

Final Preliminary Engineering Report

Florida Department of Transportation - District VII

County Line Road (C.R. 578) Project Development and Environment Study From U.S. 19 (S.R. 55) to U.S. 41 (S.R. 45)

*Work Program Item Segment Number: 257298 1
Federal-Aid Program Number: 7822 001 S
Pasco and Hernando Counties, Florida*

The proposed project involves improving County Line Road (C.R. 578) to a multi-lane facility from U.S. 19 (S.R. 55) to east of U.S. 41 (S.R. 45) in Pasco and Hernando Counties, a distance of approximately 12.0 miles (19.3 kilometers). The project includes a segment of roadway along a new alignment. This segment is referred to as the Ayers Road Extension and extends from the interchange of C.R. 578 and the Suncoast Parkway to east of U.S. 41, a distance of approximately 3.5 miles (5.6 kilometers).



**January 2003
Revised April 2003**

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Section 1.0

SUMMARY

The recommended project involves improving C.R. 578, to a four-lane suburban facility from the vicinity of U.S. 19 (S.R. 55) to the vicinity of U.S. 41 (S.R. 45), a distance of approximately 12.0 miles (mi) [19.3 kilometers (km)]. A segment of roadway on new alignment, referred to as the Ayers Road Extension, is being recommended from the C.R. 578/Suncoast Parkway interchange north then east to the vicinity of U.S. 41 and Ayers Road (C.R. 576). The recommended routes extends northward through mostly undeveloped pasture then east for a distance of approximately 3.5 mi (5.6 km) terminating at the U.S. 41/Ayers Road intersection north of Masaryktown.

The portion of the project from East Road to the Suncoast Parkway is included in the *Pasco County Metropolitan Planning Organization's (MPO's) 2025 Long Range Transportation Plan (LRTP)*⁴ as a four-lane divided facility. The portion of the project from U.S. 19 to the Suncoast Parkway is included in the *Hernando County MPO's 2025 LRTP*⁵ and is recommended to be improved to a four-lane divided facility. The recommended new roadway alignment, Ayers Road Extension, from the interchange of C.R. 578 and Suncoast Parkway to the vicinity of U.S. 41 and Ayers Road is also identified in the *Hernando County 2025 LRTP*⁵ as a four-lane divided facility.

1.1 RECOMMENDATION

Both the existing and design year conditions were evaluated, and various improvement alternative alignments were developed and are documented in Section 8.0 of this report. After a thorough technical analysis and a comprehensive public involvement process, the study recommended the following optimized alternative for C.R. 578 (Alignment S-8) and Ayers Road Extension (Alignment S-5).

- U.S. 19 to Hamlet Circle North Alignment
- Hamlet Circle to Fountain Court Within existing right-of-way (ROW)
- Fountain Court to Kelley Road South Alignment
- Kelley Road to Suncoast Parkway North Alignment
- Suncoast Parkway to U.S. 41
(Ayers Road Extension) New Alignment

The typical section proposed and approved by Pasco and Hernando Counties, is a four-lane divided suburban facility, with a 30 ft (9.0 m) median in which 22 ft (6.6 m) is raised, two 12 ft (3.6 m) travel lanes in each direction, 8 ft (2.4 m) outside shoulders with 5 ft (1.5 m) of the shoulder paved, and 15 ft (4.5 m) drainage swales. A 12 ft (3.6 m) multi-use facility on the north side of the roadway and a 5 ft (1.5 m) sidewalk on the south side of the roadway are also being proposed. The proposed design speed for this typical section is 55 mph (90 km/h). This typical

section will require a minimum of approximately 155 ft (46.5 m) of right-of-way (ROW), shown in Figure 1-1.

**FIGURE 1-1
SUBURBAN TYPICAL SECTION**

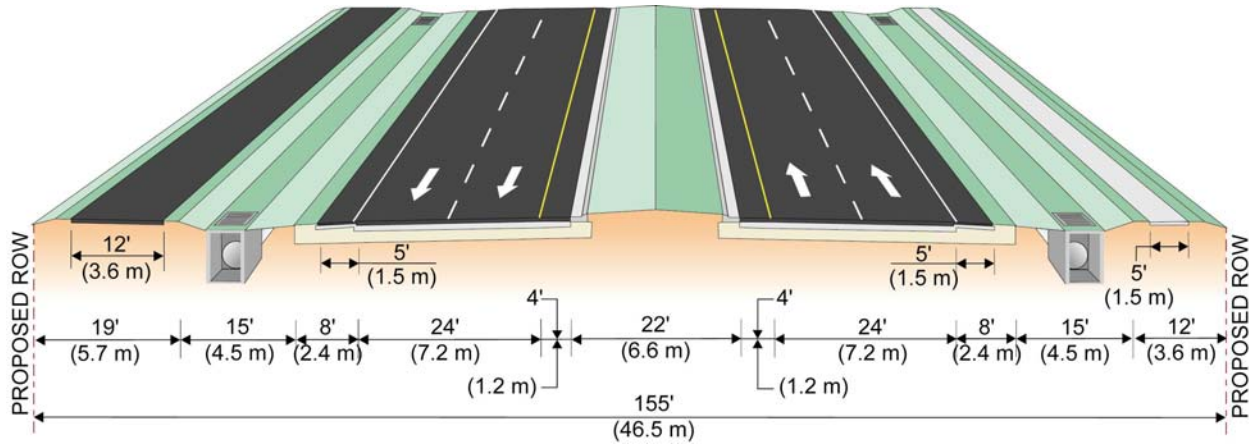


Table 1-1 identifies the costs and effects associated with the recommended alternative.

**TABLE 1-1
RECOMMENDED ALTERNATIVE MATRIX**

Evaluation Factors	C.R. 578 from U.S. 19 to Suncoast Parkway			Ayers Road Extension		
	Segment A	Segment B	Segment C	Segment D		
	S-8	S-8	S-8	S-5		
Potential Relocations						
Businesses	10	8	5	0		
Individual Residences	17	1	5	3		
Cultural Resources						
Potential Historic Structures	0	0	0	0		
Archaeological Sites NRHP Eligible	0	0	0	1		
Parks [Section 4(f)]	0	0	0	0		
Natural/Physical Environmental Effects						
Wetlands (Acres)	0.30	1.21	0.00	0.00		
Potential T&E Species Involvement (L/M/H)	M	M	M	M		
Noise Sensitive Sites	40	15	4	5		
Potential Contamination Sites (L/M/H)	1 2 2	6 2 2	2 1 1	1	1	0
Project Costs (millions \$)						
Engineering Costs ⁵	1.30	1.20	2.00	0.80		
ROW Cost ^{2,3}	22.90	33.00	35.20	6.50		
Construction Cost ¹	10.88	13.99	12.39	12.99		
Construction Engineering and Inspection Cost ⁴	1.63	2.10	1.86	1.95		
Total Cost per Segment	36.71	50.29	51.45	22.24		

¹ Construction Cost Estimate completed on May 24, 2002.
² ROW Estimate completed on June 1, 2002.
³ Includes cost estimate for stormwater ponds
⁴ 15% of Construction Cost.
⁵ Per the FDOT's Work Program.
 L/M/H = Low/Medium/High.

The recommended improvements will potentially relocate 23 businesses, and 26 residences. These improvements will have a construction cost of \$50.25 million, \$7.54 million for engineering and inspection, \$5.30 for engineering design, and \$97.60 million for ROW acquisition for a total of \$160.69 million. See Appendix A for the Recommended Build Alternative.

1.2 *COMMITMENTS*

Based on Section 106 consultation with the State Historic Preservation Officer, a Memorandum of Agreement (MOA) for the National Register of Historic Places (NRHP) eligible Alexsuk Site (8HE426) was executed by FHWA, FDOT, and SHPO on December 20, 2002. The mitigative efforts identified in the MOA will be implemented by the Department during subsequent project phases. Additionally, coordination and consultation with Native American Indian tribes has been initiated and will be continued during subsequent implementation phases of this project.

The recommended alignment of the Ayers Road Extension will bisect an existing cattle ranch. As a result a cattle crossing, allowing movement of cattle from one side of the road to the other, may be considered for evaluation during the design phase of the project.

Based on consultation with the U.S. Fish and Wildlife Service (USFWS), protection provisions may be implemented during project construction to minimize potential impacts to the Eastern Indigo Snake.

Section 2.0 INTRODUCTION

The Florida Department of Transportation (FDOT) in partnership with Pasco and Hernando Counties has conducted a Project Development and Environment (PD&E) Study to evaluate capacity improvement alternatives for County Line Road (C.R. 578) in Pasco and Hernando Counties, as shown in Figure 2-1. The proposed project involves improving C.R. 578 from a primarily two-lane roadway to a multi-lane facility from the vicinity of U.S. 19 (S.R. 55) to the vicinity of U.S. 41 (S.R. 45), a distance of approximately 12.0 miles (mi) [19.3 kilometers (km)]. A segment of roadway on new alignment, referred to as the Ayers Road Extension, is being proposed from the C.R. 578/Suncoast Parkway interchange to the vicinity of U.S. 41 and Ayers Road (C.R. 576), a distance of approximately 3.5 mi (5.6 km). The Ayers Road Extension provides for a continuous travel route between U.S. 19 and C.R. 581 and it also would improve access to the Hernando County Airport with a new connection to the airport.

FIGURE 2-1
PROJECT LOCATION MAP



2.1 PURPOSE

The objective of the PD&E Study is to provide documented environmental and engineering analyses that will assist the FDOT and the Federal Highway Administration (FHWA) in reaching a decision on the location and conceptual design for improvements to C.R. 578. This Study will also comply with the requirements of the National Environmental Policy Act (NEPA) and other Federal laws to qualify the proposed project for Federal-aid funding.

This report documents the need for the project and presents the procedures used to develop and evaluate the Build and No-Build Alternatives as they relate to the proposed project. Engineering data and information about the environmental characteristics of the area were collected, which are essential to the alignments and analytical decision-making process. Comparison of the alignments developed for the Build Alternative versus the No-Build Alternative will be based on a variety of parameters using a matrix format and described in Section 8.0 of this report. This process will identify the effects that each alignment has on the community. The design year of the analysis is year 2025.

2.2 PROJECT DESCRIPTION

The C.R. 578 corridor is an east/west facility with a functional classification of a major collector. The project is located within Sections 1 through 6 of Township 24 South, Range 17 East and Sections 1 through 6 of Township 24 South, Range 18 East in Pasco County, and Sections 31 through 36 of Township 23 South, Range 17 East; Sections 25, 26, 31 through 36 of Township 23 South, Range 18 East; and Section 30 of Township 23 South, Range 19 East in Hernando County.

C.R. 578 is currently a two-lane rural roadway from U.S. 19 to Callaway Avenue and from Hallow Avenue to U.S. 41. From the vicinity of Callaway Avenue to Hallow Avenue, C.R. 578 has been expanded to a four-lane divided suburban facility with an open drainage system. In addition, for 0.5 mi (0.8 km) west and east of the interchange at the Suncoast Parkway, C.R. 578 has recently been expanded to a four-lane divided facility. The existing posted speed limit along C.R. 578 ranges from 40 to 55 miles per hour (mph) [60 to 90 kilometers per hour (km/h)]. The existing right-of-way (ROW) width ranges from 50 feet (ft) [15.24 meters (m)] to 170 ft (51.82 m) except at the Suncoast Parkway interchange where the ROW width is 254 ft (77.42 m).

Primary land uses along C.R. 578 include numerous residential subdivisions, individual residences, commercial development, the Spring Hill Regional Hospital, the Suncoast Elementary School, the Hernando County Airport, and numerous religious facilities.

Section 3.0

NEED FOR IMPROVEMENT

The need for improvements along the C.R. 578 corridor is based primarily on the following conditions:

- Current substandard traffic operations;
- Future traffic demands along the C.R. 578 corridor, and the projected future socioeconomic growth in northwest Pasco and southwest Hernando Counties;
- Inadequate driver sight distances;
- Inadequate capacity as a designated evacuation route;
- The need for adequate pedestrian facilities;
- Assistance in improving access to the Hernando County Airport; and
- Providing a continuous route between U.S. 19 and C.R. 581.

The 2025 Average Annual Daily Traffic (AADT) volumes that were developed from the use of the 2020 Tampa Bay Regional Planning Model (TBRPM) using the revised land use data for Pasco County indicate that a four-lane roadway will be required for C.R. 578 from U.S. 19 to U.S. 41 to provide acceptable levels of service.

The Hernando County Aviation Authority has prepared a Master Plan and Airport Layout Plan for the Hernando County Airport (Coastal Engineering Associates, Inc. and Airport Engineering Company, Inc., June 2001). The Master Plan anticipates that C.R. 578 will be extended to intersect U.S. 41 at Ayers Road via the proposed Ayers Road Extension. The potential location for the Ayers Road Extension identified in the Master Plan is located near the southern boundary of the airport, an area also identified in the plan for potential future airport expansion. The Ayers Road Extension will improve airport access and east-west mobility for residents of northwestern Pasco County and southeastern Hernando County.

An existing airport industrial park is located on the north side of the airport, accessible from Spring Hill Drive, and is nearly built out. According to the Master Plan, an additional 600 acres (ac) of the more than 2,400-ac airport are designated for future industrial, business, and commercial development over the next 20 years. That future development is to be concentrated primarily along the south and west sides of the airport property with planned roadway connections to U.S. 41 and the proposed Ayers Road Extension.

The Airport Layout Plan also indicates a branch campus of Pasco-Hernando Community College to be located on the south side of the airport. Access to the campus would be provided via Corporate Boulevard, a proposed on-airport access drive that would intersect the proposed Ayers Road Extension. Thus, the Ayers Road Extension would provide the primary access to the campus and the future on-airport industrial/business development from north Pasco and southeastern Hernando Counties.

3.1 DEFICIENCIES

Capacity analyses were conducted to identify the roadway segments and intersections that presently or will in the future operate at a deficient Level of Service (LOS) if no improvements are constructed. The traffic analysis performed for this study and documented in Section 6.0 of this report indicates that the portion of C.R. 578 from U.S. 19 to Mariner Boulevard/Shady Hills Road is currently operating at LOS E in both the a.m. and p.m. peak hours. The entire portion of the C.R. 578 corridor from Mariner Boulevard/Shady Hills Road to U.S. 41 is operating at LOS D in the p.m. peak hour. In the a.m. peak hour, the segment from Mariner Boulevard/Shady Hills Road to Linden Drive is operating at LOS D, while the remaining portion from Linden Drive to U.S. 41 is operating at LOS C. However, the results of the No-Build Alternative analyses indicate that a majority of the existing two-lane undivided roadway is projected to operate at LOS F if no improvements are made to the facility.

3.2 SAFETY

3.2.1 CRASH EVALUATION

The evaluation of the crash data revealed that a total of 147 crashes have occurred over the 3-year period 1997 to 1999. These 147 crashes have involved 301 vehicles and resulted in 127 injuries along with two fatalities.

The crash evaluation also revealed that rear-end collisions are the most prevalent type of crash occurring in the corridor and represent approximately 45.6 percent of the total crashes reported between 1997 and 1999. In addition, right-angle collisions and left-turn collisions are the next most frequent types of crashes occurring in the corridor, accounting for approximately 17.0 percent and 12.9 percent of the total crashes, respectively.

3.2.2 HURRICANE EVACUATION

Evacuation is a critical issue for the coastal communities of Pasco and Hernando Counties. Planning and preparation are the keys to successful evacuation of coastal areas. The primary sources of information for hurricane evacuation in Pasco County are the *Tampa Bay Region Hurricane Evacuation Plan*¹ and the *Tampa Bay Region Hurricane Study*², prepared by the Tampa Bay Regional Planning Council. In Hernando County, the primary source is the *Hurricane Evacuation Study for the Cedar Key Basin*³, prepared by the U.S. Army Corps of Engineers.

Pasco County delineates five evacuation levels, Levels A through E. Level A is the most hurricane-vulnerable area encompassing the coastal areas lying west of U.S. 19. According to the hurricane evacuation plans, C.R. 578 is designated as a secondary evacuation route in Pasco County. In the event of an evacuation event, C.R. 578 may be utilized by nearby coastal communities in addition to the communities immediately adjacent to the roadway.

Hernando County has two evacuation zones: Zone A, which is everything west of U.S. 19, and Zone B, which is the area from U.S. 19 east to the vicinity of Deltona Boulevard. However, based on the hurricane evacuation plan, C.R. 578 is primarily used by those communities adjacent to it.

3.3 **CONSISTENCY WITH TRANSPORTATION PLANS**

The portion of the project from East Road to the Suncoast Parkway is included in the *Pasco County Metropolitan Planning Organization's (MPO's) 2025 Long Range Transportation Plan (LRTP)*⁴ as a four-lane divided facility. The portion of the project from U.S. 19 to the Suncoast Parkway is included in the *Hernando County MPO's 2025 LRTP*⁵ and is recommended to be improved to a four-lane divided facility. The proposed new roadway alignment, Ayers Road Extension, from the interchange of C.R. 578 and Suncoast Parkway to the vicinity of U.S. 41 and Ayers Road is also identified in the *Hernando County 2025 LRTP*⁵ as a four-lane divided facility.

In addition, the *Hernando County 2025 LRTP*⁵ has designated a portion of C.R. 578, from east of the Suncoast Parkway to U.S. 41, as a constrained facility. This constraint is based on the existing scenic and aesthetic characteristics associated with this canopied roadway segment. No multi-lane improvements are considered for this segment.

3.4 **SOCIAL AND ECONOMIC DEMANDS**

Pasco County encompasses 868 gross square miles (gr mi²) [2,248 gross square kilometers (gr km²)] including water bodies. Approximately 745 mi² (1,930 km²) is land area. Hernando County encompasses 589 gr mi² (1,526 gr km²) including water bodies. Approximately 478 mi² (1,238 km²) is land area. The C.R. 578 corridor from U.S. 19 to U.S. 41 is primarily located in Census Tract 318 in Pasco County and Census Tracts 14 and 9 in Hernando County.

According to the 2001 Census of Population, Housing, and Employment, Pasco County's population was 344,765 in 2000, which was a 22.6 percent increase over the 1990 population of 281,131. Projected population for 2020 is 466,300, which represents a 35 percent increase over the 2000 population. The population growth in Pasco can be attributed to tourism, a second home market, an influx of retirees, and the retail industry. Due to lower taxes and other living expenses, Pasco County attracts the overflow population from Pinellas and Hillsborough Counties to its south.

Hernando County's population was 130,802 in 2000, which reflected a 29.4 percent increase over the 1990 population. Projected population for 2020 is 189,900, which represents a 45 percent increase over the 2000 population. The population growth in Hernando County can be attributed to tourism, a second home market, and the economic growth in Central Florida. Hernando County has become a residential community for Hillsborough, Pinellas, and Pasco Counties.

Relevant socioeconomic information for both counties is presented in Tables 3-1 and 3-2.

**TABLE 3-1
PASCO COUNTY SOCIOECONOMIC INFORMATION**

Statistic	Value
Population 2000	344,765
Projected Population 2020	466,300
% Increase in Population 1990-2000	22.6
% Increase in Population 2000-2020	35
Median Age 1990	47.9
% 65 and Older	26.8
Persons per Household	2.3
Per Capita Income 1999	\$23,435

Source: 2001 Florida Statistical Abstract.

**TABLE 3-2
HERNANDO COUNTY SOCIOECONOMIC INFORMATION**

Statistic	Value
Population 2000	130,802
Projected Population 2020	189,900
% Increase in Population 1990-2000	29.4
% Increase in Population 2000-2020	45
Median Age 1990	49.4
% 65 and Older	30.9
Persons per Household	2.32
Per Capita Income 1999	\$22,412

Source: 2001 Florida Statistical Abstract.

Section 4.0

EXISTING CONDITIONS

4.1 EXISTING ROADWAY CHARACTERISTICS

4.1.1 FUNCTIONAL CLASSIFICATION

Based on the *Pasco County Comprehensive Plan*⁶ and the *Hernando County Comprehensive Plan*⁷, the existing facility is classified as a major collector. However, with the proposed improvements to this facility, the functional classification is anticipated to be changed to an arterial.

4.1.2 TYPICAL SECTIONS

Within the project study area, C.R. 578 displays three different roadway typical cross sections.

- From U.S. 19 to Callaway Avenue and from Hallow Avenue to U.S. 41, C.R. 578 consists of a two-lane rural facility. These sections of roadway consist of 12 ft (3.6 m) travel lanes, no shoulders, and an open drainage system. In addition, Pasco and Hernando Counties are currently preparing construction plans from Mariner Boulevard/Shady Hills Road to west of the Suncoast Parkway to include 4 ft (1.2 m) paved shoulders and a 12 ft (3.6 m) left turn lane at designated intersections.
- From Callaway Avenue to Hallow Avenue, the roadway has been expanded to a four-lane divided suburban facility with a 22 ft (6.6 m) raised median, 12 ft (3.6 m) travel lanes, a 10 ft (3.0 m) outside shoulder with 4 ft (1.2 m) paved, and an open drainage system.
- For 0.5 mi (0.8 km) west and east of the interchange at the Suncoast Parkway, C.R. 578 is a four-lane divided rural facility. This section of roadway consists of a 76 ft (22.8 m) depressed median, 12 ft (3.6 m) travel lanes, a 10 ft (3.0 m) outside shoulder with 5 ft (1.5 m) paved, and a 43 ft (12.9 m) border area with an open drainage system.

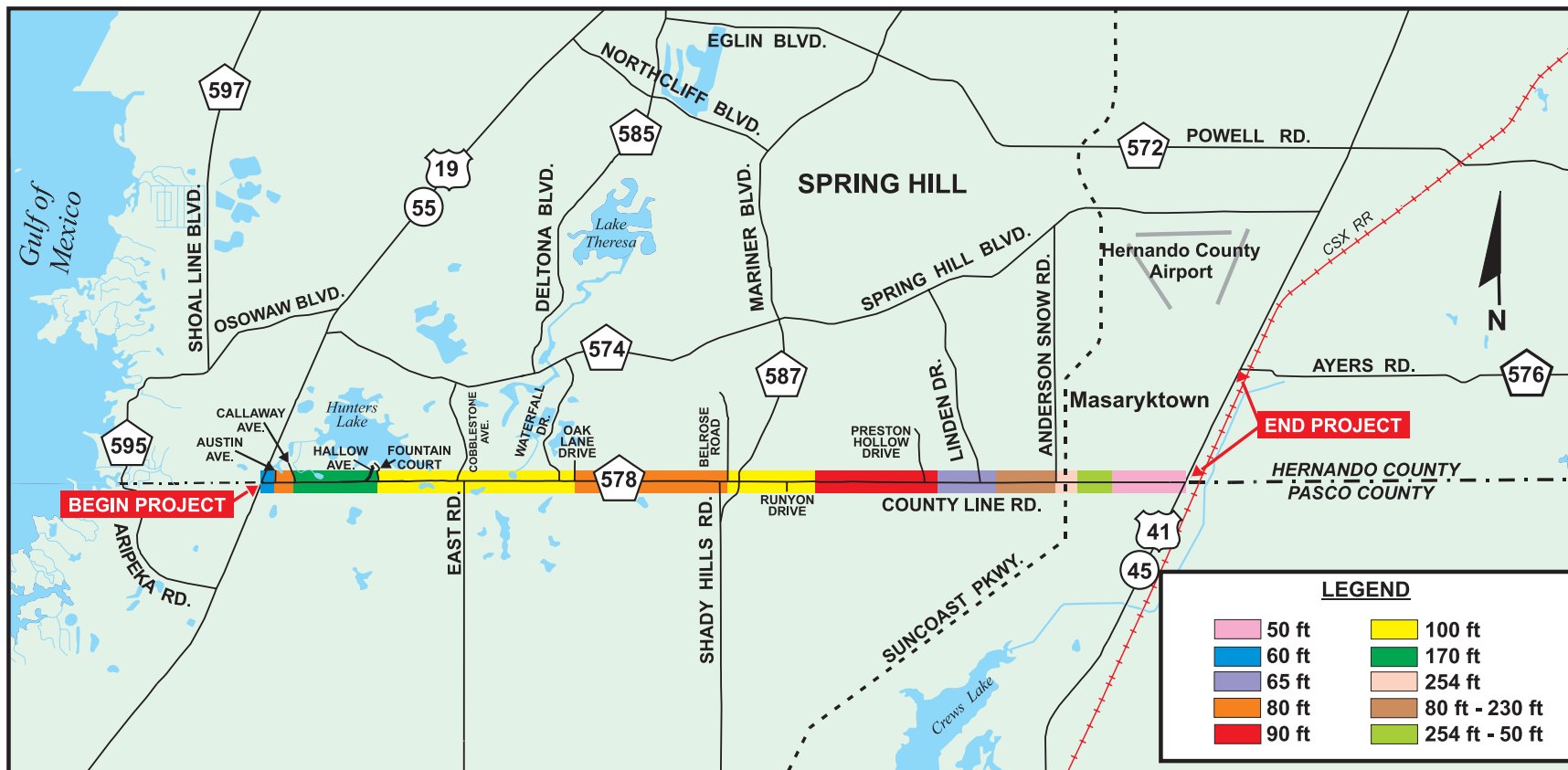
4.1.3 PEDESTRIAN AND BICYCLE FACILITIES

There are currently no existing pedestrian or bicycle facilities, except in areas where paved shoulders exist, along the project corridor.

4.1.4 RIGHT-OF-WAY

The existing right-of-way (ROW) for C.R. 578 from U.S. 19 to U.S. 41 ranges from 50 ft (15.24 m) to 170 ft (51.82 m) except at the Suncoast Parkway interchange where the ROW width is 254 ft (77.42 m), as shown in Figure 4-1. Table 4-1 summarizes the existing ROW widths along the project corridor.

FIGURE 4-1
EXISTING RIGHT-OF-WAY



**TABLE 4-1
EXISTING RIGHT-OF-WAY**

Segment	Right-of-Way Width	
U.S. 19 to west of Austin Avenue	60 ft	18.29 m
West of Austin Avenue to Callaway Avenue	80 ft	24.38 m
Callaway Avenue to Fountain Court	170 ft	51.82 m
Fountain Court to Oak Lane Drive	100 ft	30.48 m
Oak Lane Drive to Belrose Road	80 ft	24.38 m
Belrose Road to 900 ft (274.32 m) east of Runyon Drive	100 ft	30.48 m
900 ft (274.32 m) east of Runyon Drive to 500 ft (152.40 m) east of Preston Hollow Drive	90 ft	27.43 m
500 ft (152.40 m) east of Preston Hollow Drive to 2,000 ft (609.60 m) west of Anderson Snow Road	65 ft	19.81 m
2,000 ft (609.60 m) west of Anderson Snow Road to Anderson Snow Road	80 ft to 230 ft	24.38 m to 70.10 m
Anderson Snow Road to 700 ft (213.36 m) east of Suncoast Parkway	254 ft	77.42 m
700 ft (213.36 m) east of Suncoast Parkway to 660 ft (201.17 m) east of Service Road 6B	254 ft to 50 ft	77.42 m to 15.24 m
660 ft (201.17 m) east of Service Road 6B to U.S. 41	50 ft	15.24 m

Sources: State of Florida Right-of-Way Maps, Years 1966, 1970, and 1982.
Hernando County Public Works Department, Year 1994.

4.1.5 HORIZONTAL ALIGNMENT

The existing horizontal alignment was obtained from the field survey conducted for this project. C.R. 578 consists of 15 deflections along the existing facility. Table 4-2 summarizes the existing horizontal alignment.

**TABLE 4-2
EXISTING HORIZONTAL ALIGNMENT CHARACTERISTICS ALONG C.R. 578**

Station	Bearing	Length
83+95.986	S 89° 55' 06.8676" E	2044.9264 ft
104+40.912	S 89° 54' 24.0157" E	5286.9467 ft
157+27.859	S 89° 41' 22.4713" E	5286.5946 ft
210+14.454	S 89° 34' 26.5348" E	5290.0843 ft
263+04.538	S 89° 42' 58.8983" E	5288.1768 ft
315+92.715	S 89° 37' 00.1545" E	5286.1072 ft
368+78.822	S 89° 22' 55.2196" E	5187.4725 ft
420+66.294	S 89° 34' 22.9389" E	5288.0549 ft
473+54.349	S 89° 40' 33.1718" E	2644.0041 ft
499+98.354	S 89° 46' 25.5992" E	2643.6587 ft
526+42.012	S 89° 45' 25.5993" E	2644.3800 ft
552+86.392	S 89° 49' 47.4331" E	2644.1611 ft
579+30.553	S 89° 48' 38.4015" E	2643.0506 ft
605+73.604	S 89° 48' 57.3602" E	2646.0804 ft
632+19.684	S 89° 54' 00.4652" E	2404.4889 ft

4.1.6 VERTICAL ALIGNMENT

A Digital Terrain Model (DTM) was developed for this study using the Low Altitude Mapping Photography (LAMP) procedure. From the DTM, the elevations along C.R. 578 range from a low of 17.0 ft (5.18 m) at U.S. 19 to a high of 92.0 ft (28.0 m) at Preston Hollow Drive.

4.1.7 DRAINAGE

4.1.7.1 Existing Drainage Patterns

The existing roadway drainage system within the project limits consists predominantly of roadside grass swales and ditches, with numerous driveway culverts and cross drains. The project is located within the Coastal Rivers Basin and exhibits hydrogeologic characteristics associated with the Karst topography. Sinkholes and other depressed areas are prevalent throughout the project limits providing vast amounts of natural surface storage within numerous closed basins. Shallow lakes are also present, many of which may be connected directly to the underlying confined aquifer.

Stormwater runoff for most of the eastern portion of the project located between U.S. 19 and Mariner Boulevard/Shady Hills Road, a distance of approximately 4.3 mi (6.9 km), drains north and outfalls into Hunters Lake. Within this segment, approximately 0.85 mi (1.37 km) of roadway was recently widened to four lanes. Stormwater management facilities (two retention ponds) have been provided on the south side of the roadway.

Stormwater runoff from the remainder of the project flows to closed basins and or sinkholes adjacent to the project corridor. Under normal conditions the closed basins are internally drained. However, during periods of high groundwater levels and extreme rainfall, excess runoff from some of these closed basins/depressional areas will flow overland following poorly defined shallow swales and ditches toward the Masaryktown canal.

4.1.7.2 Existing Drainage Structures

Seventeen existing cross drains were located along C.R. 578 as a result of field investigations. These structures ranged in size from 18 to 42 inches (in) [450 to 1,050 millimeters (mm)] in diameter as shown in Table 4-3. Eleven of the cross drains were reinforced concrete pipe (RCP), and the remaining five were corrugated metal pipe (CMP). Ditch bottom grate inlets were found on 9 of the cross drains with the remainder having straight concrete headwalls. All of the accessible cross drains appeared to be in good condition and functioning properly. Only minor maintenance-related problems such as minor pipeline obstructions, erosion at the outlets, and 1 damaged end treatment were observed.

**TABLE 4-3
EXISTING CROSS DRAINS**

Cross Drain No.	Location	Size & Material	Outfall
1	250 ft (76.2 m) West of U.S. 41	24 in (600 mm) RCP w/headwalls	North to poorly defined swale
1A	3,650 ft (1,112.5 m) East of Linden Drive	24 in (600 mm) RCP w/headwalls	North to poorly defined swale
2	400 ft (121.9 m) West of Linden Drive	24 in (600 mm) RCP w/headwalls	South to low area
2A	1,300 ft (396.2 m) West of Linden Drive	24 in (600 mm) RCP w/headwalls	South to sink hole/low area
3	4,900 ft (1,493.5 m) West of Linden Drive	24 in (600 mm) RCP w/headwalls	South to low area
3A	4,700 ft (1,432.6 m) East of Mariner Boulevard/Shady Hills Road	24 in (600 mm) RCP w/headwalls	South to low area
4	550 ft (167.6 m) West of Mariner Boulevard/Shady Hills Road	24 in (600 mm) RCP w/headwalls	South to sink hole
5A	150 ft (45.7 m) West of Waterfall Drive	18 in (450 mm) CMP w/grate inlets	North to Hunters Lake
5B	250 ft (76.2 m) West of Randolph Drive	12 x 18 in (300 x 450 mm) CMP w/grate inlets	North to Hunters Lake
6	250 ft (76.2 m) West of Truce Circle	24 in (600 mm) CMP w/grate inlets	North to Hunters Lake
7	1,700 ft (518.2 m) West of Waterfall Drive	24 in (600 mm) CMP w/grate inlets	North to Hunters Lake
8	700 ft (213.4 m) West of Parkton Avenue	42 in (1,050 mm) CMP w/grate inlets	North to Hunters Lake
9	Between Parma Land and Outlook Avenue	24 in (600 mm) CMP w/grate inlets	North to Hunters Lake
10A	Between Ruskin Avenue and Hallow Avenue	24 in (600 mm) RCP	North to Hunters Lake from stormwater treatment pond
10B	Between Ruskin Avenue and Hallow Avenue	30 in (750 mm) RCP	Stormwater treatment pond
11	700 ft (213.4 m) East of Grand Club Drive	18 in (450 mm) RCP	Stormwater treatment pond
12	350 ft (106.7 m) West of Grand Club Drive	14 x 23 in (365 x 575 mm) ERCP	North to Hunters Lake from stormwater treatment pond

4.1.7.3 Drainage-Related Problems

The Pasco County and Hernando County Public Works Departments were contacted concerning any historical flooding problems within and adjacent to the project limits. No drainage problems along the existing roadway were reported other than erosion along the roadway shoulders. The worst areas were reported to be west of Mariner Boulevard/Shady Hills Road where steep embankments were noted. These areas are adjacent to depressions or low-lying areas.

4.1.7.4 Encroachments to Base Floodplains

Examination of Flood Insurance Rate Maps (FIRMs) community panel numbers 120230-0020C, 120230-0050C, 120230-0075C, 120110-270B, 120110-300B, and 120110-325B indicate two distinct and relatively small portions of the C.R. 578 project limits encroach upon the 100-year Flood Zone.

The first floodplain encroachment is located approximately 2.6 mi (4.2 km) east of U.S. 19. Both the Pasco County FIRM (community panel 1200230 0050C) and Hernando County FIRM (community panel 1200110 300 B) show encroachment into Flood Zone A extending from

Beach Drive eastward for a distance of approximately 900 ft (274.3 m) to Kelly Road. Flood Zone A is defined as areas of the 100-year flood zone where the base flood elevations and flood hazard factors have not been determined.

The second floodplain encroachment is located immediately west of U.S. 41 and extends eastward to a point approximately 350 ft (106.7 m) west of Marianna Street. Pasco County community panel 1200230 0075 C shows 900 ft (274.3 m) of the C.R. 578 right-of-way as being in Flood Zone A. The northern half of the right-of-way within this same section of roadway is shown on the Hernando County FIRM (community panel 12001100 0325 B). This section of roadway is located in Flood Zone B. Flood Zone B is defined as areas between the limits of the 100-year and 500-year flood; or certain areas subject to the 100-year flood with average depths less than 1 ft (0.3 m). In addition, Flood Zone B is defined as contributing areas less than 1 square mile (sq mi) or areas that are protected by levees from the 100-year base flood.

There are no regulated floodways located within the project limits.

4.1.8 GEOTECHNICAL DATA

The soils associated within the limits of the project can be categorized according to the U.S. Department of Agriculture (USDA) Soil Conservation Services (SCS) Soil Survey of Pasco and Hernando Counties. The soil survey map indicates that there are several mapping units along the project corridor as shown in Table 4-4.

In general, the surficial soils consist of poorly graded fine sands grading to silty and clayey fine sands as the roadway approaches Masaryktown.

**TABLE 4-4
SUMMARY OF USDA SOIL SURVEY FOR PASCO AND HERNANDO COUNTIES**

Pasco/Hernando Counties USDA Soil Series	Seasonal High Groundwater Table		Soil Classifications		
	Depth (m (in))	Duration (months)	Depth (m (in))	Unified	AASHTO
C.R. 578					
Candler (13, 14) Candler (14, 15)	>72 (1.8)	–	0-80 (0-2.0)	SP, SP-SM	A-3
Paola (19) Paola (39)	>72 (1.8)	–	0-80 (0-2.0)	SP	A-3
Millhopper (69) Masaryk (32)	42–72 (1.1-1.8)	7	0-60 (0-1.5) 60-80 (1.5-2.0)	SP-SM, SM SM, SM-SC, SC	A-3, A-2-4 A-2-4, A4, A-2-6
Ayers Road Extension					
Kendrick (29)	>72 (1.8)	–	0-28 (0-0.7) 28-34 (0.7-0.9) 34-63 (0.9-1.6) 63-80 (1.6-2.0)	SP-SM SC, SM-SC SC SC, SM-SC	A-3, A-2-4 A-2-6, A-2-4 A-2-6, A-6 A-2-6, A-2-4
Nobleton (36)	18-42 (0.5-1.1)	4	0-33 (0-0.8) 33-37 (0.8-0.95) 37-60 (0.95-1.5) 60-80 (1.5-2.0)	SP-SM, SM SC SC, CL, CH SC	A-2-4 A-2-6, A-6 A-6, A-7 A-2-6, A-6

4.1.9 EXISTING CRASH HISTORY

Existing crash data was obtained from the Hernando County Office of the County Engineer for the most recent 3-year period 1997 to 1999 and from FDOT District VII for the period 1997 to 1998. Since data were obtained from two different sources, the data were checked to ensure that there was no duplicate information. Table 4-5 provides information on the number of crashes, the number of vehicles involved in the crashes, the number of injuries, the number of fatalities, and the estimated economic damages for each of the three years 1997, 1998, and 1999 as well as the 3-year totals. As indicated in the table, 147 total crashes have occurred over the 3-year period 1997 to 1999. These 147 crashes have involved 301 vehicles and resulted in 127 injuries along with two fatalities.

**TABLE 4-5
EXISTING CRASH HISTORY
NUMBER OF CRASHES AND CRASH CONSEQUENCES BY YEAR**

Year	Crashes	Vehicles	Injuries	Fatalities
1997	46	93	47	0
1998	68	144	66	2
1999	33	64	14	0
3-Year Total	147	301	127	2

Table 4-6 provides a summary of the types of crashes that have occurred within the C.R. 578 corridor. Rear-end collisions are the most prevalent type of crash occurring in the corridor and represent approximately 45.6 percent of the total crashes reported between 1997 and 1999. Right-angle collisions and left-turn collisions are the next most frequent types of crashes occurring in the corridor, accounting for approximately 17.0 percent and 12.9 percent of the total crashes, respectively.

**TABLE 4-6
EXISTING CRASH HISTORY
FREQUENCY OF CRASHES BY TYPE**

Type of Crash	No. of Occurrences
Rear End Collision	67
Right-angle Collision	25
Left-turn Collision	19
Sideswipe Collision	8
Head-on Collision	7
Vehicle Hit Tree/Shrubbery	4
Vehicle Hit Sign/Signpost	2
Backing into Collision	1
Collision with Bicycle	1
Vehicle Hit Utility Pole/Light Pole	1
Vehicle Hit Guardrail	1
Vehicle Hit Barrier Wall	1
Vehicle Ran Into Ditch/Culvert	1
Vehicle Overtuned	1
Vehicle Fire	1
All Other Types	7
TOTAL	147

Table 4-7 summarizes the lighting conditions and pavement conditions that were associated with the crashes. Approximately 24.5 percent of the total crashes occurred during non-daylight hours (i.e., dawn, dusk, or at night) and approximately 69.4 percent of the total crashes occurred under dry pavement conditions. One additional analysis of the existing crash data was conducted to identify the individual locations that experienced the highest number of crashes during the period from 1997 to 1999. The three intersections that had the most crashes were Mariner Boulevard/Shady Hills Road (33 total crashes), Commercial Way (17 total crashes), and Cobblestone Drive (11 total crashes). Table 4-8 provides a summary of the crash frequency by individual intersection location.

**TABLE 4-7
EXISTING CRASH HISTORY
LIGHTING AND PAVEMENT CONDITIONS**

Lighting Conditions	No. of Crashes	Pavement Conditions	No. of Crashes
Daylight	95	Dry	102
Dusk	2	Wet	29
Dawn	3	Slippery	1
Dark (Street Lights)	10	Not Specified	15
Dark (No Street Lights)	21		
Not Specified	16		

**TABLE 4-8
EXISTING CRASH HISTORY
FREQUENCY OF CRASHES BY LOCATION**

Location	No. of Occurrences
Mariner Boulevard/Shady Hills Road	33
Commercial Way	17
Cobblestone Drive	11
Broad Street	9
Spring Time Street	7
Anderson Snow Road	6
Kostka Drive	5
U.S. 19	4
Holden Drive	4
Medical Boulevard	4
Waterfall Drive	3
U.S. 41	2
Ackson Street	2
Baine Avenue	2
Belrose Road	2
Cabot Avenue	2
Dartmouth Avenue	2
East Road	2
Hallam Court	2
Linden Drive	2
Oak Lane Drive	2
Paris Avenue	2
Peach Tree Drive	2
Preston Hollow Drive	2

TABLE 4-8 (CONTINUED)
EXISTING CRASH HISTORY
FREQUENCY OF CRASHES BY LOCATION

Location	No. of Occurrences
Randolph Avenue	2
Shady Hills Road	2
Austin Avenue	1
Dandelion Court	1
Fargo Court	1
Furman Road	1
Galena Avenue	1
Long Lake Avenue	1
Mapleleaf Court	1
Old Shady Hills Road	1
Partridge Street	1
Rosephil Street	1
Ruskin Avenue	1
Shelby Avenue	1
Sparks Road	1
Suncoast Boulevard	1

4.1.10 INTERSECTIONS AND SIGNALIZATION

Along the project corridor, there are two signalized intersections: U.S. 19 and Mariner Boulevard/Shady Hills Road. All other intersections along the corridor are unsignalized and are stop sign controlled for the side streets.

4.1.11 RAILROAD CROSSINGS

There currently exists one railroad crossing east of the intersection of U.S. 41 and Ayers Road. This crossing has the following general characteristics:

Crossing Highway Number:	624913S
Railroad Milepost Number:	SR806.84
Traffic Control Equipment:	Flashing warning lights, gates, and cantilevers

4.1.12 TRANSIT

There are currently no existing transit services provided along the C.R. 578 corridor. However, both counties provide a paratransit service. This service is an on-demand transportation service for the elderly.

4.1.13 LIGHTING

No street lighting is currently provided along the project corridor.

4.1.14 UTILITIES

To evaluate potential surface and subsurface utility conflicts associated with the proposed project, information was obtained concerning the location and characteristics of the existing utilities within the C.R. 578 corridor. The first step in the process was to contact the utility owners within the corridor. Candidate owners for this “contact” list were those owners known to operate or have plans to operate facilities within the project corridor. The resulting “contact” list is shown below.

- Bell-South Telecommunications
- Time Warner
- Florida Power Corporation
- Pasco County Utilities
- E-Spire/ASCI
- Intermedia Communications
- Sprint Fiber Operations
- Teco/Peoples Gas
- Withlacoochee Electric
- Hernando County Utilities
- AT&T
- General Telephone
- MCI Worldcom
- NorthStar Communications Group

Each utility owner on the list above was contacted to verify ownership or operation of any utility facility, existing or proposed, within the project limits. These owners were then provided with two sets of aerial photography based plans. The owners were asked to mark and return one set of the plans identifying the existing and proposed facilities. The type, location, and ownership of the existing utilities along the project corridor are summarized in Table 4-9.

4.1.15 PAVEMENT CONDITIONS

A pavement condition survey was conducted by Pasco County in November of 1999 for the project corridor. A scale of 1 to 7 is used in rating the pavement condition of a roadway and Table 4-10 details these ratings.

Using the criteria in Table 4-10, the existing pavement conditions along the project corridor for 1999 are detailed in Table 4-11. Since this survey, portions of C.R. 578 have been resurfaced.

