DRAFT
NOISE STUDY REPORT

for

Project Development and Environment (PD&E) Study
Midway Road/CR 712 from Glades Cut Off Road to Selvitz Road
Milepost 5.813 to 7.405
St. Lucie County, Florida

Financial Project ID: 231440-3-22-01
Federal Aid Number: TBD
ETDM Number: 14177

Prepared for:

Florida Department of Transportation
District IV
3400 West Commercial Boulevard
Fort Lauderdale, Florida 33309

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Prepared by:
Bernard Kinney Associates, Inc.

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EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT), District Four, has conducted a noise study for the Midway Road study corridor which extends from Glades Cut Off Road to Selvitz Road in St. Lucie County. The Noise Study Report is being prepared as a part of the proposed roadway improvements which will result in a four (4) lane divided urban roadway with the replacement of the existing bridge. This study utilized the Traffic Noise Model (TNM) version 2.5 which is the most current model available for the prediction of highway traffic noise levels. Traffic noise impacts were evaluated for potential noise sensitive sites developed prior to the project's Date of Public Knowledge (DPK). Based upon the DPK, Activity Category B and C land uses were evaluated for potential noise impacts. The Noise Study Report was developed based upon the current regulatory criteria contained in Chapter 17 Noise (July 27, 2016) and the Traffic Noise Modeling and Analysis Practitioners Handbook, January 1, 2016. Additionally, the current regulatory criteria contained in the New Final Rule (23 CFR Part 772) dated July 13, 2010 is in compliance with the Department's Noise Policy. The study corridor is approximately 1.6 miles in length. The noise study evaluated one (1) Build Alternative (Build Alternative 2) and the No-Build Alternative. No other alternatives were evaluated.

The noise study identified five (5) noise sensitive areas which were evaluated for potential noise impacts for the following conditions, Existing Year 2015 Condition, No-Build Alternative Design Year 2040 Condition, and the Build Alternative 2 Design Year 2040 Condition. The noise sensitive areas evaluated are representative of one hundred and ten (110) noise sensitive receptor locations. The computer modeled noise receptor locations are as follows: the residential areas bordering the south side of the corridor, the residential areas bordering the north side of the study corridor, and the New Horizons facility bordering the north side of the corridor. The potential noise sensitive locations identified in this report are representative of Activity Category B and C locations. Activity Category B and C locations require potential noise abatement measures for computer predicted sound levels which approach or exceed 66 dB(A).

The traffic noise levels predicted at the one hundred and ten (110) noise sensitive receptor locations under evaluation approached or exceeded the FDOT Noise Abatement Criteria (NAC) at one (1) residential area; therefore, potential noise abatement measures were evaluated.

The traffic noise levels predicted at the noise sensitive receptor locations under evaluation did not approach or exceed the FDOT NAC at Noise Sensitive Area 1, Noise Sensitive Area 2, Noise Sensitive Area 3, and Noise Sensitive Area 5; therefore, potential noise abatement measures were not evaluated.

Potential noise abatement measures were evaluated at one (1) location (Noise Sensitive Area 4) on the southeast side of the study corridor west of Selvitz Road. Potential noise barrier placement (BW-1S) was evaluated for the residential dwellings identified as R84S and R85S.

Additionally, two (2) neighboring residential dwellings (R84AS and R85AS) were evaluated. The impacted (benefitted) receptors include three (3) residential dwellings. Additionally, a single residential dwelling was not impacted, however; it was benefitted by the computer modeled noise barrier (BW-1S).

A noise barrier approximately 500 feet long and 10 feet high was determined to meet the Department's feasibility factor (Noise Reduction Factor) and reasonableness factor (Noise Reduction Design Goal). The cost of the noise barrier is approximately $150,000.00. The cost per benefitted receptor is approximately $37,500.00. The cost of the noise barrier meets the Department's Cost Reasonableness Factor of $42,000.00 per benefitted receptor.

The feasibility factor associated with a barriers noise reduction is the Noise Reduction Factor. FDOT's Noise Reduction Factor requires that two (2) or more impacted receptors achieve a 5 dB(A) reduction or greater in order to be considered feasible. The reasonableness factor associated with a barriers noise reduction is the Noise Reduction Design Goal. FDOT's Noise Reduction Design Goal requires that one (1) or more benefitted receptors achieve a 7 dB(A) reduction or greater in order to be considered reasonable. The Cost Reasonableness Factor established by the Department is based upon a unit cost of $30 per square foot for noise barrier placement. FDOT's Cost Reasonableness Factor is based on a current cost allowance of $42,000 per benefitted receptor.

1.0 INTRODUCTION

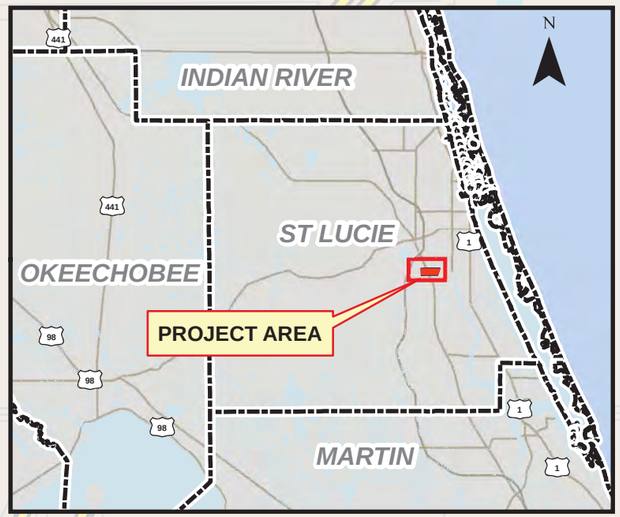
The Florida Department of Transportation (FDOT), District Four, is currently conducting a Project Development and Environment (PD&E) Study for the Midway Road project corridor which is centrally located in the eastern part of St. Lucie County, Florida, and is owned and maintained by St. Lucie County. The project corridor extends approximately 1.6 miles along Midway Road (Roadway ID 94530000), from Glades Cut Off Road (Mile Post 5.813) to Selvitz Road (Mile Post 7.405). The project ties into the existing four-lane section to the west of Glades Cut Off Road and to a four-lane segment east of Selvitz Road currently under construction (St. Lucie County Project Number 06-18). The project corridor is located in unincorporated St. Lucie County but is on the northern border to the City of Port St. Lucie. The project location map is depicted in **Figure 1**.

Traffic noise impacts were evaluated for potential noise sensitive locations identified in this study. Based upon the existing land uses, Activity Category B and C noise sensitive locations were evaluated. Five (5) noise sensitive areas were identified adjacent to the study corridor. The noise sensitive areas evaluated are representative of one hundred and ten (110) noise sensitive receptor locations. The computer modeled noise receptor locations are as follows: the residential areas bordering the south side of the corridor, the residential areas bordering the north side of the study corridor, and the New Horizons facility bordering the north side of the corridor.

The noise study was developed based upon the current regulatory criteria contained in Part 2, Chapter 17 Noise (July 27, 2016), of the PD&E Manual, and the Traffic Noise Modeling and Analysis Practitioners Handbook dated January 1, 2016. Additionally, the current regulatory criteria contained in the New Final Rule (23 CFR Part 772) dated July 13, 2010 is in compliance with the Departments Noise Policy. A summary of the noise analysis may be found in the Type II Categorical Exclusion (CE) document for the project available under separate cover.

2.0 PROJECT DESCRIPTION

Midway Road is a major east-west roadway that provides a vital connection for residents and commuters to and from I-95 and to the commercial areas along US 1. Within the project limits, Midway Road is a four-lane divided roadway from Glades Cut Off Road to Torino Parkway with a design speed of 40 miles per hour (mph). From Torino Parkway until just west of the Selvitz Road intersection, Midway Road is a two-lane undivided roadway with a design speed of 45 mph. The posted speed limit throughout the project limits is 45 mph. Midway Road is functionally classified as an Urban Principal Arterial and is designated as a hurricane evacuation route by the Florida Division of Emergency Management. The existing roadway typical section consists of two 12-foot lanes, one in each direction, and the existing right-of-way varies with a minimum width of 103 feet and a maximum width of 153 feet.



N

0 1,000 Feet

BEGIN PROJECT

Bridge ID #940050

END PROJECT

FLORIDA'S TURNPIKE

FLORIDA EAST COAST RAIL RAILWAY

91

95

ST LUCIE 709 COUNTY

ST LUCIE 712 COUNTY

W MIDWAY RD

ENERGY LN

DEVINE RD

FAVORITE RD

DUNN RD

MAGNUM DR

ENVIRONMENT DR

S JENKINS RD

POST OFFICE RD

SELVITZ RD

GLADES CUT OFF RD

NW LTC PKWY

NW DELCRIS DR

NW SOUTH LUNDY ST

NW CAMBO CT

NW BOYDGA AVE

NW CROOKED ST

NW COMER ST

NW CONLEY DR

NW CRISTA ST

NW CROMEY ST

NW BRISCOE DR

NW BOLIN ST

NW OWNS ST

NW SOUTH LANETT CIR

NW WEST LANETT CIR

NW SOUTH LOVETT CIR

NW JAKE CT

NW REBA CIR

NW WEST PIPER CIR

NW IREDELL ST

NW EAST PADEN CIR

NW WEST PADEN CIR

NW GAMMA ST

NW JANNEBO ST

NW EAST TORINO PKWY

NW RABBIT RUN

NW MOORHEN TRL

NW CORPORATE WAY

NW MONOCO CT

NW LAMOORE LN

NW MAYFIELD LN

NW OMEGA RD

NW RODIN CT

NW MOLTON CIR

NW POMONA CT

NW REGAL CIR

NW ALE CT

NW MILNER DR

NW RUGBY DR

NW NEKOMA ST

NW NEWARK LN

NW SELVITZ RD

NW NASSAU LN

NW DOVER CT

DUKE C

Legends

- Project Limits
- Bridge

Florida Department of Transportation
District 4

Midway Rd. (CR 712)
from Glades Cut Off Road to Selvitz Road
St. Lucie County, Florida
Financial Project ID: 231440-3-22-01
ETDM No. 14177

PROJECT LOCATION MAP

FIGURE 1

The land uses consist of residential, commercial, government, and industrial facilities, including Tropicana Products, Inc.; CEMEX; Packers of Indian River Ltd.; U.S. Post Office; St. Lucie County Sheriff's Office; and New Horizons of the Treasure Coast, Inc.

The study corridor includes a bridge (ID 940050) over Florida's Turnpike (SR 91). The Florida East Coast (FEC) Railroad traverses the corridor by running adjacent and parallel to Glades Cut Off Road. Canal 103, which was previously part of the St. Lucie Water Control District, but has since been transferred to St. Lucie County, is the principal receiving water body for the project area and conveys stormwater from the west side of Florida's Turnpike through an existing concrete box culvert under the Turnpike. The canal runs parallel along the south side of Midway Road to east of Selvitz Road and then continues southeasterly to discharge into the North Fork of the St. Lucie River. The North Fork ultimately outfalls into the St. Lucie Aquatic Preserve, which is designated as an Outstanding Florida Water. It is the main collector water body in St. Lucie County and discharges into the Indian River Lagoon. The canal, along with the adjacent vegetative buffer, provides a physical separation between the residential homes on the south side of the canal and the roadway on the north side of the canal.

3.0 PROJECT ALTERNATIVES

The Midway Road PD&E Study from Glades Cut Off Road to Selvitz Road evaluates alternatives to widen the existing road from two to four lanes within the project limits in order to satisfy existing and future traffic demand and capacity needs. This study also considers pedestrian, bicycle, and transit facilities; improvements to freight mobility; operational improvements and access management into some commercial businesses along the project corridor. Right-of-way requirements were evaluated for the roadway widening and other improvements listed above. Additional right-of-way requirements were also evaluated for offsite ponds in order to meet stormwater management requirements.

Typical Sections and Alignments

Build Alternative 1 Typical Section

Build Alternative 1 maintains Canal 103 in its current location along the south side of Midway Road. The typical section includes the full reconstruction of Midway Road and provides two 11-foot travel lanes in each direction separated by a 22-foot median. Seven-foot buffered bike lanes would be provided in each direction located adjacent to the outside travel lanes. Type F curb and gutter is used along the inside and outside lanes and collects stormwater runoff which is then directed to stormwater retention ponds. A six-foot-wide sidewalk would be constructed on the north side of the roadway, and a 12-foot-wide shared-use path would be constructed along the south side.

An 18-foot buffer would be provided between the shared-use path and the Canal 103 front slope. The buffer provides space for canal maintenance equipment and also eliminates the need to install guardrail to protect the canal. A new bridge structure over Florida's Turnpike will be constructed to accommodate the roadway typical section features. The design speed for this typical section would be 45 mph.

Build Alternative 1 Alignment

The horizontal alignment of Build Alternative 1 will shift the roadway to the north beginning east of the FEC Railroad and then crossing through a series of back to back normal crown curves (design speed (DS) = 45 mph). The alignment will then maintain a constant tangential path until it approaches the project terminus. There, it will again go through a series of back to back normal crown curves (DS = 45 mph) to shift the alignment back to the south aligning with Midway Road east of Selvitz Road. The Build Alternative 1 typical section is shown in **Appendix A**.

The vertical alignment will match the existing roadway elevation across the FEC Railroad crossing. From the FEC Railroad crossing to Florida's Turnpike, it will raise approximately one to two feet to provide three-feet of base clearance to the seasonal high water table (SHWT). From Florida's Turnpike to Post Office Road, the road will raise roughly 0.5 feet or less. From Post Office Road to Selvitz Road, the vertical alignment will match the existing road although a saw-tooth profile will need to be created to provide gutter grade. Longitudinal grades will consist of a minimum 0.30% slope to maintain gutter grades for drainage purposes. The roadway will raise approximately 22 feet as it crosses Florida's Turnpike to accommodate the bridge deck and beams while maintaining a minimum of 16.5-foot vertical clearance over the Turnpike travel lanes. The rise will be a series of back to back vertical curves - sag, crest, sag - which maintain minimum K-values (DS = 45 mph; Kcrest = 98; Ksag = 79) ensuring proper sight distance.

Build Alternative 2 Typical Section

The Build Alternative 2 typical section includes the full reconstruction of Midway Road and provides two 11-foot travel lanes in each direction separated by a 22-foot median. Seven-foot buffered bike lanes would be provided in each direction located adjacent to the outside travel lanes. Type F curb and gutter is used along the inside and outside lanes and collects stormwater runoff which is then directed to stormwater retention ponds. A six-foot-wide sidewalk would be constructed on the north side of the roadway, and a 12-foot-wide shared-use path would be constructed along the south side of the road. Canal 103 will be enclosed in an 11-foot by 5-foot concrete box culvert which will be located along the south side of Midway Road. This alternative will also include a 10-foot-wide landscape strip which will incorporate both existing native vegetation as well as supplemental plantings to screen the residential properties adjacent to the south side of the roadway.

A new bridge structure over Florida's Turnpike will be constructed to accommodate the roadway typical section features. The design speed for this typical section would be 45 mph.

Build Alternative 2 Alignment

The horizontal alignment of Build Alternative 2 will shift the roadway to the south beginning east of the FEC Railroad through a series of back to back normal crown curves (DS = 45 mph) minimizing impacts to the CEMEX plant located on the north side of the roadway. The alignment will then maintain a tangential path with two deflections (< 01°00'00") located west of Florida's Turnpike. As the project approaches Selvitz Road, it will again go through a series of back to back normal crown curves (DS = 45 mph) to shift the roadway to the south aligning with Midway Road east of Selvitz Road. The Build Alternative 2 typical section is shown in **Appendix A**.

