorcycles	**3**	**6**
		Total[2]	935		Total[2]	**935**	**1,636**
	Off-Peak Direction	Autos	784	Off-Peak Direction	Autos	**784**	**1,373**
		Medium Trucks	12		Medium Trucks	**12**	**22**
		Heavy Trucks	25		Heavy Trucks	**25**	**44**
		Buses	4		Buses	**4**	**7**
		Motorcycles	3		Motorcycles	**3**	**5**
		Total[2]	829		Total[2]	**829**	**1,451**

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with some left-turn lanes (Existing) LOS C AADT volume = 19,600
4-lane divided roadway with some left-turn lanes (Proposed) LOS C AADT volume = 34,300

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

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) DocuSigned by: Kyle Purvis 35E9D52E12B14A4... (Signature) Date: 06/21/2023 | 10:23 AM EDT

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From Old Lucerne Park Road (west end) to Lucerne Loop Road (From Milepost 5.749 to Milepost 7.284) - Context Classification = C3C

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 14,500 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 17,500 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 32,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	**654**	Peak Direction	Autos	789	1,442
		Medium Trucks	**11**		Medium Trucks	13	24
		Heavy Trucks	**21**		Heavy Trucks	25	46
		Buses	**3**		Buses	4	6
		Motorcycles	**4**		Motorcycles	5	9
		Total[1]	**692**		Total[1]	835	1,526
	Off-Peak Direction	Autos	**580**	Off-Peak Direction	Autos	699	1,279
		Medium Trucks	**9**		Medium Trucks	11	21
		Heavy Trucks	**18**		Heavy Trucks	22	40
		Buses	**3**		Buses	3	6
		Motorcycles	**3**		Motorcycles	4	8
		Total[1]	**613**		Total[1]	740	1,354
LOS C	Peak Direction	Autos	726	Peak Direction	Autos	**726**	**1,384**
		Medium Trucks	12		Medium Trucks	**12**	**23**
		Heavy Trucks	23		Heavy Trucks	**23**	**44**
		Buses	3		Buses	**3**	**6**
		Motorcycles	4		Motorcycles	**4**	**8**
		Total[2]	768		Total[2]	**768**	**1,464**
	Off-Peak Direction	Autos	644	Off-Peak Direction	Autos	**644**	**1,227**
		Medium Trucks	10		Medium Trucks	**10**	**20**
		Heavy Trucks	20		Heavy Trucks	**20**	**39**
		Buses	3		Buses	**3**	**5**
		Motorcycles	4		Motorcycles	**4**	**7**
		Total[2]	681		Total[2]	**681**	**1,299**

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with left-turn & right-turn lanes (Existing) LOS C AADT Volume = 15,300 x 1.05 = 16,100
4-lane divided roadway with left-turn & right-turn lanes (Proposed) LOS C AADT volume = 30,700

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

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) DocuSigned by: Kyle Purvis 35E9D52E12B14A4... (Signature) Date: 06/21/2023 | 10:23 AM EDT

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From Lucerne Loop Road to Speed Limit Change (From Milepost 7.284 to Milepost 8.384) - Context Classification = C3C

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 14,000 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 22,000 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 37,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	**621**	Peak Direction	Autos	977	1,642
		Medium Trucks	**7**		Medium Trucks	11	18
		Heavy Trucks	**37**		Heavy Trucks	58	97
		Buses	**1**		Buses	1	2
		Motorcycles	**2**		Motorcycles	3	5
		Total[1]	**668**		Total[1]	1,049	1,765
	Off-Peak Direction	Autos	**551**	Off-Peak Direction	Autos	866	1,456
		Medium Trucks	**6**		Medium Trucks	10	16
		Heavy Trucks	**33**		Heavy Trucks	51	86
		Buses	**1**		Buses	1	1
		Motorcycles	**2**		Motorcycles	3	5
		Total[1]	**592**		Total[1]	931	1,565
LOS C	Peak Direction	Autos	715	Peak Direction	Autos	**715**	**1,363**
		Medium Trucks	8		Medium Trucks	**8**	**15**
		Heavy Trucks	42		Heavy Trucks	**42**	**80**
		Buses	1		Buses	**1**	**1**
		Motorcycles	2		Motorcycles	**2**	**5**
		Total[2]	768		Total[2]	**768**	**1,464**
	Off-Peak Direction	Autos	634	Off-Peak Direction	Autos	**634**	**1,208**
		Medium Trucks	7		Medium Trucks	**7**	**14**
		Heavy Trucks	37		Heavy Trucks	**37**	**71**
		Buses	1		Buses	**1**	**1**
		Motorcycles	2		Motorcycles	**2**	**4**
		Total[2]	681		Total[2]	**681**	**1,299**

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with left-turn & right-turn lanes (Existing) LOS C AADT Volume = 15,300 x 1.05 = 16,100
4-lane divided roadway with left-turn & right-turn lanes (Proposed) LOS C AADT volume = 30,700

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

Prepared By: Greg Root (Print Name) _____ (Signature) Date: 6/12/2023

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FDOT Reviewer: Kyle Purvis (Print Name) DocuSigned by: Kyle Purvis 35E9D52E12B14A4... (Signature) Date: 06/21/2023 | 10:23 AM EDT

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From Speed Limit Change to Old Lucerne Park Road (east end) (From Milepost 8.384 to Milepost 8.965) - Context Classification = C3C

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 14,000 Posted Speed = 50 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 22,000 Posted Speed = 50 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 37,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	**621**	Peak Direction	Autos	977	1,642
		Medium Trucks	**7**		Medium Trucks	11	18
		Heavy Trucks	**37**		Heavy Trucks	58	97
		Buses	**1**		Buses	1	2
		Motorcycles	**2**		Motorcycles	3	5
		Total[1]	**668**		Total[1]	1,049	1,765
	Off-Peak Direction	Autos	**551**	Off-Peak Direction	Autos	866	1,456
		Medium Trucks	**6**		Medium Trucks	10	16
		Heavy Trucks	**33**		Heavy Trucks	51	86
		Buses	**1**		Buses	1	1
		Motorcycles	**2**		Motorcycles	3	5
		Total[1]	**592**		Total[1]	931	1,565
LOS C	Peak Direction	Autos	715	Peak Direction	Autos	**715**	**1,363**
		Medium Trucks	8		Medium Trucks	**8**	**15**
		Heavy Trucks	42		Heavy Trucks	**42**	**80**
		Buses	1		Buses	**1**	**1**
		Motorcycles	2		Motorcycles	**2**	**5**
		Total[2]	768		Total[2]	**768**	**1,464**
	Off-Peak Direction	Autos	634	Off-Peak Direction	Autos	**634**	**1,208**
		Medium Trucks	7		Medium Trucks	**7**	**14**
		Heavy Trucks	37		Heavy Trucks	**37**	**71**
		Buses	1		Buses	**1**	**1**
		Motorcycles	2		Motorcycles	**2**	**4**
		Total[2]	681		Total[2]	**681**	**1,299**

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with left-turn & right-turn lanes (Existing) LOS C AADT Volume = 15,300 x 1.05 = 16,100
4-lane divided roadway with left-turn & right-turn lanes (Proposed) LOS C AADT volume = 30,700

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

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) DocuSigned by: Kyle Purvis 35E0D52E12B14A4... (Signature) Date: 06/21/2023 | 10:23 AM EDT

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From Old Lucerne Park Road (east end) to Lake Hamilton Drive (From Milepost 8.965 to Milepost 9.156) - Context Classification = C3C

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 18,500 Posted Speed = 50 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 27,000 Posted Speed = 50 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 40,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	812	Peak Direction	Autos	1,185	1,755
		Medium Trucks	15		Medium Trucks	22	33
		Heavy Trucks	48		Heavy Trucks	70	103
		Buses	2		Buses	2	3
		Motorcycles	6		Motorcycles	9	14
		Total[1]	882		Total[1]	1,288	1,908
	Off-Peak Direction	Autos	720	Off-Peak Direction	Autos	1,051	1,556
		Medium Trucks	13		Medium Trucks	20	29
		Heavy Trucks	42		Heavy Trucks	62	92
		Buses	1		Buses	2	3
		Motorcycles	6		Motorcycles	8	12
		Total[1]	783		Total[1]	1,142	1,692
LOS C	Peak Direction	Autos	**706**	Peak Direction	Autos	**706**	**1,347**
		Medium Trucks	**13**		Medium Trucks	**13**	**25**
		Heavy Trucks	**42**		Heavy Trucks	**42**	**79**
		Buses	**1**		Buses	**1**	**3**
		Motorcycles	**5**		Motorcycles	**5**	**10**
		Total[2]	**768**		Total[2]	**768**	**1,464**
	Off-Peak Direction	Autos	**626**	Off-Peak Direction	Autos	**626**	**1,195**
		Medium Trucks	**12**		Medium Trucks	**12**	**22**
		Heavy Trucks	**37**		Heavy Trucks	**37**	**70**
		Buses	**1**		Buses	**1**	**2**
		Motorcycles	**5**		Motorcycles	**5**	**9**
		Total[2]	**681**		Total[2]	**681**	**1,299**

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with left-turn & right-turn lanes (Existing) LOS C AADT Volume = 15,300 x 1.05 = 16,100
4-lane divided roadway with left-turn & right-turn lanes (Proposed) LOS C AADT volume = 30,700

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

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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FDOT Reviewer: Kyle Purvis (Print Name) DocuSigned by: Kyle Purvis 35E9D52E12B14A4... (Signature) Date: 06/21/2023 | 10:23 AM EDT

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From Lake Hamilton Drive to Brenton Manor Avenue (From Milepost 9.156 to Milepost 9.661) - Context Classification = C3C

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 21,000 Posted Speed = 50 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 30,000 Posted Speed = 50 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 43,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	930	Peak Direction	Autos	1,329	1,905
		Medium Trucks	15		Medium Trucks	21	31
		Heavy Trucks	48		Heavy Trucks	68	97
		Buses	2		Buses	3	4
		Motorcycles	7		Motorcycles	10	15
		Total[1]	1,002		Total[1]	1,431	2,051
	Off-Peak Direction	Autos	825	Off-Peak Direction	Autos	1,179	1,689
		Medium Trucks	13		Medium Trucks	19	27
		Heavy Trucks	42		Heavy Trucks	60	86
		Buses	2		Buses	2	3
		Motorcycles	6		Motorcycles	9	13
		Total[1]	888		Total[1]	1,269	1,819
LOS C	Peak Direction	Autos	**713**	Peak Direction	Autos	**713**	**1,360**
		Medium Trucks	**12**		Medium Trucks	**12**	**22**
		Heavy Trucks	**36**		Heavy Trucks	**36**	**69**
		Buses	**1**		Buses	**1**	**3**
		Motorcycles	**5**		Motorcycles	**5**	**10**
		Total[2]	**768**		Total[2]	**768**	**1,464**
	Off-Peak Direction	Autos	**632**	Off-Peak Direction	Autos	**632**	**1,206**
		Medium Trucks	**10**		Medium Trucks	**10**	**19**
		Heavy Trucks	**32**		Heavy Trucks	**32**	**62**
		Buses	**1**		Buses	**1**	**2**
		Motorcycles	**5**		Motorcycles	**5**	**9**
		Total[2]	**681**		Total[2]	**681**	**1,299**

