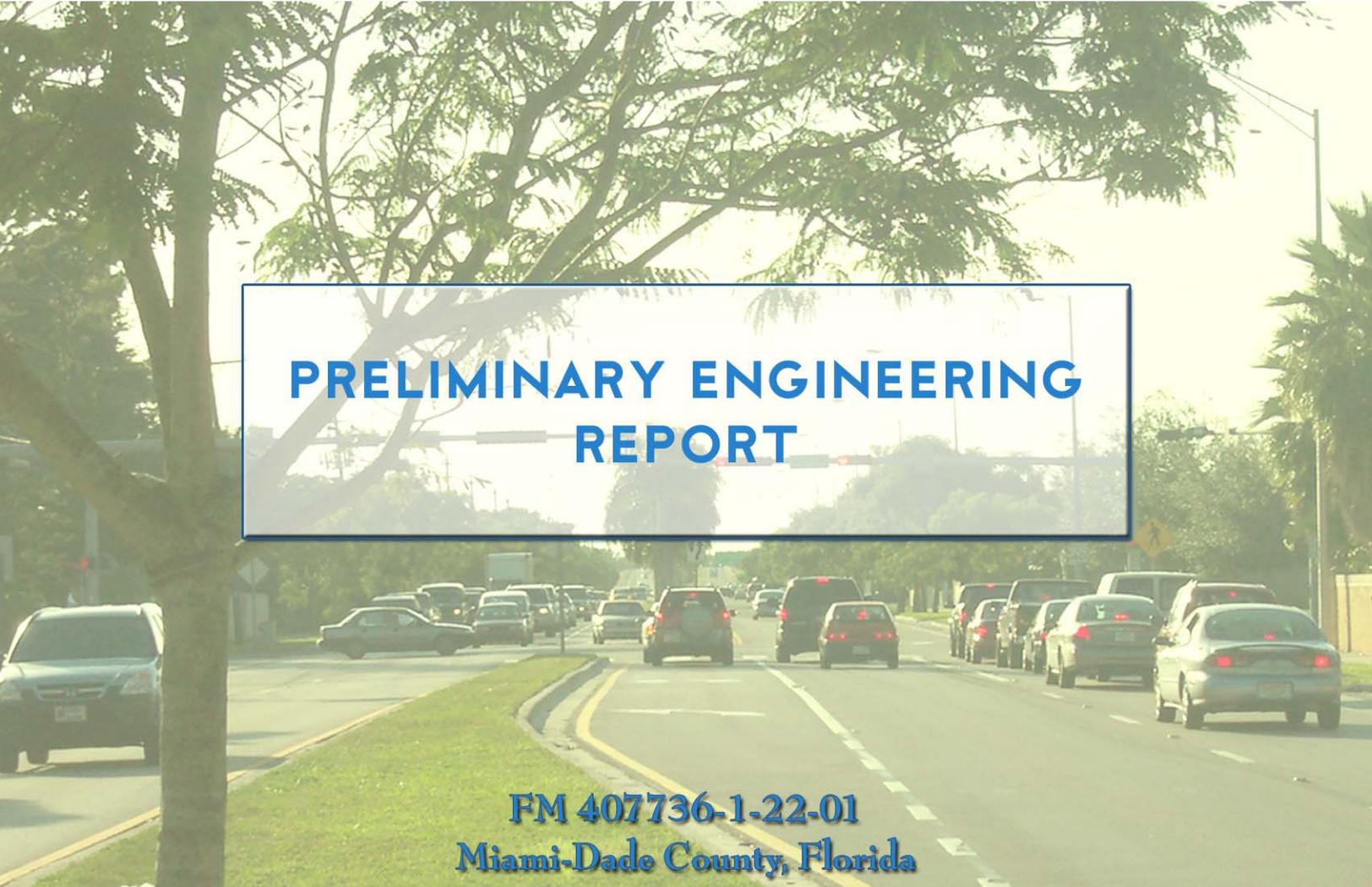


State Road 860 Miami Gardens Drive

(From East of I-75 to NW 57th Avenue)



PRELIMINARY ENGINEERING REPORT

FM 407736-1-22-01
Miami-Dade County, Florida

November 2006



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1.0 SUMMARY

1.1 COMMITMENTS

This Project Development and Environment (PD&E) Study, addresses the proposed roadway improvements that are required to widen State Road (SR) 860 also known as Miami Gardens Drive (MGD) from just east of I-75 to NW 57th Avenue in Miami-Dade County, Florida.

An evaluation of 2004 existing traffic conditions in the study area revealed that existing traffic demand is surpassing capacity in most areas of the corridor. Based on intersection and segment capacity analyses performed within the study area the following conditions were identified:

- Six of the eight signalized intersections along MGD within the study area are operating at level of service (LOS) “F” during the PM peak hour
- The MGD / NW 87th Avenue and MGD / NW 67th Avenue are currently operating at LOS “F” during the AM peak hour

Currently, traffic volumes for the study corridor show LOS conditions of C, D, E and F. However, the 2015 South Florida Regional Planning Model projects an increase in Annual Average Daily Traffic, which would bring the entire corridor to LOS F unless capacity improvements are undertaken. This traffic increase justifies the widening of the corridor, which would relieve congestion while providing additional capacity to the surrounding traffic-saturated corridors.

Other deficiencies in the study area include violations of current access management standards, and out-of-date design standards, such as storage and taper lengths for turn lanes. Improving these deficiencies would increase the safety of the corridor and the overall condition of the study area.

The project is consistent with the *Miami-Dade Transportation Plan to the Year 2030* which calls for the widening of Miami Gardens Drive from I-75 to NW 57th Avenue from four lanes to six lanes.

The Florida Department of Transportation (FDOT) will adhere to the following commitments with regard to the proposed widening of Miami Gardens Drive:

- X Continuous coordination with pertinent agencies throughout the final design and construction phases of this project.
- X Proposed improvements will be designed in accordance with FDOT standards and in compliance with applicable guidelines established by AASHTO, FDOT and the Federal Highway Administration.
- X Maintenance of traffic plans will be developed during the final design phase of the project to minimize impacts to the traveling public during the construction of the improvements.
- X In order to attenuate the temporary impacts to air and noise quality, the contractor will adhere to the noise and air provisions outlined in FDOT's *Standard Specifications for Road and Bridge Construction*.
- X The contractor shall dispose of all oil, chemicals, fuels, etc., in an acceptable manner according to local, state, and federal regulations and shall not dump these contaminants on the ground or in sinkholes, canals, ponds, or lakes to avoid contamination of the soil and groundwater.
- X The entire corridor lies within the 100-year floodplain. However, encroachment will be minimized to the extent practicable and mitigation measures will be developed to compensate for the anticipated encroachment.

- X 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 benefited 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.
- X The proposed stormwater facility design will include at a minimum, the water quantity requirements for water quality impacts as required by the South Florida Water Management District (SFWMD) in Rules FAC 40E-40 and by Miami-Dade County in the Miami-Dade County Code Chapter 24, Article II, Environmental Protection.

1.2 RECOMMENDATIONS

The four (4) developed alternatives for this project have been analyzed in full detail to determine the associated environmental, social and economic impacts. The following section provides a brief description of each alternative.

Alternative 1 – No Build Alternative

The No-Build alternative will involve maintaining the existing condition of Miami Gardens Drive from just west of NW 87 Avenue to NW 57 Avenue, with the addition of routine maintenance and isolated improvements. MGD will remain with its existing four-lane divided configuration. The combination of the lack of any capacity improvements and steadily increased traffic volumes will result in increased congestion, longer travel times for users and higher crash rates.

Alternative 2 – Transportation System Management

Transportation System Management (TSM) alternatives typically improve the operating performance on an existing facility through a variety of techniques other than reconstruction. Techniques used involve smoothing traffic operations by coordinating traffic lights and enhanced pavement markings. Some examples of TSM objectives include improving the level of service of urban travel, reducing the occurrence of traffic accidents, and reducing automotive emissions and noise impacts. These techniques and objectives are part of all the proposed “build” alternatives. However, TSM improvements by itself will not improve the traffic operations in the area especially during the peak hours.

Alternative 3 – Partial 6-Lane Alternative

Alternative 3 proposes the widening of Miami Gardens Drive from four lanes to six lanes from NW 57th Avenue to approximately 600 feet west of Bob-O-Link Drive and constructing sidewalks along the north side of MGD where the sidewalks are currently discontinuous. It would also include landscaping improvements in area of the widening. Access management and TSM improvements will be incorporated through out the corridor. All improvements for this alternative will be done within the existing right-of-way.

Alternative 4 – Complete 6-Lane Alternative

Alternative 4 proposes the widening of Miami Gardens Drive from four lanes to six from west of NW 87th Avenue to NW 57th Avenue. In addition to the roadway widening, this alternative proposes access

management and TSM improvements, as well as the construction of continuous sidewalks, and landscaping improvements along the corridor. All improvements for this alternative will be done within the existing right-of-way.

Preferred Alternative

Based on preliminary engineering and environmental evaluation, Alternative 4 – Full 6-lane widening was selected as the preferred alternative. In addition to the roadway widening, this alternative also proposes access management and TSM improvements, as well as the construction of continuous sidewalks, and landscaping improvements along the corridor. This alternative meets the goals and objectives of the study, addresses the comments provided by the Project Advisory Group (PAG), and conforms to the local transportation plan.

The proposed widening of Miami Gardens Drive will increase capacity on the roadway network within the study area while reducing travel time, vehicle emissions, and fuel consumption. The improvements will also improve safety by reducing the potential for crashes, while making the corridor more user friendly and aesthetically pleasing.

Environmental Impacts

Traffic noise impacts associated with construction of the project are predicted to occur by the project's design year. Approximately 324 sites are predicted to experience traffic noise levels equal to, or exceeding, the 66.0 dBA. The project is only predicted to result in marginal increases in the CO level. Thus, the project passes the CO screening analysis and air quality impacts resulting from the proposed project are not expected.

Project implementation is anticipated to include improvements in the drainage and stormwater management system to accommodate the proposed increase in impervious area. The proposed stormwater facility design will include, at a minimum, the water quantity requirements for the water

quality impacts as required by the current Miami-Dade County Code and/or South Florida Water Management District rules. This proposed project contains no known significant contamination.

Access Management

Miami Gardens Drive is classified as an Access Class 3 facility between I-75 and NW 57th Avenue. According to the FDOT Access Management Standards, the following minimum spacing requirements apply:

- Full Median Opening Spacing – 2,640 feet
- Directional Median Opening Spacing – 1,320 feet
- Signal Spacing – 2,640 feet

Currently there are 28 median openings along this corridor within the study area. Most of the median openings violate the required access management standards. Therefore, a very comprehensive median management study was conducted to recommend median closures along the corridor.

Landscaping

The landscape goal for Miami Gardens Drive is to provide aesthetically pleasing surroundings along the corridor. This will be accomplished by preserving and protecting existing vegetation when possible; enhancing existing vegetated areas; and replacing vegetation consistent with local community values and FDOT requirements.

The recommended alternative for the corridor includes a widening of the travel lanes and therefore a reduction of the area between the curb and the roadway. Within the sidewalk, trees will be placed in cut-outs at regular intervals to enhance the corridor and provide shade to the pedestrians on the sidewalks. The majority of these trees will be located underneath power lines, therefore small trees are recommended. The placement of the trees will need to comply with the clear zone setbacks from back of curb.

2.0 INTRODUCTION

2.1 PURPOSE

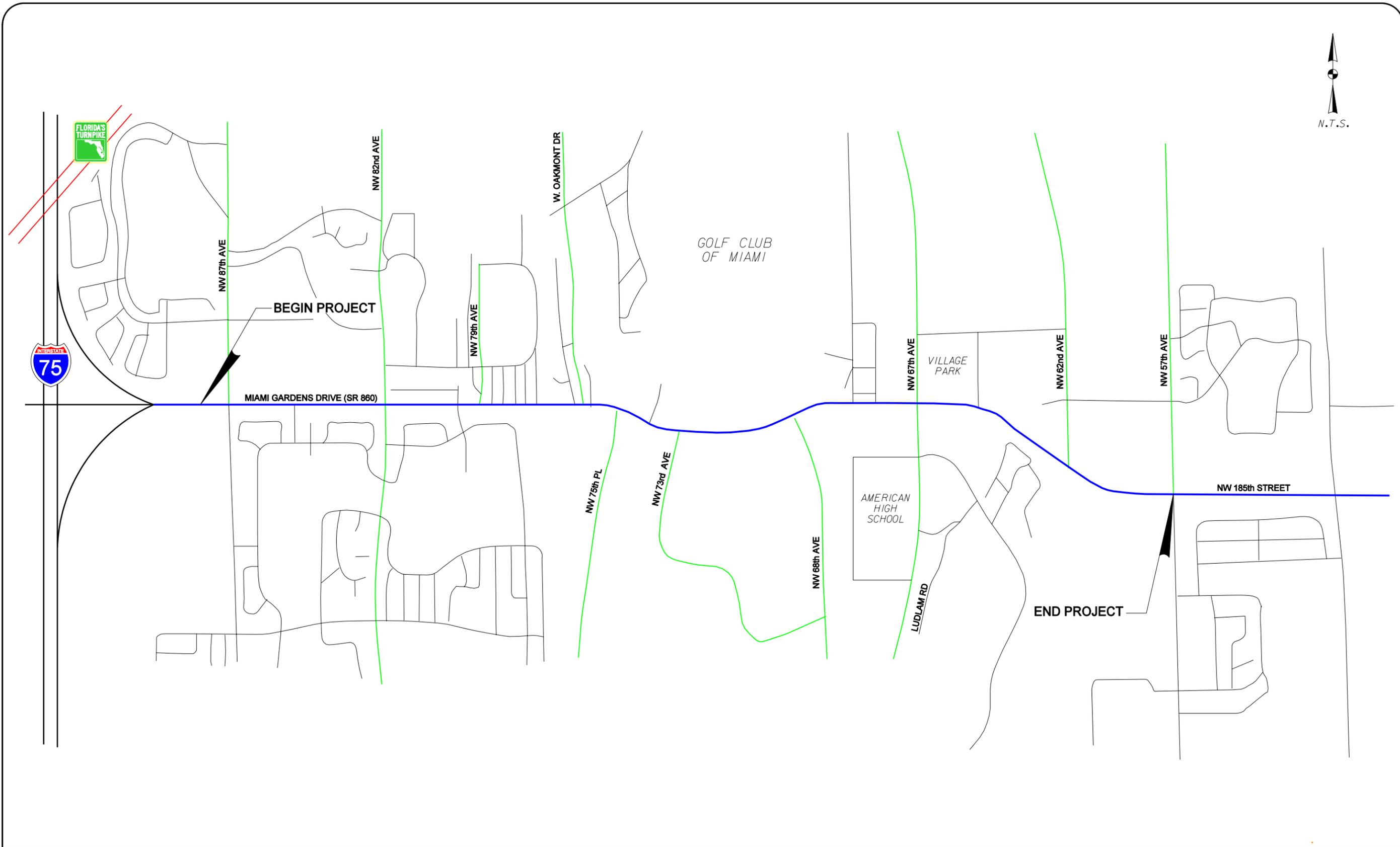
The purpose of this Preliminary Engineering Report is to prepare and complete the necessary processes and documentation for the FDOT to determine the roadway improvements that are required to widen Miami Gardens Drive (MGD, SR 860) from just east of I-75 to NW 57th Avenue in Miami-Dade County, Florida. This report documents existing physical and environmental characteristics of the corridor and the analysis of existing and projected traffic conditions. In addition, this report will demonstrate the need and feasibility of the proposed improvements.

The report will also serve as a comprehensive source of information for use in the next phase of project development. This Preliminary Engineering Report was prepared in accordance with Part 1, Chapter 9 of the Project Development and Environmental (PD& E) Manual, Florida Department of Transportation (FDOT) guidelines, and related federal, state and local government environmental requirements.

2.2 PROJECT DESCRIPTION

Miami Gardens Drive is a primary east-west roadway in northern Miami-Dade County. It consists of various commercial developments, office complexes, residential communities and a limited number of undeveloped parcels. The project proposes to widen the segment from the existing four-lane divided facility to six lanes.

The limits of the project study area extend from west of NW 87th Avenue to NW 57th Avenue (Red Road) in northwest Miami-Dade County. The overall corridor connects I-75 on the west to US 1 (Biscayne Boulevard) on the east. The project location map shown in Exhibit 2.1, graphically depicts the project boundaries.



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PROJECT:

**Miami Gardens Drive
Project Development & Environment Study**

TITLE:

Location Map

EXHIBIT

2.1

3.0 NEED FOR IMPROVEMENT

3.1 DEFICIENCIES

An evaluation of 2004 existing traffic conditions in the study area revealed that existing traffic demand is surpassing capacity in most areas of the corridor. Based on intersection and segment capacity analyses performed within the study area the following conditions were identified:

- Six of the eight signalized intersections along MGD within the study area are operating at level of service (LOS) “F” during the PM peak hour
- The MGD / NW 87th Avenue and MGD / NW 67th Avenue are currently operating at LOS “F” during the AM peak hour

Exhibits 3.1 and 3.2 provide a summary of the existing traffic operations analyses for the major intersections and segment respectively.

Currently, traffic volumes for the study corridor show LOS conditions of C, D, E and F. However, the 2015 South Florida Regional Planning Model projects an increase in Annual Average Daily Traffic, which would bring the entire corridor to LOS F unless capacity improvements are undertaken. This traffic increase justifies the widening of the corridor, which would relieve congestion while providing additional capacity to the surrounding traffic-saturated corridors.

Other deficiencies in the study area include violations of current access management standards, and out-of-date design standards, such as storage and taper lengths for turn lanes. Improving these deficiencies would increase the safety of the corridor and the overall condition of the study area.

Exhibit 3.1

2004 Intersection LOS – Weekday AM & PM Conditions

Intersection	Level of Service	
	AM Peak	PM Peak
NW 87 th Avenue	F	F
NW 82 nd Avenue	C	F
NW 79 th Avenue	E	F
West Oakmont Drive	B	A
NW 68 th Avenue	D	D
Bob-O-Link Road	C	F
NW 67 th Avenue	F	F
NW 57 th Avenue	E	F

Exhibit 3.2

2004 Link LOS – Weekday AM & PM Conditions

Roadway Segment	Direction	AM Peak LOS	PM Peak LOS
NW 87 th Avenue to NW 82 nd Avenue	EB	C	F
	WB	F	E
NW 82 nd Avenue to NW 79 th Avenue	EB	D	F
	WB	D	F
NW 79 th Avenue to West Oakmont Drive	EB	B	B
	WB	F	F
West Oakmont Drive to NW 68 th Avenue	EB	C	D
	WB	A	A
NW 68 th Avenue to Bob-O-Link Drive	EB	D	D
	WB	D	E
Bob-O-Link Drive to NW 67 th Avenue	EB	F	F
	WB	D	F
NW 67 th Avenue to NW 57 th Avenue	EB	C	C
	WB	C	C

3.2 SAFETY

A safety review was conducted on Miami Gardens Drive for the six-year period from 1998 to 2003. Crash data for MGD between I-75 and NW 57th Avenue was obtained from FDOT's Traffic Operations Department. The following segments were analyzed:

1. Miami Gardens Drive from east of I-75 to just east of NW 87th Avenue
2. Miami Gardens Drive from east of NW 87th Avenue to just east of Bob-O-Link Drive
3. Miami Gardens Drive from east of Bob-O-Link Drive to just east of NW 67th Avenue
4. Miami Gardens Drive from east of NW 67th Avenue to just east of NW 57th Avenue

The following intersections were analyzed:

1. Miami Gardens Drive / NW 87th Avenue
2. Miami Gardens Drive / NW 82nd Avenue
3. Miami Gardens Drive / NW 79th Avenue
4. Miami Gardens Drive / W. Oakmont
5. Miami Gardens Drive / NW 68th Avenue
6. Miami Gardens Drive / Bob-O-Link
7. Miami Gardens Drive / NW 67th Avenue
8. Miami Gardens Drive / NW 57th Avenue

The purpose of the analysis was to determine the safety ratios for each roadway segment and intersection during the past years. The resulting actual crash rates have been compared to the critical crash rates established by FDOT to assist in the determination of critical crash ratios for a particular segment. The rate of occurrence for all crash types per million vehicle miles traveled was calculated as follows:

Vehicle miles traveled per year = Road length * ADT * 365 days

Crash per million vehicle miles traveled = $\frac{1,000,000 \text{ miles} * \text{Number of Crash}}{\text{Vehicle miles traveled per year}}$

If the ratio of the *actual crash rate* for the roadway versus the *critical crash rate* for the same year exceeds 1.00, the roadway segment has a crash rate that exceeds the state criteria.

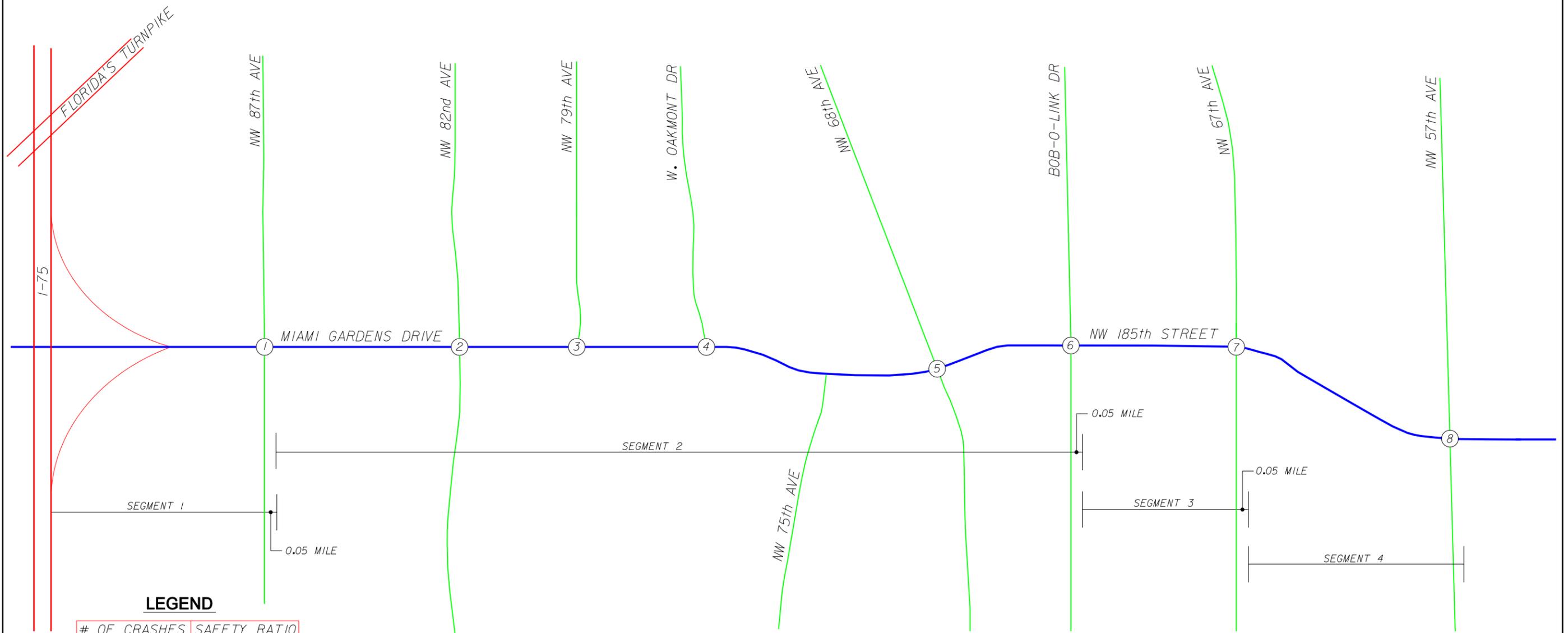
For segment one, two and four the average safety ratio exceeded 1.00 and therefore did not meet the state criteria for any of the years from 1998 to 2003. Segment three met the state criteria for the years 1998 and 2001 but failed to meet it for the years 1999, 2000, 2002 and 2003. Exhibit 3.3 shows the crash data analyses for the years 1998 through 2003.

All the intersections met the state criteria for all of the years from 1998 to 2003. Exhibit 3.4 shows the crash data analyses for the intersections for the years 1998 through 2003.

