SR 54

Project Development and Environment (PD&E) Study

From CR 577 (Curley Road)
to CR 579/CR 54 (Morris Bridge Road)

Final Preliminary Engineering Report

WPI Segment No: 416561-1
Pasco County

Prepared for the

Florida Department of Transportation
District Seven

March 2009

Manny Santos, EI
FDOT Project Manager

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Prepared by
American Consulting Engineers of Florida, LLC

American

March 2009

Jeffrey S. Novotny, PE
Florida PE# 51083

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SECTION 1 - SUMMARY

The Florida Department of Transportation (FDOT) conducted a Project Development and Environment (PD&E) Study to evaluate alternative improvements along State Road (SR) 54, from CR 577 (Curley Road) to CR 579/CR 54 (Morris Bridge Road), in southeast Pasco County (maps of the location and study area are included in Section 2).

The west end of the study area is located in Wesley Chapel, an unincorporated census-designated place. The project is located within Sections 9, 10, 13, 14, & 15, Township 26 S, and Range 20 E and Section 18, Township 26 S, Range 21 E. The total length of the proposed project limits is approximately 4.5 miles. The segment to the west, from I-75 to east of Curley Road (CR 577), is currently programmed by Pasco County for widening to six lanes. That project also includes a connection to the planned Zephyrhills West Bypass Extension.

The purpose of the proposed project is to provide a higher capacity and safer facility to better meet future transportation demand in this rapidly developing area of Pasco County. SR 54 is one of the primary east-west facilities within Pasco County, effectively connecting the eastern and western sides of the county. This corridor is also designated as an emergency evacuation route. The PD&E Study also included the consideration of a No-Build Alternative.

As part of the Department's Efficient Transportation Decision Making (ETDM) process, a *Planning Screen Summary Report* was published on September 23, 2005 under ETDM #3104, and a *Programming Screen Summary Report* was published on August 17, 2006 under ETDM #6651 (Reference 1-1). The Federal Highway Administration has determined that the project qualifies as a Type 2 Categorical Exclusion.

Existing Facility and Proposed Improvements

The existing SR 54 facility is functionally classified by FDOT as:

- "Urban Principal Arterial Other" from west of the project limits to Smith Rd
- "Rural Principal Arterial Other" from Smith Rd to west of New River
- "Urban Principal Arterial Other" from west of New River to east of the project limits

The existing roadway is a two-lane rural facility with 12-ft travel lanes and 5-ft paved shoulders. Several areas have been widened to provide left-turn and right-turn lanes. From west to east, the posted speed limit varies from 55 miles per hour (mph) to 45 mph.

Traffic signals currently exist (or will be in operation) at Curley Road, Meadow Pointe Boulevard, River Glen Boulevard/Wyndfields Boulevard, and Morris Bridge Road. The existing right-of-way typically varies between 80 ft and 100 ft. In addition, the County has obtained (or will obtain) "reserved" right-of-way which is being donated by developers as a stipulation of development orders and rezoning conditions. The existing highway is classified by FDOT as Access Management Class 3. Class 3 standards require a minimum traffic signal spacing of 0.5 miles, which the existing facility meets, and minimum spacing for median openings as follows:

- 0.5 mile for full median openings
- 0.25 mile for directional median openings

The existing facility is mostly two-lane undivided and two-lane divided without raised medians, so the median opening spacing standards don't apply yet.

The Preferred Alternative includes the widening or reconstruction of the existing highway to a four-lane divided arterial including additional auxiliary lanes between east of Curley Road and Foxwood Boulevard. Two different types of typical sections are proposed: an urban typical section and a suburban typical section. The proposed typical sections include 12-ft travel lanes, sidewalks and "trails", and either 5-ft paved shoulders or 4-ft bicycle lanes, with a closed drainage system, extension or replacement of cross drains, and associated storm water management facilities for water quality treatment and discharge attenuation.

The proposed project is included in the Pasco County Metropolitan Planning Organization's (MPO) Year 2025 Cost Affordable Long-Range Transportation Plan for the period from 2016 to 2025, as a four-lane divided facility.

Preliminary cost estimates for the Build Alternative ($millions, rounded) are as follows:

Design & Construction Inspection	$10
Right of Way – Roadway Only	35
Right of Way – Ponds and Floodplain Compensation	16
Wetlands Mitigation and Construction (roadway & ponds)	51
Total (Revised 6/08)	$112

The preliminary engineering (design) phase is funded in fiscal year 2008/09, and right-of-way acquisition is funded in fiscal years 2011/12 and 2012/13 of the current 5-year FDOT work program (FY 2008/09 to FY 2012/13). Construction is not currently funded.

Current funding sources include a combination of state, federal, and developer-contributed funds.

1.1 Commitments

Additional assessment activities during design at the two sites ranked "medium" for contamination consisting of soil and groundwater testing to determine the potential impact from the sites on construction.

During the design phase the FDOT will utilize hydrologic studies to verify and quantify potential impacts to the floodplain and consider avoidance measures where reasonable and feasible. The FDOT will evaluate for compensation for any floodplain encroachment and lost floodplain storage impacts, indentify mitigation for any subsequent loss of historic basin storage, and utilize the information from the ongoing watershed management plans.

The Eastern Indigo Snake has the potential to exist along the project corridor; therefore the contractor will be required to implement the Standard Protection Measures for the Eastern Indigo Snake (1999) during construction of the project.

Impacts to wetlands within the Core Foraging Area for existing wood stork colonies will be mitigated for either through the use of FS 373.4137 (the "Senate Bill") or through the use of on-site mitigation within the same watershed basin as the proposed impacts.

During the wetland permitting process through the SWFWMD, the following mitigation recommendation from the Florida Fish and Wildlife Conservation Commission (FFWCC) will be provided for their consideration. "If wetland impacts are mitigated under the provisions of Chapter 373.4137 F.S. (Senate Bill 1986), the replacement wetlands should be functionally equivalent, equal to or of higher functional value, and as or more productive as the impacted wetlands. Land acquisition and restoration of appropriate tracts adjacent to lands previously placed under conservation easement or located adjacent to large areas of jurisdictional wetlands that currently serve as regional core habitat areas has been an appropriate and routine way to address this issue in the past. An all-important focus of the selection process for mitigation lands for this project should include a strong consideration of the quality, functionality, and suitability of the replacement habitat for the birds, mammals, amphibians, and reptiles which will be impacted during future construction work in the project area."

FDOT will coordinate with the U.S. Fish and Wildlife Service (USFWS) and the Florida Fish and Wildlife Conservation Commission (FFWCC) during the design phase of this project to address impacts to critical habitat for federal and state-listed species.

The FDOT will resurvey for bald eagles during the design phase.

The FDOT will further evaluate the need of noise walls at the three impacted noise sensitive sites during the design phase.

During the design phase, a geotechnical evaluation will be conducted of specific pond sites for potential of sinkhole development. Should the results of the geotechnical study indicate a potential for ground water contamination as a result of pond construction/operation, the FDOT will coordinate with the SWFWMD during the permitting of such sites.

During the construction phase, the contractor will be required to maintain access to all businesses during normal business hours.

There is an identified need for transit in this corridor, as well as a commitment to fund a transit route in this location, as indicated in the 2002 Transit Development Plan as well as in the MPO's Cost Feasible Long Range Transportation Plan, which identifies a commitment to fund a transit route at this location. Future transit service needs will be evaluated during the project's design phase. In addition, it is noted that the proposed typical sections include border widths of sufficient width to accommodate future bus turnouts and bus stops.

1.2 Recommendations

It is recommended that additional pavement widening be considered at all locations where motorists are expected to make U-turns, to facilitate this movement, especially in the segments with four thru lanes.

SECTION 2 - INTRODUCTION

2.1 Project Development & Environment Study Process

The objective of the Project Development and Environment (PD&E) Study process is to provide the documentation necessary to reach a decision on the type, conceptual design, and specific location of the improvements identified as being needed. Factors considered include transportation needs, socioeconomic and environmental impacts, and engineering requirements. In general terms, the process involves the following steps:

(1) the establishment of project need
(2) the gathering and analysis of detailed information regarding the natural and cultural features of the study area
(3) the development of a number of alternatives for meeting the project need
(4) the selection of a Preferred Alternative, and
(5) documenting the entire process in a series of reports

During the process, communication with the affected public is accomplished directly, through public meetings, and indirectly, through interaction with elected officials and agency representatives.

Prior to the beginning of the PD&E Study phase, the project was entered into the Department's Efficient Transportation Decision Making (ETDM) system. An ETDM *Planning Screen Summary Report* was published on September 23, 2005 under ETDM #3104, and a *Programming Screen Summary Report* was published on August 17, 2006 under ETDM #6651. The Federal Highway Administration has determined that the project qualifies as a Type 2 Categorical Exclusion.

2.2 Purpose of Report

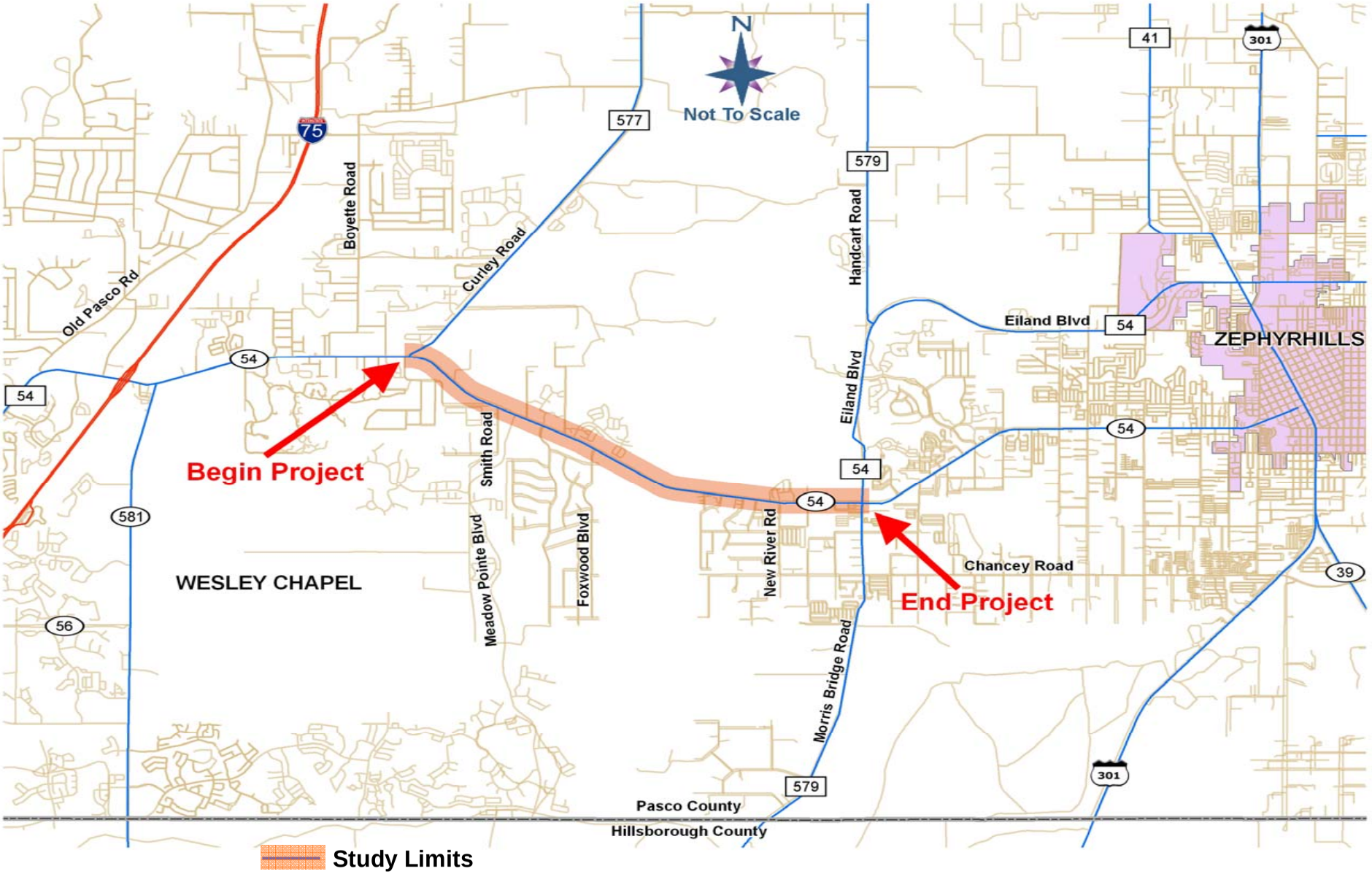
The purpose of this report is to document the engineering and environmental analysis performed to support decisions related to project alternatives. In addition, it summarizes existing conditions, documents the purpose of and need for the project, and documents other data related to preliminary design concepts. These preliminary design concepts establish the functional or conceptual requirements that will be the starting point for the final design phase.

2.3 Project Description

The Florida Department of Transportation (FDOT) conducted a PD&E Study to evaluate alternative improvements along State Road (SR) 54, from CR 577 (Curley Road) to CR 579/CR 54 (Morris Bridge Road), in southeast Pasco County (**Figure 2-1**). A Study Area map is shown in **Figure 2-2**. An aerial photograph of the project area is shown in **Figure 2-3**.

The west end of the study area is located in Wesley Chapel, an unincorporated census-designated place. The project is located within Sections 9, 10, 13, 14, & 15, Township 26 S, and Range 20 E and Section 18, Township 26 S, Range 21 E. The total length of the proposed project limits is approximately 4.5 miles. The segment to the west, from I-75 to east of CR 577, is currently programmed by Pasco County for widening from two to six lanes.

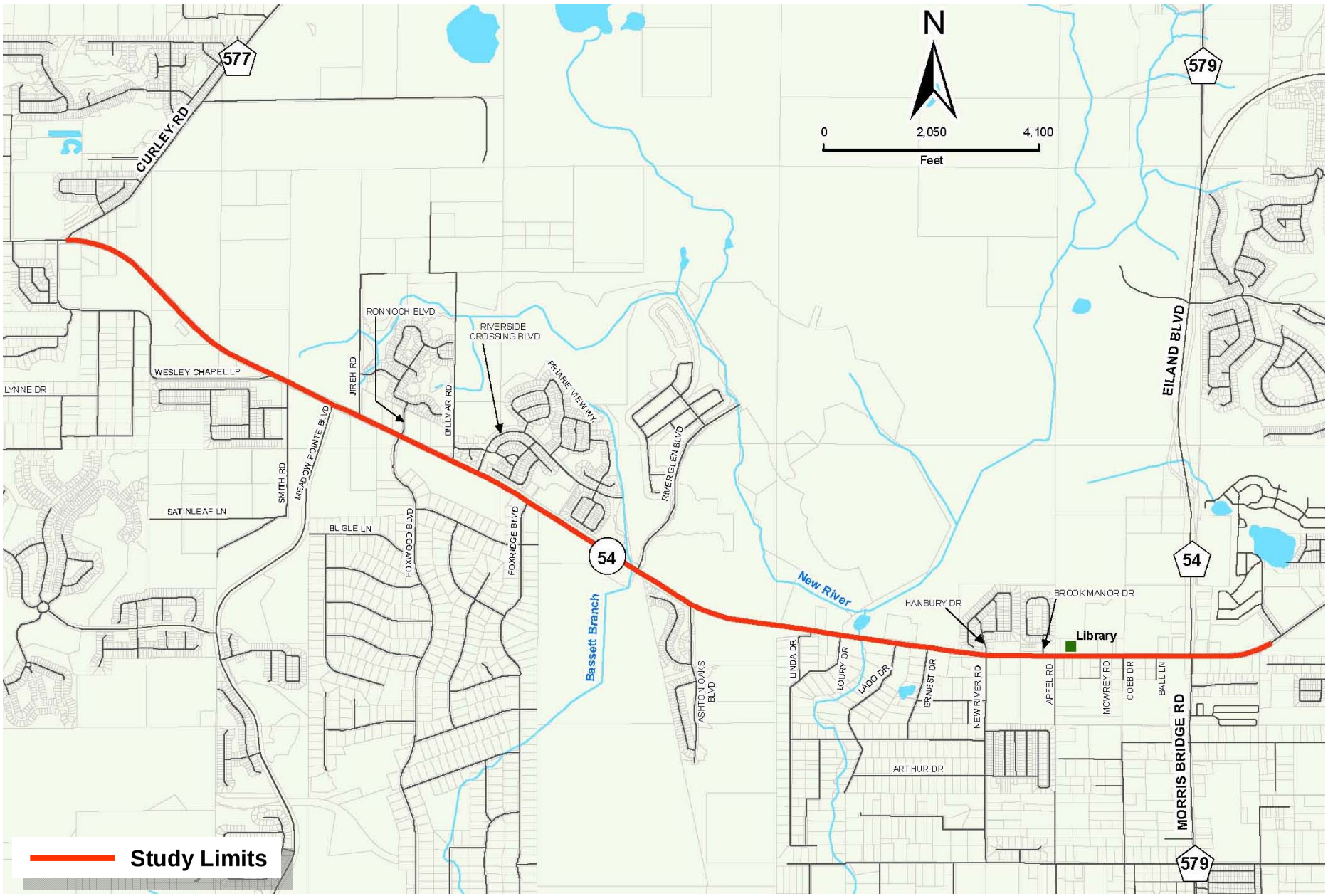
The purpose of the proposed project is to provide a higher capacity and safer facility to better meet future transportation demand in this rapidly developing area of Pasco County. SR 54 is one of the primary east-west facilities within Pasco County, effectively connecting the eastern and western sides of the county. This corridor is also designated as an emergency evacuation route. The PD&E Study also included the consideration of a No-Build Alternative.



SR 54 PD&E Study
From Curley Road to Morris Bridge Road
Pasco County, Florida
WPI Segment No. 416561-1

SR 54 PROJECT LOCATION MAP

FIGURE 2-1



SR 54 PD&E Study
From Curley Road to Morris Bridge Road
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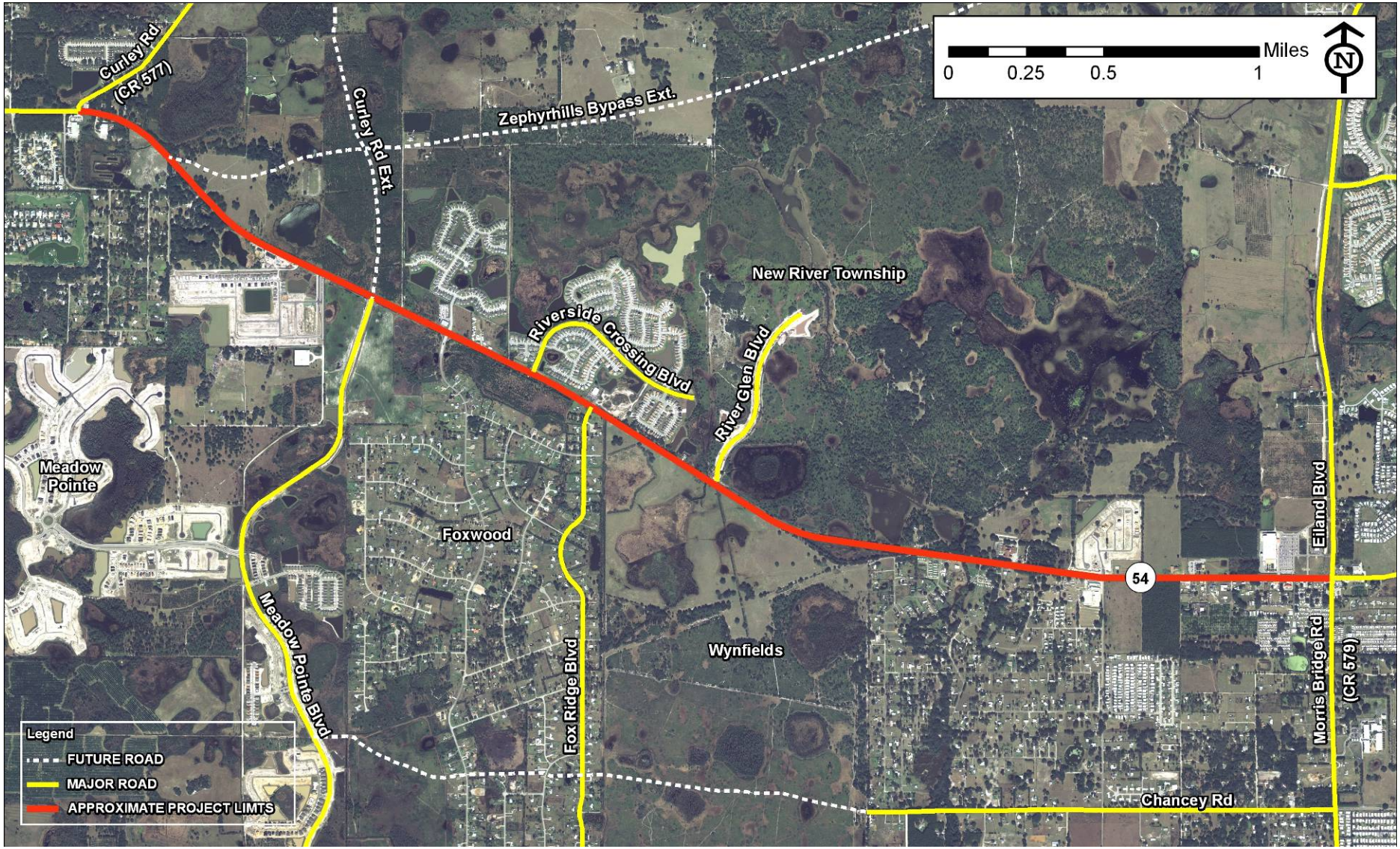
SR 54 PD&E STUDY AREA MAP

Rev. 10/8/07

FIGURE 2-2



February 2007 Aerial Photos

SR 54 PD&E Study
From Curley Road to Morris Bridge Road
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SR 54 PD&E STUDY AREA AERIAL PHOTOGRAPH

FIGURE 2-3

SECTION 3 - NEED FOR IMPROVEMENT

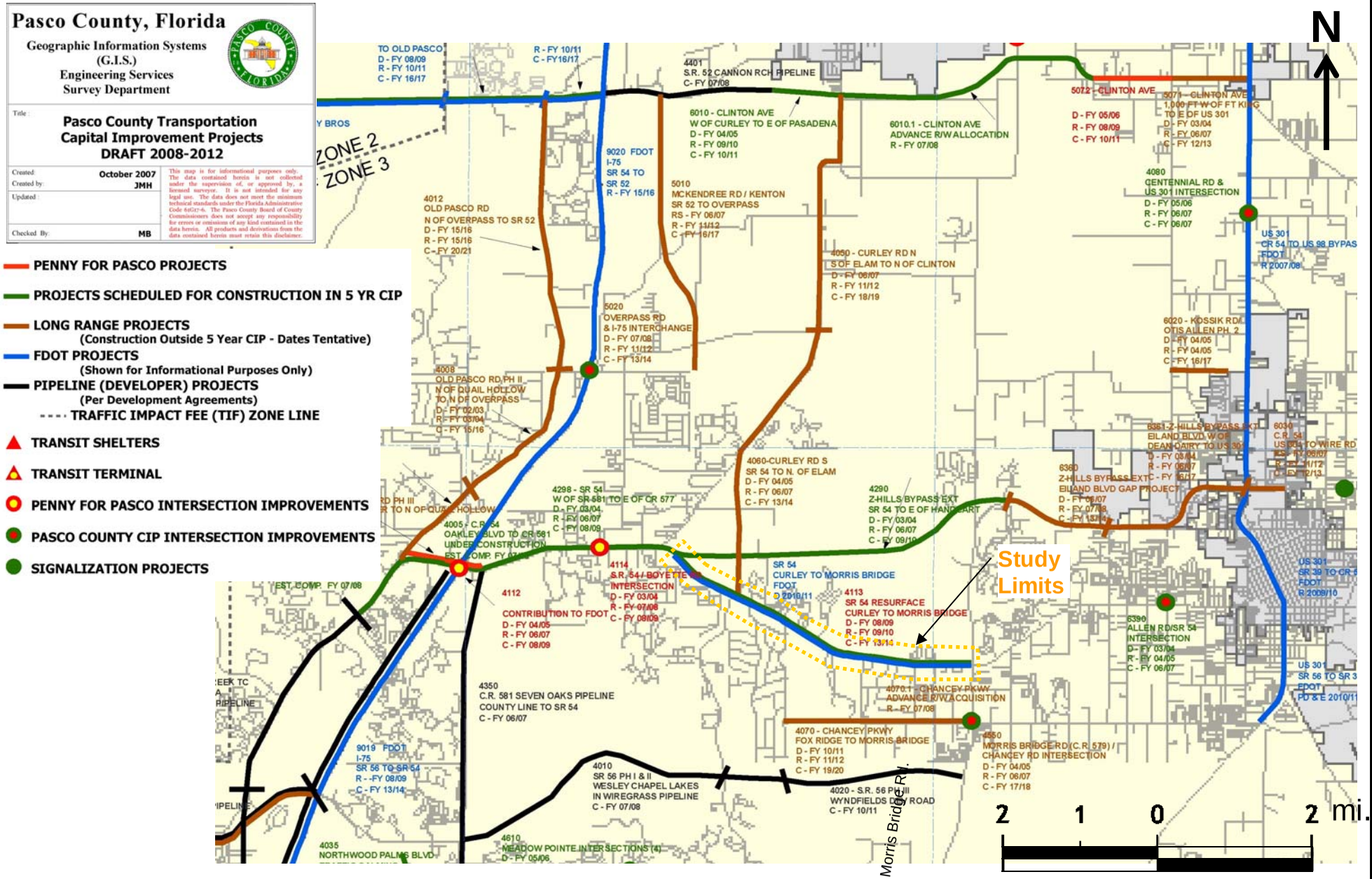
3.1 System Linkage

SR 54 is one of two existing major east-west arterials that connect East Pasco County to West Pasco County. It also serves regional travel and provides a connection between residential developments and shopping and employment centers. SR 54 across Pasco County provides connections to several regional north-south routes including, US 19, Suncoast Parkway, US 41, I-75, US 301, and US 98. Several segments of SR 54 in Pasco County are currently under construction to provide additional lanes; thereby increasing the capacity of this important east-west route. As a part of the regional roadway network, SR 54 is included in the 2025 Regional Long Range Transportation Plan developed by the West Central Florida MPOs' Chairs' Coordinating Committee (CCC). These improvements to SR 54 would enhance the overall transportation network that links Pasco County to the entire Tampa Bay region. **Figure 3-1** shows the proposed project location in relation to the county and state highway network, in addition to other proposed county roadway and intersection improvement projects.

3.2 Transportation & Socioeconomic Demand

Traffic volumes on SR 54 are expected to steadily increase due to approved population and employment growth along the corridor. There are two approved Developments of Regional Impact adjacent to SR 54: New River Township and Wesley Chapel Lakes, in addition to numerous master planned unit developments (MPUDs), as shown in **Figure 3-2.** Per the socio-economic data used in the development of the Pasco County 2025 LRTP, the population from 2000 to 2025 is expected to grow from 2,744 to 21,323 people (an increase of 18,579 or 677 percent). Employment is also expected to increase from 1,400 to 5,269 (an increase of 3,869 or 276 percent) along Traffic Analysis Zones adjacent to SR 54. Overall, the Pasco County population is expected to reach 624,600 in 2025, up from 339,303 in 2000.

In 2006, SR 54 from Curley Road to Morris Bridge Road carried approximately 25,000 vehicles per day (vpd) east of Meadow Pointe Boulevard. By 2030, this same segment is expected to carry approximately 36,000 vpd. Based on FDOT's LOSPLAN 2007 software, the existing level of service (LOS) ranges from D to F depending on the segment studied. With the proposed improvements to widen this roadway to four lanes, the overall arterial LOS for year 2030 is projected to be LOS C. Without improvements, the entire facility is expected to operate at LOS F by year 2021.



