

NOISE STUDY REPORT

SR 860/Miami Gardens Drive/NW 186th Street/NW 183rd Street

From: East of Interstate (I)-75

To: SR-823/NW 57th Avenue/Red Road

Miami-Dade County, Florida

Financial Management Number: 407736-3-22-01

Federal Aid Project Number: Not Assigned

Prepared For:

Florida Department of Transportation

District Six

Miami-Dade , Florida

March 2006

TABLE OF CONTENTS

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE NO.</u>
1.0	INTRODUCTION	1
2.0	PROJECT DESCRIPTION	1
2.1	Existing Conditions	1
2.2	Proposed Alternatives	3
3.0	LAND USE	3
4.0	TRAFFIC NOISE ANALYSIS	4
4.1	Noise Descriptors	4
4.2	Noise Abatement Criteria	4
4.3	Noise Sensitive Areas	6
4.4	Field Measured Noise Levels	7
4.4.1	Methodology	7
4.4.2	Field Measurement Data	7
4.4.2.1	Site FR-1	7
4.4.2.2	Site FR-2	10
4.4.2.3	Site FR-3	11
4.4.2.4	Site FR-4	11
4.4.3	Field Measurement Summary	11
4.5	Computer Noise Model Verification	11
4.6	Noise Model Development	12
4.7	Predicted Traffic Noise Levels	12
4.7.1	South of Miami Gardens Drive	15
4.7.2	North of Miami Gardens Drive	17
4.8	Noise Impact Analysis	19
4.9	Noise Abatement Measures	19
4.9.1	Traffic Management Measures	20
4.9.2	Alignment Modifications	20
4.9.3	Construction of Permanent Noise Barriers Within the Available Highway Right-of-Way	20
4.9.3.1	Palms Springs North	24
4.9.3.2	Coral Gate	29
4.9.3.3	Country Club Towers	31
4.9.3.4	Mediterranean Village	34
4.9.3.5	Ibis Villas	36
4.9.3.6	San Mateo	38
4.9.3.7	Esplanade	40
4.9.3.8	Country Club of Miami Estates	42
4.9.3.9	Las Brisas	43
4.9.3.10	Country Club of Miami Condominiums	45
4.9.3.11	Villa Esperanza	49

TABLE OF CONTENTS
(continued)

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE NO.</u>
4.9.4	Acquisition of Property Rights (either in fee or lesser interest) for Construction of Noise Barriers by Donation, by Purchase or by Condemnation	51
4.9.5	Acquisition (by purchase or by condemnation) of Right-of-way for Landscaping Adjacent to Noise Barriers and for Buffer Zones	51
4.9.6	Acquisition of the Balance of a Noise-sensitive Property from Which There Is a Taking, If Acquisition Is less Expensive and Disruptive than the Methods Shown Above	51
5.0	SUMMARY	51
6.0	CONSTRUCTION NOISE AND VIBRATION	55
7.0	COORDINATION WITH LOCAL AGENCIES	55

LIST OF FIGURES

<u>FIGURE NO.</u>	<u>DESCRIPTION</u>	<u>PAGE NO.</u>
1	Project Location Map	2
2	Land Use Map	5
3	Measured and Modeled Noise Receiver Locations	8 and 9
4	Noise Barriers Under Consideration	22, and 23

LIST OF TABLES

<u>TABLE NO.</u>	<u>DESCRIPTION</u>	<u>PAGE NO.</u>
1	FHWA Noise Abatement Criteria and FDOT Noise Abatement Approach Criteria	6
2	Field Measured Traffic Noise Data	10
3	Modeled Noise Receiver Descriptions	13 and 14
4	Predicted Noise Levels-South of Miami Gardens Drive	16
5	Predicted Noise Levels-North of Miami Gardens Drive	18
6	Palm Springs North Segment-1 Noise Barrier Specifications Build Alternative 4	25
7	Palm Springs North Segment-1 Noise Barrier Reasonableness and Feasibility Analysis Build Alternative 4	25
8	Palm Springs North Segment-2 Noise Barrier Specifications Build Alternative 4	27
9	Palm Springs North Segment-2 Noise Barrier Reasonableness and Feasibility Analysis Build Alternative 4	27
10	Palm Springs North Segment-3 Noise Barrier Specifications Build Alternative 4	28
11	Palm Springs North Segment-3 Noise Barrier Reasonableness and Feasibility Analysis Build Alternative 4	28

LIST OF TABLES

(continued)

<u>TABLE NO.</u>	<u>DESCRIPTION</u>	<u>PAGE NO.</u>
12	Coral Gate Noise Barrier Specifications Build Alternative 4	30
13	Coral Gate Noise Barrier Reasonableness and Feasibility Analysis Build Alternative 4	30
14	Country Club Towers Noise Barrier Specifications Build Alternative 3 .	32
15	Country Club Towers Noise Barrier Reasonableness and Feasibility Analysis Build Alternative 3	32
16	Country Club Towers Noise Barrier Specifications Build Alternative 4 .	33
17	Country Club Towers Noise Barrier Reasonableness and Feasibility Analysis Build Alternative 4	33
18	Mediterranean Village Noise Barrier Specifications Build Alternatives 3 and 4	35
19	Mediterranean Village Noise Barrier Reasonableness and Feasibility Analysis Build Alternatives 3 and 4	35
20	Ibis Villas Noise Barrier Specifications Build Alternative 4	37
21	Ibis Villas Noise Barrier Reasonableness and Feasibility Analysis Build Alternative 4	37
22	San Mateo Noise Barrier Specifications Build Alternative 4	39
23	San Mateo Noise Barrier Reasonableness and Feasibility Analysis Build Alternative 4	39
24	Esplanade Noise Barrier Specifications Build Alternative 4	41
25	Esplanade Noise Barrier Reasonableness and Feasibility Analysis Build Alternative 4	41
26	Las Brisas Noise Barrier Specifications Build Alternative 4	44
27	Las Brisas Noise Barrier Reasonableness and Feasibility Analysis Build Alternative 4	44
28	Country Club of Miami Condominiums Noise Barrier Specifications Build Alternative 3	46
29	Country Club of Miami Condominiums Reasonableness and Feasibility Analysis Build Alternative 3	46
30	Country Club of Miami Condominiums Noise Barrier Specifications Build Alternative 4	47
31	Country Club of Miami Condominiums Reasonableness and Feasibility Analysis Build Alternative 4	47
32	Villa Esperanza Noise Barrier Specifications Build Alternatives 3 and 4	50
33	Villa Esperanza Reasonableness and Feasibility Analysis Build Alternatives 3 and 4	50
34	Summary of Recommended Noise Barriers	53
35	Summary of Noise Barriers Not Recommended	54

APPENDICES

<u>APPENDIX</u>	<u>DESCRIPTION</u>	<u>NO. OF PAGES</u>
A	TNM Traffic Data	2
B	Predicted Traffic Noise Levels	4

1.0 INTRODUCTION

The purpose of this report is to present the findings of a noise analysis for the proposed improvements to SR 860/Miami Gardens Drive/NW 186th Street in unincorporated Miami-Dade County. The proposed improvements consist of increasing capacity by adding a third lane in each direction within the existing right-of-way. The layout of the existing divided four-lane roadway included space for an additional outside lane between the roadway and sidewalk. Potential traffic noise impacts in the area surrounding the project corridor were assessed for all viable project alternatives, including the No Build Alternative, in accordance with Federal regulations (CFR 772) and guidelines contained in Chapter 17 of the PD&E Manual. A summary of this noise analysis may be found in the Categorical Exclusion Type 2 document for the project available from the FDOT District Six offices.

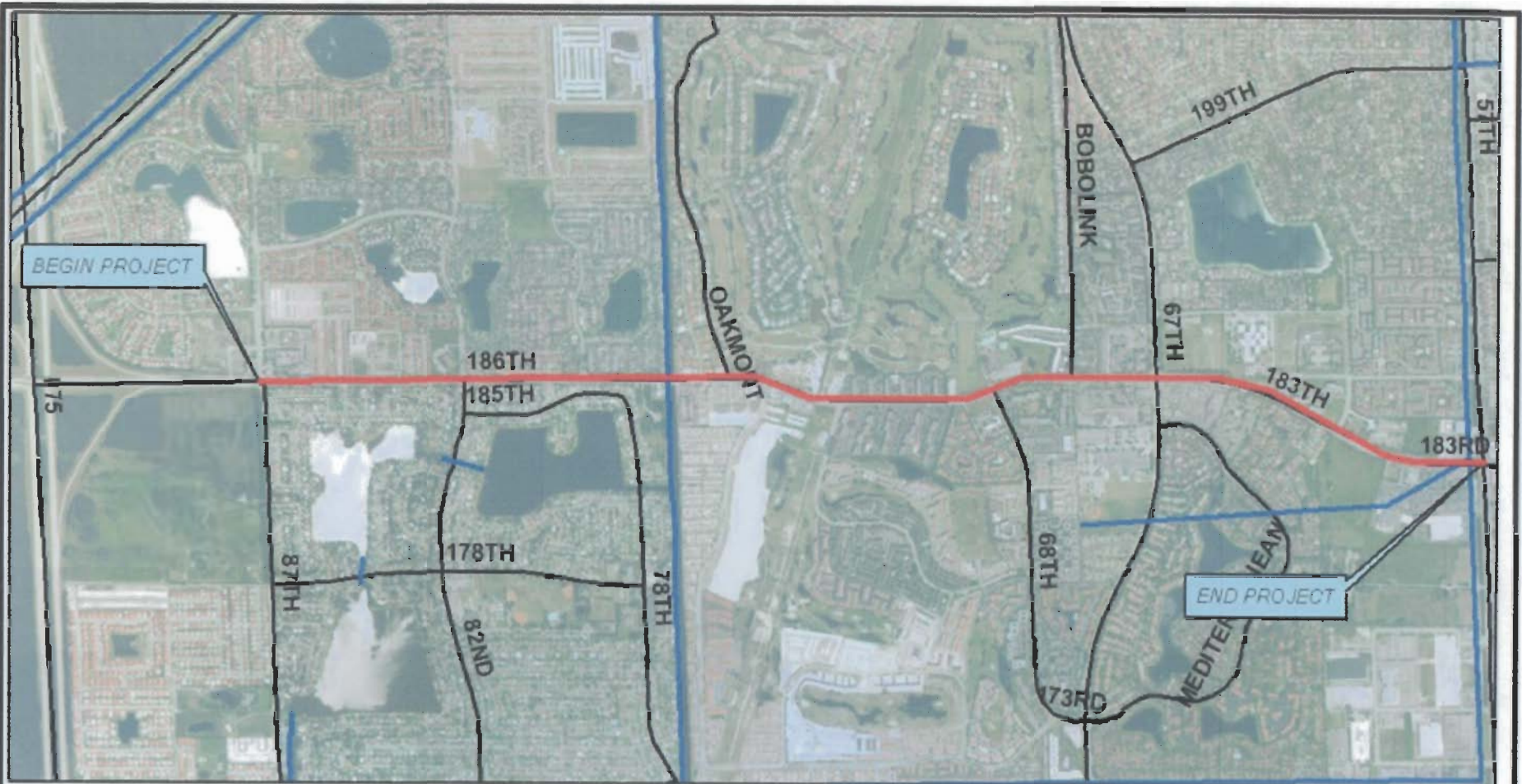
2.0 PROJECT DESCRIPTION

The project study limits on SR 860/Miami Gardens Drive/NW 186th Street are from east of the I-75 ramps (MP 0.438) to SR 823/NW 57th Avenue/Red Road (MP 3.664) (see Figure 1, Project Location Map). Miami Gardens Drive is located in northern Miami-Dade County, approximately one mile south of the Miami-Dade County/Broward County line. The 3.2-mile project corridor represents the existing western limits of Miami Gardens Drive, which does not extend past I-75. Currently, the project corridor consists of an urban, divided four-lane typical section, with left and right turn lanes at intersections, and discontinuous sidewalks. Miami Gardens Drive is classified as a principal arterial, and has six lanes east of the project corridor.

Previous planning studies completed in 1999 and 2002 resulted in recommendations for short-term improvements and for a Project Development & Environment (PD&E) Study to include a No-build alternative, a Transportation System Management (TSM) alternative and two Build alternatives. For the current PD&E study, build alternatives propose adding lanes. Measures to improve access management, as well as provisions for improved signal placement (spacing) and timing were considered as part of the TSM and build alternatives. Modifications to landscaping and measures to assure compliance with Americans with Disabilities Act (ADA) requirements were incorporated. Improvements to pedestrian facilities were also incorporated.

2.1 Existing Conditions

The 3.2-mile project corridor represents the existing western limits of Miami Gardens Drive. Currently, the project corridor consists of an urban, divided four-lane arterial that traverses an area



LEGEND:

- PROJECT CORRIDOR
- CANALS



PROJECT LOCATION MAP

SR - 860/Miami Gardens Drive/NW 186th Street/NW 183rd Street
 Project Development & Environmental Study
 FM No. 407736-3-22-01

Figure 1

dominated by residential land use. Commercial land use is present at major intersections, and a public golf course is the dominant feature of the project corridor's study area. The surrounding land uses include Commercial/Office, Parkland and Institutional land uses. No significant changes are anticipated in land use as a result of this project.

2.2 Proposed Alternatives

The No-Project Alternative (Alternative 1) remains viable through the Public Hearing and Location/Design Concept Acceptance stages of the Project Development & Environment (PD&E) process. This alternative has the least amount of short-term impacts to the environment. The facility would be retained with all the existing operational, geometric, and safety deficiencies, and would continue to deteriorate, causing negative economic and environmental impacts.

A Traffic System Management (TSM) Alternative (Alternative 2) and two Build Alternatives were developed, none of which require any right-of-way acquisition for intersection improvements. The Build Alternatives include a Partial Six-Lane Alternative (Alternative 3) and a Full Six-Lane Alternative (Alternative 4). With Build Alternative 3, the corridor would remain as a four-lane arterial between the Project Begin point and Bob-O-Link Drive, and would be widened to six lanes only in the eastern third of the project corridor (Bob-O-Link Drive to Red Road). A full description of the Build Alternatives developed for this project and the Alternatives Evaluation Matrix are contained in the Preliminary Engineering Report (PER) and summarized in the Environmental Determination, Type 2 Categorical Exclusion (CE-2) for this project. The preferred construction alternative is Alternative 4 (Full Six-Lane Alternative).

3.0 LAND USE

The proposed SR 860/Miami Gardens Drive/NW 186th Street project corridor between I-75 and NW 57th Avenue/Red Road passes through a series of planned urban residential developments with a mix of neighborhood businesses at the major intersections. One dominant feature of the study area is the Country Club of Miami Golf Course, a municipal facility with two 18-hole courses that are surrounded by housing. The golf course extends northward from Miami Gardens Drive between West Oakmont Drive and Bob-O-Link Drive. Two other park properties are also present. These include Country Village Park and a future park site. Two schools found within project area are Joella C. Good Elementary School (6350 NW 188th Terrace, population 1,591 students) which is located directly adjacent to the corridor; and American High /Adult/Vocational School (18350 NW 67th Avenue, Hialeah, population 6,634 students) which is located just south of a major intersection of

the project corridor. The residential developments along the project corridor include single-family housing (3.5 units/acre) to high density apartments (50 units/acre).

No significant changes are anticipated in land use as a result of this project. According to the Miami-Dade County Adopted 2005 and 2015 Land Use Plan, the dominant future land uses will remain as Residential and Business/Office (see Figure 2, Land Use Map).

4.0 TRAFFIC NOISE ANALYSIS

Traffic noise levels were predicted for peak periods of the existing (2005) conditions, the design year (2028) No Build Alternative and the design year build alternatives (Build Alternative 3 and 4).

4.1 Noise Descriptors

All noise levels in this study are reported in decibels (dB) using the “A” weighting scale referred to as “dBA”. This weighting scale correlates well with human response to traffic noise. Also, unless otherwise noted, all noise levels are reported as the one-hour equivalent noise level (L_{Aeq1h}). The L_{Aeq1h} represents the A-weighted steady-state noise level that contains the same acoustic energy over a one hour period as a fluctuating noise level due to a time varying source(s) over that same period. Unless otherwise noted, the predicted noise levels presented in this study are representative of traffic noise only and are not indicative of the influences of other sources of noise that may be present.

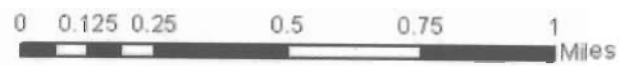
4.2 Noise Abatement Criteria

Noise Abatement Criteria (NAC) have been developed by the Federal Highway Administration (FHWA) for most common land use types. Noise abatement is considered in conjunction with FDOT projects where traffic noise levels approaching or exceeding the FHWA NAC are predicted to occur as a result of increased roadway capacity or significant alterations to the roadway geometry. The FDOT defines “approach” as meaning within 1.0 dBA of the NAC for each Land Use Activity Category (LUAC). The FHWA NAC and FDOT Noise Abatement Approach Criteria (NAAC) are presented in *Table 1*. Noise abatement is also considered when a substantial noise level increase is predicted to occur. A substantial noise level increase is defined by the FDOT as one where the existing noise level is predicted to be exceeded by 15 dBA or more as a result of a transportation improvement project.



LEGEND:

- | | | | | |
|---------------------|--|--|---------------------------------------|------------------------------------|
| Land Use Categories | Cemeteries | Low-Density Multi-Family | Single-Family | Vacant Unprotected |
| <all other values> | Communications, Utilities, Terminals, Plants | Mobile Home Parks | Streets/Roads, Expressways, Ramps | Vacant, Government Owned |
| DESCRIPTION | Expressway Right of Way Open Areas | Multi-Family, Migrant Camps | Streets/Roads/Canals RW | Vacant, Protected, Privately Owned |
| Agriculture | Industrial | Office | Townhouses | Water |
| Airports/Ports | Industrial Extraction | Parks (Including Preserves & Conservation) | Transient-Residential (Hotels/Motels) | Water Conservation Areas |
| | Institutional | Shopping Centers, Commercial, Stadiums, Tracks | Two-Family (Duplexes) | |
| CANALS | | | | |
| PROJECT CORRIDOR | | | | |



LAND USE MAP
 SR - 860/Miami Gardens Drive/NW 186th Street/NW 183rd Street
 Project Development & Environmental Study
 FM No. 407736-3-22-01

Figure 2

TABLE 1
FHWA NOISE ABATEMENT CRITERIA AND
FDOT NOISE ABATEMENT APPROACH CRITERIA

LAND USE ACTIVITY CATEGORY	FHWA NAC (L _{Aeqth})	FDOT NAAC (L _{Aeqth})	DESCRIPTION OF ACTIVITY CATEGORY
A	57 dBA (Exterior)	56 dBA (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 dBA (Exterior)	66 dBA (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, RV parks, day care centers and hospitals.
C	72 dBA (Exterior)	71 dBA (Exterior)	Developed lands, properties, or activities not included in Categories A or B above
D	Not Defined	Not Defined	Undeveloped lands
E	52 dBA (Interior)	51 dBA (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

4.3 Noise Sensitive Areas

Existing noise sensitive land use within the project corridor includes exterior areas at several single-family home communities, several multi-family complexes (i.e., apartments, condominiums and townhomes) and a park, a school and three religious facilities. The single-family home communities adjacent to the project include Palm Springs North, The Moors, Hunters Point, Esplanade and Country Club of Miami Estates. The single-family homes in these communities are typically located adjacent to Miami Gardens Drive right-of-way. The multi-family complexes adjacent to the project include Coral Gate, The Gate House, Country Club Towers, Mediterranean Village, Ibis Villas, San Mateo, Las Brisas, Country Club of Miami Condominiums and Villa Esperanza. Non-residential potentially noise sensitive sites include the Country Village Park, Joella C. Good Elementary School, Sunrise Presbyterian Church, Church of Mother Redemption Catholic Church and The Church of Jesus Christ Latter Day Saints. An existing residential community, Aspen, has been significantly damaged by recent storms. Also, portions of this community are slated for future redevelopment into commercial use.

Potentially noise sensitive areas at the single-family homes include yards, pools, patios, etc. Noise sensitive areas at the multi-family complexes include patios and balconies of the buildings near Miami Gardens Drive. Potentially noise sensitive areas at the church properties near Miami Gardens Drive were determined to primarily be the front entrances of the sanctuaries. Potentially noise sensitive areas at the park include open areas on the south side of the park. Potentially noise sensitive areas at the school include outside areas near portable classrooms at the southwest corner of the school.

