# FINAL
# NOISE STUDY REPORT

## PROJECT DEVELOPMENT AND ENVIRONMENT STUDY
## SR 52 from East of McKendree Road to East of US 301
**WPI Segment No: 435915-1**

**Pasco County, Florida**

**Florida Department of Transportation**
**11201 North McKinley Drive**
**Tampa, Florida 33612**

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**11201 North McKinley Drive**
**Tampa, Florida 33612**

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**4030 West Boy Scout Boulevard, Suite 700**
**Tampa, FL 33607**

**July 2015**

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## EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT), District Seven, conducted a Project Development and Environment (PD&E) study to determine the engineering and environmental effects of the proposed realignment of State Road (SR) 52 from east of McKendree Road to east of US 301 within Pasco County, Florida. The purpose of the PD&E Study was to provide documented environmental and engineering analyses to assist FDOT in reaching a decision on the type, location and conceptual design of the necessary improvements, in order to accommodate future traffic demand in a safe and efficient manner.

The PD&E study included a traffic noise analysis for noise sensitive sites along the Recommended Build Alternative. The traffic noise study was completed in accordance with Title 23, Code of Federal Regulations, Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise*[1] following methodology and policy established by FDOT in the *Project Development and Environment Manual*[2], Part 2, Chapter 17. The purpose of the noise study was to identify noise sensitive sites that would be impacted by the proposed project and evaluate abatement measures at impacted noise sensitive sites.

For the Recommended Build Alternative, 189 receptor points were established representing 175 residences, five residences identified as relocations, Piney Grove Missionary Baptist Church, Childcare Center with an associated playground, Knights of Columbus lodge, Pasadena Baptist Church with an associated playground, Faith Fellowship Church and Clinton Academy Day Care with an associated playground. Exterior noise levels are predicted to approach or exceed the NAC for 2025 build conditions at 12 residences. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to substantially increase as a direct result of the transportation improvement project at two residences, one at which the NAC is also exceeded.

For the Recommended Build Alternative, abatement was evaluated for all 13 noise sensitive sites predicted to approach/exceed the NAC or predicted to experience a substantial increase in noise attributable to the project. Traffic management and alignment modifications were determined to not be viable abatement measures. Consideration of buffer zones during planning of future development was identified as a viable abatement measure that can be implemented by local officials responsible for land use planning. Noise barriers were evaluated for the amount of noise reduction that could potentially be provided and cost reasonableness where minimum noise reduction requirements could be achieved.

Noise barriers are not feasible at the 13 impacted residences primarily because the residence is an isolated impact or gaps in a noise barrier needed to accommodate driveways/roads limit the amount of noise reduction to less than 5 dB(A).

Most property adjacent to the project corridor is undeveloped. A land use review will be performed during the design phase of the project to ensure that all noise-sensitive land uses

that have received a building permit prior to the project's Date of Public Knowledge are evaluated. Notably, there was no ongoing construction observed during the field review (January 7, 2015) which was to establish the existing land use data.

# 1.0 INTRODUCTION

The Florida Department of Transportation (FDOT), District Seven, conducted a Project Development and Environment (PD&E) study to determine the engineering and environmental effects of the proposed realignment of SR 52 from east of McKendree Road to east of US 301 within Pasco County, Florida.

## 1.1 Purpose

The purpose of the PD&E Study was to provide documented environmental and engineering analyses to assist FDOT in reaching a decision on the type, location and conceptual design of the necessary improvements, in order to accommodate future traffic demand in a safe and efficient manner. The PD&E Study also satisfied the requirements of FDOT and followed the process outlined in the FDOT *Project Development and Environment Manual*. Although no federal involvement has been identified, the proposed project's PD&E Study process was developed in compliance with the National Environmental Policy Act (NEPA), and other applicable federal and state regulations.

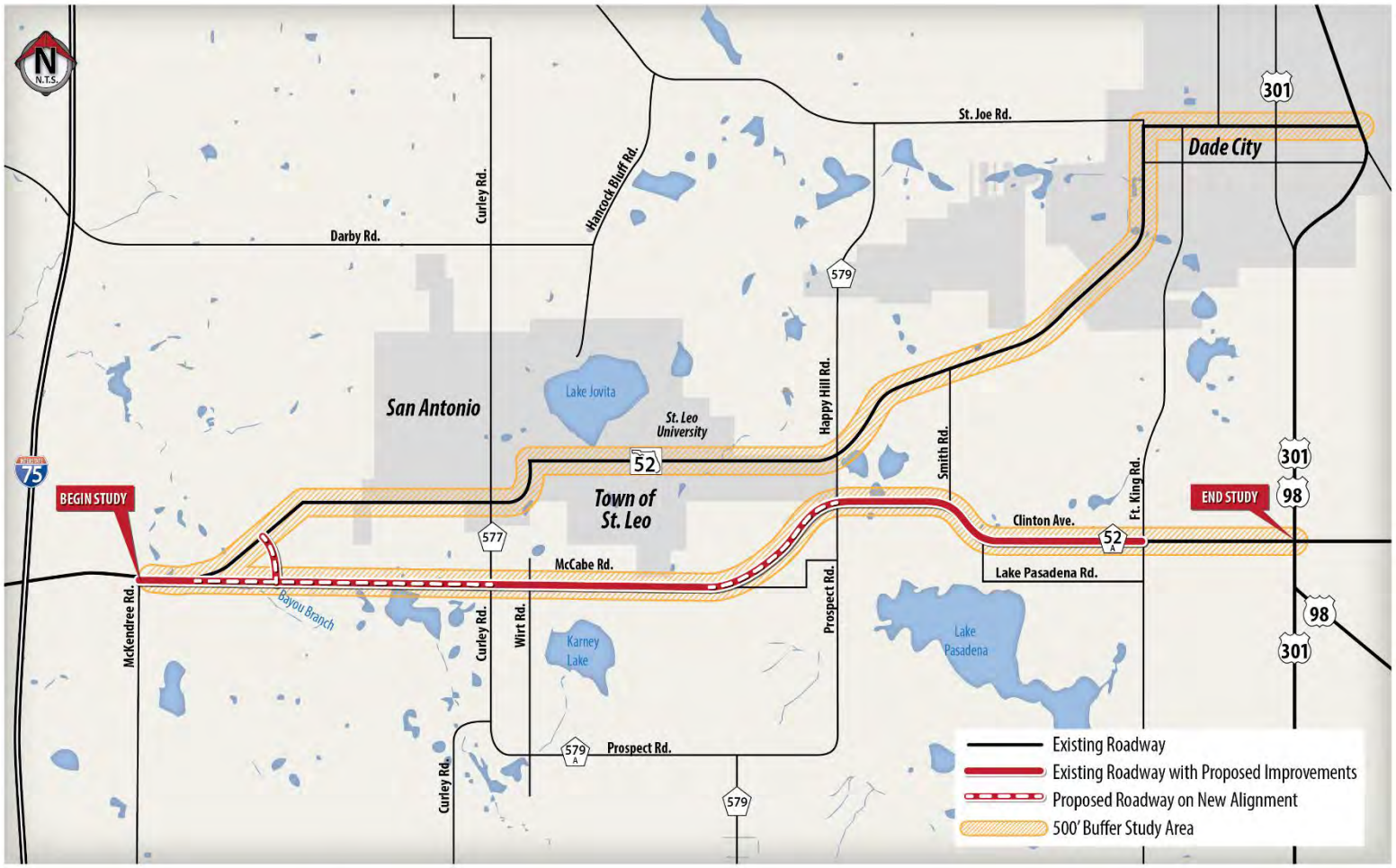
This PD&E Study documented the need for the new roadway, and presented the procedures utilized to develop and evaluate the improvement alternative. Information relating to the engineering and environmental characteristics essential for development of alternative alignments and analytical decisions was collected. Design criteria were established and preliminary alternative alignments were developed. The comparison of alternative alignments was based on a variety of parameters utilizing a matrix format. This process was utilized to identify the Recommended Build Alternative that minimizes natural, physical, and socio-economic impacts, while providing the necessary future transportation improvements. The study also solicited input from the community and users of the facility.

***Project Description***

The realignment of SR 52 is proposed as a new four-lane urban controlled access facility within Pasco County, Florida, that will serve as an additional east-west route in the regional transportation network. The study limits extend from the existing SR 52 intersection with McKendree Road easterly to the Clinton Avenue intersection with US 301, as shown in **Figure 1-1**. The roadway will generally be constructed on new alignment south of the existing SR 52. The existing four-lane portion of Clinton Avenue between Fort King Road and US 301, recently constructed by Pasco County, will also be designated as SR 52, while the existing SR 52 from McKendree Road to US 301 will be transfered to Pasco County for ownership and maintenance purposes.

The total length of the proposed project is approximately 8 miles (mi.). The study area is within the following United States Geological Survey (USGS) 1:24,000 scale quadrangle maps: San Antonio and Dade City. **Table 1-1** lists the Townships, Ranges, and Sections covering the study area. SR 52 is not identified as part of the Strategic Intermodal System (SIS). However, the existing SR 52 and CR 52A are both identified as evacuation routes by the State Emergency Response Team (SERT).

## FIGURE 1-1: PROJECT LOCATION MAP

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**SR 52 PD&E Study**
From East of McKendree Road to East of US 301
WPI Segment No: 435915-1

PROJECT LOCATION MAP

**TABLE 1-1: TOWNSHIP, RANGE, AND SECTION**

| Township | Range | Sections |
|---|---|---|
| 25 South | 20 East | 9, 10, 11, 12, |
| | 21 East | 5, 6, 7, 8, 9 |

***Corridor Analysis***

The Pasco County Engineering Services Department conducted the Clinton Avenue Extension Route Study which established the need for the new roadway and its proposed typical section and alignment. The study included three public workshops, the last of which was held in April 2004.

The Clinton Avenue Extension Final Route Study Report (June 2004)[1] documents the traffic, engineering and environmental analysis, public involvement activities, and the selection of a Recommended Alternative. It serves as the basis for this PD&E Study. The design year is 2025.

## 1.2 Existing Conditions and Proposed Improvements

Existing SR 52 is primarily a two-lane undivided rural roadway extending from US 19 in Hudson, Florida, to US 301 in Dade City, Florida. Currently, there are limited bicycle and pedestrian facilities within the study area. The current access classification along SR 52 from I-75 to CR 41 (21st Street) is Access Class 3 and from CR 41 (21st Street) to US 301 it is Access Class 7.

Traffic analyses documented the need to provide increased capacity within the SR 52 corridor beyond those that could be achieved solely with transportation management and operation measures such as mass transit and ride-sharing. However, as identified in the Clinton Avenue Extension Route Study Report (June 2004)[1], portions of SR 52 through downtown Dade City cannot be widened without significant cost and social impact to the land uses adjacent to this section of SR 52. The Clinton Avenue Extension Route Study evaluated the costs, engineering and environmental issues associated with the potential construction of four new alignment alternatives. The study ultimately recommended the proposed alignment alternative being evaluated in the *Engineering and Environmental Technical Compendium (EETC)*[3] and *State Environmental Impact Report (SEIR)*[4].

The proposed improvement includes the realignment and construction of SR 52 on a new route which will allow multiple lanes to be constructed without creating substantial impacts to the communities adjacent to the existing roadway. The proposed project begins on SR 52 at McKendree Road and it follows existing SR 52 for approximately 4,400 feet where it

continues eastward on new alignment to CR 577 (Curley Road). At CR 577 (Curley Road), the project continues east along McCabe Road for approximately 1.25 miles, then travels northeast avoiding Williams Cemetery before tying into the existing Clinton Avenue roadway. The project would follow existing Clinton Avenue from CR 579 (Prospect Road) to US 301. The total project length is approximately eight miles.

The typical sections evaluated in this noise study vary slightly from the preliminary design typical sections evaluated in the *EETC* and *SEIR*. This is the case since the noise modeling was completed prior to finalizing the typical sections. It was determined that the effect on the noise study outcome would not warrant any new modeling due to the minimal change in the modeled typical sections from the final typical sections, described below. Any significant changes to the design concept, including typical section, alignment, and design speed, will be reviewed in the design phase. If necessary, noise reanalysis will be performed.

There are three proposed typical sections. The first, from McKendree Road to CR 577 (Curley Road), is a four-lane suburban typical section expandable to an ultimate six-lane urban roadway with a 22-ft raised median. There is a 5-foot sidewalk on the south side and a 10-foot shared use path on the north side. **Figure 1-2** shows the typical section evaluated under this noise study as well as the preliminary design typical section evaluated in the EETC and SEIR. The differences are in the lane widths, bike lane widths, median widths, and design speed. The noise study evaluated 12-foot lanes, 4-foot bike lanes, a 46-foot median, and a 45 mph design speed, whereas the preliminary design evaluated 11-foot lanes, 7-foot bike lanes, a 44-foot median, and a design speed that varies from 45 mph to 55 mph.

The second typical section (**Figure 1-3**) from CR 577 (Curley Road) to CR 579 (Prospect Road) is the same as Figure 1-2, except the sidewalks are 5-ft on both sides.

The proposed typical section from CR 579 (Prospect Road) to Fort King Road is a four-lane urban roadway with a 22-ft median and two 5-ft sidewalks. All three typical sections have 11-ft lanes, 7-ft bike lanes, and a 45 - 55 mph design speed. **Figure 1-4** shows the typical section evaluated under this noise study as well as the preliminary design typical section evaluated in the EETC and SEIR. The differences are in the lane widths, bike lane widths, median widths, and design speed. The noise study evaluated 12-foot lanes, 4-foot bike lanes, and a 45 mph design speed, whereas the preliminary design evaluated 11-foot lanes, 7-foot bike lanes, and a design speed that varies from 45 mph to 55 mph.