**TABLE 4-9
SUMMARY OF EXISTING UTILITIES**

Owner	Utility Description	Aerial(A) Buried (B)	Side	Approximate Location
Florida Power Corporation	Electric Power Distribution	A A	Crossing Crossing	C.R. 578 - 380 ft east of Shady Hills Road/Mariner Blvd. C.R. 578 – 200 ft west of Jackson Street
Hernando County Utilities Department (Water and Sewer)	Sanitary Sewer Pumping Station Sanitary Sewer – 8” Gravity Line Sanitary Sewer – 6” Force Main Potable Water – 12” Water Main	B B B B	North North North North	C.R. 578 – 300 ft east of Suncoast Parkway C.R. 578 – From Pumping Station westward 300 ft C.R. 578 – From Pumping Station westward 300 ft C.R. 578 – From Pumping Station westward 300 ft
Bell-South Communications	Communication	B B B B B A B B B B B B	North North North North North North South North North West East South	C.R. 578 – From U.S. 19 to Arcadia Avenue C.R. 578 – From Cabot Avenue west for 100 ft C.R. 578 – From Clearwater Drive to Fargo Court C.R. 578 – From Truce Circle to Randolph Avenue C.R. 578 – From Waterfall Drive to Candlewick Avenue C.R. 578 – From Oak Lake Drive to 380 ft east of Sparks Road C.R. 578 – From 330 ft west of Linden Dr. to 380 ft east of Sparks Rd. C.R. 578 – From 380 ft E. of Sparks Rd to 1,500 E. of the Suncoast Exp. C.R. 578 – From 380 ft E. of Sparks Rd to 500 W. of the Suncoast Exp C.R. 578 – From 270 ft. E. of the Suncoast Exp to 220 ft. E. of Quarter Horse Ln U.S. 41 at Ayers Road – entire length of study limits U.S. 41 – From Ayers Road south to end of study limits Ayers Road – From U.S. 41 to end of study limits
Pasco County Utilities Department (Water and Sewer)	Potable Water – 12” Water Main Potable Water – 12” Water Main Sanitary Sewer – 6” Force Main Sanitary Sewer – 6” Force Main Sanitary Sewer – 6” Force Main Sanitary Sewer – 6” Force Main	B B B B B B	East South West Crossing East South	U.S. 19 – From C.R. 578 south to end of study limits C.R. 578 – From U.S. 19 to 300 ft east of Shady Hills Road U.S. 19 – From 45 ft south of C.R. 578 to end of study limits U.S. 19 – 45 ft south of C.R. 578 U.S. 19 – From 45 ft south of C.R. 578 to C.R. 578 C.R. 578 – From U.S. 19 to 550 ft east of U.S. 19
Teco/Peoples Gas	Natural Gas – 6” Gas Main Natural Gas – Proposed 6” Gas Natural Gas – Proposed 6” Gas	B B B	North North South	C.R. 578 – From Medical Boulevard to 1870 ft west of Presto Hollow Drive C.R. 578 – From 1870 ft west of Presto Hollow Drive to Linden Drive C.R. 578 – From Mariner Boulevard to 650 ft west of Jackson Street
Verizon	Communication Fiber Optic Cable	B B B B B B	East Crossing West South South South	U.S. 19 – From C.R. 578 south 500 ft U.S. 19 – 500 ft south of C.R. 578 U.S. 19 – From C.R. 578 south to Project End C.R. 578 – From U.S. 19 to Old Shady Hills Road C.R. 578 – From Parade Road to Kelly Road C.R. 578 – From Drayton Street to the west 820 ft
Williams Communication	Fiber Optic Cable	B B	East Crossing	U.S. 41 - Entire Project Limits Ayers Road - East of U.S. 41
Level (3) Communications	Communication	B	West	U.S. 19 - Entire Project Limits

TABLE 4-9 (Continued)
SUMMARY OF EXISTING UTILITIES

Owner	Utility Description	Aerial(A) Buried (B)	Side	Approximate Location
Florida Water Services	Wastewater - 10" Force Main	B	North	C.R. 578 – From U.S. 19 to Mariner Boulevard
	Wastewater - 10" Force Main	B	Crossing	U.S. 19 - North of C.R. 578
	Wastewater - 10" Force Main	B	West	U.S. 19 - North of C.R. 578 to north end of project
	Potable Water - 6" Water Main	B	East	U.S. 19 - From north of C.R. 578 to C.R. 578
	Potable Water - 6" Water Main	B	North	C.R. 578 - from U.S. 19 to Callaway Avenue
	Potable Water - 8" Water Main	B	North	C.R. 578 - from Callaway Avenue to Balboa Avenue
	Potable Water - 10" Water Main	B	North	C.R. 578 - from Balboa Avenue to Cobblestone Drive
	Potable Water - 6" Water Main	B	North	C.R. 578 - from Cobblestone Drive to Oak Leaf Drive
	Potable Water - 8" Water Main	B	North	C.R. 578 - from Mariner Boulevard to 425' east of Mariner Boulevard
	Potable Water - 10" Water Main	B	North	C.R. 578 - from to 425' east of Mariner Boulevard t Preston Hollow Drive
Withlacoochee River Electric	Electric Power Distribution	A	East	U.S. 19 - entire project limits
		A	West	U.S. 19 - entire project limits
		A	North	C.R. 578 - from U.S. 19 to Balboa Avenue
		A	South	C.R. 578 - from Balboa Avenue to 0.97 miles east of Mariner Boulevard C.R. 578 - from Balboa Avenue to 1.24 miles east of Mariner Boulevard
Time Warner	Cable TV	A	North	C.R. 578 - from U.S. 19 to Hamlet Circle
		B	North	C.R. 578 - from Hamlet Circle to Dartmouth Avenue
		A	North	C.R. 578 - from Dartmouth Avenue to Oak Leaf Drive
		B	South	C.R. 578 - from east of U.S. 19 to Parade Road
		A	South	C.R. 578 - from Runyon Drive to Drayton Street
		A	North	C.R. 578 - from Anderson Road to west side of Suncoast Parkway
		B	North	C.R. 578 - from west side of Suncoast Parkway to east side of Suncoast Parkway
		A	North	C.R. 578 - from east side of Suncoast Parkway to U.S. 41
		A	East	U.S. 41 - from C.R. 578 to north of Ayers Road
		A	South	Stur Street - from U.S. 41 to Kosta Street
		B	East	Kosta Street - from Stur Street to Psenka Street
		B	North	Penska Street - from Kosta Street to 1,200 ft west of Kosta Street
		A	North	Penska Street - 1,200 ft west of Kosta Street to Korbus Road
A	East	Korbus Road - from Penska Street to Boynton Road		
A	North	Boynton Road - from Korbus Road to Kosta Street		

**TABLE 4-10
PAVEMENT RATINGS**

1	2	3	4	5	6	7
Total Failure	Very Poor	Poor	Fair with Minor Cracking	Good with Minor Cracking	Very Good with Minor Roadway Surface Oxidation	Excellent Paved within a Year

**TABLE 4-11
EXISTING PAVEMENT CONDITIONS ALONG C.R. 578**

Location	STR	Condition
From U.S. 19 east for 0.36 mi (0.58 km)	62417	5
From 0.36 mi (0.58 km) east of U.S. 19, east for 1.02 mi (1.64 km)	52417	7
From 1.38 mi (2.22 km) east of U.S. 19 to East Road	42417	5
1.03 mi (1.66 km) east of East Road	32417	5
From 1.03 mi (1.66 km) east of East Road, east for 1.0 mi (1.61 km)	22417	5
From 2.03 mi (3.27 km) east of East Road to Old Shady Hills Road	12417	5
From Old Shady Hills Road east for 1.0 mi (1.61 km)	62418	4
From 1.0 mi (1.61 km) east of Old Shady Hills Road, east for 1.01 mi (1.63 km)	52418	4
From 2.01 mi (3.24 km) east of Old Shady Hills Road, east for 1.0 mi (1.61 km)	42418	4
From 3.01 mi (4.85 km) east of Old Shady Hills Road, east for 1.0 mi (1.61 km)	32418	5
From east of the Suncoast Parkway to 0.42 mi (0.68 km) west of U.S. 41	22418	5
From 0.42 mi (0.68 km) west of U.S. 41 to U.S. 41	12418	5

4.2 EXISTING STRUCTURES

There currently are two new structures along the project corridor that span C.R. 578 at the Suncoast Parkway (Bridge Numbers 080038 and 080039) with the following characteristics.

- Horizontal Alignment:** The existing bridges are on tangent horizontal alignments.
- Vertical Alignment:** The bridges are on a parabolic vertical curve with an incoming grade of (+) 2.5 percent and an outgoing grade of (-) 2.7 percent. The vertical curve length for each bridge structure is 2,100 ft (640.0 m).
- Vertical Clearance:** The northbound bridge has a minimum vertical clearance of 16.58 ft (5.05 m), and the southbound bridge has a minimum vertical clearance of 16.83 ft (5.13 m).
- Span Arrangement:** The bridges consist of two spans with a maximum span length of 90.45 ft (27.57 m). The total length of each bridge is 180.90 ft (55.14 m). The bridge deck consists of two-lanes in each direction, 12 ft (3.6 m) wide, a 6 ft (1.8 m) wide inside shoulder and a 10 ft (3.0 m) outside shoulder.

4.3 ENVIRONMENTAL CHARACTERISTICS

4.3.1 LAND USE DATA

4.3.1.1 Existing Land Use

Primary land uses along the C.R. 578 corridor include numerous residential subdivisions, individual residences, commercial and industrial development, numerous religious and community facilities, and undeveloped land. Existing land uses are similar on both the Pasco County and Hernando County sides of C.R. 578. The project corridor can be divided into two sections based on existing land use patterns: U.S. 19 to Mariner Boulevard/Shady Hills Road and Mariner Boulevard/Shady Hills Road to U.S. 41. Below is a description of the existing land use in each section. Additionally, existing land use maps are shown in Appendix B.

The land uses in the western section of C.R. 578, between U.S. 19 and Mariner Boulevard/Shady Hills Road, consist of a mixture of medium-density single-family residential, commercial, and several religious facilities. Residential development is made up of numerous individual residences directly adjacent to C.R. 578 as well as single-family subdivisions. Residential subdivisions located along this section include Oakwood Village, Arlington Woods, Heritage Pines, Rolling Oaks Estates, Spring Hill, El Pico, Rainbow Hills, Seven Hills, Autumn Oaks, and Oak Lake Estates. Numerous commercial uses are scattered along this section of the project corridor with the greatest concentrations being located at U.S. 19, Mariner Boulevard/Shady Hills Road, and the County Line Industrial Park. Major commercial centers include the UHL Plaza shopping center at U.S. 19 and the Publix Shopping Center and Seven Hills Business Park at Mariner Boulevard/Shady Hills Road intersection. Other commercial uses consist of automotive service and sales establishments, retail stores, and restaurants. The 4 churches located along this section of the project corridor are The Father's House, Church of the Nazarene Calvary Community, New Hope Baptist Church, and Faith Baptist Church.

The eastern section of the C.R. 578 project corridor, between Mariner Boulevard/Shady Hills Road and U.S. 41 is characterized by lower residential densities and undeveloped land. Land uses consist of a mixture of low- and medium-density single-family residential, commercial, industrial, religious and community facilities, and undeveloped land. Residential uses are concentrated in the Preston Hollow subdivision, the Topics RV community, Leisure Hills, Highland 10 Country Hills, Linden Retreats, Arkay Park, and in the southeast corner of Shady Hills Road and C.R. 578. Masaryktown, located north of C.R. 578, and west of U.S. 41, is an established residential community consisting of single-family residences and one church. Commercial land uses are concentrated in the vicinity of the Mariner Boulevard/Shady Hills Road intersection and consist of automotive service establishments, retail stores, and restaurants. Keys Concrete Industries, located on the south side of the project corridor between Mariner Boulevard/Shady Hills Road and the Suncoast Parkway, is the only industrial use located within this section. At the eastern terminus of the project corridor, commercial uses are scattered along U.S. 41 between C.R. 578 and Ayers Road and consist of retail sales and automotive service establishments. The Hernando County Airport, a regional general aviation facility, is located north of the proposed Ayers Road Extension and west of U.S. 41. Community facilities include the Spring Hill Regional Hospital, Suncoast Elementary School, Spring Hill Assisted Living Facility, VFW Post 8681, and Slovene National Benefit Society Lodge #778. The three religious facilities located in this section of the project corridor are Hosanna Assembly of God, Cornerstone Christian Center, and First Baptist Church of Masaryktown.

4.3.1.2 Future Land Use

The *Pasco and Hernando County Comprehensive Plans*^{6,7} indicate that future land uses within the project corridor will follow the established trends of the existing land uses. See Appendix B for future land use maps.

The Pasco County Future Land Use Map indicates that land uses south of the project corridor are primarily designated as residential combined with scattered commercial uses. Approved future commercial development includes a Walgreens Drug Store at the intersection of Mariner Boulevard/Shady Hills Road and C.R. 578. The western half of the project corridor is characterized by medium residential densities, while the eastern half of the project corridor is characterized by low residential densities.

According to the Hernando County Future Land Use Map, land uses north of the project corridor will continue to be designated as residential with scattered commercial uses at the major intersections. Additional commercial uses have been designated for the areas in the vicinity of the Suncoast Parkway Interchange. Approved future commercial development includes two assisted care living facilities on C.R. 578 east of Mariner Boulevard/Shady Hills Road. Land on the northwest corner of Mariner Boulevard/Shady Hills Road and C.R. 578 is part of the Seven Hills Development of Regional Impacts (DRI) and has been designated for future commercial development. Vacant land on the northeast corner of Mariner Boulevard/Shady Hills Road and C.R. 578 has also been designated for future commercial development. A 50 acre (ac) [20.2 hectare (ha)] site on C.R. 578 approximately 1.5 mi (2.4 km) east of Mariner Boulevard/Shady Hills Road is currently being considered as the site for a new Pasco/Hernando Community College Campus. The Hernando County Board of County Commissioners will ultimately determine whether to locate the school on the C.R. 578 site or an alternate site in the Airport Industrial Park.

The *Hernando County Comprehensive Plan*⁷, calls for the creation of an Airport Planned Development District in order to “...maximize the use of the Hernando County Airport and surrounding lands by providing for aviation related activities, industrial uses, and other land use not incompatible with the airport.” Relevant policies associated with this airport planned development district include the identification of “runway approach surfaces at the end of each runway, which shall be protected from encroachment from residential development and other non-compatible land uses.”

4.3.2 CULTURAL FEATURES

A *Cultural Resource Assessment Survey*¹⁵ (CRAS) of C.R. 578 in Hernando and Pasco Counties was conducted as part of the PD&E Study. The CRAS is intended to comply with the National Environmental Policy Act (NEPA); Section 106 of the National Historic Preservation Act of 1966 (as amended), as implemented by 36 CFR 800 (Protection of Historic Properties); and Chapter 267, Florida Statutes. The objective of this survey was to assess all cultural resources in terms of their eligibility for listing in the *National Register of Historic Places (NRHP)*⁸ according to the criteria set forth in 36 CFR Section 60.4.

A total of 13 archaeological sites were identified within the project area. Eleven of the 13 archaeological sites are newly identified (8PA1301, 8PA1302, 8HE419-8HE423, 8HE426,

8HE426, 8GE428, and 8HE429); two previously recorded sites (8PA185 and 8HE284) were revisited during testing. A Florida Master Site File (FMSF) form for each site is provided in Appendix A. Based on preliminary analysis, ten sites are considered ineligible for listing in the NRHP. Nine sites (8PA1301, 8PA1302, 8HE419-8HE423, 8HE425, and 8HE428) are short-term campsites of small limited lithic scatters associated with resource procurement. Site 8HE429 is a cistern or drainage pond most likely dating from the turn-of-the-century. Although site 8HE429 provides useful information of historic studies of this area, no other artifacts were recovered from shovel testing within the project impact area, which indicates that the potential for recovering further important information is relatively low. These sites are not considered locally or regionally significant and, therefore, are considered ineligible for listing in the *NRHP*⁸. No further work is recommended at these sites.

The remaining 3 potentially eligible sites (8PA185, 8HE426, and 8HE284) were subjected to additional testing. Based on the additional testing and review of results, the SHPO determined through correspondence dated March 12, 2002, that 8PA185 and 8HE284 were not considered eligible for listing in the *NRHP*⁸. However, the SHPO determined that 8HE426 was considered eligible for listing in the *NRHP*⁸. Consequently, the Section 106 process was initiated for 8HE426.

The historic resources survey conducted for the project resulted in the identification of 15 historic resources located in Hernando and Pasco Counties. Fourteen resources (8HE408-8HE417; 8PA1297-8PA1300) were newly recorded during this survey, and one resource (8HE384) was recorded during previous survey work. Of the 15 resources, none are considered eligible for listing in the *NRHP*⁸, based on their common designs and building types, compromised historic integrity, and lack of important historical associations.

One previously recorded historic resource was identified during a search of the *Florida Master Site Files*¹⁶ (*FMSF*). The historic resource, 14459 County Line Road (8HE378), was documented in 1995 as part of the Suncoast Expressway Re-evaluation conducted by Archaeological Consultants, Inc. While performing the CRAS for C.R. 578, it was determined that 14459 County Line Road (8HE378) was demolished sometime between 1995 and the present time and is no longer standing.

4.3.3 NATURAL FEATURES

The C.R. 578 project area, which includes the Ayers Road Extension, was reviewed to identify, quantify, and map wetland communities which are located within or adjacent to the proposed project boundaries. A project study corridor was established to encompass a broad area of study, which includes all practical design alignments for this project. The study corridor for C.R. 578 was based on the existing two-lane roadway with proposed widening improvements to a four-lane roadway to either side of C.R. 578. Because of the long linear nature of this roadway, practical improvements are limited to a 600 ft (183.0 m) wide corridor centered on the centerline of the existing roadway. The Ayers Road Extension study corridor was based on a starting location east of the Suncoast Parkway at C.R. 578 and ending at Ayers Road and U.S. 41.

Field reviews of the study area were conducted to identify and determine the various types of habitat and wildlife within the project corridor. The results of these field surveys are as follows.

Seven vegetative upland community types were found within the project corridor consisting of Xeric Oak, Improved Pasture, Longleaf Pine-Xeric Oak, Pine-Mesic Oak, Live Oak, Citrus Groves, and Open Land.

Based on the work effort, 12 wetland areas consisting of 3 wetland community types were identified within the study corridor. The 3 wetland community types identified within the project corridor consisted of Open Water Lake or Pond, Marsh Wetland, and Forested Wetland. The location of each wetland is shown on Figure 4-2. Table 4-12 lists the wetlands and the wetland type and classification.

4.3.4 THREATENED AND ENDANGERED SPECIES

In accordance with Section 7 of the Endangered Species Act of 1973 (as amended) and Chapter 68 of the Florida Administrative Code, the project study area was evaluated for the potential occurrences of federal and state listed protected plant and animal species.

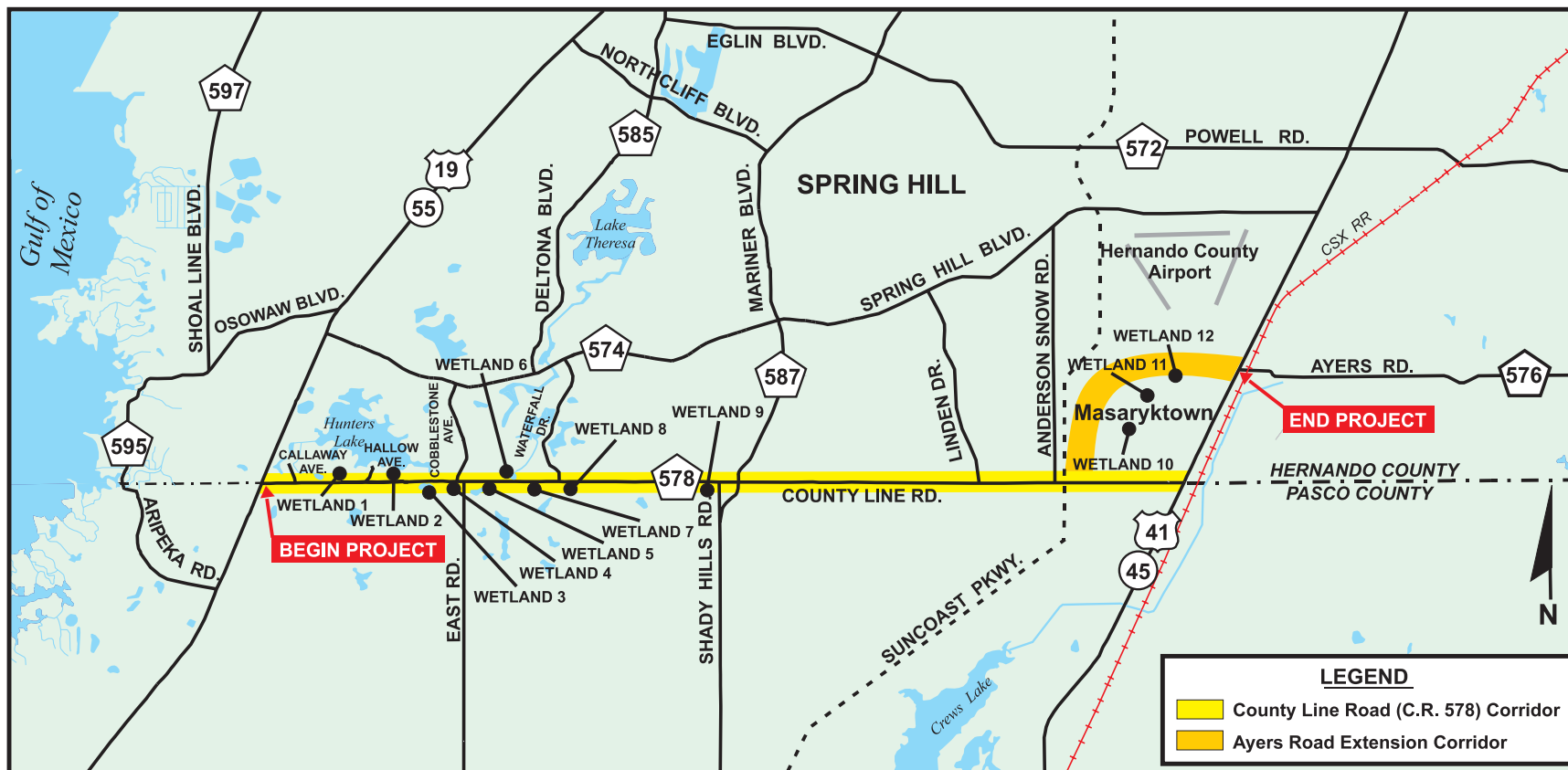
The protected species listed in Table 4-13 were compiled from information obtained from various sources and on-site field investigations. The table provides the USFWS, FFWCC, and/or Florida Department of Agriculture and Consumer Services (FDA) protection status for each species. The probability of occurrence within the project limits is shown within the table as High, Moderate, or Low and is based on the habit requirements for each species and the presence of the habitat within the proposed roadway construction limits. A Low listing indicates that no preferred habitat for that species was found to exist within the study area. A Moderate listing indicates that suitable habitat exists within the study area. A High listing indicates that suitable habitat exists and the species was observed during field reviews or documented in the database as being located within the study area.

4.3.5 POTENTIAL HAZARDOUS MATERIALS AND PETROLEUM PRODUCTS CONTAMINATED SITES

A preliminary contamination survey was conducted for the project area in accordance with Part 2, Chapter 22 of the *Project Development and Environment Manual*¹² (*PD&E Manual*). The purpose of the evaluation was to identify properties or businesses that use, store, or distribute petroleum products, hazardous materials, or hazardous wastes that are located within the project corridor.

There is no single comprehensive source of information available that identifies known or potential sources of environmental contamination along the C.R. 578 corridor. Therefore, to identify and evaluate sites containing hazardous materials, petroleum products, or other sources of potential environmental contamination in these areas, several tasks were conducted. These tasks included field reviews, database research, and review of historical aerial photographs.

FIGURE 4-2
WETLAND LOCATIONS



**TABLE 4-12
WETLAND TYPE AND DESCRIPTIONS**

Wetland Identification	Wetland Type	FLUCFCS Code*	FLUCFCS Description	USFWS Code**	USFWS Description
1	Lake/Marsh	523	Lake >10 ac & <100 ac (>4.05 ha & <40.5 ha)	PUB/EMFx	Palustrine, Unconsolidated Bottom and Emergent, Semi-permanently Flooded, Excavated
2	Lake/Marsh	522	Lake >100 ac & <500 ac (>40.5 ha & <202.5 ha)	L2EMFx	Lacustrine, Littoral Emergent, Semi-permanently Flooded, Excavated
3	Marsh	641	Freshwater Marsh	PUB/EMFx	Palustrine, Unconsolidated Bottom and Emergent, Semi-permanently Flooded, Excavated
4	Marsh (Storm Pond)	534	Reservoir <10 ac (<4.05 ha)	PEM/SS1Fx	Palustrine, Emergent and Scrub-Shrub, Broad-Leaved Deciduous, Semi-Permanently Flooded, Excavated
5	Lake	523	Lake >10 ac & <100 ac (<4.05 ha & <40.5 ha)	PUBF	Palustrine, Unconsolidated Bottom, Semi-Permanently Flooded
6	Lake/Marsh	523	Lake >10 ac & <100 ac (>4.05 ha & <40.5 ha)	PUB/EMFx	Palustrine, Unconsolidated Bottom and Emergent, Semi-permanently Flooded, Excavated
7	Marsh	641	Freshwater Marsh	PUB/EMF	Palustrine, Unconsolidated Bottom and Emergent, Semi-Permanently Flooded
8	Marsh	641	Freshwater Marsh	PEMFx	Palustrine, Emergent, Semi-Permanently Flooded, Excavated
9	Forest	610	Wetland Hardwood Forest	PFO1C	Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded
10	Marsh	641	Freshwater Marsh	PEMFx	Palustrine, Emergent, Semi-Permanently Flooded, Excavated
11	Lake	524	Lake <10 ac (<4.05 ha)	PABH	Palustrine, Aquatic Bed, Permanently Flooded
12	Lake	524	Lake <10 ac (<4.05 ha)	PABH	Palustrine, Aquatic Bed, Permanently Flooded

* FLUCFCS = Based on Florida Land Use Cover Forms Classification System, third ed. 1999.

** USFWS = Based on U.S. Fish and Wildlife Service Classification of Wetlands and Deepwater Habitats of the United States, 1979.

**TABLE 4-13
PROTECTED SPECIES POTENTIALLY OCCURRING WITHIN THE PROJECT STUDY CORRIDOR**

Scientific Name	Common Name	Habitat Preference	Habitat Presence	USFWS Designation	FFWCC/ FDA Designation	Probability of Occurrence
Plants						
<i>Adiantum tenerum</i>	Brittle maidenhair fern	Limestone sinkholes and rocky hammocks	No	NL	E	Low
<i>Asclepias curtissii</i>	Curtiss' milkweed	Scrub	No	NL	E	Low
<i>Asplenium auritum</i>	Auricled spleenwort	Wet hammocks and swamps	No	NL	E	Low
<i>Asplenium pumilum</i>	Dwarf spleenwort	Limestone and rocks in moist hammocks	No	NL	E	Low
<i>Blechnum occidentale</i>	Sinkhole fern	Deep shaded ravines and moist and dense hammocks	No	NL	E	Low
<i>Campanula robinsiae</i>	Brooksville bellflower	Brooksville Ridge Seepage Slope	No	E	E	Low
<i>Camaesyce cumulicola</i>	Sand-dune spurge	Dunes and scrub	No	NL	E	Low
<i>Glandularia tampensis</i>	Tampa vervain	Clearings in moist hammocks	No	NL	E	Low
<i>Justicia cooleyi</i>	Cooley's Water-willow	Brooksville Ridge Seepage Slope	No	E	E	Low
<i>Lechea cernua</i>	Nodding pinweed	Scrub	No	NL	T	Low
<i>Lechea divaricata</i>	Pine pinweed	Flatwoods	No	NL	E	Low
<i>Malaxis unifolia</i>	Green adder's-mouth	Partial shade of second-growth mixed oak-pine woods	No	NL	E	Low
<i>Matelea floridana</i>	Florida milkvine	Hammocks	No	NL	E	Low
<i>Monotropsis reynoldsiae</i>	Pigmy pipes	Root parasite on Flowering Dogwood	No	NL	E	Low
<i>Nolina brittoniana</i>	Britton's beargrass	Xeric Pine	Yes	E	E	Low
<i>Pteroglossaspis ecristata</i>	Wild coco	Sandhills, pinelands, oak hammocks	No	NL	T	Low
<i>Spiranthes elata</i>	Tall neottia	Moist, rocky hammocks	No	NL	E	Low
<i>Thelypteris reptans</i>	Creeping fern	Hammocks around limestone sinkholes	No	NL	E	Low
<i>Triphora craigheadii</i>	Craighead's nodding-caps	Hammocks	No	NL	E	Low
<i>Triphora latifolia</i>	Broad-leaved nodding-caps	Hardwood hammocks	No	NL	E	Low
Amphibians						
<i>Rana capito</i>	Gopher frog	Xeric Habitats	Yes	NL	SSC	Moderate
Reptiles						
<i>Alligator mississippiensis</i>	American alligator	Wetland habitats	Yes	T(S/A)	SSC	Moderate
<i>Drymarchon corais couperi</i>	Eastern indigo snake	Various habitats, gopher tortoise burrows	Yes	T	T	Moderate

TABLE 4-13 (CONTINUED)
PROTECTED SPECIES POTENTIALLY OCCURRING WITHIN THE PROJECT STUDY CORRIDOR

Scientific Name	Common Name	Habitat Preference	Habitat Presence	USFWS Designation	FFWCC/ FDA Designation	Probability of Occurrence
<i>Gopherus polyphemus</i>	Gopher tortoise	Xeric Habitats	Yes	NL	SSC	High
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake	Xeric Habitats	Yes	NL	SSC	Moderate
<i>Pseudemys concinna suwanniensis</i>	Suwannee cooter	Rivers and springs	No	NL	SSC	Low
<i>Stilosoma extenuatum</i>	Short-tailed snake	Longleaf Pine, Turkey Oak	Yes	NL	T	Low
Birds						
<i>Aphelocoma coerulescens</i>	Florida scrub-jay	Sand pine scrub and coastal strand	Yes	T	T	Moderate
<i>Aramus guarauna</i>	Limpkin	Slow moving freshwater rivers and streams, marshes, and lake shores	Yes	NL	SSC	Moderate
<i>Egretta caerulea</i>	Little blue heron	Coastal marshes, freshwater marshes, wet prairies, Mangrove swamps, open water, and sand, mud flats	Yes	NL	SSC	Moderate
<i>Egretta thula</i>	Snowy egret	Coastal marshes, freshwater marshes, wet prairies, Mangrove swamps, open water, and sand, mud flats	Yes	NL	SSC	Moderate
<i>Egretta tricolor</i>	Tricolored heron	Coastal marshes, freshwater marshes, wet prairies, Mangrove swamps, open water, and sand, mud flats	Yes	NL	SSC	Low
<i>Eudocimus albus</i>	White ibis	Coastal marshes, freshwater marshes, wet prairies, Mangrove swamps, open water, and sand, mud flats	Yes	NL	SSC	Moderate
<i>Falco peregrinus</i>	Peregrine falcon	Open terrain-coastal barrier islands, lake and river margins, coastal ponds and sloughs	Yes	NL	E	Low
<i>Falco sparverius paulus</i>	American kestrel	Open Habitats, dry prairies, pine flatwoods	Yes	NL	T	Moderate
<i>Grus canadensis pratensis</i>	Florida sandhill crane	Dry prairies, freshwater marshes, and wet prairies	Yes	NL	T	High
<i>Haliaeetus leucocephalus</i>	Bald eagle	Pine flatwoods, Coastal wetlands, lakes, rivers	Yes	T	T	Moderate

TABLE 4-13 (CONTINUED)
PROTECTED SPECIES POTENTIALLY OCCURRING WITHIN THE PROJECT STUDY CORRIDOR

Scientific Name	Common Name	Habitat Preference	Habitat Presence	USFWS Designation	FFWCC/ FDA Designation	Probability of Occurrence
<i>Mycteria americana</i>	Wood stork	Coastal marshes, freshwater marshes, wet prairies, cypress swamps, hardwood swamps, and mangrove swamps	Yes	E	E	Low
<i>Picoides borealis</i>	Red cockaded woodpecker	Frequently burned pine flatwoods, longleaf pin-oaks, and mixed hardwood pine	No	E	T	Low
<i>Speotyto cunicularia</i>	Burrowing owl	Dry prairies, open grassland	Yes	NL	SSC	Moderate
Mammals						
<i>Podomys floridanus</i>	Florida mouse	Sand pine and xeric oak	Yes	NL	SSC	Moderate
<i>Sciurus niger shermani</i>	Sherman's fox squirrel	Longleaf pine and turkey oak	Yes	NL	SSC	High
<i>Ursus americanus</i>	Florida black bear	Dense swamps and forests	No	NL	T	Low

USFWS = U.S. Fish and Wildlife Service.
 FFWCC = Florida Fish and Wildlife Conservation Commission.
 FDA = Florida Department of Agriculture and Consumer Services.
 T = Threatened.
 E = Endangered.
 SSC = Species of Special Concern.
 (S/A) = Listed due to similarity of appearance to a listed species.
 NL = Not Listed.

4.3.5.1 Potential Impacts and Preliminary Findings

A total of 33 sites having the potential for contamination were identified within close proximity to or within the project corridor. Of the 33 sites identified, 19 sites were assigned a degree of risk for potential contamination of High, Medium, or Low and are shown in Table 4-14. Eighteen of these ranked sites are located within the C.R. 578 corridor, and the remaining site is located within the Ayers Road Extension corridor.

Of the 18 C.R. 578 sites, 7 sites primarily involve petroleum, 2 sites primarily involve hazardous materials, and 9 sites involve a combination of the two. As shown in Table 4-14, each of the 18 sites has been ranked with High, Medium, or Low potential to impact the project corridor. Depending on alignment selected, nine of these sites are rated as having a Medium to High risk for containing environmental contamination within the proposed project corridors. The Ayers Road Extension site involves petroleum and hazardous materials and has a Medium ranking for potential impact.

**TABLE 4-14
SITE RANKING SUMMARY - SEGMENTS A, B, C, AND D**

Site No	Site Name Description Address	Concern	High	Medium	Low	Total
Segment A						
1	7-Eleven #3273	P		1		P-2 PH-2
2	Circle K #7480	P	1			
4	AAA Discount Transmission	PH	1			
7	Accurate Auto Repair	PH			1	
Segment A Totals			2	1	1	4
Segment B						
8	Presto Food Store (Citgo)	PH	1			P-1 H-2 PH-7
9	Armor Pest Control	H			1	
11	Mancini Tire Service	PH			1	
13	Mike's Auto Body	PH			1	
14A	County Line Auto Repair	PH			1	
15	J.D. Smith Exterminators	H			1	
16	Roger's Towing	PH		1		
17	Action Auto Center	PH			1	
19	Circle K #1880	PH	1			
20	Vacant Commercial Parcel	P		1		
Segment B Totals			2	2	6	10
Segment C						
21	Hess Gas Station #09284	P		1		P-4
25	Mazourek Ranch	P			1	
26	Keys Concrete Industries, Inc.	P	1			
27	Nick's County Line Vineyard	P			1	
Segment C Totals			1	1	2	4
Segment D						
33	Stan's Garage (salvage yard)	PH		1		PH-1
Segment D Totals			0	1	0	1
PROJECT TOTALS			5	5	9	19

Note P = Petroleum.
H = Hazardous Materials.

In accordance with FDOT guidelines, it is recommended that limited sampling and testing be conducted at the Medium and High risk sites in select areas to help verify the absence or presence of environmental contamination in the project's right-of-way. For example, subsurface soils from the ground surface to the water table should be screened with an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID) using the standard FDEP headspace method. Should these samples exhibit the likelihood of impacts, soil and groundwater samples should also be collected from these locations for laboratory analysis.

It must be recognized that the possibility still exists that other sites containing hazardous substances, hazardous wastes, petroleum products, or environmental contamination not identified during this assessment may exist on, or in the immediate vicinity of, five intersections analyzed during this study. This is because regulatory agency records are not always complete; not all leaks, spills, and discharges are reported; and not all underground storage tanks (USTs) and aboveground storage tanks (ASTs) are registered. Therefore, the purpose of this assessment is to reduce, but not eliminate, the unknown and uncertainty regarding the absence or presence of hazardous substances or environmental contamination in connection with the project.

Section 5.0

DESIGN CRITERIA

The proposed roadway improvements must adhere to specific design standards. The *Florida Department of Transportation's Plans Preparation Manual*¹³ was consulted in developing design criteria for this project. Tables 5-1 and 5-2 present the design criteria applicable to this project. The following sections describe components of the criteria contained in these tables.

5.1 FUNCTIONAL CLASSIFICATION

The functional classification of a roadway affects elements of design such as design speed, level of service requirements, and local access accommodations. For C.R. 578, a functional classification of an arterial was utilized.

5.2 ACCESS CLASSIFICATION

The objective of the access classification system is to protect the public safety, enhance the mobility of people and goods, and preserve the functional integrity of the highway system. An access management classification is currently not assigned to C.R. 578. However, for the proposed improvements to C.R. 578, the FDOT's access management classification of Class 3 will be utilized for this study. If the study shows that this is unattainable, than the FDOT's access management classification of Class 5 will be implemented. Table 5-1 displays the FDOT access management standards.

**TABLE 5-1
ACCESS CLASSIFICATION**

Access Class	Connection Spacing	Median Opening Spacing		Signal Spacing
		Directional	Full	
Class 3	660 ft (200 m)	1,320 ft (400 m)	2,640 ft (800 m)	2,640 ft (800 m)
Class 5	440 ft (135 m)	660 ft (200 m)	2,640 ft (800 m)	2,640 ft (800 m)

**TABLE 5-2
ROADWAY DESIGN CRITERIA**

Design Element		Value/Designation*		Plans Preparation Manual Documentation	
		English	Metric		
General	Type of Facility	Suburban	Suburban		
	Functional Classification	Arterial	Arterial		
	Access Classification	3	3	Table 1.8.2	
	Number of Lanes	4	4	Table 2.1.4	
	Design Speed	55 mph	90 km/h	Table 1.9.1	
Typical Section	Lane Width	Standard	12 ft	3.6 m	Table 2.1.1
		Minimum	12 ft	3.6 m	Table 2.1.1
	Minimum Median Width**		30 ft	9.0 m	
	Shoulder Width	Full Width Outside	10 ft	3.0 m	Table 2.3.2
		Paved Width Outside	5 ft	1.5 m	Table 2.3.2
		Full Width Inside**	4 ft	1.2 m	
		Paved Width Inside**	4 ft	1.2 m	
	Border Width	Adjacent to Shoulder**	30 ft	9.0 m	
	Bicycle Lane Width	Paved Shoulder	5 ft	1.5 m	Section 8.4.1
	Sidewalk Width	With a Buffer Strip	5 ft	1.5 m	Section 8.3.1
Clear Zone		30 ft	9.0 m	Section 2.11	
Horizontal	Length of Horizontal Curve		825 ft	270 m	Table 2.8.2a
	Minimum Length of Horizontal Curve		400 ft	120 m	Table 2.8.2a
	Maximum Deflection Without Curve		0°45' 00"	0° 45' 00"	Table 2.8.1a
	Maximum Curvature		5° 00' 00"	376 m	Table 2.8.3
	Maximum Rate of Superelevation		0.05	0.05	
	Minimum Stopping Sight Distance for Grades of 2% or Less		475 ft	145 m	Table 2.7.1
	Minimum Stopping Sight Distance for Grades Greater than 2%; See Table 2.7.1				
Vertical	Maximum Grade		4.5%	4%	Table 2.6.1
	Minimum Grade		0.3%	0.3%	
	Maximum Change in Grade Without Vertical Curves		0.5%	0.5%	Table 2.6.2
	K Values for Crest Curves		170	52	Table 2.8.5
	K Values for Sag Curves		110	35	Table 2.8.6

* Values were determined using both the metric and English versions of the Plans Preparation Manual.

** Coordination with Pasco and Hernando Counties.

Section 6.0

TRAFFIC ANALYSIS

6.1 EXISTING TRAFFIC VOLUMES

A two-phase traffic count program was conducted for the C.R. 578 PD&E Study. The first phase of the traffic count program was conducted during the period from October 5, 1999 through October 11, 1999. This phase of the count program consisted of 7 day, 24 hour vehicle classification counts (recorded in 15 minute intervals by direction) at the following three locations:

- Between U.S. 19 and Cobblestone Drive;
- Between Waterfall Drive and Mariner Boulevard/Shady Hills Road; and
- Between Mariner Boulevard/Shady Hills Road and Linden Drive.

The locations of the 7-day classifications counts were reviewed and approved by the FDOT prior to initiating the traffic count program. The second phase of the traffic count program included manual turning movement counts and 24-hour machine traffic counts at the following 9 intersections:

- C.R. 578/U.S. 19;
- C.R. 578/Cobblestone Drive;
- C.R. 578/East Road;
- C.R. 578/Waterfall Drive;
- C.R. 578/Mariner Boulevard/Shady Hills Road;
- C.R. 578/Linden Drive;
- C.R. 578/Anderson Snow Road;
- C.R. 578/U.S. 41; and
- U.S. 41/Ayers Road.

Eight hour turning movement counts were conducted from 7:00 a.m. to 10:00 a.m. and from 2:00 p.m. to 7:00 p.m. on January 4, 2000 and January 5, 2000. These hours correspond to the 8 highest volume hours as determined from the 7 day, 24 hour vehicle classification counts. The existing lane geometry at each of the intersections, along with the intersection spacing, is illustrated on Figure 6-1.

The existing (2000) Average Annual Daily Traffic (AADT) volumes for the study corridor were developed from the traffic count data and are illustrated on Figure 6-2. In general, the AADT volumes increase from east to west along the C.R. 578 study corridor ranging from a low of approximately 7,000 vehicles/day (just west of U.S. 41) to a high of approximately 16,000 vehicles/day (just east of U.S. 19). The AADT volume on Ayers Road just to the east of U.S. 41 is approximately 3,000 vehicles/day.