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with left-turn & right-turn lanes (Existing) LOS C AADT Volume = 15,300 x 1.05 = 16,100
4-lane divided roadway with left-turn & right-turn lanes (Proposed) LOS C AADT volume = 30,700

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

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From Brenton Manor Avenue to US 27 (From Milepost 9.661 to Milepost 9.873) - Context Classification = C3C

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 22,000 Posted Speed = 50 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 30,000 Posted Speed = 50 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 43,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	979	Peak Direction	Autos	1,335	1,913
		Medium Trucks	15		Medium Trucks	20	29
		Heavy Trucks	46		Heavy Trucks	63	91
		Buses	2		Buses	3	4
		Motorcycles	7		Motorcycles	10	15
		Total[1]	1,049		Total[1]	1,431	2,051
	Off-Peak Direction	Autos	868	Off-Peak Direction	Autos	1,184	1,697
		Medium Trucks	13		Medium Trucks	18	25
		Heavy Trucks	41		Heavy Trucks	56	80
		Buses	2		Buses	2	3
		Motorcycles	7		Motorcycles	9	13
		Total[1]	931		Total[1]	1,269	1,819
LOS C	Peak Direction	Autos	**716**	Peak Direction	Autos	**716**	**1,366**
		Medium Trucks	**11**		Medium Trucks	**11**	**20**
		Heavy Trucks	**34**		Heavy Trucks	**34**	**65**
		Buses	**1**		Buses	**1**	**3**
		Motorcycles	**5**		Motorcycles	**5**	**10**
		Total[2]	**768**		Total[2]	**768**	**1,464**
	Off-Peak Direction	Autos	**635**	Off-Peak Direction	Autos	**635**	**1,211**
		Medium Trucks	**10**		Medium Trucks	**10**	**18**
		Heavy Trucks	**30**		Heavy Trucks	**30**	**57**
		Buses	**1**		Buses	**1**	**2**
		Motorcycles	**5**		Motorcycles	**5**	**9**
		Total[2]	**681**		Total[2]	**681**	**1,299**

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with left-turn & right-turn lanes (Existing) LOS C AADT Volume = 15,300 x 1.05 = 16,100
4-lane divided roadway with left-turn & right-turn lanes (Proposed) LOS C AADT volume = 30,700

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Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From US 27 to Speed Limit Change (From Milepost 9.873 to Milepost 10.773) - Context Classification = C3R

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 11,000 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 22,000 Posted Speed = 55 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 26,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	**479**	Peak Direction	Autos	959	**1,133**
		Medium Trucks	**10**		Medium Trucks	20	**23**
		Heavy Trucks	**31**		Heavy Trucks	62	**73**
		Buses	**1**		Buses	2	**2**
		Motorcycles	**4**		Motorcycles	7	**9**
		Total[1]	**525**		Total[1]	1,049	**1,240**
	Off-Peak Direction	Autos	**425**	Off-Peak Direction	Autos	850	**1,005**
		Medium Trucks	**9**		Medium Trucks	17	**20**
		Heavy Trucks	**27**		Heavy Trucks	55	**65**
		Buses	**1**		Buses	2	**2**
		Motorcycles	**3**		Motorcycles	7	**8**
		Total[1]	**465**		Total[1]	931	**1,100**
LOS C	Peak Direction	Autos	854	Peak Direction	Autos	**854**	1,495
		Medium Trucks	17		Medium Trucks	**17**	30
		Heavy Trucks	55		Heavy Trucks	**55**	96
		Buses	2		Buses	**2**	3
		Motorcycles	7		Motorcycles	**7**	12
		Total[2]	935		Total[2]	**935**	1,636
	Off-Peak Direction	Autos	757	Off-Peak Direction	Autos	**757**	1,326
		Medium Trucks	15		Medium Trucks	**15**	27
		Heavy Trucks	49		Heavy Trucks	**49**	85
		Buses	1		Buses	**1**	3
		Motorcycles	6		Motorcycles	**6**	10
		Total[2]	829		Total[2]	**829**	1,451

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with no turn lanes but only two connections (Existing) LOS C AADT volume = 19,600
4-lane divided roadway with left-turn lanes (Proposed) LOS C AADT volume = 34,300

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

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) DocuSigned by: Kyle Purvis 35E9D52E12B14A4... (Signature) Date: 06/21/2023 | 10:23 AM EDT

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From Speed Limit Change to Myrtle Avenue (From Milepost 10.773 to Milepost 11.109) - Context Classification = C3R

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 10,000 Posted Speed = 45 mph No. of Lanes = 2 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 28,000 Posted Speed = 45 mph No. of Lanes = 2 No. of Vehicles	Design Year (2045) Build Alt AADT = 29,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	**423**	Peak Direction	Autos	1,185	**1,227**
		Medium Trucks	**12**		Medium Trucks	33	**35**
		Heavy Trucks	**38**		Heavy Trucks	106	**109**
		Buses	**1**		Buses	2	**2**
		Motorcycles	**3**		Motorcycles	9	**10**
		Total[1]	**477**		Total[1]	1,336	**1,383**
	Off-Peak Direction	Autos	**375**	Off-Peak Direction	Autos	1,051	**1,088**
		Medium Trucks	**11**		Medium Trucks	30	**31**
		Heavy Trucks	**33**		Heavy Trucks	94	**97**
		Buses	**1**		Buses	2	**2**
		Motorcycles	**3**		Motorcycles	8	**9**
		Total[1]	**423**		Total[1]	1,184	**1,227**
LOS C	Peak Direction	Autos	664	Peak Direction	Autos	**664**	1,451
		Medium Trucks	19		Medium Trucks	**19**	41
		Heavy Trucks	59		Heavy Trucks	**59**	129
		Buses	1		Buses	**1**	3
		Motorcycles	5		Motorcycles	**5**	12
		Total[2]	749		Total[2]	**749**	1,636
	Off-Peak Direction	Autos	589	Off-Peak Direction	Autos	**589**	1,287
		Medium Trucks	17		Medium Trucks	**17**	36
		Heavy Trucks	53		Heavy Trucks	**53**	115
		Buses	1		Buses	**1**	3
		Motorcycles	5		Motorcycles	**5**	10
		Total[2]	664		Total[2]	**664**	1,451

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
2-lane undivided roadway with no exclusive left-turn lanes and only one right-turn lane (Existing) LOS C AADT volume = 19,600 X 0.80 = 15,700
4-lane divided roadway with left-turn lanes (Proposed) LOS C AADT volume = 34,300

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

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) DocuSigned by: Kyle Purvis (Signature) 35E9D52E12B14A4... Date: 06/21/2023 | 10:23 AM EDT

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
From Myrtle Avenue to SR 17 (From Milepost 11.109 to Milepost 11.647) - Context Classification = C3R

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 10,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 28,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles	Design Year (2045) Build Alt AADT = 29,000 Posted Speed = 45 mph No. of Lanes = 4 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos	**423**	Peak Direction	Autos	1,185	**1,227**
		Medium Trucks	**12**		Medium Trucks	33	**35**
		Heavy Trucks	**38**		Heavy Trucks	106	**109**
		Buses	**1**		Buses	2	**2**
		Motorcycles	**3**		Motorcycles	9	**10**
		Total[1]	**477**		Total[1]	1,336	**1,383**
	Off-Peak Direction	Autos	**375**	Off-Peak Direction	Autos	1,051	**1,088**
		Medium Trucks	**11**		Medium Trucks	30	**31**
		Heavy Trucks	**33**		Heavy Trucks	94	**97**
		Buses	**1**		Buses	2	**2**
		Motorcycles	**3**		Motorcycles	8	**9**
		Total[1]	**423**		Total[1]	1,184	**1,227**
LOS C	Peak Direction	Autos	1,087	Peak Direction	Autos	**1,087**	1,451
		Medium Trucks	31		Medium Trucks	**31**	41
		Heavy Trucks	97		Heavy Trucks	**97**	129
		Buses	2		Buses	**2**	3
		Motorcycles	9		Motorcycles	**9**	12
		Total[2]	1,226		Total[2]	**1,226**	1,636
	Off-Peak Direction	Autos	964	Off-Peak Direction	Autos	**964**	1,287
		Medium Trucks	27		Medium Trucks	**27**	36
		Heavy Trucks	86		Heavy Trucks	**86**	115
		Buses	2		Buses	**2**	3
		Motorcycles	8		Motorcycles	**8**	10
		Total[2]	1,087		Total[2]	**1,087**	1,451

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
4-Lane undivided roadway with no left-turn lanes (Existing) LOS C AADT volume = 34,300 x 0.75 = 25,700
4-lane divided roadway with left-turn lanes (Proposed) LOS C AADT volume = 34,300

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

Prepared By: Greg Root (Print Name) _____ (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) _____ (Signature) Date: 06/21/2023 | 10:23 AM EDT

DocuSigned by:
Kyle Purvis
35E9D52E12B14A4...