The vertical alignment for Build Alternative 2 will match the existing roadway elevation across the FEC Railroad crossing. From the FEC Railroad crossing to Florida's Turnpike, it will raise approximately one to two feet to provide three feet of base clearance to the SHWT. From Florida's Turnpike to Post Office Road, the road will raise roughly 0.5 feet or less. From Post Office Road to Selvitz Road, the vertical alignment will match the existing road although a saw-tooth profile will need to be created to provide gutter grade. Longitudinal grades will consist of a minimum 0.03% slope to maintain minimum gutter grades for drainage purposes. The roadway will raise approximately 22 feet as it crosses Florida's Turnpike to accommodate the bridge deck and beams while maintaining a minimum of 16.5-foot vertical clearance over Florida's Turnpike travel lanes. The rise will be a series of back to back vertical curves - sag, crest, sag - which maintain minimum K-values (DS = 45 mph; Kcrest = 98; Ksag = 79) ensuring proper sight distance.

Recommended Alternative

Subsequent to the June 28, 2016 alternatives public workshop for the project, a meeting was held with representatives from FDOT District 4, St, Lucie County, and St. Lucie Transportation Planning Organization to discuss the selection of the recommended alternative. Advantages and disadvantages of Build Alternative 1 and Build Alternative 2 were presented and discussed. The advantages and disadvantages of both alternatives are listed below.

Build Alternative 1 – Canal Avoidance

Advantages:

- Lower engineering, right-of-way acquisition, and construction costs
- Five 5 comment forms were received at the alternatives public workshop in favor of Build Alternative 1 compared with 4 comment forms received in favor of Build Alternative 2

Disadvantages:

- Sixteen properties are impacted compared with nine parcels for Build Alternative 2
- Higher wetland impacts than Build Alternative 2
- Build Alternative 1 is not preferred by representatives from St. Lucie County, Port St. Lucie, Sherriff's Office, New Horizons, and St. Lucie Public Schools
- FDOT does not have eminent domain rights on all required properties needed for construction

Build Alternative 2 – Box Culvert

Advantages:

- Nine properties are impacted compared with 16 parcels for Build Alternative 1
- Build Alternative 2 preferred by representatives from St. Lucie County, Port St. Lucie, Sherriff's Office, New Horizons, and St. Lucie Public Schools
- Build Alternative 2 maintains the corridor look/consistency established with the Midway Road widening from Selvitz Road to 25th Street
- Build Alternative 2 has Lower wetland impacts
- FDOT has eminent domain rights on all required properties needed for construction

Disadvantages:

- Higher costs
- Four comment forms were received at the alternative public workshop in favor of Build Alternative 2 compared with five forms received in favor of Build Alternative 1

Based on the advantages and disadvantages listed above, Build Alternative 2- Box culvert was selected as the recommended alternative.

4.0 LAND USES

4.1 EXISTING LAND USES

The existing land uses along the project corridor include single family residential areas adjacent to the south side of the corridor. The north side of the corridor is comprised of single family residential areas, a medical treatment facility, commercial areas, and industrial areas. There are areas of vacant land on both sides of the study corridor in which development could occur. The areas bordering the side of the study corridor appear to support potential residential development.

4.2 FUTURE LAND USES

Future land use in the study area is expected to remain consistent with the existing land use characteristics. The south side of the study corridor is fully developed with limited areas in which future residential development could occur. There are vacant tracts of land on the north side of the study corridor in which future development could occur.

Should any noise sensitive development occur, the contents of this report should be considered before approving any potential noise sensitive land uses directly adjacent to the Midway Road study corridor limits from Glades Cut Off Road to Selvitz Road in St. Lucie County.

FDOT is not responsible for future noise abatement measures for parcels or locations with building permits approved after the project's Date of Public Knowledge (DPK). Active building permits for potential noise sensitive land uses within the study corridor limits were verified on August 15, 2016. At that time, there were no potential noise sensitive sites identified for the purposes of inclusion in this report. A second active building permit request received on September 22, 2016, verified that there were no additional active building permits adjacent to the study corridor. Since the study corridor is within the limits of St. Lucie County and the City of Port St. Lucie, both Building Departments were contacted for the purposes of active building permit identification. The City of Port St. Lucie did not respond to the request for building permit status. Follow-up contact should take place during final design.

5.0 METHODOLOGY

The noise study was developed based upon the current regulatory criteria contained in Part 2, Chapter 17 Noise (July 27, 2016), of the PD&E Manual and the Traffic Noise Modeling and Analysis Practitioners Handbook dated January 1, 2016. Additionally, the current regulatory criteria contained in the New Final Rule (23 CFR Part 772) dated July 13, 2010 is reflected in the Departments Noise Policy. The technical criteria are provided in the Federal Regulations Title 23, Part 772 (23 CFR Part 772) entitled "Procedures for Abatement of Highway Traffic Noise and Construction Noise" (1). Chapter 335.17 of the Florida Statute requires the use of 23 CFR Part 772 in the noise impact assessment process regardless of funding, and the FDOT PD&E Manual, Part 2, Chapter 17 Noise (July 27, 2016) (2). Additionally, technical guidance is provided in the Traffic Noise Modeling and Analysis Practitioners Handbook, January 1, 2016 (3).

Computer predicted noise levels were produced using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) version 2.5. The project alternatives evaluated in this noise study consist of one (1) Build Alternative (Build Alternative 2) and the No-Build Alternative. Traffic noise levels were predicted for the Existing Year Condition 2015 and the Design Year 2040 No-Build and Build Alternative conditions. No other alternatives were evaluated.

No consideration was given to potential noise sensitive land uses established after the DPK. Both the interior (where applicable) and exterior areas of potential noise sensitive locations were evaluated for potential noise impacts.

FDOT is not responsible for future noise abatement measures for parcels or locations with building permits approved after the DPK. The DPK is the approval date of the Type II CE document.

The Noise Abatement Criteria (NAC) activity categories for the noise sensitive areas evaluated include Activity Category B and C locations. The Activity Category B locations represent the residential areas adjacent to Midway Road and the Activity Category C locations represent the New Horizons facility adjacent to the north side of Midway Road. No other activity categories were identified as of the date of this report.

5.1 NOISE METRICS

The noise level descriptor used by FDOT will be level equivalent (LEQ). LEQ is the equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with LEQ (h) being the hourly value of LEQ. Title 23 CFR Part 772 specifies that either the LEQ(h) or L10(h) metric, but not both, may be used on a project. Consistent with this requirement, the FDOT elects to use the LEQ(h) metric.

The 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.

5.2 TRAFFIC DATA

Predicted traffic noise levels are primarily dependent on traffic volumes, vehicle mix, and vehicle speeds. The project traffic data developed for this study was prepared by the project traffic engineer and approved by the Department. The project traffic data was developed for the Midway Road corridor for the following conditions: Existing Year 2015 Condition and the Design Year 2040 No-Build and Build Alternative Condition (Build Alternative 2). Traffic volumes representative of Level of Service (LOS) C or demand (whichever is less) was used as input data for the noise study and is consistent with the Traffic Noise Modeling and Analysis Practitioners Handbook dated January 1, 2016. This represents the highest traffic volume traveling at the highest average speed for this project. Such conditions typically generate the highest noise levels at a given site during a normal day. A review of the traffic data for this study determined that the project traffic data (LOS C and demand) would be used for input into TNM version 2.5. The approved project traffic data developed for this study is presented in **Appendix B.**

5.3 NOISE ABATEMENT CRITERIA

Noise sensitive sites are defined in the PD&E Manual as any property (owner occupied, rented or leased) where frequent exterior human use occurs and where a lowered noise level would be of benefit. Consistent with the guidance provided in the PD&E Manual, unless the area of exterior frequent use is identified elsewhere, residential receptor sites were placed at the edge of the dwelling unit closest to the major traffic noise source as dictated by professional judgment. Examples of common outdoor and indoor activities and their associated noise levels are presented in **Figure 2**.

The FHWA has established specific noise levels for both exterior and interior locations where frequent human activity could occur. These noise levels vary by activity category and are presented in **Table 1**.

The FDOT has also established an approach criterion based upon these activity categories. The FDOT approach criteria are one (1) decibel below the FHWA criteria.

Potential noise abatement measures must be considered for all activity categories (except Activity Category F and G) which either meet or exceed the FDOT NAC for a specific category or experience a substantial noise increase as a direct result of a transportation improvement project. The FDOT defines a substantial increase as 15 dB(A) or more over the existing conditions. A substantial increase in traffic-related noise usually occurs for new alignment transportation projects. This study has identified that Activity Category B and C locations were present as of the date of this report.

5.4 NOISE ABATEMENT MEASURES

The traffic noise levels predicted at the one hundred and ten (110) noise sensitive receptor locations under evaluation approached or exceeded the FDOT NAC at one (1) residential area (Noise Sensitive Area 4); therefore, potential noise abatement measures were evaluated. A summary of the potential noise abatement measures considered by the Department are presented below.

5.4.1 Traffic Management

Traffic management techniques are considered an acceptable noise abatement measure by the FHWA; however, such measures may be difficult to implement. A review of the project traffic data does not support this technique as a viable choice.

5.4.2 Alignment Modifications

Alignment modifications are considered an effective noise abatement measure by the FHWA. Given the right-of-way limitations associated with the study corridor, this technique is not a viable choice.

5.4.3 Buffer Zones

Buffer zones are considered an effective noise abatement measure by the FHWA. Given the right-of-way limitations associated with the study corridor, this technique is not a viable choice. The noise contours developed for the noise study will assist local planning agencies in minimizing future traffic noise impacts adjacent to the study corridor by restricting future development in areas where future traffic noise impacts have been identified.

Figure 2 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 (Background)
Quiet Suburban Nighttime		Library
	---30---	Bedroom at Night, Concert Hall (Background)
Quiet Rural Nighttime		
	---20---	
	---10---	
Lowest Threshold of Human Hearing	---0---	Lowest Threshold of Human Hearing

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

Table 1
NOISE ABATEMENT CRITERIA (NAC)
[Hourly A-Weighted Sound Level-decibels (dB(A))]

Activity Category	Activity Leq(h)[1] FHWA	Activity Leq(h)[1] FDOT	Evaluation Location	Description of Activity Category
A	57	56	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67	66	Exterior	Residential
C[2]	67	66	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	51	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[2]	72	71	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	–	–	–	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	–	–	–	Undeveloped lands that are not permitted.

(Based on Table 1 of 23 CFR Part 772)

[1] The Leq(h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.

[2] Includes undeveloped lands permitted for this activity category.

Note: FDOT defines that a substantial noise increase occurs when the existing noise level is predicted to be exceeded by 15 decibels or more as a result of the transportation improvement project. When this occurs, the requirement for abatement consideration will be followed.

5.4.4 Noise Barrier Placement

Potential noise barrier placement is the most effective noise abatement measure utilized by the Department. The Department has established feasibility and reasonableness factors which are used to determine the viability of potential noise barrier placement. The proposed noise barrier (BW-1S) is located on the south side of Midway Road and adjacent to receptors R84S and R85S. The noise barrier is located along the proposed right-of-way line.

The feasibility factor associated with a barriers noise reduction is the Noise Reduction Factor. FDOT's Noise Reduction Factor requires that two (2) or more impacted receptors achieve a 5 dB(A) reduction or greater in order to be considered feasible. The reasonableness factor associated with a barriers noise reduction is the Noise Reduction Design goal. FDOT's Noise Reduction Design Goal requires that one (1) or more benefitted receptors achieve a 7 dB(A) reduction or greater in order to be considered reasonable. The Cost Reasonableness Factor established by the Department is based upon a unit cost of $30 per square foot for noise barrier placement. FDOT's Cost Reasonableness Factor is based on a current cost allowance of $42,000 per benefitted receptor. The remaining feasibility and reasonableness factors consider the constructability and safety factors associated with potential noise barrier placement. Additionally, public input is also considered during this process.

6.0 TRAFFIC NOISE ANALYSIS

The noise study identified five (5) noise sensitive areas which were evaluated for potential noise impacts for the following conditions: Existing Year 2015 Condition, No-Build Alternative Design Year 2040 Condition, and Build Alternative 2 Design Year 2040 Condition. The noise sensitive areas evaluated are representative of one hundred and ten (110) noise sensitive receptor locations. The computer modeled noise receptor locations are as follows: the residential areas bordering the south side of the corridor, the residential areas bordering the north side of the study corridor, and the New Horizons facility bordering the north side of the corridor. The noise receptor location and description summary is presented in **Table 2**. The potential noise sensitive locations identified in this report are representative of Activity Category B and C as shown in **Table 1**.

There are no other noise sensitive areas located within the project corridor as of the date of this report and was verified through an active building permit request. There are no other noise sources located adjacent to the study corridor which could interfere with the existing ambient highway traffic noise levels with the exception of the industrial site between Glades Cut Off Road and NW East Torino Parkway. There are no other noise sources within the vicinity of this project that could potentially interfere with the predicted sound levels within the limits of the study corridor. First floor and second floor receptors were assumed to be placed 5 feet and 15 feet above ground, respectively. Consistent with these guidelines, residential receptors were placed at the edge of the dwelling unit closest to the major traffic noise source at a height of 5 feet.

Table 2
Noise Receptor Location and Description Summary
Build Alternative 2 South Alignment

Noise Receptor Number	Noise Receptor Station Number N=North Side of CR 712 S=South Side of CR 712	Noise Receptor Description	FDOT NAC	Distance From Closest Center Travel Lane (Ft.)	Distance From Closest Center Travel Lane (Ft.)	Distance Variance (Ft.)	Noise Receptor Number	Noise Receptor Station Number N=North Side of CR 712 S=South Side of CR 712	Noise Receptor Description	FDOT NAC	Distance From Closest Center Travel Lane (Ft.)	Distance From Closest Center Travel Lane (Ft.)	Distance Variance (Ft.)
				Existing Alignment	Build Alternative 2 South Alignment						Existing Alignment	Build Alternative 2 South Alignment	
R1S	3004+45.91	Residential	66	507.2834	498.8831	8.40	R31S	3027+48.89	Residential	66	363.4664	317.2178	46.25
R2S	3005+81.23	Residential	66	356.7539	348.8517	7.90	R32S	3026+08.46	Residential	66	359.1435	310.5067	48.64
R3S	3006+35.34	Residential	66	311.3307	303.6026	7.73	R33S	3026+39.99	Residential	66	190.1252	142.0491	48.08
R4S	3008+17.52	Residential	66	263.873	253.2164	10.66	R34S	3028+18.66	Residential	66	197.2373	151.5797	45.66
R5S	3010+49.97	Residential	66	398.3722	378.5799	19.79	R35S	3029+64.55	Residential	66	383.2248	337.893	45.33
R6S	3009+60.06	Residential	66	504.6311	488.2624	16.37	R36S	3029+98.94	Residential	66	462.004	416.7489	45.26
R7S	3011+51.44	Residential	66	514.8895	488.8691	26.02	R37S	3050+04.37	Residential	66	165.89	130.5226	35.37
R8S	3010+82.68	Residential	66	613.4594	591.6895	21.77	R38S	3050+88.76	Residential	66	161.096	125.6656	35.43
R9S	3011+59.75	Residential	66	259.0793	233.0089	26.07	R39S	3052+56.78	Residential	66	173.158	137.556	35.60
R10S	3012+97.14	Residential	66	181.9925	148.8938	33.10	R40S	3054+21.23	Residential	66	141.4439	105.6408	35.80
R11S	3015+44.34	Residential	66	181.197	144.5477	36.65	R41S	3051+09.97	Residential	66	328.8981	293.4519	35.45
R12S	3016+57.54	Residential	66	201.0259	164.2119	36.81	R42S	3054+01.50	Residential	66	328.7977	293.0186	35.78
R13S	3014+62.26	Residential	66	343.182	306.6519	36.53	R43S	3051+01.82	Residential	66	551.1693	515.7291	35.44
R14S	3015+62.13	Residential	66	404.4173	367.7419	36.68	R44S	3051+00.23	Residential	66	452.3321	416.8931	35.44
R15S	3013+47.10	Residential	66	505.254	469.8739	35.38	R45S	3053+40.91	Residential	66	446.4279	410.7228	35.71
R16S	3014+88.62	Residential	66	570.7214	534.1527	36.57	R46S	3054+94.42	Residential	66	470.6828	434.7901	35.89
R17S	3015+69.01	Residential	66	634.6111	597.9254	36.69	R47S	3056+40.55	Residential	66	470.9306	434.8592	36.07
R18S	3015+30.84	Residential	66	729.4759	692.8456	36.63	R48S	3054+31.06	Residential	66	639.8595	604.0441	35.82
R19S	3020+36.13	Residential	66	464.2656	426.1559	38.11	R49S	3056+43.38	Residential	66	650.5029	614.428	36.07
R20S	3020+21.03	Residential	66	396.2744	358.2902	37.98	R50S	3058+27.28	Residential	66	595.3983	559.0987	36.30
R21S	3020+86.00	Residential	66	300.9958	262.4928	38.50	R51S	3057+26.05	Residential	66	132.8236	96.648	36.18
R22S	3021+41.99	Residential	66	233.5988	194.6507	38.95	R52S	3059+98.04	Residential	66	286.3602	249.8449	36.52
R23S	3022+00.71	Residential	66	176.1543	136.739	39.42	R53S	3058+34.63	Residential	66	353.8875	317.5791	36.31
R24S	3024+41.95	Residential	66	179.9823	132.0158	47.97	R54S	3059+38.36	Residential	66	447.757	411.3217	36.44
R25S	3023+69.03	Residential	66	353.4245	308.6702	44.75	R55S	3059+68.27	Residential	66	609.4173	572.943	36.47
R26S	3023+65.53	Residential	66	494.3093	449.5622	44.75	R56S	3059+64.12	Residential	66	691.1059	654.6372	36.47
R27S	3024+93.62	Residential	66	547.9732	498.677	49.30	R57S	3061+64.97	Residential	66	428.6798	391.9333	36.75
R28S	3026+20.32	Residential	66	611.067	562.5955	48.47	R58S	3061+54.51	Residential	66	529.7809	493.0488	36.73
R29S	3026+93.85	Residential	66	552.0933	504.8811	47.21	R59S	3061+74.33	Residential	66	611.514	574.7544	36.76
R30S	3028+30.65	Residential	66	438.163	392.5316	45.63	R60S	3062+55.24	Residential	66	691.6467	654.7749	36.87

