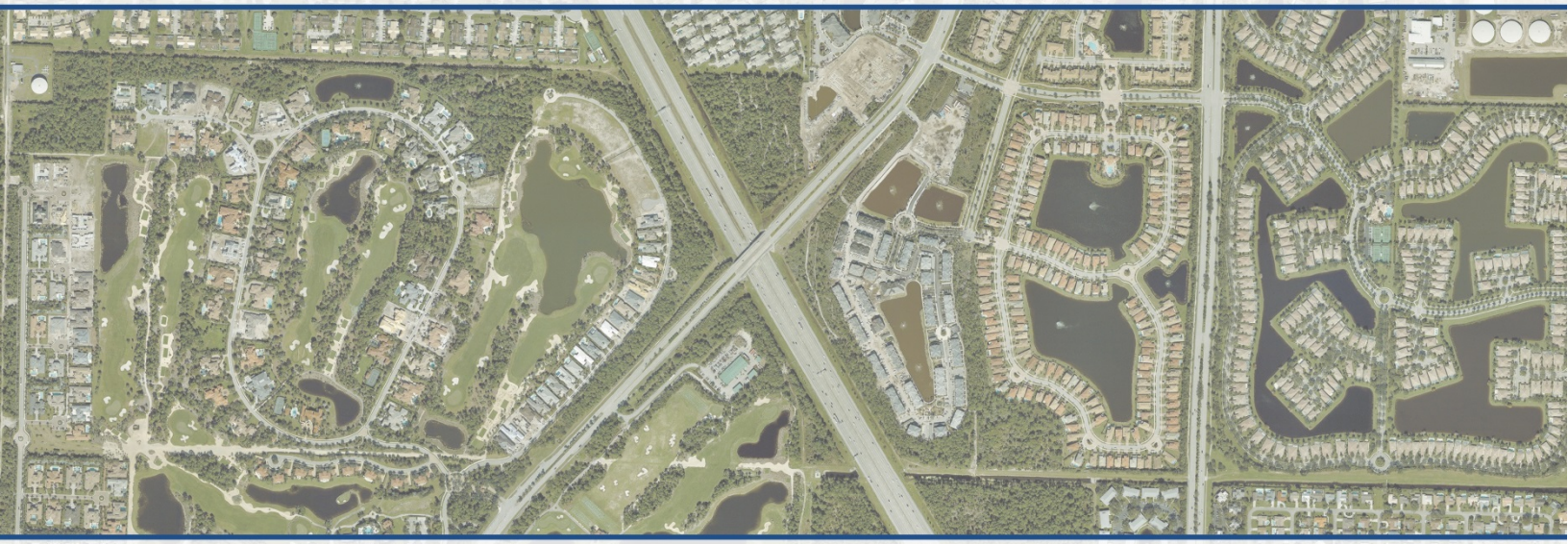
Final Noise Study Report

SR 9/I-95 at Central Boulevard Interchange PD&E Study

I-95 from north of PGA Boulevard (MP 36.783) to Donald Ross Road (MP 40.163)

ETDM 13748 • Palm Beach County • Financial Management Number: 413265-1-22-01 • Federal Aid Project No: N/A



FDOT

Prepared for:
FDOT District 4
3400 West Commercial Blvd.
Fort Lauderdale, Florida 33309

November, 2016

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EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) has evaluated the preliminary engineering concept of constructing a new interchange at I-95 at Central Boulevard in Palm Beach County, FL. This Project Development and Environment (PD&E) Study includes the I-95 corridor from north of PGA Boulevard to Donald Ross Road.

The objectives of this Noise Study Report (NSR) are to identify noise sensitive sites adjacent to the project corridor, to evaluate existing and future traffic noise levels at the sites with and without the proposed improvements, and to evaluate the need for and effectiveness of noise abatement measures. Additional objectives include the evaluation of construction noise impacts and the identification of noise impact "contours" adjacent to the corridor.

The traffic noise analysis was performed following FDOT procedures that comply with Title 23 Code of Federal Regulations (CFR), Part 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise. The evaluation uses methodology established by the FDOT and documented in the PD&E Manual, Part 2, Chapter 17 (May 24, 2011). The prediction of existing and future traffic noise levels with and without the roadway improvement was performed using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM).

Within the project study limits, 775 noise sensitive sites were evaluated, consisting of 758 residences, 13 recreational areas, two schools, one assisted living facility and one hotel pool. Exterior traffic noise levels were predicted for the residential and recreational sites as well as the hotel pool. Interior traffic noise levels were predicted for the schools and assisted living facility.

The results of the analysis indicate that existing (2013) exterior traffic noise levels are predicted to range from 48.9 to 74.6 dB(A) at the residential and recreational sites evaluated for exterior traffic noise. Future no-build (2040) exterior traffic noise levels at these sites are predicted to range from 50.3 to 75.9 dB(A). With the proposed build Alternative 2, traffic noise levels are predicted to range from 49.9 to 76.2 dB(A). Exterior traffic noise levels are predicted to approach, meet, or exceed the respective FHWA Noise Abatement Criteria (NAC) at 152 residences and five recreational areas.

The results of the analysis also indicate that existing interior traffic noise levels are predicted to range from 38.8 to 45.2 dB(A) at the locations evaluated for interior traffic noise levels. Future no-build interior traffic noise levels are predicted to range from 40.5 to 46.5 dB(A). With the future build Alternative 2, interior traffic noise levels are predicted to range from 40.5 to 48.0 dB(A). None of the locations evaluated for interior traffic noise are predicted to experience future build traffic noise levels that approach, meet or exceed the NAC for Activity Category D.

When compared to the existing condition, the maximum increase in traffic noise levels with the proposed Alternative 2 is predicted to be 4.1 dB(A). As such, none of the sites are predicted to experience a substantial increase in traffic noise as a result of the proposed

improvements.

Noise abatement measures were evaluated for the 152 residences and six recreational areas predicted to be impacted by the proposed project. The measures were traffic management, alternative roadway alignments, noise buffer zones, and noise barriers. Although feasible, traffic management and alternative roadway alignments were determined to be unreasonable methods of reducing predicted traffic noise impacts. Providing a buffer between a highway and future noise sensitive sites has been determined to be an abatement measure that can minimize/eliminate noise impacts in areas of future development. To encourage the use of this abatement measure through local land use planning, noise contours have been developed and are further discussed in Section 7.0 of this report.

The results of the evaluation indicate that the construction of noise barriers appears to be a potentially feasible and cost reasonable method of reducing traffic noise impacts for up to 94 of the 152 impacted receptors located in the following communities:

- Garden Lakes (Noise Barrier 1),
- Winchester Court (Noise Barrier 5), and the
- Quaye Apartments (Noise Barrier 8).

The FDOT is committed to the construction of these barriers contingent upon the following conditions:

- Detailed traffic noise analysis during the design phase of the proposed improvements supports the need, feasibility and reasonableness of providing abatement;
- Cost analysis indicates that the cost of the noise barriers will not exceed the cost reasonableness criterion;
- Community input regarding desires, locations, and aesthetic options have been solicited by the District Office; and
- Safety and engineering aspects as related to the roadway user and the adjacent property owner have been reviewed and any conflicts or issues resolved.

Noise barriers were not feasible and cost reasonable at the remaining impacted receptors due to the inability of the evaluated noise barrier to meet the minimum requirements for feasibility and reasonableness due to site specific geometry or the distance between the evaluated noise barrier and the impacted receptors. In the case of the impacted recreational areas, the recreational facility would likely not generate enough person-hours of use to meet the cost reasonableness requirements for special land uses.

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1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) has evaluated the preliminary engineering concept of constructing a new interchange at I-95 at Central Boulevard in Palm Beach County, FL. This Project Development and Environment (PD&E) Study includes the I-95 corridor from north of PGA Boulevard to Donald Ross Road.

The objectives of this Noise Study Report (NSR) are to identify noise sensitive sites adjacent to the project corridor, to evaluate existing and future traffic noise levels at the sites with and without the proposed improvements, and to evaluate the need for and effectiveness of noise abatement measures. Additional objectives include the evaluation of construction noise impacts and the identification of noise impact "contours" adjacent to the corridor.

2.0 PROJECT OVERVIEW

2.1 PROJECT BACKGROUND

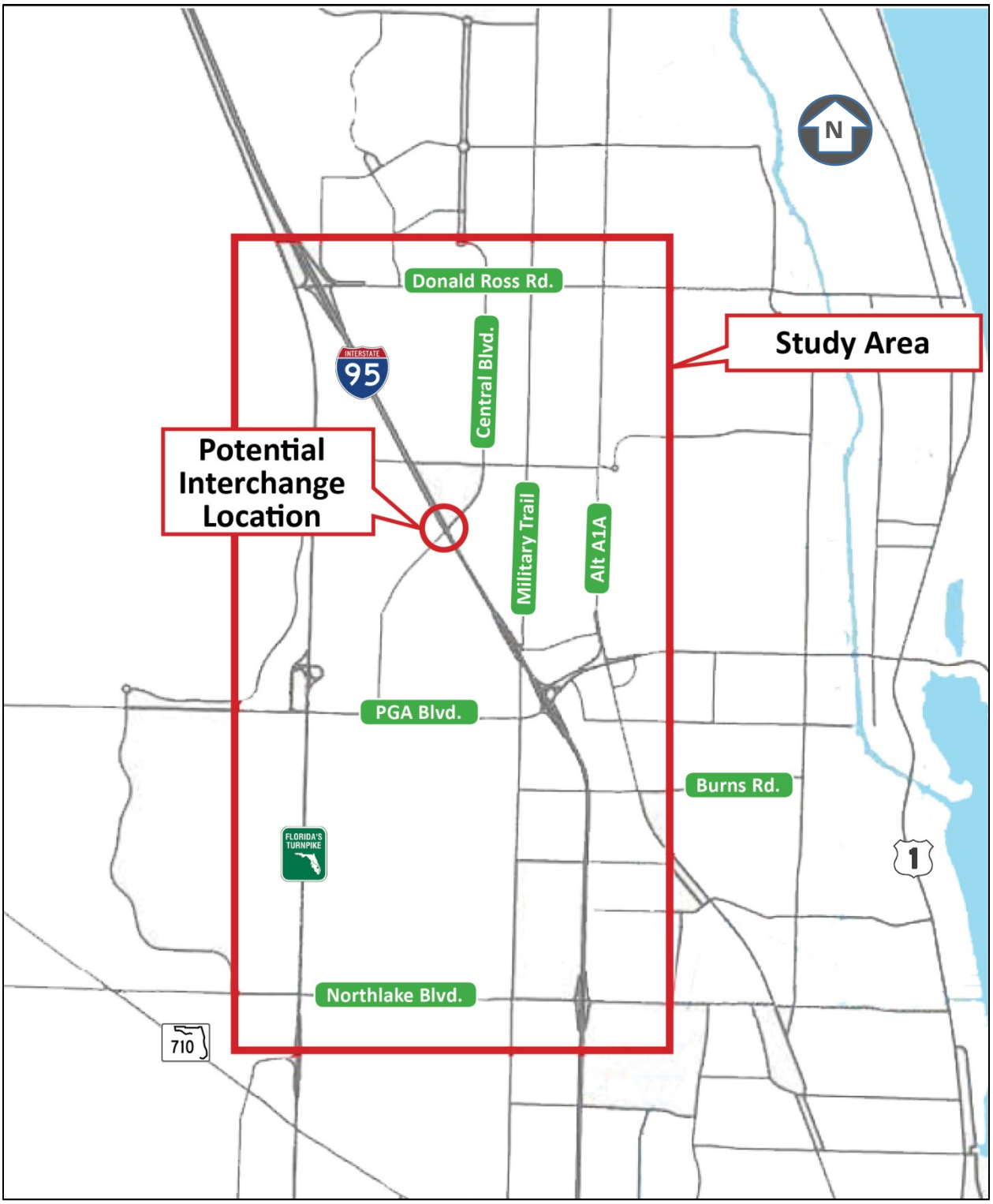
The Florida Department of Transportation, District Four conducted an Interchange Justification Study to evaluate improvements to SR 9/I-95 that would reduce congestion and improve mobility in the northern Palm Beach County area, within the City of Palm Gardens. The limits of this study extended from north of Northlake Boulevard to south of Donald Ross Road, PGA Boulevard from west of Military Trail to west of Lake Victoria Gardens Drive; and Central Boulevard from 1.0 mile south of I-95 to 1.0 mile north of I-95. The limits of this study are shown in **Figure 1**.

Specifically, this study focused on solutions that would reduce demand on regional transportation facilities, such as PGA Boulevard and Military Trail, by transferring that demand to other roadways with available capacity via a new or modified interchange between PGA Boulevard and Donald Ross Road along SR 9/I-95.

The Interchange Justification Report (IJR) was prepared in 2015. It concluded that a shift in demand to a new interchange at Central Boulevard would reduce the delay by approximately 1.4 million hours annually. The IJR was approved by the Federal Highway Administration (FHWA) in November, 2015. The Palm Beach County Metropolitan Planning Organization (MPO) 2040 Cost Feasible Plan was updated to include a new interchange at Central Boulevard. The Cost Feasible Plan was included in the MPO's Long Range Transportation Plan (LRTP), adopted in late 2014.

To address the improvements recommended in the IJR, FDOT initiated a Project Development and Environment (PD&E) study to evaluate potential improvements to SR 9/I-95 from north of PGA Boulevard (MP 36.783) to Donald Ross Road (MP 40.163), a distance of 3.38 miles. Specifically, the PD&E study evaluated alternatives for a new Interchange at Central Boulevard and for improvements to mainline I-95 within the reduced project limits.

Figure 1 – IJR Study Area



2.2 PROJECT DESCRIPTION

The ongoing PD&E study is evaluating alternatives for construction of a new interchange at SR 9/I-95 and Central Boulevard in the City of Palm Beach Gardens in northern Palm Beach County. Construction of a new interchange, if selected over the No-Build Alternative as the Recommended Alternative, will reduce congestion and improve mobility within the City of Palm Beach Gardens. SR 9/I-95 is owned and operated by FDOT. It is classified in the Palm Beach County Comprehensive Plan as a Principal Arterial. Central Boulevard is classified as an Urban Collector. Central Boulevard currently crosses over, but does not provide access to, I-95 at this location.

The original study area identified for the IJR, and described for the PD&E study in the ETDM Project Summary Report, extended from Northlake Boulevard to the south to Donald Ross Road to the north, and from Florida's Turnpike to the west to Lake Victoria Gardens Boulevard to the east (Figure 1). However, since the IJR recommended construction of a new interchange at Central Boulevard to address congestion, the new limits of the PD&E Study were reduced to include the area influenced by the proposed improvements. As shown in (**Figure 2**). The project limits for the PD&E study extend along I-95 from north of PGA Boulevard to Donald Ross Road. The proposed Central Boulevard interchange would be located approximately 1.0 mile north of the existing Military Trail (SR 809) partial interchange, and 2.0 miles south of the existing Donald Ross Road interchange.**2.3**

PURPOSE AND NEED

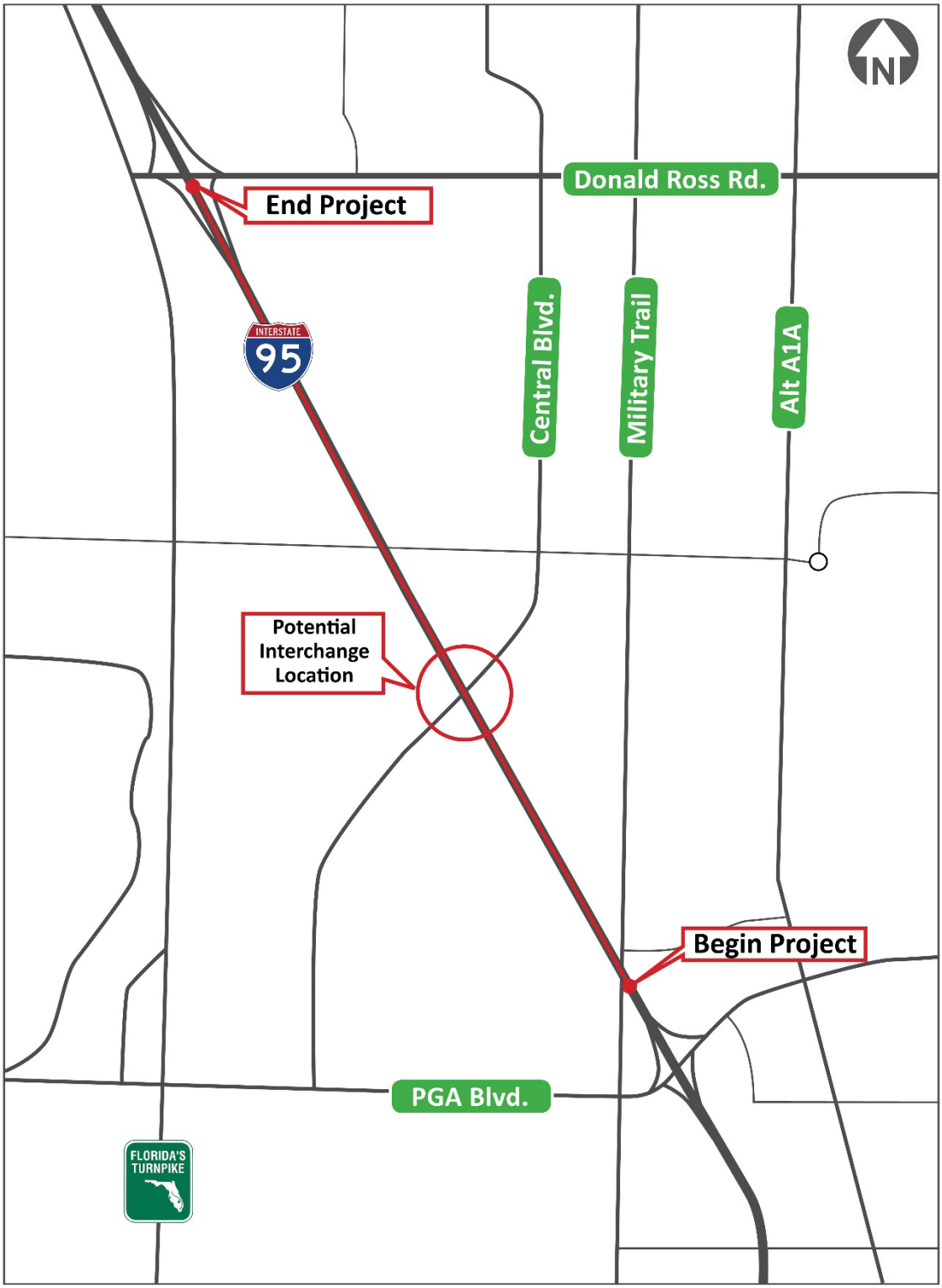
The purpose of the project is to improve operational capacity and overall traffic operations by determining if a new interchange at Central Blvd at I-95 will relieve traffic congestion at the existing interchange of SR 9 (I-95) and SR 786 (PGA Boulevard). Conditions at PGA Boulevard are anticipated to deteriorate below acceptable level of service (LOS) standards if no improvements occur by 2035; the interchange will have insufficient capacity to accommodate the projected travel demand. The need for the project is based on the following primary and secondary criteria:

PRIMARY CRITERIA

CAPACITY/TRANSPORTATION DEMAND: Improve Operational Capacity and Overall Traffic Operations (Level of Service)

Proposed construction of a new interchange at I-95 and Central Boulevard is anticipated to improve traffic operations by reducing demand at the PGA Boulevard interchange and study area roadways and continue to meet the future travel demand projected as a result of Palm Beach County population and employment growth. According to traffic data presented in the I-95 Area Wide Mobility Study, the northbound I-95 ramp terminal intersection at PGA Boulevard is currently operating at LOS E/F (AM/PM Peak Hours) and the intersection of PGA Boulevard at Military Trail is currently operating at LOS E (AM/PM Peak Hours). By year 2035, if no improvements occur, several additional locations are

Figure 2 – PD&E Study Limits



projected to deteriorate to unacceptable conditions, including the southbound I-95 ramp terminal intersection at PGA Boulevard to LOS F (PM Peak Hour), the intersection of PGA Boulevard and Central Boulevard to LOS F (AM/PM Peak Hours) and the intersection of PGA Boulevard at Florida's Turnpike to LOS F (AM/PM Peak Hours). The existing and projected future traffic conditions for the study area roadways are as follows:

I-95 (South of PGA Boulevard)
-Existing Conditions-
2011 Annual Average Daily Traffic (AADT): 145,000
2011 Truck AADT: 6.4% (9,280 trucks per day)
LOS C (8 General Use and 2 HOV Lanes)
-Future Conditions-
2035 AADT: 182,400
2035 Truck AADT: 6.4% (11,674 trucks per day)
LOS D (8 General Use and 2 HOV Lanes)

PGA Boulevard (Florida's Turnpike to Military Trail)
-Existing Conditions-
2011 AADT: 42,000
2011 Truck AADT: 4.8% (2,016 trucks per day)
LOS D (6 Lanes)
-Future Conditions-
2035 AADT: 55,700
2035 Truck AADT: 4.8% (2,674 trucks per day)
LOS F (6 Lanes)

PGA Boulevard (Military Trail to I-95)
-Existing Conditions-
2011 AADT: 37,000
2011 Truck AADT: 7.0% (2,590 trucks per day)
LOS D (6 Lanes)
-Future Conditions-
2035 AADT: 69,200
2035 Truck AADT: 7.0% (4,844 trucks per day)
LOS F (6 Lanes)

PGA Boulevard (I-95 to Alt A1A)
-Existing Conditions-
2011 AADT: 64,500
2011 Truck AADT: 2.6% (1,677 trucks per day)
LOS F (6 General Use plus 1 Auxiliary Lane [Eastbound])
-Future Conditions-
2035 AADT: 78,100

2035 Truck AADT: 2.6% (2,030 trucks per day)
LOS F (8 Lanes)

Military Trail (South of PGA Boulevard)
-Existing Conditions-
2011 AADT: 37,000
2011 Truck AADT: 4.7% (1,739 trucks per day)
LOS C (6 Lanes)
-Future Conditions-
2035 AADT: 59,100
2035 Truck AADT: 4.7% (2,778 trucks per day)
LOS F (6 Lanes)

Sources:
(1) 2011 AADT and 2011 Truck AADT volumes obtained from the FDOT's Florida Traffic Online (2011).
(2) Projected 2035 AADT volumes derived from the Southeast Regional Planning Model (SERPM) Version 6.5.2e.
(3) Projected 2035 Truck AADT volumes are based on the assumption that future truck traffic percentages are consistent with the 2011 existing percentages.
(4) LOS derived from the FDOT 2009 Quality/Level of Service Handbook: Generalized Annual Average Daily Volumes for Florida's Urban Areas, Table 1.

It should additionally be noted that the Palm Beach MPO 2035 Long Range Transportation Plan (LRTP) states that volume to capacity (V/C) ratios exceeding 1.1 are assumed to constitute a travel demand need or deficiency. Based on the projected 2035 AADT volumes derived from the Southeast Regional Planning Model (SERPM), PGA Boulevard and the interchange at I-95 are expected to have a V/C ratio greater than 1.1 and are, therefore, projected to be deficient in the future if no improvements are made.

GROWTH MANAGEMENT: Accommodate Future Population and Employment Growth
The study area is urbanized containing a mixture of commercial, industrial, mixed-use and residential land uses with vacant land in the northeast quadrant. According to the City of Palm Beach Gardens Comprehensive Plan, future land use is to remain relatively unchanged, with the exception of the area east of the interchange which has been designated as part of the Bioscience Research Protection Overlay (BRPO). The BRPO was developed to protect portions of land for biotechnology/biosciences land uses and includes the Scripps Florida Phase II/Briger Tract DRI which consists of 82 acres located south of Donald Ross Road, north of Hood Road and east and west of I-95 (just north of the study area). The DRI includes 1,600,000 square feet of Biotech Research and Development, 2,400,000 square feet of biotechnological/biomedical, pharmaceutical, and office space, 2,700 residential dwelling units, and 500,000 square feet of retail space.

According to SERPM projections developed for Palm Beach County as part of the Palm Beach

MPO 2035 LRTP development:

- Population is projected to grow from 1,270,302 in 2005 to 1,677,170 in 2035 (32% increase).

- Employment is projected to grow from 544,496 in 2005 to 800,045 in 2035 (46.9% increase).

The improvements will be critical in supporting the growing bioscience industry and vision of the County, as well as the expanding residential, commercial and industrial uses in the vicinity of the interchange.

SECONDARY CRITERIA

MODAL INTERRELATIONSHIPS: Enhance Freight Mobility

I-95 is the primary interstate route along the east coast of the United States extending from Maine to Florida and serving some of the most populated urban areas in the country. In Florida, I-95 is both a designated Strategic Intermodal System (SIS) highway and a major facility of Florida's Intrastate Highway System (FIHS). The SIS is a statewide network of highway, railway and waterway corridors as well as transportation hubs that handle the bulk of Florida's passenger and freight traffic. Highways that are designated as part of the SIS provide for movement of high volumes of goods and people at high speeds. The Florida Intrastate Highway System (FIHS) is composed of interconnected limited- and controlled-access roadways (which include designated SIS highway corridors) that provide for high-speed and high-volume traffic movements within the state to serve both interstate and regional commerce and long-distance trips. This statewide transportation network accommodates high occupancy vehicles, express bus transit and, in some corridors, passenger rail service. Within southeast Florida, I-95 is a vital north-south transportation corridor providing important regional access to major east/west and north/south transportation corridors, as well as residential and employment activity centers and other regional destinations in the area.

The proposed new interchange at I-95 and Central Boulevard and the mainline improvements between Military Trail and Central Boulevard are critical to enhance the mobility of goods by alleviating current and future congestion at the interchange and on the surrounding freight network. Reduced congestion will serve to maintain and improve viable access to the major transportation facilities and businesses of the area (including connectors to freight activity centers/local distribution facilities or between the regional freight corridors).

EMERGENCY EVACUATION: Enhance Emergency Evacuation and Response Times

I-95 and PGA Boulevard serve as part of the emergency evacuation route network designated by the Florida Division of Emergency Management. Also designated by Palm Beach County and the City of Palm Beach Gardens as evacuation facilities, I-95 and PGA

Boulevard are currently critical in facilitating traffic during emergency evacuation periods as they connect other major arterials and highways of the state evacuation route network. Construction of a new interchange at Central Boulevard is anticipated to:

- Improve emergency evacuation capabilities by enhancing connectivity and accessibility to I-95 and other major arterials designated on the state evacuation route network.
- Increase the operational capacity of traffic that can be evacuated during an emergency event.
- Reduce demand at the existing I-95/PGA Boulevard interchange.

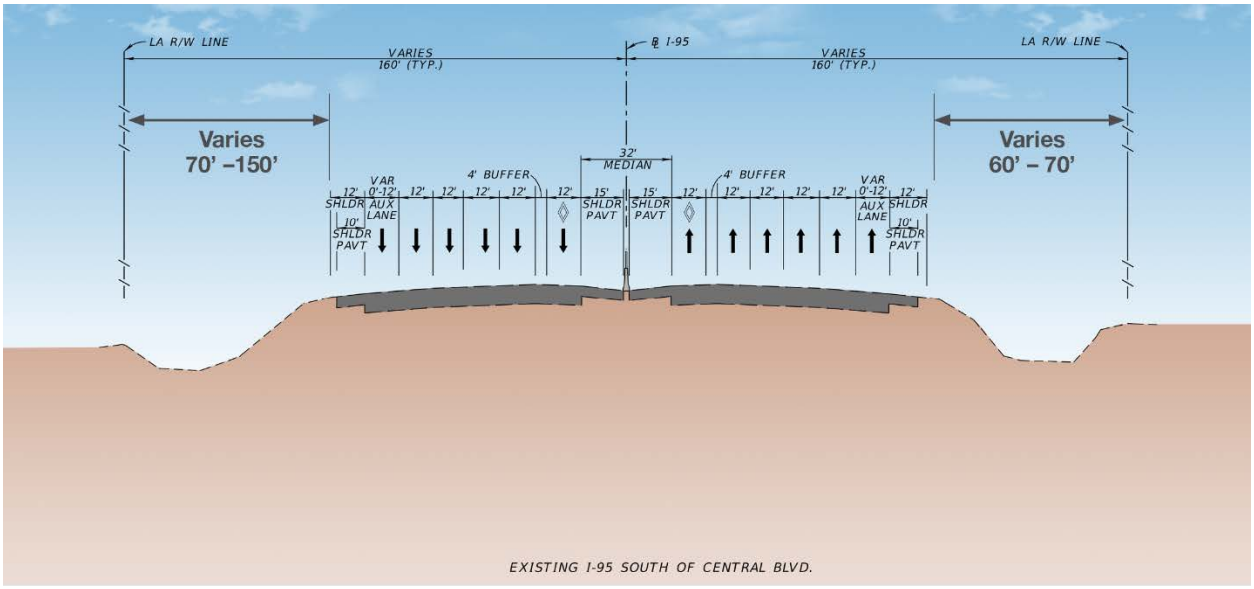
2.4 EXISTING FACILITY

Within the study area, SR 9/I-95 is a ten-lane divided, limited access facility. The speed limit is 70 mph north of PGA Boulevard. Central Boulevard is a four-lane divided collector road. The speed limit is 45 mph. The existing typical sections for I-95 and Central Boulevard are described below.