Overall, the crash rate analysis indicates that there are safety problems and high crash roadway segments along Miami Gardens Drive which is an aspect to be improved by this project.

The elderly driving population is a characteristic of the study area and it represents approximately 14% of the total Miami-Dade County population, as a result, this population may also benefit from improvements such as, reflective pavement markers, improved pedestrian crossings, work zone safety specifications, overhead and advance street name signs.

YEAR	SEGMENT 1	SEGMENT 2	SEGMENT 3	SEGMENT 4
1998	32 1.392	95 1.530	24 0.918	67 1.977
1999	27 1.156	85 1.436	34 1.382	70 2.108
2000	35 1.414	99 1.570	28 1.097	70 1.523
2001	37 2.230	102 1.547	22 0.887	56 1.751
2002	43 2.317	107 1.869	33 2.163	55 1.751
2003	21 1.097	93 1.571	28 1.156	62 1.919



LEGEND

# OF CRASHES	SAFETY RATIO
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SOURCE: URS

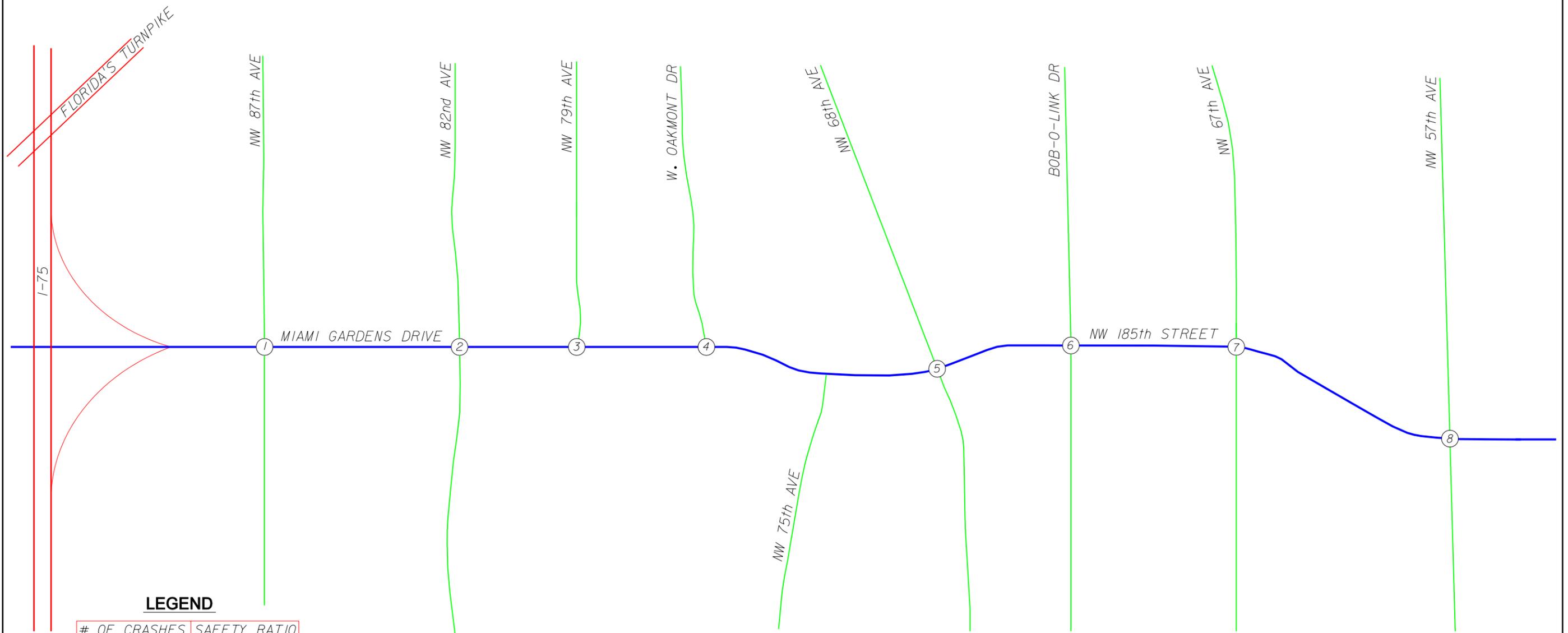
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PROJECT: **Miami Gardens Drive Project Development & Environment Study**

TITLE: **Crash Analysis (Segment)**

EXHIBIT **3.3**

YEAR	NW 87 AVE	NW 82 AVE	NW 79 AVE	W.OAKMONT	NW 68 AVE	BOB-O-LINK	NW 67 AVE	NW 57 AVE
1998	0 -	4 0.248	3 0.186	2 0.124	2 0.124	6 0.373	4 0.248	1 0.050
1999	1 0.068	7 0.430	3 0.184	0 -	2 0.123	2 0.080	3 0.184	6 0.307
2000	1 0.065	7 0.414	1 0.059	5 0.296	1 0.059	4 0.237	5 0.296	2 0.128
2001	2 0.124	4 0.223	2 0.112	4 0.223	1 0.056	4 0.159	4 0.223	3 0.136
2002	0 -	6 0.304	2 0.129	2 0.129	0 -	2 0.129	4 0.259	1 0.051
2003	0 -	8 0.504	2 0.063	1 0.063	0 -	6 0.378	5 0.315	2 0.116



LEGEND

OF CRASHES | SAFETY RATIO

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PROJECT:

**Miami Gardens Drive
 Project Development & Environment Study**

TITLE:

Crash Analysis (Spot)

EXHIBIT

3.4

3.3 CONSISTENCY WITH TRANSPORTATION PLAN

The Miami-Dade County Metropolitan Planning Organization (MPO) Transportation Improvement Plan (TIP) for the 2006 fiscal year reflects a resurfacing project along MGD from I-75 to NW 57th Avenue. It also reflects traffic signal improvements from West Oakmont to NW 75 place and guardrail additions at MGD and I-75 intersection.

The project is consistent with the *Miami-Dade Transportation Plan to the Year 2030* which calls for the widening of Miami Gardens Drive from I-75 to NW 57th Avenue from four lanes to six lanes.

3.4 SOCIO-ECONOMIC DEMANDS

Miami Gardens Drive from I-75 to US 1 is economically supported on the east by an important retail district, which includes the Aventura Regional Mall and on the western end by a residential component. MGD is a main transportation connector to several north-south arteries, including I-75, I-95 and US 1. There is an on-going cycle of traffic increase due to rapid growth in the area, especially on the western limits. Increase in retail and residential traffic resulting from the addition of new retail businesses along the corridor, as well as, new residential developments proposed for the area near NW 87th Avenue intersection have caused intensification in traffic conditions. The projection is that there will be a continued development of commercial and residential components, thus, expecting to result in higher traffic in the near-term and long-range future.

The growth of South Florida will require proper transportation measures and constant upgrading of the highway capacity in order to mitigate and avoid future deterioration of the transportation and associated air quality degradation.

4.0 EXISTING CONDITIONS

4.1 EXISTING ROADWAY CHARACTERISTICS

The study area extends along Miami Gardens Drive from west of NW 87th Avenue to NW 57th Avenue in northwest Miami-Dade County. It consists of eight signalized intersections along this 3.6-mile study corridor. MGD is classified as a State Principal Arterial, Access Class 3 and on the east-west approach to all the intersections it consists of four lanes divided with turning lanes. Some have exclusive left-turn lanes, exclusive right-turn lanes, or both.

4.1.1 Functional Classification

Miami Gardens Drive is classified as a state Principal Arterial. FDOT establishes the functional classification in accordance with state criteria and formulae. The classification of all state and county roadways is periodically updated by FDOT to reflect changing conditions. The four major classifications (i.e., principal arterials, minor arterials, collector roads, and local roads) are defined as follows:

- *Principal Arterials* include most heavily traveled routes ranging from freeways with full control of access to at-grade roadways with partial or no control access. This system of roadways carries most of the trips entering and exiting a region as well as provides major through movements within a region.
- *Minor Arterials* include roadways that accommodate trips of moderate length at relatively high travel speeds and minimum interference to through movement. This system of roadways places more emphasis on land access than the principal arterial system and offers lower traffic mobility.

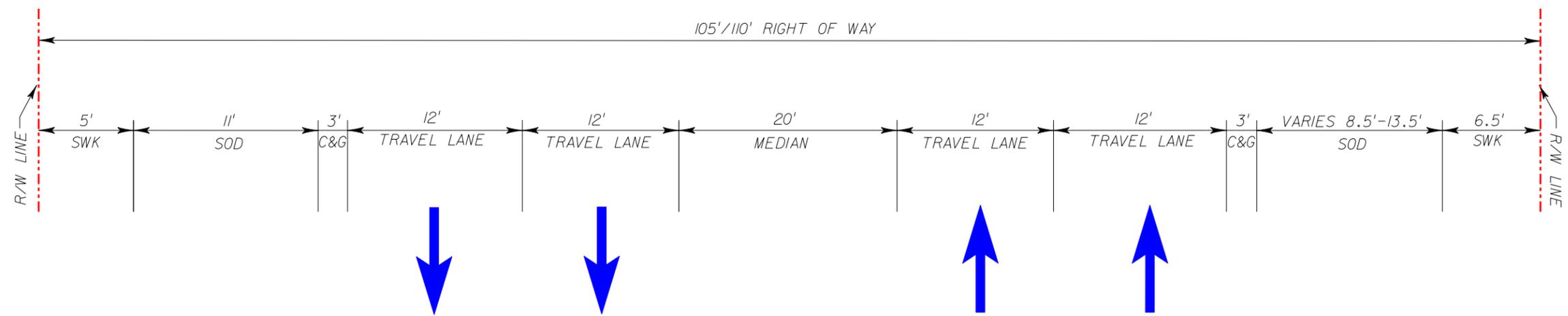
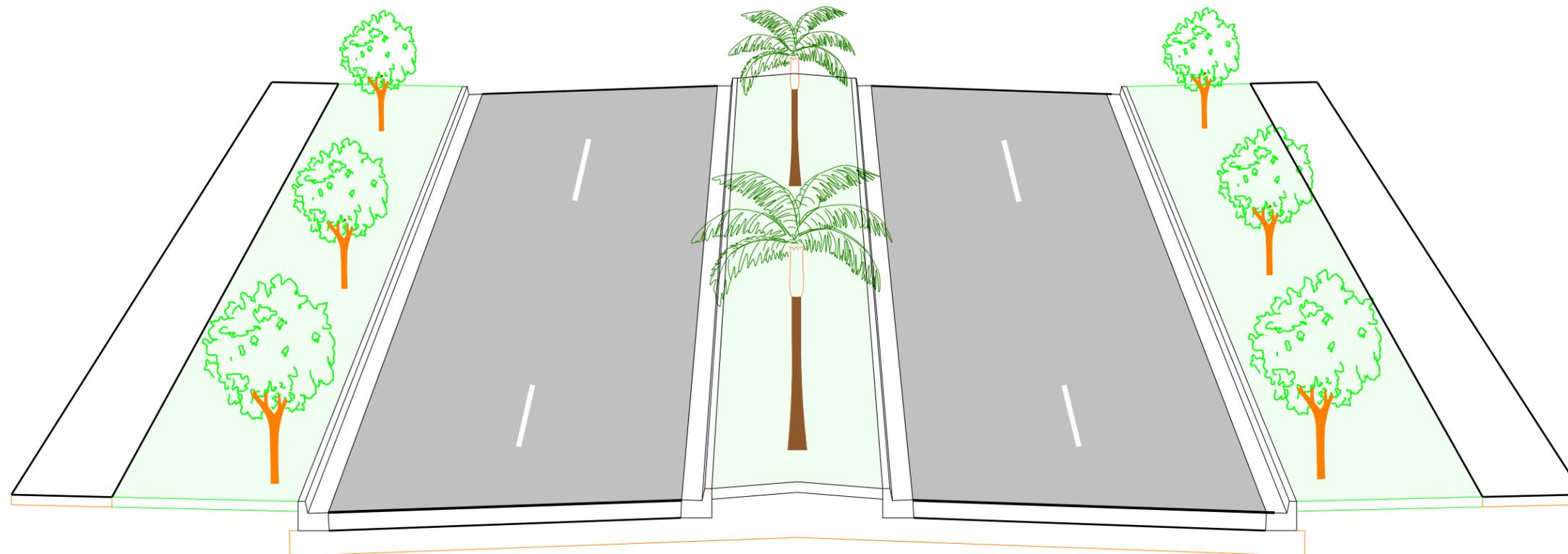
- *Collector Roads* include roadways on which predominant travel distances are shorter than on arterial routes and more moderate speeds are typical. This system of roadways collects traffic from local roadways and channels it into the arterial system.
- *Local Roads* include roadways that serve travel over relatively short distances and the through-traffic movement is usually discouraged. This system of roadways provides access to land adjacent to the collector network and offers the lowest level of mobility.

4.1.2 Typical Sections

The existing typical section of Miami Gardens Drive within the study area consists of four 12-foot lanes (2 in each direction), a 19-foot grass median variable and a 3-foot paved shoulder on each side of the roadway. The roadway also has on each side, a curb, sidewalks that vary in width from 5 to 7 feet, and a grass area between the curb and the sidewalk that vary in width from 9.5 to 14.5-feet. Exhibit 4.1 shows the typical section of Miami Gardens Drive.

4.1.3 Pedestrian and Bicycle Facilities

There are no designated bicycle facilities within the project area. Pedestrian facilities such as sidewalks exist continuously on the southern side of the corridor; however, on the northern side there are multiple discontinuities along the western half of the study corridor. The existing typical sections depict the location and width of these facilities. All major side streets within the study area have sidewalks. Exhibit 4.2 summarizes the sidewalk characteristics along MGD within the study area.



DATE: 5/11/15



DAVID PLUMMER & ASSOCIATES, INC.
 TRANSPORTATION • CIVIL • STRUCTURAL • ENVIRONMENTAL
 CORAL GABLES FORT MYERS FORT LAUDERDALE
 1750 PONCE DE LEON BLVD. CORAL GABLES FL 33134 TELEPHONE (305) 447-0900 FAX (305) 444-4986

PROJECT:

**Miami Gardens Drive
 Project Development & Environment Study**

TITLE:

Existing 4-Lane Typical Section

EXHIBIT

4.1

Exhibit 4.2
Sidewalk Characteristics

Section	Sidewalk Width		Section	Sidewalk Width	
	Northern Side	Southern Side		Northern Side	Southern Side
NW 57 Avenue to NW 62 Avenue	6.5 ft	6.5 ft	NW 75 Place to Canal	No Sidewalk	6.5 ft
NW 62 Avenue to NW 67 Avenue	6.5 ft*	6.5 ft	Canal to NW 79 Avenue	7.0 ft	6.5 ft
NW 67 Avenue to NW 68 Avenue	6.5 ft	6.5 ft	NW 79 Avenue to NW 82 Avenue	No Sidewalk	6.5 ft
NW 68 Avenue to NW 73 Avenue	5.0 ft	6.5 ft	NW 82 Avenue to NW 87 Avenue	5.0 ft	5.75 ft
NW 73 Avenue to NW 75 Place	No Sidewalk	6.5 ft	NW 87 Avenue to I-75 Ramps	5.0 ft	No Sidewalk

NOTE *Indicates Partial Sidewalk Discontinuity

4.1.4 Right-of-Way

The existing right-of way for Miami Gardens Drive ranges from 105 feet to 110 feet. The 105 feet is from approximately 1,000 feet west of NW 87th Avenue to approximately 400 feet west of the NW 77th Avenue section line. The 110 feet is from approximately 400 feet west of the NW 77th Avenue section line to NW 57th Avenue.

4.1.5 Horizontal Alignment

The existing horizontal alignment along Miami Gardens Drive from just west of NW 79th Avenue to just east of NW 68th Avenue is skewed with a presence of six horizontal curves. From STA. 50 + 000 to STA. 142 + 57.80, from STA. 154 + 31.39 to STA. 167 + 93.66, and from STA. 179 + 89.25 to

STA.199 + 77.17 there are no horizontal curves present. Exhibit 4.3 shows the horizontal alignment features along Miami Gardens Drive.

Exhibit 4.3
Horizontal Alignment along Miami Gardens Drive

Curve	P.C. Station	P.I. Station	P.T. Station	Degree of Curve	Radius (feet)	Length (feet)
1	142 + 57.21	145 + 57.80	148 + 45.13	29°23'45"	1,145.92	587.92
2	148 + 45.13	151 + 44.85	154 + 44.85	29°22'09"	1,143.72	586.26
3	167 + 93.66	170 + 40.71	172 + 80.32	24°19'58"	1,145.92	486.66
4	175 + 0.270	177 + 49.69	179 + 89.25	24°19'38"	1,145.92	486.55
5	199 + 77.17	207 + 04.13	214 + 01.04	28°28'38"	2,864.79	1,423.87
6	222 + 90.60	230 + 59.33	237 + 92.67	30°02'29"	2,864.79	1,502.06

Source : PBS&J

4.1.6 Vertical Alignment

The existing vertical alignment of Miami Gardens Drive is predominantly flat with no presence of a vertical curve.

4.1.7 Drainage

The storm drainage system on Miami Gardens Drive consists of two separate positive systems: System “B” and System “C.” System “B” serves the roadway from NW 87 Avenue to NW 77 Avenue and

system “C” serves the roadway from NW 77 Avenue to NW 57 Avenue. The Miami Gardens Drive roadway is also a four lane divided section with a 10 foot grass median, which has a type F curb and gutter on the median. The outside of the roadway contains valley gutters. The valley gutters on the north side of the roadway are connected by concrete flumes to a series of ditch bottom inlets. The valley gutters on the south side of the roadway contain P-5 and P-6 inlets. There is evidence that some of the flumes on the north side of the roadway do not perform adequately because the runoff ponds in the flumes do not reach the inlets.

The roadway segment west of NW 87 Avenue to the I-75 entrance ramps contains storm drainage system “A” with no curb and gutter. However, there are ditch bottom inlets located on the edge of the roadway. The existing observations were performed by Burns & McDonnell and outlined in the Drainage assessment for SR 860 / Miami Gardens Drive. From NW 57 Ave to I-75 Entrance Ramps.

4.1.8 Geotechnical Data

Within the study area, there are several locations that have been mapped by the *Soil Survey of Miami-Dade County (1996)* and the *Miami-Dade County Field Office Technical Soil Guide Table* as supporting hydric soils. These are poorly drained soils, which under natural conditions would support freshwater marsh and flatwood communities; among these are Lauderhill muck, Plantation muck, and Margate fine sand. The soils have been mapped within the small undeveloped areas along the corridor; however, these areas have already been highly disturbed and include improved pasture, Brazilian pepper thickets, and roadside ditches. Due to the fact that no wetlands remain within the study area, any impacts will be limited to areas that had been previously disturbed located adjacent to the existing right-of-way.

4.1.9 Crash Data

An evaluation of the existing study area safety issues was conducted. Six years of traffic accident data

from January 1998 to December 2003 for Miami Gardens Drive from I-75 to NW 57th Avenue was obtained from FDOT. The data provided included the number and type of accidents, accident locations, and number of fatalities and injuries. This information was reviewed to establish the most common types of accidents.

In accordance with the Manual on Uniform Traffic Studies (MUTS), the crash information was tabulated for each year. The crash data provided shows a total of 1,325 documented crashes between the years 1998 and 2003, of which 218 occurred in 1998, 216 occurred in 1999, 232 occurred in 2000, 217 occurred in 2001, 238 occurred in 2002, and 204 occurred in 2003. Of the six-year total, there were no fatalities and 781 injuries.

Exhibits 4.5 – 4.8 summarize the types of crashes that occurred along Miami Gardens Drive from I-75 to NW 57 Avenue during the six analysis years. The most common types of crashes were: rear end crashes (37.8%), angle collisions (24.0%), and sideswipe crashes (8.5%). During the analysis period there were 4 (0.3%) collisions with parked vehicles and 35 (2.6%) collisions with pedestrians.

4.1.10 Intersections and Signalizations

Within the Miami Gardens Drive study area there are 11 intersections, of which eight (8) are currently signalized. The 11 intersections along Miami Gardens Drive are:

1. NW 87th Avenue
2. NW 82nd Avenue
3. NW 79th Avenue
4. West Oakmont Drive
5. NW 75th Place (unsignalized)
6. NW 73rd Avenue (unsignalized)

7. NW 68th Avenue
8. Bob-O-Link Drive
9. NW 67th Avenue
10. NW 62nd Avenue (unsignalized)
11. NW 57th Avenue

4.1.11 Lighting

Existing roadway lighting along the corridor consist of 400 Watt high pressure sodium vapor luminaries with self contained, 480 volts regular type ballast mounted on aluminum poles. Poles are spaced approximately 225 feet apart.

Exhibit 4.4

Crash Summary – From I-75 to NW 87th Avenue

		1998	1999	2000	2001	2002	2003
CRASH TYPE	Rear End	11	14	18	11	21	5
	Head On	0	0	0	1	1	0
	Angle	7	8	1	7	6	4
	Left Turn	10	1	6	5	2	3
	Right Turn	0	0	2	0	0	1
	Sideswipe	1	2	5	5	3	3
	Pedestrian/Bicycle	0	0	1	2	3	1
	Fixed Object	0	0	0	1	0	0
	Other	3	2	2	5	7	4
SEVERITY	Fatal Crashes	0	0	0	0	0	0
	PDO	18	8	15	16	15	11
	Injury Crashes	14	19	20	21	28	10
LIGHT CONDITIONS	Daylite	25	21	28	27	27	8
	Dusk	0	0	1	0	0	0
	Dawn	0	0	0	0	0	0
	Dark (w/Street Lites)	7	5	6	10	14	12
	Dark (wo/Street Lites)	0	0	0	0	2	1
Unknown	0	1	0	0	0	0	
WEATHER	Dry	23	19	24	22	34	17
	Cloudy	6	5	5	10	6	2
	Rain	3	2	6	3	2	2
	Fog	0	0	0	0	0	0
	Others	0	0	0	0	0	0
Unknown	0	1	0	0	1	0	
SURFACE CONDITIONS	Dry	29	21	27	29	39	17
	Wet	3	5	7	7	3	4
	Others	0	0	1	1	1	0
	Unknown	0	1	0	0	0	0
MONTH OF YEAR	January	1	2	2	6	3	0
	February	3	1	2	3	3	1
	March	5	1	2	1	1	4
	April	2	5	3	3	6	0
	May	2	1	0	2	2	2
	June	0	2	6	2	3	1
	July	1	1	3	5	5	1
	August	2	2	3	4	9	1
	September	5	2	6	3	4	1
	October	5	2	2	2	3	2
	November	2	4	3	1	2	3
	December	4	4	3	5	2	5
DAY OF WEEK	Sunday	4	6	3	1	8	3
	Monday	6	3	2	7	6	5
	Tuesday	8	6	8	3	3	1
	Wednesday	7	0	4	9	3	1
	Thursday	2	2	3	3	8	5
	Friday	2	7	9	8	5	3
	Saturday	3	3	6	6	10	3
HOUR OF DAY	00:00-03:00	0	2	1	2	1	1
	03:00-06:00	0	0	0	1	0	1
	06:00-09:00	5	2	2	4	4	2
	09:00-12:00	5	4	8	5	2	3
	12:00-15:00	4	7	7	9	12	3
	15:00-18:00	11	6	9	7	5	1
	18:00-21:00	5	4	5	7	12	5
	21:00-24:00	2	2	3	2	7	5