Table 2
Noise Receptor Location and Description Summary
Build Alternative 2 South Alignment

Noise Receptor Number	Noise Receptor Station Number N=North Side of CR 712 S=South Side of CR 712	Noise Receptor Description	FDOT NAC	Distance From Closest Center Travel Lane (Ft.)	Distance From Closest Center Travel Lane (Ft.)	Distance Variance (Ft.)	Noise Receptor Number	Noise Receptor Station Number N=North Side of CR 712 S=South Side of CR 712	Noise Receptor Description	FDOT NAC	Distance From Closest Center Travel Lane (Ft.)	Distance From Closest Center Travel Lane (Ft.)	Distance Variance (Ft.)
				Existing Alignment	Build Alternative 2 South Alignment						Existing Alignment	Build Alternative 2 South Alignment	
R61S	3064+25.10	Residential	66	746.0931	708.9862	37.11	R85S	3082+38.71	Residential	66	161.6341	105.5095	56.12
R62S	3063+17.08	Residential	66	510.5158	473.5586	36.96	R86S	3084+94.65	Residential	66	164.6508	111.8398	52.81
R63S	3064+66.03	Residential	66	531.3593	494.1959	37.16	R87S	3086+41.20	Residential	66	254.3852	201.7377	52.65
R64S	3065+64.17	Residential	66	554.965	517.6658	37.30	R88S	3087+01.09	Residential	66	408.1465	355.6937	52.45
R65S	3066+09.96	Residential	66	483.066	445.7034	37.36	R89S	3087+09.56	Residential	66	492.7531	440.3286	52.42
R66S	3064+64.57	Residential	66	357.4664	320.3052	37.16	R90S	3079+88.22	Residential	66	356.7615	305.9422	50.82
R67S	3064+02.19	Residential	66	266.4318	229.357	37.07	R91S	3082+46.06	Residential	66	345.1618	288.6534	56.51
R68S	3064+05.85	Residential	66	171.9084	134.8286	37.08	R92S	3079+54.94	Residential	66	482.2461	431.4847	50.76
R69S	3067+01.01	Residential	66	336.0532	298.5647	37.49	R93S	3082+97.38	Residential	66	456.114	398.1649	57.95
R70S	3067+09.96	Residential	66	728.0983	690.597	37.50	R94S	3085+14.88	Residential	66	448.9887	396.4579	52.53
R71S	3067+71.23	Residential	66	577.0617	539.4758	37.59	R95S	3081+26.78	Residential	66	634.4179	581.1613	53.26
R72S	3068+72.71	Residential	66	478.1791	440.4527	37.73	R96S	3081+09.29	Residential	66	544.1132	491.3001	52.81
R73S	3070+58.47	Residential	66	364.5402	326.5568	37.98	R97S	3083+02.81	Residential	66	539.0488	480.3119	58.74
R74S	3072+22.19	Residential	66	351.99	313.7799	38.21	R98S	3083+43.79	Residential	66	616.4384	558.8532	57.59
R75S	3074+01.20	Residential	66	346.4019	305.8727	40.53	R99S	3087+20.44	Residential	66	645.7274	593.3511	52.38
R76S	3076+74.71	Residential	66	401.7572	351.4857	50.27	R100N	3085+62.32	Residential	66	-717.2959	-769.922	52.63
R77S	3077+65.25	Residential	66	503.6502	453.2203	50.43	R101N	3085+39.00	Residential	66	-529.9373	-582.4585	52.52
R78S	3068+45.45	Residential	66	257.9536	220.2652	37.69	R102N	3084+15.04	Residential	66	-547.1183	-601.5131	54.39
R79S	3070+83.05	Residential	66	181.8404	143.8231	38.02	R103N	3080+94.15	Residential	66	-295.4803	-347.6925	52.21
R80S	3072+26.40	Residential	66	142.6868	104.4711	38.22	R104N	3079+99.57	Residential	66	-136.21	-187.0484	50.84
R81S	3073+89.46	Residential	66	173.6045	133.6874	39.92	R105N	3076+75.64	Medical Fac.	66	-524.2859	-574.5577	50.27
R82S	3075+46.32	Residential	66	182.6386	134.3335	48.31	R106N	3074+51.46	Medical Fac.	66	-549.7451	-591.5121	41.77
R83S	3078+28.19	Residential	66	175.862	125.3226	50.54	R107N	3072+26.86	Medical Fac.	66	-414.0476	-452.2634	38.22
R84S	3080+75.99	Residential	66	176.6979	124.7848	51.91	R108N	3070+98.96	Medical Fac.	66	-139.6733	-177.7123	38.04
							R84A S	3080+13.23	Residential	66	163.4186	112.5558	50.86
							R85A S	3081+85.05	Residential	66	161.5149	106.9972	54.52

6.1 MODEL VALIDATION

Field measurements were documented to evaluate the current noise conditions and to determine if TNM version 2.5 could accurately predict the noise levels for the study corridor under evaluation. Measurements of the ambient noise levels for the project corridor were documented using procedures defined in the FHWA report Measurement of Highway-Related Noise (FHWA-PD-96-046) (4). Noise level measurements, meteorological conditions, and traffic data were recorded at two (2) representative locations adjacent to the Midway Road corridor. The study corridor limits extend from Glades Cut Off Road to Selvitz Road in St. Lucie County.

The field measurement locations are identified as ML1 and ML3 and are described below. The locations are also presented in the noise receptor aerials in **Appendix C**.

- **ML1** – Located on the south side of Midway Road between NW East Torino Parkway and the bridge adjacent to R24S. The measurement location is situated approximately 22 feet from the edge of pavement.

- **ML3** – Located on the south side of Midway Road (east of Post Office Road) adjacent to R68S. The measurement location is situated approximately 30 feet from the edge of pavement.

6.1.1 METHODOLOGY

A series of three (3) repetitions of 10-minute measurement periods were acquired at the designated field measurement locations (ML1 and ML3). Noise levels were measured using the Larson Davis 831 Type I Real Time Sound Level Analyzer (SN 4153) for the purposes of field verification of the existing measured noise levels. The Larson Davis 831 instrumentation adheres to the following Acoustical Specifications IEC 61672-2013 (Class 1), IEC 60651-2001 (Type 1), IEC 60804-2000 (Type 1), IEC 61260-2001 (Class 1), IEC 61252-2002, ANSI S1.4-2014 Class 1, ANSI S1.11-2004, 1/1 & 1/3 Octave Band Class 1, and ANSI S1.25-1991 (R2007).

The Larson Davis Model CAL 200 Calibrator (SN 8533) with two selectable calibration levels of 94.00 dB and 114.00 dB at 1 KHz was utilized in the measurement analysis and was the manufacturer's specified calibrator. The Larson Davis Model CAL 200 Calibrator (SN 8533) adheres to the following Acoustical Specifications IEC 6LR61, NEDA 1604A, IEC 60942-2003 CLASS 1, and ANSI S1.40-2006. The entire acoustical system was calibrated before and after each ten (10) minute measurement period and received an annual factory calibration by the manufacturer's representative. The sound level analyzer was calibrated at 114.00 dB at 1 KHz and was verified to be within the calibration tolerance. The acoustical and meteorological instrumentation is presented in **Table 3**.

The sound level meter was properly mounted on an instrument tripod approximately five (5) feet above the ground surface at each designated noise measurement location. The manufacturer's specified wind screen was properly mounted on the sound level meter microphone during the field measurement period. Prior to each ten (10) minute measurement period, the sound level meter's battery level was verified to be within the manufactures recommended tolerance. Vehicle speeds were measured with a Stalker Radar Gun (SN KE5356) which was calibrated before and after each ten (10) minute measurement period.

6.1.2 METEOROLOGICAL CONDITIONS

During each field noise measurement period, meteorological components, such as cloud cover, ambient temperature, wind speed, wind direction, and humidity, were documented. The corresponding meteorological condition associated with each measurement period was recorded with a Kestrel hand held Pocket Weather Tracker. The Kestrel Model 4500NV (SN 678342) was utilized to record all field meteorological conditions associated with this study.

6.1.3 FIELD MEASUREMENT DATA

Field noise measurements, meteorological conditions, and vehicle speeds were documented at two (2) representative locations (ML1 and ML3) situated along the Midway Road study corridor. Each measurement location represented the roadway segments adjacent to noise sensitive areas where potential noise barrier placement could be evaluated, if necessary. Additional field measurement locations (ML2 and ML4) were not included in the study due to ambient interference from heavy truck side street activity and construction noise at Midway Road and Selvitz Road.

Table 3
Acoustical and Meteorological Instrumentation

Instrument Type & Model No.	Manufacturer	Serial No.	Annual Calibration	Calibration Laboratory
Larson Davis Model 831 Type I SLM	Larson Davis	0004153	04/07/2016	Larson Davis
Larson Davis PRM 831 Preamplifier	Larson Davis	012499	04/06/2016	Larson Davis
Larson Davis 377B02 Microphone	Larson Davis	113988	04/07/2016	Larson Davis
Larson Davis Cal 200 Calibrator	Larson Davis	8533	10/01/2015	Larson Davis
Kestrel 4500 NV Pocket Weather Tracker	Kestrel	678342	N/A	N/A

The noise measurement data sheets are presented in **Appendix D.** The field measured noise levels and corresponding vehicle classification information are depicted in the TNM 2.5 model validation results presented in **Table 4**. The noise levels are reported to the 1/10th of a decibel using the LEQ(h) noise descriptor.

6.1.4 MODEL VALIDATION RESULTS

In accordance with Part 2, Chapter 17 Noise (July 27, 2016), of the PD&E Manual, the acceptable range of error between the field noise level measurements and the predicted noise levels is +/- 3 dB(A). If this acceptable range of error can be achieved, TNM version 2.5 inputs can be relied upon for the purposes of predicting the noise levels for the project conditions. The difference between the field measured noise levels and the predicted noise levels for all measurement trials was within +/- 3 dB(A). Thus, the model inputs were determined to be valid for further use with this study. The TNM 2.5 model validation results are presented in **Table 4**. The first measurement period at monitoring location ML1 was not used due to interference from the industrial site on the north side of Midway Road. The remaining measurement periods were within the acceptable range of error for validation purposes.

6.2 PREDICTED NOISE LEVELS AND ABATEMENT ANALYSIS

The predicted noise levels and applicable abatement analysis measures were developed based upon the modeling criteria described in Part 2, Chapter 17 Noise (July 27, 2016), of the PD&E Manual and the Traffic Noise Modeling and Analysis Practitioners Handbook dated January 1, 2016. Specific input data for TNM version 2.5 is required to generate computer predicted noise levels associated with the project area under evaluation. One hundred and ten (110) noise sensitive receptor locations representative of single family residential areas and a medical treatment facility were evaluated. The noise sensitive locations are depicted in the noise receptor aerials presented in **Appendix C**.

6.2.1 DATA SOURCES

The data input sources that TNM version 2.5 relied upon for the purposes of predicting noise levels for this study are as follows: roadway and receptor data (state plane coordinates), project traffic data (i.e., vehicle volumes, vehicle mix, and vehicle speeds), distance(s) from the center of each roadway to the receptor, the widths of the roadway and lanes, the height of the receptor, barrier and buffer information including embankments, areas of water (e.g., ponds), paved surfaces, building rows or other structures, the type of propagation paths (hard vs. soft), variations in terrain between the receptors and the roadway, and any changes in grade. Each of these factors can influence the predicted noise levels. The coordinate geometry for this study was derived from the State Plane Coordinate System. Elevation data was derived from the project survey data file and county elevation contour maps.

Table 4
TNM 2.5 Model Validation Results

Field Receptor Number	Aerial Sheet	Distance from Closest Edge of Travel Lane (Ft.)	Trial	Date	Start Time 10 Minute Period	Vehicle Classification EB/WB Vehicles / Hour					Average Speed EB/WB	Field Measured Noise Level dB(A)	Computer Predicted Noise Level dB(A)	Difference (Measured Predicted) dB(A)	Model Validation (+/-) 3 dB(A)
						Cars	Medium Trucks	Heavy Trucks	Bus	MC	C/MT/HT/B/MC				
ML1	1	22	2	06/30/16	11:42:12	336/408	30/30	54/24	0/0	0/0	41,43/40,40/41,36/0/0	72.6	71.6	- 1.0	YES
ML1	1	22	3	06/30/16	12:02:00	456/420	12/24	6/24	0/12	0/6	44,42/37,43/33,43/0,42/0,30	72.6	69.6	- 3.0	YES
ML3	2	30	1	07/01/16	11:12:25	624/492	30/18	18/30	0/0	6/0	42,44/40,39/36,44/0/39,0	70.8	68.6	- 2.2	YES
ML3	2	30	2	07/01/16	11:31:06	492/456	24/24	36/18	6/0	0/0	46,46/40,44/44,43/37,0/0	70.5	69.2	-1.3	YES
ML3	2	30	3	07/01/16	11:49:54	612/642	30/18	18/12	6/0	0/0	40,41/40,42/42,43/39,0/0	70.6	68.1	- 2.5	YES

Note: ML1-1 Trial 1 sound level had excessive interference from the industrial site on the north side of the road.

6.2.2 PREDICTED NOISE LEVELS

The TNM 2.5 predicted noise levels for the project area are presented in **Table 5**. The study evaluated the Existing Year 2015 Condition, the No-Build Alternative Design Year 2040 Condition, and the Build Year Alternative 2 Design Year 2040 Condition. The predicted noise levels were evaluated for five (5) Noise Sensitive Areas which represent one hundred and ten (110) noise sensitive receptor locations.