4.4 Field Measured Noise Levels

4.4.1 Methodology

Measurements of the ambient noise levels along the project corridor were performed using procedures defined in the FHWA report *Measurement of Highway-Related Noise* (FHWA-PD-96-046). Field measurements of existing noise levels were conducted on September 21, 2004 at four sites. Two of the measurement sites were in single-family home neighborhoods, and two were at apartment complexes. Measurements were taken at two offset distances from the existing roadway in order to evaluate noise levels at first and second-row noise sensitive sites.

Rion Model NL-21 Type-II integrating sound level meters were used to collect noise level data. Foam wind screens and adjustable tripods were also used. The sound level meters were calibrated to 94 dB at 1000 Hertz using a Rion Model NC-73 acoustical calibrator. The ambient temperature during the measurements was approximately 86 to 88°F and the wind speed remained less than approximately 5 MPH throughout the measurement periods. The relative humidity was approximately 50 to 65 percent and the cloud cover was up to 100 percent. All roadway surfaces remained clean and dry throughout the measurements.

Traffic data were collected by CES staff during each measurement period. Traffic speeds were measured using C.M.I., Inc. - Type JF100 radar speed measuring equipment. Traffic volumes, speed data and noise levels were collected during 13 ten-minute sampling periods. The hourly-equivalent traffic volumes ranged from approximately 960 to 2,334 vehicles. Measured vehicle speeds ranged from 20 to 62 MPH.

4.4.2 Field Measurement Data

The locations of the field measurement sites are shown in figures contained in *Figure 3* and a summary of the field data, including the measured traffic noise levels, is shown in *Table 2*.

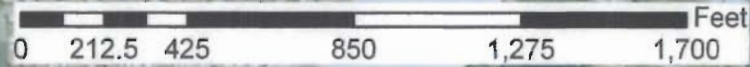
4.4.2.1 Site FR-1

This site is located south of Miami Gardens Drive in the Palm Springs North neighborhood. This is a community of single-family homes along Miami Gardens Drive between NW 87th Avenue and the Peter's Pike Canal. Traffic noise levels at this site were measured at two locations. These locations were equivalent to the near edge of the first and second row of homes in this neighborhood, approximately 80 and 160 feet from the eastbound lanes. Measurements occurred



N

- ◆ First-Row Model Receiver
- Second-Row Model Receiver
- Major Roads



**SR 860 / Miami Gardens Drive
Project Development & Environmental Study**

Measured & Modeled Noise Receiver Locations; Map 1 of 2

Figure 3A

Scale: As Shown
Drawn by; GMJ
Checked by: TO

MATCHLINE B

MATCHLINE C



MATCHLINE C



**SR 860 / Miami Gardens Drive
Project Development & Environmental Study**

Measured & Modeled Noise Receiver Locations: Map 2 of 2

Figure 3B

**Scale: As Shown
Drawn by: GMJ
Checked by: TO**

between 10:00 and 10:55 AM. Existing traffic noise levels were found to range from 54.8 to 57.8 dBA at the first-row homes and 49.7 to 56.2 dBA at the second-row homes.

**TABLE 2
FIELD MEASURED TRAFFIC NOISE DATA**

FIELD RECEIVER	LOCATION	SAMPLE RUN	TIME/ DATE	MEASURED 10-MINUTE TRAFFIC VOLUME Westbound Eastbound (Auto/MT/HT/B/Mcy)	DISTANCE TO MIAMI GARDENS DRIVE (Feet)	MEASURED TRAFFIC NOISE LEVEL (dBA)	MODELED TRAFFIC NOISE LEVEL (dBA)	DIFFERENCE (Measured - Modeled) (dBA)
FR-1	Palm Springs North, 18530 NW 84 th Avenue. In back yard of 1 st row home and adjacent to side yard of 2 nd row home.	1A	10:00AM/ 09-21-04	81/1/3/0/0	80	55.6	54.3	1.3
				82/1/0/0/0	160	51.5	52.7	-1.2
		1B	10:16AM/ 09-21-04	90/2/1/2/0	80	57.8	56.1	1.7
				70/8/4/0/0	160	56.2	54.4	1.8
		1C	10:30AM/ 09-21-04	97/2/1/0/0	80	54.8	53.7	1.1
				71/1/1/0/0	160	49.7	52.0	-2.3
		1D	10:44AM/ 09-21-04	80/3/2/0/0	80	56.5	54.3	2.2
				72/2/1/0/0	160	50.9	52.6	-1.7
FR-2	Coral Gate Apartments, 6952 NW 186 th Street. Adjacent to the near edge of 1 st and 2 nd row apartments.	2A	11:20AM/ 09-21-04	105/2/1/0/1	65	62.1	60.6	1.5
				123/4/3/1/0	120	58.5	58.6	-0.1
		2B	11:40AM/ 09-21-04	125/6/1/0/0	65	61.5	60.0	1.5
				110/2/2/1/0	120	58.1	58.0	0.1
		2C	11:55AM/ 09-21-04	125/3/1/0/1	65	61.4	59.8	1.6
				134/2/1/0/0	120	57.8	57.9	-0.1
FR-3	Villa Esperanza Apartments, 18350 NW 62 nd Avenue. Adjacent to front and back edges of the westernmost building (No. 18500).	3A	1:21AM/ 09-21-04	183/4/0/0/2	50	64.9	64.8	0.1
				195/1/1/2/1	90	56.7	54.4	2.3
		3B	1:35AM/ 09-21-04	175/2/1/0/0	50	64.6	63.9	0.7
				168/5/1/0/0	90	56.3	53.6	2.7
		3C	1:48AM/ 09-21-04	186/0/0/2/0	50	64.8	63.9	0.9
				182/2/4/1/0	90	57.6	53.7	3.9
FR-4	East Esplanade, 18641 NW 78 th Avenue (1 st row home) and 18651 NW 78 th Avenue (2 nd row home). In back yard of 1 st row home and adjacent to side yard of 2 nd row home.	4A	2:20AM/ 09-21-04	130/3/0/4/0	50	63.2	63.5	-0.3
				129/1/3/4/1	90	58.5	56.5	2.0
		4B	2:34AM/ 09-21-04	144/1/2/3/0	50	63.3	63.7	-0.4
				130/4/0/2/0	90	57.8	56.4	1.4
		4C	2:48AM/ 09-21-04	170/0/0/5/0	50	64.1	63.2	0.9
				150/2/1/4/0	90	58.0	56.0	2.0

Notes: dBA = A-weighted decibels, MT = Medium Trucks, HT = Heavy Trucks, B = Bus, Mcy = Motorcycles

4.4.2.2 Site FR-2

This site is located south of Miami Gardens Drive in the Coral Gate Apartments. This is an apartment complex along Miami Gardens Drive between NW 73rd Avenue and NW 68th Avenue. Traffic noise levels at this site were measured at two locations. These locations were equivalent to the near edge of the first and second row of apartments in this community, approximately 65 and 120 feet from the eastbound lanes. Measurements occurred between 11:20 AM and 12:05 PM. Existing traffic noise levels were found to range from 61.4 to 62.1 dBA at the first-row apartments and 57.8 to 58.5 dBA at the second-row apartments.

4.4.2.3 Site FR-3

This site is located south of Miami Gardens Drive in the Villa Esperanza apartments. This is an apartment complex along Miami Gardens Drive west of NW 62nd Avenue. Traffic noise levels at this site were measured at two locations. These locations were at the front and back of the apartment building nearest the roadway, approximately 50 and 90 feet from the westbound lanes. The second-row site represents apartments that are nearly completely shielded by the building. Measurements occurred between 1:21 and 1:58 PM. Existing traffic noise levels were found to range from 64.6 to 64.9 dBA at the first-row apartments and 56.3 to 57.6 dBA at the second-row apartments.

4.4.2.4 Site FR-4

This site is located north of Miami Gardens Drive in the Esplanade neighborhood. This is a community of single-family homes along Miami Gardens Drive between NW 79th Avenue and the Peter's Pike Canal. Traffic noise levels at this site were measured at two locations. These locations were equivalent to the near edge of the first and second row of homes in this neighborhood, approximately 50 and 90 feet from the westbound lanes. Measurements occurred between 2:20 and 2:55 PM. Existing traffic noise levels were found to range from 63.2 to 64.1 dBA at the first-row homes and 57.8 to 58.5 dBA at the second-row homes.

4.4.3 Field Measurement Summary

Existing noise levels were measured at four locations along Miami Gardens Drive. Traffic noise levels were collected during 13 ten-minute sample periods. Existing traffic noise levels were found to range from 54.8 to 64.9 dBA at first-row sites and 49.7 to 58.5 at second-row sites.

4.5 Computer Noise Model Verification

Site conditions and traffic data gathered during the field measurements were used to develop inputs to the FHWA's Traffic Noise Model (TNM) Version 2.5 for computer models representative of the existing conditions. Additional geometric information necessary for these models was developed from 1 inch=100 feet scale aerial photographs of the existing conditions in the project study area. The TNM results were then compared to the noise level data collected for each field measurement sample. The results of this analysis are shown in Table 2. The model for the field conditions is deemed to be within an acceptable level of accuracy if the predicted noise levels are within 3.0 dBA of the measured noise levels. This model is then used as a basis for models used to predict existing

and future noise levels at representative nearby noise sensitive locations. The average error between the measured and predicted noise levels for each site are as follows:

- FR-1: 0.4 dBA
- FR-2: 0.8 dBA
- FR-3: 1.8 dBA
- FR-4: 0.9 dBA

Thus, the average error for all of the field measurement sites was within the 3.0 dBA verification limit using TNM in accordance with Chapter 17 of the FDOT PD&E Manual, and further use of the TNM model on this project is supported.

4.6 Noise Model Development

After verification of the prediction methodology, computer models were developed for the existing year conditions, and the design year (2028) No Build Alternative and the two build alternatives (Build Alternative 3 and Build Alternative 4). The TNM models for all alternatives were developed using geometric information from the 1 inch = 100 feet scale master plans for the project. Traffic data used in the TNM models were derived from traffic data provided by the Department's traffic consultant for the project. This data may be found in *Appendix A*. According to Chapter 17 of the PD&E Manual "*Maximum peak-hourly traffic representing Level of Service (LOS) "C", or demand LOS of "A", "B", or "C" will be used (unless analysis shows that other conditions create a "worst-case" level)*". In cases where traffic volumes on project roadways and ramps were predicted to operate at a LOS worse than LOS C, the project's LOS C data were used. This represents the highest traffic volume traveling at the highest average speed for this project. Such conditions typically generate the highest noise levels at a given site during a normal day. Receiver locations representative of the noise sensitive land uses detailed in *Section 4.3* were input into the TNM model. These locations are presented in *Figure 3* and are described in *Table 3*.

4.7 Predicted Traffic Noise Levels

The TNM model results for the worst-case traffic conditions for all project alternatives are summarized in the following sections. Predicted noise levels for individual model receivers are presented in *Appendix B*.

TABLE 3

MODELED NOISE RECEIVER DESCRIPTIONS

LOCATION	MODEL RECEIVER NUMBER	NUMBER OF NOISE SENSITIVE SITES	STATION	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/No Build/ Alternative 3/ Alternative 4) (Feet)	LOCATION	MODEL RECEIVER NUMBER	NUMBER OF NOISE SENSITIVE SITES	STATION	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/No Build/ Alternative 3/ Alternative 4) (Feet)
First Row					Second Row				
South Side									
Palm Springs North	PS-1	1	80+60	75/75/75/65	Palm Springs North	SPS-1	1	79+60	160/160/160/150
	PS-2	9	83+80	55/55/55/45		SPS-2	7	83+80	200/200/200/190
	PS-3	1	89+80	40/40/40/30		SPS-3	2	89+20	125/125/125/115
	PS-4	1	90+40	45/45/45/35		SPS-4	1	90+20	125/125/125/115
	PS-5	7	95+40	60/60/60/50		SPS-5	3	94+30	135/135/135/125
	PS-6	6	101+20	50/50/50/40		SPS-6	9	99+20	205/205/205/195
	PS-7	1	104+20	50/50/50/40		SPS-7	1	104+60	110/110/110/100
	PS-8	1	105+80	45/45/45/35		SPS-8	1	105+80	120/120/120/115
	PS-9	7	110+00	55/55/55/45		SPS-9	8	111+40	205/205/205/195
	PS-10	4	114+40	55/55/55/45		SPS-10	3	115+00	160/160/160/150
	PS-11	6	119+40	70/70/70/60		SPS-11	9	122+40	220/220/220/210
	PS-12	5	124+00	55/55/55/50		SPS-12	1	127+00	145/145/145/140
	PS-13	1	126+60	55/55/55/50					
Coral Gate	CG-1 (a,b,c,d,e)	3,3,3,3,3	155+40	60/60/60/55	Coral Gate	SCG-1 (a,b,c,d,e)	3,3,3,3,3	154+80	100/100/100/95
	CG-2 (a,b,c,d,e)	6,6,6,6,6	161+20	80/80/80/75		SCG-2 (a,b,c,d,e)	6,6,6,6,6	160+60	100/100/100/95
	CG-3 (a,b,c,d,e)	2,2,2,2,2	167+00	180/180/180/175		SCG-3 (a,b,c,d,e)	2,2,2,2,2	166+60	250/250/250/195
Gate House	GH-1 (a,b)	1,1	169+60	125/120/120/120	Gate House	SGH-1 (a,b)	1,1	168+60	150/150/150/145
Sunrise Presbyterian Church	SPC	N/A	172+00	185/185/185/180					
Country Club Towers	CCT-1 (a,b,c,d,e)	3,3,3,3,3	176+20	125/125/125/120	Country Club Towers	SCCT-1 (a,b,c,d,e)	10,10,10,10,10	178+00	225/225/225/220
	CCT-2 (a,b,c,d,e)	8,8,8,8,8	180+00	135/135/135/130		SCCT-2 (a,b,c,d,e)	2,2,2,2,2	183+60	185/185/185/180
	CCT-3 (a,b,c,d,e)	2,2,2,2,2	184+50	115/115/110/110					
Mediterranean Village	MV-1 (a,b)	2,2	206+60	40/40/35/35	Mediterranean Village	SMV-1 (a,b)	2,2	206+00	115/115/110/110
	MV-2 (a,b,c)	2,2,2	207+60	45/45/40/40		SMV-2 (a,b,c)	4,4,4	208+00	115/115/110/110
	MV-3 (a,b,c)	2,2,2	208+00	40/40/35/35					
The Moors	TM-1	2	211+60	50/50/50/50	The Moors	STM-1	1	211+00	140/140/135/135
	TM-2	7	214+20	55/55/50/50		STM-2	7	214+60	185/185/175/175
	TM-3	6	217+00	60/60/50/50		STM-3	2	217+40	135/135/125/125
	TM-4	1	220+00	60/60/50/50		STM-4	1	220+20	145/145/135/135

TABLE 3 (continued)
MODELED NOISE RECEIVER DESCRIPTIONS

LOCATION	MODEL RECEIVER NUMBER	NUMBER OF NOISE SENSITIVE SITES	STATION	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/No Build/ Alternative 3/ Alternative 4) (Feet)	LOCATION	MODEL RECEIVER NUMBER	NUMBER OF NOISE SENSITIVE SITES	STATION	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/No Build/ Alternative 3/ Alternative 4) (Feet)
First Row					Second Row				
North Side									
Ibis Villas	IV-1	1	86+00	50/50/50/45	Ibis Villas	SIV-1	1	86+00	90/90/90/85
	IV-2	1	87+00	50/50/50/45		SIV-2	1	87+00	90/90/90/85
	IV-3	1	88+80	40/40/40/35		SIV-3	1	88+80	90/90/90/85
	IV-4	1	90+00	40/40/40/35		SIV-4	1	90+00	80/80/80/75
Church of Mother Redemption Catholic Church	CMR	N/A	93+20	315/315/315/310					
San Mateo	SM-1	1	97+80	45/45/45/40	San Mateo	SSM-1	1	97+80	85/85/85/80
	SM-2	2	99+20	40/40/40/35		SSM-2	2	99+20	80/80/80/75
	SM-3	1	101+00	40/40/40/35		SSM-3	1	101+00	80/80/80/75
Church of Latter Day Saints	LDS	N/A	103+20	110/105					
Hunters Point	HP-1	3	106+40	25/25/25/20	Hunters Point	SHP-1	2	105+60	205/205/205/200
	HP-2	2	108+00	40/40/40/35		SHP-2	18	111+60	210/210/210/205
	HP-3	10	111+80	40/40/40/35		SHP-3	5	118+00	200/200/200/195
	HP-4	2	116+00	45/45/45/40					
	HP-5	2	117+60	40/40/40/35					
Esplanade	ESP-1	2	119+60	55/55/55/50	Esplanade	SESP-1	1	118+40	105/105/105/100
	ESP-2	1	121+60	75/75/75/70		SESP-2	1	121+60	125/125/125/120
	ESP-3	8	125+60	75/75/75/65		SESP-3	8	125+80	125/125/125/115
	ESP-4	1	131+20	55/55/55/50		SESP-4	1	131+20	105/105/105/100
Country Club of Miami Estates	CCME-1	3	133+70	45/45/45/40	Country Club of Miami Estates	SCCME-1	3	134+00	150/150/150/145
	CCME-2	2	138+00	35/35/35/30		SCCME-2	2	138+00	160/160/160/155
	CCME-3	2	141+40	185/185/185/180					
	CCME-4	3	144+00	75/75/75/70					
Las Brisas	LB-1 (a,b,c,d,e)	2,2,2,2,2	151+40	40/40/40/35	Las Brisas	SLB-1 (a,b,c,d,e)	2,2,2,2,2	151+40	80/80/80/75
	LB-2 (a,b,c,d,e)	6,6,6,6,6	160+60	45/45/45/40		SLB-2 (a,b,c,d,e)	6,6,6,6,6	160+60	85/85/85/80
	LB-3 (a,b,c,d,e)	2,2,2,2,2	165+00	45/45/45/40		SLB-3 (a,b,c,d,e)	2,2,2,2,2	165+00	85/85/85/80
	LB-4 (a,b,c,d,e)	2,2,2,2,2	167+20	45/45/45/40		SLB-4 (a,b,c,d,e)	2,2,2,2,2	167+20	85/85/85/80
Country Club of Miami	CCM-1 (a,b)	3,3	182+60	55/55/50/50	Country Club of Miami	SCCM-1 (a,b)	1,1	182+60	105/105/100/100
Country Village Park	CVP	N/A	204+40	130/130/125/125					
Joella C. Good Elementary School	JCGS	N/A	207+60	120/120/115/115					
Villa Esperanza	VE-1 (a,b,c,d)	6,6,6,6	212+00	65/65/65/65	Villa Esperanza	SVE-1 (a,b,c,d)	6,6,6,6	211+60	140/140/140/140
	VE-2 (a,b,c,d)	6,6,6,6	214+00	70/70/70/70		SVE-2 (a,b,c,d)	6,6,6,6	214+60	160/160/160/160
	VE-3 (a,b,c,d)	4,4,4,4	216+95	35/35/35/35		SVE-3 (a,b,c,d)	4,4,4,4	216+00	125/125/125/125
	VE-4 (a,b,c,d)	2,2,2,2	217+90	95/95/95/95		SVE-4 (a,b,c,d)	2,2,2,2	217+60	125/125/125/125

Notes: * = distances rounded to nearest five foot increment from the near edge-of-pavement. a = 1st floor receivers at multi-story complexes, b = 2nd floor receivers, c = 3rd floor receivers, d = 4th floor receivers, e = 5th floor receivers

4.7.1 South of Miami Gardens Drive

A summary of traffic noise levels for the neighborhoods, communities and a church south of Miami Gardens Drive is presented in *Table 4*. Existing traffic noise levels along the south side of the project are predicted by TNM to range from 43.3 dBA at second-row condominiums in Mediterranean Village to 67.6 dBA at first-row apartments at the Coral Gate Apartments. Design year traffic noise levels with the No-Build Alternative are predicted to range from 44.9 dBA at second-row condominiums in Mediterranean Village to 69.0 dBA at first-row homes in the Palm Springs North neighborhood. These No-Build traffic noise levels are predicted to be no more than 3.5 dBA greater than existing noise levels. Design year traffic noise levels with Build Alternative 3 are predicted to range from 46.4 dBA at second-row condominiums in Mediterranean Village to 70.5 dBA at first-row condominiums in Mediterranean Village during peak conditions. Traffic noise levels with Build Alternative 3 are predicted to be no more than 5.5 dBA greater than existing noise levels and no more than 3.8 dBA greater than those of the No-Build Alternative. Design year traffic noise levels with Build Alternative 4 are predicted to range from 46.4 dBA at second-row condominiums in Mediterranean Village to 70.5 dBA at first-row condominiums in Mediterranean Village during peak conditions. Traffic noise levels with Build Alternative 4 are predicted to be no more than 5.5 dBA greater than existing noise levels and no more than 3.8 dBA greater than those of the No-Build Alternative.