SR 9/I-95 South of Central Boulevard (from the PGA Boulevard ramps to Central Boulevard overpass)

Figure 3 depicts the existing roadway typical section for I-95 south of Central Boulevard. This section provides four 12-foot wide general purpose lanes, one 12-foot wide auxiliary lane, and a 15-foot inside and 12-foot outside shoulder in each direction. The northbound and southbound lanes are separated by a 32-foot median which contains a concrete barrier. The 12-foot auxiliary lanes are not continuous throughout the section. The roadside swales vary from 60 feet to 150 feet. The maximum width of the typical section is 300 feet.

Figure 3 – Existing I-95 Roadway Typical Section – South of Central Boulevard



SR 9/I-95 north of Central Boulevard (from Central Boulevard to Donald Ross Road)

Figure 4 depicts the existing roadway typical section for I-95 north of Central Boulevard. This typical section consists of four 12-foot wide general purpose lanes, two 12-foot wide auxiliary lanes, and a 14-foot inside and 12-foot outside shoulder in each direction. The northbound and southbound lanes are separated by a 28-foot grassed median (excluding the shoulders) and a double faced guardrail. The auxiliary lanes are not continuous throughout the section. The roadside swales vary from 60 feet to 146 feet. The maximum width of the typical section is 372 feet.

Figure 4 – Existing I-95 Roadway Typical Section – North of Central Boulevard

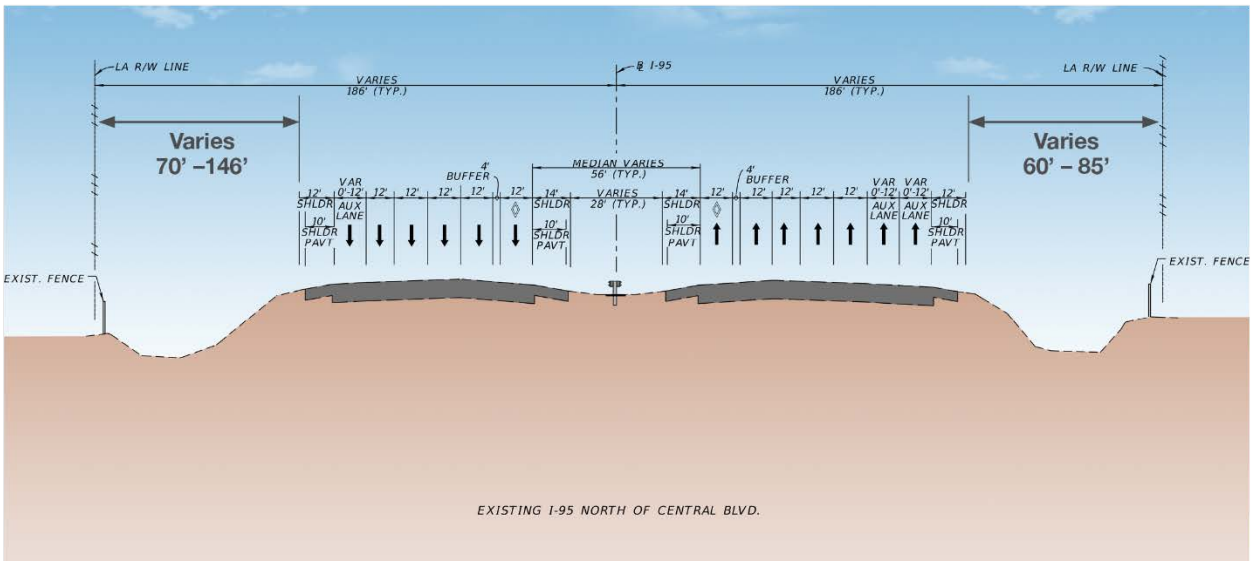


Figure 5 depicts the existing roadway typical section for Central Boulevard approaching the bridge over I-95. Two 12-foot through lanes with a 10-foot wide outside shoulder are provided in each direction. The eastbound and westbound lanes are separated by a 22-foot raised median. An eight-foot wide sidewalk is provided on the west side and a five-foot wide sidewalk is provided on the east side of Central Avenue. The area between the outside of the sidewalk and the outer edge of the right-of-way varies from three to 98 feet. The total width of the typical section for this segment of Central Boulevard varies from 120 to 265 feet.

Figure 5 – Existing Central Boulevard Roadway Typical Section

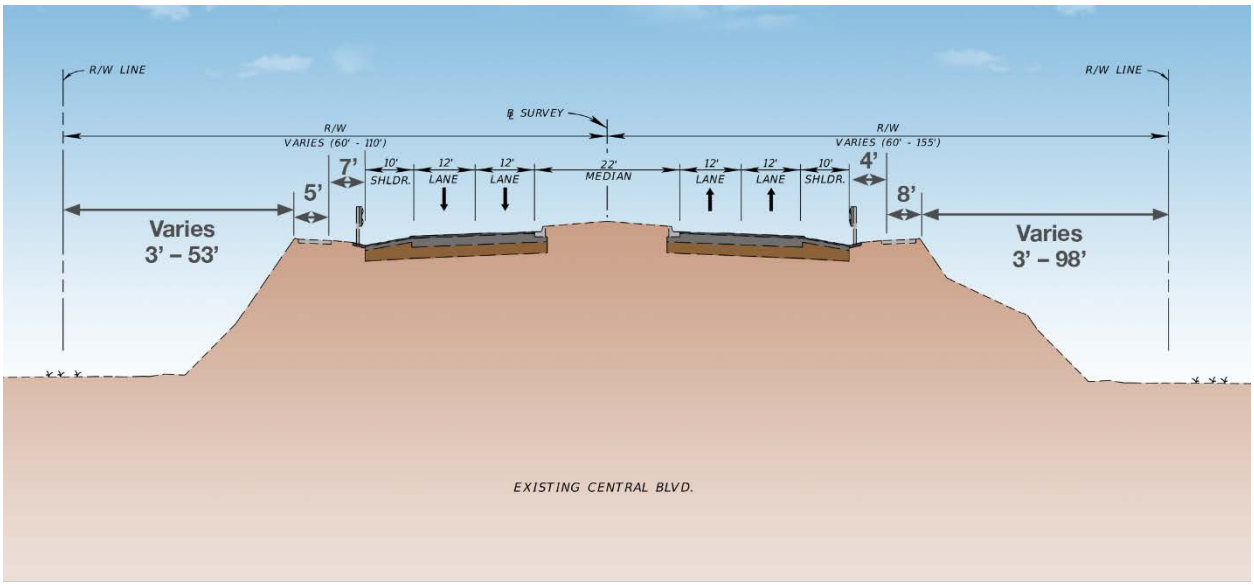
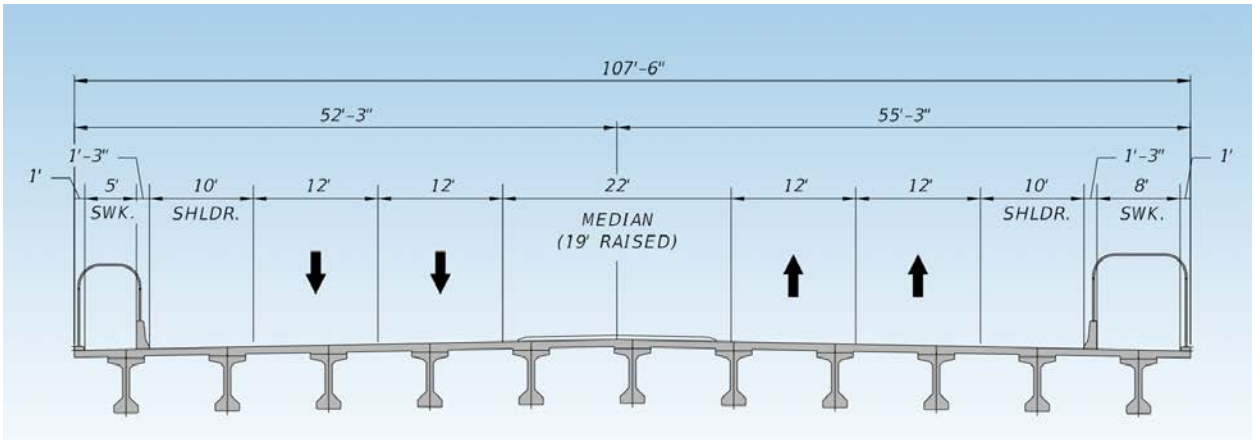


Figure 6 depicts the existing bridge typical section for the Central Boulevard Bridge over I-95. Two 12-foot through lanes with a 10-foot wide outside shoulder are provided in each direction. An eight-foot wide sidewalk is provided on the west side and a five-foot wide sidewalk is provided on the east side of Central Avenue. The eastbound and westbound lanes are separated by a 22-foot median (19 feet raised). The total out-to-out width of the existing bridge is 107 feet-six inches.

Figure 6 – Existing Central Boulevard Bridge Typical Section



2.5 ALTERNATIVES CONSIDERED

Alternatives evaluated during the PD&E Study include the No-Build Alternative and two build alternatives. The No-Build Alternative will remain viable until after the Public Hearing. Over 20 build alternatives were evaluated as part of the IJR preceding this PD&E Study.

The advantages of the No-Build Alternative include the following:

- No disruption to motorists during construction,
- No additional noise impacts,
- No wetland or wildlife impacts,
- No temporary construction impacts, or disruption to motorists during construction,
- No additional right-of-way impacts, and
- No impacts to the Palm Beach County planned District Park.

The disadvantages of the No-Build Alternative include the following:

- Congestion within the project limits will not be reduced,
- Operational capacity will not be improved during emergency evacuations,
- Traffic Demand will continue to increase at the existing I-95/PGA Boulevard Interchange, and
- Mobility will not be improved within the City of Palm Beach Gardens.

Two interchange options for each build alternative are under consideration. Alternatives 2 and 3 include construction of a new tight diamond urban interchange (TDUI) at Central Boulevard and I-95. Alternatives 2A and 3A include construction of a new Diverging Diamond Interchange (DDI). Descriptions of these build alternatives are provided below. Both require varying amounts of Right of Way acquisition. The alternative concept plans are included in Appendix A.

The TDUI interchange consists of one-way diagonal ramps in each quadrant of the interchange that are designed to minimize impacts to the existing right-of-way. The ramp terminals from the I-95 mainline to Central Boulevard will be signalized and consist of one left turn lane and two right turn lanes in each quadrant. The on-ramps from Central Boulevard to the I-95 mainline will consist of two signalized left turn lanes and a free-flow right turn one-lane ramp.

The DDI alternative requires drivers to briefly cross to the left, or opposite side of the road at carefully designed crossover intersections. Drivers will travel for a short distance, then cross back to the right side of the road. The design allows for free-flow movements for the left and right turns to and from the I-95 ramps onto Central Boulevard without crossing the path of opposing traffic. This interchange does not require a signal for left turning vehicles, thus allowing more green time for opposing traffic. This design will, however, require the construction of two new bridges in order to accommodate the necessary geometry and acquisition of additional right-of-way.

2.5.1 BUILD ALTERNATIVES 2, 2A

Alternative 2 includes a new TDUI at Central Boulevard and a collector-distributor (CD) roadway system adjacent to northbound and southbound SR 9/I-95 between the Military Trail ramps and the Central Boulevard interchange ramps. This alternative removes the direct connection of the ramps at Military Trail to I-95. Northbound I-95 on ramp traffic at Military Trail merges with northbound I-95 off ramp traffic at Central Boulevard, and the weaving movement between the two occurs on the northbound collector road. Similarly, southbound I-95 on ramp traffic from Central Boulevard merges with southbound I-95 off ramp traffic at Military Trail, and the weaving movement between the two occurs on the southbound collector road. Alternative 2A is essentially the same as Alternative 2, except that a DDI is proposed.

2.5.2 BUILD ALTERNATIVES 3, 3A

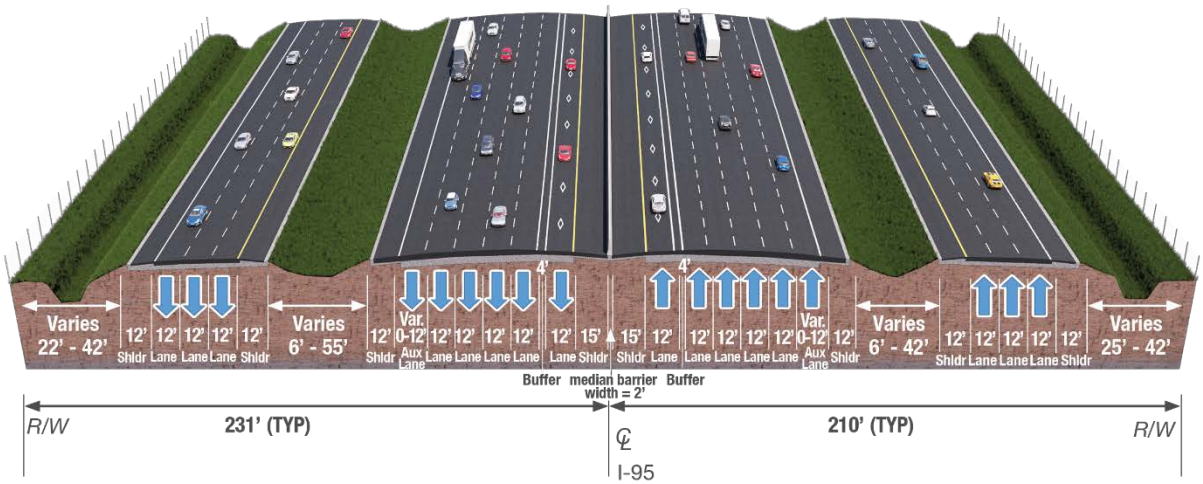
Alternative 3 includes a new TDUI Central Boulevard. This alternative also includes braided ramps between Military Trail and Central Boulevard to eliminate the weaving sections in this area. The I-95 northbound off ramp to Central Boulevard passes over top of the I-95 northbound on ramp from Military Trail. The I-95 southbound off ramp to Military Trail passes over top of the I-95 southbound on ramp from Central Boulevard. This alternative

differs from Alternative 2 only in the treatment of ramp maneuvers on I-95. Alternative 3A is essentially the same as Alternative 3, except that a DDI is proposed.

2.6 RECOMMENDED ALTERNATIVE

Evaluation Matrices were developed to facilitate a comparison of traffic operation and engineering issues; construction costs and right-of-way impacts; socio-economic, natural and physical environmental impacts; and public input for the four viable alternatives. Based on a comparative analysis of the four alternatives, the project team selected Alternative 2 as the Recommended Alternative. Alternative 2 combines the CD roadway system adjacent to northbound and southbound SR 9/I-95 between the Military Trail ramps and the Central Boulevard interchange ramps with construction of a new TDUI at Central Boulevard.

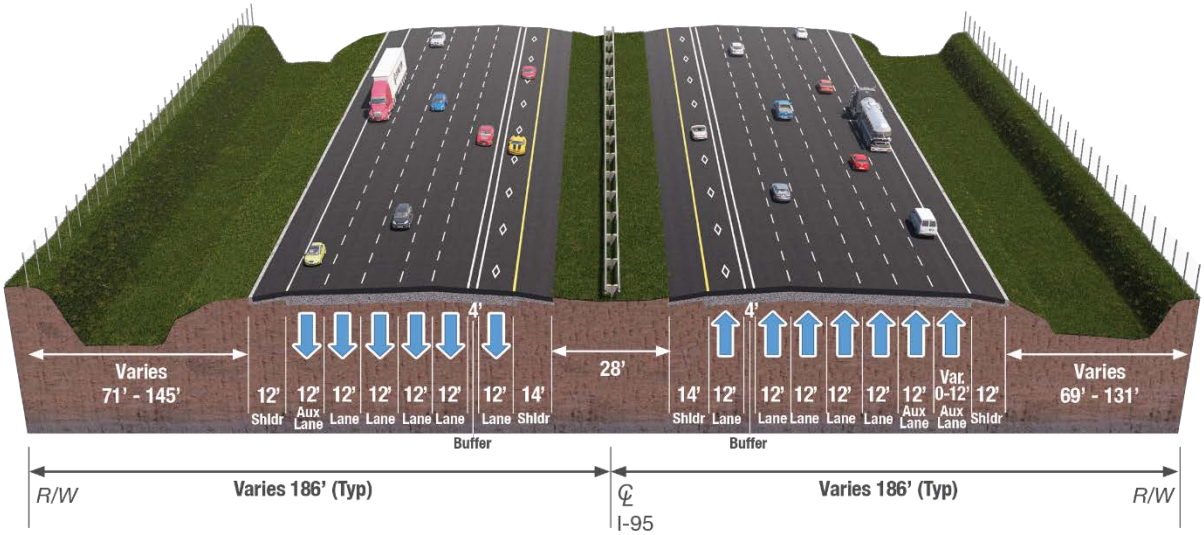
Figure 7 –Typical Section – I-95 South of Central Boulevard (Mainline Alternative 2)



The proposed typical section for I-95 south of Central Boulevard for the CD road alternative is shown in **Figure 7**. This section includes four 12-foot wide general purpose lanes and one 12-foot wide special use lane, a 15-foot inside shoulder, and a 12-foot outside shoulder in each direction. A continuous 12-foot wide auxiliary lane in each direction is also provided. The north and southbound lanes are separated by a two-foot wide concrete median barrier.

The proposed CD road is separated from the mainline by a grassed median that varies in width from six feet to 55 feet. Three 12-foot wide through lanes, with 12-foot wide inside and outside shoulders are provided. The swales at the edges of the right-of-way vary in width from 22 feet to 42 feet. The total width of the typical section, including the CD road, is 441 feet.

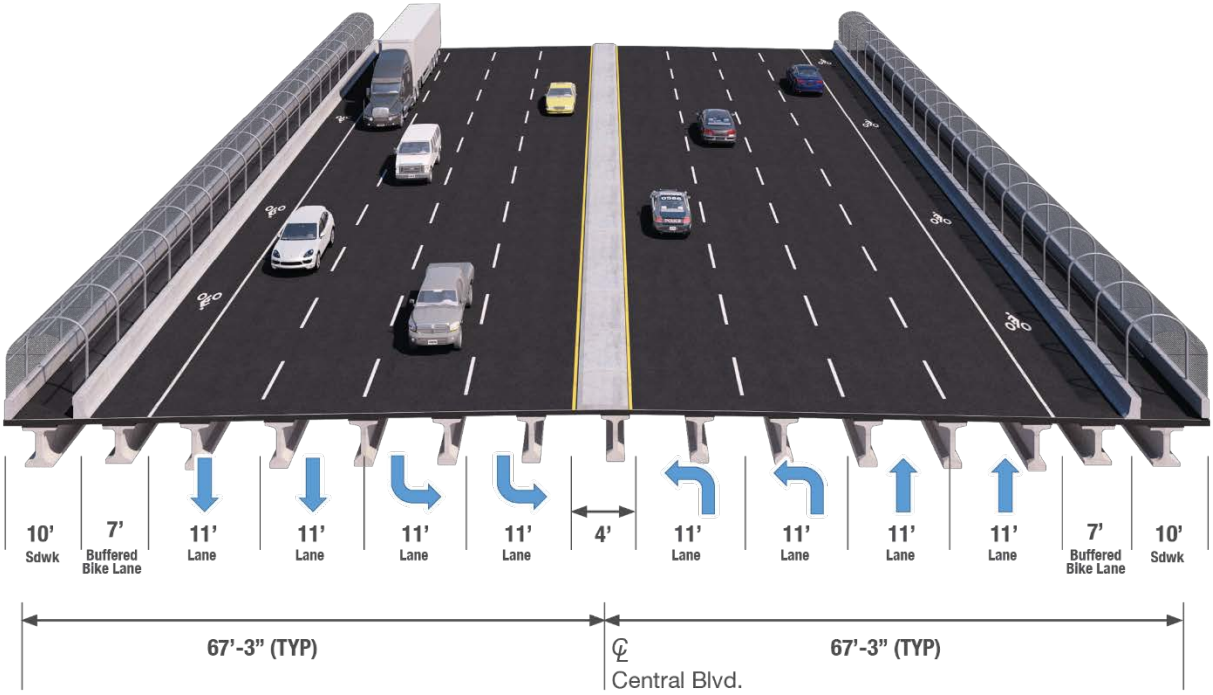
Figure 8 – Typical Section – I-95 North of Central Boulevard (Mainline Alternatives 2 and 3)



The proposed typical section for I-95 north of Central Boulevard is shown in **Figure 8**. This typical section is the same for Mainline Alternative 3. The typical section consists of four 12-foot wide general purpose lanes, one 12-foot wide special use lane, and a 14-foot inside and 12-foot outside shoulder in each direction. Two southbound 12-foot auxiliary lanes are provided in each direction. Northbound and southbound lanes are separated by a 28-foot grassed median and a double faced guardrail. The swales at the edges of the right-of-way vary in width from 69 feet to 145 feet. The maximum total right-of-way required for this proposed typical section is 372 feet.

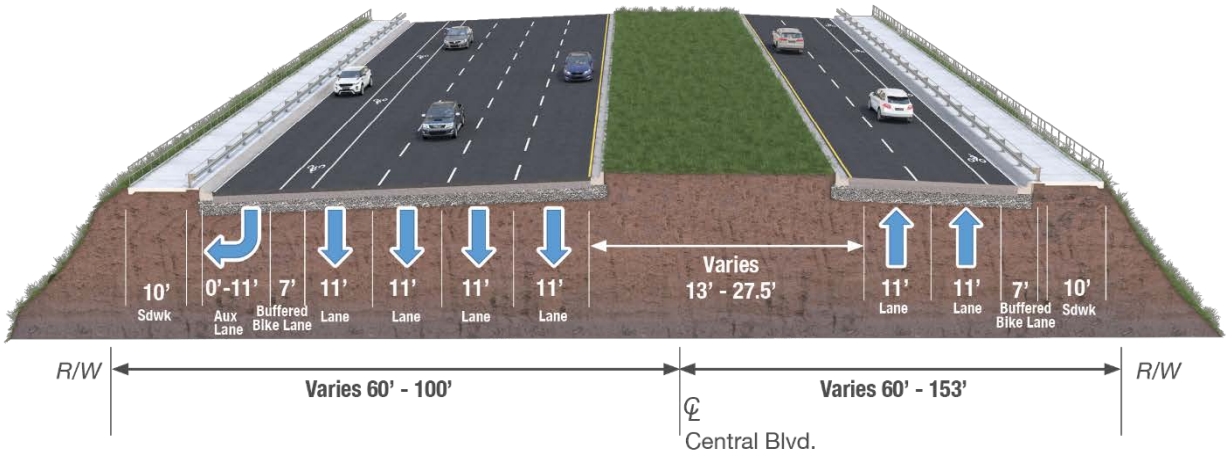
The typical section for the proposed Central Boulevard Bridge for the proposed TDUI at Central Boulevard is shown in **Figure 9**. This section provides two 11-foot wide through lanes, two 11-foot left turn lanes, a seven-foot designated bicycle lane, and a ten-foot wide enclosed sidewalk in each direction, separated by a four-foot traffic separator. The out-to-out width of the proposed bridge is 134 feet six inches.

Figure 9 - Typical Section - Central Boulevard Bridge for TDUI



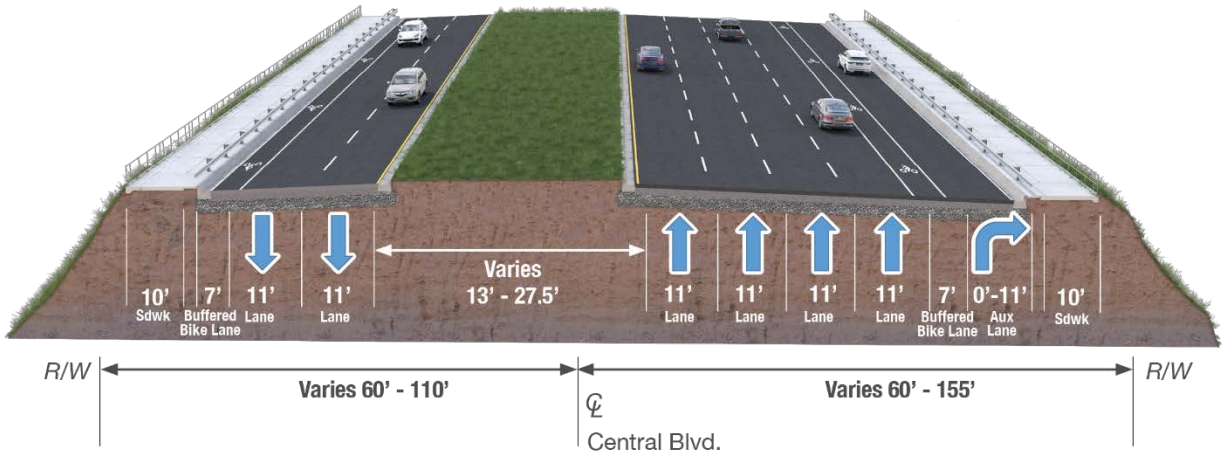
The proposed typical section for Central Boulevard east of I-95 is shown in **Figure 10**. In the eastbound direction, this section provides two 11-foot through lanes, a seven-foot designated bicycle lane and a ten-foot sidewalk. In the westbound direction this section provides four 11-foot through lanes, one 11-foot auxiliary lane, a seven-foot wide designated bicycle lane, and a ten-foot wide sidewalk separated from the travel lanes by a pedestrian rail. The eastbound and westbound lanes are separated by a grassed median that varies in width from 13 feet to 27.5 feet. The total width of this typical section varies from 120 feet to 253 feet.

Figure 10 - Proposed Typical Section - Central Boulevard East of I-95 – TDUI



The proposed typical section for Central Boulevard west of I-95 is shown in **Figure 11**. In the eastbound direction, this section provides two 11-foot through lanes, a seven-foot designated bicycle lane and a ten-foot sidewalk. In the westbound direction, this section provides four 11-foot through lanes, one 11-foot auxiliary lane, a seven-foot wide designated bicycle lane, and a ten-foot wide sidewalk separated from the travel lanes by a pedestrian rail. The east and westbound lanes are separated by a grassed median that varies in width from 13 feet to 27.5 feet. The total width of this typical section varies from 120 feet to 265 feet.

Figure 11 - Proposed Typical Section - Central Boulevard West of I-95 – TDUI



It is anticipated that acquisition of approximately 11.34 acres of right-of-way would be required for construction of the Recommended Alternative 2. No business or residential relocations will be required. Environmental impacts are anticipated to be minimal. The estimated total construction cost for Alternative 2 is approximately $33.9 million.

The Recommended Alternative will meet the purpose and need of the project, have minimal environmental impacts, requires acquisition of the least amount of additional right-of-way, and is the most acceptable to the community. Construction costs for Alternative 2 are estimated to be the lowest of the four build alternatives evaluated.

3.0 TRAFFIC NOISE ANALYSIS

3.1 METHODOLOGY

This traffic noise study was prepared in accordance with Title 23 Code of Federal Regulations (CFR) Part 772, "Procedures for Abatement of Highway Traffic Noise and Construction Noise"[1]. The evaluation uses methodology and policy established by the FDOT and documented in the PD&E Manual, Part 2, Chapter 17 (May 24, 2011)[2]. The predicted noise levels presented in this report are expressed in decibels (dB) on the A-weighted scale, or dB(A). This scale most closely approximates the response characteristics of the human

ear to traffic noise. All noise levels are reported as equivalent level (Leq(h)) values, which is the equivalent steady-state sound level for a one hour period that contains the same acoustic energy as the time-varying sound level during the same time period. Use of the Leq(h) metric and dB(A) as the unit of measurement is specified by 23 CFR 772.