6.2.3 NOISE SENSITIVE AREA 1

Noise Sensitive Area 1, which represents the residential areas on the south side of Midway Road between Glades Cut Off Road and NW East Torino Parkway will experience the following computer predicted sound levels:

- Existing Year 2015 Condition: 49.1dB(A) to 59.3 dB(A)
- No-Build Alternative Design Year 2040 Condition: 50.3 dB(A) to 59.4 dB(A)
- Build Alternative 2 Design Year 2040 Condition: 53.9 dB(A) to 65.9 dB(A)

6.2.4 NOISE SENSITIVE AREA 2

Noise Sensitive Area 2, which represents the residential areas on the south side of Midway Road between NW East Torino Parkway and Florida's Turnpike will experience the following computer predicted sound levels:

- Existing Year 2015 Condition: 49.4 dB(A) to 59.1 dB(A)
- No-Build Alternative Design Year 2040 Condition: 49.8 dB(A) to 59.1 dB(A)
- Build Alternative 2 Design Year 2040 Condition: 54.5 dB(A) to 65.5 dB(A)

6.2.5 NOISE SENSITIVE AREA 3

Noise Sensitive Area 3, which represents the residential areas on the south side of Midway Road between NW Milner Drive to east of NW Mayfield Lane will experience the following computer predicted sound levels:

- Existing Year 2015 Condition: 47.2 dB(A) to 61.5 dB(A)
- No-Build Alternative Design Year 2040 Condition: 47.3 dB(A) to 61.5 dB(A)
- Build Alternative 2 Design Year 2040 Condition: 51.9 dB(A) to 65.9 dB(A)

6.2.6 NOISE SENSITIVE AREA 4

Noise Sensitive Area 4, which represents the residential areas on the south side of Midway Road from east of NW Mayfield Lane to Selvitz Road will experience the following computer predicted sound levels:

- Existing Year 2015 Condition: 46.7 dB(A) to 60.3 dB(A)
- No-Build Alternative Design Year 2040 Condition: 46.9 dB(A) to 60.5 dB(A)
- Build Alternative 2 Design Year 2040 Condition: 51.2 dB(A) to 66.7 dB(A)

Table 5
TNM 2.5 Predicted Noise Levels
dB(A)
Build Alternative 2 South Alignment

Noise Receptor Number	Number of Noise Sensitive Sites Represented	Activity Category	FDOT NAC	(2015) Existing Year dB(A)	(2040) No-Build Alternative dB(A)	(2040) Build Year Alternative dB(A)	Difference Between Build and Existing dB(A)	Approach or Exceed FDOT NAC	Consider Abatement	Noise Receptor Number	Number of Noise Sensitive Sites Represented	Activity Category	FDOT NAC	(2015) Existing Year dB(A)	(2040) No-Build Alternative dB(A)	(2040) Build Year Alternative dB(A)	Difference Between Build and Existing dB(A)	Approach or Exceed FDOT NAC	Consider Abatement
R1S	1	B	66	53.3	56.4	57.8	4.5	N	N	R31S	1	B	66	53.1	53.2	59.0	5.9	N	N
R2S	1	B	66	55.2	57.6	59.7	4.5	N	N	R32S	1	B	66	53.2	53.4	59.0	5.8	N	N
R3S	1	B	66	56.0	58.2	60.4	4.4	N	N	R33S	1	B	66	58.1	58.1	63.1	5.0	N	N
R4S	1	B	66	56.8	58.0	61.3	4.5	N	N	R34S	1	B	66	57.4	57.5	62.4	5.0	N	N
R5S	1	B	66	53.8	54.8	58.6	4.8	N	N	R35S	1	B	66	52.8	52.9	58.8	6.0	N	N
R6S	1	B	66	52.0	53.4	56.9	4.9	N	N	R36S	1	B	66	51.5	51.6	56.7	5.2	N	N
R7S	1	B	66	51.7	52.7	56.8	5.1	N	N	R37S	1	B	66	59.5	59.5	64.8	5.3	N	N
R8S	1	B	66	50.5	52.0	55.2	4.7	N	N	R38S	1	B	66	59.8	59.8	65.0	5.2	N	N
R9S	1	B	66	56.4	57.0	61.5	5.1	N	N	R39S	1	B	66	59.5	59.6	64.2	4.7	N	N
R10S	1	B	66	59.1	59.4	65.2	6.1	N	N	R40S	1	B	66	60.4	60.4	65.5	5.1	N	N
R11S	1	B	66	59.3	59.4	65.9	6.6	N	N	R41S	1	B	66	53.6	53.6	59.1	5.5	N	N
R12S	1	B	66	58.7	58.8	65.0	6.3	N	N	R42S	1	B	66	53.6	53.7	58.8	5.2	N	N
R13S	1	B	66	54.8	55.2	60.4	5.6	N	N	R43S	1	B	66	49.1	49.2	54.6	5.5	N	N
R14S	1	B	66	53.7	54.1	59.3	5.6	N	N	R44S	1	B	66	50.7	50.8	56.7	6.0	N	N
R15S	1	B	66	52.0	52.7	57.2	5.2	N	N	R45S	1	B	66	50.9	51.0	56.6	5.7	N	N
R16S	1	B	66	50.9	51.7	56.2	5.3	N	N	R46S	1	B	66	50.5	50.5	56.0	5.5	N	N
R17S	1	B	66	50.1	50.9	55.2	5.1	N	N	R47S	1	B	66	50.5	50.5	56.0	5.5	N	N
R18S	1	B	66	49.1	50.3	53.9	4.8	N	N	R48S	1	B	66	47.8	47.9	52.8	5.0	N	N
R19S	1	B	66	52.1	52.5	58.0	5.9	N	N	R49S	1	B	66	47.7	47.8	52.6	4.9	N	N
R20S	1	B	66	53.4	53.7	59.3	5.9	N	N	R50S	1	B	66	48.5	48.6	53.5	5.0	N	N
R21S	1	B	66	55.3	55.5	61.0	5.7	N	N	R51S	1	B	66	61.5	61.5	65.9	4.4	N	N
R22S	1	B	66	57.0	57.1	62.9	5.9	N	N	R52S	1	B	66	55.0	55.0	60.1	5.1	N	N
R23S	1	B	66	58.7	58.7	65.5	6.8	N	N	R53S	1	B	66	53.1	53.1	58.4	5.3	N	N
R24S	1	B	66	59.1	59.1	65.5	6.4	N	N	R54S	1	B	66	50.9	51.0	56.6	5.7	N	N
R25S	1	B	66	53.6	53.8	59.4	5.8	N	N	R55S	1	B	66	48.3	48.4	53.3	5.0	N	N
R26S	1	B	66	51.1	51.4	56.9	5.8	N	N	R56S	1	B	66	47.2	47.3	51.9	4.7	N	N
R27S	1	B	66	50.3	50.6	55.7	5.4	N	N	R57S	1	B	66	51.3	51.3	56.9	5.6	N	N
R28S	1	B	66	49.4	49.8	54.5	5.1	N	N	R58S	1	B	66	49.5	49.6	54.8	5.3	N	N
R29S	1	B	66	50.1	50.5	55.4	5.3	N	N	R59S	1	B	66	48.3	48.4	53.2	4.9	N	N
R30S	1	B	66	51.7	51.9	57.5	5.8	N	N	R60S	1	B	66	47.2	47.4	51.9	4.7	N	N

Table 5
TNM 2.5 Predicted Noise Levels
dB(A)
Build Alternative 2 South Alignment

Noise Receptor Number	Number of Noise Sensitive Sites Represented	Activity Category	FDOT NAC	(2015) Existing Year dB(A)	(2040) No-Build Alternative dB(A)	(2040) Build Year Alternative dB(A)	Difference Between Build and Existing dB(A)	Approach or Exceed FDOT NAC	Consider Abatement	Noise Receptor Number	Number of Noise Sensitive Sites Represented	Activity Category	FDOT NAC	(2015) Existing Year dB(A)	(2040) No-Build Alternative dB(A)	(2040) Build Year Alternative dB(A)	Difference Between Build and Existing dB(A)	Approach or Exceed FDOT NAC	Consider Abatement
R61S	1	B	66	46.7	46.9	51.2	4.5	N	N	R85S	1	B	66	60.0	60.1	**66.6**	6.6	**Y[2]**	**Y[2]**
R62S	1	B	66	49.8	49.9	55.2	5.4	N	N	R86S	1	B	66	60.2	60.5	65.5	5.3	N	N
R63S	1	B	66	49.5	49.6	54.7	5.2	N	N	R87S	1	B	66	58.0	58.5	61.8	3.8	N	N
R64S	1	B	66	49.2	49.3	54.3	5.1	N	N	R88S	1	B	66	55.8	56.3	58.8	3.0	N	N
R65S	1	B	66	50.3	50.4	55.8	5.5	N	N	R89S	1	B	66	55.0	55.4	57.6	2.6	N	N
R66S	1	B	66	52.9	52.9	58.2	5.3	N	N	R90S	1	B	66	53.0	53.2	59.6	6.6	N	N
R67S	1	B	66	55.5	55.5	60.2	4.7	N	N	R91S	1	B	66	53.9	54.2	59.8	5.9	N	N
R68S	1	B	66	59.2	59.2	64.0	4.8	N	N	R92S	1	B	66	50.7	51.0	57.0	6.3	N	N
R69S	1	B	66	53.5	53.5	58.8	5.3	N	N	R93S	1	B	66	52.0	52.4	57.6	5.6	N	N
R70S	1	B	66	47.0	47.1	51.4	4.4	N	N	R94S	1	B	66	53.1	53.6	57.5	4.4	N	N
R71S	1	B	66	48.9	49.0	53.9	5.0	N	N	R95S	1	B	66	49.2	49.7	53.9	4.7	N	N
R72S	1	B	66	50.5	50.6	56.0	5.5	N	N	R96S	1	B	66	50.2	50.6	55.7	5.5	N	N
R73S	1	B	66	52.9	52.9	58.3	5.4	N	N	R97S	1	B	66	50.9	51.4	55.9	5.0	N	N
R74S	1	B	66	53.1	53.2	58.6	5.5	N	N	R98S	1	B	66	50.0	50.5	54.4	4.4	N	N
R75S	1	B	66	53.2	53.3	58.8	5.6	N	N	R99S	1	B	66	53.9	54.3	55.5	1.6	N	N
R76S	1	B	66	52.0	52.1	58.4	6.4	N	N	R100N	1	B	66	53.1	54.5	52.3	-0.8	N	N
R77S	1	B	66	50.3	50.5	56.3	6.0	N	N	R101N	1	B	66	53.5	54.6	55.3	1.8	N	N
R78S	1	B	66	56.1	56.1	60.7	4.6	N	N	R102N	1	B	66	51.8	52.6	54.8	3.0	N	N
R79S	1	B	66	59.2	59.2	63.8	4.6	N	N	R103N	1	B	66	55.1	55.3	60.1	5.0	N	N
R80S	1	B	66	60.3	60.3	65.6	5.3	N	N	R104N	1	B	66	61.6	61.7	65.8	4.2	N	N
R81S	1	B	66	59.3	59.4	64.1	4.8	N	N	R105N	1	C	66	50.3	50.5	55.0	4.7	N	N
R82S	1	B	66	58.9	58.9	64.4	5.5	N	N	R106N	1	C	66	50.0	50.1	54.5	4.5	N	N
R83S	1	B	66	58.5	58.5	65.5	7.0	N	N	R107N	1	C	66	52.3	52.4	57.3	5.0	N	N
R84S	1	B	66	58.7	58.7	65.8	7.1	**N[1]**	**N[1]**	R108N	1	C	66	61.5	61.6	65.3	3.8	N	N
										R84A S	1	B	66	58.8	58.9	**66.0**	7.2	**Y[2]**	**Y[2]**
										R85A S	1	B	66	59.9	60.0	**66.7**	6.8	**Y[2]**	**Y[2]**

N[1] Non Impacted / Benefitted Receptor
Y[2] Noise Barrier Computer Modeled (BW-1S)

6.2.7 NOISE SENSITIVE AREA 5

Noise Sensitive Area 5, which represents the residential area and the New Horizons facility on the north side of Midway Road from Selvitz Road to Post Office Road, will experience the following computer predicted sound levels:

- Existing Year 2015 Condition: 50.0 dB(A) to 61.6 dB(A)
- No-Build Alternative Design Year 2040 Condition: 50.1 dB(A) to 61.7 dB(A)
- Build Alternative 2 Design Year 2040 Condition: 52.3 dB(A) to 65.8 dB(A)

6.2.8 NOISE IMPACT ANALYSIS

The traffic noise levels predicted at the one hundred and ten (110) noise sensitive receptor locations under evaluation approached or exceeded the FDOT NAC at one (1) residential area, therefore potential noise abatement measures were evaluated.

Noise Sensitive Areas 1,2,3, and 5

The traffic noise levels predicted at the noise sensitive receptor locations under evaluation did not approach or exceed the FDOT NAC at Noise Sensitive Area 1, Noise Sensitive Area 2, Noise Sensitive Area 3, and Noise Sensitive Area 5; therefore, potential noise abatement measures were not evaluated.

Noise Sensitive Area 4

Potential noise abatement measures were evaluated at one (1) location (Noise Sensitive Area 4) on the southeast side of the study corridor west of Selvitz Road. Potential noise barrier placement (BW-1S) was evaluated for the residential dwellings identified as R84S and R85S. Additionally, two (2) neighboring residential dwellings (R84AS and R85AS) were evaluated. The impacted (benefitted) receptors include three (3) residential dwellings. Additionally, a single residential dwelling was not impacted; however, it was benefitted by the computer modeled noise barrier (BW-1S).

A noise barrier approximately 500 Feet long and 10 Feet high was determined to meet the Department's feasibility factor (Noise Reduction Factor) and reasonableness factor (Noise Reduction Design Goal). The cost of the noise barrier is approximately $150,000.00. The cost per benefitted receptor is approximately $37,500.00. The cost of the noise barrier meets the Department's cost reasonableness of $42,000.00 per benefitted receptor. The noise barrier analysis results are presented in **Table 6**.

Table 6
Noise Barrier Analysis Results

Noise Barrier Height (Feet)	Noise Barrier Length (Feet)	Number of Impacted Receptors	Noise Reduction at Impacted Receptors[1] dB(A)			Number of Benefitted Receptors[2]			Average Reduction for Benefitted Receptors dB(A)[1]	Total Estimated Cost[3]	Cost per Benefitted Receptor[4]
			5-5.9 dB(A)	6-6.9 dB(A)	> 7.0 dB(A)	Impacted	Not Impacted	Total			
8	NA[5]	3	3	1	0	NA[5]	NA[5]	NA[5]	NA[5]	NA[5]	NA[5]
10	500	3	0	0	4	3	1	4	7.35	$ 150,000	$ 37,500
12	500	3	0	0	4	3	1	4	8.375	$ 180,000	$ 45,000

[1] Receptors with a predicted noise level of 66 dB(A) or greater.

[2] Receptors with a predicted reduction of 5 dB(A) or more are considered benefitted.

[3] Based on a unit cost of $ 30 per square foot.

[4] FDOT cost reasonable criterion is $ 42,000 per benefitted receptor.

[5] 7 dB(A) reduction not achieved at any receptor.

7.0 CONCLUSIONS

This noise study has been prepared for the PD&E Study associated with the Midway Road study corridor which extends from Glades Cut Off Road to Selvitz Road in St. Lucie County. Traffic noise impacts were evaluated for potential noise sensitive locations which were developed prior to the project's DPK. Based upon field reviews and active building permit requests from St. Lucie County and the City of Port St. Lucie, it was determined that Activity Category B and C locations could experience potential noise impacts from the project area improvements. The Build Alternative 2 Design Year 2040 Condition was selected as the preferred alternative. No other alternatives were evaluated.

One hundred and ten (110) noise sensitive receptor locations representative of residential dwellings and the New Horizons facility were evaluated. The computer modeled noise receptor locations are representative of one hundred and six (106) residential locations and four (4) New Horizon facility locations.

The traffic noise levels predicted at the noise sensitive receptor locations under evaluation did not approach or exceed the FDOT NAC at Noise Sensitive Area 1, Noise Sensitive Area 2, Noise Sensitive Area 3, and Noise Sensitive Area 5; therefore, potential noise abatement measures were not evaluated.

Potential noise abatement measures were evaluated at one (1) location (Noise Sensitive Area 4) on the southeast side of the study corridor west of Selvitz Road. Potential noise barrier placement (BW-1S) was evaluated for the residential dwellings identified as R84S and R85S. Additionally, two (2) neighboring residential dwellings (R84AS and R85AS) were also evaluated. The impacted (benefitted) receptors include three (3) residential dwellings. Additionally, a single residential dwelling was not impacted; however, it was benefitted by the computer modeled noise barrier (BW-1S).