**FIGURE 1-2: PROPOSED TYPICAL SECTION SR 52 FROM MCKENDREE ROAD TO CR 577 (CURLEY ROAD)**

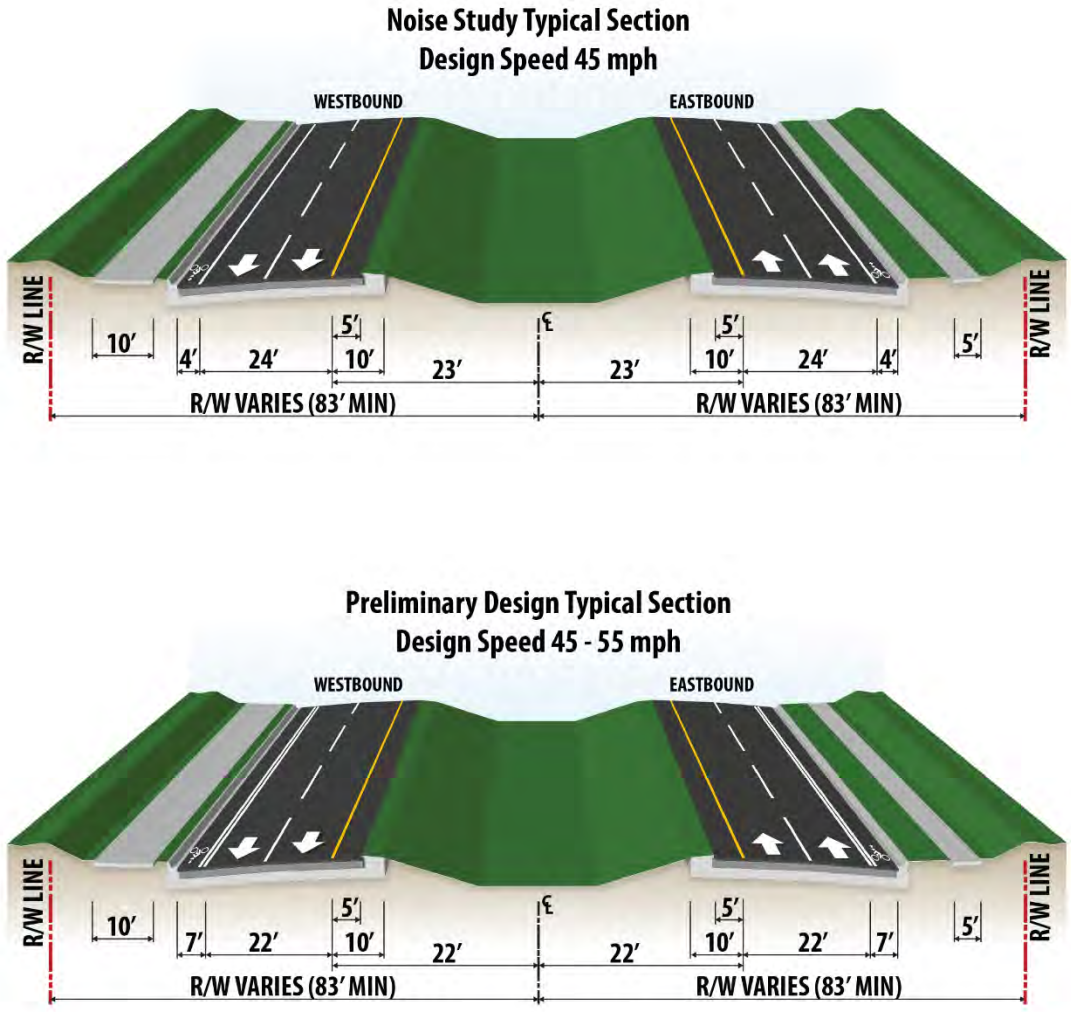
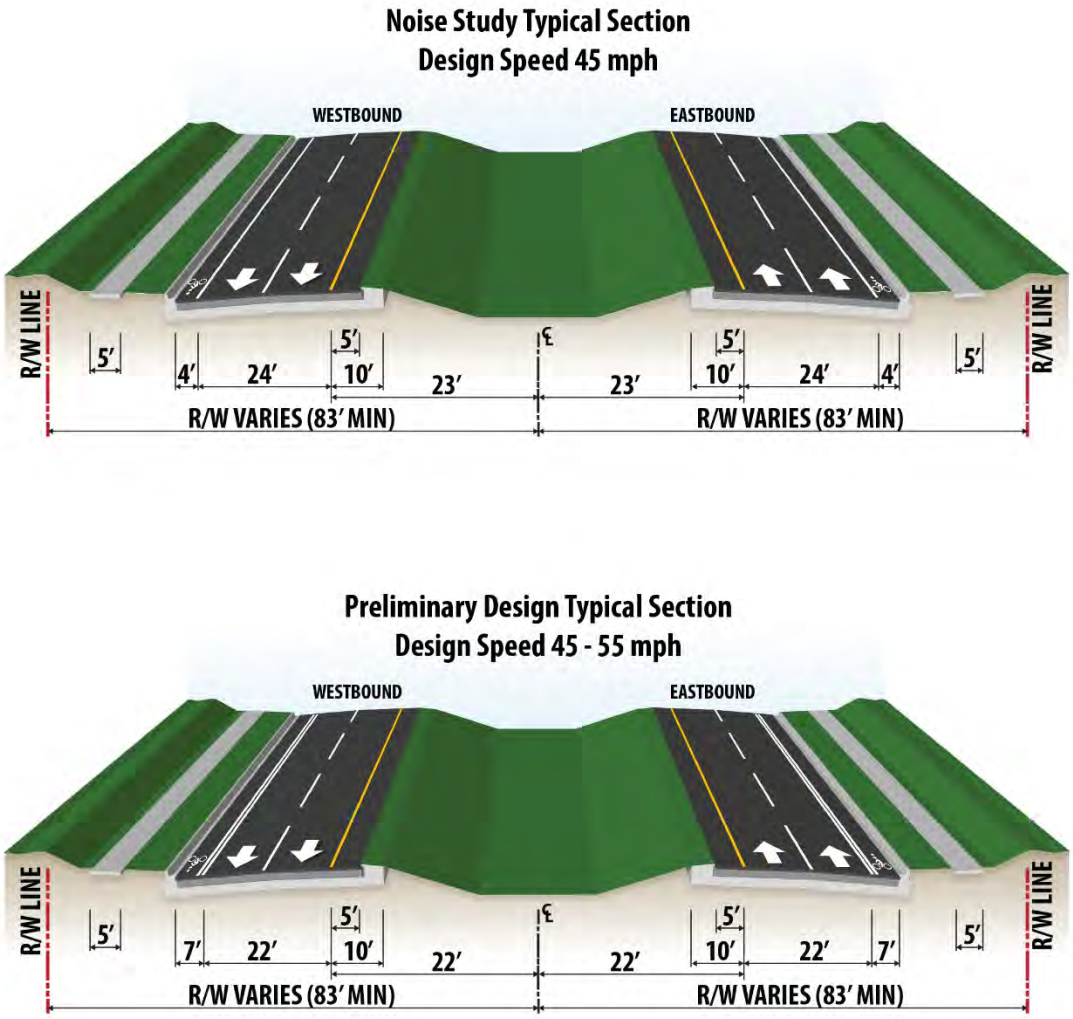


**FIGURE 1-3: PROPOSED TYPICAL SECTION SR 52 FROM CR 577 (CURLEY ROAD) TO CR 579 (PROSPECT ROAD)**

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**SR 52 PD&E Study**
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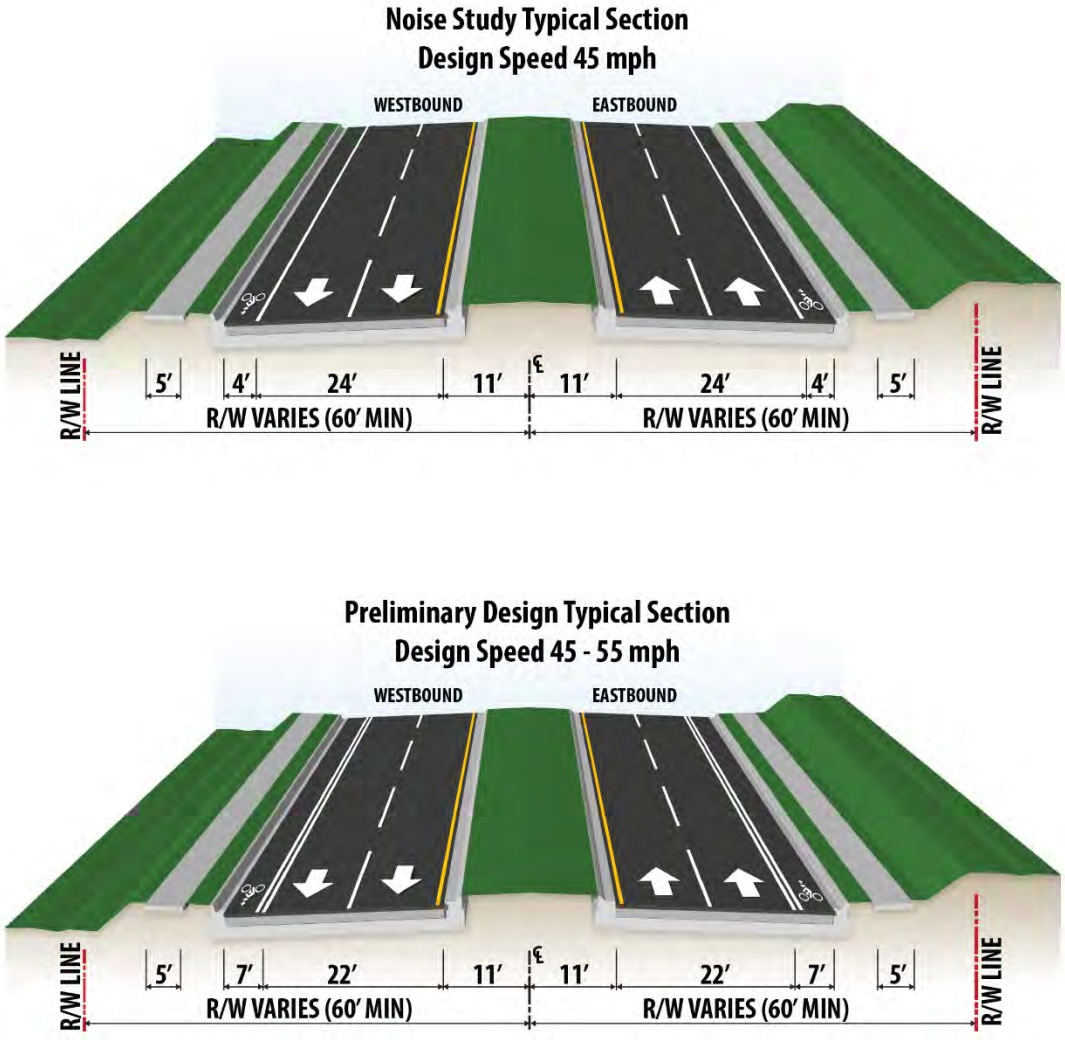
PROPOSED TYPICAL SECTION

## FIGURE 1-4: PROPOSED TYPICAL SECTION SR 52 FROM CR 579 (PROSPECT ROAD) TO FORT KING ROAD

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**SR 52 PD&E Study**
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PROPOSED TYPICAL SECTION

***No Build Alternative***

For capacity improvements to SR 52 between McKendree Road and US 301, two alternatives were evaluated: the No Build Alternative and the Build Alternative. The No Build Alternative would not make any construction improvements in the SR 52 corridor beyond any currently planned. There are no planned roadway improvements to the segment of SR 52 between McKendree Road and US 301. Although there would be no costs associated with the No Build Alternative, traffic congestion and travel delays would increase. Therefore, the No Build Alternative would not meet the purpose and need for the project. It was, however, included for comparison with the Build Alternative.

***Build Alternative***

Under the Build Alternative, described above, it is anticipated that as much as 60 percent of the projected traffic for SR 52 would shift to the proposed re-aligned SR 52. With this shift in traffic, existing SR 52 would operate at LOS C and LOS D and the re-aligned SR 52 would operate at LOS B. Therefore, the Build Alternative would meet the project's purpose and need, but could not do so without incurring cost and environmental impacts.

There are no cultural centers, parks, recreational facilities, fire stations, schools, or medical facilities in the vicinity of the Build Alternative. It is estimated that the proposed new alignment alternative would require acquisition of right-of-way (ROW) from 177 parcels and result in five residential relocations but no business relocations. The total estimated project cost which includes design, right-of-way acquisition, construction, compensation for impacted wetlands, and construction engineering inspection is $103,977,813.

***Recommendation***

The Evaluation Matrix (**Table 2-1** in the EETC) shows the outcome of the evaluation of the No-Build and Build Alternatives for social, cultural, and natural effects, as well as cost. Based upon the results of the evaluation, the Build Alternative is the Recommended Alternative.

# 2.0 NOISE STUDY METHODOLOGY

The traffic noise study was performed in accordance with the Code of Federal Regulations Title 23 Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise*[1] using methodology established in the FDOT *Project Development and Environment Manual*[2], Part 2, Chapter 17. As required by 23 CFR 772, predicted noise levels were produced using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM), version 2.5.

## 2.1 Noise Metrics

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

## 2.2 Traffic Data

The amount of traffic noise is dependent on vehicle speed with the amount of noise generated by traffic increasing as the vehicle speed increases. Roadway geometrics for existing conditions and the Recommended Build Alternative were reviewed to identify maximized traffic volumes that would allow vehicles to travel at speeds consistent with speed limits established for existing SR 52, the SR 52 new alignment segment and existing Clinton Avenue.

A vehicle volume resulting in LOS C operating conditions is considered the maximum volume that allows vehicles to travel at the speed limit and consequently, produces the worst-case traffic noise environment. Therefore, noise levels were predicted using LOS C conditions when forecasted demand volumes exceed LOS C conditions. If forecasted demand volumes are less than LOS C volumes, demand traffic volumes are used to predict noise levels.

The forecasted Annual Average Daily Traffic (AADT) volume was reduced to an hourly volume using a peak-hour factor (K-factor). Using a directional factor (D-factor), the heavier directional traffic volume was always assigned to travel lanes in closest proximity to noise sensitive sites. The total traffic volume was categorized into vehicle types (i.e., cars, medium trucks, heavy trucks, buses and motorcycles) using vehicle classification factors (e.g., T-factor). Traffic volumes provided by the FDOT for 2015 existing conditions, 2025 no-build conditions and 2025 build conditions, including factors to reduce AADT to hourly volumes, are provided in **Appendix A**. A comparison of LOS C to hourly demand volumes is provided in **Table 2-1** through **Table 2-3** with highlighting of traffic volumes used in the noise analysis.

## TABLE 2-1: TRAFFIC DATA FOR 2015 EXISTING CONDITIONS

| Roadway | Hourly Demand Peak Direction[1] (vehicles) | Peak Hour Directional Level of Service C[2] (vehicles) | Existing Posted Speed (mph) |
|---|---|---|---|
| SR 52 from McKendree Road to CR 577 | 881[3] | 710 | 55 |
| Clinton Avenue from CR 579 to Fort King Road | 681[4] | 710 | 45 |

[1] K = 9.59%, D = 57.88%, Medium Trucks =1.57%, Heavy Trucks = 2.94%, Buses = .02%, Motorcycles = 0.32%.
[2] Level of Service (LOS) C traffic volumes documented in the *2012 FDOT Quality/Level of Service Handbook.*
[3] AADT of 15,865 vehicles for 2015.
4AADT of 12,264 vehicles for 2015.

## TABLE 2-2: TRAFFIC DATA FOR 2025 NO-BUILD CONDITIONS

| Roadway | Hourly Demand Peak Direction[1] (vehicles) | Peak Hour Directional Level of Service C[2] (vehicles) | Existing Posted Speed (mph) |
|---|---|---|---|
| SR 52 from McKendree Road to CR 577 | 1,195[3] | 710 | 55 |
| Clinton Avenue from CR 579 to Fort King Road | 935[4] | 710 | 45 |

[1] K = 9.59%, D = 57.88%, Medium Trucks =1.57%, Heavy Trucks = 2.94%, Buses = .02%, Motorcycles = 0.32%.
[2] Level of Service (LOS) C traffic volumes documented in the *2012 FDOT Quality/Level of Service Handbook.*
[3] AADT of 21,534 vehicles for 2025.
[4]AADT of 16,849 vehicles for 2025**.**

## TABLE 2-3: TRAFFIC DATA FOR 2025 BUILD CONDITIONS

| Roadway | Hourly Demand Peak Direction[1] (vehicles) | Peak Hour Directional Level of Service C[2] (vehicles) | Design Speed (mph) |
|---|---|---|---|
| SR 52 from McKendree Road to CR 577 | 1,322[3] | 1,740 | 45 |
| Proposed SR 52 New Alignment from Existing SR 52 to CR 577 | 1,575[4] | 1,740 | 45 |
| Proposed SR 52 New Alignment from CR 577 to CR 579 | 1,312[5] | 1,740 | 45 |
| Clinton Avenue from CR 579 to Fort King Road | 1,357[6] | 1,740 | 45 |

[1] K = 9.59%, D = 57.88%, Medium Trucks =1.57%, Heavy Trucks = 2.94%, Buses = .02%, Motorcycles = 0.32%.
[2] Level of Service (LOS) C traffic volumes documented in the *2012 FDOT Quality/Level of Service Handbook.*
[3] AADT of 23,822 vehicles for 2025.
[4] AADT of 28,368 vehicles for 2025.
[5] AADT of 23,639 vehicles for 2025.
[6] AADT of 24,441 vehicles for 2025.

## 2.3 Noise Abatement Criteria

FHWA has established noise levels at which noise abatement must be considered for various types of noise sensitive sites. These noise levels are referred to as the Noise Abatement Criteria (NAC). As shown in **Table 2-4**, the NAC vary by Activity Category. Noise Abatement measures are considered when predicted traffic noise levels for Design Year (2025) Recommended Build Alternative conditions approach or exceed the NAC. Following FDOT procedure, approaching the NAC is defined as within 1 dB(A) of the FHWA criteria. For comparison purposes, typical noise levels associated with common indoor and outdoor activities are provided in **Table 2-5**.

### TABLE 2-4: FHWA NOISE ABATEMENT CRITERIA

| Activity Category | Leq(h) | Evaluation Location | Description of Land Use Activity Category |
|---|---|---|---|
| A | 57 | Exterior | Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. |
| B | 67 | Exterior | Residential. |
| C | 67 | Exterior | Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings. |
| D | 52 | Interior | Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios. |
| E | 72 | Exterior | Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A – D or F. |
| F | ------ | ------ | Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing. |
| G | ------ | ------ | Undeveloped lands that are not permitted. |

Source: 23 CFR Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, FHWA, 2010

**TABLE 2-5: TYPICAL NOISE LEVELS**

| COMMON OUTDOOR ACTIVITIES | NOISE LEVEL dB(A) | COMMON INDOOR ACTIVITIES |
|---|---|---|
| | **---110---** | Rock Band |
| Jet Fly-over at 1000 ft | | |
| | **---100---** | |
| Gas Lawn Mower at 3 ft | | |
| | **---90---** | |
| Diesel Truck at 50 ft, at 50 mph | | Food Blender at 1 m (3 ft) |
| | **---80---** | Garbage Disposal at 1 m (3 ft) |
| Noise Urban Area (Daytime) | | |
| Gas Lawn Mower at 100 ft | **---70---** | Vacuum Cleaner at 10 ft |
| Commercial Area | | Normal Speech at 3 ft |
| Heavy Traffic at 300 ft | **---60---** | |
| | | Large Business Office |
| Quiet Urban Daytime | **---50---** | Dishwasher Next Room |
| Quiet Urban Nighttime | **---40---** | Theater, Large Conference Room |
| Quiet Suburban Nighttime | | (Background) |
| | **---30---** | Library |
| Quiet Rural Nighttime | | Bedroom at Night, Concert Hall |
| | **---20---** | (Background) |
| | **---10---** | |
| Lowest Threshold of Human Hearing | **---0---** | Lowest Threshold of Human Hearing |

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

Abatement measures must also be considered when a substantial increase in traffic noise would occur as a direct result of the transportation project. Following FDOT procedure, a substantial increase is defined as 15 dB(A) or more above existing conditions. A substantial increase typically occurs in areas where traffic noise is a minor component of the existing noise environment but could become a major component after the project is constructed.

## 2.4 Noise Abatement Measures

Abatement was evaluated for all noise sensitive sites predicted to approach/exceed the NAC or predicted to experience a substantial increase in noise attributable to the project. Abatement measures considered include traffic management, alignment modifications, noise buffer zones through application of land use controls and noise barriers.