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
US 27 Mainline South of the On-/Off-Ramps - Context Classification = C2

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 39,500 Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 62,000 Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles	Design Year (2045) Build Alt AADT = 62,000 Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles
PM Peak Hour Demand	Peak Direction (SB)	Autos	**1,338**	Peak Direction (SB)	Autos	**2,886**	**2,886**
		Medium Trucks	**41**		Medium Trucks	**88**	**88**
		Heavy Trucks	**61**		Heavy Trucks	**132**	**132**
		Buses	**3**		Buses	**7**	**7**
		Motorcycles	**4**		Motorcycles	**10**	**10**
		Total[1]	**1,448**		Total[1]	**3,123**	**3,123**
	Off-Peak Direction (NB)	Autos	**1,258**	Off-Peak Direction (NB)	Autos	**2,284**	**2,284**
		Medium Trucks	**38**		Medium Trucks	**70**	**70**
		Heavy Trucks	**58**		Heavy Trucks	**104**	**104**
		Buses	**3**		Buses	**5**	**5**
		Motorcycles	**4**		Motorcycles	**8**	**8**
		Total[1]	**1,361**		Total[1]	**2,471**	**2,471**
LOS C	Peak Direction	Autos	3,011	Peak Direction	Autos	3,011	3,042
		Medium Trucks	92		Medium Trucks	92	93
		Heavy Trucks	138		Heavy Trucks	138	139
		Buses	7		Buses	7	7
		Motorcycles	10		Motorcycles	10	10
		Total[2]	3,258		Total[2]	3,258	3,291
	Off-Peak Direction	Autos	2,670	Off-Peak Direction	Autos	2,670	2,697
		Medium Trucks	81		Medium Trucks	81	82
		Heavy Trucks	122		Heavy Trucks	122	123
		Buses	6		Buses	6	6
		Motorcycles	9		Motorcycles	9	9
		Total[2]	2,889		Total[2]	2,889	2,919

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
6-Lane divided roadway with left-turn lanes (Existing) LOS C AADT volume = 68,300
6-lane limited access roadway in a rural area (Proposed) LOS C AADT volume = 69,000

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

Prepared By: Greg Root _____ Date: 6/12/2023
Print Name Signature

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

FDOT Reviewer: _____ Date: _____
Print Name Signature

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
US 27 Mainline Between the On-/Off-Ramps - Context Classification = C2

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = N/A Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = N/A Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles	Design Year (2045) Build Alt AADT = 47,700 Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos		Peak Direction (SB)	Autos		**2,262**
		Medium Trucks			Medium Trucks		**68**
		Heavy Trucks			Heavy Trucks		**112**
		Buses			Buses		**6**
		Motorcycles			Motorcycles		**9**
		Total			Total		**2,457**
	Off-Peak Direction	Autos		Off-Peak Direction (NB)	Autos		**1,779**
		Medium Trucks			Medium Trucks		**59**
		Heavy Trucks			Heavy Trucks		**88**
		Buses			Buses		**3**
		Motorcycles			Motorcycles		**6**
		Total			Total		**1,935**
LOS C	Peak Direction	Autos		Peak Direction	Autos		3,011
		Medium Trucks			Medium Trucks		94
		Heavy Trucks			Heavy Trucks		168
		Buses			Buses		7
		Motorcycles			Motorcycles		11
		Total			Total		3,291
	Off-Peak Direction	Autos		Off-Peak Direction	Autos		2,670
		Medium Trucks			Medium Trucks		84
		Heavy Trucks			Heavy Trucks		149
		Buses			Buses		6
		Motorcycles			Motorcycles		10
		Total			Total		2,919

(1) *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

(2) *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
6-lane limited access roadway in a rural area (Proposed) LOS C AADT volume = 69,000

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

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) DocuSigned by: Kyle Purvis 35E9D52E12B14A4... (Signature) Date: 06/21/2023 | 10:23 AM EDT

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
US 27 Ramps to/from the North- Context Classification = C2

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = N/A Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = N/A Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles	Design Year (2045) Build Alt AADT = 29,300 Posted Speed = 45 mph No. of Lanes = 1 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos		Peak Direction	Autos		**1,190**
		Medium Trucks			Medium Trucks		**37**
		Heavy Trucks			Heavy Trucks		**121**
		Buses			Buses		**2**
		Motorcycles			Motorcycles		**5**
		Total			Total	**SB Off-Ramp**	**1,355**
	Off-Peak Direction	Autos		Off-Peak Direction	Autos		**1,131**
		Medium Trucks			Medium Trucks		**29**
		Heavy Trucks			Heavy Trucks		**109**
		Buses			Buses		**3**
		Motorcycles			Motorcycles		**6**
		Total			Total	**NB On-Ramp**	**1,278**
LOS C	Peak Direction	Autos		Peak Direction	Autos		
		Medium Trucks			Medium Trucks		
		Heavy Trucks			Heavy Trucks		
		Buses			Buses		
		Motorcycles			Motorcycles		
		Total[(2)]			Total[(2)]		
	Off-Peak Direction	Autos		Off-Peak Direction	Autos		
		Medium Trucks			Medium Trucks		
		Heavy Trucks			Heavy Trucks		
		Buses			Buses		
		Motorcycles			Motorcycles		
		Total[(2)]			Total[(2)]		

Note: The 2023 FDOT Multimodal Quality/Level of Service Handbook does not include LOS C volumes for interchange on-/off-ramps.

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

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) DocuSigned by: Kyle Purvis 35E9D52E12B14A4... (Signature) Date: 06/21/2023 | 10:23 AM EDT

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
US 27 Ramps to/from the South - Context Classification = C2

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = N/A Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = N/A Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles	Design Year (2045) Build Alt AADT = 14,300 Posted Speed = 45 mph No. of Lanes = 1 No. of Vehicles
PM Peak Hour Demand	Peak Direction	Autos		Peak Direction	Autos		**624**
		Medium Trucks			Medium Trucks		**20**
		Heavy Trucks			Heavy Trucks		**20**
		Buses			Buses		**1**
		Motorcycles			Motorcycles		**1**
		Total			Total	**SB On-Ramp**	**666**
	Off-Peak Direction	Autos		Off-Peak Direction	Autos		**505**
		Medium Trucks			Medium Trucks		**11**
		Heavy Trucks			Heavy Trucks		**16**
		Buses			Buses		**2**
		Motorcycles			Motorcycles		**2**
		Total			Total	**NB Off-Ramp**	**536**
LOS C	Peak Direction	Autos		Peak Direction	Autos		
		Medium Trucks			Medium Trucks		
		Heavy Trucks			Heavy Trucks		
		Buses			Buses		
		Motorcycles			Motorcycles		
		Total[2]			Total[2]		
	Off-Peak Direction	Autos		Off-Peak Direction	Autos		
		Medium Trucks			Medium Trucks		
		Heavy Trucks			Heavy Trucks		
		Buses			Buses		
		Motorcycles			Motorcycles		
		Total[2]			Total[2]		

[1] *Peak hour peak direction volumes = AADT x 0.09 x 0.53 / Peak hour off-peak direction volumes = AADT x 0.09 x (1-0.53)*

* *Note: The 2023 FDOT Multimodal Quality/Level of Service Handbook does not include LOS C volumes for interchange on-/off-ramps.*

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

Prepared By: Greg Root (Print Name) Greg Root (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) DocuSigned by: Kyle Purvis (Signature) 35E9D52E12B14A4... Date: 06/21/2023 | 10:23 AM EDT

SR 544 from Martin Luther King Boulevard to SR 17 (Section # 16140000)
Project Development & Environment Study (FPID # 440273-1-22-01)
Traffic Data for Noise Analysis
US 27 Mainline North of the On-/Off Ramps - Context Classification = C2

Demand Peak Hour/LOS C	Direction	Vehicle Type	Existing Year (2019) AADT = 46,500 Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles	Direction	Vehicle Type	Design Year (2045) No-Build Alt AADT = 71,000 Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles	Design Year (2045) Build Alt AADT = 77,000 Posted Speed = 60 mph No. of Lanes = 6 No. of Vehicles
PM Peak Hour Demand	Peak Direction (SB)	Autos	**1,696**	Peak Direction (SB)	Autos	3,183	3,453
		Medium Trucks	**52**		Medium Trucks	97	105
		Heavy Trucks	**115**		Heavy Trucks	215	233
		Buses	**4**		Buses	7	8
		Motorcycles	**7**		Motorcycles	13	14
		Total[1]	**1,873**		Total[1]	3,515	3,812
	Off-Peak Direction (NB)	Autos	**1,487**	Off-Peak Direction (NB)	Autos	2,653	2,910
		Medium Trucks	**45**		Medium Trucks	81	88
		Heavy Trucks	**101**		Heavy Trucks	180	197
		Buses	**3**		Buses	6	6
		Motorcycles	**6**		Motorcycles	11	12
		Total[1]	**1,642**		Total[1]	2,930	3,213
LOS C	Peak Direction	Autos	2,950	Peak Direction	Autos	**2,950**	**2,981**
		Medium Trucks	90		Medium Trucks	**90**	**91**
		Heavy Trucks	200		Heavy Trucks	**200**	**202**
		Buses	7		Buses	**7**	**7**
		Motorcycles	12		Motorcycles	**12**	**12**
		Total[2]	3,258		Total[2]	**3,258**	**3,291**
	Off-Peak Direction	Autos	2,616	Off-Peak Direction	Autos	**2,616**	**2,643**
		Medium Trucks	80		Medium Trucks	**80**	**80**
		Heavy Trucks	177		Heavy Trucks	**177**	**179**
		Buses	6		Buses	**6**	**6**
		Motorcycles	10		Motorcycles	**10**	**11**
		Total[2]	2,889		Total[2]	**2,889**	**2,919**

[2] *Obtained from the 2023 FDOT Multimodal Quality/Level of Service Handbook*
6-Lane divided roadway with left-turn lanes (Existing) LOS C AADT volume = 68,300
6-lane limited access roadway in a rural area (Proposed) LOS C AADT volume = 69,000

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

Prepared By: Greg Root (Print Name) _____ (Signature) Date: 6/12/2023

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

FDOT Reviewer: Kyle Purvis (Print Name) _____ (Signature) Date: 06/21/2023 | 10:23 AM EDT

DocuSigned by:
Kyle Purvis
35E9D52E12B14A4...

APPENDIX B

VALIDATION DOCUMENTATION

NOISE MEASUREMENT DATA SHEET

Measurements Taken By: Robyn Hartz & Wayne Arner Date: 5-30-23
Time Run 1 Started: 13:45 pm Time Run 1 Ended: 13:55 pm
Time Run 2 Started: 14:01 pm Time Run 2 Ended: 14:11 pm
Time Run 3 Started: 14:17 pm Time Run 3 Ended: 14:27 pm
Project Identification:
Financial Project ID: 440273-1-22-01
Project Location: SR 544 Winter Haven/Haines City
Site Identification: Site 1: West side of SR 544 at Harry King Park. LD 831 100' from EOP.

Weather Conditions:
Sky: Clear Partly Cloudy X Cloudy Other
Temperature 89F Wind Speed 3 mph Wind Direction from NE Humidity 52%
Equipment:
Sound Level Meter:
Type: Larson Davis 831
Did you check the battery? Yes X No
Calibration Readings: Start 114.0 End 114.1
Response Settings: Slow
Weighting: A
Calibrator:
Type: LD CAL200
Did you check the battery? Yes

TRAFFIC DATA (Run 1/Run 2/Run 3)

Roadway Identification	SR 544 EB		SR 544 WB	
Vehicle Type	Volume	Speed (mph)	Volume	Speed (mph)
Autos	121/94/102	43.2/44.2/44.2	113/130/142	47.2/45.6/35.2
Medium Trucks	6/3/4	46.0/50.0/48.0	6/1/2	45.3/53.0/49.1
Heavy Trucks	8/6/12	33.5/48.0/44.8	7/13/5	44.2/44.6/30.8
Buses	0/2/0	na/43.0/na	1/0/2	44.5/na/33.0
Motorcycles	0/0/0	na/na/na	0/2/0	na/39.5/na
Duration	Three 10-minute sample periods		Three 10-minute sample periods	

RESULTS [dB(A)]

L_{EQ} 64.0 (Run 1), 64.1 (Run 2), 63.5 (Run 3)

Primary Noise: Traffic on SR 544
Background Noise: Cars in parking lot, birds, distant mowing, flyovers.