SR 54 PD&E Study
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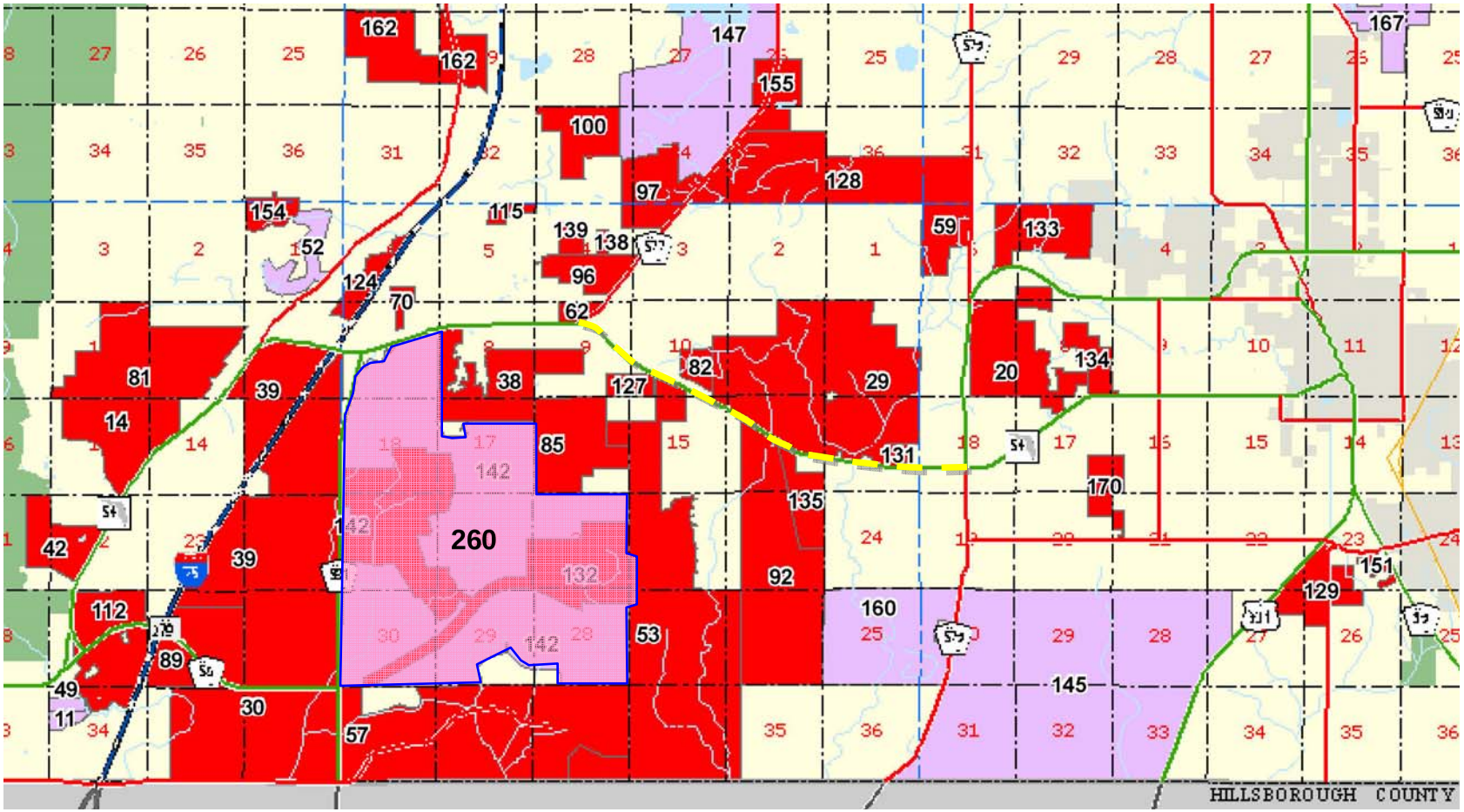
SYSTEM LINKAGE AND COUNTY CIP PROJECTS

FIGURE 3-1



Selected DRIs and MPUDs Near Study Area

20 Lake Bernadette
29 New River
30 Northwood
38 Saddlebrook
39 Seven Oaks
53 Wesley Chapel Lakes
57 Meadow Pointe
82 Aberdeen Lakes
85 Country Walk
92 Wyndfields
96 Chapel Pines
112 Cypress Creek Town Center
127 Ashley Pines
131 Hamilton Park
132 Wiregrass MPUD
135 Ashton Oaks
142 Wiregrass MPUD
145 Two Rivers DRI
147 Epperson Ranch (Proposed)
160 River Landing (Proposed)
260 Wiregrass Ranch DRI

Legend

Approved
Proposed
Study Limits

Pasco County, Florida
Geographic Information Systems (G.I.S.)
Engineering Services
Survey Department

MPUD & DRI MAP
MASTER PLANNED UNIT DEVELOPMENT
DEVELOPMENT OF REGIONAL IMPACT

Growth Management
Revised: May 18, 2007

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DRI's AND MPUD's NEAR THE STUDY AREA

FIGURE 3-2

The planned widening of SR 54 between Curley Road and Morris Bridge Road is part of an overall plan to improve access and relieve traffic congestion on parallel facilities such as SR 52. Safety, emergency access, and truck access will all be enhanced through this improvement.

3.3 Consistency with Transportation Plan

This project is consistent with the Pasco County Metropolitan Planning Organization (MPO) 2025 Long Range Transportation Plan (LRTP), adopted December 9, 2004, and the Transportation Element of the Comprehensive Plan (**Figure 3-3**). In addition, the county has developed a "corridor preservation plan" which designates future right of way needs for county roads. SR 54 is designated to require 220 feet of right of way west of Meadow Pointe Boulevard and 166 feet of right of way east of Meadow Pointe Boulevard, as shown in **Figure 3-4**.

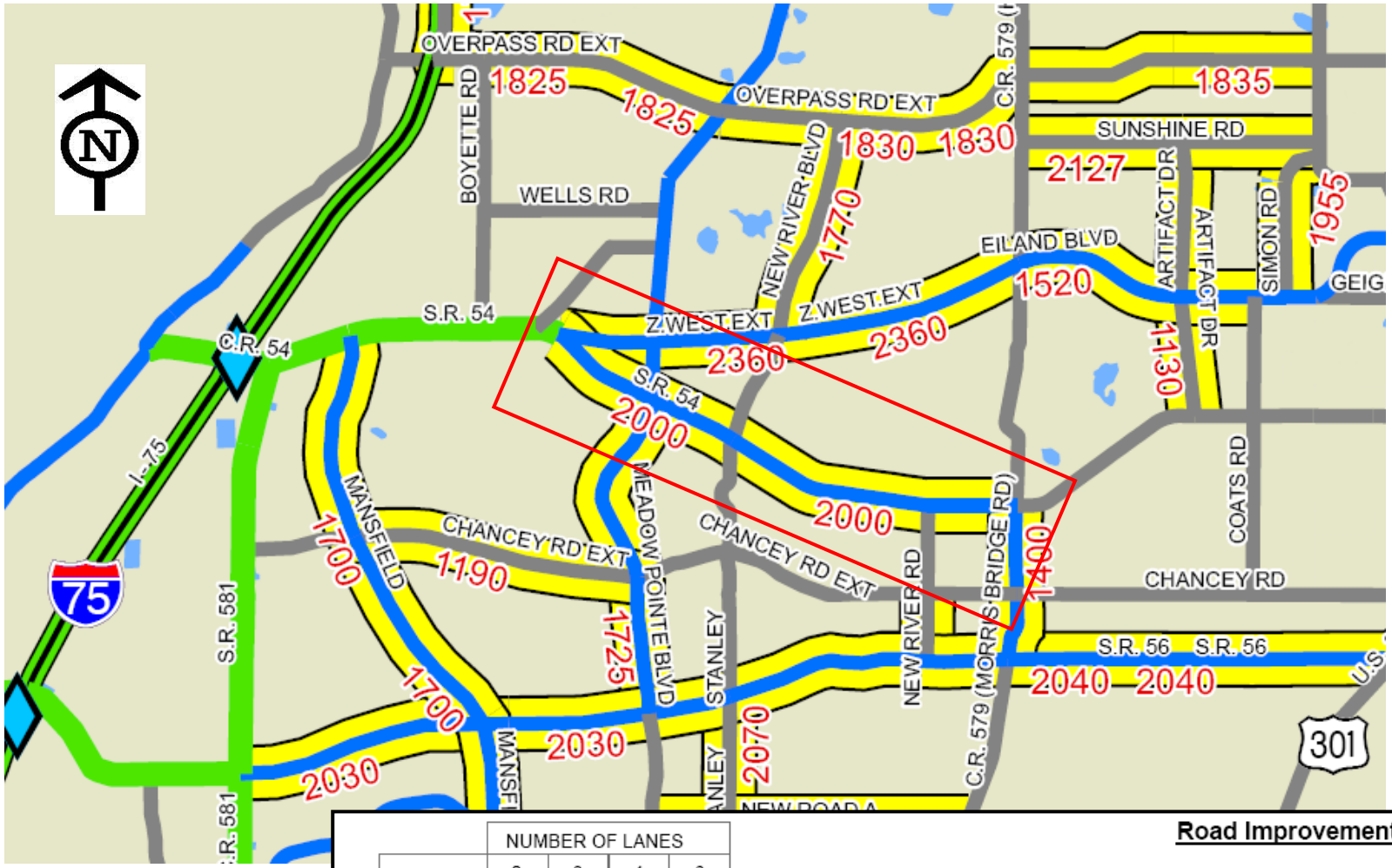
3.4 Modal Relationships

There are no existing transit routes along the project corridor, but future local transit service is proposed according to the Pasco County 2025 LRTP. In addition, Pasco County's May 2005 Five-Year Transit Development Plan (2006-2010) proposes to implement limited cross-county connector service on SR 54. Therefore, the FDOT will coordinate with Pasco County regarding potential transit amenities needed during the project development and design phases of the project. Access to intermodal facilities is an important consideration in the development of the Pasco County transportation system. The county's Comprehensive Plan identifies SR 54 as an existing truck route - highways that carry the majority of freight and goods in Pasco County. Improvements to SR 54 will also enhance access to two general aviation facilities and to activity centers in the area.

Pasco County's Comprehensive Plan identifies SR 54 as a "future/conceptual corridor" for a trail. Currently, there are paved shoulders for use by bicyclists but no sidewalks along the project corridor. The proposed improvements would include sidewalks, bike lanes, and a multiuse "trail" on one side.

3.5 Safety

Traffic crash data were reviewed and summarized for years 2001 through 2005, inclusive. During the 5-year analysis period, a total of 200 crashes were reported on SR



ROAD TYPE	NUMBER OF LANES 2	3	4	6
One-Way				
Undivided				
Divided				
Freeway				

Road Improvements

Existing Interchange

Add Lanes

Study Area

Source: Pasco County MPO
LRTP, Map 3-7

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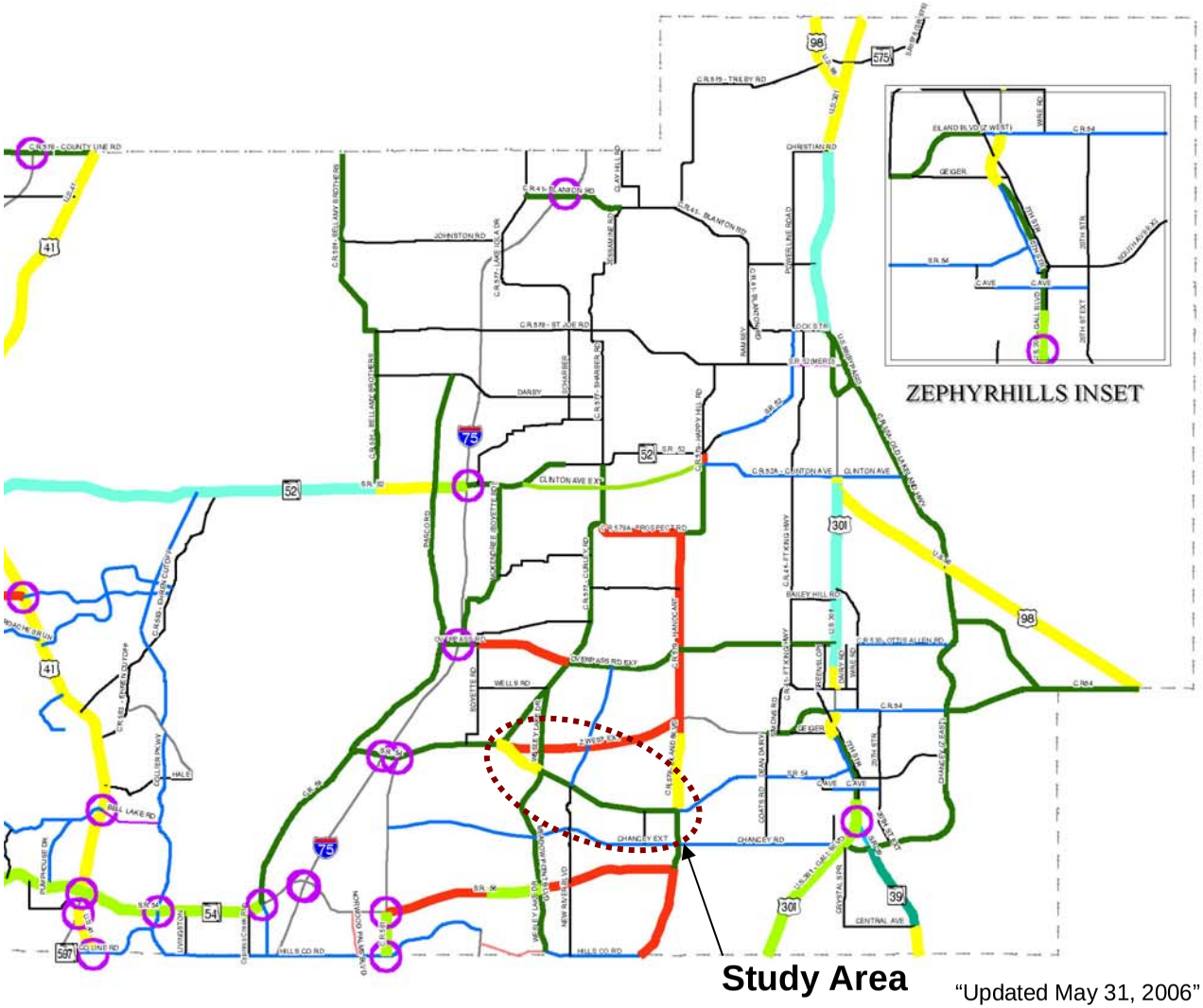
PASCO COUNTY MPO'S YEAR 2025 LRTP COST AFFORDABLE PLAN (2016-2025)

FIGURE 3-3



THE COMPREHENSIVE PLAN
OF UNINCORPORATED
PASCO COUNTY

MAP # 7-35

TRANSPORTATION CORRIDOR
PRESERVATION

PROPOSED CORRIDOR WIDTH (FEET)

- 80
- 100
- 135
- 142
- 150
- 166
- 168
- 172
- 190
- 200
- 214
- 220
- 225
- 235
- 250

EXISTING RIGHT-OF-WAY IS ADEQUATE

HIGH VOLUME INTERSECTION

PASCO COUNTY BOUNDARY

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From Curley Road to Morris Bridge Road
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PASCO COUNTY TRANSPORTATION CORRIDORS

FIGURE 3-4

54 within the study limits.

Safety along the SR 54 corridor will be enhanced due to the provision of turn lanes, access control through construction of a 22-30 ft raised median, and additional through lanes. Roadway congestion will be reduced, thereby decreasing potential conflicts with other vehicles. The provision of additional lanes will also help SR 54 fulfill its role as a designated hurricane evacuation route.

SECTION 4 - EXISTING CONDITIONS

4.1 Existing Roadway Characteristics

Photos of the existing roadway at various locations within the study area are included in **Figure 4-1** on the following page.

4.1.1 Functional Classification and Access Management

SR 54 is currently classified as *Other Urban Principal Arterial* from west of the project limits to Smith Road and from west of New River Road to east of the project limits. The roadway is classified as a *Rural Principal Arterial Other* from Smith Road to west of New River Road, according to FHWA's 2000 Urban Boundaries/Functional Class map. The existing highway is presently classified as "Access Management Class 3" according to FDOT's Roadway Characteristics Inventory (RCI) database. Design standards for this access class are included in Section 5. This roadway is *not* on Florida's Intrastate Highway System (FIHS). FDOT's straight line diagram is shown in **Figure 4-2** (follows Figure 4-1).

4.1.2 Typical Sections and Speed Limits

The existing roadway has a two-lane rural typical section with 12-ft travel lanes and 5-ft paved shoulders in most areas (**Figure 4-3**). Several areas have been widened to provide left-turn and right-turn lanes. Five-foot (5-ft) paved shoulders are present for the entire length of the project limits. Beginning at the west end, the speed limit is 55 miles per hour (MPH) between Curley Road and Linda Drive, and 50 mph between Linda Drive and Morris Bridge Road.

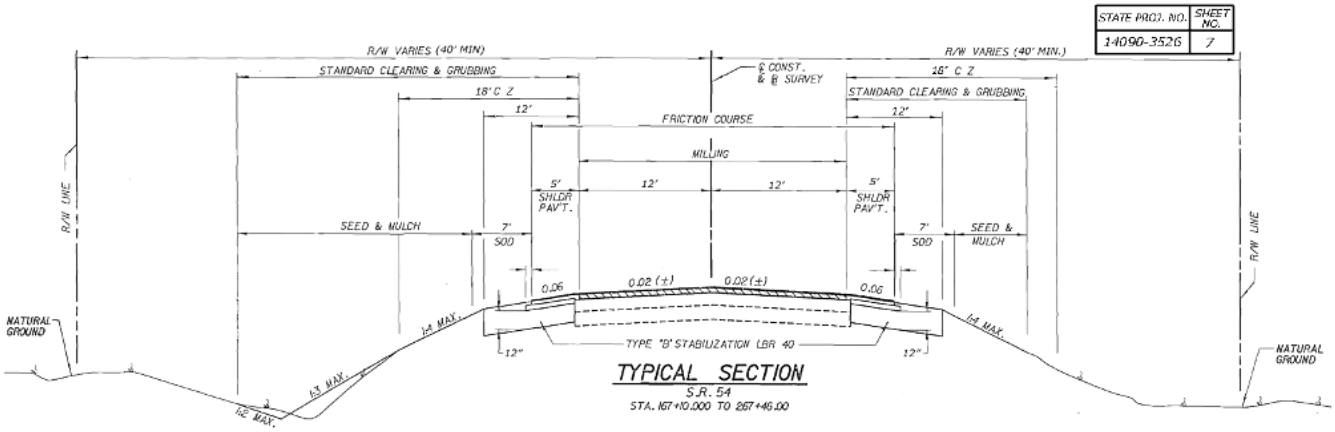
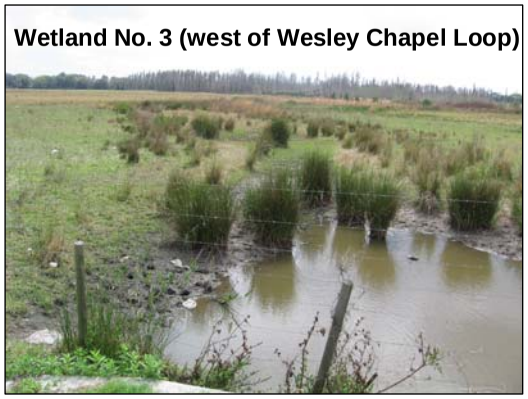


FIGURE 4-3: EXISTING SR 54 TYPICAL SECTION

Culvert Near River Glen Boulevard



SR 54 At Morris Bridge Road, Looking West

Triple Box Culvert at New River

West of Morris Bridge Road, Looking East

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PHOTOS OF EXISTING CONDITIONS

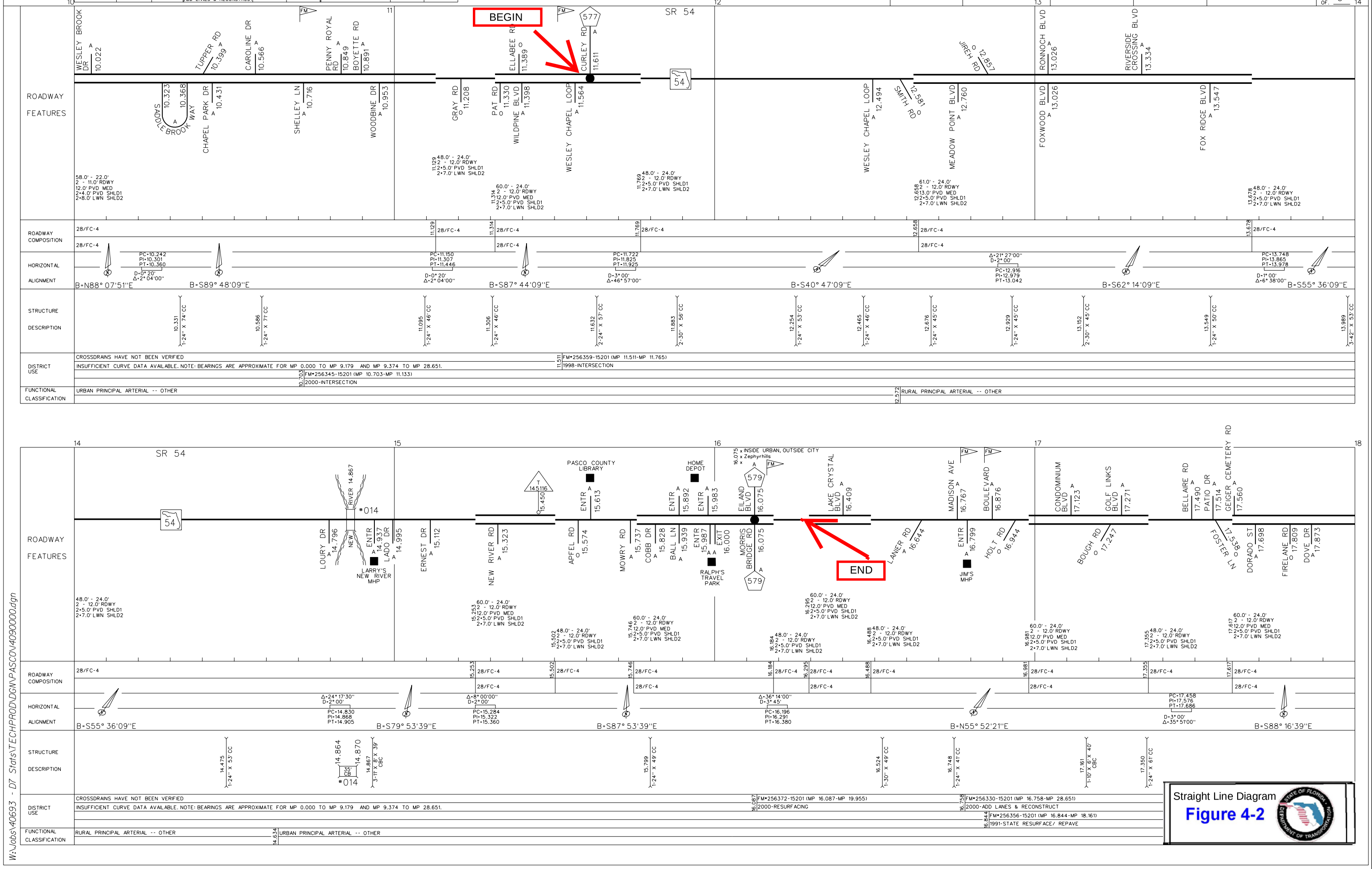
FIGURE 4-1

INTERIM REVISIONS						INTERIM REVISIONS				
	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	04/04/2002	04/26/2002	0.028	1.557	07/27/2005	10/14/2005	0.000	28.651	N/A	11/04/2005
BY	URS/DGW&PWM	TEI/HFN	FM• 256338-15201		URS/TAC&TAT	HNTB/RWB	FIX ERRORS			HNTB/RWB
			ADD LANES & RECONSTRUCT							

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

FLORIDA DEPARTMENT OF TRANSPORTATION

INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	SECTION	SHEET
	SR 54	PASCO	7	14 090 000	NO. 2 OF. 3



W:\Jobs\40693 - D7 Stats\TECHPRODDGN\PASCON4090000.dgn

Straight Line Diagram

Figure 4-2

4.1.3 Pedestrian and Bicycle Facilities

There are presently no sidewalks within the study limits. Five (5) ft paved shoulders are present throughout the project limits for use by bicyclists. The SR 54 corridor is designated as a "future/conceptual corridor" for a multiuse trail according to the county's Comprehensive Plan (**Figure 4-4**).

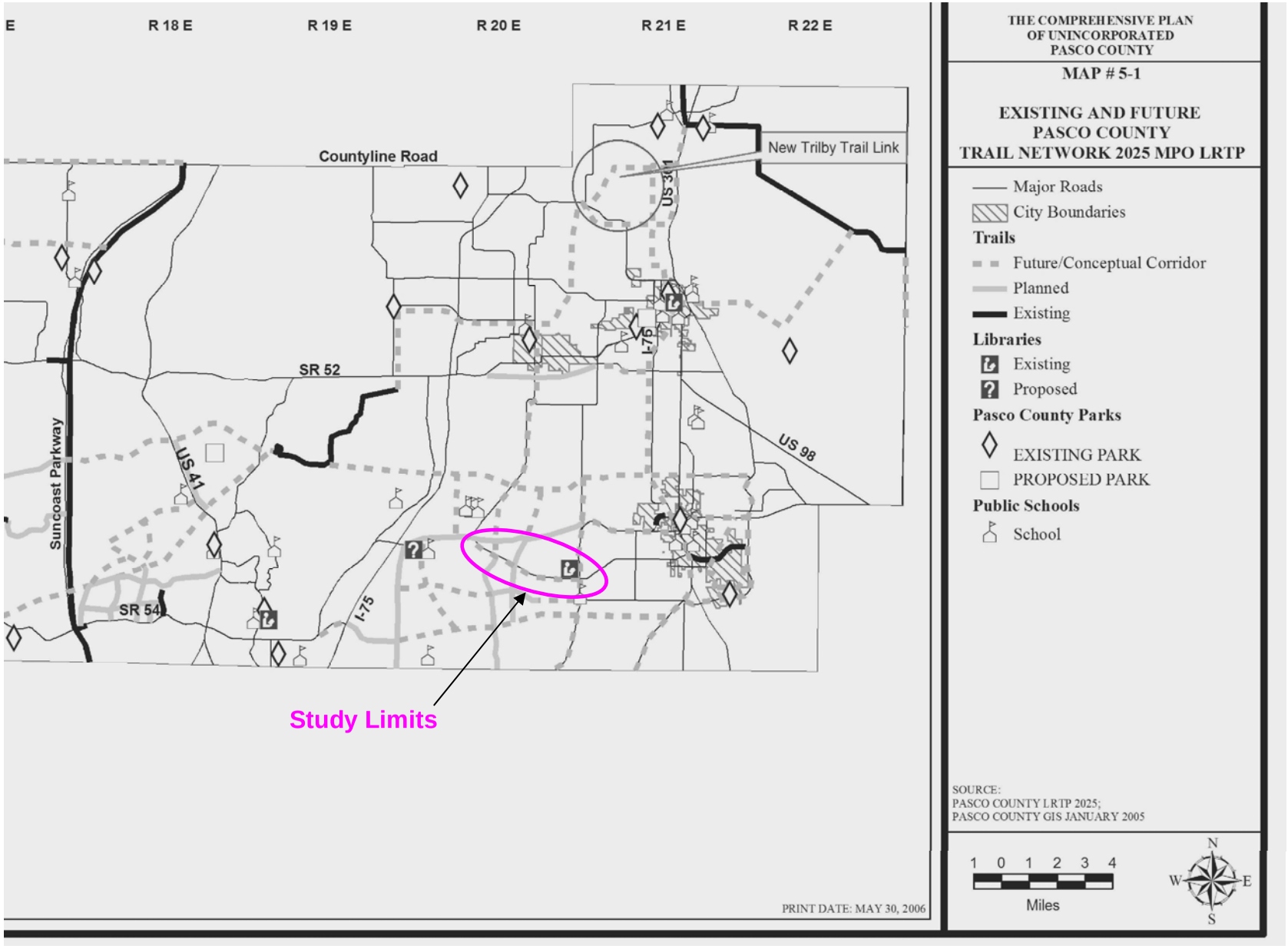
4.1.4 Right-of-Way

The existing right-of-way typically varies between 80 ft and 100 ft. In addition, the County has obtained (or will obtain) "reserved" right-of-way which is being donated by developers as a stipulation of development approvals and rezoning conditions. Known developer commitments are shown in **Table 4-1.**

Table 4-1. Pasco County Developer Right of Way Commitments

Pasco County MPUD/ DRI Map #	Project and/or Development Name	Project Type	Station		Side LT/ RT	Distance Adjoining SR54		ROW Dedication from SR 54 C/L (ft)			
			Begin	End		(ft.)	(mi.)	Per MPUD/DRI Order		Per Plat	
								Rural Section	Urban Section	Rural Section	Urban Section
127	Ho (aka Ashley Pines)	MPUD	693+36	694+41	RT	105	0.02	20		75	
53	Wesley Chapel Lakes (aka Meadow Point III/IV)	MPUD/ DRI #166	696+19	714+69	RT	140	0.03	80			
						1,107	0.21	80			
						463	0.09	80			
82	Aberdeen Lakes	MPUD	718+30	716+67	LT	164	0.03	80			
29	New River/Flag Development Company	MPUD/ DRI #119	789+42	896+60	LT	859	0.16	200	148	105	
						691	0.13	200	148	105	
						3,980	0.75	200	148	105	
						2,035	0.39	200	148	105	
						1,992	0.38	200	148	105	
92	Wyndfields - Schickendanz	MPUD	808+58	830+35	RT	2,168	0.41	20			
135	Houck Property/The Crossings (aka Ashton Oaks)	MPUD	832+03	843+58	RT	1,165	0.22	71			
131	Parkview - Serino (aka Hamilton Park)	MPUD	896+60	901+33	LT	572	0.11		60		60

Note: locations of Pasco County MPUD/DRIs are shown in Figure 3-2.



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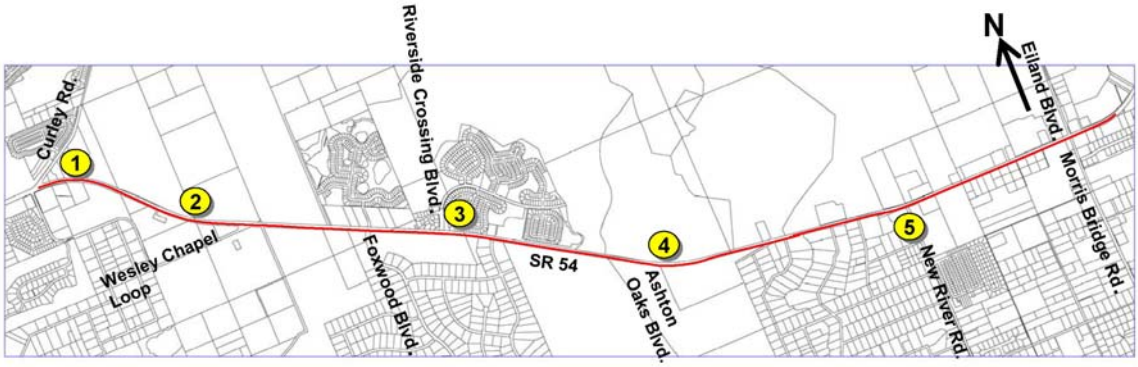
EXISTING & FUTURE PASCO COUNTY TRAIL NETWORK

FIGURE 4-4

4.1.5 Horizontal Alignment

There are a total of 5 horizontal curves within the study limits. Data for the existing horizontal curves is included in **Table 4-2**. The existing alignment meets 60 to 65 mph design speed requirements for a rural typical section.