FIGURE 6-1
EXISTING (2000) INTERSECTION GEOMETRY

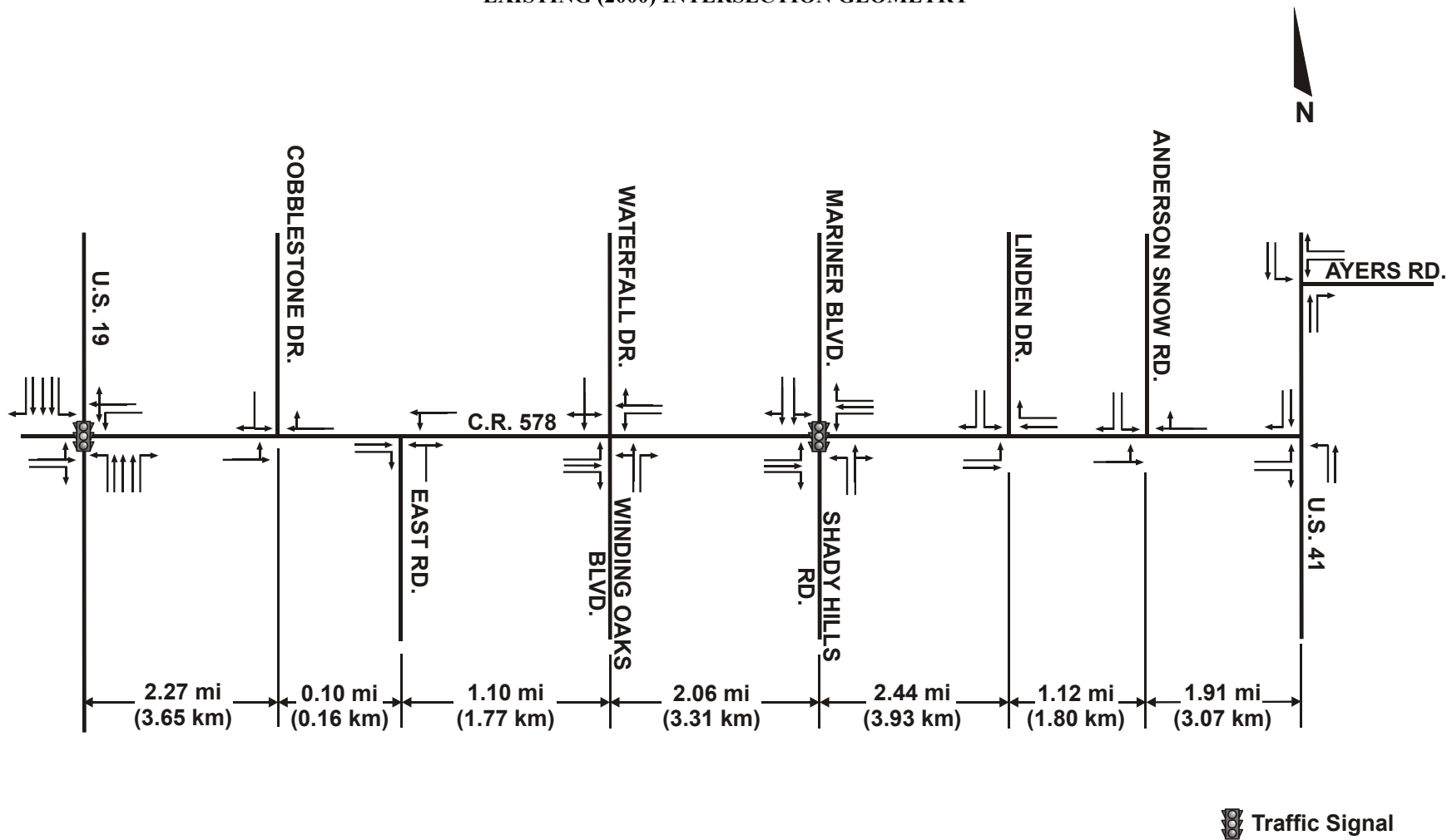
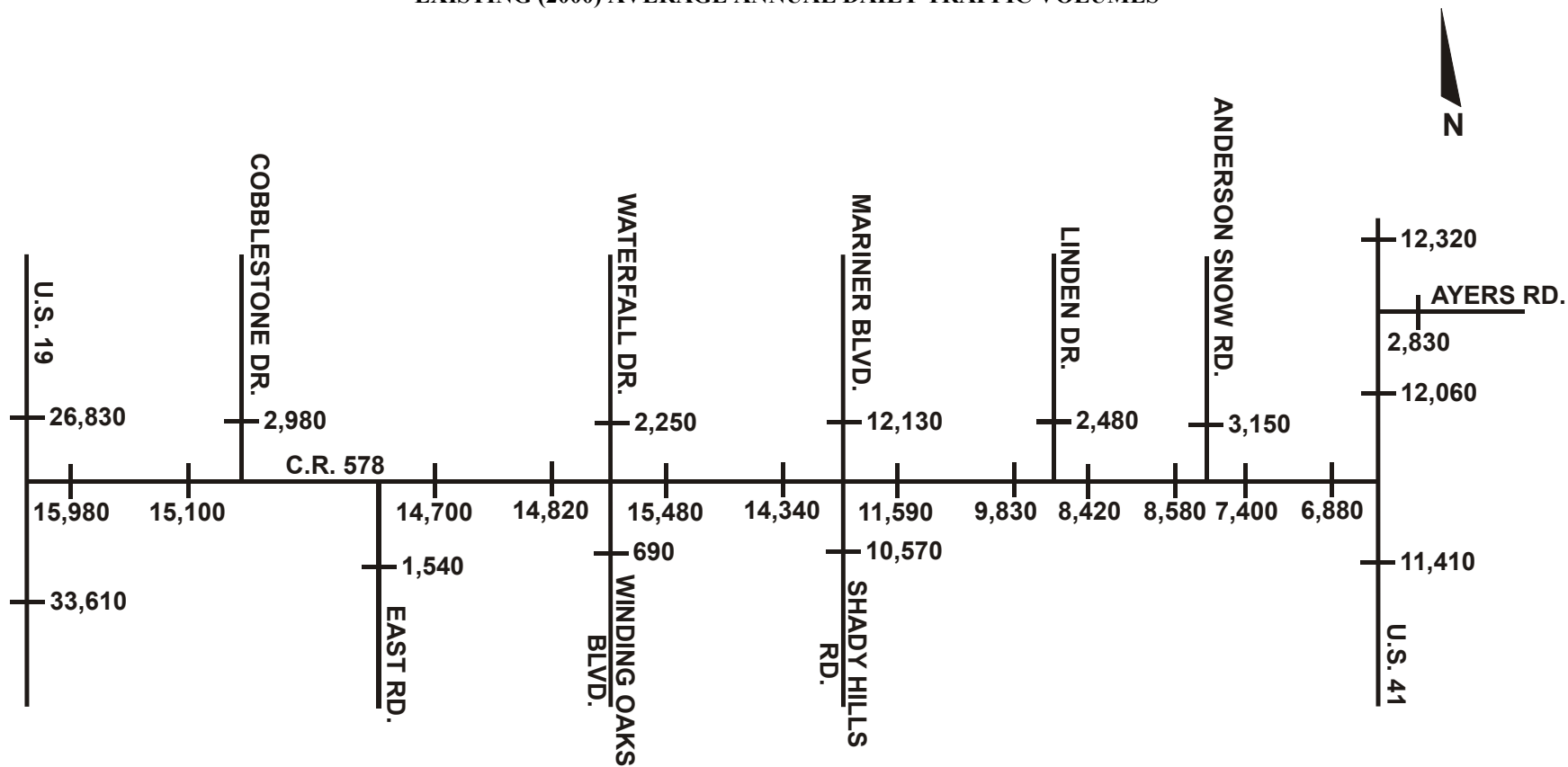


FIGURE 6-2
EXISTING (2000) AVERAGE ANNUAL DAILY TRAFFIC VOLUMES



The percentage of daily traffic occurring during the peak hour and the percentage of peak hour traffic traveling in the peak direction were calculated for 12 locations on C.R. 578 between U.S. 19 and U.S. 41 using the traffic count data. Table 6-1 indicates that there is a higher proportion of the daily traffic volume occurring in the p.m. peak hour than in the a.m. peak hour. Table 6-1 also indicates that in general, the peak directions of travel along C.R. 578 are westbound in the a.m. peak hour and eastbound in the p.m. peak hour.

A review of the 8 hour turning movement count data indicated that the a.m. peak hour generally occurs between 7:15 a.m. and 8:15 a.m. for the portion of the corridor from U.S. 19 to Mariner Boulevard/Shady Hills Road and between 7:00 a.m. and 8:00 a.m. for the portion east of Mariner Boulevard/Shady Hills Road. The p.m. peak hour generally occurs from 4:30 p.m. and 5:30 p.m. throughout the entire C.R. 578 corridor.

The K_{30} -factors and D_{30} -factors for the state roadways located in the vicinity of the study corridor were obtained from the 1998 Annual Daily Traffic Report prepared by FDOT's Transportation Statistics Office and are provided in Table 6-2. The K_{30} -factor is the percentage of the average annual daily traffic volume that occurs during the 30th highest hour of the year, while the D_{30} -factor is the percentage of the 30th highest hourly volume that occurs in the peak travel direction.

The average K_{30} -factor is 10.0 percent while the average D_{30} -factor is 57.88 percent. These values are slightly higher than the average peak-hour-to-daily volume ratio (expressed as a percentage of the daily volume) and directional distribution calculated from the existing p.m. peak hour traffic count data. This is to be expected since the traffic counts were not conducted during the 30th highest hour of the year.

Peak hour volumes that represent the 30th highest hour were derived using the average K_{30} -factor (10.00 percent), the average D_{30} -factor (57.88 percent), and the existing turning movement percentages. Some adjustments to these turning movement percentages were required since the existing directional distribution (based on the count data) at the western end of the corridor was higher than 57.88 percent and since the peak direction of travel in the a.m. peak hour changes from westbound to eastbound east of Linden Drive. The estimated a.m. and p.m. peak hour volumes for the 30th highest hour of the year are illustrated on Figure 6-3.

Table 6-3 summarizes the daily vehicle classification count data obtained for the 5 weekdays. As indicated in this table, the percentage of trucks present in the daily traffic volume is higher for the eastern portion of the study corridor than for the western portion of the study corridor.

**TABLE 6-1
EXISTING (2000) PEAK HOUR TRAFFIC CHARACTERISTICS**

Location	Traffic Volumes							Traffic Characteristics (Expressed as a %)			
	A.M. Peak Hour			P.M. Peak Hour			Two-Way Daily	A.M. Peak Hour		P.M. Peak Hour	
	EB	WB	Total	EB	WB	Total		Peak-to-Daily Volume Ratio	Directional Distribution	Peak-to-Daily Volume Ratio	Directional Distribution
	East of U.S. 19	399	869	1,268	999	498	1,497	18,112	7.0	68.5 (WB)	8.3
West of Cobblestone Drive	400	811	1,211	951	498	1,449	17,071	7.1	67.0 (WB)	8.5	65.6 (EB)
East of East Road	436	754	1,190	853	533	1,386	16,663	7.1	63.4 (WB)	8.3	61.5 (EB)
West of Waterfall Drive	464	707	1,171	841	525	1,366	16,804	7.0	60.4 (WB)	8.1	61.6 (EB)
East of Waterfall Drive	504	670	1,174	781	601	1,382	17,554	6.7	57.1 (WB)	7.9	56.5 (EB)
West of Mariner Boulevard/ Shady Hills Road	494	595	1,089	752	674	1,426	16,261	6.7	54.6 (WB)	8.8	52.7 (EB)
East of Mariner Boulevard/ Shady Hills Road	322	443	765	637	533	1,170	13,135	5.8	57.9 (WB)	8.9	54.4 (EB)
West of Linden Drive	347	385	732	610	486	1,096	11,150	6.6	52.6 (WB)	9.8	55.7 (EB)
East of Linden Drive	376	291	667	521	468	989	9,544	7.0	56.4 (EB)	10.4	52.7 (EB)
West of Anderson Snow Road	381	274	655	488	445	933	9,732	6.7	58.2 (EB)	9.6	52.3 (EB)
East of Anderson Snow Road	315	257	572	419	379	798	8,385	6.8	55.1 (EB)	9.5	52.5 (EB)
West of U.S. 41	324	174	498	385	391	776	7,801	6.4	65.1 (EB)	9.9	50.4 (WB)
AVERAGE								6.7		9.0	

**TABLE 6-2
1998 TRAFFIC CHARACTERISTICS FOR ADJACENT ROADWAYS¹**

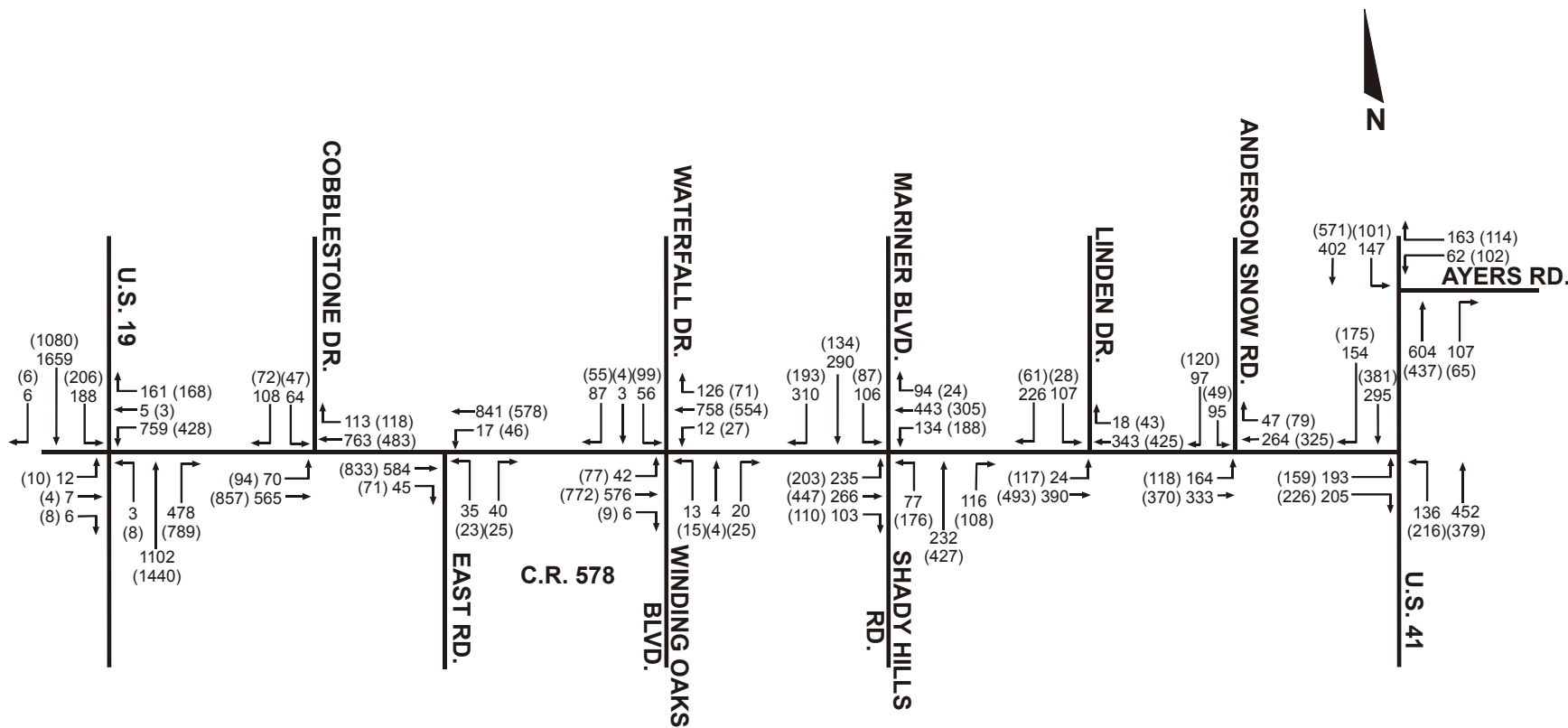
County	Roadway	Site	Location	K-Factor (%)	D-Factor (%)
Pasco	SR52	5309	East of Ridgedale Drive	10.28	58.69
Pasco	SR 52	0107	East of Fivay Road	10.28	58.69
Pasco	SR 52	5120	West of CR 581	10.28	58.69
Pasco	SR 52	0006	East of U.S. 41	10.28	58.69
Pasco	U.S. 41	5301	South of Hernando County Line	10.28	58.69
Hernando	SR 50	0019	West of CR 541	9.73	57.07
Hernando	SR 50	5310	West of CR 493	9.73	57.07
Hernando	U.S. 19	5300	North of Pasco County Line	9.73	57.07

¹ Data obtained from FDOT's Transportation Statistics Office 1998 Annual Average Daily Traffic Report.

**TABLE 6-3
EXISTING (2000) DAILY HEAVY VEHICLE PERCENTAGES**

Location	Count Date	Heavy Vehicles			Total Vehicles	% Heavy Vehicles
		EB	WB	Total		
Between U.S. 19 and Cobblestone Drive	10/5/99	448	401	849	16,331	5.20
	10/6/99	440	421	861	16,851	5.11
	10/7/99	444	421	865	17,092	5.06
	10/8/99	454	416	870	18,258	4.77
	10/11/99	369	436	805	16,778	4.80
	5-Day Average					4.98
Between Waterfall Dr. and Mariner Boulevard/Shady Hills Road	10/5/99	334	350	684	15,430	4.4
	10/6/99	379	385	764	15,975	4.8
	10/7/99	384	357	741	16,215	4.6
	10/8/99	393	369	762	17,216	4.4
	10/11/99	415	388	803	15,831	5.1
	5-Day Average					4.65
Between Mariner Boulevard/Shady Hills Road and Linden Drive	10/5/99	342	305	647	8,568	7.6
	10/6/99	223	325	548	8,838	6.2
	10/7/99	416	324	740	9,242	8.0
	10/8/99	391	298	689	9,453	7.3
	10/11/99	421	369	790	8,924	8.9
	5-Day Average					7.58

**FIGURE 6-3
EXISTING (2000) PEAK HOUR TRAFFIC VOLUMES**



576 = AM Peak Hour Volume
 (772) = PM Peak Hour Volume

Table 6-4 summarizes the peak hour vehicle classification count data obtained for the 5 weekdays. This table illustrates the fact that there is no appreciable decrease in the percentage of trucks traveling in the C.R. 578 corridor during the a.m. and p.m. peak hours as compared to the percentage of trucks traveling in the corridor during an entire day. Usually, in the absence of any detailed peak hour data, the peak hour truck percentages are assumed to be equal to one-half the daily truck percentages. The C.R. 578 vehicle classification count data indicate this type of assumption would result in a significant underestimation of the peak hour truck volumes.

6.2 EXISTING LEVELS OF SERVICE

The existing peak hour levels of service in the C.R. 578 corridor were determined using Release 3.1c of the *1997 Highway Capacity Manual Software (HCS)*. Level of service (LOS) evaluations were conducted for the roadway segments as well as the signalized and unsignalized intersections.

6.2.1 EXISTING ROADWAY SEGMENT LEVELS OF SERVICE

The existing two-lane highway segment LOS evaluations were conducted in accordance with the methodology documented in Chapter 8 of the *1997 Highway Capacity Manual* using a design speed of 50 mph. The design speed was based on the fact that the posted speed limit throughout the majority of the corridor is 45 mph.

The two-lane highway segment levels of service are summarized in Table 6-5. The portion of C.R. 578 from U.S. 19 to Mariner Boulevard/Shady Hills Road is currently operating at LOS E in both the a.m. and p.m. peak hours. In the a.m. peak hour, the segment from Mariner Boulevard/Shady Hills Road to Linden Drive is operating at LOS D, while the remaining portion from Linden Drive to U.S. 41 is operating at LOS C. In the p.m. peak hour, the entire portion from Mariner Boulevard/Shady Hills Road to U.S. 41 is operating at LOS D.

6.2.2 EXISTING INTERSECTION LEVELS OF SERVICE

Signalized intersection analyses were conducted for the C.R. 578/U.S. 19 and C.R. 578/Mariner Boulevard/Shady Hills Road intersections. These analyses were conducted using the peak hour volumes depicted on Figure 6-3 and the intersection geometry depicted on Figure 6-1. The results of the signalized intersection analyses are summarized in Table 6-6. The average delay and LOS for each intersection approach, as well as for the overall intersection, are provided in Table 6-6. The C.R. 578/U.S. 19 intersection is currently operating at LOS E overall in both the a.m. and p.m. peak hours with average delay values of 60.3 seconds/vehicle and 63.3 seconds/vehicle, respectively.

**TABLE 6-4
EXISTING (2000) PEAK HOUR HEAVY VEHICLE PERCENTAGES**

Location	Count Date	A.M. Peak Hour					P.M. Peak Hour				
		Heavy Vehicles			Total Vehicles	% Heavy Vehicles	Heavy Vehicles			Total Vehicles	% Heavy Vehicles
		EB	WB	Total			EB	WB	Total		
Between U.S. 19 and Cobblestone Drive	10/5/99	27	43	70	1,261	5.55	39	17	56	1,347	4.16
	10/6/99	33	37	70	1,335	5.24	27	26	53	1,391	3.81
	10/7/99	26	43	69	1,341	5.15	36	30	66	1,418	4.65
	10/8/99	23	38	61	1,300	4.69	38	25	63	1,417	4.45
	10/11/99	23	43	66	1,400	4.71	23	15	38	1,367	2.78
	5 Day Average					5.06					
Between Waterfall Drive and Mariner Boulevard/Shady Hills Road	10/5/99	26	31	57	1,117	5.10	11	19	30	1,314	2.28
	10/6/99	23	26	49	1,156	4.24	20	28	48	1,334	3.60
	10/7/99	18	30	48	1,142	4.20	30	23	53	1,377	3.85
	10/8/99	30	29	59	1,137	5.19	27	24	51	1,337	3.81
	10/11/99	28	38	66	1,140	5.79	22	17	39	1,331	2.93
	5 Day Average					4.90					
Between Mariner Boulevard/Shady Hills Road/and Linden Drive	10/5/99	27	22	49	589	8.32	23	17	40	757	5.28
	10/6/99	2	27	29	519	5.59	20	24	44	756	5.82
	10/7/99	11	25	36	497	7.24	43	22	65	728	8.93
	10/8/99	4	16	20	453	4.42	46	14	60	770	7.79
	10/11/99	8	32	40	481	8.32	43	19	62	750	8.27
	5 Day Average					6.78					

**TABLE 6-5
EXISTING (2000) ROADWAY SEGMENT PEAK HOUR LEVELS OF SERVICE**

Roadway Segment		Level of Service	
From	To	AM Peak Hour	PM Peak Hour
U.S. 19	Cobblestone Drive	E	E
Cobblestone Drive	East Road	E	E
East Road	Waterfall Drive	E	E
Waterfall Drive	Mariner Boulevard/Shady Hills Road	E	E
Mariner Boulevard/Shady Hills Road	Linden Drive	D	D
Linden Drive	Anderson Snow Road	C	D
Anderson Snow Road	U.S. 41	C	D

**TABLE 6-6
EXISTING (2000) SIGNALIZED INTERSECTION PEAK HOUR OPERATIONS**

Intersection	Approach	AM Peak Hour		PM Peak Hour	
		Average Delay (in sec/veh)	Level of Service	Average Delay (in sec/veh)	Level of Service
C.R. 578/U.S. 19	Eastbound	54.2	D	53.2	D
	Westbound	148.5	F	176.9	F
	Northbound	37.1	D	56.7	E
	Southbound	32.8	C	23.1	C
	Overall	60.3	E	63.3	E
C.R. 578/Mariner Boulevard/Shady Hills Road	Eastbound	20.6	C	22.7	C
	Westbound	22.9	C	20.6	C
	Northbound	30.3	C	54.9	D
	Southbound	69.3	E	34.2	C
	Overall	37.2	D	33.8	C

The C.R. 578/Mariner Boulevard/Shady Hills Road intersection is operating at LOS D overall during the a.m. peak hour and LOS C overall during the p.m. peak hour.

Unsignalized intersection analyses were conducted for the seven unsignalized intersections where turning movement counts were conducted. The results of the unsignalized intersection analyses are summarized in Table 6-7. As indicated in this table, four of the seven intersections analyzed have one or more movements currently operating at LOS F during both the a.m. and p.m. peak hours. With one exception, all of the movements that are currently operating at LOS F are cross street movements. The one exception is the eastbound C.R. 578 left-turn movement at the C.R. 578/U.S. 41 intersection.

**TABLE 6-7
EXISTING (2000) UNSIGNALIZED INTERSECTION PEAK HOUR LEVELS OF SERVICE**

Intersection	Approach	Movement	A.M. Peak Hour		P.M. Peak Hour	
			Volume (in veh/hr)	Level of Service	Volume (in veh/hr)	Level of Service
C.R. 578/Cobblestone Drive	Eastbound	Left	70	B	94	A
	Southbound	Left/Right	172	F	119	F
C.R. 578/East Road	Westbound	Left	17	A	46	B
	Northbound	Left/Right	75	E	48	E
C.R. 578/Waterfall Drive	Eastbound	Left	42	B	77	B
	Westbound	Left	12	A	27	A
	Northbound	Left/Thru	17	F	19	F
		Right	20	B	25	B
Southbound	Left/Thru/Right	146	F ¹	158	F ¹	
C.R. 578/Linden Drive	Eastbound	Left	24	A	117	A
	Southbound	Left	107	C	28	D
		Right	226	B	61	B
C.R. 578/ Anderson Snow Road	Eastbound	Left	164	A	118	A
	Southbound	Left	95	E	49	D
		Right	97	B	120	B
C.R. 578/U.S. 41	Eastbound	Left	193	F ¹	159	F ¹
		Right	205	B	226	C
	Northbound	Left	136	A	216	B
U.S. 41/Ayers Road	Westbound	Left	62	F	102	F ¹
		Right	163	C	114	B
	Southbound	Left	147	B	101	A

¹ The volume-to-capacity (v/c) ratio for this movement exceeds 1.00.

6.3 DESIGN YEAR TRAFFIC PROJECTIONS

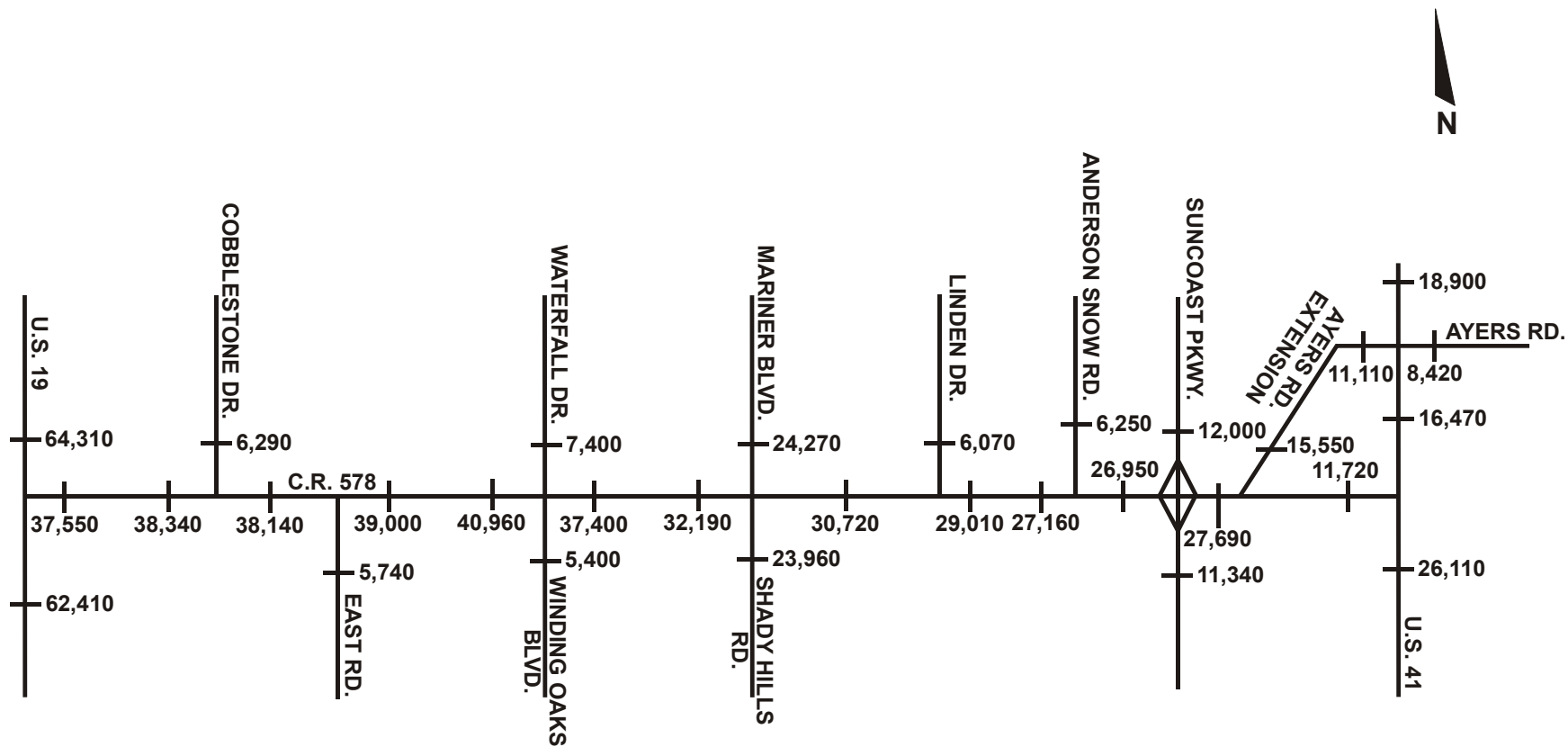
The design year (2025) daily travel demand in the C.R. 578 corridor was estimated using the FDOT District VII Tampa Bay Regional Planning Model (TBRPM) Version 3.2. Both the base year (1995) validated TBRPM and the future year (2020) TBRPM were reviewed with FDOT District VII Planning Staff to evaluate the reasonableness of the traffic volume assignments produced by the models for the C.R. 578 study corridor.

Average Annual Daily Traffic (AADT) volumes for the design year 2025 were derived by first converting the 2020 Peak Season Weekday Average Daily Traffic (PSWADT) volumes to 2020 AADT volumes, and then applying a growth rate to the 2020 AADT volumes. The 2020 PSWADT volumes were multiplied by the Pasco/Hernando County model conversion factor (MOCF) of 0.94 to obtain an estimate of the 2020 AADT volumes. A 2.0 percent/year growth rate was then applied to the 2020 AADT volumes to obtain an estimate of the 2025 AADT volumes. The 2.0 percent/year growth rate was estimated based on historical traffic count data provided by Pasco County for the periods from 1995 to 1998 for three locations along the C.R. 578 corridor. The average yearly growth rates were calculated for each of these three individual locations and then the three individual growth rates were averaged to yield an overall value of approximately 2.0 percent/year. The 2025 AADT volumes estimated for the C.R. 578 corridor are illustrated on Figures 6-4 and 6-5.

FIGURE 6-4
DESIGN YEAR (2025) AVERAGE ANNUAL DAILY TRAFFIC VOLUMES - NO-BUILD ALTERNATIVE



FIGURE 6-5
 DESIGN YEAR (2025) AVERAGE ANNUAL DAILY TRAFFIC VOLUMES - BUILD ALTERNATIVE



Year 2025 a.m. and p.m. peak hour volumes were subsequently derived by first multiplying the AADT volumes by a K_{30} -factor of 10.00 percent and a D_{30} -factor of 57.88 percent and then distributing the peak and off-peak direction link volumes in accordance with the future year TBRPM daily turning movement distribution. The TBRPM forecasted daily turning movements were used instead of the existing intersection turning movement volumes to help derive the 2025 peak hour intersection turning movements due to the impact that the significant increase in Pasco County future year land use density has on the future travel patterns. It was assumed that the peak travel directions in the year 2025 were westbound in the a.m. peak hour and eastbound in the p.m. peak hour. For the cross streets that primarily provide access to established residential developments, the peak travel directions were assumed to be outbound in the a.m. peak hour and inbound in the p.m. peak hour. The 2025 peak hour volumes developed for the C.R. 578 corridor are illustrated on Figures 6-6 and 6-7.

6.4 DESIGN YEAR TRAFFIC CONDITIONS

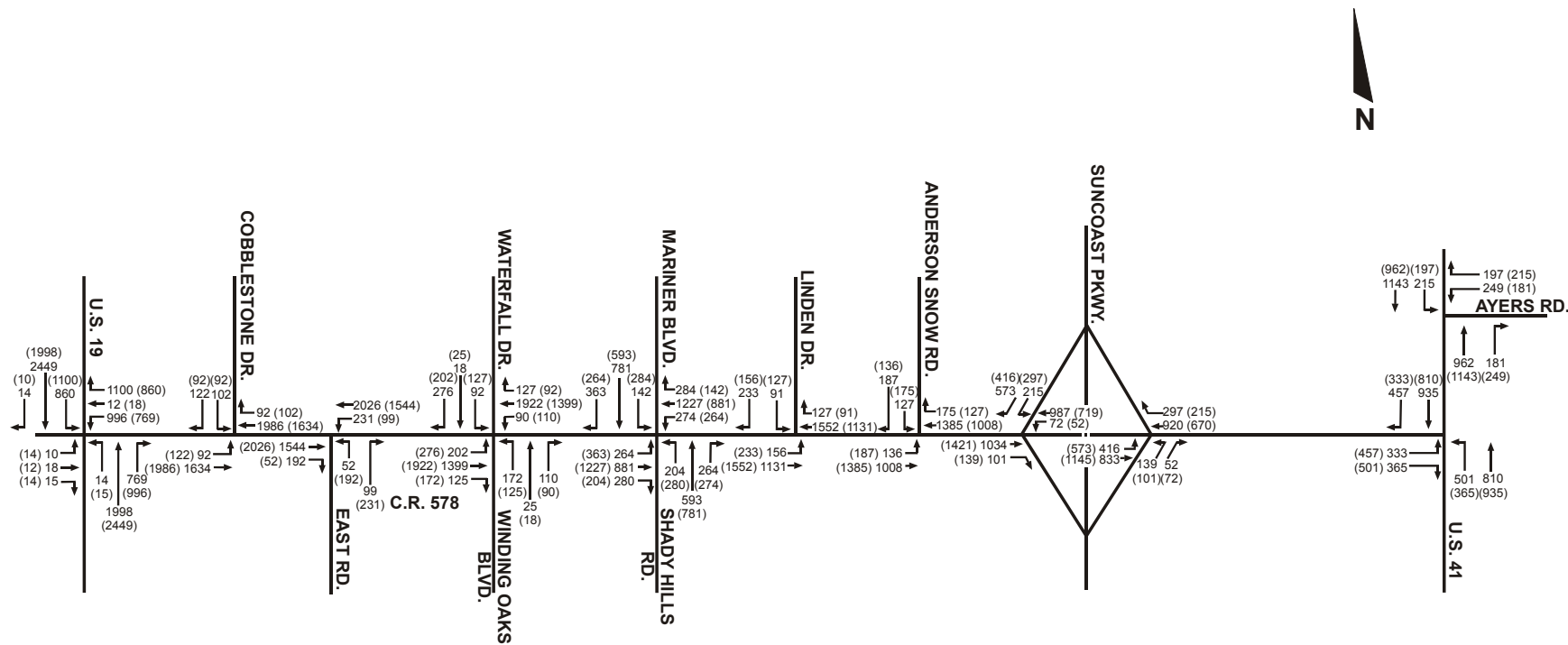
Using the 2025 design hour volumes discussed previously, the LOS analyses were conducted for both the No-Build Alternative and the Build Alternative. Levels of service analyses were conducted for the mainline C.R. 578 segments as well as the signalized and unsignalized intersections using the 1997 HCS. The following sections discuss the results of these analyses.

6.4.1 NO-BUILD ALTERNATIVE

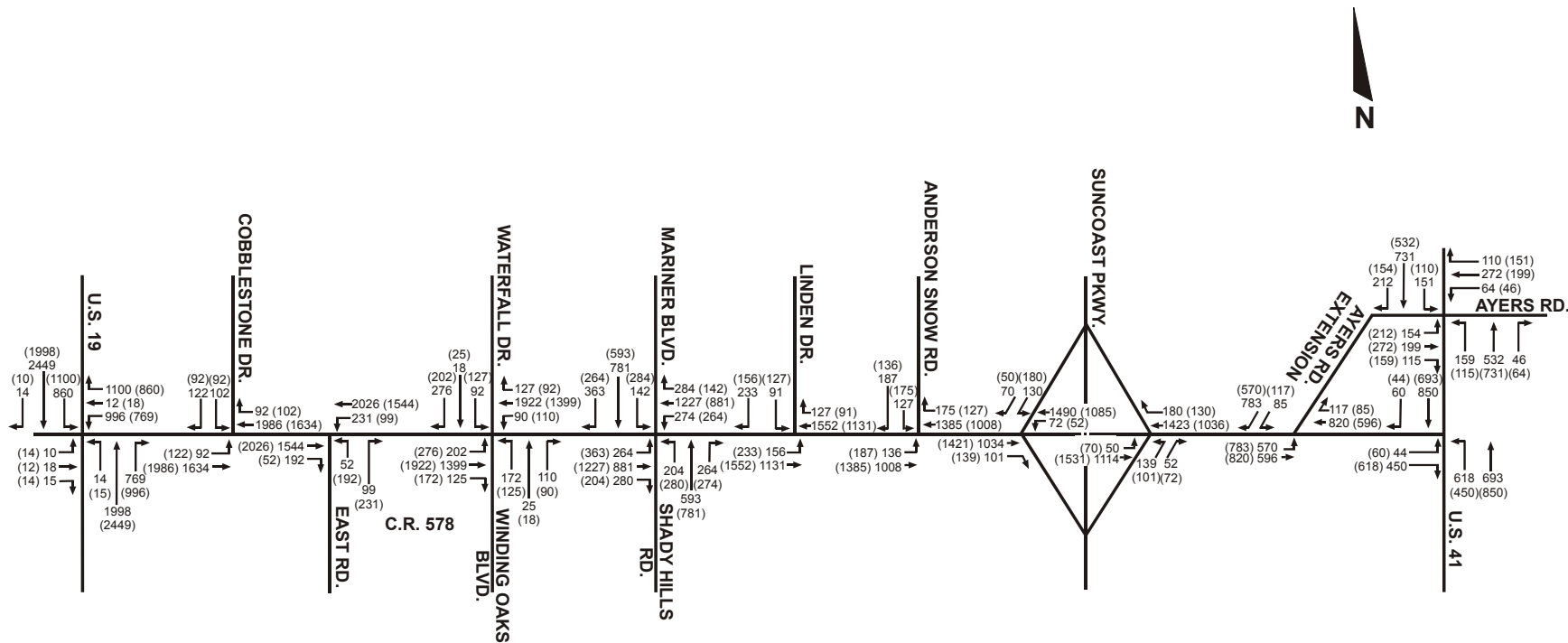
A No-Build Alternative analysis was conducted for the C.R. 578 corridor to document the LOS that would be expected to occur in the year 2025 if no corridor improvements are made. For the purposes of this study, the No-Build Alternative is defined to be the existing two-lane undivided C.R. 578 facility. The Suncoast Parkway was included in the No-Build Alternative.

The roadway segment LOS analyses were conducted using the methodology documented in Chapter 8 of the *1997 Highway Capacity Manual*. The two-lane highway HCS analyses are summarized in Table 6-8. As indicated in Table 6-8, all of the two-lane roadway segments between U.S. 19 and the Suncoast Parkway are projected to operate at LOS F during the a.m. and p.m. peak hours. The portion of C.R. 578 from the Suncoast Parkway to U.S. 41 is projected to operate at LOS E during both the a.m. and p.m. peak hours. Given the severe over capacity conditions that are projected to occur along the C.R. 578 mainline in the design year, intersection analyses were not conducted for the No-Build Alternative. In addition, given the fact that C.R. 578 is currently a two-lane undivided roadway with only two signalized intersections, no viable transportation system management improvements exist.

FIGURE 6-6
DESIGN YEAR (2025) PEAK HOUR TRAFFIC VOLUMES – NO-BUILD ALTERNATIVE



**FIGURE 6-7
DESIGN YEAR (2025) PEAK HOUR TRAFFIC VOLUMES - BUILD ALTERNATIVE**



1399 = AM Peak Hour Volume
 (1922) = PM Peak Hour Volume

**TABLE 6-8
DESIGN YEAR (2025) ROADWAY SEGMENT PEAK HOUR
LEVELS OF SERVICE – NO-BUILD ALTERNATIVE**

Roadway Segment		Level of Service	
From	To	A.M. Peak Hour	P.M. Peak Hour
U.S. 19	Cobblestone Drive	F	F
Cobblestone Drive	East Road	F	F
East Road	Waterfall Drive	F	F
Waterfall Drive	Mariner Boulevard/Shady Hills Road	F	F
Mariner Boulevard/Shady Hills Road	Linden Drive	F	F
Linden Drive	Anderson Snow Road	F	F
Anderson Snow Road	Suncoast Parkway	F	F
Suncoast Parkway	U.S. 41	E	E

6.4.2 BUILD ALTERNATIVE

The LOS F conditions projected to occur with the No-Build Alternative document the need to provide additional capacity throughout the C.R. 578 corridor. Between the *Pasco and Hernando County Metropolitan Planning Organizations (MPO's) Year 2025 Long Range Transportation Plans (LRTPs)* a four-lane divided roadway on C.R. 578 from U.S. 19 to Mariner Boulevard/Shady Hills Road is proposed. The *Hernando County MPO's 2025 LRTP* also includes a proposed new roadway alignment, the Ayers Road Extension, from just east of the C.R. 578/Suncoast Parkway interchange to the U.S. 41/Ayers Road intersection. This new roadway is included in the *2025 LRTP* as a four-lane facility and is also included in the *Hernando County MPO's Year 2015 Interim Plan* as a two-lane facility. In addition, the *Hernando County MPO's Year 2025 LRTP* has designated the existing two-lane portion of C.R. 578 from east of the Suncoast Parkway to U.S. 41 as a constrained facility. This constrained designation is based on the existing scenic/aesthetic characteristics associated with this canopied segment of the corridor. Therefore, no multi-lane improvements are being considered for this segment of C.R. 578.

The roadway segment LOS analyses for the Build Alternative were conducted using the methodology documented in Chapter 7 - Multi-Lane Highways of the *1997 Highway Capacity Manual*. The multi-lane highway HCS analyses are summarized in Table 6-9.

An additional analysis was conducted to provide an estimate of the approximate year that each existing two-lane segment of C.R. 578 would be expected to begin operating at LOS F. The results of this analysis indicate that the portion of existing C.R. 578 from U.S. 19 to Mariner Boulevard/Shady Hills Road is projected to begin operating at LOS F by the year 2001, while the portion of C.R. 578 from the Suncoast Parkway to U.S. 41 is projected to begin operating at LOS F in the year 2010. The remaining segments of C.R. 578 from Mariner Boulevard/Shady Hills Road to the Suncoast Parkway are projected to begin operating at LOS F during the years between 2006 and 2010.

**TABLE 6-9
DESIGN YEAR (2025) ROADWAY SEGMENT PEAK HOUR
LEVELS OF SERVICE - BUILD ALTERNATIVE**

Roadway Segment		Peak Direction Level of Service	
From	To	AM Peak Hour	PM Peak Hour
U.S. 19	Cobblestone Drive	C	C
Cobblestone Drive	East Road	C	C
East Road	Waterfall Drive	C	C
Waterfall Drive	Mariner Boulevard/Shady Hills Road	B	B
Mariner Boulevard/Shady Hills Road	Linden Drive	B	B
Linden Drive	Anderson Snow Road	B	B
Anderson Snow Road	Suncoast Parkway	B	B
Suncoast Parkway	Ayers Road Extension	B	B
C.R. 578 ¹	U.S. 41 ¹	A	A
Ayers Road Extension	U.S. 41	D	D

¹ This segment is the Ayers Road Extension.

Unsignalized intersection analyses were initially conducted for the following seven intersections:

- C.R. 578/Cobblestone Drive;
- C.R. 578/East Road;
- C.R. 578/Waterfall Drive;
- C.R. 578/Linden Drive;
- C.R. 578/Anderson Snow Road;
- C.R. 578/Ayers Road Extension; and
- Ayers Road Extension/U.S. 41.

Although the C.R. 578/U.S. 41 intersection is currently unsignalized, it was assumed that this intersection would be signalized by the design year 2025. In addition, it was also assumed that the Suncoast Parkway interchange ramp terminal intersections with C.R. 578 would be signalized by the design year 2025.

Initially, the intersections at the western and eastern termini of the Ayers Road Extension (i.e., C.R. 578 and U.S. 41) were analyzed as unsignalized intersections. The unsignalized intersection analysis results indicated that both of these intersections were projected to provide insufficient capacity for many of the movements to/from this proposed new facility. Although these intersections may initially not require (or warrant) signalization and may operate as unsignalized intersections for some period of time after the Ayers Road Extension is open to traffic, the 2025 peak hour unsignalized intersection analysis results indicate that traffic signals will be required at these locations by the design year to provide acceptable levels of service for all movements. Based on these results, the C.R. 578/Ayers Road Extension and the Ayers Road Extension/U.S. 41 intersections were re-analyzed as signalized intersections.

The results of the other unsignalized intersection analyses are summarized in Table 6-10. As indicated in this table, these five intersections are all projected to have one or more movements operating at LOS F during both the a.m. and p.m. peak hours. However, with one exception, all of the movements that are projected to operate at LOS F are cross street movements. The one exception is the eastbound C.R. 578 left-turn at the Waterfall Drive intersection during the a.m. peak hour. It should be noted that although this movement is projected to operate at LOS F, the left-turn volume does not exceed the estimated capacity of this movement. The westbound left-turn at the C.R. 578/East Road intersection is projected to operate at LOS E during the a.m. peak hour. All of the other C.R. 578 left-turn movements at these five intersections are projected to operate at LOS D or better.