### 2.4.1 Traffic Management

The realignment of SR 52 will serve as an additional east-west route in the regional transportation network. Traffic management measures such as a much reduced speed limit or prohibition of truck traffic would not be consistent with the project objectives, vehicle types that

use SR 52 or the traffic volume that SR 52 accommodates. Consequently, traffic management is not a viable abatement measure.

### 2.4.2 Alignment Modifications

In order to make full use of the existing right-of-way, maintain the existing connections that SR 52, McCabe Road and Clinton Avenue currently provide and to minimize project costs, the portions of the project incorporating SR 52, McCabe Road and Clinton Avenue follow the alignment of the existing roads. Alignment modification is not a viable abatement measure for the portions of the project that incorporate an existing road.

The new alignment segments make use of right-of-way acquired by Pasco County. The Recommended Build Alternative alignment minimizes natural, physical, and socio-economic impacts while providing the necessary future transportation improvements. Consequently, further alternative alignment modifications are not a viable abatement measure.

### 2.4.3 Buffer Zones

As properties in the vicinity of a highway are developed, providing a buffer between a highway and future noise sensitive development can minimize or eliminate noise impacts. This abatement measure can be implemented through local land use planning. The distances between the proposed highway and the location where traffic noise levels approach the NAC for Activity Categories A, B, C and E are provided to facilitate future land use planning that is compatible with the traffic noise environment. For the Recommended Build Alternative, the distance between the nearest through lane and the location where traffic noise levels would approach a particular NAC is provided in **Table 2-6**. The distances do not account for any reduction in noise levels that may be provided by berms, privacy walls or intervening structures. For any new development occurring in the future, local officials can use the noise contour information to establish buffer zones thereby minimizing or avoiding noise impacts at sensitive land uses.

**TABLE 2-6: NOISE ABATEMENT CRITERIA CONTOURS**

| Segment of Realigned SR 52 | Distance[1] | | |
|---|---|---|---|
| | Activity Category A [56 dB(A)] | Activity Category B & C [66 dB(A)] | Activity Category E [71 dB(A)] |
| McKendree Road to the West End of the Proposed SR 52 New Alignment | 298 feet | 85 feet | 29 feet |
| West End of the Proposed SR 52 New Alignment to CR 577 (Curley Road) | 326 feet | 96 feet | 36 feet |
| CR 577 (Curley Road) to CR 579 (Prospect Road) | 298 feet | 84 feet | 29 feet |
| CR 579 (Prospect Road) to Fort King Road | 331 feet | 83 feet | 30 feet |

[1]Distance referenced to the nearest proposed through lane. Distance does not account for any reduction in noise levels that may be provided by berms, privacy walls or intervening structures.

### 2.4.4 Noise Barriers

Noise barriers reduce noise levels by blocking the sound path between a roadway and a noise sensitive site. To effectively reduce traffic noise, a noise barrier must be relatively long, continuous (with no intermittent openings) and of sufficient height. Noise barriers located along the ROW line were evaluated for heights ranging from 8 to 22 ft in 2-ft increments. The maximum noise barrier height of 22 ft is specified in the *Plans Preparation Manual*[5]. For a noise barrier to be considered feasible and cost reasonable, the following minimum conditions should be met:

- A noise barrier must provide a minimum noise reduction of 5 dB(A) or more at two impacted noise sensitive sites with at least a 7 dB(A) reduction (noise reduction design goal) at one benefited noise sensitive site.
- The cost of the noise barrier should not exceed $42,000 per benefited residence. A benefited residence is defined as a residence where at least a 5 dB(A) reduction would occur as a result of providing a noise barrier. The current unit cost used to evaluate cost reasonableness is $30 per square foot, which covers barrier materials and labor.

Noise barriers were evaluated based on the benefit provided to noise sensitive sites with predicted noise levels that approach/exceed the NAC or experience a substantial increase in traffic noise attributable to the proposed project. Noise barrier lengths and heights are optimized as part of the barrier analysis. Optimization involves reducing barrier length, thereby minimizing cost, for a particular barrier height while maintaining at least a 5 dB(A) reduction at impacted noise sensitive sites where possible. The purpose of optimization is to maximize the number of impacted noise sensitive sites that can be benefited by a noise barrier that is cost reasonable.

At some locations, a noise barrier for impacted noise sensitive sites may also benefit additional sites with predicted noise levels that do not approach the NAC. Since abatement consideration at the additional non-impacted sites is not required, noise barrier lengths or heights were not increased to specifically benefit non-impacted sites. However, if experiencing an incidental benefit because of proximity to an impacted noise sensitive site, the additional non-impacted sites were included when determining cost reasonableness.

## 3.0 TRAFFIC NOISE ANALYSIS

The traffic noise analysis included noise model validation, establishing ambient noise levels through noise monitoring when existing traffic is not a prevalent noise source and prediction of noise levels for 2015 existing conditions, 2025 no-build conditions and 2025 build conditions. Receptor points representing noise sensitive sites were established by a field review performed on January 7, 2015.

### 3.1 Model Validation

To validate the accuracy of the computer noise model for the project area, field measurements were taken following procedures documented in FHWA's *Measurement of Highway-Related Noise*[6]. Noise monitoring was performed on January 13, 2015 using a Quest Technologies Q-300 noise monitor. All monitoring events were ten minutes in duration consistent with FDOT procedures. Prior to taking noise measurements, the noise monitor was calibrated using a QC-10 calibrator.

The validation sites were located at a distance that is consistent with noise sensitive sites in closest proximity to the road. Traffic volumes by vehicle classification were noted during each monitoring event. Field notes for each monitoring event are provided in **Appendix B**.

The results for each monitoring event are provided in **Table 3-1**. The variance between measured and predicted noise levels was less than 3 dB(A). Therefore, the noise model is predicting within the level of accuracy specified in FDOT's *Project Development and Environment Manual.*

**TABLE 3-1: NOISE MODEL VALIDATION**

| Location | Trial # | Date | Start Time | Field Measured Level dB(A) | Computer Predicted Level dB(A) | Decibel Variation dB(A) |
|---|---|---|---|---|---|---|
| West of Emmaus Cemetery Road; 69 feet south of SR 52 | 1 | 1-13-2015 | 0844 | 67.8 | 68.7 | +0.9 |
| | 2 | 1-13-2015 | 0856 | 66.6 | 68.1 | +1.5 |
| | 3 | 1-13-2015 | 0908 | 67.6 | 68.7 | +1.1 |
| 72 feet west of (CR 577) Curley Road; north of the Proposed SR 52 New Alignment | 1 | 1-13-2015 | 0949 | 58.7 | 59.6 | +0.9 |
| | 2 | 1-13-2015 | 1000 | 59.3 | 58.5 | -0.8 |
| | 3 | 1-13-2015 | 1013 | 61.5 | 60.5 | -1.0 |
| Across from Just-A-Mere Lane; 60 feet north of Clinton Avenue | 1 | 1-13-2015 | 1349 | 62.4 | 63.9 | +1.5 |
| | 2 | 1-13-2015 | 1401 | 62.2 | 62.7 | +0.5 |
| | 3 | 1-13-2015 | 1412 | 64.0 | 64.3 | +0.3 |

## 3.2 Noise Sensitive Sites

Within the project limits, noise sensitive land uses along existing SR 52, the proposed new alignment segment of SR 52, existing McCabe Road and existing Clinton Avenue that are specified in the NAC include:

- Activity Category B – Single-family homes and mobile homes.
- Activity Category C – Childcare Center playground, Pasadena Baptist Church playground, Clinton Academy Day Care playground.
- Activity Category D – Piney Grove Missionary Baptist Church, Childcare Center, Knights of Columbus, Pasadena Baptist Church, Faith Fellowship Church, Clinton Academy Day Care.

Warehouses, maintenance/service facilities, industrial facilities and agricultural uses (all in Activity Category F of the NAC) were also noted. As stipulated in 23 CFR 772, Activity Category F land uses do not require a noise analysis. The majority of property along the project corridor is undeveloped (Activity Category G of the NAC). When considering development of currently undeveloped property, the noise contour information provided in Section 2.3.3 can be applied to minimize or eliminate development that is incompatible with traffic noise.

As specified in FDOT's procedures, all noise sensitive land uses that have received a building permit prior to the project's Date of Public Knowledge must be evaluated. The Date of Public Knowledge is defined as the date the environmental document is approved. This date will be established after the PD&E noise analysis is complete; therefore, a specific commitment to review land use in the Design phase will be made. Notably, there was no ongoing construction observed during the field review performed to establish existing land use (January 7, 2015).

Receptor points representing noise sensitive sites are located in accordance with FDOT's *Project Development and Environment Manual*, Part 2, Chapter 17 as follows:

- Residential and Activity Category D receptor points are located at the edge of the building closest to the project corridor.
- Receptor points representing noise sensitive sites in Activity Category C are located in exterior areas where frequent human use may occur.
- Ground floor receptor points are positioned 5 ft above the ground elevation.

For the Recommended Build Alternative, 189 receptor points are established representing 175 residences, five residences identified as relocations with the conceptual design, Piney Grove Missionary Baptist Church, Childcare Center with an associated playground, Knights of Columbus lodge, Pasadena Baptist Church with an associated playground, Faith Fellowship Church and Clinton Academy Day Care with an associated playground. Predicted noise levels at the receptor points are provided in **Appendix C**. The locations of the receptor points identified in Appendix C are depicted on aerials found in **Appendix D**. An electronic

copy of the TNM modeling files is found in **Appendix E**. The alphanumeric identification for each receptor point was formulated as follows:

- Receptor points north of the project are specified by "N" in the receptor identification.
- Receptor points south of the project are specified by "S" in the receptor identification.
- The numeric portion of the receptor identification identifies a specific receptor point with the number generally increasing from west to east.

## 3.3 Existing Noise Levels

Following the FHWA procedures, existing noise levels were established using TNM for noise sensitive sites where existing traffic on SR 52, CR 577 (Curley Road), CR 579 (Prospect Road) or Clinton Avenue is a prevalent noise source. However, a portion of the project is on a new alignment and traffic noise is not a prevalent noise source at some noise sensitive areas along the Recommended Build Alternative. Noise monitoring was performed at representative locations to establish existing conditions where traffic noise is a minor component of the noise environment.

The date, time and duration of noise monitoring at a particular location are provided in **Table 3-2**. Noise sources during each monitoring event were noted to classify the various sources and assign a reasonable existing condition at noise sensitive sites. Common natural noise sources included birds and the effects of wind. Common man-made noise sources included airplanes, solitary nearby vehicles and distant traffic.

Averaging Leq noise levels measured during monitoring events, an existing noise level of 42.6 dB(A) was assigned to noise sensitive areas where existing traffic noise is not a prevalent noise source.

## TABLE 3-2: AMBIENT NOISE MONITORING

| Monitor Site Identification | Location | Monitor Event Date/Time | Event Duration (minutes) | Lmax[1] (dBA) | Leq[2] (dBA) | Observations |
|---|---|---|---|---|---|---|
| MS1 | 33750 Williams Cemetery Road San Antonio, Fl (Vacant parcel between isolated residences) | 1-7-2015/ 1648 | 10.0 | 49.8 | 41.0 | Distant traffic noise from SR 52 was constant. Lmax (49.8 dBA) was caused by an owl. Occasional, reoccurring noise from distant jet, birds and rustling of leaves by wind. |
| | | 1-7-2015/ 1700 | 10.0 | 56.7 | 42.6 | Distant traffic noise from SR 52 was constant. Lmax (56.7 dBA) was caused by a nearby car on Williams Cemetery Road. Occasional, reoccurring noise from rustling of leaves by wind. |
| MS2 | 33616 McCabe Road San Antonio, Fl. (Orange grove north of isolated residence) | 1-13-2015/ 1135 | 10.0 | 54.3 | 42.4 | Distant traffic noise from SR 52 and noise from a distant tractor in the orange grove were constant. Lmax (54.3 dBA) was caused by the voice of a nearby person walking by. |
| | | 1-13-2015/ 1147 | 10.0 | 53.7 | 44.0 | Distant traffic noise from SR 52 and noise from a distant tractor in the orange grove were constant. Lmax (53.7 dBA) was caused by an airplane flyover. |
| | | 1-13-2015/ 1158 | 10.0 | 51.3 | 42.7 | Distant traffic noise from SR 52 and noise from a distant tractor in the orange grove were constant. Lmax (51.3 dBA) was caused by an airplane flyover. |
| Average | | | | | 42.6 | Average Leq used as ambient noise level. |

[1] Lmax – Maximum noise level recorded during the event.
[2] Leq – Equivalent noise level or true average noise level recorded during the event.

## 3.4 Predicted Noise Levels and Abatement Analysis

For the Recommended Build Alternative, exterior noise levels are predicted to approach or exceed the NAC for 2025 build conditions at 12 residences. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to substantially increase at two residences, one at which the NAC is also exceeded. All impacted noise sensitive sites are evaluated to determine the feasibility of providing barriers to reduce traffic noise. If feasible, cost reasonableness is also evaluated.

At three receptor points along existing Clinton Avenue, 2025 build conditions show a small decrease in predicted noise levels compared to 2015 existing conditions. The decreases are a result of realigning an existing curve to the north (i.e., further from the receptor points).

The discussions that follow analyze noise sensitive areas along the corridor from west to east, first on the north side of project, then on the south side of the project.

### 3.4.1 Isolated Residence (Station 54)

An isolated residence (Appendix D, Aerial Sheet 3) is located north of existing SR 52 at Station 54. The residence is represented by one receptor point. With a predicted exterior noise level of 69.7 dB(A) for the year 2025 build condition, the traffic noise level exceeds the NAC at the residence. Compared to the existing condition, the traffic noise level for the year 2025 build condition is predicted to increase 1.2 dB(A). Therefore, the traffic noise level at the residence is not expected to substantially increase above the existing condition.

FDOT policy requires that two or more impacted receptors benefit (i.e., be provided a noise reduction of 5 dB(A) or greater) for a noise barrier to be considered feasible. Since there is only one impacted residence at this location that may benefit, a noise barrier cannot be a feasible abatement measure.

### 3.4.2 Piney Grove Missionary Baptist Church

The Piney Grove Missionary Baptist Church (Appendix D, Aerial Sheet 3) is located north of existing SR 52 at Station 55. There is no exterior area of frequent human use associated with the church; therefore, the church was analyzed as an Activity Category D (interior) use. Following FHWA procedures documented in *Highway Traffic Noise: Analysis and Abatement Guidance*[7] (FHWA, December 2011), the traffic noise level for the interior of the church is determined by applying a 25 dB(A) reduction to the exterior traffic noise prediction. The 25 dB(A) reduction accounts for the decrease in traffic noise provided by the masonry building. With a predicted interior traffic noise level of 46.1 dB(A) for the year 2025 build condition, the traffic noise level does not approach or exceed the NAC at the church. Compared to the existing condition, the traffic noise level for the 2025 build condition is predicted to increase 2.0 dB(A). Therefore, the traffic noise level at the church is not expected to substantially increase above the existing condition.

The traffic noise level is not predicted to approach or exceed the NAC. Furthermore, the existing traffic noise level is not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the Piney Grove Missionary Baptist Church.

### 3.4.3 Residential Community (Station 58 to Station 66)

A residential community (Appendix D, Aerial Sheet 3) is located is located north of existing SR 52 between Station 58 and Station 66. Residences in the community are represented by 20 receptor points. With a predicted exterior traffic noise level of 69.3 dB(A) for the year 2025 build condition, the traffic noise level exceeds the NAC at one residence. The predicted exterior traffic noise level at all other residences is 64.6 dB(A) or less. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 3.2 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

FDOT policy requires that two or more impacted receptors benefit (i.e., be provided a noise reduction of 5 dB(A) or greater) for a noise barrier to be considered feasible. Since there is only one impacted residence at this location that may benefit, a noise barrier cannot be a feasible abatement measure.

### 3.4.4 Childcare Center

The Childcare Center (Appendix D, Aerial Sheet 6) is located north of the proposed SR 52 new alignment at Station 141. The daycare has an associated outdoor playground. With a predicted exterior traffic noise level of 55.8 dB(A) for the year 2025 build condition, the traffic noise level does not approach or exceed the NAC at the playground.

The Childcare Center was also analyzed as an Activity Category D (interior) use. Following FHWA procedures documented in *Highway Traffic Noise: Analysis and Abatement Guidance* (FHWA, December 2011), the traffic noise level for the interior of the daycare building is determined by applying a 25 dB(A) reduction to the exterior traffic noise prediction. The 25 dB(A) reduction accounts for the decrease in traffic noise provided by the masonry building. With a predicted interior traffic noise level of 33.6 dB(A) for the year 2025 build condition, the traffic noise level does not approach or exceed the NAC inside the daycare building. Compared to existing conditions, the traffic noise levels for 2025 build conditions are predicted to increase 14.0 dB(A) or less. Therefore, traffic noise levels at the daycare are not expected to substantially increase above existing conditions.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the Childcare Center.