Table 4-2: Existing Horizontal Curves



Curve No.	P.I. Station	Curve Radius (ft)	Degree of Curve	Super-elevation	Max. Speed per PPM	Max Speed AASHTO
1	651+99.83	1909	3 deg 0 min	0.08	60	65
2	679+35.26	2865	2 deg 0 min	0.058	60	65
3	800+00.79	5730	1 deg 0 min	0.031	60	65
4	846+76.95	2865	2 deg 0 min	0.058	60	65
5	899+73.51	2865	2 deg 0 min	0.058	60	65

4.1.6 Vertical Alignment

Ground elevations vary from about elevation 85 feet at New River to elevation 100 feet near Morris Bridge Road (map datum NGVD 1929- USGS Map for Wesley Chapel with 5-ft contour intervals). In the low areas, the roadway is several feet higher than the ground elevation. In general, the grades are generally flat and are estimated to range between 0.0 percent and 0.3 percent. As-built plans for the original construction were not available. No bench line survey was conducted as part of this PD&E Study.

4.1.7 Drainage and Floodplains

The project lies in the Zephyrhills Gap of the Gulf Coastal Lowlands between the Brooksville Ridge and the Polk Upland. The topography of the project area consists of relatively flat plains. The Gulf Coastal Lowlands is an area of intensive karst

development, which is characterized by numerous sinkholes and a lack of surface drainage.

The existing condition consists of a roadway with associated intermittent shallow swales and/or flow from the roadway and shoulders directly into depressional areas or adjacent wetlands that discharge to their respective sub-basins and ultimately to the Hillsborough River, which outfalls to Tampa Bay. There are existing off-site drainage areas that contribute direct runoff to the FDOT right-of-way. These areas discharge to the existing roadside swales and/or concrete ditches and then outfall to their respective receiving waters. There are no stormwater detention or retention facilities that serve the roadway within the project limits.

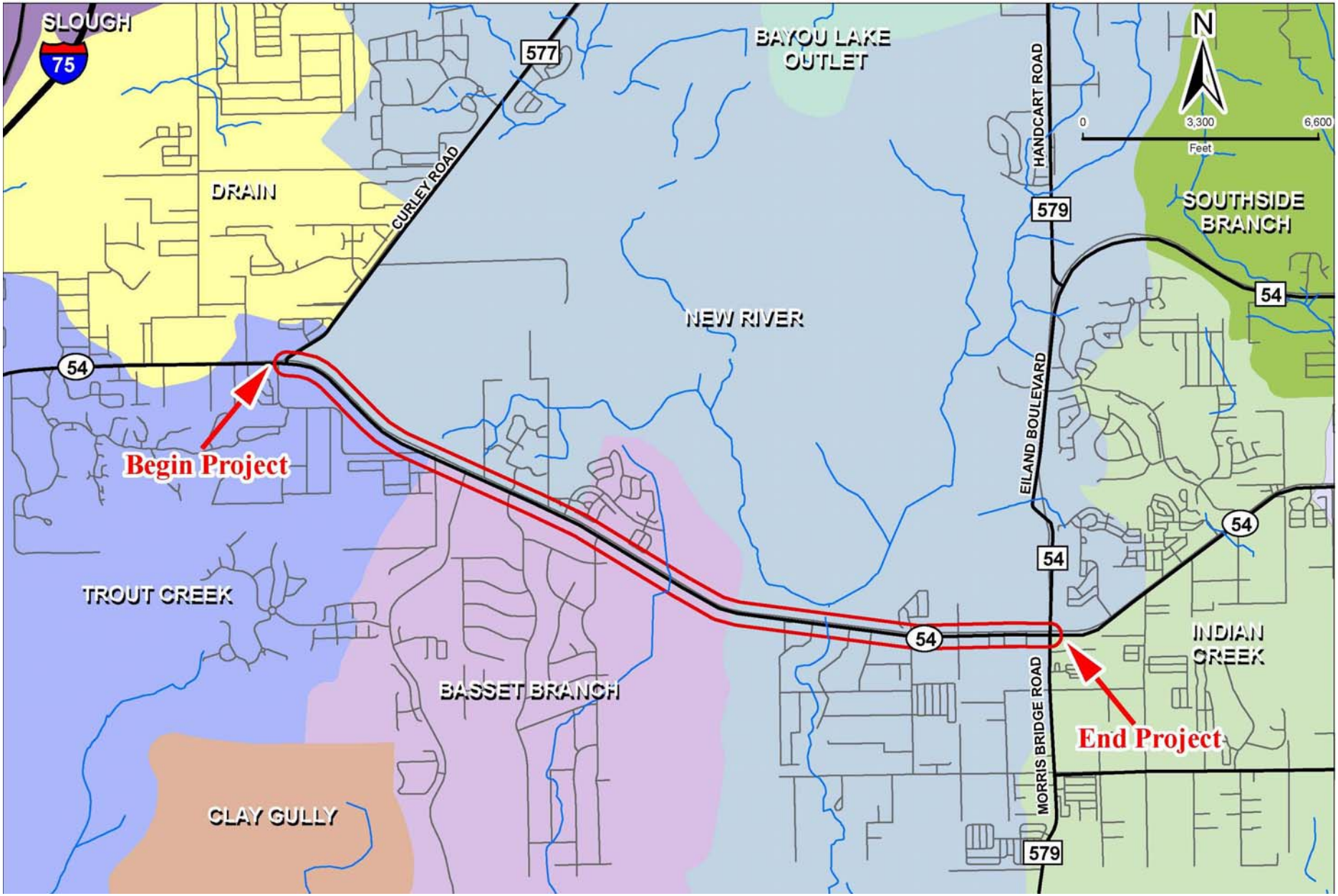
From west to east (i.e., begin to end project), SR 54 falls within or is adjacent to the following drainage basins (**Figure 4-5**):

- Upper East Cypress Creek
- Trout Creek
- Basset Branch
- New River
- Indian Creek

The project area is further subdivided into 10 roadway subbasins, which were determined by the existing cross-drains and high points along the roadway (see **Appendix A**). There are 12 cross drains within the study limits including a bridge culvert (Bridge No. 140014) that is located at the New River crossing. **Table 4-3** provides a list and description of existing cross drains along SR 54 within the study area.

Table 4-3. Existing Cross Drains
(shaded rows = floodplain involvement)

Structure Number	Station (ft)	Type of Drainage Structure	Number of Barrels	Length (ft)	Flow Direction	Basin Area (ac)
1	645+38.6	24-inch RCP	2	70.1	N-S	N/A
2	658+63.9	30-inch RCP	2	56.0	N-S	N/A
3	678+22.8	24-inch RCP	1	78.0	N-S	NA/
4	689+36.9	24-inch RCP	1	78.4	S-N	4.50
5	700+51.0	24-inch RCP	1	98.3	S-N	5.36
6	713+86.8	24-inch RCP	1	91.1	S-N	3.91
7	725+64.2	30-inch RCP	2	77.7	S-N	8.62
8	806+06.0	24-inch RCP	1	50.0	S-N	2.97
9	***829+29.2***	***42-inch RCP***	***3***	***83.4***	***N-S***	***16.39***
10	854+95.3	24-inch RCP	1	64.6	S-N	8.63
11	***875+65.1***	***11-ft x 8-ft CBC***	***3***	***57.2***	***N-S***	***15.43***
12	924+86.0	24-inch RCP	1	76.8	S-N	14.14



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EXISTING DRAINAGE BASINS

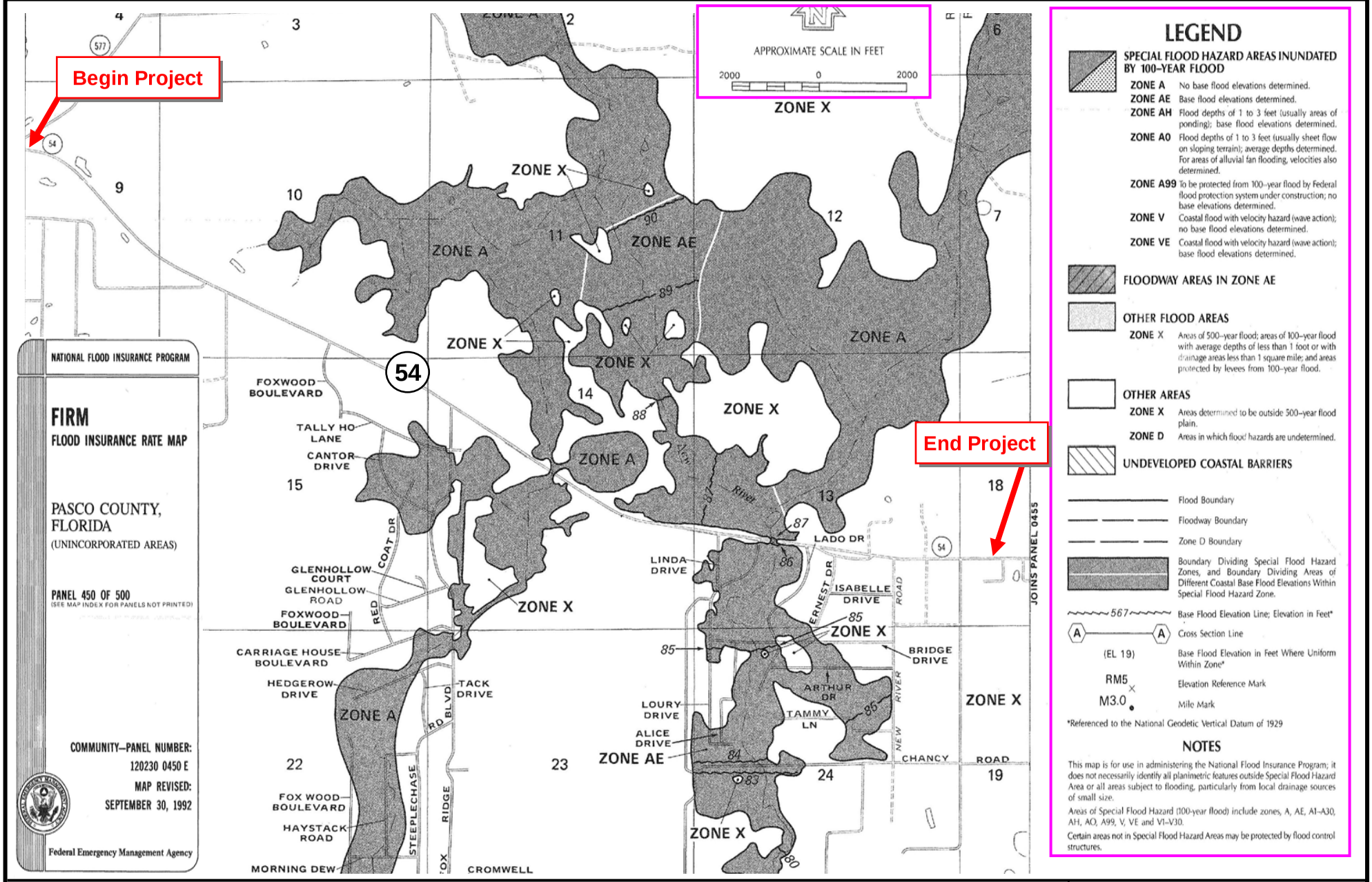
FIGURE 4-5

Within the project area, the Trout Creek basin is comprised of forested wetlands, which eventually drain to the Hillsborough River. Basset Branch is conveyed under SR 54 via triple 42-inch reinforced concrete pipes (RCP) and flows to swamps that are associated with the Hillsborough River. New River conveys flow through a bridge culvert under SR 54 in a well-defined, narrow channel to swamps that are also associated with the Hillsborough River. Trout Creek, Basset Branch, and New River are open basins that drain the project area and are tributaries to the Hillsborough River, which is designated an Outstanding Florida Water (OFW).

Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Pasco County (unincorporated), Florida, community panel number 120230 0450E (dated September 30, 1992), shown in **Figure 4-6**, indicates that there are two areas where the 100-year floodplain crosses SR 54. The Bassett Branch crossing is located within Zone A, a special flood hazard area that is inundated by a 100-year flood and where no base flood elevation has been determined. The New River crossing is located within Zone AE, a special flood hazard area that is inundated by a 100-year flood and where the base flood elevation has been determined [87 ft National Geodetic Vertical Datum (NGVD), upstream; and 86 ft NGVD, downstream of the triple box culvert]. Therefore, any of the build alternatives will have floodplain involvement. There are no regulated floodways within the project limits.

Local maintenance offices having jurisdiction in the project area were contacted to determine the history of flooding problems in the project area. A representative with the FDOT Brooksville Maintenance Office said that there is no record of SR 54 overtopping and/or water on the roadway along the project limits during the past 30 years. After the 2004 hurricanes, there was standing water in most of the fields up to the shoulders in some areas. A representative from Pasco County Engineering Services/Design & Stormwater Division stated that the New River crossing has episodes of "bad flooding" but that there are no reports of SR 54 being overtopped in that area. After Hurricane Frances in 2004, the mobile home park to the southeast of SR 54 and the New River (**Figure 4-7**) was completely inundated with floodwater; these floodwaters came within two feet of overtopping SR 54. During that same period, there was no flooding to the north of the New River box culvert adjacent to SR 54. This same representative said that this is the only area between Curley Road and Morris Bridge Road that has any flooding issues. In addition, Pasco County has identified several areas on the south side of SR 54 as areas of "observed flooding", as shown in **Figure 4-7**.



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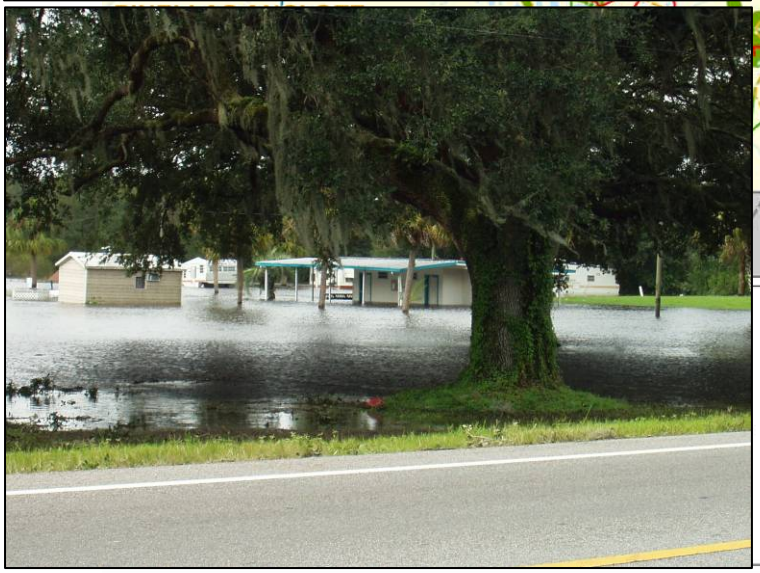
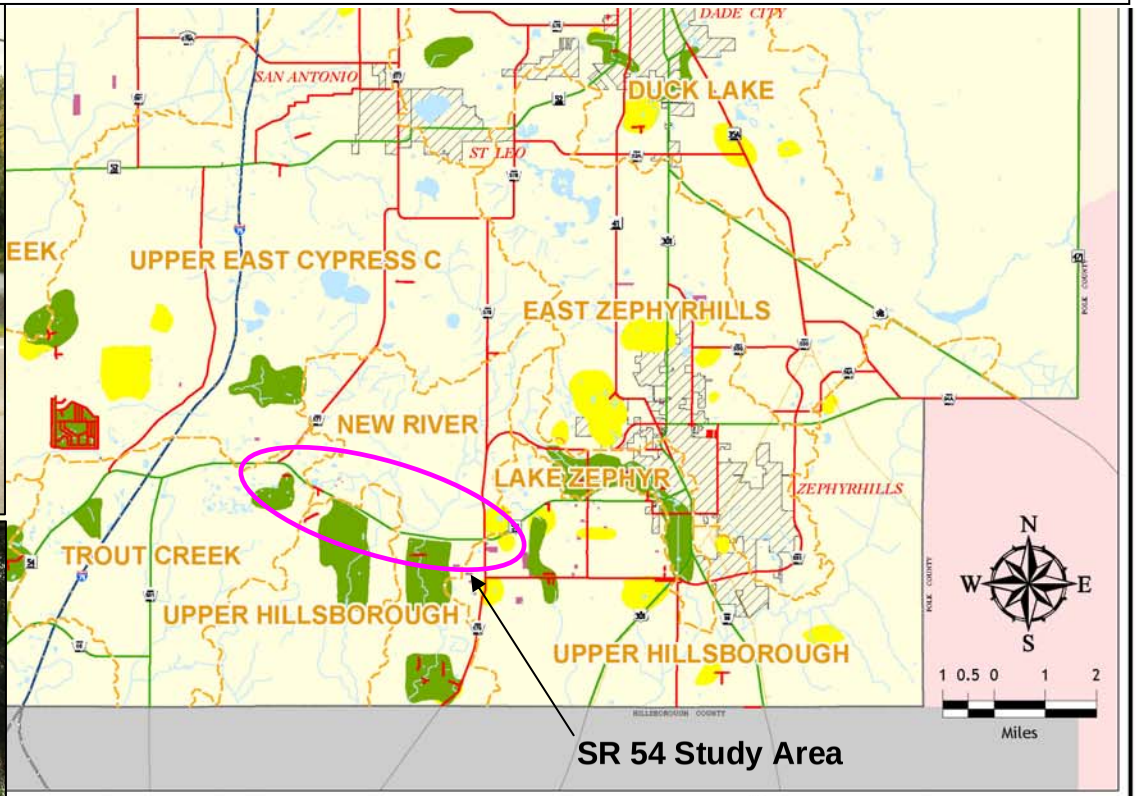
FEMA FLOOD ZONES

FIGURE 4-6

After Hurricane Frances in 2004, the mobile home park on the south side of SR 54 east of New River (see photos) was completely inundated with floodwaters; these floodwaters came within two feet of overtopping SR 54.





Water Shed Boundaries
Stormwater Flooding Areas (EL NINO)
Roadways Frequently Overtopped by Stormwater
Stormwater Flooding Areas (2003)
Stormwater Flooding Areas (Frances)

Pasco County, Florida
Geographic Information Systems (G.I.S.)
Engineering Services
Survey Department

2003 FLOOD PRONE AREAS
Map #2-4a

Created	RAJ Dec 27 2004
Traced	RAJ Dec 27 2004
Checked By	BH

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PASCO COUNTY FLOOD PRONE AREAS

FIGURE 4-7

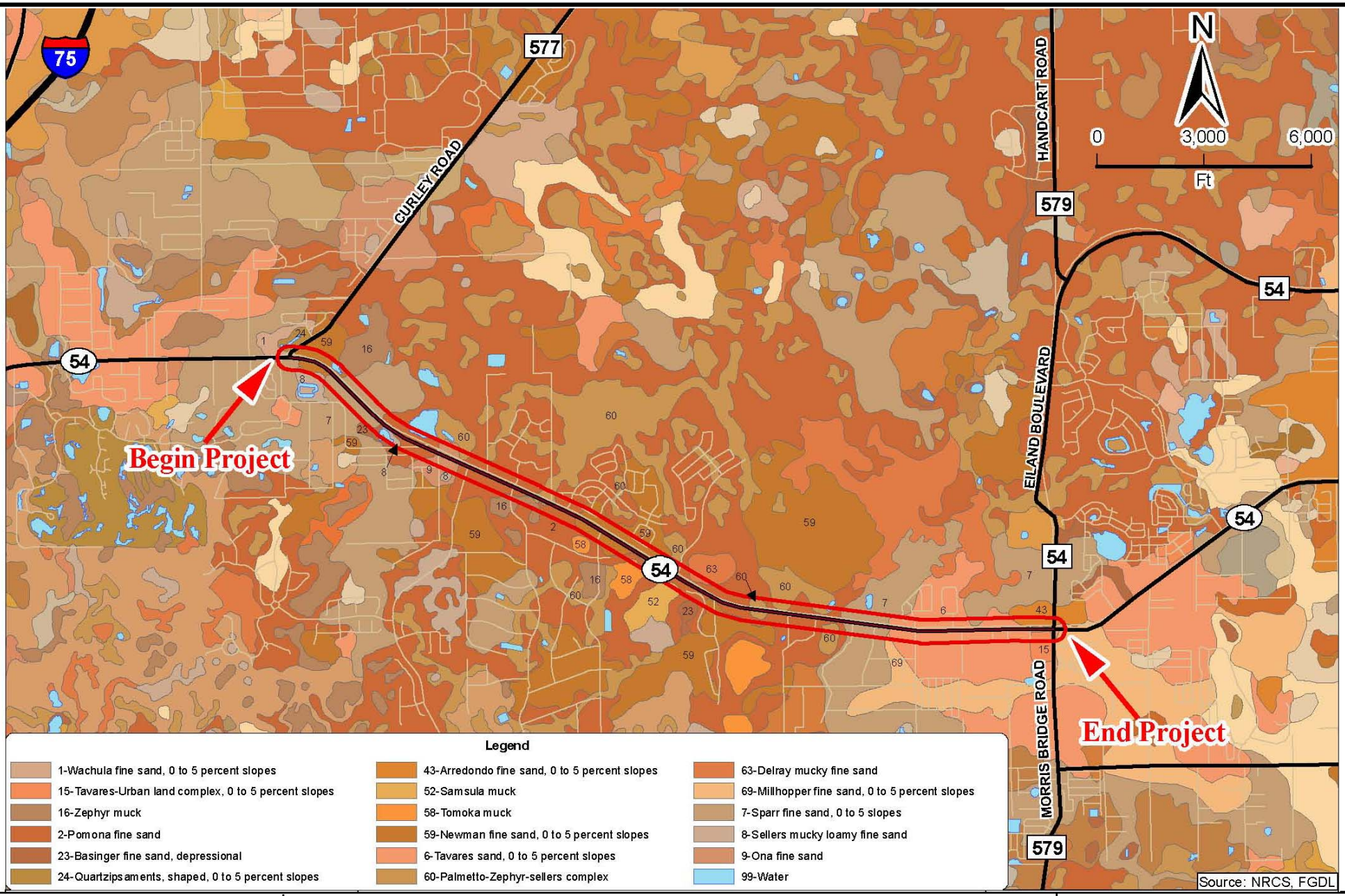
4.1.8 Geotechnical Data

The *Soil Survey for Pasco County* (Reference 4-1) provides general descriptions of subsurface conditions of the county. Pasco County is located in the central or mid-peninsular physiographic region of the Florida Peninsula and is characterized by discontinuous highlands in the form of ridges separated by broad valleys. The Soil Survey indicates that there are multiple soil types that exist within the corridor. These soil types and their identification numbers are as follows: Newman fine sand (59), Pomona fine sand (2), Sparr fine sand (7), Ona fine sand (9), Palmetto-Zephyrs-Sellers complex (60), Sellers mucky loamy fine sand (8), Zephyr muck (16), Basinger fine sand, depressional (23), Arrendondo fine sand (43), Delray mucky fine sand (63), Tavares-Urban land complex (15) and Tavares sand (6). These soils are shown in **Figure 4-8** and described in **Table 4-4.**

Table 4-4. USDA Soils

Map #	Soil Name	Hydrologic Group	Depth to High Water Table (ft)	Soil Type	Description
2	Pomona FS	B/D	0 - 1.0	Fine sandy soil	Nearly level, poorly drained soil on low ridges in flatwoods
6	Tavares Sand	A	3.5 - 6.0	Sandy soil	Nearly level to gently sloping, moderately well drained soils on ridges and knolls
7	Sparr FS	C	1.5 - 3.5	Fine sandy soil	Nearly level to gently sloping, somewhat poorly drained soils on seasonally wet uplands
9	Ona FS	B/D	0 - 1.0	Fine sandy soil	Nearly level, poorly drained soil in broad areas in flatwoods
15	Tavares Urban Land complex	A	3.5 - 6.0	Sandy soil	Nearly level to gently sloping, moderately well drained Tavares soils on low ridges
16	Zephyr Muck	D	+2 - 1.0	Muck/ mucky fine sandy soil	Nearly level, very poorly drained soil in depressions
23	Basinger FS	B/D	+2 - 1.0	Fine sandy soil	Nearly level, poorly drained soil in depressions in flatwoods
59	Newnan FS	C	1.5 - 2.5	Fine sandy soil/ sandy clay loam	Somewhat poorly drained soil on low ridges in flatwoods
60	Palmetto-Zephyr-Sellers complex	D	+2 - 1.0	Fine sandy soil/muck/ mucky loamy fine sandy soil	Nearly level, poorly drained Palmetto soils w/small areas of nearly level, poorly drained Zephyr & Seller soils

FS = Fine Sand



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SOILS MAP

FIGURE 4-8

Approximately 30-40 percent of the soils along the project corridor are classified as hydric. The dominant hydric soil is Ponoma fine sand. Other prominent soils found within the project corridor include Sparr fine sand and Tavares sand, neither of which is listed as hydric soil. A more detailed description of the prominent soils is included below.

- **Pomona fine sand** – Nearly level, poorly drained soil in large areas on low ridges in the flatwoods. Slopes are smooth and concave and range from 0 to 2 percent. In most years, under natural conditions, the water table is within a depth of 10 inches for 1-3 months and is at a depth of 10 to 40 inches for 6 months or more.

- **Sparr fine sand** – Nearly level to gently sloping, somewhat poorly drained soil located on seasonally wet uplands. Slopes are smooth to concave and areas are irregular in shape. This Sparr soil has a water table, commonly perched above the subsoil, at a depth of 20 to 40 inches for 1 to 4 months during most years.

- **Tavares sand –** Nearly level to gently sloping, moderately well drained soil on low level ridges and knolls throughout the county with irregularly shaped areas. In most years, under natural conditions, the water table is at a depth of 40 to 60 inches for 6 to 12 months and below 60 inches during very dry periods.

4.1.9 Crash Data

Traffic crash data were reviewed and summarized for years 2001 through 2005, inclusive. During the 5-year analysis period, a total of 200 crashes were reported on SR 54 within the study limits. A summary of crashes by year is shown in **Table 4-5.**

Table 4-5. Summary of Traffic Crashes by Year

Crash Type	Analysis Year					Total Crashes	Average Per Year
	2001	2002	2003	2004	2005		
Totals	31	31	25	57	56	200	40

4.1.10 Intersections and Signalization

Existing intersection laneage ("geometry") is shown schematically in **Figure 4-9** for the major intersections along SR 54. Most of the major intersections already have left turn storage/refuge lanes on SR 54.

Traffic signals currently exist at Curley Road, Meadow Pointe Boulevard, and Morris Bridge Road. A traffic signal is expected to be installed in the future at the intersection of SR 54 at West Zephyrhills Bypass extension, when the county constructs this new roadway.

4.1.11 Lighting

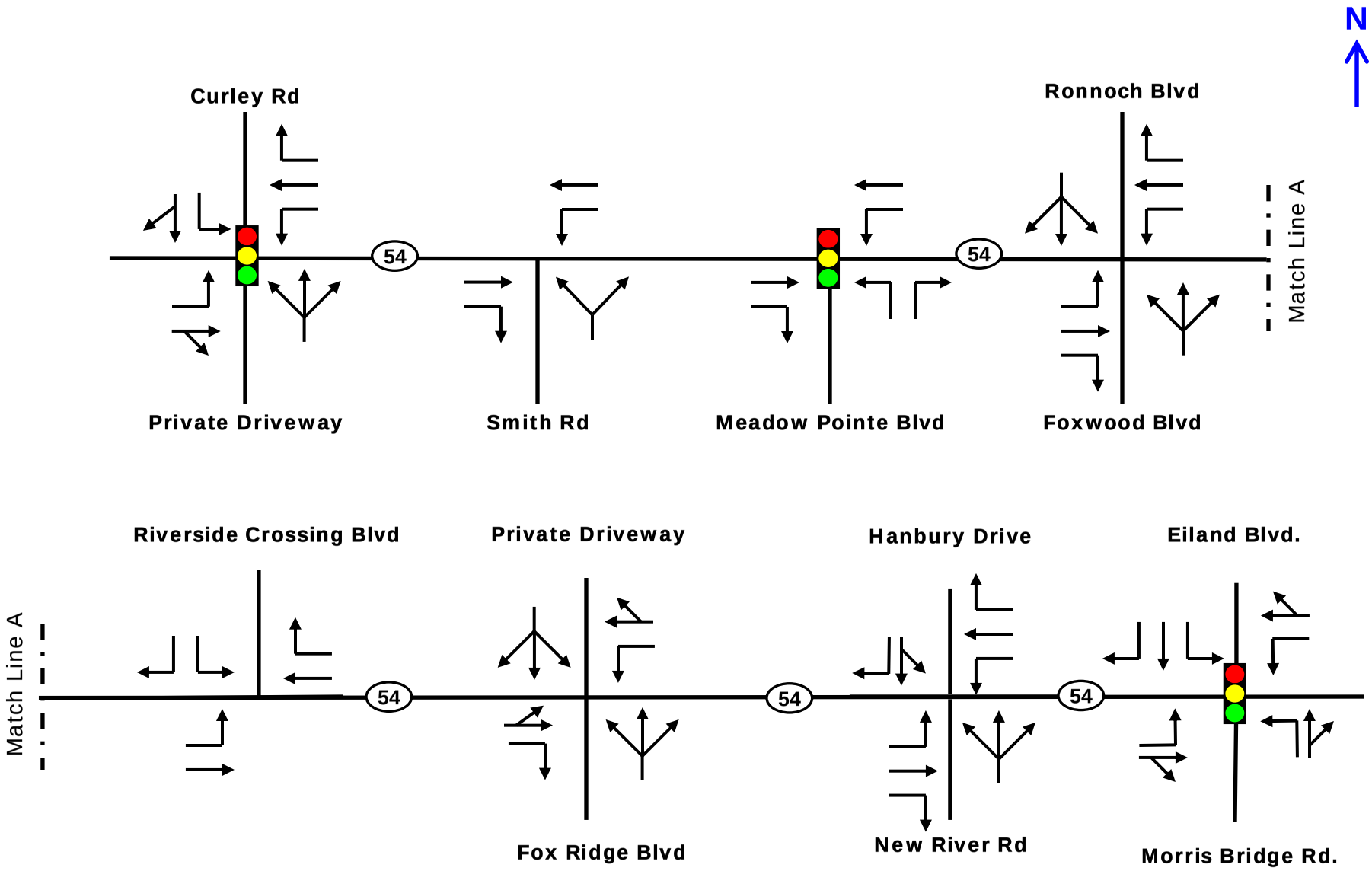
The existing highway has no street lighting. Some of the larger properties have "yard light" luminaires mounted on the power poles on the south side of SR 54.