NOISE MEASUREMENT DATA SHEET

Measurements Taken By: Robyn Hartz & Wayne Arner Date: 5-30-23
Time Run 1 Started: 10:56 am Time Run 1 Ended: 11:06 am
Time Run 2 Started: 11:12 am Time Run 2 Ended: 11:22 am
Time Run 3 Started: 11:29 am Time Run 3 Ended: 11:39 am
Project Identification:
Financial Project ID: 440273-1-22-01
Project Location: SR 544 Winter Haven/Haines City
Site Identification: Site 2: South side of SR 544 at 4th St S. LD 831 100' from EOP.

Weather Conditions:
Sky: Clear Partly Cloudy X Cloudy Other
Temperature 86F Wind Speed 3 mph Wind Direction from N Humidity 52%
Equipment:
Sound Level Meter:
Type: Larson Davis 831
Did you check the battery? Yes X No
Calibration Readings: Start 114.0 End 114.0
Response Settings: Slow
Weighting: A
Calibrator:
Type: LD CAL200
Did you check the battery? Yes

TRAFFIC DATA (Run 1/Run 2/Run 3)

Roadway Identification	SR 544 EB		SR 544 WB	
Vehicle Type	Volume	Speed (mph)	Volume	Speed (mph)
Autos	38/48/43	42.2/41.0/43.1	50/48/47	40.3/41.6/41.9
Medium Trucks	3/4/2	39.0/51.0/33.0	1/3/2	36.3/38.5/34.0
Heavy Trucks	11/7/3	45.0/43.4/56.0	7/8/15	42.5/38.1/37.7
Buses	0/0/0	na/na/na	0/0/0	na/na/na
Motorcycles	0/0/0	na/na/na	0/0/0	na/na/na
Duration	Three 10-minute sample periods		Three 10-minute sample periods	

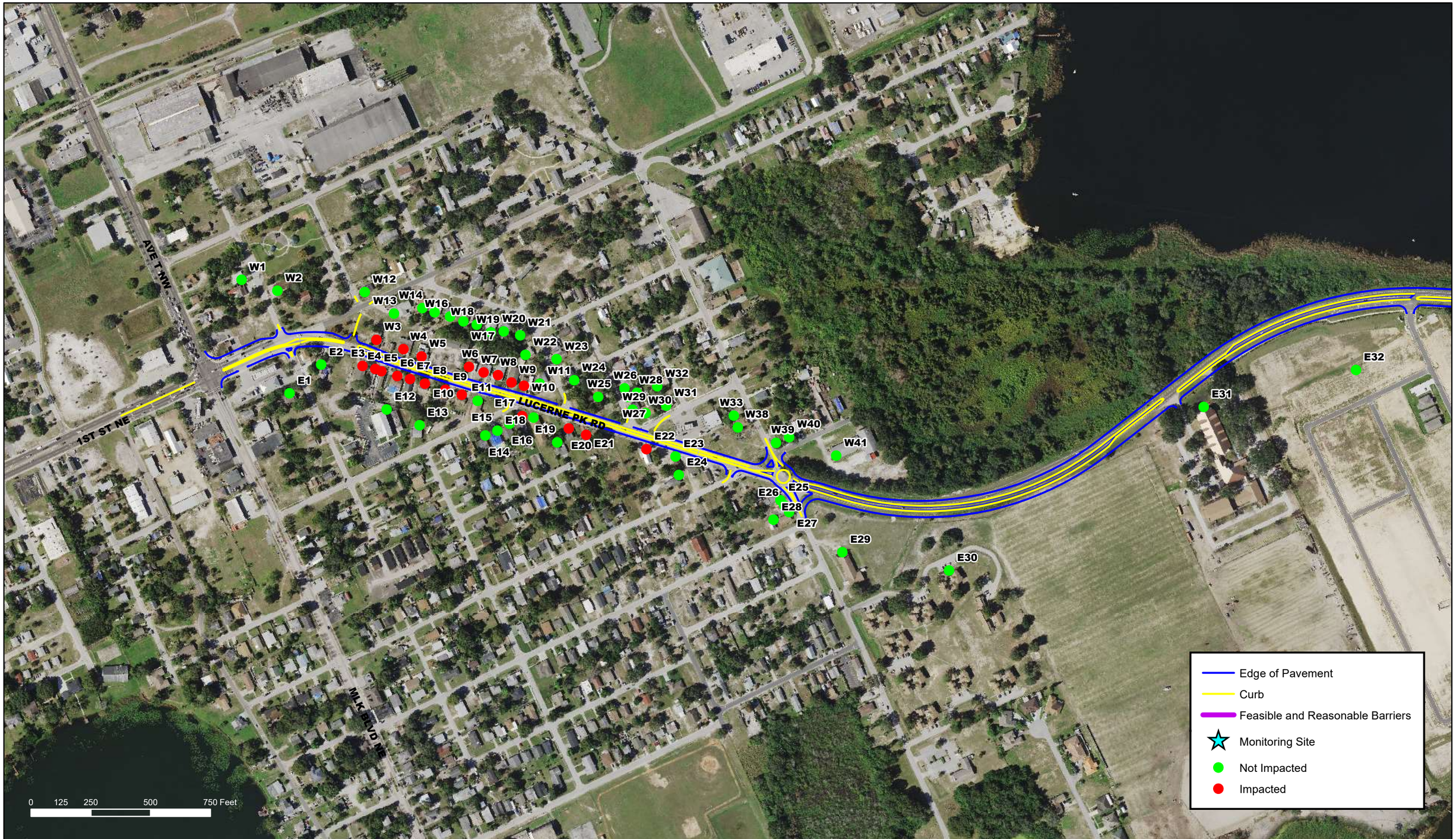
RESULTS [dB(A)] 831

L_{EQ} 61.4 (Run 1), 59.8 (Run 2), 60.0 (Run 3)

Primary Noise: Traffic on SR 544
Background Noise: Passbys on 4th St S., birds, distant mowing, intermittent traffic flow.