Exhibit 4.5

Crash Summary – From NW 87th Avenue to Bob-O-Link Drive

		1998	1999	2000	2001	2002	2003
CRASH TYPE	Rear End	30	46	45	34	48	14
	Head On	1	1	0	0	0	1
	Angle	28	18	20	24	21	24
	Left Turn	13	6	17	17	11	8
	Right Turn	5	1	0	3	2	2
	Sideswipe	2	6	5	9	12	8
	Pedestrian/Bicycle	5	2	2	2	1	2
	Fixed Object	0	0	0	0	0	2
	Other	11	5	10	13	12	32
SEVERITY	Fatal Crashes	0	0	0	0	0	0
	PDO	39	38	39	39	35	33
	Injury Crashes	56	47	60	63	72	60
LIGHT CONDITIONS	Daylite	58	54	63	76	64	61
	Dusk	2	1	4	0	1	3
	Dawn	1	0	0	0	3	0
	Dark (w/Street Lites)	31	30	32	26	35	29
	Dark (wo/Street Lites)	3	0	0	0	3	0
	Unknown	0	0	0	0	1	0
WEATHER	Dry	74	63	75	75	72	61
	Cloudy	12	13	9	21	28	24
	Rain	9	9	15	6	6	8
	Fog	0	0	0	0	0	0
	Others	0	0	0	0	0	0
	Unknown	0	0	0	0	0	0
SURFACE CONDITIONS	Dry	84	74	82	92	92	77
	Wet	11	10	17	10	14	16
	Others	0	1	0	0	1	0
	Unknown	0	0	0	0	0	0
MONTH OF YEAR	January	12	6	6	7	15	5
	February	3	11	9	8	8	8
	March	10	6	12	11	9	10
	April	6	10	7	12	10	6
	May	6	7	11	7	18	10
	June	9	2	3	14	11	8
	July	1	10	8	7	6	3
	August	6	11	6	7	6	10
	September	8	7	9	10	10	8
	October	14	7	5	8	4	13
	November	7	1	10	8	4	4
	December	13	7	13	3	6	8
DAY OF WEEK	Sunday	11	12	11	12	16	10
	Monday	9	15	15	11	13	13
	Tuesday	19	10	12	17	14	13
	Wednesday	13	16	11	12	10	13
	Thursday	16	11	19	12	17	10
	Friday	12	11	14	18	15	16
	Saturday	15	10	17	20	22	18
HOUR OF DAY	00:00-03:00	8	6	5	6	10	6
	03:00-06:00	4	4	0	2	4	2
	06:00-09:00	8	5	14	6	8	12
	09:00-12:00	8	13	11	15	4	10
	12:00-15:00	18	12	14	19	25	15
	15:00-18:00	18	19	26	31	23	18
	18:00-21:00	23	14	22	8	17	18
	21:00-24:00	8	12	7	15	16	12

Exhibit 4.6

Crash Summary – From Bob-O-Link Drive to NW 67th Avenue

		1998	1999	2000	2001	2002	2003
CRASH TYPE	Rear End	10	12	9	6	14	4
	Head On	0	0	0	0	0	0
	Angle	11	10	7	7	8	14
	Left Turn	0	3	4	2	0	1
	Right Turn	0	0	1	1	1	0
	Sideswipe	1	3	4	4	5	4
	Pedestrian/Bicycle	0	2	0	1	0	1
	Fixed Object	0	1	0	0	0	0
	Other	2	3	3	1	5	4
SEVERITY	Fatal Crashes	0	0	0	0	0	0
	PDO	9	18	8	11	17	9
	Injury Crashes	15	16	20	11	16	19
LIGHT CONDITIONS	Daylite	14	26	19	17	23	20
	Dusk	2	0	1	1	0	1
	Dawn	0	0	0	0	0	0
	Dark (w/Street Lites)	8	8	6	4	9	6
	Dark (wo/Street Lites)	0	0	1	0	1	0
	Unknown	0	0	1	0	0	1
WEATHER	Dry	18	23	22	14	20	17
	Cloudy	6	10	4	5	8	7
	Rain	0	1	1	3	5	2
	Fog	0	0	0	0	0	0
	Others	0	0	0	0	0	0
	Unknown	0	0	1	0	0	0
SURFACE CONDITIONS	Dry	23	33	26	17	28	21
	Wet	1	1	1	5	4	5
	Others	0	0	0	0	1	2
	Unknown	0	0	1	0	0	0
MONTH OF YEAR	January	1	2	2	1	3	1
	February	2	3	3	1	3	0
	March	3	9	0	2	3	3
	April	1	3	2	0	1	3
	May	3	3	4	3	4	1
	June	0	2	2	2	2	2
	July	4	1	1	2	0	2
	August	0	4	1	2	5	3
	September	0	1	4	4	2	3
	October	3	0	3	3	6	3
	November	2	4	4	0	2	6
	December	5	2	2	2	2	1
DAY OF WEEK	Sunday	4	6	2	0	4	5
	Monday	2	2	3	7	6	4
	Tuesday	4	7	2	0	4	2
	Wednesday	2	3	7	2	4	7
	Thursday	6	5	5	7	4	3
	Friday	4	4	2	3	1	1
	Saturday	2	7	7	3	10	6
HOUR OF DAY	00:00-03:00	4	2	1	0	2	2
	03:00-06:00	0	0	0	1	1	1
	06:00-09:00	5	3	1	1	1	3
	09:00-12:00	2	6	7	3	3	3
	12:00-15:00	4	9	3	3	8	8
	15:00-18:00	3	4	6	9	6	6
	18:00-21:00	5	8	7	4	8	3
	21:00-24:00	1	2	3	1	4	2

Exhibit 4.7

Crash Summary – From NW 67th Avenue to NW 57th Avenue

		1998	1999	2000	2001	2002	2003
CRASH TYPE	Rear End	31	28	30	24	21	15
	Head On	0	0	0	1	0	2
	Angle	19	15	13	12	12	22
	Left Turn	7	9	9	4	3	5
	Right Turn	2	2	3	2	1	2
	Sideswipe	4	3	6	4	8	5
	Pedestrian/Bicycle	1	3	2	1	1	2
	Fixed Object	0	0	0	0	0	0
	Other	3	10	7	8	9	9
SEVERITY	Fatal Crashes	0	0	0	0	0	0
	PDO	26	34	30	29	19	28
	Injury Crashes	41	36	40	27	36	34
LIGHT CONDITIONS	Daylite	45	48	54	39	33	45
	Dusk	2	1	4	2	1	1
	Dawn	0	0	0	0	1	1
	Dark (w/Street Lites)	20	19	11	15	19	15
	Dark (wo/Street Lites)	0	0	0	0	1	0
	Unknown	0	2	1	0	0	0
WEATHER	Dry	41	47	50	35	40	50
	Cloudy	17	16	11	15	13	6
	Rain	9	6	9	6	2	6
	Fog	0	0	0	0	0	0
	Others	0	0	0	0	0	0
	Unknown	0	1	0	0	0	0
SURFACE CONDITIONS	Dry	54	61	56	47	48	53
	Wet	13	8	13	9	7	9
	Others	0	0	1	0	0	0
	Unknown	0	1	0	0	0	0
MONTH OF YEAR	January	3	6	5	3	3	4
	February	4	4	6	4	6	2
	March	6	2	3	7	4	8
	April	12	7	8	6	8	6
	May	6	10	4	3	3	5
	June	3	7	5	4	6	2
	July	4	4	7	8	4	5
	August	7	5	8	2	5	8
	September	7	7	3	4	6	8
	October	4	6	6	5	2	6
	November	4	4	5	6	3	5
	December	7	8	10	4	5	3
DAY OF WEEK	Sunday	4	7	8	4	5	4
	Monday	8	12	5	9	5	8
	Tuesday	8	12	6	7	8	6
	Wednesday	9	6	11	11	5	14
	Thursday	13	8	8	10	10	10
	Friday	7	15	17	7	10	11
	Saturday	18	10	15	8	12	9
HOUR OF DAY	00:00-03:00	4	1	3	4	8	4
	03:00-06:00	0	7	0	2	0	3
	06:00-09:00	6	11	7	2	5	5
	09:00-12:00	6	6	12	6	6	9
	12:00-15:00	13	12	17	12	6	7
	15:00-18:00	16	17	13	16	12	22
	18:00-21:00	13	12	13	10	11	11
	21:00-24:00	9	4	5	4	7	1

4.1.12 Utilities

The following utilities exist within the project limits:

Everglades Pipeline – there is a 10-inch underground gas main that runs along NW 73rd Avenue and crosses Miami Gardens Drive.

Florida Power & Light Company – on Miami Gardens Drive, overhead and underground power lines exist along the entire corridor.

Underground power lines exist on:

- North side of Miami Gardens Drive from:
 - I-75 to West of NW 82nd Avenue
 - East of NW 81 Court to NW 79th Place
 - Golden Glades Canal to East of NW 67th Avenue
- South Side of Miami Gardens Drive from:
 - Golden Glades Canal to NW 67th Avenue
 - East of NW 67th Avenue to West of 62nd Avenue
 - East of 62nd Avenue to NW 57th Avenue

Overhead power lines exist on:

- North Side of Miami Gardens Drive from:
 - Golden Glades Canal to East of NW 67th Avenue
 - West of NW 57th Avenue to NW 57th Avenue
- South Side of Miami Gardens Drive from:
 - NW 87th Avenue to West of Golden Glades Canal

Comcast Cable – On Miami Garden Drive, the overhead cable lines run discontinuous from NW 87th Avenue to NW 67th Avenue. The overhead cable lines exist along the south side of Miami Gardens Drive from NW 87th Avenue to NW 82nd Avenue and from east of NW 82nd Avenue to the Golden Glades Canal. The overhead cable lines exist along the north side of Miami Gardens Drive from east of the Golden Glades Canal to NW 75th Place and from east of NW 73rd Avenue to NW 67th Avenue.

4.1.13 Pavement Conditions

Field observations indicate that the current pavement conditions along Miami Gardens Drive are generally poor and roadway travel has dimmed the pavement markings.

4.2 EXISTING BRIDGES

There are no existing bridge structures within the project limits. However, there are two large box culverts. The first box culvert spans over the Golden Glades Canal and is located on MGD just west of Wentworth Drive. The second box culvert spans over a canal paralleling the west side of NW 57th Avenue.

4.3 ENVIRONMENTAL CHARACTERISTICS

4.3.1 Land Use Data

The project corridor is located in the north-central part of unincorporated Miami-Dade County, and planned residential land use has dominated the study area since the original residential development around the Country Club of Miami golf course. Commercial land use at the major intersections has increased over time. Build-out is nearly complete. The residential developments along the project corridor include single-family housing (3.5 units/acre) to high density apartments (50 units/acre).

Residential developments include both single-family and multi-family home communities. 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 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. Several of these developments have security gates and privacy walls along Miami Gardens Drive.

4.3.2 Cultural Features and Community Services

Cultural features are an important element since they build community identity through the preservation of historical and archaeological sites, churches, parks, and schools. Community services, on the other hand, provide useful services to the neighborhood such as fire and police stations, medical facilities, public facilities, and cemeteries.

4.3.2.1 Cultural and Community Resources

Within the study corridor there are several community service facilities, among these is a fire station, and a post office. The nearest fire station is the Palm Springs North Fire Rescue Station, located at MGD between NW 79 Avenue and West Oakmont Drive. The US post office is located west of NW 57 Avenue. At the intersection of MGD and NW 67 Avenue the Miami-Dade Water & Sewer Department houses an office within the County Club Plaza North. There are also several religious institutions, schools, and public facilities, such as parks, within the area. Exhibit 4.8 summarizes these community services.

Exhibit 4.8
Community Services

Religious Institutions	Government / Schools	Public Facilities / Utilities	Retail / Businesses
Church of Jesus Christ, of Latter Day Saints	Joella C. Good Elementary School	FP&L Substation	Miami Gardens Shopping Center
Mother of Redeemer, Catholic Church	American Senior High School	County Club of Miami	Garden Square Shopping Center
Sunrise Presbyterian Church	Palm Springs N. Elementary & Jr. High School	Country Village Park	Miami Gardens Corporate Park
Bethel Assembly Church	Navy/Marine Training Center	Norma & Jean Reach Park	
	US Post Office	Country Lake Park	
	Palm Springs North Fire Rescue Station		Country Club Plaza Shopping Center

4.3.2.2 Archaeological and Historical Sites

The State Historic Preservation Officer (SHPO) determined on December 14, 2004 that the project corridor does not contain any archaeological or historic properties listed, or eligible for listing, on the National Register of Historic Places (NRHP). A review of the Florida Master Site File indicated that five previously identified archeological sites were recorded in the general vicinity of the project. Only one (1) of the five recorded archaeological sites was located within the Area of Potential Effect (APE). The SHPO determined that the archeological site nearest the project corridor is located within 500 meters (=1,642 ft) of the NW 57th Avenue intersection (the Project End point). The exact location was not revealed; however, it was determined that there will be no involvement with this site.

4.3.2.3 Section 4(f) – Recreation/Parkland Resources

Section 4(f) of the Department of Transportation Act of 1966 consists of evaluating impacts of federally assisted project to public parks, recreation areas, wildlife and waterfowl refuges, and historical sites. The two extant Miami-Dade County parks adjacent to the north side of the Miami Gardens Drive project corridor are the Country Club of Miami, 6801 NW 186th Street, (a 36-hole public golf course) and Country Village Park, on Ludlam Road. No right-of-way is needed and no Section 4(f) involvement with public parks is anticipated. Also, no impact is anticipated to any wildlife or waterfowl refuge, or any historic site or district protected by Section 4(f). The Country Club of Miami entrance at NW 68th Avenue is a signalized intersection. Only the clubhouse parking lot and the driving range abut FDOT R/W along Miami Gardens Drive. The remainder of the golf courses is separated from the project corridor's north side by parcels of both multi-story apartment buildings and single-family homes. Country Village Park covers 17 acres to the north of Miami Gardens Drive, and has frontage along approximately 1,000 ft of the project corridor, east of the NW 67th Avenue/Ludlam Road intersection. Most of the park frontage consists of a public parking lot.

There is also a future public park under development by the Miami-Dade County Parks & Recreation Department (MDCPRD) at an out-parcel (5.3-acre) of the Country Club of Miami, next to the FPL sub-station with frontage on Miami Gardens Drive and the former Old Elm Drive. Based on coordination with MDCPRD staff, the preliminary plans for the proposed park development includes the construction of a sidewalk along the north side of Miami Gardens Drive, where no sidewalk presently exists. Any sidewalk construction within the roadway R/W would be coordinated with the FDOT. The proposed roadway improvements can be accomplished without Section 4(f) involvement at this location. Through mutual agreement, the sidewalk can be constructed within the roadway R/W either as part of the roadway project, or as part of the park project, whichever is first implemented.

4.3.3 Natural and Biological Features

4.3.3.1 Wildlife and Habitat

The species that are federally listed by the U.S. Fish and Wildlife Service (FWS) as endangered (E) or threatened (T), and could possibly inhabit or migrate through the subject project or vicinity, include the bald eagle *Haliaeetus leucocephalus* (E), the wood stork *Mycteria americana* (E), the West Indian manatee *Trichechus manatus latirostris* (E), and the eastern indigo snake *Drymarchon corais couperi*(T).

The wood stork travels great distances from their rookeries to forage in wetlands. Areas with potential wood stork forage habitat may possibly exist in roadside swales, particularly around I-75. The wood stork's Core Foraging Area (CFA) is defined by the FWS as all potential foraging habitat within a 30 km (18.6-mile) radius of a rookery. The western portion of the Miami Gardens Drive project corridor is located within 30 km of wood stork rookeries in western Broward and Miami-Dade Counties (i.e., CFA). Therefore, there is a potential for the wood stork to be present in any potential foraging habitat along Miami Gardens Drive, and consideration for any loss of foraging habitat (wetlands) must be made. Based on project plans, no wetland impacts are anticipated. Therefore, no impact to the wood stork is anticipated.

No involvement and no impact are anticipated to the bald eagle, manatee or eastern indigo snake. Also, no impact is anticipated to any state-listed species.

4.3.3.2 Wetlands

The existing corridor crosses over Peter's Pike Canal and Red Road Canal, two primary drainage canals operated by Miami-Dade County DERM. Both canals pass under the roadway through culverts, and

will not be affected by the proposed action. Peter's Pike Canal is located along the section line corresponding with NW 77th Avenue. This is a steep sided canal with shoreline vegetation limited to upland and transitional weed species. The slopes below the top of bank may be considered jurisdictional. The 130-ft culvert has end walls of sloped concrete. As the original roadway was designed for the proposed lane addition, the proposed widening can be accommodated on the existing roadway surface without reconstructing or affecting the end walls at the culvert or the adjacent canal banks. The Red Road Canal, located along the west side of the NW 57th Avenue (project terminus), passes through a 200-ft pipe culvert under the intersection. No change is proposed at this location. Therefore, no wetland impacts to either canal are anticipated.

Roadside ditches are located on both sides of the project corridor at the western terminus of the study area. These narrow ditches support species such as cattails (*Typha* sp.), sawgrass (*Cladium jamaicense*), sedges (*Cyperus* sp.), torpedo grass (*Panicum repens*), duck potato (*Sagittaria lancifolia*) and primrose (*Ludwigia* sp.). Wetlands that are typically dominated by the exotic tree species *Melaleuca quinquenervia* are present on undeveloped areas around the western project terminus. The adjacent areas of former wetlands located north and south of the I-75 ramps have been filled and are currently under construction for residential and commercial land uses. Concern regarding potential wetland involvement in the project corridor area west of the NW 87th Avenue intersection has been eliminated by the recently completed safety operations project that added shoulders and left-turn lanes to the west and south legs of this intersection. Also, there is a separate project by others to widen NW 87th Avenue, including the south leg of this intersection, where wetlands are present. As currently designed, the proposed action does not propose any changes to the I-75 ramps or this western intersection that would affect wetlands. Therefore, no wetland involvement is anticipated.

4.3.3.3 Water Quality

The Biscayne Aquifer underlies all of Miami-Dade County. This aquifer is a designated Sole Source Aquifer, i.e., it is the sole or principal drinking water source for a populated area. Potable water is

supplied principally from the Northwest Well-field and the West Well-field. The established Protection Area of the Northwest Well-field is located several miles west of the subject project, the closest approach to the project being at US-27/Okeechobee Road. Another small well-field, North Miami Beach's Myrtle Grove Well-field, has three wells south of Miami Gardens Drive at approximately NW 30th Avenue, which is 2.7 miles from the eastern project terminus at NW 57th Avenue, and will not be affected.

The existing drainage system generally consists of a curb-and-gutter piped collection system connected to exfiltration drains within the existing right-of-way, and direct outflow of excess to the two canals that cross the corridor. Advance Notification of this project was provided to the U.S. Environmental Protection Agency (EPA) on June 1, 2004. A response letter dated June 30, 2004 from the EPA Region Four Sole Source Aquifer Coordinator indicated that the project is not anticipated to have any significant impact on the Biscayne Aquifer. This letter is on file at the FDOT District Six office.

Project implementation is anticipated to include improvements in the drainage and stormwater management system to accommodate the proposed increase in impervious area. The proposed stormwater facility design will include, at a minimum, the water quantity requirements for the water quality impacts as required by the current Miami-Dade County Code (Chapter 24, Section 24-58) and/or South Florida Water Management District rules (Chapters 40E-4, 40E-40 and 63-302, F.A.C). Therefore, no further mitigation for water quality impacts will be needed. The Water Quality Impact Evaluation (WQIE) of the project is on file at the FDOT District Six office.

To control the effects of stormwater runoff during construction, a Storm Water Pollution Prevention Program (SWPPP) will be incorporated into the project, as required by the FDEP National Pollutant Discharge Elimination System (NPDES) permit. In the event that any hazardous materials or suspected contamination is encountered during construction, or if any spill of hazardous materials occurs during construction, the contractor will stop work immediately and notify the FDOT Construction Project Manager who will coordinate any needed actions with the FDOT District Six office.

4.3.3.4 Contamination

Examination of the project corridor for potential contamination concerns resulted in discovery of a total of 53 sites of potential contamination concern. Ten (10) sites were rated as high risks and two (2) sites were rated as medium risks to the project. The ten high risk sites are listed below:

1. Oshmar, Inc. d/b/a Dry Clean USA, 8633 NW 186th Street, DERM File # 6269
2. Superstar Cleaners, 7628 NW 186th Street, DERM File # 2617
3. Hess (gas station), 7550 NW 186th Street, DERM File # 16706
4. Miami-Dade County W&S pump station #416, 7301 NW 186th Street, DERM File # 9340
5. Vista Shell (gas station), 18421 NW 67th Avenue, DERM File # 8357
6. Dry Clean USA # 11201, 18468 NW 67th Avenue, DERM File # 3141
7. U-Gas (gas station), 18560 NW 67th Avenue, DERM File # 8183
8. Shell (gas station), 18255 NW 57th Avenue, DERM File # 7064
9. Chevron (gas station) # 202-689, 18305 NW 57th Avenue, DERM File # 15885
10. 7-Eleven Food Store # 10581(gas station), 5601 NW 183rd Street, DERM File # 7151

Also, the two medium risk sites are listed below:

1. Miami-Dade County P&RD-Country Club of Miami, 6801 NW 186th Street, DERM File # 4356
2. D'Dago, Inc. d/b/a Unicorn Dry Cleaners, 5830 NW 183rd Street, DERM File # 15127.

There are minor comparative differences between the two build alternatives in relation to contamination risks at the first four high risk sites listed above, as the outside travel lane of Build Alternative 4 would be located approximately six (6) ft closer to these four sites as compared with the outside lane of Alternative 3. This minimal difference did not affect the high risk ratings at any of the four

contamination sites.

Another 35 sites were rated as low risks to the project. These low risk sites either currently have, or have had, some involvement with hazardous materials, but no project involvement with contamination is anticipated. The remaining six (6) sites were rated as posing no risks to the project.

4.3.3.5 Floodplains

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Community Panels 12025C0075J and 12025C0080J, (revised March 2, 1994), the project corridor is entirely situated within the 100-year flood plain, as is a large surrounding area. The project corridor is located within Zone AH (base flood elevation determined, 7 ft). There is no involvement with regulatory floodways in Miami-Dade County.

5.0 DESIGN CONTROLS AND STANDARDS

5.1 STANDARD REFERENCES

Alternative design concepts will be prepared consistent with the current edition of the following publications:

- Roadway Design Geometrics and Criteria found in Volume I, *Plans Preparation Manual*, FDOT
- A Policy on the Geometric Design of Highways and Streets, AASHTO
- A Policy on the Design of Urban Highways and Streets, AASHTO
- AASHTO Standard Specifications for Highway Bridges
- Manual on Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways, State of Florida
- Manual on Uniform Traffic Control Devices (MUTCD), Federal Highway Administration
- Highway Capacity Manual (HCM), Transportation Research Board
- Drainage Manual, FDOT
- Structures Design Guidelines, FDOT
- FDOT Standard Specifications for Road and Bridge Construction
- Roadway and Traffic Design Standards, FDOT
- Florida Intrastate Highway System Standards, FDOT

5.2 DESIGN CRITERIA

The guidelines and specifications set forth in the standard references will be used to establish design controls that apply to the proposed project and all design standards to be used in the development of the design alternatives. Design controls and standards to be followed are summarized in Table 5.1.

Table 5.1
Roadway Design Controls and Standards

Design Criteria	Roadways
Functional Classification	Principal Arterial
Access Classification	Access Class 3
Design Speed	45 mph
Posted Speed	40 mph
Basic Number of Travel Lanes	6 lanes
Lane Widths	11 feet
Pedestrian Requirements	5 feet min.
Horizontal Alignment	
Radius (min.)	694 feet
Superelevation (max.)	Reserve Crown (2%)
Clear Zone (min.)	4 feet (travel lane)
Curb Return	30 feet min.
Vertical Alignment	
Grades (max.)	3%
(min.)	0.3%
Sight Distance	275 feet (min)
Lighting	400 watts hps

Source: Standard References

6.0 TRAFFIC

A Design Traffic Technical Memorandum was prepared for this project to evaluate the existing (2004) and future (2028) traffic conditions of Miami Gardens Drive within the study area. The tasks performed as part of this traffic memorandum include collection of existing geometric field conditions and traffic signal timing data, development of the existing year (2004) model in the Synchro/Simtraffic micro-simulation traffic software and development of opening year and design year operational results as 2008 and 2028, respectively. The operational analysis included 8 signalized intersections and 7 arterial links. This section provides a summary of the findings documented in the traffic memorandum prepared by URS Corporation Southern and approved by FDOT. Refer to the traffic memorandum for detailed information regarding the traffic methodology and procedures implemented.

6.1 EXISTING TRAFFIC CONDITIONS

Miami Gardens Drive (MGD) is a multi-lane divided principal arterial located in northwest Miami-Dade County connecting I-75 on the west to US 1 (Biscayne Boulevard) on the east. Within the project limits, the corridor is a four-lane divided arterial. It widens to a six-lane divided cross-section just before and after its intersection with NW 67th Avenue and NW 57th Avenue. It should be noted that the analysis in this report has been revised to include the addition of an exclusive westbound through lane and an exclusive eastbound left-turn lane along MGD at the intersection of NW 87th Avenue. These improvements have been recently completed by FDOT. The adjacent major transportation facilities include the Homestead Extension of Florida's Turnpike (HEFT), the NW 199th Street corridor, and SR 826 (Palmetto Expressway).