4.1.12 Utilities

Current owners of utilities in the corridor, based on a Sunshine One Call design ticket (updated August 2007) include:

- Progress Energy
- Bright House Networks
- Aqua Utilities Florida, Inc.
- Verizon Florida Inc
- Pasco County Traffic Operations Division
- Pasco County Utilities
- Teco Peoples Gas
- Withlacoochee River Electric Cooperative
- Southwest Florida Water Management District

Utilities that were identified during the last pavement milling and resurfacing project are shown in **Figure 4-10**. Field observations conducted in August 2007 noted the installation of new 3-ft diameter concrete electric transmission poles and lines on the south side of SR 54, between Curley Road and Smith Road (see inset photo). This new line connects to a Withlacoochee River Electric Cooperative substation on Smith Road, south of SR 54. All utility owners will be contacted as part of the Utility Assessment Package preparation, once the alignment alternatives have been refined.



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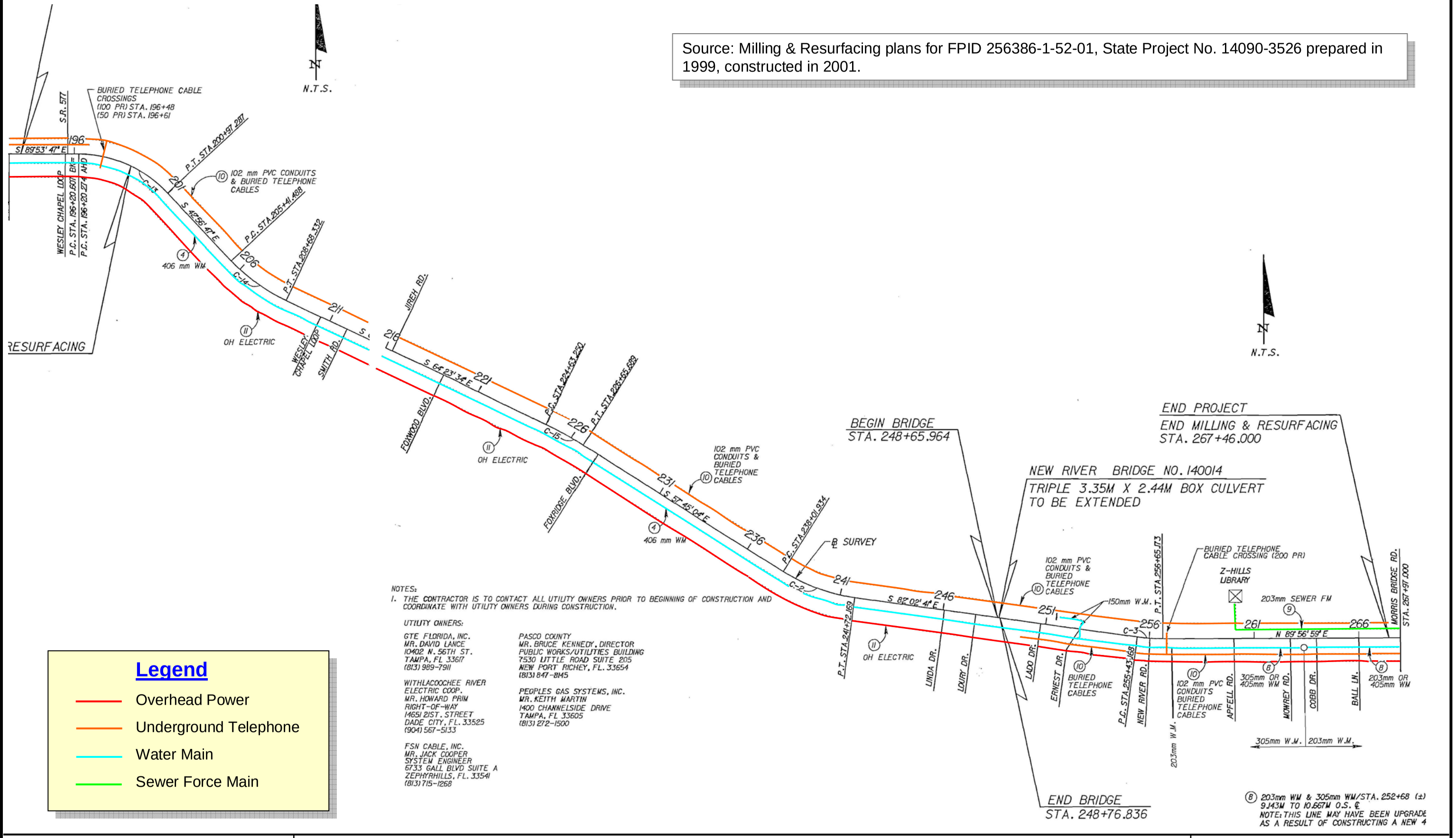
SR 54 EXISTING INTERSECTION LANE GEOMETRY

Rev. 4/24/08

FIGURE 4-9

Source: Milling & Resurfacing plans for FPID 256386-1-52-01, State Project No. 14090-3526 prepared in 1999, constructed in 2001.



NOTES:

1. THE CONTRACTOR IS TO CONTACT ALL UTILITY OWNERS PRIOR TO BEGINNING OF CONSTRUCTION AND COORDINATE WITH UTILITY OWNERS DURING CONSTRUCTION.

UTILITY OWNERS:

GTE FLORIDA, INC.
MR. DAVID LANCE
10402 N. 56TH ST.
TAMPA, FL 33617
(813) 989-7911

WITHLACOOCHEE RIVER ELECTRIC COOP.
MR. HOWARD PRIM
RIGHT-OF-WAY
14651 21ST. STREET
DADE CITY, FL. 33525
(904) 567-5133

FSN CABLE, INC.
MR. JACK COOPER
SYSTEM ENGINEER
6733 GALL BLVD SUITE A
ZEPHYRHILLS, FL. 33541
(813) 715-1268

PASCO COUNTY
MR. BRUCE KENNEDY, DIRECTOR
PUBLIC WORKS/UTILITIES BUILDING
7530 LITTLE ROAD SUITE 205
NEW PORT RICHEY, FL. 33654
(813) 847-8145

PEOPLES GAS SYSTEMS, INC.
MR. KEITH MARTIN
1400 CHANNELSIDE DRIVE
TAMPA, FL 33605
(813) 272-1500

Legend

- Overhead Power
- Underground Telephone
- Water Main
- Sewer Force Main

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EXISTING UTILITIES

Figure 4-10

4.1.13 Pavement Conditions

A flexible pavement condition survey was conducted by FDOT in 2007 for the project corridor. Each section of pavement is rated for cracking, ride and rutting on a 0-10 scale with 0 the worst and 10 the best. Any rating of 6.4 or less is considered deficient pavement and is marked by an asterisk. **Table 4-6** identifies the existing and projected pavement condition ratings for SR 54. The existing pavement is in good condition, having been milled and resurfaced in 2001.

Table 4-6. Pavement Condition Survey Results

Beginning Mile Post	Ending Mile Post	Condition Ratings	Year 2007	Year 2012 (projected)
9.341	15.577	Cracking	7.0	5.5*
		Ride	7.7	6.4*
		Rutting	Not provided	Not provided

*"deficient pavement" Source: FDOT's Pavement Condition Forecast Report for Pasco County, July 3, 2007

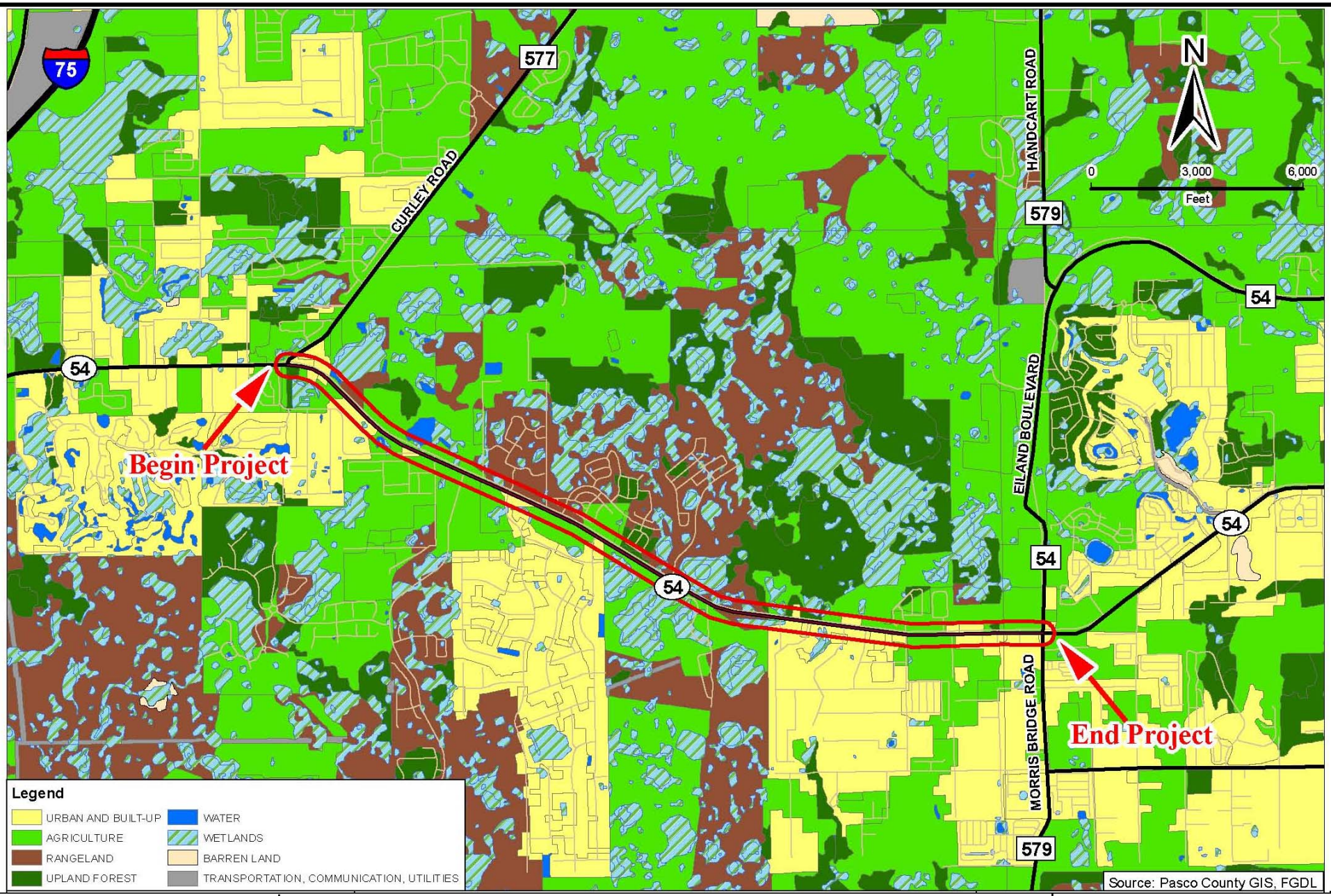
4.2 Existing Structures

The only "bridge structure" within the study limits is a 35-ft concrete box bridge culvert located at New River (beginning mile post 14.864). Designated as bridge number 140014, it consists of a triple 11-ft x 8-ft concrete box, each barrel 57.2 feet in length perpendicular to the roadway. A photo of it is included in **Figure 4-1**. It was constructed in 1957 and its sufficiency rating is 85 based on an inspection conducted on February 1, 2007. Field review revealed it to be in good condition.

4.3 Environmental Characteristics

4.3.1 Land Use Data

The study corridor, located in portions of Wesley Chapel and Zephyrhills, is mostly rural in nature but is being developed at a rapid pace. The Florida Land Use, Cover and Forms Classification System (FLUCFCS) from the Southwest Florida Water Management District (SWFWMD), together with aerial photographs and wetland data from the National Wetland Inventory, were utilized to determine current land use and habitat types within the corridor. These land uses and habitat types were subsequently verified during field visits. **Figure 4-11** shows the existing land use within the corridor.



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EXISTING LAND USE MAP

FIGURE 4-11

The majority of the landscape has been converted from native habitat to other land uses such as pastureland (210), planted pine (246), shrub and brushland (320) and residential areas (120, 130) with the exception of a few parcels that have been unaltered or are comprised almost entirely of jurisdictional wetlands. From Curley Road to New River Road, the land use predominantly consists of residential and agricultural lands. There are several residential subdivisions as well as a nursery located along this segment. From New River Road to Morris Bridge Road, the land use predominately consists of commercial and office/retail.

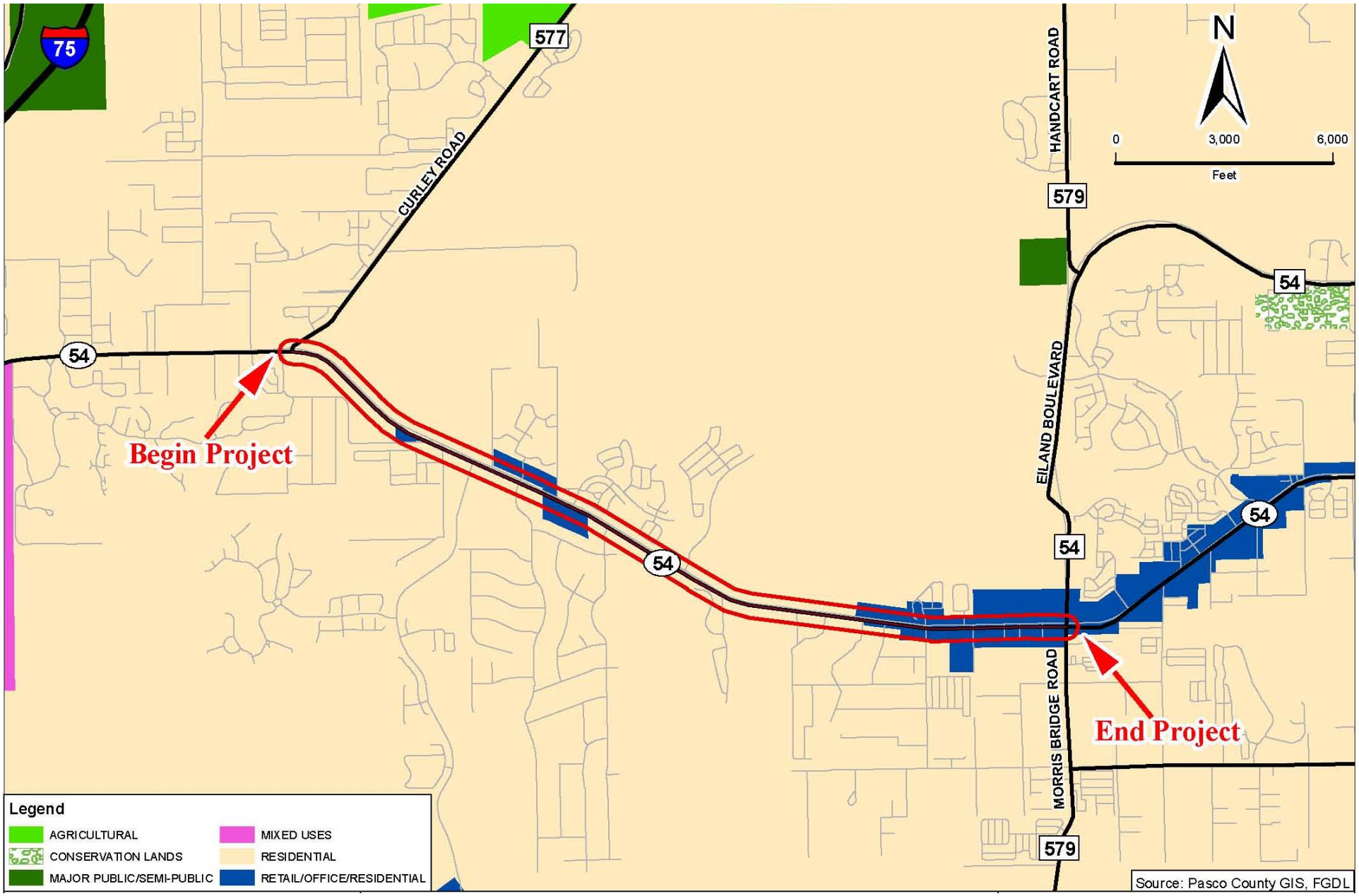
According to the Pasco County Future Land Use Map (2015), the entire project corridor is transitioning from a rural area to a residential area with small, scattered office/retail developments located immediately adjacent to SR 54 (**Figure 4-12**). This transformation is currently taking place as many of the existing agricultural areas along this stretch of SR 54 are being converted to residential subdivisions and retail/office development.

4.3.2 Cultural Features and Community Services

A *Cultural Resource Assessment Survey Report* (Reference 4-2) was prepared to comply with Section 106 of the *National Historic Preservation Act* (NHPA) of 1966 (Public Law 89-665), as amended, and the implementing regulations 36 CFR 800 (*Protection of Historic Properties*, revised January 2001), the *National Environmental Protection Act (NEPA) of 1969* (Public Law 91-190) as well as the provisions contained in the revised Chapter 267, Florida Statutes. All work was carried out in the conformity with Part 2, Chapter 12 ("Archaeological and Historic Resources") of the Florida Department of Transportation's *Project Description and Environment Manual* (revised January 1999), and the standards contained in *The Cultural Resource Management Standards and Operational Manual* (FDHR 2003).

Archaeological: Background research and a review of data at the Florida Master Site File (FMSF), and the National Register of Historic Places (NRHP), indicated that six archaeological sites had been recorded previously within or immediately adjacent to the project APE. These resources include five prehistoric lithic scatters (8PA1289, 8PA1467, 8PA1468, 8PA1469, and 8PA2116) and one historic artifact scatter (8PA1379). The five lithic scatters were evaluated by the Florida State Historic Preservation Officer (SHPO) as ineligible for listing in the NRHP; the sixth site, 8PA1379, was not evaluated by the SHPO. Thirty-seven additional recorded archaeological sites are located within approximately one mile of the project limits.

As a result of field survey, evidence of three previously recorded archaeological sites, 8PA1289, 8PA1468, and 8PA2116, was discovered within the project APE. No evidence



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FUTURE LAND USE MAP

FIGURE 4-12

for 8PA1467, 8PA1469, and 8PA1379, was found. In addition, the portion of SR 54 extending from just west of Smith Road to east of Morris Bridge Road, constructed prior to 1957, was newly recorded as 8PA2472. Two archaeological occurrences, each evidenced by a single waste flake, were also identified. None of these previously and newly identified archaeological resources are considered potentially eligible for listing in the NRHP given their limited research potential.

Historical/Architectural: Background research and a review of the FMSF and NRHP indicated that two previously recorded historic resources, 8PA1656 and 8PA1660, are located within or adjacent to the project APE. Neither of the two historic residential buildings, recorded in 2003, was evaluated by the SHPO. As a result of field survey, ten additional historic resources, 8PA2429-8PA2436 and 8PA2470-8PA2471, constructed between ca. 1940 and ca. 1957, were identified and evaluated. Of the 12 total resources, six are of the Frame Vernacular style, five are Masonry Vernacular style, and one is a Ranch style. All are typical examples of their respective styles, with no known associations with significant persons or events. Thus, the total 12 previously and newly recorded historic resources are not considered potentially eligible for listing in the NRHP, either individually or as part of a historic district.

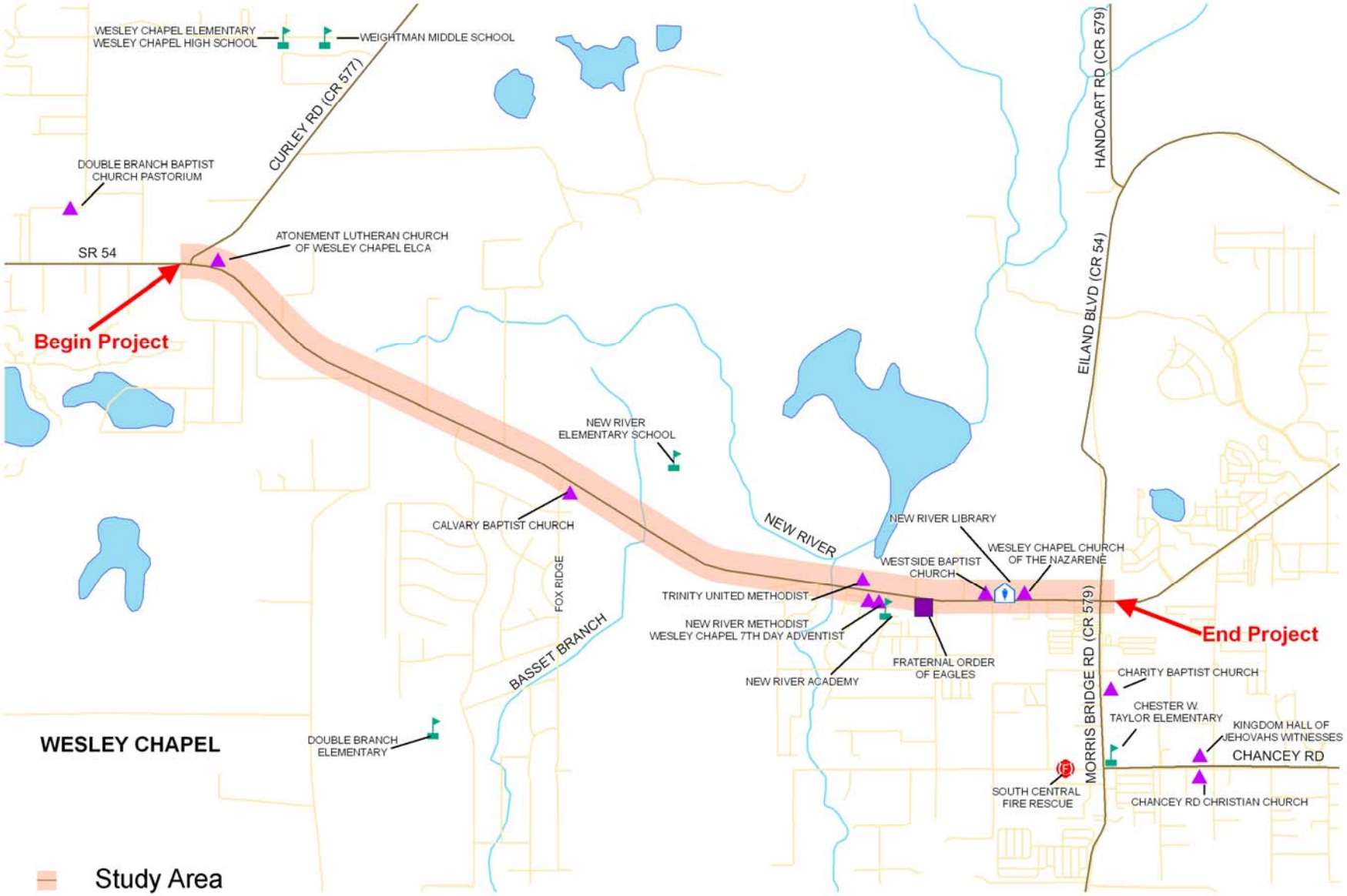
Section 4(f) Resources: There are no known public recreational facilities within 1.0 mile of the project or other resources which could be eligible for protection under the Department of Transportation's Section 4(f) regulations. Existing cultural features and community services primarily consist of a public library and numerous churches, as shown in **Figure 4-13**.

4.3.3 Natural and Biological Features

Wetlands Overview

A *Wetland Evaluation and Biological Assessment Report* (*WEBAR*) (Reference 4-3) was prepared for this proposed project. Wetlands were evaluated utilizing the SWFWMD FLUCCS codes, the National Wetland Inventory (NWI), aerial photography and ground truthing during numerous field visits. There are a total of 25 wetlands and 7 surface waters that are located adjacent to the project corridor (**Figures 4-14** and **4-15**). Wetlands and surface waters are delineated using the U.S. Army Corps of Engineers' (USACE) *Wetland Delineation Manual* (1987), and the *Florida Wetlands Delineation Manual*, Chapter 62-340, Florida Administrative Code (FAC). Wetlands along the project corridor are categorized into three basic categories:

- Palustrine Emergent with Persistent Vegetation (PEM1);
- Palustrine Scrub-Shrub (PSS1 and PSS6); and



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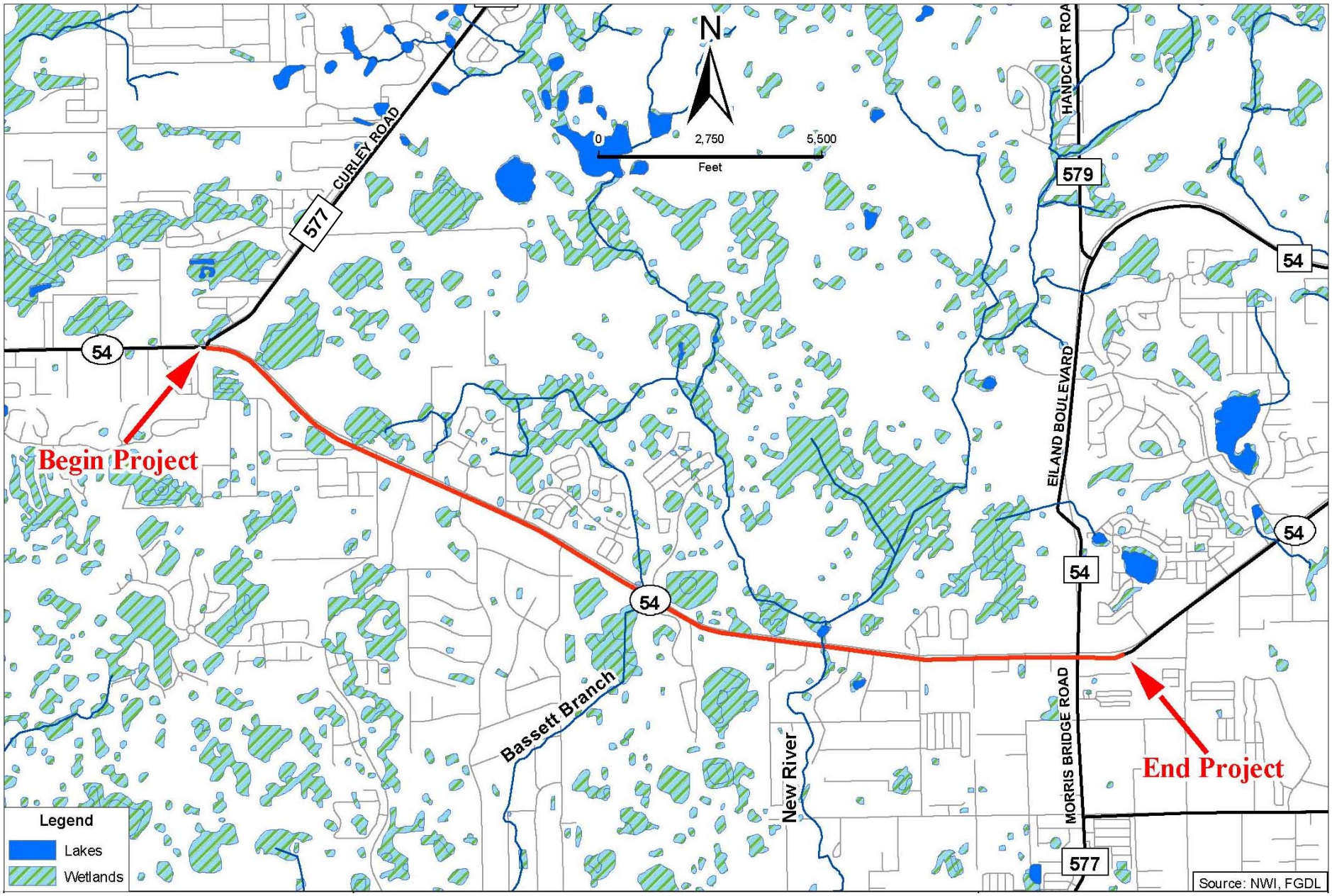
CULTURAL FEATURES & COMMUNITY SERVICES