APPENDIX C

PROJECT AERIALS

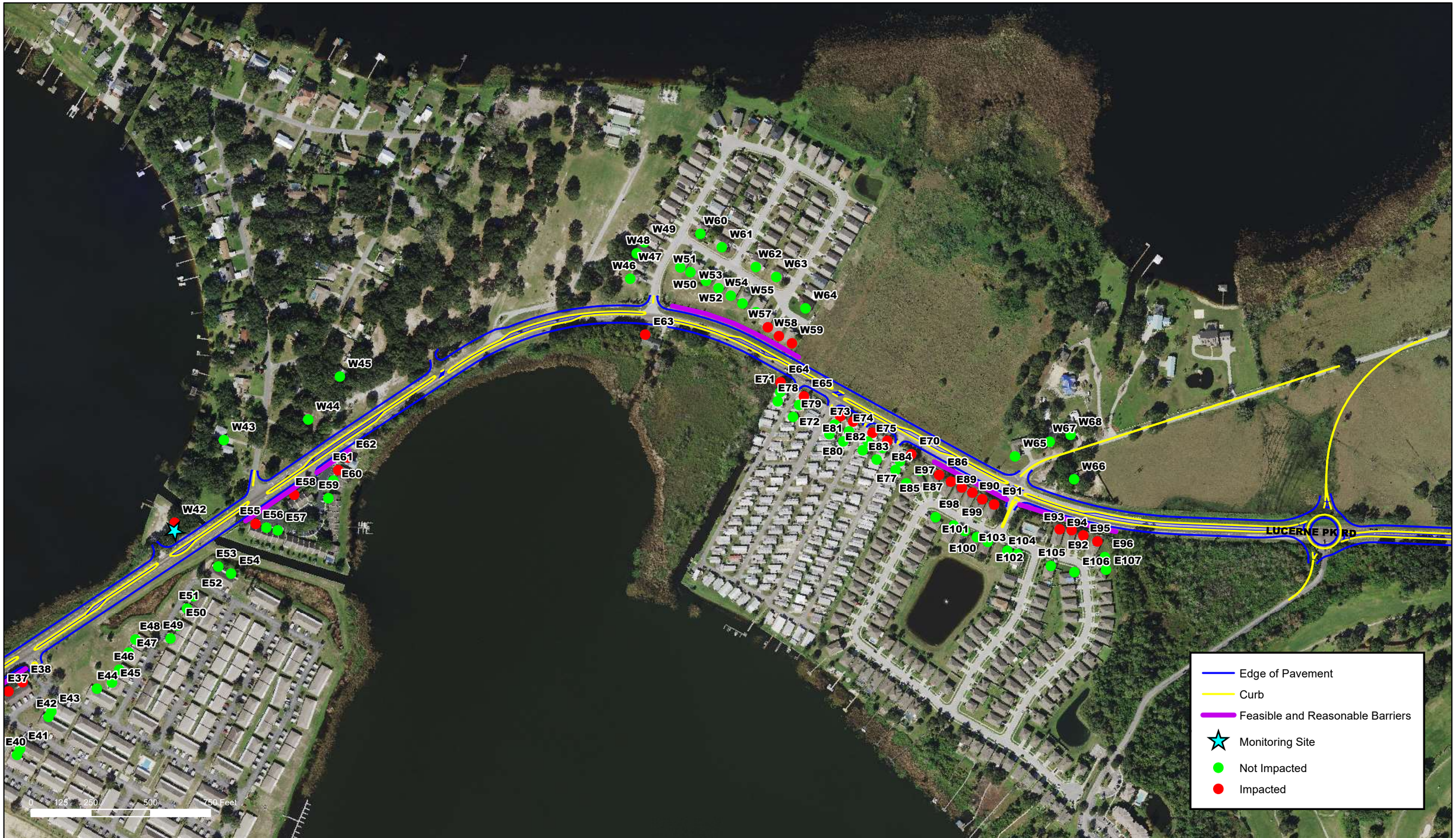


SR 544 from Martin Luther King Blvd. to SR 17

Project Aerials and Noise Sensitive Receptors

SR 544 from Martin Luther King Blvd. to SR 17

Project Aerials and Noise Sensitive Receptors

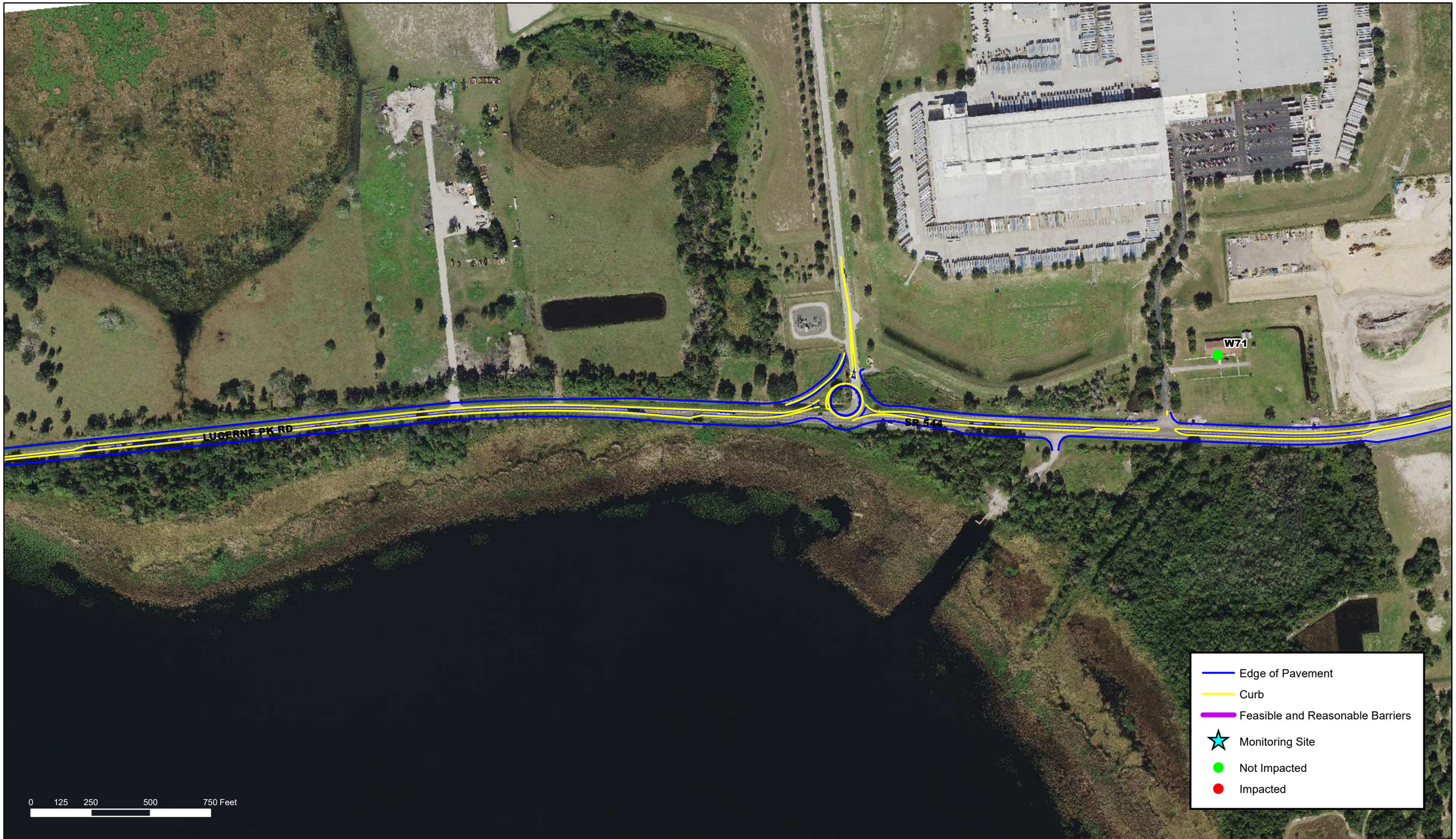


SR 544 from Martin Luther King Blvd. to SR 17

Project Aerials and Noise Sensitive Receptors

SR 544 from Martin Luther King Blvd. to SR 17

Project Aerials and Noise Sensitive Receptors

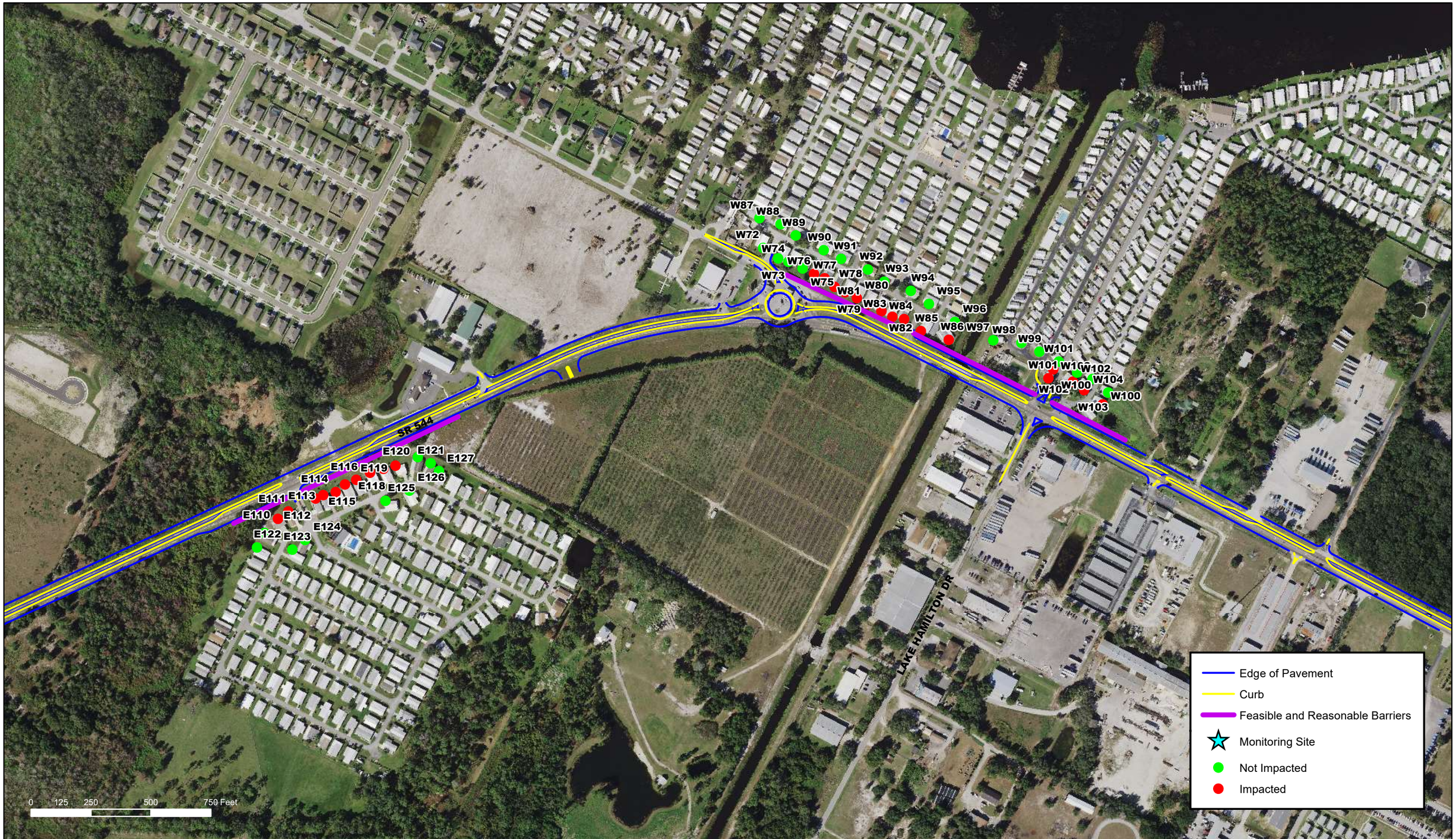


SR 544 from Martin Luther King Blvd. to SR 17

Project Aerials and Noise Sensitive Receptors

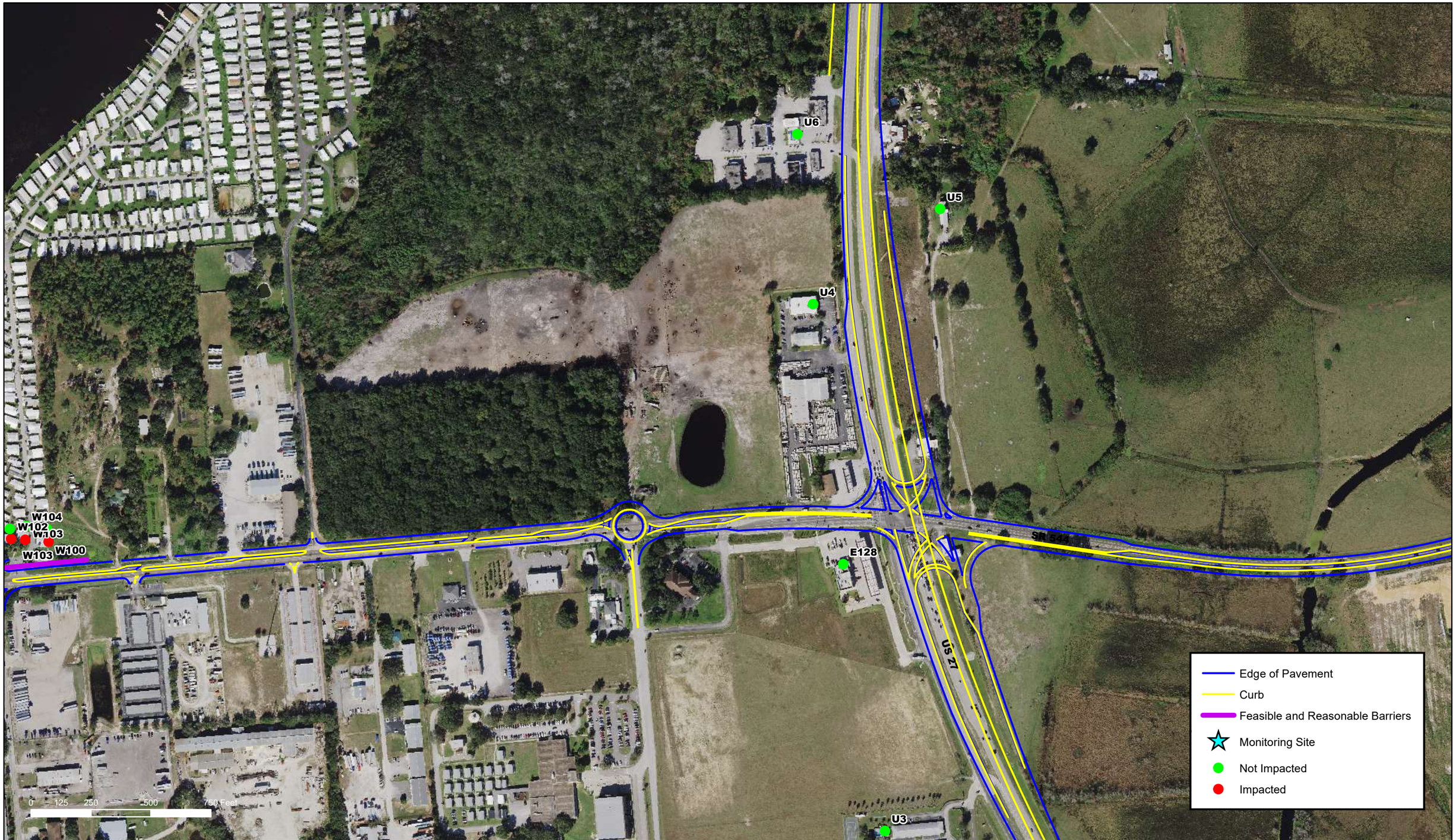
SR 544 from Martin Luther King Blvd. to SR 17