**TABLE 4
PREDICTED NOISE LEVELS
SOUTH OF MIAMI GARDENS DRIVE**

Number of Dwellings	Range of Existing Noise Levels (dBA)	Design Year No Build Alternative		Design Year Build Alternative 3			Number of Dwellings With Noise Levels > 66 dBA	Design Year Build Alternative 4			Number of Dwellings With Noise Levels > 66 dBA
		Range of Predicted Noise Levels (dBA)	Change from Existing Noise Levels (dBA)	Range of Predicted Noise Levels (dBA)	Change from Existing Noise Levels (dBA)	Change from No Build Noise Levels (dBA)		Range of Predicted Noise Levels (dBA)	Change from Existing Noise Levels (dBA)	Change from No Build Noise Levels (dBA)	
Palm Springs North											
First Row											
50	63.2 - 66.5	64.5 - 69.0	0.3 - 2.5	64.5 - 69.0	0.3 - 2.5	0.0 - 0.1	30	67.0 - 70.3	3.2 - 4.2	1.3 - 3.2	50
Second Row											
46	55.0 - 62.7	55.9 - 65.0	-0.1 - 3.5	55.9 - 65.0	-0.1 - 3.5	0.0 - 0.0	0	58.2 - 65.9	1.0 - 4.4	0.9 - 3.2	0
Coral Gate Apartments											
First Row											
55	57.2 - 67.6	57.2 - 67.7	0.0 - 0.2	57.2 - 67.7	0.0 - 0.2	0.0 - 0.1	36	59.2 - 69.3	1.1 - 2.2	1.1 - 2.1	39
Second Row											
55	53.4 - 64.3	53.4 - 64.9	0.0 - 1.2	53.4 - 64.9	0.0 - 1.2	0.0 - 0.0	0	55.3 - 66.3	1.1 - 3.0	1.1 - 2.3	9
Gate House Townhomes											
First Row											
2	59.8 - 64.3	59.8 - 64.3	0.0 - 0.0	59.8 - 64.3	0.0 - 0.0	0.0 - 0.0	0	62.6 - 65.8	1.5 - 2.8	1.5 - 2.8	0
Second Row											
2	57.0 - 61.3	57.0 - 61.3	0.0 - 0.0	57.0 - 61.4	0.0 - 0.1	0.0 - 0.1	0	59.8 - 63.3	2.0 - 2.8	2.0 - 2.8	0
Sunrise Presbyterian Church											
First Row											
1	58.1 - 58.1	58.1 - 58.1	0.0 - 0.0	58.1 - 58.1	0.0 - 0.0	0.0 - 0.0	0	60.6 - 60.6	2.5 - 2.5	2.5 - 2.5	0
Country Club Towers											
First Row											
65	60.0 - 65.8	60.0 - 65.8	0.0 - 0.0	61.3 - 67.1	0.2 - 3.4	0.2 - 3.4	27	63.3 - 67.5	1.7 - 3.5	1.7 - 3.5	52
Second Row											
60	48.6 - 61.2	48.7 - 61.1	-0.1 - 0.1	48.6 - 62.6	-0.1 - 2.5	-0.1 - 2.5	0	49.8 - 62.9	0.9 - 2.9	0.9 - 2.9	0
Mediterranean Village											
First Row											
16	55.7 - 65.1	57.4 - 66.8	1.6 - 1.8	60.7 - 70.5	4.7 - 5.5	3.0 - 3.8	10	60.7 - 70.5	4.7 - 5.5	3.0 - 3.8	10
Second Row											
16	43.3 - 57.8	44.9 - 59.4	1.6 - 1.9	46.4 - 63.1	3.1 - 5.3	1.4 - 3.7	0	46.4 - 63.1	3.1 - 5.3	1.4 - 3.7	0
The Moors											
First Row											
16	55.4 - 56.9	57.2 - 58.5	1.6 - 1.8	59.8 - 60.7	3.5 - 4.7	1.9 - 3.0	0	59.8 - 60.7	3.5 - 4.7	1.9 - 3.0	0
Second Row											
11	49.7 - 52.0	51.7 - 53.9	1.9 - 2.0	53.8 - 55.0	3.0 - 4.4	1.1 - 2.5	0	53.8 - 55.0	3.0 - 4.4	1.1 - 2.5	0

4.7.2 North of Miami Gardens Drive

A summary of traffic noise levels for the neighborhoods, multi-family complexes, religious facilities, park and school north of Miami Gardens Drive is presented in *Table 5*. Existing traffic noise levels along the north side of the project are predicted to range from 35.5 dBA at second-row condominiums in Villa Esperanza to 68.6 dBA at first-row homes in Country Club of Miami Estates and first-row apartments at Las Brisas. Design year traffic noise levels with the No-Build Alternative are predicted to range from 37.6 dBA at second-row condominiums in Villa Esperanza to 68.6 dBA at first-row homes in Country Club of Miami Estates and first-row apartments at Las Brisas. These No-Build traffic noise levels are predicted to be no more than 2.7 dBA greater than existing noise levels. Design year traffic noise levels with Build Alternative 3 are predicted to range from 40.2 dBA at second-row condominiums in Villa Esperanza to 70.9 dBA at first-row condominiums in Villa Esperanza during peak conditions. Traffic noise levels with Build Alternative 3 are predicted to be no more than 7.3 dBA greater than existing noise levels and no more than 5.0 dBA greater than those of the No-Build Alternative. Design year traffic noise levels with Build Alternative 4 are predicted to range from 40.2 dBA at second-row condominiums in Villa Esperanza to 71.1 dBA at first-row homes in the Country Club of Miami Estates during peak conditions. Traffic noise levels with Build Alternative 4 are predicted to be no more than 7.3 dBA greater than existing noise levels and no more than 5.0 dBA greater than those of the No-Build Alternative.

**TABLE 5
PREDICTED NOISE LEVELS
NORTH OF MIAMI GARDENS DRIVE**

Number of Dwellings	Range of Existing Noise Levels (dBA)	Design Year No Build Alternative		Design Year Build Alternative 3			Design Year Build Alternative 4				
		Range of Predicted Noise Levels (dBA)	Change from Existing Noise Levels (dBA)	Range of Predicted Noise Levels (dBA)	Change from Existing Noise Levels (dBA)	Change from No Build Noise Levels (dBA)	Number of Dwellings With Noise Levels > 66 dBA	Range of Predicted Noise Levels (dBA)	Change from Existing Noise Levels (dBA)	Change from No Build Noise Levels (dBA)	Number of Dwellings With Noise Levels > 66 dBA
Ibis Villas											
First Row											
4	66.2 - 67.0	66.8 - 67.5	0.5 - 0.6	66.8 - 67.5	0.5 - 0.6	0.0 - 0.0	4	68.8 - 69.4	2.4 - 2.6	1.9 - 2.0	4
Second Row											
4	61.7 - 62.2	62.5 - 63.0	0.8 - 0.9	62.5 - 63.0	0.8 - 0.9	0.0 - 0.1	0	65.0 - 65.4	3.2 - 3.3	2.4 - 2.5	0
Church of Mother Redemption Catholic Church											
1	52.4 - 52.4	53.9 - 53.9	1.5 - 1.5	53.9 - 53.9	1.5 - 1.5	0.0 - 0.0	0	55.7 - 55.7	3.3 - 3.3	1.8 - 1.8	0
San Mateo Condominiums											
First Row											
4	64.0 - 66.1	64.7 - 66.7	0.6 - 0.7	64.7 - 66.7	0.6 - 0.7	0.0 - 0.0	1	66.1 - 68.2	2.1 - 2.3	1.4 - 1.7	4
Second Row											
4	60.8 - 61.8	61.7 - 62.7	0.9 - 0.9	61.7 - 62.7	0.9 - 0.9	0.0 - 0.0	0	63.4 - 64.7	2.6 - 2.9	1.7 - 2.0	0
Church of Latter Day Saints											
1	59.9 - 59.9	61.2 - 61.2	1.3 - 1.3	61.2 - 61.2	1.3 - 1.3	0.0 - 0.0	0	63.6 - 63.6	3.7 - 3.7	2.4 - 2.4	0
Hunters Point											
First Row											
19	61.4 - 62.8	62.0 - 63.4	0.4 - 0.6	62.0 - 63.4	0.4 - 0.6	0.0 - 0.0	0	63.3 - 64.7	1.7 - 2.0	1.2 - 1.6	0
Second Row											
25	53.2 - 55.3	54.0 - 57.7	0.6 - 2.4	54.0 - 57.7	0.6 - 2.4	0.0 - 0.0	0	55.1 - 58.4	1.9 - 3.1	0.7 - 1.6	0
Esplanade											
First Row											
12	63.2 - 66.4	63.5 - 66.6	0.2 - 0.3	63.5 - 66.6	0.2 - 0.3	0.0 - 0.0	1	66.8 - 69.6	2.9 - 3.6	2.6 - 3.3	12
Second Row											
11	57.3 - 61.6	57.7 - 61.8	0.2 - 0.4	57.7 - 61.8	0.2 - 0.4	0.0 - 0.0	0	59.7 - 64.3	2.2 - 3.6	2.0 - 3.4	0
Country Club of Miami Estates											
First Row											
10	57.5 - 68.6	57.5 - 68.6	0.0 - 0.2	57.5 - 68.6	0.0 - 0.2	0.0 - 0.0	5	60.4 - 71.1	2.5 - 3.1	2.5 - 2.9	8
Second Row											
5	57.3 - 59.2	57.5 - 59.5	0.2 - 0.3	57.5 - 59.5	0.2 - 0.3	0.0 - 0.0	0	60.5 - 61.6	2.4 - 3.2	2.1 - 3.0	0
Las Brisas Condominiums											
First Row											
60	66.3 - 68.6	66.3 - 68.6	0.0 - 0.1	66.3 - 68.6	0.0 - 0.1	0.0 - 0.1	60	69.1 - 70.4	1.7 - 2.8	1.7 - 2.8	60
Second Row											
60	59.8 - 64.3	59.8 - 64.3	0.0 - 0.1	59.8 - 64.3	0.0 - 0.1	0.0 - 0.1	0	62.8 - 65.9	1.5 - 3.0	1.5 - 3.0	0
Country Club Of Miami Condominiums											
First Row											
6	65.9 - 67.9	65.7 - 67.8	-0.2 - -0.1	68.3 - 69.5	1.6 - 2.4	1.7 - 2.6	6	68.6 - 69.7	1.8 - 2.7	1.9 - 2.9	6
Second Row											
2	57.7 - 61.6	57.5 - 61.5	-0.2 - -0.1	59.8 - 62.8	1.2 - 2.1	1.3 - 2.3	0	60.6 - 63.3	1.7 - 2.9	1.8 - 3.1	0
Park and School											
First Row											
1	00 - 59.7	57.5 - 58.0	2.2 - 2.3	62.4 - 62.9	7.1 - 7.2	4.9 - 4.9	0	62.4 - 62.9	7.1 - 7.2	4.9 - 4.9	0
Villa Esperanza Apartments											
First Row											
72	57.9 - 66.0	60.3 - 67.3	2.1 - 2.7	64.4 - 70.9	4.8 - 7.3	2.6 - 4.8	70	64.4 - 70.9	4.8 - 7.3	2.6 - 4.8	70
Second Row											
72	35.5 - 55.4	37.6 - 57.6	2.0 - 2.3	40.2 - 61.0	4.4 - 7.3	2.3 - 5.0	0	40.2 - 61.0	4.4 - 7.3	2.3 - 5.0	0

4.8 Noise Impact Analysis

Approximately 769 noise sensitive sites, including residences, a school, a park and 3 religious facilities were considered noise sensitive within the limits of this project. Under the existing conditions, the primary source of noise at most of these sites is vehicular traffic on Miami Gardens Drive. Traffic on the local roadway network generally has a much less noticeable effect on overall traffic noise levels owing to their significantly lower traffic volumes. During the design year, the primary source of noise at most sites along the project corridor is expected to remain traffic on Miami Gardens Drive. Construction of Build Alternative 3 is not expected to significantly reduce the distance between the near travel lanes and most of the nearby noise sensitive sites since it only extends the existing 6-lane section 0.75 mile westward from NW 62nd Avenue to just west of Bob-O-Link Drive. However, the separation distance at sites east of the transition from the 4-lane cross-section to the 6-lane cross-section is expected to be reduced by less than 10 to 15 feet. With construction of Build Alternative 4, the separation distance between most of the existing noise sensitive sites and the roadway will be reduced by less than approximately 10 to 15 feet.

Approximately 250 noise sensitive sites are predicted to experience traffic noise levels equal to, or exceeding, the FDOT NAAC for LUAC B (66.0 dBA) with Build Alternative 3. Of these sites, only 113 are located near improvements proposed with this alternative. The communities and complexes predicted to be impacted with Build Alternative 3 include: Country Club Towers, Mediterranean Village, Country Club of Miami Condominiums and Villa Esperanza. Approximately 324 noise sensitive sites are predicted to experience traffic noise levels equal to, or exceeding, 66.0 dBA with Build Alternative 4. The communities and complexes predicted to be impacted with Build Alternative 4 include: Palm Springs North, Coral Gate, Country Club Towers, Mediterranean Village, Ibis Villas, San Mateo, Hunters Point, Esplanade, Las Brisas, Country Club of Miami Estates, Country Club of Miami Condominiums and Villa Esperanza. No other potentially noise sensitive sites, including outdoor areas at the park, school or any of the religious facilities along the project corridor are predicted to experience traffic noise levels equal to, or exceeding the FDOT NAAC, or experience noise levels at least 15.0 dBA greater than existing noise levels with the build alternatives.

4.9 Noise Abatement Measures:

The FDOT requires that the reasonableness and feasibility of noise abatement be considered when the NAAC is exceeded. Potential abatement measures were considered in the following order:

- Traffic management measures (e.g. traffic control devices and signing for prohibition of certain vehicle types, time-use restriction for certain vehicle types, modified speed limits, and exclusive lane designations);
- Alignment modifications;
- Construction of noise barriers within the highway project's right-of-way;
- Acquisition of property rights (either in fee or lesser interest) for construction of noise barriers by donation, by purchase or by condemnation;
- Acquisition (by purchase or condemnation) of right-of-way for landscaping adjacent to noise barriers and for buffer zones; and,
- Acquisition (by purchase or condemnation) of the balance of a noise-sensitive property from which there is a taking, if acquisition is less expensive and disruptive than the methods shown above.

4.9.1 Traffic Management Measures

Traffic management measures such as traffic control devices, signing for prohibition of certain vehicle types, time-use restriction for certain vehicle types, modified speed limits, and exclusive lane designations applied for the purpose of reducing traffic noise levels would impede the operational characteristics of this facility and are not considered reasonable or feasible with this project.

4.9.2 Alignment Modifications

Existing development is located directly adjacent to Miami Gardens Drive and physically constrains the horizontal and vertical alignment along the project corridor. Thus, the proposed build alternative modifications follow the same general horizontal alignment as the existing roadway in order to minimize overall impacts due to the project. Also, given the flat topography of the project study area, alterations to the vertical alignment of the project are infeasible and would not noticeably reduce noise levels.

4.9.3 Construction of Permanent Noise Barriers Within the Available Highway Right-of-Way

Construction of permanent noise barriers within the available highway right-of-way is considered the most effective noise abatement option for the proposed project given the limited amount of available right-of-way. Ideally, long continuous noise barriers located as close as possible to the affected noise sensitive receivers are the most effective form of reducing traffic noise impacts. The FHWA's TNM model was used to develop conceptual noise barrier designs. A design noise level reduction (i.e., insertion loss) goal of 10 dBA was attained where possible; the minimum acceptable

insertion loss was 5 dBA in accordance with criteria specified in Chapter 17 of the FDOT PD&E Manual. The predicted effectiveness of all noise barriers was evaluated for heights between 8 and 22 feet in one-foot increments.

The cost of all noise barriers was evaluated based on the current FDOT cost estimate for noise barrier construction which is \$25.00 per square foot. This estimate is generally most applicable for sites that are at-grade, possess adequate right-of-way and have minimal utility/drainage conflicts. A maximum cost guideline of \$35,000 per benefitted receiver site as presented in Chapter 17 of the FDOT's PD&E Manual was used in assessing the reasonableness of the noise barriers.

Roadway improvements proposed with Build Alternative 3 were limited to the section of Miami Gardens Drive east of approximately Bob-O-Link Drive. With Build Alternative 3, noise impacts were predicted to occur and noise barriers were considered at the following locations:

- Country Club Towers
- Mediterranean Village
- Country Club of Miami Condominiums
- Villa Esperanza

Roadway improvements proposed with Build Alternative 4 occur across the entire length of Miami Gardens Drive from just west of NW 87th Avenue to NW 57th Avenue. With Build Alternative 4, noise impacts were predicted to occur and noise barriers were considered at the following locations:

- Palm Springs North
- Coral Gate
- Country Club Towers
- Mediterranean Village
- Ibis Villas
- San Mateo
- Esplanade
- Country Club of Miami Estates
- Las Brisas
- Country Club of Miami Condominiums
- Villa Esperanza

Noise barriers under consideration with this project are presented in *Figure 4*.



MATCHLINE A

MATCHLINE A

MATCHLINE B



**SR 860 / Miami Gardens Drive
Project Development and Environmental Study**

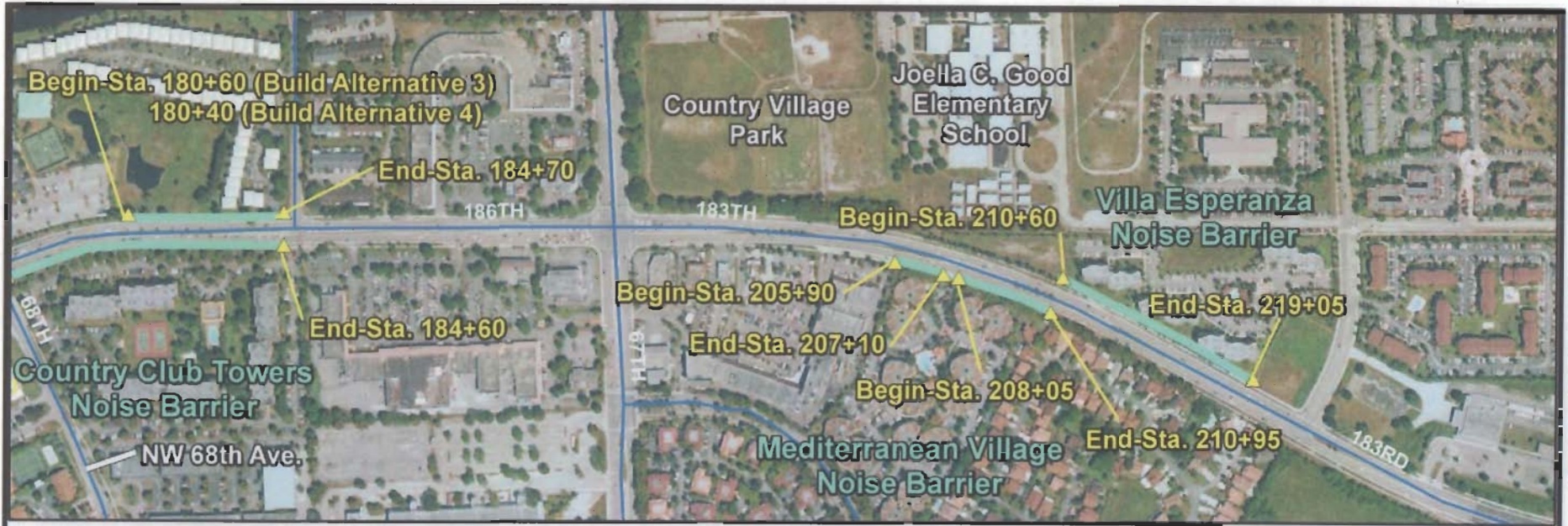
Noise Barriers Under Consideration: Map 1 of 2

Figure 4A

Scale: As Shown
 Drawn by: GMJ
 Checked by: TO

MATCHLINE C

MATCHLINE C



MATCHLINE C



**SR 860 / Miami Gardens Drive
Project Development & Environmental Study**

Noise Barriers Under Consideration: Map 2 of 2

Figure 4B

**Scale: As Shown
Drawn By: GMJ
Checked by: TO**

4.9.3.1 Palm Springs North

Noise abatement was considered along the south side of Miami Gardens Drive adjacent to the Palm Springs North single-family home community to mitigate noise impacts predicted to occur with Build Alternative 4. Traffic noise levels at 50 first-row single-family homes between NW 87th Avenue and the Peters Pike Canal are predicted to exceed the FDOT NAAC (66.0 dBA) with Build Alternative 4. Since there are no nearby roadway modifications proposed with Build Alternative 3, there are no new impacts associated with this alternative.