As required by 23 CFR Part 772, the prediction of existing and future traffic noise levels with and without the proposed improvements was performed using the Federal Highway Administration's (FHWA's) computer model for highway traffic noise prediction and analysis – the Traffic Noise Model (TNM-Version 2.5). The TNM predicts sound energy, in one-third octave bands, between highways and nearby receivers taking the intervening ground's acoustical characteristics/topography and rows of buildings into account.

3.2 TRAFFIC DATA

In order to simulate "worst case" traffic noise conditions within the TNM, Level of Service C (LOS C) or demand traffic volumes, whichever was less, were modeled along the mainline and arterial roadways and demand volumes were used for interchange ramps and collector-distributor (CD) roads. Vehicle speeds are based on posted speed limits for the respective roadways. The existing (2013), future no build (2040) and future build (2040) traffic data used in the analysis for the computer modeling of the project is provided in **Appendix B**.

3.3 MEASURED NOISE LEVELS

As previously stated, existing and future traffic noise levels are modeled using the TNM. To insure that these predictions are as accurate as possible, the computer model was validated using measured noise levels at locations adjacent to the project corridor. Traffic data including motor vehicle volumes, vehicle mix, vehicle speeds, and meteorological conditions were observed and recorded during each measurement period.

The recorded vehicle data (volume counts, fleet mix and speeds) were used as input for the TNM to determine if, given the topography and actual site conditions of the area, the computer model could "re-create" the measured levels with the existing roadway.

Following FDOT policy, a traffic noise prediction model is considered within the accepted level of accuracy if the measured and predicted noise levels are within a tolerance standard of plus or minus three dB(A).

The field measurements for this project were generally conducted in accordance with the FHWA's "Measurement of Highway-Related Noise"[3]. Each field measurement was obtained using a Larson Davis Sound Level Meter (SLM, Model 720). The SLM calibrated before and after each monitoring period with a Larson Davis Model CAL150 Sound-Level Calibrator. Traffic speeds were obtained using a handheld radar gun.

Table 3.1 presents the field measurements and the validation results for I-95. As shown, the ability of the model to predict noise levels within the FDOT limits of plus or minus 3

dB(A) for the project was confirmed. In all cases, the modeled values were higher than the levels measured in the field. Documentation in support of the model validation measurements is provided in **Appendix C** of this report.

Table 3.1 – Validation Monitoring Results

Site	Run	Leq(h) – dB(A)		
		Measured*	Modeled	Difference
1: Nova Southeastern University Parking Lot, approx. 120 feet from I-95 edge of pavement	1	69.4	70.8	-1.4
	2	69.0	70.1	-1.1
	3	68.7	70.0	-1.3
2: Mandel JCC Parking Lot, approx. 110 feet from I-95 edge of pavement	1	70.6	72.8	-2.2
	2	70.3	72.6	-2.3
	3	70.4	73.3	-2.9
* Measurements were obtained on February 24, 2015				

3.4 NOISE SENSITIVE SITES

Noise sensitive sites are defined as any property where frequent human use occurs. To evaluate traffic noise, the FHWA has established Noise Abatement Criteria (NAC). As shown in **Table 3.2**, the criteria vary according to a property's activity category.

When predicted traffic noise levels "approach" or exceed the NAC, or when predicted future noise levels increase substantially from existing levels, FHWA and FDOT policy requires the consideration of noise abatement measures. The FDOT defines the word 'approach" to mean within one dB(A) of the NAC and states that a substantial increase will occur if traffic noise levels are predicted to increase 15 dB(A) or more above existing noise levels as a direct result of a transportation improvement project.

Table 3.2 – FHWA Noise Abatement Criteria (NAC)

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

(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.

When determining traffic noise impacts, receptor points representing the various noise sensitive sites were located in accordance with the PD&E Manual as follows:

- Residential receptor points were located at the edge of the structure closest to I-95.
- Receptor points for non-residential land uses were placed at the area of frequent exterior use closest to I-95.

- All receptor heights were assumed to be five feet above ground for first-floor receptors. Second and third floor unit receptors for apartments and/or condominiums were assumed to be 15 and 25 feet, respectively above ground level. The letters A, B, and C following a receptor ID (i.e., 1A, 1B, 1C) denote first, second and third floor receptors, respectively.

Within the project study limits (from PGA Boulevard to Donald Ross Road), 456 TNM receivers were modeled to represent 775 noise sensitive sites. Of the 775 sites, there are 758 residences (evaluated as Activity Category B of the NAC), 13 recreational areas (evaluated as Activity Category C of the NAC), two schools and one assisted living facility (evaluated as Activity Category D of the NAC), and one swimming pool located at a hotel (evaluated as Activity Category E of the NAC).

Exterior traffic noise levels were predicted for the Activity Category B, C, and E locations. Interior traffic noise levels were predicted for the Activity Category D land uses. The interior traffic noise level is determined by applying a building reduction factor of 25 dB(A) to the predicted exterior traffic noise level at the face of the building structure closest to I-95. The 25 dB(A) reduction factor is consistent with guidance found in the FHWA publication "Highway Traffic Noise: Analysis and Abatement Guidance" (2010)[4] for buildings of masonry construction.

It should be noted that at the time of the detailed noise study for the project (Summer 2016), there was active development occurring in several areas within the project limits. Consistent with FDOT policy, noise sensitive sites were only included in the analysis if a building permit for a specific noise sensitive site (residence, etc.) was issued.

The City of Palm Beach Gardens is currently planning a district park to be constructed north of the Palm Beach Gardens Tennis Center park on the west side of I-95 and north of PGA Boulevard. At the time of the detailed noise analysis for the project, none of the proposed park facilities had been permitted for construction.

The Old Palm community (Northwest quadrant of I-95 and Central Boulevard) as well as the area on the east side of I-95 south of Donald Ross Road has active development as well. For the Old Palm community, all residences permitted for construction (according to the searchable database on the City of Palm Beach Gardens website) as of May 18, 2016 were included. As of that same date, no permits for any noise sensitive land uses had been issued for the development occurring east of I-95 and south of Donald Ross Road.

As part of the design phase reevaluation for the proposed improvements, it will be determined if any additional noise sensitive sites were permitted for construction prior to the date of public knowledge (the date the environmental document for this project is approved by the FHWA) that were not included as part of this study that are eligible for consideration of traffic noise impacts and abatement potential (if warranted).

3.5 EXISTING NOISE BARRIERS

Several communities adjacent to the project corridor have existing FDOT noise barriers that were constructed between the residences and I-95 as part of previous capacity improvement projects. **Table 3.3** provides the description and location of each of the existing FDOT noise barriers included in the prediction of existing and future traffic noise levels.

Table 3.3 – Existing FDOT Noise Barriers

Location	Approximate I-95 STA. Limits	Height	Adjacent Community
Southbound I-95, Ground Mounted at Right-of-Way	926+22 to 935+85 (Ramp K Stationing)	22 feet	Garden Lakes
	99+65 to 113+60	22 feet	Westwood Gardens (West of I-95), Trevi at the Gardens
Northbound I-95, Ground Mounted at Right-of-Way	96+45 to 107+85	22 feet	Westwood Gardens (East of I-95)
Southbound I-95, Mounted on Outside of Roadway Shoulder	1986+43 to 1978+77	8 feet	Garden Lakes
Northbound I-95, Mounted on Outside of Roadway Shoulder	1978+77 to 36+03	8 feet	Winchester Court

The Garden Lakes community, located west of I-95 and Military Trail, has an existing 5-foot tall masonry privacy wall located along the west (southbound) side of Military Trail. The Old Palm community, located in the northwest quadrant of I-95 and Central Boulevard, has an existing eight-foot tall concrete privacy wall located adjacent to both I-95 and Central Boulevard. Both of these existing walls were included in the prediction of traffic noise levels for all scenarios evaluated.

3.6 PREDICTED TRAFFIC NOISE LEVELS

A summary of the predicted existing (2013), future no-build (2040), and future build Alternative 2 (2040) traffic noise levels for the project is provided in **Table 3.4**. A full list of the predicted traffic noise levels for all modeled receptors is provided in **Appendix D.** TNM files in support of the analysis are provided in **Appendix E**.

As shown, existing traffic noise levels at the residential sites evaluated as Activity Category B are predicted to range from 48.9 to 74.6 dB(A). Existing traffic noise levels at the 13 sites evaluated as Activity Category C are predicted to range from 56.0 to 72.6 dB(A). Interior traffic noise levels at the three Activity Category D locations are predicted to range from 38.8 to 45.2 dB(A). Finally, an existing traffic noise level of 62.8 dB(A) was predicted for the

single Activity Category E location.

Future no-build traffic noise levels are predicted to range from 50.3 to 75.9 dB(A) at the Activity Category B locations and from 57.6 to 73.9 dB(A) at the Activity category C sites. The three interior locations are predicted to experience future no build traffic noise levels ranging from 40.5 to 46.5 dB(A). The single evaluated Activity Category E location is predicted to experience a traffic noise level of 63.8 dB(A) in the future without the proposed improvements.

Finally, future build traffic noise levels with the proposed improvements (Alternative 2) are predicted to range from 49.9 to 76.2 dB(A) at the 758 residences evaluated as Activity Category B, with 152 residences predicted to experience future build traffic noise levels that approach, meet or exceed the NAC for Activity Category B.

At the 13 recreational areas evaluated as Activity Category C, future build traffic noise levels are predicted to range from 56.0 to 73.7 dB(A). Six recreational areas are predicted to experience future build traffic noise levels that approach, meet or exceed the NAC for Activity Category C.

Future build interior traffic noise levels are predicted to range from 40.5 to 48.0 dB(A) at the three locations evaluated as Activity Category D. None of the interior traffic noise levels are predicted to approach, meet, or exceed the NAC for Activity Category D.

Finally, the single Activity Category E land use evaluated is predicted to experience a future build traffic noise level of 63.6 dB(A), a level that does not approach, meet or exceed the NAC for Activity Category E.

When compared to existing traffic noise levels, the greatest increase with the future build alternative is predicted to be 4.1 dB(A). As such, none of the sites evaluated are predicted to experience a substantial increase (15 dB(A) or more) in traffic noise as a result of the proposed improvements.

Table 3.4 – Summary of Predicted Traffic Noise Levels

Location (Site ID's)[1]	Number of Sites Represented	NAC Activity Category	Sheet #[1]	Range of Predicted Traffic Noise Levels – Leq(h) (dB(A))			Number of Impacted Receptors[2]	Noise Barrier[3]
				Existing (2013)	Future No-Build (2040)	Future Build (2040)		
DoubleTree Hotel (1)	1 Recreational Area (Pool)	E	1	62.8	63.8	63.6	0	NA
Garden Lakes (2-32)	159 Residences	B	1-2	60.0 – 68.4	61.2 – 69.4	61.3 – 69.3	18	1
Palm Beach Gardens Tennis Center (93-119)	1 Recreational Area	C	2	59.7 – 70.7	60.9 – 71.9	61.9 – 73.6	1	2/2A
Old Palm Golf Course (120-127)	1 Recreational Area	C	3	63.0 – 72.6	64.4 – 73.9	63.0 – 73.7	1	3/3A
Old Palm (128-153)	26 Residences	B	4, 8	57.0 – 67.2	58.7 – 68.5	58.1 – 67.6	4	4/4A
Old Palm Golf Course (154-160)	1 Recreational Area	C	4	56.0 – 62.4	57.6 – 63.8	57.6 – 63.0	0	NA
Westwood Gardens, West of I-95 (161-174, 178-202)	66 Residences	B	4-5	54.5 – 64.0	55.9 – 65.4	55.5 – 65.1	0	NA
Westwood Gardens, West of I-75 (175-177)	3 Recreational Areas	C	4	62.3 – 65.2	63.7 – 66.5	63.5 – 65.8	0	NA
Trevi at the Gardens (203-233)	61 Residences	B	5	54.4 – 64.8	56.1 – 66.4	55.6 – 65.8	0	NA
Winchester Court (234-255, 257-263)	48 Residences	B	2	62.0 – 72.0	62.9 – 73.0	62.9 – 72.7	23	5
Winchester Court (256)	1 Recreational Area (Tennis Court)	C	2	70.2	71.5	71.2	1	6/6A
Palm Beach Gardens (264)	1 Residence	B	2	61.4	62.6	63.2	0	NA

[1] Please refer to Conceptual Plans in Appendix A
[2] Refers to the Number of Impacted Receptors with Future Build Alternative 2 (Preferred Alternative)
[3] Please refer to Section 4.5 of this report

Table 3.4 – Summary of Predicted Traffic Noise Levels (Continued)

Location (Site ID's)[1]	Number of Sites Represented	NAC Activity Category	Sheet #[1]	Range of Predicted Traffic Noise Levels – Leq(h) (dB(A))			Number of Impacted Receptors[2]	Noise Barrier[3]
				Existing (2013)	Future No-Build (2040)	Future Build (2040)		
Nova Southeastern University (265)	1 School (Interior)	D	2	43.9	45.2	48.0	0	NA
Sabal Ridge Condominiums (266-277)	48 Residences	B	2	57.4 – 69.9	58.7 – 71.2	58.8 – 73.1	32	7/7A
Paloma (278)	3 Residences	B	3	59.4	60.8	61.5	0	NA
Quaye Apartments (279-328)	210 Residences	B	3-4	48.9 – 74.6	50.3 – 75.9	49.9 – 76.2	74	8
Harbor Chase Assisted Living Facility (329)	1 Medical Facility (Interior)	D	8	38.8	40.5	40.5	0	NA
Westwood Gardens, East of I-95 (330-408)	136 Residences	B	4	56.6 – 65.4	58.2 – 66.7	57.4 – 66.0	1	NA
Mandel Jewish Community Center (409)	1 Recreational Area (Playground)	C	5	69.7	71.0	70.0	1	9/9A
Mandel Jewish Community Center (410)	1 School (Interior)	D	5	45.2	46.5	45.5	0	NA
Mandel Jewish Community Center (411)	1 Recreational Area (Pool)	C	5	67.9	69.3	68.4	1	9/9A
Mandel Jewish Community Center (412-417)	1 Recreational Area (Athletic Field)	C	5	65.2 – 72.6	66.5 – 73.9	66.1 – 73.2	1	9/9A
Wandering Trails Riding Academy (418-422)	1 Recreational Area	C	5	57.9 – 62.7	59.3 – 64.4	59.0 – 63.9	0	NA

[1] Please refer to Project Aerials in Appendix A
[2] Refers to the Number of Impacted Receptors with Future Build Alternative 2 (Preferred Alternative)
[3] Please refer to Section 4.5 of this report

4.0 EVALUATION OF ABATEMENT MEASURES

The FDOT considers noise abatement measures when predicted traffic noise levels approach or exceed the NAC, or when levels increase substantially due to a proposed transportation improvement project. The measures considered for the I-95 at PGA/Central Boulevard PD&E Study were traffic management, alternative roadway alignment, noise buffer zones, and noise barriers. The following discusses the feasibility (amount of noise reduction, engineering considerations) and reasonableness (number of noise-sensitive sites benefited, absolute noise levels, cost, etc.) of each of the measures.

4.1 TRAFFIC MANAGEMENT

Traffic management measures that limit motor vehicle speeds, reduce volumes, and prohibit certain vehicle types can be effective noise mitigation measures. However, these measures also negate a project's ability to accommodate forecast traffic volumes. For example, if the posted speed on I-95 were reduced, the capacity of the roadway to handle the forecast motor vehicle demand would also be reduced. Therefore, reducing traffic speeds and/or traffic volumes is inconsistent with the goal of improving the ability of the roadway to handle the forecast volumes. As such, although feasible, traffic management measures are not considered a reasonable noise mitigation measure for the project.

4.2 ALTERNATIVE ROADWAY ALIGNMENT

The proposed improvements seek to minimize the amount of additional right-of-way required adjacent to I-95 other than that required to accommodate the proposed improvements and interchange at Central Boulevard. Shifts in the roadway alignment would result in a need for additional right-of-way, thus increasing the overall cost of the project. Additionally, a shift in the roadway alignment may not provide a positive benefit in all areas, as noise sensitive sites are located both east and west of I-95. Therefore, altering the roadway alignment is not considered a reasonable mitigation measure for the project.

4.3 NOISE BUFFER ZONES

Providing a buffer between a highway and the future development of noise sensitive land uses is an abatement measure that can minimize or eliminate traffic noise impacts in areas of future development. To encourage use of this abatement measure through local land use planning, noise contours have been developed and are further discussed in Section 7.0 of this report.

4.4 NOISE BARRIERS

Noise barriers reduce noise levels by blocking the sound path between the noise source and the receptor. In order to effectively reduce traffic noise, a noise barrier must be relatively long, continuous (without intermittent openings), and sufficiently tall to provide a reduction in noise levels. Following procedures developed by the FDOT, the minimum requirements

for a noise barrier to be considered both feasible and economically reasonable are:

- A noise barrier must provide at least a five dB(A) reduction in traffic noise for at least two impacted noise sensitive receptors, and also provide at least a seven dB(A) reduction (i.e., the FDOT's noise reduction design goal) for at least one impacted receptor; and,

- A noise barrier should not cost more than $42,000 per benefited noise sensitive receptor (a benefited receptor is a receptor that receives at least a five dB(A) reduction in noise from a mitigation measure). The current cost estimate for noise barrier construction (including materials and labor) is $30 per square foot ($ft^2$).

- The feasibility and reasonableness of providing noise barriers at impacted non-residential land uses (Activity Category C, D and E land uses) was determined following guidance found in the FDOT publication "A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations" (2009)[5].

After considering the amount of noise reduction that may be provided and the cost reasonableness, additional factors must also be considered when evaluating a noise barrier as a potential noise abatement measure. These additional factors address both the feasibility and reasonableness of the noise barrier(s).

Additional feasibility factors include those that relate to design and construction (i.e., given site-specific details, can the noise barrier actually be constructed), safety, access requirements, right-of-way requirements, maintenance, impacts on existing and planned utilities and drainage requirements. In addition to the cost and the noise reduction design goal requirement, the only other reasonable factor considered is the viewpoint of the benefited property owners/residents who may, or may not desire a noise barrier as an abatement measure.

Noise barriers were evaluated as an abatement measure for the 152 impacted residential receptors and six recreational areas. Version 2.5 of the TNM was used to evaluate the effectiveness of noise barriers as a potential abatement measure. The noise barrier lengths are optimized at each height evaluated in order to maintain at least the minimum noise reduction requirements stated above while minimizing excess barrier length (in turn reducing the overall noise barrier cost) at the ends and in areas of overlap. Noise barriers are not optimized to provide a benefit to non-impacted receptors. However; at some locations, noise barriers provide a benefit to receptors that are not impacted by the project. This benefit is considered incidental and is due to the proximity to an impacted receptor. Consistent with FDOT policy, the non-impacted and benefited receptors are included in the cost reasonableness calculations for each noise barrier.

Noise barriers are typically evaluated at two locations, either individually or in combination depending on the particular site geometry. The first location is approximately five feet inside the FDOT right-of-way. These ground mounted noise barriers are evaluated at

heights ranging from eight to 22 feet in two-foot increments. In situations where the roadway is elevated (either on fill/embankment or structure/retaining wall), or when a ground mounted barrier at the right-of-way does not meet the minimum feasibility/reasonableness requirements, noise barriers may be evaluated at the outside edge of the roadway shoulder. Consistent with Chapter 32 of the FDOT Plans Preparation Manual (PPM) [6], noise barriers located at the roadway shoulder point are limited to a height of eight feet if located on bridge or retaining wall structures, and are limited to a height of 14 feet if located on fill/embankment sections. Any noise barrier within the clear recovery zone must be protected by a crash tested device (traffic railing barrier or guardrail).

The FDOT has guidance related to the evaluation of existing noise barriers (those constructed by the FDOT within their right-of-way as part of a previous Type I project). The guidance evaluates the effectiveness of the existing noise barrier with the improvements proposed as part of this project. If it is determined that the existing noise barrier meets the FDOT noise policy requirements for feasibility and reasonableness with the proposed project, no further action is necessary and the existing noise barrier shall remain in place. If it is determined that the existing noise barrier does not fulfill the noise policy requirements for feasibility and reasonableness with the proposed project, or if additional impacted receptors are identified in the adjacent community/communities, the addition of length and/or height to the existing barrier is evaluated following the same requirements for feasibility and reasonableness stated above.

As discussed above, FDOT's traffic noise policy states that in order to be considered feasible, a noise barrier must benefit at least two impacted receptors. For this reason, a noise barrier was not evaluated for Site 356 (located in Westwood Gardens on the east side of I-95). This residential receptor is considered an "isolated impact" where there is only one impacted receptor that may benefit from a noise barrier, and as such, would not meet the minimum feasibility requirements. Notably, the impacted receptor is predicted to experience a future build traffic noise level that approaches the NAC for Activity Category B and is located behind an existing FDOT noise barrier constructed along the right-of-way for I-95.

The results of the noise barrier analyses for the remaining impacted receptors (151 residences and six recreation areas) are provided below.

4.5 NOISE BARRIER ANALYSIS

The following discusses the feasibility and reasonableness of providing noise barriers as an abatement measure for the impacted residential and recreational receptors where traffic noise levels are predicted to approach, meet, or exceed the NAC during the design year for their respective Activity Category. The TNM files in support of the noise barrier analysis are provided in Appendix E of this report.

NOISE BARRIER 1

Noise Barrier 1 was evaluated for the 18 impacted receptors (Sites 7, 13, 17, 21, 25, 55, 69, 71-74 and 85-86) at the Garden Lakes townhomes, located west of I-95 and Military Trail. With the proposed improvements, the impacted residential receptors are predicted to experience future traffic noise levels ranging from 66.1 to 69.3 dB(A), levels that approach and exceed the NAC for Activity Category B land uses.

There is an existing 22-foot tall noise barrier constructed along the FDOT ROW adjacent to the Garden Lakes community. The analysis determined the existing noise barrier does not meet the FDOT noise policy requirements for reasonableness and feasibility with the proposed project. As such, adding additional length to the barrier was evaluated. Since the existing noise barrier is already constructed at the maximum height of 22 feet, additional height cannot be added.

Two separate noise barrier analyses were conducted for Garden Lakes: the first as an extension of the existing ground mounted barrier to the south along the Military Trail ROW for impacted receptor Sites 7, 13, 17, 21 and 25. The second noise barrier analysis considered two shoulder mounted noise barriers (one along the outside shoulder of Ramp A-1 and one along the outside shoulder of the I-95 mainline). These shoulder barriers at the north end were evaluated for impacted receptor Sites 55, 69, 71-74, and 85-86. Due to the elevation of I-95 in this area, a northward extension of the ground mounted noise barrier along the right-of-way would not provide a benefit to any of the impacted receptors.

The results of the evaluation for the southern extension of the existing ground mounted noise barrier are provided in **Table 4.1**. As shown, the noise reduction design goal is not achieved until a noise barrier height of 14 feet. As also shown, eight of the 10 impacted receptors are predicted to experience a reduction in traffic noise levels of at least five dB(A) at noise barrier heights ranging from 14 to 22 feet, with up to four impacted receptors achieving the noise reduction design goal at those heights as well. At barrier heights ranging from 14 to 22 feet and at their respective lengths, the total estimated cost to construct the noise barrier ranges from $275,100 to $399,300. The cost per benefited receptor ranges from $34,387 to $49,912, with the noise barrier below the cost reasonableness criteria at heights ranging from 14 to 18 feet.

Table 4.1 - Noise Barrier 1 (Southern Extension of Existing Noise Barrier)

Barrier Height / Length (ft)	Impacted Receptors With Insertion Loss of (dB(A))			Number of Benefited Receptors			** Avg	Total Estimated Cost	Cost Per Benefited Receptor	Cost Reasonable?
	5-5.9	6-6.9	7 or >	Impacted	* Other	Total				
8/1,759	0	0	0	0	0	0	--	--	--	--
10/1,759	2	0	0	2	0	2	5.3	--	--	--
12/1,759	4	2	0	6	0	6	5.7	--	--	--
14/655	2	4	2	8	0	8	6.5	$275,100	$34,387	Yes
16/655	0	4	4	8	0	8	6.8	$314,400	$39,300	Yes
18/605	4	0	4	8	0	8	6.6	$326,700	$40,837	Yes
20/605	2	2	4	8	0	8	6.9	$363,000	$45,375	No
22/605	2	2	4	8	0	8	7.2	$399,300	$49,912	No

* Other = Receptors determined to not be impacted by the project (traffic noise levels do not approach or exceed the NAC for their respective Activity Category of the NAC) but are benefited by the noise barrier.
** Avg = Average noise reduction applies only to “impacted” receptors that would receive at least a five dB(A) benefit from the noise barrier.

Since Noise Barrier 1 is predicted to provide some of the impacted receptors with a reduction in traffic noise levels of at least five dB(A) while also achieving the noise reduction design goal at a cost below the cost reasonableness criteria, the noise barrier was evaluated further. The results of that evaluation are provided in **Table 4.2**.

Table 4.2 - Additional Considerations: Noise Barrier 1 (Southern Extension of Existing Noise Barrier)

Evaluation Criteria	Comment
1. Relationship of future levels to the abatement criteria	With the proposed improvements, the eight impacted receptors that could be benefited by the barrier are predicted to experience traffic noise levels ranging from 68.6 to 69.3 dB(A).
2. Amount of noise reduction	Traffic noise from the I-95 and the proposed interchange at Central Boulevard would be reduced a minimum of five dB(A) at eight impacted receptors (an average reduction of up to 6.6 dB(A)). Additionally, the noise reduction design goal would be achieved for up to four of the impacted receptors.
3. Safety	To be evaluated in greater detail during the design phase of the project.
4. Community desires	Community desires related to the potential noise barrier will be solicited during the design phase of the project.
5. Accessibility	To be evaluated in greater detail during the design phase of the project.
6. Local controls	Palm Beach County does not have an active noise control program.
7. Views of local officials with jurisdiction	To be determined during the design phase of the project.
8. Constructability	To be evaluated in greater detail during the design phase of the project.
9. Maintainability	To be evaluated in greater detail during the design phase of the project.
10. Aesthetics	To be determined during the design phase of the project.
11. Right-of-way needs including access rights, easements for construction and/or maintenance, and additional land	The noise barrier will be located inside the FDOT's right-of-way along Military Trail. Additional right-of-way requirements, if any, will be determined during the design phase for the project.
12. Cost	The noise barrier is below the FDOT's cost reasonableness criteria.
13. Utilities	To be evaluated in greater detail during the design phase of the project.
14. Drainage	To be evaluated in greater detail during the design phase of the project.
16. Other environmental considerations	None.

As shown in Table 4.2, factors in favor of Noise Barrier 1 as a method of reducing traffic noise impacts from the proposed improvements to I-95 and the Central Boulevard interchange include:

- The noise barrier analysis determined that eight of the 10 impacted receptors could potentially be benefited by the barrier.

- The noise barrier analysis determined that the noise barrier will reduce traffic noise levels at least five dB(A) at up to eight noise sensitive receptors.
- The noise reduction design goal of seven dB(A) is achieved for up to four impacted receptors.
- The cost per benefited receptor is below the FDOT cost reasonable guideline.
- The land use in the area is expected to remain noise sensitive in the future.

The results of the noise barrier evaluation for the two shoulder mounted noise barriers evaluated at the north end of the existing noise barrier indicate that the minimum required reduction of five dB(A) could not be achieved for any of the impacted receptors at any of the noise barrier heights evaluated, up to the maximum of 14 feet. As such, the shoulder mounted noise barriers are not considered a feasible abatement measure for the impacted receptors at the north end of the Garden Lakes community.

NOISE BARRIER 2/2A

Noise Barrier 2 was evaluated for the recreational areas at the Palm Beach Gardens Tennis Center, located on the west side of I-95, north of Military Trail. Included in the impacted areas are existing handball, basketball and tennis courts (Sites 93-94 and 96-99), as well as a walking trail, athletic fields and additional tennis courts (Sites 106-107 and 109-119) that are all currently under construction as part of an expansion of the park facilities. With the proposed project, traffic noise levels at the impacted areas of the park are predicted to range from 66.3 to 73.6 dB(A), levels that approach and exceed the NAC for Activity Category C land uses.

As previously mentioned, the feasibility and reasonableness of providing noise barriers at impacted recreational areas is determined following guidance found in the FDOT publication "A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations". Consistent with that methodology, a noise barrier for special land uses must not cost more than $995,935 per person-hour per square foot of noise barrier.