Project Aerials and Noise Sensitive Receptors



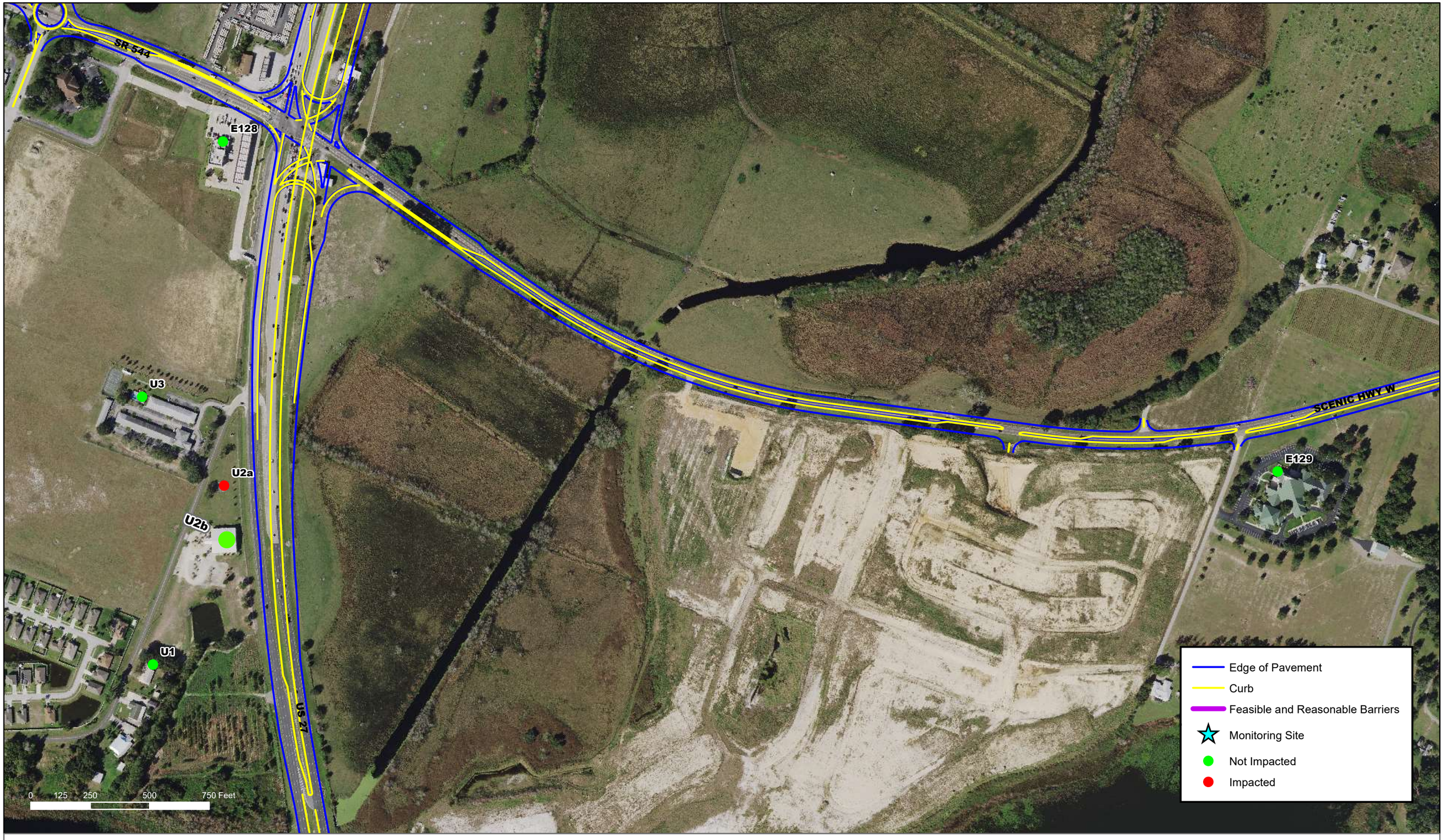
SR 544 from Martin Luther King Blvd. to SR 17

Project Aerials and Noise Sensitive Receptors



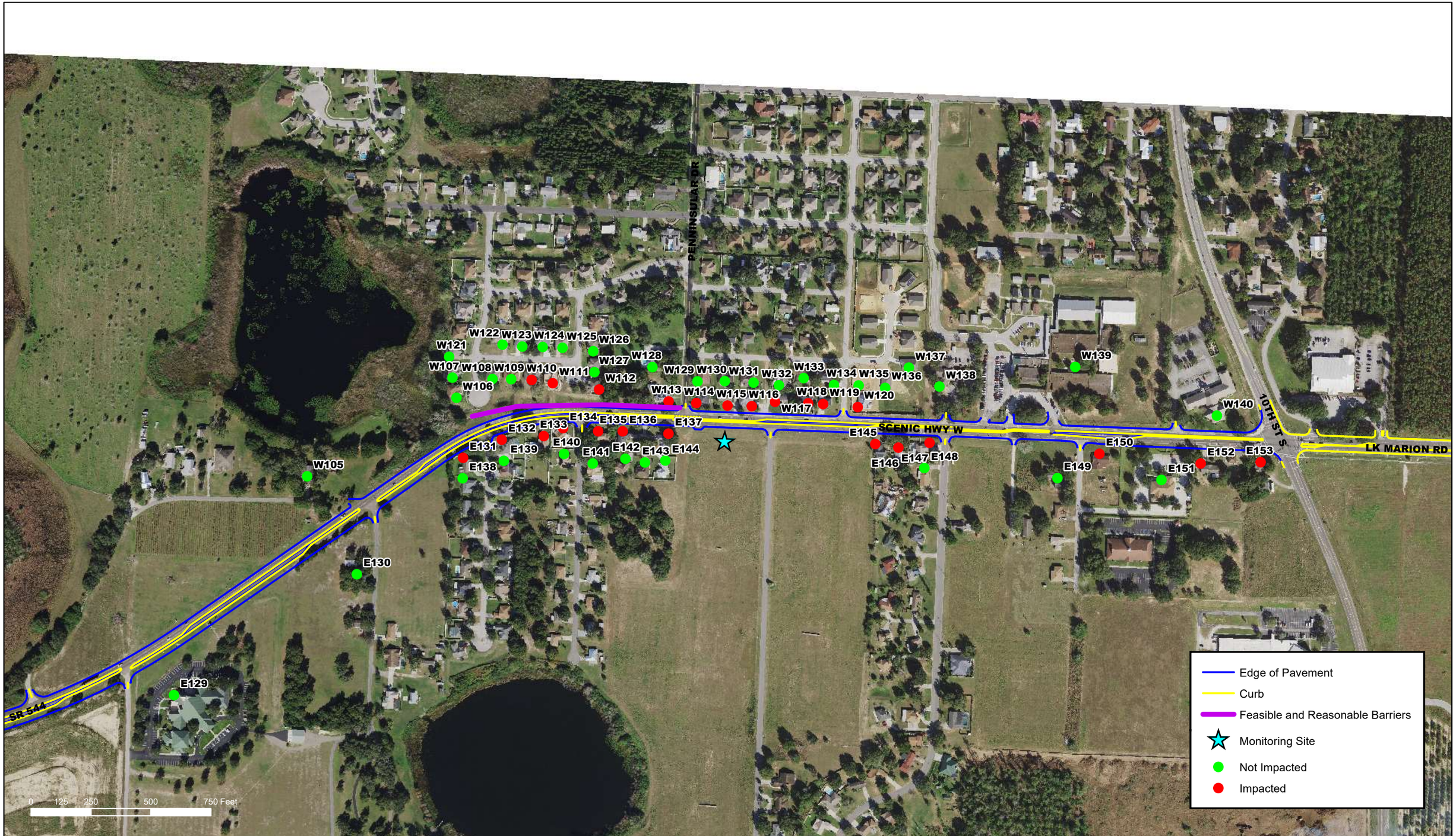
SR 544 from Martin Luther King Blvd. to SR 17