### 3.4.5 Knights of Columbus

The Knights of Columbus lodge (Appendix D, Aerial Sheet 6) is located north of the proposed SR 52 new alignment at Station 147. There is no exterior area of frequent human use associated with the lodge; therefore, the lodge was analyzed as an Activity Category D (interior) use. Following FHWA procedures documented in *Highway Traffic Noise: Analysis and Abatement Guidance* (FHWA, December 2011), the traffic noise level for the interior of the lodge is determined by applying a 25 dB(A) reduction to the exterior traffic noise prediction. The 25 dB(A) reduction accounts for the decrease in traffic noise provided by the masonry building. With a predicted interior traffic noise level of 38.5 dB(A) for the year 2025 build condition, the traffic noise level does not approach or exceed the NAC at the lodge. Compared to the existing condition, the traffic noise level for the 2025 build condition is predicted to increase 1.5 dB(A). Therefore, the traffic noise level at the lodge is not expected to substantially increase above the existing condition.

The traffic noise level is not predicted to approach or exceed the NAC. Furthermore, the existing traffic noise level is not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the Knights of Columbus lodge.

### 3.4.6 Residences (Station 162 to Station 165)

Two residences (Appendix D, Aerial Sheet 7) are located north of the proposed SR 52 new alignment between Station 162 and Station 165. The residences are represented by two receptor points. With the highest predicted exterior traffic noise level at 53.2 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at either residence. Compared to existing conditions, noise levels for the year 2025 build conditions are predicted to increase 10.6 dB(A), or less. Therefore, noise levels at the residences are not expected to substantially increase above existing conditions.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the two residences.

### 3.4.7 Isolated Residence (Station 213)

A single residence (Appendix D, Aerial Sheet 8) is located north of the proposed SR 52 new alignment at Station 213. The residence is represented by one receptor point. With a predicted exterior traffic noise level of 55.6 dB(A) for the year 2025 build condition, the traffic noise level does not approach or exceed the NAC at the residence. Compared to the existing condition, the noise level for the year 2025 build condition is predicted to increase 13.0 dB(A). Therefore, the noise level at the residence is not expected to substantially increase above the existing condition.

The traffic noise level is not predicted to approach or exceed the NAC. Furthermore, the existing noise level is not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the isolated residence.

### 3.4.8 Isolated Residence (Station 246)

A single residence (Appendix D, Aerial Sheet 9) is located north of the proposed SR 52 new alignment at Station 246. The residence is represented by one receptor point. With a predicted exterior traffic noise level of 48.3 dB(A) for the year 2025 build condition, the traffic noise level does not approach or exceed the NAC at the residence. Compared to the existing condition, the noise level for the year 2025 build condition is predicted to increase 5.7 dB(A). Therefore, the noise level at the residence is not expected to substantially increase above the existing condition.

The traffic noise level is not predicted to approach or exceed the NAC. Furthermore, the existing noise level is not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the isolated residence.

### 3.4.9 Residential Community (Station 258 to Station 266)

A residential community (Appendix D, Aerial Sheet 10) is located north of the proposed SR 52 new alignment between Station 258 and Station 266. Residences in the community are represented by seven receptor points. With the highest predicted exterior traffic noise level at 48.6 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, noise levels for the year 2025 build condition are predicted to increase 6.0 dB(A), or less. Therefore, noise levels at the residences are not expected to substantially increase above existing conditions.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the residential community.

### 3.4.10 Residential Community (Station 277 to Station 286)

A residential community (Appendix D, Aerial Sheet 11) is located north of existing Clinton Avenue between Station 277 and Station 286. Residences in the community are represented by five receptor points. With predicted exterior traffic noise levels ranging from 66.7 dB(A) to 68.6 dB(A) for year 2025 build conditions, the traffic noise levels approach or exceed the NAC at two residences. Predicted exterior traffic noise levels at all other residences are 65.6 dB(A) or less. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 4.4 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

A noise barrier along the right-of-way line would require gaps to accommodate Prospect Road, three driveways and adequate sight distances for vehicles accessing Clinton Avenue. With these gaps a noise barrier cannot be provided along the parcel frontage for either impacted residence and, consequently, a noise reduction of at least 5 dB(A) could not be provided at either impacted residence.

FDOT policy requires that two or more impacted receptors benefit (i.e., be provided a noise reduction of 5 dB(A) or greater) for a noise barrier to be considered feasible. Therefore, a noise barrier is not a feasible abatement measure at this location.

### 3.4.11 Scattered Residences (Station 305 to Station 313)

Scattered residences (Appendix D, Aerial Sheet 12) are located north of existing Clinton Avenue between Station 305 and Station 313. The residences are represented by three receptor points. With a predicted exterior traffic noise level at 70.2 dB(A) for the year 2025 build condition, the traffic noise level exceeds the NAC at one residence. The predicted exterior traffic noise levels at the other residences are 56.9 dB(A) or less. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 4.9 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

FDOT policy requires that two or more impacted receptors benefit (i.e., be provided a noise reduction of 5 dB(A) or greater) for a noise barrier to be considered feasible. Since there is only one impacted residence at this location that may benefit, a noise barrier cannot be a feasible abatement measure.

### 3.4.12 Residential Community along Roberts Road

A residential community (Appendix D, Aerial Sheet 12) is located along Roberts Road north of existing Clinton Avenue between Station 316 and Station 325. Residences in the community are represented by nine receptor points. With the highest predicted exterior traffic noise level at 51.1 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, noise levels for year 2025 build conditions are predicted to increase 4.4 dB(A), or less. Therefore, noise levels at residences are not expected to substantially increase above existing conditions.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the residential community.

### 3.4.13 Residential Community along Hope Lane

A residential community (Appendix D, Aerial Sheet 12) is located along Hope Lane north of existing Clinton Avenue between Station 318 and Station 324. Residences in the community

are represented by six receptor points. With the highest predicted exterior traffic noise level at 64.4 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, noise levels for year 2025 build conditions are predicted to increase 4.3 dB(A), or less. Therefore, noise levels at residences are not expected to substantially increase above existing conditions.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the residential community.

### 3.4.14 Pasadena Baptist Church

The Pasadena Baptist Church (Appendix D, Aerial Sheet 12) is located north of existing Clinton Avenue at Station 325. The church has an associated outdoor playground. With a predicted exterior traffic noise level of 56.6 dB(A) for the year 2025 build condition, the traffic noise level does not approach or exceed the NAC at the playground.

The Pasadena Baptist Church was also analyzed as an Activity Category D (interior) use. Following FHWA procedures documented in *Highway Traffic Noise: Analysis and Abatement Guidance* (FHWA, December 2011), the traffic noise level for the interior of the church is determined by applying a 25 dB(A) reduction to the exterior traffic noise prediction. The 25 dB(A) reduction accounts for the decrease in traffic noise provided by the masonry building. With a predicted interior traffic noise level of 33.2 dB(A) for the year 2025 build condition, the traffic noise level does not approach or exceed the NAC inside the church. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 4.8 dB(A) or less. Therefore, traffic noise levels at the church are not expected to substantially increase above existing conditions.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the Pasadena Baptist Church.

### 3.4.15 Residences along Circle B Road

A residential community (Appendix D, Aerial Sheet 13) is located along Circle B Road north of existing Clinton Avenue between Station 340 and Station 344. Residences in the community are represented by four receptor points. With the highest predicted exterior traffic noise level at 63.5 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 6.0 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the residential community.

### 3.4.16 Residences (Station 345 to Station 347)

Two residences (Appendix D, Aerial Sheet 13) are located north of existing Clinton Avenue between Station 345 and Station 347. The residences are represented by two receptor points. With a predicted exterior traffic noise level at 68.3 dB(A) for the year 2025 build condition, the traffic noise level exceeds the NAC at one residence. The predicted exterior traffic noise level at the other residence is 65.5 dB(A). Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 6.6 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at either residence.

FDOT policy requires that two or more impacted receptors benefit (i.e., be provided a noise reduction of 5 dB(A) or greater) for a noise barrier to be considered feasible. Since there is only one impacted residence at this location that may benefit, a noise barrier cannot be a feasible abatement measure.

### 3.4.17 Residential Community (Station 348 to Station 356)

A residential community (Appendix D, Aerial Sheets 13 and 14) is located north of existing Clinton Avenue between Station 348 and Station 356. Residences in the community are represented by eight receptor points. With the highest predicted exterior traffic noise level at 63.6 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 4.4 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the residential community.

### 3.4.18 Residential Community along Chesterfield Road

A residential community (Appendix D, Aerial Sheet 14) is located along Chesterfield Road north of existing Clinton Avenue between Station 357 and Station 362. Residences in the community are represented by five receptor points. With predicted exterior traffic noise levels ranging from 66.4 dB(A) to 67.0 dB(A) for the year 2025 build condition, the traffic noise levels approach or equal the NAC at two residences. Predicted exterior traffic noise levels at all other residences are 63.6 dB(A) or less. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 5.8 dB(A) or less. Therefore,

traffic noise levels are not expected to substantially increase above existing conditions at any residence.

A noise barrier along the right-of-way line would require gaps to accommodate Chesterfield Road and two driveways. With these gaps, a noise barrier at the maximum height of 22 feet can provide at least 5 dB(A) reduction at only one impacted residence.

FDOT policy requires that two or more impacted receptors benefit (i.e., be provided a noise reduction of 5 dB(A) or greater) for a noise barrier to be considered feasible. With only one impacted residence benefited, a noise barrier is not a feasible abatement measure at this location.

### 3.4.19 Residences (Station 374 to Station 377)

Two residences (Appendix D, Aerial Sheet 14) are located north of existing Clinton Avenue between Station 374 and Station 377. The residences are represented by two receptor points. With a predicted exterior traffic noise level at 67.4 dB(A) for the year 2025 build condition, the traffic noise level exceeds the NAC at one residence. The predicted exterior traffic noise levels at the other residence is 65.1 dB(A). Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 3.8 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at either residence.

FDOT policy requires that two or more impacted receptors benefit (i.e., be provided a noise reduction of 5 dB(A) or greater) for a noise barrier to be considered feasible. Since there is only one impacted residence at this location that may benefit, a noise barrier cannot be a feasible abatement measure.

### 3.4.20 Residential Community along Mary Bill Lane

A residential community (Appendix D, Aerial Sheet 14) is located along Mary Bill Lane north of existing Clinton Avenue between Station 378 and Station 380. Residences in the community are represented by four receptor points. With the highest predicted exterior traffic noise level at 59.9 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 3.9 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the residential community.

### 3.4.21 Residential Community (Station 381 to Station 385)

A residential community (Appendix D, Aerial Sheet 15) is located north of existing Clinton Avenue between Station 381 and Station 385. Residences in the community are represented by six receptor points. With the highest predicted exterior traffic noise level at 64.9 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 4.1 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the residential community.

### 3.4.22 Residential Community along Fort King Road

A residential community (Appendix D, Aerial Sheet 15) is located along Fort King Road north of existing Clinton Avenue at Station 387. Residences in the community are represented by three receptor points. With a predicted exterior traffic noise level at 66.5 dB(A) for the year 2025 build condition, the traffic noise level approaches the NAC at one residence. Predicted exterior traffic noise levels at all other residences are 60.2 dB(A) or less. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 5.9 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

FDOT policy requires that two or more impacted receptors benefit (i.e., be provided a noise reduction of 5 dB(A) or greater) for a noise barrier to be considered feasible. Since there is only one impacted residence at this location that may benefit, a noise barrier cannot be a feasible abatement measure.

### 3.4.23 Scattered Residences (Station 160 to Station 183)

Scattered residences (Appendix D, Aerial Sheet 7) are located south of the proposed SR 52 new alignment between Station 160 and Station 183. The residences are represented by five receptor points. With the highest predicted exterior traffic noise level at 58.3 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to the existing condition, the traffic noise level for the year 2025 build condition is predicted to increase 15.7 dB(A) at one residence. Therefore, the noise level at one residence is expected to substantially increase above the existing condition.

FDOT policy requires that two or more impacted receptors benefit (i.e., be provided a noise reduction of 5 dB(A) or greater) for a noise barrier to be considered feasible. Since there is only one impacted residence at this location that may benefit, a noise barrier cannot be a feasible abatement measure.

### 3.4.24 Isolated Residence (Station 195)

A single residence (Appendix D, Aerial Sheet 8) is located south of the proposed SR 52 new alignment at Station 195. The residence is represented by one receptor point. With a predicted exterior noise level of 66.5 dB(A) for the year 2025 build condition, the traffic noise level approaches the NAC at the residence. Compared to the existing condition, the traffic noise level for the year 2025 build condition is predicted to increase 23.9 dB(A). Therefore, the noise level at the single residence is also expected to substantially increase above the existing condition.

FDOT policy requires that two or more impacted receptors benefit (i.e., be provided a noise reduction of 5 dB(A) or greater) for a noise barrier to be considered feasible. Since there is only one impacted residence at this location that may benefit, a noise barrier cannot be a feasible abatement measure.

### 3.4.25 Isolated Residence (Station 279)

A single residence (Appendix D, Aerial Sheet 11) is located south of existing Clinton Avenue at Station 279. The residence is represented by one receptor. With a predicted exterior traffic noise level of 63.4 dB(A) for the year 2025 build condition, the traffic noise level does not approach or exceed the NAC at the residence. Compared to the existing condition, the noise level for the year 2025 build condition is predicted to increase 5.5 dB(A). Therefore, the noise level at the residence is not expected to substantially increase above the existing condition.

The traffic noise level is not predicted to approach or exceed the NAC. Furthermore, the existing noise level is not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the isolated residence.

### 3.4.26 Residential Community (Station 291 to Station 303)

A residential community (Appendix D, Aerial Sheet 11) is located south of existing Clinton Avenue between Station 291 and Station 303. Residences in the community are represented by 14 receptor points. With the highest predicted exterior traffic noise level at 61.4 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, traffic noise levels for year 2025 build conditions are predicted to increase 4.6 dB(A), or less. Therefore, traffic noise levels at residences are not expected to substantially increase above existing conditions.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the residential community.

### 3.4.27 Residential Community (Station 320 to Station 331)

A residential community (Appendix D, Aerial Sheet 13) is located south of existing Clinton Avenue between Station 320 and Station 331. Residences in the community are represented by eight receptor points. With a predicted exterior traffic noise level at 67.0 dB(A) for the year 2025 build condition, the traffic noise level equals the NAC at one residence. The predicted exterior traffic noise level at all other residences is 64.4 dB(A) or less. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 5.8 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

FDOT policy requires that two or more impacted receptors benefit (i.e., be provided a noise reduction of 5 dB(A) or greater) for a noise barrier to be considered feasible. Since there is only one impacted residence at this location that may benefit, a noise barrier cannot be a feasible abatement measure.

### 3.4.28 Residential Community (Station 324 to Station 333)

A residential community (Appendix D, Aerial Sheet 13) is located along Old Clinton Avenue south of existing Clinton Avenue between Station 324 and Station 333. Residences in the community are represented by 23 receptor points. With the highest predicted exterior traffic noise level at 59.7 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 3.5 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the residential community.

### 3.4.29 Residential Community along Pasadena Road

A residential community (Appendix D, Aerial Sheet 13) is located along Pasadena Road south of existing Clinton Avenue between Station 334 and Station 335. Residences in the community are represented by five receptor points. With the highest predicted exterior traffic noise level at 63.3 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 3.1 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the

transportation improvement project. Therefore, a noise barrier is not considered for the residential community.

### 3.4.30 Residential Community along Pine Bluff Loop

A residential community (Appendix D, Aerial Sheet 13) is located along Pine Bluff Loop south of existing Clinton Avenue between Station 335 and Station 339. Residences in the community are represented by seven receptor points. With the highest predicted exterior traffic noise level at 63.1 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 3.7 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the residential community.

### 3.4.31 Residential Community (Station 339 to Station 346)

A residential community (Appendix D, Aerial Sheet 13) is located south of existing Clinton Avenue between Station 339 and Station 346. Residences in the community are represented by 15 receptor points. With the highest predicted exterior traffic noise level at 62.0 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 3.8 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the residential community.

### 3.4.32 Faith Fellowship Church

The Faith Fellowship Church (Appendix D, Aerial Sheet 13) is located south of existing Clinton Avenue at Station 343. There is no exterior area of frequent human use associated with the church; therefore, the church was analyzed as an Activity Category D (interior) use. Following FHWA procedures documented in *Highway Traffic Noise: Analysis and Abatement Guidance* (FHWA, December 2011), the traffic noise level for the interior of the church is determined by applying a 20 dB(A) reduction to the exterior traffic noise prediction. The 20 dB(A) reduction accounts for the decrease in traffic noise provided by the frame building. With a predicted interior traffic noise level of 47.9 dB(A) for the year 2025 build condition, the traffic noise level does not approach or exceed the NAC at the church.

Compared to the existing condition, the traffic noise level for the 2025 build condition is predicted to increase 1.9 dB(A). Therefore, the traffic noise level at the church is not expected to substantially increase above the existing condition.

The traffic noise level is not predicted to approach or exceed the NAC. Furthermore, the existing traffic noise level is not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the Faith Fellowship Church.

### 3.4.33 Scattered Residences (Station 349 to Station 379)

Scattered residences (Appendix D, Aerial Sheets 13 and 14) are located south of existing Clinton Avenue between Station 349 and Station 379. The residences are represented by seven receptor points. With the highest predicted exterior traffic noise level at 60.9 dB(A) for the year 2025 build condition, traffic noise levels do not approach or exceed the NAC at any residence. Compared to existing conditions, noise levels for the year 2025 build condition are predicted to increase 4.9 dB(A) or less. Therefore, traffic noise levels are not expected to substantially increase above existing conditions at any residence.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the transportation improvement project. Therefore, a noise barrier is not considered for the residences.