The Miami Gardens Drive corridor within the study area includes eight signalized intersections. The corridor also has an emergency signal for the Palm Springs Fire Rescue Station. The eight signalized intersections along the corridor are as follows:

1. NW 87th Avenue
2. NW 82nd Avenue
3. NW 79th Avenue
4. West Oakmont Drive
5. NW 68th Avenue
6. Bob-O-Link Drive
7. NW 67th Avenue
8. NW 57th Avenue

Additionally, the Level of Service analysis consisted of the seven arterial links as follows:

1. NW 87th Avenue to NW 82nd Avenue
2. NW 82nd Avenue to NW 79th Avenue
3. NW 79th Avenue to West Oakmont Drive
4. West Oakmont Drive to NW 68th Avenue
5. NW 68th Avenue to Bob-O-Link Drive
6. Bob-O-Link Drive to NW 67th Avenue
7. NW 67th Avenue to NW 57th Avenue

The posted speed limit for Miami Gardens Drive within the study area is 40 mph.

6.1.1 Field Data

Data Collection

Two types of traffic data were collected along the study corridor; machine counts and peak hour intersection turning movement counts. The primary purpose of collecting existing traffic data and examining roadway characteristics is to validate the FSUTMS Model vehicular volumes as well as to

provide field information for the analysis of existing conditions. The traffic data collection and traffic analyses were performed in accordance with FDOT procedures.

Twenty-Four Hour Machine Counts

The traffic volumes were collected in the east-west directions along MGD for a period of seven consecutive days at 15-minute intervals. The seven-day counts were used to determine the peak time of traffic conditions during the week along the corridor. It was determined that the peak conditions prevail during the weekdays as oppose to during the weekend days. Therefore, the average of the three typical weekdays (Tuesday, Wednesday and Thursday) was used as the average directional daily traffic (ADT) volume for the analysis. The machine counts were taken at nine specific locations along the corridor. The machine counts were recorded during the months of March, April, May, and September 2004. The data collection had to be repeated at several locations due to adverse weather conditions, mechanical malfunction, and/or broken hoses. The machines recorded a variety of traffic information such as the traffic-volume, vehicle speed, vehicle classification, and vehicle gap at most of the count location.

Intersection Turning Movement Counts

Turning movement counts (TMCs) were collected at all eight of the signalized intersections during the AM and PM peak periods. The AM peak period was considered to be between 7:00 AM and 9:00 AM and the PM peak period was considered to be between 4:00 PM and 6:00 PM. The TMCs were collected between the third week of April 2004 and the second week of May 2004. The field data was collected using hand held data collectors from JAMAR Technologies. The field data was then downloaded in an electronic format using the Professional Engineers Traffic Reporting & Analysis (PETRA) software program. Comparisons were then made with the AM and PM peak hour TMCs and the twenty-four hour machine counts. The difference between the machine counts and the turning movement counts are in the range of approximately 8% to 12%.

6.2 MULTIMODAL TRANSPORTATION SYSTEM CONSIDERATIONS

Extensive bus service is provided within the study area by the Metro-Dade Transit Authority's Metrobus System. Metrobus transit routes and scheduling were obtained from the Miami-Dade County Transit Agency. There are 5 Metrobus routes that traverse the Miami Gardens Drive study area. Existing Metrobus routes within the study area are: Routes 83, 91, 175, 183, 282. Headways during the AM, Middy, and PM peak hours range from nine to thirty-four minutes.

6.3 TRAFFIC ANALYSIS ASSUMPTIONS

6.3.1 1999 Model Volumes

The Miami-Dade Planning Area Travel Demand Model was used to develop travel projections. The Miami-Dade model is based on the Florida Standard Urban Transportation Modeling Structure (FSUTMS). The model is recognized by FDOT and area Metropolitan Planning Organizations (MPOs) as one of the accepted travel demand modeling tools for the Miami-Dade region.

The Miami-Dade modeling network is specific to Miami-Dade County. It should be noted that the Miami-Dade MPO recently released updated socioeconomic data projections for the year 2000 Miami-Dade Planning Area Model validation and additionally for the years 2015 and 2030. These socioeconomic data projections precede the release of the MPO's updated travel demand model, due for release in early 2005. The modeling task for this project uses the year 1999 conditions.

The Model Conversion Factor (MOCF) of 0.99 was obtained from the FDOT Transportation Statistics Office database (2003 CD-ROM). The Peak Season Weekday Average Daily Traffic (PSWADT) volumes obtained from the model runs were adjusted by applying the MOCF. The AADT based on the

model output are estimated using the following formula:

$$\text{AADT} = \text{PSWADT} \times \text{MOCF}$$

The 1999 PSWADT and the AADT volumes estimated from the model output are shown in Exhibit 6.1.

The 1999 model generated AADT volumes were then projected to year 2004. The 2004 forecasted volumes were calculated by using the growth factor based on the base year (1999) and future year (2025) FSUTMS Model results. The model projected AADT for year 2004 are also shown in Exhibit 6.1.

The projected 2004 model volumes are compared against the machine counts and presented in Exhibit 6.2. The 'ratio' and numeric 'volume' differences between the data sets indicate that the only segment with significant amount (greater than 15%) of 'ratio' or 'volume' difference is between Bob-O-Link and NW 67th Avenue. The model underestimates the traffic in this segment not only for the base year but also for the future design year. The future AADT for this specific segment was adjusted by using a procedure similar to the Screenline Refinement Procedure. The calculation of the Screenline adjustment is presented in the Traffic Memorandum.

Exhibit 6.1

1999 and 2004 Model Volumes

Location	Direction	1999 PSWADT (vpd)	MOCF	1999 Directional Daily Volume (vpd)	1999 two-way AADT (vpd)	2004 Directional Daily Volume (vpd)	2004 two-way AADT (vpd)
1. MGD, west of NW 87 th Avenue	EB	18,200	0.99	18,000	36,600	18,500	38,100
	WB	18,800	0.99	18,600		19,600	
2. MGD, east of NW 87 th Avenue	EB	14,100	0.99	14,000	27,900	14,500	29,100
	WB	14,000	0.99	13,900		14,600	
3. MGD, east of NW 82 nd Avenue	EB	14,200	0.99	14,100	28,600	14,700	30,000
	WB	14,600	0.99	14,500		15,300	
4. MGD, east of West Oakmont Dr.	EB	14,200	0.99	14,100	29,000	15,000	31,000
	WB	15,000	0.99	14,900		16,000	
5. MGD, east of NW 75 th Avenue	EB	12,800	0.99	12,700	26,100	14,600	30,100
	WB	13,500	0.99	13,400		15,500	
6. MGD, east of NW 68 th Avenue	EB	13,200	0.99	13,100	27,100	14,200	29,400
	WB	14,100	0.99	14,000		15,200	
7. MGD, east of Bob-O-Link Drive	EB	13,200	0.99	13,100	27,100	14,800	30,700
	WB	14,100	0.99	14,000		15,900	
8. MGD, east of NW 67 th Avenue	EB	17,800	0.99	17,600	35,100	18,500	37,100
	WB	17,700	0.99	17,500		18,600	
9. MGD, east of NW 57 th Avenue	EB	12,400	0.99	12,300	24,900	13,900	28,100
	WB	12,700	0.99	12,600		14,200	

Exhibit 6.2

Comparison of 2004 Daily Directional Volumes

Location	Direction	2004 Model Directional Daily Volume (vpd) (1)	2004 Directional Daily Machine Count (vpd) (2)	Ratio (1/2)	Difference (vpd) (1-2)
1. MGD, west of NW 87 th Avenue	EB	18,500	16,600	1.11	1,900
	WB	19,600	17,100	1.15	2,500
2. MGD, east of NW 87 th Avenue	EB	14,500	13,000	1.12	1,500
	WB	14,600	13,000	1.12	1,600
3. MGD, east of NW 82 nd Avenue	EB	14,700	15,700	0.94	-1,000
	WB	15,300	15,600	0.98	-300
4. MGD, east of West Oakmont Dr.	EB	15,000	15,700	0.96	-700
	WB	16,000	14,400	1.11	1,600
5. MGD, east of NW 75 th Avenue	EB	14,600	17,900	0.86	2,500
	WB	15,500	18,000	0.90	1,800
6. MGD, east of NW 68 th Avenue	EB	14,200	16,200	0.91	1,500
	WB	15,200	16,200	0.96	-700
7. MGD, east of Bob-O-Link Drive	EB	14,800	21,800	0.73	-5,800
	WB	15,900	21,000	0.80	-4,100
8. MGD, east of NW 67 th Avenue	EB	18,500	17,300	1.07	1,200
	WB	18,600	18,800	0.99	-200
9. MGD, east of NW 57 th Avenue	EB	13,900	13,500	1.03	400
	WB	14,200	12,900	1.10	1,300

6.3.2 Manual Adjustments of Model Volumes

Consistent with the 1999 model data, the 2025 model also underestimates the projected volumes for the segment between Bob-O-Link Drive and NW 67th Avenue. The highway network in the model reflects the exact field conditions including the six-lane cross section for this segment. Two of the most important parameters of the model are Area Type (AT) and Facility Type (FT). The model was run with AT and FT values of 31 and 25 respectively. Area Type 31 represents residential area of urbanized conditions while the Facility Type 25 represents Class II or III divided arterial. The AT of

the subject link was modified to the nearest higher category of the land-use, which is 'CBD Fringe' with a value of 21 and was found to have no impact on the results. Other potential reasons for the underestimation of the trips between Bob-O-Link and NW 67th Avenue may include:

- Lane geometry: The existing lane geometry shows that the subject segment is six-lanes, while it converges to four-lanes on both ends within a very short distance. Although the segment was coded as six-lane divided arterial, the projected traffic only feeds the four-lanes instead of the six-lane field conditions.
- Location: The study segment of MGD is near the Broward/Miami-Dade County line. Northwest 67th Avenue and NW 57th Avenue are two north-south roadways that connect both counties, and a significant amount of traffic uses both these roadways to travel in the north/south direction in this area. The South East Regional Planning Model (SERPM) used by Broward County has limited correlation to the Miami-Dade County Model. Hence, neither Model is sensitive enough to localized changes that occur in the other county, especially the changes that occur along the county line. The SERPM Model underestimates this segment volume by 5,000 vehicles in the westbound direction compared to the 2025 Miami-Dade Model.

Therefore, a procedure similar to the Screenline Refinement Procedure, outlined in the National Cooperative Highway Research Program Report 255, Highway Traffic Data for Urbanized Area Project Planning and Design, December 1982, was followed. The adjustment was made to the projected traffic volume to account for the error. According to the Screenline Procedure, two types of adjustments are possible; Ratio Adjustment and Difference Adjustment. The average of these two adjustments is used to calculate the adjusted volume for this particular link

A detailed calculation of the volume adjustment made by this procedure is presented in the Design Traffic Technical Memorandum.

6.3.3 2004 Annual Average Daily Traffic (AADT)

Based on the FDOT procedures outlined in the Project Traffic Forecasting Handbook, the Annual Average Daily Traffic (AADT) volumes can be determined from short-term traffic count data by applying correction factors, such as the Weekly Seasonal Correction Factor (SF) and the Axle Correction Factor (AF). The AADT volumes based on the ground counts were estimated using the following formula:

$$\text{AADT} = \text{ADT} \times \text{SF} \times \text{AF}$$

The AF and SF were obtained from the FDOT Transportation Statistics Office Database (2003 CD-ROM). The 2004 calculated 2-way AADT volumes are rounded to nearest hundredths.

6.3.4 Traffic Forecast Parameters (K_{30} , D_{30} and T_{24})

The K-factor is the proportion of peak hour volume to the daily traffic volume. The K-factor is critical in traffic forecasts because it defines the peak hour of the road use, typically the home based work trips.

According to the Project Traffic Forecasting Handbook, October 2002 (PTFH), K_{30} is the proportion of AADT volumes during the 30th highest hour of the design year and is used to determine the peak hour traffic volumes for design purposes.

The Directional Distribution Factor, or D-Factor, is the percentage of peak hour directional volume to two-way volume during the peak hour of the day. D_{30} is the percentage of traffic in the 30th highest hour of the design year traveling in the peak direction.

The values of K_{30} and D_{30} were obtained from the PTFH and the historic data contained in the

Transportation Statistics Office 2003 CD-ROM, respectively. Both the K_{30} and D_{30} factors were compared to the limits outlined in the PTFH. According to PTFH, the recommended K_{30} factors for any urban arterial ranges between 9.2% and 11.5% with an average value of 10.2%. The K_{30} at one of the count stations along the corridor (station # 2517 located at 200 feet west of NW 67th Avenue intersection along MGD) shows considerably low value (8.08%). The study corridor is located in a highly urbanized area. However, it was also agreed at the September 8th, 2004 monthly progress meeting that the K-factor value of 9.2%, identified in the PTFH, would be used for this study. Similarly, PTFH presents the range of D_{30} factors for an urban arterial. The value ranges between 50.8% and 67.1%. A D_{30} value at the same count station (station # 2517) is 53.5%, which is well within the limits identified in the PTFH and is acceptable for this study.

The T24-factor is the percentage of trucks or heavy vehicle in the traffic mix. It is the same as the 24T+B according to the Florida Annual Traffic Classification Report. The 24T+B includes the adjusted annual 24-hour percentage of trucks (FHWA Vehicle Classifications 4 through 13) and buses. The T24-factor is assumed to remain constant over time. The T24-factor at the nearest count station (station # 2517) is considerably higher (5.81%) compared to the ground count data. One logical explanation could be that in the year 2003, when the count station #2517 data was collected, there were several construction projects within the study area that may have generated a significant amount of truck traffic. Therefore, the field machine count data was used for calculating the T-factor for the study corridor.

6.4 EXISTING TRAFFIC VOLUMES

6.4.1 2004 Directional Design Hourly Volume (DDHV)

The K_{30} and D_{30} factors identified in the previous section are used in the development of the Design Hour Volumes (DHV) and the Directional Design Hour Volumes (DDHV). The (two-way) DHV and

the DDHV are calculated using the following formulas:

$$DHV = 2\text{-way Daily Volume} \times K_{30}$$

$$DDHV = DHV \times D_{30}$$

The year 2004 (Base Year) and year 2008 (Opening Year) DDHV are presented in Exhibit 6.3.

Exhibit 6.3

Base Year (2004) and Opening Year (2008) DDHV

Location	Direction	K ₃₀	D ₃₀	2004 Directional Daily Volume (vpd)	2004 DDHV (vph)	2008 DDHV (vph)
1. MGD, west of NW 87 th Avenue	EB	9.2%	53.5%	16,600		
	WB	9.2%	53.5%	17,100	1,658	1,717
2. MGD, east of NW 87 th Avenue	EB	9.2%	53.5%	13,000	1,279	
	WB	9.2%	53.5%	13,000		1,324
3. MGD, east of NW 82 nd Avenue	EB	9.2%	53.5%	15,700	1,540	
	WB	9.2%	53.5%	15,600		1,599
4. MGD, east of West Oakmont Dr.	EB	9.2%	53.5%	15,700	1,481	
	WB	9.2%	53.5%	14,400		1,560
5. MGD, east of NW 75 th Avenue	EB	9.2%	53.5%	17,900		
	WB	9.2%	53.5%	18,000	1,767	1,895
6. MGD, east of NW 68 th Avenue	EB	9.2%	53.5%	16,200		
	WB	9.2%	53.5%	16,200	1,594	1,663
7. MGD, east of Bob-O-Link Drive	EB	9.2%	53.5%	21,800	2,106	2,461
	WB	9.2%	53.5%	21,000		
8. MGD, east of NW 67 th Avenue	EB	9.2%	53.5%	17,300		
	WB	9.2%	53.5%	18,800	1,777	1,860
9. MGD, east of NW 57 th Avenue	EB	9.2%	53.5%	13,500	1,299	1,432
	WB	9.2%	53.5%	12,900		

The highest DDHV of 2,106 vehicles per hour (vph) for the base year and 2,461 vph for the opening year occurs on the segment of MGD between Bob-O-Link Drive and NW 67th Avenue in the eastbound direction. This segment has the highest concentration of traffic due to commercial developments on both sides of the roadway. It should also be noted that in some segments the directional traffic flow in the year 2008 switches from eastbound to westbound due to higher growth factors in the westbound direction.

6.5 TRAFFIC VOLUME PROJECTIONS

6.5.1 Design Year Traffic Projections

The opening year for this project is considered to be the year 2008. The directional design hourly volume (DDHV) for the opening year is presented in Exhibit 6.3. The design year for this project will be 20 years from the opening year, which is 2028. Again the Florida Standard Urban Transportation Model Structure (FSUTMS) developed specifically to cover the Miami-Dade County by the MPO (Metropolitan Planning Organization) was used to develop the traffic projections.

The Miami-Dade County MPO is currently working on the updates for Highway and Transit Network files for the 2030 model. Therefore, the 2025 Miami-Dade Model (also known as the 2025 Cost Feasible Plan Model) was used for the traffic projections. The socio-economic data files (ZDATA 1 through 4) as well as other input files for the 2025 Cost Feasible Plan was obtained from the Miami-Dade MPO. The socio-economic data files (ZDATA 1 through 4) were not modified for the analysis. However, the Highway and Transit Network files for the same 2025 Model were revised to incorporate the updates or changes listed in the 2025 Long Range Transportation Plan (LRTP) and in the Draft 2005 Transportation Improvement Program (TIP), published on February 5, 2004. However, few of the major updates are listed below:

Network Updates:

- Revised SR 836/SR 826 Interchange;
- Revised SR 874/Florida's Turnpike Interchange;
- Revised Iron Triangle Area vicinity (SR 112/Lejeune Interchange);
- Revised the roadway network in the Miami International Airport and MIC-MTAR area vicinity;
- Revised SR 836/Lejeune Interchange.
- Revised Metrobus, Metrorail and Metromover route network based on the list published in the People's Transportation Plan.

6.5.2 Future Daily Volume (PSWADT and AADT)

The 2025 Model output results are presented in the Design Traffic Technical Memorandum. The future AADTs were developed for both 2025 and 2028. The 2025 AADTs were developed using the procedures described in the previous sections, while the 2028 AADTs were extrapolated based on the straight-line projection from 1999 and 2025 Model results. The resulting 2028 AADT and the directional design hourly volumes are presented in Exhibit 6.4.

Exhibit 6.4

Design Year (2028) AADT Projection

Location	Direction	2025 PSWADT (vpd)	2025 Directional Daily Volume (vpd)	2025 two-way AADT	2028 Projected Directional Daily Volume (vpd)	2028 Projected AADT (vpd)
1. MGD, west of NW 87 th Avenue	EB	21,100	20,900	45,600	21,300	46,800
	WB	24,900	24,700		25,500	
2. MGD, east of NW 87 th Avenue	EB	17,100	17,000	35,000	17,300	35,800
	WB	18,200	18,000		18,500	
3. MGD, east of NW 82 nd Avenue	EB	17,400	17,200	36,200	17,600	37,200
	WB	19,200	19,000		19,600	
4. MGD, east of West Oakmont Dr.	EB	20,000	19,800	41,200	20,600	42,900
	WB	21,600	21,400		22,300	
5. MGD, east of NW 75 th Avenue	EB	20,000	19,800	41,200	20,800	43,400
	WB	21,600	21,400		22,600	
6. MGD, east of NW 68 th Avenue	EB	17,300	17,100	35,500	17,600	36,600
	WB	18,600	18,400		19,000	
7. MGD, east of Bob-O-Link Drive	EB	16,500	26,000*	55,100*	26,700	57,200*
	WB	17,900	29,100*		30,500	
8. MGD, east of NW 67 th Avenue	EB	22,800	22,600	46,800	23,300	48,400
	WB	24,400	24,200		25,100	
9. MGD, east of NW 57 th Avenue	EB	23,600	23,400	46,900	25,200	50,500
	WB	23,700	23,500		25,300	

* - Volume adjusted by following a procedure similar to the Screenline Refinement Procedure

6.6 LEVEL OF SERVICE

6.6.1 Operational Analysis Summary

This section presents the analysis results by the future year conditions. Exhibit 6.5 through Exhibit 6.8 should facilitate the comparison of the different alternatives. Per FDOT staff directions, the allocated signal timing on the northbound and southbound approaches along NW 57th Avenue were not modified. The eastbound and westbound left-turn lanes along MGD at its intersection with NW 57th Avenue

require additional green time to reduce conflicts with through traffic. Additional green time was assigned to the left-turn movements from the eastbound and westbound through movements during the optimization process. The northbound and southbound approaches at this intersection have unused allocated green time (i.e., excess green time.) This time could be reallocated to the eastbound and westbound approaches to improve traffic operations at this intersection.

Exhibit 6.5

Comparison of Opening Year (2008) Intersection LOS

	Intersection	No-Build ALT 1 AM (PM)	TSM ALT 2 AM (PM)	Partial Six- Lane ALT 3 AM (PM)	Complete Six-Lane ALT 4 AM (PM)
1	MGD @ NW 87 th Avenue	F (F)	F (F)	F (F)	F (F)
2	MGD @ NW 82 nd Avenue	D (F)	D (F)	D (F)	D (E)
3	MGD @ NW 79 th Avenue	E (F)	E (F)	E (F)	C (D)
4	MGD @ West Oakmont Drive	B (B)	B (B)	B (B)	A (A)
5	MGD @ NW 68 th Avenue	D (E)	C (D)	C (D)	C (C)
6	MGD @ Bob-O-Link Drive	D (F)	D (E)	C (C)	C (C)
7	MGD @ NW 67 th Avenue	F (F)	F (F)	F (F)	F (F)
8	MGD @ NW 57 th Avenue	E (F)	E (F)	F (F)	F (F)

Exhibit 6.6

Comparison of Opening (Year 2008) Arterial LOS

	Arterial	Dir.	No-Build ALT 1 AM (PM)	TSM ALT 2 AM (PM)	Partial Six- Lane ALT 3 AM (PM)	Complete Six-Lane ALT 4 AM (PM)
1	Between NW 87 th Ave and NW 82 nd Ave	EB	C (F)	B (F)	B (F)	B (B)
		WB	E (E)	D (C)	D (C)	D (C)
2	Between NW 82 nd Ave and NW 79 th Ave	EB	E (F)	E (F)	E (F)	D (E)
		WB	D (F)	D (F)	D (F)	C (F)
3	Between NW 79 th Ave and W. Oakmont Drive	EB	B (B)	B (B)	B (B)	B (B)
		WB	F (F)	F (F)	F (F)	D (E)
4	Between W. Oakmont Drive and NW 68 th Ave	EB	D (E)	B (C)	B (C)	A (B)
		WB	A (A)	A (A)	A (A)	A (A)
5	Between NW 68 th Ave and Bob-O-Link Dr.	EB	F (D)	E (C)	D (C)	D (D)
		WB	F (F)	D (E)	D (C)	D (D)
6	Between Bob-O-Link Dr. and NW 67 th Avenue	EB	F (F)	F (F)	F (F)	F (F)
		WB	E (F)	E (F)	D (E)	D (E)
7	Between NW 67 th Ave and NW 57 th Avenue	EB	C (C)	C (E)	C (E)	C (E)
		WB	C (C)	E (C)	F (D)	F (D)
8	Between NW 87 th Ave and NW 57 th Avenue	EB	D (F)	D (F)	D (F)	D (E)
		WB	D (F)	E (E)	E (E)	E (D)

Exhibit 6.7

Comparison of Design Year (2028) Intersection LOS

	Intersection	No-Build ALT 1 AM (PM)	TSM ALT 2 AM (PM)	Partial Six- Lane ALT 3 AM (PM)	Complete Six-Lane ALT 4 AM (PM)
1	MGD @ NW 87 th Avenue	F (F)	F (F)	F (F)	F (F)
2	MGD @ NW 82 nd Avenue	F (F)	F (F)	F (F)	E (F)
3	MGD @ NW 79 th Avenue	F (F)	F (F)	F (F)	F (F)
4	MGD @ West Oakmont Drive	F (C)	F (C)	F (C)	C (B)
5	MGD @ NW 68 th Avenue	F (F)	E (F)	E (F)	D (D)
6	MGD @ Bob-O-Link Drive	F (F)	F (F)	F (D)	F (D)
7	MGD @ NW 67 th Avenue	F (F)	F (F)	F (F)	F (F)
8	MGD @ NW 57 th Avenue	F (F)	F (F)	F (F)	F (F)

Exhibit 6.8

Comparison of Design Year (2028) Arterial LOS

	Arterial	Dir.	No-Build ALT 1 AM (PM)	TSM ALT 2 AM (PM)	Partial Six- Lane ALT 3 AM (PM)	Complete Six-Lane ALT 4 AM (PM)
1	Between NW 87 th Ave and NW 82 nd Ave	EB	F (F)	F (F)	F (F)	D (F)
		WB	E (F)	D (F)	D (F)	D (F)
2	Between NW 82 nd Ave and NW 79 th Ave	EB	F (F)	F (F)	F (F)	D (F)
		WB	F (F)	F (F)	F (F)	E (F)
3	Between NW 79 th Ave and W. Oakmont Drive	EB	F (B)	F (B)	F (B)	C (B)
		WB	F (F)	F (F)	F (F)	F (F)
4	Between W. Oakmont Drive and NW 68 th Ave	EB	F (F)	D (F)	D (F)	B (B)
		WB	D (D)	C (D)	C (D)	A (A)
5	Between NW 68 th Ave and Bob-O-Link Dr.	EB	F (E)	F (E)	F (C)	F (C)
		WB	F (F)	E (F)	E (F)	D (D)
6	Between Bob-O-Link Dr. and NW 67 th Ave	EB	F (F)	F (F)	F (F)	F (F)
		WB	F (F)	F (F)	F (F)	F (F)
7	Between NW 67 th Ave and NW 57 th Ave	EB	C (C)	C (F)	C (F)	C (F)
		WB	F (D)	F (E)	F (F)	F (F)
8	Entire Corridor (Between NW 87 th Ave and NW 57 th Ave)	EB	F (F)	F (F)	F (F)	E (F)
		WB	F (F)	F (F)	F (F)	F (F)

6.7 CONCLUSION OF TRAFFIC MEMO

As evident from the traffic volumes obtained from the MGD Design Traffic Technical Memorandum, higher traffic volumes are expected along this corridor in the future years.