A noise barrier approximately 500 feet long and 10 Feet high was determined to meet the Department's feasibility factor (Noise Reduction Factor) and reasonableness factor (Noise Reduction Design Goal). The cost of the noise barrier is approximately $150,000.00. The cost per benefitted receptor is approximately $37,500.00. The cost of the noise barrier meets the Department's cost reasonableness of $42,000.00 per benefitted receptor.

The roadway improvements will result in two (2) additional travel lanes and an alignment shift to the south of the existing corridor which will result in a noticeable noise level increase at some locations for the alternative year conditions evaluated.

There are no other noise sensitive areas located within the project corridor as of the date of this report and was verified through an active building permit request. There are no other noise sources located adjacent to the study corridor which could interfere with the existing ambient highway traffic noise levels with the exception of the industrial site between Glades Cut Off Road and NW East Torino Parkway.

There are no other noise sources within the vicinity of this project that could potentially interfere with the predicted sound levels within the limits of the study corridor.

Statement of Likelihood

"The Florida Department of Transportation is committed to the construction of feasible and reasonable noise abatement measures at the noise-impacted locations identified in Table 5 and Appendix C, Figure 3 contingent upon the following conditions."

1. Detailed noise analyses during the final design process support the need, feasibility and reasonableness of providing abatement.

2. Cost analysis indicates that the cost of the noise barrier(s) will not exceed the cost reasonable criterion.

3. Community input supporting types, heights, and locations of the noise barrier(s) is provided to the District Office.

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

8.0 CONSTRUCTION NOISE AND VIBRATION

The study corridor is situated in a medium densely populated area, with the majority of the noise sensitive locations being comprised of residential areas bordering the south side of the roadway. There are limited residential areas on the north side of the roadway. Additionally, New Horizons (medical treatment facility) is located on the north side of the roadway. This location may require special noise and vibration control consideration during the construction process. Special consideration to these areas as it relates to ground borne vibration impacts may also be necessary.

The noise sensitive locations are depicted in the noise receptor aerials presented in **Appendix C**. Noise and vibration impacts may occur due to movement and operation of heavy equipment and construction activities.

Noise control measures will include those contained in FDOT Standard Specifications for Road and Bridge Construction (5). Special consideration may be required to minimize noise and vibration impacts resulting from the expected bridge construction process.

These considerations could include any of the following: limitations on the construction activities, temporary noise abatement structures around noisy equipment, and methods to measure and reduce ground borne vibration impacts.

A list of typical construction noise and vibration sensitive sites can be found on page 17-46 of Chapter 17 (Topic No. 650-000-001, July 27, 2016). A summary of potential noise and vibration sensitive sites has been provided in **Appendix E**.

An assessment of these sites should take place prior to construction to mitigate potential impacts. Section 335.02, Florida Statutes, in 2003, exempts FDOT from compliance with local ordinances. However, FDOT policy is to follow the requirement of local ordinances to the extent that it is reasonable. If unanticipated noise and / or vibration issues arise during the construction process, the Project Engineer, in concert with the District Noise Specialist and the Contractor, may investigate additional methods of controlling these impacts on a case by case basis.

9.0 COMMUNITY COORDINATION

A copy of the Noise Study Report should be submitted to the appropriate local planning / zoning officials for their use in land use control once the Location and Design Concept Acceptance (LDCA) occurs. To assist local planning officials, the distances to the 66 dB(A) noise contours were estimated by evaluating the results of the computer modeled receptor location(s) identified in this analysis. The 66 dB(A) noise contour delineates the distance from the closest edge of the travel lane that an approach of the NAC for Activity Category B and Category C is expected to occur for the 2040 design year traffic condition. This study has identified that Activity Category B and C locations were present under the existing study corridor conditions. For Build Alternative 2, the estimated distance from the closest edge of the travel lane to the 66 dB(A) noise contour is approximately 134 feet from Glades Cut Off Road to NW East Torino Parkway. The estimated distance from the closest edge of the travel lane to the 66 dB(A) noise contour is approximately 126 feet from NW East Torino Parkway to NW Milner Drive. The estimated distance from the closest edge of the travel lane to the 66 dB(A) noise contour is approximately 96.5 feet to 101 feet from NW Milner Drive to NW Rugby Drive. The estimated distance from the closest edge of the travel lane to the 66 dB(A) noise contour is approximately 105 feet from NW Rugby Drive to Selvitz Road. On the north side of the corridor the estimated distance from the closest edge of the travel lane to the 66 dB(A) noise contour is approximately 120 feet from Selvitz Road to NW Milner Drive.

The set-back distances referenced above account only for the traffic noise associated with the Midway Road study corridor and do not take into consideration the noise levels associated with other noise sources. The noise contours are depicted on the noise receptor aerials presented in **Appendix C.** The noise contour table is presented in **Appendix F**.

Further, the distances to the 66 dB(A) noise contours do not consider the effects of shielding from adjacent buildings, significant changes in roadway elevation, unusual topographic features, abnormal atmospheric conditions, or local traffic volumes from adjacent roadways.

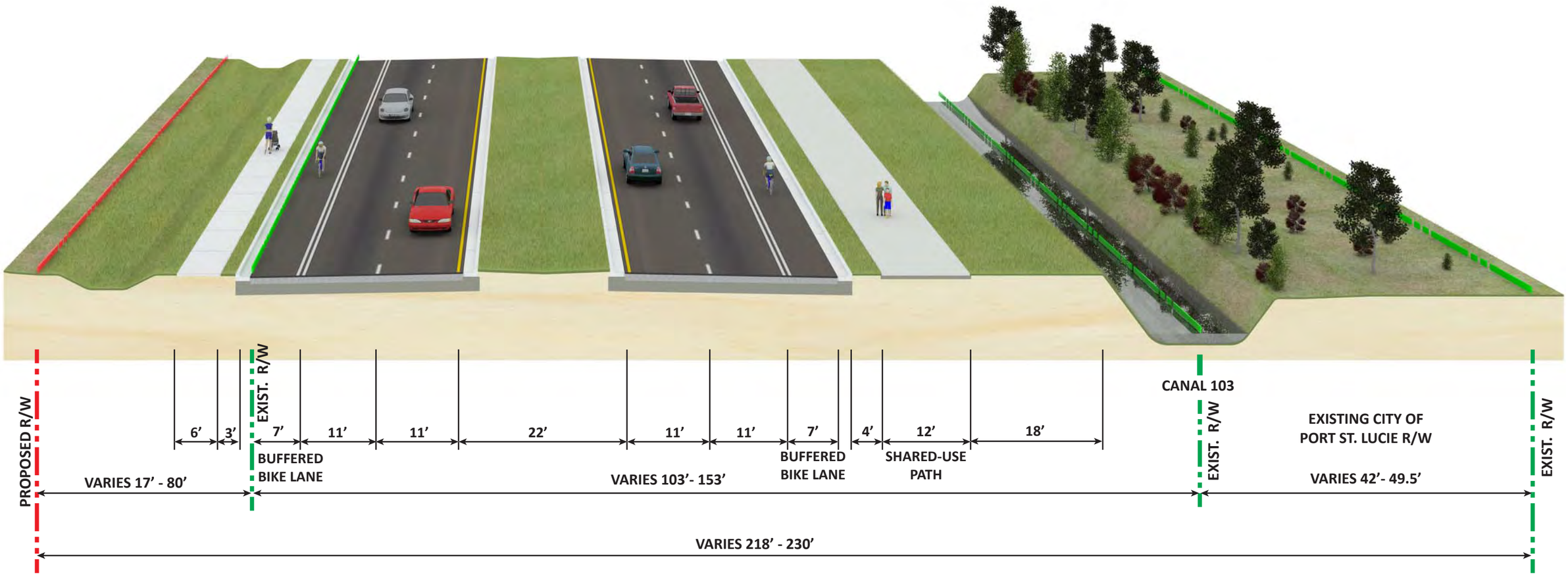
Each of these factors could either increase or decrease the estimated distance to the 66 dB(A) noise contours**.** Therefore, the setback distances shown in **Appendix F** are approximate values and should be considered as general guidance information.

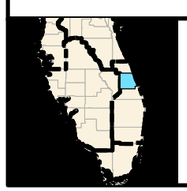
10.0 REFERENCES

1. Procedures for Abatement of Highway Traffic Noise and Construction Noise; FHWA; April 2001.
2. FDOT PD&E Manual, Part 2, Chapter 17 (Noise Policy); FDOT; Tallahassee, Florida; July 27, 2016.
3. The Traffic Noise Modeling and Analysis Practitioners Handbook; FDOT; Tallahassee, Florida; January 1, 2016.
4. Measurement of Highway-Related Noise (FHWA-PD-96-046); FHWA; May 1996.
5. Standard Specifications for Road and Bridge Construction; FDOT; Tallahassee, Florida; 2013.

APPENDIX A
PROPOSED TYPICAL SECTIONS

ALTERNATIVE 1 - CANAL AVOIDANCE
URBAN 4 LANE WITH 7ft BUFFERED BIKE LANE



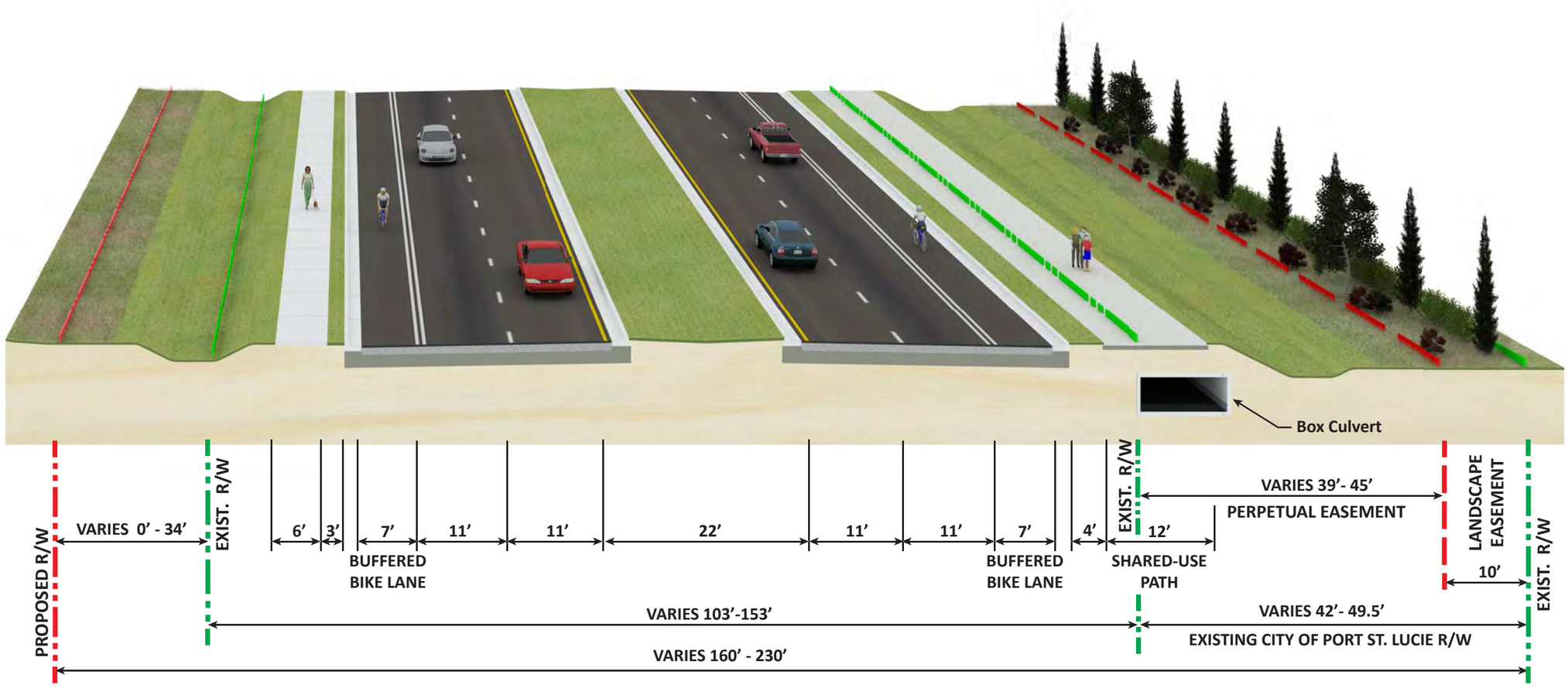


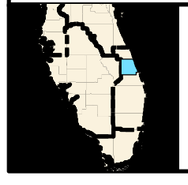
FDOT Florida Department of Transportation
District 4

Midway Rd. (CR 712)
from Glades Cut Off Road to Selvitz Road
St. Lucie County, Florida
Financial Project ID: 231440-3-22-01
ETDM No. 14177

ALTERNATIVE 1
TYPICAL SECTION

ALTERNATIVE 2 - BOX CULVERT
URBAN 4 LANE WITH 7ft BUFFERED BIKE LANE





Florida Department of Transportation
District 4

Midway Rd. (CR 712)
from Glades Cut Off Road to Selvitz Road
St. Lucie County, Florida
Financial Project ID: 231440-3-22-01
ETDM No. 14177

ALTERNATIVE 2
TYPICAL SECTION

APPENDIX B
TRAFFIC DATA FOR NOISE STUDY

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Numbers(s):
FPID Number(s): 23144032201
State/Federal Route No.:
Road Name: CR 712/Midway Road
Project Description: PD&E Services for CR 712/Midway Road from Glades Cut Off Road to Selvitz Road in St. Lucie County
Segment Description:
Section Number:
Mile Post To/From: West of Glades Cut Off Road

Existing Facility					
			D:	51.0	%
			T24=	12.1	% of 24 Hour Volume
Year	2015		Tpeak=	6.1	% of Design Hour Volume
			MT=	0.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	1,805	One-Way	HT=	2.3	% of Design Hour Volume
Demand Peak Hour Volume:	1,440	Two-Way	B=	0.3	% of Design Hour Volume
Posted Speed:	45		MC=	0.2	% of Design Hour Volume

No Build Alternative (Design Year):					
			D:	51.0	%
			T24=	12.1	% of 24 Hour Volume
Year	2040		Tpeak=	6.1	% of Design Hour Volume
			MT=	0.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	1,805	One-Way	HT=	2.3	% of Design Hour Volume
Demand Peak Hour Volume:	3,258	Two-Way	B=	0.3	% of Design Hour Volume
Posted Speed:	45		MC=	0.2	% of Design Hour Volume

Build Alternative (Design Year):					
			D:	51.0	%
			T24=	12.1	% of 24 Hour Volume
Year	2040		Tpeak=	6.1	% of Design Hour Volume
			MT=	0.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	1,805	One-Way	HT=	2.3	% of Design Hour Volume
Demand Peak Hour Volume:	3,258	Two-Way	B=	0.3	% of Design Hour Volume
Posted Speed:	45		MC=	0.2	% of Design Hour Volume

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

Prepared By: Ian M. Rairden, P.E. (Print Name) _____ (Signature) Date: 9/16/16

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

FDOT Reviewer: _____ (Print Name) _____ (Signature) Date: _____

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Numbers(s):
FPID Number(s): 23144032201
State/Federal Route No.:
Road Name: CR 712/Midway Road
Project Description: PD&E Services for CR 712/Midway Road from Glades Cut Off Road to Selvitz Road in St. Lucie County
Segment Description:
Section Number:
Mile Post To/From: Glades Cut-off Road to E Torino Parkway

Existing Facility					
			D:	56.3	%
			T24=	19.5	% of 24 Hour Volume
Year	2015		Tpeak=	9.8	% of Design Hour Volume
			MT=	1.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	750	One-Way	HT=	1.4	% of Design Hour Volume
Demand Peak Hour Volume:	1,593	Two-Way	B=	0.6	% of Design Hour Volume
Posted Speed:	45		MC=	2.1	% of Design Hour Volume