### 3.4.34 Clinton Academy Daycare

The Clinton Academy (Appendix D, Aerial Sheet 13) is located south of existing Clinton Avenue at Station 354. The daycare has an associated outdoor playground. With a predicted exterior traffic noise level of 65.4 dB(A) for the year 2025 build condition, the traffic noise level does not approach or exceed the NAC at the playground.

The Clinton Academy was also analyzed as an Activity Category D (interior) use. Following FHWA procedures documented in *Highway Traffic Noise: Analysis and Abatement Guidance* (FHWA, December 2011), the traffic noise level for the interior of the daycare is determined by applying a 25 dB(A) reduction to the exterior traffic noise prediction. The 25 dB(A) reduction accounts for the decrease in traffic noise provided by the masonry building. With a predicted interior traffic noise level of 43.1 dB(A) for the year 2025 build condition, the traffic noise level does not approach or exceed the NAC inside the daycare. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to increase 4.7 dB(A) or less. Therefore, traffic noise levels at the daycare are not expected to substantially increase above existing conditions.

Traffic noise levels are not predicted to approach or exceed the NAC. Furthermore, existing traffic noise levels are not predicted to substantially increase as a direct result of the

transportation improvement project. Therefore, a noise barrier is not considered for the Clinton Academy.

# 4.0 CONCLUSIONS

## 4.1 Traffic Noise Impacts

For the Recommended Build Alternative, exterior noise levels are predicted to approach or exceed the NAC for 2025 build conditions at 12 residences. Compared to existing conditions, traffic noise levels for 2025 build conditions are predicted to substantially increase at two residences, one at which the NAC is also exceeded.

## 4.2 Noise Abatement Considerations

For the Recommended Build Alternative, abatement is evaluated for all 13 noise sensitive sites predicted to approach/exceed the NAC or predicted to experience a substantial increase in noise attributable to the project. Traffic management and alignment modifications are determined to not be viable abatement measures. Consideration of buffer zones during planning of future development is identified as a viable abatement measure that can be implemented by local officials responsible for land use planning (see **Table 2-6**). Noise barriers are evaluated for the amount of noise reduction that could potentially be provided and cost reasonableness where minimum noise reduction requirements could be achieved.

## 4.3 Statement of Likelihood

Noise barriers are not feasible at the 13 impacted residences primarily because the residence is an isolated impact or gaps in a noise barrier needed to accommodate driveways/roads limit the amount of noise reduction to less than 5 dB(A).

Most properties adjacent to the project corridor are undeveloped. A land use review will be performed during the design phase of the project to ensure that all noise-sensitive land uses that have received a building permit prior to the project's Date of Public Knowledge are evaluated. Notably, there was no ongoing construction observed during the field review performed when establishing existing land use (January 7, 2015).

In addition, any significant changes to the design concept, including typical section, alignment, and design speed, will be reviewed in the design phase. If necessary, noise reanalysis will be performed.

## 5.0 CONSTRUCTION NOISE AND VIBRATION

Within the project limits, land uses adjacent to existing SR 52, the proposed SR 52 new alignment segments and Clinton Avenue are identified on the FDOT listing (PD&E Manual, Table 17.3) of noise- and vibration-sensitive sites (i.e., residences). Construction of the proposed roadway improvements is not expected to have any significant noise or vibration impact. If sensitive land uses develop adjacent to the roadway prior to construction, increased potential for noise or vibration impacts could result. It is anticipated that the application of the *FDOT Standard Specifications for Road and Bridge Construction*[8] will minimize or eliminate potential construction noise and vibration impacts. However, should unanticipated noise or vibration issues arise during the construction process, the Project Engineer, in coordination with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

# 6.0 COMMUNITY COORDINATION

Land use controls are a means of preventing or minimizing traffic noise impacts in areas of future development. The predicted distances to an approach of the Noise Abatement Criteria (Activity Categories A, B, C and E) for Year 2025 build conditions is provided in **Table 2-6**. The distances do not account for any shielding of noise provided by structures or the effects of site specific topographic features.

Pasco County will be provided a copy of the Noise Study Report to promote compatibility between land development and highways. The predicted distances that noise levels would approach the Noise Abatement Criteria and other predicted noise levels provided in this report can be used to determine areas where noise sensitive land uses would be incompatible with traffic noise generated from SR 52, the proposed SR 52 new alignment segment and Clinton Avenue. When considering development of currently undeveloped properties, this information can be applied to establish buffers between the build alternative and noise sensitive development or used to determine when noise abatement should be provided as part of a noise sensitive development.

## 7.0 REFERENCES


1. *Procedures for Abatement of Highway Traffic Noise and Construction Noise*; Title 23 Code of Federal Regulations Part 772; Federal Highway Administration; July 2010.

2. *Project Development and Environment Manual,* Part 2, Chapter 17; Florida Department of Transportation; May 2011.

3. *Final Engineering and Environmental Technical Compendium*; Atkins; Tampa, Florida; July 2015.

4. *State Environmental Impact Report*; Atkins; Tampa, Florida; July 2015.

5. *Plans Preparation Manual*; Florida Department of Transportation; 2015.

6. *Measurement of Highway-Related Noise*; Federal Highway Administration; May 1996.

7. *Highway Traffic Noise: Analysis and Abatement Guidance*, Federal Highway Administration, December 2011.

8. *Standard Specification for Road and Bridge Construction*; Florida Department of Transportation; 2015.

# APPENDICES

# *APPENDIX A*

# *TRAFFIC DATA*

**2012 FDOT Quality Level of Service Handbook**
**Latest Standard Capacities for LOS C from QLOS Tables**

| Class I (40 mph or higher) | | LOS C |
|---|---|---|
| Clinton Ave Built | 2 l div | 1740 |
| SR 52 | 1 l undiv | 710 |
| Curley | 1 l undiv | 639 |
| Prospect | 1 l undiv | 639 |

**Model Traffic for Noise Analysis**

**SR 52 No Build Condition**

| From | To | 2006 | 2015 | 2020 | 2025 | k | D | DDHV 2025 | LOS |
|---|---|---|---|---|---|---|---|---|---|
| I75 | McKendree Rd | 12432 | 23979 | 30739 | 37500 | 0.0959 | 0.5788 | 2081 | D |
| McKendree Rd | CR577 | 11330 | 15865 | 18700 | 21534 | 0.0959 | 0.5788 | 1195 | C |
| CR577 | CR579 | 11942 | 15182 | 17314 | 19445 | 0.0959 | 0.5788 | 1079 | C |
| CR579 | 17th St/Fort King Rd | 8616 | 10110 | 11180 | 12249 | 0.0959 | 0.5788 | 680 | B |

**Clinton Ave No Build Condition**

| From | To | 2006 | 2015 | 2020 | 2025 | k | D | DDHV 2025 | LOS |
|---|---|---|---|---|---|---|---|---|---|
| CR 579 | Fort King Rd | 8567 | 12264 | 14557 | 16849 | 0.0959 | 0.5788 | 935 | C |

**SR 52 Build Condition**

| From | To | 2006 | 2015 | 2020 | 2025 | k | D | DDHV 2025 | LOS |
|---|---|---|---|---|---|---|---|---|---|
| I75 | McKendree Rd | 12432 | 23979 | 37128 | 46170 | 0.0959 | 0.5788 | 2563 | D |
| McKendree Rd | CR577 | 11330 | 15865 | 20386 | 23822 | 0.0959 | 0.5788 | 1322 | C |
| CR577 | CR579 | 11942 | 15182 | 13594 | 14397 | 0.0959 | 0.5788 | 799 | C |
| CR579 | 17th St/Fort King Rd | 8616 | 10110 | 11779 | 13062 | 0.0959 | 0.5788 | 725 | C |

**Clinton Ave Build Condition**

| From | To | 2006 | 2015 | 2020 | 2025 | k | D | DDHV 2025 | LOS |
|---|---|---|---|---|---|---|---|---|---|
| Extension | CR577 | NA | NA | 20903 | 28368 | 0.0959 | 0.5788 | 1575 | B |
| CR577 | CR579 | NA | NA | 17418 | 23639 | 0.0959 | 0.5788 | 1312 | B |
| CR 579 | Fort King Rd | 8567 | 12264 | 20151 | 24441 | 0.0959 | 0.5788 | 1357 | B |

**Curley Rd No Build Condition**

| From | To | 2006 | 2015 | 2020 | 2025 | k | D | DDHV 2025 | LOS |
|---|---|---|---|---|---|---|---|---|---|
| South of Clinton | Clinton Ave | 6712 | 9517 | 11262 | 13007 | 0.095 | 0.600 | 741.398 | C |
| Clinton Ave | SR 52 | 6712 | 11169 | 13831 | 16493 | 0.095 | 0.600 | 940.125 | C |
| SR 52 | North of SR 52 | 6076 | 9704 | 11889 | 14074 | 0.095 | 0.600 | 802.198 | C |

**Curley Rd Build Condition**

| From | To | 2006 | 2015 | 2020 | 2025 | k | D | DDHV 2025 | LOS |
|---|---|---|---|---|---|---|---|---|---|
| South of Clinton | Clinton Ave | 6712 | 9517 | 14369 | 17223 | 0.095 | 0.600 | 981.723 | C |
| Clinton Ave | SR 52 | 6712 | 11169 | 11456 | 13270 | 0.095 | 0.600 | 756.405 | C |
| SR 52 | North of SR 52 | 6076 | 9704 | 11564 | 13633 | 0.095 | 0.600 | 777.062 | C |

**Prospect No Build Condition**

| From | To | 2006 | 2015 | 2020 | 2025 | k | D | DDHV 2025 | LOS |
|---|---|---|---|---|---|---|---|---|---|
| South of Clinton | Clinton Ave | 3000 | 6116 | 7931 | 9746 | 0.095 | 0.600 | 555.506 | B |
| Clinton Ave | SR 52 | 7926 | 9622 | 10784 | 11946 | 0.095 | 0.600 | 680.906 | C |
| SR 52 | North of SR 52 | 1897 | 3717 | 4780 | 5844 | 0.095 | 0.600 | 333.114 | B |

**Prospect Rd Build Condition**

| From | To | 2006 | 2015 | 2020 | 2025 | k | D | DDHV 2025 | LOS |
|---|---|---|---|---|---|---|---|---|---|
| South of Clinton | Clinton Ave | 3000 | 6116 | 7190 | 8740 | 0.095 | 0.600 | 498.174 | B |
| Clinton Ave | SR 52 | 7926 | 9622 | 10473 | 11524 | 0.095 | 0.600 | 656.853 | C |
| SR 52 | North of SR 52 | 1897 | 3717 | 5743 | 7151 | 0.095 | 0.600 | 407.581 | B |

| | Medium Truck | Heavy Truck | Busses | Motorcycles | Total Truck | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Site** | **5106** | | | | | | | | |
| **Vehicle Classification Report** | | | **Annual Average Daily %** | | | **Medium 04, 05** | **Heavy 06 -13** | Design Hour | |
| | | | | | | | | DHT | 4.53 |
| | 3.14 | 5.87 | 0.04 | 0.64 | 9.05 | | | DH2 (Med) | 1.57 C |
| | | | | | | Medium 4 to 7 | Heavy 8 to 13 | DH3 (He) | 2.94 |
| | 4.32 | | | | | | | Bpeak | 0.02 C |
| **Summary Daily Statistic (24)** | | | | | | | | Mcpeak | 0.32 C |
| | 3.18 | 5.88 | 0.03 | | | | | | |
| **Vehicle Class History** | | | | | **T24** | **Medium 4 to 7** | **Heavy 8 to 13** | | |
| 2013 | 4.32 | 4.73 | NA | NA | 9.05 | | | | |
| 2012 | 5.54 | 4.03 | NA | NA | 9.57 | | | | |

# *APPENDIX B*

# *NOISE MODEL VALIDATION NOTES*

# Noise Model Validation

**Personnel**: Daniel Doebler, Phillip Still, Todd Bogner, Nicole Selly **Date**: 1/13/2015

**Project**: SR 52 from East of McKendree Road to Fort King Road

**FPID**: 435915-1

**Validation Site**: West of Emmaus Cemetery Road, 69 feet south of nearest SR 52 travel lane

**Weather**: Temperature – 65°F, Humidity – 80%, Wind Speed – 2 to 5 mph, Wind Dir. – North, Cloud Cover – 90%

**Noise Monitor**: Quest Technologies Q300 **Noise Calibrator**: Quest Technologies QC10
**Serial Number:** QC2060111 **Serial Number:** QIB070010

**Replicate 1**
**Time:** 0844 to 0854 **Duration:** 10 minutes **Measured Leq:** 67.8 dB(A)

**Replicate 2**
**Time:** 0856 to 0906 **Duration:** 10 minutes **Measured Leq:** 66.6 dB(A)

**Replicate 3**
**Time:** 0908 to 0918 **Duration:** 10 minutes **Measured Leq:** 67.6 dB(A)

**Traffic Data**

| Vehicle Type | SR 52 Eastbound | | | SR 52 Westbound | | | Speed Limit (mph) |
|---|---|---|---|---|---|---|---|
| | Rep 1 | Rep 2 | Rep 3 | Rep 1 | Rep 2 | Rep 3 | |
| Autos | 106 | 105 | 97 | 72 | 49 | 68 | 55 |
| Medium Truck | 2 | 3 | 4 | 6 | 6 | 6 | |
| Heavy trucks | 3 | 1 | 6 | 5 | 6 | 4 | |
| Buses | 1 | 2 | 0 | 1 | 0 | 1 | |
| Motorcycles | 0 | 0 | 0 | 1 | 0 | 0 | |

**Comments:**

# Noise Model Validation

**Personnel**: Daniel Doebler, Phillip Still, Todd Bogner, Nicole Selly **Date**: 1/13/2015

**Project**: SR 52 from East of McKendree Road to Fort King Road

**FPID**: 435915-1

**Validation Site**: 72 feet west of Curley Road nearest travel lane, North of SR 52 new alignment

**Weather**: Temperature – 65°F, Humidity – 80%, Wind Speed – 2 to 5 mph, Wind Dir. – North, Cloud Cover – 90%

**Noise Monitor**: Quest Technologies Q300 **Noise Calibrator**: Quest Technologies QC10
**Serial Number:** QC2060111 **Serial Number:** QIB070010

**Replicate 1**
**Time:** 0949 to 0959 **Duration:** 10 minutes **Measured Leq:** 58.7 dB(A)

**Replicate 2**
**Time:** 1000 to 1010 **Duration:** 10 minutes **Measured Leq:** 59.3 dB(A)

**Replicate 3**
**Time:** 1013 to 1023 **Duration:** 10 minutes **Measured Leq:** 61.5 dB(A)

**Traffic Data**

| Vehicle Type | Curley Road Northbound | | | Curley Road Southbound | | | Speed Limit (mph) |
|---|---|---|---|---|---|---|---|
| | Rep 1 | Rep 2 | Rep 3 | Rep 1 | Rep 2 | Rep 3 | |
| Autos | 16 | 17 | 21 | 18 | 27 | 15 | 50 |
| Medium Truck | 0 | 1 | 0 | 2 | 0 | 2 | |
| Heavy trucks | 0 | 0 | 1 | 1 | 0 | 2 | |
| Buses | 4 | 0 | 0 | 0 | 0 | 0 | |
| Motorcycles | 0 | 1 | 0 | 0 | 0 | 1 | |

**Comments:**

# Noise Model Validation

**Personnel**: Daniel Doebler, Phillip Still, Todd Bogner, Nicole Selly **Date**: 1/13/2015

**Project**: SR 52 from East of McKendree Road to Fort King Road

**FPID**: 435915-1

**Validation Site**: Across from Just-A-Mere Lane, 60 feet north of Clinton Avenue nearest travel lane

**Weather**: Temperature – 73°F, Humidity – 71%, Wind Speed – 0 to 3 mph, Wind Dir. – East, Cloud Cover – 80%

**Noise Monitor**: Quest Technologies Q300 **Noise Calibrator**: Quest Technologies QC10
**Serial Number:** QC2060111 **Serial Number:** QIB070010

**Replicate 1**
**Time:** 1349 to 1359 **Duration:** 10 minutes **Measured Leq:** 62.4 dB(A)

**Replicate 2**
**Time:** 1401 to 1411 **Duration:** 10 minutes **Measured Leq:** 62.2 dB(A)

**Replicate 3**
**Time:** 1412 to 1422 **Duration:** 10 minutes **Measured Leq:** 64.0 dB(A)

## Traffic Data

| Vehicle Type | Clinton Avenue Eastbound | | | Clinton Avenue Westbound | | | Speed Limit (mph) |
|---|---|---|---|---|---|---|---|
| | Rep 1 | Rep 2 | Rep 3 | Rep 1 | Rep 2 | Rep 3 | |
| Autos | 33 | 43 | 37 | 58 | 35 | 50 | 45 |
| Medium Truck | 0 | 3 | 4 | 3 | 1 | 3 | |
| Heavy trucks | 2 | 2 | 1 | 4 | 1 | 4 | |
| Buses | 0 | 0 | 0 | 0 | 2 | 2 | |
| Motorcycles | 0 | 0 | 1 | 0 | 0 | 0 | |