TABLE 6-10
DESIGN YEAR (2025) UNSIGNALIZED INTERSECTION PEAK HOUR LEVELS OF SERVICE

Intersection	Approach	Movement	A.M. Peak Hour		P.M. Peak Hour	
			Volume (in veh/hour)	Level of Service	Volume (in veh/hour)	Level of Service
C.R. 578/Cobblestone Drive	Eastbound	Left	92	D	122	C
	Southbound	Left	102	F ¹	92	F ¹
		Right	122	E	92	C
C.R. 578/East Road	Westbound	Left	231	E	99	D
	Northbound	Left	52	F ¹	192	F ¹
		Right	99	C	231	F ¹
C.R. 578/Waterfall Drive	Eastbound	Left	202	F	276	D
	Westbound	Left	90	C	110	D
	Northbound	Left	172	F ¹	125	F ¹
		Through/Right	135	F ¹	108	F ¹
	Southbound	Left	92	F ¹	127	F ¹
		Through/Right	294	F ¹	227	F ¹
C.R. 578/Linden Drive	Eastbound	Left	156	D	233	C
	Southbound	Left	91	F ¹	127	F ¹
		Right	233	E	156	C
C.R. 578/Anderson Snow Road	Eastbound	Left	136	D	187	C
	Southbound	Left	127	F ¹	175	F ¹
		Right	187	B	136	B

¹ The volume-to-capacity (v/c) ratio for this movement exceeds 1.00.

Design year (2025) signalized intersection analyses were conducted and are summarized in Table 6-11. Although traffic signal warrant studies will need to be conducted at the unsignalized intersections along C.R. 578 prior to making a decision to signalize a given location, the signalized intersection analyses were conducted to determine the design year (2025) intersection geometrics (including exclusive turn lane storage lengths) that should be provided throughout the corridor and to document that acceptable peak hour levels of service are projected to occur at all of the key intersections along the corridor in the design year. The recommended design year intersection geometry for C.R. 578 and the Ayers Road Extension is illustrated in Figure 6-8.

**TABLE 6-11
DESIGN YEAR (2025) SIGNALIZED INTERSECTION PEAK HOUR OPERATIONS**

Intersection	Approach	Lane Group	A.M. Peak Hour		P.M. Peak Hour		
			Average Delay (in sec/veh)	Level of Service	Average Delay (in sec/veh)	Level of Service	
C.R. 578/U.S. 19	Eastbound	Left	66.8	E	69.8	E	
		Through/Right	70.2	E	71.8	E	
		Overall	69.4	E	71.1	E	
	Westbound	Left	62.6	E	107.8	F	
		Through	33.4	C	46.1	D	
		Right	100.1	F	53.3	D	
		Overall	81.1	F	80.3	F	
	Northbound	Left	64.9	E	67.5	E	
		Through	98.9	F	78.1	E	
		Right	35.9	D	136.0	F	
		Overall	81.3	F	94.7	F	
	Southbound	Left	92.9	F	127.1	F	
		Through/Right	33.9	C	19.3	B	
		Overall	49.2	D	57.5	E	
	Overall			68.1	E	77.7	E
C.R. 578/Cobblestone Drive	Eastbound	Left	23.2	C	13.9	B	
		Through	3.7	A	6.4	A	
		Overall	4.7	A	6.8	A	
	Westbound	Through	12.3	B	11.0	B	
		Right	1.1	A	1.4	A	
		Overall	11.8	B	10.4	B	
	Southbound	Left	52.8	D	38.1	D	
		Right	38.1	D	26.8	C	
		Overall	44.8	D	32.5	C	
	Overall			10.6	B	9.5	A
	C.R. 578/East Road	Eastbound	Left	8.8	A	25.5	C
Through			1.4	A	1.3	A	
Overall			8.0	A	24.9	C	
Westbound		Through	40.5	D	21.9	C	
		Right	5.1	A	5.4	A	
		Overall	8.7	A	6.4	A	
Northbound		Left	47.1	D	47.3	D	
		Right	37.5	D	28.3	C	
		Overall	40.8	D	36.9	D	
Overall			9.6	A	18.8	B	
C.R. 578/Waterfall Drive	Eastbound	Left	72.2	E	59.5	E	
		Through	16.0	B	31.0	C	
		Right	5.0	A	9.8	A	
		Overall	21.8	C	32.8	C	
	Westbound	Left	11.9	B	20.0	C	
		Through	32.1	C	15.5	B	
		Right	5.0	A	9.3	A	
	Overall	Overall	29.6	C	15.4	B	
		Northbound	Left	42.3	D	32.0	C
			Through/Right	74.2	E	30.7	C
	Overall		56.3	E	31.4	C	
	Southbound	Left	39.0	D	33.2	C	
		Through	44.8	D	28.5	C	
		Right	50.2	D	21.6	C	
Overall		47.3	D	26.2	C		
Overall			29.6	C	26.1	C	

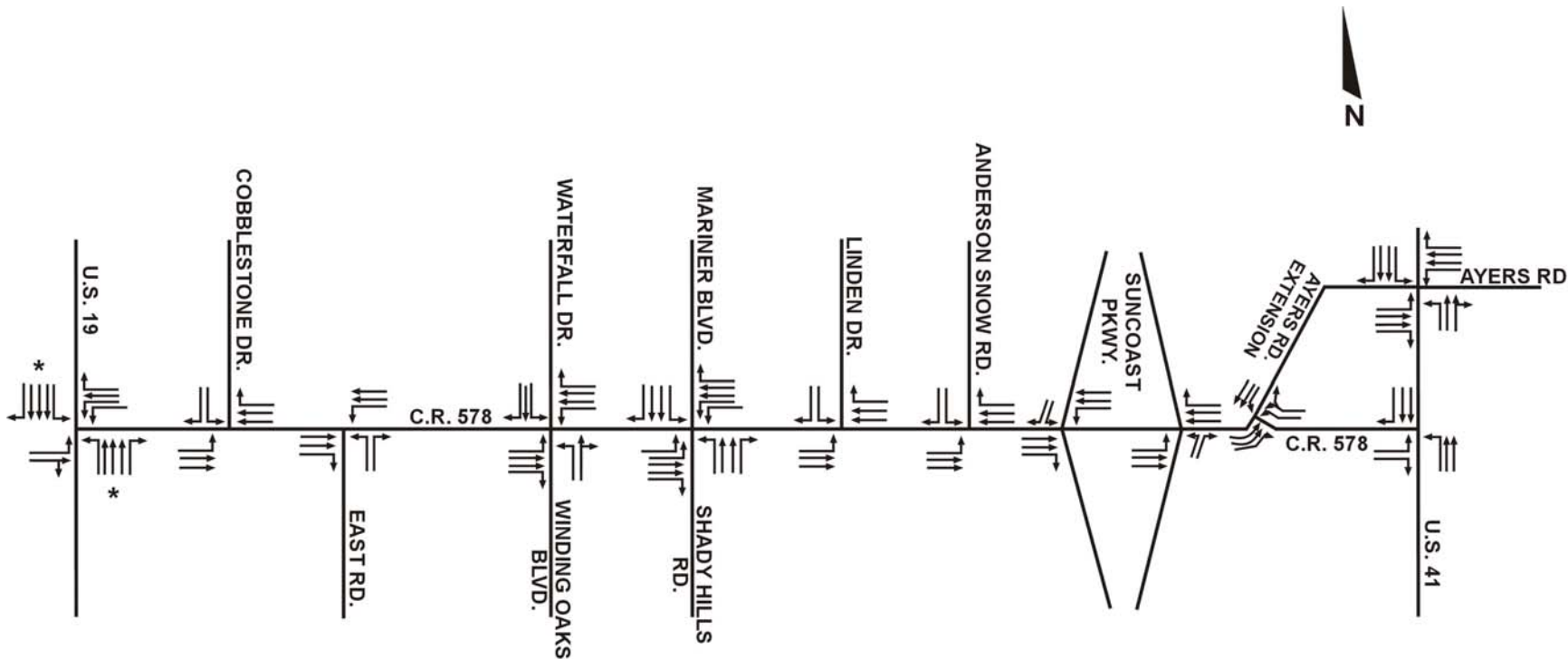
TABLE 6-11 (CONTINUED)
DESIGN YEAR (2025) SIGNALIZED INTERSECTION PEAK HOUR OPERATIONS

Intersection	Approach	Lane Group	A.M. Peak Hour		P.M. Peak Hour	
			Average Delay (in sec/veh)	Level of Service	Average Delay (in sec/veh)	Level of Service
C.R. 578/Mariner Boulevard/ Shady Hills Road	Eastbound	Left	59.7	E	70.4	E
		Through	27.4	C	45.7	D
		Right	18.6	B	12.3	B
		Overall	31.7	C	46.9	D
	Westbound	Left	52.4	D	45.1	D
		Through	34.0	C	26.9	C
		Right	14.9	B	11.7	B
		Overall	33.7	C	29.0	C
	Northbound	Left	79.4	E	66.0	E
		Through	38.9	D	63.2	E
		Right	27.1	C	20.8	C
		Overall	43.8	D	55.1	E
	Southbound	Left	28.9	C	70.5	E
		Through	50.6	D	35.7	D
		Right	29.4	C	20.6	C
		Overall	42.2	D	40.9	D
Overall			37.1	D	43.5	D
C.R. 578/Linden Drive	Eastbound	Left	20.7	C	9.4	A
		Through	3.8	A	4.2	A
		Overall	5.8	A	4.8	A
	Westbound	Through	10.7	B	7.8	A
		Right	1.1	A	1.4	A
		Overall	10.0	B	7.3	A
	Southbound	Left	44.6	D	43.6	D
		Right	41.1	D	28.6	C
		Overall	42.1	D	35.3	D
	Overall			11.5	B	8.4
C.R. 578/Anderson Snow Road	Eastbound	Left	15.8	B	5.4	A
		Through	3.3	A	4.4	A
		Overall	4.8	A	4.5	A
	Westbound	Through	9.5	A	8.3	A
		Right	1.4	A	1.4	A
		Overall	8.6	A	7.6	A
	Southbound	Left	50.4	D	47.4	D
		Right	38.4	D	26.3	C
		Overall	43.3	D	38.2	D
	Overall			10.8	B	9.1
C.R. 578/Suncoast Parkway (West Side)	Eastbound	Through	7.8	A	10.0	A
		Right	1.3	A	1.6	A
		Overall	7.2	A	9.2	A
	Westbound	Left	6.3	A	10.3	B
		Through	4.3	A	3.1	A
		Overall	4.4	A	3.4	A
	Southbound	Left	49.5	D	65.2	E
		Right	45.0	D	36.6	D
		Overall	47.9	D	58.9	E
	Overall			8.5	A	10.9

TABLE 6-11 (CONTINUED)
DESIGN YEAR (2025) SIGNALIZED INTERSECTION PEAK HOUR OPERATIONS

Intersection	Approach	Lane Group	A.M. Peak Hour		P.M. Peak Hour	
			Average Delay (in sec/veh)	Level of Service	Average Delay (in sec/veh)	Level of Service
C.R. 578/Suncoast Parkway (East Side)	Eastbound	Left	4.9	A	3.5	A
		Through	2.6	A	4.0	A
		Overall	2.7	A	4.0	A
	Westbound	Through	7.6	A	7.4	A
		Right	1.2	A	1.4	A
		Overall	6.8	A	6.7	A
	Northbound	Left	71.4	E	38.5	D
		Right	47.4	D	37.6	D
		Overall	64.8	E	38.1	D
	Overall			8.9	A	7.1
C.R. 578/Ayers Road Extension	Eastbound	Through	20.0	B	13.6	B
		Right	3.7	A	5.5	A
		Overall	11.7	B	9.5	A
	Westbound	Left	45.3	D	41.3	D
		Through	10.7	B	5.7	A
		Overall	14.0	B	11.8	B
	Northbound	Left	38.0	D	53.0	D
		Left/Right	37.2	D	51.6	D
		Overall	37.6	D	52.3	D
	Overall			20.5	C	19.8
Ayers Road Extension /U.S. 41	Eastbound	Left	29.2	C	22.7	C
		Through	25.9	C	27.4	C
		Right	20.3	C	19.1	B
		Overall	25.6	C	23.8	C
	Westbound	Left	26.3	C	18.3	B
		Through	27.3	C	26.7	C
		Right	19.0	B	19.0	B
		Overall	25.1	C	22.8	C
	Northbound	Left	31.5	C	11.6	B
		Through/Right	25.9	C	21.3	C
		Overall	27.1	C	20.1	C
	Southbound	Left	25.4	C	13.3	B
		Through	27.8	C	18.8	B
		Right	16.9	B	10.5	B
Overall		25.3	C	16.4	B	
Overall			25.8	C	20.3	C
C.R. 578/U.S. 41	Eastbound	Left	50.6	D	44.0	D
		Right	15.5	B	15.3	B
		Overall	32.2	C	29.0	C
	Northbound	Left	52.2	D	33.1	C
		Through	7.5	A	10.2	B
		Overall	24.6	C	16.6	B
	Southbound	Through	30.7	C	24.3	C
		Right	8.9	A	4.3	A
		Overall	23.5	C	18.4	B
	Overall			25.7	C	20.7

FIGURE 6-8
 DESIGN YEAR (2025) INTERSECTION GEOMETRY - BUILD ALTERNATIVE



*Note: The lane geometry depicted on US19 at the US19 / CR578 intersection is the existing (2000) lane geometry. The required future year geometry at this location will be determined as a part of a future US19 PD&E Study.

With one exception, all of the intersections analyzed are projected to operate at LOS D or better overall during both the a.m. and p.m. peak hours with the intersection geometry depicted in Figure 6-8. The C.R. 578/U.S. 19 intersection is projected to operate at LOS E overall in the a.m. and p.m. peak hours; however, many of the critical movements are projected to operate at LOS F. The C.R. 578/U.S.19 intersection analysis was conducted using maximum at-grade geometry, and, consequently, the analysis results indicate that some type of grade separation will likely be required for U.S. 19 by the year 2025. The specific future year geometric improvements that should be implemented on U.S. 19 will not be determined as a part of the C.R. 578 PD&E Study, but will be determined at some later time when a PD&E Study is conducted for this portion of U.S. 19.

Queue lengths were estimated for all of the major intersections in the C.R. 578 study corridor for both the a.m. and p.m. peak hours based on the assumption that by the year 2025, all of these major intersections will be signalized. Three separate queue length estimates were obtained by conducting TRANSYT-7F, SYNCHRO, and SIGNAL 94 analyses. The recommended turn-lane storage lengths were determined by comparing the TRANSYT-7F queue lengths, the SYNCHRO queue lengths, and the SIGNAL 94 queue lengths. The through movement queue lengths were also compared to the left-turn and right-turn queue lengths to help determine the most appropriate storage lengths. The recommended minimum turn-lane storage lengths are summarized in Table 6-12.

6.5 ***SUMMARY***

Existing and design year (2025) traffic analyses were conducted as part of the C.R. 578 PD&E Study to document the existing levels of service in the corridor as well as the anticipated future levels of service in the corridor. A traffic count program was conducted during the period from October 5, 1999, to October 11, 1999, and from January 4, 2000, to January 5, 2000, to obtain existing daily and peak hour traffic volumes. The existing traffic characteristics (peak-hour-to-daily volume ratio, directional distribution, daily and peak hour truck percentages, and peak hour factors) were then determined from the count data. Results of the existing conditions LOS analyses indicate that the portion of C.R. 578 from U.S. 19 to Mariner Boulevard/Shady Hills Road is currently operating at LOS E in both the a.m. and p.m. peak hours. The entire portion of the C.R. 578 corridor from Mariner Boulevard/Shady Hills Road to U.S. 41 is operating at LOS D in the p.m. peak hour. In the a.m. peak hour, the segment from Mariner Boulevard/Shady Hills Road to Linden Drive is operating at LOS D, while the remaining portion from Linden Drive to U.S. 41 is operating at LOS C.

Design year (2025) daily and peak hour traffic projections were developed through the use of the FDOT District VII TBRPM in combination with the use of a historical growth rate methodology. The results of the No-Build Alternative analyses indicate that a majority of the existing two-lane undivided roadway is projected to operate at LOS F if no improvements are made. The results of the Build Alternative analyses indicate that if C.R. 578 is widened to a four-lane divided roadway from U.S. 19 to the Suncoast Parkway, this portion of the corridor is projected to operate at LOS C or better in the design year. The results of the Build Alternative analysis also indicate that the implementation of the proposed Ayers Road Extension from just east of the Suncoast Parkway to U.S. 41 (at the existing U.S. 41/Ayers Road intersection) is projected to improve the LOS for the constrained C.R. 578 segment from the Suncoast Parkway to U.S. 41.

Signalized intersection analyses were conducted for all of the major intersections along the C.R 578 corridor including the eastern and western termini of the Ayers Road Extension. These analyses were conducted to determine the design year intersection geometrics that should be provided throughout the corridor. Acceptable peak hour levels of service are projected to occur at all of the C.R. 578 intersections in the design year with the recommended geometry.

**TABLE 6-12
RECOMMENDED MINIMUM DESIGN YEAR (2025) TURN LANE STORAGE LENGTHS**

Intersection	Turn Lane	Minimum Storage Length ft (m)	Decel Length ft (m)	Total Turn Lane Length ft (m)	Provided Length ft (m)
C.R. 578/U.S. 19	Westbound Left	650 ft (198 m)	185 ft (56 m)	835 ft (254 m)	835 ft (254 m)
C.R. 578/Cobblestone Drive	Eastbound Left	175 ft (53 m)	185 ft (56 m)	360 ft (109 m)	560 ft (171 m)
	Westbound Right	175 ft (53 m)	185 ft (56 m)	360 ft (109 m)	560 ft (171 m)
	Southbound Left	150 ft (46 m)	155 ft (47 m)	305 ft (93 m)	335 ft (102 m)
C.R. 578/East Road	Eastbound Right	500 ft (152 m)	185 ft (56 m)	685 ft (208 m)	550 ft (168 m)
	Westbound Left	300 ft (91 m)	185 ft (56 m)	485 ft (147 m)	685 ft (209 m)
	Northbound Left	225 ft (69 m)	155 ft (47 m)	380 ft (116 m)	370 ft (113 m)
C.R. 578/Waterfall Drive	Eastbound Left	350 ft (107 m)	185 ft (56 m)	535 ft (163 m)	750 ft (229 m)
	Eastbound Right	350 ft (107 m)	185 ft (56 m)	535 ft (163 m)	750 ft (229 m)
	Westbound Left	325 ft (99 m)	185 ft (56 m)	510 ft (155 m)	715 ft (218 ft)
	Westbound Right	325 ft (99 m)	185 ft (56 m)	510 ft (155 m)	715 ft (218 m)
	Northbound Left	225 ft (69 m)	155 ft (47 m)	380 ft (125 m)	380 ft (116 m)
	Southbound Left	150 ft (46 m)	155 ft (47 m)	305 ft (93 m)	290 ft (88 m)
C.R. 578/Mariner Boulevard/ Shady Hills Road	Southbound Right	350 ft (107 m)	155 ft (47 m)	505 ft (154 m)	495 ft (151 m)
	Eastbound Left	475 ft (145 m)	185 ft (56 m)	660 ft (201 m)	860 ft (262 m)
	Eastbound Right	250 ft (76 m)	185 ft (56 m)	306 ft (132 m)	625 ft (191 m)
	Westbound Left	475 ft (145 m)	185 ft (56 m)	660 ft (201 m)	850 ft (259 m)
	Westbound Right	225 ft (69 m)	185 ft (56 m)	410 ft (125 m)	615 ft (187 m)
	Northbound Left	400 ft (122 m)	185 ft (56 m)	585 ft (178 m)	580 ft (177 m)
	Northbound Right	400 ft (122 m)	185 ft (56 m)	585 ft (178 m)	580 ft (177 m)
	Southbound Left	375 ft (114 m)	185 ft (56 m)	560 ft (170 m)	535 ft (163 m)
C.R. 578/Linden Drive	Southbound Right	375 ft (114 m)	185 ft (56 m)	560 ft (170 m)	535 ft (163 m)
	Eastbound Left	225 ft (69 m)	185 ft (56 m)	410 ft (125 m)	610 ft (186 m)
	Westbound Right	250 ft (76 m)	185 ft (56 m)	435 ft (132 m)	635 ft (194 m)
C.R. 578/Anderson Snow Road	Southbound Left	200 ft (61 m)	155 ft (47 m)	355 ft (108 m)	355 ft (108 m)
	Eastbound Left	225 ft (69 m)	185 ft (56 m)	410 ft (125 m)	Existing
	Westbound Right	100 ft (30 m)	185 ft (56 m)	285 ft (86 m)	Existing
C.R. 578/Ayers Road Extension	Southbound Left	200 ft (61 m)	185 ft (56 m)	385 ft (117 m)	Existing
	Northbound Right	300 ft (91 m)	185 ft (56 m)	458 ft (147 m)	Existing
Ayers Road Extension/U.S. 41	Southbound Left	150 ft (46 m)	185 ft (56 m)	335 ft (102 m)	Existing
	Eastbound Left	200 ft (61 m)	185 ft (56 m)	385 ft (117 m)	650 ft (198 m)
	Eastbound Right	150 ft (46 m)	185 ft (56 m)	335 ft (102 m)	645 ft (197 m)
	Westbound Left	200 ft (61 m)	185 ft (56 m)	385 ft (117 m)	300 ft (91 m)
	Westbound Right	200 ft (61 m)	185 ft (56 m)	385 ft (117 m)	315 ft (96 m)
	Northbound Left	225 ft (69 m)	185 ft (56 m)	410 ft (125 m)	550 ft (168 m)
	Southbound Left	125 ft (38 m)	185 ft (56 m)	310 ft (94 m)	310 ft (95m)
Southbound Right	375 ft (114 m)	185 ft (56 m)	560 ft (170 m)	560 ft (171 m)	

The four-lane divided facility that was analyzed for the Build Alternative from U.S. 19 to Mariner Boulevard/Shady Hills Road along with the Ayers Road Extension is consistent with the *Pasco County and Hernando County MPO's 2025 LRTPs*. Although the four-laning of C.R. 578 from Mariner Boulevard/Shady Hills Road to the Suncoast Parkway is not currently included in the *Pasco County and Hernando County MPO's 2025 LRTPs*, the results of the traffic analyses indicate that this improvement will also be needed.

Section 7.0

CORRIDOR ANALYSIS

7.1 CORRIDOR EVALUATION

In an effort to identify potential alternate corridors that could serve the future travel demand of the C.R. 578 corridor, the following options were considered.

- Improvement of a parallel west-to-east roadway within the region;
- Development of a new corridor; or
- Roadway improvements to the existing C.R. 578 corridor.

The typical sections described in Sections 8.4.1 and 8.4.2 of this report were developed in conjunction with the FDOT, Pasco County, and Hernando County and were used in evaluating potential alternative corridors.

7.2 IMPROVEMENT OF A PARALLEL ROADWAY

A review of the existing roadway network both north and south of the immediate vicinity of C.R. 578 reveals the presence of one west-to-east parallel roadway, C.R. 574 (Spring Hill Boulevard), located approximately 1.5 mi (2.4 km) north of C.R. 578, as shown in Figure 2-1.

Spring Hill Boulevard is currently a four-lane divided minor arterial between U.S. 19 and Finland Drive [approximately 6.0 mi (9.7 km) in length] and from Anderson Snow Road to U.S. 41. Between Finland Drive and Anderson Snow Road, the existing facility is currently a two-lane undivided roadway. The *Hernando County MPO Five Year Transportation Improvement Program (TIP)* includes the portion of Spring Hill Boulevard from Finland Drive to Anderson Snow Road and proposes that it be improved to a four-lane divided facility.

Spring Hill Boulevard currently provides access to several large residential communities both on the north side and south side of the existing roadway. The *Hernando County MPO's 1996 LRTP* update analyzed the possible expansion of Spring Hill Boulevard to a six-lane facility as an alternative to four-laning C.R. 578. This analysis concluded that expanding Spring Hill Boulevard was not a viable alternative due to the following reasons:

- The Hernando County MPO has designated two segments of Spring Hill Boulevard as constrained facilities due to significant right-of-way (ROW) impacts. The segments are located from U.S. 19 to Deltona Boulevard, approximately 2.5 mi (4.0 km) in length and from Mariner Boulevard/Shady Hills Road to the Suncoast Parkway, approximately 4.0 mi (6.4 km) in length;
- The Hernando County MPO has also indicated that while these two facilities are parallel, they handle different types of traffic; and

- Expansion of Spring Hill Boulevard would not provide a direct evacuation access connection inland without detouring south along U.S. 41 to Ayers Road.

Improvement to Spring Hill Boulevard will not address the projected traffic demand along C.R. 578, since portions of Spring Hill Boulevard have been identified as constrained and will only be improved to a four-lane facility. Therefore, improvement of Spring Hill Boulevard, in lieu of improving C.R. 578 is not considered a viable alternative corridor.

7.3 DEVELOPMENT OF A NEW CORRIDOR

In evaluating the development of a new corridor, the project limits were divided into two segments. The first segment is from U.S. 19 to the Suncoast Parkway and the second segment is from the Suncoast Parkway to U.S. 41.

7.3.1 U.S. 19 TO SUNCOAST PARKWAY

The existing land uses along C.R. 578 from U.S. 19 to the Suncoast Parkway consist of a mixture of medium density single-family residential, commercial, and several religious facilities. Residential development is made up of numerous individual residences directly adjacent to C.R. 578 as well as single-family subdivisions. Major residential subdivisions located along this section include Oakwood Village, Arlington Woods, Heritage Pines, Rolling Oaks Estates, Oak Lake Estates, Seven Hills, Preston Hollow subdivision, and the Topics RV community. Community facilities include the Spring Hill Regional Hospital, Suncoast Elementary School, Spring Hill Assisted Living Facility, VFW Post 8681, and Slovene National Benefit Society Lodge #778.

The provision for a new corridor either south or north of C.R. 578 from U.S. 19 to the Suncoast Parkway would pass through predominantly developed residential communities, a golf course in the northeast quadrant at C.R. 578 and Mariner Boulevard/Shady Hills Road, and established commercial properties in the northwest quadrant at C.R. 578 and Mariner Boulevard/Shady Hills Road. The disadvantages associated with the development of a new corridor from U.S. 19 to the Suncoast Parkway include:

- Significant relocations.
- The new corridor would divide existing established residential communities.
- Introduction of heavy traffic in residential communities.
- Long transitions to reconnect to existing C.R. 578.

In addition, the development of a new corridor with a typical section width of 155 ft (46.5 m) from U.S. 19 to the Suncoast Parkway would require approximately 183.0 ac (74.0 ha) of new ROW. However, by utilizing the existing corridor and evaluating alignments that widen to the south, center, or north of the existing ROW on C.R. 578, the proposed improvements would require approximately 91.0 ac (36.8 ha) of additional ROW, and the effects to the human and natural environment would be minimized.

In addition, a new corridor from U.S. 19 to the Suncoast Parkway is not consistent with the *Pasco and Hernando County 2025 LRTPs*^{4,5}. Therefore, the development of a new corridor from U.S. 19 to the Suncoast Parkway is not considered a viable alternative corridor.

7.3.2 *SUNCOAST PARKWAY TO U.S. 41*

As noted in Section 3.3 of this report, the *Hernando County 2025 LRTP*⁵ has designated the portion of C.R. 578, from east of the Suncoast Parkway to U.S. 41, as a constrained facility. This constraint was based on the existing scenic and aesthetic characteristics associated with the canopied roadway. Therefore, widening the existing alignment is not considered a viable corridor.

However, as part of the PD&E process, several alternative corridors for the Ayers Road Extension were identified and evaluated for comparison from the interchange of the Suncoast Parkway to U.S. 41. This corridor study area is defined as C.R. 578 on the south from the interchange of C.R. 578 and Suncoast Parkway to the vicinity of U.S. 41 and from the Suncoast Parkway to the intersection of U.S. 41/Ayers Road to the north.

Certain advantages would be associated with the development of the Ayers Road Extension, since C.R. 578 from the Suncoast Parkway to U.S. 41 is designated as a constrained facility include:

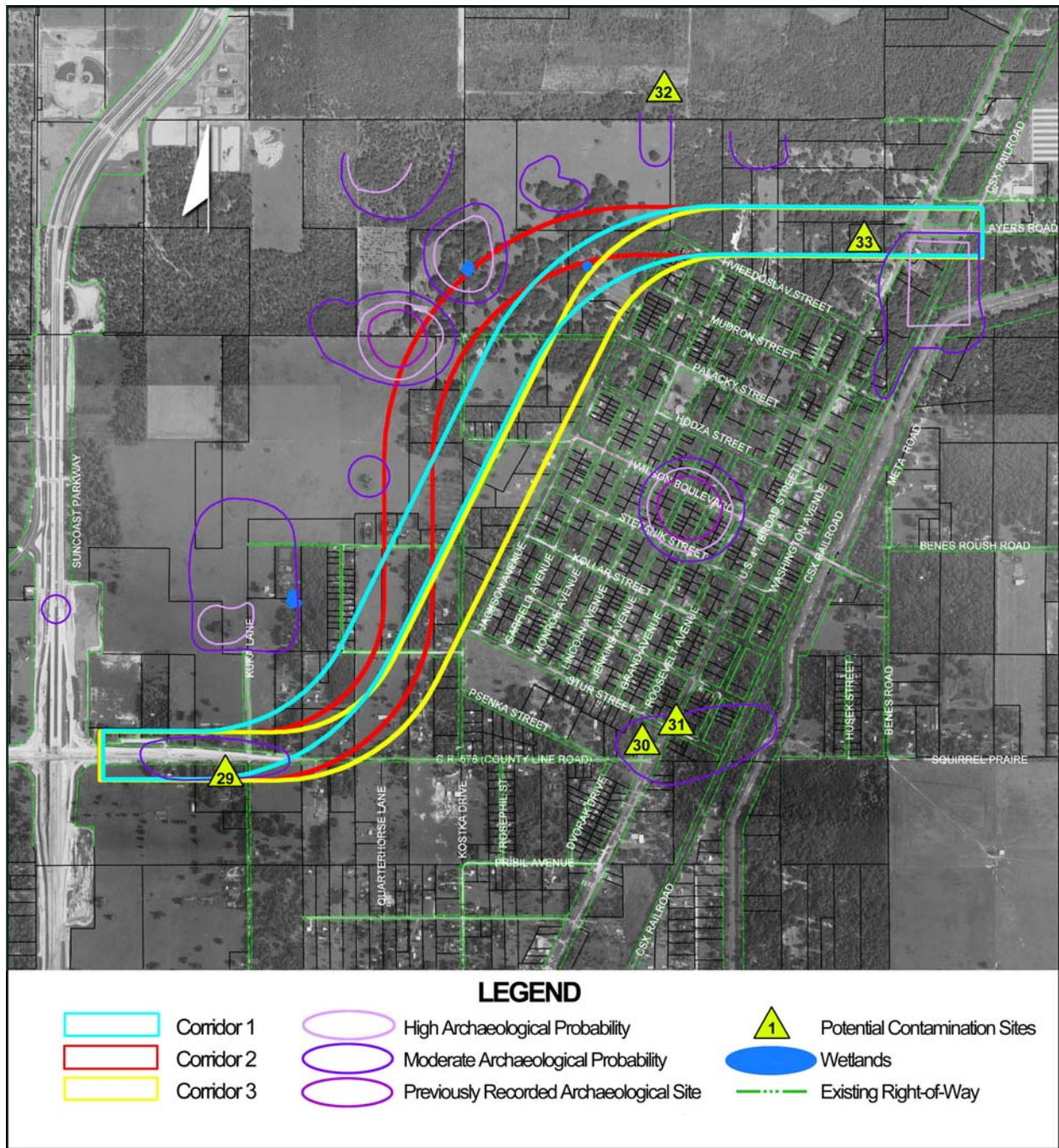
- Direct evacuation access connection inland from U.S. 19 to Spring Lake Highway (C.R. 41) approximately 9.0 mi (14.5 km) east of U.S. 41. Currently, the traffic has to stop (no signal control) at U.S. 41, make a left onto U.S. 41, and then turn right onto Ayers Road. Therefore, the development of the Ayers Road Extension would provide a better connection for evacuation to C.R. 41. However, since Ayers Road does not directly connect to I-75, traffic would still be required to travel either south to Blanton Road or north to Cortez Boulevard (U.S. 98) to access I-75.
- The Hernando County Airport has prepared plans that would provide a new connection to the Hernando County Airport from the proposed Ayers Road Extension.
- The Ayers Road Extension is identified in the Hernando County 2015 Interim Plan as a two-lane facility and in the *2025 LRTP* as a four-lane facility.

Disadvantages associated with the development of the Ayers Road Extension, include:

- Dividing existing land tracts.
- Increased ROW requirements.
- Increased environmental effects.

As shown in Figure 7-1, the Ayers Road Extension corridors were developed to avoid or minimize effects to the human and natural environment. A review of the land use, environmental components, and geometrics to the east of the Suncoast Parkway indicates that three new corridors could be developed for the evaluation of the Ayers Road Extension.

**FIGURE 7-1
AYERS ROAD EXTENSION CORRIDORS**



A comparison of the effects of each evaluated alternative corridor is shown in Table 7-1. Table 7-1 was prepared using quantifiable criteria from categories including socioeconomic, environmental, cultural, hazardous material/petroleum contamination, and construction cost. The data were developed utilizing GIS databases and field verifications. A corridor band width of 600 ft (183.0 m) was utilized for the three corridors developed. In estimating the construction cost of each corridor, a cost of \$1.9 million/mile was used for new construction of a rural facility. However, only approximately 212 ft (63.6 m) of ROW will be needed within the corridor.

**TABLE 7-1
AYERS ROAD EXTENSION CORRIDOR MATRIX**

Evaluation Factor		Corridor 1	Corridor 2	Corridor 3
Type of Facility		Rural	Rural	Rural
Length		2.71 mi (4.36 km)	2.91 mi (4.68 km)	2.74 mi (4.41 km)
Parcels Affected	Pasco	9	12	14
	Hernando	74	58	79
	Total	83	70	93
ROW Area [acres (hectares)] ¹		69.6 (28.2)	74.8 (30.3)	70.4 (28.5)
Number of Archaeological Sites Within the Corridor	Previously Recorded	0	1	0
	Moderate Probability	2	5	2
	High Probability	1	2	1
Potential Threatened and Endangered Species Involvement (State-Listed)		Yes	Yes	Yes
Wetland Area [acres (hectares)]		0.18 (0.07)	0.06 (0.02)	0.00 (0.00)
Contamination Sites		2	2	2
Estimated Construction Cost (\$1.9 million/mile)		\$5.15	\$5.53	\$5.21

¹ Corridors 1, 2, and 3 will require the acquisition of approximately 212 ft (64.6 m) of ROW.

Based on the evaluation of the three alternative corridors developed for the Ayers Road Extension, the effects were found to be similar within each corridor and are compared below:

- Corridor 2 has the least number of parcels (70); and Corridor 3 has the greatest number of parcels (93).
- Corridor 2 has the highest number of archaeological site probability occurrences than either Corridors 1 or 3.
- Corridor 3 has the least involvement with wetland areas, 0.00 ac (0.00 ha) versus 0.18 ac (0.07 ha) for Corridor 1, which has the greatest wetland acreage.
- Corridor 2 has the highest construction cost, \$5.53 million versus \$5.15 million for Corridor 1, which has the least cost.

In addition, Corridor 2 would require sharper degrees of curvature than Corridors 1 and 3. Therefore, due to the high travel speed along this new facility, Corridors 1 and 3 would be more preferable since the proposed degree of curvatures are flatter.

Therefore, from the evaluation criteria in Table 7-1 and the corridor alignments shown on Figure 7-1, Corridors 1 and 3 are recommended as viable options for further alignment development, and it is recommended that Corridor 2 be eliminated as a viable alternative corridor.

7.4 IMPROVEMENT OF THE EXISTING CORRIDOR

As identified in Sections 7.2 and 7.3 of this report, improvements to a parallel corridor and the development of a new corridor from U.S. 19 to the Suncoast Parkway were not considered viable options. Therefore, utilizing the existing corridor from U.S. 19 to the Suncoast Parkway is the most viable corridor since adverse effects to residential communities would be minimized. However, accommodations of a four-lane divided facility will require additional ROW along the project corridor since there is not sufficient ROW along the majority of the project to construct the proposed improvements. In addition, improvement of this corridor is consistent with the *Pasco and Hernando County 2025 LRTPs*^{4,5}.

As noted in Sections 3.3 of this report, the *Hernando County 2025 LRTP*⁵ has designated the portion of C.R. 578, from east of the Suncoast Parkway to U.S. 41, as a constrained facility. Therefore, no major improvements will be made to this existing facility.

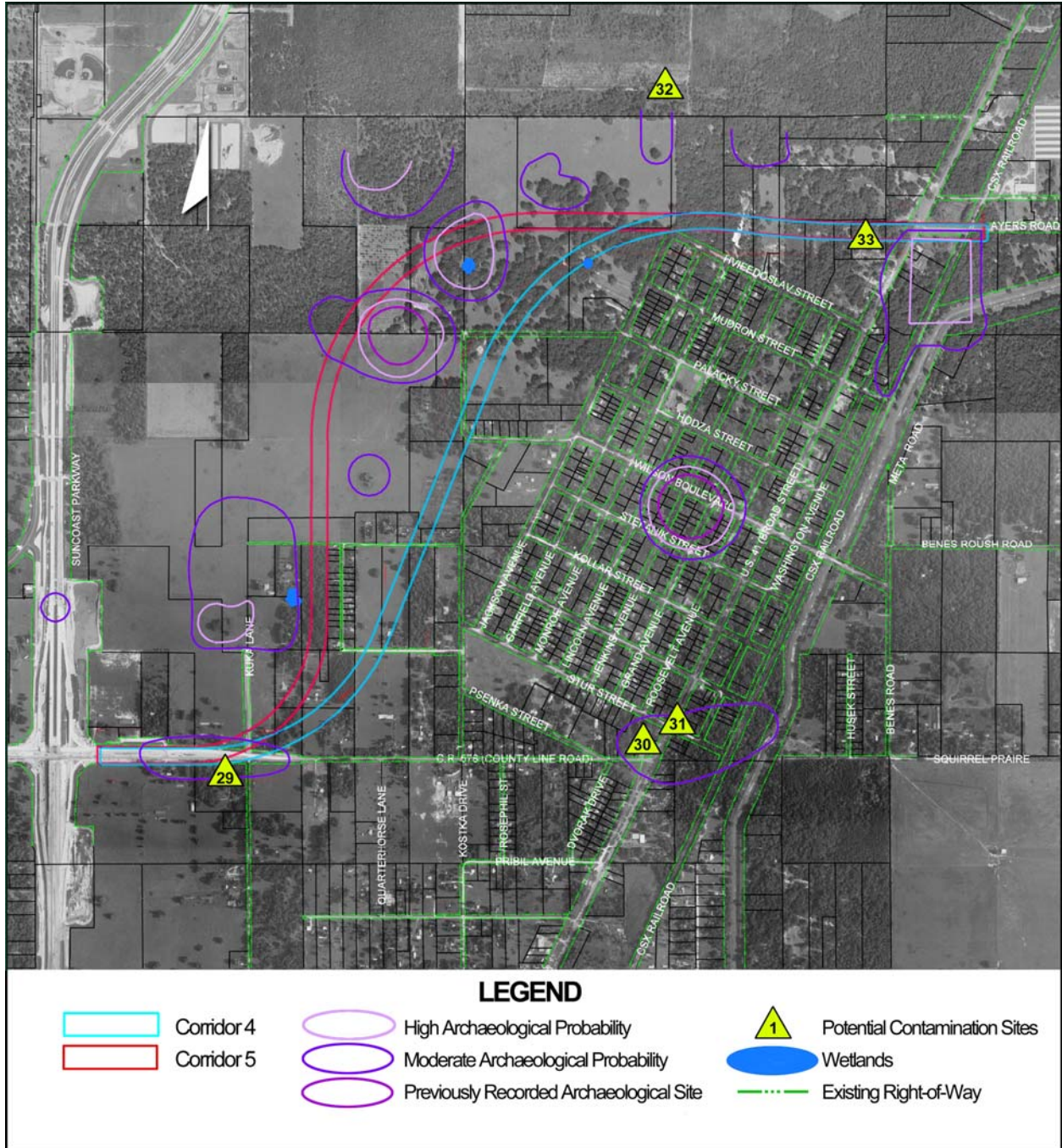
7.5 AMENDMENT

Upon reviewing Corridors 1, 2, and 3 for the Ayers Road Extension, the FDOT, Pasco County, and Hernando County met to reevaluate these corridors. A meeting was held on August 7, 2000, to address the project and the potential impacts associated with the Ayers Road Extension. As a result of that meeting, several steps were identified which could potentially reduce impacts associated with the Ayers Road Extension. In addition, the eastern limit of the project along Ayers Road was extended to a point approximately 0.5 mi (0.80 km) east of the U.S. 41/Ayers Road intersection.

The first step in the development of additional corridors was to identify areas where the new alignment would have the least impact to the community. This process identified two new corridors: Corridors 4 and 5. Corridor 4 is located approximately along the same alignment as Corridor 1, but has been modified slightly to reduce impacts to residences and parcels. Corridor 5 is located west of the previously developed corridors, through less developed lands, to reduce the potential impacts. Both new corridors are shown on Figure 7-2.

To further reduce impacts, Corridors 4 and 5 were developed using the suburban typical section described in Section 8.4.2 of this report, instead of the rural typical section used for Corridors 1, 2, and 3.

**FIGURE 7-2
 AYERS ROAD EXTENSION CORRIDORS 4 AND 5**



Like Corridors 1, 2, and 3, Corridors 4 and 5 were evaluated using the same quantifiable socioeconomic, environmental, cultural, contamination, and construction cost criteria. The evaluation data were developed using GIS databases with field verification. Due to the use of the smaller suburban typical section, the corridor bandwidth used to evaluate Corridors 4 and 5 was approximately 400 ft (122.0 m) rather than 600 ft (183.0 m). In estimating the construction cost for Corridors 4 and 5, a cost of \$2.9 million per mile was used for the construction of a suburban facility.

A comparison of the impacts and costs associated with Corridors 4 and 5 is shown in Table 7-2. Based on the evaluation of the two new corridors developed for the Ayers Road Extension, the effects were found to be similar within each corridor and the comparison follows:

- Corridor 4 is slightly shorter in length than Corridor 5.
- Corridor 5 affects fewer parcels (36 versus 43) than Corridor 4.
- Corridor 4 requires less ROW than Corridor 5.
- Corridor 4 has a lower probability of archaeological site occurrence.
- Corridor 4 has a lower construction cost (\$10.2 million versus \$10.8 million).
- Corridor 5 incorporates slightly sharper degrees of curvature than Corridor 4, resulting in a more due-north/south alignment and a more westerly location.
- Corridor 5 results in no wetland impacts, while Corridor 4 impacts approximately 0.11 ac (0.04 ha).

Based on a comparison with Corridors 1, 2, and 3, shown in Table 7-1, Corridors 4 and 5 compare favorably. Corridors 4 and 5 result in reduced parcel impacts, reduced ROW acquisition, and fewer wetland impacts. However, due to the use of the suburban typical section and extended length to the east of U.S. 41, Corridors 4 and 5 have higher estimated construction costs.

**TABLE 7-2
AYERS ROAD EXTENSION CORRIDORS 4 AND 5 EVALUATION MATRIX**

Evaluation Factor		Corridor 4	Corridor 5
Type of Facility		Suburban	Suburban
Length		3.52 mi (5.66 km)	3.73 mi (6.0 km)
Parcels Affected	Pasco	6	5
	Hernando	37	31
	Total	43	36
Right-of-Way Area [hectares (acres)] ¹		46.6 (18.9)	53.3 (21.6)
Number of Archaeological Sites Within the Corridor	Previously Recorded	0	0
	Moderate Probability	3	5
	High Probability	1	2
Potential Threatened and Endangered Species Involvement (State-Listed)		Yes	Yes
Wetland Area [hectares (acres)]		0.11 (0.04)	0.00 (0.00)
Contamination Sites		2	2
Estimated Construction Cost (\$2.9 million/mile)		\$10.20	\$10.81

¹ Corridors 4 and 5 will require the acquisition of approximately 155 ft (47.2 m) of ROW.

7.6 CONCLUSION

The corridor analysis forms the basis for the selection of the viable corridors to be carried forward for detailed engineering, environmental, and cost evaluation in developing alignments.