No Build Alternative (Design Year):					
			D:	56.3	%
			T24=	19.5	% of 24 Hour Volume
Year	2040		Tpeak=	9.8	% of Design Hour Volume
			MT=	1.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	750	One-Way	HT=	1.4	% of Design Hour Volume
Demand Peak Hour Volume:	3,600	Two-Way	B=	0.6	% of Design Hour Volume
Posted Speed:	45		MC=	2.1	% of Design Hour Volume

Build Alternative (Design Year):					
			D:	56.3	%
			T24=	19.5	% of 24 Hour Volume
Year	2040		Tpeak=	9.8	% of Design Hour Volume
			MT=	1.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	2,005	One-Way	HT=	1.4	% of Design Hour Volume
Demand Peak Hour Volume:	3,600	Two-Way	B=	0.6	% of Design Hour Volume
Posted Speed:	45		MC=	2.1	% of Design Hour Volume

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

Prepared By: Ian M. Rairden, P.E. _____ Date: 9/16/16
Print Name Signature

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

FDOT Reviewer: _____ Date: _____
Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Numbers(s):
FPID Number(s): 23144032201
State/Federal Route No.:
Road Name: CR 712/Midway Road
Project Description: PD&E Services for CR 712/Midway Road from Glades Cut Off Road to Selvitz Road in St. Lucie County
Segment Description:
Section Number:
Mile Post To/From: E Torino Parkway to NW Milner Drive/Jenkins Road

Existing Facility			D:	56.3	%
			T24=	19.5	% of 24 Hour Volume
Year	2015		Tpeak=	9.8	% of Design Hour Volume
			MT=	1.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	750	One-Way	HT=	1.4	% of Design Hour Volume
Demand Peak Hour Volume:	1,575	Two-Way	B=	0.6	% of Design Hour Volume
Posted Speed:	45		MC=	2.1	% of Design Hour Volume

No Build Alternative (Design Year):			D:	56.3	%
			T24=	19.5	% of 24 Hour Volume
Year	2040		Tpeak=	9.8	% of Design Hour Volume
			MT=	1.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	750	One-Way	HT=	1.4	% of Design Hour Volume
Demand Peak Hour Volume:	3,564	Two-Way	B=	0.6	% of Design Hour Volume
Posted Speed:	45		MC=	2.1	% of Design Hour Volume

Build Alternative (Design Year):			D:	56.3	%
			T24=	19.5	% of 24 Hour Volume
Year	2040		Tpeak=	9.8	% of Design Hour Volume
			MT=	1.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	1,910	One-Way	HT=	1.4	% of Design Hour Volume
Demand Peak Hour Volume:	3,564	Two-Way	B=	0.6	% of Design Hour Volume
Posted Speed:	45		MC=	2.1	% of Design Hour Volume

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

Prepared By: Ian M. Rairden, P.E. (Print Name) _____ (Signature) Date: 9/16/16

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

FDOT Reviewer: _____ (Print Name) _____ (Signature) Date: _____

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Numbers(s):
FPID Number(s): 23144032201
State/Federal Route No.:
Road Name: CR 712/Midway Road
Project Description: PD&E Services for CR 712/Midway Road from Glades Cut Off Road to Selvitz Road in St. Lucie County
Segment Description:
Section Number:
Mile Post To/From: N Milner Drive/Jenkins Road to Selvitz Road

Existing Facility					
			D:	51.0	%
			T24=	41.8	% of 24 Hour Volume
Year	2015		Tpeak=	20.9	% of Design Hour Volume
			MT=	1.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	750	One-Way	HT=	1.4	% of Design Hour Volume
Demand Peak Hour Volume:	1,575	Two-Way	B=	0.6	% of Design Hour Volume
Posted Speed:	45		MC=	2.1	% of Design Hour Volume

No Build Alternative (Design Year):					
			D:	51.0	%
			T24=	41.8	% of 24 Hour Volume
Year	2040		Tpeak=	20.9	% of Design Hour Volume
			MT=	1.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	750	One-Way	HT=	1.4	% of Design Hour Volume
Demand Peak Hour Volume:	2,781	Two-Way	B=	0.6	% of Design Hour Volume
Posted Speed:	45		MC=	2.1	% of Design Hour Volume

Build Alternative (Design Year):					
			D:	51.0	%
			T24=	41.8	% of 24 Hour Volume
Year	2040		Tpeak=	20.9	% of Design Hour Volume
			MT=	1.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	2,005	One-Way	HT=	1.4	% of Design Hour Volume
Demand Peak Hour Volume:	2,781	Two-Way	B=	0.6	% of Design Hour Volume
Posted Speed:	45		MC=	2.1	% of Design Hour Volume

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

Prepared By: Ian M. Rairden, P.E. _____ Date: 9/16/16
Print Name Signature

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

FDOT Reviewer: _____ Date: _____
Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Numbers(s):
FPID Number(s): 23144032201
State/Federal Route No.:
Road Name: CR 712/Midway Road
Project Description: PD&E Services for CR 712/Midway Road from Glades Cut Off Road to Selvitz Road in St. Lucie County
Segment Description:
Section Number:
Mile Post To/From: East of Selvitz Road

Existing Facility					
			D:	51.0	%
			T24=	8.9	% of 24 Hour Volume
Year	2015		Tpeak=	4.5	% of Design Hour Volume
			MT=	0.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	785	One-Way	HT=	0.8	% of Design Hour Volume
Demand Peak Hour Volume:	1,305	Two-Way	B=	0.5	% of Design Hour Volume
Posted Speed:	45		MC=	0.4	% of Design Hour Volume

No Build Alternative (Design Year):					
			D:	51.0	%
			T24=	8.9	% of 24 Hour Volume
Year	2040		Tpeak=	4.5	% of Design Hour Volume
			MT=	0.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	2,005	One-Way	HT=	0.8	% of Design Hour Volume
Demand Peak Hour Volume:	2,223	Two-Way	B=	0.5	% of Design Hour Volume
Posted Speed:	45		MC=	0.4	% of Design Hour Volume

Build Alternative (Design Year):					
			D:	51.0	%
			T24=	8.9	% of 24 Hour Volume
Year	2040		Tpeak=	4.5	% of Design Hour Volume
			MT=	0.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	2,005	One-Way	HT=	0.8	% of Design Hour Volume
Demand Peak Hour Volume:	2,223	Two-Way	B=	0.5	% of Design Hour Volume
Posted Speed:	45		MC=	0.4	% of Design Hour Volume

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

Prepared By: Ian M. Rairden, P.E. (Print Name) _____ (Signature) Date: 9/16/16

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

FDOT Reviewer: _____ (Print Name) _____ (Signature) Date: _____

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Numbers(s):
FPID Number(s): 23144032201
State/Federal Route No.:
Road Name: Glades Cutoff Road
Project Description: PD&E Services for CR 712/Midway Road from Glades Cut Off Road to Selvitz Road in St. Lucie County
Segment Description:
Section Number:
Mile Post To/From: North of Midway Road

Existing Facility					
			D:	51.0	%
			T24=	41.8	% of 24 Hour Volume
Year	2015		Tpeak=	20.9	% of Design Hour Volume
			MT=	0.4	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	333	One-Way	HT=	0.7	% of Design Hour Volume
Demand Peak Hour Volume:	513	Two-Way	B=	0.3	% of Design Hour Volume
Posted Speed:	30		MC=	0.2	% of Design Hour Volume

No Build Alternative (Design Year):					
			D:	51.0	%
			T24=	41.8	% of 24 Hour Volume
Year	2040		Tpeak=	20.9	% of Design Hour Volume
			MT=	0.4	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	333	One-Way	HT=	0.7	% of Design Hour Volume
Demand Peak Hour Volume:	990	Two-Way	B=	0.3	% of Design Hour Volume
Posted Speed:	30		MC=	0.2	% of Design Hour Volume

Build Alternative (Design Year):					
			D:	51.0	%
			T24=	41.8	% of 24 Hour Volume
Year	2040		Tpeak=	20.9	% of Design Hour Volume
			MT=	0.4	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	333	One-Way	HT=	0.7	% of Design Hour Volume
Demand Peak Hour Volume:	990	Two-Way	B=	0.3	% of Design Hour Volume
Posted Speed:	30		MC=	0.2	% of Design Hour Volume

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

Prepared By: Ian M. Rairden, P.E. (Print Name) _____ (Signature) Date: 9/14/16

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

FDOT Reviewer: _____ (Print Name) _____ (Signature) Date: _____

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Numbers(s):	
FPID Number(s):	23144032201
State/Federal Route No.:	
Road Name:	Glades Cutoff Road
Project Description:	PD&E Services for CR 712/Midway Road from Glades Cut Off Road to Selvitz Road in St. Lucie County
Segment Description:	
Section Number:	
Mile Post To/From:	South of Midway Road

Existing Facility					
			D:	51.0	%
			T24=	27.2	% of 24 Hour Volume
Year	2015		Tpeak=	13.6	% of Design Hour Volume
			MT=	0.4	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	784	One-Way	HT=	0.7	% of Design Hour Volume
Demand Peak Hour Volume:	252	Two-Way	B=	0.3	% of Design Hour Volume
Posted Speed:	50		MC=	0.2	% of Design Hour Volume

No Build Alternative (Design Year):					
			D:	51.0	%
			T24=	27.2	% of 24 Hour Volume
Year	2040		Tpeak=	13.6	% of Design Hour Volume
			MT=	0.4	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	784	One-Way	HT=	0.7	% of Design Hour Volume
Demand Peak Hour Volume:	1,953	Two-Way	B=	0.3	% of Design Hour Volume
Posted Speed:	50		MC=	0.2	% of Design Hour Volume

Build Alternative (Design Year):					
			D:	51.0	%
			T24=	27.2	% of 24 Hour Volume
Year	2040		Tpeak=	13.6	% of Design Hour Volume
			MT=	0.4	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	784	One-Way	HT=	0.7	% of Design Hour Volume
Demand Peak Hour Volume:	1,953	Two-Way	B=	0.3	% of Design Hour Volume
Posted Speed:	50		MC=	0.2	% of Design Hour Volume

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

Prepared By: Ian M. Rairden, P.E. (Print Name) _____ (Signature) Date: 9/16/16

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

FDOT Reviewer: _____ (Print Name) _____ (Signature) Date: _____

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Numbers(s):	
FPID Number(s):	23144032201
State/Federal Route No.:	
Road Name:	Selvitz Road
Project Description:	PD&E Services for CR 712/Midway Road from Glades Cut Off Road to Selvitz Road in St. Lucie County
Segment Description:	
Section Number:	
Mile Post To/From:	North of Midway Road

Existing Facility			D:	51.0	%
			T24=	4.9	% of 24 Hour Volume
Year	2015		Tpeak=	2.5	% of Design Hour Volume
			MT=	0.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	664	One-Way	HT=	0.8	% of Design Hour Volume
Demand Peak Hour Volume:	576	Two-Way	B=	0.5	% of Design Hour Volume
Posted Speed:	40		MC=	0.4	% of Design Hour Volume

No Build Alternative (Design Year):			D:	51.0	%
			T24=	4.9	% of 24 Hour Volume
Year	2040		Tpeak=	2.5	% of Design Hour Volume
			MT=	0.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	664	One-Way	HT=	0.8	% of Design Hour Volume
Demand Peak Hour Volume:	810	Two-Way	B=	0.5	% of Design Hour Volume
Posted Speed:	40		MC=	0.4	% of Design Hour Volume

Build Alternative (Design Year):			D:	51.0	%
			T24=	4.9	% of 24 Hour Volume
Year	2040		Tpeak=	2.5	% of Design Hour Volume
			MT=	0.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	664	One-Way	HT=	0.8	% of Design Hour Volume
Demand Peak Hour Volume:	810	Two-Way	B=	0.5	% of Design Hour Volume
Posted Speed:	40		MC=	0.4	% of Design Hour Volume

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

Prepared By: Ian M. Rairden, P.E. (Print Name) _____ (Signature) Date: 9/16/16

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

FDOT Reviewer: _____ (Print Name) _____ (Signature) Date: _____

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Numbers(s):	
FPID Number(s):	23144032201
State/Federal Route No.:	
Road Name:	Selvitz Road
Project Description:	PD&E Services for CR 712/Midway Road from Glades Cut Off Road to Selvitz Road in St. Lucie County
Segment Description:	
Section Number:	
Mile Post To/From:	South of Midway Road

Existing Facility					
			D:	51.0	%
			T24=	4.9	% of 24 Hour Volume
Year	2015		Tpeak=	2.5	% of Design Hour Volume
			MT=	0.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	296	One-Way	HT=	0.8	% of Design Hour Volume
Demand Peak Hour Volume:	630	Two-Way	B=	0.5	% of Design Hour Volume
Posted Speed:	30		MC=	0.4	% of Design Hour Volume

No Build Alternative (Design Year):					
			D:	51.0	%
			T24=	4.9	% of 24 Hour Volume
Year	2040		Tpeak=	2.5	% of Design Hour Volume
			MT=	0.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	296	One-Way	HT=	0.8	% of Design Hour Volume
Demand Peak Hour Volume:	1,026	Two-Way	B=	0.5	% of Design Hour Volume
Posted Speed:	30		MC=	0.4	% of Design Hour Volume

Build Alternative (Design Year):					
			D:	51.0	%
			T24=	4.9	% of 24 Hour Volume
Year	2040		Tpeak=	2.5	% of Design Hour Volume
			MT=	0.8	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	296	One-Way	HT=	0.8	% of Design Hour Volume
Demand Peak Hour Volume:	1,026	Two-Way	B=	0.5	% of Design Hour Volume
Posted Speed:	30		MC=	0.4	% of Design Hour Volume

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

Prepared By: Ian M. Rairden, P.E. _____ Date: 9/10/10

Print Name Signature

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

FDOT Reviewer: _____ Date: _____

Print Name Signature

Midway Road Peak Hour Traffic Volumes For TNM 2.5 Model

	Existing Year 2015 Condition			No Build Alternative 2040 Condition			Build Alternative 2040 Condition / Alternative 2		
West of Glades Cut Off	1440 VPH	Cars = 708	Cars = 681	3258 VPH	Cars = 1603	Cars = 1538	3258 VPH	Cars = 1603	Cars = 1538
	Demand	MT = 6	MT = 6	**Demand**	MT = 13	MT = 13	**Demand**	MT = 13	MT = 13
		HT= 17	HT= 16		HT= 38	HT= 37		HT= 38	HT= 37
		BUS = 2	BUS = 2		BUS = 5	BUS = 5		BUS = 5	BUS = 5
		MC = 1	MC = 1		MC = 3	MC = 3		MC = 3	MC = 3
		45 MPH			45 MPH			45 MPH	
	Existing Year 2015 Condition			**No Build Alternative 2040 Condition**			**Build Alternative 2040 Condition / Alternative 2**		
Glades Cut Off Rd. to E	750 VPH	Cars = 704	Cars = 704	750 VPH	Cars = 704	Cars = 704	3600 VPH	Cars = 1908	Cars = 1481
	LOS C	MT = 14	MT = 14	LOS C	MT = 14	MT = 14	**Demand**	MT = 36	MT = 28
	1-Way	HT= 11	HT= 11	1-Way	HT= 11	HT= 11		HT= 28	HT= 22
		BUS = 5	BUS = 5		BUS = 5	BUS = 5		BUS = 12	BUS = 9
		MC = 16	MC = 16		MC = 16	MC = 16		MC = 43	MC = 33
		45 MPH			45 MPH			45 MPH	
	Existing Year 2015 Condition			**No Build Alternative 2040 Condition**			**Build Alternative 2040 Condition / Alternative 2**		
E. Torino Parkway to N	750 VPH	Cars = 704	Cars = 704	750 VPH	Cars = 704	Cars = 704	3564 VPH	Cars = 1889	Cars = 1465
	LOS C	MT = 14	MT = 14	LOS C	MT = 14	MT = 14	**Demand**	MT = 36	MT = 28
	1-Way	HT= 11	HT= 11	1-Way	HT= 11	HT= 11		HT= 28	HT= 22
		BUS = 5	BUS = 5		BUS = 5	BUS = 5		BUS = 12	BUS = 9
		MC = 16	MC = 16		MC = 16	MC = 16		MC = 42	MC = 33
		45 MPH			45 MPH			45 MPH	
	Existing Year 2015 Condition			**No Build Alternative 2040 Condition**			**Build Alternative 2040 Condition / Alternative 2**		
NW Milner Drive to Sel	750 VPH	Cars = 704	Cars = 704	750 VPH	Cars = 704	Cars = 704	2781 VPH	Cars = 1333	Cars = 1282
	LOS C	MT = 14	MT = 14	LOS C	MT = 14	MT = 14	**Demand**	MT = 26	MT = 25
	1-Way	HT= 11	HT= 11	1-Way	HT= 11	HT= 11		HT= 20	HT= 19
		BUS = 5	BUS = 5		BUS = 5	BUS = 5		BUS = 9	BUS = 8
		MC = 16	MC = 16		MC = 16	MC = 16		MC = 30	MC = 29
		45 MPH			45 MPH			45 MPH	
	Existing Year 2015 Condition			**No Build Alternative 2040 Condition**			**Build Alternative 2040 Condition / Alternative 2**		
East of Selvitz Road	1305 VPH	Cars = 650	Cars = 623	2223 VPH	Cars = 1105	Cars = 1062	2223 VPH	Cars = 1105	Cars = 1062
	Demand	MT = 5	MT = 5	**Demand**	MT = 9	MT = 9	**Demand**	MT = 9	MT = 9
		HT= 5	HT= 5		HT= 9	HT= 9		HT= 9	HT= 9
		BUS = 3	BUS = 3		BUS = 6	BUS = 5		BUS = 6	BUS = 5
		MC = 3	MC = 3		MC = 5	MC = 4		MC = 5	MC = 4
		45 MPH			45 MPH			45 MPH	