A ground mounted noise barrier was evaluated approximately five feet inside the proposed right-of-way for the project. The northern and southern termini of the barrier were optimized at each height evaluated, in order to minimize excess barrier length (thus reducing cost) while attempting to achieve noise reduction requirements at the impacted areas of the park. The height of the barrier was evaluated from eight to 22 feet, in two-foot increments.

The results of the analysis indicate that the noise reduction design goal would not be achieved until a barrier height of 14 feet and that a noise barrier 22 feet in height with a length of 1,606 feet could provide the maximum amount of the impacted area with a

reduction in traffic noise of at least five dB(A) while also achieving the required noise reduction design goal of at least seven dB(A) at a portion of the impacted area.

The cost reasonableness of providing noise abatement at the park is provided in **Table 4.3**, and is based on the dimensions of the barrier (square footage), park usage data from the City of Palm Beach Gardens, and the assumption that each person using the park would spend an average of two hours there per visit. The park usage data provided by the City of Palm Beach Gardens indicates that 257,000 visitors use the park on an annual basis, which translates to 705 people on an average day (257,000 people / 365 days per year = 704.1, rounded up to 705). Even with the conservative assumption that all 705 visitors would spend their time in the area of the park benefited by the noise barrier (an area much smaller than the total size of the park), there is not enough usage to warrant cost reasonable noise abatement. As such, Noise Barrier 2 along the right-of-way for I-95 is not a cost reasonable noise abatement measure for the impacted areas of the Palm Beach Gardens Tennis Center.

Table 4.3 - Noise Barrier 2

Item	Criteria	Result
1	Length of proposed noise barrier	1,606 feet
2	Height of proposed noise barrier	22 feet
3	Multiply item 1 by item 2	35,332 ft^2
4	Average amount of time that a person stays at the site per visit	2 hours
5	Enter the average number of people that use this site per day that will receive at least a five dB(A) benefit from abatement at the site	705
6	Multiply item 4 by item 5	1,410 person-hours
7	Divide item 3 by item 6	25.06 ft^2 per person-hour
8	Multiply item 7 by $42,000	$1,052,520 per person-hour per ft^2
9	Does item 8 exceed the "abatement cost factor" of $995,935/person-hour/$ft^2$	Yes
10	If item 9 is no, abatement is reasonable	
11	If item 9 is yes, abatement is not reasonable	NOT REASONABLE

Since Noise Barrier 2 at the right-of-way was determined to be unreasonable, Noise Barrier 2A was evaluated along the outside edge of the roadway shoulder of Ramps A/A-1. Shoulder mounted noise barriers are limited to a maximum height of 14 feet.

The results of the evaluation for Noise Barrier 2A indicate that a shoulder mounted noise barrier 14 feet tall with a length of 1,305 feet could provide portions of the impacted park with a reduction in traffic noise of at least five dB(A) while also achieving the noise reduction design goal at a portion of the impacted park area as well. Noise barrier heights

less than 14 feet do not achieve the required noise reduction design goal of at least seven dB(A).

The results of the "special use" evaluation are provided in **Table 4.4**. Using the same assumptions for park usage that were used for Noise Barrier 2 results in a cost per person-hour per square foot of noise barrier of $544,320 which is less than the FDOT upper limit of $995,935 per person-hour per square foot. However, this assumption was based on all 705 daily users of the park spending all of their time in the area benefited by the noise barrier (an area much less than the total size of the park and less than the area benefited by Noise Barrier 2). Since it is not reasonable to expect that all daily users of the park would spend all of their time in the area benefited by the noise barrier, Noise Barrier 2A is not considered a reasonable noise abatement measure for the impacted areas of the Palm Beach Gardens Tennis Center Park.

Table 4.4 - Noise Barrier 2A

Item	Criteria	Result
1	Length of proposed noise barrier	1,305 feet
2	Height of proposed noise barrier	14 feet
3	Multiply item 1 by item 2	18,270 ft^2
4	Average amount of time that a person stays at the site per visit	2 hours
5	Enter the average number of people that use this site per day that will receive at least a five dB(A) benefit from abatement at the site	705
6	Multiply item 4 by item 5	1,410 person-hours
7	Divide item 3 by item 6	12.96 ft^2 per person-hour
8	Multiply item 7 by $42,000	$544,320 per person-hour per ft^2
9	Does item 8 exceed the "abatement cost factor" of $995,935/person-hour/$ft^2$	No
10	If item 9 is no, abatement is reasonable	REASONABLE
11	If item 9 is yes, abatement is not reasonable	

NOISE BARRIER 3/3A

Noise Barrier 3 was evaluated for the impacted areas of the Old Palm golf course (Sites 121-123), located on the west side of I-95 and south of Central Boulevard. The impacted areas consist of portions of two holes located within the courses' "golf studio" practice area. With the proposed project and the new interchange at Central Boulevard, the impacted areas are predicted to experience future traffic noise levels ranging from 66.5 to 73.7 dB(A), levels that approach and exceed the NAC for Activity Category C.

The evaluation for Noise Barrier 3 followed the same "Special Land Use" methodology used for Noise Barriers 2 and 2A. Due to the drainage feature located approximately at Station 6033 along Ramp A, Noise Barrier 3 was evaluated as a combination ground mounted barrier

along the right-of-way and a shoulder mounted noise barrier along the outside edge of Ramp A. The northern and southern termini of both evaluated noise barriers were optimized at each height evaluated, in order to minimize excess barrier length (thus reducing cost) while attempting to achieve noise reduction requirements at the impacted areas of the golf course. The height of the right-of-way barrier was evaluated from eight to 22 feet, in two-foot increments and the shoulder barrier was evaluated from eight to 14 feet in two-foot increments (with the exception of the portion located on the bridge structure at the drainage crossing that is limited to a height of eight feet).

The results of the evaluation indicate that the combination of a right-of-way noise barrier 18 feet tall with a length of 1,293 feet and a shoulder mounted noise barrier eight feet tall with a length of 596 feet would provide all of the impacted areas with a reduction in traffic noise of at least five dB(A) while also achieving the noise reduction design goal at a portion of the impacted area.

The results of the "special use" evaluation are provided in **Table 4.5**. Even though usage data for the Old Palm golf course was not available, it is possible to calculate the amount of people that would be required to utilize the benefited area of the golf course on an average day to warrant cost reasonable noise abatement. Using the noise barrier dimensions above and assuming each person would spend two hours at the facility, a minimum of 592 people would need to use the area benefited by the noise barrier on an average day, an amount that does not appear to be reasonable based on the size of the benefited area and the nature of its use. As such, Noise Barrier 3 is not a reasonable abatement measure for the impacted areas of the Old Palm golf course.

Table 4.5 - Noise Barrier 3

Item	Criteria	Result
1	Length of proposed noise barrier	1,293 feet (ROW Barrier), 596 feet (Shoulder Barrier)
2	Height of proposed noise barrier	18 feet (ROW Barrier), 8 feet (Shoulder Barrier)
3	Multiply item 1 by item 2	28,042 ft^2 (Total for both barriers)
4	Average amount of time that a person stays at the site per visit	2 hours
5	Enter the average number of people that use this site per day that will receive at least a 5 dB(A) benefit from abatement at the site	592
6	Multiply item 4 by item 5	1,184 person-hours
7	Divide item 3 by item 6	23.68 ft^2 per person-hour
8	Multiply item 7 by $42,000	$994,560 per person-hour per ft^2
9	Does item 8 exceed the "abatement cost factor" of $995,935/person-hour/$ft^2$	No
10	If item 9 is no, abatement is reasonable	REASONABLE
11	If item 9 is yes, abatement is not reasonable	

Since Noise Barrier 3 was not determined to be a reasonable abatement measure, Noise Barrier 3A was evaluated solely along the outside edge of the shoulder for Ramp A. As stated above, the shoulder barrier would be limited to a maximum height of 14 feet, with the exception of the portion of the barrier that is located on the bridge structure (approximately 80 feet) that crosses over the drainage feature that is limited to a maximum height of eight feet.

The results of the evaluation for Noise Barrier 3A indicate that a shoulder mounted noise barrier with a total length of 1,337 feet and a height of 14 feet (including the 80 feet located on bridge structure and limited to a height of eight feet) would provide a portion of the impacted area with a reduction in traffic noise levels of at least five dB(A) while also achieving the noise reduction design goal at a portion of the impacted area.

The results of the "special use" evaluation are provided in **Table 4.6.** As with Barrier 3 above, even though detailed usage data for the Old Palm golf course was not available, it is possible to determine the number of people that would need to utilize the area benefited by the barrier on an average day based on the optimal dimensions of the noise barrier. Based on those dimensions, a minimum of 385 people would need to use the benefited area on an average day, an amount that does not appear to be reasonable based on the size of the benefited area and the nature of its use. As such, Noise Barrier 3A is not a reasonable abatement measure for the impacted areas of the Old Palm golf course.

Table 4.6 - Noise Barrier 3A

Item	Criteria	Result
1	Length of proposed noise barrier	1,337 feet (1,257 at a height of 14 feet and 80 feet on bridge structure at a height of 8 feet)
2	Height of proposed noise barrier	14 feet (With the exception of 80 feet located on bridge structure at a height of 8 feet)
3	Multiply item 1 by item 2	18,238 ft^2 (total for entire barrier)
4	Average amount of time that a person stays at the site per visit	2 hours
5	Enter the average number of people that use this site per day that will receive at least a five dB(A) benefit from abatement at the site	385
6	Multiply item 4 by item 5	770 person-hours
7	Divide item 3 by item 6	23.68 ft^2 per person-hour
8	Multiply item 7 by $42,000	$994,560 per person-hour per ft^2
9	Does item 8 exceed the "abatement cost factor" of $995,935/person-hour/$ft^2$	No
10	If item 9 is no, abatement is reasonable	REASONABLE
11	If item 9 is yes, abatement is not reasonable	

NOISE BARRIER 4/4A

Noise Barrier 4 was evaluated for the four impacted receptors (Sites 150-153) in the Old Palm community, located in the northwest quadrant of I-95 and the proposed Central Boulevard Interchange. With the proposed improvements, the four impacted single family residences are predicted to experience future traffic noise levels ranging from 66.3 to 67.6 dB(A), levels that approach and exceed the NAC for Activity Category B. As previously mentioned, there is an eight-foot concrete privacy wall that currently exists between the residences and I-95 as well as Central Boulevard.

A ground mounted noise barrier was evaluated approximately five feet inside the right-of-way with the proposed interchange at Central Boulevard. The barrier was evaluated at heights from eight to 22 feet in two-foot increments, with the length optimized at each height evaluated in order to reduce excess length (thus reducing cost) while attempting to meet noise reduction requirements.

The results of the evaluation are provided in **Table 4.7**. As shown, at a height of 22 feet, the noise barrier could provide three of the four impacted receptors with a reduction in traffic noise of at least five dB(A). However, at the maximum height of 22 feet, the required noise reduction design goal of seven dB(A) could not be achieved for any of the impacted receptors. As such, Noise Barrier 4 is not considered a reasonable noise abatement measure. The inability of the noise barrier to achieve the noise reduction design goal can primarily be attributed to the existing eight-foot privacy wall. The evaluated noise barrier could not meet the minimum noise reduction requirements above the noise reduction provided by the existing wall.

Table 4.7 - Noise Barrier 4

Barrier Height / Length (ft)	Impacted Receptors With Insertion Loss of (dB(A))			Number of Benefited Receptors			** Avg	Total Estimated Cost***	Cost Per Benefited Receptor	Cost Reasonable?
	5-5.9	6-6.9	7 or >	Impacted	* Other	Total				
8/1,495	0	0	0	0	0	0	--	--	--	--
10/1,495	0	0	0	0	0	0	--	--	--	--
12/1,495	0	0	0	0	0	0	--	--	--	--
14/1,495	0	0	0	0	0	0	--	--	--	--
16/1,495	0	0	0	0	0	0	--	--	--	--
18/1,495	0	0	0	0	0	0	--	--	--	--
20/1,495	1	0	0	1	0	1	5.1	--	--	--
22/1,495	3	0	0	3	0	3	5.5	--	--	--

* Other = Receptors determined to not be impacted by the project (traffic noise levels do not approach or exceed the NAC for their respective Activity Category of the NAC) but are benefited by the noise barrier.
** Avg = Average noise reduction applies only to "impacted" receptors that would receive at least a five dB(A) benefit from the noise barrier.
*** Cost reasonableness not evaluated since noise reduction design goal not achieved.

Since Noise Barrier 4 was determined to be unreasonable, Noise Barrier 4A was evaluated along the outside edge of the shoulder for Ramp D. As previously stated, noise barriers located along the roadway shoulder are limited to a maximum height of 14 feet.

The results of the evaluation indicate that even at the maximum height of 14 feet, Noise Barrier 4A could not provide any of the impacted receptors with a reduction of at least five dB(A). As such, the barrier is not considered a feasible abatement measure for the impacted receptors. As with Noise Barrier 4, the inability of the evaluated barrier to meet the minimum noise reduction requirements can primarily be attributed to the existing privacy wall, and can also be attributed to the limitations placed on the maximum height of noise barriers evaluated along the roadway shoulder.

NOISE BARRIER 5

Noise Barrier 5 was evaluated for the 23 impacted receptors in Winchester Court (Sites 234-241, 243, 249-251, 257, 259, and 261), located east of I-95, on the east side of Military Trail and north of Kyoto Gardens Drive. With the proposed improvements to I-95 and the Central Boulevard Interchange, the impacted receptors are predicted to experience future traffic noise levels ranging from 66.0 to 72.7 dB(A), levels that approach and exceed the NAC for Activity Category B land uses.

A ground mounted noise barrier was evaluated approximately five feet inside the FDOT right-of-way for Military Trail. In order to maintain access to the community, the noise

barrier was evaluated in two segments. The barrier was evaluated at heights from eight to 22 feet in two-foot increments, with the length optimized at each height evaluated in order to reduce excess length (thus reducing cost) while attempting to meet noise reduction requirements.

The results of the analysis are provided in **Table 4.8**. As shown, the noise reduction design goal could not be achieved until noise barrier heights of 10 feet or more. As also shown, the noise barrier could provide nine to 12 of the 23 impacted receptors with a reduction in traffic noise of at least five dB(A) at heights ranging from 10 to 22 feet while also achieving the noise reduction design goal for two to nine of the impacted receptors. At barrier heights ranging from 10 to 22 feet and their respective lengths, the total estimated cost to construct the noise barrier ranges from $228,900 to $485,100. The cost per benefited receptor ranges from $25,433 to $44,280, costs that are below the cost reasonableness criteria at barrier heights ranging from 10 to 16 feet, as well as 22 feet.

Table 4.8 - Noise Barrier 5

Barrier Height / Length (ft)	Impacted Receptors With Insertion Loss of (dB(A))			Number of Benefited Receptors			** Avg	Total Estimated Cost	Cost Per Benefited Receptor	Cost Reasonable?
	5-5.9	6-6.9	7 or >	Impacted	* Other	Total				
8/988	2	2	0	4	0	4	6.1	--	--	--
10/763	5	2	2	9	0	9	6.1	$228,900	$25,433	Yes
12/706	0	7	2	9	0	9	6.7	$254,160	$28,240	Yes
14/654	3	0	6	9	0	9	6.6	$274,680	$30,520	Yes
16/654	3	0	6	9	0	9	6.9	$313,920	$34,880	Yes
18/820	3	0	7	10	0	10	7.8	$442,800	$44,280	No
20/706	3	0	7	10	0	10	7.5	$423,600	$42,360	No
22/735	3	0	9	12	0	12	7.7	$485,100	$40,425	Yes

* Other = Receptors determined to not be impacted by the project (traffic noise levels do not approach or exceed the NAC for their respective Activity Category of the NAC) but are benefited by the noise barrier.
** Avg = Average noise reduction applies only to "impacted" receptors that would receive at least a five dB(A) benefit from the noise barrier.

Since Noise Barrier 5 is predicted to provide some of the impacted receptors with a reduction in traffic noise levels of at least five dB(A) while also achieving the noise reduction design goal at a cost below the cost reasonableness criteria, the noise barrier was evaluated further. The results of that evaluation are provided in **Table 4.9**.

Table 4.9 - Additional Considerations: Noise Barrier 5

Evaluation Criteria	Comment
1. Relationship of future levels to the abatement criteria	With the proposed improvements, the impacted receptors that could be benefited by the barrier are predicted to experience traffic noise levels ranging from 67.1 to 71.9 dB(A).
2. Amount of noise reduction	Traffic noise from the I-95 and the proposed interchange at Central Boulevard would be reduced a minimum of five dB(A) at up to 12 impacted receptors (an average reduction of up to 7.7 dB(A)). Additionally, the noise reduction design goal would be achieved for up to nine of the impacted receptors.
3. Safety	To be evaluated in greater detail during the design phase of the project.
4. Community desires	Community desires related to the potential noise barrier will be solicited during the design phase of the project.
5. Accessibility	To be evaluated in greater detail during the design phase of the project.
6. Local controls	Palm Beach County does not have an active noise control program.
7. Views of local officials with jurisdiction	To be determined during the design phase of the project.
8. Constructability	To be evaluated in greater detail during the design phase of the project.
9. Maintainability	To be evaluated in greater detail during the design phase of the project.
10. Aesthetics	To be determined during the design phase of the project.
11. ROW needs including access rights, easements for construction and/or maintenance, and additional land	The noise barrier will be located inside the FDOT's ROW along Military Trail. Additional ROW requirements, if any, will be determined during the design phase for the project.
12. Cost	The noise barrier is below the FDOT's cost reasonableness criteria.
13. Utilities	To be evaluated in greater detail during the design phase of the project.
14. Drainage	To be evaluated in greater detail during the design phase of the project.
16. Other environmental considerations	None.

As shown in Table 4.9, factors in favor of Noise Barrier 5 as a method of reducing traffic noise impacts from the proposed improvements to I-95 and the Central Boulevard interchange include:

- The noise barrier analysis determined that up to 12 of the 23 impacted receptors could potentially be benefited by the barrier.
- The noise barrier analysis determined that the noise barrier will reduce traffic noise levels at least five dB(A) at up to 12 noise sensitive receptors.

- The noise reduction design goal of seven dB(A) is achieved for up to nine impacted receptors.
- The cost per benefited receptor is below the FDOT cost reasonable guideline.
- The land use in the area is expected to remain noise sensitive in the future.

NOISE BARRIER 6/6A

Noise Barriers 6 and 6A were evaluated for the impacted tennis court (Site 256) located at Winchester Court. With the proposed project, the impacted recreational area is predicted to experience a future traffic noise level of 71.2 dB(A), a level that exceeds the NAC for Activity Category C.

The ground mounted noise barrier was evaluated in two segments (to maintain access to the community) within the Military Trail right-of-way.

The results of the analysis indicate that the noise reduction design goal would not be achieved until a barrier height of 10 feet and that a noise barrier 16 feet in height with a length of 421 feet could provide the largest amount of the impacted area with a reduction in traffic noise of at least five dB(A) while also achieving the required noise reduction design goal of at least seven dB(A) at a portion of the impacted area as well.

The cost reasonableness evaluation for Noise Barrier 6 is provided in **Table 4.10.** Using the optimal noise barrier dimensions of 16 feet tall at a length of 421 feet, and assuming each person would spend 1.5 hours per visit at the tennis court, it is possible to calculate the number of visitors on an average day that would need to occupy the benefited area to meet the cost reasonableness requirements for special land uses. As shown below, 190 people would need to use the single tennis court on an average day to meet the cost reasonableness requirements for special land uses, an amount that does not appear to be reasonable based on the size of the facility. As such, Noise Barrier 6 is not a cost reasonable noise abatement measure for the impacted tennis court located at Winchester Court.

Table 4.10 - Noise Barrier 6

Item	Criteria	Result
1	Length of proposed noise barrier	421 feet
2	Height of proposed noise barrier	16 feet
3	Multiply item 1 by item 2	6,736 ft^2
4	Average amount of time that a person stays at the site per visit	1.5 hours
5	Enter the average number of people that use this site per day that will receive at least a five dB(A) benefit from abatement at the site	190
6	Multiply item 4 by item 5	285 person-hours
7	Divide item 3 by item 6	23.63 ft^2 per person-hour
8	Multiply item 7 by $42,000	$992,460 per person-hour per ft^2
9	Does item 8 exceed the "abatement cost factor" of $995,935/person-hour/$ft^2$	No
10	If item 9 is no, abatement is reasonable	REASONABLE
11	If item 9 is yes, abatement is not reasonable	

Since Noise Barrier 6 was determined to be unreasonable, Noise Barrier 6A was evaluated along the outside edge of the Military Trail roadway shoulder. It was determined that a shoulder mounted noise barrier 14 feet tall with a length of 609 feet could provide a portion of the impacted tennis court with a reduction in traffic noise levels of at least five dB(A) while also achieving the noise reduction design goal at a portion of the impacted area as well.

The cost reasonableness evaluation for Noise Barrier 6A is provided in **Table 4.11.** Using the optimal noise barrier dimensions of 14 feet tall at a length of 609 feet, and assuming each person would spend 1.5 hours per visit at the tennis court, it is possible to calculate the number of visitors on an average day that would need to occupy the benefited area to meet the cost reasonableness requirements for special land uses. As shown below, 240 people would need to use the single tennis court on an average day to meet the cost reasonableness requirements for special land uses, an amount that does not appear to be reasonable based on the size of the facility. As such, Noise Barrier 6A is not a cost reasonable noise abatement measure for the impacted tennis court located at Winchester Court.

Table 4.11 - Noise Barrier 6A

Item	Criteria	Result
1	Length of proposed noise barrier	609 feet
2	Height of proposed noise barrier	14 feet
3	Multiply item 1 by item 2	8,526 ft^2
4	Average amount of time that a person stays at the site per visit	1.5 hours
5	Enter the average number of people that use this site per day that will receive at least a five dB(A) benefit from abatement at the site	240
6	Multiply item 4 by item 5	360 person-hours
7	Divide item 3 by item 6	23.68 ft^2 per person-hour
8	Multiply item 7 by $42,000	$994,560 per person-hour per ft^2
9	Does item 8 exceed the "abatement cost factor" of $995,935/person-hour/$ft^2$	No
10	If item 9 is no, abatement is reasonable	REASONABLE
11	If item 9 is yes, abatement is not reasonable	

NOISE BARRIER 7/7A

Noise Barrier 7 was evaluated for the 32 impacted receptors in the Sabal Ridge condominiums (Sites 266-273), located east of I-95, on the west side of Military Trail. The 32 impacted receptors are located on the first and second floors of the condo buildings, and are predicted to experience future traffic noise levels ranging from 66.5 to 73.1 dB(A) with the proposed improvements, levels that approach and exceed the NAC for Activity Category B land uses.

A ground mounted noise barrier was evaluated approximately five feet inside the proposed right-of-way for I-95. The height of the barrier was evaluated from eight to 22 feet in two-foot increments. The length of the barrier was optimized at each height evaluated while reducing excess length (thus reducing cost) while attempting to meet noise reduction requirements.

The results of the noise barrier evaluation are provided in **Table 4.12**. As shown, barrier heights less than 18 feet would not achieve the required noise reduction design goal. As also shown, noise barrier heights of 20 and 22 feet could provide 20 to 24 of the impacted receptors with a reduction of at least five dB(A) and achieve the noise reduction design goal for up to four impacted receptors. At heights ranging from 20 to 22 feet and at their respective lengths, the total estimated cost to construct the barrier ranges from $1,151,040 to $1,198,200. The cost per benefited receptor ranges from $47,960 to $59,910, costs that exceed the cost reasonableness criteria. As such, although Noise Barrier 6 is predicted to provide some of the impacted receptors with a reduction of at least five dB(A) while also achieving the noise reduction design goal, since the cost per benefited receptor exceeds

FDOT's upper limit of $42,000, the barrier is not considered a reasonable noise abatement measure for the impacted receptors.

Table 4.12 - Noise Barrier 7

Barrier Height / Length (ft)	Impacted Receptors With Insertion Loss of (dB(A))			Number of Benefited Receptors			** Avg	Total Estimated Cost	Cost Per Benefited Receptor	Cost Reasonable?
	5-5.9	6-6.9	7 or >	Impacted	* Other	Total				
8/2,096	0	0	0	0	0	0	--	--	--	--
10/2,096	0	0	0	0	0	0	--	--	--	--
12/2,096	0	0	0	0	0	0	--	--	--	--
14/2,096	0	0	0	0	0	0	--	--	--	--
16/2,096	6	0	0	6	0	6	5.2	--	--	--
18/2,096	10	4	0	14	0	14	5.6	--	--	--
20/1,997	6	12	2	20	0	20	6.2	$1,198,200	$59,910	No
22/1,744	6	14	4	24	0	24	6.3	$1,151,040	$47,960	No

* Other = Receptors determined to not be impacted by the project (traffic noise levels do not approach or exceed the NAC for their respective Activity Category of the NAC) but are benefited by the noise barrier.
** Avg = Average noise reduction applies only to "impacted" receptors that would receive at least a five dB(A) benefit from the noise barrier.

Since Noise Barrier 7 was determined to be unreasonable, Noise Barrier 7A was evaluated along the outside edge of the roadway shoulder for Ramp B. Noise barriers located on roadway shoulders are limited to a maximum height of 14 feet.

The results of the evaluation are provided in **Table 4.13**. At a height of 14 feet, the barrier could provide 18 of the 32 impacted receptors with a reduction in traffic noise levels of at least five dB(A). However, at the maximum height of 14 feet, the noise reduction design goal could not be achieved for any of the receptors, with the maximum achievable reduction being 6.6 dB(A). As such, Noise Barrier 7A is not a reasonable abatement measure for the impacted residential receptors at the Sabal Ridge condominiums. The inability of the barrier to achieve the noise reduction design goal requirement can be attributed to the height limitations on the shoulder mounted noise barrier and the distance from the noise barrier to the impacted receptors.

Table 4.13 - Noise Barrier 7A

Barrier Height / Length (ft)	Impacted Receptors With Insertion Loss of (dB(A))			Number of Benefited Receptors			** Avg	Total Estimated Cost***	Cost Per Benefited Receptor	Cost Reasonable?
	5-5.9	6-6.9	7 or >	Impacted	* Other	Total				
8/2,341	0	0	0	0	0	0	--	--	--	--
10/2,341	0	0	0	0	0	0	--	--	--	--
12/2,341	6	0	0	6	0	6	5.3	--	--	--
14/2,341	10	8	0	18	0	18	5.9	--	--	--

* Other = Receptors determined to not be impacted by the project (traffic noise levels do not approach or exceed the NAC for their respective Activity Category of the NAC) but are benefited by the noise barrier.
** Avg = Average noise reduction applies only to "impacted" receptors that would receive at least a five dB(A) benefit from the noise barrier
*** Cost reasonableness not evaluated since noise reduction design goal not achieved.

NOISE BARRIER 8

Noise Barrier 8 was evaluated for the 74 impacted receptors in the Quaye Apartments (Sites 298, 300B, 306, 308B, 310, 312B, 312C, 314, 316B, 318, 319B, and 321A-324C), located in the southeast quadrant of I-95 and the proposed interchange with Central Boulevard. The impacted receptors are located on the first, second and third floors of the apartment buildings and are predicted to experience future traffic noise levels ranging from 66.2 to 76.2 dB(A), levels that approach and exceed the NAC for Activity Category B land uses.

In order to accommodate the drainage feature that occurs in the vicinity of station 3029+50 for Ramp B, it was necessary to evaluate the ground mounted noise barrier in two segments. A shoulder mounted noise barrier was also evaluated along the outside edge of Ramp B to prevent sound from passing through the gap in the ground mounted noise barrier. The shoulder barrier was limited to a maximum height of 14 feet, with the exception of approximately 80 feet that would be located on the bridge structure and limited to a maximum height of eight feet.

The results of the evaluation are provided in **Table 4.14.** As shown, the noise reduction design goal could not be achieved until a right-of-way noise barrier height of 12 feet. As also shown, at right-of-way barrier heights ranging from 12 to 22 feet (with the respective height/length for the shoulder mounted barrier), 24 to all 74 of the impacted receptors may experience a reduction in traffic noise levels of at least five dB(A), with 20 to 46 of the impacted receptors predicted to achieve the noise reduction design goal of at least seven dB(A). At the ROW barrier heights ranging from 12 to 22 feet and including the respective height/length for the shoulder mounted noise barrier, the total estimated cost for Noise Barrier 8 ranges from $495,480 to $1,380,420.