Access to this community is provided at NW 87th Avenue, NW 84th Court and NW 82nd Avenue. In order to maintain these access points, three noise barrier segments were evaluated along the southern right-of-way line between NW 87th Avenue and the Peters Pike Canal. The alignments considered for these noise barrier segments are shown in *Figure 4*. The limits of the noise barrier segments are as follows:

- Segment-1 - NW 87th Avenue to NW 84th Court, Station 79+20 to 89+40, 1,037 feet long;
- Segment-2 - NW 84th Court to NW 82nd Avenue, Station 90+00 to 104+70, 1,496 feet long; and,
- Segment-3 - NW 82nd Avenue to Peters Pike Canal, Station 105+70 to 127+25, 2,186 feet long.

These noise barrier segments would be located approximately 10 feet south of the edge-of-pavement of the nearest eastbound through-lane and approximately 20 to 50 feet from the nearby homes. Each noise barrier segment provides noise abatement for a distinct neighborhood between the access roads and as such, each noise barrier was evaluated individually for reasonableness and feasibility.

Table 6 provides design and performance details for Segment-1 of this noise barrier. The results of this evaluation indicate that a noise barrier at least 8 feet tall will provide a minimum insertion loss of at least 5.0 dBA at all 11 residences where impacts were identified along this segment of the project while meeting the \$35,000 cost guideline. The average insertion loss with this configuration is predicted to 7.0 dBA. A minimum height of 12 feet is recommended for this noise barrier in order to better meet the FDOT's design insertion loss goal of 10 dBA and to more completely block the line-of-sight between the nearby ground-level noise sensitive sites and the tops of trucks and truck exhausts. With a 12-foot tall noise barrier, the average insertion loss is predicted to be 10.4 dBA at the impacted sites. When factoring in the additional 9 residences that are not impacted but are benefitted by this noise barrier, the average insertion loss is predicted to be 8.4 dBA overall. Increasing the height to 22 feet does not benefit any additional sites identified as impacted and only increases the overall average insertion loss by 2.4 dBA. *Table 7* provides details of the reasonableness and feasibility analysis for this noise barrier segment. The twenty-one considerations shown in this table are found in Chapter 17 of the PD&E Manual.

TABLE 6
PALM SPRINGS NORTH NOISE BARRIER SEGMENT-1 SPECIFICATIONS
BUILD ALTERNATIVE 4

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	1,037	67.3 - 70.3	61.1 - 62.0	5.7 - 8.3	7.0	11	0	11	\$207,400	\$18,855
9	1,037	67.3 - 70.3	59.9 - 61.1	6.2 - 9.8	8.1	11	0	11	\$233,325	\$21,211
10	1,037	67.3 - 70.3	58.5 - 60.3	7.0 - 10.6	9.1	11	0	11	\$259,250	\$23,568
11	1,037	67.3 - 70.3	57.7 - 59.4	7.9 - 11.3	9.9	11	0	11	\$285,175	\$25,925
12	1,037	58.4 - 70.3	52.9 - 59.0	5.0 - 11.9	8.4	11	9	20	\$311,100	\$15,555
13	1,037	58.4 - 70.3	52.5 - 58.7	5.3 - 12.3	8.7	11	9	20	\$337,025	\$16,851
14	1,037	58.4 - 70.3	52.2 - 58.5	5.5 - 12.8	9.1	11	9	20	\$362,950	\$18,148
15	1,037	58.4 - 70.3	51.9 - 58.2	5.7 - 13.2	9.4	11	9	20	\$388,875	\$19,444
16	1,037	58.4 - 70.3	51.7 - 58.1	5.9 - 13.6	9.7	11	9	20	\$414,800	\$20,740
17	1,037	58.4 - 70.3	51.5 - 57.9	6.0 - 13.9	10.1	11	9	20	\$440,725	\$22,036
18	1,037	58.4 - 70.3	51.3 - 57.8	6.1 - 14.1	10.1	11	9	20	\$466,650	\$23,333
19	1,037	58.4 - 70.3	51.2 - 57.6	6.2 - 14.3	10.3	11	9	20	\$492,575	\$24,629
20	1,037	58.4 - 70.3	51.1 - 57.5	6.3 - 14.6	10.5	11	9	20	\$518,500	\$25,925
21	1,037	58.4 - 70.3	51.2 - 57.4	6.4 - 14.9	10.6	11	9	20	\$544,425	\$27,221
22	1,037	58.4 - 70.3	51.2 - 57.3	6.5 - 15.2	10.8	11	9	20	\$570,350	\$28,518

Note: * = Noise levels presented for benefitted receiver sites only.

TABLE 7
PALM SPRINGS NORTH NOISE BARRIER SEGMENT-1
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVE 4

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 11 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at all noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 8 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 3.8 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design.
Noise Level Increase from Existing to Future Build Conditions	Up to 4.2 dBA
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 2.3 dBA
Antiquity	Homes in this neighborhood were built circa 1968.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights assessed.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

Table 8 provides design and performance details for Segment-2 of this noise barrier. The results of this evaluation indicate that a noise barrier at least 8 feet tall will provide a minimum insertion loss of at least 5.0 dBA at all 15 residences where impacts were identified along this segment of the project while meeting the \$35,000 cost guideline. The average insertion loss with this configuration is predicted to 7.0 dBA. A minimum height of 12 feet is recommended for this noise barrier in order to better meet the FDOT's design insertion loss goal of 10 dBA and to more completely block the line-of-sight between the nearby ground-level noise sensitive sites and the tops of trucks and truck exhausts. With a 12-foot tall noise barrier, the average insertion loss is predicted to be 10.3 dBA at the impacted sites. When factoring in the additional 13 residences that are not impacted but are benefitted by this noise barrier, the average insertion loss is predicted to be 8.5 dBA overall. Increasing the height to 22 feet does not benefit any additional sites identified as impacted and only increases the overall average insertion loss by 2.8 dBA. *Table 9* provides details of the reasonableness and feasibility analysis for this noise barrier segment.

Table 10 provides design and performance details for Segment-3 of this noise barrier. The results of this evaluation indicate that a noise barrier at least 8 feet tall will provide a minimum insertion loss of at least 5.0 dBA at all 24 residences along this segment of the project where impacts were identified while meeting the \$35,000 cost guideline. The average insertion loss with this configuration is predicted to 6.4 dBA. A minimum height of 12 feet is recommended for this noise barrier in order to better meet the FDOT's design insertion loss goal of 10 dBA and to more completely block the line-of-sight between the nearby ground-level noise sensitive sites and the tops of trucks and truck exhausts. With a 12-foot tall noise barrier, the average insertion loss is predicted to be 9.4 dBA at the impacted sites. When factoring in the additional 20 residences that are not impacted but are benefitted by this noise barrier, the average insertion loss is predicted to be 8.4 dBA overall. Increasing the height to 22 feet does not benefit any additional sites identified as impacted and only increases the overall average insertion loss by 2.6 dBA. *Table 11* provides details of the reasonableness and feasibility analysis for this noise barrier segment.

Based on the results of this PD&E phase traffic noise analysis, it appears that all three noise barrier segments evaluated for the Palm Springs North neighborhood could provide a noise level reduction of at least 5.0 dBA within the \$35,000 cost guideline and therefore will be further evaluated during the design phase of this project.

**TABLE 8
PALM SPRINGS NORTH NOISE BARRIER SEGMENT-2 SPECIFICATIONS
BUILD ALTERNATIVE 4**

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	1,496	68.7 - 69.8	61.3 - 62.8	6.2 - 7.4	7.0	15	0	15	\$299,200	\$19,947
9	1,496	68.7 - 69.8	60.2 - 62.2	6.8 - 8.5	7.9	15	0	15	\$336,600	\$22,440
10	1,496	68.7 - 69.8	58.6 - 61.2	7.8 - 10.1	9.2	15	0	15	\$374,000	\$24,933
11	1,496	60.0 - 69.8	54.6 - 60.8	5.4 - 10.8	8.9	15	3	18	\$411,400	\$22,856
12	1,496	58.2 - 69.8	52.0 - 60.5	5.2 - 11.5	8.5	15	13	28	\$448,800	\$16,029
13	1,496	58.2 - 69.8	51.4 - 60.2	5.5 - 12.0	9.0	15	13	28	\$486,200	\$17,364
14	1,496	58.2 - 69.8	51.0 - 60.0	5.7 - 12.6	9.3	15	13	28	\$523,600	\$18,700
15	1,496	58.2 - 69.8	50.7 - 59.8	5.9 - 13.1	9.7	15	13	28	\$561,000	\$20,036
16	1,496	58.2 - 69.8	50.3 - 59.7	6.1 - 13.5	10.0	15	13	28	\$598,400	\$21,371
17	1,496	58.2 - 69.8	50.0 - 59.5	6.2 - 14.0	10.3	15	13	28	\$635,800	\$22,707
18	1,496	58.2 - 69.8	49.7 - 59.4	6.3 - 14.4	10.5	15	13	28	\$673,200	\$24,043
19	1,496	58.2 - 69.8	49.5 - 59.3	6.5 - 14.8	10.8	15	13	28	\$710,600	\$25,379
20	1,496	58.2 - 69.8	50.1 - 59.2	6.6 - 15.2	10.9	15	13	28	\$748,000	\$26,714
21	1,496	58.2 - 69.8	49.8 - 59.1	6.7 - 15.6	11.1	15	13	28	\$785,400	\$28,050
22	1,496	58.2 - 69.8	49.6 - 59.0	6.8 - 15.9	11.3	15	13	28	\$822,800	\$29,386

Note: * = Noise levels presented for benefitted receiver sites only.

**TABLE 9
PALM SPRINGS NORTH NOISE BARRIER SEGMENT-2
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVE 4**

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 15 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at all noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 8 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 4.3 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design.
Noise Level Increase from Existing to Future Build Conditions	Up to 4.2 dBA
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 1.8 dBA
Antiquity	Homes in this neighborhood were built circa 1968.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights assessed.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

**TABLE 10
PALM SPRINGS NORTH NOISE BARRIER SEGMENT-3 SPECIFICATIONS
BUILD ALTERNATIVE 4**

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	2,186	67.0 - 69.7	60.4 - 64.3	5.1 - 7.1	6.4	24	0	24	\$437,200	\$18,217
9	2,186	67.0 - 69.7	59.7 - 63.8	5.7 - 8.4	7.2	24	0	24	\$491,850	\$20,494
10	2,186	67.0 - 69.7	58.0 - 63.3	6.3 - 9.8	8.4	24	0	24	\$546,500	\$22,771
11	2,186	58.2 - 69.7	52.7 - 63.0	5.5 - 10.6	8.2	24	12	36	\$601,150	\$16,699
12	2,186	58.2 - 69.7	51.8 - 62.9	6.0 - 11.2	8.4	24	20	44	\$655,800	\$14,905
13	2,186	58.2 - 69.7	51.4 - 62.7	6.3 - 11.6	8.8	24	20	44	\$710,450	\$16,147
14	2,186	58.2 - 69.7	51.0 - 62.6	6.7 - 12.2	9.2	24	20	44	\$765,100	\$17,389
15	2,186	58.2 - 69.7	50.6 - 62.5	7.0 - 12.6	9.5	24	20	44	\$819,750	\$18,631
16	2,186	58.2 - 69.7	50.3 - 62.4	7.2 - 13.1	9.8	24	20	44	\$874,400	\$19,873
17	2,186	58.2 - 69.7	50.0 - 62.3	7.3 - 13.5	10.1	24	20	44	\$929,050	\$21,115
18	2,186	58.2 - 69.7	49.7 - 62.2	7.3 - 13.9	10.3	24	20	44	\$983,700	\$22,357
19	2,186	58.2 - 69.7	49.7 - 62.2	7.3 - 13.9	10.3	24	20	44	\$1,038,350	\$23,599
20	2,186	58.2 - 69.7	49.5 - 62.1	7.5 - 14.7	10.7	24	20	44	\$1,093,000	\$24,841
21	2,186	58.2 - 69.7	49.7 - 62.1	7.5 - 15.0	10.8	24	20	44	\$1,147,650	\$26,083
22	2,186	58.2 - 69.7	49.5 - 62.0	7.6 - 15.4	11.0	24	20	44	\$1,202,300	\$27,325

Note: * = Noise levels presented for benefitted receiver sites only.

**TABLE 11
PALM SPRINGS NORTH NOISE BARRIER SEGMENT-3
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVE 4**

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 24 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at all noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 8 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 4.6 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design.
Noise Level Increase from Existing to Future Build Conditions	Up to 3.5 dBA
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 3.2 dBA
Antiquity	Homes in this neighborhood were built circa 1968.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights assessed.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

4.9.3.2 Coral Gate

Noise abatement was considered along the south side of Miami Gardens Drive adjacent to the Coral Gate apartments to mitigate noise impacts predicted to occur with Build Alternative 4. Traffic noise levels at 39 first-row and 9 second-row apartments are predicted to exceed the FDOT NAAC with Build Alternative 4. No new noise impacts were identified with Build Alternative 3. Access to this community is provided via two entrance roads along Miami Gardens Drive. In order to maintain access to these apartments, three noise barrier segments were evaluated along the southern right-of-way line adjacent to these apartments. The alignment considered for this noise barrier is shown in *Figure 4*. The limits of the noise barrier segments are as follows:

- Segment-1 - Station 154+90 to 159+50, 460 feet long;
- Segment-2 - Station 159+85 to 165+65, 580 feet long; and,
- Segment-3 - Station 166+20 to 169+20, 300 feet long.

These noise barrier segments would be located approximately 10 feet south of the edge-of-pavement of the nearest eastbound through-lane and approximately 40 to 200 feet from the nearby apartments. Since these noise barrier segments protect a single apartment complex, they were evaluated for reasonableness and feasibility collectively as a system.

Table 12 provides design and performance details for this noise barrier. The results of this evaluation indicate that a noise barrier at least 19 feet tall will provide a minimum insertion loss of at least 5.0 dBA at 15 apartments where impacts were identified along this segment of the project and 22 additional apartments while meeting the \$35,000 cost guideline. The overall average insertion loss with this configuration is predicted to 7.3 dBA. Increasing the height to 22 feet does not benefit any additional sites identified as impacted and only increases the overall average insertion loss by 0.4 dBA. It was not possible to provide effective noise abatement for several apartments located on the uppermost floors of the apartment buildings and apartments located near the ends of the noise barrier. *Table 13* provides details of the reasonableness and feasibility analysis for this noise barrier.

Based on the results of this PD&E phase traffic noise analysis, it appears that the noise barrier evaluated for the Coral Gate apartments could provide a noise level reduction of at least 5.0 dBA within the \$35,000 cost guideline and therefore will be further evaluated during the design phase of this project.

**TABLE 12
CORAL GATE NOISE BARRIER SPECIFICATIONS
BUILD ALTERNATIVE 4**

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	1,340	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$268,000	N/A
9	1,340	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$301,500	N/A
10	1,340	64.6 - 64.6	59.6 - 59.6	5.0 - 5.0	5.0	0	6	6	\$335,000	\$55,833
11	1,340	64.6 - 68.7	58.5 - 63.4	5.3 - 6.1	5.7	6	6	12	\$368,500	\$30,708
12	1,340	64.6 - 68.7	58.0 - 62.5	5.2 - 6.6	6.0	6	12	18	\$402,000	\$22,333
13	1,340	61.4 - 68.7	56.2 - 61.7	5.2 - 7.1	6.3	6	18	24	\$435,500	\$18,146
14	1,340	61.4 - 68.7	55.9 - 60.2	5.5 - 8.5	7.1	6	18	24	\$469,000	\$19,542
15	1,340	61.4 - 68.7	55.7 - 58.9	5.7 - 9.8	7.7	6	18	24	\$502,500	\$20,938
16	1,340	61.4 - 68.7	55.5 - 58.3	5.9 - 10.4	8.0	6	18	24	\$536,000	\$22,333
17	1,340	61.4 - 68.7	55.4 - 57.7	6.0 - 11.0	8.3	6	18	24	\$569,500	\$23,729
18	1,340	61.4 - 68.7	55.2 - 62.5	5.2 - 11.6	7.6	12	20	32	\$603,000	\$18,844
19	1,340	61.4 - 69.3	55.1 - 64.3	5.0 - 12.0	7.3	15	22	37	\$636,500	\$17,203
20	1,340	61.4 - 69.3	54.9 - 64.3	5.0 - 12.3	7.5	15	22	37	\$670,000	\$18,108
21	1,340	61.4 - 69.3	54.8 - 64.2	5.1 - 12.6	7.8	15	22	37	\$703,500	\$19,014
22	1,340	61.4 - 69.3	54.7 - 64.2	5.0 - 13.0	7.7	15	24	39	\$737,000	\$18,897

Note: * = Noise levels presented for benefitted receiver sites only.

**TABLE 13
CORAL GATE NOISE BARRIER
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVE 4**

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 48 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at 15 noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 19 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 0.4 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design.
Noise Level Increase from Existing to Future Build Conditions	Up to 4.4 dBA
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 3.2 dBA
Antiquity	These apartments were built circa 1973.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights greater than 10 feet.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

4.9.3.3 Country Club Towers

Noise abatement was considered along the south side of Miami Gardens Drive adjacent to the Country Club Towers apartments to mitigate noise impacts predicted to occur with both build alternatives. Traffic noise levels at 27 first-row apartments are predicted to exceed the FDOT NAAC with Build Alternative 3; 52 first-row apartments are predicted to exceed the FDOT NAAC with Build Alternative 4. The alignment considered for this noise barrier is shown in *Figure 4*. The limits of this noise barrier for both build alternatives are from Station 174+90 to 184+60, and it will be approximately 942 feet long. This noise barrier would be located approximately 10 feet south of the edge-of-pavement of the nearest eastbound through-lane and approximately 100 to 120 feet from the nearby apartments.

Table 14 provides design and performance details for this noise barrier with Build Alternative 3. The results of this evaluation indicate that a noise barrier at least 21 feet tall will provide a minimum insertion loss of at least 5.0 dBA at all 27 of the apartments where impacts were identified along this segment of the project and 32 additional apartments while meeting the \$35,000 cost guideline. The overall average insertion loss with this configuration is predicted to 8.8 dBA. Increasing the height to 22 feet does not benefit any additional sites identified as impacted and only increases the overall average insertion loss by 0.2 dBA. *Table 15* provides details of the reasonableness and feasibility analysis for this noise barrier.

Table 16 provides design and performance details for this noise barrier with Build Alternative 4. The results of this evaluation indicate that a noise barrier at least 21 feet tall will provide a minimum insertion loss of at least 5.0 dBA at 38 of the apartments where impacts were identified along this segment of the project and 21 additional apartments while meeting the \$35,000 cost guideline. The overall average insertion loss with this configuration is predicted to 8.8 dBA. Increasing the height to 22 feet does not benefit any additional sites identified as impacted and only increases the overall average insertion loss by 0.2 dBA. It was not possible to provide effective noise abatement for several apartments located on the uppermost floors of the apartment buildings and apartments located near the ends of the noise barrier. *Table 17* provides details of the reasonableness and feasibility analysis for this noise barrier.

Based on the results of this PD&E phase traffic noise analysis, it appears that the noise barriers evaluated for the Country Club Towers apartments with either build alternative could provide a noise level reduction of at least 5.0 dBA within the \$35,000 cost guideline and therefore will be further evaluated during the design phase of this project.