Based on the evaluation results documented in Tables 7-1 and 7-2, both Corridors 4 and 5 result in fewer overall impacts than Corridors 1, 2, and 3. However, due to their suburban typical sections and greater project length, Corridors 4 and 5 result in higher estimated construction costs.

Based on the reduction of parcel, relocation, and wetlands impacts associated with Corridors 4 and 5, Corridors 1, 2, and 3 have been dropped from further consideration. Therefore, Corridors 4 and 5 will be carried forward as the most viable options for further refinement and development.

Section 8.0

ALTERNATIVE ALIGNMENT ANALYSIS

To develop an improved roadway facility for C.R. 578 that is in the best overall public interest, the following factors were taken into consideration:

- Engineering: The design and alignment of the improved facility;
- Environmental: Social, cultural, natural, and physical factors;
- Public Involvement: Needs and concerns of the affected local community; and
- Economic Factors: Project costs and opportunities to optimize expenses such as construction staging and traffic control.

The design of the improved facility will safely and efficiently accommodate the projected design year vehicular traffic as well as other modes of transportation. All of the factors developed and utilized for this study will have a direct bearing on the selection of a preferred alternative.

The following sections describe the alignment concepts developed for the Build Alternative from the vicinity of U.S. 19 to U.S. 41 and the evaluation methods used to compare these alignments. These descriptions are preceded by a discussion of the advantages and disadvantages of the Build and No-Build Alternatives.

8.1 NO-BUILD ALTERNATIVE

The No-Build Alternative consists of postponing major improvements on C.R. 578 beyond the Design Year 2025. This involves leaving the existing roadway as it is, with only routine maintenance as required. Certain advantages would be associated with the implementation of the No-Build Alternative, including:

- No new construction costs,
- No disruption to the existing land uses due to construction activities,
- No disruption to traffic due to construction activities,
- No right-of-way (ROW) acquisitions or relocations, and
- No disturbance to natural resources.

The disadvantages of the No-Build Alternative include:

- Increased traffic congestion causing increased road user cost due to travel delay;
- No improvements to inadequate driver sight distances; and
- Not consistent with local transportation plans.

Additionally, postponement of the project may jeopardize its future economic feasibility due to the current escalation of construction and ROW costs. However, the No-Build Alternative will remain under consideration as a viable alternative throughout the PD&E Study.

8.2 TRANSPORTATION SYSTEM MANAGEMENT

The Hernando County MPO is planning to perform the following interim improvements on C.R. 578 in 2002/03 and 2004/05. These projects are identified in Hernando County's Congestion/Mobility Management Systems and Intelligent Transportation Systems Project Plan.

- Provide a signal and dedicated left turn lanes on C.R. 578 at the intersection of C.R. 578 and Waterfall Drive.
- Provide dual hand turn lanes and a divided four-lane facility at the C.R. 578/Mariner Boulevard intersection.
- Provide a signal and construct turn lanes in all directions at the C.R. 578/Cobblestone Road intersection.

These types of projects or future similar projects along the existing two-lane facility will not, given the projected traffic volumes, satisfy TSM criteria, such as providing for an adequate level of service for the 2025 design year.

8.3 BUILD ALTERNATIVE ALIGNMENTS EVALUATION

To effectively develop and evaluate all viable improvement options, the following three-step process was applied:

- Step One: Typical sections were developed in conjunction with the Department, Pasco County, and Hernando County based on the design criteria discussed in Section 5.0 and the findings of the traffic analyses.
- Step Two: Alignments were developed for each segment based on the typical section developed in Step One and the assumption that additional ROW could be acquired on the south side, the north side, or both sides of the existing facility.
- Step Three: The project was divided into four segments based on the existing land use patterns and future construction segments.

Certain advantages would be associated with the Build Alternative:

- Less traffic congestion;
- Improvement to inadequate driver sight distances; and
- Consistency with local transportation plans.

The disadvantages include:

- Design, ROW, and construction costs;
- ROW acquisition and relocation;
- Temporary disruption to traffic during construction; and
- Minimal effects to the environment.

8.3.1 PROJECT SEGMENTS

Project segments are used in this type of study to effectively assess and compare the effects of each alignment. C.R. 578 was divided into the four study segments as follows due to existing land use patterns.

Segment A: U.S. 19 to East Road – A distance of 2.4 mi (3.9 km).

Segment B: East Road to Mariner Boulevard/Shady Hills Road – A distance of 3.2 mi (5.1 km).

Segment C: Mariner Boulevard/Shady Hills Road to Suncoast Parkway – A distance of 3.9 mi (6.3 km).

Segment D: Suncoast Parkway to U.S. 41 (Ayers Road Extension) – A distance of 3.5 mi (5.6 km).

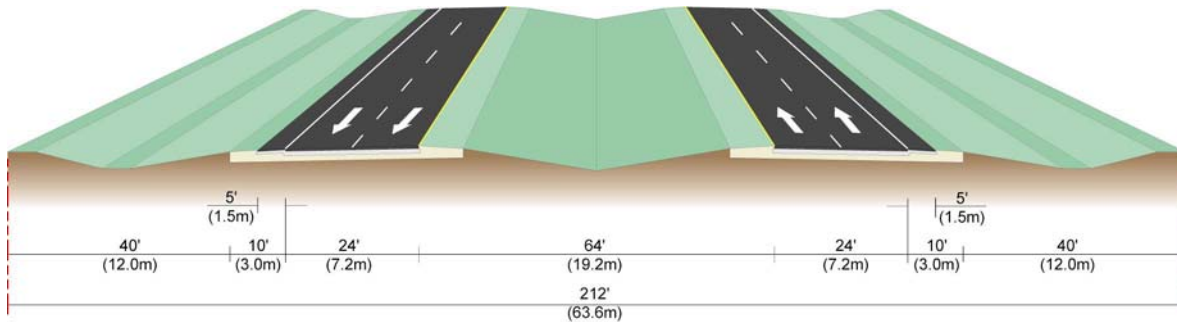
8.4 TYPICAL SECTION EVALUATION

This section describes and presents graphically the typical sections developed for this study. Using the traffic projections described in Section 6.0 of this report and coordinating with the FDOT, Pasco County, and Hernando County, rural and suburban typical sections were developed for evaluation. The typical roadway sections developed for this study will provide for four-lanes of through travel and will be utilized in developing the Build Alternative alignments.

8.4.1 RURAL TYPICAL SECTION

This typical section is a four-lane divided rural facility, with travel lanes 24 ft (7.2 m) wide, a 64 ft (19.2 m) depressed grass median with 8 ft (2.4 m) inside shoulders, 10-ft (3.0-m) outside shoulders with 5 ft (1.5 m) of the shoulder paved, and 40 ft (12.0 m) borders to accommodate the open roadside ditches. The proposed design speed for this typical section is 70 mph (110 km/h). This typical section will require a minimum of approximately 212 ft (63.6 m) of ROW as shown in Figure 8-1.

**FIGURE 8-1
RURAL TYPICAL SECTION**

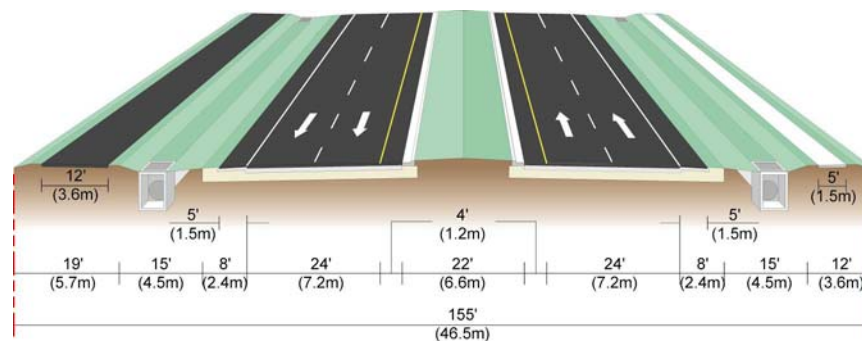


The rural typical section was eliminated from further consideration in the development of the alternative alignments due to the significant ROW impacts associated with this typical section.

8.4.2 SUBURBAN TYPICAL SECTION

This typical section is a four-lane divided suburban facility, with a 30 ft (9.0 m) median in which 22 ft (6.6 m) is raised, two 12 ft (3.6 m) travel lanes in each direction, 8 ft (2.4 m) outside shoulders with 5 ft (1.5 m) of the shoulder paved, and 15 ft (4.5 m) drainage swales. A 12 ft (3.6 m) multi-use facility on the north side of the roadway and a 5 ft (1.5 m) sidewalk on the south side of the roadway are also being proposed. The proposed design speed for this typical section is 55 mph (90 km/h). This typical section will require a minimum of approximately 155 ft (46.5 m) of ROW, as shown in Figure 8-2.

**FIGURE 8-2
SUBURBAN TYPICAL SECTION**



8.5 BUILD ALTERNATIVE ALIGNMENTS

Southern, northern, and centered alignments were developed for the Build Alternative in Segments A, B, and C using the suburban typical section shown in Figure 8-2. In Segment D, the proposed Ayers Road Extension, two alignments were developed for the Build Alternative

using the corridors identified in Section 7.0 of this report and utilizing the suburban typical section shown in Figure 8-2. A brief description of the alternative alignments follows:

Segments A, B and C

- Alignment S-1: (South Alignment) proposes the widening of C.R. 578 to the south with ROW acquisitions primarily to the south.
- Alignment S-2: (Center Alignment) proposes the widening of C.R. 578 to the center with ROW acquisitions from both sides of the roadway.
- Alignment S-3: (North Alignment) proposes the widening of C.R. 578 to the north with ROW acquisitions primarily to the north.

Segment D (Ayers Road Extension)

- Alignment S-4: Alignment S-4 is a new alignment that begins east of the Suncoast Parkway and travels north to east and connects to U.S. 41 at Ayers Road. This alignment parallels the Masaryktown residential community located in the northwest quadrant of C.R. 578 and U.S. 41. This alignment was developed using Corridor 4 described in Section 7.0 of this report.
- Alignment S-5: Alignment S-5 is a new alignment that begins east of the Suncoast Parkway and travels north to east and connects to U.S. 41 at Ayers Road. This alignment was developed using Corridor 5 described in Section 7.0 of this report.

8.6 EVALUATION PROCESS

8.6.1 QUANTIFIABLE CRITERIA

To evaluate the Build Alternative alignments, the evaluation matrix shown in Table 8-1 was prepared using quantifiable criteria from a multitude of categories including socioeconomic, environmental, cultural, hazardous material/petroleum contamination, and cost (engineering, ROW, and construction). The matrix data were developed utilizing raster-based aerial photography depicting the proposed ROW needs for each alignment. A brief description of these quantifiable evaluation criteria is presented below:

- Potential Business Relocations

The number of businesses that will have the potential to be relocated by the proposed improvements for the Build Alternative. In addition, other business effects expected to be sustained by the proposed improvements that will not require relocation (i.e., parking loss) were also considered as part of the ROW acquisition cost estimate.

- Potential Residential Relocations

The number of residences that exist within the proposed ROW and that will have the potential to be relocated if the Build Alternative is implemented.

- Effects on Cultural/Historic Resources and Public Parks
Effects to the number of historically and archaeologically significant sites, structures, and public parks within the proposed improvements.
- Natural Environmental Effects
Effects to the natural environment (i.e., wetlands and potential threatened and endangered species) within the proposed improvements.

**TABLE 8-1
EVALUATION MATRIX**

Evaluation Factors	C.R. 578 from U.S. 19 to Suncoast Parkway									Ayers Road Extension	
	Segment A			Segment B			Segment C			Segment D	
	S-1 (S)	S-2 (C)	S-3 (N)	S-1 (S)	S-2 (C)	S-3 (N)	S-1 (S)	S-2 (C)	S-3 (N)	S-4	S-5
	Potential Relocations										
Businesses	4	4	4	4	0	0	1	0	1	0	0
Residences	13	24	33	0	7	10	0	1	3	4	2
Cultural Resources											
Potential Historic Structures	0	0	0	0	0	0	0	0	0	0	0
Archaeological Sites	8	8	8	8	8	8	8	8	8	2	2
Parks [Section 4(f)]	0	0	1	0	0	0	0	0	0	0	0
Natural/Physical Environmental Effects											
Wetlands Acres (Hectares)	0.50 (0.20)	0.41 (0.17)	0.26 (0.11)	1.43 (0.58)	1.49 (0.60)	1.24 (0.50)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.05 (0.02)	0.00 (0.00)
Potential T&E Species Involvement (N/L/M/H)	M	M	M	M	M	M	M	M	M	M	M
Noise Sensitive Sites	38	35	26	7	6	1	7	10	6	5	7
Potential Contamination Sites	4	4	4	10	8	4	3	3	4	1	1
Project Costs (millions)											
Construction Cost ¹	\$6.84	\$6.84	\$6.84	\$9.04	\$9.04	\$9.04	\$9.64	\$9.64	\$9.64	\$11.44	\$12.04
ROW Cost ²	\$28.57	\$31.09	\$31.37	\$34.17	\$31.25	\$19.73	\$17.99	\$25.95	\$24.70	\$5.51	\$3.93
Engineering Cost	\$1.03	\$1.03	\$1.03	\$1.36	\$1.36	\$1.36	\$1.45	\$1.45	\$1.45	\$1.72	\$1.81
Construction Engineering and Inspection Cost	\$1.03	\$1.03	\$1.03	\$1.36	\$1.36	\$1.36	\$1.45	\$1.45	\$1.45	\$1.72	\$1.81
Total Cost per Alignment	\$37.47	\$39.99	\$40.27	\$45.93	\$43.01	\$31.49	\$30.53	\$38.49	\$37.24	\$20.39	\$19.59

S, C, or N = South, Center, or North.

N/L/M/H = None/Low/Medium/High.

¹ LRE estimate completed on October 4, 2000.

² Pond costs to be determined.

- Noise-Sensitive Sites
Noise-sensitive sites are defined as any property (owner occupied, rented, or leased) where frequent human use occurs and where a lowered noise level would be of benefit. Typical noise-sensitive sites include residences, schools, churches, and recreational areas. For this project, noise-sensitive sites

predicted to experience noise levels that reach or exceed 66 dBA (decibels), or experience an increase of 15 dBA greater than existing noise levels, require abatement consideration.

- **Potentially Contaminated Sites**

As presented in Section 4.0, several potentially hazardous material and/or petroleum contaminated sites exist along the project. The number of potentially contaminated sites are within or adjacent to the proposed ROW.

- **Right-of-Way Costs**

Cost of ROW acquisition is related to both the number of parcels affected and the amount of acreage required. Administrative costs are incurred with each land parcel affected, regardless of the acreage. A combination of these two factors produces the ROW costs. The ROW costs were determined using year 2000 dollars. The ROW acquisition cost includes the cost of potential business and residence relocations, private property purchase, and reimbursement cost for miscellaneous business damages.

- **Other Project Costs**

Preliminary cost estimates were prepared for the alternative alignments, including engineering/design, construction, and construction engineering and inspection costs (CEI). The construction cost was calculated using the FDOT's Long Range Estimates (LRE) computer program. The engineering (final design) cost and construction engineering and inspection costs were calculated as a percentage (15.0 percent) of the construction cost.

8.7 ALTERNATIVE ALIGNMENT EVALUATION

An Alternatives Public Workshop was held on December 14, 2000, at the Frank W. Springstead High School in Spring Hill. At this workshop, the southern, centered, and northern alignments (S-1, S-2, and S-3) were presented to the public for Build Alternatives in Segments A, B, and C using the typical section shown in Figure 8-2. In Segment D, the proposed Ayers Road Extension, two alignments (S-4 and S-5) were presented utilizing the typical section shown in Figure 8-2.

Subsequent to the Alternatives Public Workshop, Pasco and Hernando Counties and the Department looked at optimizing the alignment from U.S. 19 to the Suncoast Parkway. For the Ayers Road Extension, Alignment S-5 was selected. The following details the optimized alignment developed for C.R. 578 from U.S. 19 to the Suncoast Parkway.

- | | |
|-----------------------------------|---------------------|
| • U.S. 19 to Hamlet Circle | North Alignment |
| • Hamlet Circle to Fountain Court | Within Existing ROW |
| • Fountain Court to Kelley Road | South Alignment |
| • Kelley Road to Suncoast Parkway | North Alignment |

8.7.1 OPTIMIZED ALTERNATIVE ALIGNMENT ANALYSIS

Utilizing the optimized alignment for C.R. 578 from U.S. 19 to the Suncoast Parkway and Alignment S-5 for the Ayers Road Extension, three new typical sections were developed and analyzed for construction and ROW costs.

8.7.1.1 Modified Suburban Typical Section

This typical section is a four-lane divided facility with a 19.5 ft (6.0 m) raised median, two 12 ft (3.6 m) travel lanes in each direction, 8 ft (2.4 m) outside shoulders with 5 ft (1.5 m) paved, 15 ft (4.5 m) drainage swales, and 5 ft (1.5 m) sidewalks. The proposed design speed for this typical section is 45 mph (70 km/h). This section will require a minimum of approximately 133.5 ft (40.2 m) of ROW as shown in Figure 8-3.

**FIGURE 8-3
MODIFIED SUBURBAN TYPICAL SECTION**

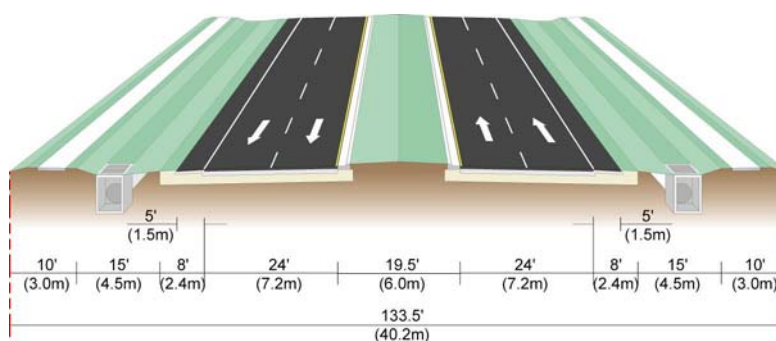


Table 8-2 identifies the costs associated with the modified suburban alternative (Alignments S-6 and S-7).

**TABLE 8-2
OPTIMIZED 4-LANE TO 6-LANE SUBURBAN ALIGNMENT MATRIX**

Evaluation Factors	C.R. 578 from U.S. 19 to Suncoast Parkway			Ayers Road Extension	Total
	Segment A	Segment B	Segment C	Segment D	
	S-6	S-6	S-6	S-7	
Construction Cost ¹	\$6.69	\$8.94	\$9.64	\$11.05	\$36.32
ROW Cost	\$19.80	\$18.85	\$24.57	\$6.21	\$69.43
Engineering Cost	\$1.00	\$1.34	\$1.45	\$1.66	\$5.45
CEI Cost	\$1.00	\$1.34	\$1.45	\$1.66	\$5.45
Cost/Alignment	\$28.49	\$30.47	\$37.11	\$20.58	\$116.65

¹ LRE estimate completed on July 9, 2001.

8.7.1.2 Expandable Urban Typical Section

This typical section would be constructed from U.S. 19 to the Suncoast Parkway and the modified suburban typical section would be utilized for the Ayers Road Extension. The

expandable urban typical section is a four-lane divided facility with a 43.5 ft (13.2 m) depressed median, two 12 ft (3.6 m) travel lanes in each direction, 4 ft (1.2 m) bicycle lanes, and 10 ft (3.0 m) borders with 6 ft (1.8 m) sidewalks adjacent to the curb and gutter. The proposed design speed for this typical section is 45 mph (70 km/h). This section will require a minimum of approximately 119.5 ft (36.0 m) of ROW as shown in Figure 8-4.

**FIGURE 8-4
EXPANDABLE URBAN TYPICAL SECTION**

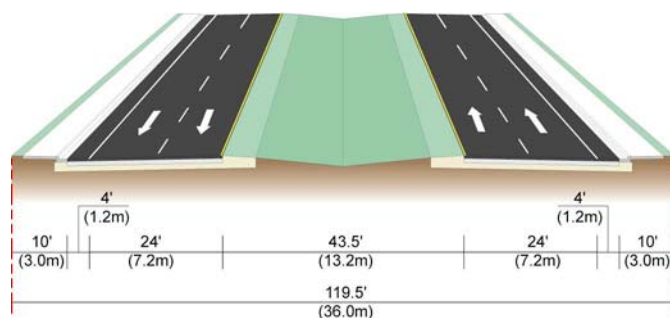


Table 8-3 identifies the costs associated with the expandable urban alternative (Alignments U-1 and S-7).

**TABLE 8-3
EXPANDABLE URBAN ALIGNMENT MATRIX**

Evaluation Factors	C.R. 578 from U.S. 19 to Suncoast Parkway			Ayers Road Extension	Total
	Segment A	Segment B	Segment C	Segment D	
	U-1	U-1	U-1	S-7	
Construction Cost ¹	\$7.10	\$8.94	\$9.64	\$11.05	\$36.73
ROW Cost	\$19.04	\$16.51	\$23.25	\$6.21	\$65.01
Engineering Cost	\$1.07	\$1.34	\$1.45	\$1.66	\$5.52
CEI Cost	\$1.07	\$1.34	\$1.45	\$1.66	\$5.52
Cost/Alignment	\$28.28	\$28.13	\$35.79	\$20.58	\$112.78

¹ LRE estimate completed on July 9, 2001.

8.7.1.3 Constrained Urban Typical Section

This typical section would be constructed from U.S. 19 to U.S. 41. This urban typical section is a four-lane divided facility with a 15.5 ft (5.0 m) raised median, two 12 ft (3.6 m) travel lanes in each direction, 4 ft (1.2 m) bicycle lanes, and 10 ft (3.0 m) borders with 6 ft (1.8 m) sidewalks adjacent to the curb and gutter. The proposed design speed for this typical section is 45 mph (70 km/h). This section will require a minimum of approximately 91.5 ft (27.8 m) of ROW as shown in Figure 8-5.

**FIGURE 8-5
CONSTRAINED URBAN TYPICAL SECTION**

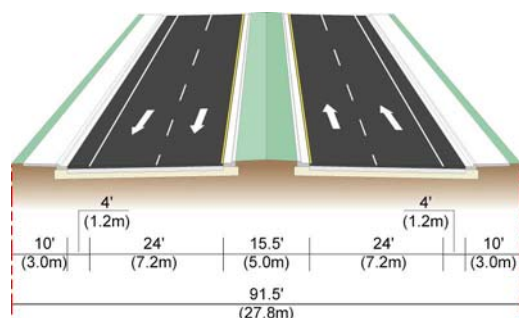


Table 8-4 identifies the costs associated with the constrained urban alternative (Alignment U-2).

**TABLE 8-4
CONSTRAINED URBAN ALIGNMENT MATRIX**

Evaluation Factors	C.R. 578 from U.S. 19 to Suncoast Parkway			Ayers Road Extension	Total
	Segment A	Segment B	Segment C	Segment D	
	U-2	U-2	U-2	U-2	
Construction Cost ¹	\$10.00	\$13.32	\$15.97	\$15.37	\$54.66
ROW Cost	\$11.68	\$10.20	\$11.72	\$5.94	\$39.54
Engineering Cost	\$1.50	\$2.00	\$2.40	\$2.31	\$8.21
CEI Cost	\$1.50	\$2.00	\$2.40	\$2.31	\$8.21
Cost/Alignment	\$24.68	\$27.52	\$32.49	\$25.93	\$110.62

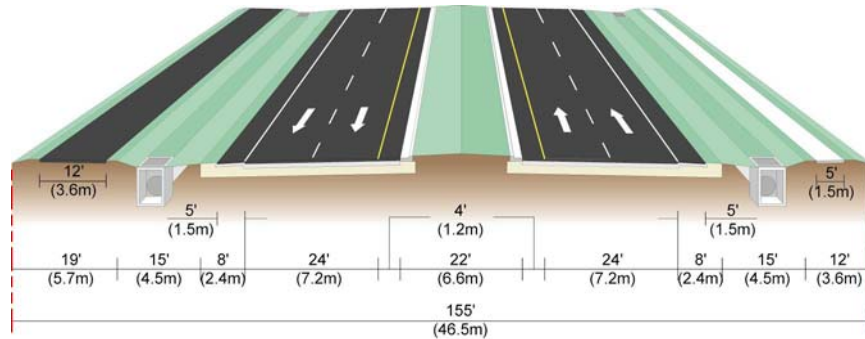
¹ LRE estimate completed on July 9, 2001.

8.7.2 OPTIMIZED ALTERNATIVE ALIGNMENT RECOMMENDATION

Subsequent to the analysis, the Department with Pasco and Hernando Counties met to discuss a recommendation for C.R. 578 and the Ayers Road Extension. After reviewing the additional alternatives developed for the optimized alignment, it was concluded that there was minimal benefits to the project with implementing one of the new typical sections. Therefore, the recommendation was to proceed to the Public Hearing with the typical section presented at the Alternatives Public Workshop.

This typical section is a four-lane divided suburban facility, with a 30 ft (9.0 m) median in which 22 ft (6.6 m) is raised, two 12 ft (3.6 m) travel lanes in each direction, 8 ft (2.4 m) outside shoulders with 5 ft (1.5 m) of the shoulder paved, and 15 ft (4.5 m) drainage swales. A 12 ft (3.6 m) multi-use facility on the north side of the roadway and a 5 ft (1.5 m) sidewalk on the south side of the roadway are also being proposed. The proposed design speed for this typical section is 55 mph (90 km/h). This typical section will require a minimum of approximately 155 ft (46.5 m) of ROW, as shown in Figure 8-6.

**FIGURE 8-6
SUBURBAN TYPICAL SECTION**



The alignment for C.R. 578 from U.S. 19 to the Suncoast Parkway, Alignment S-8, will consist of the following:

- U.S. 19 to Hamlet Circle North Alignment
- Hamlet Circle to Fountain Court Within Existing ROW
- Fountain Court to Kelley Road South Alignment
- Kelley Road to Suncoast Parkway North Alignment

**FIGURE 8-7
AYERS ROAD EXTENSION ALIGNMENTS**

For the Ayers Road Extension, it was determined that because of potential cultural resource conflicts with Alignment S-5, further/ongoing cultural resource coordination with the Federal Highway Administration (FHWA) and the State Historic Preservation Officer (SHPO) was needed. Consequently, a new alignment, S-8, was developed. This alignment parallels the Masaryktown Community and connects to the existing U.S. 41/ Ayers Road intersection as shown in Figure 8-7. Both alignments were presented at the Public Hearing.



Table 8-5 identifies the costs associated with the recommended alternatives to be presented at the Public Hearing.

**TABLE 8-5
EVALUATION MATRIX FOR RECOMMENDED ALTERNATIVE**

Evaluation Factors	C.R. 578 from U.S. 19 to Suncoast Parkway									Ayers Road Extension					
	Segment A			Segment B			Segment C			Segment D					
	S-8			S-8			S-8			S-5		S-8			
Potential Relocations															
Businesses	10			8			5			0		0			
Individual Residences	17			1			5			3		10			
Cultural Resources															
Potential Historic Structures	0			0			0			0		0			
Archaeological Sites NRHP Eligible	0			0			0			1		1			
Parks [Section 4(f)]	0			0			0			0		0			
Natural/Physical Environmental Effects															
Wetlands (Acres)	0.30			1.21			0.00			0.00		0.00			
Potential T&E Species Involvement (L/M/H)	M			M			M			M		M			
Noise Sensitive Sites	40			15			4			5		4			
Potential Contamination Sites (L/M/H)	1	2	2	6	2	2	2	1	1	1	1	0	1	1	0
Project Costs (millions \$)															
Engineering Costs ⁵	1.30			1.20			2.00			0.80		0.80			
ROW Cost ^{2,3}	22.90			33.00			35.20			6.50		8.40			
Construction Cost ¹	10.88			13.99			12.39			12.99		12.36			
Construction Engineering and Inspection Cost ⁴	1.63			2.10			1.86			1.95		1.85			
Total Cost per Alignment	36.71			50.29			51.45			22.24		23.41			

¹ Construction Cost Estimate completed on May 24, 2002.

² ROW Estimate completed on June 1, 2002.

³ Includes cost estimate for stormwater ponds

⁴ 15% of Construction Cost.

⁵ Per the FDOT's Work Program.

L/M/H = Low/Medium/High.

8.8 RECOMMENDED ALTERNATIVE

After a thorough technical analysis and a comprehensive public involvement process, the study recommended the following optimized alternative for C.R. 578 (Alignment S-8) and Ayers Road Extension (Alignment S-5):

- U.S. 19 to Hamlet Circle North Alignment
- Hamlet Circle to Fountain Court Within Existing Right-of-Way
- Fountain Court to Kelley Road South Alignment
- Kelley Road to Suncoast Parkway North Alignment
- Suncoast Parkway to U.S. 41 New Alignment
(Ayers Road Extension)

The plans for the recommended alternative can be found in Appendix A.

Section 9.0

PRELIMINARY DESIGN ANALYSIS

9.1 *DESIGN TRAFFIC VOLUMES*

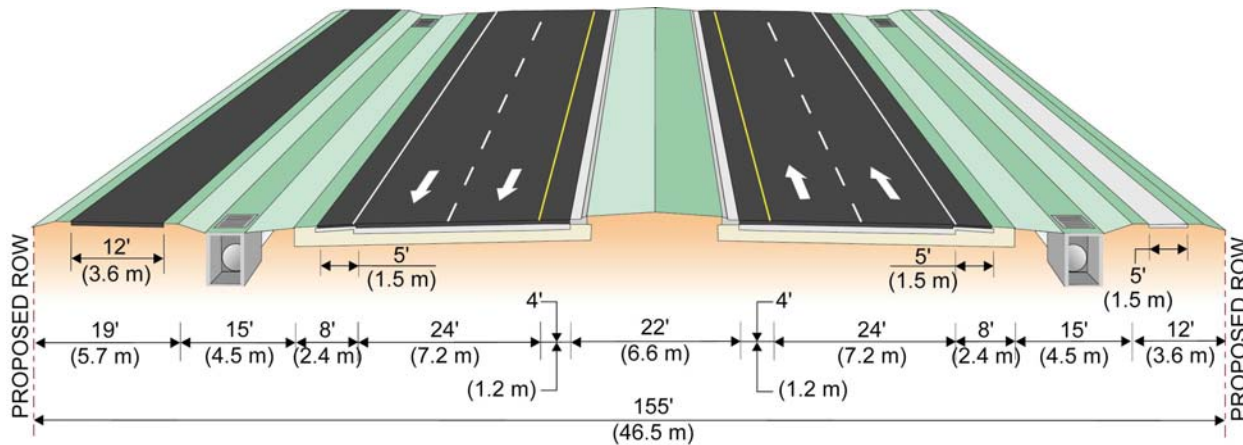
The design year (2025) daily travel demand in the C.R. 578 corridor was estimated using the FDOT District VII Tampa Bay Regional Planning Model (TBRPM) Version 3.2. Both the base year (1995) validated TBRPM and the future year (2020) TBRPM were reviewed with FDOT District VII Planning Staff to evaluate the reasonableness of the traffic volume assignments produced by the models for the C.R. 578 study corridor.

Average Annual Daily Traffic (AADT) volumes for the design year 2025 were derived by first converting the 2020 Peak Season Weekday Average Daily Traffic (PSWADT) volumes to 2020 AADT volumes, and then applying a growth rate to the 2020 AADT volumes. The 2020 PSWADT volumes were multiplied by the Pasco/Hernando County model conversion factor (MOCF) of 0.94 to obtain an estimate of the 2020 AADT volumes. A 2.0 percent/year growth rate was then applied to the 2020 AADT volumes to obtain an estimate of the 2025 AADT volumes. The 2.0 percent/year growth rate was estimated based on historical traffic count data provided by Pasco County for the periods from 1995 to 1998 for three locations along the C.R. 578 corridor. The average yearly growth rates were calculated for each of these three individual locations and then the three individual growth rates were averaged to yield an overall value of approximately 2.0 percent/year. The 2025 AADT volumes estimated for the C.R. 578 corridor are illustrated on Figures 6-4 and 6-5 in Section 6.3 of this report.

9.2 *TYPICAL SECTIONS*

The recommended typical section is a four-lane divided suburban facility, with a 30 ft (9.0 m) median in which 22 ft (6.6 m) is raised, two 12 ft (3.6 m) travel lanes in each direction, 8 ft (2.4 m) outside shoulders with 5 ft (1.5 m) of the shoulder paved, and 15 ft (4.5 m) drainage swales. A 12 ft (3.6 m) multi-use facility on the north side of the roadway and a 5 ft (1.5 m) sidewalk on the south side of the roadway are also being proposed. The design speed for this typical section is 55 mph (90 km/h). This typical section will require a minimum of approximately 155 ft (46.5 m) of ROW, as shown in Figure 9-1.

**FIGURE 9-1
SUBURBAN TYPICAL SECTION**



9.3 INTERSECTION CONCEPTS AND SIGNAL ANALYSIS

The concept plans located in Appendix A illustrate the intersection geometry for the recommended improvements. With one exception, all of the intersections analyzed are projected to operate at LOS D or better overall during both the a.m. and p.m. peak hours with the intersection geometry depicted in Figure 6-8. The C.R. 578/U.S. 19 intersection is projected to operate at LOS E overall in the a.m. and p.m. peak hours; however, many of the critical movements are projected to operate at LOS F. The C.R. 578/U.S.19 intersection analysis was conducted using maximum at-grade geometry, and, consequently, the analysis results indicate that some type of grade separation will likely be required for U.S. 19 by the year 2025. The specific future year geometric improvements that should be implemented on U.S. 19 will not be determined as a part of the C.R. 578 PD&E Study, but will be determined at some later time when a PD&E Study is conducted for this portion of U.S. 19.

9.4 ALIGNMENT AND RIGHT-OF-WAY NEEDS

Appendix A includes raster-based plan sheets illustrating the recommended improvements for the project and the anticipated ROW needs. In addition, a CD is also included, which has the plans and cross-sections for C.R. 578 every 100 ft (30.48 m).

As discussed in Section 8.7 of this report, the recommended improvements for C.R. 578 consists of the following alignment:

U.S. 19 to Hamlet Circle	North Alignment
Hamlet Circle to Fountain Court	Within Existing ROW
Fountain Court to Kelley Road	South Alignment
Kelley Road to Suncoast Parkway	North Alignment

For the Ayers Road Extension, Alignment S-5 was selected.

9.5 RELOCATION

The recommended widening of C.R. 578 will require a minimum ROW of 155 ft (46.5 m). The acquisition of ROW will necessitate residential and business relocations in some areas of the project. A *Conceptual Stage Relocation Plan*¹⁴ has been prepared to address the potential relocation of residences or businesses and analyze the availability of replacement dwellings or commercial properties. The optimum alignment may result in the relocation of 26 residences and 23 businesses including the New Hope Baptist Church. Evaluation of the area real estate market indicates that there is a sufficient number of residential properties available for relocates within close proximity to the project area. Although business space available for relocation is minimal, there is an adequate supply of commercially zoned vacant land along the project corridor available for building new business facilities. In order to minimize the unavoidable effects of ROW acquisition and relocations, the Florida Department of Transportation will carry out a ROW and relocation program in accordance with *Florida Statute 339.09* and the *Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (Public Law 91-646)*.

9.6 RIGHT-OF-WAY COSTS

As shown previously in Table 8-5, the ROW acquisition costs for the recommended improvements are \$97.60 million. These costs include ROW acquisition for roadway improvements and stormwater treatment facilities. The ROW costs were calculated by the Department using 2002 dollars.

9.7 CONSTRUCTION COSTS

Table 8-5 summarizes the estimated construction costs by segments. These costs were calculated with the use of the Department's Long Range Estimate (LRE) program. The total estimated roadway construction cost is \$50.25 million. These costs were generated using 2001 dollars.

9.8 PRELIMINARY ENGINEERING AND CONSTRUCTION ENGINEERING COSTS

The cost for engineering (final design) and the cost for CEI are shown in Table 8-5. The engineering costs were extracted from the FDOT's Work Program for a total of \$5.30 million. The CEI cost was estimated as 15 percent of the construction cost. Therefore, this effort is expected to cost approximately \$7.54 million.

9.9 RECYCLING OF SALVAGEABLE MATERIALS

During construction of the project, recycling of re-usable materials will occur to the greatest extent possible. Where possible, removal and recycling of the existing pavement for use in the new pavement will be considered. This will reduce the volume of the materials that need to be hauled and disposed of away from the project and to reduce the cost of purchasing materials suitable for pavement construction. Other materials such as signs, drainage structures, etc., will also be salvaged and re-used for maintenance operations if they are deemed to be in good condition.

9.10 USER BENEFITS

The public will realize benefits after the recommended improvements are constructed. Savings in travel time, reduced vehicle operating costs, and reduced emergency response times are the primary benefits. In addition, safer pedestrian facilities will also be constructed.

9.11 PEDESTRIAN AND BICYCLE FACILITIES

The recommended improvements will provide for a 12 ft (3.6 m) multi-use facility on the north side of the roadway and a 5 ft (1.5 m) sidewalk on the south side of the roadway. There are no provisions for a dedicated bicycle facility with this concept. However, per the FDOT's Plans Preparation Manual, Chapter 8, on roadways with flush shoulders, the 5 ft (1.5 m) paved shoulder provides for a bicycle lane.

9.12 SAFETY

The increased roadway capacity is expected to result in less congestion and, therefore, reduce the probability of crashes. The design and alignment of the recommended improvements will meet applicable safety standards. Adherence to design speed as it applies to establishing and setting minimum values on critical roadway design features will be closely followed. Roadway design elements including curvature, sight distance, width, and clearance will meet the applicable minimum roadway design standards. Access control techniques to promote safe and efficient traffic circulation will also be implemented.

9.13 ECONOMIC AND COMMUNITY DEVELOPMENT

As previously presented in Section 3.0, C.R. 578 is designated as a secondary evacuation route in Pasco County. In the event of an evacuation event, C.R. 578 may be utilized by nearby coastal communities in addition to the communities immediately adjacent to the roadway. The need for improvement is supported by the population and socioeconomic growth identified in the 2001 Census of Population, Housing, and Employment for Pasco and Hernando Counties.

9.14 ENVIRONMENTAL IMPACTS

9.14.1 LAND USE DATA

Primary land uses along the C.R. 578 corridor include numerous residential subdivisions, individual residences, commercial and industrial development, religious and community facilities, and undeveloped land. Existing land uses are similar on both the Pasco County and Hernando County sides of C.R. 578.

The *Pasco County* and *Hernando County Comprehensive Plans*^{6,7} indicate that future land uses along the project corridor are expected to follow the established trends of the existing land uses. Therefore, the project will have a minimal effect on overall land use in the study area.

9.14.2 COMMUNITY COHESION

The Ayers Road Extension will provide a continuous travel route from U.S. 19 to east of U.S. 41 and new access for the Hernando County Airport in accordance with the Hernando County Airport Master Plan. The recommended improvements will not result in the isolation or separation of communities, ethnic groups or social groups. The project will enhance community cohesion in Masaryktown because the Ayers Road Extension will reduce traffic on existing C.R. 578.

9.14.3 COMMUNITY SERVICES

The following community service facilities are located within the project study area:

- Spring Hill Regional Hospital,
- Spring Hill Medical Mall,
- Spring Hill Assisted Living Facility,
- Suncoast Elementary School,
- VFW Post 8681,
- Slovene National Benefit Society Lodge #778,
- Hosanna Assembly of God Church,
- Cornerstone Christian Center Church,
- First Baptist Church of Masaryktown, and
- New Hope Mission Baptist Church.

Only the New Hope Mission Baptist Church will be affected by the project and may require relocation.

9.14.4 SECTION 4(f) LANDS

In accordance with Section 4(f) of the Department of Transportation Act of 1966 (Title 49, U.S.C., Section 1653 (f), amended and recodified in Title 49, U.S.C., section 303, in 1983) the project was examined for possible Section 4(f) properties.

There are no properties located adjacent to or within the study area that were considered potentially eligible for protection under the provisions of Section 4(f).

9.14.5 WETLAND IMPACT AND MITIGATION

In accordance with *Executive Order 11990, Protection of Wetlands*, dated May 23, 1977, a study was conducted to assess the potential wetland impacts of the recommended project. The wetlands were classified according to the United States Fish and Wildlife Service (USFWS) methodology.

Twelve wetland areas consisting of three wetland community types were identified within the study corridor. The three wetland community types identified consisted of Open Water Lake or Pond, Marsh Wetland, and Forested Wetland.

A total of 1.51 acres (ac) of affected wetlands are located along the optimal alignment resulting in a loss of 0.64 wetland functional units. Of these, 0.30 ac (0.09 wetland functional units) are located between U.S. 19 and East Road and 1.20 ac (0.55 wetland functional units) are located between East Road and Mariner Boulevard/Shady Hills Road. None of the remaining segments, including the Ayers Road Extension, contains affected wetlands.

Mitigation for potential wetland impacts will be coordinated through the Southwest Florida Water Management District (SWFWMD). Wetland impacts, which result from the construction of this project, will be mitigated pursuant to *S.373.4137 F.S.* to satisfy all mitigation requirements of *Part IV, Chapter 373 F.S.* and *33 USC 1344*.

9.14.6 THREATENED AND ENDANGERED SPECIES HABITAT

The project was evaluated for impacts on threatened and endangered species. A literature review and corresponding field reviews were conducted to determine those possible threatened and endangered species that inhabit the project area. In addition, the USFWS, Florida Fish and Wildlife Conservation Commission (FWC) and the Florida Natural Areas Inventory (FNAI) were contacted for a list of known or potentially occurring threatened or endangered species. One Federally-listed species, the Eastern indigo snake, is known to occur within the project limits.

Coordination with the USFWS regarding the potential occurrence of the Florida scrub-jay (*Aphelocoma coerulescens*) within the project corridor resulted in performance of a formal scrub-jay survey. This survey was conducted from March 4 through March 6 at locations identified by a joint field review conducted on March 4, 2003 by USFWS and FDOT biologists. The formal survey was performed in accordance with FWC Technical Memorandum No. 8. As a result of this survey, no scrub-jays were observed.

Based on the February 20, 2003 letter from USWS which stated “If the survey finds no scrub-jays within the project footprint, we would concur with a “not likely to adversely affect” determination and thus complete informal consultation on the project for this species.” Given the results of the survey, which observed no scrub-jays, the “not likely to adversely affect” determination has been completed.

Additionally, the project study area was evaluated for the potential of affecting designated critical habitat as defined by the USFWS. No designated critical habitat for listed species occurs within the project study area.

The moderate probability of occurrence of the Federally-listed Eastern indigo snake may require precautions during construction and subsequent coordination with the USFWS. Based on the above considerations, and with the inclusion of Eastern indigo snake construction provisions, the project will have no effect on any Federally-listed threatened and endangered species.

9.14.7 HISTORIC AND ARCHAEOLOGICAL SITES

A *Cultural Resources Assessment Survey*¹⁵ (CRAS), conducted in accordance with the procedures contained in *36 CFR Part 800* (revised May 1999) and including background research and a field surveys coordinated with the State Historic Preservation Officer (SHPO), was performed for the project. As a result of the assessment, fifteen historic resources were identified within the project study area. Fourteen resources (*Florida Site File*¹⁶ numbers 8HE408-8HE417; 8PA1297-8PA1300) were newly recorded during this survey, and one resource (8HE384) was recorded during previous survey work. The Federal Highway Administration (FHWA), after application of the *National Register Criteria of Significance*, found that none of the fifteen sites are eligible for listing on the *National Register of Historic Places*⁸ (NRHP). The SHPO rendered the same opinion. Based on the fact that no additional historic sites or properties are expected to be encountered during subsequent project development, the FHWA, after consultation with the SHPO, has determined that no NRHP⁸ properties will be affected.

Archaeological background research, including a review of the *FSF*¹⁶ and *NRHP*⁸ was conducted. A total of 13 archaeological sites were identified within the project area. Eleven of the 13 archaeological sites are newly identified (8PA1301, 8PA1302, 8HE419-8HE423, 8HE425, 8HE426, 8GE428, and 8HE429); two previously recorded sites (8PA185 and 8HE284) were revisited during testing. Based on preliminary analysis, 12 sites are considered ineligible for listing in the NRHP. Nine sites (8PA1301, 8PA1302, 8HE419-8HE423, 8HE425, and 8HE428) are short-term campsites of small limited lithic scatters associated with resource procurement. Site 8HE429 is a cistern or drainage pond most likely dating from the turn-of-the-century. Although site 8HE429 provides useful information of historic studies of this area, no other artifacts were recovered from shovel testing within the project impact area. That indicates that the potential for recovering further important information is relatively low. Sites 8PA185 and 8HE284 are not considered locally or regionally significant and, therefore, are considered ineligible for listing in the NRHP⁸. No further work is recommended at these sites.