FIGURE 4-13



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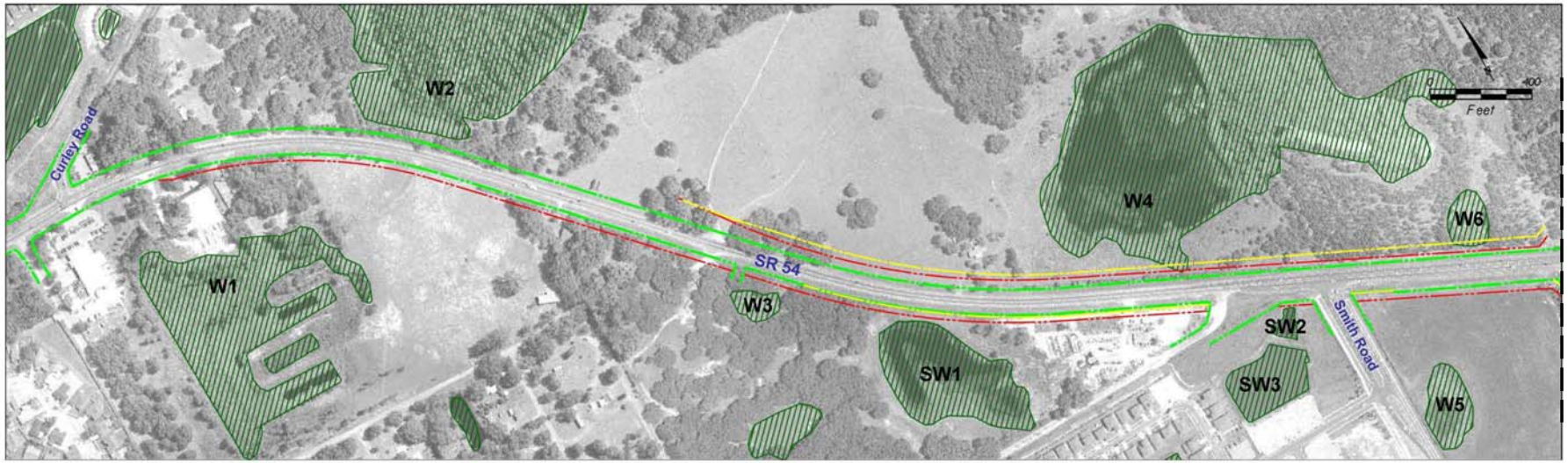
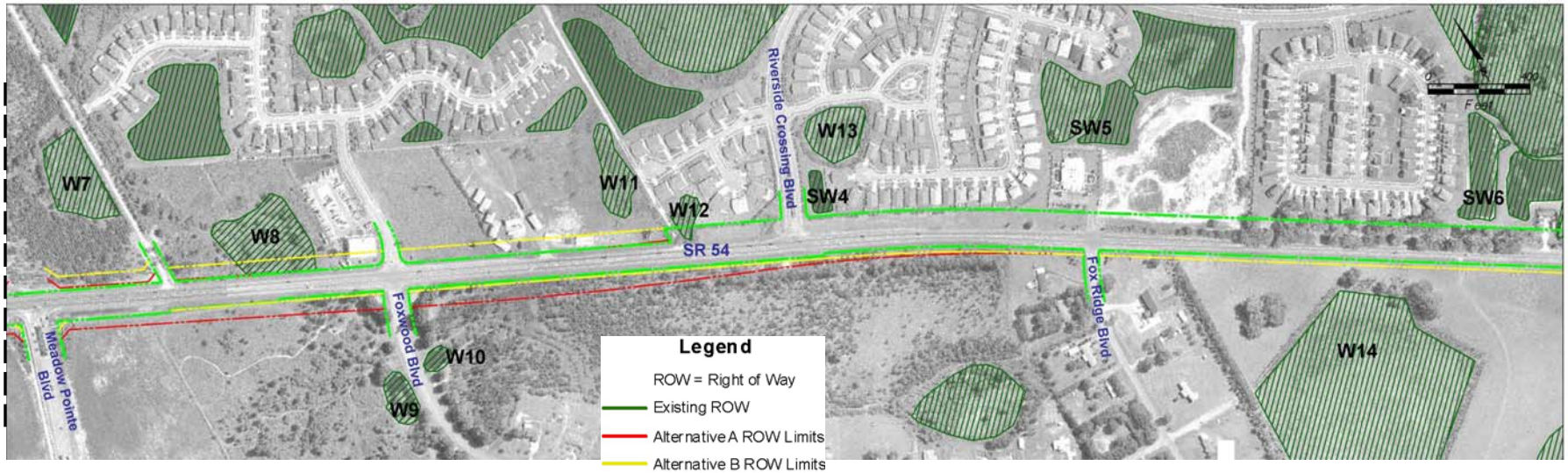
GENERALIZED WETLAND AREAS

FIGURE 4-14



Match Line

Match Line



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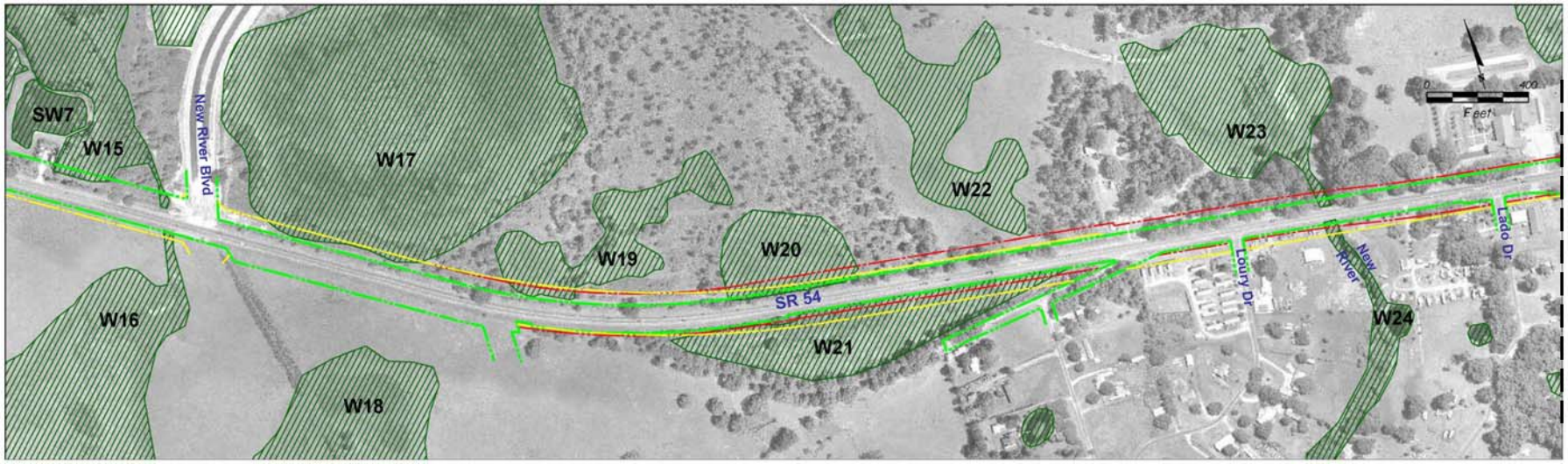
WETLAND ADJACENT TO SR 54

FIGURE 4-15
Sheet 1 of 2



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WETLANDS ADJACENT TO SR 54

FIGURE 4-15
Sheet 2 of 2

- Riverine Lower Perennial Open Water (R2OW).

It appears that many of the wetlands along the project corridor were connected prior to the construction of the original roadway. In some cases, culverts have been placed at these locations to maintain hydrology.

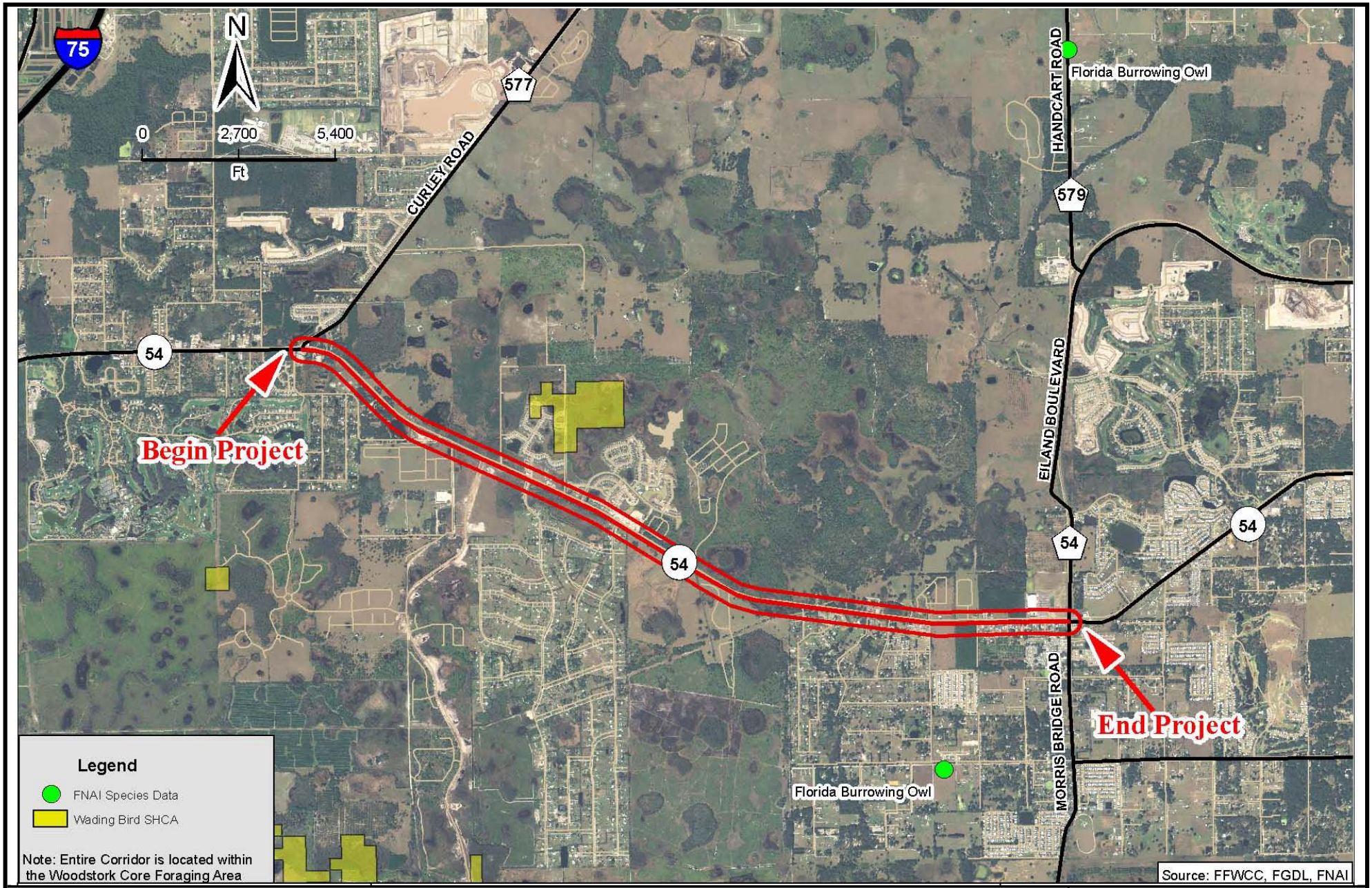
Wildlife and Habitat – Affected Environment

The *WEBAR* also documents literature reviews, agency database searches, and field reviews of potential habitat areas conducted to identify federal- and state-listed protected species and/or critical habitat occurring or potentially occurring within the project area. This was done in accordance with 50 CFR Part 402 of the Endangered Species Act of 1973, as amended, and Chapter 27 of the FDOT *PD&E Manual: Wildlife and Habitat Impacts*. Following research and agency coordination, field surveys were conducted in each habitat type in September and October of 2006, as well as March and June of 2007 to identify any protected species and/or critical or potential habitat within the project corridor. In addition, random surveys were performed along the corridor throughout the duration of the study to obtain data on resident and transient species. This project has also been subject to the FDOT's Efficient Transportation Decision Making (ETDM) process in which coordination with the Florida Fish and Wildlife Conservation Commission (FFWCC), the United States Fish and Wildlife Service (USFWS) and the Florida Natural Areas Inventory (FNAI) was initiated. Strategic habitat and conservation areas are shown in **Figure 4-16**.

In regards to federal-listed species, critical habitat is present within the project corridor to support the bald eagle, wood stork, American alligator, and eastern indigo snake. A wood stork was observed at Surface Water 1 (SW1) during one of the field visits. In regards to state-listed species, critical habitat is present along the project corridor to support the snowy egret, sandhill crane, white ibis, little blue heron, tricolored heron, peregrine falcon, gopher tortoise and Florida burrowing owl. Several state-listed species were observed during the field inspections and include the following: snowy egret, sandhill crane, white ibis and little blue heron.

4.3.4 Contamination/Hazardous Waste

A *Contamination Screening Evaluation Report* (*CSER*) (Reference 4-4) was prepared pursuant to the Federal Highway Administration's (FHWA) Technical Advisory 6640.8a, dated October 30, 1987, and the FDOT's PD&E Manual, Part 2, Chapter 22, (revised December 10, 2003). A regulatory database search was conducted by FirstSearch Technology Corporation for the entire project corridor. The results of this search were



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STRATEGIC HABITAT & CONSERVATION AREAS

FIGURE 4-16

used as a basis for performing the CSER. Also, on-site field visits were conducted to verify the results of the database search performed by FirstSearch Technology Corporation and also to evaluate other sites along the project corridor that may have the potential for contamination. The CSER is evaluating seven (7) sites along the project corridor for potential contamination. The potential contamination sites are outlined in **Table 4-7,** and the locations of these sites are illustrated in **Figure 4-17**.

Table 4-7. Summary of Potential Contamination Sites

Map ID	Site Name	Site Address	Risk Rating	Government Database
1	East of Curley Rd.	5510 Wesley Chapel Loop	No	N/A-Field Observation
2	Crystal Trucking	31108 SR 54 West	Low	UST
3	L. D. Smith Property	167 Smith Rd	Low	
4	East of Loury Dr.	4240 Loury Drive	No	N/A-Field Observation
5	Coachmaster – RV Repair and Sales	34100 SR 54	Low	
6	Cumberland Farms #V1147	34434 SR 54 West	**Medium**	LUST
7	Former Site of Hills Grocery	34506 SR 54 West	**Medium**	

Of the 7 sites evaluated, the following risk ratings were assigned:

- 0 “High” risk rating,
- 2 “Medium” risk rating,
- 3 “Low” risk ranking and
- 2 “No” risk ranking

The two sites ranked as “medium” risk are further described below.

Potential Contamination Site 6 – Cumberland Farms #1147

Cumberland Farms is located on the southwest corner of the Morris Bridge Road and SR 54 intersection. The site contains two covered gas pump stands and a small building that is used as a convenience store. The FDEP data management system (OCULUS) was reviewed to find additional information on this site.

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POTENTIAL CONTAMINATION SITES

FIGURE 4-17

Three underground gas tanks were originally installed on-site in May of 1985. Contamination from an underground leaded gasoline tank in the form of dissolved hydrocarbons was reported in 1987. The Contamination Assessment dated October 1987 was consulted to determine the extent of the discharge. Based on the information contained in this report, the contamination appeared to be limited to the area around the tank field. Groundwater flow in this area was determined to be from North to South. Any discharges from this site would effectively migrate away from the SR 54 project area. According to the FDEP, the site has been cleaned up and a No Further Action (NFA) has been issued. In April of 2006, the old single walled tanks at this site were removed and replaced with three double walled fiberglass tanks. At that time, no further contamination was reported at this site.

During a site review on October 27, 2006, no obvious signs of contamination were present. Although cleanup efforts have been completed for known soil and groundwater contamination, and many of the tanks were replaced in April 2006, this site is rated "Medium" for potential contamination.

Potential Contamination Site 7 – Formerly Hills Grocery

Hills Grocery was formerly located on the southeast corner of the Morris Bridge Road and SR 54 intersection. The site contained two covered gas pump stands connected to a small building that was used as a grocery store and small restaurant. The FDEP data management system (OCULUS) was reviewed for additional information on this site.

There were seven tanks located on-site. Of these seven tanks, 4 were installed in July 1974 and were closed in place. The 3 additional tanks were installed in January 1989 and were active gasoline tanks. Contamination from underground storage tank(s) were reported on three different occasions in 1988, 1992 and 2003. Clean up has been completed for each and the *Site Rehabilitation Completion Report* (*SRCR*) was issued for all discharges at this site.

During a site review on October 27, 2006, no obvious signs of contamination were present. At the time of the site visit, all pump handles were covered with grocery bags indicating that the tanks were empty or no longer in use. Due to the fact that this site has known releases, this site is rated "Medium" for potential contamination. In early 2008, Hills Grocery was demolished and a CVS Pharmacy store was under construction.

Recommendations

At the two (2) facilities ranked “medium” due to potential contamination near the project areas, additional environmental assessment activities are recommended. The additional assessment activities should consist of soil and groundwater testing, and are recommended during design to determine the potential impact from the sites on construction.

SECTION 5 - DESIGN CRITERIA

The proposed roadway design standards are summarized in the two tables below. **Table 5-1** gives the access management standards that must be followed for this Class 3 facility. **Table 5-2** gives general roadway design criteria, based primarily on FDOT's *Plans Preparation Manual* (PPM) and the American Association of State Highway and Transportation Official's (AASHTO) *A Policy of Geometric Design of Highways and Streets (the "Green Book").*

Table 5-1. FDOT's Access Management Standards

Access Class	Facility Design Features	Minimum Median Opening Spacing		Minimum Signal Spacing	Minimum Connection Spacing
	Median Treatment & Service Roads	Directional (Prohibits left turns from side streets)	Full		>45mph / ≤ 45 mph (posted speed)
2	Restrictive with Service Roads	1,320 ft	0.500 mi.	0.500 mi.	1,320/660 ft
3	Restrictive *	1320 ft	0.500 mi.	0.500 mi.	660/440 ft
4	Non-Restrictive	N/A	N/A	0.500 mi.	660/440 ft
5	Restrictive	660 ft	Over 45 mph / ≤ 45 mph 0.5/0.25 mi.	0.5/0.25 mi.	440/245 ft
6	Non-Restrictive	N/A	N/A	0.250 mi.	440/245 ft
7	Both Median Types	330 ft	0.125 mi.	0.250 mi.	125 ft

* Restrictive means medians which prevent vehicles from crossing due to curbs, grass, or other barriers.

Source: Florida Department of State, Florida Administrative Code, FDOT Rule Chapter 14-97.

Table 5-2. Roadway Design Criteria
SR 54 PD&E Study

DESIGN ELEMENT	**4L or 6L Urban** Typical Section	**4L Suburban** Typical Section	SOURCE
Functional Classification	Principal Arterial	Principal Arterial	FDOT SLD
Design Year	2030	2030	"Traffic Report"
Design Speed	45 mph	55 mph	2. Sections 2.16.1 and 1.9.1
Design Vehicle	WB-62FL	WB-62FL	2. Section 1.12
Horizontal Alignment			
Maximum Superelevation	0.05	0.05	2. Table 2.9.2 & Section 2.16.8
Maximum Curvature	8° 15'	2° 06'	2. Table 2.8.3 & & Section 2.16.8
Maximum Curvature w/o Superelevation	2°45'	0° 30'	2. Table 2.8.4 & Section 2.16.8
Max. Deflection w/o Horizontal Curve	1° 00'	1° 00'	2. Table 2.8.1a
Minimum Length of Horizontal Curve	675' Desirable, 400' Minimum	825' Desirable, 400' Minimum	2. Table 2.8.2a
Superelevation Rate	1 :150	1:225	2. Table 2.9.3 & 2.9.4
Vertical Alignment			
Maximum Grade	6.0%	5.0%	2. Table 2.6.1 & Section 2.16.6
Minimum Grade	0.3%	0.3%	2. Table 2.6.4
Min. Distance Between VPI's	250 ft	250 ft	2. Table 2.6.4
Min. K Value for Crest Vertical Curves	98	185	2. Table 2.8.5
Min. K Value for Sag Vertical Curves	79	115	2. Table 2.8.6
Minimum Curve Length	Crest & Sag: 135 ft (min 3V)	Crest: 350 ft Sag: 250 ft	2. Table 2.8.5 & 2.8.6
Max. Change In Grade w/o Vertical Curve	0.70%	0.50%	2. Table 2.6.2
Min. Roadway Base Clearance above DHW	1'	1'	2. Section 2.6.3
Roadway Cross-Section			
Lane Widths	12' (All Lanes) 4' Bicycle Lanes	12' (All Lanes) 5' Paved Shoulder	2. Table 2.1.1 & Table 2.1.2
Cross Slopes	2% (3% on outside lane for 6L) Bicycle Cross Slopes Should Match Cross Slope Of Outside Lane	2% 6% (Shoulder)	2. Figure 2.1.1
Median Width	22' Minimum; 30' for dual left turns	30' (22' grassed median w/4' buffer to travel lanes)	2. Table 2.2.1 & Section 2.16.3
Shoulders	------	Full Width 8' Paved Width 5'	2. Section 2.3.2
Horizontal Clearance	4' from face of curb	Outside clear zone (30' from travel lane)	2. Section 2.11
Minimum Border Width	12' with bike lanes; 14' without bike lanes	35'	2. Table 2.5.2 & Section 2.16.5
Right-Of-Way Requirements	Varies: 142' -166' Minimum	166' Minimum	3. TS-1
Access Classification Proposed	Class 3	Class 3	4. FDOT's Chapter 14-97
Minimum Level Of Service	D	D	5. FDOT's LOS Standards

SOURCES	
1. AASHTO "Policy On Geometric Design Of Highways And Streets" (2004)	
2. FDOT Plans Preparation Manual, Volume I English (Revised January 2007)	
3. Pasco County Standard Roadway Typical Sections	
4. FDOT Chapter 14-97 State Highway System Access Management Classification System And Standards	
5. 2007 LOS Issue Papers (2002 LOS Handbook Addendum) and 2007 Generalized Q/LOS Tables	

Table Revised 12/28/07

SECTION 6 - TRAFFIC DATA

This section includes information extracted from the *Draft Traffic Technical Memorandum* prepared for this study (Reference 6-1).

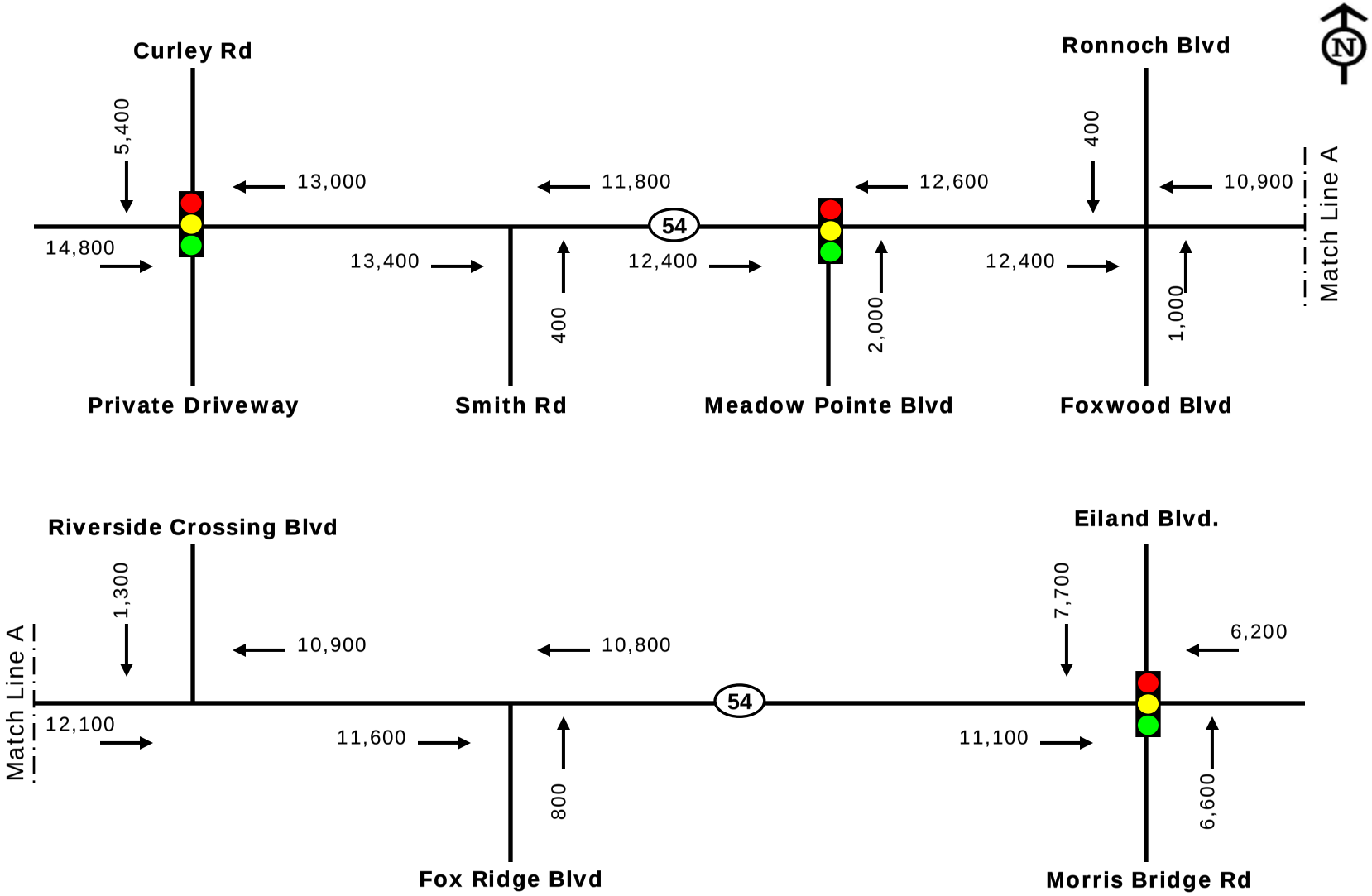
6.1 Existing Traffic Volumes and Traffic Characteristics

Machine intersection approach counts were taken for a consecutive 72-hour period from May 23 (Tuesday) thru May 26 (Thursday), 2006, as part of the traffic study. The raw counts were adjusted for seasonal variation using a seasonal adjustment factor and an axle-correction factor. **Figure 6-1** graphically shows all of the 2006 machine traffic counts and the estimated annual average daily traffic (AADT). Year 2006 traffic volumes ranged from 22,000 vehicles per day (VPD) east of Fox Ridge Boulevard to 27,400 VPD west of Smith Road. The machine count printouts are included in the appendices of Reference 6-1.

In addition to the machine counts, manual 8-hour intersection turning movement counts (TMCs) were collected in May 2006 at the following intersections. The peak hour turning movements are graphically summarized in **Figure 6-2**.

- SR 54 and Curley Road
- SR 54 and Smith Road
- SR 54 and Meadow Pointe Boulevard
- SR 54 and Foxwood Boulevard
- SR 54 and Riverside Crossing Boulevard
- SR 54 and Fox Ridge Boulevard
- SR 54 and Morris Bridge Road

Existing time-of-day variation in traffic on SR 54 is illustrated in **Figure 6-3**. After traffic volumes build up to the a.m. peak period, they continue to stay heavy throughout most of the day, after which they gradually drop off following the p.m. peak period.



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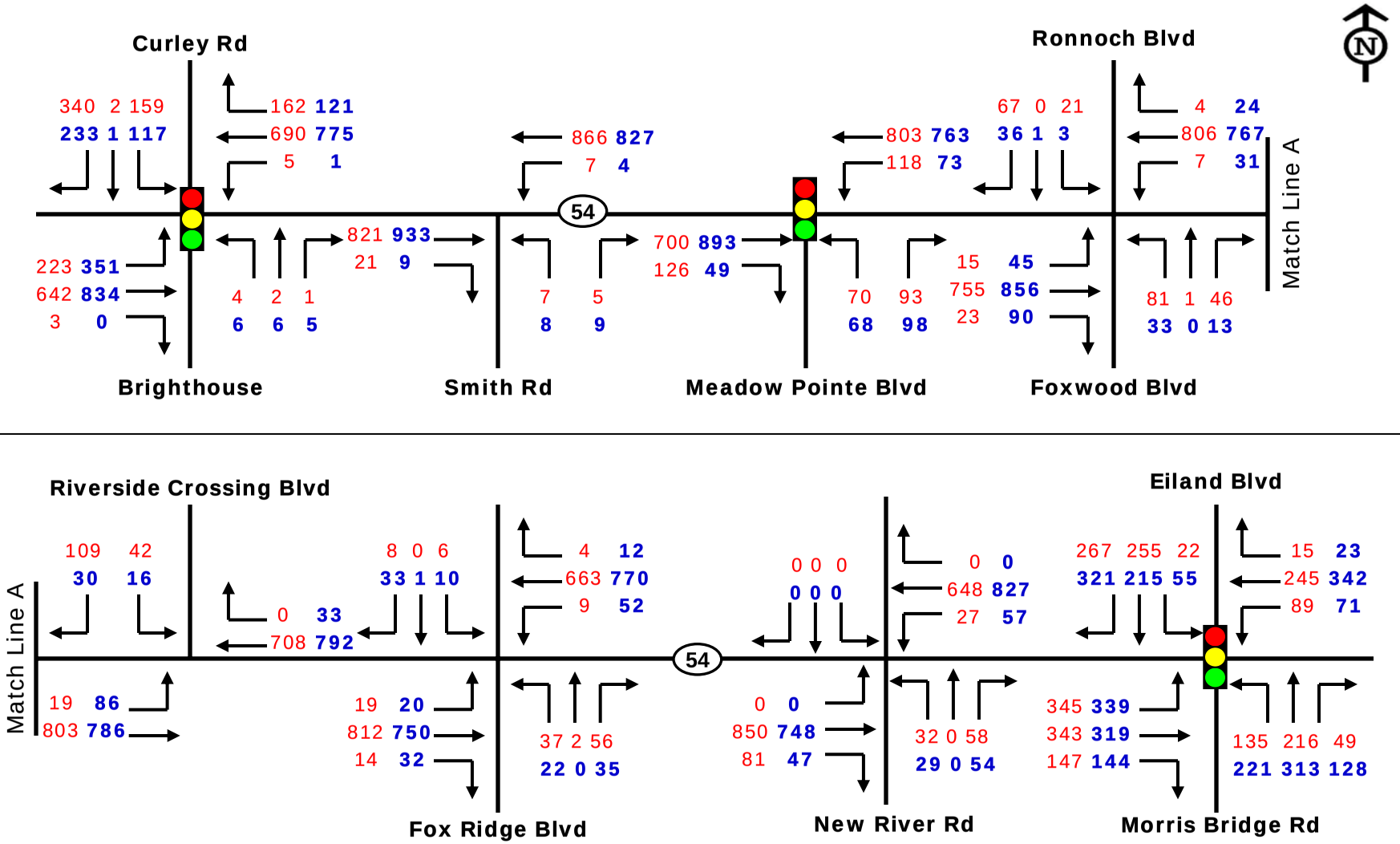
YEAR 2006 APPROACH AADT VOLUMES (ADJUSTED)

Rev. 4/30/08

FIGURE 6-1



Source: Turning Movement Counts by Bayside Engineering, 2006; Adjusted by ACE for seasonal correction

Legend: AM VOLUME (7:00-8:00 a.m.)
PM VOLUME (5:00-6:00 p.m.)