**TABLE 14
COUNTRY CLUB TOWERS NOISE BARRIER SPECIFICATIONS
BUILD ALTERNATIVE 3**

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	942	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$188,400	N/A
9	942	61.0 - 65.4	55.3 - 60.4	5.0 - 5.7	5.4	0	10	10	\$211,950	\$21,195
10	942	61.0 - 65.4	55.0 - 59.7	5.6 - 6.0	5.8	0	12	12	\$235,500	\$19,625
11	942	57.4 - 65.4	51.6 - 59.4	5.8 - 6.4	6.0	0	22	22	\$259,050	\$11,775
12	942	57.4 - 66.2	50.8 - 61.2	5.0 - 6.8	6.3	8	22	30	\$282,600	\$9,420
13	942	57.4 - 66.2	50.2 - 60.7	5.4 - 8.9	6.8	8	27	35	\$306,150	\$8,747
14	942	57.4 - 66.2	49.8 - 60.1	5.9 - 9.5	7.4	8	27	35	\$329,700	\$9,420
15	942	57.4 - 66.2	49.3 - 60.7	5.0 - 9.9	7.5	11	30	41	\$353,250	\$8,616
16	942	57.4 - 66.2	49.0 - 60.2	5.2 - 10.4	7.9	11	30	41	\$376,800	\$9,190
17	942	57.4 - 66.2	48.6 - 60.3	5.3 - 10.9	7.9	19	32	51	\$400,350	\$7,850
18	942	57.4 - 66.2	48.3 - 59.7	5.4 - 11.3	8.3	19	32	51	\$423,900	\$8,312
19	942	57.4 - 66.2	48.0 - 60.5	5.4 - 11.8	8.4	19	32	51	\$447,450	\$8,774
20	942	57.4 - 66.2	47.8 - 60.2	5.6 - 12.2	8.8	19	32	51	\$471,000	\$9,235
21	942	57.4 - 66.2	47.5 - 60.2	5.6 - 12.5	8.8	27	32	59	\$494,550	\$8,382
22	942	57.4 - 66.2	47.3 - 59.9	5.7 - 12.8	9.0	27	32	59	\$518,100	\$8,781

Note: * = Noise levels presented for benefitted receiver sites only.

**TABLE 15
COUNTRY CLUB TOWERS NOISE BARRIER
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVE 3**

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 27 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at all noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 21 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 0.2 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design.
Noise Level Increase from Existing to Future Build Conditions	Up to 3.4 dBA
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 3.4 dBA
Antiquity	These apartments were built circa 1981.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights greater than 8 feet.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

**TABLE 16
COUNTRY CLUB TOWERS NOISE BARRIER SPECIFICATIONS
BUILD ALTERNATIVE 4**

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	942	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$188,400	N/A
9	942	61.5 - 66.5	55.8 - 61.2	5.3 - 5.7	5.5	8	2	10	\$211,950	\$21,195
10	942	61.5 - 66.5	55.4 - 60.5	5.5 - 6.1	5.9	8	4	12	\$235,500	\$19,625
11	942	57.8 - 66.5	52.0 - 60.2	5.8 - 6.6	6.2	8	14	22	\$259,050	\$11,775
12	942	57.8 - 67.0	51.2 - 61.9	5.1 - 7.1	6.5	16	14	30	\$282,600	\$9,420
13	942	57.8 - 67.0	50.7 - 61.4	5.6 - 8.7	7.3	16	14	30	\$306,150	\$10,205
14	942	57.8 - 67.0	50.3 - 60.4	6.2 - 9.2	7.7	16	16	32	\$329,700	\$10,303
15	942	57.8 - 67.0	49.9 - 59.6	6.9 - 9.7	8.3	16	16	32	\$353,250	\$11,039
16	942	57.8 - 67.5	49.6 - 61.8	5.1 - 10.0	7.7	22	21	43	\$376,800	\$8,763
17	942	57.8 - 67.5	49.3 - 61.8	5.7 - 10.4	7.9	30	21	51	\$400,350	\$7,850
18	942	57.8 - 67.5	49.0 - 61.8	5.7 - 10.7	8.3	30	21	51	\$423,900	\$8,312
19	942	57.8 - 67.5	48.7 - 61.8	5.7 - 11.1	8.6	30	21	51	\$447,450	\$8,774
20	942	57.8 - 67.5	48.5 - 61.8	5.7 - 11.5	8.9	30	21	51	\$471,000	\$9,235
21	942	57.8 - 67.5	48.3 - 61.8	5.5 - 11.8	8.8	38	21	59	\$494,550	\$8,382
22	942	57.8 - 67.5	48.0 - 61.8	5.7 - 12.0	9.0	38	21	59	\$518,100	\$8,781

Note: * = Noise levels presented for benefitted receiver sites only.

**TABLE 17
COUNTRY CLUB TOWERS NOISE BARRIER
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVE 4**

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 52 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at 38 noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 21 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 0.2 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design.
Noise Level Increase from Existing to Future Build Conditions	Up to 3.5 dBA
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 3.5 dBA
Antiquity	These apartments were built circa 1981.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights greater than 8 feet.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

4.9.3.4 Mediterranean Village

Noise abatement was considered along the south side of Miami Gardens Drive adjacent to the Mediterranean Village apartments to mitigate noise impacts predicted to occur with both build alternatives. Traffic noise levels at 10 first-row apartments are predicted to exceed the FDOT NAAC with both build alternatives. An existing approximately 8-foot tall privacy wall is located along the perimeter of the community that provides a level of protection from traffic noise for the first-floor apartments. Thus, the impacted sites are located on the second and third floors of the apartment buildings. Access to this community is provided via an entrance road along Miami Gardens Drive. In order to maintain access to these apartments, two noise barrier segments were evaluated along the southern right-of-way line. The alignment considered for this noise barrier is shown in *Figure 4*. The limits of the noise barrier segments are as follows:

- Segment-1 - Station 205+90 to 207+10, 138 feet long; and,
- Segment-2 - Station 208+05 to 210+95, 277 feet long.

These noise barrier segments would be located approximately 10 feet south of the edge-of-pavement of the nearest eastbound through-lane and approximately 20 to 40 feet from the nearby apartments. Since these noise barrier segments protect a single apartment complex, they were evaluated for reasonableness and feasibility collectively as a system.

Table 18 provides design and performance details for this noise barrier with both build alternatives. The results of this evaluation indicate that a noise barrier at least 21 feet tall will provide a minimum insertion loss of at least 5.0 dBA at all 10 of the apartments where impacts were identified along this segment of the project and 6 additional apartments while meeting the \$35,000 cost guideline. The overall average insertion loss with this configuration is predicted to 7.2 dBA. Increasing the height to 22 feet does not benefit any additional sites identified as impacted and only increases the overall average insertion loss by 0.4 dBA. *Table 19* provides details of the reasonableness and feasibility analysis for this noise barrier.

Based on the results of this PD&E phase traffic noise analysis, it appears that the noise barrier evaluated for the Mediterranean Village apartments could provide a noise level reduction of at least 5.0 dBA within the \$35,000 cost guideline and therefore will be further evaluated during the design phase of this project.

**TABLE 18
MEDITERRANEAN VILLAGE NOISE BARRIER SPECIFICATIONS
BUILD ALTERNATIVES 3 AND 4**

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	415	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$83,000	N/A
9	415	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$93,375	N/A
10	415	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$103,750	N/A
11	415	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$114,125	N/A
12	415	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$124,500	N/A
13	415	68.7 - 69.8	63.2 - 63.9	5.5 - 5.9	5.7	4	0	4	\$134,875	\$33,719
14	415	68.7 - 69.8	61.9 - 63.9	5.3 - 7.9	6.6	6	0	6	\$145,250	\$24,208
15	415	68.7 - 69.8	60.8 - 63.4	5.8 - 9.0	7.3	6	0	6	\$155,625	\$25,938
16	415	61.0 - 69.8	55.8 - 63.2	5.2 - 9.6	7.1	6	2	8	\$166,000	\$20,750
17	415	60.7 - 69.8	55.5 - 63.0	5.0 - 10.1	6.9	6	4	10	\$176,375	\$17,638
18	415	60.7 - 69.8	55.1 - 62.9	5.3 - 10.4	7.2	6	4	10	\$186,750	\$18,675
19	415	60.7 - 69.8	54.9 - 62.8	5.5 - 10.7	7.4	6	4	10	\$197,125	\$19,713
20	415	60.7 - 69.9	54.7 - 63.6	5.1 - 11.0	7.0	8	6	14	\$207,500	\$14,821
21	415	60.7 - 70.5	54.5 - 63.5	5.3 - 11.2	7.2	10	6	16	\$217,875	\$13,617
22	415	60.7 - 70.5	54.2 - 62.7	5.4 - 11.4	7.6	10	6	16	\$228,250	\$14,266

Note: * = Noise levels presented for benefitted receiver sites only.

**TABLE 19
MEDITERRANEAN VILLAGE NOISE BARRIER
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVES 3 AND 4**

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 10 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at all noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 21 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 0.4 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design.
Noise Level Increase from Existing to Future Build Conditions	Up to 5.5 dBA with Build Alternative 3 Up to 5.5 dBA with Build Alternative 4
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 3.8 dBA with Build Alternative 3 Up to 3.8 dBA with Build Alternative 4
Antiquity	These apartments were built circa 1988.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights greater than 12 ft.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

4.9.3.5 Ibis Villas

Noise abatement was considered along the north side of Miami Gardens Drive adjacent to the Ibis Villas townhomes to mitigate noise impacts predicted to occur with Build Alternative 4. Traffic noise levels at 4 first-row townhomes are predicted to exceed the FDOT NAAC Build Alternative 4. No new noise impacts were identified with Build Alternative 3. Access to this community is provided via an entrance road along Miami Gardens Drive. In order to maintain access to these townhomes, two noise barrier segments were evaluated along the northern right-of-way line. The alignment considered for this noise barrier is shown in *Figure 4*. The limits of the noise barrier segments are as follows:

- Segment-1 - Station 85+70 to 87+35, 165 feet long; and,
- Segment-2 - Station 88+45 to 90+30, 185 feet long.

These noise barrier segments would be located approximately 10 feet north of the edge-of-pavement of the nearest westbound through-lane and approximately 20 feet from the nearby townhomes. Since these noise barrier segments protect a single townhome complex, they were evaluated for reasonableness and feasibility collectively as a system.

Table 20 provides design and performance details for this noise barrier. The results of this evaluation indicate that a noise barrier at least 8 feet tall will provide a minimum insertion loss of at least 5.0 dBA at all 4 of the townhomes where impacts were identified along this segment of the project while meeting the \$35,000 cost guideline. The average insertion loss with this configuration is predicted to 5.1 dBA. A minimum height of 12 feet is recommended for this noise barrier in order to better meet the FDOT's design insertion loss goal of 10 dBA and to more completely block the line-of-sight between the nearby ground-level noise sensitive sites and the tops of trucks and truck exhausts. With a 12-foot tall noise barrier, the average insertion loss is predicted to be 6.3 dBA at the impacted sites. Increasing the height to 22 feet does not benefit any additional sites identified as impacted and only increases the overall average insertion loss by 0.2 dBA. *Table 21* provides details of the reasonableness and feasibility analysis for this noise barrier.

Based on the results of this PD&E phase traffic noise analysis, it appears that the noise barrier evaluated for the Ibis Villas townhomes could provide a noise level reduction of at least 5.0 dBA within the \$35,000 cost guideline and therefore will be further evaluated during the design phase of this project.

TABLE 20
IBIS VILLAS NOISE BARRIER SPECIFICATIONS
BUILD ALTERNATIVE 4

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	350	68.8 - 69.4	63.2 - 64.4	4.6 - 6.2	5.1	4	0	4	\$70,000	\$17,500
9	350	68.8 - 69.4	62.4 - 64.0	5.0 - 7.0	5.6	4	0	4	\$78,750	\$19,688
10	350	68.8 - 69.4	62.0 - 63.8	5.4 - 7.4	6.0	4	0	4	\$87,500	\$21,875
11	350	68.8 - 69.4	61.8 - 63.6	5.5 - 7.6	6.1	4	0	4	\$96,250	\$24,063
13	350	68.8 - 69.4	61.4 - 63.4	5.7 - 8.0	6.4	4	0	4	\$113,750	\$28,438
14	350	68.8 - 69.4	61.2 - 63.3	5.8 - 8.2	6.5	4	0	4	\$122,500	\$30,625
15	350	68.8 - 69.4	61.1 - 63.2	5.9 - 8.3	6.6	4	0	4	\$131,250	\$32,813
16	350	68.8 - 69.4	61.0 - 63.2	6.0 - 8.4	6.7	4	0	4	\$140,000	\$35,000
17	350	68.8 - 69.4	60.9 - 63.1	6.0 - 8.5	6.7	4	0	4	\$148,750	\$37,188
18	350	68.8 - 69.4	60.8 - 63.1	6.1 - 8.6	6.8	4	0	4	\$157,500	\$39,375
19	350	65.4 - 69.4	60.4 - 63.0	5.0 - 8.7	6.5	4	1	5	\$166,250	\$33,250
20	350	65.4 - 69.4	60.4 - 63.0	5.0 - 8.7	6.5	4	1	5	\$175,000	\$35,000
21	350	65.4 - 69.4	60.4 - 63.0	5.0 - 8.8	6.5	4	1	5	\$183,750	\$36,750
22	350	65.4 - 69.4	60.3 - 63.0	5.1 - 8.8	6.5	4	1	5	\$192,500	\$38,500

Note: * = Noise levels presented for benefitted receiver sites only.

TABLE 21
IBIS VILLAS NOISE BARRIER
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVE 4

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 4 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at all noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 8 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 1.4 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design.
Noise Level Increase from Existing to Future Build Conditions	Up to 3.3 dBA
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 2.5 dBA
Antiquity	These townhomes were built circa 2000.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights up to 16 feet.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

4.9.3.6 San Mateo

Noise abatement was considered along the north side of Miami Gardens Drive adjacent to the San Mateo condominiums to mitigate noise impacts predicted to occur with Build Alternative 4. Traffic noise levels at 4 first-row condominiums are predicted to exceed the FDOT NAAC Build Alternative 4. No new noise impacts were identified with Build Alternative 3. Access to this community is provided via two entrance roads along Miami Gardens Drive. In order to maintain access to these condominiums, three noise barrier segments were evaluated along the northern right-of-way line. The alignment considered for this noise barrier is shown in *Figure 4*. The limits of the noise barrier segments are as follows:

- Segment-1 - Station 97+40 to 98+15, 75 feet long;
- Segment-2 - Station 98+55 to 99+95, 140 feet long; and,
- Segment-3 - Station 100+40 to 101+05, 65 feet long.

These noise barrier segments would be located approximately 10 feet north of the edge-of-pavement of the nearest westbound through-lane and approximately 20 feet from the nearby condominiums. Since these noise barrier segments protect a single condominium complex, they were evaluated for reasonableness and feasibility collectively as a system.

Table 22 provides design and performance details for this noise barrier. The results of this evaluation indicate that it would only be possible to provide insertion losses of at least 5 dBA at two of the impacted condominiums due to the openings required in the noise barrier to maintain access to this community. Thus, the noise barrier considered for the San Mateo townhomes would exceed the \$35,000 cost guideline by at least \$7,000 per home. *Table 23* provides details of the reasonableness and feasibility analysis for this noise barrier.

Based on the results of this PD&E phase traffic noise analysis, it appears that the noise barrier evaluated for the San Mateo condominiums can not be constructed within the \$35,000 cost guideline and therefore will not be further evaluated during the design phase of this project.

**TABLE 22
SAN MATEO NOISE BARRIER SPECIFICATIONS
BUILD ALTERNATIVE 4**

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	280	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$56,000	N/A
9	280	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$63,000	N/A
10	280	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$70,000	N/A
11	280	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0	0	0	0	\$77,000	N/A
12	280	66.1 - 66.1	61.1 - 61.1	5.0 - 5.0	5.0	2	0	2	\$84,000	\$42,000
13	280	66.1 - 66.1	60.9 - 60.9	5.2 - 5.2	5.2	2	0	2	\$91,000	\$45,500
14	280	66.1 - 66.1	60.7 - 60.7	5.4 - 5.4	5.4	2	0	2	\$98,000	\$49,000
15	280	66.1 - 66.1	60.5 - 60.5	5.6 - 5.6	5.6	2	0	2	\$105,000	\$52,500
16	280	66.1 - 66.1	60.3 - 60.3	5.8 - 5.8	5.8	2	0	2	\$112,000	\$56,000
17	280	66.1 - 66.1	60.2 - 60.2	5.9 - 5.9	5.9	2	0	2	\$119,000	\$59,500
18	280	66.1 - 66.1	60.1 - 60.1	6.0 - 6.0	6.0	2	0	2	\$126,000	\$63,000
19	280	66.1 - 66.1	60.1 - 60.1	6.0 - 6.0	6.0	2	0	2	\$133,000	\$66,500
20	280	66.1 - 66.1	60.0 - 60.0	6.1 - 6.1	6.1	2	0	2	\$140,000	\$70,000
21	280	66.1 - 66.1	59.9 - 59.9	6.2 - 6.2	6.2	2	0	2	\$147,000	\$73,500
22	280	66.1 - 66.1	59.9 - 59.9	6.2 - 6.2	6.2	2	0	2	\$154,000	\$77,000

Note: * = Noise levels presented for benefitted receiver sites only.

**TABLE 23
SAN MATEO NOISE BARRIER
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVE 4**

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 4 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at 2 noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 12 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 1.2 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design..
Noise Level Increase from Existing to Future Build Conditions	Up to 2.9 dBA
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 2.0 dBA
Antiquity	These condominiums were built circa 1995.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is greater than FDOT guidelines for all noise barrier heights assessed.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

4.9.3.7 Esplanade

Noise abatement was considered along the north side of Miami Gardens Drive adjacent to the Esplanade single-family home community to mitigate noise impacts predicted to occur with Build Alternative 4. Traffic noise levels at 12 first-row homes are predicted to exceed the FDOT NAAC Build Alternative 4. No new noise impacts were identified with Build Alternative 3. Access to this neighborhood is provided via NW 79th Avenue from Miami Gardens Drive. In order to maintain access to these homes, two noise barrier segments were evaluated along the northern right-of-way line. The alignment considered for this noise barrier is shown in *Figure 4*. The limits of the noise barrier segments are as follows:

- Segment-1 - Station 118+40 to 120+20, 180 feet long; and,
- Segment-2 - Station 121+40 to 131+60, 1,200 feet long.

These noise barrier segments would be located approximately 10 feet north of the edge-of-pavement of the nearest westbound through-lane and approximately 50 to 70 feet from the nearby homes. Since these noise barrier segments protect a single neighborhood, they were evaluated for reasonableness and feasibility collectively as a system.

Table 24 provides design and performance details for this noise barrier. The results of this evaluation indicate that a noise barrier at least 9 feet tall will provide a minimum insertion loss of at least 5.0 dBA at 11 of the homes where impacts were identified along this segment of the project while meeting the \$35,000 cost guideline. The average insertion loss with this configuration is predicted to 5.7 dBA. A minimum height of 12 feet is recommended for this noise barrier in order to better meet the FDOT's design insertion loss goal of 10 dBA and to more completely block the line-of-sight between the nearby ground-level noise sensitive sites and the tops of trucks and truck exhausts. With a 12-foot tall noise barrier, the average insertion loss is predicted to be 7.3 dBA at the impacted sites. When factoring in the additional 8 residences that are not impacted but are benefitted by this noise barrier, the overall average insertion loss is also predicted to be 7.3 dBA overall. Increasing the height to 22 feet does not benefit any additional sites identified as impacted and only increases the overall average insertion loss by 1.7 dBA. *Table 25* provides details of the reasonableness and feasibility analysis for this noise barrier.

Based on the results of this PD&E phase traffic noise analysis, it appears that the noise barrier evaluated for the Esplanade community could provide a noise level reduction of at least 5.0 dBA within the \$35,000 cost guideline and therefore will be further evaluated during the design phase of this project.

**TABLE 24
ESPLANADE NOISE BARRIER SPECIFICATIONS
BUILD ALTERNATIVE 4**

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	1,200	66.8 - 69.6	60.3 - 64.6	5.0 - 6.5	5.8	9	0	9	\$240,000	\$26,667
9	1,200	61.8 - 69.6	56.8 - 64.2	5.0 - 7.2	5.7	11	8	19	\$270,000	\$14,211
10	1,200	61.8 - 69.6	56.3 - 63.9	5.5 - 8.3	6.3	11	8	19	\$300,000	\$15,789
11	1,200	61.8 - 69.6	54.8 - 63.7	5.8 - 9.3	7.0	11	8	19	\$330,000	\$17,368
12	1,200	61.8 - 69.6	54.1 - 63.5	6.0 - 9.3	7.5	11	8	19	\$360,000	\$18,947
13	1,200	61.8 - 69.6	54.1 - 63.5	6.1 - 10.3	7.6	11	8	19	\$390,000	\$20,526
14	1,200	61.8 - 69.6	53.9 - 63.4	6.2 - 10.7	7.8	11	8	19	\$420,000	\$22,105
15	1,200	61.8 - 69.6	53.6 - 63.3	6.3 - 11.1	8.0	11	8	19	\$450,000	\$23,684
16	1,200	61.8 - 69.6	53.3 - 63.3	6.3 - 11.4	8.2	11	8	19	\$480,000	\$25,263
17	1,200	61.8 - 69.6	53.1 - 63.2	6.4 - 11.7	8.3	11	8	19	\$510,000	\$26,842
18	1,200	61.8 - 69.6	52.9 - 63.2	6.4 - 12.0	8.5	11	8	19	\$540,000	\$28,421
19	1,200	61.8 - 69.6	52.7 - 63.1	6.5 - 12.2	8.6	11	8	19	\$570,000	\$30,000
20	1,200	61.8 - 69.6	52.5 - 63.1	6.5 - 12.5	8.7	11	8	19	\$600,000	\$31,579
21	1,200	61.8 - 69.6	52.4 - 63.1	6.5 - 12.7	8.8	11	8	19	\$630,000	\$33,158
22	1,200	61.8 - 69.6	52.2 - 63.0	6.6 - 12.9	9.0	11	8	19	\$660,000	\$34,737

Note: * = Noise levels presented for benefitted receiver sites only.