**Comments:**

# *APPENDIX C*

# *PREDICTED NOISE LEVELS*

## Predicted Noise Levels

| Receptor Identification | Aerial Sheet Number | Noise Sensitive Site Represented | Predicted Noise Level | | | Difference between Build and Exisiting (dBA) | NAC Approached or Exceeded |
|---|---|---|---|---|---|---|---|
| | | | 2015 Existing Condition (dBA) | 2025 No Build Condition (dBA) | 2025 Build Condition (dBA) | | |
| **Isolated Residence (Station 54)** | | | | | | | |
| RN1 | Sheet 3 | 1 residence | 68.5 | 68.5 | 69.7 | 1.2 | Yes |
| **Piney Grove Missionary Baptist Church (Station 55)** | | | | | | | |
| RN2 | Sheet 3 | Church Interior | 44.1 | 44.1 | 46.1 | 2.0 | No |
| **Residential Community (Station 58 to Station 66)** | | | | | | | |
| RN3 | Sheet 3 | 1 residence | 62.5 | 62.5 | 64.6 | 2.1 | No |
| RN4 | Sheet 3 | 1 residence | 67.3 | 67.3 | 69.3 | 2.0 | Yes |
| RN5 | Sheet 3 | 1 residence | 60.7 | 60.7 | 62.7 | 2.0 | No |
| RN6 | Sheet 3 | 1 residence | 55.2 | 55.2 | 57.7 | 2.5 | No |
| RN7 | Sheet 3 | 1 residence | 57.3 | 57.3 | 59.4 | 2.1 | No |
| RN8 | Sheet 3 | 1 residence | 52.4 | 52.4 | 55.0 | 2.6 | No |
| RN9 | Sheet 3 | 1 residence | 54.6 | 54.6 | 56.9 | 2.3 | No |
| RN10 | Sheet 3 | 1 residence | 50.4 | 50.4 | 53.6 | 3.2 | No |
| RN11 | Sheet 3 | 1 residence | 47.5 | 47.5 | 50.7 | 3.2 | No |
| RN12 | Sheet 3 | 1 residence | 50.3 | 50.3 | 52.9 | 2.6 | No |
| RN13 | Sheet 3 | 1 residence | 53.4 | 53.4 | 55.8 | 2.4 | No |
| RN14 | Sheet 3 | 1 residence | 52.1 | 52.1 | 54.4 | 2.3 | No |
| RN15 | Sheet 3 | 1 residence | 55.5 | 55.5 | 57.7 | 2.2 | No |
| RN16 | Sheet 3 | 1 residence | 52.0 | 52.0 | 54.4 | 2.4 | No |
| RN17 | Sheet 3 | 1 residence | 54.0 | 54.0 | 56.1 | 2.1 | No |
| RN18 | Sheet 3 | 1 residence | 56.9 | 56.9 | 59.0 | 2.1 | No |
| RN19 | Sheet 3 | 1 residence | 58.5 | 58.5 | 60.5 | 2.0 | No |
| RN20 | Sheet 3 | 1 residence | 60.1 | 60.1 | 62.0 | 1.9 | No |
| RN21 | Sheet 3 | 1 residence | 61.7 | 61.7 | 63.6 | 1.9 | No |
| RN22 | Sheet 3 | 1 residence | 62.0 | 62.0 | 63.9 | 1.9 | No |
| **Childcare Center (Station 141)** | | | | | | | |
| RN71 | Sheet 6 | playground | 44.5 | 45.4 | 55.8 | 11.3 | No |
| RN72 | Sheet 6 | indoor | 19.6 | 20.5 | 33.6 | 14.0 | No |
| **Knights of Columbus (Station 147)** | | | | | | | |
| RN73 | Sheet 6 | indoor | 37.0 | 38.0 | 38.5 | 1.5 | No |
| **Residences (Station 162 to Station 165)** | | | | | | | |
| RN74 | Sheet 7 | 1 residence | 42.6 | 42.6 | 53.2 | 10.6 | No |
| RN75 | Sheet 7 | 1 residence | 42.6 | 42.6 | 51.1 | 8.5 | No |
| **Isolated Residence (Station 213)** | | | | | | | |
| RN76 | Sheet 8 | 1 residence | 42.6 | 42.6 | 55.6 | 13.0 | No |
| **Isolated Residence (Station 246)** | | | | | | | |
| RN77 | Sheet 9 | 1 residence | 42.6 | 42.6 | 48.3 | 5.7 | No |
| **Residential Community (Station 258 to Station 266)** | | | | | | | |
| RN78 | Sheet 10 | 1 residence | 42.6 | 42.6 | 45.6 | 3.0 | No |
| RN79 | Sheet 10 | 1 residence | 42.6 | 42.6 | 45.5 | 2.9 | No |
| RN80 | Sheet 10 | 1 residence | 42.6 | 42.6 | 46.5 | 3.9 | No |
| RN81 | Sheet 10 | 1 residence | 42.6 | 42.6 | 46.1 | 3.5 | No |
| RN82 | Sheet 10 | 1 residence | 42.6 | 42.6 | 47.2 | 4.6 | No |
| RN83 | Sheet 10 | 1 residence | 42.6 | 42.6 | 47.1 | 4.5 | No |
| RN84 | Sheet 10 | 1 residence | 42.6 | 42.6 | 48.6 | 6.0 | No |

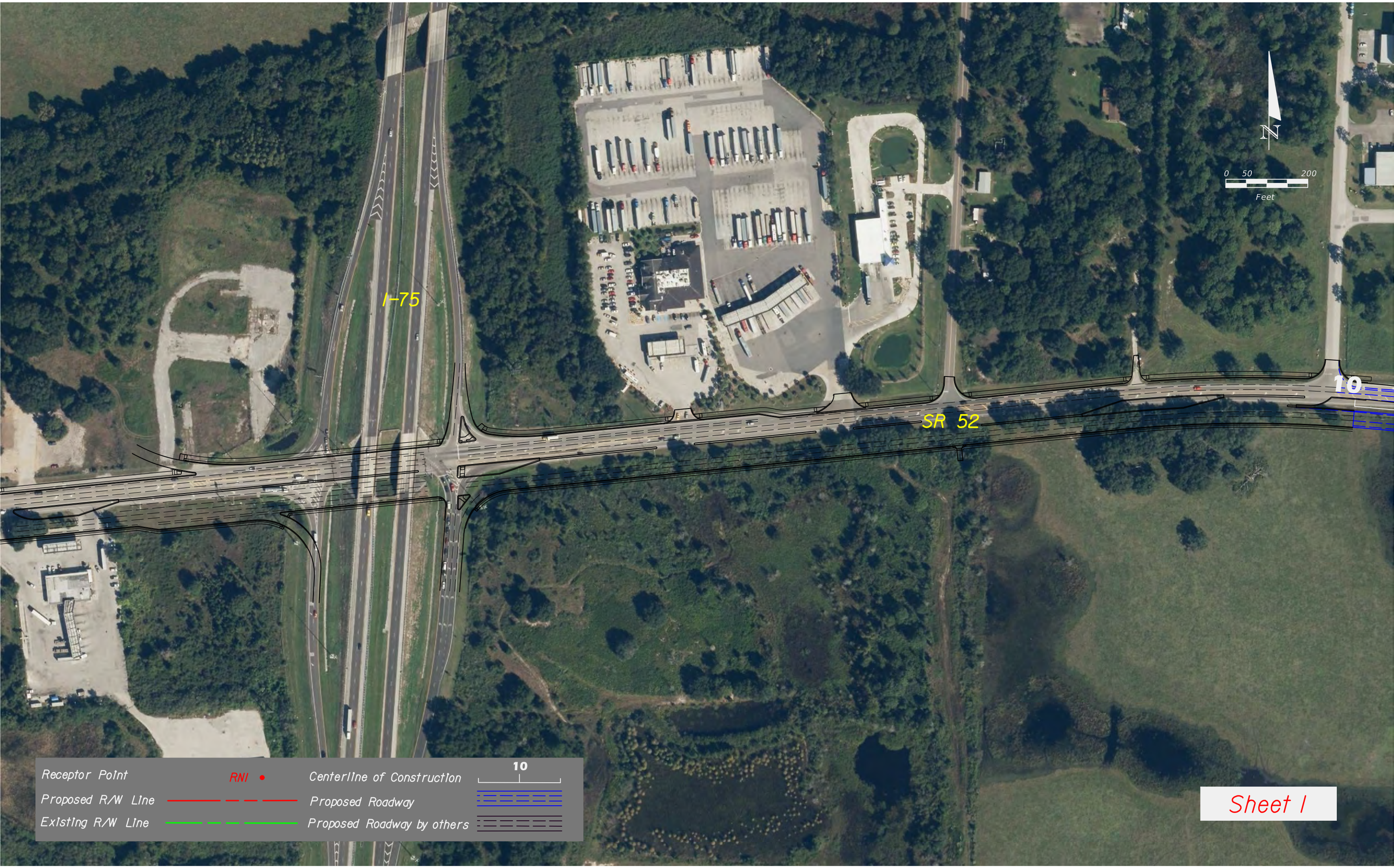
| Receptor Identification | Aerial Sheet Number | Noise Sensitive Site Represented | Predicted Noise Level | | | Difference between Build and Exisiting (dBA) | NAC Approached or Exceeded |
|---|---|---|---|---|---|---|---|
| | | | 2015 Existing Condition (dBA) | 2025 No Build Condition (dBA) | 2025 Build Condition (dBA) | | |
| **Residential Community (Station 277 to Station 286)** | | | | | | | |
| RN85 | Sheet 11 | 1 residence | 65.3 | 66.6 | 68.6 | 3.3 | Yes |
| RN86 | Sheet 11 | 1 residence | 64.6 | 65.5 | 66.7 | 2.1 | Yes |
| RN87 | Sheet 11 | 1 residence | 62.7 | 63.6 | 65.6 | 2.9 | No |
| RN88 | Sheet 11 | 1 residence | 61.9 | 62.9 | 64.7 | 2.8 | No |
| RN89 | Sheet 11 | 1 residence | 53.3 | 54.3 | 57.7 | 4.4 | No |
| **Scattered Residences (Station 305 to Station 313)** | | | | | | | |
| RN90 | Sheet 12 | 1 residence | 52.2 | 53.1 | 56.9 | 4.7 | No |
| RN91 | Sheet 12 | 1 residence | 52.2 | 53.0 | 56.4 | 4.2 | No |
| RN92 | Sheet 12 | 1 residence | 65.3 | 66.1 | 70.2 | 4.9 | Yes |
| **Residential Community Along Roberts Road (Station 316 to Station 325)** | | | | | | | |
| RN93 | Sheet 12 | 1 residence | 43.1 | 43.9 | 47.2 | 4.1 | No |
| RN94 | Sheet 12 | 1 residence | 42.4 | 43.2 | 46.5 | 4.1 | No |
| RN95 | Sheet 12 | 1 residence | 44.7 | 45.5 | 48.8 | 4.1 | No |
| RN96 | Sheet 12 | 1 residence | 47.2 | 47.9 | 51.1 | 3.9 | No |
| RN97 | Sheet 12 | 1 residence | 45.6 | 46.4 | 49.7 | 4.1 | No |
| RN98 | Sheet 12 | 1 residence | 44.7 | 45.5 | 48.8 | 4.1 | No |
| RN99 | Sheet 12 | 1 residence | 43.6 | 44.3 | 48.0 | 4.4 | No |
| RN100 | Sheet 12 | 1 residence | 42.5 | 43.3 | 46.8 | 4.3 | No |
| RN101 | Sheet 12 | 1 residence | 45.4 | 46.1 | 49.1 | 3.7 | No |
| **Residential Community Along Hope Lane (Station 318 to Station 324)** | | | | | | | |
| RN102 | Sheet 12 | 1 residence | 47.6 | 48.4 | 51.9 | 4.3 | No |
| RN103 | Sheet 12 | 1 residence | 52.3 | 53.0 | 55.4 | 3.1 | No |
| RN104 | Sheet 12 | 1 residence | 55.4 | 56.1 | 58.7 | 3.3 | No |
| RN105 | Sheet 12 | 1 residence | 57.1 | 57.7 | 59.6 | 2.5 | No |
| RN106 | Sheet 12 | 1 residence | 62.5 | 63.1 | 64.4 | 1.9 | No |
| RN107 | Sheet 12 | 1 residence | 59.5 | 60.1 | 62.7 | 3.2 | No |
| RN108 | Sheet 12 | 1 residence | 65.2 | 65.9 | 68.8 | 3.6 | Yes |
| **Pasadena Baptist Church (Station 325)** | | | | | | | |
| RN109 | Sheet 12 | Playground | 52.5 | 53.2 | 56.6 | 4.1 | No |
| RN110 | Sheet 12 | Church Interior | 28.4 | 29.2 | 33.2 | 4.8 | No |
| **Residences (Station 328 to Station 340)** | | | | | | | |
| RN111 | Sheet 12 | 1 residence | Relocation for Conceptual Design | | | | |
| RN112 | Sheet 12 | 1 residence | Relocation for Conceptual Design | | | | |
| RN113 | Sheet 12 | 1 residence | Relocation for Conceptual Design | | | | |
| RN114 | Sheet 12 | 1 residence | Relocation for Conceptual Design | | | | |
| RN115 | Sheet 12 | 1 residence | Relocation for Conceptual Design | | | | |
| **Residences Along Circle B Road (Station 340 to Station 344)** | | | | | | | |
| RN116 | Sheet 13 | 1 residence | 57.5 | 58.4 | 63.5 | 6.0 | No |
| RN117 | Sheet 13 | 1 residence | 52.8 | 53.7 | 57.4 | 4.6 | No |
| RN118 | Sheet 13 | 1 residence | 49.8 | 50.7 | 54.8 | 5.0 | No |
| RN119 | Sheet 13 | 1 residence | 52.4 | 53.2 | 57.3 | 4.9 | No |

| Receptor Identification | Aerial Sheet Number | Noise Sensitive Site Represented | Predicted Noise Level | | | Difference between Build and Exisiting (dBA) | NAC Approached or Exceeded |
|---|---|---|---|---|---|---|---|
| | | | 2015 Existing Condition (dBA) | 2025 No Build Condition (dBA) | 2025 Build Condition (dBA) | | |
| **Residences (Station 345 to Station 347)** | | | | | | | |
| RN120 | Sheet 13 | 1 residence | 61.7 | 62.6 | 68.3 | 6.6 | Yes |
| RN121 | Sheet 13 | 1 residence | 60.0 | 61.0 | 65.5 | 5.5 | No |
| **Residential Community (Station 348 to Station 356)** | | | | | | | |
| RN122 | Sheet 13 | 1 residence | 52.8 | 53.7 | 57.2 | 4.4 | No |
| RN123 | Sheet 13 | 1 residence | 53.1 | 54.0 | 56.9 | 3.8 | No |
| RN124 | Sheet 13 | 1 residence | 59.5 | 60.6 | 63.6 | 4.1 | No |
| RN125 | Sheet 13 | 1 residence | 55.9 | 56.9 | 59.7 | 3.8 | No |
| RN126 | Sheet 13 | 1 residence | 50.3 | 51.1 | 54.5 | 4.2 | No |
| RN127 | Sheet 13 | 1 residence | 51.5 | 52.4 | 55.7 | 4.2 | No |
| RN128 | Sheet 13 | 1 residence | 57.4 | 58.4 | 60.7 | 3.3 | No |
| RN129 | Sheet 14 | 1 residence | 57.2 | 58.2 | 60.7 | 3.5 | No |
| **Residences Along Chesterfield Road (Station 357 to Station 362)** | | | | | | | |
| RN130 | Sheet 14 | 1 residence | 60.4 | 61.5 | 63.6 | 3.2 | No |
| RN131 | Sheet 14 | 1 residence | 63.8 | 64.8 | 67.0 | 3.2 | Yes |
| RN132 | Sheet 14 | 1 residence | 52.2 | 53.1 | 56.8 | 4.6 | No |
| RN133 | Sheet 14 | 1 residence | 52.1 | 53.0 | 57.9 | 5.8 | No |
| RN134 | Sheet 14 | 1 residence | 63.8 | 64.7 | 66.4 | 2.6 | Yes |
| **Residences (Station 374 to Station 377)** | | | | | | | |
| RN135 | Sheet 14 | 1 residence | 63.6 | 64.3 | 67.4 | 3.8 | Yes |
| RN136 | Sheet 14 | 1 residence | 63.6 | 64.3 | 65.1 | 1.5 | No |
| **Residential Community Along Mary Bill Lane (Station 378 to Station 380)** | | | | | | | |
| RN137 | Sheet 14 | 1 residence | 52.5 | 53.2 | 56.4 | 3.9 | No |
| RN138 | Sheet 14 | 1 residence | 50.3 | 51.1 | 54.2 | 3.9 | No |
| RN139 | Sheet 14 | 1 residence | 54.6 | 55.3 | 57.1 | 2.5 | No |
| RN140 | Sheet 14 | 1 residence | 58.0 | 58.6 | 59.9 | 1.9 | No |
| **Residential Community (Station 381 to Station 385)** | | | | | | | |
| RN141 | Sheet 15 | 1 residence | 62.3 | 63.0 | 64.9 | 2.6 | No |
| RN142 | Sheet 15 | 1 residence | 56.9 | 57.5 | 59.6 | 2.7 | No |
| RN143 | Sheet 15 | 1 residence | 52.3 | 53.0 | 56.2 | 3.9 | No |
| RN144 | Sheet 15 | 1 residence | 57.3 | 57.9 | 60.4 | 3.1 | No |
| RN145 | Sheet 15 | 1 residence | 54.9 | 55.7 | 59.0 | 4.1 | No |
| RN146 | Sheet 15 | 1 residence | 60.7 | 61.3 | 64.1 | 3.4 | No |
| **Residential Community Along Fort King Road (Station 387)** | | | | | | | |
| RN147 | Sheet 15 | 1 residence | 60.6 | 61.4 | 66.5 | 5.9 | Yes |
| RN148 | Sheet 15 | 1 residence | 55.2 | 56.1 | 60.2 | 5.0 | No |
| RN149 | Sheet 15 | 1 residence | 51.8 | 52.7 | 56.6 | 4.8 | No |
| **Scattered Residences (Station 160 to Station 183)** | | | | | | | |
| RS1 | Sheet 7 | 1 residence | 42.6 | 42.6 | 49.9 | 7.3 | No |
| RS2 | Sheet 7 | 1 residence | 42.6 | 42.6 | 50.8 | 8.2 | No |
| RS3 | Sheet 7 | 1 residence | 42.6 | 42.6 | 57.3 | 14.7 | No |
| RS4 | Sheet 7 | 1 residence | 42.6 | 42.6 | 58.3 | 15.7 | No |
| RS5 | Sheet 7 | 1 residence | 42.6 | 42.6 | 49.7 | 7.1 | No |