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AM & PM PEAK HOUR ADJUSTED VOLUMES FOR 2006

Rev. 4/24/08

FIGURE 6-2

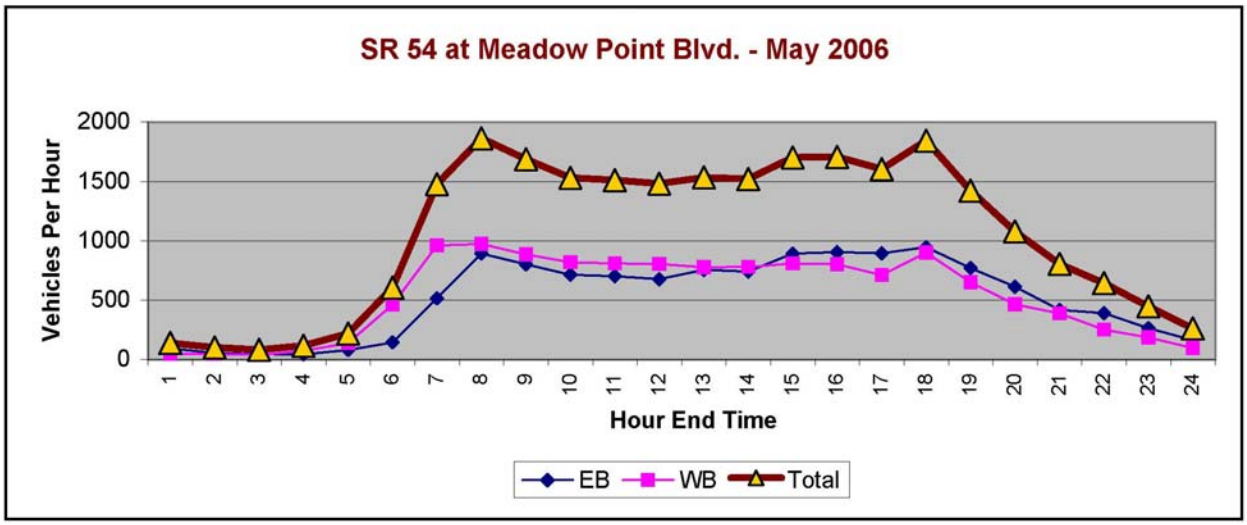


Figure 6-3: Time of Day Variation in Traffic on SR 54

Recommended Traffic Design Factors (K_{30}, D_{30}, T_{24} & PHF)

The FDOT District Seven Planning staff approved K_{30}, D_{30}, and T_{24} factors used in this study are shown in **Table 6-1.** The basis for the recommendations and documentation of their approval are included in Reference 6-1.

Table 6-1. Recommended Traffic Design Factors

Factor	Recommended Value
K_{30}	9.5 percent
D_{30}	57.0 percent
T_{24}	7.2 percent
PHF	0.95

The K (or Design Hour) Factor is of major importance in the determination of Design Hour Volumes (DHV). It is defined as the ratio of DHV to the Annual Average Daily Traffic (AADT) occurring during the 30th highest hour of the year. The K_{30} and related DHV are influenced by the timing of trips during the day. K_{30} will be lower on roads which serve many trip making purposes distributed during the day. Roads which serve few purposes will normally experience high hourly variance. The K_{30}-factor of 9.5 percent was derived from the averaging the count stations (stations 26, 5102, 5103, 5115, and 5116) along SR 54 located within the PD&E and Traffic Study project limits.

The directional "D Factor" is defined as the percentage of design hour traffic in the dominant direction of flow. The directional distribution factor or D_{30}, is based on the 200th Highest Hour Traffic Count Report and is referred to as D_{30}. The D_{30} values are available from FDOT's Florida Traffic Information databases. An overall D_{30}-factor of 57 percent is assumed for the future years. The directional distribution for each of the future years is based on the percentage of the turning movements for each of the existing intersections along SR 54 with the project limits. For new roadways, the directional distribution is based on the proximity of existing roadway turning movement percentages for the new roadway's forecasted AADT volume.

Vehicle classification counts were collected and summarized from 2001 to 2005 and presented as a percentage of daily traffic. These "truck" counts included trucks as well as buses. The truck factor recommended for the SR 54 corridor is 7.2 percent for daily trucks; the design hour truck factor is estimated by dividing 7.2 by 2 to yield 3.6 percent..

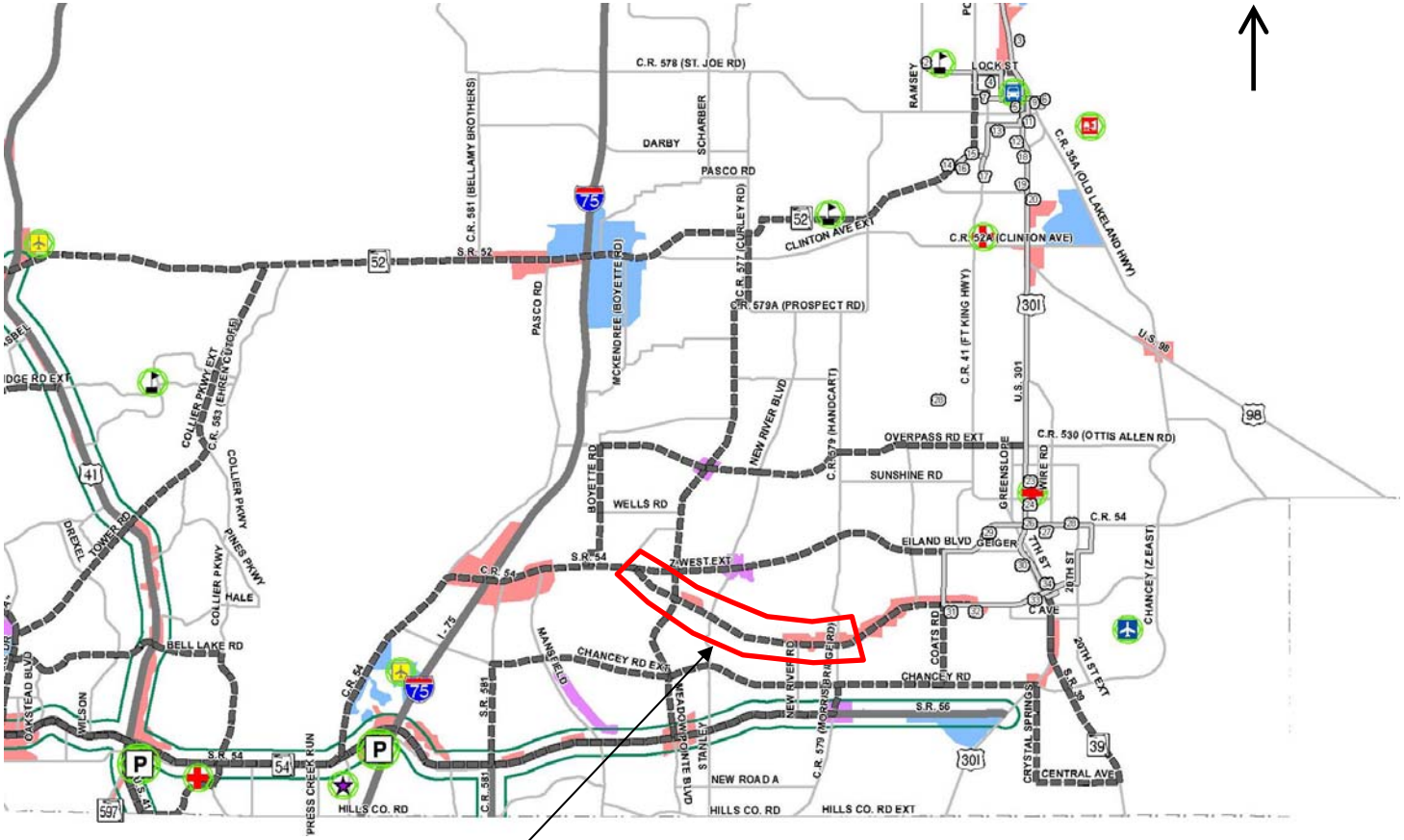
An additional "traffic factor" needed for design/study purposes is the Peak Hour Factor (PHF). The peak hour factor is defined as:

$$PHF = \frac{\text{Hourly Volume}}{4 \times (\text{Peak 15-Minute Volume})}$$

Existing peak hour factors were determined from both turning movement counts and machine counts. Existing PHFs vary considerably depending on the time of day and location. A PHF over 0.95 is considered indicative of capacity constraints on flow during the peak hour. Due to the uncertainty of design year traffic arrival patterns, a "default" PHF of 0.95 is recommended for design purposes.

6.2 Multi-Modal Transportation Systems

There are no existing transit routes along the project corridor, but future local transit service is proposed according to the Pasco County 2025 Long Range Transportation Needs Plan (**Figure 6-4**). Therefore, the FDOT will coordinate with Pasco County regarding potential transit amenities needed during the project development and design phases of the project. Access to intermodal facilities is an important consideration in the development of the Pasco County transportation system. The county's Comprehensive Plan identifies SR 54 as an existing truck route - highways that carry the majority of freight and goods in Pasco County. Improvements to SR 54 will also enhance access to two general aviation facilities and to activity centers in the area.



Updated May 31, 2006

Study Area

THE COMPREHENSIVE PLAN
OF UNINCORPORATED
PASCO COUNTY

MAP # 7-28

FUTURE PUBLIC TRANSIT ROUTES AND FACILITIES (2025 NEEDS PLAN)

PUBLIC TRANSIT ROUTES
- EXISTING BUS ROUTE
- FUTURE LOCAL ROUTE
- FUTURE EXPRESS ROUTE
- BUS RAPID TRANSIT (BRT) CORRIDOR
- OTHER ROAD

INTERMODAL FACILITIES
- Private Aviation Facilities
- Public General Aviation Facilities
- Greyhound Bus Station
- Train Station
- Seaports
- College or University
- Major Medical Facility
- Regional Shopping Mall
- Park and Ride

COMMERCIAL CENTERS
- COMMERCIAL CORRIDORS
- EMPLOYMENT CENTERS
- TOWN CENTERS

PASCO COUNTY BOUNDARY

Note: See Technical Support Document for descriptions of the transit trip generators and attractors shown on this map

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FUTURE PUBLIC TRANSIT FACILITIES

FIGURE 6-4

Pasco County's Comprehensive Plan identifies SR 54 as a "future/conceptual corridor" for a trail. Currently, there are paved shoulders for use by bicyclists but no sidewalks along the project corridor. The proposed improvements would include sidewalks, bike lanes, and a multiuse "trail" on one side.

6.3 Traffic Analysis Assumptions and Projection Methodology

The methodology followed for forecasting future traffic for SR 54 is consistent with the FDOT published procedures for developing design traffic in the Project Traffic Forecasting Handbook, March 2006 (Reference 6-2). For traffic analysis purposes the following traffic years were recommended:

Existing (Baseline):	2006
Opening Year:	2010
Mid Year:	2020
Design Year:	2030 (Build and No-Build Scenarios)

The No-Build alternative assumes the existing two-lane roadway will remain in place. For the No-Build Alternative, the road improvements currently programmed in the state's work program and the Pasco and Hillsborough County Transportation Improvement Programs (TIP) as well as Long Range Transportation Plans (LRTP) are included. Of significance, the No-Build Alternative includes the West Zephyrhills Bypass extension, a road parallel to this section of SR 54 (between Curley Road and Handcart Road connecting with Eiland Road) as well as the Chancey Road and SR 56 extensions.

6.3.1 Pasco County MPO's 2025 Long-Range Transportation Plan

The Pasco County Metropolitan Planning Organization's (MPO) adopted Year 2025 Cost Affordable Long-Range Transportation Plan (LRTP) was used for the analysis of the opening year 2010 traffic. The roadway network shows the "cost-affordable" improvements that have been adopted to serve travel needs through year 2025. The LRTP is illustrated in **Figure 3-3** in Section 3. The adopted plan includes these projects that are in or near this project's study area:

- Extend the Zephyrhills Bypass to SR 54
- Extend Chancey Road to US 301
- Widen Meadow Point Boulevard to 4-Lanes
- Widen SR 56 to 4-Lanes and extend it eastward to US 301
- Extend New River Blvd north of SR 54 and construct Wyndfields Blvd ("Stanley" on the map figure) south of SR 54

- Widen SR 54 west of Curley Road to 6-Lanes

The road improvements for the year 2010, 2015, and 2020 are based on Pasco and Hillsborough Counties Capital Improvement Program for the road improvements together with the timing of anticipated road improvements for the Wiregrass Ranch DRI (i.e Porter Blvd.). The 2025 LRTP road improvements were not assumed for the year 2010 and the year 2020 in developing the model traffic projections.

The ultimate roadway network assumed for the year 2030 reflects the Adopted 2025 Financially Feasible Long Range Transportation Plans (LRTPs) for all the counties in the **s**tudy **a**rea, with the additional roadway improvements as indicated below. **Table 6-2** reflects the roadway improvements included in the Tampa Bay Regional Planning Model networks.

6.3.2 Regional Transportation Analysis Model Runs

The travel demand model used to develop the future year traffic projections is the Tampa Bay Regional Planning Model Version 5.1 (TBRPM 5.1). The TBRPM 5.1 is based on the Florida Standard Urban Transportation Modeling Structure (FSUTMS) and is recognized by FDOT District 7, as well as the Pasco and Tampa Bay area Metropolitan Planning Organizations (MPOs) as the accepted travel demand forecasting tool.

An initial review of the existing 2015 and 2025 TBRPM 5.1 socio-economic data revealed that some of the recently approved developments in the area were not included in the model. Therefore, a list of approved and proposed projects from Pasco County and the Tampa Bay Regional Planning Council (TBRPC) was compiled, including the dwelling units, retail square footage, and other land uses of each development. These developments were assigned to the appropriate Traffic Analysis Zone (TAZ) in the network and the model was run to ensure that all planned development was accurately included. The TBRPM 5.1 was reviewed with FDOT District 7 System Planning Staff.

Pasco County provided a list of all Master Planned Unit Developments (MPUDs) approved and proposed as of July 2006. The TBRPC Developments of Regional Impact (DRI) information was reviewed to ensure that all approved DRIs were included. The latest version of TBRPM 5.1 for the years 2015 and 2025 was reviewed and compared with the more recent DRIs and MPUDs.

Table 6-2

Roadway Improvements Timetable

Roadway	Segment	Road Improvement	Construction Time Frame
SR 54	I-75 - Zephyrhills By Pass	6-lanes	2016
SR 54	Old Pasco Rd. – Curley Rd/	6-lanes	2016
SR 52	Bellamy Brothers Blvd. – east of Clinton Ave. extension	4-lanes	2016
SR 56	CR/SR 54 – Porter Blvd.	6-lanes	2016
SR 56	Porter Blvd. – Meadow Point Blvd.	4-lanes	2016
SR 56	Meadow Point Blvd. – Morris Bridge Rd.	2- lanes	2016
SR 56	Meadow Point Blvd. – Morris Bridge Rd.	4- lanes	2030
SR 581	County Line Rd. – SR 54 (Re-alignment of SR 581 along Loop Rd across from Wesleybrook Drive).	6-lanes	2016
SR 581	SR 581 re-alignment – SR 54	Remains 2-lanes (Right-in/Right-out only access)	2016
CR 581	Tampa Palms Blvd. - County Line	8-lanes	2016
CR 577 (Curley Rd.)	SR 52 – SR 54	4-lanes	2016
CR 579 (Morris Bridge Rd.)	SR 56 – SR 54	4-lanes	2030
Zephyrhills By-Pass	SR 54 – CR 579 (Hancart Rd.)	2-lanes	2016
Porter Blvd.	SR 56 – SR 54	4-lanes	2016
Chancey Rd.	SR 581 – Porter Blvd	4-lanes	2016
Chancey Rd.	Meadow Point Blvd – Morris Bridge Rd.	2-lanes	2016
Chancey Rd.	Meadow Point Blvd – Morris Bridge Rd.	4-lanes	2030
Mansfield Blvd.	SR 56 – School Entrance	4-lanes	2016
Wynfields Blvd.	SR 56 – Chancey Rd. Extension	2-lanes	2016
Overpass Rd.	Old Pasco Rd. – Watergrass Entrance.	4-lanes	2016
Overpass Rd.	Watergrass Entrance – Fort King Rd.	4-lanes	2030
Clinton Ave.	Curley Rd. – SR 52	2-lanes	2016

Source: URS Corporation, February 2008

Traffic projections for 2030 were extrapolated from 2025 model projections, based on an annual increase in the socio-economic data between the year 2000 and the year 2025, for the additional 5 years. The 2030 socio-economic data was checked to ensure that the buildout development levels of the DRIs and MPUDs were not exceeded.

For DRIs currently under construction within the study area, their socio-economic data is based on their phasing schedules. **Figure 3-2** in Section 3 shows the location of the DRIs and MPUDs.

The DRIs and MPUDs land use projections are based on a linear interpolation from the existing development level until buildout. A buildout of 2030 was assumed for all approved and proposed development. All centroid connections in the model were also checked for reasonableness and adjusted to reflect the proper loading points for each development. The model was then executed for all alternatives under study and the future year travel demand was identified. Peak Season Weekday Average Daily Traffic (PSWADT) model volumes were converted to AADT volumes using a Model Output Conversion Factor (MOCF) of 0.96.

The TBRPM roadway network was updated for the new roadway improvements anticipated to be constructed in the study area for each of the future years based on committed improvements, developer-funded projects, engineering judgment, and discussions with Pasco County and FDOT District Seven. The TBRPM for each of the future year's forecast volumes was checked for reasonableness with appropriate adjustments to account for the model's assignment of future traffic when compared with historical traffic trends.

In early 2008, revised traffic forecasts were produced due to needed changes in the future traffic network model associated with planned developments. Previously, the Wiregrass Ranch and planned Wal-Mart "Loop Road" were proposed to align with Wesleybrook Drive. However, as part of the Wiregrass development approval process, an alternative roadway network was proposed which will include the realignment of the northern portion of SR 581 (Bruce B. Downs Boulevard). The proposed realignment shifts SR 581 through Wiregrass Ranch to a location east of the current intersection with SR 54 and continues east of the proposed Wal-Mart site, ultimately terminating at SR 54. Due to this realignment, it was agreed upon by all parties (FDOT District 7, Wal-Mart, Wiregrass Ranch, Goodman and Pasco County) that the traffic be updated accordingly. Updates included the following specific tasks:

- The SR 581 re-alignment through the Wiregrass Ranch development; the SR 581 segment from the realignment north to SR 54 was assumed as a two-lane roadway. The existing SR 581/SR 54 intersection was assumed to include only a "right-in-only/right-out" access;
- The proposed developments located in the "triangle" area where SR 54, Curley Road re-alignment, and the Zephyrhills West Bypass intersect; the proposed Wesley Chapel Marketplace and the Harrison-Bennett developments were included and adjustments were made to ensure that their trip distribution and patterns are reasonable as they split traffic between SR 54 and the Zephyrhills Bypass. Several meetings and coordination efforts were held with Pasco, FDOT, American, Lincks & Associates, URS and the developers of these properties to ensure a reasonable trip assignment;
- The socio-economic data was updated reflecting the Wiregrass Ranch specifically approved development levels for the earlier years. The year 2030 assumes the previously proposed build-out development levels. In addition, Wiregrass Ranch was separated into separate traffic analysis zones (TAZs) from the surrounding Wesley Chapel Lakes and Meadow Pointe DRIs;
- The DRI/MPUDs totals were updated based on the latest available DRI matrix from the Tampa Bay Regional Planning Council and from Pasco County's MPUD/DRI database dated Dec.2007;
- Updates to the road improvements based on Pasco and Hillsborough County's Transportation Improvement Programs, the FDOT Work Program, and Wiregrass Ranch/Wesley Chapel Lakes roadway commitments:
    - the build-out schedule for interim roadway improvements was updated based upon FDOT's adopted work program and Pasco and Hillsborough Counties adopted roadway improvement programs and
    - Four lanes on Overpass Road from Old Pasco Road to Curley Road by the year 2016 reflecting recent discussions with Pasco County staff.

For the future No-Build Alternative, the road improvements currently programmed in the state's Work Program and the Pasco and Hillsborough County Transportation Improvement Programs are included. Of significance, the No-Build Alternative includes the Zephyrhills By-Pass, a parallel arterial to the PD&E study section of SR 54 between Curley Road and Handcart Road, connecting with Eiland Road. In addition, SR 56 and Chancey Road are committed by the Wiregrass Ranch and Wesley Chapel Ranch Development Orders to initially extend from SR 581 eastward to Meadow Point Boulevard. Pasco County has programmed the extension of SR 56 further eastward to Morris Bridge Road commencing in the County's 2010/11 fiscal year.

The entire model-traffic forecasting process is more fully documented in a report entitled: *Draft Technical Memorandum - Development of Future Traffic Volumes for the Wal-Mart/FDOT Stipulation of Settlement Traffic Study and SR 54 PD&E STUDY (Curley Road to Morris Bridge Road) prepared by URS Corporation, February 2008.*

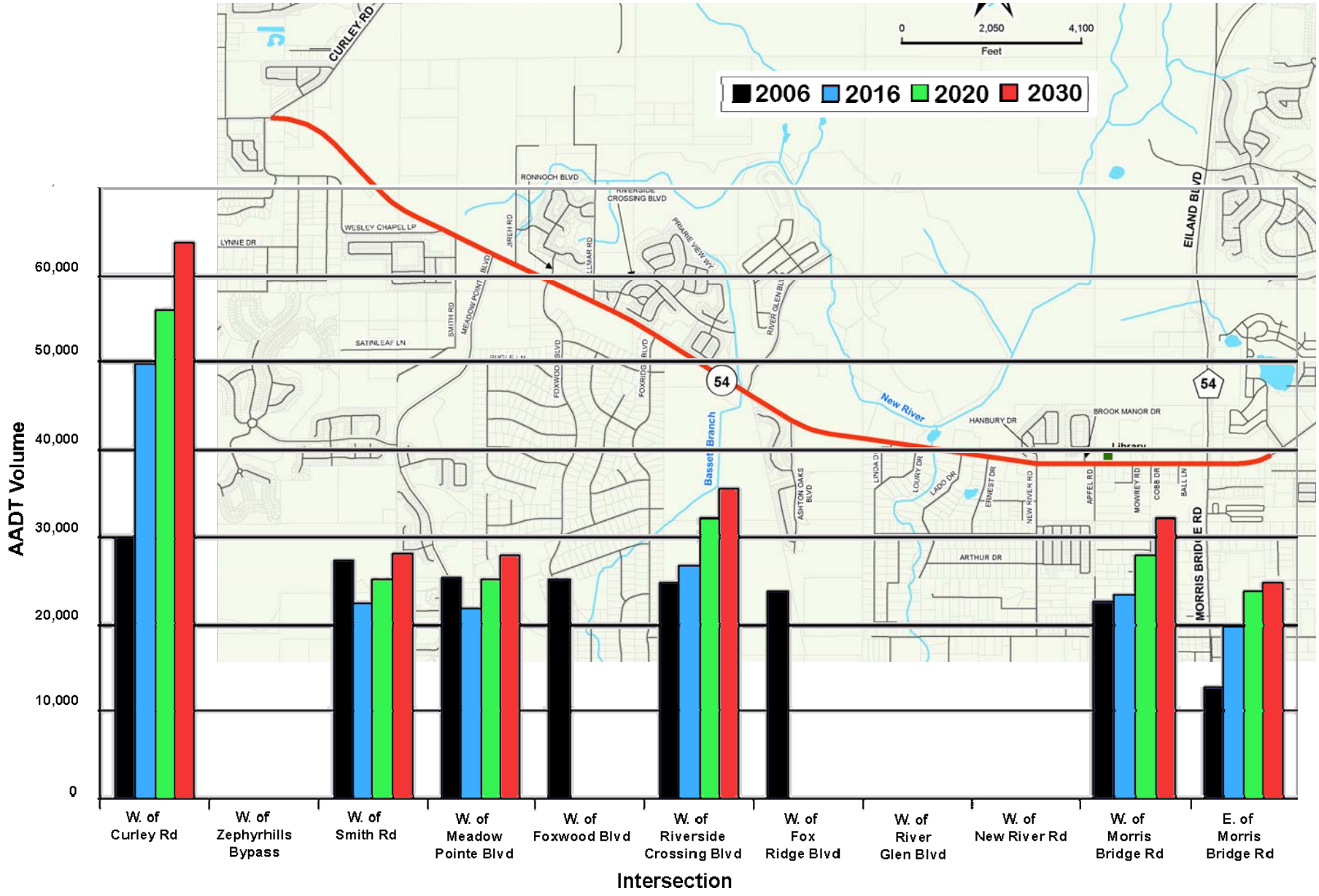
6.4 Traffic Volumes Forecasts and Assumptions

The predicted traffic growth trends by segment for the project corridor are shown in **Figure 6-5**. The 2030 projected traffic volumes for the Build Alternative range from 28,900 VPD east of Meadow Pointe Boulevard to 45,400 VPD west of Meadow Pointe Boulevard. The AADT volumes for years 2010, 2020, and 2030 are illustrated in **Figure 6-6.** Directional Design Hour Volumes (DDHV) were calculated using the previously recommended K and D Factors. **Figure 6-7 (Sheets A and B)** illustrates the peak hour volumes for the all analysis years.

For the design year Build Alternative, manual adjustments were made to the DDHV to account for the effects of proposed raised medians, directional median openings, and full median openings. Tentative locations of these features have been established based on the roadway's Class 3 access management classification, which requires a minimum ¼-mile spacing between directional median openings and ½-mile spacing between full median openings or traffic signals. At intersections proposed to have either no median opening or directional median openings only, side-street motorists will have to make a right turn and then a U-turn if they want to make a left turn. These manual adjustments to the DDHV are shown in the *Traffic Technical Memorandum*.

6.5 Existing and Future Levels of Service

Existing calculated Levels of Service (LOS) for the signalized and unsignalized intersections within the study limits are shown in **Table 6-3**. Intersection Level of Service was calculated based on observed turning movement counts. Arterial LOS was calculated using two-way peak hour volumes. Two of the intersections are currently signalized, including SR 54 at Meadow Point Boulevard and SR 54 at Morris Bridge Road. SR 54 at Curley Road is west of the expected limits of construction for this project, and it is being reconstructed by Pasco County as part of the project to the west of this project. Levels of service were calculated using the Highway Capacity Software (HCS+, version 5.2) for unsignalized and signalized intersection and SYNCHRO version 6.