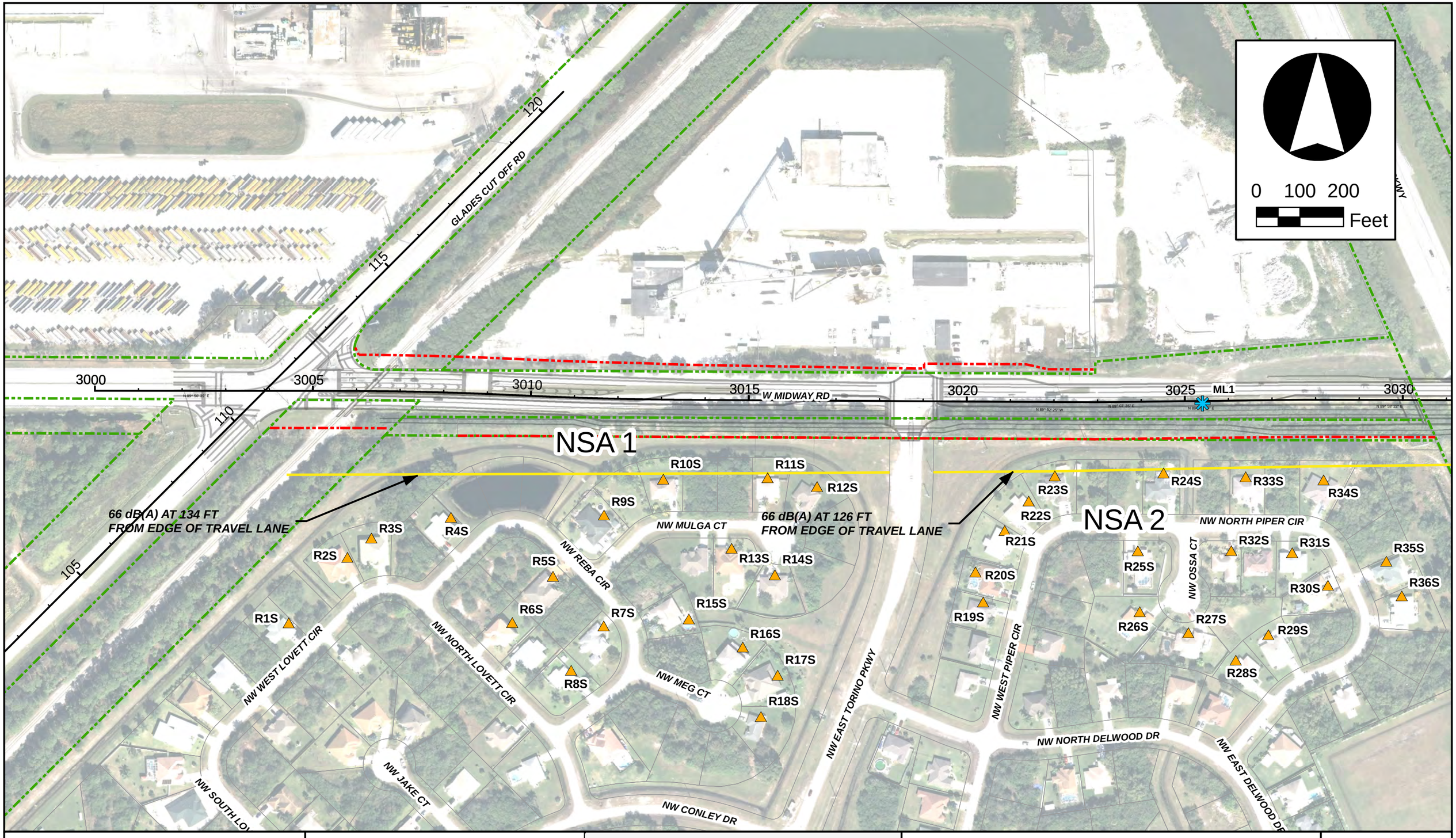
Glades Cut Off Rd. Peak Hour Traffic Volumes For TNM 2.5 Model

	Existing Year 2015 Condition			No Build Alternative 2040 Condition			Build Alternative 2 2040 Condition		
Glades CO NB S. of CR	**129 VPH**	Cars = 125		**784 VPH**	Cars = 772		**784 VPH**	Cars = 772	
	Demand	MT = 1		LOS C	MT = 3		LOS C	MT = 3	
		HT= 1		1-Way	HT= 5		1-Way	HT= 5	
		BUS = 1			MT = 2			MT = 2	
		MC = 1			MC = 2			MC = 2	
		50 MPH			50 MPH			50 MPH	
	Existing Year 2015 Condition			**No Build Alternative 2040 Condition**			**Build Alternative 2 2040 Condition**		
Glades CO NB N. of CR	**262 VPH**	Cars = 257		**333 VPH**	Cars = 328		**333 VPH**	Cars = 328	
	Demand	MT = 1		LOS C	MT = 1		LOS C	MT = 1	
		HT= 2		1-Way	HT= 2		1-Way	HT= 2	
		BUS = 1			BUS = 1			BUS = 1	
		MC = 1			MC = 1			MC = 1	
		30 MPH			30 MPH			30 MPH	
	Existing Year 2015 Condition			**No Build Alternative 2040 Condition**			**Build Alternative 2 2040 Condition**		
Glades CO SB N. of CR	**251 VPH**	Cars = 246		**333 VPH**	Cars = 328		**333 VPH**	Cars = 328	
	Demand	MT = 1		LOS C	MT = 1		LOS C	MT = 1	
		HT= 2		1-Way	HT= 2		1-Way	HT= 2	
		BUS = 1			BUS = 1			BUS = 1	
		MC = 1			MC = 1			MC = 1	
		30 MPH			30 MPH			30 MPH	
	Existing Year 2015 Condition			**No Build Alternative 2040 Condition**			**Build Alternative 2 2040 Condition**		
Glades CO SB S. of CR	**123 VPH**	Cars = 119		**784 VPH**	Cars = 772		**784 VPH**	Cars = 772	
	Demand	MT = 1		LOS C	MT = 3		LOS C	MT = 3	
		HT= 1		1-Way	HT= 5		1-Way	HT= 5	
		BUS = 1			MT = 2			MT = 2	
		MC = 1			MC = 2			MC = 2	
		50 MPH			50 MPH			50 MPH	

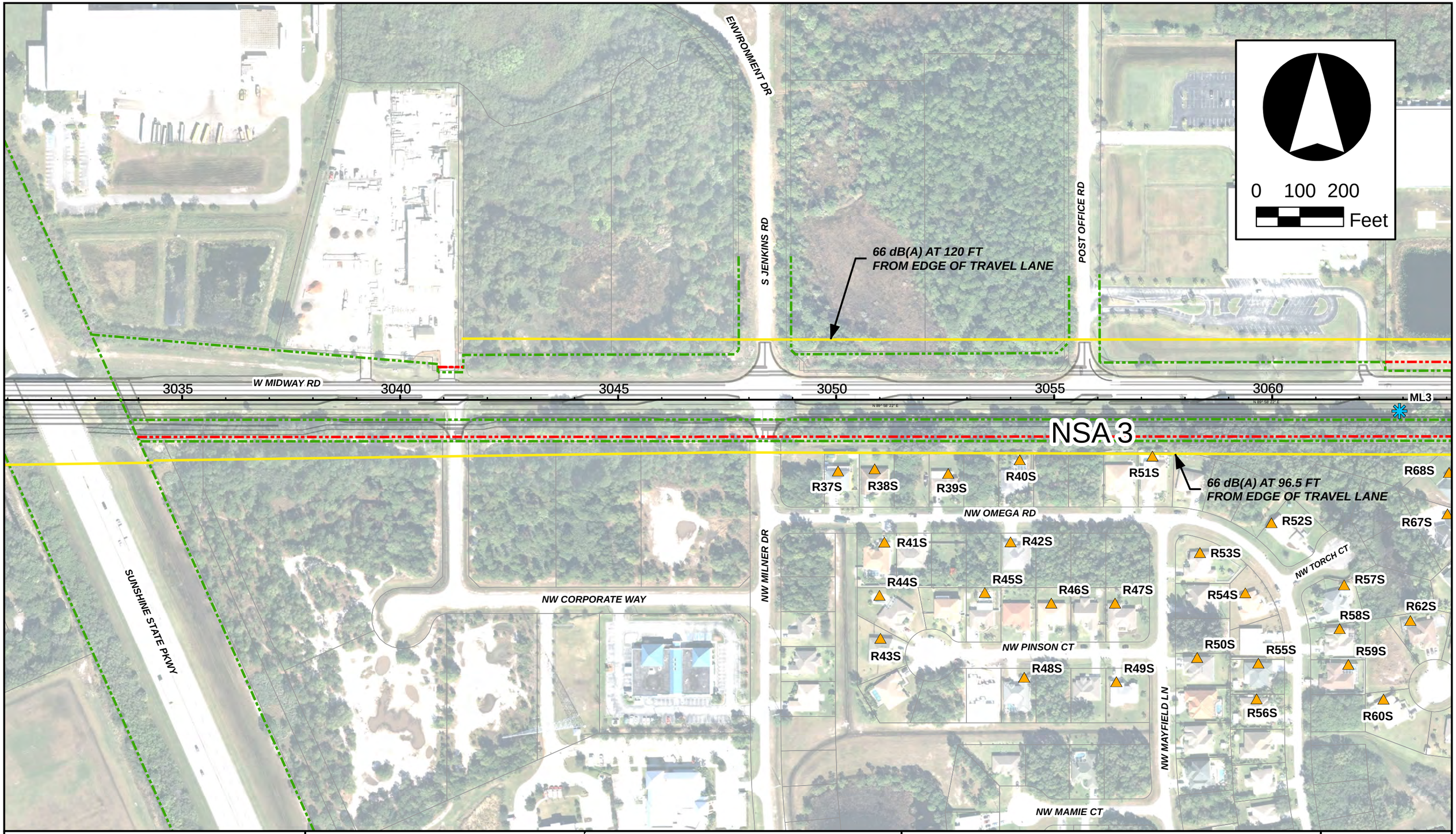
Selvitz Road Peak Hour Traffic Volumes For TNM 2.5 Model

	Existing Year 2015 Condition			No Build Alternative 2040 Condition			Build Alternative 2 2040 Condition		
Selvitz Road NB S. of CI	**296 VPH**	Cars = 290		**296 VPH**	Cars = 290		**296 VPH**	Cars = 290	
	LOS C	MT = 2		LOS C	MT = 2		LOS C	MT = 2	
	1-Way	HT= 2		1-Way	HT= 2		1-Way	HT= 2	
		BUS = 1			BUS = 1			BUS = 1	
		MC = 1			MC = 1			MC = 1	
		30 MPH			30 MPH			30 MPH	
	Existing Year 2015 Condition			**No Build Alternative 2040 Condition**			**Build Alternative 2 2040 Condition**		
Selvitz Road NB N. of C	**282 VPH**	Cars = 276		**397 VPH**	Cars = 387		**397 VPH**	Cars = 387	
	Demand	MT = 2		Demand	MT = 3		Demand	MT = 3	
		HT= 2			HT= 3			HT= 3	
		BUS = 1			BUS = 2			BUS = 2	
		MC = 1			MC = 2			MC = 2	
		40 MPH			40 MPH			40 MPH	
	Existing Year 2015 Condition			**No Build Alternative 2040 Condition**			**Build Alternative 2 2040 Condition**		
Selvitz Road SB N. of CI	**294 VPH**	Cars = 288		**413 VPH**	Cars = 403		**413 VPH**	Cars = 403	
	Demand	MT = 2		Demand	MT = 3		Demand	MT = 3	
		HT= 2			HT= 3			HT= 3	
		BUS = 1			BUS = 2			BUS = 2	
		MC = 1			MC = 2			MC = 2	
		40 MPH			40 MPH			40 MPH	
	Existing Year 2015 Condition			**No Build Alternative 2040 Condition**			**Build Alternative 2 2040 Condition**		
Selvitz Road SB S. of CI	**296 VPH**	Cars = 290		**296 VPH**	Cars = 290		**296 VPH**	Cars = 290	
	LOS C	MT = 2		LOS C	MT = 2		LOS C	MT = 2	
	1-Way	HT= 2		1-Way	HT= 2		1-Way	HT= 2	
		BUS = 1			BUS = 1			BUS = 1	
		MC = 1			MC = 1			MC = 1	
		30 MPH			30 MPH			30 MPH	

APPENDIX C
NOISE RECEPTOR AERIALS



Florida Department of Transportation District 4	***Midway Rd.(CR 712)*** ***from Glades Cut Off Road to Selvit Road*** ***St. Lucie County, Florida*** Financial Project ID: 231440-3-22-01 Federal Project No: TBD	**Legend** RECEPTOR (R) · MONITORING LOCATION (ML) · MODELED NOISE BARIER (BW) · NOISE CONTOUR LINE (66 dB(A)) · NSA - NOISE SENSITIVE AREA · PROPOSED R/W LINE · EXISTING R/W LINE	**Noise Receptor Aerials Proposed Alt 2 South Shift**	***Appendix C*** ***Figure*** 1