Table 4.14 - Noise Barrier 8

Ground Mounted Noise Barrier Height / Length (ft)	Shoulder Mounted Noise Barrier Height /Length (ft)*	Impacted Receptors With Insertion Loss of (dB(A))			Number of Benefited Receptors			Avg***	Total Estimated Cost	Cost Per Benefited Receptor	Cost Reasonable?
		5-5.9	6-6.9	7 or >	Impacted	** Other	Total				
8/2,288	8/501	2	0	0	2	0	2	5.2	--	--	--
10/2,288	10/501	12	8	0	20	0	20	6.0	--	--	--
12/902	12/501	2	2	20	24	0	24	6.8	$495,480	$20,645	Yes
14/1,439	14/501	12	2	22	36	0	36	7.1	$800,400	$22,233	Yes
16/1,436	14/501	14	10	24	48	0	48	7.1	$885,300	$18,444	Yes
18/1,976	0/0	20	8	36	64	2	66	7.3	$1,067,040	$16,167	Yes
20/1,974	14/501	4	20	44	68	4	72	8.1	$1,380,420	$19,172	Yes
22/1,974	0/0	10	18	46	74	8	82	8.0	$1,302,840	$15,888	Yes

* Includes approximately 80 feet of noise barrier located on bridge structure (Maximum height of 8 feet)
** Other = Receptors determined to not be impacted by the project (traffic noise levels do not approach or exceed the NAC for their respective Activity Category of the NAC) but are benefited by the noise barrier.
*** Avg = Average noise reduction applies only to "impacted" receptors that would receive at least a five dB(A) benefit from the noise barrier.

The cost per benefited receptor ranges from $15,888 to $22,233, costs that are below the cost reasonableness criteria.

Since Noise Barrier 8 is predicted to provide the impacted receptors with a reduction in traffic noise levels of at least five dB(A) while also achieving the noise reduction design goal at a cost below the cost reasonableness criteria, the noise barrier was evaluated further. The results of that evaluation are provided in **Table 4.15**.

Table 4.15 - Additional Considerations: Noise Barrier 8

Evaluation Criteria	Comment
1. Relationship of future levels to the abatement criteria	With the proposed improvements, the 74 impacted receptors that could be benefited by the barrier are predicted to experience traffic noise levels ranging from 66.2 to 76.2 dB(A).
2. Amount of noise reduction	Traffic noise from the I-95 and the proposed interchange at Central Boulevard would be reduced a minimum of five dB(A) at 74 impacted receptors (an average reduction of up to 8.1 dB(A)). Additionally, the noise reduction design goal would be achieved for up to 46 of the impacted receptors.
3. Safety	To be evaluated in greater detail during the design phase of the project.
4. Community desires	Community desires related to the potential noise barrier will be solicited during the design phase of the project.
5. Accessibility	To be evaluated in greater detail during the design phase of the project.
6. Local controls	Palm Beach County does not have an active noise control program.
7. Views of local officials with jurisdiction	To be determined during the design phase of the project.
8. Constructability	To be evaluated in greater detail during the design phase of the project.
9. Maintainability	To be evaluated in greater detail during the design phase of the project.
10. Aesthetics	To be determined during the design phase of the project.
11. ROW needs including access rights, easements for construction and/or maintenance, and additional land	The noise barrier will be located inside the FDOT's ROW along I-95. Additional ROW requirements, if any, will be determined during the design phase for the project.
12. Cost	The noise barrier is below the FDOT's cost reasonableness criteria.
13. Utilities	To be evaluated in greater detail during the design phase of the project.
14. Drainage	To be evaluated in greater detail during the design phase of the project.
16. Other environmental considerations	None.

As shown in Table 4.15, factors in favor of Noise Barrier 8 as a method of reducing traffic noise impacts from the proposed improvements to I-95 and the Central Boulevard interchange include:

- The noise barrier analysis determined that all 74 impacted receptors could potentially be benefited by the barrier.
- The noise barrier analysis determined that the noise barrier will reduce traffic noise levels at least five dB(A) at up to 82 noise sensitive receptors.

- The noise reduction design goal of seven dB(A) is achieved for up to 46 impacted receptors.
- The cost per benefited receptor is below the FDOT cost reasonable guideline.
- The land use in the area is expected to remain noise sensitive in the future.

NOISE BARRIER 9/9A

Noise Barrier 9 was evaluated for the impacted recreational areas (Sites 408 and 410-416) at the Mandel Jewish Community Center (Mandel JCC), located in the northeast quadrant of I-95 and Hood Road. Impacted areas include athletic fields, a playground and a swimming pool. With the proposed improvements, the impacted areas are predicted to experience future traffic noise levels ranging from 66.1 to 73.2 dB(A), levels that approach and exceed the NAC for Activity Category C land uses.

As previously discussed, the feasibility and reasonableness of providing noise barriers at impacted recreational areas is determined following guidance found in the FDOT publication "A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations". Consistent with that methodology, a noise barrier for special land uses must not cost more than $995,935 per person-hour per square foot of noise barrier.

A ground mounted noise barrier was evaluated approximately five feet inside the proposed right-of-way for the project. The northern and southern termini of the barrier were optimized at each height evaluated, in order to minimize excess barrier length (thus reducing cost) while attempting to achieve noise reduction requirements at the impacted areas of the park. The height of the barrier was evaluated from 8 to 22 feet, in two-foot increments.

The results of the analysis indicate that the noise reduction design goal would not be achieved until a barrier height of 14 feet and that a noise barrier 18 feet tall with a length of 1,655 feet could provide all of the impacted area with a reduction in traffic noise of at least five dB(A) while also achieving the required noise reduction design goal of at least seven dB(A) at a portion of the impacted area. Using those noise barrier dimensions, the amount of people required to use the benefited area on an average day was calculated and is provided in **Table 4.16**. As shown, a minimum of 629 people would need to use the area benefited by the noise barrier (athletic fields, swimming pool and playground) on an average day in order to meet cost reasonableness requirements, an amount that does not appear to be reasonable based on the size and nature of use at those areas. As such, Noise Barrier 9 is not a reasonable abatement measure for the impacted recreational areas at the Mandel JCC.

Table 4.16 - Noise Barrier 9

Item	Criteria	Result
1	Length of proposed noise barrier	1,655 feet
2	Height of proposed noise barrier	18 feet
3	Multiply item 1 by item 2	29,790 ft^2
4	Average amount of time that a person stays at the site per visit	2 hours
5	Enter the average number of people that use this site per day that will receive at least a five dB(A) benefit from abatement at the site	629
6	Multiply item 4 by item 5	1,258 person-hours
7	Divide item 3 by item 6	23.68 ft^2 per person-hour
8	Multiply item 7 by $42,000	$994,560 per person-hour per ft^2
9	Does item 8 exceed the "abatement cost factor" of $995,935/person-hour/$ft^2$	No
10	If item 9 is no, abatement is reasonable	REASONABLE
11	If item 9 is yes, abatement is not reasonable	

Since Noise Barrier 9 at the right-of-way was determined to be unreasonable, Noise Barrier 9A was evaluated along the outside edge of the roadway shoulder of I-95. As previously discussed, shoulder mounted noise barriers are limited to a maximum height of 14 feet.

The results of the evaluation for Noise Barrier 9A indicate that a shoulder mounted noise barrier 12 feet tall with a length of 1,600 feet could provide all of the impacted areas with a reduction in traffic noise of at least five dB(A) while also achieving the noise reduction design goal at a portion of the impacted area as well.

Using those noise barrier dimensions, the amount of people required to use the benefited area on an average day was calculated and is provided in **Table 4.17**. As shown, a minimum of 405 people would need to use the area benefited by the noise barrier (athletic fields, swimming pool and playground) on an average day in order to meet cost reasonableness requirements, an amount that does not appear to be reasonable based on the size and nature of use at those areas. As such, Noise Barrier 9A is not a reasonable abatement measure for the impacted recreational areas at the Mandel JCC.

Table 4.17 - Noise Barrier 9A

Item	Criteria	Result
1	Length of proposed noise barrier	1,600 feet
2	Height of proposed noise barrier	12 feet
3	Multiply item 1 by item 2	19,200 ft^2
4	Average amount of time that a person stays at the site per visit	2 hours
5	Enter the average number of people that use this site per day that will receive at least a five dB(A) benefit from abatement at the site	405
6	Multiply item 4 by item 5	810 person-hours
7	Divide item 3 by item 6	23.70 ft^2 per person-hour
8	Multiply item 7 by $42,000	$995,400 per person-hour per ft^2
9	Does item 8 exceed the "abatement cost factor" of $995,935/person-hour/$ft^2$	No
10	If item 9 is no, abatement is reasonable	REASONABLE
11	If item 9 is yes, abatement is not reasonable	

4.6 SUMMARY OF NOISE BARRIER ANALYSIS

Noise barriers were evaluated as an abatement measure for the 151 residential and six recreational noise sensitive receptors predicted to experience future build traffic noise levels that approach, meet, or exceed the NAC for their respective activity category of the NAC. Based on the results of the analysis, noise barriers are a potentially feasible and cost reasonable noise abatement measure for up to 94 of the impacted receptors located in Garden Lakes (Noise Barrier 1), Winchester Court (Noise Barrier 5) and the Quaye Apartments (Noise Barrier 8).

Noise barriers were not feasible and cost reasonable at the remaining impacted receptors due to the inability of the evaluated noise barrier to meet the minimum requirements for feasibility and reasonableness due to site specific geometry or the distance between the evaluated noise barrier and the impacted receptors. A noise barrier was not evaluated for Site 356 located in Westwood Gardens (east of I-95) since there is only one impacted receptor and as such, would not meet the minimum feasibility requirements set forth in FDOT's traffic noise policy. In the case of the impacted recreational areas, the recreational facilities would likely not generate enough person-hours of use to meet the cost reasonableness requirements for special land uses.

The FDOT is committed to the construction of these barriers contingent upon the following conditions:

- Detailed traffic noise analysis during the design phase of the proposed improvements supports the need, feasibility and reasonableness of providing abatement;

- Cost analysis indicates that the cost of the noise barriers will not exceed the cost reasonableness criterion;
- Community input regarding desires, locations, and aesthetic options have been solicited by the District Office; and
- Safety and engineering aspects as related to the roadway user and the adjacent property owner have been reviewed and any conflicts or issues resolved.

5.0 CONSTRUCTION NOISE AND VIBRATION

Land uses adjacent to the I-95 and the proposed Central Boulevard Interchange (e.g., residences and hotels) are identified in the FDOT listing of noise and vibration-sensitive sites contained in Table 17.3 of the FDOT PD&E Manual. Construction of the proposed roadway improvements is not expected to have any significant noise or vibration impact. If additional sensitive uses develop adjacent to the roadway prior to construction, increased potential for noise or vibration impacts could result. It is anticipated that the application of the FDOT "Standard Specifications for Road and Bridge Construction"[7] will minimize or eliminate potential construction noise and vibration impacts. However, should unanticipated noise or vibration issues arise during the construction process, the Project Engineer, in coordination with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

6.0 PUBLIC INVOLVEMENT

A detailed public involvement program has been carried out for this project since the beginning of the PD&E Study.

The Alternatives Public Workshop was held on February 18, 2016 from 5:30pm until 8:30pm at the chambers for the City of Palm Beach Gardens, located at 10500 North Military Trail, Palm Beach Gardens, FL 33410. Over 100 individuals attended the Alternatives Workshop, which included exhibits of the various improvements and alternatives available for viewing by the public. Several traffic noise-related comments were received from individuals residing in the communities within the project corridor.

The Public Hearing for the project was held on September 28, 2016, from 5:30pm until approximately 7:00pm at the chambers for the City of Palm Beach Gardens, located at 10500 North Military Trail, Palm Beach Gardens, FL 33410. The hearing consisted of an open house format at the beginning where the public could view various exhibits related to the preferred alternative and was followed by a video presentation and the public comment period. Several traffic noise-related questions and comments were received during the open house portion of the hearing.

7.0 NOISE CONTOURS

Land uses such as residences, motels, schools, churches and recreation areas are considered incompatible with highway traffic noise levels that exceed the NAC for their respective Activity Category as detailed previously in Section 3.0. In order to reduce the possibility of additional noise related impacts, noise level contours were developed for the future improved roadway facility. These noise contours delineate the distance from the improved roadway's edge-of-pavement (EOP) where the NAC for each Activity Category (A through E) is expected to be approached (i.e. within one dB(A) of the NAC) in the design year (2040) with the proposed improvements to I-95 and the Central Boulevard interchange.

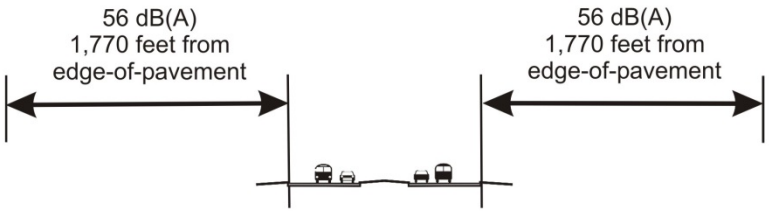
Providing a buffer between a roadway and future noise sensitive land uses is an abatement measure that can minimize/eliminate noise impacts in areas of future development. To encourage the use of this abatement measure through local land use planning and zoning, copies of this report, once finalized, will be shared with local Palm Beach County officials consistent with state requirements found in Part 2, Chapter 17 of the PD&E Manual, and federal requirements found in 23 CFR Part 772.

As shown in **Table 7.1**, within the project limits, the extent of the noise level contour varies by roadway segment and for each of the Activity Categories evaluated. **Figures 8** through **11** illustrate the noise contours. Examples of typical noise levels can be found in **Table 7.2**.

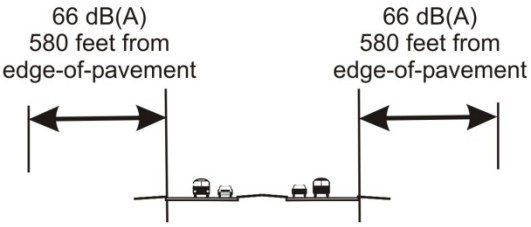
Table 7.1 – Noise Contours

I-95 Roadway Segment	Activity Category	NAC for Activity Category (dB(A))	Distance to Approach (within 1 dB(A)) of NAC for Activity Category (feet)*
PGA Boulevard to North of Military Trail	A	57	1,770
	B	67	580
	C	67	580
	D**	52	285
	E	72	285
North of Military Trail to North of Central Boulevard	A	57	1,930
	B	67	600
	C	67	600
	D**	52	285
	E	72	285
North of Central Boulevard to Hood Road	A	57	1,560
	B	67	450
	C	67	450
	D**	52	195
	E	72	195
Hood Road to Donald Ross Road	A	57	1,435
	B	67	500
	C	67	500
	D**	52	235
	E	72	235

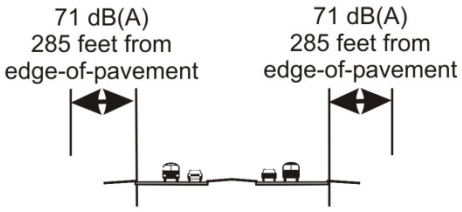
* Distances are measured from the improved roadway's edge of pavement (EOP), do not account for any reduction in noise levels that may occur from shielding, and should be used for planning purposes only.
** The distance to the interior impact criteria for Activity Category D is based on a conservative reduction factor of 20 dB(A) due to the building envelope that is applied to the predicted exterior traffic noise level.



Activity Category A

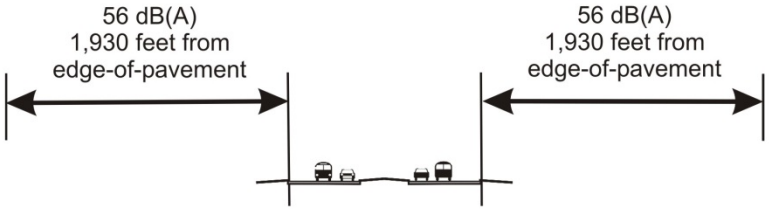


Activity Category B/C



Activity Category D/E

SR 9 / I-95 at Central Boulevard PD&E Study FM No. 413265-1-22-01	Noise Contours: PGA Boulevard to North of Military Trail	Figure 12
	Draft Noise Study Report	September 2016



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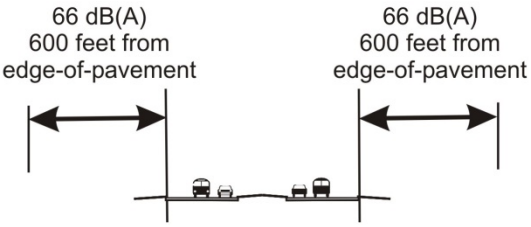

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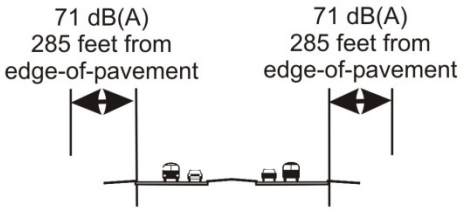
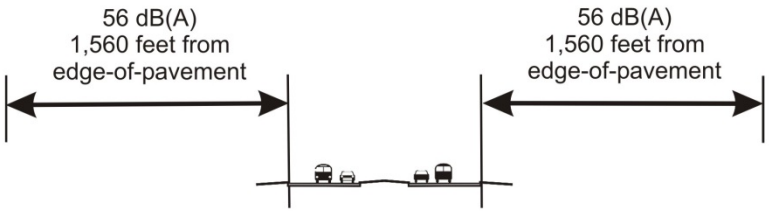
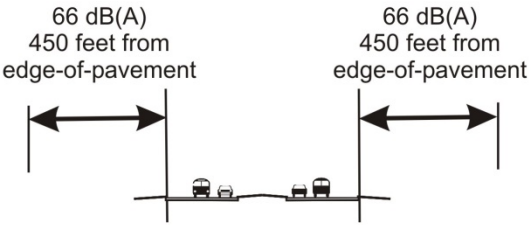


Activity Category D/E

SR 9 / I-95 at Central Boulevard PD&E Study FM No. 413265-1-22-01	Noise Contours: North of Military Trail to North of Central Boulevard	Figure 13
	Draft Noise Study Report	September 2016



Activity Category A



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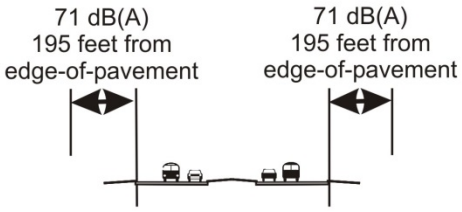
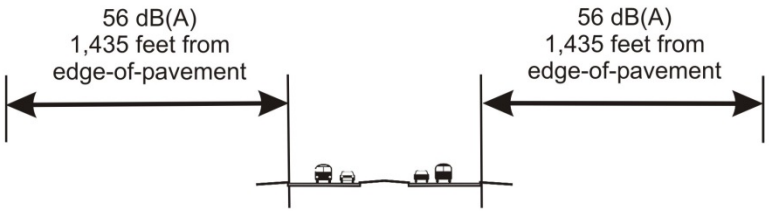
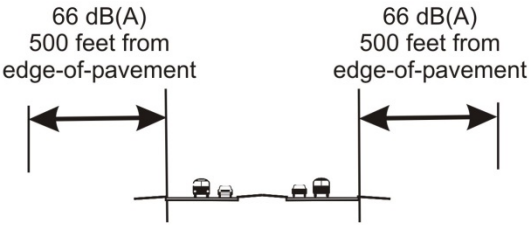


Activity Category D/E

SR 9 / I-95 at Central Boulevard PD&E Study FM No. 413265-1-22-01	Noise Contours: North of Central Boulevard to Hood Road	Figure 14
	Draft Noise Study Report	September 2016



Activity Category A



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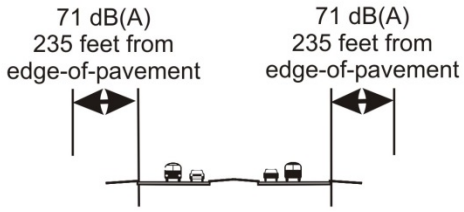


Activity Category D/E

SR 9 / I-95 at Central Boulevard PD&E Study FM No. 413265-1-22-01	Noise Contours: Hood Road to Donald Ross Road	Figure 15
	Draft Noise Study Report	September 2016

Table 7.2 –Typical Sound Levels

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

8.0 REFERENCES

1. 23 Code of Federal Regulations, Part 772: "Procedures for Abatement of Highway Traffic Noise and Construction Noise." Federal Highway Administration; July 13, 2010; 6 pp.

2. Florida Department of Transportation Project Development and Environment Manual, Part 2, Chapter 17; May 24, 2011; 40 pp.

3. Measurement of Highway-Related Noise. U.S. Department of Transportation; May 1996. 189 pp.

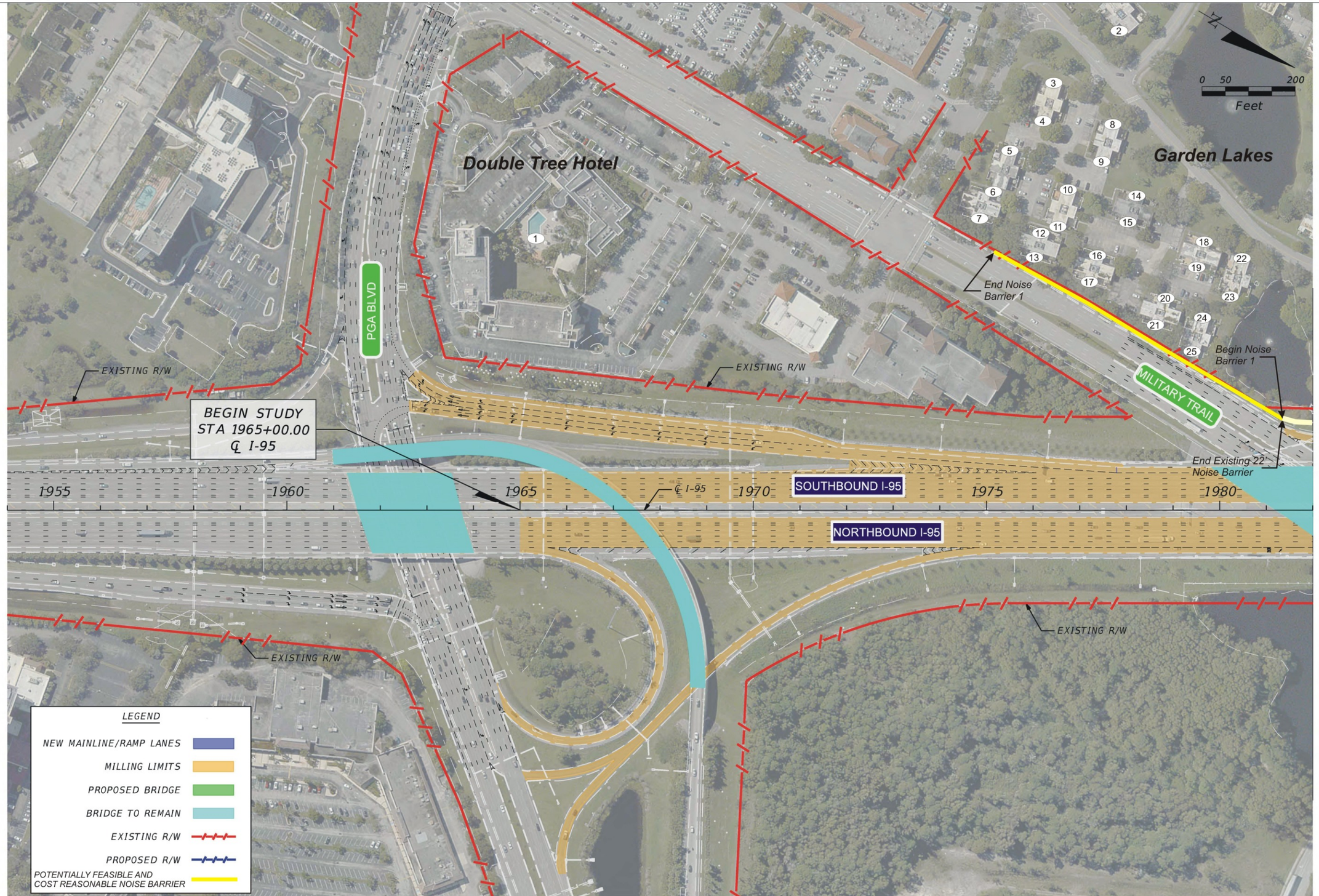
4. Federal Highway Administration; Highway Traffic Noise: Analysis and Abatement Guidance; December 2011; 75pp.

5. A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations. Florida Department of Transportation. Updated July 22, 2009. 64 pp.

6. Plans Preparation Manual Chapter 32 (Noise Walls and Perimeter Walls); Florida Department of Transportation; January 1, 2016; 18pp.