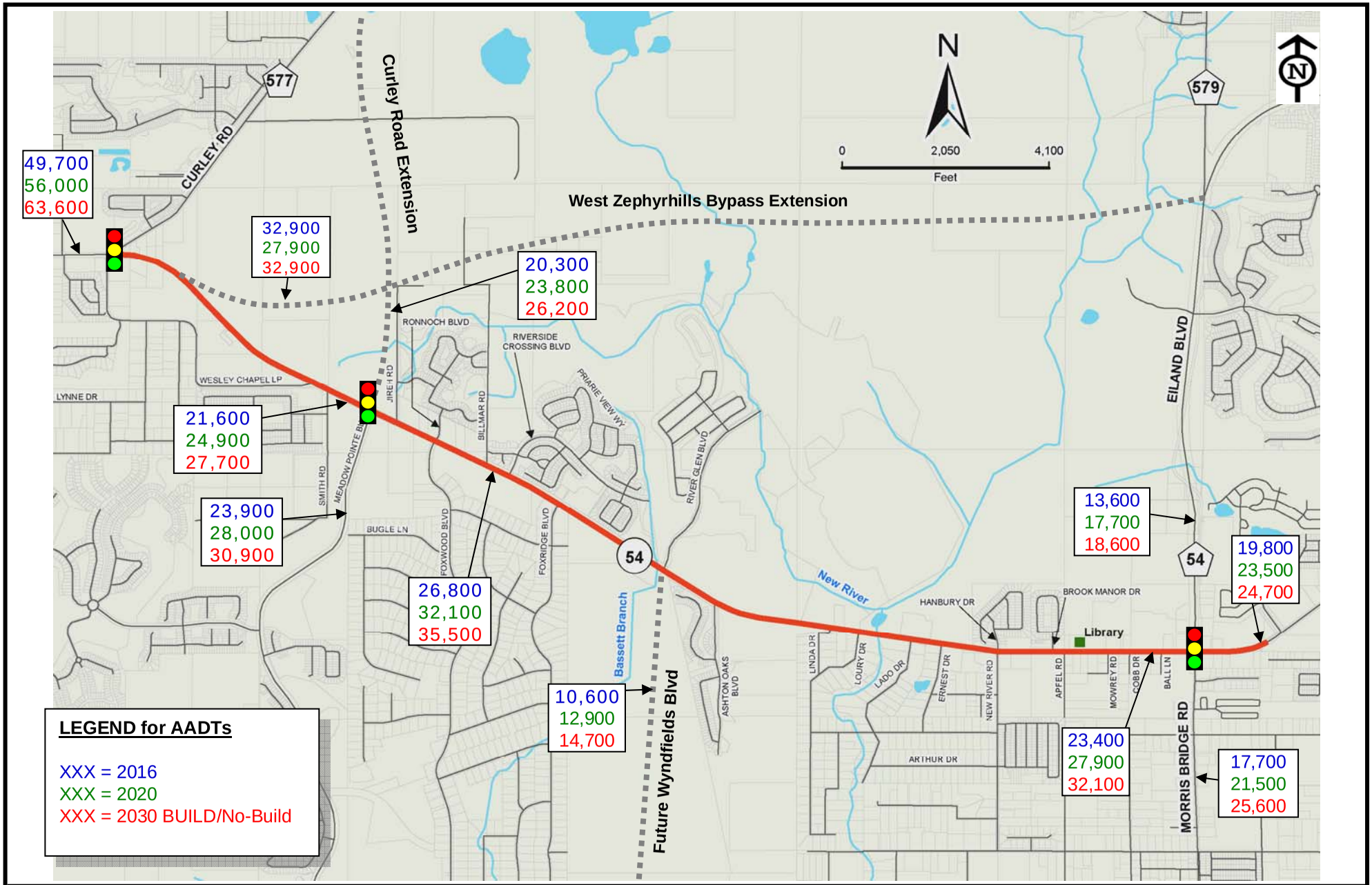


SR 54 PD&E Study
From Curley Road to Morris Bridge Road
Pasco County, Florida
WPI Segment No. 416561-1

SR 54 AADT FOR ALL YEARS

Rev. 5/5/08

FIGURE 6-5

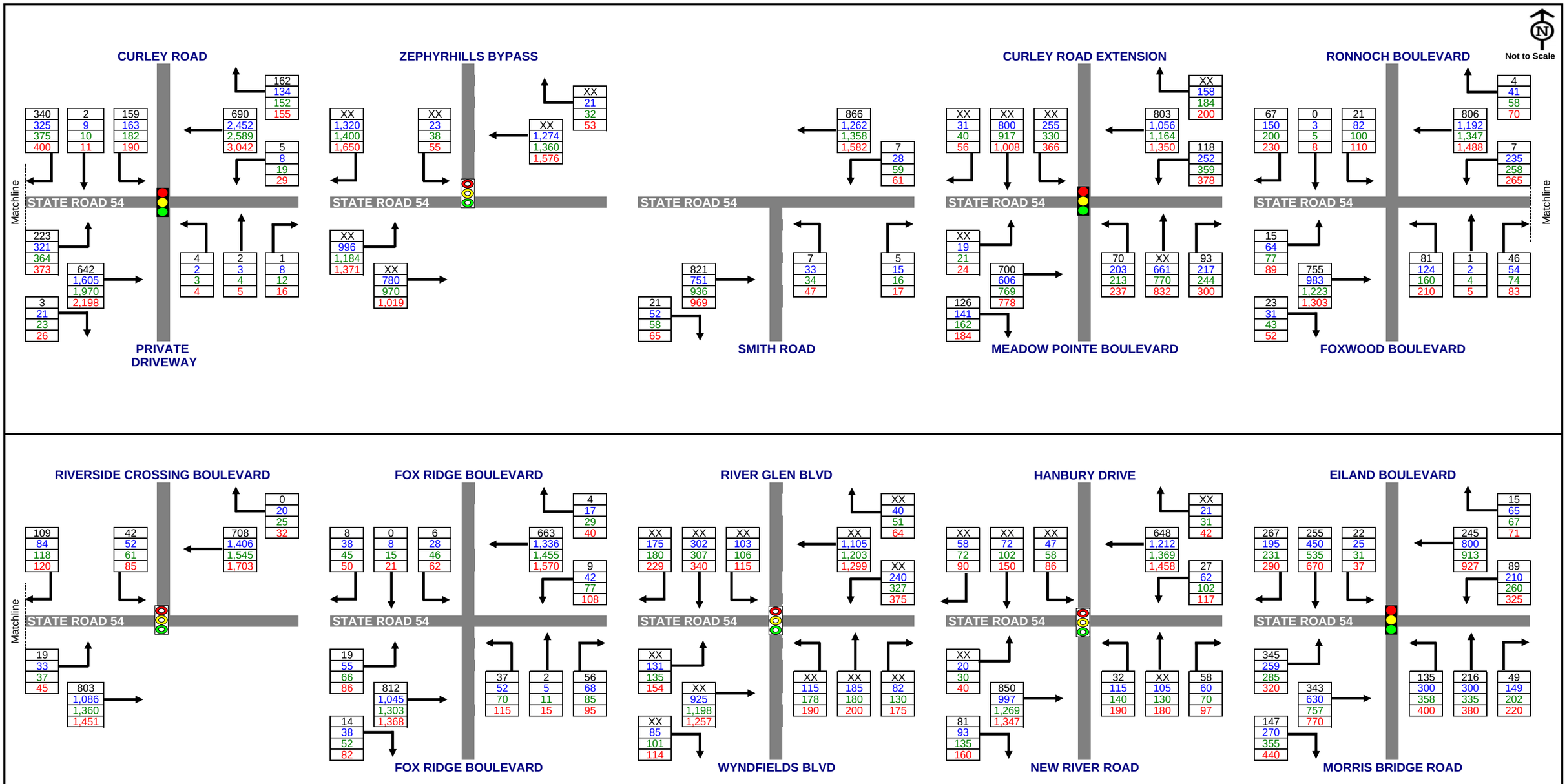


SR 54 PD&E Study
From Curley Road to Morris Bridge Road
Pasco County, Florida
WPI Segment No. 416561-1

FUTURE YEAR PROJECTED AADTS

Rev. 5/5/08

FIGURE 6-6



123 Existing (2006)
123 2016
123 2020
123 2030
XX Prohibited Movement or No Count Available

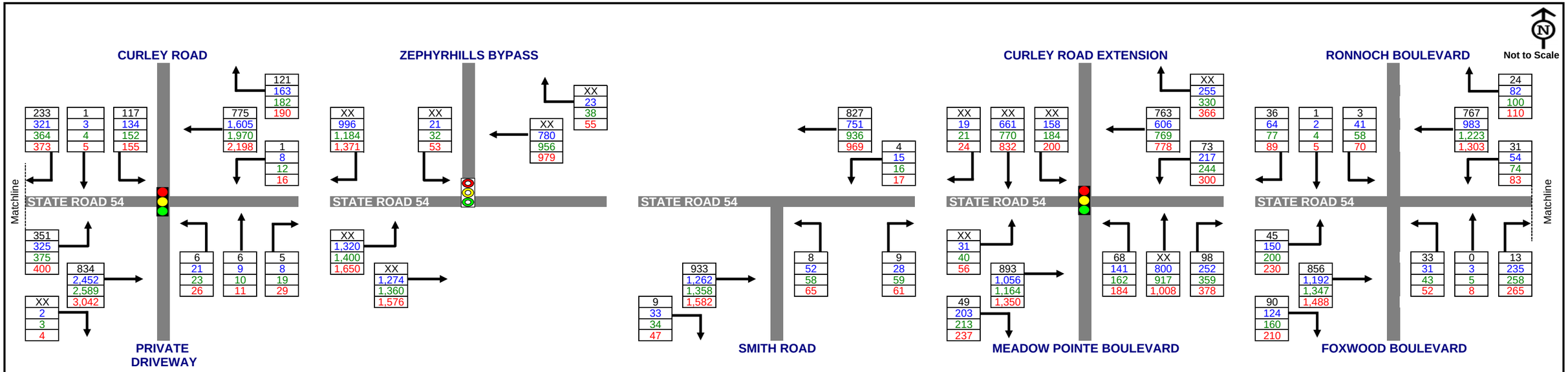
AM PEAK HOUR TURN MOVEMENTS FOR ALL YEARS

Existing Signal

Proposed Signal*

FIGURE 6-7
Sheet A

*Locations with future traffic signals were assumed for analysis purposes; new signals will not be installed until minimum warrants are met and the installation has been approved by FDOT traffic operations.



123 Existing (2006)
123 2016
123 2020
123 2030
XX Prohibited Movement or No Count Available

PM PEAK HOUR TURN MOVEMENTS FOR ALL YEARS

Existing Signal

Proposed Signal*

FIGURE 6-7
Sheet B

*Locations with future traffic signals were assumed for analysis purposes; new signals will not be installed until minimum warrants are met and the installation has been approved by FDOT traffic operations.

Table 6-3. Existing (2006) Levels of Service

Existing 2006 LOS and Delay (sec/vehicle)/ Arterial Speed (mph)										
Signalized Intersections	AM					PM				
Intersection	LOS (Delay)					LOS (Delay)				
	EB	WB	NB	SB	Overall	EB	WB	NB	SB	Overall
SR 54 at Meadow Pointe Blvd.[1]	C (31.3)	C (21.2)	D (37.3)		C (26.8)	E (71.0)	C (21.9)	D (37.6)		D (46.0)
SR 54 at Morris Bridge Road[1]	C (30.1)	D (35.6)	C (22.9)	D (51.9)	D (35.2)	D (46.1)	D (42.1)	C (25.9)	E (61.4)	D (43.6)
Unsignalized Intersections										
Intersection	LOS (Delay)					LOS (Delay)				
	EBL	WBL	NB	SB		EBL	WBL	NB	SB	
SR 54 at Smith Road[1]		A (10.0)	F (184.3)				B (10.1)	F (84.9)		
SR 54 at Ronnoch/Foxwood Blvd.[1]	A (9.9)	A (9.6)	F (974.0)	F (86.5)		A (9.9)	B (10.4)	F (244.9)	C (24.8)	
SR 54 at Riverside Crossing Blvd.[1]	A (9.3)			D (31.8)		B (10.8)			E (44.6)	
SR 54 at Fox Ridge Blvd.[1]	A (9.4)	A (9.7)	F (116.4)	E (48.1)		A (9.7)	A (9.8)	F (78.3)	E (43.9)	
New River Road[1]		B (11.6)	F (112.7)				B (10.2)	F (58.7)		
Arterial LOS										
Segment on SR 54	LOS (speed)									
Curley to Meadow Point Blvd.[2]	E (34.0)									
Meadow Point Blvd. to Morris Bridge Rd.[2]	E (35.8)									

[1]The LOS results are based on actual peak hour counts, which may be lower than DDHVs derived from AADTs times the K30 Factor.

[2]The LOS results are based on HighPlan 2007. The values in parenthesis are average travel speed.

LOS shown for the signalized intersections is for individual approaches as well as the overall intersection, and for unsignalized intersections the LOS shown is for the major street left turns and minor street approaches. The acceptable level of service established in the Pasco County Comprehensive Plan, Transportation Element is LOS "D". The signalized intersections were operating at either LOS C or LOS D in 2006, based on actual observed counts. For the unsignalized intersections, the LOS for the minor street approaches ranges from LOS C to LOS F, with the majority operating at LOS F.

The LOS for the overall arterial was estimated from the use of FDOT's HighPlan and ArtPlan 2007 programs. The western end of the project area (including the traffic signals at Curley Road and at Meadow Pointe Boulevard) is currently operating at LOS F according to ArtPlan. The center portion of the project area is operating at LOS D based on HighPlan, and the easternmost segment on either side of the signal at Morris Bridge Road is operating at LOS F according to ArtPlan. Copies of HCS and HighPlan/ArtPlan printouts for year 2006 are included in the *Traffic Technical Memorandum*.

6.5.1 Alternatives Evaluated

The Build Alternatives considered included mainline widening consistent with the MPO's 2025 Needs Plan, which shows a 4 lane-divided roadway on SR 54 between Curley Road and Morris Bridge Road. After an initial evaluation, intersection improvements were considered at all major intersections as well as a 6 lane mainline (4 thru lanes plus 2 auxiliary lanes) from east of Curley Road to Foxwood Boulevard. In addition to the Build Alternatives, a No-Build alternative was evaluated which would consider maintaining the existing two-lane condition along SR 54 throughout the study limits.

Future Levels of Service

6.5.2 No-Build Alternative Capacity Analysis

Year 2030 was selected as the design year for future traffic analysis. Based on the 2030 No Build p.m. peak design hour volumes, all of the intersections would operate at LOS F if SR 54 is not widened to at least four through lanes.

For the overall arterial, level of service (LOS) estimates for the No-Build Alternative were developed using FDOT's ArtPlan and HighPlan 2007 software. Based on this methodology, the *uninterrupted flow* segments are expected to be operating at LOS F by year 2021, if the roadway is not widened to at least 4 through lanes. The segments at the west and east ends, which include signalized intersections (*interrupted flow*), are already operating at LOS F (based on ArtPlan), and peak hour travel speeds are expected to continue to decline as the traffic volumes continue to

increase. Traffic flow under LOS F conditions will be mostly "stop and go" for the entire peak period, and under these conditions, speeds are difficult to predict.

6.5.3 Build Alternative Capacity Analysis

Future projected LOS for the signalized and unsignalized intersections within the study limits are shown in **Table 6-4** based on the intersection laneage proposed in **Figure 6-8**. The LOS results were determined from SYNCHRO (version 6) and the Highway Capacity Software (HCS+, version 5.2), based on the projected peak period directional design hour volumes (DDHV).

With the intersection laneage proposed, all of the proposed signalized intersections are predicted to operate at LOS C or D in the a.m. and p.m. peak periods in the design year 2030. For the unsignalized intersections, the predicted side street LOS ranges from B to F; all three intersections shown are proposed to have left-turns and through movements prohibited from the side streets, due to access management requirements.

The following two intersections are planned or proposed to be signalized since the existing/future cross roads are (or will be) major collectors or minor arterials in Pasco County's proposed highway network:

- SR 54 at the West Zephyrhills Bypass Extension
- SR 54 at River Glen Boulevard (formerly known as New River Boulevard)

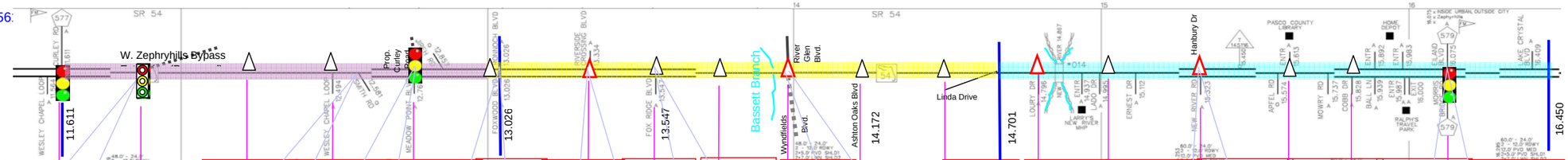
The following additional locations are recommended for signalization in the future, when warranted by traffic or crash data:

- SR 54 at Riverside Crossing
- SR 54 at New River Road.

Locations with future traffic signals were assumed for analysis purposes; new signals will not be installed until minimum warrants are met and the installation has been approved by FDOT traffic operations. All proposed future traffic signals meet the minimum 0.5 mile spacing between signals required by FDOT's Access Management Class 3 standards.

Both of the latter two locations were proposed to have full median openings (based on Access Management Class 3 standards) prior to reviewing any LOS results. Without signalization, the LOS for the side streets at these two intersections would be LOS F, and both of these intersections would need to accommodate high numbers of U-turns due to the proposed directional median openings to be located on either side of each of these intersections. Both of these intersections have development order commitments from the New River DRI that require them to be signalized when the Manual on Uniform Traffic Control Devices warrants are met (Reference: Development Order for DRI No. 210, Resolution No. 04-43, approved by the Pasco County BOCC on November 18, 2003).

SR 54 PD&E Study ♦ WPI Segment No. 416561-1



Concept Design Plans
Sheet Number ----->

Sheet 2 | Sheet 3 | Sheet 4 | Sheet 5 | Sheet 6 | Sheet 7 | Sheet 8 | Sheet 9 | Sheet 10 | Sheet 11 | Sheet 12 | Sheet 13 | Sheet 14 | Sheet 15 | Sheet 16 | Sheet 17 | Sheet 18 | Sheet 19

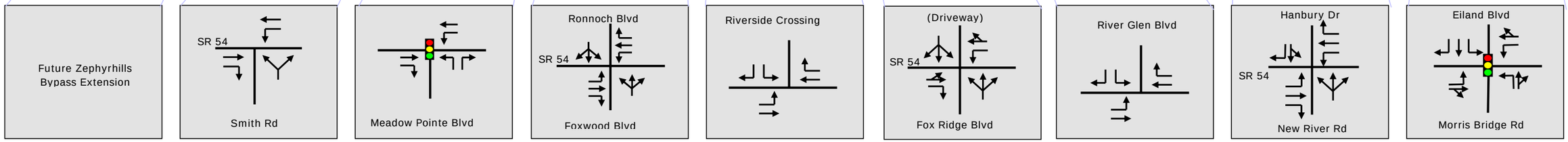
Proposed Full Median Opening
Proposed Directional Median Opening

Distances between proposed median openings (feet and miles)

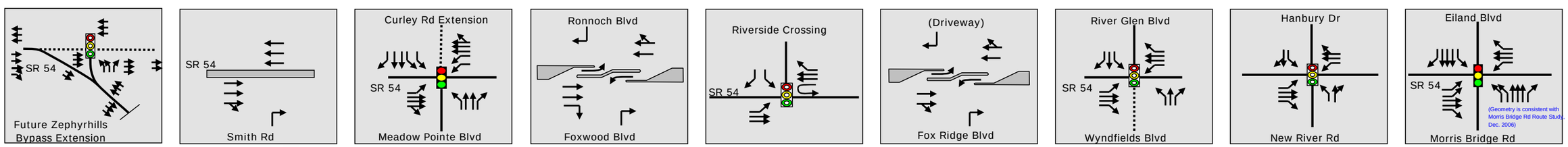
2500 ft 0.47 mi | 1000 ft 0.19 mi | 1170 ft 0.22 mi | 1380 ft 0.26 mi | 1420 ft 0.27 mi | 1600 ft 0.30 mi | 1170 ft 0.22 mi | 1330 ft 0.25 mi | 1120 ft 0.21 mi | 1200 ft 0.23 mi | 1570 ft 0.30 mi | 1380ft 0.26 mi | 1240 ft 0.23 mi | 1520 ft 0.29mi | 1560 ft 0.30mi | 1450 ft 0.27mi | 850 ft 0.16mi

Segment	Curley Road to Foxwood Blvd.	Foxwood Blvd to Linda Drive	Linda Drive to East of Morris Bridge Road
Proposed Typical Section	**4-Lane + Aux. Lanes Urban**	**4-Lane Suburban**	**4-Lane Urban**

Existing Intersection Geometry



Proposed Intersection Geometry



Existing Traffic Signal

***Proposed Future Traffic Signal**

*Locations with future traffic signals were assumed for analysis purposes; new signals will not be installed until minimum warrants are met and the installation has been approved by FDOT traffic operations.

SR 54 PD&E Study
From Curley Road to Morris Bridge Road
Pasco County, Florida
WPI Segment No. 416561-1

PROPOSED MEDIAN OPENING LOCATIONS AND INTERSECTION GEOMETRY

FIGURE 6-8

Rev. 3/24/09

Table 6-4. Future Peak Hour Levels of Service (Build Alternative)

2030 Build LOS and Delay (sec/vehicle)/ Arterial Speed (mph)											
	AM					PM					
Signalized Intersections (Existing & Future)[1]	LOS (Delay)					LOS (Delay)					
SR 54 at:	EB	WB	NB	SB	Overall	EB	WB	NB	SB	Overall	
Zephyrhills Bypass Extension*	C (33.4)	D (44.4)	D (44.0)		D (41.1)	B (10.4)	B (16.8)	E (56.3)		C (24.3)	
Meadow Pointe Blvd	D (53.8)	D (53.4)	D (45.7)	E (63.9)	D (54.3)	E (58.9)	D (46.9)	E (59.9)	D (51.4)	D (54.7)	***
Riverside Crossing Blvd*	C (34.8)	D (46.5)		D (36.7)	D (40.6)	D (36.6)	C (23.3)		C (34.3)	C (30.6)	
River Glen**/Wyndfields Blvd*	E (62.4)	D (39.1)	E (64.8)	E (65.0)	D (53.9)	D (50.5)	D (46.8)	D (46.7)	D (40.1)	D (47.6)	
Hanbury Drive/New River Road*	D (38.2)	D (52.9)	D (48.2)	D (47.0)	D (46.1)	D (47.3)	D (48.5)	D (51.1)	D (50.6)	D (48.4)	
Morris Bridge Rd	D (43.8)	C (33.2)	D (46.3)	E (65.0)	D (45.7)	D (44.9)	D (43.3)	D (45.2)	D (46.1)	D (44.8)	

Unsignalized Intersections[1]	LOS (Delay)					LOS (Delay)				
SR 54 at:	EBL	WBL	NB	SB		EBL	WBL	NB	SB	Comments
Smith Rd			B (11.8)					C (16.2)		No median opening proposed
Ronnoch/Foxwood Blvd	C (21.4)	D (29.7)	F (56.3)	F (190.2)		D (25.2)	C (21.0)	F (109.2)	C (22.6)	Directional median opening proposed
Fox Ridge Blvd	C (18.1)	B (13.7)	B (13.5)	D (26.4)		C (15.6)	C (16.3)	B (14.7)	D (25.0)	Directional median opening proposed

Arterial LOS[2]	LOS (speed)		Comments	LOS (speed)		Comments
SR 54	EB	WB		EB	WB	
West of Curley Road	B (35.3)		Future 6-Laning by the county	C (33.5)		Future 6-Laning by the county
Curley Road to Meadow Pointe Blvd.	D (26.3)	E (18.0)	4 L + Auxilliary Lanes	D (24.4)	C (28.4)	4 L + Auxilliary Lanes
Meadow Pointe to Riverside Crossing	B (38.5)	D (24.4)	4 Lanes east of Foxwood	B (39.8)	D (25.4)	4 Lanes east of Foxwood
Riverside Crossing to Wyndfields Blvd.	D (23.3)	B (34.5)	4 Lanes proposed	C (28.4)	B (40.5)	4 Lanes proposed
Wyndfields Blvd. to New River Road	B (36.4)	B (35.8)	4 Lanes proposed	B (36.0)	C (33.0)	4 Lanes proposed
New River Road to Morris Bridge Road	D (26.3)	C (30.3)	4 Lanes proposed	C (27.5)	C (29.5)	4 Lanes proposed
East of Morris Bridge Road		E (18.4)	4 Lanes proposed		E (20.5)	4 Lanes proposed
Overall Arterial	C (30.1)	C (27.5)		C (30.8)	C (29.9)	

[1]Results of signalized and unsignalized intersections were based on HCS+.

[2]Results of arterial analysis were from Synchro.

*Locations with future traffic signals were assumed for analysis purposes; new signals will not be installed until minimum warrants are met and the installation has been approved by FDOT traffic operations.

**River Glen Blvd formerly known as "New River Blvd."

***Table Revised 3/16/09

Table 6-4 (above) also shows the overall projected arterial LOS for the 2030 Build Alternative. Arterial LOS was derived from SYNCHRO. For the year 2030 Build Alternative, the overall arterial peak period LOS is predicted to be LOS C for both directions for both peak periods. The analysis excluded the intersection of existing Curley Road/SR 54, since that intersection falls outside the expected limits of construction for this project. At the west end of the project, widening to 4 lanes plus 2 auxiliary lanes will be needed by approximately year 2020, based on the future traffic projections and SYNCHRO analysis.

6.5.4 Intersection Geometric Recommendations

Future recommended laneage at major intersections is shown in **Figure 6-8**, based on design-year projected a.m. and p.m. peak hour turning volumes. In addition, proposed locations, types, and spacing of median openings are shown in this same figure.

Recommended lengths for auxiliary lanes at signalized intersections are shown in **Table 6-5**, also based on the same projected turning volumes. **Table 6-6** shows recommended auxiliary lane lengths at the major unsignalized intersections. Prior to the end of the future design phase, these auxiliary lane lengths should be re-evaluated based on updated design hour volumes for both the a.m. and p.m. peak periods.

.

SR 54 PD&E Study

TABLE 6-5. RECOMMENDED AUXILIARY LANE LENGTHS- SIGNALIZED INTERSECTIONS

Curley Rd. to Morris Bridge Rd.

Based on Year 2030 Peak Directional Design Hour Volumes

Rev. March 2009

Intersection Approach & Lane Group		(1) Peak Hour Traffic (VPH)	(2) Cycle Length (Sec.)	(3) (1- g/c)	(4) No. of Prop. Lanes	(5) Random Arival Factor K	(6) Req Queue (ft) From ITE Formula	(7) "L" Distance From Index No. 301 (ft)	(8) Column (6) + Column (7) (feet)	(9) Recommended Lane Lengths[1] (ft.)	Foot Notes
SR 54 & Zephyrhills Bypass Intersection (AM)											
EB	Left										
	Thru	1371	150	0.40	3	1.5	301	240	541	775	**4**
	Right										
WB	Left										
	Thru	1705	150	0.40	3	1.5	367	240	607	700	**4**
	Right										
NB	Left	1637	150	0.68	2	1.5	904	435	1339	1350	**5**
	Thru										
	Right	53	150	0.68	1	1.5	59	240	299	300	**4**
SB	Left										
	Thru										
	Right										
SR 54 & Zephyrhills Bypass Intersection (PM)											
EB	Left										
	Thru	1650	150	0.60	3	1.5	535	240	775	775	**4**
	Right										
WB	Left										
	Thru	1424	150	0.60	3	1.5	453	240	693	700	**4**
	Right										
NB	Left	996	150	0.47	2	1.5	382	435	817	825	**5**
	Thru										
	Right	55	150	0.47	1	1.5	42	240	282	300	**4**
SB	Left										
	Thru										
	Right										

Notes: (The distance "L" in column 6 is the total deceleration distance)

[1] All recommendations rounded to nearest 25 ft. [2] The 185 ft from Index 301, based on design speed of 45 mph [3] The 145 ft from Index 301, based on design speed of 35 mph.

[4] The 240 ft from Index 301, based on design speed of 50 mph, [5] The 435 ft from AASHTO Decel from 50 to 0 mph

*Locations with future traffic signals were assumed for analysis purposes; new signals will not be installed until minimum warrants are met and the installation has been approved by FDOT traffic operations.

The ITE "red-time" formula is: $L = \frac{(1-G/C)(\text{Volume})(1+\%\ \text{trucks})(K)(25\ \text{ft/vehicle})}{(\#\ \text{cycles per hour})(\#\ \text{traffic lanes})}$ where G = Green time, C = cycle length, and K = random arrival factor (1.5 was used)

Source: ITE's Traffic Engineering Handbook, 1999.

TABLE 6-5. RECOMMENDED AUXILIARY LANE LENGTHS- SIGNALIZED INTERSECTIONS

Based on Year 2030 Peak Directional Design Hour Volumes

Intersection Approach & Lane Group		(1) Peak Hour Traffic (VPH)	(2) Cycle Length (Sec.)	(3) (1- g/c)	(4) No. of Prop. Lanes	(5) Random Arival Factor K	(6) Req Queue (ft) From ITE Formula	(7) "L" Distance From Index No. 301 (ft)	(8) Column (6) + Column (7) (feet)	(9) Recommended Lane Lengths[1] (ft.)	Foot Notes
SR 54 & Curley Road Ext/Meadow Pointe Blvd. Intersection											
EB	Left	121	136	0.86	1	1.5	153	185	338	350	**2**
	Thru/Rt	1587	136	0.65	3	1.5	507	0	507	525	**2**
WB	Left	496	137	0.81	2	1.5	298	185	483	500	**2**
	Thru/Rt	1716	137	0.64	3	1.5	543	0	543	550	**2**
NB	Left	237	136	0.58	1	1.5	203	145	348	350	**3**
	Thru	1008	136	0.69	2	1.5	512	0	512	525	**3**
	Right	378	136	0.52	1	1.5	290	145	435	450	**3**
SB	Left	366	137	0.87	2	1.5	236	145	381	400	**3**
	Thru	1008	137	0.69	2	1.5	516	0	516	525	**3**
	Right	56	137	0.58	1	1.5	48	145	193	200	**3**
SR 54 & Riverside Crossing Blvd. Intersection*											
EB	Left	260	120	0.31	1	1.5	105	240	345	350	**4**
	Thru	1703	120	0.45	2	1.5	498	0	498	500	**4**
WB	Left	83	120	0.33	1	1.5	36	240	276	275	**4**
	Thru	1703	120	0.48	2	1.5	531	0	531	550	**4**
	Right	85	120	0.16	1	1.5	18	240	258	275	**4**
SB	Left	85	120	0.75	1	1.5	83	145	228	250	**3**
	Right	120	120	0.75	1	1.5	117	145	262	275	**3**
SR 54 & Wyndfields Blvd./River Glen Blvd. Intersection*											
EB	Left	229	150	0.40	1	1.5	149	240	389	400	**4**
	Thru	1257	150	0.62	2	1.5	633	0	633	650	**4**
	Right	190	150	0.48	1	1.5	148	240	388	400	**4**
WB	Left	375	150	0.37	1	1.5	225	240	465	475	**4**
	Thru	1257	150	0.58	2	1.5	592	0	592	600	**4**
	Right	115	150	0.48	1	1.5	90	240	330	350	**4**
NB	Left	190	150	0.68	1	1.5	210	145	355	375	**3**
	Thru	340	150	0.76	1	1.5	420	0	420	425	**3**
	Right	375	150	0.58	1	1.5	353	145	498	500	**3**
SB	Left	115	150	0.68	1	1.5	127	145	272	275	**3**
	Thru	340	150	0.79	1	1.5	436	0	436	450	**3**
	Right	229	150	0.69	1	1.5	257	145	402	400	**3**

TABLE 6-5. RECOMMENDED AUXILIARY LANE LENGTHS- SIGNALIZED INTERSECTIONS

Based on Year 2030 Peak Directional Design Hour Volumes

Intersection Approach & Lane Group		(1) Peak Hour Traffic (VPH)	(2) Cycle Length (Sec.)	(3) (1- g/c)	(4) No. of Prop. Lanes	(5) Random Arival Factor K	(6) Req. Queue (ft) From ITE Formula	(7) "L" Distance From Index No. 301 (ft)	(8) Column (6) + Column (7) (feet)	(9) Recommended Lane Lengths[1] (ft.)	Foot Notes
SR 54 & Hanbury Dr./New River Road Intersection*											
EB	Left	90	150	0.39	1	1.5	57	185	242	250	**2**
	Thru	1458	150	0.54	2	1.5	640	0	640	650	**2**
	Right	190	150	0.42	1	1.5	130	185	315	325	**2**
WB	Left	117	150	0.41	1	1.5	78	185	263	275	**2**
	Thru	1458	150	0.53	2	1.5	628	0	628	650	**2**
NB	Left	190	150	0.64	1	1.5	198	145	343	350	**3**
	Thru	180	150	0.76	1	1.5	222	0	222	225	**3**
SB	Left	86	150	0.65	1	1.5	91	145	236	250	**3**
	Thru	180	150	0.78	1	1.5	228	0	228	250	**3**
SR 54 & Morris Bridge Road Intersection (All lane lengths proposed to match those shown on the concept plans contained in the CR 579 - Morris Bridge Road Route Study Report, dated December 20. 2006.)											
EB	Left				2					550	
	Right				1					700	
WB	Left				1					500	
	Right				1					325	
NB	Left				2					650	
	Right				1					850	
SB	Left				1					650	
	Right				1					750	

Notes: (The distance "L" in column 6 is the total deceleration distance)

[1] All recommendations rounded to nearest 25 ft. [2] The 185 ft from Index 301, based on design speed of 45 mph [3] The 145 ft from Index 301, based on design speed of 35 mph.