**TABLE 25
ESPLANADE NOISE BARRIER
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVE 4**

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 12 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at 11 noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 9 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 3.3 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design.
Noise Level Increase from Existing to Future Build Conditions	Up to 3.6 dBA
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 3.4 dBA
Antiquity	These homes were built circa 1987.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights assessed.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

4.9.3.8 Country Club of Miami Estates

Noise abatement was considered along the north side of Miami Gardens Drive adjacent to the Country Club of Miami Estates single-family home community to mitigate noise impacts predicted to occur with Build Alternative 4. Traffic noise levels at 5 first-row homes are predicted to exceed the FDOT NAAC Build Alternative 4. No new noise impacts were identified with Build Alternative 3.

Access to homes in this neighborhood is provided via Wentworth Drive, West Oakmont Drive, Troon Drive and 6 driveway openings directly onto Miami Gardens Drive. Due to the numerous openings required to maintain access to the nearby homes, it was not possible to provide effective noise abatement. Noise abatement will not be considered further for this neighborhood as part of this roadway improvement project.

4.9.3.9 Las Brisas

Noise abatement was considered along the north side of Miami Gardens Drive adjacent to the Las Brisas apartments to mitigate noise impacts predicted to occur with Build Alternative 4. Traffic noise levels at 60 first-row apartments are predicted to exceed the FDOT NAAC. No new noise impacts were identified with Build Alternative 3. The alignment considered for this noise barrier is shown in *Figure 4*. The limits of this noise barrier are from Station 155+40 to 167+10, and it will be approximately 1,170 feet long. This noise barrier would be located approximately 10 feet north of the edge-of-pavement of the nearest westbound through-lane and approximately 30 to 40 feet from the nearby apartments.

Table 26 provides design and performance details for this noise barrier. The results of this evaluation indicate that a noise barrier at least 19 feet tall will provide a minimum insertion loss of at least 5.0 dBA at 30 apartments where impacts were identified along this segment of the project and 26 additional apartments while meeting the \$35,000 cost guideline. The overall average insertion loss with this configuration is predicted to 11.8 dBA. Increasing the height to 22 feet does not benefit any additional sites identified as impacted and only increases the overall average insertion loss by 1.6 dBA. It was not possible to provide effective noise abatement for several apartments located on the uppermost floors of the apartment buildings and apartments located near the ends of the noise barrier. *Table 27* provides details of the reasonableness and feasibility analysis for this noise barrier segment.

Based on the results of this PD&E phase traffic noise analysis, it appears that the noise barrier evaluated for the Las Brisas apartments could provide a noise level reduction of at least 5.0 dBA within the \$35,000 cost guideline and therefore will be further evaluated during the design phase of this project.

**TABLE 26
LAS BRISAS APARTMENTS NOISE BARRIER SPECIFICATIONS
BUILD ALTERNATIVE 4**

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	1,170	62.8 - 69.9	56.7 - 62.6	6.1 - 8.1	7.1	10	8	18	\$234,000	\$13,000
9	1,170	62.8 - 69.9	56.0 - 62.0	6.0 - 9.3	7.3	10	16	26	\$263,250	\$10,125
10	1,170	62.8 - 69.9	55.2 - 61.2	6.5 - 10.9	8.3	10	16	26	\$292,500	\$11,250
11	1,170	62.8 - 70.3	53.3 - 65.1	5.2 - 11.6	8.6	14	16	30	\$321,750	\$10,725
12	1,170	62.8 - 70.4	52.6 - 64.4	5.9 - 12.3	9.0	20	16	36	\$351,000	\$9,750
13	1,170	62.8 - 70.4	52.1 - 63.3	7.0 - 12.9	10.0	20	16	36	\$380,250	\$10,563
14	1,170	62.8 - 70.4	51.6 - 62.1	5.3 - 13.4	10.2	20	24	44	\$409,500	\$9,307
15	1,170	62.8 - 70.4	51.1 - 61.2	6.8 - 13.9	11.1	20	24	44	\$438,750	\$9,972
16	1,170	62.8 - 70.4	50.6 - 60.8	8.4 - 14.4	11.8	20	24	44	\$468,000	\$10,636
17	1,170	62.8 - 70.4	50.2 - 60.5	9.8 - 14.8	12.4	20	24	44	\$497,250	\$11,301
18	1,170	62.8 - 70.4	49.8 - 65.1	5.0 - 15.2	11.8	24	24	48	\$526,500	\$10,969
19	1,170	62.8 - 70.4	49.4 - 63.6	5.7 - 15.7	11.8	30	26	56	\$555,750	\$9,923
20	1,170	62.8 - 70.4	49.1 - 62.7	6.0 - 16.2	12.2	30	32	62	\$585,000	\$9,435
21	1,170	62.8 - 70.4	48.6 - 62.1	8.0 - 16.6	12.8	30	32	62	\$614,250	\$9,907
22	1,170	62.8 - 70.4	48.2 - 61.5	8.6 - 17.0	13.4	30	32	62	\$643,500	\$10,379

Note: * = Noise levels presented for benefitted receiver sites only.

**TABLE 27
LAS BRISAS APARTMENTS NOISE BARRIER
REASONABLENESS AND FEASIBILITY
BUILD ALTERNATIVE 4**

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 60 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at 30 noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 19 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 1.6 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design.
Noise Level Increase from Existing to Future Build Conditions	Up to 3.0 dBA
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 3.0 dBA
Antiquity	These apartments were built circa 1986.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights assessed.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

4.9.3.10 Country Club of Miami Condominiums

Noise abatement was considered along the north side of Miami Gardens Drive adjacent to the Country Club of Miami condominiums to mitigate noise impacts predicted to occur with both build alternatives. Traffic noise levels at 2 first-row condominiums are predicted to exceed the FDOT NAAC with both build alternatives. The alignment considered for this noise barrier is shown in *Figure 4*. The limits of this noise barrier vary by build alternative as follows:

- Build Alternative 3 - Station 180+60 to 184+70, 410 feet long; and,
- Build Alternative 4 - Station 180+40 to 184+70, 430 feet long.

This noise barrier would be located approximately 10 feet north of the edge-of-pavement of the nearest westbound through-lane and approximately 30 to 40 feet from the nearby condominiums.

Table 28 provides design and performance details for this noise barrier with Build Alternative 3. The results of this evaluation indicate that a noise barrier at least 11 feet tall will provide a minimum insertion loss of at least 5.0 dBA at all of the condominiums where impacts were identified along this segment of the project and 1 additional condominium while meeting the \$35,000 cost guideline. The average overall insertion loss with this configuration is predicted to 6.5 dBA. A minimum height of 12 feet is recommended for this noise barrier in order to better meet the FDOT's design insertion loss goal of 10 dBA and to more completely block the line-of-sight between the nearby ground-level noise sensitive sites and the tops of trucks and truck exhausts. With a 12-foot tall noise barrier, the average insertion loss is predicted to be 7.8 dBA at the impacted sites. When factoring in the additional 2 residences that are not impacted but are benefitted by this noise barrier, the average insertion loss is predicted to be 6.5 dBA overall. Increasing the height to 22 feet does not benefit any additional sites identified as impacted and only increases the overall average insertion loss by 2.6 dBA. *Table 29* provides details of the reasonableness and feasibility analysis for this noise barrier segment.

Table 30 provides design and performance details for this noise barrier with Build Alternative 4. The results of this evaluation indicate that a noise barrier at least 11 feet tall will provide a minimum insertion loss of at least 5.0 dBA at all of the condominiums where impacts were identified along this segment of the project while meeting the \$35,000 cost guideline. The average insertion loss with this configuration is predicted to 7.2 dBA. A minimum height of 12 feet is recommended for this noise barrier in order to better meet the FDOT's design insertion loss goal of 10 dBA and to more completely block the line-of-sight between the nearby ground-level noise sensitive sites and the tops of trucks and truck exhausts. With a 12-foot tall noise barrier, the average insertion loss is predicted to be 7.9 dBA at the impacted sites. When factoring in the additional 2 residences that are

TABLE 28
COUNTRY CLUB OF MIAMI CONDOMINIUMS NOISE BARRIER SPECIFICATIONS
BUILD ALTERNATIVE 3

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	410	68.4 - 68.4	61.5 - 61.5	6.9 - 6.9	6.9	3	0	3	\$82,000	\$27,333
9	410	68.4 - 68.4	60.8 - 60.8	7.6 - 7.6	7.6	3	0	3	\$92,250	\$30,750
10	410	68.4 - 68.4	59.9 - 59.9	8.5 - 8.5	8.5	3	0	3	\$102,500	\$34,167
11	410	59.8 - 69.6	54.6 - 64.4	5.2 - 9.0	6.5	6	1	7	\$112,750	\$16,107
13	410	59.8 - 69.6	54.2 - 62.4	5.5 - 9.7	7.0	6	2	8	\$133,250	\$16,656
14	410	59.8 - 69.6	54.0 - 61.3	5.8 - 9.9	7.5	6	2	8	\$143,500	\$17,938
15	410	59.8 - 69.6	53.9 - 60.1	5.9 - 10.1	7.9	6	2	8	\$153,750	\$19,219
16	410	59.8 - 69.6	53.7 - 59.7	6.1 - 10.4	8.2	6	2	8	\$164,000	\$20,500
17	410	59.8 - 69.6	53.6 - 59.3	6.2 - 10.5	8.4	6	2	8	\$174,250	\$21,781
18	410	59.8 - 69.6	53.5 - 58.9	6.3 - 10.7	8.6	6	2	8	\$184,500	\$23,063
19	410	59.8 - 69.6	53.4 - 58.6	6.4 - 11.0	8.8	6	2	8	\$194,750	\$24,344
20	410	59.8 - 69.6	53.4 - 58.4	6.4 - 11.2	8.8	6	2	8	\$205,000	\$25,625
21	410	59.8 - 69.6	53.3 - 58.3	6.5 - 11.3	9.0	6	2	8	\$215,250	\$26,906
22	410	59.8 - 69.6	53.2 - 58.2	6.6 - 11.4	9.1	6	2	8	\$225,500	\$28,188

Note: * = Noise levels presented for benefitted receiver sites only.

TABLE 29
COUNTRY CLUB OF MIAMI CONDOMINIUMS NOISE BARRIER
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVE 3

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 6 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at all noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 11 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 2.6 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design..
Noise Level Increase from Existing to Future Build Conditions	Up to 2.4 dBA with Build Alternative 3
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 2.6 dBA with Build Alternative 3
Antiquity	These condominiums were built circa 1969.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights assessed.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

**TABLE 30
COUNTRY CLUB OF MIAMI CONDOMINIUMS NOISE BARRIER SPECIFICATIONS
BUILD ALTERNATIVE 4**

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	430	68.6 - 68.6	61.5 - 61.5	7.1 - 7.1	7.1	3	0	3	\$86,000	\$28,667
9	430	68.6 - 68.6	60.9 - 60.9	7.7 - 7.7	7.7	3	0	3	\$96,750	\$32,250
10	430	68.6 - 68.6	59.9 - 59.9	8.7 - 8.7	8.7	3	0	3	\$107,500	\$35,833
11	430	68.6 - 69.7	59.5 - 64.5	5.2 - 9.1	7.2	6	0	6	\$118,250	\$19,708
12	430	60.6 - 69.7	55.3 - 62.6	5.3 - 9.8	6.9	6	2	8	\$139,750	\$17,469
13	430	60.6 - 69.7	55.2 - 61.3	5.4 - 10.1	7.4	6	2	8	\$150,500	\$18,813
14	430	60.6 - 69.7	55.1 - 60.2	5.5 - 10.3	7.8	6	2	8	\$161,250	\$20,156
15	430	60.6 - 69.7	55.0 - 59.8	5.6 - 10.6	8.1	6	2	8	\$172,000	\$21,500
16	430	60.6 - 69.7	54.9 - 59.4	5.7 - 10.8	8.3	6	2	8	\$182,750	\$22,844
17	430	60.6 - 69.7	54.8 - 59.0	5.8 - 10.9	8.4	6	2	8	\$193,500	\$24,188
18	430	60.6 - 69.7	54.7 - 58.7	5.9 - 11.1	8.6	6	2	8	\$204,250	\$25,531
19	430	60.6 - 69.7	54.7 - 58.5	5.9 - 11.3	8.7	6	2	8	\$215,000	\$26,875
20	430	60.6 - 69.7	54.6 - 58.4	6.0 - 11.4	8.8	6	2	8	\$225,750	\$28,219
21	430	60.6 - 69.7	54.6 - 58.3	6.0 - 11.5	8.9	6	2	8	\$236,500	\$29,563

Note: * = Noise levels presented for benefitted receiver sites only.

**TABLE 31
COUNTRY CLUB OF MIAMI CONDOMINIUMS NOISE BARRIER
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVE 4**

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 6 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at all noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 11 feet. Increasing the height to 22 feet does not benefit any additional sites and only increases the average insertion loss by 1.7 dBA.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design..
Noise Level Increase from Existing to Future Build Conditions	Up to 2.9 dBA with Build Alternative 4
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 3.1 dBA with Build Alternative 4
Antiquity	These condominiums were built circa 1969.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights of 8 and 9 feet and greater than 10 feet.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

4.9.3.11 Villa Esperanza

Noise abatement was considered along the north side of Miami Gardens Drive adjacent to the Villa Esperanza apartments to mitigate noise impacts predicted to occur with both build alternatives. Traffic noise levels at 70 first-row apartments are predicted to exceed the FDOT NAAC with both build alternatives. The alignment considered for this noise barrier is shown in *Figure 4*. The limits of this noise barrier for both build alternatives are from Station 210+60 to 219+05, and it will be approximately 857 feet long. The noise barrier would be located approximately 10 feet north of the edge-of-pavement of the nearest westbound through-lane and approximately 25 to 50 feet from the nearby apartments.

Table 32 provides design and performance details for this noise barrier with both build alternatives. The results of this evaluation indicate that a noise barrier at least 22 feet tall will provide a minimum insertion loss of at least 5.0 dBA at 32 of the apartments where impacts were identified along this segment of the project and 8 additional apartments while meeting the \$35,000 cost guideline. The overall average insertion loss with this configuration is predicted to 8.6 dBA. It was not possible to provide effective noise abatement for several apartments located on the uppermost floors of the apartment buildings and apartments located near the ends of the noise barrier. *Table 33* provides details of the reasonableness and feasibility analysis for this noise barrier segment.

Based on the results of this PD&E phase traffic noise analysis, it appears that the noise barrier evaluated for the Villa Esperanza apartments could provide a noise level reduction of at least 5.0 dBA within the \$35,000 cost guideline and therefore will be further evaluated during the design phase of this project.

TABLE 32
VILLA ESPERANZA NOISE BARRIER SPECIFICATIONS
BUILD ALTERNATIVES 3 AND 4

HEIGHT (Feet)	TOTAL LENGTH (Feet)	RANGE OF PREDICTED UNABATED NOISE LEVELS (dBA)	RANGE OF PREDICTED NOISE LEVELS WITH NOISE BARRIER (dBA)	RANGE OF PREDICTED INSERTION LOSSES (dBA)	AVERAGE PREDICTED INSERTION LOSS (dBA)	NUMBER OF BENEFITTED RECEIVERS			ESTIMATED COST	ESTIMATED COST PER BENEFITTED RECEIVER
						Receivers Predicted to be Impacted	Receivers Predicted to not be Impacted	Total		
8	857	68.6 - 68.6	65.9 - 65.9	2.7 - 2.7	2.7	6	0	6	\$171,400	\$28,567
9	857	68.6 - 68.6	65.4 - 65.4	3.2 - 3.2	3.2	6	0	6	\$192,825	\$32,138
10	857	68.6 - 68.6	62.9 - 62.9	5.7 - 5.7	5.7	6	0	6	\$214,250	\$35,708
11	857	68.6 - 68.6	61.7 - 61.7	6.9 - 6.9	6.9	6	0	6	\$235,675	\$39,279
12	857	68.6 - 68.6	60.3 - 60.3	8.3 - 8.3	8.3	6	0	6	\$257,100	\$42,850
13	857	68.6 - 68.6	59.0 - 59.0	9.6 - 9.6	9.6	6	0	6	\$278,525	\$46,421
14	857	68.6 - 68.6	57.2 - 57.2	11.4 - 11.4	11.4	6	0	6	\$299,950	\$49,992
15	857	55.6 - 68.6	50.6 - 56.3	5.0 - 12.3	8.7	6	6	12	\$321,375	\$26,781
16	857	55.6 - 68.6	50.5 - 58.4	5.1 - 12.9	8.0	6	8	14	\$342,800	\$24,486
17	857	55.6 - 68.6	50.4 - 61.9	5.2 - 13.8	7.9	12	8	20	\$364,225	\$18,211
18	857	55.6 - 68.6	50.2 - 61.0	5.4 - 14.6	8.1	14	8	22	\$385,650	\$17,530
19	857	55.6 - 68.9	50.1 - 63.1	5.5 - 15.2	8.1	26	8	34	\$407,075	\$11,973
20	857	55.6 - 68.9	50.0 - 63.1	5.6 - 15.7	8.3	26	8	34	\$428,500	\$12,603
21	857	55.6 - 70.6	50.0 - 64.8	5.6 - 16.2	8.3	30	8	38	\$449,925	\$11,840

Note: * = Noise levels presented for benefitted receiver sites only.

TABLE 33
VILLA ESPERANZA NOISE BARRIER
REASONABLENESS AND FEASIBILITY ANALYSIS
BUILD ALTERNATIVES 3 AND 4

CRITERIA	COMMENTS
Relationship of Future Traffic Noise Levels to the Noise Abatement Criterion	Design year traffic noise levels are predicted to exceed the abatement criterion at 70 nearby residences.
Insertion Loss	Varies with height, minimum of 5 dBA predicted at 32 noise sensitive sites where noise levels are predicted to be at least 66.0 dBA for a height of at least 22 feet.
Safety	Noise barrier to be located adjacent to right-of-way line, outside of the clear recovery zone.
Community Desires	Public involvement will be addressed during the PD&E and design phases.
Accessibility	Entranceway access maintained. No apparent conflicts.
Land Use Stability	Land use stable according to future land use projections by Miami-Dade County.
Land Use Controls	Local municipalities and Miami-Dade County do not have any known land use controls affecting development adjacent to this project corridor.
Views of Officials with Jurisdiction in the Area	Not known at this time. Coordination will occur during public involvement and design.
Noise Level Increase from Existing to Future Build Conditions	Up to 7.3 dBA with Build Alternative 3 Up to 7.3 dBA with Build Alternative 4
Noise Level Changes from Design Year No-build and Build Alternatives.	Up to 5.0 dBA with Build Alternative 3 Up to 5.0 dBA with Build Alternative 4
Antiquity	These apartments were built circa 1999.
Constructability	Noise barrier to be located along right-of-way line and should only require routine construction methods and techniques.
Maintainability	Sufficient right-of-way exists, no difficulties anticipated in maintaining the noise barrier.
Aesthetics	Coordination with nearby property owners regarding aesthetics will occur during design.
Right of Way Needs	Noise barrier to be constructed within available right-of-way.
Cost	Cost is less than FDOT guidelines for all noise barrier heights of 8 feet and greater than 14 feet.
Utilities	No apparent conflicts.
Drainage	No apparent conflicts.
Special Land Use Considerations	Not Applicable
Other Environmental Impacts	None
Additional Considerations	None

4.9.4 Acquisition of Property Rights (either in fee or lesser interest) for Construction of Noise Barriers by Donation, by Purchase or by Condemnation

Sufficient right-of-way exists for potential construction of the noise barrier designs presented in this report. Therefore, acquisition of property rights for the construction of noise barriers is not necessary.

4.9.5 Acquisition (by purchase or by condemnation) of Right-of-way for Landscaping Adjacent to Noise Barriers and for Buffer Zones

Sufficient right-of-way exists for potential construction of the noise barrier designs presented in this report. Therefore, acquisition of property rights adjacent to noise barriers for landscaping or for buffer zones is not necessary.