The No-Build Alternative has a degradation of LOS in the 2008 and 2028 future year conditions. As expected the TSM and Partial Six-Lane Alternatives do not provide significant improvement over the No-Build Alternative since these alternatives provide comparable lane configuration at the intersections. The Complete Six-Lane Alternative (Alternative 4) provides the most improvement when compared to the other alternatives. These improvements could be even more significant if the allocated signal time to the crossing streets could be redistributed based on the optimization of the system.

7.0 CORRIDOR ANALYSIS

7.1 EVALUATION OF ALTERNATIVE CORRIDOR

State Road 860 (Miami Gardens Drive) is the only major east/west route in northwest Miami-Dade County with access to I-75 and I-95. The continuing rapid rate of growth for residential and commercial development in this part of the county has contributed to a deteriorating roadway network. The need to upgrade this facility has been identified in the *Miami-Dade Transportation Plan to the Year 2030*. The consideration of developing any major roadway on a new corridor is severely limited by physical, environmental and economic constraints. The utilization of the existing roadway right-of-way makes the proposed improvements on the existing corridor the most reasonable choice.

The widening of Miami Gardens Drive on the existing alignment is consistent with Miami-Dade and FDOT current policy and represents the best measure to improve the safety and increase the capacity to the existing corridor. Therefore, it has been determined that Miami Gardens Drive is the only corridor feasible choice for this corridor.

8.0 ALTERNATIVE ALIGNMENT ANALYSIS

8.1 ALTERNATIVE 1 - NO-BUILD ALTERNATIVE

The No-Build alternative will involve maintaining the existing condition of Miami Gardens Drive from just west of NW 87 Avenue to NW 57 Avenue, with the addition of routine maintenance and isolated improvements. MGD will remain with its existing four-lane divided configuration. The combination of the lack of any capacity improvements and steadily increased traffic volumes will result in increased congestion, longer travel times for users and higher crash rates.

The No-Build alternative is not consistent with the Long Range Transportation Plan of Miami-Dade County, which specifies the widening of Miami Gardens Drive from four to six lanes. In addition, this alternative will not improve the emergency evacuation potential of the corridor.

The No-Build alternative has the advantage of no construction cost and minimal impacts to the natural environment. Negative physical and social impacts will occur due to increase congestion and degradation of this transportation link.

8.2 ALTERNATIVE 2 - TRANSPORTATION SYSTEM MANAGEMENT

Transportation System Management (TSM) alternatives typically improve the operating performance on an existing facility through a variety of techniques other than reconstruction. Techniques used involve smoothing traffic operations by coordinating traffic lights and enhanced pavement markings. Some examples of TSM objectives include improving the level of service of urban travel, reducing the occurrence of traffic accidents, and reducing automotive emissions and noise impacts. These techniques and objectives are part of all the proposed “build” alternatives. However, TSM improvements by itself will not improve the traffic operations in the area especially during the peak

hours. Therefore, the TSM alternative was dismissed as a feasible alternative.

8.3 ALTERNATIVE 3 – PARTIAL 6 LANE ALTERNATIVE

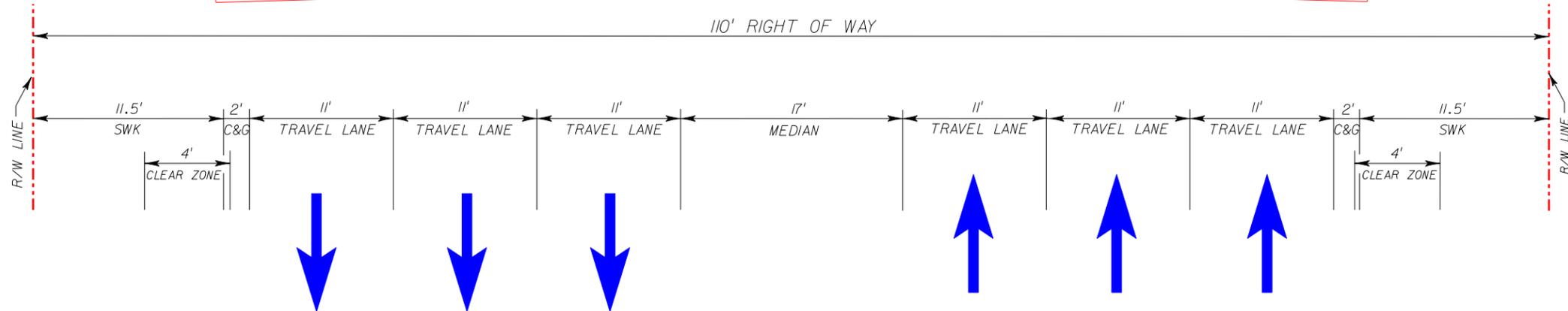
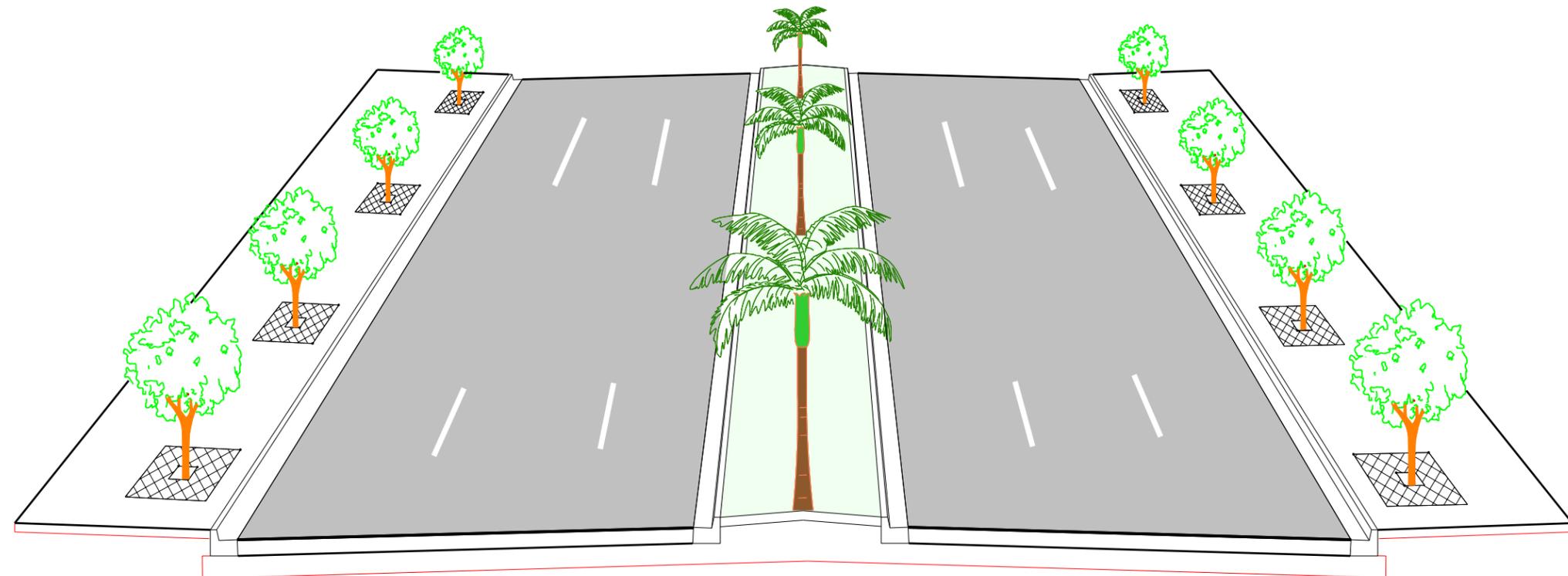
Alternative 3 proposes the widening of Miami Gardens Drive from four lanes to six lanes from NW 57th Avenue to approximately 600 feet west of Bob-O-Link Drive and constructing sidewalks along the north side of MGD where the sidewalks are currently discontinuous. It would also include landscaping improvements in area of the widening. Access management and TSM improvements will be incorporated through out the corridor. All improvements for this alternative will be done within the existing right-of-way. Exhibit 8.1 shows the proposed typical section for Alternative 3.

Even though a segment of MGD will be widened to six lanes, a major portion of the corridor will remain with its existing four-lane configuration. The combination of the lack of any capacity improvements on the western segment of the corridor where a steady increase in traffic volumes is anticipated will result in increased congestion, longer travel times for users and higher crash rates.

Alternative 3 is not consistent with the Long Range Transportation Plan of Miami-Dade County, which specify the widening of Miami Gardens Drive from four to six lanes. In addition, this alternative will not improve the emergency evacuation potential of the corridor.

8.4 ALTERNATIVE 4 – COMPLETE 6 LANE ALTERNATIVE

Alternative 4 proposes the widening of Miami Gardens Drive from four lanes to six from west of NW 87th Avenue to NW 57th Avenue. In addition to the roadway widening, this alternative proposes access management and TSM improvements, as well as the construction of continuous sidewalks, and landscaping improvements along the corridor. All improvements for this alternative will be done within the existing right-of-way.



Typical Section (110' ROW)
From West of Bob-O-Link Ave to NW 57 Ave

DATE: 8/1/18
SCALE: 1/8"=1'-0"



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PROJECT:

Miami Gardens Drive
Project Development & Environment Study

TITLE:

Alternative 3

EXHIBIT

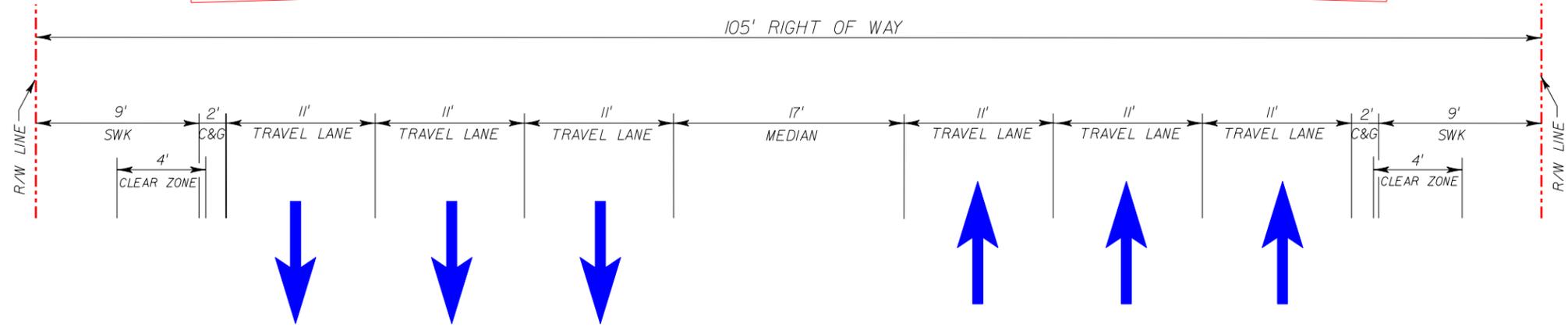
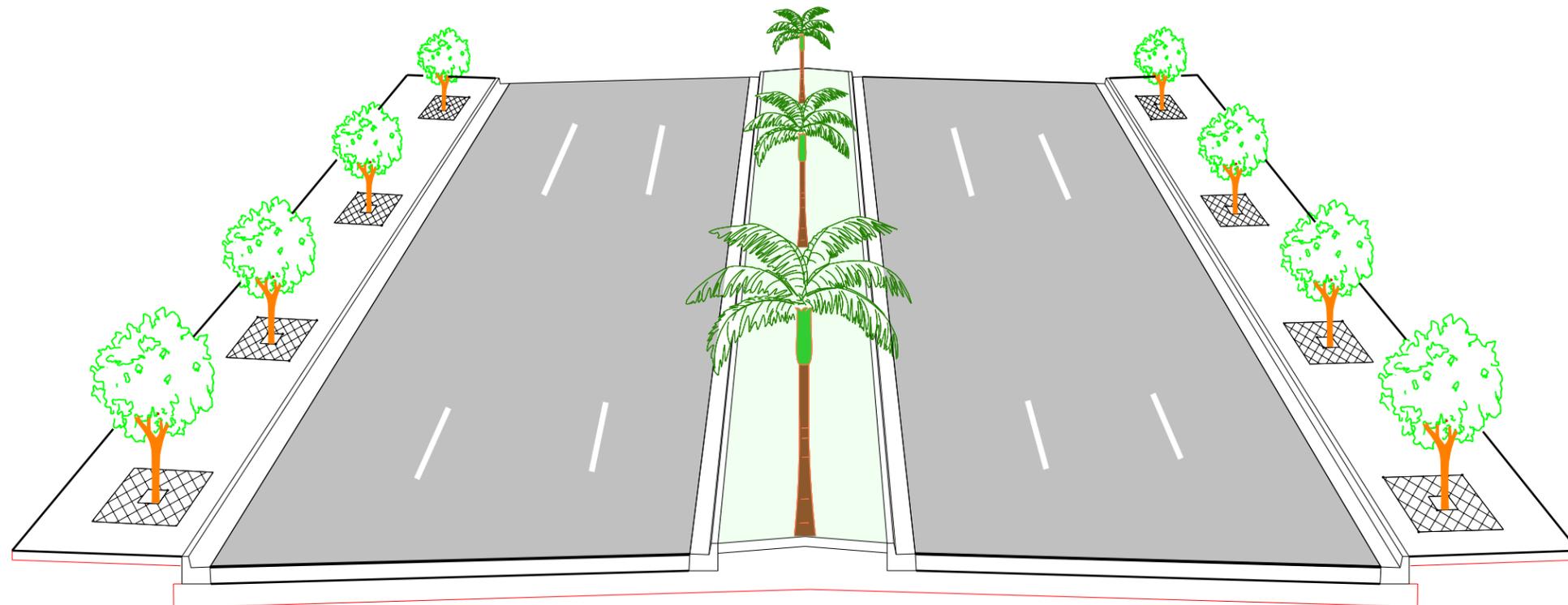
8.1

Two typical sections were developed for this alternative since the existing right-of-way varies from 105 feet to 110 feet within the project limits. Exhibit 8.2 shows the proposed typical section for the segment with 105 feet of right-of-way (from NW 87th Avenue to approximately 400 feet west of NW 77th Avenue). Exhibit 8.3 shows the proposed typical section for the segment with 110 feet of existing right-of-way (from approximately 400 feet west of NW 77th Avenue to NW 57th Avenue).

The alternative will significantly increase the capacity of the corridor which will result in decreased congestion, shorter travel times for users and a safer corridor. In addition, this alternative will improve the emergency evacuation potential of the corridor. Alternative 4 is consistent with the Long Range Transportation Plan of Miami-Dade County, which specifies the widening of Miami Gardens Drive from four to six lanes.

8.5 EVALUATION MATRIX

A comparative evaluation matrix has been prepared to compare the no-build alternative and the two build alternatives (see Exhibit 8.4). The factors considered in the evaluation matrix include the following: engineering impacts; socio-economic impacts; environmental impacts; and construction cost.



Typical Section (105' ROW)
From 87 Ave to West of NW 77 Ave

DATE: 8/15/18
SCALE: AS SHOWN



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PROJECT:

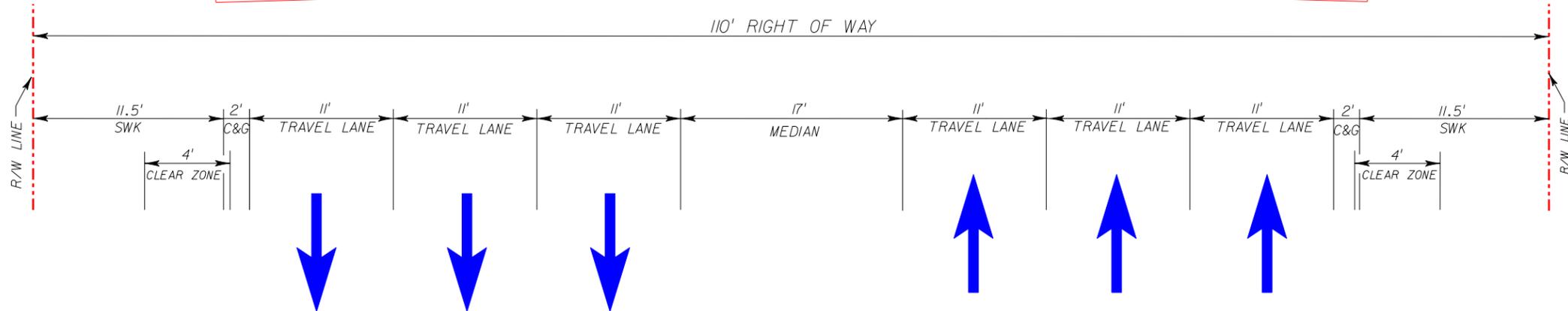
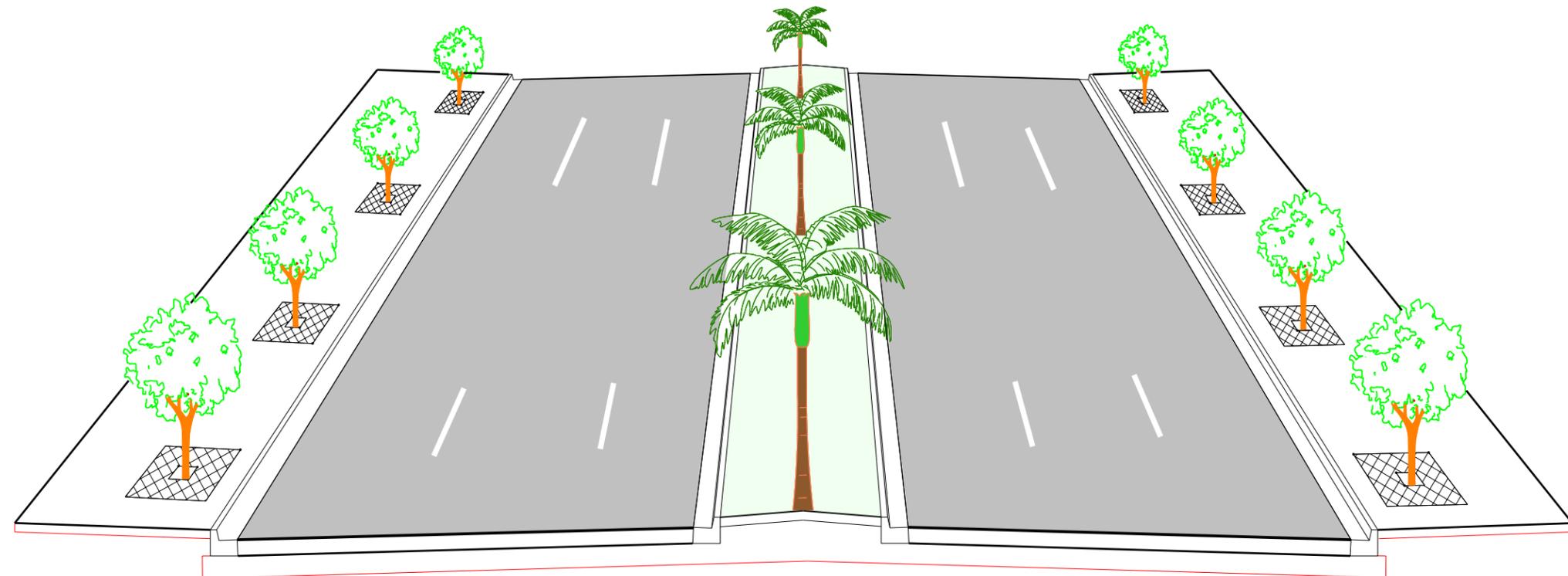
**Miami Gardens Drive
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TITLE:

Alternative 4

EXHIBIT

8.2



Typical Section (110' ROW)
From West of NW 77 Ave to NW 57 Ave

DATE: 8/1/13



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PROJECT:

Miami Gardens Drive
 Project Development & Environment Study

TITLE:

Alternative 4

EXHIBIT

8.3

Exhibit 8.4 Alternatives Evaluation Matrix

Parameter	Alternative		
	No Build	Partial 6-lane	Complete 6-lane
Transportation / Engineering	Alternative 1	Alternative 3	Alternative 4
Improves Traffic Capacity	LOW Congestion will increase	MODERATE Congestion will increase at the western segment	HIGH Congestion will decrease
Improves Vehicular Safety	LOW Safety will decrease as congestion increases	MODERATE Safety will decrease as congestion increases on western segment	HIGH Safety will increase as congestion decreases
Major Utility Impacts	LOW No impact to utilities	MODERATE Minimal impact to underground utilities during construction	MODERATE Minimal impact to underground utilities during construction
MPO Plan Conformance	LOW Does not conform to the MPO Plan	LOW Does not conform to the MPO Plan	HIGH Conforms to the MPO Plan
Environmental			
Contamination Impacts	LOW No risk of disturbing 12 contaminating sites	MODERATE Potential risk of impacting 12 contamination sites	MODERATE Potential risk of impacting 12 contamination sites
Noise Impacts	TBD	TBD	TBD
Air Quality Impacts	TBD	TBD	TBD
Socio-Economic			
Construction Impacts	LOW No construction impacts	MODERATE Construction impacts will be mostly on the eastern segment of the corridor	MODERATE Construction impacts are anticipated
Aesthetics	LOW Aesthetics of the corridor will remain as is.	MODERATE Landscape improvements are recommended for the eastern segment only	HIGH Landscape improvements are recommended for the entire corridor.
Construction Cost			
Roadway Construction Cost	LOW No expenditure of fund is required	MODERATE Expenditure of funds will be required to implement this alternative	MODERATE Expenditure of funds will be required to implement this alternative
Right-of-Way Cost	LOW No acquisition of right-of-way is required	LOW No acquisition of right-of-way is anticipated	LOW No acquisition of right-of-way is anticipated

8.6 PREFERRED ALTERNATIVE

Based on preliminary engineering and environmental evaluation, Alternative 4 – Complete 6-lane Widening was selected as the preferred alternative. This alternative meets the goals and objectives of the study, addresses the comments provided by the Project Advisory Group (PAG), and conforms to the local transportation plan.

9.0 PRELIMINARY DESIGN ANALYSIS

9.1 DESIGN TRAFFIC VOLUMES

A Design Traffic Technical Memorandum was prepared by URS Corporation Southern and approved by FDOT. The memorandum was prepared in accordance with the *Project Traffic Forecasting Handbook*.