One site, (8HE426 – Alexsuk Site), is situated within the proposed Ayers Road Extension area. This site is considered regionally significant and eligible for listing in the NRHP. Based on Section 106, consultation with the State Historic Officer, a Memorandum of Agreement (MOA)

identifying the potential effects as well as mitigative efforts to recover the history of the National Register of Historic Places eligible Alexsuk Site (8HE426) was executed by FHWA, FDOT, and SHPO on December 20, 2002. Additionally, coordination and consultation with Native American Indian tribes has been initiated and will be continued during subsequent implementation phases of this project.

9.14.8 HAZARDOUS MATERIALS

A Level I Contamination Screening of the C.R. 578 project corridor was conducted to determine the potential for contamination of the ROW from adjacent properties and business operations. Abutting sites were identified based on regulatory standards as potential sources of hazardous materials and petroleum contamination. Sites with suspected or documented contamination were further evaluated for potential contamination risks with respect to impacts to construction and ROW acquisition.

A Contamination Screening Evaluation Report¹⁸ (CSER) was prepared pursuant to the Federal Highway Administration's *Technical Advisory T 6640.8A*, dated October 30, 1987, and in accordance with the FDOT's *PD&E Manual¹², Part 2, Chapter 22*, dated February 8, 1994.

A total of 33 sites having the potential for contamination were identified in close proximity to or within the project corridor. Of these sites, 19 were assigned a degree of risk for potential contamination. Ten sites have been identified as having a potential for petroleum and or hazardous-material-based impacts. These sites are rated as having a "MEDIUM" to "HIGH" risk for environmental contamination within the project corridor.

9.14.9 NOISE IMPACTS

Two hundred twenty four (224) noise-sensitive sites were identified as having the potential to be affected by traffic-related noise adjacent to the C.R. 578 project corridor including the Ayers Road Extension.

In the year 2025 with the Build Alternative, predicted exterior traffic noise levels at the residential sites along C.R. 578 and the Ayers Road Extension range from 49.2 to 69.9 dBA, with levels above the Federal Highway Administration Noise Abatement Criteria (NAC) at 56 of the single-family residences. Three of the single-family residences along the Ayers Road Extension are predicted to experience traffic noise levels that exceed existing levels by 15 dBA or more. The predicted interior traffic noise levels at the religious and public/private meeting facilities range from 30.0 to 47.0 dBA, which are below the NAC.

Noise abatement measures were considered for the noise sensitive sites predicted to experience traffic noise levels that approach, meet, or exceed the NAC. Although feasible, traffic management, alternative roadway alignments, and property acquisition were determined to be unreasonable methods to reduce the predicted traffic noise levels for the affected sites with the C.R. 578 improvements.

Noise barriers were also evaluated to determine if barriers would be a feasible and reasonable noise abatement measure. Twenty-four (24) barriers were analyzed for the affected noise-

sensitive sites. The results of the analysis indicate that none of the barriers are reasonable and feasible to reduce predicted traffic noise levels because of the following findings:

- The minimum required insertion loss would not be provided by a noise barrier.
- The cost of a barrier would exceed the FDOT's cost reasonable guideline of \$30,000 per benefited receiver.

Notably, in most cases, the barriers were determined to be unreasonable or unfeasible due to limitations on barrier length because of required property access (driveways), intersecting roadways, and property line and line-of-sight limitations.

Based on this analysis, there are no noise commitments as a result of construction of the C.R. 578 improvements.

In order to assist local officials in promoting compatibility between land development and highway, noise contours were developed for the proposed project. The results indicate that a traffic noise level of 66.0 dBA or more is predicted to extend 60 to 90 feet (ft) (18.0 to 27.4 meters (m)) from the edge-of-pavement of the improved roadway.

9.14.10 AIR QUALITY

An *Air Quality Report*²⁰ has been prepared separately for this study in accordance with the procedures in the *FDOT PD&E Manual*¹², Part II.

A Screening Test for Suburban Areas was conducted using the computerized version of *COSCREEN98R*. This version contains conservative, worst-case assumptions about meteorology, traffic, and other site conditions in the *MOBILE* emissions and *CALINE3* model to produce maximum concentrations at receptors near roadway intersections. The results were compared to the maximum one- and eight-hour concentrations of carbon monoxide (CO) and *NAAQS*.

The intersection of U.S. 19 and C.R. 578 was used for the Screening Test because it had a combination of highest traffic volumes and lowest vehicular speeds based on traffic data obtained for the opening year (2005) and the design year (2025). The receptor used was a mobile home located in the southwest quadrant of the intersection.

The *NAAQS* 1-hour CO levels for the Build/No-Build Alternatives for the opening year were 10.8 ppm and 10.6 ppm compared to the *NAAQS* standard of 35 ppm. For the design year, CO levels were 11.4 ppm and 11.0 ppm for the Build/No build scenarios. *NAAQS* 8-Hour standards are 9 ppm. The test results were 6.5 ppm and 6.4 ppm for the opening year, and 6.9 ppm and 6.6 ppm for the design year. The Screening Test determined that the project would not cause or contribute to an exceedance of the *NAAQS* for carbon monoxide. This project is in conformance with the *State Implementation Plan (SIP)*.

9.14.11 FARMLANDS

There are no designated farmlands in the C.R. 578 study area.

9.14.12 AQUATIC PRESERVES

There are no designated aquatic preserves in the C.R. 578 study area.

9.14.13 WATER QUALITY IMPACTS

The recommended drainage systems will be designed to convey stormwater runoff away from the roadway in the existing natural basin flow directions. The recommended improvements will consist of a four-lane divided suburban typical section. Stormwater runoff will be collected via inlets and conveyed through a storm sewer system to stormwater management ponds generally situated outside the roadway ROW in close proximity to the outfall locations.

The recommended improvements will increase the amount of impervious surface and consequently increase stormwater runoff. A *Water Quality Impact Evaluation*²¹ (WQIE) checklist was completed in accordance with Chapter 20 of the *PD&E Manual*¹². The appropriate Best Management Practices will be used during the construction phase for erosion control and water quality considerations.

The stormwater facility designs will include, at a minimum, the water quantity requirements for water quality impacts as required by SWFWMD in *Rules Chapters 40D-4 and 40D-40*. Therefore, no further mitigation for water quality impacts will be needed.

9.14.14 OUTSTANDING FLORIDA WATERS

There are no Outstanding Florida Waters in the C.R. 578 study area.

9.14.15 WILD AND SCENIC RIVERS

There are no Wild and Scenic Rivers in the C.R. 578 study area.

9.14.16 FLOODPLAINS

Examination of *FEMA Community Panel Numbers 120230-0020C, 120230-0050C, 120230-0075C, 120110-270B, 120110-300B, and 120110-352B* indicates that relatively small portions of the C.R. 578 ROW encroach upon the 100-year flood zone

The modification and construction of the drainage structure(s) recommended for this project will cause changes in flood stage and flood limits. These changes will not result in any significant adverse impacts on the natural and beneficial floodplain values or any significant changes in flood risk or damage. These changes have been reviewed by the appropriate regulatory authorities who have concurred with the determination that there will be no significant impacts. There will not be significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that the encroachment is not significant.

There are no regulated floodways located within the project limits, therefore it has been determined, through consultation with local, state, and federal water resources and floodplain management agencies that there is no regulatory floodway involvement on the proposed project and that the project will not support base floodplain development that is incompatible with existing floodplain management programs.

9.14.17 COASTAL ZONE CONSISTENCY

The Department of Community Affairs has determined, based on the information contained in the Advance Notification process, that this project is consistent with the Florida Coastal Management Program (letter dated December 21, 1999).

9.14.18 NAVIGATION

There are no navigable waterways along the C.R. 578 study area.

9.15 UTILITY IMPACTS

As previously discussed in Section 4.0 of this report, several utility distribution lines are located within the existing C.R. 578 ROW, including power lines, telephone cables, cable television lines, potable water mains, and force mains. Depending on their location and depth, implementation of the recommended improvements for the project may require adjustments or relocation of some of these facilities.

The utility relocation costs are summarized in Table 9-1 with a total cost of approximately \$34.7 million. However, these costs are not included in the total estimated project costs presented in Section 9.7, since the utility companies will incur the cost.

**TABLE 9-1
UTILITY RELOCATION COSTS**

Utility	Costs
Florida Power Corporation	\$ 0
Hernando County Utilities Department	0
Bell-South Communications	800,000
Pasco County Utilities Department	741,000
TECO/Peoples Gas	382,250
Verizon Communications	24,288,726
Williams Communications	0
Level (3) Communications	200,000
Florida Water Services	8,200,000
Withlacoochee River Electric	0
Time Warner	115,430
Florida Gas Transmission	0
Total	\$34,727,406

One existing railroad was identified within the project study area. The CSX Rail Road crosses Ayers Road immediately east of U.S. 41. The C.R. 578 project terminus extends to east of U.S. 41. However, no adverse effects are anticipated at this existing rail crossing.

9.16 TRAFFIC CONTROL PLAN

C.R. 578 provides access to residences and businesses along the corridor. Due to its importance, C.R. 578 will remain functional throughout the duration of the construction activities. The following conceptual construction sequence will help maintain traffic operations along C.R. 578.

- Relocate existing utilities within the ROW.
- Construct stormwater ponds.
- Utilize existing pavement for traffic and construct adjacent proposed travel lanes.
- Temporarily operate two-way traffic on the completed ultimate lanes while reconstructing the existing pavement.
- Shift traffic to their respective, completed roadways.

9.17 RESULTS OF PUBLIC INVOLVEMENT PROGRAM

A public involvement program was approved for this PD&E Study on December 3, 1999. The purpose of the program is to establish communication with the general public, property owners, and federal, state, and local government agencies and officials concerned with the project. The program, which included an Advance Notification (AN) Package, a Public Official/Agency Kickoff Meeting, project newsletters, coordination meetings with local governments, an Alternatives Public Workshop, and a Public Hearing, have been summarized in the *Comments and Coordination Report*²². The following sections provide a brief summary of the public involvement program to date.

9.17.1 ADVANCE NOTIFICATION

An Advance Notification (AN), Form 508-03, was prepared in accordance with Part 1, Chapter 2, of the FDOT *PD&E Manual*¹² and transmitted to the Florida State Clearinghouse in the Governor's Office of Planning and Budgeting on October 25, 1999, for distribution. Several agencies responded with comments, including the Florida Department of Environmental Protection, Florida Department of State, Division of Historical Resources, Withlacoochee Regional Planning Council, Tampa Bay Regional Planning Council, and Southwest Florida Water Management District.

Generally, the comments were in regard to consistency with applicable requirements and continued coordination throughout the project's planning, design, and construction phases. The

detailed comments and corresponding responses can be found in the *Comments and Coordination Report*²².

9.17.2 PUBLIC OFFICIALS/AGENCY KICKOFF MEETING

A Public Officials and Agencies kickoff meeting was held on Wednesday, October 27, 1999 from 10:00 a.m. until 12:00 p.m. at the VFW Post 8681, located at 18940 Drayton, Spring Hill, Florida. The format of the meeting was informal (open house); project fact sheets were provided for all attendees; and project graphics were on display.

The purpose of the meeting was to introduce the project and its study objectives, and to obtain specific information from the participants about the project, including technical, socioeconomic, and environmental data, as well as local knowledge and concerns as related to the proposed improvements.

Twenty-five people signed in at the meeting, including public officials, agency representatives, and citizens. Eleven written comments were received at the meeting, and one was mailed to the FDOT after the meeting. In general, the comments were positive and requested that the project be completed as soon as possible. A summary of the comments received can be found in the *Comments and Coordination Report*²².

9.17.3 SMALL GROUP MEETINGS

Letters were mailed to civic groups, neighborhood associations, and homeowners associations giving them the opportunity to request a presentation by the project team. Several groups requested that the FDOT give them a presentation about the C.R. 578 project. FDOT met with and provided presentations to four civic groups – Kiwanis Club, Heritage Pines Homeowners Association, Autumn Oaks Homeowners Association, and Rolling Oaks Homeowners Association. A list including the dates of those meetings can also be found in the *Comments and Coordination Report*²².

9.17.4 ALTERNATIVES PUBLIC WORKSHOP

An Alternatives Public Workshop was held on December 14, 2000, at Frank W. Springstead High School. Over 200 persons attended the workshop, and 48 returned comment forms. Comments were generally positive regarding the need to make C.R. 578 a four-lane highway especially with the additional traffic anticipated with the upcoming opening of the Suncoast Parkway. However, many of the comments on the Ayres Road Extension were negative. Five persons requested to be added to the mailing list for future meetings and hearings.

Those persons having property adjoining the ROW favored alignments that minimized the effect on their property. Three persons living along the ROW preferred the purchase of their entire property and relocation by the state. They were concerned with the closeness of the new alignment to their homes and the increased level of noise. There was also a fear of a decrease in property value due to a loss of property and the nearness of a four-lane highway. A summary of the comments received as a result of the Public Workshop is included in the *Comments and Coordination Report*²².

9.17.5 PUBLIC HEARING

A Public Hearing was held on Thursday, August 8, 2002, at Frank W. Springstead High School located at 3300 Mariner Boulevard, Spring Hill, Florida. The purpose of the Hearing was to present the recommended alternatives to the public and to provide them an opportunity to express their opinions regarding the location, design, socioeconomic effects, and environmental impacts associated with the recommended alternative. The FDOT and its consultant team were present at the Hearing to informally discuss the project and answer questions for the general public. Aerial photographs and display boards outlining the recommended alternatives, information boards with the project schedule, typical sections, and project evaluation matrix were on display. A project video ran continuously during the informal portion of the Hearing. A project brochure, containing specific project information, FDOT ROW acquisition procedures, and State and Federal relocation assistance programs was provided to the attendees as they signed in for the Hearing. During the formal portion of the Hearing, the public was given the opportunity to provide oral statements regarding the proposed project. A court reporter was present during the Hearing to take comments from the public and to provide a verbatim transcript of the formal proceedings.

One hundred and ninety-two persons signed the attendance sheets at the Hearing. Three comment forms were mailed prior to the Hearing; fourteen written comment forms were received at the Hearing; and three comment forms were mailed, faxed, or e-mailed during the ten-day comment period following the Hearing. Five of the comments were to request copies of aerial plan concepts for specific areas of the project. Aerial maps and letters were sent in response to these requests. A letter was sent in answer to a comment from the Alexsuk family in Masaryktown regarding the Ayers Road Extension and its connection to the Hernando County Airport. Both the comment and the letter are included in the *Comments and Coordination Report*²². The majority of the written comments either did not need a reply, or their questions were answered by FDOT or county representatives at the Hearing.

During the formal portion of the Hearing, 13 people gave oral statements. Following is a summary of the oral statements.

Three of the speakers were concerned about increased noise. One person who spoke was a lawyer representing residents concerned about the proposed median blocking small businesses and neighborhoods. He also wanted to find out how close homes would be to County Line Road once it was expanded. Two speakers were worried about losing some of their property to the new Ayers Road extension.

Another large concern among the speakers was the increased traffic and drivers not obeying the speed limit. Two speakers were also anxious about bus stops for school children being so close to a large highway. There were also two requests for a traffic light to be installed at the intersection of Linden Road and County Line Road.

One speaker was in favor of the recommended alternative because it would mean less taxpayer dollars to compensate commercial businesses.

9.18 VALUE ENGINEERING

The Department's Value Engineering Team consisting of various disciplines met on several occasions to review the recommended alternative and associated roadway typical section.

Based on their review the District Value Engineer recommended that the existing 4-lane suburban roadway from Callow Avenue to Hallow Avenue be retained, a distance of approximately 0.5 mi. It was estimated that retaining this existing roadway segment would result in a cost savings of approximately \$2.2 million. However, it was also recognized that this recommendation, if accepted, would require additional ROW along the north side of the roadway. The ROW requirement would impact an additional 29 residential parcels and increase the number of potential residential relocations for this segment from 17 to 30. In addition, the recommendation to retain the existing facility would cause a condition that may confuse driver's expectations, as they would be transitioning between typical roadway sections within a 0.5 mi distance.

The decision was made not to implement this recommendation unless it could be demonstrated that no additional ROW would be required and that the multi-use trail would be retained. Should it be demonstrated that the above two conditions can be met the recommendation will be reconsidered and presented to Pasco and Hernando Counties and their respective MPO's which, based on safety and community needs, have approved and endorsed the recommended alternative and typical section.

9.19 DRAINAGE

The existing roadway drainage system within the project limits consists predominantly of roadside grass swales and ditches, with numerous driveway culverts and cross drains. The project is located within the Coastal Rivers Basin and exhibits hydrogeologic characteristics associated with the Karst topography. Sinkholes and other depressed areas are prevalent throughout the project limits providing vast amounts of natural surface storage within numerous closed basins. Shallow lakes are also present, many of which may be connected directly to the underlying confined aquifer.

Stormwater runoff for most of the eastern portion of the project located between U.S. 19 and Mariner Boulevard/Shady Hills Road, a distance of approximately 4.3 mi (6.9 km), drains north and outfalls into Hunters Lake. Within this segment, approximately 0.85 mi (1.37 km) of roadway was recently widened to four lanes. Stormwater management facilities (two retention ponds) have been provided on the south side of the roadway.

Stormwater runoff from the remainder of the project flows to closed basins and or sinkholes adjacent to the project corridor. Under normal conditions the closed basins are internally drained. However, during periods of high groundwater levels and extreme rainfall, excess runoff from some of these closed basins/depressional areas will flow overland following poorly defined shallow swales and ditches toward the Masaryktown canal.

The recommended improvements will result in increases in the amount of stormwater runoff, pollutant loadings, and minor floodplain encroachments. These encroachments will require compensating storage of lost floodplain volume. The construction of stormwater management facilities providing attenuation and water quality treatment will also be required. The conceptual pond locations were analyzed and evaluated for Section 4(f) properties, cultural resources such as historic structures and archaeological sites; environmental impacts including wetlands, upland habitat, and protected species involvement; petroleum and hazardous materials contamination; economic factors including acquisition of ROW costs; hydrology (soil type and seasonal high water) and hydraulics. The preliminary pond sizes are based on required water quality treatment and attenuation volumes.

The proposed stormwater management system for C.R. 578 will utilize ponds to meet permitting requirements for stormwater runoff treatment and attenuation and compensate for encroachments upon the 100-year floodplain. Stormwater runoff will be conveyed to these ponds by the storm sewer system. Where possible, flows produced by large off-site areas should be kept separate from the roadway runoff thereby reducing the required pond sizes. The project is divided into 24 drainage basins each containing two or more alternative pond site locations. The recommended preliminary pond site locations are listed in Table 9-2.

9.20 ACCESS MANAGEMENT

A preliminary plan addressing future access management was developed to regulate access and preserve the functional integrity of the roadway system. The objective of the access classification system is to protect the public safety, enhance the mobility of people and goods, and preserve the functional integrity of the highway system. An access management classification is currently not assigned to C.R. 578. However, for the recommended improvements to C.R. 578, the FDOT's access management classification of Class 3 to Class 5 was utilized for this study. Table 9-3 and Figures 9-2 and 9-3 illustrate the preliminary future access management plan developed for this study.

**TABLE 9-2
PREFERRED PRELIMINARY POND AND FLOODPLAIN SITES**

Pond Number	Location	Required Area (ac)	Available Area (ac)	Estimated Construction Costs	Estimated ROW Costs	Total Cost
County Line Road						
1A	89+00 LT	0.74	0.93	\$9,779.06	\$15,000.00	\$24,779.06
2B	103+00 RT	1.47	1.52	\$24,963.91	\$15,000.00	\$39,963.91
3A	135+00 RT	1.75	1.81	\$31,343.68	\$503,800.00	\$535,143.68
4B	167+00 RT	0.91	1.30	\$13,061.39	\$607,200.00	\$620,261.39
5A	184+00 LT	2.12	2.26	\$39,955.81	\$357,500.00	\$397,455.81
6B	239+00 RT	3.52	3.61	\$73,997.15	\$273,500.00	\$347,497.15
7A	298+00 LT	2.21	2.26	\$42,027.49	\$483,600.00	\$525,627.49
8A	338+00 LT	1.54	1.58	\$26,652.59	\$617,600.00	\$644,252.59
9B	363+00 RT	0.97	1.95	\$14,317.53	\$856,800.00	\$871,117.53
10A	371+50 LT	0.77	0.79	\$10,380.35	\$1,000,600.00	\$1,010,980.35
11B	85+00 RT	3.36	3.44	\$69,915.41	\$1,755,100.00	\$1,825,015.41
12A	102+00 RT	1.73	1.77	\$30,907.11	\$87,300.00	\$118,207.11
13B	145+00 RT	1.29	1.31	\$21,034.80	\$302,600.00	\$323,634.80
14B	167+00 RT	1.29	1.31	\$21,034.80	\$349,900.00	\$370,934.80
15A	184+00 LT	2.17	2.22	\$41,100.80	\$103,900.00	\$145,000.80
Ayers Road Extension						
21A	607+00 RT	2.02	2.16	\$34,719.90	\$15,000.00	\$49,719.90
22B	676+00 RT	4.37	4.61	\$95,443.67	\$62,300.00	\$157,743.67
23A	724+00 RT	2.15	2.87	\$27,273.56	\$82,800.00	\$110,073.56
24A	752+00 RT	3.02	3.49	\$39,943.87	\$179,000.00	\$218,943.87
Floodplain Mitigation Site						
1B	227+00 RT	1.12	1.25	\$21,213.32	\$239,700.00	\$260,913.32

**TABLE 9-3
PRELIMINARY ACCESS MANAGEMENT PLAN**

Segment		Posted Speed (mph)	Type of Access Point		Distance to Access Point	Distance Between Full	Meets Standards*	
From Station	To Station		Full Median Opening	Directional Median Opening			Class 3	Class 5
C.R. 578								
84+50 (Full)	101+30	50	X		1700	1700	No	No
101+30	107+50	50		X	620	2320	No	No
107+50	124+50	50	X		1700			
124+50	138+75	50		X	1425	2450	No	No
138+75	149+00	50	X		1025			
149+00	161+90	50		X	1290	2810	Yes	Yes
161+90	167+50	50		X	560			
167+50	177+10	50	X		960			
177+10	193+50	50		X	1640			
193+50	205+50	50		X	1200	3310	Yes	Yes
205+50	210+20	50	X		470			
210+20	230+00	50	X		1980	1980	No	No
230+00	240+90	50		X	1090	2425	No	No
240+90	254+25	50	X		1335			
254+25	268+50	50	X		1425	1425	No	No
268+50	281+80	50		X	1330	3430	Yes	Yes
281+80	302+80	50	X		2100			
302+80	319+10	50		X	1630	2890	Yes	Yes
319+10	331+70	50	X		1260			
331+70	355+70	50	X		2400	2400	No	No
355+70	362+10	50		X	640	2180	No	No
362+10	377+50	50	X		1540			
377+50	399+00	50	X		2150	2150	No	No
399+00	411+75	50		X	1275	3175	No	No
411+75	430+75	50	X		1900			
430+75	444+00	50		X	1325	4925	Yes	Yes
444+00	472+00	50		X	2800			
472+00	480+00	50	X		800	2670	Yes	Yes
480+00	492+40	50		X	1240			
492+40	506+70	50	X		1430	1670	No	No
506+70	523+40	50	X		1670	4210	Yes	Yes
523+40	536+50	50		X	1310			
536+50	565+50	50	X		2900	4210	Yes	Yes
Ayers Road Extension								
595+50 (Full)	609+00	50	X		1350	1350	No	No
609+00	633+70	50	X		2450	2450	No	No
633+70	735+60	50	X		10190	10190	Yes	Yes
735+60	759+60	50	X		2400	2400	No	No

- Note: Full Median Opening Standard – Distance between full median opening spacing.

**FIGURE 9-2
PRELIMINARY ACCESS MANAGEMENT ON C;R. 578**

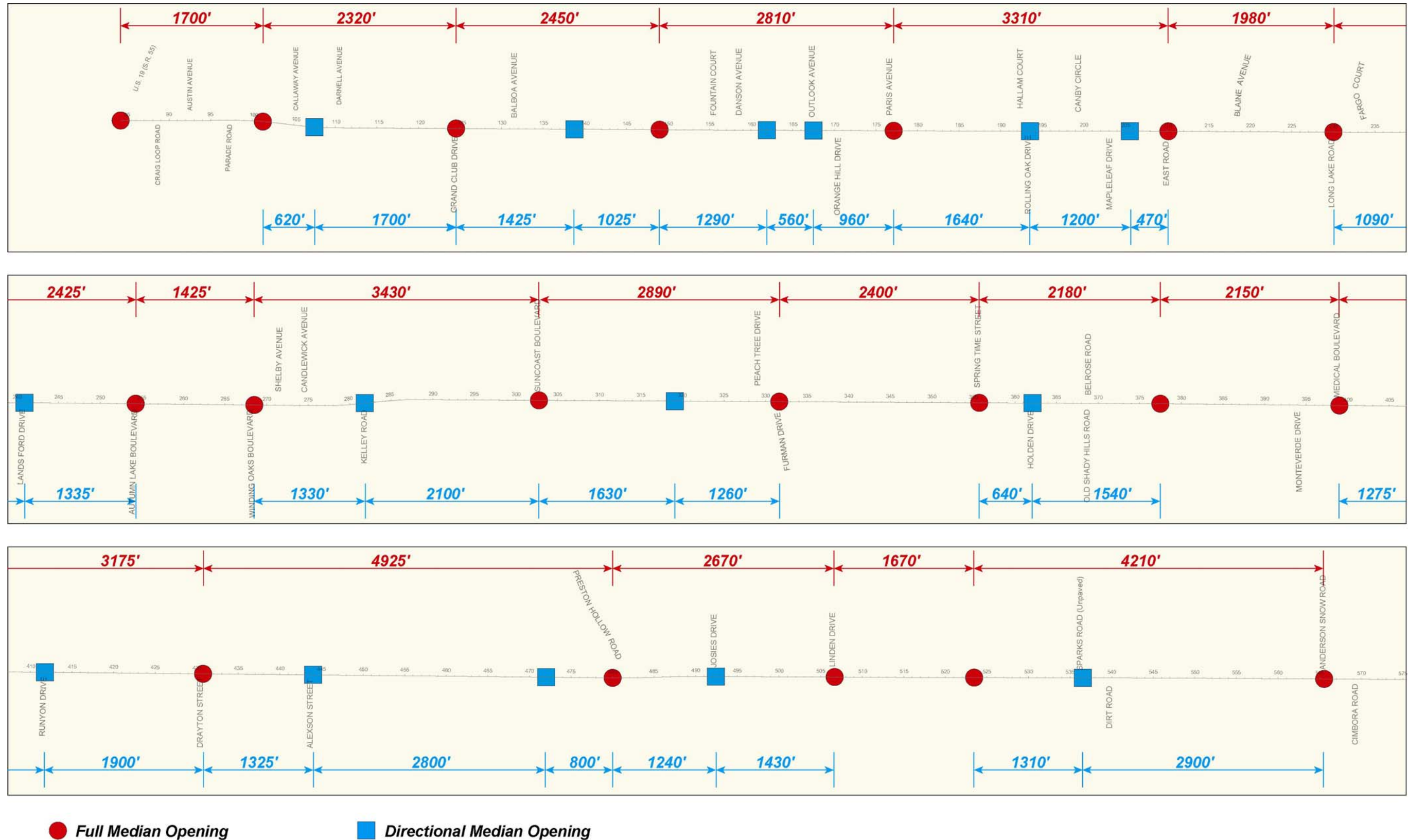
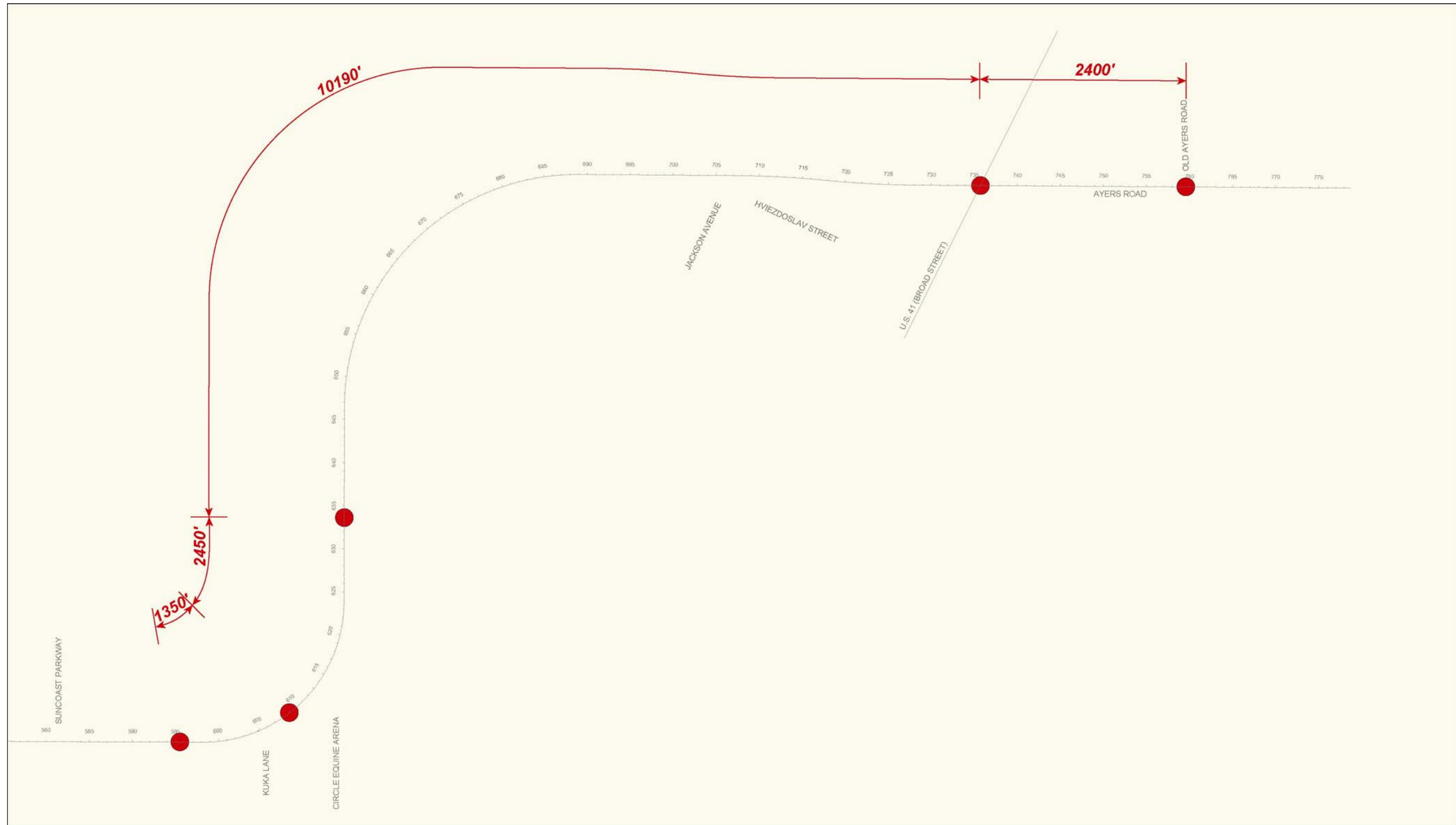


FIGURE 9-3
PRELIMINARY ACCESS MANAGEMENT ON THE AYERS ROAD EXTENSION



● Full Median Opening

■ Directional Median Opening

Section 10.0

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21. *Water Quality Impact Evaluation*; URS; Tampa, Florida; 2002.
22. *Comments and Coordination Report*; URS; Tampa, Florida; 202.

APPENDIX A
RECOMMENDED BUILD
ALTERNATIVE ALIGNMENT

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

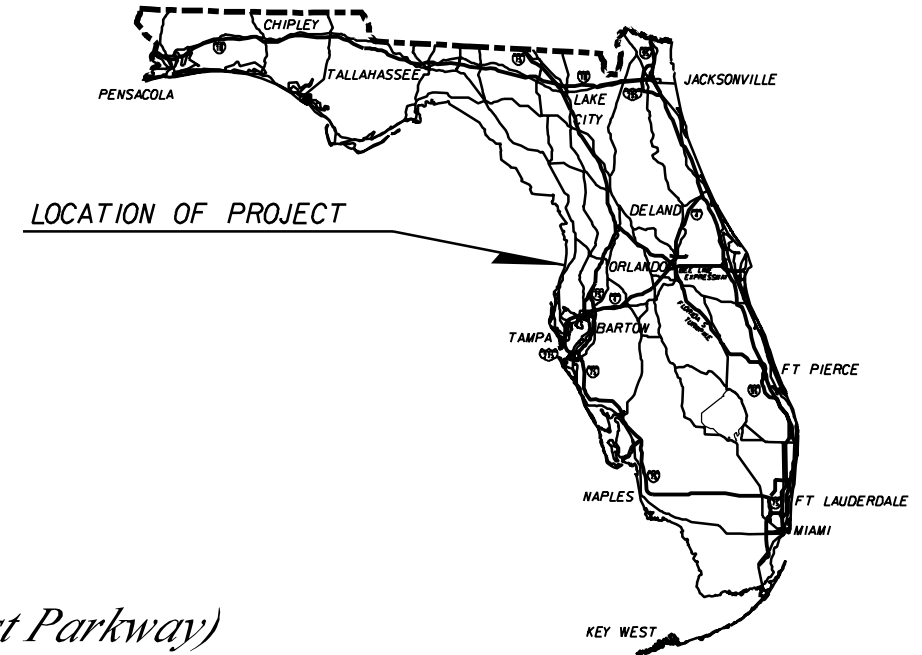
CONCEPT PLANS

FINANCIAL PROJECT ID 257298 1 22 01
FEDERAL-AID PROGRAM NUMBER 7822 001 S
PASCO AND HERNANDO COUNTIES

COUNTY ROAD NO. 578

From U.S. 19 (S.R. 55) to U.S. 41 (S.R. 45)

ALIGNMENT S-8 (C.R. 578 From U.S. 19 (S.R. 55) to Suncoast Parkway)
ALIGNMENT S-5 (Ayers Road Extension From Suncoast Parkway to U.S. 41 (S.R. 45))

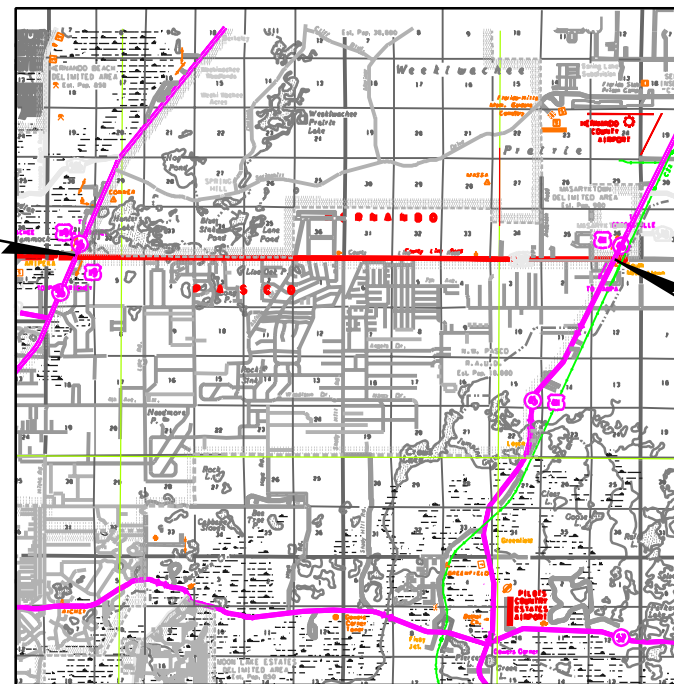


A DETAILED INDEX APPEARS ON THE
KEY SHEET OF EACH COMPONENT

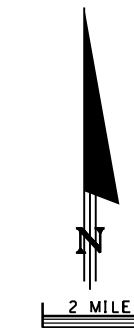
INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	TYPICAL SECTIONS/LEGEND
3	PROJECT LAYOUT
4 - 28	ROADWAY PLAN SHEETS
4 - 20	ROADWAY PROFILE SHEETS
1 - 198	CROSS SECTION SHEETS

BEGIN PROJECT
STA. 84+05.96



END PROJECT
STA. 721+84.90



PLANS PREPARED BY:



URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
No. 00000002

GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION,
ROADWAY AND TRAFFIC DESIGN STANDARDS
DATED JANUARY 2000, AND
STANDARDS SPECIFICATIONS FOR ROAD AND BRIDGE
CONSTRUCTION DATED 1999,
AS AMENDED BY CONTRACT DOCUMENTS.

LENGTH OF PROJECT		
	LIN. FT.	MILES
ROADWAY		
BRIDGES (W.B.)		
NET LENGTH OF PROJ.		
EXCEPTIONS		
GROSS LENGTH OF PROJ.		






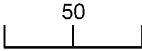


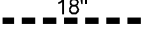







FDOT PROJECT MANAGER : MIKE SEIFERT, PLS, PE

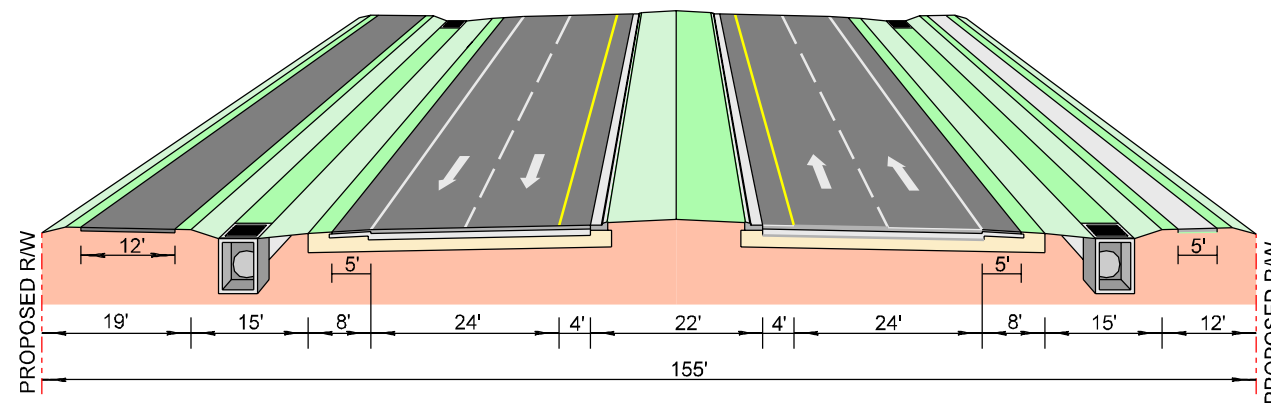
CONCEPT PLANS
ENGINEER OF RECORD: LISA D. HEIMBURG, P.E.

P.E. NO. 47231

FISCAL YEAR	SHEET NO.
01	1

LEGEND

-  EXISTING RIGHT-OF-WAY
-  EXISTING L/A RIGHT-OF-WAY
-  PROPOSED RIGHT-OF-WAY
-  PROPERTY LINES
-  PROPOSED EDGE OF PAVEMENT
-  CENTERLINE OF CONSTRUCTION
-  WETLAND BOUNDARY
-  POTENTIAL CONTAMINATION SITE
-  EXISTING CROSS DRAINS
-  HIGH ARCHAEOLOGICAL PROBABILITY
-  MODERATE ARCHAEOLOGICAL PROBABILITY
-  PREVIOUSLY RECORDED ARCHAEOLOGICAL SITE
-  PROPOSED POND SITE
-  POTENTIAL RESIDENTIAL RELOCATION
-  POTENTIAL BUSINESS RELOCATION
-  POTENTIAL INSTITUTIONAL OR NON PROFIT



SUBURBAN TYPICAL SECTION
From U.S. 19 to U.S. 41 (S.R. 45)

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
09/13/99		DATE OF FLIGHT			



URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
No. 00000002

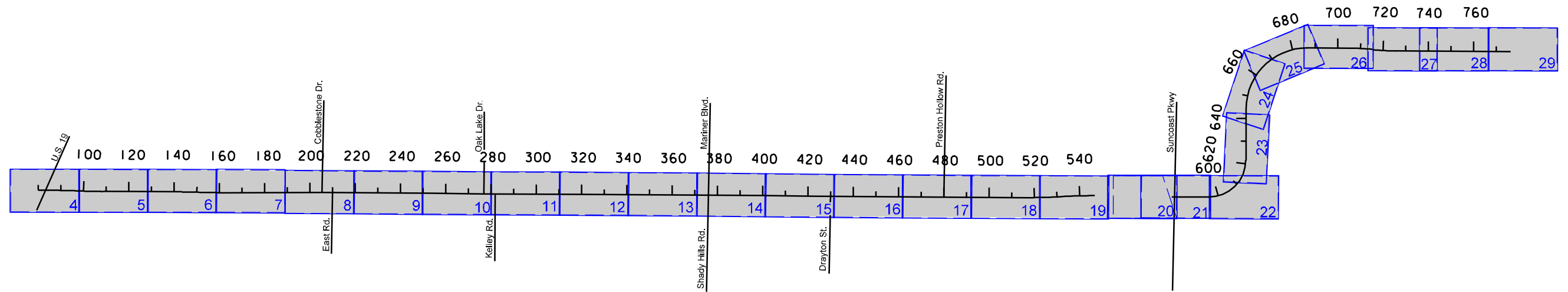
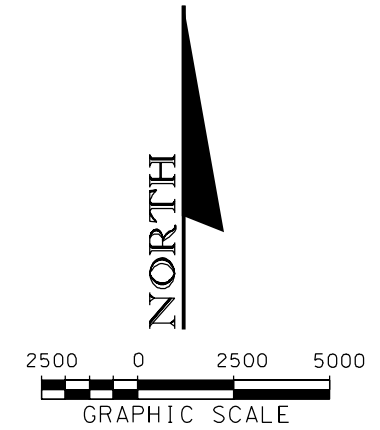
**STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION**

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
C.R. 578	PASCO & HERNANDO	257298 22 01

COUNTY LINE ROAD (C.R. 578)
PROJECT DEVELOPMENT & ENVIRONMENT STUDY
From U.S. 19 (S.R. 55) to U.S. 41 (S.R. 45)
ALIGNMENT S-8

SHEET NO.