7. Florida Department of Transportation Standard Specifications for Road and Bridge Construction; 2016; 1,206 pp.

APPENDIX A: Conceptual Plans with Noise Sensitive Receptors



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SR 9/I-95 AT CENTRAL BLVD. INTERCHANGE PD&E STUDY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9	PALM BEACH	413265-1-22-01

I-95 FROM PGA BLVD. TO DONALD ROSS RD. (ALT 2)

SHEET NO. 1

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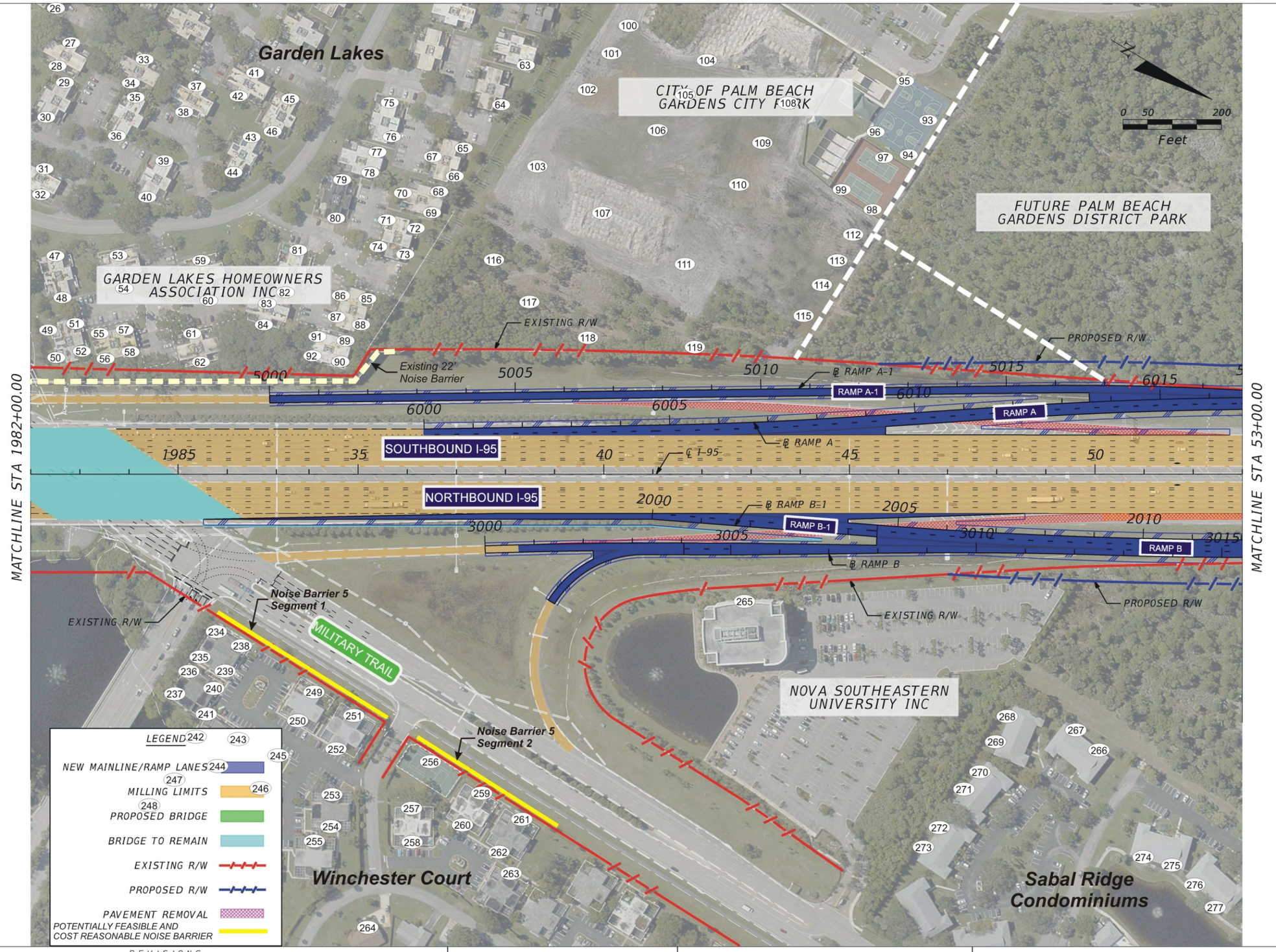

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SR 9/I-95 AT CENTRAL BLVD. INTERCHANGE PD&E STUDY

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9	PALM BEACH	413265-1-22-01

I-95 FROM PGA BLVD. TO DONALD ROSS RD. (ALT 2)

SHEET NO. 2

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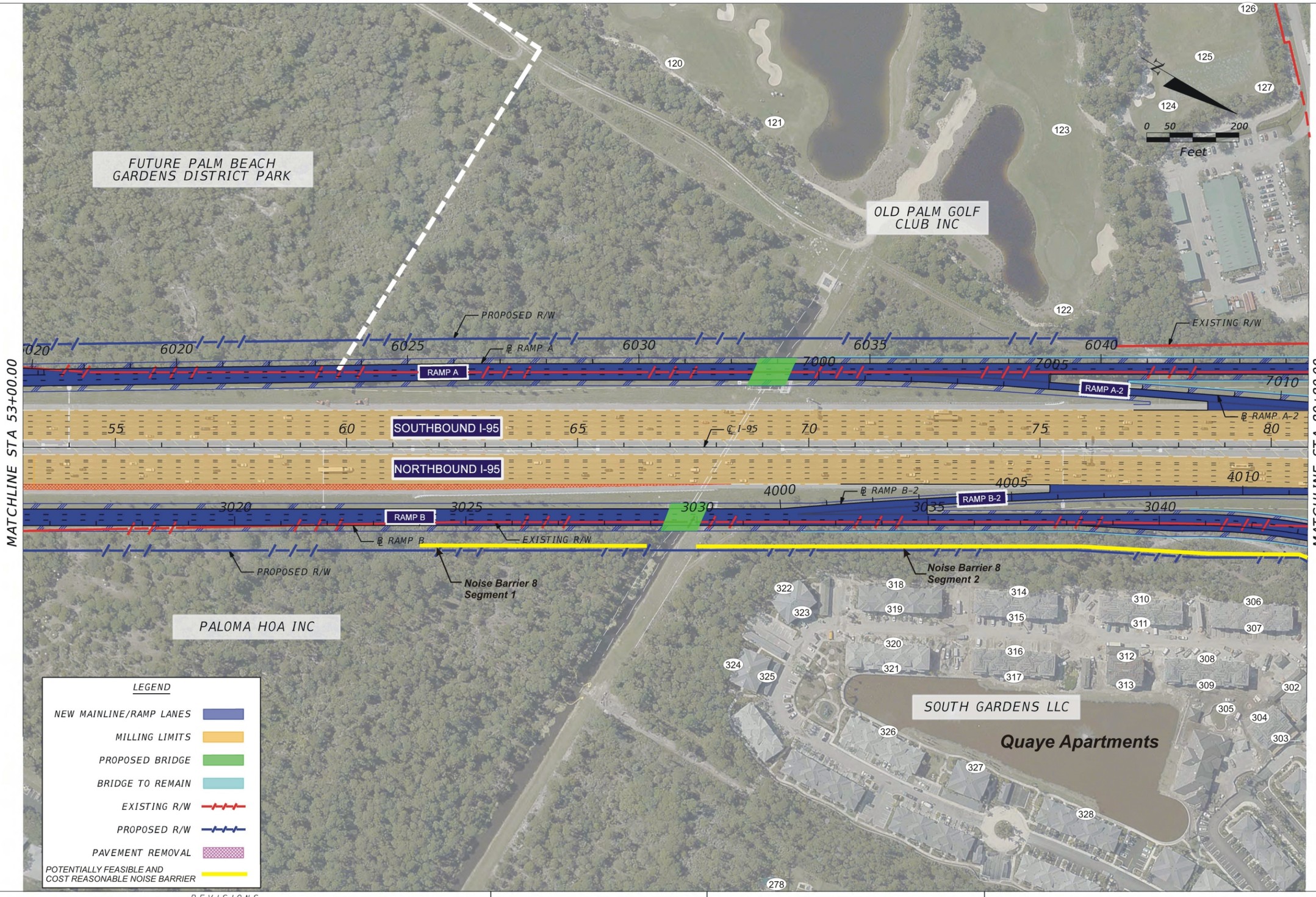

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SR 9/I-95 AT CENTRAL BLVD. INTERCHANGE PD&E STUDY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9	PALM BEACH	413265-1-22-01

I-95 FROM PGA BLVD. TO DONALD ROSS RD. (ALT 2)

SHEET NO. 3

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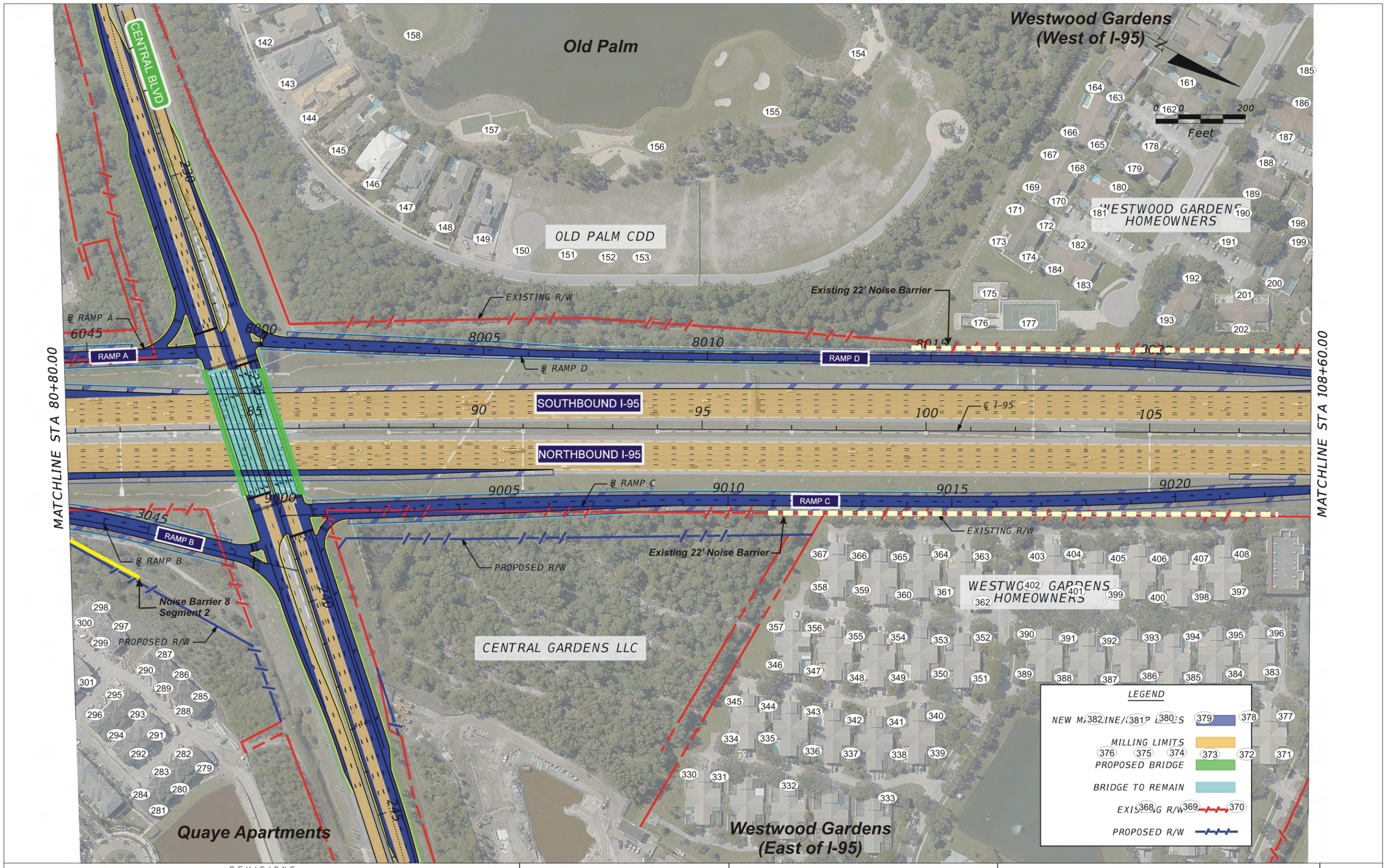

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SR 9/I-95 AT CENTRAL BLVD. INTERCHANGE PD&E STUDY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9	PALM BEACH	413265-1-22-01

I-95 FROM PGA BLVD. TO DONALD ROSS RD. (ALT 2)

SHEET NO. 4

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MATCHLINE STA 108+60.00

MATCHLINE STA 136+40.00

TREVI AT THE GARDENS HOA INC

Existing 22' Noise Barrier

EXISTING R/W

8025

℄ RAMP D

RAMP D

110 115 ℄ I-95 120 SOUTHBOUND I-95 125 130 135

NORTHBOUND I-95

9025

RAMP C

℄ RAMP C

HOOD ROAD

EXISTING R/W

JEWISH FEDERATION OF PALM BEACH COUNTY INC

Mandel Jewish Community Center

Wandering Trails Riding Academy

0 50 200

Feet

LEGEND

- NEW MAINLINE/RAMP LANES
- MILLING LIMITS
- PROPOSED BRIDGE
- BRIDGE TO REMAIN
- EXISTING R/W
- PROPOSED R/W

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SR 9/I-95 AT CENTRAL BLVD. INTERCHANGE PD&E STUDY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9	PALM BEACH	413265-1-22-01

I-95 FROM PGA BLVD. TO DONALD ROSS RD. (ALT 2)

SHEET NO. 5

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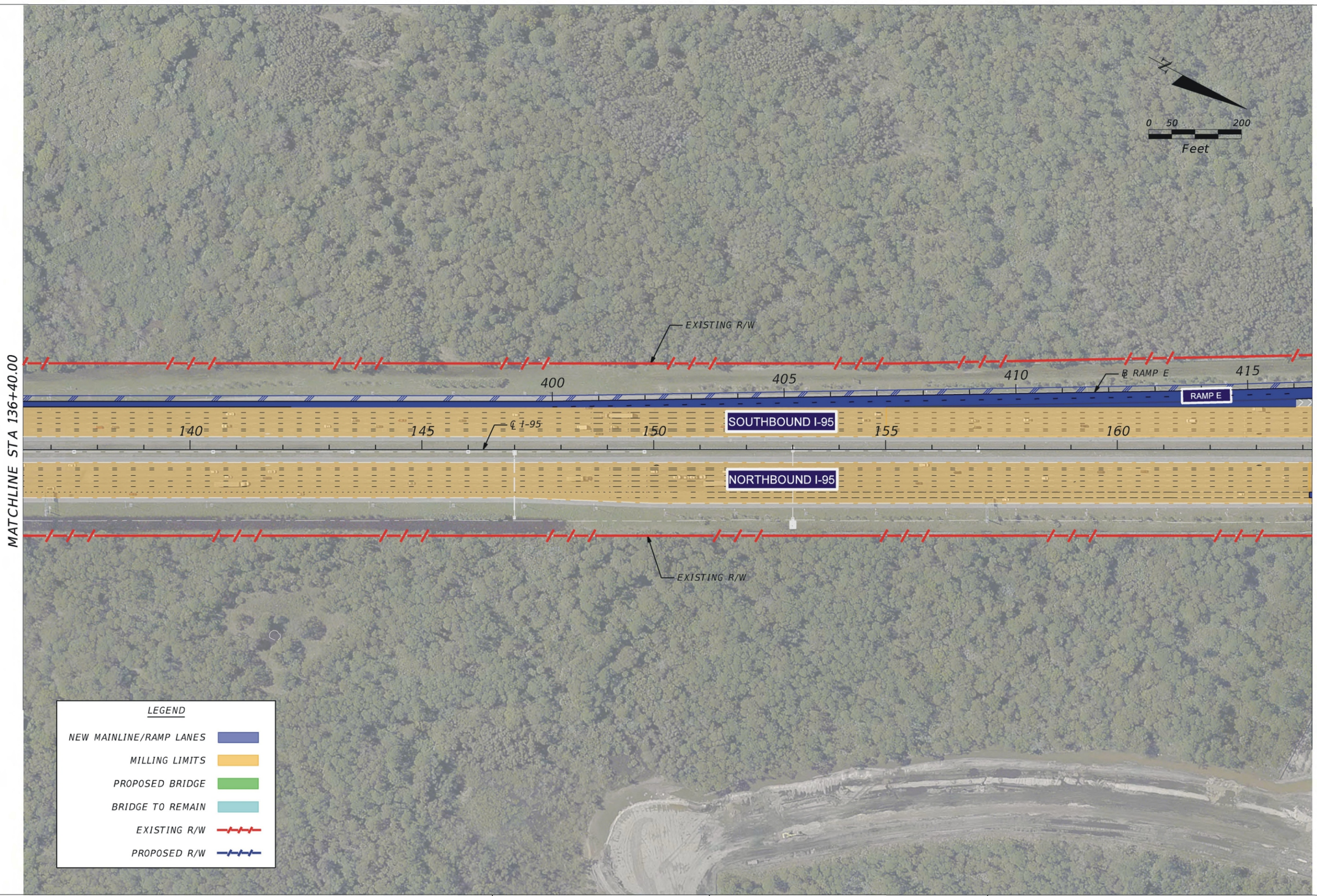

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SR 9/I-95 AT CENTRAL BLVD. INTERCHANGE PD&E STUDY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9	PALM BEACH	413265-1-22-01

I-95 FROM PGA BLVD. TO DONALD ROSS RD. (ALT 2)

SHEET NO. 6

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MATCHLINE STA 164+20.00

0 50 200
Feet

EXISTING R/W

420

℄ RAMP E

425

RAMP E

END STUDY
STA 190+00.00
℄ I-95

165 170 ℄ I-95 175 180 185 190

SOUTHBOUND I-95

NORTHBOUND I-95

RAMP F

EXISTING R/W

DONALD ROSS RD

LEGEND

- NEW MAINLINE/RAMP LANES
- MILLING LIMITS
- PROPOSED BRIDGE
- BRIDGE TO REMAIN
- EXISTING R/W
- PROPOSED R/W

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SR 9/I-95 AT CENTRAL BLVD. INTERCHANGE PD&E STUDY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9	PALM BEACH	413265-1-22-01

I-95 FROM PGA BLVD. TO DONALD ROSS RD. (ALT 2)

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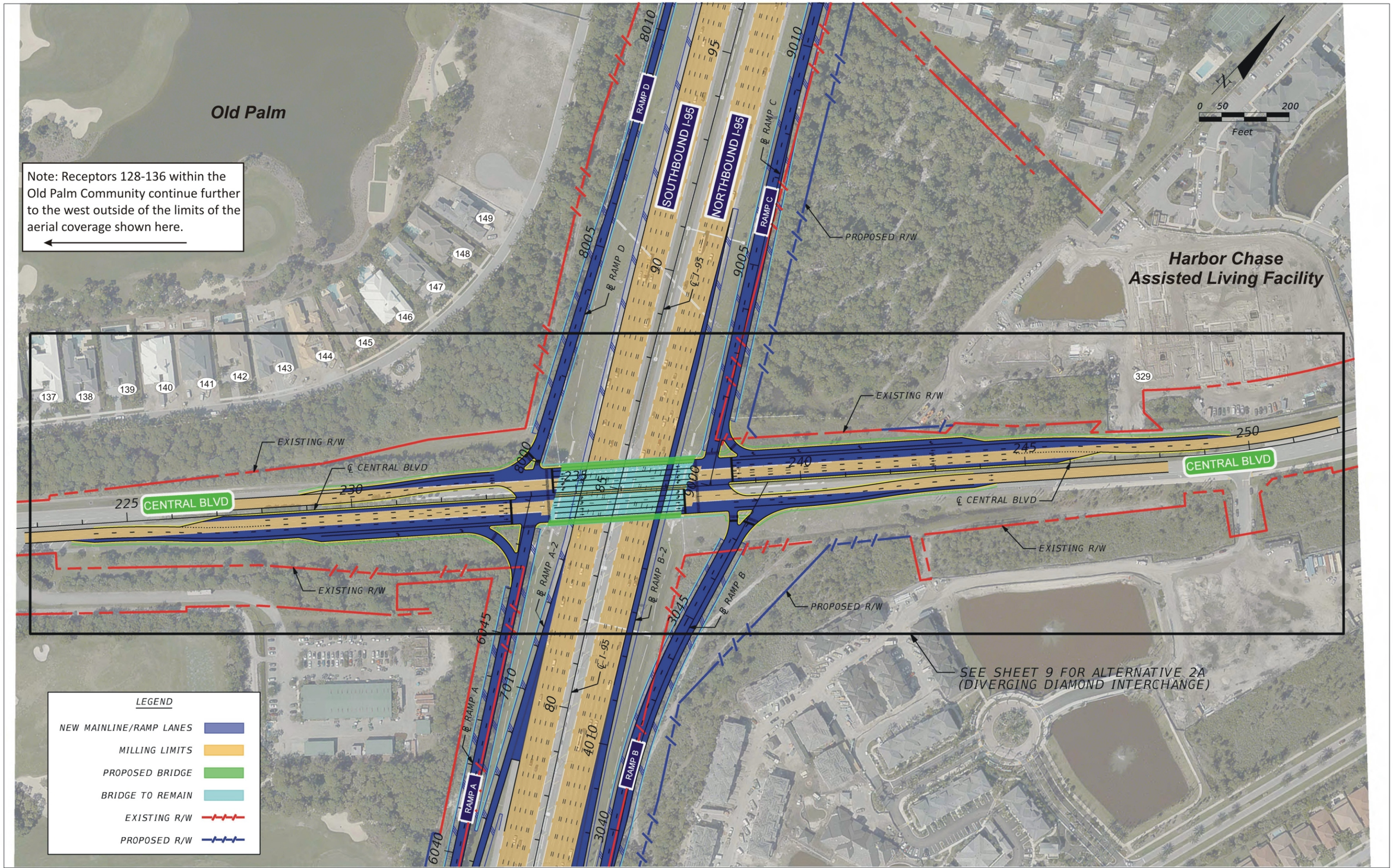

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SR 9/I-95 AT CENTRAL BLVD. INTERCHANGE PD&E STUDY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9	PALM BEACH	413265-1-22-01

I-95 FROM PGA BLVD. TO DONALD ROSS RD. (ALT 2)

SHEET NO. 8

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APPENDIX B: Noise Analysis Traffic Data

SR 9/I-95 at Central Boulevard Interchange PD&E Study, Palm Beach County
FPID: 413265-1-22-01

Traffic Data for Noise Analysis - I-95 Mainline

I-95 from PGA EB Off Ramp to PGA WB Off Ramp		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 10	Lanes: 10	Lanes: 10
ADT: LOS (C) 15,360	ADT: LOS (C) 15,360	ADT: LOS (C) 15,360
Demand 9,733	Demand 12,958	Demand 13,209
Posted Spd: 65 mph	Posted Spd: 65 mph	Posted Spd: 65 mph
K= 100.0 %	K= 100.0 %	K= 100.0 %
D= 60 %	D= 60 %	D= 54 %
3.30 % Medium Trucks DHV	3.30 % Medium Trucks DHV	3.30 % Medium Trucks DHV
3.90 % Heavy Trucks DHV	3.90 % Heavy Trucks DHV	3.90 % Heavy Trucks DHV
0.76 % Buses DHV	0.76 % Buses DHV	0.76 % Buses DHV
0.39 % Motorcycles DHV	0.39 % Motorcycles DHV	0.39 % Motorcycles DHV

I-95 from PGA WB Off Ramp to Military Trail NB & SB Off Ramp		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 10	Lanes: 10	Lanes: 10
ADT: LOS (C) 15,360	ADT: LOS (C) 15,360	ADT: LOS (C) 15,360
Demand 7,736	Demand 10,264	Demand 10,852
Posted Spd: 65 mph	Posted Spd: 65 mph	Posted Spd: 65 mph
K= 100.0 %	K= 100.0 %	K= 100.0 %
D= 63 %	D= 63 %	D= 57 %
3.30 % Medium Trucks DHV	3.30 % Medium Trucks DHV	3.30 % Medium Trucks DHV
3.90 % Heavy Trucks DHV	3.90 % Heavy Trucks DHV	3.90 % Heavy Trucks DHV
0.76 % Buses DHV	0.76 % Buses DHV	0.76 % Buses DHV
0.39 % Motorcycles DHV	0.39 % Motorcycles DHV	0.39 % Motorcycles DHV

I-95 from Military Trail NB & SB On Ramp to Donald Ross (Existing Facility Only)
Existing Facility (2013)
Lanes: 10
ADT: LOS (C) 15,360
Demand 8,156
Posted Spd: 70 mph
K= 100.0 %
D= 63 %
3.30 % Medium Trucks DHV
3.90 % Heavy Trucks DHV
0.76 % Buses DHV
0.39 % Motorcycles DHV

I-95 from Military Trail NB & SB On Ramp to Central EB & WB Off Ramp (Future Build Only)	I-95 from Central EB & WB Off Ramp to Central EB &WB On Ramp (Future Build Only)	I-95 from Central Blvd EB &WB On Ramp to Donald Ross Road (Future Build Only)
Build (Design Year - 2040)	Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 10	Lanes: 10	Lanes: 10
ADT: LOS (C) 15,360	ADT: LOS (C) 15,360	ADT: LOS (C) 15,360
Demand 12,196	Demand 9,616	Demand 10,552
Posted Spd: 70 mph	Posted Spd: 70 mph	Posted Spd: 70 mph
3.30 % Medium Trucks DHV	3.30 % Medium Trucks DHV	3.30 % Medium Trucks DHV
3.90 % Heavy Trucks DHV	3.90 % Heavy Trucks DHV	3.90 % Heavy Trucks DHV
0.76 % Buses DHV	0.76 % Buses DHV	0.76 % Buses DHV
0.39 % Motorcycles DHV	0.39 % Motorcycles DHV	0.39 % Motorcycles DHV

* Volumes highlighted in yellow represent those used in the traffic noise analysis for each respective roadway segmen

SR 9/I-95 at Central Boulevard Interchange PD&E Study, Palm Beach County
FPID: 413265-1-22-01

Traffic Data for Noise Analysis - Arterial Roadways (Page 1 of 2)

PGA Blvd from Central to Military Trail		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 6	Lanes: 6	Lanes: 6
ADT:	ADT:	ADT:
LOS (C) 5,880	LOS (C) 5,880	LOS (C) 5,880
Demand 3,948	Demand 4,814	Demand 4,478
Posted Spd: 45 mph	Posted Spd: 45 mph	Posted Spd: 45 mph
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

PGA Blvd Military Trail to I-95		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 6	Lanes: 6	Lanes: 6
ADT:	ADT:	ADT:
LOS (C) 5,300	LOS (C) 5,880	LOS (C) 5,880
Demand 4,071	Demand 4,781	Demand 4,344
Posted Spd: 45 mph	Posted Spd: 45 mph	Posted Spd: 45 mph
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

PGA Blvd I-95 to Lake Victoria Gardens		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 6	Lanes: 6	Lanes: 6
ADT:	ADT:	ADT:
LOS (C) 7,940	LOS (C) 5,880	LOS (C) 5,880
Demand 5,852	Demand 7,026	Demand 5,661
Posted Spd: 45 mph	Posted Spd: 45 mph	Posted Spd: 45 mph
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

Military Trail from PGA to I-95		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 6	Lanes: 6	Lanes: 6
ADT:	ADT:	ADT:
LOS (C) 5,880	LOS (C) 5,880	LOS (C) 5,880
Demand 3,229	Demand 3,908	Demand 3,466
Posted Spd: 45 mph	Posted Spd: 45 mph	Posted Spd: 45 mph
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

Military Trail from I-95 to Hood Road		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 6	Lanes: 6	Lanes: 6
ADT:	ADT:	ADT:
LOS (C) 5,880	LOS (C) 5,880	LOS (C) 5,880
Demand 2,173	Demand 2,900	Demand 2,422
Posted Spd: 45 mph	Posted Spd: 45 mph	Posted Spd: 45 mph
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

Kyoto Gardens Drive from Military Trail to A1A		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 4	Lanes: 4	Lanes: 4
ADT:	ADT:	ADT:
LOS (C) 3,440	LOS (C) 3,440	LOS (C) 3,440
Demand 940	Demand 999	Demand 980
Posted Spd: 45 mph	Posted Spd: 45 mph	Posted Spd: 45 mph
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

* Volumes highlighted in yellow represent those used in the traffic noise analysis for each respective roadway segment

SR 9/I-95 at Central Boulevard Interchange PD&E Study, Palm Beach County
FPID: 413265-1-22-01

Traffic Data for Noise Analysis - Arterial Roadways (Page 2 of 2)

Central Blvd from PGA to I-95		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 4	Lanes: 4	Lanes: 4
ADT: LOS (C) 3,440	ADT: LOS (C) 3,440	ADT: LOS (C) 3,440
Demand 1,842	Demand 2,561	Demand 2,567
Posted Spd: 45 mph	Posted Spd: 45 mph	Posted Spd: 45 mph
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

Central Blvd. I-95 to Hood Road		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 4	Lanes: 4	Lanes: 4
ADT: LOS (C) 3,440	ADT: LOS (C) 3,440	ADT: LOS (C) 3,440
Demand 1,842	Demand 2,808	Demand 4,469
Posted Spd: 45 mph	Posted Spd: 45 mph	Posted Spd: 45 mph
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

Hood Road from W of Central to Central		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 2	Lanes: 2	Lanes: 2
ADT: LOS (C) 3,440	ADT: LOS (C) 3,440	ADT: LOS (C) 3,440
Demand 781	Demand 1,454	Demand 1,184
Posted Spd: 45 mph	Posted Spd: 45 mph	Posted Spd: 45 mph
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

Hood Road from Central to Military Trail		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 2	Lanes: 2	Lanes: 2
ADT: LOS (C) 3,440	ADT: LOS (C) 3,440	ADT: LOS (C) 3,440
Demand 1,067	Demand 1,759	Demand 2,220
Posted Spd: 45 mph	Posted Spd: 45 mph	Posted Spd: 45 mph
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

* Volumes highlighted in yellow represent those used in the traffic noise analysis for each respective roadway segment

SR 9/I-95 at Central Boulevard Interchange PD&E Study, Palm Beach County
FPID: 413265-1-22-01

Traffic Data for Noise Analysis - Interchange Ramps (Page 1 of 2)

Ramp: NB I-95 to EB PGA

Existing Facility (2013)		No-Build (Design Year - 2040)		Build (Design Year - 2040)	
Demand	2,187	Demand	2,996	Demand	2,674
Posted Spd:	35 mph	Posted Spd:	35 mph	Posted Spd:	35 mph
2.33	% Medium Trucks DHV	2.33	% Medium Trucks DHV	2.33	% Medium Trucks DHV
1.37	% Heavy Trucks DHV	1.37	% Heavy Trucks DHV	1.37	% Heavy Trucks DHV
0.23	% Buses DHV	0.23	% Buses DHV	0.23	% Buses DHV
0.18	% Motorcycles DHV	0.18	% Motorcycles DHV	0.18	% Motorcycles DHV

Ramp: EB & WB PGA to NB I-95

Existing Facility (2013)		No-Build (Design Year - 2040)		Build (Design Year - 2040)	
Demand	650	Demand	852	Demand	810
Posted Spd:	55 mph	Posted Spd:	55 mph	Posted Spd:	55 mph
1.78	% Medium Trucks DHV	1.78	% Medium Trucks DHV	1.78	% Medium Trucks DHV
1.33	% Heavy Trucks DHV	1.33	% Heavy Trucks DHV	1.33	% Heavy Trucks DHV
0.44	% Buses DHV	0.44	% Buses DHV	0.44	% Buses DHV
0.00	% Motorcycles DHV	0.00	% Motorcycles DHV	0.00	% Motorcycles DHV

Ramp: NB I-95 to WB PGA (Loop)