The AADT and DDHV projections for the design year 2028 as well as the interim years 2008 and 2018 have been discussed in Section 6.0 of this report.

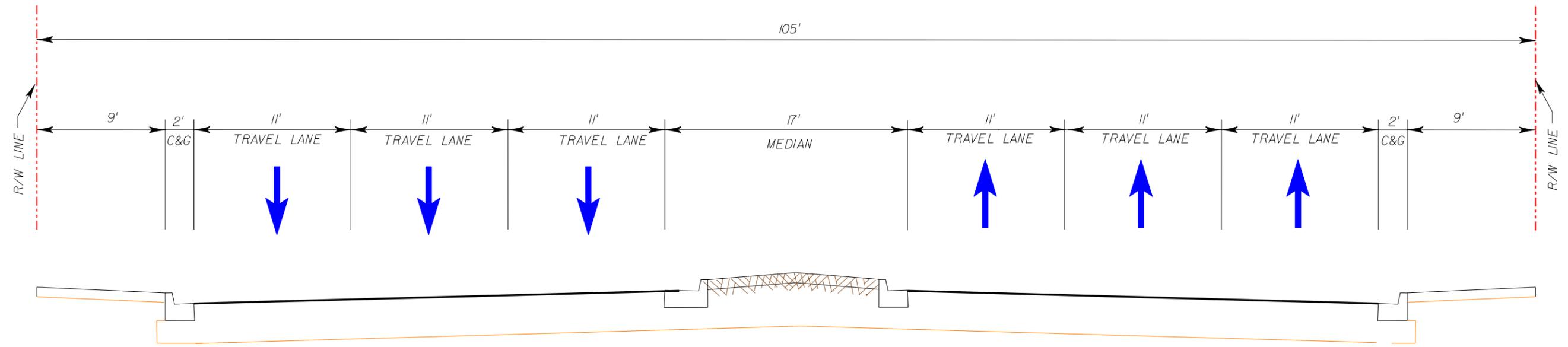
9.2 TYPICAL SECTIONS

The typical sections for the proposed improvements consist of a six-lane divided roadway within the existing 105 feet and 110 feet of right-of-way. Both typical sections propose three 11 ft. wide travel lanes in each direction, a 17 ft wide landscaped median with curb and gutter, and sidewalks on both sides of the roadway. The preferred typical section for the segment of the corridor with 105 ft of right-of-way and the segment with 110 ft of right-of-way are shown in Exhibits 9.1 and 9.2 respectively.

9.3 INTERSECTION CONCEPTS AND SIGNAL ANALYSIS

Miami Gardens Drive within the study limits has eight signalized intersections. The corridor also has an emergency signal for the Palm Springs Fire Rescue Station. The eight signalized intersections along the corridor are as follows:

1. NW 87th Avenue
2. NW 82nd Avenue
3. NW 79th Avenue
4. West Oakmont Drive



DATE



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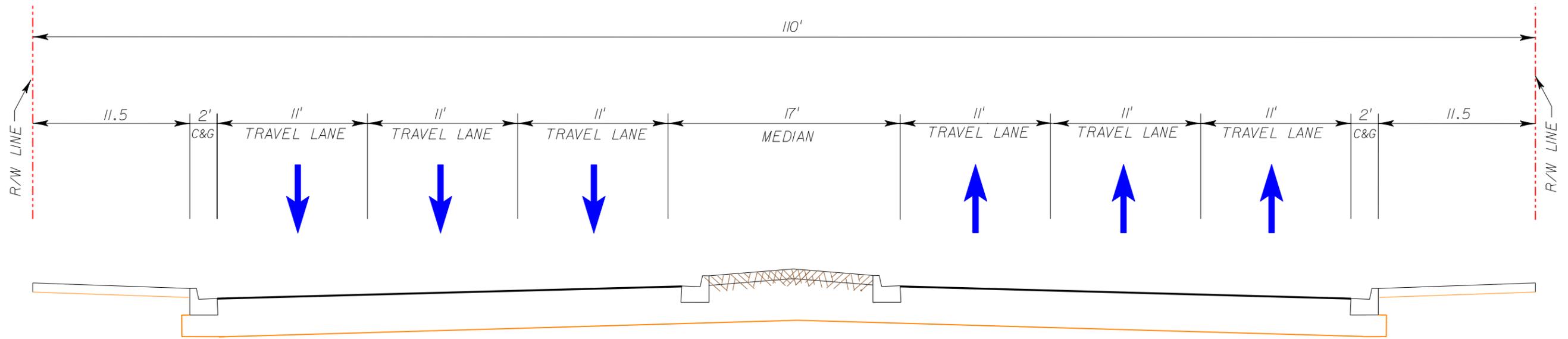
PROJECT:

**Miami Gardens Drive
 Project Development & Environment Study**

TITLE:

**Proposed Typical Section
 (105' Right of Way)**

DATE 09/20/04	PROJECT NO. 03201
DRAWN	SHEET NO. 9.1
CHECKED	
APPROVED	



DATE PLOTTED: 09/20/04



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PROJECT:

**Miami Gardens Drive
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TITLE:

**Proposed Typical Section
 (110' Right of Way)**

DATE 09/20/04	PROJECT NO. 03201
DRAWN	SHEET NO. 9.2
CHECKED	
APPROVED	

5. NW 68th Avenue
6. Bob-O-Link Drive
7. NW 67th Avenue
8. NW 57th Avenue

The traffic memorandum recommends signal timing optimization at all signalized intersections within the study limits. The Network Cycle Lengths and Network Offsets optimization tools from Synchro model were utilized to modify signal timings to provide better progression through the Miami Gardens Drive corridor.

Exclusive left turn lanes will be provided at intersections in accordance with the Access Management Plan prepared for this project. Length of tapers and storage lanes were developed according to the FDOT's Design Standards and based on the results of the traffic study. Intersection improvements are shown on the Concept Plans (see Appendix A). The intersection plan, shown on Exhibit 9.3, represents a conceptual layout of Miami Gardens Drive as a six-lane divided facility intersecting a two-lane minor arterial.

9.4 ALIGNMENT AND RIGHT-OF-WAY NEEDS

The proposed widening of Miami Gardens Drive to six lanes will be accomplished within the existing right-of-way. The improvements will generally follow the existing alignment. The proposed improvements recommend that the existing reverse curve between West Oakmont Drive and Bob-O-Link Drive be reconstructed with a reverse crown rather than the existing normal crown. A reverse crown at these curves will help driver's transitions in a safer manner.

9.5 RELOCATION

No residential or business relocations are anticipated for this project.



DATE
SHEET



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PROJECT:

**Miami Gardens Drive
 Project Development & Environment Study**

TITLE:

Intersection Layout

DATE 09/20/04	PROJECT NO. 03201
DRAWN	SHEET NO.
CHECKED	9.3
APPROVED	

9.6 RIGHT-OF-WAY COSTS

Since the proposed widening will be accomplished within the existing right-of-way, no right-of-way cost is anticipated for this project.

9.7 CONSTRUCTION COSTS

The construction cost for the proposed improvements was estimated using the FDOT Long Range Estimating System. The construction cost of widening Miami Gardens Drive from four to six lanes was estimated to be \$32.8 million dollars. This includes the noise wall construction estimate which was approximately \$12.4 million dollars.

9.8 PRELIMINARY ENGINEERING COSTS

Engineering costs associated with the proposed improvements were estimated to be \$4,920,000 for preliminary engineering (PE), \$8,200,000 for construction engineering and inspections (CE&I), and \$6,560,000 for administration. These costs were estimated by applying a percentage of the total construction cost (15% for PE costs, 25% for CE&I and 20% for administration).

9.9 RECYCLING OF SALVAGEABLE MATERIAL

The existing four-lane roadway will be reconstructed for the majority of the project length. Salvageable materials from the existing roadway will be used in the construction of the new roadway to the maximum extent permitted by the *Standard Specifications for Road and Bridge Construction* and as approved by the field engineer.

9.10 USER BENEFITS

The proposed widening of Miami Gardens Drive will increase capacity on the roadway network within the study area while reducing travel time, vehicle emissions, and fuel consumption. The improvements will also improve safety by reducing the potential for crashes, while making the corridor more user friendly and aesthetically pleasing.

9.11 PEDESTRIAN AND BICYCLE FACILITIES

To provide a safe facility for pedestrians, wide, continuous sidewalks and pedestrian crossings have been incorporated into the proposed roadway improvements. The project proposes 9 ft wide sidewalks on both sides of the roadway from NW 87th Avenue to west of NW 77th Avenue. From west of NW 77th Avenue to NW 57th Avenue, 11.5 ft wide sidewalk on both sides of the roadway are being proposed.

This project is not proposing dedicated bike lanes along the corridor because of the limited right-of way available. However, the proposed sidewalk widths provide an opportunity for recreational bikers to share the sidewalk with pedestrians. Bikers using the sidewalk should adhere to the safety standards outlined in Florida Statute 316.2065 – 11 (Bicycle Regulations). This Statute states that “a person propelling a bicycle upon and along a sidewalk, or across a roadway upon a crosswalk, shall yield the right-of-way to any pedestrian and shall give an audible signal before overtaking and passing such pedestrian”.

9.12 SAFETY

Many sections of Miami Gardens Drive are experiencing crash rates greater than state wide averages for similar facilities. Please refer to Section 4.1.9 of this report for additional information. If the No-Build alternative is selected, traffic volumes are projected to increase and crash rates will likely

increase. However, the proposed widening of Miami Gardens Drive to six lanes will significantly reduce traffic congestion and accident rates will likely be reduced.

9.13 ECONOMIC AND COMMUNITY DEVELOPMENT

Miami Gardens Drive within the project limits serves as a major connector between the residential areas on the west and the commercial uses on the eastern segments of the corridor. This roadway is also the main connector for commuters to I-75. Future traffic congestion on the corridor will create additional hardship on commuters attempting to gain access to their places of employment and homes as well as to motorist traveling to shopping areas, recreational attractions, and other community facilities. Increased congestion results in greater economic risks in term of lost work hours, and places greater safety risks on motorists which, in turn, lead to increased insurance and health cost.

9.14 ENVIRONMENTAL IMPACTS

9.14.1 Air Quality

Potential air quality impacts in the area surrounding the project corridor were assessed for all viable project alternatives in accordance with guidelines contained in Chapter 16 of the PD&E Manual. The project's No Build and build alternatives were analyzed using the FDOT's Carbon Monoxide (CO) Florida 2004 screening model, which is used to assess the potential for air quality impacts due to roadway traffic. Since CO is a localized pollutant that is emitted directly into the atmosphere by vehicles, it is analyzed for individual roadway projects where substantial changes to the traffic conditions are anticipated. The National Ambient Air Quality Standard (NAAQS) for CO is 35 parts per million (PPM) for one-hour periods and 9 PPM for eight-hour periods. The location within the project study area with the greatest potential for traffic-generated air quality impacts is the intersection of Miami Gardens Drive with NW 87th Avenue. This intersection was selected for analysis. Given the

local surroundings, a suburban land use type was selected as model input, which includes a background CO level of 3.3 PPM for one-hour predictions and 2.0 PPM for eight-hour predictions. The findings of the air quality CO screening analysis for this project indicate that the worst-case one-hour CO level is 11.8 PPM during the opening year and 9.2 PPM during the project's design year. The worst-case eight-hour CO level is estimated to be 7.1 PPM during the opening year and 5.5 PPM during the project's design year. These results indicate the proposed project is not expected to cause any exceedances of the one-hour or eight-hour NAAQS for CO. Furthermore, the project is only predicted to result in marginal increases in the CO level near this intersection. Thus, the project passes the CO screening analysis and air quality impacts resulting from the proposed project are not expected.

Construction activities will cause minor short-term air quality impacts in the form of dust from earthwork and unpaved roads and smoke from open burning. These impacts will be minimized by adhering to all State and local regulations and to the FDOT *Standard Specifications for Road and Bridge Construction*.

9.14.2 Noise

Traffic noise impacts associated with construction of the project are predicted to occur by the project's design year. 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 uses 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 benefited 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 331 sites with Build Alternative 4 for a cost of less than the FDOT cost guideline (\$35,000). A summary of the noise barriers proposed for further evaluation and figures illustrating the proposed noise barrier locations are contained in Noise Impact Report. These noise barriers will be further evaluated during the design phase of this project where specific dimensions and locations will be determined.

A noise barrier considered adjacent to the San Mateo condominiums was determined to exceed the FDOT cost guideline and will not be further evaluated during the design phase of this project. Also, it was not possible to provide effective noise abatement for homes in the Country Club of Miami Estates given the numerous driveways and side streets that provide access between this neighborhood and Miami Gardens Drive.

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 benefited 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.

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.

9.14.3 Water Quality

The Biscayne Aquifer underlies all of Miami-Dade County. This aquifer is a designated Sole Source Aquifer, i.e., it is the sole or principal drinking water source for a populated area. Potable water is supplied principally from the Northwest Well-field and the West Well-field. The established Protection Area of the Northwest Well-field is located several miles west of the subject project, the closest approach to the project being at US-27/Okeechobee Road. Another small well-field, North Miami Beach's Myrtle Grove Well-field, has three wells south of Miami Gardens Drive at approximately NW 30th Avenue, which is 2.7 miles from the eastern project terminus at NW 57th Avenue, and will not be affected.

The existing drainage system generally consists of a curb-and-gutter piped collection system connected to exfiltration drains within the limited-access right-of-way, and direct outflow of excess to the two canals that cross the corridor. Advance Notification of this project was provided to the U.S. Environmental Protection Agency (EPA) on June 1, 2004. A response letter dated June 30, 2004 from the EPA Region Four Sole Source Aquifer Coordinator indicated that the project is not anticipated to have any significant impact on the Biscayne Aquifer. This letter is on file at the FDOT District Six office.

Project implementation is anticipated to include improvements in the drainage and stormwater management system to accommodate the proposed increase in impervious area. The proposed stormwater facility design will include, at a minimum, the water quantity requirements for the water quality impacts as required by the current Miami-Dade County Code (Chapter 24, Section 24-58) and/or South Florida Water Management District rules (Chapters 40E-4, 40E-40 and 63-302, F.A.C). Therefore, no further mitigation for water quality impacts will be needed. The Water Quality Impact Evaluation (WQIE) of the project is on file at the FDOT District Six office.

To control the effects of stormwater runoff during construction, a Storm Water Pollution Prevention Program (SWPPP) will be incorporated into the project, as required by the FDEP National Pollutant Discharge Elimination System (NPDES) permit. In the event that any hazardous materials or suspected contamination is encountered during construction, or if any spill of hazardous materials occurs during construction, the contractor will stop work immediately and notify the FDOT Construction Project Manager who will coordinate any needed actions with the FDOT District Six office.

9.14.4 Contamination

This proposed project contains no known significant contamination. Significant contamination is defined as contamination that would meet the definition of hazardous materials (per 42 USC, Section 9601, et seq.) or hazardous waste (per 40 CFR, Part 261.3, et seq.) and be regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or the Resource Conservation and Recovery Act (RCRA). These two acts are administered by the U.S. Environmental Protection Agency (EPA). As of 2005, no National Priorities List (Superfund) sites were present. Note that contamination related to gasoline, diesel fuel or dry cleaning solvents is not regulated by CERCLA or RCRA.

The project corridor was examined for potential contamination concerns in accordance with Part 2, Chapter 22 of the PD&E Manual. A total of 53 sites of potential contamination concern were evaluated. The findings are contained in the Contamination Screening Evaluation Report (CSER) for this project, on file at the District Six office, and summarized herein. Ten (10) sites were rated as high risks and two (2) sites were rated as medium risks to the project, that is, there is some potential for contamination problems at these twelve sites with implementation of the project (Alternatives 3 & 4). The ten high risk sites are listed below:

1. Oshmar, Inc. d/b/a Dry Clean USA, 8633 NW 186th Street, DERM File # 6269
2. Superstar Cleaners, 7628 NW 186th Street, DERM File # 2617
3. Hess (gas station), 7550 NW 186th Street, DERM File # 16706
4. Miami-Dade County W&S pump station #416, 7301 NW 186th Street, DERM File # 9340
5. Vista Shell (gas station), 18421 NW 67th Avenue, DERM File # 8357
6. Dry Clean USA # 11201, 18468 NW 67th Avenue, DERM File # 3141
7. U-Gas (gas station), 18560 NW 67th Avenue, DERM File # 8183
8. Shell (gas station), 18255 NW 57th Avenue, DERM File # 7064
9. Chevron (gas station) # 202-689, 18305 NW 57th Avenue, DERM File # 15885
10. 7-Eleven Food Store # 10581(gas station), 5601 NW 183rd Street, DERM File # 7151

The two medium risk sites are listed below:

1. Miami-Dade County P&RD-Country Club of Miami, 6801 NW 186th Street, DERM File # 4356
2. D'Dago, Inc. d/b/a Unicorn Dry Cleaners, 5830 NW 183rd Street, DERM File # 15127.

There are minor comparative differences between the two build alternatives in relation to contamination risks at the first four high risk sites listed above, as the outside travel lane of Build Alternative 4 would be located approximately six (6) ft closer to these four sites as compared with the outside lane of Alternative 3. This minimal difference did not affect the high risk ratings at any of the four contamination sites.

Another 35 sites were rated as low risks to the project. These low risk sites either currently have, or have had, some involvement with hazardous materials, but no project involvement with contamination is anticipated. The remaining six (6) sites were rated as posing no risks to the project. These sites have either been documented as being fully remediated (clean), or were sites that merely handle sealed

hazardous materials, with no history of discharges or problems. The full list of low risk and no risk contamination sites is contained in the CSER.

Section 120 Excavation and Embankment – Sub article 120-1.2 Unidentified Areas of Contamination of the Standard Specifications for Road and Bridge Construction is provided in the project’s construction contract documents. This specification requires that in the event that any hazardous material or suspected contamination is encountered during construction, or if any spills caused by construction-related materials should occur, the contractor shall be instructed to stop work immediately and notify the District Six Environmental Management Office as well as the appropriate regulatory agencies for assistance.

In case of a chemical spill on the roadway, the FDOT maintains a contract for emergency response and remediation on any of the State roads. In addition, local first response agencies such as the Miami-Dade County Fire Department and Miami-Dade County Department of Environmental Resources Management (DERM) have established emergency response mechanisms, which are put into immediate action in the event of a chemical spill.

9.14.5 Wildlife and Habitat

In accordance with Section 7c of the Endangered Species Act of 1973 (ESA), an Endangered Species Biological Assessment (ESBA) was prepared for the proposed project and is available for review at the FDOT District Six office.

Urbanization has significantly altered and degraded any natural wildlife habitats. The project corridor no longer contains undisturbed native upland or wetland habitats. The few scattered, small areas of vacant land interspersed within the developed areas provide isolated, poor quality sites for potential wildlife utilization. The golf course water hazards and drainage ditches provide some forage habitat for the state-protected wading birds. No upland habitats considered critical for any threatened or

endangered species exist within the project study area. However, many square miles of conservation land and vacant land exist beyond the western limit of the project corridor, in the Lake Belt Region wetlands, the Pennsuco wetlands, and Water Conservation Area 3 (WCA-3), which buffer the Everglades. These areas may provide suitable habitat for the avian and reptilian species of concern.

9.14.6 Construction Considerations

Construction activities for the proposed project may generate air, noise, vibration, water quality, and visual impacts of a temporary nature for those businesses and travelers within the immediate vicinity of the project. The air quality impacts will consist of emissions from diesel powered construction equipment and dust from embankment and haul road areas. Air pollution associated with the creation of airborne particles will be effectively controlled through use of watering or the application of calcium chloride in accordance with the most recent edition of the FDOT *Standard Specifications for Road and Bridge Construction*, as directed by the FDOT Project Manager. Noise and vibration impacts will be from the heavy equipment movement and construction activities such as pile driving and vibratory compaction of the base. These impacts will be minimized by adherence to noise control measures contained in the FDOT *Standard Specifications for Road and Bridge Construction* and through use of Best Management Practices.

Construction of the roadway may require excavation of unsuitable material and use of materials such as limerock, asphaltic concrete, and portland cement concrete. Temporary erosion control features as specified in Section 104 of the FDOT *Standard Specifications for Road and Bridge Construction*, latest edition, will consist of measures such as temporary grassing, sodding, mulching, sandbagging, slope drains, sediment basins, sediment checks, artificial coverings, and berms.

The project will include a Traffic Control plan. The local news media will be notified in advance of road closings and other construction-related activities that could excessively inconvenience the community so that persons conducting business in the affected area can plan travel routes in advance.

Signs providing the name, address, and telephone of a Department contact person will be displayed on-site to assist the public in obtaining immediate answers to questions and logging complaints about project activity. Access to businesses will be maintained in a practical manner as dictated by the construction phases. Best Management Practices will be implemented in all phases in order to satisfy permit requirements and minimize secondary construction impacts.

9.15 UTILITY IMPACTS

A utility assessment package was prepared for this project. Major utility companies with facilities within the roadway right-of-way were notified of the proposed improvements. The utility coordination package included aerials with right-of-way lines and stationing numbers. The following agencies responded by providing marked up aerials with the approximately location and description of existing utilities that could be affected by the proposed improvements: Everglades Pipeline, Florida Power & Light Company, and Comcast Cable. During the design phase of this project, measures should be taken to minimize the utility impacts. Utility relocation costs associated with this project will be determined during the design phase.

9.16 TRAFFIC CONTROL PLAN

The proposed improvements to Miami Gardens Drive will require reconstruction of the existing median and widening of travel lanes to the outside of the existing alignment. A combination of temporary lanes shifts and temporary concrete barrier walls can be used to isolate the work area while maintaining four lanes of traffic. Milling and resurfacing of the existing four lanes, to achieve the correct roadway cross slope, can be done as a continuous “rolling” operations during of-peak hours, keeping inconvenience to the traveling public and business in the area to a minimum.

9.17 RESULTS OF PUBLIC INVOLVEMENT PROGRAM

A public involvement program was established for this project. The program included:

- Preparation of an Advanced Notification to solicit agency comments
- Kick-off Meeting - to inform federal, state and local agencies and organizations as well the community in general about the scope of the study
- Public Advisory Group Meetings – two meetings were held to inform representatives of the residential and business communities of the progress of the study
- Alternative Public Meeting - to obtain public comments on the alternatives developed and select the preferred alternative
- Public Hearing – to obtain public input on the preferred alternative

9.17.1 Advanced Notification

An Advanced Notification (AN) Package was submitted to government agencies and elected officials on April 2004. Responses were received from 15 agencies. The agencies that responded and provided comments include: US Department of Commerce – National Marine Fisheries Services, US Department of Interior – Fish and Wildlife Services, US Environmental Protection Agency, Florida Department of Environmental Protection, South Florida Regional Planning Council, South Florida Water Management District, Miami-Dade Commission – District 13, Miami-Dade County DERM, Miami-Dade County Planning and Zoning, Miami-Dade County Public Works, Miami-Dade County MPO, Miami-Dade County Water & Sewer, Miami-Dade County Parks and Recreation, and Miami-Dade County Office of Emergency Management

9.17.2 Kick-off Meeting

The kick-off meeting was held on June 16, 2003 at 6:00 pm at the American Senior High School Auditorium in Miami, Florida. The purpose of the meeting was to inform the community, as well as elected and appointed officials of the project scope and to receive their comments. Members and/or representatives from the Honorable Rafael Arza (Florida House Representative) office, Community Council # 5 and the Moors Homeowners Association were in attendance.

9.17.3 Public Advisory Group Meetings

Two Public Advisory Group (PAG) meetings were held for this project. The advisory group consisted of representatives of the residential communities and businesses in the area. The first meeting was held on March 3, 2005 at the Miami Lakes Community Center. In attendance at the meeting were Richard Friedman, William Hicks and Paul O'Dell all members of the Miami-Dade Community Council # 5. Also attending were Ana O'Dell member of Country Club of Miami Homeowners Association and Segundo Perez from State Representative Rafael Arza's office. A PowerPoint presentation detailing the possible solution available for the corridor and results of the traffic study (existing conditions) were shown to members. The following is summary of the discussions that took place at the meeting.