| Receptor Identification | Aerial Sheet Number | Noise Sensitive Site Represented | Predicted Noise Level | | | Difference between Build and Exisiting (dBA) | NAC Approached or Exceeded |
|---|---|---|---|---|---|---|---|
| | | | 2015 Existing Condition (dBA) | 2025 No Build Condition (dBA) | 2025 Build Condition (dBA) | | |
| **Isolated Residence (Station 195)** | | | | | | | |
| RS6 | Sheet 8 | 1 residence | 42.6 | 42.6 | 66.5 | 23.9 | Yes |
| **Isolated Residence (Station 279)** | | | | | | | |
| RS7 | Sheet 11 | 1 residence | 57.9 | 59.3 | 63.4 | 5.5 | No |
| **Residential Community (Station 291 to Station 303)** | | | | | | | |
| RS8 | Sheet 11 | 1 residence | 58.6 | 59.4 | 60.6 | 2.0 | No |
| RS9 | Sheet 11 | 1 residence | 59.7 | 60.6 | 61.4 | 1.7 | No |
| RS10 | Sheet 11 | 1 residence | 50.2 | 51.0 | 54.5 | 4.3 | No |
| RS11 | Sheet 11 | 1 residence | 50.0 | 50.8 | 54.0 | 4.0 | No |
| RS12 | Sheet 11 | 1 residence | 49.6 | 50.3 | 53.3 | 3.7 | No |
| RS13 | Sheet 11 | 1 residence | 51.0 | 51.8 | 54.7 | 3.7 | No |
| RS14 | Sheet 11 | 1 residence | 46.8 | 47.7 | 51.4 | 4.6 | No |
| RS15 | Sheet 11 | 1 residence | 46.7 | 47.5 | 50.7 | 4.0 | No |
| RS16 | Sheet 11 | 1 residence | 46.5 | 47.3 | 50.4 | 3.9 | No |
| RS17 | Sheet 11 | 1 residence | 46.1 | 47.0 | 50.0 | 3.9 | No |
| RS18 | Sheet 11 | 1 residence | 44.5 | 45.5 | 48.8 | 4.3 | No |
| RS19 | Sheet 11 | 1 residence | 44.2 | 45.1 | 48.3 | 4.1 | No |
| RS20 | Sheet 11 | 1 residence | 43.9 | 44.8 | 47.9 | 4.0 | No |
| RS21 | Sheet 11 | 1 residence | 43.9 | 44.8 | 47.8 | 3.9 | No |
| **Residential Community (Station 318 to Station 331)** | | | | | | | |
| RS22 | Sheet 13 | 1 residence | Relocation for Conceptual Design | | | | |
| RS23 | Sheet 13 | 1 residence | 61.2 | 62.1 | 67.0 | 5.8 | Yes |
| RS24 | Sheet 13 | 1 residence | 57.3 | 58.3 | 61.2 | 3.9 | No |
| RS25 | Sheet 13 | 1 residence | 63.0 | 64.1 | 64.4 | 1.4 | No |
| RS26 | Sheet 13 | 1 residence | 61.2 | 62.2 | 62.1 | 0.9 | No |
| RS27 | Sheet 13 | 1 residence | 64.6 | 65.3 | 63.0 | -1.6 | No |
| RS28 | Sheet 13 | 1 residence | 57.9 | 58.9 | 58.4 | 0.5 | No |
| RS29 | Sheet 13 | 1 residence | 53.4 | 54.3 | 56.7 | 3.3 | No |
| RS31 | Sheet 13 | 1 residence | 50.3 | 51.2 | 53.7 | 3.4 | No |
| **Residential Community along Old Clinton Avenue (Station 324 to Station 333)** | | | | | | | |
| RS30 | Sheet 13 | 1 residence | 50.9 | 51.8 | 53.9 | 3.0 | No |
| RS32 | Sheet 13 | 1 residence | 48.8 | 49.7 | 51.7 | 2.9 | No |
| RS33 | Sheet 13 | 1 residence | 46.0 | 46.9 | 49.3 | 3.3 | No |
| RS34 | Sheet 13 | 1 residence | 44.0 | 44.9 | 47.3 | 3.3 | No |
| RS35 | Sheet 13 | 1 residence | 48.1 | 49.1 | 51.1 | 3.0 | No |
| RS36 | Sheet 13 | 1 residence | 46.0 | 46.9 | 49.0 | 3.0 | No |
| RS37 | Sheet 13 | 1 residence | 44.7 | 45.7 | 48.0 | 3.3 | No |
| RS38 | Sheet 13 | 1 residence | 43.8 | 44.7 | 47.1 | 3.3 | No |
| RS39 | Sheet 13 | 1 residence | 47.8 | 48.7 | 51.0 | 3.2 | No |
| RS40 | Sheet 13 | 1 residence | 46.8 | 47.8 | 49.7 | 2.9 | No |
| RS41 | Sheet 13 | 1 residence | 45.9 | 46.9 | 49.0 | 3.1 | No |
| RS42 | Sheet 13 | 1 residence | 44.9 | 45.8 | 48.1 | 3.2 | No |
| RS43 | Sheet 13 | 1 residence | 48.7 | 49.6 | 51.7 | 3.0 | No |
| RS44 | Sheet 13 | 1 residence | 52.0 | 52.9 | 54.3 | 2.3 | No |
| RS45 | Sheet 13 | 1 residence | 50.1 | 51.1 | 52.9 | 2.8 | No |
| RS46 | Sheet 13 | 1 residence | 47.2 | 48.1 | 50.6 | 3.4 | No |
| RS47 | Sheet 13 | 1 residence | 46.3 | 47.3 | 49.4 | 3.1 | No |
| RS48 | Sheet 13 | 1 residence | 51.1 | 52.1 | 53.8 | 2.7 | No |
| RS49 | Sheet 13 | 1 residence | 48.1 | 49.1 | 51.4 | 3.3 | No |
| RS50 | Sheet 13 | 1 residence | 46.4 | 47.4 | 49.9 | 3.5 | No |
| RS51 | Sheet 13 | 1 residence | 46.1 | 47.1 | 49.6 | 3.5 | No |
| RS52 | Sheet 13 | 1 residence | 46.8 | 47.8 | 50.3 | 3.5 | No |
| RS56 | Sheet 13 | 1 residence | 59.8 | 60.9 | 59.7 | -0.1 | No |

| Receptor Identification | Aerial Sheet Number | Noise Sensitive Site Represented | Predicted Noise Level | | | Difference between Build and Exisiting (dBA) | NAC Approached or Exceeded |
|---|---|---|---|---|---|---|---|
| | | | 2015 Existing Condition (dBA) | 2025 No Build Condition (dBA) | 2025 Build Condition (dBA) | | |
| **Residential Community Along Pasadena Road (Station 334 to Station 335)** | | | | | | | |
| RS53 | Sheet 13 | 1 residence | 47.1 | 48.1 | 50.2 | 3.1 | No |
| RS54 | Sheet 13 | 1 residence | 50.2 | 51.2 | 53.1 | 2.9 | No |
| RS55 | Sheet 13 | 1 residence | 53.1 | 54.1 | 54.9 | 1.8 | No |
| RS57 | Sheet 13 | 1 residence | 57.2 | 58.2 | 58.1 | 0.9 | No |
| RS58 | Sheet 13 | 1 residence | 64.1 | 65.0 | 63.3 | -0.8 | No |
| **Residential Community Along Pine Bluff Loop (Station 335 to Station 339)** | | | | | | | |
| RS59 | Sheet 13 | 1 residence | 59.7 | 60.6 | 61.4 | 1.7 | No |
| RS60 | Sheet 13 | 1 residence | 60.1 | 61.0 | 63.1 | 3.0 | No |
| RS61 | Sheet 13 | 1 residence | 59.2 | 60.0 | 62.6 | 3.4 | No |
| RS62 | Sheet 13 | 1 residence | 51.3 | 52.0 | 53.9 | 2.6 | No |
| RS63 | Sheet 13 | 1 residence | 52.1 | 52.8 | 55.5 | 3.4 | No |
| RS64 | Sheet 13 | 1 residence | 56.0 | 56.8 | 59.7 | 3.7 | No |
| RS65 | Sheet 13 | 1 residence | 52.3 | 53.0 | 55.6 | 3.3 | No |
| **Residential Community (Station 339 to Station 346)** | | | | | | | |
| RS66 | Sheet 13 | 1 residence | 53.5 | 54.3 | 57.0 | 3.5 | No |
| RS67 | Sheet 13 | 1 residence | 57.3 | 58.1 | 60.8 | 3.5 | No |
| RS68 | Sheet 13 | 1 residence | 58.6 | 59.5 | 62.0 | 3.4 | No |
| RS69 | Sheet 13 | 1 residence | 58.7 | 59.6 | 61.9 | 3.2 | No |
| RS70 | Sheet 13 | 1 residence | 51.2 | 51.9 | 54.4 | 3.2 | No |
| RS71 | Sheet 13 | 1 residence | 52.0 | 52.8 | 55.6 | 3.6 | No |
| RS72 | Sheet 13 | 1 residence | 52.0 | 52.8 | 55.5 | 3.5 | No |
| RS73 | Sheet 13 | 1 residence | 52.0 | 52.9 | 55.2 | 3.2 | No |
| RS74 | Sheet 13 | 1 residence | 51.3 | 52.2 | 54.2 | 2.9 | No |
| RS75 | Sheet 13 | 1 residence | 51.7 | 52.5 | 55.1 | 3.4 | No |
| RS76 | Sheet 13 | 1 residence | 52.6 | 53.4 | 55.9 | 3.3 | No |
| RS77 | Sheet 13 | 1 residence | 53.6 | 54.5 | 56.7 | 3.1 | No |
| RS78 | Sheet 13 | 1 residence | 54.1 | 54.9 | 57.1 | 3.0 | No |
| RS79 | Sheet 13 | 1 residence | 53.1 | 54.0 | 56.5 | 3.4 | No |
| RS80 | Sheet 13 | 1 residence | 51.7 | 52.5 | 55.5 | 3.8 | No |
| **Faith Fellowship Church (Station 343)** | | | | | | | |
| RS81 | Sheet 13 | Church Interior | 41.0 | 41.8 | 42.9 | 1.9 | No |
| **Scattered Residences (Station 349 to Station 379)** | | | | | | | |
| RS82 | Sheet 13 | 1 residence | 49.3 | 50.1 | 53.8 | 4.5 | No |
| RS84 | Sheet 14 | 1 residence | 48.5 | 49.4 | 52.8 | 4.3 | No |
| RS85 | Sheet 14 | 1 residence | 51.5 | 52.4 | 55.7 | 4.2 | No |
| RS86 | Sheet 14 | 1 residence | 57.1 | 58.1 | 60.9 | 3.8 | No |
| RS87 | Sheet 14 | 1 residence | 51.4 | 52.3 | 55.9 | 4.5 | No |
| RS88 | Sheet 14 | 1 residence | 48.7 | 49.5 | 53.6 | 4.9 | No |
| RS89 | Sheet 14 | 1 residence | 56.0 | 56.9 | 59.8 | 3.8 | No |
| **Clinton Academy Daycare (Station 354)** | | | | | | | |
| RS83 | Sheet 13 | interior | 38.4 | 39.3 | 43.1 | 4.7 | No |
| RS90 | Sheet 13 | playground | 61.4 | 62.3 | 65.4 | 4.0 | No |

# *APPENDIX D*
# *AERIALS*


I-75
SR 52
10
N
0 50 200
Feet
Receptor Point
RNI
Centerline of Construction
10
Proposed R/W Line
Proposed Roadway
Existing R/W Line
Proposed Roadway by others
Sheet 1