Project Aerials and Noise Sensitive Receptors



SR 544 from Martin Luther King Blvd. to SR 17

Project Aerials and Noise Sensitive Receptors



SR 544 from Martin Luther King Blvd. to SR 17

Project Aerials and Noise Sensitive Receptors

APPENDIX D

PREDICTED TRAFFIC NOISE LEVELS

Receptor	Dwelling Units	NAC Category	Impact Criteria	Existing (2019) Noise Levels (dB(A))	No Build (2045) Noise Levels (dB(A))	Build (2045) Noise Levels (dB(A))	Increase over Existing (Build - Existing)	Impact (Yes/No)
E1	1	B	66	55.0	55.0	60.3	5.3	
E2	1	B	66	61.6	61.6	65.0	3.4	
E3	1	B	66	66.3	66.3	**67.7**	1.4	**Yes**
E4	2	B	66	66.5	66.6	**68.3**	1.8	**Yes**
E5	2	B	66	66.4	66.4	**68.3**	1.9	**Yes**
E6	1	B	66	66.3	66.3	**68.4**	2.1	**Yes**
E7	1	B	66	66.7	66.7	**68.8**	2.1	**Yes**
E8	1	B	66	66.7	66.7	**68.8**	2.1	**Yes**
E9	1	B	66	66.7	66.7	**68.7**	2.0	**Yes**
E10	2	B	66	66.7	66.7	**68.2**	1.5	**Yes**
E11	0	D	51	41.3	41.3	42.5	1.2	
E12	0	D	51	30.1	30.1	34.1	4.0	
E13	1	B	66	54.2	54.2	57.8	3.6	
E14	1	B	66	55.9	55.9	59.5	3.6	
E15	1	B	66	57.7	57.7	61.5	3.8	
E16	1	B	66	60.7	60.7	63.7	3.0	
E17	1	B	66	65.5	65.5	**66.4**	0.9	**Yes**
E18	0	D	51	41.3	41.3	42.1	0.8	
E19	1	B	66	59.3	59.3	63.0	3.7	
E20	1	B	66	66.3	66.3	**67.1**	0.8	**Yes**
E21	1	B	66	65.8	65.8	**66.8**	1.0	**Yes**
E22	1	B	66	67.4	67.4	**68.7**	1.3	**Yes**
E23	0	D	51	43.2	43.2	44.6	1.4	
E24	1	B	66	59.9	59.9	63.4	3.5	
E25	1	B	66	65.9	66.0	64.5	-1.4	
E26	1	B	66	64.6	64.7	63.5	-1.1	
E27	1	B	66	63.1	63.2	62.7	-0.4	
E28	1	B	66	59.5	59.6	60.4	0.9	
E29	0	D	51	33.2	33.3	35.1	1.9	
E30	6	B	66	55.9	56.0	60.1	4.2	
E31	0	D	51	38.3	38.4	40.9	2.6	
E32	7	B	66	56.7	56.9	60.3	3.6	
E33	2	B	66	66.7	66.8	**70.6**	3.9	**Yes**
E34	2	B	66	66.7	66.8	**70.5**	3.8	**Yes**
E35	2	B	66	66.9	67.0	**70.6**	3.7	**Yes**
E36	2	B	66	67.0	67.1	**70.6**	3.6	**Yes**
E37	2	B	66	66.9	67.1	**70.4**	3.5	**Yes**
E38	2	B	66	66.9	67.0	**70.4**	3.5	**Yes**
E39	2	B	66	52.5	52.6	56.0	3.5	
E40	2	B	66	48.4	48.5	50.9	2.5	
E41	2	B	66	48.1	48.2	51.1	3.0	
E42	2	B	66	51.3	51.4	54.0	2.7	
E43	2	B	66	47.6	47.7	50.0	2.4	
E44	2	B	66	55.6	55.8	58.8	3.2	
E45	2	B	66	55.5	55.6	58.9	3.4	
E46	2	B	66	56.7	56.8	59.9	3.2	
E47	2	B	66	58.1	58.2	61.2	3.1	
E48	2	B	66	59.6	59.7	62.6	3.0	
E49	2	B	66	55.8	55.9	59.0	3.2	
E50	2	B	66	57.1	57.2	60.2	3.1	
E51	2	B	66	58.7	58.8	61.6	2.9	
E52	2	B	66	59.8	59.9	62.5	2.7	
E53	2	B	66	61.2	61.3	63.4	2.2	
E54	2	B	66	58.3	58.4	60.9	2.6	
E55	2	B	66	67.9	67.9	68.0	0.1	Yes
E56	2	B	66	63.9	63.9	63.9	0.0	
E57	2	B	66	61.3	61.3	61.9	0.6	
E58	5	B	66	70.7	70.8	**70.3**	-0.4	**Yes**
E59	2	B	66	61.0	61.0	61.2	0.2	

Receptor	Dwelling Units	NAC Category	Impact Criteria	Existing (2019) Noise Levels (dB(A))	No Build (2045) Noise Levels (dB(A))	Build (2045) Noise Levels (dB(A))	Increase over Existing (Build - Existing)	Impact (Yes/No)
E60	2	B	66	65.9	65.9	64.8	-1.1	
E61	2	B	66	68.7	68.7	**67.4**	-1.3	**Yes**
E62	1	B	66	71.7	71.7	**70.4**	-1.3	**Yes**
E63	1	B	66	70.5	70.9	**69.4**	-1.1	**Yes**
E64	1	B	66	71.0	71.4	**70.5**	-0.5	**Yes**
E65	1	B	66	68.7	69.1	**68.6**	-0.1	**Yes**
E66	1	B	66	68.6	69.0	**68.6**	0.0	**Yes**
E67	1	B	66	70.9	71.3	**70.7**	-0.2	**Yes**
E68	1	B	66	70.8	71.2	**70.4**	-0.4	**Yes**
E69	1	B	66	69.4	69.9	**69.0**	-0.4	**Yes**
E70	1	B	66	71.3	71.7	**70.8**	-0.5	**Yes**
E71	1	B	66	66.2	66.7	65.6	-0.6	
E72	1	B	66	64.3	64.7	64.0	-0.3	
E73	1	B	66	64.2	64.6	64.0	-0.2	
E74	1	B	66	64.6	65.0	64.4	-0.2	
E75	1	B	66	65.1	65.5	64.8	-0.3	
E76	1	B	66	65.3	65.7	64.8	-0.5	
E77	1	B	66	64.5	64.9	63.8	-0.7	
E78	1	B	66	62.6	63.0	61.9	-0.7	
E79	1	B	66	60.8	61.2	61.0	0.2	
E80	1	B	66	61.0	61.4	61.8	0.8	
E81	1	B	66	61.4	61.9	62.1	0.7	
E82	1	B	66	61.9	62.3	62.2	0.3	
E83	1	B	66	61.0	61.5	61.4	0.4	
E84	1	B	66	61.7	62.1	61.5	-0.2	
E85	1	B	66	67.2	67.6	65.9	-1.3	
E86	1	B	66	69.6	70.0	**68.4**	-1.2	**Yes**
E87	1	B	66	69.5	69.9	**68.1**	-1.4	**Yes**
E88	1	B	66	69.5	69.9	**68.0**	-1.5	**Yes**
E89	1	B	66	69.4	69.9	**68.2**	-1.2	**Yes**
E90	1	B	66	68.4	68.9	**67.5**	-0.9	**Yes**
E91	1	B	66	68.4	68.8	**67.7**	-0.7	**Yes**
E92	1	B	66	67.9	68.4	**67.8**	-0.1	**Yes**
E93	1	B	66	68.8	69.2	**68.4**	-0.4	**Yes**
E94	1	B	66	68.0	68.4	**67.5**	-0.5	**Yes**
E95	1	B	66	66.8	67.3	**66.4**	-0.4	**Yes**
E96	1	B	66	61.8	62.2	62.8	1.0	
E97	1	B	66	61.9	62.3	61.7	-0.2	
E98	1	B	66	58.3	58.7	59.4	1.1	
E99	1	B	66	58.6	59.1	59.7	1.1	
E100	1	B	66	58.5	58.9	59.8	1.3	
E101	1	B	66	58.7	59.1	60.1	1.4	
E102	1	B	66	58.5	58.9	60.0	1.5	
E103	1	B	66	58.5	58.9	59.9	1.4	
E104	1	B	66	58.5	59.0	60.0	1.5	
E105	1	B	66	58.3	58.8	59.9	1.6	
E106	1	B	66	58.5	59.0	60.0	1.5	
E107	1	B	66	58.9	59.3	60.7	1.8	
E108	0	C	66	61.6	62.1	62.3	0.7	
E109	1	B	66	65.3	65.9	65.1	-0.2	
E110	1	B	66	67.5	68.1	**66.8**	-0.7	**Yes**
E111	1	B	66	68.4	68.9	**67.5**	-0.9	**Yes**
E112	1	B	66	68.4	69.0	**67.3**	-1.1	**Yes**
E113	1	B	66	68.3	68.9	**67.2**	-1.1	**Yes**
E114	1	B	66	67.4	68.0	**66.3**	-1.1	**Yes**
E115	1	B	66	68.5	69.0	**67.5**	-1.0	**Yes**
E116	1	B	66	68.1	68.7	**67.3**	-0.8	**Yes**
E117	1	B	66	68.1	68.7	**67.5**	-0.6	**Yes**
E118	1	B	66	67.1	67.7	**66.7**	-0.4	**Yes**

Receptor	Dwelling Units	NAC Category	Impact Criteria	Existing (2019) Noise Levels (dB(A))	No Build (2045) Noise Levels (dB(A))	Build (2045) Noise Levels (dB(A))	Increase over Existing (Build - Existing)	Impact (Yes/No)
E119	1	B	66	66.3	66.9	**66.0**	-0.3	**Yes**
E120	1	B	66	65.5	66.0	65.6	0.1	
E121	1	B	66	62.3	62.9	63.6	1.3	
E122	1	B	66	62.6	63.2	63.3	0.7	
E123	1	B	66	59.1	59.7	61.3	2.2	
E124	1	B	66	59.7	60.2	61.7	2.0	
E125	1	B	66	59.4	60.0	61.5	2.1	
E126	1	B	66	59.2	59.7	61.4	2.2	
E127	1	B	66	59.8	60.3	61.9	2.1	
E128	0	C	66	68.1	69.5	65.3	-2.8	
E129	0	D	51	34.7	36.2	37.1	2.4	
E130	1	B	66	58.0	59.0	62.9	4.9	
E131	1	B	66	68.1	70.0	**73.9**	5.8	**Yes**
E132	1	B	66	68.4	70.4	**73.9**	5.5	**Yes**
E133	1	B	66	64.1	66.3	**70.8**	6.7	**Yes**
E134	1	B	66	68.9	71.0	**73.8**	4.9	**Yes**
E135	1	B	66	67.7	71.1	**72.5**	4.8	**Yes**
E136	1	B	66	68.3	72.2	**72.9**	4.6	**Yes**
E137	1	B	66	68.6	72.5	**72.6**	4.0	**Yes**
E138	1	B	66	60.4	62.0	65.9	5.5	
E139	1	B	66	59.3	61.4	65.2	5.9	
E140	1	B	66	60.2	62.8	64.9	4.7	
E141	1	B	66	58.7	61.8	63.2	4.5	
E142	1	B	66	59.6	63.2	64.0	4.4	
E143	1	B	66	59.2	63.0	63.4	4.2	
E144	1	B	66	59.8	63.6	63.8	4.0	
E145	1	B	66	68.0	72.0	**71.9**	3.9	**Yes**
E146	1	B	66	67.1	71.0	**70.8**	3.7	**Yes**
E147	1	B	66	69.2	73.1	**73.4**	4.2	**Yes**
E148	1	B	66	61.5	65.5	65.6	4.1	
E149	1	B	66	61.0	65.0	65.1	4.1	
E150	1	B	66	67.6	71.6	**72.2**	4.6	**Yes**
E151	0	D	51	35.4	39.4	40.4	5.0	
E152	1	B	66	64.4	68.3	**68.9**	4.5	**Yes**
E153	1	B	66	65.0	68.9	**71.3**	6.3	**Yes**
W1	1	B	66	52.6	52.6	57.2	4.6	
W2	3	B	66	55.6	55.6	58.9	3.3	
W3	1	B	66	65.0	65.0	**67.8**	2.8	**Yes**
W4	1	B	66	65.6	65.6	**67.7**	2.1	**Yes**
W5	1	B	66	66.4	66.4	**68.4**	2.0	**Yes**
W6	1	B	66	64.8	64.8	**66.6**	1.8	**Yes**
W7	1	B	66	65.2	65.2	**67.1**	1.9	**Yes**
W8	1	B	66	64.6	64.6	**66.5**	1.9	**Yes**
W9	1	B	66	65.9	66.0	**67.9**	2.0	**Yes**
W10	1	B	66	65.7	65.7	**67.8**	2.1	**Yes**
W11	1	B	66	62.5	62.5	65.1	2.6	
W12	1	B	66	54.4	54.5	58.2	3.8	
W13	1	B	66	55.5	55.5	59.5	4.0	
W14	1	B	66	53.3	53.3	57.1	3.8	
W15	1	B	66	53.3	53.3	57.1	3.8	
W16	1	B	66	53.3	53.3	57.1	3.8	
W17	1	B	66	53.4	53.4	57.0	3.6	
W18	1	B	66	53.4	53.4	56.8	3.4	
W19	1	B	66	53.7	53.7	57.0	3.3	
W20	1	B	66	53.2	53.2	56.4	3.2	
W21	1	B	66	53.0	53.1	56.3	3.3	
W22	1	B	66	55.5	55.5	59.3	3.8	
W23	1	B	66	54.7	54.7	58.6	3.9	
W24	1	B	66	58.0	58.0	62.7	4.7	