- Common concerns among attending PAG members were:
 1. Overall character of the area (would like to maintain a consistent beautification of the corridor) – PAUL FRIEDMAN
 2. The quality of life after projected improvements– PAUL FRIEDMAN
 3. Speed of traffic and traffic flow - PAUL O'DELL
 4. Noise privacy - PAUL O'DELL
- Members of the PAG mentioned their disbelief in FDOT finding ample space to do the roadway improvements projected for the corridor. Andre Goins, P.E. explained that though hard to visualize there are many examples of existing intersections engineered like the

alternatives projected. Example given was the intersection of SW 137 Avenue and SW 152 Street.

- The status of the Noise Study is still ongoing.
- Mrs. Ana O’Dell, board member of the Country Club of Miami Estates, wondered about the landscape on the medians. Juan Espinosa, P.E., stated that this all depends on the needs and wants of the community. Whether it is bigger sidewalks or trees in the medians, there has to be a compromise. Mr. Segundo Perez, Representative of Honorable Rafael Arza’s Office, mentioned that the corridor is heavily used by pedestrians.
- Mr. Friedman expressed concerns regarding the stacking of cars at entrances to apartment buildings between Bob-O-Link and NW 82 Avenue. Mr. O’Dell reinforced this by mentioning the back-ups on the intersection of NW 87 Avenue and Miami Gardens Drive from traffic attempting to access I-75. He brought to light the amount of communities being built south of the intersection and how this is a major factor in the assessments of the study. Most of the mentioned problem areas were visualized in the PowerPoint presentation of the Traffic Study analysis presented by Mr. Shanmugam, P.E. and Mr. Masood, E.I. of URS Corporation.
- During the Traffic Study PowerPoint presentation, trouble spots were immediately obvious. Some of these are listed below:
 1. Intersection of NW 67 Avenue and Miami Gardens Drive – Broward traffic using Miami Gardens Drive to access I-75 – Mr. Perez.
 2. Back-up created by parents/students in front of American Senior High School, NW 67 Avenue and Miami Gardens Drive – Mr. Friedman.
- Mr. O’Dell suggested that FDOT solicit the assistance of the Police Department to control traffic. Mr. Goins, P.E., replied that law enforcement has made itself available as much as possible and that a call from local residents will carry more weight than from FDOT.

The second meeting was held on May 25, 2005 at the Miami Lakes Community Center. In attendance at the meeting was Richard Friedman from the Miami-Dade Community Council # 5. A PowerPoint

presentation detailing the results of the traffic study (future conditions) was shown. The following is summary of the discussions that took place at the meeting.

- The intersections of NW 87 Avenue, NW 67 Avenue, and NW 57 Avenue with Miami Gardens Drive are the problem intersections.
- Mr. Richard Friedman mentioned that the traffic back-up on the intersection of NW 67 Avenue and Miami Gardens Drive caused by American High School students being dropped-off in the mornings is an issue that must be resolved. He will take this up the School Board on what can be done to remedy this problem.
- Each alternative was simulated in the presentation shown by URS Corporation with the projected traffic capacity of the year 2028. The alternatives are: Alternative 1 – No build, Alternative 2 – TSM improvements on the corridor, Alternative 3 – partial six-lane, and Alternative 4 – six-lane improvement to the entire corridor.
- Mr. Richard Friedman expressed that the Miami Gardens Drive community will become more of a multi-complex community rather than single family residential as per the developments in planning at the moment between NW 68 Avenue and NW 67 Avenue.
- Mr. Raj Shanmugam, P.E. made suggestions to Mr. Richard Friedman regarding possible ways to improve transportation which the community can push for local government to activate. Programs suggested were: Staggered Work Time (an agreed time of business operation to spread the commuting); Share Vehicle program; and Transportation Management Organization.
- Mr. Kevin Mullen, CES, brought up that the Miami Gardens Drive corridor was designed with a six-lane upgrade in mind considering the amplexness of the grass swales along the corridor.

9.17.4 Alternative Alignment Public Meeting

The Alternative Alignment Public Meeting was held on December 15, 2005 at the Miami Country Club in Miami, Florida. The meeting was held to inform the public of the PD&E Study in progress and to solicit their comments regarding the proposed improvements to Miami Gardens Drive. A PowerPoint presentation was shown. The presentation described in details the four proposed alternatives as well as

the advantages and disadvantages of each. The results of the traffic analysis was also presented and discussed. The proposed landscape plan was explained. Comments and concerns expressed at the public information meeting were as follows:

- A resident of the area wanted to know if drainage and water quality was taken into account when developing this type of projects. Mr. Juan Espinosa, PE explained that all FDOT projects have to adhere to very strict local and state regulations regarding water runoff discharge. This project will follow those guidelines.
- A resident inquired about the time it will take to construct the improvements. Mr. Andre Goins, PE responded that the project most likely will be divided in two segments and take from 2 to 3 years to complete.
- A resident asked if there was room to have an exclusive bus lane or bus lanes pull-outs along the corridor. Mr. Espinosa explained that the existing right-of-way was very limited and will only allow for the widening of one travel lane in each direction. The construction of bus pull-out will required the acquisition of right-of-way from properties along the corridor.
- A resident asked about the maintenance of the proposed landscape. Ms. Aida Curtis (the project team landscape architect) explained that the proposed vegetation will be native plants or plants that can thrive without irrigation. Mr. Goins added that FDOT will provide the landscape but will not be responsible for irrigation or maintenance.

9.17.5 Public Hearing

A Public Hearing was held on March 22, 2006. The format of the hearing included an informal review of the display material between 6:00 pm and 7:00 pm. A formal presentation began at 7:00 pm and included a slide presentation describing the specifics of the project. A public hearing transcript, which include all testimony received was prepared and is included as part of the project file.

9.18 VALUE ENGINEERING

This project was not selected for a Value Engineering study.

9.19 DRAINAGE

9.19.1 Roadway Drainage

Water quality requirements established by Miami-Dade DERM and South Florida Water Management District (SFWMD) state that the first flush of water runoff from the new impervious areas (i.e., new travel lanes) must be retained at a minimum before being discharged into the adjacent canal system.

The existing drainage system generally consists of a curb-and-gutter piped collection system connected to exfiltration drains within the limited-access right-of-way, and direct outflow of excess to the two canals that cross the corridor. Advance Notification of this project was provided to the U.S. Environmental Protection Agency (EPA) on June 1, 2004. A response letter dated June 30, 2004 from the EPA Region Four Sole Source Aquifer Coordinator indicated that the project is not anticipated to have any significant impact on the Biscayne Aquifer. This letter is on file at the FDOT District Six office.

Project implementation is anticipated to include improvements in the drainage and stormwater management system to accommodate the proposed increase in impervious area. The improvements should consist of a series of exfiltration trenches. Some of the existing inlets may also be salvaged and connected to the proposed system. The existing 15 inch diameter pipes do not meet the minimum FDOT standard of 18 inches and must therefore be replaced. The system will then overflow in the NW 77 Avenue canal. The roadway drainage improvements were proposed by Burns & McDonnell and can be seen in the [Drainage assessment for SR 860 / Miami Gardens Drive From NW 57 Ave to I-75 Entrance Ramps](#). The proposed stormwater facility design will include, at a minimum, the water quantity requirements for the water quality impacts as required by the current Miami-Dade County

Code (Chapter 24, Section 24-58) and/or South Florida Water Management District rules (Chapters 40E-4, 40E-40 and 63-302, F.A.C). More specific drainage features will be determined during the design phase of this project.

9.19.2 Floodplain Encroachment

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Community Panels 12025C0075J and 12025C0080J, (revised March 2, 1994), the project corridor is entirely situated within the 100-year flood plain, as is a large surrounding area. The project corridor is located within Zone AH (base flood elevation determined, 7 ft). There is no involvement with regulatory floodways in Miami-Dade County.

The roadway does not have a history of flooding, but the neighborhoods surrounding the Country Club of Miami golf course adjacent to the project corridor have a history of flooding. Miami-Dade County recently completed a drainage improvement project involving reconstruction of the golf course's waterway system.

9.20 ACCESS MANAGEMENT

Miami Gardens Drive is classified as an Access Class 3 facility between I-75 and NW 57th Avenue. According to the FDOT Access Management Standards, the following minimum spacing requirements apply:

- Full Median Opening Spacing – 2,640 feet
- Directional Median Opening Spacing – 1,320 feet
- Signal Spacing – 2,640 feet

Currently there are 28 median openings along this corridor within the study area. Most of the median openings violate the required access management standards. Therefore, a very comprehensive median management study was conducted to recommend median closures along the corridor. Exhibit 9.4

shows the median opening recommended for change. These changes can also be seen in the Conceptual Plan included in the Appendix.

Exhibit 9.4
Recommended Median Opening Changes

Median Location	Existing Median Opening Type	Proposed Median Opening Type
Garden Square Shopping Plaza East Driveway	Full Median Opening	Full Median Closing
Country Club Shopping Center West Driveway	Full Median Opening	Full Median Closing
Country Club Shopping Center East Driveway	Full Median Opening	Directional Westbound Left Only
Wentworth Drive	Full Median Opening	Full Median Closing
Old Elm Drive	Full Median Opening	Full Median Closing
NE 73rd Avenue	Full Median Opening	Directional Eastbound Left Only
Coral Gate Apts. (West Driveway)	Full Median Opening	Directional Westbound Left Only
Coral Gate Apts. (East Driveway)	Full Median Opening	Full Closing
Driveway 440' West of NW 68th Ave	Full Median Opening	Full Closing
Driveway 550' West of NW 67th Ave (Publix)	Full Median Opening	Full Closing
Driveway 755' East of NW 67 Ave (Sedanos)	Full Median Opening	Directional Westbound Left Only
Driveway 1,200' West of NW 62nd Ave	Full Median Opening	Full Closing
Villa Esperanza Driveway	Full Median Opening	Full Closing

A properly implemented median management system will result in improvements to traffic operations, minimize adverse environmental impacts, and increase roadway safety. As traffic flows is improved, delay is reduced as are vehicle emissions. In addition, roadway capacity and fuel economy are increased, and most importantly, crashes are less numerous and less severe.

9.21 AESTHETICS AND LANDSCAPING

The landscape goal for Miami Gardens Drive is to provide aesthetically pleasing surroundings along the corridor, which will serve to reflect the character of the area. This will be accomplished by preserving and protecting existing vegetation when possible; enhancing existing vegetated areas; and replacing vegetation consistent with local community values and FDOT requirements. Landscape design will complement the adjacent neighborhoods in order to serve as a symbolic identity in the community.

The landscape shall respond to the intent to handle vehicles and pedestrians safely, efficiently, conveniently and comfortably. The design will be responsive to the South Florida climatic conditions, creating shaded areas for walking and utilizing indigenous plant materials.

Recognizing that the main function of the corridor is to provide a safe and efficient transportation system, the final design must adhere to all FDOT safety criteria regarding visibility, clear zone setbacks and trunk diameters. The goal is to provide an environment in which the users are aware and comfortable with the layout and visibility is clear.

Final placement of trees and palms will be coordinated with lighting fixture placement, to avoid conflicts with light distribution. Planting design will also be responsive to FPL's guidelines for planting under overhead power lines.

Existing Landscaping

Miami Gardens Drive is currently a four lane divided corridor with an existing landscaped median. The median is landscaped with stately Royal Palms in some areas and in others only grass exists. Both north and south sides of the corridor have grassy swales, with trees consisting of primarily Yellow Trumpet Trees (*Tabebuia caraiba*) in various stages of damage and decline. The south side of the street – between NW 87th Avenue and NW 67th Avenue, also has small Thatch Palms (4' ht) that have been planted in between the Yellow Trumpet Trees. Both the north and south sides have major portions of

the swale areas under overhead power lines.

In terms of uses – the westernmost portion of the project is bordered by single family homes, that transitions to multi-family and ultimately commercial by the time the corridor reaches 57th Avenue. The majority of the corridor also has sidewalks running continuously along both sides of the right of way.

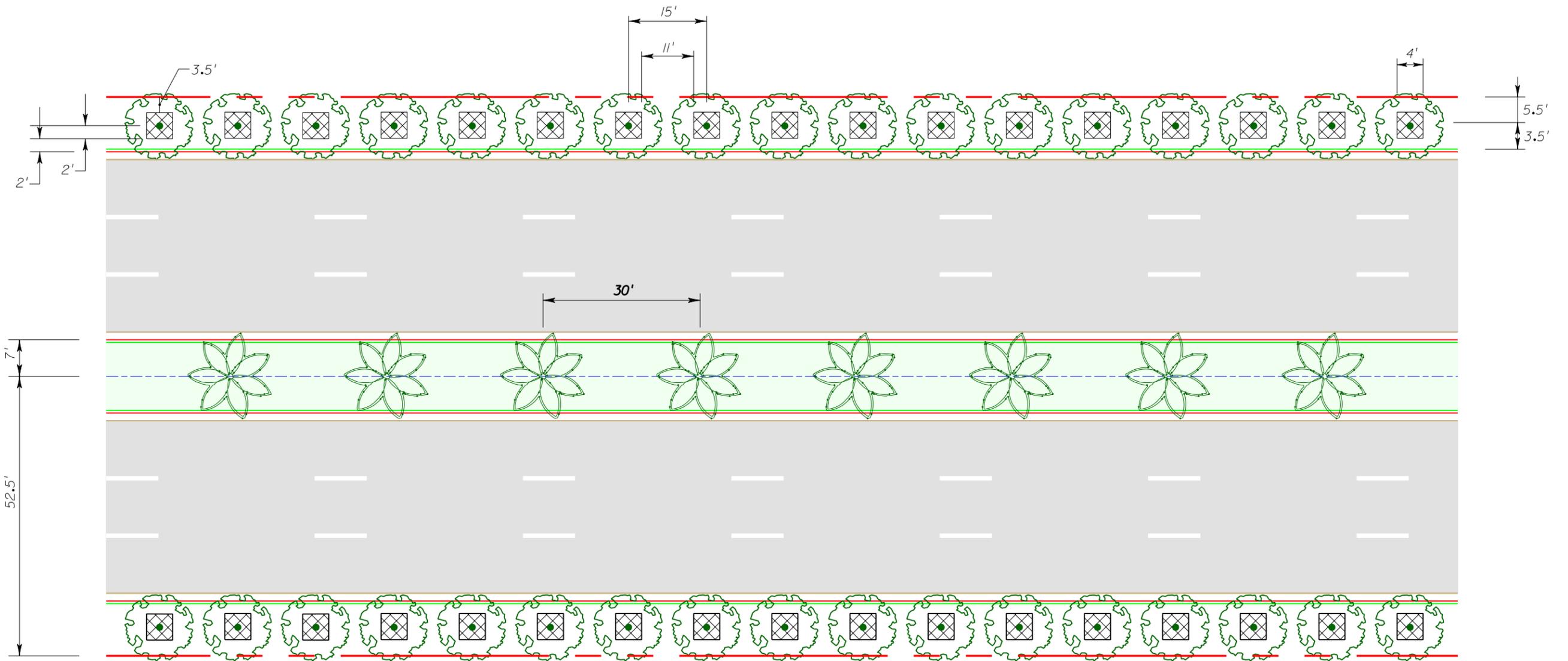
Proposed Landscaping

The recommended alternative for the corridor includes a widening of the travel lanes and therefore a reduction of the area between the curb and the roadway. The proposed solution is an urban cross-section consisting of a 9 foot sidewalk on both the north and south sides of the roadway for the 105 foot ROW and an 11.5 foot sidewalk for the 110 foot ROW section. Within the sidewalk, trees will be placed in cut-outs at regular intervals to enhance the corridor and provide shade to the pedestrians on the sidewalks. The majority of these trees will be located underneath power lines, therefore small trees are recommended at a closer spacing of 15-feet center to center (see Exhibits 9.5 and 9.6). It is recommended that the majority of the trees be of “evergreen” character with flowering trees interspersed throughout the corridor for variety and interest. The placement of the trees will need to comply with the clear zone setbacks from back of curb.

Trees should be specified with a minimum clear trunk of 5-feet. Trees should be selected for their hardiness, low maintenance and xeriscape principles. Recommended trees for this corridor include:

Evergreen:

- *Clusia rosea* (Pitch Apple)
- *Ligustrum* spp. (Ligustrum)
- *Myrica cerifera* (Wax Myrtle)
- *Murraya paniculata* “Lakeview” (Lakeview Jasmine – Tree Form)



DATE PLOTTED: 09/20/04



DAVID PLUMMER & ASSOCIATES, INC.

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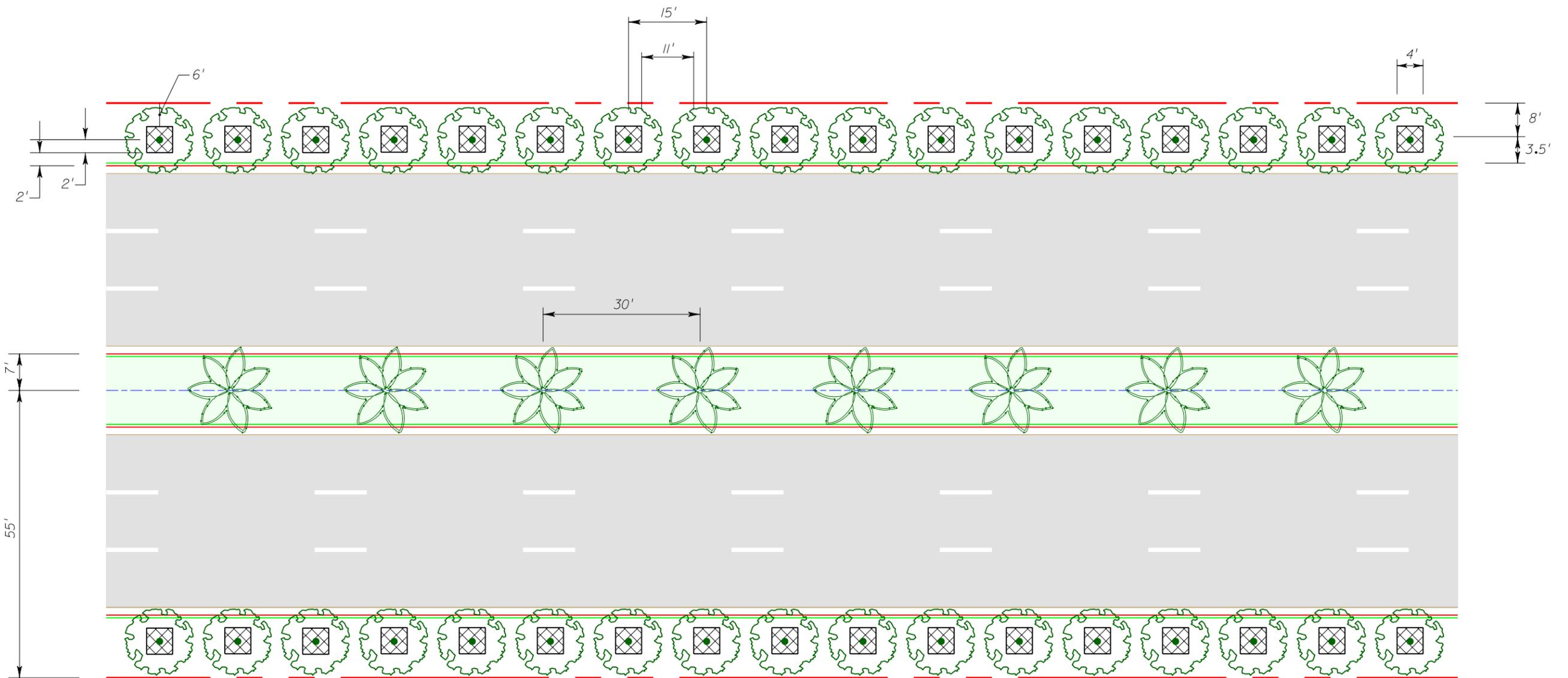
PROJECT:

**Miami Gardens Drive
 Project Development & Environment Study**

TITLE:

**105' Right of Way
 Typical Landscaping Plan**

DATE	PROJECT NO.
09/20/04	03201
DRAWN	SHEET NO.
CHECKED	9.5
APPROVED	



DATE PLOTTED: 09/20/04



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PROJECT:

**Miami Gardens Drive
 Project Development & Environment Study**

TITLE:

**110' Right of Way
 Typical Landscaping Plan**

DATE	PROJECT NO.
09/20/04	03201
DRAWN	SHEET NO.
CHECKED	9.6
APPROVED	

Flowering/ Accent:

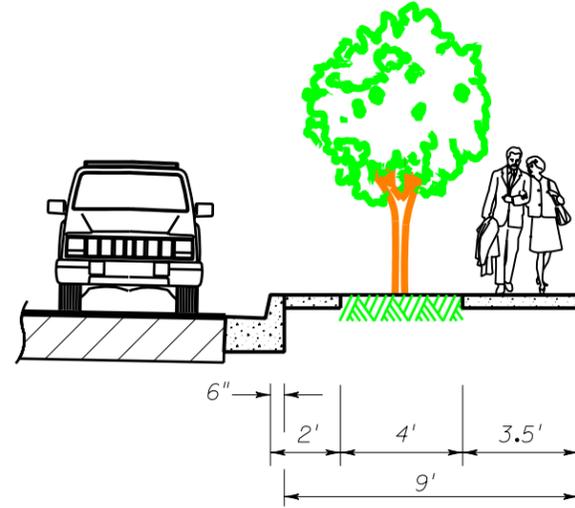
- *Conocarpus erectus* “sericeous” (Silver Buttonwood)
- *Cordia boissieri* (White Geiger)
- *Cordia sebestena* (Orange Geiger)
- *Senna surattensis* (Glaucous cassia)

The cut-outs shall be provided with either ADA accessible tree grates or some form of pervious bound aggregate surfacing for ease of maintenance. No grass or groundcovers are desired on the ROW sides. Exhibits 9.7 and 9.8 show details of the proposed landscaping plan for the 105-foot and 110-foot right-of-way sections respectively.

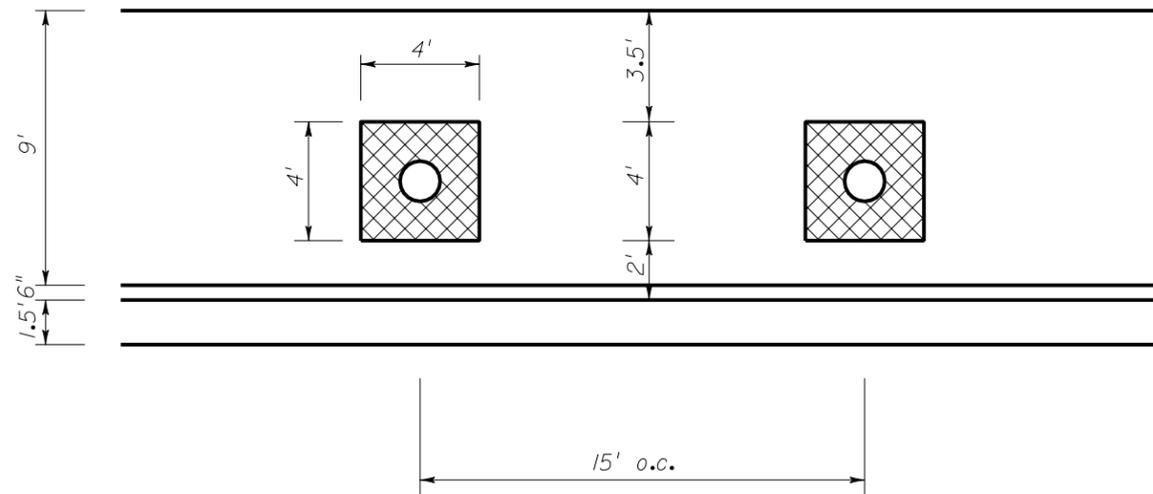
The intent for the median areas is to retain as much of the existing Royal Palms as possible, supplementing with additional Royal Palms to provide for a uniform and consistent median. Sight distance requirements will need to be considered in the placement of these palms. Opportunities exist to enhance portions of the median with colorful shrub and groundcover nodes – in particular at the median terminus of 87th Avenue. This will serve as a gateway entrance to drivers entering the corridor from I-75 and traveling eastbound.