Florida Department of Transportation
District 4

Midway Rd.(CR 712)

from Glades Cut Off Road to Selvit Road
St. Lucie County, Florida

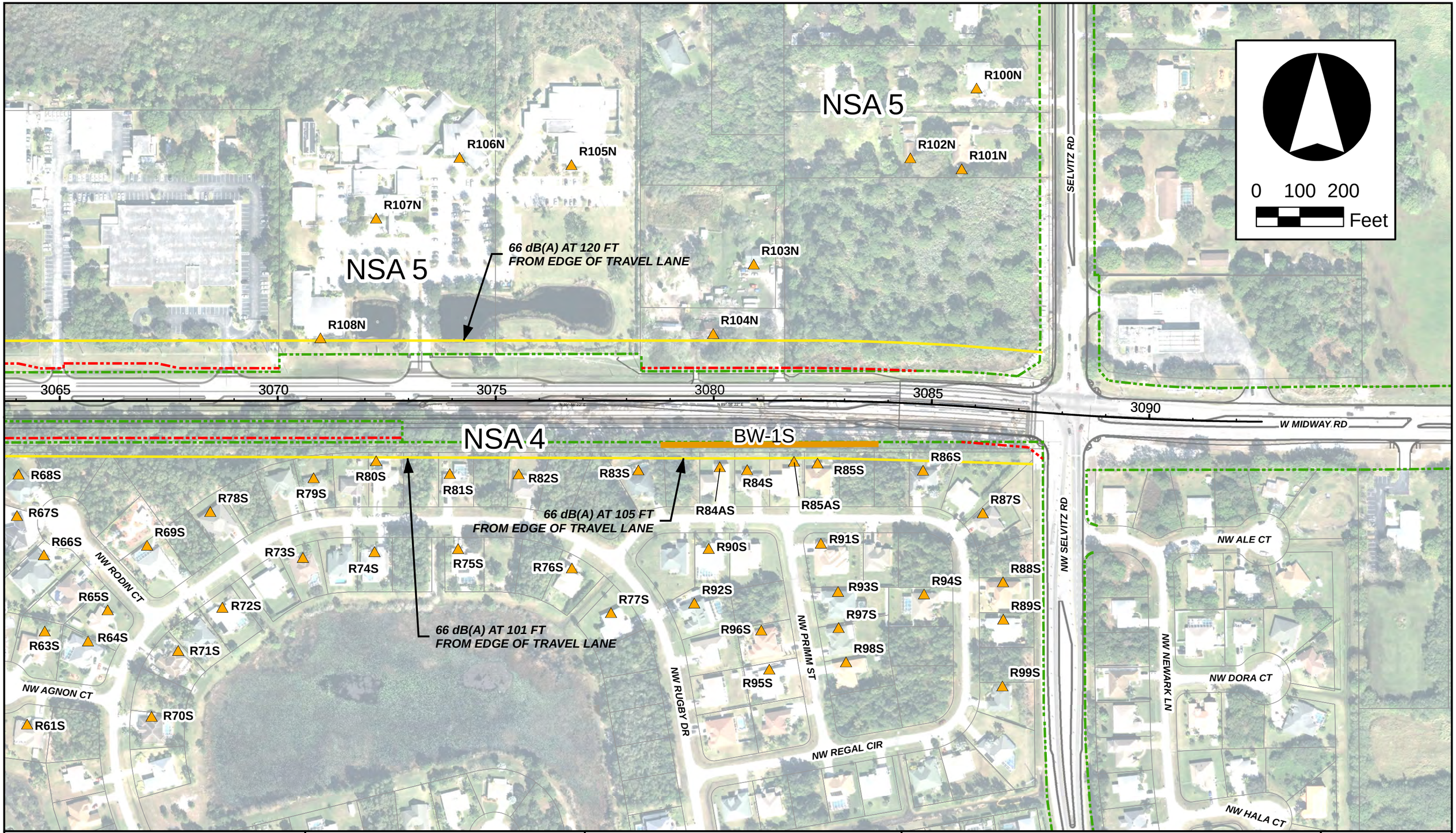
Financial Project ID: 231440-3-22-01
Federal Project No: TBD

Legend

- RECEPTOR (R)
- MONITORING LOCATION (ML)
- MODELED NOISE BARIER (BW)
- NOISE CONTOUR LINE (66 dB(A))
- NSA - NOISE SENSITIVE AREA
- PROPOSED R/W LINE
- EXISTING R/W LINE

Noise Receptor Aerials
Proposed Alt 2 South Shift

Appendix C
Figure
2



FDOT

Florida Department of Transportation
District 4

Midway Rd.(CR 712)

from Glades Cut Off Road to Selvit Road
St. Lucie County, Florida

Financial Project ID: 231440-3-22-01
Federal Project No: TBD

Legend

- RECEPTOR (R)
- MONITORING LOCATION (ML)
- MODELED NOISE BARIER (BW)
- NOISE CONTOUR LINE (66 dB(A))
- NSA - NOISE SENSITIVE AREA
- PROPOSED R/W LINE
- EXISTING R/W LINE

Noise Receptor Aerials
Proposed Alt 2 South Shift

Appendix C
Figure
3

APPENDIX D
NOISE MEASUREMENT DATA SHEETS

Site/Run #: ML1-2

Noise Measurement Data Sheet

Date: 06/30/2016 **Measurement Taken By:** Bernard Kinney Jr., INCE

LD 002

Project: Midway Road / CR 712 Bridge # 940050 FPID # 231440-3-22-01

Site ID: ML1 North Piper Circle Residential Area E/P = 22 Ft. EBL

LAT= 27 22.466' LONG= -80 23.160' Elevation= 28.5'

Weather Conditions: Clear: Partly Cloudy: X Cloudy: Other:

Temperature: Start: 91.5 End: 93.1 (°F)

Wind Direction: Start: NW 313 End: NW 316

Wind Speed (Start): Min: 0.0 Max: 1.5 Average: 1.0 (mph)

Wind Speed (End): Min: 0.0 Max: 1.5 Average: 0.7 (mph)

Humidity: Start: 56.0 End: 58.8 (%)

Equipment Data

Sound Level Meter: Larson Davis 831-Type 1 Serial Number: 0004153

Date of Last Traceable Calibration: SLM 4/7/16 PRM 831 4/6/16 MIC 4/7/16 CAL 200 10/1/2015

Calibration: Start: 114.00 End: 114.00 Difference: 0.00

Battery: Start: 5.2 V 77.5% End: 5.1 V 70.9 %

Weighting Scale: A Response: Slow

Calibrator: Larson Davis CAL 200 Serial Number: 8533

Results: Leq: 72.6
in dB(A)

Major Noise Sources: Midway Road Traffic

Background Noise Sources: Cement Plant

Other Notes/Observations:

MN PRM 831 SN 012499 MN 377B02 SN 113988 GPS 001 MN GR-213 PN 96039-XX

Observed Traffic Data Site Sketch on Reverse Side

Observed Traffic Data Site #: ML1 Run #: 2

Vehicle Types	EB Direction		WB Direction			
	Volume	Speed	Volume	Speed	Volume	Speed
Auto	366	41	408	43		
Medium Truck	30	40	30	40		
Heavy Truck	54	41	24	36		
Bus	0	0	0	0		
Motorcycle	0	0	0	0		

Site Sketch

Site/Run #: ML1-3

Noise Measurement Data Sheet

Date: 06/30/2016 **Measurement Taken By:** Bernard Kinney Jr., INCE

LD 003

Project: Midway Road / CR 712 Bridge # 940050 FPID # 231440-3-22-01

Site ID: ML1 North Piper Circle Residential Area E/P = 22 Ft. EBL

LAT= 27 22.465' LONG= -80 23.160' Elevation= 37.4'

Weather Conditions: Clear: Partly Cloudy: X Cloudy: Other:

Temperature: Start: 94.8 End: 96.2 (°F)

Wind Direction: Start: NW 314 End: NW 324

Wind Speed (Start): Min: 0.0 Max: 1.2 Average: 0.8 (mph)

Wind Speed (End): Min: 0.0 Max: 0.9 Average: 0.2 (mph)

Humidity: Start: 56.4 End: 57.9 (%)

Equipment Data

Sound Level Meter: Larson Davis 831-Type 1 Serial Number: 0004153

Date of Last Traceable Calibration: SLM 4/7/16 PRM 831 4/6/16 MIC 4/7/16 CAL 200 10/1/2015

Calibration: Start: 114.00 End: 114.00 Difference: -0.06

Battery: Start: 5.1 V 68.9% End: 5.0 V 64.9 %

Weighting Scale: A Response: Slow

Calibrator: Larson Davis CAL 200 Serial Number: 8533

Results: Leq: 72.6
in dB(A)

Major Noise Sources: Midway Road Traffic

Background Noise Sources: Cement Plant

Other Notes/Observations:

MN PRM 831 SN 012499 MN 377B02 SN 113988 GPS 001 MN GR-213 PN 96039-XX

Observed Traffic Data Site Sketch on Reverse Side

Observed Traffic Data Site #: ML1 Run #: 3

Vehicle Types	EB Direction		WB Direction			
	Volume	Speed	Volume	Speed	Volume	Speed
Auto	456	44	420	42		
Medium Truck	12	37	24	43		
Heavy Truck	6	33	24	43		
Bus	0	0	12	42		
Motorcycle	0	0	6	30		

Site Sketch

Site/Run #: ML3-1

Noise Measurement Data Sheet

Date: 07/01/2016 **Measurement Taken By:** Bernard Kinney Jr., INCE

LD 001

Project: Midway Road / CR 712 Bridge # 940050 FPID # 231440-3-22-01

Site ID: ML3 Post Office / Residential Area E/P = 30 Ft. EBL

LAT= 27 22.461' LONG= -80 22.458' Elevation= 38.7'

Weather Conditions: Clear: Partly Cloudy: X Cloudy: Other:

Temperature: Start: 91.2 End: 87.9 (°F)

Wind Direction: Start: NW 315 End: NW 317

Wind Speed (Start): Min: 0.0 Max: 3.6 Average: 2.8 (mph)

Wind Speed (End): Min: 0.0 Max: 1.3 Average: 0.9 (mph)

Humidity: Start: 64.6 End: 66.2 (%)

Equipment Data

Sound Level Meter: Larson Davis 831-Type 1 Serial Number: 0004153

Date of Last Traceable Calibration: SLM 4/7/16 PRM 831 4/6/16 MIC 4/7/16 CAL 200 10/1/2015

Calibration: Start: 114.00 End: 114.00 Difference: -0.01

Battery: Start: 5.7 V 97.4% End: 5.4 V 82.0%

Weighting Scale: A Response: Slow

Calibrator: Larson Davis CAL 200 Serial Number: 8533

Results: Leq: 70.8
in dB(A)

Major Noise Sources: Midway Road Traffic

Background Noise Sources:

Other Notes/Observations:

MN PRM 831 SN 012499 MN 377B02 SN 113988 GPS 001 MN GR-213 PN 96039-XX

Observed Traffic Data Site Sketch on Reverse Side

Observed Traffic Data Site #: ML3 Run #: 1

Vehicle Types	EB Direction		WB Direction			
	Volume	Speed	Volume	Speed	Volume	Speed
Auto	624	42	492	44		
Medium Truck	30	40	18	39		
Heavy Truck	18	36	30	44		
Bus	0	0	0	0		
Motorcycle	6	39	0	0		

Site Sketch

Site/Run #: ML3-2

Noise Measurement Data Sheet

Date: 07/01/2016 **Measurement Taken By:** Bernard Kinney Jr., INCE

LD 002

Project: Midway Road / CR 712 Bridge # 940050 FPID # 231440-3-22-01

Site ID: ML3 Post Office / Residential Area E/P = 30 Ft. EBL

LAT= 27 22.461' LONG= -80 22.458' Elevation= 47.6'

Weather Conditions: Clear: Partly Cloudy: X Cloudy: Other:

Temperature: Start: 90.0 End: 92.4 (°F)

Wind Direction: Start: NW 312 End: NW 310

Wind Speed (Start): Min: 0.0 Max: 3.0 Average: 2.1 (mph)

Wind Speed (End): Min: 0.0 Max: 4.1 Average: 2.7 (mph)

Humidity: Start: 67.8 End: 60.4 (%)

Equipment Data

Sound Level Meter: Larson Davis 831-Type 1 Serial Number: 0004153

Date of Last Traceable Calibration: SLM 4/7/16 PRM 831 4/6/16 MIC 4/7/16 CAL 200 10/1/2015

Calibration: Start: 114.00 End: 114.00 Difference: -0.01

Battery: Start: 5.3 V 80.4% End: 5.1 V 71.0%

Weighting Scale: A Response: Slow

Calibrator: Larson Davis CAL 200 Serial Number: 8533

Results: Leq: 70.5
in dB(A)

Major Noise Sources: Midway Road Traffic

Background Noise Sources:

Other Notes/Observations:

MN PRM 831 SN 012499 MN 377B02 SN 113988 GPS 001 MN GR-213 PN 96039-XX

Observed Traffic Data Site Sketch on Reverse Side

Observed Traffic Data Site #: ML3 Run #: 2

Vehicle Types	EB Direction		WB Direction			
	Volume	Speed	Volume	Speed	Volume	Speed
Auto	492	46	456	46		
Medium Truck	24	40	24	44		
Heavy Truck	36	44	18	43		
Bus	6	37	0	0		
Motorcycle	0	0	0	0		

Site Sketch

Site/Run #: ML3-3

Noise Measurement Data Sheet

Date: 07/01/2016 **Measurement Taken By:** Bernard Kinney Jr., INCE

LD 003

Project: Midway Road / CR 712 Bridge # 940050 FPID # 231440-3-22-01

Site ID: ML3 Post Office / Residential Area E/P = 30 Ft. EBL

LAT= 27 22.458' LONG= -80 22.457' Elevation= 10.8'

Weather Conditions: Clear: Partly Cloudy: X Cloudy: Other:

Temperature: Start: 92.3 End: 92.0 (°F)

Wind Direction: Start: NW 315 End: NW 316

Wind Speed (Start): Min: 0.0 Max: 4.7 Average: 2.9 (mph)

Wind Speed (End): Min: 0.0 Max: 2.4 Average: 1.4 (mph)

Humidity: Start: 60.3 End: 60.2 (%)

Equipment Data

Sound Level Meter: Larson Davis 831-Type 1 Serial Number: 0004153

Date of Last Traceable Calibration: SLM 4/7/16 PRM 831 4/6/16 MIC 4/7/16 CAL 200 10/1/2015

Calibration: Start: 114.00 End: 114.00 Difference: -0.03

Battery: Start: 5.1 V 68.3% End: 5.0 V 64.1%

Weighting Scale: A Response: Slow

Calibrator: Larson Davis CAL 200 Serial Number: 8533

Results: Leq: 70.6
in dB(A)

Major Noise Sources: Midway Road Traffic

Background Noise Sources:

Other Notes/Observations:

MN PRM 831 SN 012499 MN 377B02 SN 113988 GPS 001 MN GR-213 PN 96039-XX

Observed Traffic Data Site Sketch on Reverse Side

Observed Traffic Data Site #: ML3 Run #: 3

Vehicle Types	EB Direction		WB Direction			
	Volume	Speed	Volume	Speed	Volume	Speed
Auto	612	40	642	41		
Medium Truck	30	40	18	42		
Heavy Truck	18	42	12	43		
Bus	6	39	0	0		
Motorcycle	0	0	0	0		

Site Sketch

APPENDIX E
NOISE AND VIBRATION SENSITIVE SITES

Construction Noise and Vibration Sensitive Sites
(a partial listing of potential sites)

Noise	Vibration
Eye Centers/Clinics	Eye Centers/Clinics
Medical Centers	Medical Centers
Hospitals	Hospitals
Geriatric Centers	Geriatric Centers
Sound Recording Studios	Sound Recording Studios
TV/Radio Stations	TV/Radio Stations
Residences	Residences
Technical Laboratories	Technical Laboratories
Hearing Testing Centers	Antiques Shops
Theaters	Museums
Schools	Historic Buildings
Motels/Hotels	
Funeral Homes	
Libraries	
Meditation Centers	
Churches/Shrines	
Parks	
Day Care Centers	
Outdoor Theaters	
Note: This list is not meant to be all inclusive or exclusive, but rather an indication of the type of sites likely to be sensitive to construction noise and/or vibration.	
Source: FDOT Noise and Vibration Task Team; August 17, 1999.	

APPENDIX F
NOISE CONTOUR TABLE

Appendix F Noise Contours Midway Road From Glades Cut Off Road to Selvitz Road					
Roadway Segment	**Activity Category**	**FDOT NAC dB(A)**	**Number of Travel Lanes**	**Distance from Closest Edge of Travel Lane***	**Alternative #**
Glades Cut Off Road to E. Torino Parkway	B	66	4	134 Ft. South Side	2
E. Torino Parkway to NW Milner Drive	B	66	4	126 Ft. South Side	2
NW Milner Drive to NW Rugby Drive	B	66	4	96.5 Ft. to 101Ft. South Side	2
NW Rugby Drive to Selvitz Road	B	66	4	105 Ft. South Side	2
Selvitz Road to NW Milner Drive	B, C	66	4	120 Ft. North Side	2

* Does not include the widths of the proposed bicycle lanes.