Existing Facility (2013)		No-Build (Design Year - 2040)		Build (Design Year - 2040)	
Demand	943	Demand	1,292	Demand	951
Posted Spd:	25 mph	Posted Spd:	25 mph	Posted Spd:	25 mph
1.30	% Medium Trucks DHV	1.30	% Medium Trucks DHV	1.30	% Medium Trucks DHV
11.30	% Heavy Trucks DHV	11.30	% Heavy Trucks DHV	11.30	% Heavy Trucks DHV
0.14	% Buses DHV	0.14	% Buses DHV	0.14	% Buses DHV
0.43	% Motorcycles DHV	0.43	% Motorcycles DHV	0.43	% Motorcycles DHV

Ramp: SB I-95 to EB & WB PGA

Existing Facility (2013)		No-Build (Design Year - 2040)		Build (Design Year - 2040)	
Demand	644	Demand	810	Demand	1,029
Posted Spd:	35 mph	Posted Spd:	35 mph	Posted Spd:	35 mph
1.59	% Medium Trucks DHV	1.59	% Medium Trucks DHV	1.59	% Medium Trucks DHV
0.80	% Heavy Trucks DHV	0.80	% Heavy Trucks DHV	0.80	% Heavy Trucks DHV
0.00	% Buses DHV	0.00	% Buses DHV	0.00	% Buses DHV
0.46	% Motorcycles DHV	0.46	% Motorcycles DHV	0.46	% Motorcycles DHV

Ramp: WB PGA to SB I-95 (Flyover)

Existing Facility (2013)		No-Build (Design Year - 2040)		Build (Design Year - 2040)	
Demand	2,049	Demand	2,766	Demand	2,593
Posted Spd:	40 mph	Posted Spd:	40 mph	Posted Spd:	40 mph
1.82	% Medium Trucks DHV	1.82	% Medium Trucks DHV	1.82	% Medium Trucks DHV
2.84	% Heavy Trucks DHV	2.84	% Heavy Trucks DHV	2.84	% Heavy Trucks DHV
0.62	% Buses DHV	0.62	% Buses DHV	0.62	% Buses DHV
0.00	% Motorcycles DHV	0.00	% Motorcycles DHV	0.00	% Motorcycles DHV

Ramp: EB PGA to SB I-95

Existing Facility (2013)		No-Build (Design Year - 2040)		Build (Design Year - 2040)	
Demand	1,444	Demand	1,949	Demand	1,733
Posted Spd:	55 mph	Posted Spd:	55 mph	Posted Spd:	55 mph
1.31	% Medium Trucks DHV	1.31	% Medium Trucks DHV	1.31	% Medium Trucks DHV
0.37	% Heavy Trucks DHV	0.37	% Heavy Trucks DHV	0.37	% Heavy Trucks DHV
0.19	% Buses DHV	0.19	% Buses DHV	0.19	% Buses DHV
0.19	% Motorcycles DHV	0.19	% Motorcycles DHV	0.19	% Motorcycles DHV

SR 9/I-95 at Central Boulevard Interchange PD&E Study, Palm Beach County
FPID: 413265-1-22-01

Traffic Data for Noise Analysis - Interchange Ramps (Page 2 of 2)

Ramp: Military Trail to NB I-95		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Demand 499	Demand 653	Demand 1,082
Posted Spd: 55 mph	Posted Spd: 55 mph	Posted Spd: 55 mph
2.35 % Medium Trucks DHV	2.35 % Medium Trucks DHV	2.35 % Medium Trucks DHV
0.60 % Heavy Trucks DHV	0.60 % Heavy Trucks DHV	0.60 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV
0.20 % Motorcycles DHV	0.20 % Motorcycles DHV	0.20 % Motorcycles DHV

Ramp: SB I-95 to Military Trail		
Existing Facility (2013)	No-Build (Design Year - 2040)	Build (Design Year - 2040)
Demand 325	Demand 410	Demand 905
Posted Spd: 35 mph	Posted Spd: 35 mph	Posted Spd: 35 mph
2.09 % Medium Trucks DHV	2.09 % Medium Trucks DHV	2.09 % Medium Trucks DHV
0.35 % Heavy Trucks DHV	0.35 % Heavy Trucks DHV	0.35 % Heavy Trucks DHV
0.00 % Buses DHV	0.00 % Buses DHV	0.00 % Buses DHV
0.00 % Motorcycles DHV	0.00 % Motorcycles DHV	0.00 % Motorcycles DHV

Northbound CD Road from Military Trail to Central Boulevard	Southbound CD Road from Central Boulevard to Military Trail
Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 3	Lanes: 3
Demand 2,430	Demand 2,253
Posted Spd: 50 mph	Posted Spd: 50 mph
K= 100.0 %	K= 100.0 %
D= 100 %	D= 100 %
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

Ramp A-1	Ramp A-2	Ramp B-1	Ramp B-2
Build (Design Year - 2040)	Build (Design Year - 2040)	Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 1	Lanes: 1	Lanes: 1	Lanes: 1
Demand 907	Demand 905	Demand 1,348	Demand 1,082
Posted Spd: 50 mph	Posted Spd: 50 mph	Posted Spd: 50 mph	Posted Spd: 50 mph
K= 100.0 %	K= 100.0 %	K= 100.0 %	K= 100.0 %
D= 100 %	D= 100 %	D= 100 %	D= 100 %
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV	0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

Ramp C (Central Boulevard to NB I-95)	Ramp D (Southbound I-95 to Central Boulevard)
Build (Design Year - 2040)	Build (Design Year - 2040)
Lanes: 2	Lanes: 2
Demand 425	Demand 511
Posted Spd: 50 mph	Posted Spd: 35 mph
K= 100.0 %	K= 100.0 %
D= 100 %	D= 100 %
1.75 % Medium Trucks DHV	1.75 % Medium Trucks DHV
2.73 % Heavy Trucks DHV	2.73 % Heavy Trucks DHV
0.20 % Buses DHV	0.20 % Buses DHV
0.24 % Motorcycles DHV	0.24 % Motorcycles DHV

APPENDIX C: Model Validation Documentation

Site 1

ESA Noise Measurement Data Sheet

Date: 2/24/2015 **Measurement Taken By** MSM

Project: I-95 at PGA/Central Boulevard PD&E Study FPID: 413265-1-22-01

Site ID: 1: Nova Southeastern University Parking Lot, approx. 120 feet from NB I-95 EOP

Begin Time: 11:18am End Time: 11:56am

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

Temperature:	Start:	87	End:	86	(°F)	
Wind Direction:	Start:	SE	End:	SE		
Wind Speed (Start):	Min:	1.6	Max:	4.8	Average:	3.8 (mph)
Wind Speed (End):	Min:	0.5	Max:	1.4	Average:	0.9 (mph)
Humidity:	Start:	43	End:	40	(%)	

Equipment Data

Sound Level Meter: Larson Davis 720 SLM Serial Number: 0410

Date of Last Traceable Calibration: 3/27/2014

Calibration:	Start:	114.0	End:	114.0	dB
Battery:	Start:	115	End:	97	(%)

Weighting Scale: A Response: Slow

Calibrator: Larson Davis CAL150 Serial Number: 2282

	Run 1	Run 2	Run 3
Results: in dB(A)	Leq: 69.4 dB(A)	Leq: 69.0 dB(A)	Leq: 68.7 dB(A)

Major Noise Sources: I-95 traffic

Background Noise Sources: Birds chirping

Other Notes/Observations:

Observed Traffic Data on Reverse Side

Observed Traffic Data Site #: 1 Run #: 1

Vehicle Types	Northbound I-95		Southbound I-95			
	Volume	Speed (mph)	Volume	Speed (mph)	Volume	Speed (mph)
Auto	596	64	460	64		
Medium Truck	19	63	16	63		
Heavy Truck	49	64	30	64		
Bus	0	-	0	-		
Motorcycle	2	66	4	62		

Observed Traffic Data Site #: 1 Run #: 2

Vehicle Types	Northbound I-95		Southbound I-95			
	Volume	Speed (mph)	Volume	Speed (mph)	Volume	Speed (mph)
Auto	466	66	488	66		
Medium Truck	10	60	10	60		
Heavy Truck	32	63	35	63		
Bus	0	-	1	59		
Motorcycle	5	60	3	62		

Observed Traffic Data Site #: 1 Run #: 3

Vehicle Types	Northbound I-95		Southbound I-95			
	Volume	Speed (mph)	Volume	Speed (mph)	Volume	Speed (mph)
Auto	483	67	543	67		
Medium Truck	12	56	12	56		
Heavy Truck	33	59	25	59		
Bus	0	-	1	59		
Motorcycle	1	62	4	62		

Site 2

ESA Noise Measurement Data Sheet

Date: 2/24/2015 **Measurement Taken By:** MSM

Project: I-95 at PGA/Central Boulevard PD&E Study FPID: 413265-1-22-01

Site ID: 2: Mandel JCC Parking Lot, approx. 110 feet from NB I-95 EOP

Begin Time: 12:39pm End Time: 1:15pm

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

Temperature:	Start:	88	End:	84	(°F)	
Wind Direction:	Start:	Se	End:	SE		
Wind Speed (Start):	Min:	1.8	Max:	2.7	Average: 2.1	(mph)
Wind Speed (End):	Min:	2.1	Max:	4.8	Average: 1.4	(mph)
Humidity:	Start:	44	End:	45	(%)	

Equipment Data

Sound Level Meter: Larson Davis 720 SLM Serial Number: 0410

Date of Last Traceable Calibration: 3/27/2014

Calibration:	Start:	114.0	End:	114.0	dB
Battery:	Start:	104	End:	97	(%)

Weighting Scale: A Response: Slow

Calibrator: Larson Davis CAL150 Serial Number: 2282

	Run 1	Run 2	Run 3
Results: in dB(A)	Leq: 70.6 dB(A)	Leq: 70.3 dB(A)	Leq: 70.4 dB(A)

Major Noise Sources: I-95 traffic

Background Noise Sources Birds chirping, Madel JCC traffic

Other Notes/Observations Trucks on Hood Road

Observed Traffic Data Site #: 2 Run #: 1

Vehicle Types	Northbound I-95		Southbound I-95			
	Volume	Speed (mph)	Volume	Speed (mph)	Volume	Speed (mph)
Auto	549	66	672	66		
Medium Truck	13	62	13	62		
Heavy Truck	34	59	31	59		
Bus	0	-	0	-		
Motorcycle	1	60	0	-		

Observed Traffic Data Site #: 2 Run #: 2

Vehicle Types	Northbound I-95		Southbound I-95			
	Volume	Speed (mph)	Volume	Speed (mph)	Volume	Speed (mph)
Auto	481	67	526	67		
Medium Truck	13	61	16	61		
Heavy Truck	34	61	29	61		
Bus	0	-	1	59		
Motorcycle	2	77	0	-		

Observed Traffic Data Site #: 2 Run #: 3

Vehicle Types	Northbound I-95		Southbound I-95			
	Volume	Speed (mph)	Volume	Speed (mph)	Volume	Speed (mph)
Auto	529	68	527	68		
Medium Truck	5	63	14	63		
Heavy Truck	50	60	41	60		
Bus	4	59	1	59		
Motorcycle	0	77	1	77		

C:\LARDAV\SLMUTIL\24FEB_11.bin Interval Data
* * *

Date	Time	Avg Duration	Leq	SEL	Lmax	Lmin	Peak	Uwpk	L(1)	L(10)	L(50)	L(99)
24Feb 15	11:18:00	600	69.4	97.2	76.7	58.8	99.2	0.0	75.5	71.5	68.6	61.9
24Feb 15	11:32:00	600	69.0	96.8	82.4	60.0	96.8	104.8	75.8	71.2	67.8	62.1
24Feb 15	11:46:00	600	68.7	96.5	74.7	60.8	97.0	0.0	73.4	71.1	68.2	63.2
24Feb 15	12:39:00	600	70.6	98.4	76.7	63.8	99.7	0.0	75.0	72.8	70.1	65.0
24Feb 15	12:52:00	600	70.3	98.1	79.3	60.1	104.8	104.8	75.8	72.8	69.6	63.8
24Feb 15	13:05:00	600	70.4	98.2	76.9	62.0	97.8	0.0	75.7	72.8	69.8	64.5

APPENDIX D: Predicted Traffic Noise Levels

SR 9/I-95 at Central Boulevard Interchange PD&E Study
FPID: 413265-1-22-01

Appendix D: Predicted Traffic Noise Levels

Site ID	# of Units	Land Use	Description/Location	NAC Activity Category	Predicted Traffic Noise Level (dB(A)				Impacted?
					Existing	No-Build	Build	Increase	
1	1	Hotel	DoubleTree Hotel (Swimming Pool)	E	62.8	63.8	63.6	0.8	No
2	2	Residential	Garden Lakes	B	61.0	62.2	62.0	1.0	No
3	2	Residential	Garden Lakes	B	62.3	63.4	63.3	1.0	No
4	2	Residential	Garden Lakes	B	63.1	64.1	64.0	0.9	No
5	2	Residential	Garden Lakes	B	64.2	65.2	65.0	0.8	No
6	4	Residential	Garden Lakes	B	64.0	65.0	64.7	0.7	No
7	2	Residential	Garden Lakes	B	68.2	69.1	68.7	0.5	Yes
8	2	Residential	Garden Lakes	B	62.4	63.5	63.4	1.0	No
9	2	Residential	Garden Lakes	B	63.0	64.2	64.1	1.1	No
10	2	Residential	Garden Lakes	B	63.8	64.9	64.8	1.0	No
11	2	Residential	Garden Lakes	B	63.1	64.1	63.9	0.8	No
12	2	Residential	Garden Lakes	B	63.0	64.0	63.8	0.8	No
13	2	Residential	Garden Lakes	B	68.3	69.2	69.0	0.7	Yes
14	2	Residential	Garden Lakes	B	63.6	64.7	64.6	1.0	No
15	2	Residential	Garden Lakes	B	64.1	65.2	65.1	1.0	No
16	2	Residential	Garden Lakes	B	63.5	64.5	64.4	0.9	No
17	2	Residential	Garden Lakes	B	67.8	68.8	68.6	0.8	Yes
18	2	Residential	Garden Lakes	B	61.4	62.5	62.5	1.1	No
19	2	Residential	Garden Lakes	B	64.4	65.6	65.6	1.2	No
20	2	Residential	Garden Lakes	B	63.8	64.8	64.7	0.9	No
21	2	Residential	Garden Lakes	B	68.4	69.4	69.3	0.9	Yes
22	2	Residential	Garden Lakes	B	61.4	62.6	62.8	1.4	No
23	2	Residential	Garden Lakes	B	64.2	65.4	65.4	1.2	No
24	2	Residential	Garden Lakes	B	63.6	64.7	64.6	1.0	No
25	2	Residential	Garden Lakes	B	68.4	69.4	69.3	0.9	Yes
26	2	Residential	Garden Lakes	B	60.0	61.2	61.3	1.3	No
27	2	Residential	Garden Lakes	B	60.4	61.5	61.7	1.3	No
28	2	Residential	Garden Lakes	B	60.8	61.9	62.1	1.3	No
29	2	Residential	Garden Lakes	B	61.0	62.2	62.3	1.3	No
30	2	Residential	Garden Lakes	B	61.7	62.9	63.0	1.3	No
31	2	Residential	Garden Lakes	B	62.6	63.8	64.0	1.4	No
32	2	Residential	Garden Lakes	B	63.1	64.3	64.3	1.2	No
33	2	Residential	Garden Lakes	B	60.6	61.8	62.0	1.4	No
34	2	Residential	Garden Lakes	B	61.1	62.3	62.4	1.3	No
35	2	Residential	Garden Lakes	B	61.3	62.5	62.7	1.4	No
36	2	Residential	Garden Lakes	B	62.0	63.2	63.4	1.4	No
37	2	Residential	Garden Lakes	B	61.2	62.4	62.7	1.5	No
38	2	Residential	Garden Lakes	B	61.7	62.9	63.1	1.4	No
39	2	Residential	Garden Lakes	B	62.6	63.8	63.9	1.3	No
40	2	Residential	Garden Lakes	B	63.2	64.5	64.4	1.2	No
41	2	Residential	Garden Lakes	B	61.0	62.2	62.5	1.5	No
42	2	Residential	Garden Lakes	B	61.4	62.6	62.9	1.5	No
43	2	Residential	Garden Lakes	B	62.3	63.5	63.8	1.5	No
44	2	Residential	Garden Lakes	B	63.1	64.3	64.4	1.3	No
45	2	Residential	Garden Lakes	B	61.7	62.9	63.2	1.5	No
46	2	Residential	Garden Lakes	B	62.4	63.6	63.9	1.5	No
47	2	Residential	Garden Lakes	B	64.1	65.2	65.4	1.3	No
48	2	Residential	Garden Lakes	B	63.5	64.7	64.4	0.9	No
49	1	Residential	Garden Lakes	B	62.9	64.0	63.7	0.8	No
50	1	Residential	Garden Lakes	B	61.0	62.1	61.8	0.8	No
51	1	Residential	Garden Lakes	B	62.3	63.4	63.1	0.8	No
52	1	Residential	Garden Lakes	B	61.2	62.3	62.1	0.9	No
53	2	Residential	Garden Lakes	B	63.0	64.2	64.3	1.3	No
54	2	Residential	Garden Lakes	B	63.5	64.7	64.6	1.1	No
55	1	Residential	Garden Lakes	B	65.6	66.8	67.0	1.4	Yes
56	1	Residential	Garden Lakes	B	60.9	62.1	61.9	1.0	No
57	1	Residential	Garden Lakes	B	62.2	63.3	63.2	1.0	No
58	1	Residential	Garden Lakes	B	61.0	62.1	62.0	1.0	No
59	2	Residential	Garden Lakes	B	63.9	65.1	65.1	1.2	No
60	2	Residential	Garden Lakes	B	64.0	65.2	65.2	1.2	No
61	2	Residential	Garden Lakes	B	62.2	63.4	63.5	1.3	No

Site ID	# of Units	Land Use	Description/Location	NAC Activity Category	Predicted Traffic Noise Level (dB(A))				Impacted?
					Existing	No-Build	Build	Increase	
62	2	Residential	Garden Lakes	B	60.6	61.8	61.7	1.1	No
63	2	Residential	Garden Lakes	B	60.9	62.1	62.9	2.0	No
64	2	Residential	Garden Lakes	B	61.8	63.1	63.7	1.9	No
65	1	Residential	Garden Lakes	B	62.8	64.0	64.5	1.7	No
66	1	Residential	Garden Lakes	B	63.6	64.9	65.4	1.8	No
67	2	Residential	Garden Lakes	B	63.1	64.3	64.8	1.7	No
68	1	Residential	Garden Lakes	B	63.9	65.1	65.6	1.7	No
69	1	Residential	Garden Lakes	B	64.6	65.8	66.2	1.6	Yes
70	2	Residential	Garden Lakes	B	64.0	65.2	65.6	1.6	No
71	1	Residential	Garden Lakes	B	64.6	65.8	66.2	1.6	Yes
72	1	Residential	Garden Lakes	B	64.8	66.0	66.4	1.6	Yes
73	1	Residential	Garden Lakes	B	65.4	66.6	67.0	1.6	Yes
74	1	Residential	Garden Lakes	B	65.0	66.2	66.5	1.5	Yes
75	2	Residential	Garden Lakes	B	61.9	63.1	63.5	1.6	No
76	1	Residential	Garden Lakes	B	62.8	64.0	64.4	1.6	No
77	2	Residential	Garden Lakes	B	63.0	64.2	64.6	1.6	No
78	2	Residential	Garden Lakes	B	63.6	64.8	65.2	1.6	No
79	2	Residential	Garden Lakes	B	63.6	64.9	65.2	1.6	No
80	2	Residential	Garden Lakes	B	64.4	65.6	65.9	1.5	No
81	2	Residential	Garden Lakes	B	64.5	65.7	65.8	1.3	No
82	2	Residential	Garden Lakes	B	64.4	65.7	65.8	1.4	No
83	2	Residential	Garden Lakes	B	64.4	65.6	65.7	1.3	No
84	2	Residential	Garden Lakes	B	64.0	65.3	65.3	1.3	No
85	1	Residential	Garden Lakes	B	65.0	66.2	66.5	1.5	Yes
86	1	Residential	Garden Lakes	B	64.7	65.9	66.1	1.4	Yes
87	1	Residential	Garden Lakes	B	63.5	64.7	65.2	1.7	No
88	1	Residential	Garden Lakes	B	63.9	65.2	65.4	1.5	No
89	1	Residential	Garden Lakes	B	62.9	64.1	64.3	1.4	No
90	1	Residential	Garden Lakes	B	60.8	62.0	61.8	1.0	No
91	1	Residential	Garden Lakes	B	63.4	64.6	64.8	1.4	No
92	1	Residential	Garden Lakes	B	62.1	63.4	63.2	1.1	No
93	1	Recreational	Palm Beach Gardens Tennis Center (Existing Handball, Basketball, and Tennis Courts)	C	63.7	64.9	66.3	2.6	Yes
94					64.5	65.7	67.1	2.6	Yes
95					62.6	63.9	65.3	2.7	No
96					63.6	64.9	66.4	2.8	Yes
97					64.5	65.7	67.2	2.7	Yes
98					66.2	67.5	69.0	2.8	Yes
99					64.3	65.6	67.2	2.9	Yes
100			Palm Beach Gardens Tennis Center (Additional Facilities Under Construction)		59.7	60.9	61.9	2.2	No
101					60.7	61.9	62.9	2.2	No
102					62.1	63.3	64.1	2.0	No
103					63.5	64.8	65.5	2.0	No
104					61.6	62.9	64.1	2.5	No
105					62.8	64.1	65.4	2.6	No
106					64.1	65.3	66.6	2.5	Yes
107					65.8	67.0	68.2	2.4	Yes
108					63.0	64.3	65.7	2.7	No
109					64.6	65.9	67.4	2.8	Yes
110					65.9	67.2	68.9	3.0	Yes
111					67.6	68.9	70.7	3.1	Yes
112					67.0	68.2	69.7	2.7	Yes
113					68.1	69.4	70.8	2.7	Yes
114					69.3	70.5	72.1	2.8	Yes
115					70.7	71.9	73.6	2.9	Yes
116					65.3	66.6	67.2	1.9	Yes
117					67.4	68.7	69.6	2.2	Yes
118					69.0	70.2	71.6	2.6	Yes
119					69.8	71.0	73.3	3.5	Yes
120					63.3	64.6	65.0	1.7	No
121					65.0	66.3	66.5	1.5	Yes
122					72.6	73.9	73.7	1.1	Yes

Site ID	# of Units	Land Use	Description/Location	NAC Activity Category	Predicted Traffic Noise Level (dB(A)				Impacted?
					Existing	No-Build	Build	Increase	
123	1	Recreational	Old Palm Golf Course	C	65.6	67.0	66.6	1.0	Yes
124					64.4	65.8	65.2	0.8	No
125					63.0	64.4	63.0	0.0	No
126					64.0	65.6	64.7	0.7	No
127					64.7	66.2	64.9	0.2	No
128	1	Residential	Old Palm	B	57.9	59.7	58.7	0.8	No
129	1	Residential	Old Palm	B	57.1	58.9	58.1	1.0	No
130	1	Residential	Old Palm	B	57.0	58.7	58.3	1.3	No
131	1	Residential	Old Palm	B	57.2	58.9	58.3	1.1	No
132	1	Residential	Old Palm	B	57.5	59.2	58.7	1.2	No
133	1	Residential	Old Palm	B	57.7	59.4	59.0	1.3	No
134	1	Residential	Old Palm	B	57.9	59.6	59.2	1.3	No
135	1	Residential	Old Palm	B	58.1	59.8	59.3	1.2	No
136	1	Residential	Old Palm	B	58.3	59.9	59.5	1.2	No
137	1	Residential	Old Palm	B	58.3	60.0	59.7	1.4	No
138	1	Residential	Old Palm	B	58.4	60.0	59.8	1.4	No
139	1	Residential	Old Palm	B	58.6	60.2	60.0	1.4	No
140	1	Residential	Old Palm	B	58.8	60.5	60.0	1.2	No
141	1	Residential	Old Palm	B	59.2	60.8	60.0	0.8	No
142	1	Residential	Old Palm	B	60.2	61.8	60.2	0.0	No
143	1	Residential	Old Palm	B	60.3	61.8	60.5	0.2	No
144	1	Residential	Old Palm	B	60.8	62.3	60.7	-0.1	No
145	1	Residential	Old Palm	B	61.8	63.3	61.1	-0.7	No
146	1	Residential	Old Palm	B	63.1	64.6	61.8	-1.3	No
147	1	Residential	Old Palm	B	64.0	65.4	62.6	-1.4	No
148	1	Residential	Old Palm	B	64.9	66.3	63.5	-1.4	No
149	1	Residential	Old Palm	B	65.5	66.8	64.3	-1.2	No
150	1	Residential	Old Palm	B	67.0	68.3	66.3	-0.7	Yes
151	1	Residential	Old Palm	B	67.2	68.5	67.2	0.0	Yes
152	1	Residential	Old Palm	B	67.2	68.5	67.4	0.2	Yes
153	1	Residential	Old Palm	B	67.1	68.5	67.6	0.5	Yes
154	1	Recreational	Old Palm Golf Course	C	58.3	59.7	59.2	0.9	No
155					60.7	62.0	61.3	0.6	No
156					62.4	63.8	63.0	0.6	No
157					62.3	63.7	62.0	-0.3	No
158					59.8	61.3	60.2	0.4	No
159					56.9	58.4	57.9	1.0	No
160					56.0	57.6	57.3	1.3	No
161	2	Residential	Westwood Gardens (West of I-95)	B	55.7	57.1	56.7	1.0	No
162	2	Residential	Westwood Gardens (West of I-95)	B	57.0	58.5	58.0	1.0	No
163	2	Residential	Westwood Gardens (West of I-95)	B	57.4	58.8	58.4	1.0	No
164	2	Residential	Westwood Gardens (West of I-95)	B	57.6	59.0	58.7	1.1	No
165	1	Residential	Westwood Gardens (West of I-95)	B	59.0	60.4	60.1	1.1	No
166	1	Residential	Westwood Gardens (West of I-95)	B	59.3	60.6	60.3	1.0	No
167	1	Residential	Westwood Gardens (West of I-95)	B	59.8	61.2	60.9	1.1	No
168	1	Residential	Westwood Gardens (West of I-95)	B	60.1	61.5	60.9	0.8	No
169	1	Residential	Westwood Gardens (West of I-95)	B	61.5	62.8	62.6	1.1	No
170	1	Residential	Westwood Gardens (West of I-95)	B	61.3	62.7	62.4	1.1	No
171	1	Residential	Westwood Gardens (West of I-95)	B	62.8	64.1	64.3	1.5	No
172	1	Residential	Westwood Gardens (West of I-95)	B	62.3	63.7	63.6	1.3	No
173	1	Residential	Westwood Gardens (West of I-95)	B	64.0	65.4	65.1	1.1	No
174	1	Residential	Westwood Gardens (West of I-95)	B	63.7	65.0	64.6	0.9	No
175	1	Recreational	Westwood Gardens (West of I-95)	C	64.7	66.1	65.8	1.1	No
176	1	Recreational	Westwood Gardens (West of I-95)	C	64.2	65.5	65.3	1.1	No
177	1	Recreational	Westwood Gardens (West of I-95)	C	62.3	63.7	63.5	1.2	No
178	2	Residential	Westwood Gardens (West of I-95)	B	57.4	58.8	58.4	1.0	No
179	2	Residential	Westwood Gardens (West of I-95)	B	59.3	60.6	60.1	0.8	No
180	2	Residential	Westwood Gardens (West of I-95)	B	59.5	60.9	60.2	0.7	No
181	2	Residential	Westwood Gardens (West of I-95)	B	61.1	62.4	62.1	1.0	No
182	2	Residential	Westwood Gardens (West of I-95)	B	62.7	64.0	64.7	2.0	No
183	1	Residential	Westwood Gardens (West of I-95)	B	62.7	64.0	63.6	0.9	No