N

0 50 200
Feet

10 15 20 25 30 35 40

SR 52

Mckendree Road

Receptor Point RNI

Proposed R/W Line

Existing R/W Line

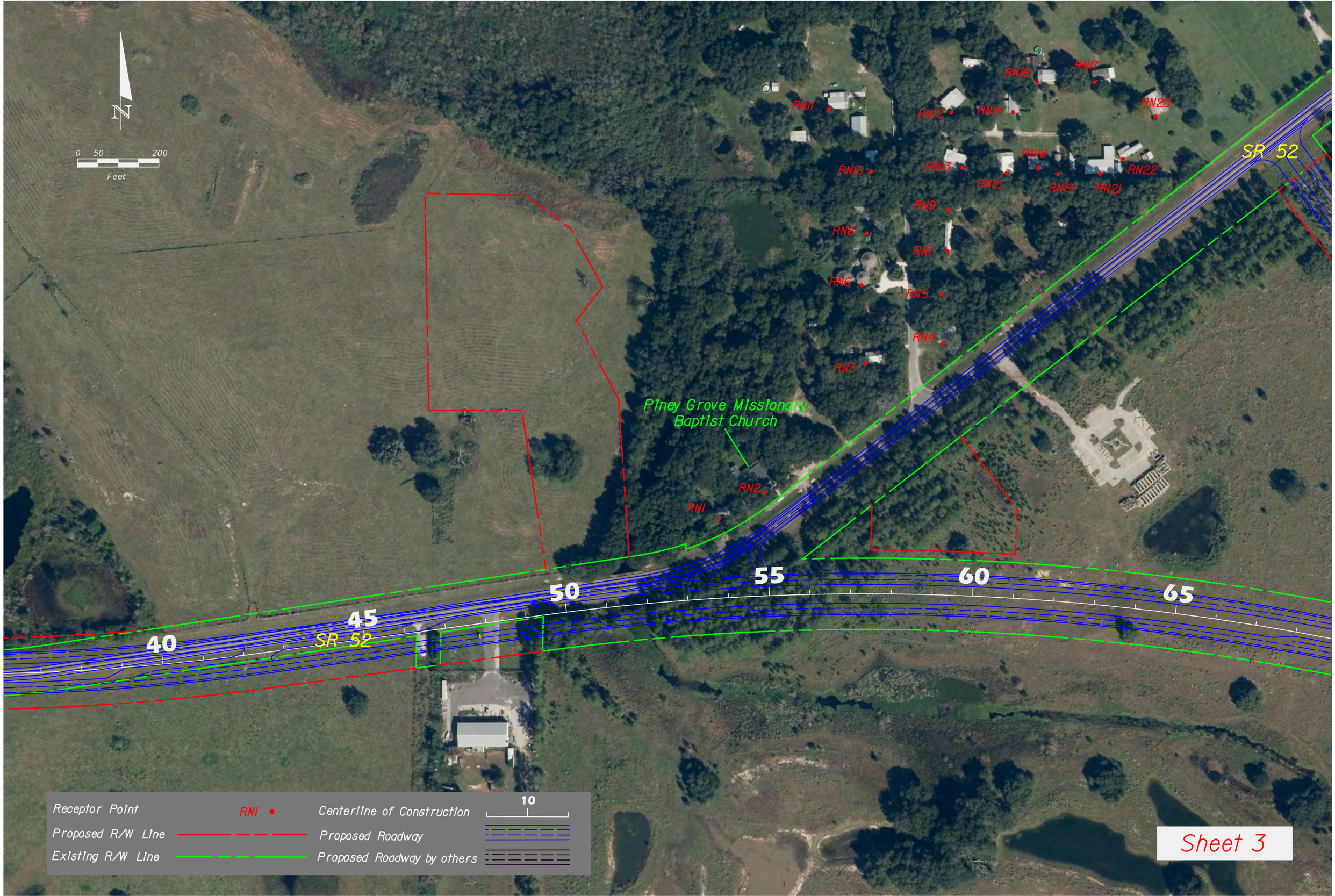
Centerline of Construction

Proposed Roadway

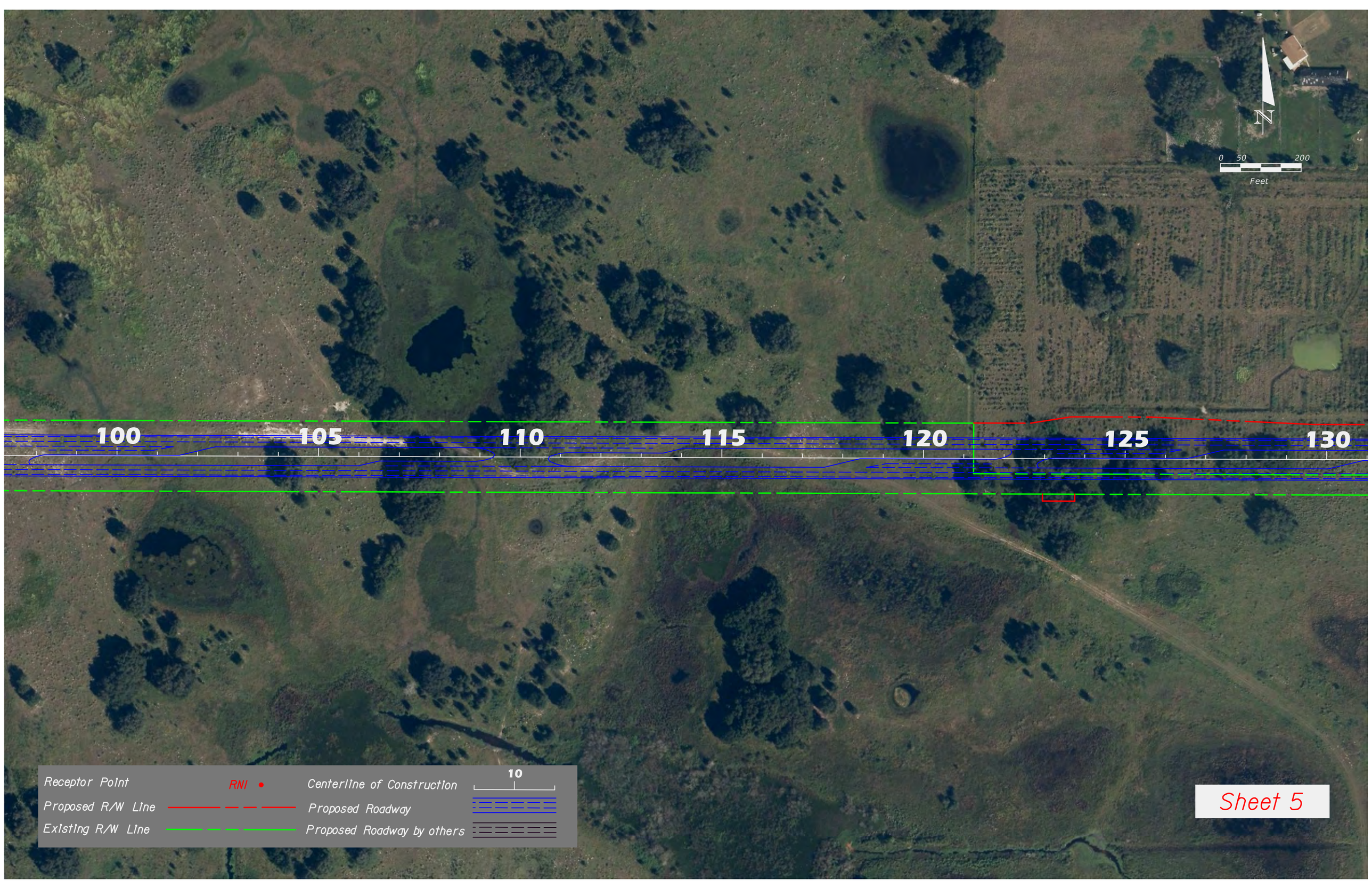
Proposed Roadway by others

10

Sheet 2


N
0 50 200
Feet
RN11
RN12
RN14
RN16
RN17
RN20
RN10
RN13
RN15
RN18
RN19
RN21
RN22
RN9
RN8
RN7
RN6
RN5
RN4
RN3
RN2
RN1
SR 52
Piney Grove Missionary Baptist Church
40
45
50
55
60
65
SR 52
Receptor Point
RN1
Proposed R/W Line
Existing R/W Line
Centerline of Construction
10
Proposed Roadway
Proposed Roadway by others
Sheet 3


SR 52
70
75
80
85
90
95
N
0 50 200
Feet
Receptor Point
RNI
Proposed R/W Line
Existing R/W Line
Centerline of Construction
10
Proposed Roadway
Proposed Roadway by others
Sheet 4


N
0 50 200
Feet
100
105
110
115
120
125
130
Receptor Point
RN1
Centerline of Construction
10
Proposed R/W Line
Proposed Roadway
Existing R/W Line
Proposed Roadway by others
Sheet 5


Childcare Center
Knights of Columbus
RN71
RN72
RN73
Curley Street
N
0 50 200
Feet
130
135
140
145
150
155
Receptor Point
RN1
Proposed R/W Line
Existing R/W Line
Centerline of Construction
Proposed Roadway
Proposed Roadway by others
10
Sheet 6

RN75

RN74

160 165 170 175 180 185 190

McCabe Road

RS4

RS3

RS2

RS1

RS5

N

0 50 200

Feet

Receptor Point RNI

Proposed R/W Line

Existing R/W Line

Centerline of Construction

Proposed Roadway

Proposed Roadway by others

10

Sheet 7

N

0 50 200
Feet

RN76

Williams Cemetery Road

190 195 200 205 210 215 220

McCabe Road

RS6

Williams Cemetery Road

Receptor Point RNI

Proposed R/W Line

Existing R/W Line

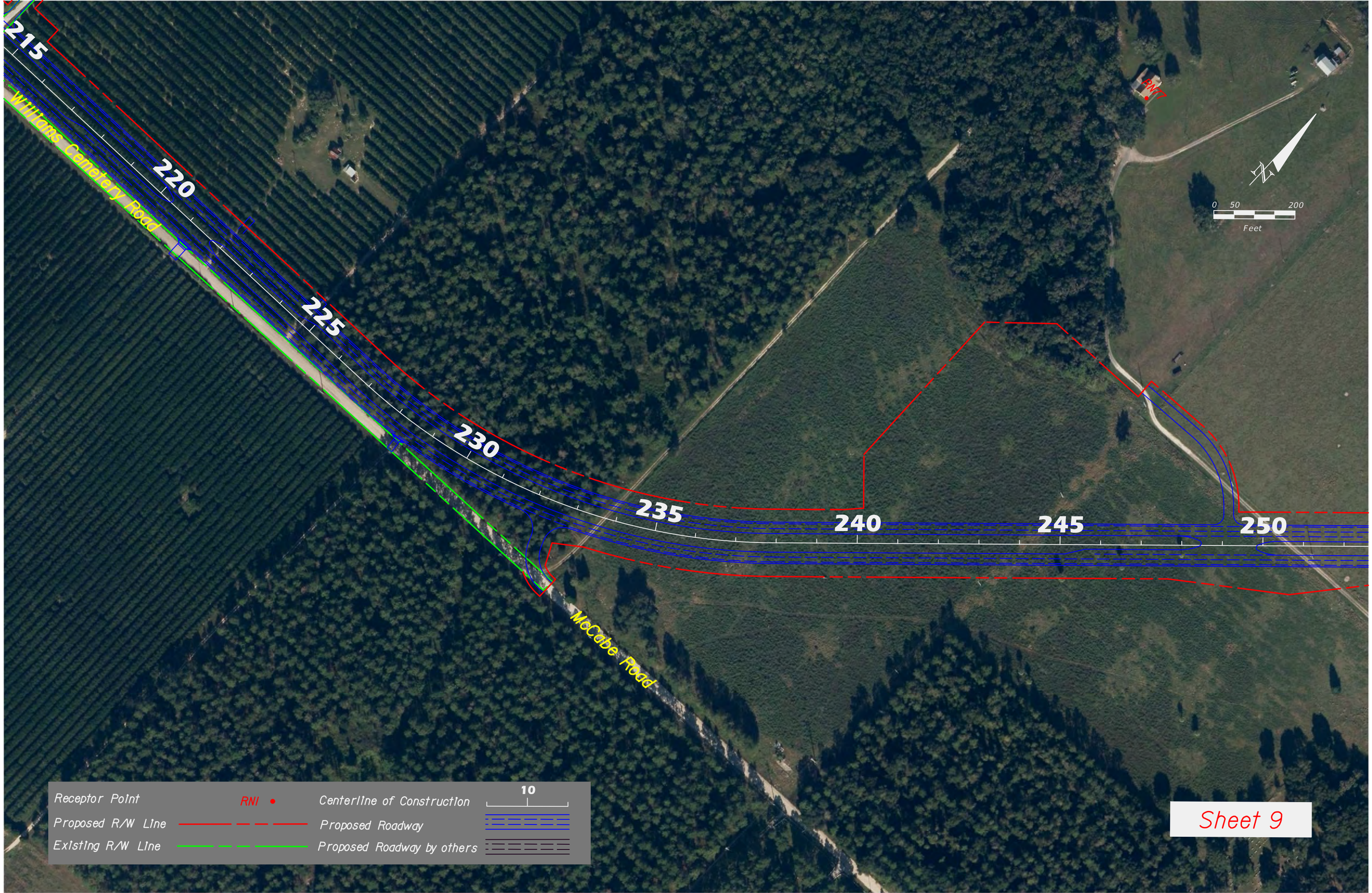
Centerline of Construction

Proposed Roadway

Proposed Roadway by others

10

Sheet 8


215
220
225
230
235
240
245
250
Williams Cemetery Road
McCabe Road
RNI
0 50 200
Feet
Receptor Point
Proposed R/W Line
Existing R/W Line
Centerline of Construction
Proposed Roadway
Proposed Roadway by others
10
Sheet 9

RN79
RN78
RN81
RN83
RN80
RN82
RN84

0 50 200
Feet

255 260 265 270 275

10

Receptor Point RNI
Proposed R/W Line
Existing R/W Line
Centerline of Construction
Proposed Roadway
Proposed Roadway by others

Prospect Road

Sheet 10


Prospect Road
Clinton Avenue
N
0 50 200
Feet
RN85
RN86
RN87
RN88
RN89
280
285
290
295
300
RS7
RS8
RS9
RS10
RS11
RS12
RS13
RS14
RS15
RS16
RS17
RS18
RS19
RS20
RS21
Receptor Point RN1
Proposed R/W Line
Existing R/W Line
Centerline of Construction
Proposed Roadway
Proposed Roadway by others
10
Sheet 11

RN93
RN94
RN95
Roberts Road
RN96
RN97
RN98
RN99
RN100
RN90
RN91
RN92
305
310
315
Clinton Avenue
RN101
RN106
RN105
RN103
RN102
Hope Lane
RN108
RN107
RN104
320
Pasadena Baptist Church
RN109
RS23
RN110
RS24
325
RS25
RS29
RN111
RS26
RS31
330
RS32
RS30
RS28
RN113
335
N
0 50 200
Feet
Receptor Point RNI
Proposed R/W Line
Existing R/W Line
Centerline of Construction
Proposed Roadway
Proposed Roadway by others
10
Sheet 12

RNI06 RNI05 RNI03 RNI02

Hope Lane

RNI08 RNI07 RNI04

Pasadena Baptist Church

RNI09

RS23 RNI10

RS24

320 325 330

RS25

RS29 RNI11

RS26

RS31 RNI18

RNI17 RNI19

Circle B Road

RNI26 RNI27

RNI22 RNI23 RNI25 RNI28

RS32 RS30 RS28 RNI13 RNI16 RNI24

RS27 RNI14 RNI15 RNI21 RNI20

335 340 345 350 35

Old Clinton Avenue

Clinton Avenue

RS33 RS35 RS39 RS43 RS44 RS56 RS58 RS81 RS83

RS36 RS40 RS45 RS48 RS59 RS60 RS61 RS67 RS68 RS69 RS90

RS34 RS41 RS46 RS49 RS64 RS66 RS71 RS73 RS75 RS77

RS37 RS57 RS55 RS65 RS70 RS72 RS74 RS76 RS78 RS79

Pine Bluff Loop

Faith Fellowship Church

RS47 RS50 RS62 RS63 RS80

RS42 RS54

Pasadena Road

RS38 RS51 RS52

Clinton Academy Day Care

RS82

RS53

N

0 50 200

Feet

Receptor Point RNI

Proposed R/W Line

Existing R/W Line

Centerline of Construction

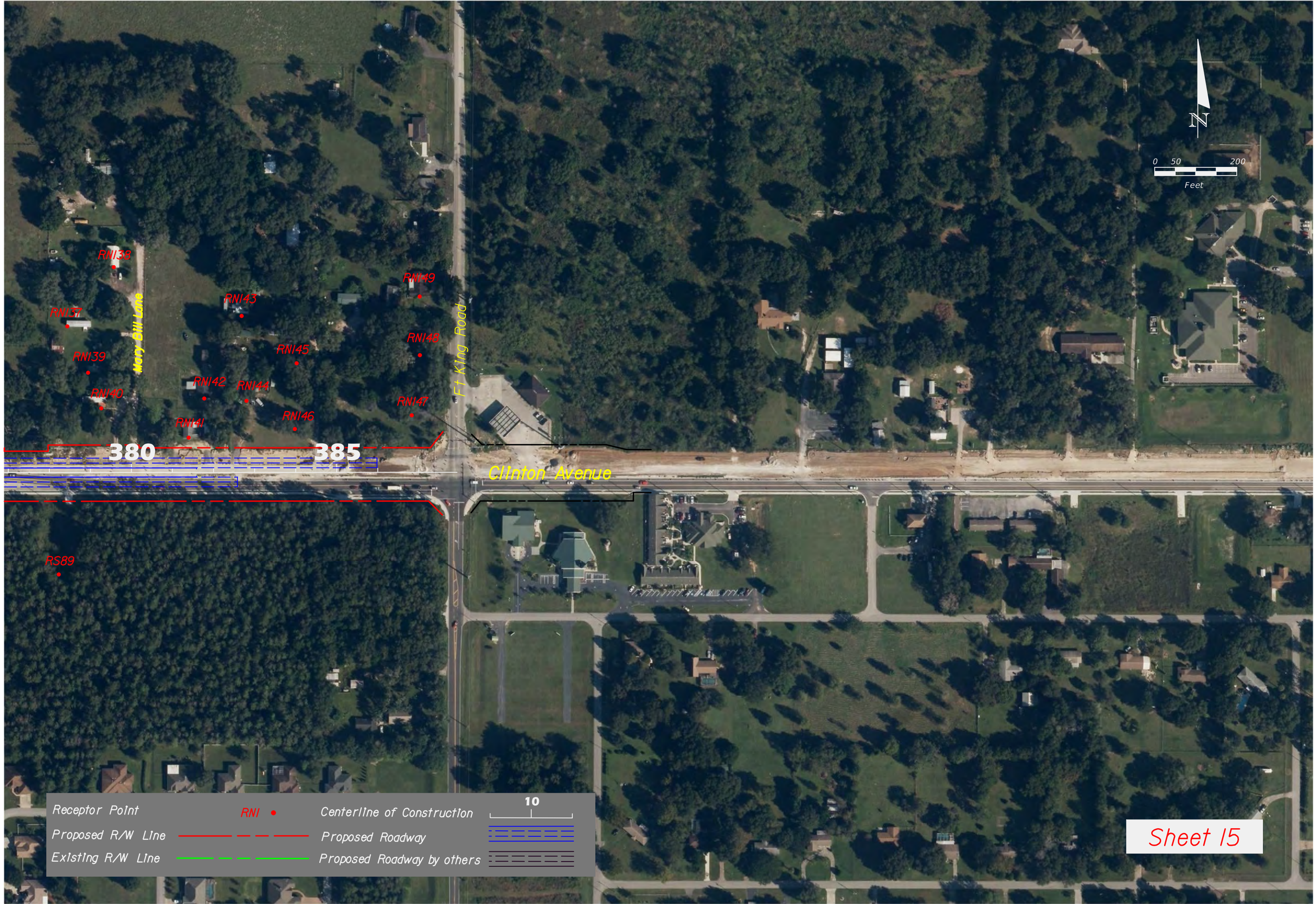
Proposed Roadway

Proposed Roadway by others

10

Sheet 13


N
0 50 200
Feet
RNI26
RNI27
RNI25
RNI28
RNI29
RNI30
RNI32
RNI33
RNI31
RNI34
Chesterfield Road
RNI38
RNI37
RNI39
RNI40
Mary Bill Lane
RNI35
RNI36
355
360
365
370
375
380
RS83
RS90
Clinton Academy Day Care
RS86
RS85
RS84
RS87
RS88
RS89
Receptor Point
RNI
Centerline of Construction
10
Proposed R/W Line
Proposed Roadway
Existing R/W Line
Proposed Roadway by others
Sheet 14


N
0 50 200
Feet
RNI38
RNI37
RNI39
RNI40
RNI41
RNI42
RNI43
RNI44
RNI45
RNI46
RNI47
RNI48
RNI49
Mary Bill Lane
Ft King Road
380
385
Clinton Avenue
RS89
Receptor Point
RNI
Proposed R/W Line
Existing R/W Line
Centerline of Construction
Proposed Roadway
Proposed Roadway by others
10
Sheet 15

# *APPENDIX E*

## *TNM Modeling Files (Provided on CD)*