2

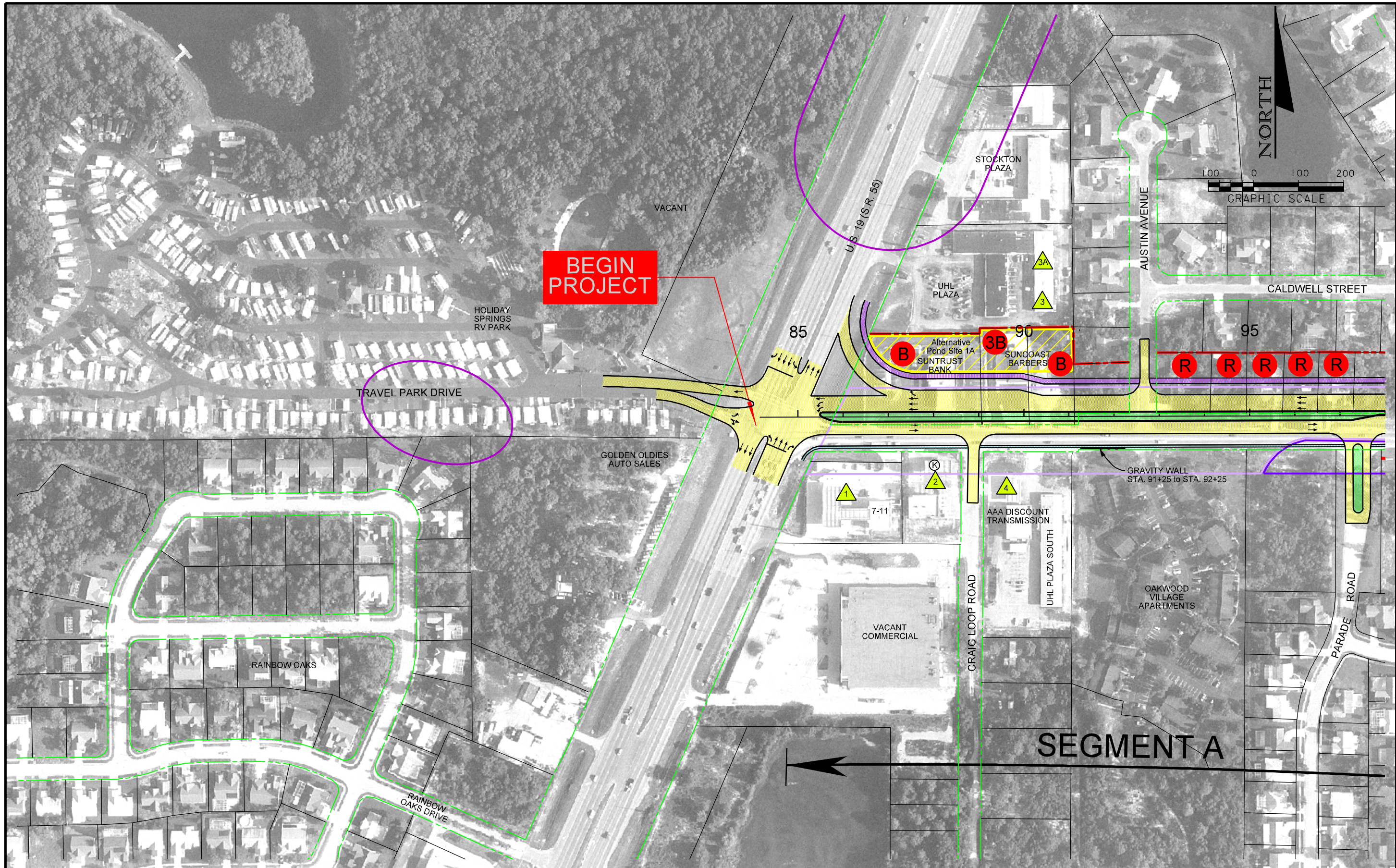


Note:

- Segment A - U.S. 19 to East Road
- Segment B - East Road to Mariner Boulevard
- Segment C - Mariner Boulevard to Suncoast Parkway
- Segment D - Suncoast Parkway to U.S. 41

PROJECT LAYOUT SHEETS

REVISIONS						 URS Corporation Southern 7650 West Courtney Campbell Causeway Tampa, FL 33607-1462 No. 00000002	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			COUNTY LINE ROAD (C.R. 578) PROJECT DEVELOPMENT & ENVIRONMENT STUDY From U.S. 19 (S.R. 55) to U.S. 41 (S.R. 45)	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		3
09/13/99		DATE OF FLIGHT					C.R.578	PASCO & HERNANDO	257298 1 22 01		



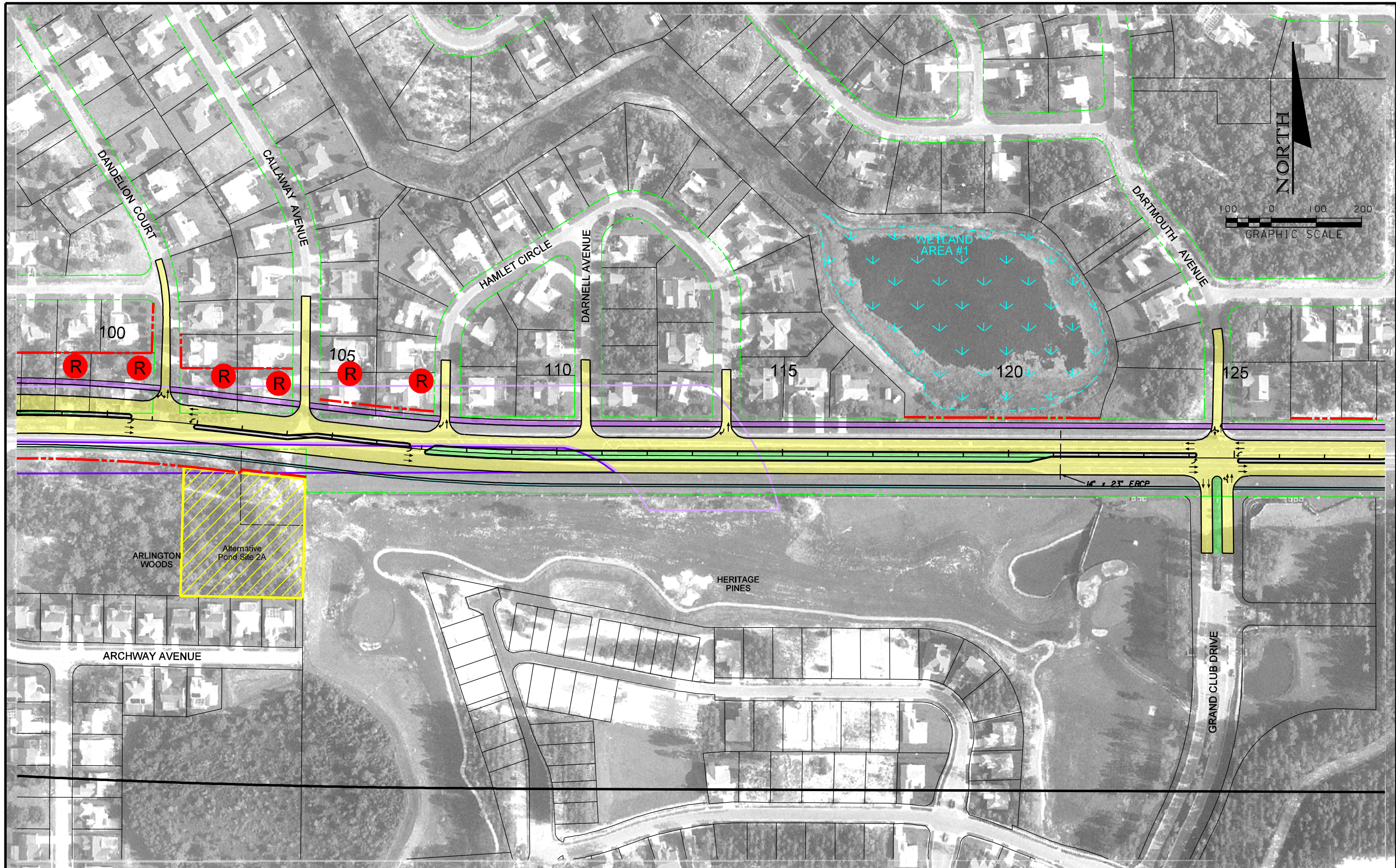
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URS
 URS Corporation Southern
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 From U.S. 19 (S.R. 55) to U.S. 41 (S.R. 45)
 ALIGNMENT S-8

SHEET NO.
4



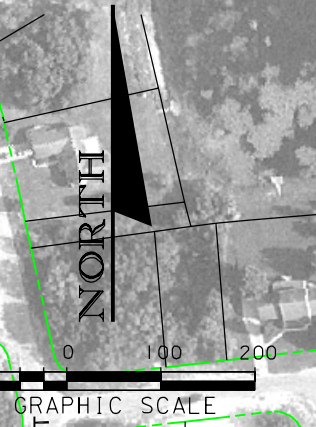
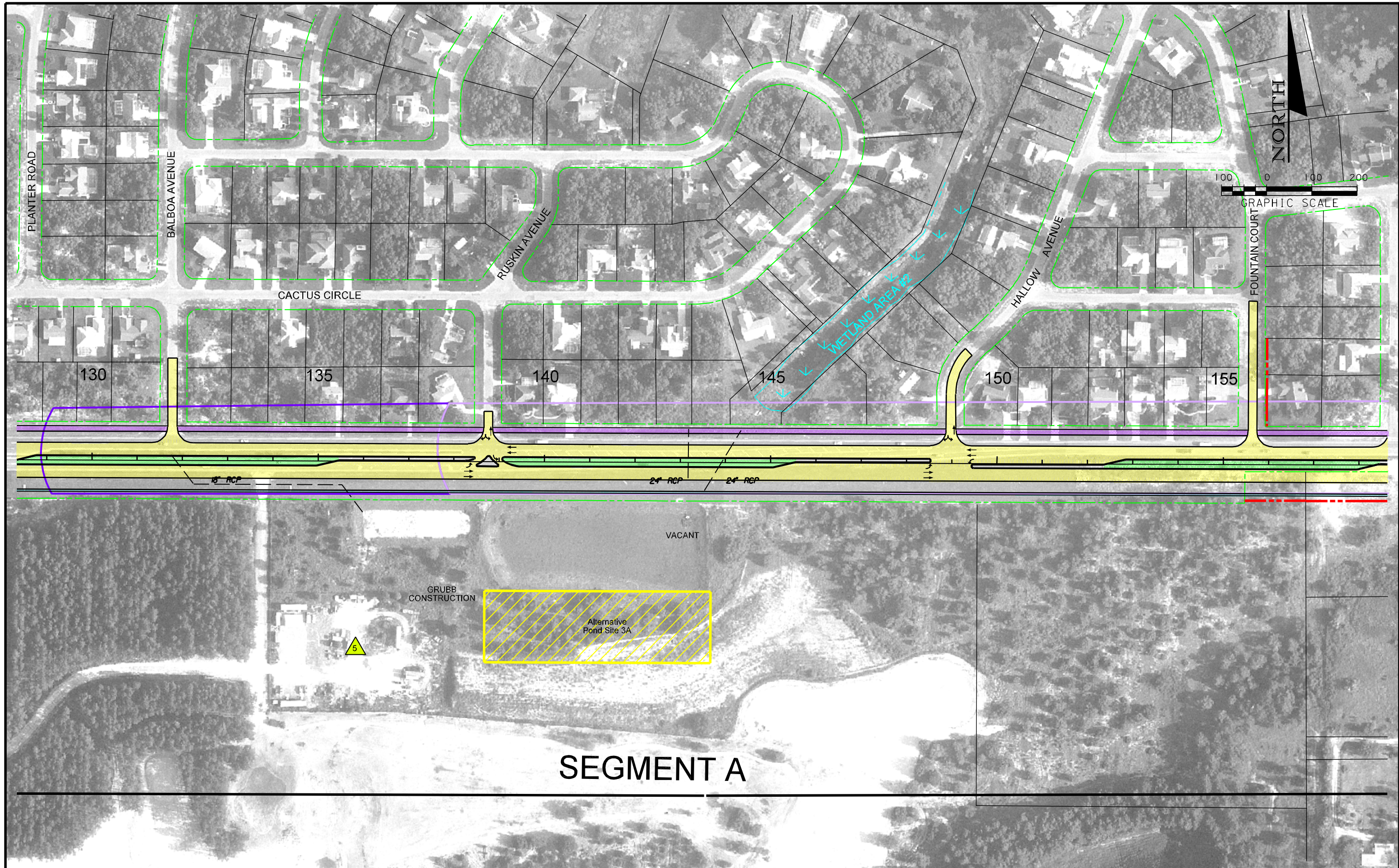
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09/13/99		DATE OF FLIGHT			

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 From U.S. 19 (S.R 55) to U.S. 41 (S.R. 45)
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5



SEGMENT A

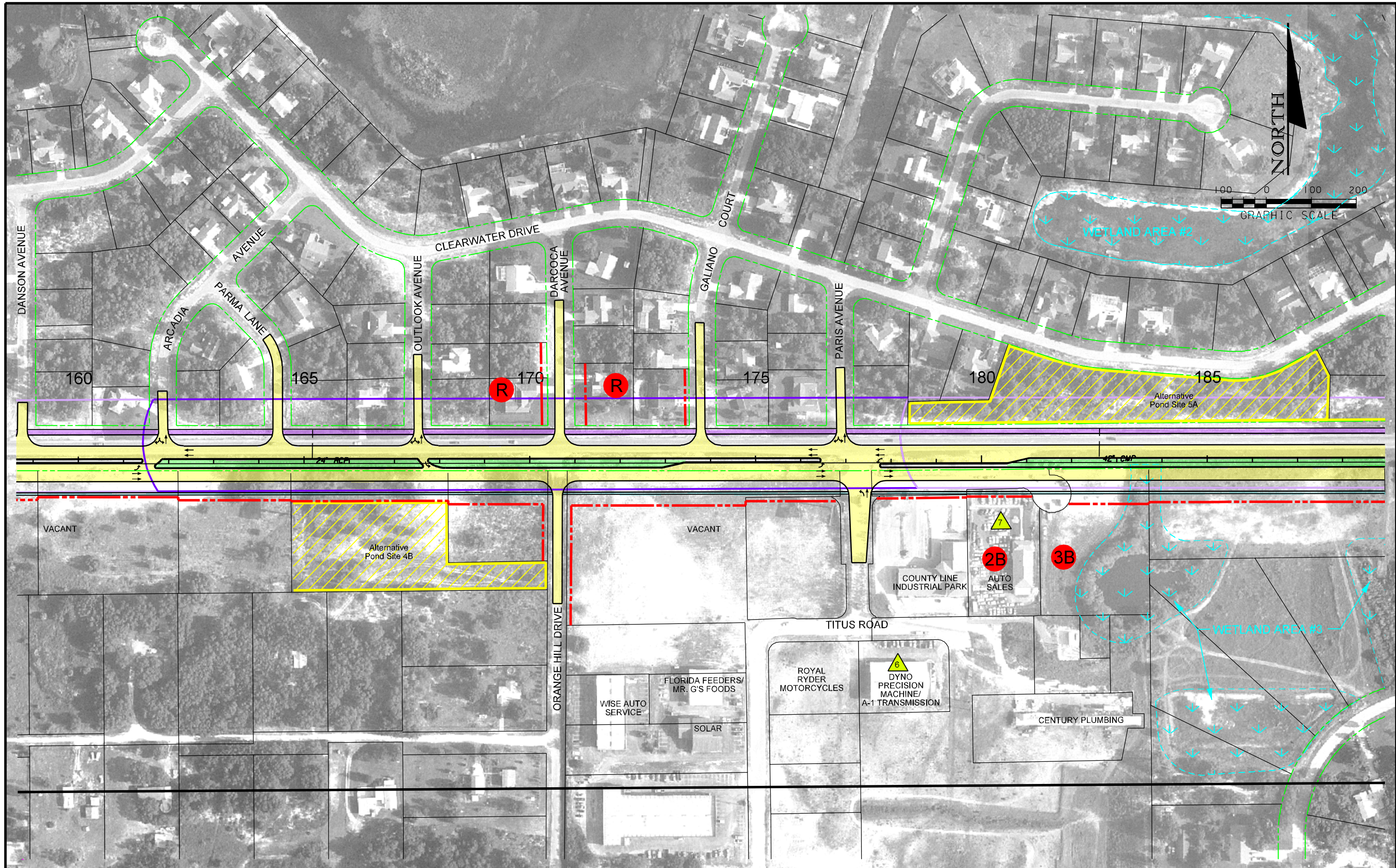
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 From U.S. 19 (S.R. 55) to U.S. 41 (S.R. 45)
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SHEET NO.
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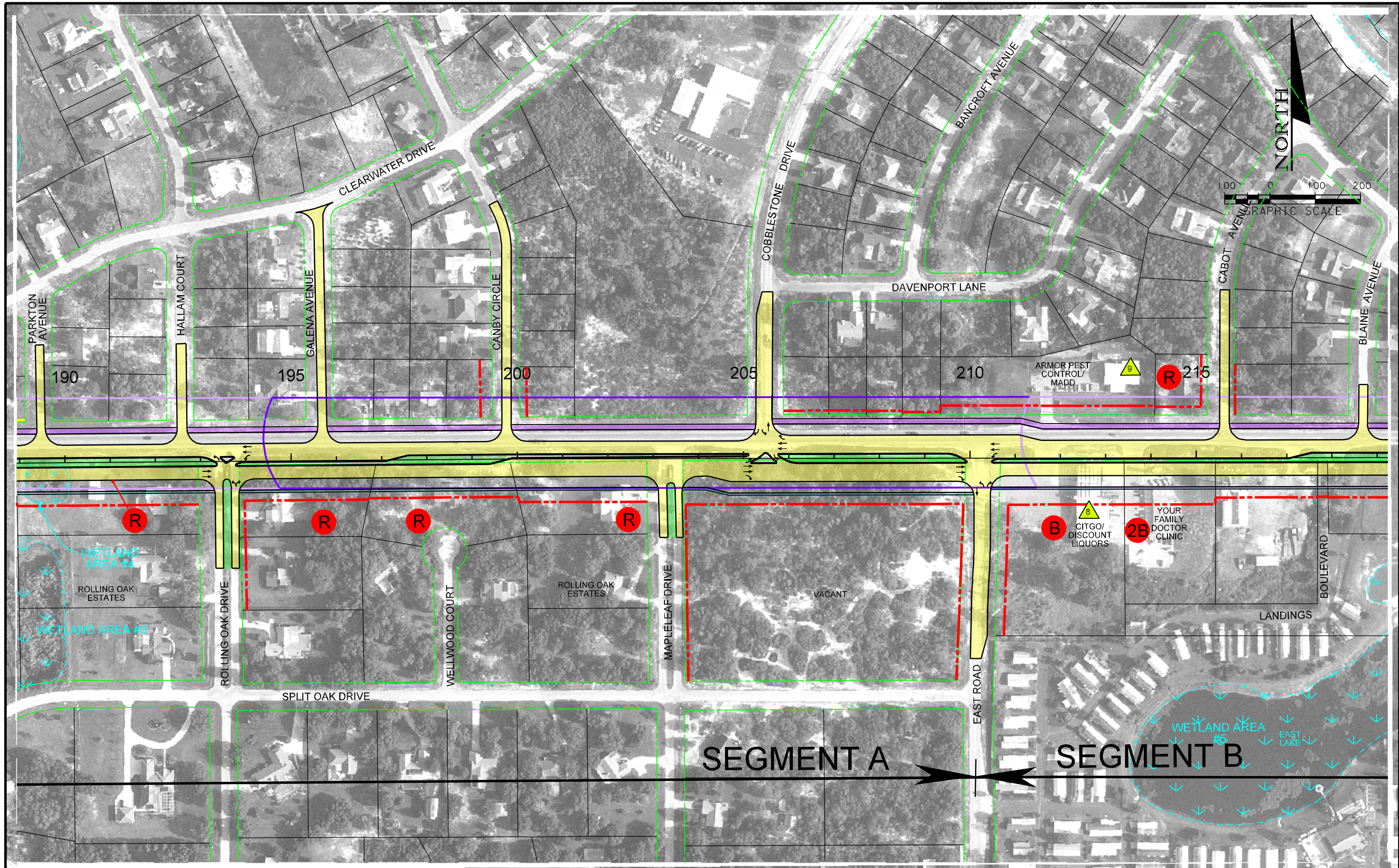
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SHEET NO.
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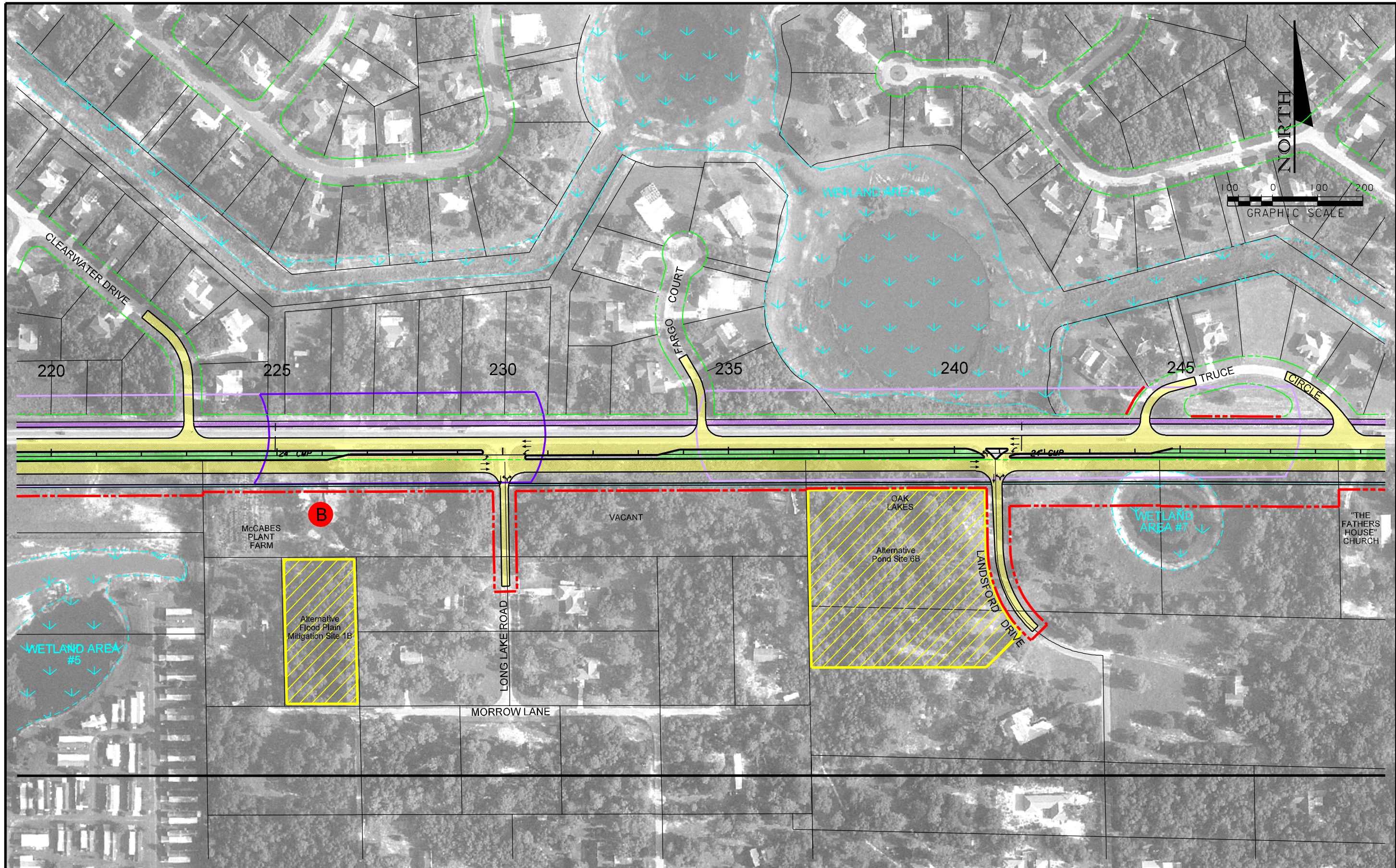
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 ALIGNMENT S-8

SHEET NO.
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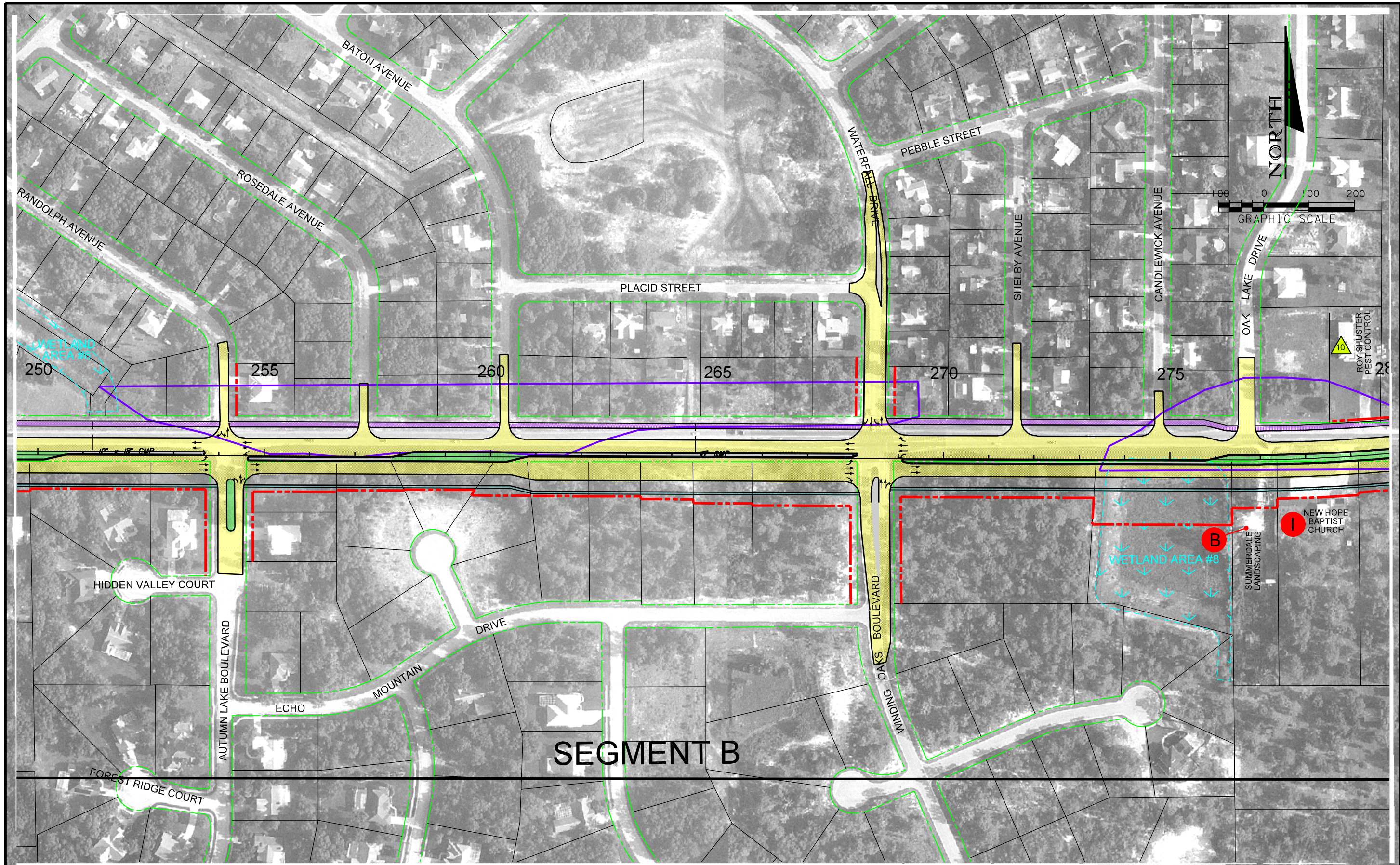
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 From U.S. 19 (S.R. 55) to U.S. 41 (S.R. 45)
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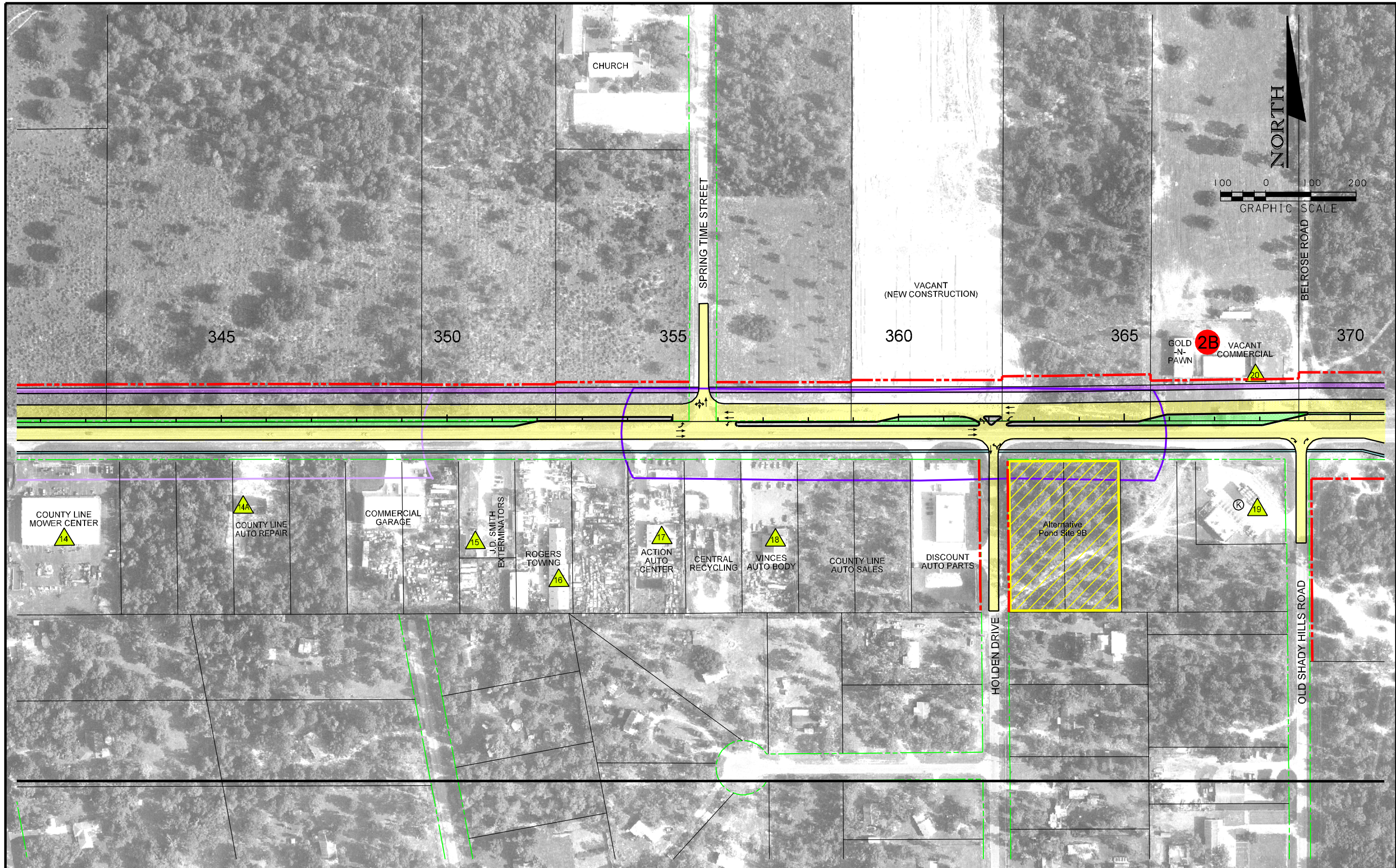
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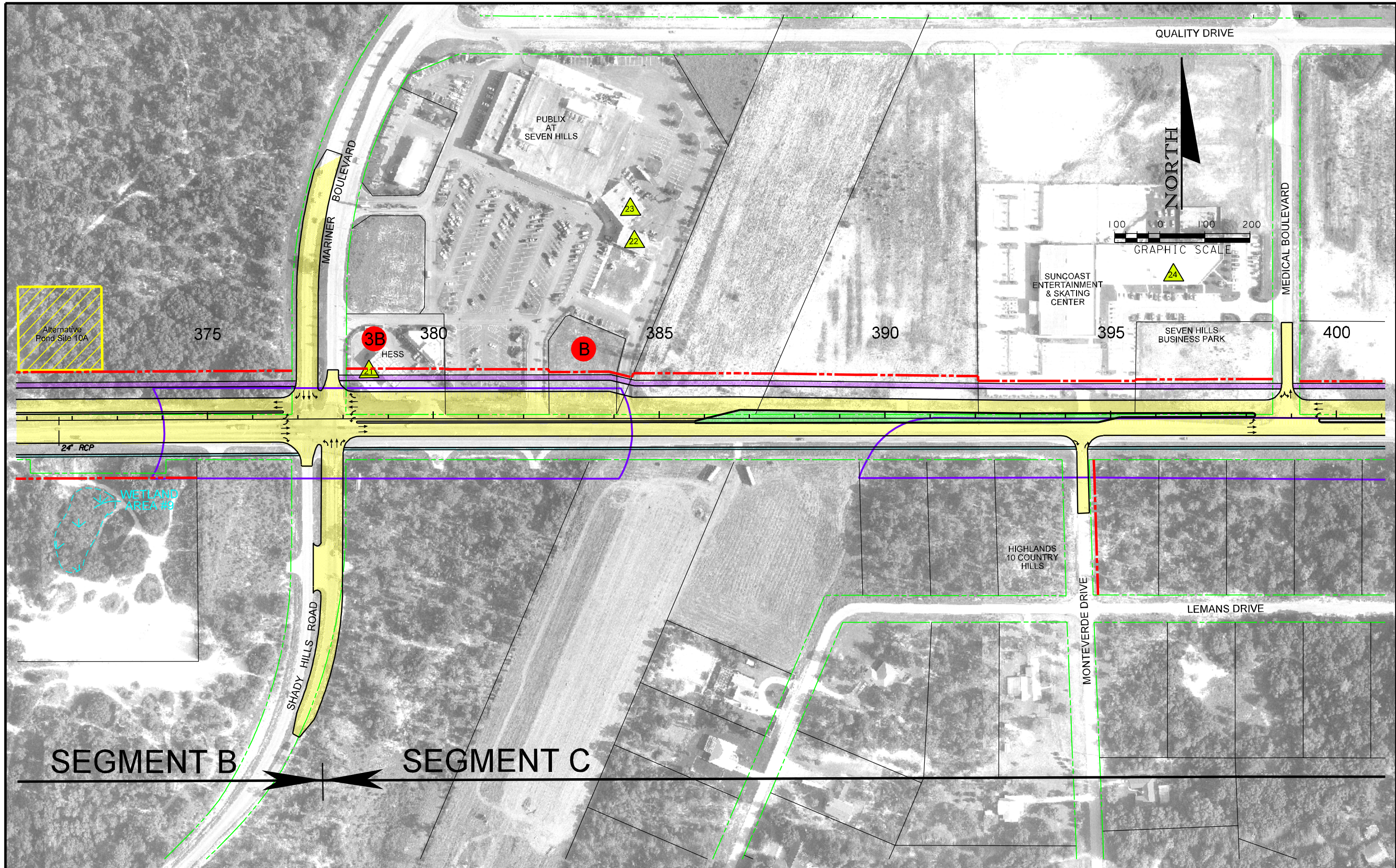
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14



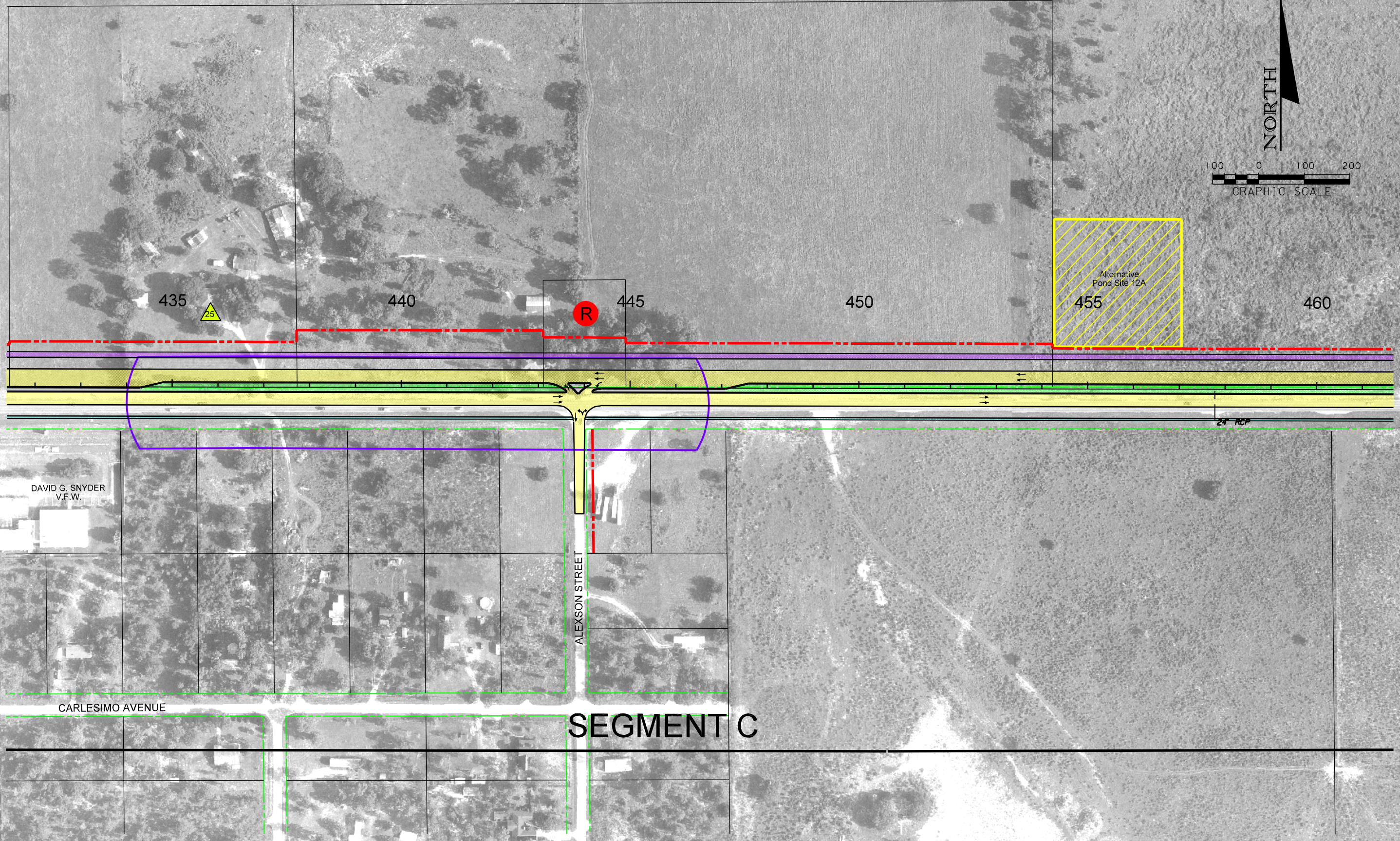
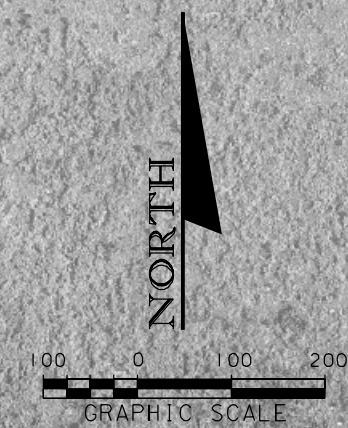
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16