Site ID	# of Units	Land Use	Description/Location	NAC Activity Category	Predicted Traffic Noise Level (dB(A))				Impacted?
					Existing	No-Build	Build	Increase	
184	1	Residential	Westwood Gardens (West of I-95)	B	63.4	64.7	64.3	0.9	No
185	2	Residential	Westwood Gardens (West of I-95)	B	54.6	56.0	55.7	1.1	No
186	2	Residential	Westwood Gardens (West of I-95)	B	55.1	56.5	56.6	1.5	No
187	2	Residential	Westwood Gardens (West of I-95)	B	57.2	58.7	58.2	1.0	No
188	2	Residential	Westwood Gardens (West of I-95)	B	57.5	58.9	60.3	2.8	No
189	2	Residential	Westwood Gardens (West of I-95)	B	59.2	60.6	60.1	0.9	No
190	2	Residential	Westwood Gardens (West of I-95)	B	59.6	61.0	62.1	2.5	No
191	2	Residential	Westwood Gardens (West of I-95)	B	60.7	62.0	61.5	0.8	No
192	2	Residential	Westwood Gardens (West of I-95)	B	61.1	62.5	62.0	0.9	No
193	2	Residential	Westwood Gardens (West of I-95)	B	61.7	63.0	62.6	0.9	No
194	2	Residential	Westwood Gardens (West of I-95)	B	54.5	55.9	55.5	1.0	No
195	2	Residential	Westwood Gardens (West of I-95)	B	54.8	56.3	55.8	1.0	No
196	2	Residential	Westwood Gardens (West of I-95)	B	57.4	58.8	58.4	1.0	No
197	2	Residential	Westwood Gardens (West of I-95)	B	58.0	59.4	58.9	0.9	No
198	2	Residential	Westwood Gardens (West of I-95)	B	60.0	61.4	61.1	1.1	No
199	2	Residential	Westwood Gardens (West of I-95)	B	60.2	61.5	62.1	1.9	No
200	2	Residential	Westwood Gardens (West of I-95)	B	61.2	62.6	62.1	0.9	No
201	2	Residential	Westwood Gardens (West of I-95)	B	61.3	62.6	62.7	1.4	No
202	2	Residential	Westwood Gardens (West of I-95)	B	61.4	62.7	62.2	0.8	No
203	2	Residential	Trevi at the Gardens	B	54.8	56.4	55.8	1.0	No
204	2	Residential	Trevi at the Gardens	B	55.2	56.8	56.4	1.2	No
205	2	Residential	Trevi at the Gardens	B	54.4	56.1	55.6	1.2	No
206	2	Residential	Trevi at the Gardens	B	54.6	56.2	55.7	1.1	No
207	2	Residential	Trevi at the Gardens	B	54.6	56.3	55.8	1.2	No
208	2	Residential	Trevi at the Gardens	B	55.0	56.6	56.1	1.1	No
209	2	Residential	Trevi at the Gardens	B	56.1	57.7	57.2	1.1	No
210	2	Residential	Trevi at the Gardens	B	59.6	61.0	60.5	0.9	No
211	2	Residential	Trevi at the Gardens	B	59.9	61.3	60.8	0.9	No
212	2	Residential	Trevi at the Gardens	B	60.2	61.6	61.1	0.9	No
213	2	Residential	Trevi at the Gardens	B	59.7	61.0	60.7	1.0	No
214	2	Residential	Trevi at the Gardens	B	60.6	62.0	61.6	1.0	No
215	2	Residential	Trevi at the Gardens	B	55.4	57.0	56.6	1.2	No
216	2	Residential	Trevi at the Gardens	B	55.9	57.4	57.0	1.1	No
217	2	Residential	Trevi at the Gardens	B	56.5	58.1	57.6	1.1	No
218	2	Residential	Trevi at the Gardens	B	57.0	58.6	58.1	1.1	No
219	2	Residential	Trevi at the Gardens	B	57.3	58.9	58.4	1.1	No
220	2	Residential	Trevi at the Gardens	B	57.4	58.9	58.4	1.0	No
221	1	Residential	Trevi at the Gardens	B	57.6	59.1	58.7	1.1	No
222	2	Residential	Trevi at the Gardens	B	55.3	56.9	56.4	1.1	No
223	2	Residential	Trevi at the Gardens	B	56.1	57.7	57.2	1.1	No
224	2	Residential	Trevi at the Gardens	B	57.5	59.1	58.6	1.1	No
225	2	Residential	Trevi at the Gardens	B	58.4	59.9	59.4	1.0	No
226	2	Residential	Trevi at the Gardens	B	58.4	59.9	59.4	1.0	No
227	2	Residential	Trevi at the Gardens	B	58.6	60.2	59.7	1.1	No
228	2	Residential	Trevi at the Gardens	B	60.1	62.1	61.6	1.5	No
229	2	Residential	Trevi at the Gardens	B	60.5	62.4	61.9	1.4	No
230	2	Residential	Trevi at the Gardens	B	61.3	63.1	62.6	1.3	No
231	2	Residential	Trevi at the Gardens	B	62.2	63.9	63.4	1.2	No
232	2	Residential	Trevi at the Gardens	B	63.5	65.2	64.7	1.2	No
233	2	Residential	Trevi at the Gardens	B	64.8	66.4	65.8	1.0	No
234	1	Residential	Winchester Court	B	72.0	73.0	72.7	0.7	Yes
235	1	Residential	Winchester Court	B	69.6	70.5	70.3	0.7	Yes
236	1	Residential	Winchester Court	B	69.2	70.1	69.9	0.7	Yes
237	1	Residential	Winchester Court	B	68.1	68.8	68.7	0.6	Yes
238	1	Residential	Winchester Court	B	71.1	72.3	71.9	0.8	Yes
239	1	Residential	Winchester Court	B	67.1	68.2	68.1	1.0	Yes
240	1	Residential	Winchester Court	B	66.1	67.2	67.1	1.0	Yes
241	2	Residential	Winchester Court	B	65.2	66.2	66.2	1.0	Yes
242	1	Residential	Winchester Court	B	65.0	65.8	65.7	0.7	No
243	2	Residential	Winchester Court	B	65.0	66.2	66.2	1.2	Yes
244	2	Residential	Winchester Court	B	62.0	62.9	62.9	0.9	No

Site ID	# of Units	Land Use	Description/Location	NAC Activity Category	Predicted Traffic Noise Level (dB(A)				Impacted?
					Existing	No-Build	Build	Increase	
245	1	Residential	Winchester Court	B	64.1	65.3	65.4	1.3	No
246	1	Residential	Winchester Court	B	62.5	63.6	64.1	1.6	No
247	2	Residential	Winchester Court	B	63.5	64.4	64.5	1.0	No
248	2	Residential	Winchester Court	B	63.3	64.3	64.6	1.3	No
249	2	Residential	Winchester Court	B	70.1	71.3	71.0	0.9	Yes
250	2	Residential	Winchester Court	B	65.1	66.2	66.0	0.9	Yes
251	2	Residential	Winchester Court	B	69.8	71.1	70.8	1.0	Yes
252	2	Residential	Winchester Court	B	64.2	65.4	65.3	1.1	No
253	2	Residential	Winchester Court	B	64.0	65.2	65.6	1.6	No
254	2	Residential	Winchester Court	B	63.2	64.4	64.8	1.6	No
255	2	Residential	Winchester Court	B	62.8	64.0	64.5	1.7	No
256	1	Recreational	Winchester Court (Tennis Courts)	C	70.2	71.5	71.2	1.0	Yes
257	2	Residential	Winchester Court	B	65.7	66.9	67.1	1.4	Yes
258	2	Residential	Winchester Court	B	63.4	64.6	64.9	1.5	No
259	2	Residential	Winchester Court	B	69.3	70.5	70.4	1.1	Yes
260	2	Residential	Winchester Court	B	63.4	64.6	64.5	1.1	No
261	2	Residential	Winchester Court	B	69.1	70.3	70.1	1.0	Yes
262	2	Residential	Winchester Court	B	63.0	64.2	64.1	1.1	No
263	2	Residential	Winchester Court	B	63.3	64.5	64.8	1.5	No
264	1	Residential	Palm Beach Gardens	B	61.4	62.6	63.2	1.8	No
265	1	School	Nova Southeastern University (Interior)	D	43.9	45.2	48.0	4.1	No
266A	2	Residential	Sabal Ridge Condominiums	B	65.6	66.8	68.7	3.1	Yes
266B	2	Residential	Sabal Ridge Condominiums	B	68.2	69.5	71.3	3.1	Yes
267A	2	Residential	Sabal Ridge Condominiums	B	66.5	67.8	69.6	3.1	Yes
267B	2	Residential	Sabal Ridge Condominiums	B	69.0	70.2	72.2	3.2	Yes
268A	2	Residential	Sabal Ridge Condominiums	B	67.7	68.9	70.6	2.9	Yes
268B	2	Residential	Sabal Ridge Condominiums	B	69.9	71.2	73.1	3.2	Yes
269A	2	Residential	Sabal Ridge Condominiums	B	65.7	67.0	68.5	2.8	Yes
269B	2	Residential	Sabal Ridge Condominiums	B	68.1	69.3	71.1	3.0	Yes
270A	2	Residential	Sabal Ridge Condominiums	B	64.8	66.1	67.5	2.7	Yes
270B	2	Residential	Sabal Ridge Condominiums	B	67.3	68.6	70.2	2.9	Yes
271A	2	Residential	Sabal Ridge Condominiums	B	64.5	65.8	67.1	2.6	Yes
271B	2	Residential	Sabal Ridge Condominiums	B	67.2	68.4	69.8	2.6	Yes
272A	2	Residential	Sabal Ridge Condominiums	B	64.1	65.3	66.5	2.4	Yes
272B	2	Residential	Sabal Ridge Condominiums	B	66.7	68.0	69.3	2.6	Yes
273A	2	Residential	Sabal Ridge Condominiums	B	64.7	66.0	66.7	2.0	Yes
273B	2	Residential	Sabal Ridge Condominiums	B	67.3	68.5	69.3	2.0	Yes
274A	2	Residential	Sabal Ridge Condominiums	B	59.6	60.8	61.5	1.9	No
274B	2	Residential	Sabal Ridge Condominiums	B	62.5	63.8	64.5	2.0	No
275A	2	Residential	Sabal Ridge Condominiums	B	59.0	60.3	61.0	2.0	No
275B	2	Residential	Sabal Ridge Condominiums	B	61.9	63.2	63.7	1.8	No
276A	2	Residential	Sabal Ridge Condominiums	B	59.0	60.3	61.4	2.4	No
276B	2	Residential	Sabal Ridge Condominiums	B	62.2	63.5	64.4	2.2	No
277A	2	Residential	Sabal Ridge Condominiums	B	57.4	58.7	58.8	1.4	No
277B	2	Residential	Sabal Ridge Condominiums	B	60.7	62.0	62.1	1.4	No
278	3	Residential	Paloma	B	59.4	60.8	61.5	2.1	No
279	2	Residential	Quaye at Palm Beach Gardens	B	59.7	61.3	60.1	0.4	No
280	2	Residential	Quaye at Palm Beach Gardens	B	55.5	57.3	57.9	2.4	No
281	2	Residential	Quaye at Palm Beach Gardens	B	54.6	56.3	57.3	2.7	No
282B	2	Residential	Quaye at Palm Beach Gardens	B	61.9	63.4	63.0	1.1	No
283B	2	Residential	Quaye at Palm Beach Gardens	B	58.0	59.5	58.0	0.0	No
284B	2	Residential	Quaye at Palm Beach Gardens	B	56.7	58.2	57.8	1.1	No
285	2	Residential	Quaye at Palm Beach Gardens	B	64.5	66.0	62.8	-1.7	No
286	2	Residential	Quaye at Palm Beach Gardens	B	65.5	66.9	63.1	-2.4	No
287	2	Residential	Quaye at Palm Beach Gardens	B	66.6	68.0	63.9	-2.7	No
288B	2	Residential	Quaye at Palm Beach Gardens	B	61.1	62.7	62.8	1.7	No
289B	2	Residential	Quaye at Palm Beach Gardens	B	62.1	63.5	63.1	1.0	No
290B	2	Residential	Quaye at Palm Beach Gardens	B	65.2	66.6	65.2	0.0	No
291B	2	Residential	Quaye at Palm Beach Gardens	B	57.7	59.3	59.5	1.8	No
292	2	Residential	Quaye at Palm Beach Gardens	B	55.2	56.7	56.9	1.7	No
293	4	Residential	Quaye at Palm Beach Gardens	B	57.7	59.1	55.0	-2.7	No

Site ID	# of Units	Land Use	Description/Location	NAC Activity Category	Predicted Traffic Noise Level (dB(A)				Impacted?
					Existing	No-Build	Build	Increase	
294	4	Residential	Quaye at Palm Beach Gardens	B	48.9	50.3	49.9	1.0	No
295B	2	Residential	Quaye at Palm Beach Gardens	B	64.7	66.0	62.0	-2.7	No
296B	2	Residential	Quaye at Palm Beach Gardens	B	61.2	62.5	58.4	-2.8	No
297	2	Residential	Quaye at Palm Beach Gardens	B	68.0	69.4	64.7	-3.3	No
298	2	Residential	Quaye at Palm Beach Gardens	B	69.9	71.3	67.6	-2.3	Yes
299B	2	Residential	Quaye at Palm Beach Gardens	B	62.7	64.1	64.1	1.4	No
300B	2	Residential	Quaye at Palm Beach Gardens	B	67.0	68.4	67.7	0.7	Yes
301A	2	Residential	Quaye at Palm Beach Gardens	B	52.5	54.0	54.6	2.1	No
301B	2	Residential	Quaye at Palm Beach Gardens	B	54.9	56.4	56.3	1.4	No
301C	2	Residential	Quaye at Palm Beach Gardens	B	58.1	59.5	59.5	1.4	No
302A	2	Residential	Quaye at Palm Beach Gardens	B	61.7	63.1	60.7	-1.0	No
302B	2	Residential	Quaye at Palm Beach Gardens	B	64.1	65.5	64.1	0.0	No
302C	2	Residential	Quaye at Palm Beach Gardens	B	65.3	66.6	65.9	0.6	No
303A	2	Residential	Quaye at Palm Beach Gardens	B	55.5	56.9	54.3	-1.2	No
303B	2	Residential	Quaye at Palm Beach Gardens	B	58.2	59.6	58.3	0.1	No
303C	2	Residential	Quaye at Palm Beach Gardens	B	59.7	61.1	60.4	0.7	No
304A	2	Residential	Quaye at Palm Beach Gardens	B	58.3	59.6	56.6	-1.7	No
304B	2	Residential	Quaye at Palm Beach Gardens	B	60.5	61.8	59.9	-0.6	No
304C	2	Residential	Quaye at Palm Beach Gardens	B	61.6	63.0	62.0	0.4	No
305	1	Recreational	Quaye at Palm Beach Gardens	C	58.0	59.4	56.0	-2.0	No
306	6	Residential	Quaye at Palm Beach Gardens	B	70.9	72.3	70.5	-0.4	Yes
307B	6	Residential	Quaye at Palm Beach Gardens	B	57.9	59.3	59.9	2.0	No
308B	6	Residential	Quaye at Palm Beach Gardens	B	65.4	66.7	67.2	1.8	Yes
309	6	Residential	Quaye at Palm Beach Gardens	B	50.7	52.1	52.2	1.5	No
310	6	Residential	Quaye at Palm Beach Gardens	B	71.4	72.7	73.3	1.9	Yes
311B	6	Residential	Quaye at Palm Beach Gardens	B	59.7	61.0	61.8	2.1	No
312A	2	Residential	Quaye at Palm Beach Gardens	B	63.8	65.2	64.8	1.0	No
312B	2	Residential	Quaye at Palm Beach Gardens	B	65.7	67.0	66.7	1.0	Yes
312C	2	Residential	Quaye at Palm Beach Gardens	B	66.7	68.0	68.0	1.3	Yes
313A	2	Residential	Quaye at Palm Beach Gardens	B	56.3	57.7	57.1	0.8	No
313B	2	Residential	Quaye at Palm Beach Gardens	B	58.4	59.8	59.5	1.1	No
313C	2	Residential	Quaye at Palm Beach Gardens	B	60.0	61.3	61.3	1.3	No
314	6	Residential	Quaye at Palm Beach Gardens	B	71.7	73.0	74.4	2.7	Yes
315B	6	Residential	Quaye at Palm Beach Gardens	B	60.4	61.7	62.0	1.6	No
316B	6	Residential	Quaye at Palm Beach Gardens	B	65.4	66.7	67.2	1.8	Yes
317	6	Residential	Quaye at Palm Beach Gardens	B	51.5	52.9	53.5	2.0	No
318	6	Residential	Quaye at Palm Beach Gardens	B	72.1	73.4	74.8	2.7	Yes
319B	6	Residential	Quaye at Palm Beach Gardens	B	60.5	61.8	61.9	1.4	No
320B	6	Residential	Quaye at Palm Beach Gardens	B	66.0	67.3	67.7	1.7	Yes
321	6	Residential	Quaye at Palm Beach Gardens	B	54.4	55.7	56.4	2.0	No
322A	2	Residential	Quaye at Palm Beach Gardens	B	71.8	73.1	74.4	2.6	Yes
322B	2	Residential	Quaye at Palm Beach Gardens	B	73.8	75.1	75.6	1.8	Yes
322C	2	Residential	Quaye at Palm Beach Gardens	B	74.6	75.9	76.2	1.6	Yes
323A	2	Residential	Quaye at Palm Beach Gardens	B	66.8	68.1	69.3	2.5	Yes
323B	2	Residential	Quaye at Palm Beach Gardens	B	68.6	69.9	70.4	1.8	Yes
323C	2	Residential	Quaye at Palm Beach Gardens	B	69.5	70.8	71.2	1.7	Yes
324A	2	Residential	Quaye at Palm Beach Gardens	B	68.1	69.4	70.0	1.9	Yes
324B	2	Residential	Quaye at Palm Beach Gardens	B	70.2	71.6	71.9	1.7	Yes
324C	2	Residential	Quaye at Palm Beach Gardens	B	70.9	72.2	72.4	1.5	Yes
325A	2	Residential	Quaye at Palm Beach Gardens	B	64.3	65.7	66.2	1.9	Yes
325B	2	Residential	Quaye at Palm Beach Gardens	B	66.4	67.8	68.0	1.6	Yes
325C	2	Residential	Quaye at Palm Beach Gardens	B	67.1	68.4	68.6	1.5	Yes
326	6	Residential	Quaye at Palm Beach Gardens	B	59.2	60.5	60.9	1.7	No
327A	2	Residential	Quaye at Palm Beach Gardens	B	58.5	59.9	60.3	1.8	No
327B	2	Residential	Quaye at Palm Beach Gardens	B	60.5	61.9	62.2	1.7	No
327C	2	Residential	Quaye at Palm Beach Gardens	B	61.7	63.0	63.2	1.5	No
328	6	Residential	Quaye at Palm Beach Gardens	B	58.1	59.5	59.9	1.8	No
329	1	Assisted Living Facility	Harbor Chase of Palm Beach Gardens (Interior)	D	38.8	40.5	40.5	1.7	No
330	1	Residential	Westwood Gardens (East of I-95)	B	61.0	62.5	61.1	0.1	No
331	1	Residential	Westwood Gardens (East of I-95)	B	60.7	62.1	60.6	-0.1	No
332	6	Residential	Westwood Gardens (East of I-95)	B	59.6	61.0	59.6	0.0	No

Site ID	# of Units	Land Use	Description/Location	NAC Activity Category	Predicted Traffic Noise Level (dB(A)				Impacted?
					Existing	No-Build	Build	Increase	
333	2	Residential	Westwood Gardens (East of I-95)	B	58.2	59.6	58.5	0.3	No
334	1	Residential	Westwood Gardens (East of I-95)	B	61.7	63.1	62.0	0.3	No
335	2	Residential	Westwood Gardens (East of I-95)	B	61.2	62.6	61.4	0.2	No
336	2	Residential	Westwood Gardens (East of I-95)	B	60.2	61.6	60.4	0.2	No
337	2	Residential	Westwood Gardens (East of I-95)	B	59.1	60.5	59.2	0.1	No
338	2	Residential	Westwood Gardens (East of I-95)	B	58.6	60.0	58.9	0.3	No
339	1	Residential	Westwood Gardens (East of I-95)	B	58.0	59.5	58.4	0.4	No
340	1	Residential	Westwood Gardens (East of I-95)	B	59.4	60.8	59.9	0.5	No
341	2	Residential	Westwood Gardens (East of I-95)	B	60.1	61.4	60.6	0.5	No
342	2	Residential	Westwood Gardens (East of I-95)	B	60.4	61.8	60.7	0.3	No
343	2	Residential	Westwood Gardens (East of I-95)	B	61.4	62.8	61.8	0.4	No
344	2	Residential	Westwood Gardens (East of I-95)	B	62.3	63.7	62.6	0.3	No
345	1	Residential	Westwood Gardens (East of I-95)	B	63.0	64.3	62.7	-0.3	No
346	1	Residential	Westwood Gardens (East of I-95)	B	63.7	65.1	64.2	0.5	No
347	2	Residential	Westwood Gardens (East of I-95)	B	62.8	64.1	63.2	0.4	No
348	2	Residential	Westwood Gardens (East of I-95)	B	61.5	62.8	61.9	0.4	No
349	2	Residential	Westwood Gardens (East of I-95)	B	60.9	62.3	61.5	0.6	No
350	2	Residential	Westwood Gardens (East of I-95)	B	60.2	61.6	60.8	0.6	No
351	1	Residential	Westwood Gardens (East of I-95)	B	59.7	61.1	60.2	0.5	No
352	1	Residential	Westwood Gardens (East of I-95)	B	60.6	62.0	61.3	0.7	No
353	2	Residential	Westwood Gardens (East of I-95)	B	61.1	62.4	61.7	0.6	No
354	2	Residential	Westwood Gardens (East of I-95)	B	61.7	63.0	62.3	0.6	No
355	2	Residential	Westwood Gardens (East of I-95)	B	62.6	63.9	63.2	0.6	No
356	2	Residential	Westwood Gardens (East of I-95)	B	64.0	65.3	64.6	0.6	No
357	1	Residential	Westwood Gardens (East of I-95)	B	65.4	66.7	66.0	0.6	Yes
358	1	Residential	Westwood Gardens (East of I-95)	B	64.8	66.2	65.8	1.0	No
359	2	Residential	Westwood Gardens (East of I-95)	B	63.5	64.8	64.1	0.6	No
360	2	Residential	Westwood Gardens (East of I-95)	B	63.0	64.4	63.1	0.1	No
361	2	Residential	Westwood Gardens (East of I-95)	B	62.4	63.8	62.4	0.0	No
362	1	Residential	Westwood Gardens (East of I-95)	B	61.5	62.8	62.2	0.7	No
363	1	Residential	Westwood Gardens (East of I-95)	B	61.8	63.1	62.5	0.7	No
364	2	Residential	Westwood Gardens (East of I-95)	B	62.0	63.3	62.7	0.7	No
365	2	Residential	Westwood Gardens (East of I-95)	B	62.4	63.8	63.1	0.7	No
366	2	Residential	Westwood Gardens (East of I-95)	B	63.5	64.8	64.2	0.7	No
367	1	Residential	Westwood Gardens (East of I-95)	B	65.0	66.3	65.8	0.8	No
368	1	Residential	Westwood Gardens (East of I-95)	B	56.6	58.2	57.4	0.8	No
369	4	Residential	Westwood Gardens (East of I-95)	B	57.6	59.4	58.7	1.1	No
370	1	Residential	Westwood Gardens (East of I-95)	B	59.8	61.8	61.2	1.4	No
371	1	Residential	Westwood Gardens (East of I-95)	B	61.4	63.4	62.9	1.5	No
372	2	Residential	Westwood Gardens (East of I-95)	B	59.9	61.8	61.2	1.3	No
373	2	Residential	Westwood Gardens (East of I-95)	B	57.8	59.6	58.9	1.1	No
374	2	Residential	Westwood Gardens (East of I-95)	B	56.9	58.5	57.8	0.9	No
375	2	Residential	Westwood Gardens (East of I-95)	B	56.7	58.3	57.4	0.7	No
376	1	Residential	Westwood Gardens (East of I-95)	B	57.3	58.8	58.0	0.7	No
377	1	Residential	Westwood Gardens (East of I-95)	B	58.1	59.5	58.7	0.6	No
378	2	Residential	Westwood Gardens (East of I-95)	B	58.1	59.5	58.7	0.6	No
379	2	Residential	Westwood Gardens (East of I-95)	B	57.8	59.3	58.4	0.6	No
380	2	Residential	Westwood Gardens (East of I-95)	B	58.3	60.0	59.3	1.0	No
381	2	Residential	Westwood Gardens (East of I-95)	B	59.8	61.5	60.9	1.1	No
382	1	Residential	Westwood Gardens (East of I-95)	B	61.5	63.3	62.7	1.2	No
383	1	Residential	Westwood Gardens (East of I-95)	B	60.7	62.3	61.7	1.0	No
384	2	Residential	Westwood Gardens (East of I-95)	B	58.9	60.5	59.9	1.0	No
385	2	Residential	Westwood Gardens (East of I-95)	B	58.9	60.5	59.3	0.4	No
386	2	Residential	Westwood Gardens (East of I-95)	B	59.0	60.5	59.3	0.3	No
387	2	Residential	Westwood Gardens (East of I-95)	B	59.3	60.8	59.4	0.1	No
388	2	Residential	Westwood Gardens (East of I-95)	B	59.6	61.1	59.6	0.0	No
389	1	Residential	Westwood Gardens (East of I-95)	B	59.6	61.0	60.2	0.6	No
390	1	Residential	Westwood Gardens (East of I-95)	B	60.5	61.9	61.2	0.7	No
391	2	Residential	Westwood Gardens (East of I-95)	B	60.3	61.7	61.0	0.7	No
392	2	Residential	Westwood Gardens (East of I-95)	B	59.8	61.2	60.4	0.6	No
393	2	Residential	Westwood Gardens (East of I-95)	B	59.5	60.9	60.2	0.7	No

Site ID	# of Units	Land Use	Description/Location	NAC Activity Category	Predicted Traffic Noise Level (dB(A))				Impacted?
					Existing	No-Build	Build	Increase	
394	2	Residential	Westwood Gardens (East of I-95)	B	59.0	60.4	59.7	0.7	No
395	2	Residential	Westwood Gardens (East of I-95)	B	58.5	60.1	59.3	0.8	No
396	1	Residential	Westwood Gardens (East of I-95)	B	60.2	61.8	61.2	1.0	No
397	1	Residential	Westwood Gardens (East of I-95)	B	58.8	60.3	59.5	0.7	No
398	2	Residential	Westwood Gardens (East of I-95)	B	60.7	62.1	61.4	0.7	No
399	2	Residential	Westwood Gardens (East of I-95)	B	61.8	63.1	61.9	0.1	No
400	2	Residential	Westwood Gardens (East of I-95)	B	61.1	62.5	61.6	0.5	No
401	2	Residential	Westwood Gardens (East of I-95)	B	60.7	62.0	61.4	0.7	No
402	1	Residential	Westwood Gardens (East of I-95)	B	61.5	62.9	61.9	0.4	No
403	1	Residential	Westwood Gardens (East of I-95)	B	61.5	62.9	62.2	0.7	No
404	2	Residential	Westwood Gardens (East of I-95)	B	61.7	63.0	62.4	0.7	No
405	2	Residential	Westwood Gardens (East of I-95)	B	62.2	63.5	62.9	0.7	No
406	2	Residential	Westwood Gardens (East of I-95)	B	62.7	64.0	63.5	0.8	No
407	2	Residential	Westwood Gardens (East of I-95)	B	63.6	65.0	64.6	1.0	No
408	1	Residential	Westwood Gardens (East of I-95)	B	64.9	66.3	65.9	1.0	No
49	1	Recreational	Madel Jewish Community Center	C	69.7	71.0	70.0	0.3	Yes
410	1	School	Madel Jewish Community Center	D	45.2	46.5	45.5	0.3	No
411	1	Recreational	Madel Jewish Community Center	C	67.9	69.3	68.4	0.5	Yes
412	1	Recreational	Madel Jewish Community Center	C	72.6	73.9	73.2	0.6	Yes
413					70.0	71.3	70.5	0.5	Yes
414					67.8	69.1	68.3	0.5	Yes
415					67.4	68.7	68.2	0.8	Yes
416					67.0	68.3	67.8	0.8	Yes
417					65.2	66.5	66.1	0.9	Yes
418	1	Recreational	Wandering Trails Riding Academy	C	58.9	60.3	60.0	1.1	No
419					57.9	59.3	59.0	1.1	No
420					60.3	61.7	61.4	1.1	No
421					59.9	61.4	61.0	1.1	No
422					62.7	64.4	63.9	1.2	No

APPENDIX E: TNM Files (Provided on CD)