Shrub and groundcover recommendations include:

- *Ficus macrocarpa* “green island” – Green Island Ficus
- *Codiaeum variegatum* – Crotons (many low growing varieties)
- *Euphorbia milli* – Crown of thorns
- *Jasminum volubile* – Wax Jasmine
- *Lantana montevidensis* – Purple Trailing Lantana
- *Raphiolepis indica* – Indian Hawthorne
- *Schefflera arboricola* “trinnette” – Variegated Schefflera
- *Helianthus debilis* – Beach Sunflower



JAPANESE PRIVET



105' RIGHT OF WAY



ORANGE GEIGER

DATE \$FILES\$



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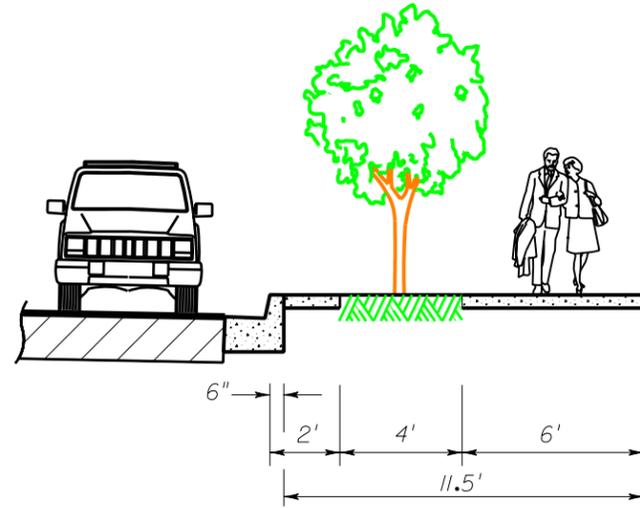
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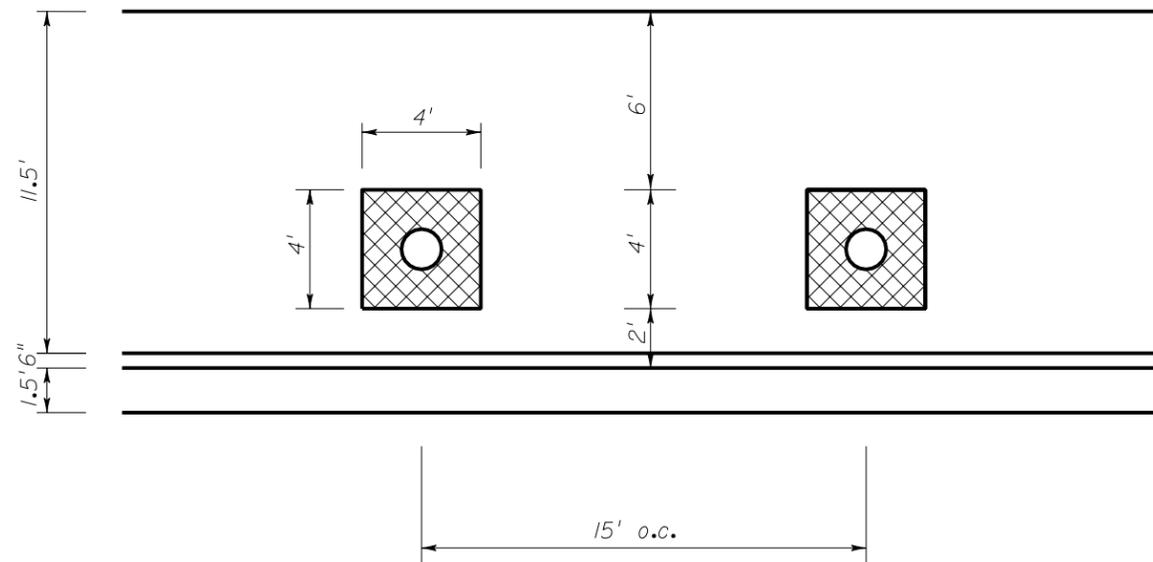
TITLE:

105' Right of Way
 Typical Landscaping Details

DATE	PROJECT NO.
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JAPANESE PRIVET



110' RIGHT OF WAY



ORANGE GEIGER

DATE \$FILES\$



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PROJECT:

**Miami Gardens Drive
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TITLE:

**110' Right of Way
 Typical Landscaping Details**

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All plant material shall be Florida No. 1, as defined by the Grades and Standards for Nursery Plants. All planted areas will be mulched with 2"-3" layer of mulch. In addition, weed control fabric shall be utilized for median areas landscaped with shrubs and groundcovers. Due to the fact that no automatic irrigation will be provided, water retaining soil amendments and post construction watering should be part of the planting specifications. Planting, once installed, shall be maintained in accordance with Section 580 of the FDOT Specifications for Road and Bridge Construction

All landscape improvements shall comply with local applicable codes and guidelines. In addition, the following standards will also apply:

- ◆ Grades and Standards for Nursery Plants- Florida Department of Agriculture and Consumer Services
- ◆ Waterwise Guide- South Florida Edition - South Florida Water Management District
- ◆ Plant the Right Tree in the Right Space – Florida Power and Light
- ◆ Florida Department of Transportation Standard Specifications for Road and Bridge Construction

APPENDIX

Alternative 4 Conceptual Plans



DATE: 09/20/04



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**Miami Gardens Drive
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TITLE:

**Alternative IV
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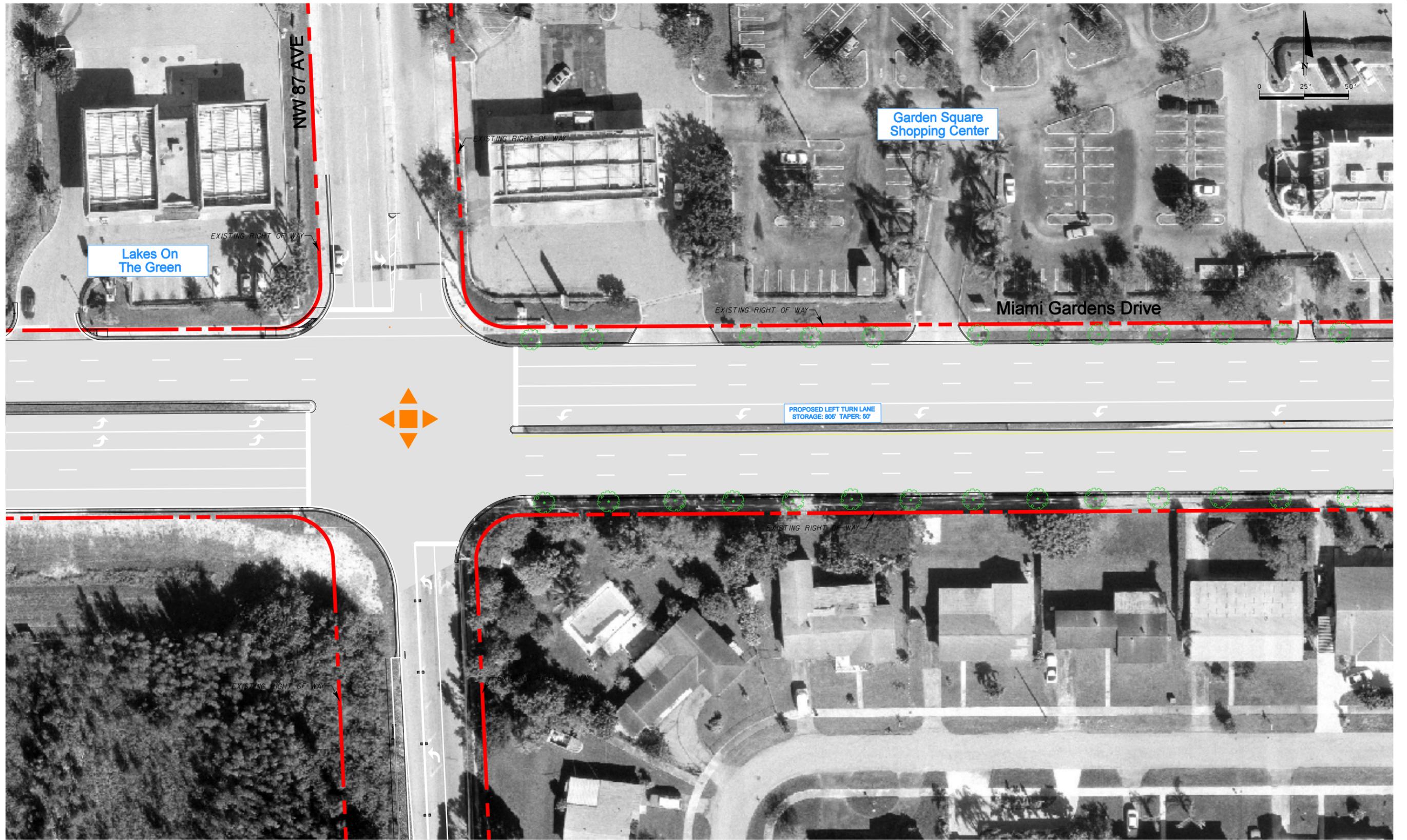
PROJECT:

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N.W. 81st CT.

Miami Gardens Drive

PROPOSED LEFT TURN LANE
STORAGE: 544' TAPER: 50'

EXISTING RIGHT OF WAY

EXISTING RIGHT OF WAY

0 25' 50'

DATE PLOTTED: 09/20/04



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APPROVED	



DATE: 09/20/04



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ESPLANDE

Miami Gardens Drive

EXISTING RIGHT OF WAY

EXISTING RIGHT OF WAY

105'

110'

7'
11'
11'
11'

DATE PLOTTED: 09/20/04



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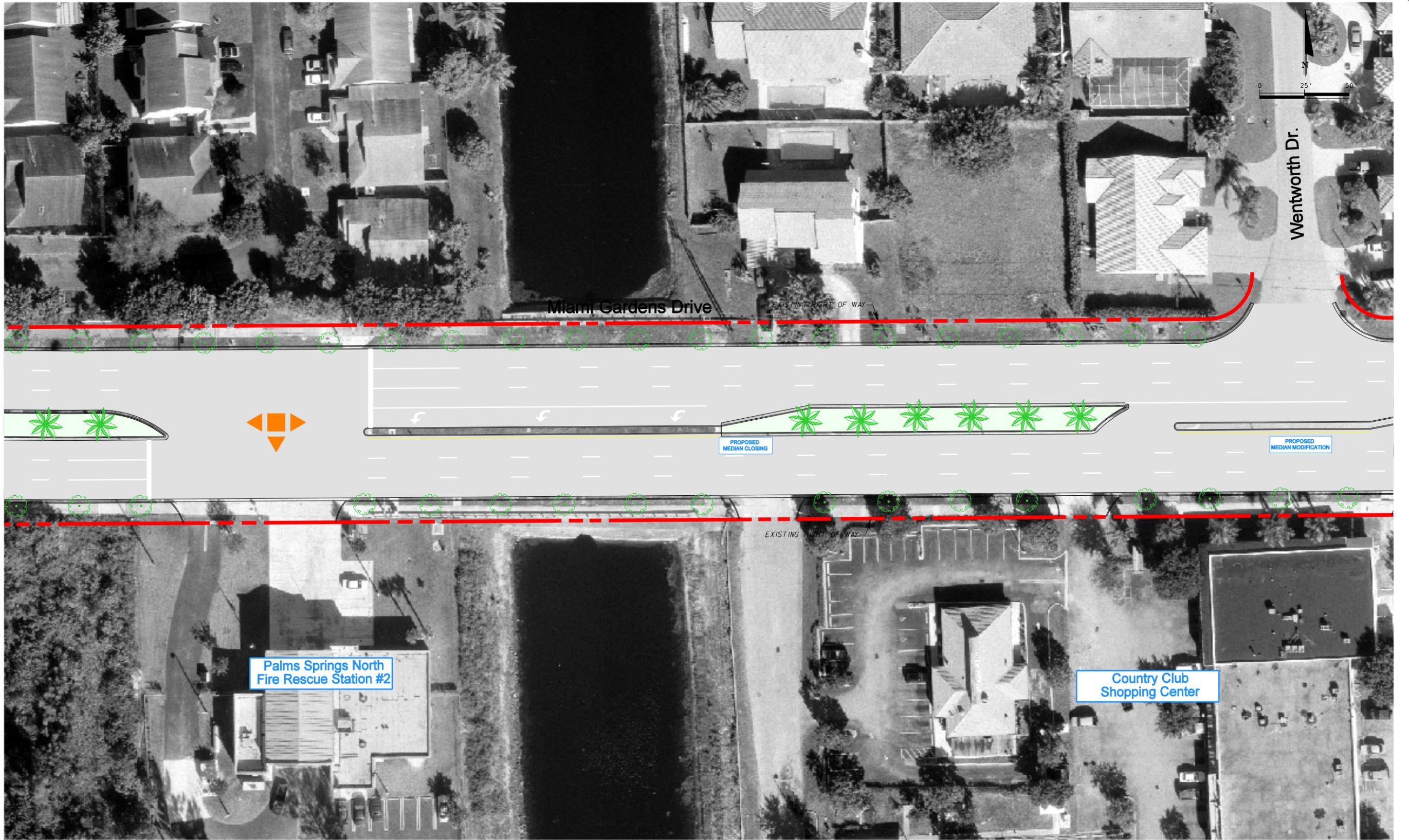
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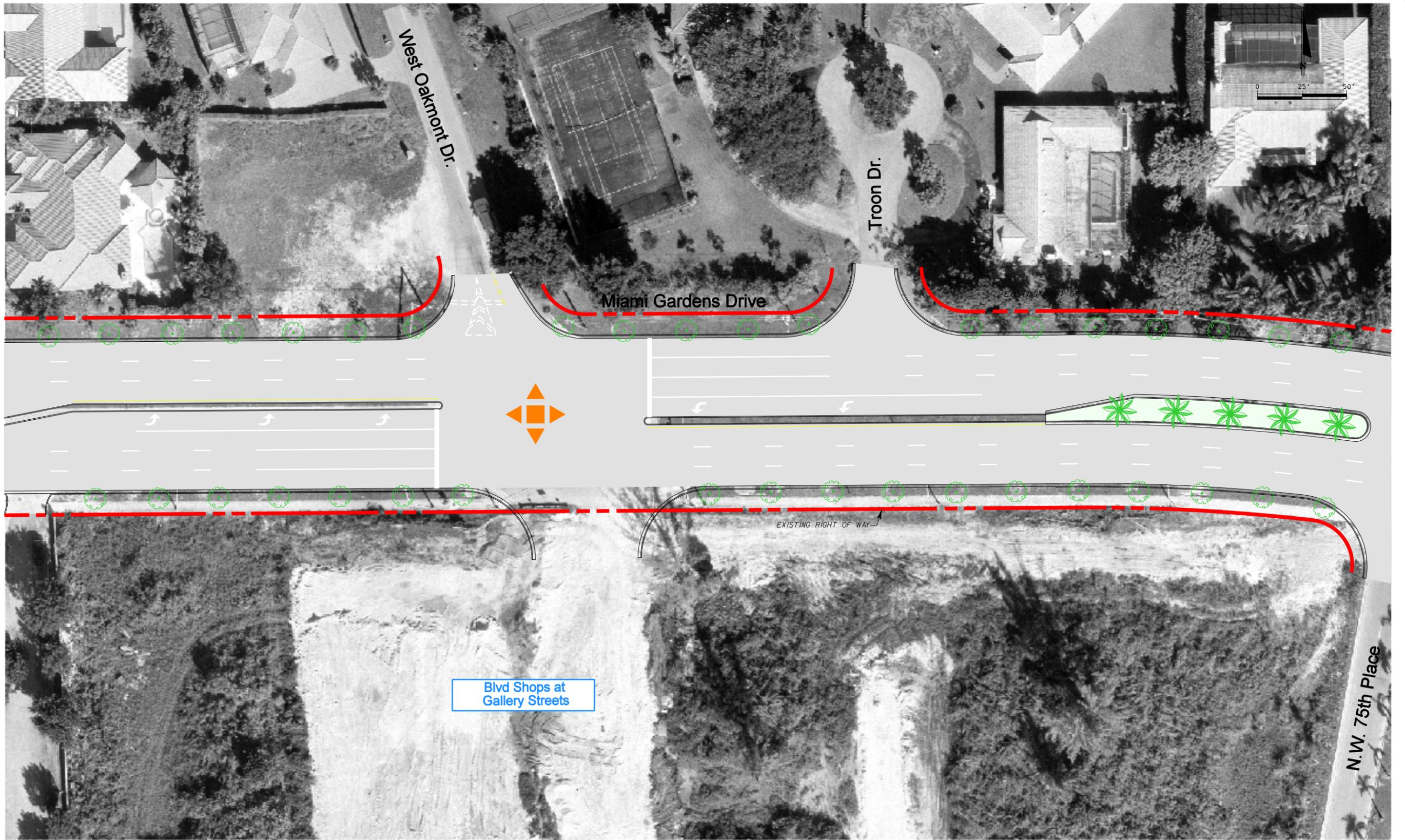
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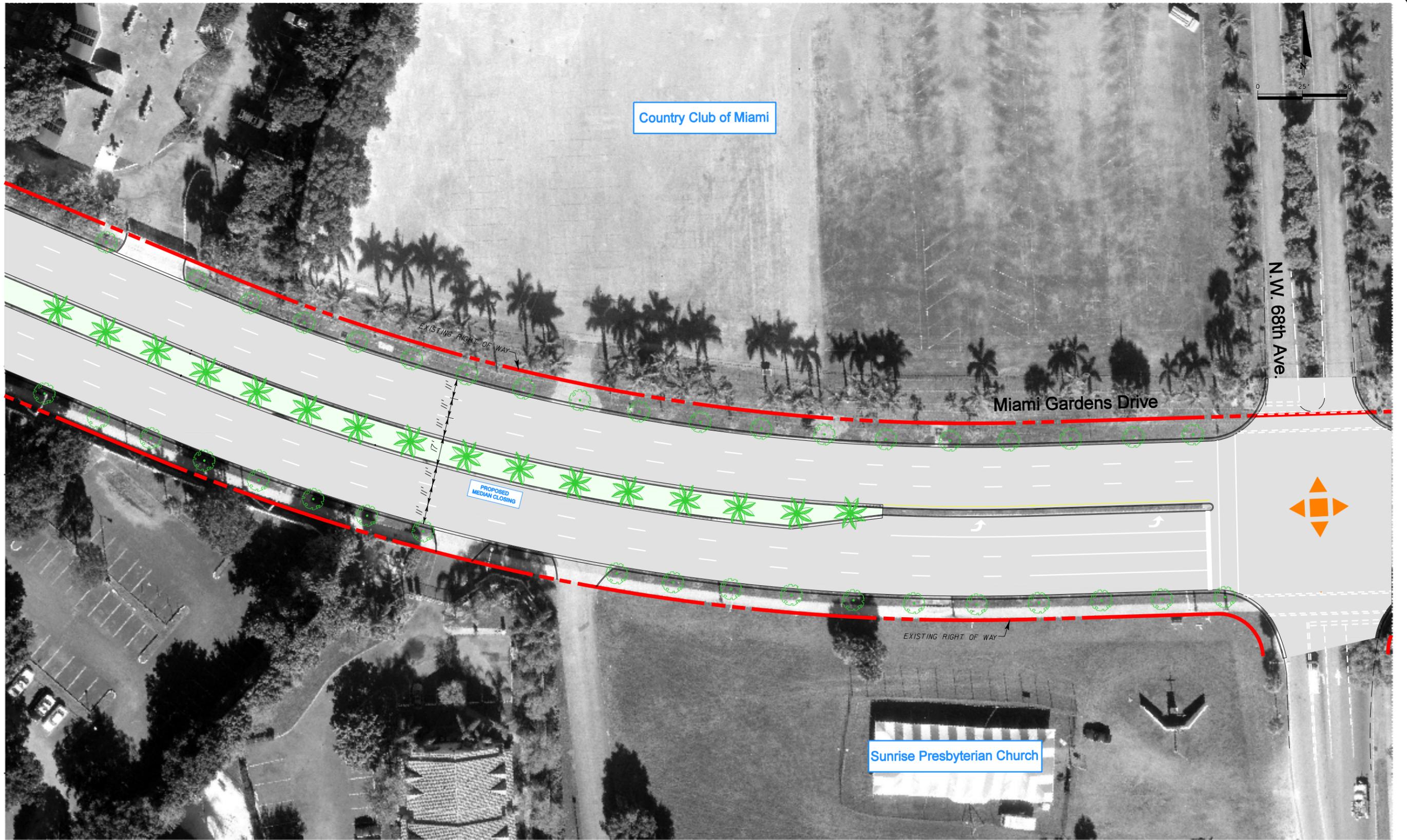
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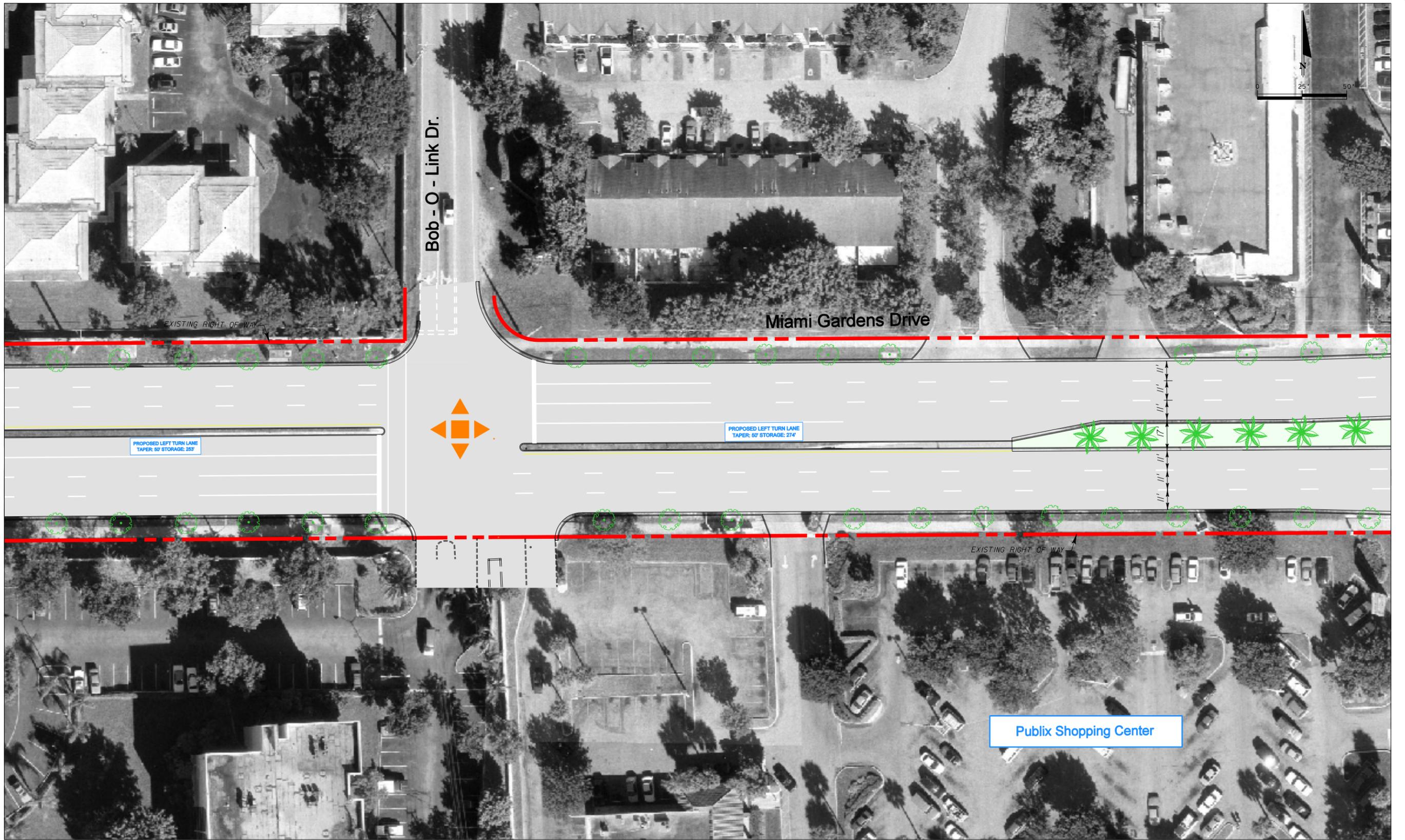
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Country Lake Manors
School Park

Miami Gardens Drive

Sedano's
Shopping Center

PROPOSED
MEDIAN MODIFICATION

PROPOSED LEFT TURN LANE
TAPER: 60' STORAGE: 235'

DATE PLOTTED: 09/20/04



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