4.9.6 Acquisition of the Balance of a Noise-sensitive Property from Which There Is a Taking, If Acquisition Is less Expensive and Disruptive than the Methods Shown Above

This noise abatement alternative is not applicable since partial acquisition of noise sensitive property is not proposed with this project.

5.0 SUMMARY

In summary, traffic noise levels were predicted for noise sensitive locations along the project corridor for the existing conditions and the design year (2028) No-Build and two build alternatives (Build Alternatives 3 and 4). Traffic noise impacts associated with construction of the project are predicted to occur by the project's design year.

Approximately 250 noise sensitive sites with Build Alternative 3 are predicted to experience traffic noise levels equal to, or exceeding, the FDOT NAAC for LUAC B (66.0 dBA). However, of these sites, only 113 are located near capacity improvements proposed with Build Alternative 3. The remaining sites are adjacent to sections of the corridor where improvements affecting noise levels are not planned with Build Alternative 3 and higher noise levels are expected to occur regardless of project construction. With Build Alternative 4, approximately 324 sites are predicted to experience traffic noise levels equal to, or exceeding, the 66.0 dBA. No other potentially noise sensitive sites, including outdoor areas at the park, school or any of the nearby religious facilities along the project corridor are predicted to experience traffic noise levels equal to, or exceeding the

FDOT NAAC, or experience noise levels at least 15.0 dBA greater than existing noise levels with the build alternatives.

Given the predicted noise impacts, roadway improvements proposed with this project were determined to affect traffic noise levels at nearby noise sensitive land use in several of the nearby neighborhoods and apartment/condominium/townhome complexes. In accordance with FHWA requirements, noise abatement was considered for all noise sensitive locations where design year traffic noise levels were predicted to equal or exceed the FDOT NAAC for residential land use, or where they were predicted to be at least 15.0 dBA greater than existing levels. Following analysis of predicted traffic noise levels, abatement alternatives, available right-of-way, safety criteria, constructability and maintenance issues associated with providing noise abatement along this project corridor, noise barriers were determined to be the most reasonable and feasible abatement alternative to reduce noise levels at all of these communities. Generally, the design goal was to provide a noise level reduction of 10 dBA at most of the nearby noise sensitive sites. At locations where this was not possible, a minimum acceptable noise level reduction of 5 dBA was used in adherence to FDOT criteria. The FDOT's current cost estimate for constructing noise barriers is \$25.00 per square foot, which is generally applicable to the noise barrier evaluated with this project since it will be located at-grade and sufficient right-of-way exists. The FDOT's cost guideline of \$35,000 per benefitted receiver site was also used to evaluate the noise barrier designs.

Based on the results of this PD&E phase traffic noise analysis, it appears that noise barriers could provide a minimum 5.0 dBA of noise reduction at 123 noise sensitive sites (48 of which are predicted to be impacted) with Build Alternative 3 for a cost of less than the FDOT cost guideline (\$35,000). With Build Alternative 4, 331 sites (135 of which are predicted to be impacted) can be benefitted for less than \$35,000 per site. A summary of the noise barriers proposed for further evaluation is presented in *Table 34*. The proposed noise barrier alignments are shown in *Figure 4*. These noise barriers will be further evaluated during the design phase of this project where specific dimensions and locations will be determined. During the design phase, the FDOT will also continue to coordinate with the owners of properties located adjacent to the noise barriers recommended in this PD&E analysis in order to evaluate their opinions regarding construction of noise barriers near their property. This coordination will include the following important components:

- Notifying the adjacent property owners of the noise barrier locations and heights selected for construction;

**TABLE 34
SUMMARY OF RECOMMENDED NOISE BARRIERS**

LOCATION	BUILD ALTERNATIVE	LIMITS (Station)		TOTAL LENGTH (Feet)	HEIGHT RECOMMENDED TO BENEFIT MAXIMUM NUMBER OF IMPACTED SITES (Feet)	NUMBER OF SITES PREDICTED TO EXPERIENCE A NOISE LEVEL REDUCTION OF AT LEAST 5 dBA				AVERAGE PREDICTED NOISE LEVEL REDUCTION (dBA)	ESTIMATED COST	ESTIMATED COST PER BENEFITTED SITE	
		Begin	End			Number of Impacted Receivers That Will be Benefitted ²	Percent of Total Impacted ³	Number of Receivers That Are Not Predicted to be Impacted That Will be Benefitted ⁴	Total Number of Receivers that will be Benefitted ⁵				
Palm Springs North	Seg.-1	4	79+20	89+40	1,037	12	11	100%	9	20	8.4	\$311,100	\$15,555
	Seg.-2	4	90+00	104+70	1,496	12	15	100%	13	28	8.5	\$448,800	\$16,029
	Seg.-3	4	105+70	127+25	2,186	12	24	100%	20	44	8.4	\$655,800	\$14,905
Coral Gate	4		154+90	159+50	460	19	15	31%	22	37	7.3	\$636,500	\$17,203
			159+85	165+65	580								
			166+20	169+20	300								
Country Club Towers	3		174+90	184+60	942	21	27	100%	32	59	8.8	\$494,550	\$8,382
	4		174+90	184+60	942	21	38	73%	21	59	8.8	\$494,550	\$8,382
Mediterranean Village	3 & 4		205+90	207+10	138	21	10	100%	6	16	7.2	\$217,875	\$13,617
	3 & 4		208+05	209+95	277								
Ibis Villas	4		85+70	87+35	165	12	4	100%	0	4	6.3	\$105,000	\$26,250
			88+45	90+30	185								
Esplanade	4		118+40	120+20	180	12	11	92%	8	19	7.3	\$360,000	\$18,947
			121+40	131+60	1,020								
Las Brisas	4		155+40	167+10	1,170	19	30	50%	26	56	11.8	\$555,750	\$9,924
Country Club of Miami Condominiums	3		180+60	184+70	410	12	6	100%	2	8	6.5	\$123,000	\$15,375
	4		180+40	184+70	430	12	6	100%	2	8	6.5	\$129,000	\$16,125
Villa Esperanza	3 & 4		210+60	219+05	857	22	32	46%	8	40	8.6	\$471,350	\$11,784
Summary	Build Alternative 3				2,624	12 -22	75	66%	48	123	6.5 -8.8	\$1,306,775	\$8,382- \$15,375
	Build Alternative 4				11,423	12 -22	196	63%	135	331	6.3 -11.8	\$4,385,725	\$8,382- \$26,250

Notes: 1 - Benefitted receivers are those that are predicted to experience noise level reductions of at least 5 decibels.
2 - Impacted and Benefitted refers to the number of impacted receivers (receivers predicted to experience noise levels greater than 66.0 dBA) that are predicted to be benefitted with this noise barrier.
3 - Percent of Total Impacted refers to the percentage of the total impacted receivers that are benefitted with this noise barrier.
4 - Not Impacted but Benefitted refers to the number of receivers that are not predicted to experience noise levels greater than 66.0 dBA that are predicted to be benefitted incidentally with this noise barrier.
5 - Total refers to the total number of impacted and not-impacted receivers that are predicted to benefit from this noise barrier.

- Property owner surveys to evaluate owner preferences for aesthetic attributes of the noise barriers; and,
- Noise barrier workshops conducted for the affected property owners in order to present the final noise barrier designs selected for construction and to discuss specific elements of the noise barriers and their construction.

Noise barriers were considered with Build Alternative 4 at two additional locations but were determined to be infeasible due to access requirements. These locations are presented in *Table 35*. A noise barrier considered adjacent to the San Mateo condominiums was determined to perform poorly due to openings required for two access driveways onto the property. It was not possible to provide insertion losses of at least 5 dBA at 2 of the 4 impacted sites and the estimated cost exceeded the FDOT's \$35,000 per benefitted site cost guideline. Also, it was not possible to provide effective noise abatement for 8 homes in the Country Club of Miami Estates predicted to be impacted with Build Alternative 4 given the numerous driveways and side streets (9 total) that provide access between this neighborhood and Miami Gardens Drive. Noise abatement will not be considered further for these neighborhoods as part of this roadway improvement project.

**TABLE 35
SUMMARY OF NOISE BARRIERS NOT RECOMMENDED**

LOCATION	BUILD ALTERNATIVE	NUMBER OF IMPACTED RECEIVERS	GENERAL LIMITS (Station)		APPROXIMATE TOTAL LENGTH (Feet)	REASON NOT RECOMMENDED
			Begin	End		
San Mateo	4	4	97+40	101+05	280	Numerous driveway openings resulting in noise barrier performance less than FDOT's criteria. Cost greater than FDOT's \$35,000 cost guideline.
Country Club of Miami Estates	4	8	132+50 (Peters Pike Canal)	145+00 (NW 75 th Place)	1,250	Numerous driveway openings resulting in noise barrier performance less than FDOT's criteria.

The Florida Department of Transportation is committed to the construction of feasible noise abatement measures at the noise-impacted locations identified in this report contingent upon the following:

- Detailed noise analyses during the final design process continues to support the need for abatement;
- Reasonable cost analyses indicates that the economic cost of the noise barriers will not exceed the FDOT cost guideline of \$35,000 per benefitted receiver site;
- Community input regarding desires, types, heights, and locations of barriers has been solicited by the District Office;
- Preferences regarding compatibility with adjacent land uses, particularly as addressed by officials having jurisdiction over such land uses has been noted;

- Safety and engineering aspects as related to the roadway user and the adjacent property owner have been reviewed; and,
- Any other mitigating circumstances found in Section 17-4.6.1 of Chapter 17 of the FDOT PD&E Manual have been analyzed.

6.0 CONSTRUCTION NOISE AND VIBRATION

There are no known County or local ordinances that set specific limitations on construction noise levels applicable to FDOT projects. The potential exists for noise impacts from equipment during the construction phase of this proposed project. To mitigate those impacts, the contractor will be required to adhere to the latest edition of FDOT *Standard Specifications for Road and Bridge Construction*. Specifications include noise screening guidelines for stationary equipment, exhaust noise, noise from loose equipment parts, and excessive tailgate banging.

No known businesses particularly sensitive to construction noise and/or vibration exist along the project corridor. A reassessment of the project corridor for such sites will be performed during design to ensure that impacts to such sites are minimized. Coordination between the FDOT and the owners of any other vibration sensitive businesses identified during design should occur and Technical Special Provisions should be developed for the project's contract package in order to ensure that impacts to such businesses are minimized.

7.0 COORDINATION WITH LOCAL AGENCIES

For the purposes of long range planning for land uses identified under LUAC B, 66 dBA L_{Aeq1h} noise level isopleths were estimated for the Build Alternative. The typical 66 dBA isopleth across flat ground that does not include any abatement measures for LUAC B properties extends approximately 70 feet from the edge of the near traffic lane along Miami Gardens Drive.

APPENDIX A
TNM Model Traffic Data

Summary of Traffic Data Used in TNM Model

Roadway Link	Design Year: No. of Links (Hourly Volume)		
Miami Gardens Drive Eastbound I-75 to NW 87th Avenue (State 2-Way, Class II)	890 (PHD)	1,360 (LOS C)	2,003 (PHD)
Miami Gardens Drive Westbound NW 87th Avenue to I-75 (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	2,110 (LOS C)
Miami Gardens Drive Eastbound NW 87th Avenue to NW 82nd Avenue (State 2-Way, Class II)	645 (PHD)	1,360 (LOS C)	1,532 (PHD)
Miami Gardens Drive Westbound NW 82nd Avenue to NW 87th Avenue (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	1,742 (PHD)
Miami Gardens Drive Eastbound NW 82nd Avenue to NW 79th Avenue (State 2-Way, Class II)	965 (PHD)	1,360 (LOS C)	1,592 (PHD)
Miami Gardens Drive Westbound NW 79th Avenue to NW 82nd Avenue (State 2-Way, Class II)	1,358 (PHD)	1,360 (LOS C)	1,831 (PHD)
Miami Gardens Drive Eastbound NW 79th Avenue to Wentworth Drive (State 2-Way, Class II)	1,265 (LOS C)	1,360 (LOS C)	2,110 (LOS C)
Miami Gardens Drive Westbound Wentworth Drive to NW 79th Avenue (State 2-Way, Class II)	1,306 (PHD)	1,360 (LOS C)	2,110 (LOS C)
Miami Gardens Drive Eastbound Wentworth Drive to W. Oakmont Drive (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	2,110 (LOS C)
Miami Gardens Drive Westbound W. Oakmont Drive to Wentworth Drive (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	2,110 (LOS C)
Miami Gardens Drive Eastbound W. Oakmont Drive to NW 75th Place (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	2,110 (LOS C)
Miami Gardens Drive Westbound NW 75th Place to W. Oakmont Drive (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	2,110 (LOS C)
Miami Gardens Drive Eastbound NW 75th Place to NW 73rd Avenue (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	1,857 (PHD)
Miami Gardens Drive Westbound NW 73rd Avenue to NW 75th Place (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	1,990 (PHD)
Miami Gardens Drive Eastbound NW 73rd Avenue to NW 68th Avenue (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	1,857 (PHD)
Miami Gardens Drive Westbound NW 68th Avenue to NW 73rd Avenue (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	1,981 (PHD)
Miami Gardens Drive Eastbound NW 68th Avenue to Bob-O-Link Drive (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	2,110 (LOS C)
Miami Gardens Drive Westbound Bob-O-Link Drive to NW 68th Avenue (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	1,801 (PHD)
Miami Gardens Drive Eastbound Bob-O-Link Drive to NW 67th Avenue (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	2,110 (LOS C)
Miami Gardens Drive Westbound NW 67th Avenue to Bob-O-Link Drive (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	2,110 (LOS C)
Miami Gardens Drive Eastbound NW 67th Avenue to NW 62nd Avenue (State 2-Way, Class II)	1,054 (PHD)	1,360 (LOS C)	2,110 (LOS C)
Miami Gardens Drive Westbound NW 62nd Avenue to NW 67th Avenue (State 2-Way, Class II)	696 (PHD)	1,360 (LOS C)	2,110 (LOS C)
Miami Gardens Drive Eastbound NW 62nd Avenue to NW 57th Avenue (State 2-Way, Class II)	1,385 (PHD)	2,071 (PHD)	2,071 (PHD)
Miami Gardens Drive Westbound NW 57th Avenue to NW 62nd Avenue (State 2-Way, Class II)	1,060 (PHD)	2,110 (LOS C)	2,110 (LOS C)

Traffic Data Used in TNM Model (continued)

Roadway Link			
NW 87th Avenue Southbound North of Miami Gardens Drive (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	1,360 (LOS C)
NW 87th Avenue Northbound North of Miami Gardens Drive (State 2-Way, Class II)	357 (PHD)	741 (PHD)	741 (PHD)
NW 87th Avenue Southbound South of Miami Gardens Drive (State 2-Way, Class II)	298 (PHD)	588 (PHD)	588 (PHD)
NW 87th Avenue Northbound South of Miami Gardens Drive (State 2-Way, Class II)	590 (LOS C)	580 (LOS C)	580 (LOS C)
NW 82nd Avenue Southbound North of Miami Gardens Drive (Non-State, Other)	480 (PHD)	580 (LOS C)	580 (LOS C)
NW 82nd Avenue Northbound North of Miami Gardens Drive (Non-State, Other)	297 (PHD)	499 (PHD)	489 (PHD)
NW 82nd Avenue Southbound South of Miami Gardens Drive (Non-State, Other)	381 (PHD)	580 (LOS C)	580 (LOS C)
NW 82nd Avenue Northbound South of Miami Gardens Drive (Non-State, Other)	443 (PHD)	580 (LOS C)	580 (LOS C)
NW 79th Avenue Southbound North of Miami Gardens Drive (Non-State, Other)	250 (LOS C)	250 (LOS C)	250 (LOS C)
NW 79th Avenue Northbound North of Miami Gardens Drive (Non-State, Other)	250 (LOS C)	250 (LOS C)	250 (LOS C)
Wentworth Drive Southbound North of Miami Gardens Drive (Non-State, Other)	242 (PHD)	250 (LOS C)	250 (LOS C)
Wentworth Drive Northbound North of Miami Gardens Drive (Non-State, Other)	250 (LOS C)	250 (LOS C)*	250 (LOS C)*
W. Oakmont Drive Southbound North of Miami Gardens Drive (Non-State, Other)	215 (PHD)	250 (LOS C)	250 (LOS C)
W. Oakmont Drive Northbound North of Miami Gardens Drive (Non-State, Other)	81 (PHD)	130 (PHD)	130 (PHD)
NW 75th Place Southbound South of Miami Gardens Drive (Non-State, Other)	148 (PHD)	161 (PHD)	161 (PHD)
NW 75th Place Northbound South of Miami Gardens Drive (Non-State, Other)	197 (PHD)	250 (LOS C)	250 (LOS C)
NW 73rd Avenue Southbound South of Miami Gardens Drive (Non-State, Other)	76 (PHD)	250 (LOS C)	250 (LOS C)
NW 73rd Avenue Northbound South of Miami Gardens Drive (Non-State, Other)	58 (PHD)	212 (PHD)	212 (PHD)
NW 68th Avenue Southbound North of Miami Gardens Drive (Non-State, Other)	6 (PHD)	12 (PHD)	12 (PHD)
NW 68th Avenue Northbound North of Miami Gardens Drive (Non-State, Other)	35 (PHD)	47 (PHD)	47 (PHD)
NW 66th Avenue Southbound South of Miami Gardens Drive (Non-State, Other)	250 (LOS C)	250 (LOS C)	250 (LOS C)
NW 66th Avenue Northbound South of Miami Gardens Drive (Non-State, Other)	250 (LOS C)	250 (LOS C)	250 (LOS C)
Bob-O-Link Drive Southbound North of Miami Gardens Drive (Non-State, Other)	250 (LOS C)	250 (LOS C)	250 (LOS C)
Bob-O-Link Drive Northbound North of Miami Gardens Drive (Non-State, Other)	90 (PHD)	182 (PHD)	182 (PHD)
NW 67th Avenue Southbound North of Miami Gardens Drive (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	1,360 (LOS C)
NW 67th Avenue Northbound North of Miami Gardens Drive (State 2-Way, Class II)	1,360 (LOS C)	1,360 (LOS C)	1,360 (LOS C)
NW 67th Avenue Southbound South of Miami Gardens Drive (State 2-Way, Class II)	1,175 (PHD)	1,360 (LOS C)	1,360 (LOS C)
NW 67th Avenue Northbound South of Miami Gardens Drive (State 2-Way, Class II)	1,311 (PHD)	1,360 (LOS C)	1,360 (LOS C)
NW 62nd Avenue Southbound North of Miami Gardens Drive (Non-State, Other)	250 (PHD)	177 (PHD)	177 (PHD)
NW 62nd Avenue Northbound North of Miami Gardens Drive (Non-State, Other)	250 (LOS C)	250 (LOS C)	250 (LOS C)