Receptor	Dwelling Units	NAC Category	Impact Criteria	Existing (2019) Noise Levels (dB(A))	No Build (2045) Noise Levels (dB(A))	Build (2045) Noise Levels (dB(A))	Increase over Existing (Build - Existing)	Impact (Yes/No)
W25	1	B	66	60.9	60.9	64.7	3.8	
W26	1	B	66	56.3	56.3	61.2	4.9	
W27	1	B	66	57.9	57.9	63.0	5.1	
W28	1	B	66	55.6	55.6	60.2	4.6	
W29	1	B	66	61.7	61.7	65.5	3.8	
W30	1	B	66	61.6	61.6	65.5	3.9	
W31	1	B	66	57.4	57.4	62.7	5.3	
W32	2	B	66	54.3	54.3	58.8	4.5	
W33	1	B	66	55.9	56.0	60.5	4.6	
W34	1	B	66	58.0	58.0	63.1	5.1	
W35	1	B	66	60.1	60.2	62.6	2.5	
W36	1	B	66	58.5	58.5	60.3	1.8	
W37	0	D	51	35.8	35.9	36.0	0.2	
W38	0	C	66	65.8	65.9	**66.3**	0.5	**Yes**
W39	1	B	66	57.7	57.8	59.9	2.2	
W40	1	B	66	63.4	63.5	63.9	0.5	
W41	1	B	66	59.8	60.0	61.3	1.5	
W42	1	B	66	63.9	64.3	64.7	0.8	
W43	1	B	66	61.3	61.8	62.4	1.1	
W44	1	B	66	59.8	60.2	60.5	0.7	
W45	1	B	66	58.2	58.6	59.2	1.0	
W46	1	B	66	61.5	61.9	62.0	0.5	
W47	1	B	66	61.8	62.2	62.3	0.5	
W48	1	B	66	62.4	62.8	62.9	0.5	
W49	1	B	66	62.9	63.3	63.4	0.5	
W50	1	B	66	63.5	63.9	63.9	0.4	
W51	1	B	66	64.1	64.5	64.6	0.5	
W52	1	B	66	64.5	64.9	65.3	0.8	
W53	1	B	66	66.7	67.1	68.2	1.5	Yes
W54	1	B	66	67.6	68.0	69.6	2.0	Yes
W55	1	B	66	67.5	67.9	69.5	2.0	Yes
W56	1	B	66	54.8	55.2	56.0	1.2	
W57	1	B	66	55.9	56.3	57.1	1.2	
W58	1	B	66	56.7	57.1	58.4	1.7	
W59	1	B	66	57.3	57.7	58.8	1.5	
W60	1	B	66	59.1	59.5	60.5	1.4	
W61	1	B	66	65.2	65.6	65.5	0.3	
W62	1	B	66	63.9	64.3	65.5	1.6	
W63	1	B	66	59.3	59.8	61.1	1.8	
W64	1	B	66	57.3	57.7	59.6	2.3	
W65	1	B	66	61.5	62.0	59.2	-2.3	
W66	0	C	66	58.2	58.6	58.2	0.0	
W67	0	D	51	31.7	32.3	32.9	1.2	
W68	1	B	66	57.3	57.7	62.3	5.0	
W69	1	B	66	58.7	59.1	63.9	5.2	
W70	1	B	66	59.1	59.5	64.5	5.4	
W71	1	B	66	59.9	60.3	65.5	5.6	
W72	1	B	66	60.6	60.9	**66.2**	5.6	**Yes**
W73	1	B	66	61.1	61.3	**66.7**	5.6	**Yes**
W74	1	B	66	62.1	62.3	**68.6**	6.5	**Yes**
W75	1	B	66	62.8	62.9	**70.1**	7.3	**Yes**
W76	1	B	66	63.5	63.6	**71.0**	7.5	**Yes**
W77	1	B	66	64.3	64.3	**71.6**	7.3	**Yes**
W78	1	B	66	65.2	65.3	**72.1**	6.9	**Yes**
W79	1	B	66	66.1	66.1	**72.2**	6.1	**Yes**
W80	1	B	66	65.7	65.7	**70.8**	5.1	**Yes**
W81	1	B	66	67.8	67.8	**72.5**	4.7	**Yes**
W82	1	B	66	66.6	66.6	**69.9**	3.3	**Yes**
W83	1	B	66	53.0	53.5	57.6	4.6	

Receptor	Dwelling Units	NAC Category	Impact Criteria	Existing (2019) Noise Levels (dB(A))	No Build (2045) Noise Levels (dB(A))	Build (2045) Noise Levels (dB(A))	Increase over Existing (Build - Existing)	Impact (Yes/No)
W84	1	B	66	53.8	54.2	58.7	4.9	
W85	1	B	66	55.5	55.9	60.3	4.8	
W86	1	B	66	56.9	57.2	61.9	5.0	
W87	1	B	66	57.6	57.9	62.7	5.1	
W88	1	B	66	58.2	58.4	63.2	5.0	
W89	1	B	66	59.3	59.4	64.2	4.9	
W90	1	B	66	59.0	59.1	63.3	4.3	
W91	1	B	66	59.5	59.6	63.5	4.0	
W92	1	B	66	57.8	57.9	62.4	4.6	
W93	1	B	66	61.5	61.5	65.6	4.1	
W94	1	B	66	59.6	59.7	64.3	4.7	
W95	1	B	66	59.7	59.7	64.7	5.0	
W96	1	B	66	60.2	60.3	**66.0**	5.8	**Yes**
W97	1	B	66	63.4	63.4	**68.7**	5.3	**Yes**
W98	1	B	66	61.6	61.6	**66.8**	5.2	**Yes**
W99	1	B	66	62.0	62.0	**66.6**	4.6	**Yes**
W100	1	B	66	62.8	62.8	**66.2**	3.4	**Yes**
W101	1	B	66	59.0	59.0	64.7	5.7	
W102	1	B	66	59.4	59.5	64.8	5.4	
W103	1	B	66	59.5	59.6	64.3	4.8	
W104	1	B	66	60.3	60.4	64.4	4.1	
W105	1	B	66	57.3	59.4	61.8	4.5	
W106	1	B	66	59.0	61.1	64.4	5.4	
W107	1	B	66	52.8	55.0	58.2	5.4	
W108	1	B	66	58.1	60.2	63.9	5.8	
W109	1	B	66	59.3	61.4	65.0	5.7	
W110	1	B	66	60.4	62.6	**66.1**	5.7	**Yes**
W111	1	B	66	61.8	63.9	**67.3**	5.5	**Yes**
W112	1	B	66	61.5	64.3	**69.0**	7.5	**Yes**
W113	1	B	66	66.2	70.2	**72.4**	6.2	**Yes**
W114	1	B	66	67.8	71.7	**72.8**	5.0	**Yes**
W115	1	B	66	68.4	72.3	**73.4**	5.0	**Yes**
W116	1	B	66	68.2	72.2	**73.2**	5.0	**Yes**
W117	1	B	66	66.4	70.4	**71.0**	4.6	**Yes**
W118	1	B	66	66.5	70.5	**71.0**	4.5	**Yes**
W119	1	B	66	66.5	70.5	**71.0**	4.5	**Yes**
W120	1	B	66	63.8	67.8	**68.3**	4.5	**Yes**
W121	1	B	66	53.1	55.2	58.6	5.5	
W122	1	B	66	53.8	56.0	59.5	5.7	
W123	1	B	66	54.3	56.5	60.0	5.7	
W124	1	B	66	55.1	57.3	60.6	5.5	
W125	1	B	66	55.6	57.9	60.9	5.3	
W126	1	B	66	55.8	58.6	61.1	5.3	
W127	1	B	66	55.3	58.0	60.8	5.5	
W128	1	B	66	57.3	60.9	62.7	5.4	
W129	1	B	66	60.7	64.6	65.1	4.4	
W130	1	B	66	60.5	64.4	64.5	4.0	
W131	1	B	66	61.3	65.3	65.2	3.9	
W132	1	B	66	62.0	66.0	65.7	3.7	
W133	1	B	66	60.3	64.2	63.5	3.2	
W134	1	B	66	60.7	64.7	64.4	3.7	
W135	1	B	66	58.9	62.8	63.1	4.2	
W136	1	B	66	58.5	62.5	63.1	4.6	
W137	1	B	66	56.8	60.7	61.3	4.5	
W138	0	D	51	35.4	39.4	40.1	4.7	
W139	0	C	66	56.7	60.6	61.8	5.1	
W140	0	D	51	39.0	43.0	45.3	6.3	
U1	1	B	66	55.9	58.9	58.6	2.7	
U2a	0	C	66	68.3	71.4	**69.8**	1.5	**Yes**

Receptor	Dwelling Units	NAC Category	Impact Criteria	Existing (2019) Noise Levels (dB(A))	No Build (2045) Noise Levels (dB(A))	Build (2045) Noise Levels (dB(A))	Increase over Existing (Build - Existing)	Impact (Yes/No)
U2b	0	D	51	42.9	46.1	45.5	2.6	
U3	0	E	71	57.4	59.7	57.5	0.1	
U4	0	D	51	43.5	45.2	43.9	0.4	
U5	1	B	66	62.6	64.0	65.8	3.2	
U6	0	E	71	63.1	64.6	64.7	1.6	

APPENDIX E

TRAFFIC NOISE MODEL (TNM) FILES (PROVIDED ELECTRONICALLY)