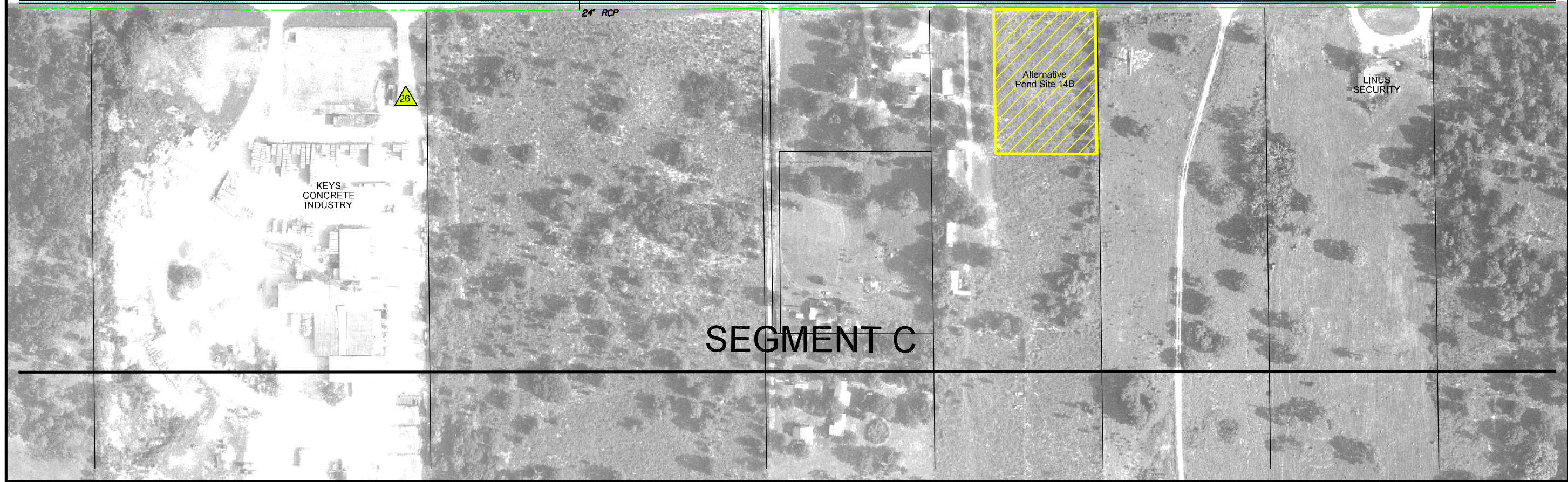
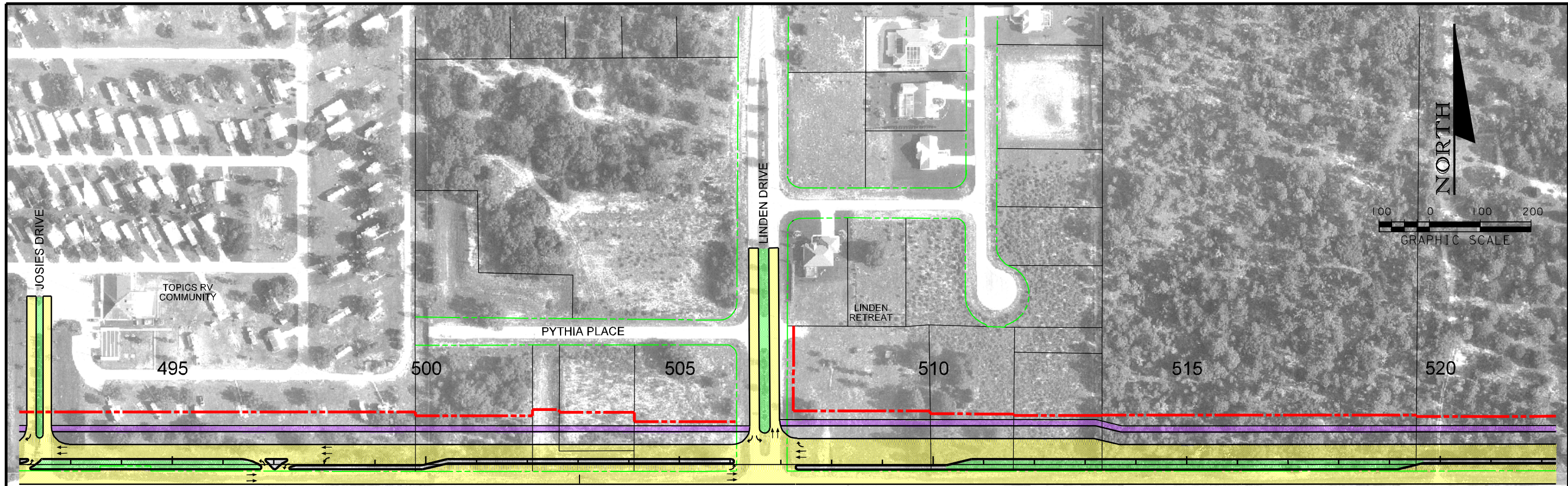
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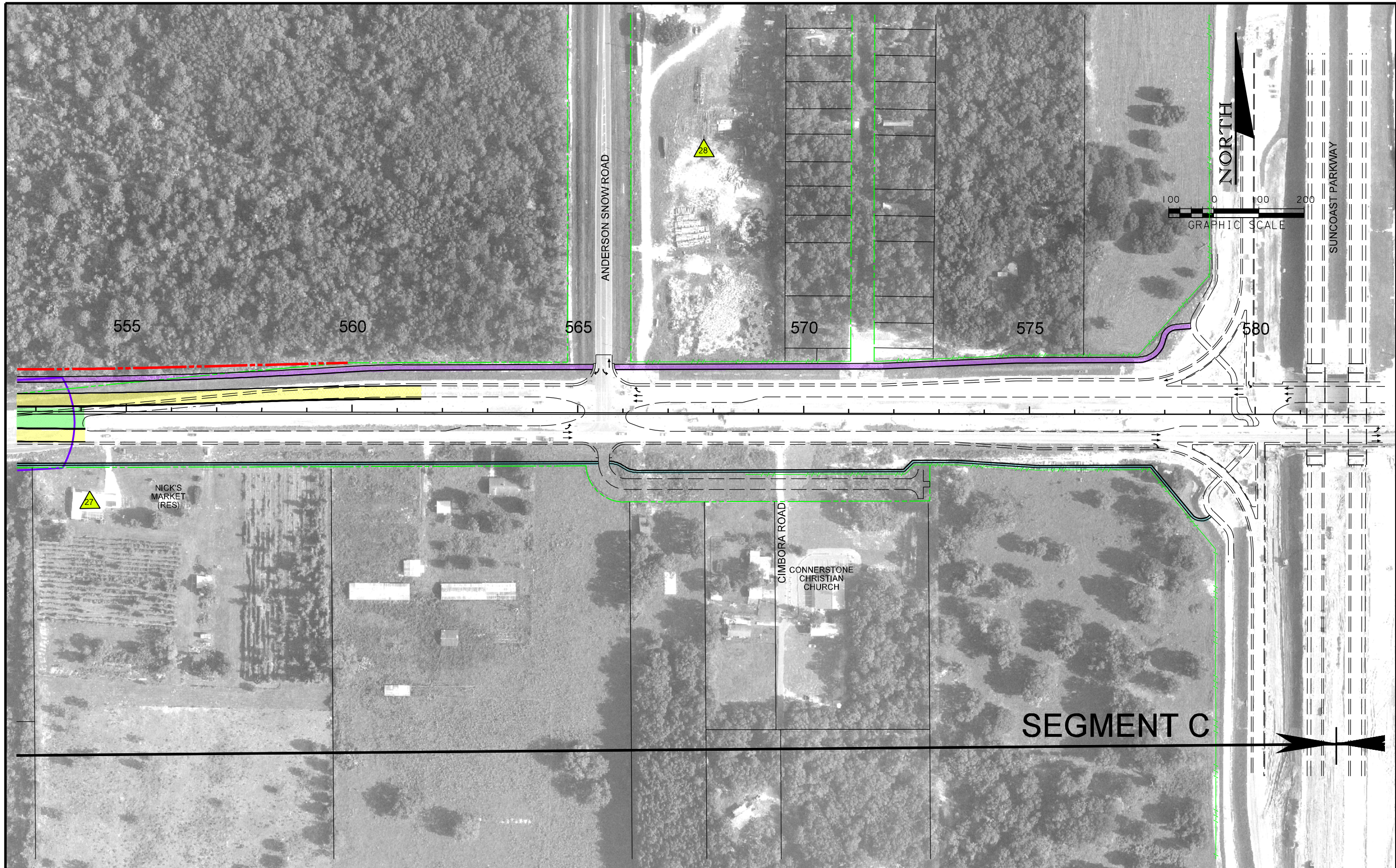
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 From U.S. 19 (S.R. 55) to U.S. 41 (S.R. 45)
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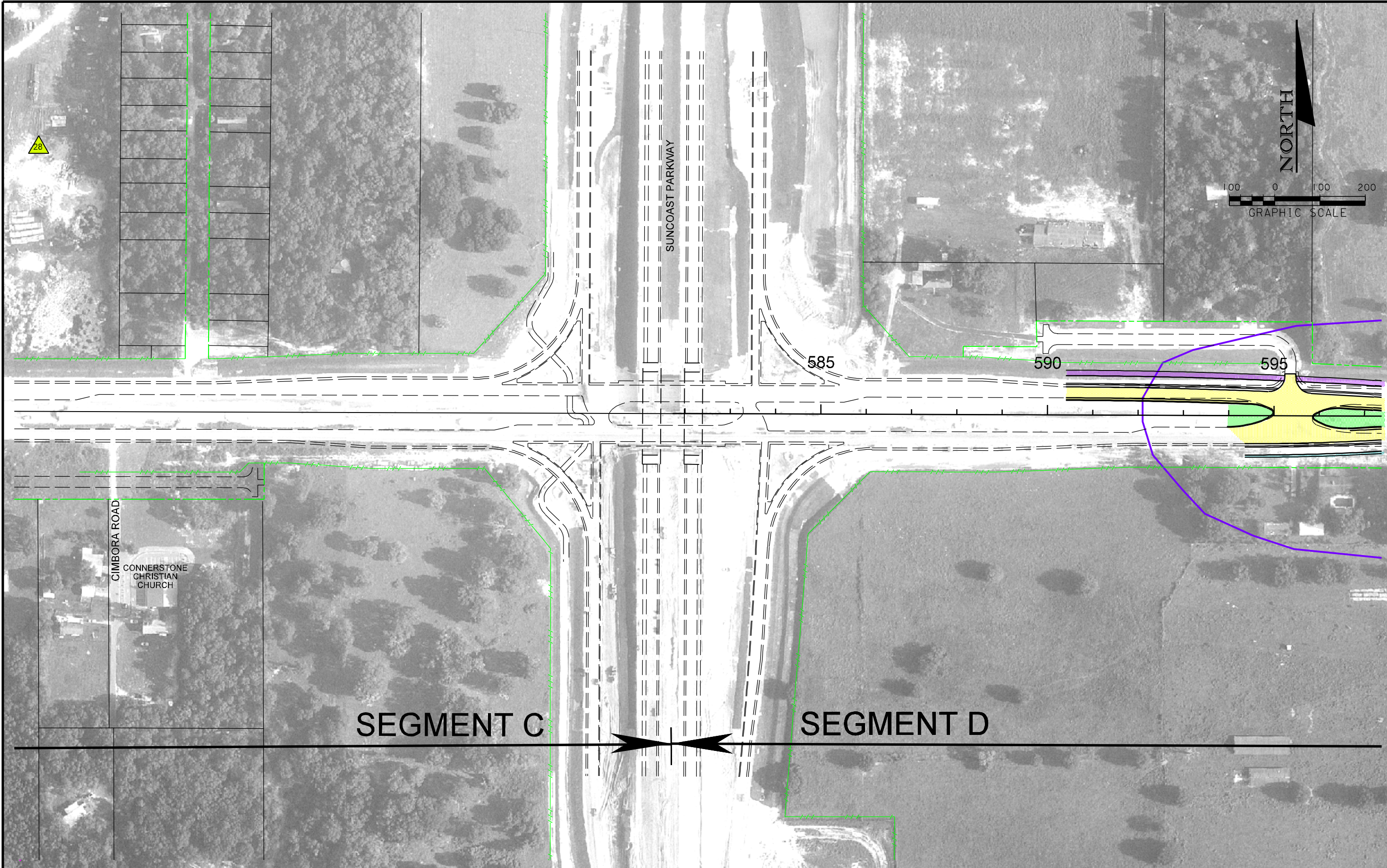
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 From U.S. 19 (S.R. 55) to U.S. 41 (S.R. 45)
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20



REVISIONS

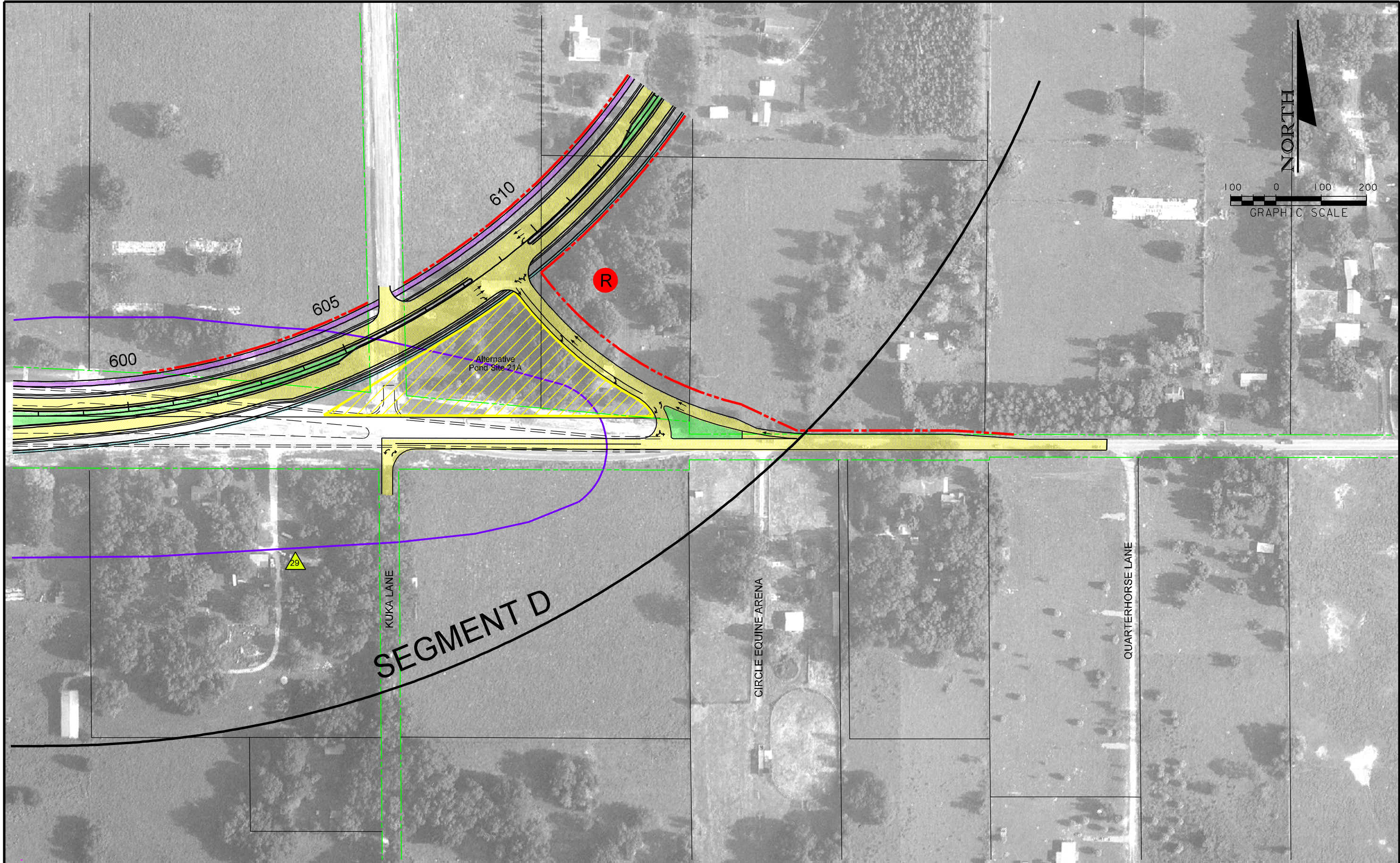
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 ALIGNMENT S-5 (AYERS ROAD)

SHEET NO.
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SHEET NO.
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NORTH



WETLAND
AREA #10

615

620

625

630

635

640

R

KORBUS ROAD

BOYNTON ROAD

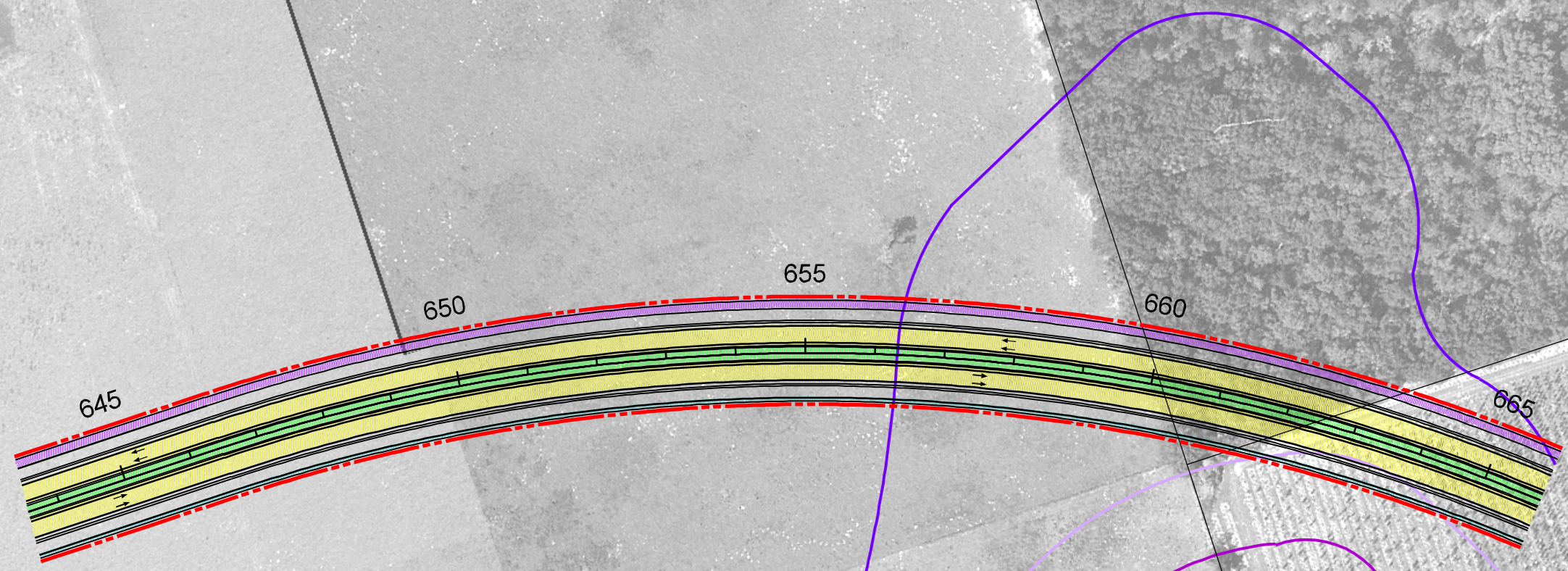
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 ALIGNMENT S-5 (AYERS ROAD)

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SEGMENT D

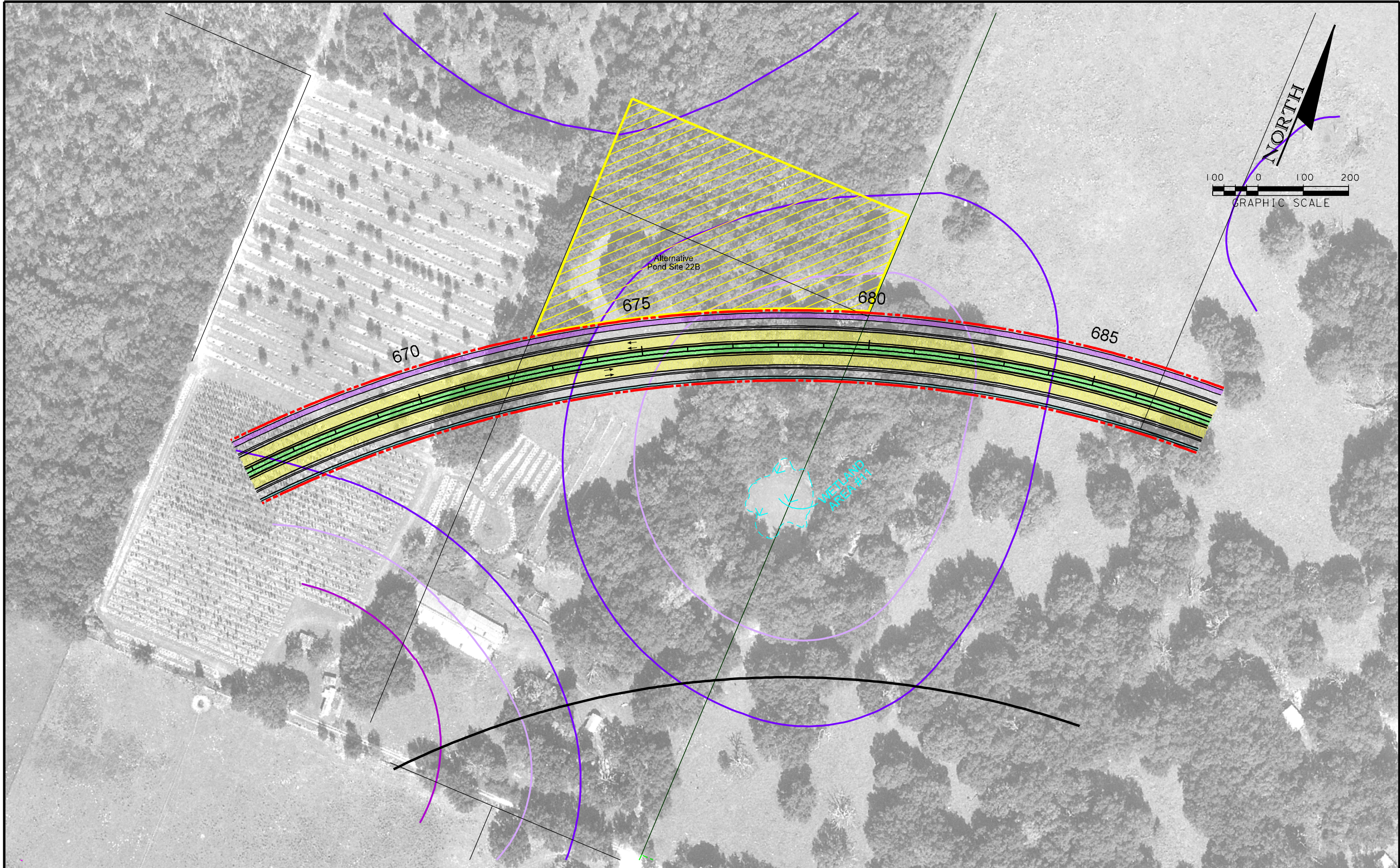
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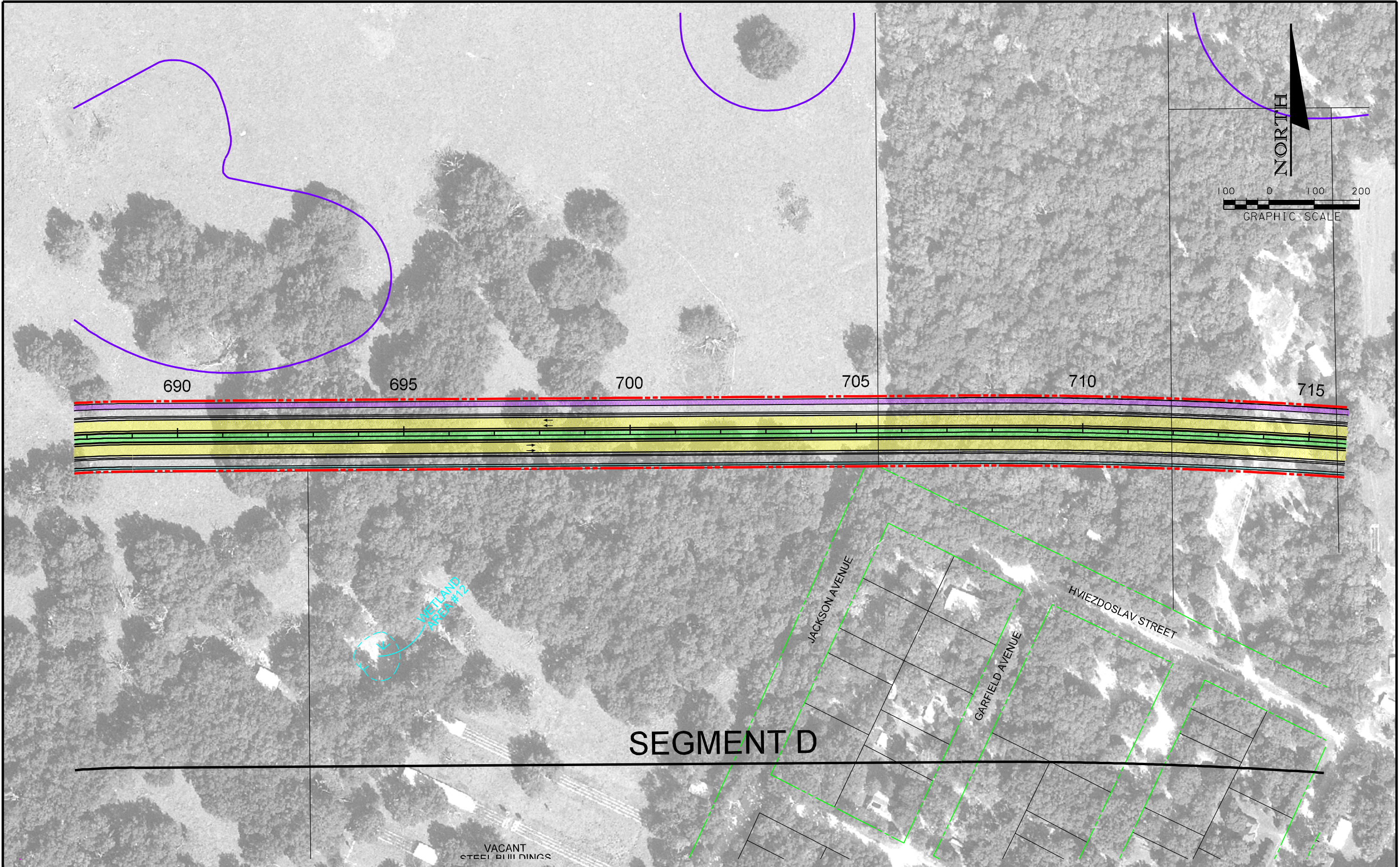
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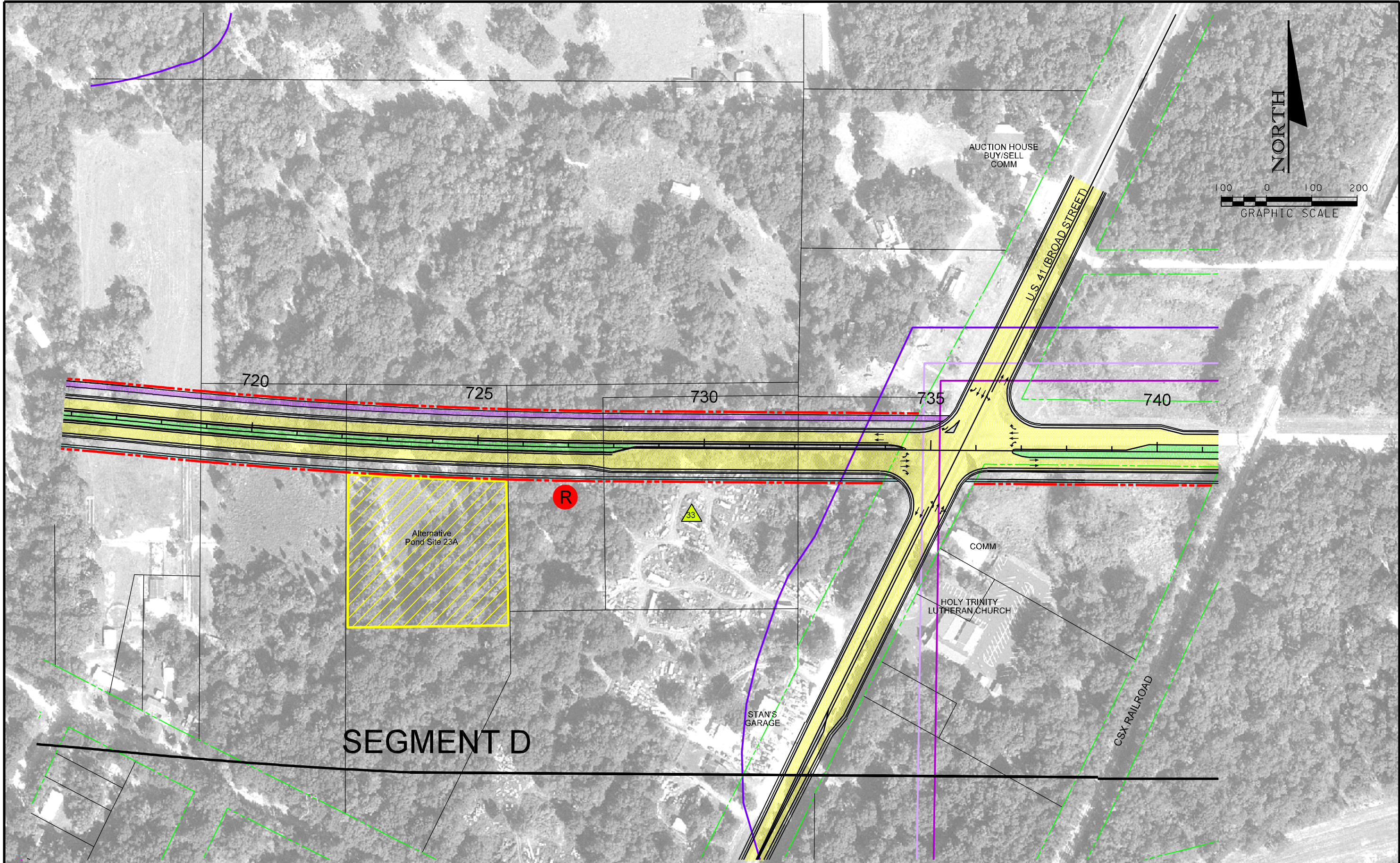
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SEGMENT D

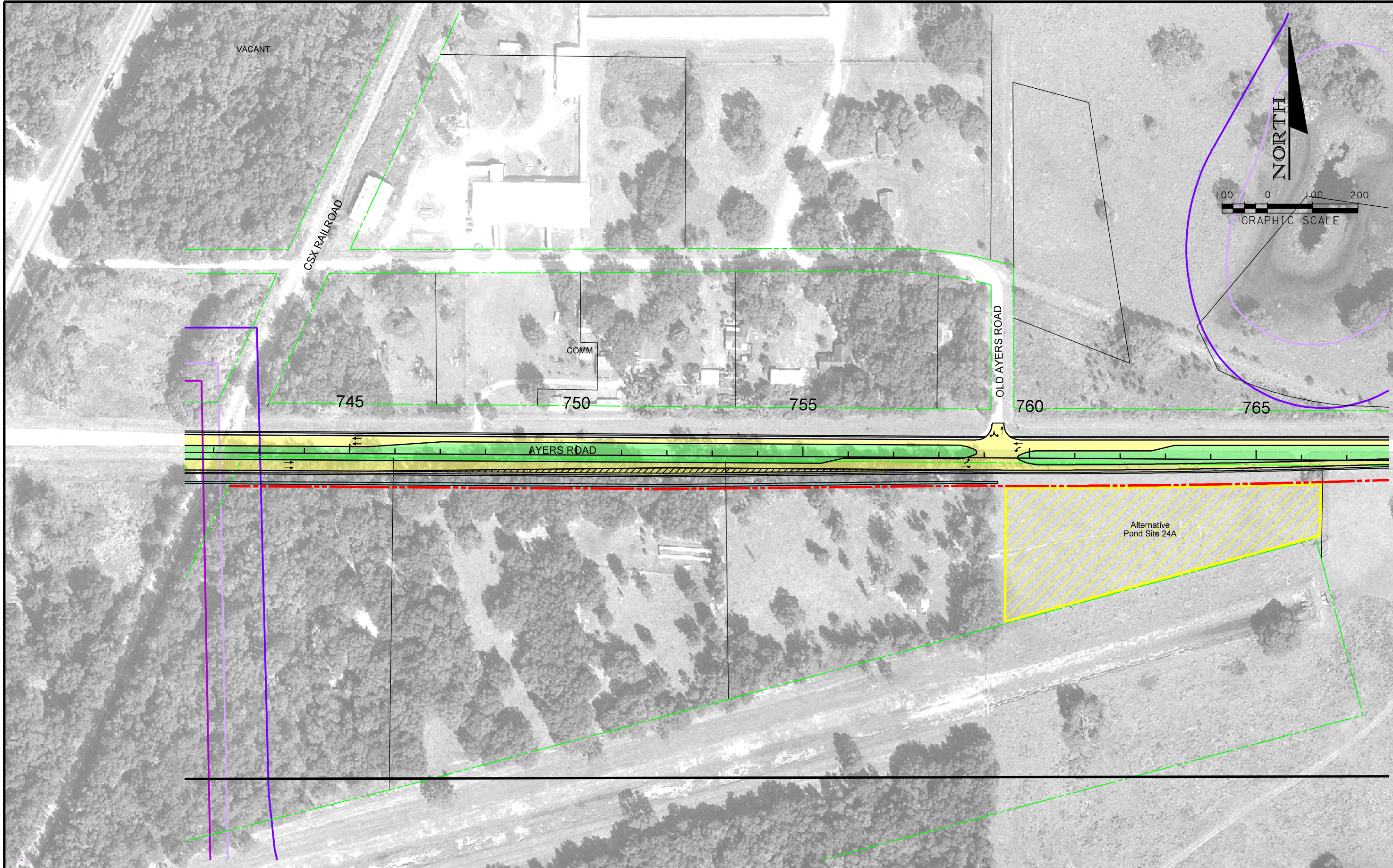
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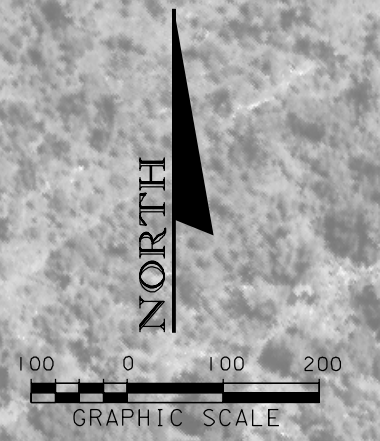
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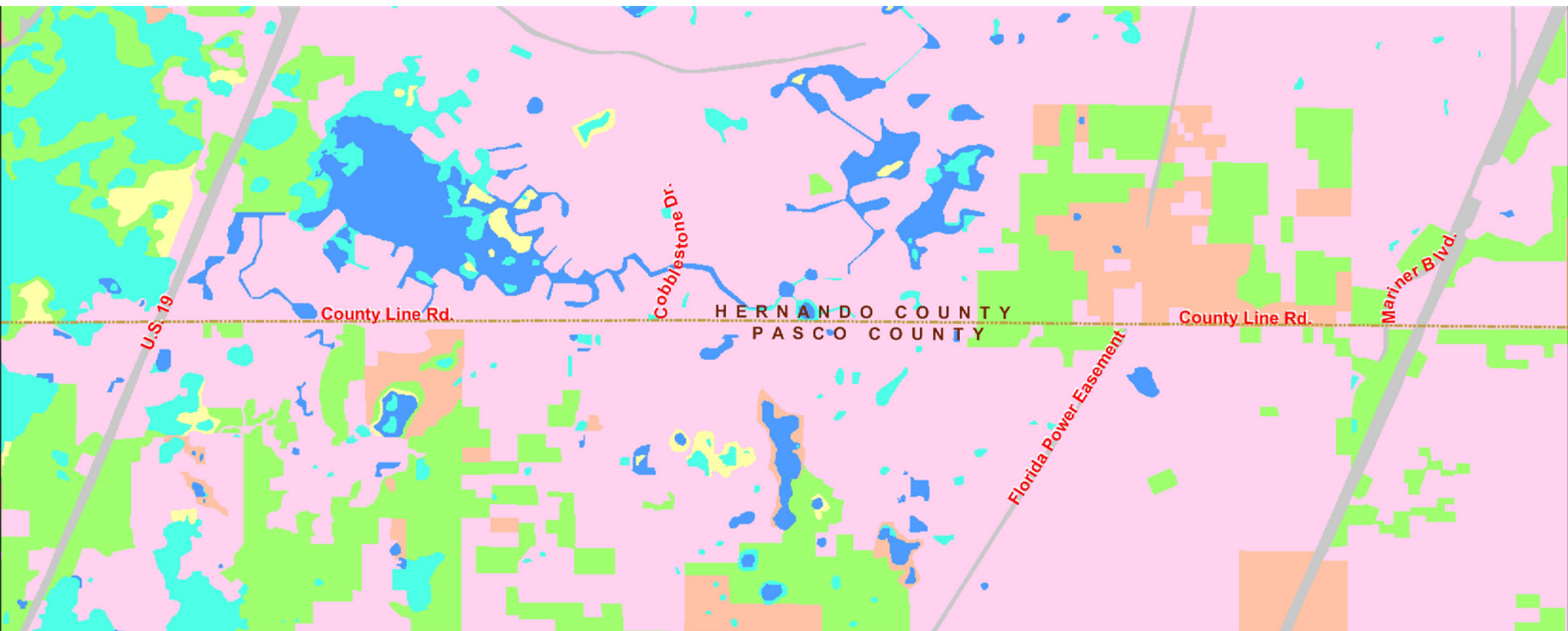
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 ALIGNMENT S-5 (AYERS ROAD)

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APPENDIX B
EXISTING AND
FUTURE LAND USE MAPS

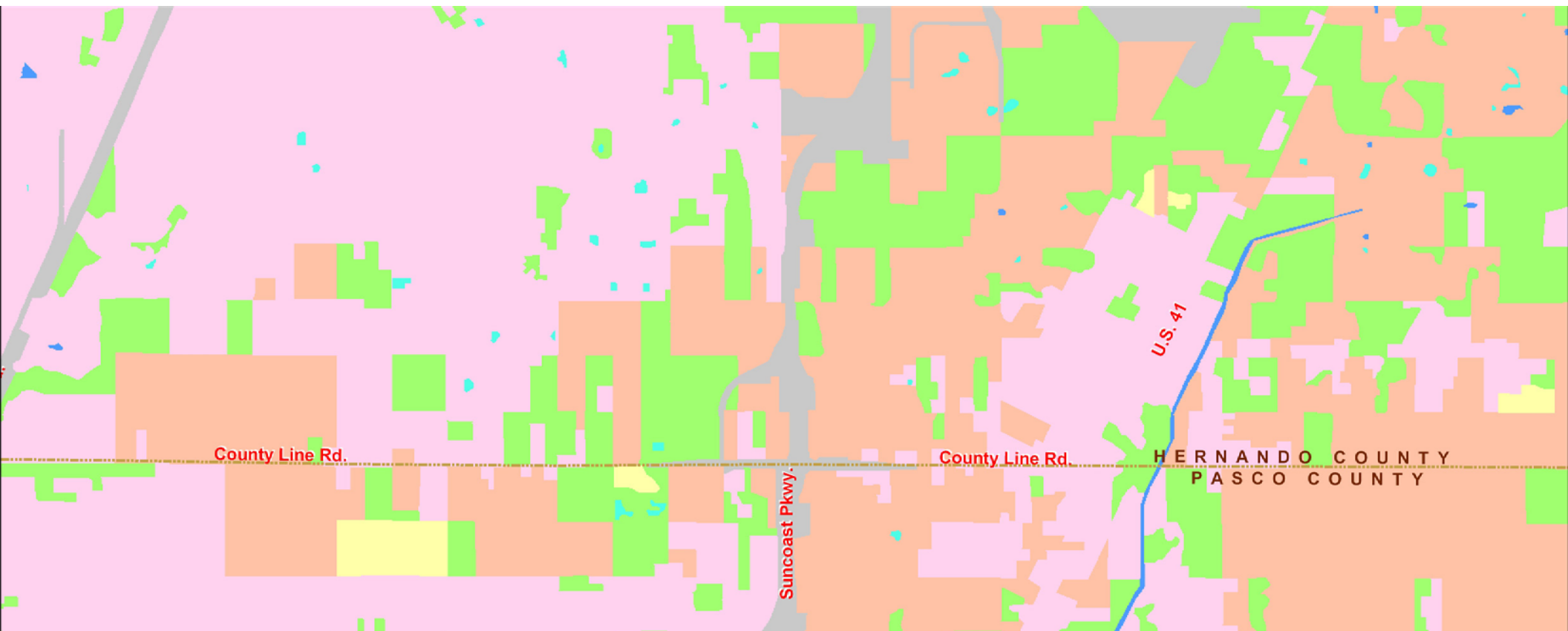


Existing Land Use (1999)

- | | |
|--|---|
|  Urban & Built-up |  Water |
|  Agriculture |  Wetland |
|  Rangeland |  Transp., Comm., Utilities |
|  Upland Forest | |
|  County Boundary | |



Source:
Southwest Florida Water Management District

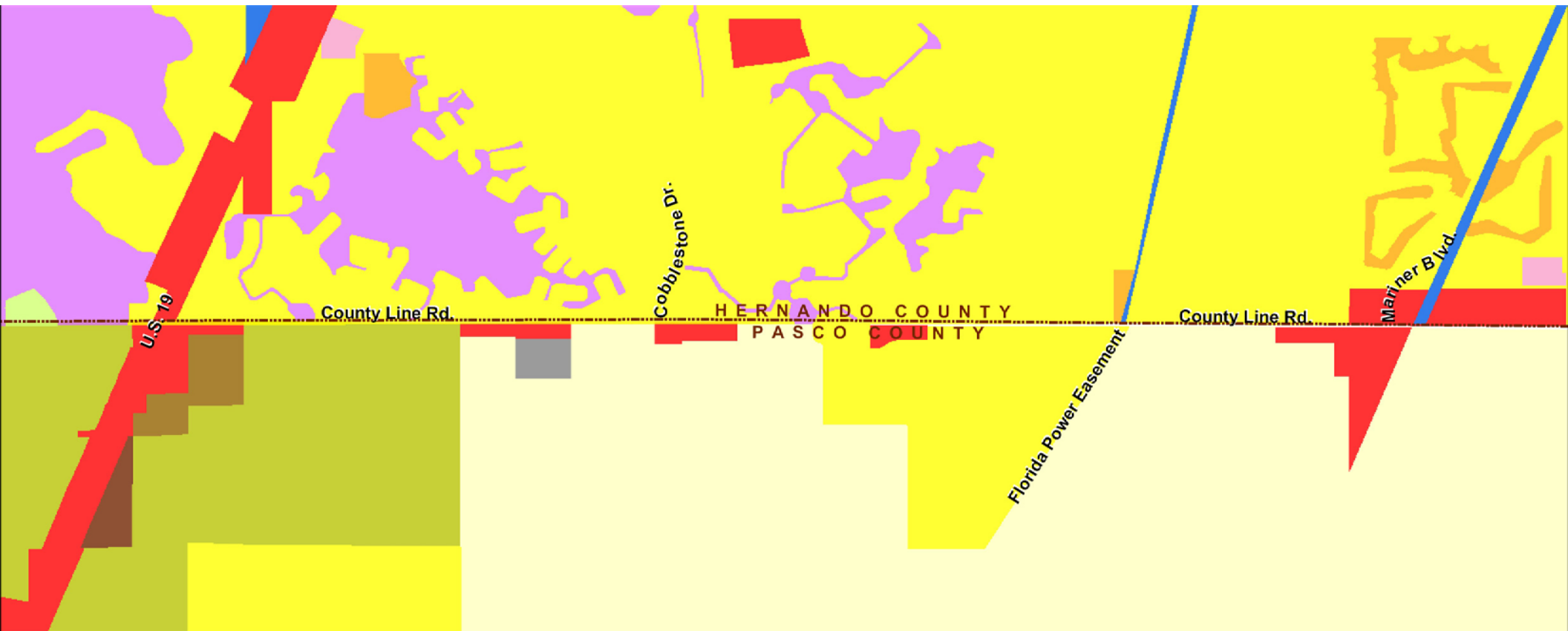


Existing Land Use (1999)

- | | |
|------------------|---------------------------|
| Urban & Built-up | Water |
| Agriculture | Wetland |
| Rangeland | Transp., Comm., Utilities |
| Upland Forest | |
| County Boundary | |



Source:
Southwest Florida Water Management District



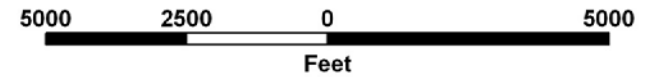
Pasco County Future Land Use

- AGRICULTURE
- AGRICULTURE/RURAL
- CONSERVATION
- LIGHT INDUSTRIAL
- HEAVY INDUSTRIAL
- PUBLIC/SEMI-PUBLIC
- MAJOR RECREATION/OPEN SPACE
- RESIDENTIAL - 1
- RESIDENTIAL - 3
- RESIDENTIAL - 6
- RESIDENTIAL - 9
- RESIDENTIAL - 12
- RESIDENTIAL - 24
- RETAIL/OFFICE/RESIDENTIAL

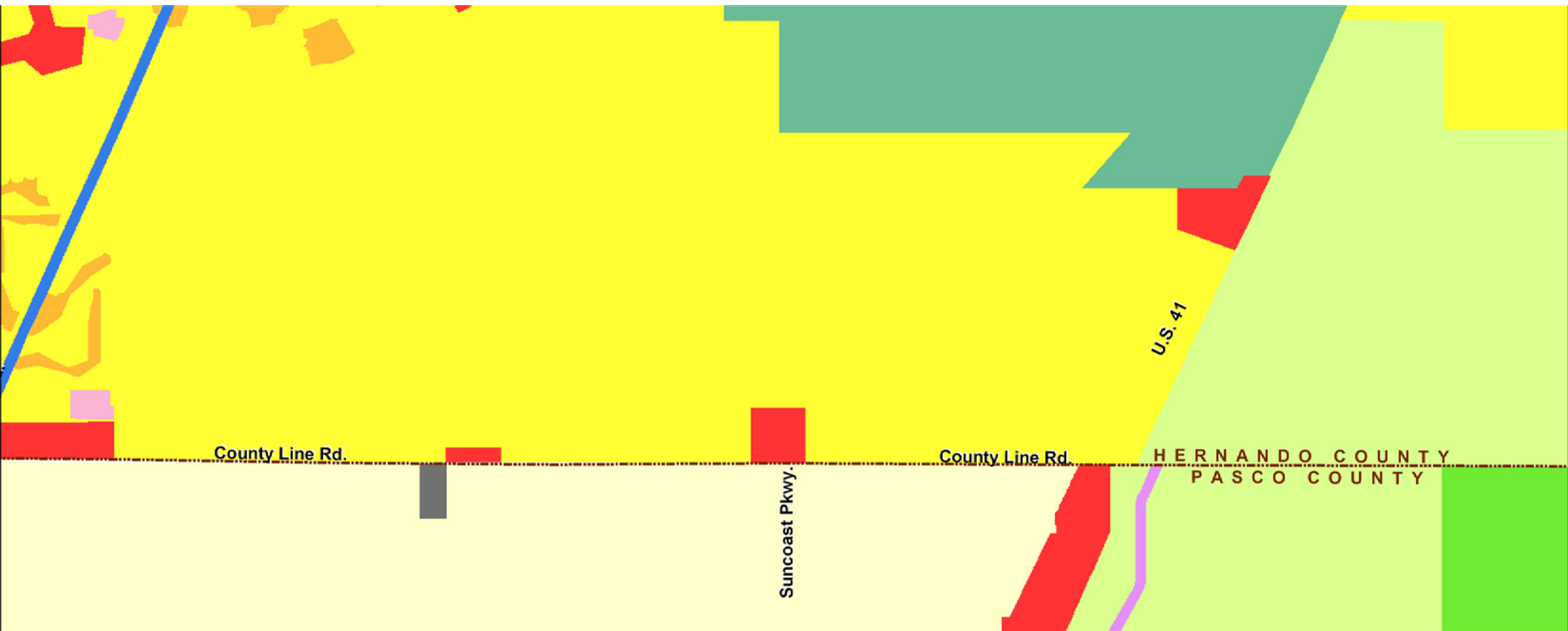
Hernando County Future Land Use

- CITY
- COMMERCIAL
- CONSERVATION
- EDUCATION
- INDUSTRIAL
- MINING
- PLANNED DEVELOPMENT
- PUBLIC FACILITY
- RECREATION
- RESIDENTIAL
- RURAL

County Boundary



Sources:
 Pasco County Development Services
 Hernando County Planning Department



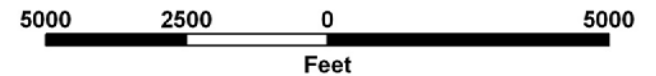
Pasco County Future Land Use

- AGRICULTURE
- AGRICULTURE/RURAL
- CONSERVATION
- LIGHT INDUSTRIAL
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Hernando County Future Land Use

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- COMMERCIAL
- CONSERVATION
- EDUCATION
- INDUSTRIAL
- MINING
- PLANNED DEVELOPMENT
- PUBLIC FACILITY
- RECREATION
- RESIDENTIAL
- RURAL

County Boundary



Sources:
 Pasco County Development Services
 Hernando County Planning Department