APPENDIX B
Modeled Traffic Noise Levels

North Side

		Year 2007		Year 2008		Year 2009		Year 2010		Year 2011		Year 2012	
		Level (GA)		Level (GA)		Level (GA)		Level (GA)		Level (GA)		Level (GA)	
Palm Springs North													
First Row													
PS-1	1	63.2	65.0	1.8	65.0	1.8	0.0	9	67.3	4.1	2.3	1	1
PS-2	9	64.0	66.3	2.3	66.3	2.3	0.0	1	68.2	4.2	1.9	9	9
PS-3	1	66.5	69.0	2.5	69.0	2.5	0.0	1	70.4	3.8	1.3	1	1
PS-4	1	65.6	68.3	2.5	68.3	2.5	0.0	1	69.8	4.0	1.5	1	1
PS-5	7	64.5	66.9	2.4	66.9	2.4	0.0	7	67.7	4.2	1.8	7	7
PS-6	6	64.6	67.0	2.4	67.1	2.5	0.1	6	68.9	4.2	1.8	6	6
PS-7	1	64.8	67.3	2.5	67.3	2.5	0.0	1	69.0	4.2	1.7	1	1
PS-8	1	66.3	68.2	1.9	68.2	1.9	0.0	1	69.7	3.4	1.5	1	1
PS-9	7	64.2	65.3	1.1	65.3	1.1	0.0	7	67.5	3.3	2.2	7	7
PS-10	4	65.1	66.3	1.2	66.3	1.2	0.0	4	68.3	3.2	2.0	4	4
PS-11	6	63.6	64.5	0.9	64.5	0.9	0.0	6	67.0	3.4	2.5	6	6
PS-12	5	65.6	65.9	0.3	65.9	0.3	0.0	5	69.0	3.4	3.1	5	5
PS-13	1	64.6	65.1	0.3	65.1	0.3	0.0	1	66.3	3.5	3.2	1	1
Sum	50							30				50	50
Average		64.8	66.5	1.7	66.6	1.7	0.0		68.6	3.8	2.1		
Minimum		63.2	64.5	0.3	64.5	0.3	0.0		67.0	3.2	1.9		
Maximum		66.5	69.0	2.5	69.0	2.5	0.1		70.3	4.2	3.2		
Coral Gate Apartments													
First Row													
SPS-1(Row 2)	1	62.7	62.6	-0.1	62.6	-0.1	0.0		63.7	1.0	1.1		
SPS-2(Row 2)	7	55.2	56.8	1.6	56.8	1.6	0.0		58.4	3.2	1.8		
SPS-3(Row 2)	2	56.8	58.6	1.8	58.6	1.8	0.0		60.5	3.7	1.9		
SPS-4(Row 2)	1	56.8	58.6	1.8	58.6	1.8	0.0		60.5	3.7	1.9		
SPS-5(Row 2)	3	58.4	58.2	-0.2	58.2	-0.2	0.0		60.0	3.6	1.8		
SPS-6(Row 2)	9	55.0	56.7	1.7	56.7	1.7	0.0		58.2	3.2	1.5		
SPS-7(Row 2)	1	61.5	65.0	3.5	65.0	3.5	0.0		65.9	4.4	0.9		
SPS-8(Row 2)	1	61.1	64.4	3.3	64.4	3.3	0.0		65.3	4.2	0.9		
SPS-9(Row 2)	8	55.5	58.4	0.9	58.4	0.9	0.0		58.2	2.7	1.8		
SPS-10(Row 2)	3	58.5	57.4	-0.9	57.4	-0.9	0.0		59.1	2.6	1.7		
SPS-11(Row 2)	9	55.5	55.9	0.4	55.9	0.4	0.0		58.2	2.7	2.3		
SPS-12(Row 2)	1	58.4	58.7	0.3	58.7	0.3	0.0		61.9	3.5	3.2		
Sum	46							0				46	46
Average		57.6	59.1	1.5	59.1	1.5	0.0		60.6	3.2	1.7		
Minimum		55.0	55.9	-0.1	55.9	-0.1	0.0		58.2	1.9	0.9		
Maximum		62.7	65.0	3.5	65.0	3.5	0.0		65.9	4.4	3.2		
Gate House Townhomes													
First Row													
GH-1(a)	1	59.8	59.8	0.0	59.8	0.0	0.0	3	62.6	2.8	2.8	3	3
GH-1(b)	1	64.3	64.3	0.0	64.3	0.0	0.0	3	65.8	1.5	1.5	3	3
Sum	2							0				2	2
Average		62.1	62.1	0.0	62.1	0.0	0.0		64.2	2.2	2.2		
Minimum		59.8	59.8	0.0	59.8	0.0	0.0		62.6	1.5	1.5		
Maximum		64.3	64.3	0.0	64.3	0.0	0.0		65.8	2.8	2.8		
SGH-1(a)	1	57.0	57.0	0.0	57.0	0.0	0.0		59.8	2.8	2.8		
SGH-1(b)	1	61.3	61.3	0.0	61.4	0.1	0.1		63.3	2.0	2.0		
Sum	2							0				2	2
Average		59.2	59.2	0.0	59.2	0.1	0.1		61.6	2.4	2.4		
Minimum		57.0	57.0	0.0	57.0	0.0	0.0		59.8	2.0	2.0		
Maximum		61.3	61.3	0.0	61.4	0.1	0.1		63.3	2.8	2.8		
Sunrise Presbyterian Church													
SPC	1	58.1	58.1	0.0	58.1	0.0	0.0	0	60.6	2.5	2.5	0	0
Sum	1							0				1	1
Average		58.1	58.1	0.0	58.1	0.0	0.0		60.6	2.5	2.5		
Minimum		58.1	58.1	0.0	58.1	0.0	0.0		60.6	2.5	2.5		
Maximum		58.1	58.1	0.0	58.1	0.0	0.0		60.6	2.5	2.5		

Country Club Towers

First Row

CCT-1(a)	3	61.1	61.1	0.0	61.3	0.2	0.2		64.2	3.1	3.1	
CCT-1(b)	3	65.1	65.1	0.0	65.4	0.3	0.3			2.0	2.0	3
CCT-1(c)	3	65.8	65.8	0.0		0.2	0.2	3		1.7	1.7	3
CCT-1(d)	3	65.6	65.6	0.0	65.9	0.3	0.3			1.8	1.8	3
CCT-1(e)	3	65.5	65.5	0.0	65.7	0.2	0.2			1.8	1.8	3
CCT-2(a)	8	60.0	60.0	0.0	61.8	1.8	1.8		63.3	3.3	3.3	
CCT-2(b)	8	64.3	64.3	0.0	65.4	1.1	1.1			2.2	2.2	8
CCT-2(c)	8	65.2	65.2	0.0		0.9	0.9	8		1.8	1.8	8
CCT-2(d)	8	65.1	65.1	0.0		1.0	1.0	8		1.8	1.8	8
CCT-2(e)	8	64.9	64.9	0.0	65.9	1.0	1.0			1.9	1.9	8
CCT-3(a)	2	60.4	60.4	0.0	63.8	3.4	3.4		63.9	3.5	3.5	
CCT-3(b)	2	64.7	64.7	0.0		2.0	2.0	2		2.1	2.1	2
CCT-3(c)	2	65.3	65.3	0.0		1.8	1.8	2		1.9	1.9	2
CCT-3(d)	2	65.2	65.2	0.0		1.8	1.8	2		1.9	1.9	2
CCT-3(e)	2	65.0	65.0	0.0		1.9	1.9	2		1.9	1.9	2
Sum	65							27				52
Average		64.2	64.2	0.0	65.4	1.2	1.2		66.4	2.2	2.2	
Minimum		60.0	60.0	0.0	61.3	0.2	0.2		63.3	1.7	1.7	
Maximum		65.8	65.8	0.0	67.1	3.4	3.4		67.5	3.5	3.5	

SCCT-1(a)(Row 2)	10	48.6	48.7	0.1	48.6	0.0	-0.1		49.8	1.2	1.1	
SCCT-1(b)(Row 2)	10	51.9	51.9	0.0	51.8	-0.1	-0.1		52.9	1.0	1.0	
SCCT-1(c)(Row 2)	10	53.2	53.2	0.1	53.2	0.0	-0.1		54.2	1.0	0.9	
SCCT-1(d)(Row 2)	10	53.6	53.6	0.0	53.6	0.0	0.0		54.5	0.9	0.9	
SCCT-1(e)(Row 2)	10	54.2	54.2	0.0	54.2	0.0	0.0		55.2	1.0	1.0	
SCCT-2(a)(Row 2)	2	54.9	54.9	0.0	57.4	2.5	2.5		57.8	2.9	2.9	
SCCT-2(b)(Row 2)	2	59.0	58.9	-0.1	61.0	2.0	2.1		61.5	2.5	2.6	
SCCT-2(c)(Row 2)	2	60.8	60.8	0.0	62.3	1.5	1.5		62.6	1.8	1.8	
SCCT-2(d)(Row 2)	2	61.2	61.1	-0.1	62.6	1.4	1.5		62.9	1.7	1.8	
SCCT-2(e)(Row 2)	2	61.2	61.1	-0.1	62.6	1.4	1.5		62.9	1.7	1.8	
Sum	60							0				0
Average		55.9	55.9	0.0	56.7	0.9	0.9		57.4	1.6	1.6	
Minimum		48.6	48.7	-0.1	48.6	-0.1	-0.1		49.8	0.9	0.9	
Maximum		61.2	61.1	0.1	62.6	2.5	2.5		62.9	2.9	2.9	

Mediterranean Village

First Row

MV-1(a)	2	56.0	57.6	1.6	61.0	5.0	3.4		61.0	5.0	3.4	
MV-1(b)	2	64.2	66.0	1.8		5.0	3.2	2		5.0	3.2	2
MV-1(c)	2	64.9	66.6	1.7		5.4	3.7	2		5.4	3.7	2
MV-2(a)	2	55.9	57.6	1.7	60.7	4.8	3.1		60.7	4.8	3.1	
MV-2(b)	2	63.7	65.5	1.8		5.0	3.2	2		5.0	3.2	2
MV-2(c)	2	64.5	66.3	1.8		5.4	3.6	2		5.4	3.6	2
MV-3(a)	2	55.7	57.4	1.7	61.0	5.3	3.6		61.0	5.3	3.6	
MV-3(b)	2	65.1	66.8	1.7		4.7	3.0	2		4.7	3.0	2
MV-3(c)	2	65.0	66.7	1.7		5.5	3.8	2		5.5	3.8	2
Sum	18							12				12
Average		61.7	63.4	1.7	66.8	5.1	3.4		66.8	5.1	3.4	
Minimum		55.7	57.4	1.6	60.7	4.7	3.0		60.7	4.7	3.0	
Maximum		65.1	66.8	1.8	70.5	5.5	3.8		70.5	5.5	3.8	

SMV-1(a)(Row 2)	2	49.2	50.9	1.7	54.2	5.0	3.3		54.2	5.0	3.3	
SMV-1(b)(Row 2)	2	57.8	59.4	1.6	63.1	5.3	3.7		63.1	5.3	3.7	
SMV-1(c)(Row 2)	2	59.0	60.7	1.7	64.1	5.1	3.4		64.1	5.1	3.4	
SMV-2(a)(Row 2)	4	43.3	44.9	1.6	46.4	3.1	1.5		46.4	3.1	1.5	
SMV-2(b)(Row 2)	4	46.3	47.9	1.6	49.9	3.6	2.0		49.9	3.6	2.0	
SMV-2(c)(Row 2)	4	49.5	51.4	1.9	52.8	3.3	1.4		52.8	3.3	1.4	
Sum	18							0				0
Average		50.9	52.5	1.7	55.1	4.2	2.8		55.1	4.2	2.8	
Minimum		43.3	44.9	1.6	46.4	3.1	1.4		46.4	3.1	1.4	
Maximum		59.0	60.7	1.8	64.1	5.3	3.7		64.1	5.3	3.7	

The Moors

First Row

TM-1	2	56.0	57.7	1.7	60.7	4.7	3.0		60.7	4.7	3.0	
TM-2	7	55.7	57.4	1.7	60.3	4.6	2.9		60.3	4.6	2.9	
TM-3	6	55.4	57.2	1.8	59.8	4.4	2.6		59.8	4.4	2.6	
TM-4	1	58.0	58.5	1.6	60.4	3.5	1.9		60.4	3.5	1.9	
Sum	16							0				0
Average		56.0	57.7	1.7	60.3	4.3	2.8		60.3	4.3	2.8	
Minimum		55.4	57.2	1.6	59.8	4.3	2.6		59.8	4.3	2.6	
Maximum		58.5	58.5	1.6	60.7	4.7	3.0		60.7	4.7	3.0	

STM-1(Row 2)	1	50.0	51.9	1.9	54.4	4.4	2.5		54.4	4.4	2.5	
STM-2(Row 2)	7	49.7	51.7	2.0	53.8	4.1	2.1		53.8	4.1	2.1	
STM-3(Row 2)	2	50.7	52.8	1.9	54.4	3.7	1.8		54.4	3.7	1.8	
STM-4(Row 2)	1	52.0	53.9	1.9	55.0	3.0	1.1		55.0	3.0	1.1	
Sum	11							0				0
Average		50.8	52.5	1.9	54.4	3.8	2.0		54.4	3.8	2.0	
Minimum		49.7	51.7	1.9	53.8	3.0	1.1		53.8	3.0	1.1	
Maximum		52.0	53.9	2.0	55.0	4.4	2.5		55.0	4.4	2.5	

North Side Communities

North Side Communities													
Isla Villas													
First Row													
IV-1	1	66.2	66.8	0.6	66.8	0.6	0.0	1	66.8	2.6	2.0	1	
IV-2	1	66.2	66.8	0.6	66.8	0.6	0.0	1	66.8	2.6	2.0	1	
IV-3	1	67.0	67.5	0.5	67.5	0.5	0.0	1	67.5	2.4	1.9	1	
IV-4	1	67.0	67.5	0.5	67.5	0.5	0.0	1	67.5	2.4	1.9	1	
Sum	4							4				4	
Average		66.6	67.2	0.5	67.2	0.5	0.0		69.1	2.5	2.0		
Minimum		66.2	66.8	0.5	66.8	0.5	0.0		66.4	2.4	1.9		
Maximum		67.0	67.5	0.6	67.5	0.6	0.0		69.4	2.6	2.0		
SIV-1(Row 2)													
SIV-1(Row 2)	1	61.7	62.5	0.8	62.5	0.8	0.0		65.0	3.3	2.5		
SIV-2(Row 2)	1	61.7	62.5	0.8	62.5	0.8	0.0		65.0	3.3	2.5		
SIV-3(Row 2)	1	62.1	63.0	0.9	63.0	0.9	0.0		65.4	3.3	2.4		
SIV-4(Row 2)	1	62.2	63.0	0.8	63.0	0.8	0.0		65.4	3.2	2.4		
Sum	4							0				0	
Average		61.9	62.6	0.8	62.6	0.8	0.0		65.2	3.3	2.5		
Minimum		61.7	62.5	0.8	62.5	0.8	0.0		65.0	3.2	2.4		
Maximum		62.2	63.0	0.9	63.0	0.9	0.0		65.4	3.3	2.5		
Church of Mother Redemption Catholic Church													
CMR	1	52.4	53.9	1.5	53.9	1.5	0.0	0	55.7	3.3	1.8		
Sum	1							0				0	
Average		52.4	53.9	1.5	53.9	1.5	0.0		55.7	3.3	1.8		
Minimum		52.4	53.9	1.5	53.9	1.5	0.0		55.7	3.3	1.8		
Maximum		52.4	53.9	1.5	53.9	1.5	0.0		55.7	3.3	1.8		
San Mateo Condominiums													
First Row													
SM-1	1	64.1	64.7	0.6	64.7	0.6	0.0		66.4	2.3	1.7	1	
SM-2	2	64.0	64.7	0.7	64.7	0.7	0.0		66.4	2.1	1.4	2	
SM-3	1	66.1	66.7	0.6	66.7	0.6	0.0	1	68.2	2.1	1.5	1	
Sum	4							1				4	
Average		64.7	65.4	0.6	65.4	0.6	0.0		66.9	2.2	1.5		
Minimum		64.0	64.7	0.6	64.7	0.6	0.0		66.1	2.1	1.4		
Maximum		66.1	66.7	0.7	66.7	0.7	0.0		68.2	2.3	1.7		
SSM-1(Row 2)													
SSM-1(Row 2)	1	60.9	61.8	0.9	61.8	0.9	0.0		63.7	2.8	1.9		
SSM-2(Row 2)	2	60.8	61.7	0.9	61.7	0.9	0.0		63.4	2.6	1.7		
SSM-3(Row 2)	1	61.8	62.7	0.9	62.7	0.9	0.0		64.7	2.9	2.0		
Sum	4							0				0	
Average		61.2	62.1	0.9	62.1	0.9	0.0		63.9	2.8	1.9		
Minimum		60.8	61.7	0.9	61.7	0.9	0.0		63.4	2.6	1.7		
Maximum		61.8	62.7	0.9	62.7	0.9	0.0		64.7	2.9	2.0		
Church of Latter Day Saints													
LDS	1	59.9	61.2	1.3	61.2	1.3	0.0	0	63.6	3.7	2.4		
Sum	1							0				0	
Average		59.9	61.2	1.3	61.2	1.3	0.0		63.6	3.7	2.4		
Minimum		59.9	61.2	1.3	61.2	1.3	0.0		63.6	3.7	2.4		
Maximum		59.9	61.2	1.3	61.2	1.3	0.0		63.6	3.7	2.4		
Hunters Point													
First Row													
HP-1	3	62.8	63.4	0.6	63.4	0.6	0.0		64.7	1.9	1.3		
HP-2	2	61.4	62.0	0.6	62.0	0.6	0.0		63.3	1.9	1.3		
HP-3	10	61.8	62.3	0.5	62.3	0.5	0.0		63.5	1.7	1.2		
HP-4	2	61.7	62.2	0.5	62.2	0.5	0.0		63.6	1.9	1.4		
HP-5	2	61.8	62.2	0.4	62.2	0.4	0.0		63.8	2.0	1.6		
Sum	19							0				0	
Average		61.9	62.4	0.5	62.4	0.5	0.0		63.8	1.9	1.4		
Minimum		61.4	62.0	0.4	62.0	0.4	0.0		63.3	1.7	1.2		
Maximum		62.8	63.4	0.6	63.4	0.6	0.0		64.7	2.0	1.6		
SHP-1(Row 2)													
SHP-1(Row 2)	2	55.3	57.7	2.4	57.7	2.4	0.0		58.4	3.1	0.7		
SHP-2(Row 2)	18	53.2	54.0	0.8	54.0	0.8	0.0		55.1	1.9	1.1		
SHP-3(Row 2)	5	54.5	55.1	0.6	55.1	0.6	0.0		56.7	2.2	1.6		
Sum	25							0				0	
Average		54.3	55.8	1.3	55.8	1.3	0.0		56.7	2.4	1.1		
Minimum		53.2	54.0	0.8	54.0	0.8	0.0		55.1	1.9	0.7		
Maximum		55.3	57.7	2.4	57.7	2.4	0.0		58.4	3.1	1.6		
Esplanade													
First Row													
ESP-1	2	64.4	64.7	0.3	64.7	0.3	0.0		67.3	2.9	2.6	2	
ESP-2	1	64.4	64.7	0.3	64.7	0.3	0.0		67.3	3.0	2.7	1	
ESP-3	8	63.2	63.5	0.3	63.5	0.3	0.0		65.8	3.6	3.3	8	
ESP-4	1	66.4	66.6	0.2	66.6	0.2	0.0	1	68.0	3.2	3.0	1	
Sum	12							1				12	
Average		64.6	64.9	0.3	64.9	0.3	0.0		67.6	3.2	2.9		
Minimum		63.2	63.5	0.2	63.5	0.2	0.0		66.8	2.9	2.6		
Maximum		66.4	66.6	0.3	66.6	0.3	0.0		68.6	3.6	3.3		
SESP-1(Row 2)													
SESP-1(Row 2)	1	57.3	57.7	0.4	57.7	0.4	0.0		59.7	2.4	2.0		
SESP-2(Row 2)	1	61.6	61.8	0.2	61.8	0.2	0.0		63.8	2.2	2.0		
SESP-3(Row 2)	8	58.3	58.6	0.3	58.6	0.3	0.0		61.8	3.5	3.2		
SESP-4(Row 2)	1	60.7	60.9	0.2	60.9	0.2	0.0		64.3	3.6	3.4		
Sum	11							0				0	
Average		59.5	59.8	0.3	59.8	0.3	0.0		62.4	2.9	2.7		
Minimum		57.3	57.7	0.2	57.7	0.2	0.0		59.7	2.2	2.0		
Maximum		61.6	61.8	0.4	61.8	0.4	0.0		64.3	3.6	3.4		
Country Club of Miami Estates													
First Row													
CCME-1	3	66.5	66.7	0.2	66.7	0.2	0.0		69.8	3.1	2.9	3	
CCME-2	2	68.6	68.6	0.0	68.6	0.0	0.0		71.1	2.5	2.5	2	
CCME-3	2	57.5	57.5	0.0	57.5	0.0	0.0		60.4	2.9	2.9		
CCME-4	3	64.7	64.7	0.0	64.7	0.0	0.0		67.6	2.9	2.9	3	
Sum	10							0				8	
Average		64.3	64.4	0.1	64.4	0.1	0.0		67.2	2.9	2.8		
Minimum		57.5	57.5	0.0	57.5	0.0	0.0		60.4	2.5	2.5		
Maximum		68.6	68.6	0.2	68.6	0.2	0.0		71.1	3.1	2.9		
SCCME-1(Row 2)													
SCCME-1(Row 2)	3	57.3	57.5	0.2	57.5	0.2	0.0		60.5	3.2	3.0		
SCCME-2(Row 2)	2	59.2	59.5	0.3	59.5	0.3	0.0		61.6	2.4	2.1		
Sum	5							0				0	
Average		58.3	58.5	0.3	58.5	0.3	0.0		61.1	2.8	2.6		
Minimum		57.3	57.5	0.2	57.5	0.2	0.0		60.5	2.4	2.1		
Maximum		59.2	59.5	0.3	59.5	0.3	0.0		61.6	3.2	3.0		