[4] The 240 ft from Index 301, based on design speed of 50 mph.

*Locations with future traffic signals were assumed for analysis purposes; new signals will not be installed until minimum warrants are met and the installation has been approved by FDOT traffic operations.

The ITE "red-time" formula is: $L = \frac{(1-G/C)(Volume)(1+\%\ trucks)(K)(25\ ft/vehicle)}{(\#\ cycles\ per\ hour)(\#\ traffic\ lanes)}$ where G = Green time, C = cycle length, and K = random arrival factor (1.5 was used)

Source: ITE's Traffic Engineering Handbook, 1999.

TABLE 6-6. RECOMMENDED AUXILIARY LANE LENGTHS - UNSIGNALIZED INTERSECTIONS

Based on Year 2030 Peak Directional Design Hour Volumes

Intersection Approach & Lane Group		(1) Peak Hour Traffic (VPH)	(2) Design Speed (mph)	(3) No. of Prop. Lanes	(4) Storage Length (ft) From ITE[2]	(5) Storage Length (ft) From FDOT Florida Greenbook[2]	(6) Total Deceleration Length (ft)	(7) Column (4) + Column (6) (feet)	(8) Column (5) + Column (6) (feet)	(9) Recommended Lane Lengths[1] (ft.)	Foot Notes
SR 54 & Ronnoch/Foxwood Blvd. Intersection											
EB	Left	230	50	1	500	200	240	740	440	450	**5**
WB	Left	265	50	1	500	225	240	740	465	475	**5**
SR 54 & Fox Ridge Blvd. Intersection											
EB	Left	86	50	1	500	100	240	740	340	350	**5**
WB	Left	108	50	1	500	125	240	740	365	375	**5**

Notes: (The length in column 4 is the total storage queue length)

[1] All recommendations rounded to nearest 25 ft.

[2]The storage length is from M.D. Hamerlink Curve from Institute of Transportation Engineers (ITE) Traffic Engineering Handbook.

[3]The storage length is from FDOT's Florida Greenbook.

[4]The 240 ft total deceleration length from Design Standards Index #301, based on design speed of 50 mph.

[5]The storage values calculated from the Florida Greenbook are recommended as they appear more reasonable.

SECTION 7 - CORRIDOR ANALYSIS

This proposed project is considered a "Level I corridor analysis" (projects on existing alignments for which alternative corridors are not being considered, and the development and analysis of an interconnected multimodal transportation system is not feasible). Pasco County and the FDOT are both in the process of developing additional east-west corridors both north and south of SR 54 to help serve this rapidly growing area of the county. To the north of SR 54, the West Zephyrhills Bypass is being planned and designed by the county to provide an alternate east-west route between Curley Road and CR 579/Eiland Boulevard. To the south, the County is extending Chancey Road between SR 581 and Tina Marie Drive (located west of Morris Bridge Road). In addition, the county and FDOT are working on a series of projects to extend SR 56 between SR 581 and US 301, which will provide an additional west-east corridor in south Pasco County**.** Most of these new and extended roadways are shown in **Figures 2-3 and 3-1** earlier in this report. Despite these new facilities, the projected travel demand on SR 54 still indicates the need for additional improvements as documented in Section 6 of this report.

SECTION 8 - ALTERNATIVES ANALYSIS

8.1 No-Build Alternative

The No-Build Alternative would involve postponing major improvements to the existing roadway beyond the design year 2030. This involves leaving existing SR 54 as-is, providing only routine maintenance and safety improvements as required.

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

- No new construction costs
- No disruption to existing land use due to construction
- No disruption to traffic due to construction activities
- No right-of-way acquisition or relocations, and
- No disturbance to natural resources

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

- Increase in roadway maintenance and user costs
- Increase in traffic congestion
- Increase in potential for traffic crashes
- Deterioration of air quality, and
- Inconsistency with local transportation plans

These advantages and disadvantages, along with other criteria established will be used in the evaluation process with the Build Alternatives. The No-Build Alternative will remain a viable alternative throughout the PD&E Study process.

8.2 Transportation System Management

Transportation System Management (TSM) are actions designed to achieve short-range cost-effective transportation improvements. TSM improvements can include:

- Improve the efficiency of an existing roadway;
- Reduce vehicle use in congested areas;
- Improve transit service; and
- Improve internal transit management efficiency

While Transportation System Management (TSM) measures such as signal timing improvements, signing and marking improvements, intersection improvements, and travel demand management strategies could result in small operational improvements, TSM measures alone would not adequately address the major need for the project, which is to increase the roadway capacity to meet projected future travel demand. Therefore,

the TSM Alternative is not considered viable as a replacement for the Build Alternatives. As development continues to occur, however, some TSM improvements could be prudent for the county/FDOT to include in development orders, or include as potential interim improvements.

8.3 Build Alternatives

The following steps were utilized to develop and evaluate viable alternatives:

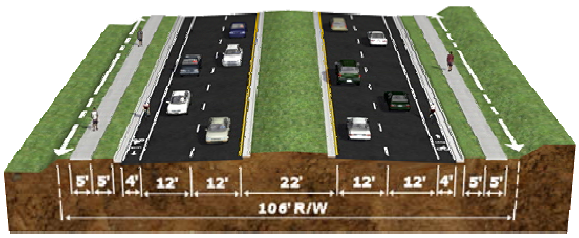
- Base concept plans were prepared using all available data regarding existing right of way (ROW) including county GIS, FDOT ROW maps, and subdivision plats as well as planned or proposed ROW dedications by developers
- The project was divided into five segments to facilitate evaluation
- The required number of through lanes was determined based on the traffic analysis summarized in Section 6
- Typical sections were developed based on standard design criteria
- Alternative alignments were developed to minimize costs and environmental impacts
- The Build Alternatives were evaluated using an evaluation matrix.
- A Recommended Alternative (will be) selected

8.3.1 Typical Sections

Typical sections initially considered are shown in **Figure 8-1**. This figure shows the right of way requirements and other features of the typical sections considered. Both Pasco County's standard typical sections (approved by the Board of County Commissioners on June 29, 2004) provided by the Pasco County Development Services Branch, as well as FDOT's standard typical sections, were considered. A special effort was made to accommodate the county's wider border areas since there is an unwritten understanding between FDOT and Pasco County that SR 54 will eventually be turned over to the county when SR 56 is extended to the east to connect to US 301. All alternative typical sections meet or exceed FDOT's minimum typical section requirements contained in the Plans Preparation Manual.

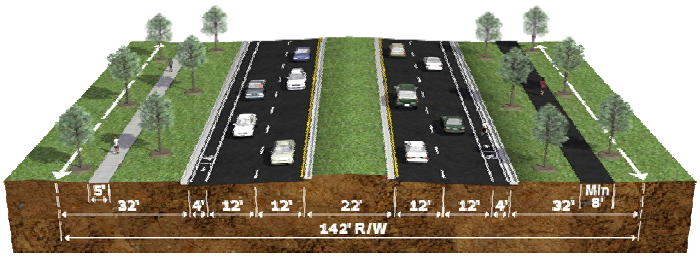
Initially, only rural and suburban typical sections were considered due to their desirable higher operating speeds compared to urban typical sections. However, it soon became apparent that urban typical sections might be necessary, at least in some areas, in order to minimize impacts to adjacent properties as well as to wetlands and other natural communities.

Acronyms Used:
ROW = Right of Way LD = Lane Divided



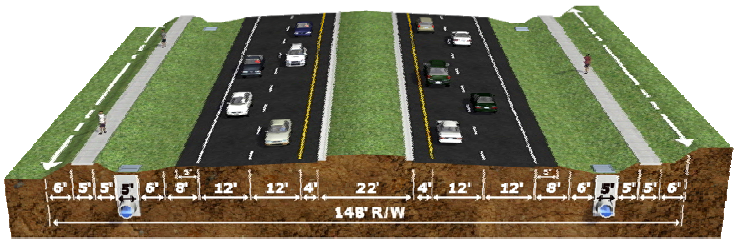
FDOT 4-LD Urban

- Requires **106'** of ROW minimum
- Pasco County's version of this requires **142'** of ROW
- Design Speed = 45 mph



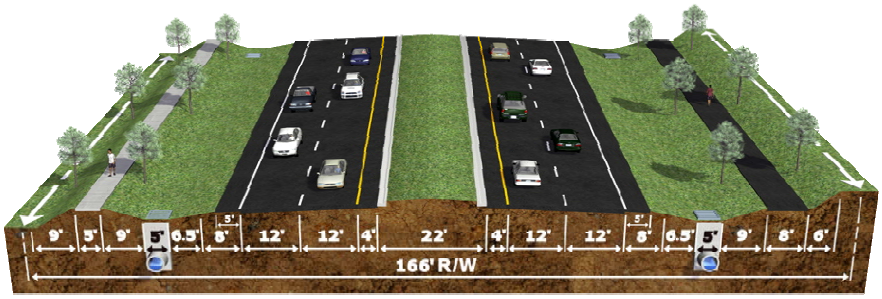
Pasco County 4-LD Urban (TS-1)

- Requires **142'** of ROW minimum
- Has wider border areas for utilities and trails compared to FDOT's version
- Design Speed = 45 mph



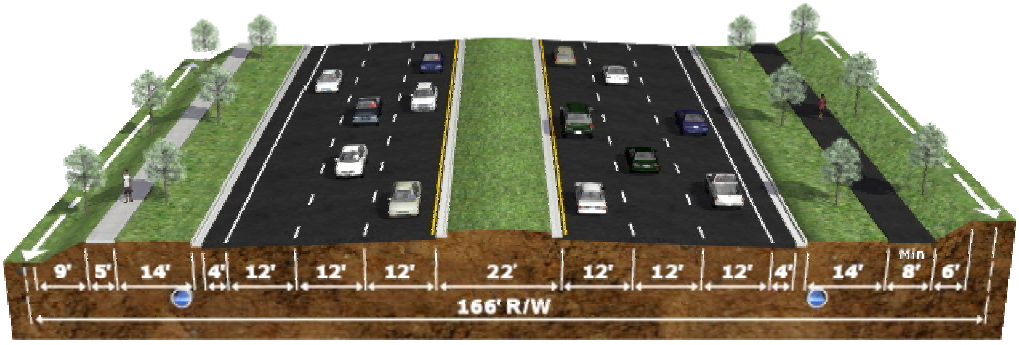
FDOT 4-LD Suburban

- Requires **148'** of ROW
- Could be "converted" to a 6 LD Urban Section in the future if warranted by traffic demand
- Design Speed = 55 mph



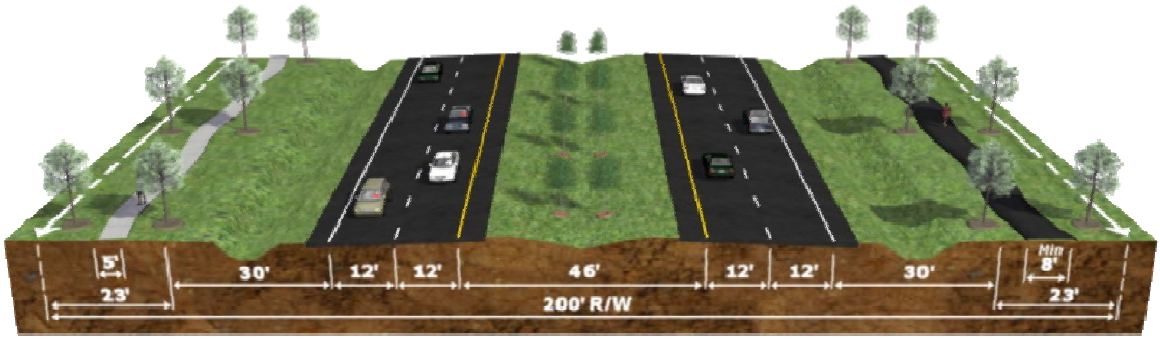
Pasco County 4-LD Suburban

- Requires **166'** of ROW
- Has wider border areas for utilities and trails compared to FDOT's version
- Could be "converted" to the County's standard 6 LD Urban Section in the future if warranted by traffic demand
- Design Speed = 55 mph



6-LD Urban - Pasco County Version (TS-2)

- Requires **166'** of ROW compared to 130' for FDOT's version
- Has wider border areas for utilities and trails compared to FDOT's version



4-LD Rural - Pasco County Version (TS-4)

- Requires **200'** of ROW
- Expandable to 6 LD Rural with a 22-ft raised median (50 mph design speed)
- Would also allow room for a future 6-LD Urban section

Two important meetings were held early on in the study process to discuss alternative typical sections in addition to other project issues. The first of these was a meeting held with FDOT and county officials on September 13, 2006. Various typical section alternatives were reviewed and discussed, and the Department requested the county to formally request consideration of their standard typical sections if that is what they want the Department to follow. The second meeting was held at FDOT's District Seven offices with the Department's District Design Engineer and other Department staff on November 14, 2006. The District Design Engineer acknowledged that suburban and urban sections might be appropriate in lieu of a rural typical section, given the suburban land uses in this rapidly growing area of Pasco County. It was suggested that a suburban typical section might be appropriate west of New River and an urban typical section might be appropriate east of New River, due to more adjacent development east of New River.

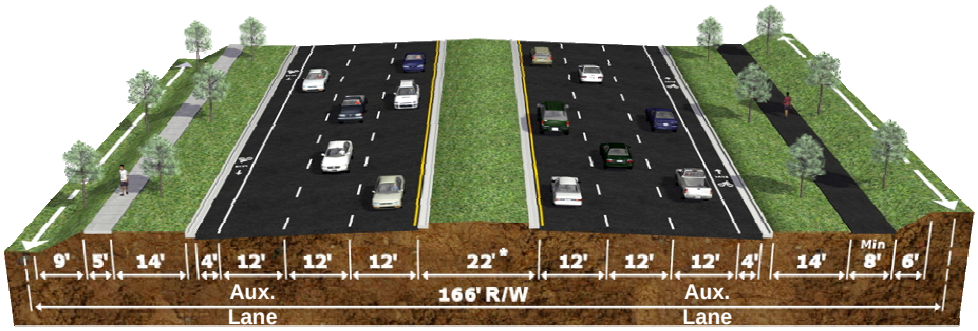
Until revised traffic projections were received in March 2007, it was assumed that a four-lane typical section would be adequate through the design year 2030. The year 2030 traffic projections near the west of the project went from 32,500 vehicles per day (in July 2006) to approximately 50,000 vehicles per day (in March 2007). Once it became apparent that four lanes plus two auxiliary lanes would be needed near the west end in order to achieve an acceptable level of service, a four-lane with auxiliary lanes *urban* typical section was added to the alternatives being considered.

Typical sections currently recommended are shown in **Figure 8-2**. A four-lane with auxiliary lanes urban typical section is recommended from east of Curley Road to Foxwood Boulevard (the first major street east of Meadow Pointe Boulevard). A four-lane suburban typical section is recommended between Foxwood Boulevard and Linda Drive (approximately 850 ft west of New River), and a four-lane urban typical section is recommended between Linda Drive and the end of the project (east of Morris Bridge Road). The locations of these cross roads are shown in **Figure 2-2** and in the Evaluation Matrix included later in this Section. For all typical sections, the median width would transition to approximately 30 ft at those intersections where dual left turn lanes are proposed on SR 54.

8.3.2 Alternative Alignments

Alternative alignments typically include "north-shifted", "south-shifted", and "centered" or various combinations of alignments. After consideration and refinement, two alignment alternatives: a "north-shifted" and a "best-fit" alternative were developed. An initial best-fit alignment alternative was developed which took advantage of future

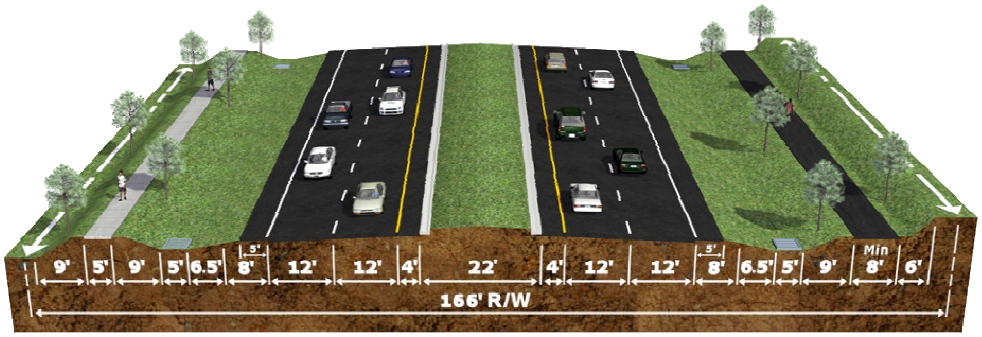
(Looking east for all sections)



Four-Lane Divided with Auxiliary Lanes Urban Typical Section

From East of Curley Road to Foxwood Blvd

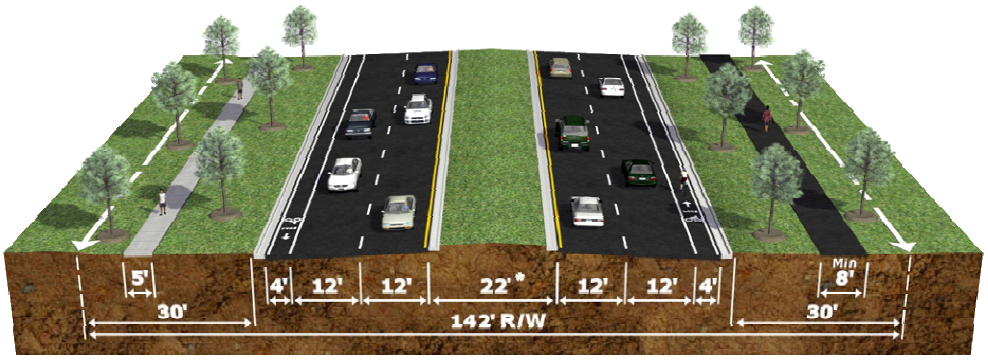
Design Speed = 45 mph



Four-Lane Divided Suburban Typical Section

From Foxwood Blvd to Linda Drive

Design Speed = 55 mph



Four-Lane Divided Urban Typical Section

From Linda Drive to Morris Bridge Road

Design Speed = 45 mph

*For the few areas where a 30' median would be required for dual left turn lanes at signalized intersections, the outside border areas would be reduced by 4' on each side to provide the extra median width required.

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SR 54 PD&E Study From Curley Road to Morris Bridge Road Pasco County, Florida WPI Segment No. 416561-1	**SR 54 Alternative Typical Sections**	**Figure 8-2**

proposed right-of-way dedications by developers of various DRIs and MPUDs located adjacent to SR 54. These future dedications are shown by a thin solid green line on the conceptual design plans. This initial alignment was designated as Alternative A (the "Red Alignment"; red was changed to magenta [pink] prior to the first public meeting to avoid any potential confusion with the red proposed right-of-way lines associated with the Recommended or Preferred Alternative).

A second best-fit alignment alternative was developed after the study team met with a representative of FDOT's Right of Way Department on April 2, 2007. Some revisions were suggested to the Red Alignment. Based on these suggestions, a second best fit alignment was developed which was designated as Alternative B (the "Yellow Alignment").

Conceptual Design Plans

Preliminary conceptual design plans are included in **Appendix B** for the recommended build alternative. Information about the various alternatives is summarized by study segment in the evaluation matrix included in Section 8.5.

There is a high probability that several new signals will be warranted along SR 54 by the design year. The development order for New River Township includes signal installations at Riverside Crossing and River Glen Blvd/Wyndfields Blvd "at such time as they are warranted by the MUTCD". The concept plans do not show signals at these locations, however these intersections were analyzed in the *Traffic Technical Memorandum* as unsignalized and signalized. The concept plans do identify proposed turn lanes at these locations. These items were considered to potentially accommodate future signalization should it be warranted in the future.

8.4 Intersection Requirements

Proposed laneage at major intersections was previously shown schematically in **Figure 6-8** in Section 6.0. In addition, the proposed layout of all intersections is shown in plan view on the conceptual design plans included in **Appendix B**. In early 2008, the conceptual design plans were revised to show full median openings at Riverside Crossing and at New River Road, based on public meeting comments. Full openings at these two locations will fit within the half-mile minimum spacing criteria for Class 3 access management standards.

8.5 Evaluation Matrices (Roadway and Ponds)

An evaluation matrix comparing the various roadway alternatives by study segment is included in **Table 8-1**. This matrix was developed to compare the two Build Alternatives, based on preliminary estimates of costs and environmental impacts. The data for each alternative was developed based on the proposed right-of-way "footprint" along with the base map information collected and prepared for this study. The construction cost estimates came from the Department's Long Range Estimates (LRE) program (last updated June 2008). An evaluation of alternative sites for storm water management facilities (ponds) and floodplain compensation is included in **Table 8-2**.

Straight Line Diagram Excerpt with Mile Posts

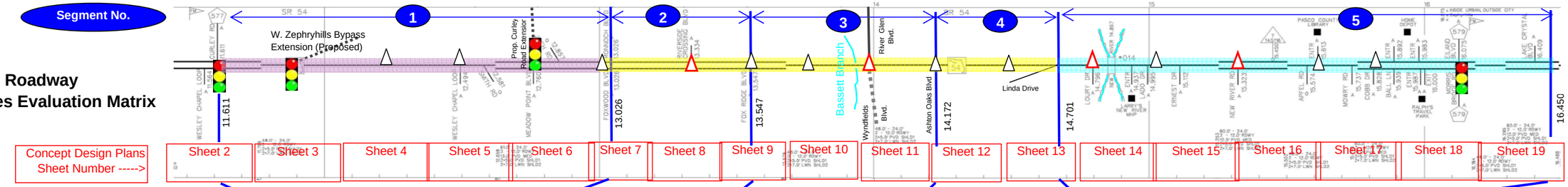

Table 8-1: Roadway Alternatives Evaluation Matrix

Proposed Full Median Opening
Proposed Directional Median Opening

Segment Number ->	1		2		3	4		5		Rounded Totals	
Segment Description ->	Curley Road to Foxwood Blvd.		Foxwood Blvd. to Fox Ridge Blvd.		Fox Ridge Blvd. To Ashton Oaks Blvd.	Ashton Oaks Blvd. to Linda Drive		Linda Drive to East of Morris Bridge Road		For All Alternatives	
Approximate Station Limits	644+30 to 719		719 to 806***		806 to 842+50	842+50 to 867		867 to 954			
Approximate Segment Length (mi.)	1.42		0.523		0.689	0.464		1.638		4.734	
Approx. Sheet Nos. for Concept Design Plans	Sheet Nos. 3-7 +/-		Sheet Nos. 7-9 +/-		Sheet Nos. 9-11 +/-	Sheet Nos. 12-13 +/-		Sheet Nos. 13-19 +/-			
Existing Typical Right-of-Way width	varies 100' - 125'		varies 100' - 155'		varies 143' - 145'	varies 100' - 110'		varies 80' - 123'			
Proposed Typical Section	6-L Urban		4-L Suburban		4-L Suburban	4-L Suburban		**4-Lane Urban**			
Proposed Right-of-Way Width	min. 166'		166'		166'	166'		Min 130'; 142' preferred			
Alignment Alternative	**Alt. A**	**Alt. B**	**Alt. A**	**Alt. B**	**Alt. A or Alt B (same alignment)**	**Alt. A**	**Alt. B**	**Alt. A**	**Alt. B**	**Alt. A**	**Alt. B**
Comments	Includes new T intersection with Zephyrhills Bypass Extension. Coordination with County ongoing re design of this intersection. Alt. B would minimize impacts to the nursery on the south side.			Would minimize impacts to the nursery on the south side	May be possilbe to reduce ROW acquisition costs by narrowing the prop typical section by 1 foot			Prop. typical section at the Flea Market could be narrowed to eliminate the need to acquire ROW from this parcel. Includes bridge culvert at New River.			
Projected Arterial Level of Service (LOS) in Year 2030	**LOS C or better**		**LOS C or better**		**LOS C or better**	**LOS C or better**		**LOS C or better**		**LOS C or better**	
Evaluation Factors											
Environmental Impacts											
Floodplain Impacts (Acres)	0	0	0	0	0.789	0.599	0.323	1.025	1.154	2.41	2.27
Wetland Impacts (Acres)	0.002	0.428	0.045	0.045	0.472	1.36	1.997	0.086	0.092	1.97	3.03
No. of Noise Receptors Within 66 dBA Isopleth	3	3	16	16	16	0	0	33	33	68	68
No. of Potentially Contaminated Sites, Involvement With (H=High; M=Medium, & L=Low Risk)	2 L	1 L						1 L, 2 M	1 L, 2 M	3 L, 2 M	2 L, 2 M
Right-of-Way (ROW) Acreages & Relocations											
Additional ROW Required for Roadway (ac)	6.87	6.45	2.94	2.34	2.39	3.55	3.39	8.22	9.16	24.0	23.7
Land Required for Stormwater & FPC Ponds (ac)	11.2	11.2	7.0	7.0	5.20	8.2	8.2	17.8	17.8	49.4	49.4
Potential Relocations (including most reasonable pond sites)											
Residences	0	0	0	0	0	0	0	2	6	2	6
Businesses	0	1	0	0	0	0	0	2	10	2	11
Total Relocations (excluding personal property)	0	1	0	0	0	0	0	4	16	4	17
Estimated Costs											
Construction of Roadway & Ponds	$11,958,000		$5,855,000		$7,628,000	$4,988,000		$20,615,000		$51,040,000	
Design & Construction Inspection (20%)	$2,391,600		$1,171,000		$1,525,600	$997,600		$4,123,000		$10,208,000	
Wetlands Mitigation Costs ($100K/ac)	$200	$42,800	$4,500	$4,500	$47,200	$136,000	$199,700	$8,600	$9,200	$200,000	$300,000
Drainage & Floodplain Comp. Ponds Land Costs	$3,283,000		$3,620,000		$1,565,000	$2,890,000		$4,580,000		$15,900,000	$15,900,000
Right-of-way & Reloc.Costs, Excluding Ponds**	$6,526,500	$10,402,600	$2,190,400	$3,212,500	$1,536,100	$1,034,500	$973,100	$23,293,700	$36,218,800	$34,580,000	$52,340,000
Total Capital Costs (rounded)	$24,159,300	$28,078,000	$12,840,900	$13,863,000	$12,301,900	$10,046,100	$10,048,400	$52,620,300	$65,546,000	**$112,000,000**	**$130,000,000**

**Also includes business damages

***Station equation in this segment near sta. 736

Recommended Preferred Alternative

Land costs for ponds based on availability of current least expensive sites

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Table 8-2: Pond & Floodplain Compensation Sites Evaluation Matrix

	Basic Design Parameters and Construction Cost Estimates																	
Pond #	Pond Area (Ac)	FPC Sites (Ac)	Total Area (Ac)	Conveyance Easement (Ac)	Clearing & Grubbing	Avg.exc depth (ft)	Excavation (cy)	Excavation	Conveyances (ft) From Pond	Conveyances (ft) To Pond	Conveyance	Major crossing cost	Other (control structures, etc)	Total Const. Cost	Wetland Impacts (Ac)	Est. Right of Way Costs ($mill)[1]	Est. Total Costs ($mill)	Comments
Units -->					acre			cubic yard			feet							
Unit Costs -->					$ 19,290			$ 6.14			$ 250							
1A	6		6	0	$ 115,740	4	38,720	$ 237,741	0	0	$ -	$ -	$ 234,542	$ 588,023	3.72	0.68	$1.27	Least expensive site
1B	**2.7**		2.7	0	$ 52,083	5	21,780	$ 133,729	300	0	$ 75,000	$ -	$ 234,542	$ 495,354	0	**2.70**	$3.20	May interfere with commercial dev'p
1C	**2.7**		2.7	0	$ 52,083	5	21,780	$ 133,729	425	200	$ 156,250	$ -	$ 234,542	$ 576,604	0	**3.21**	$3.79	Requires relocation & demolition
2A	**5.7**		5.7	0	$ 109,953	5	45,980	$ 282,317	0		$ -	$ -	$ 94,000	$ 486,270	0	**3.64**	$4.13	2 owners
2B	**5.7**		5.7	0	$ 109,953	5	45,980	$ 282,317	0	700	$ 175,000	$ -	$ 94,171	$ 661,441	1.37	**2.85**	$3.51	Least expensive and best location
2C	**5.7**		5.7	0	$ 109,953	5	45,980	$ 282,317	1000	0	$ 250,000	$ -	$ 94,000	$ 736,270	1.04	**4.93**	$5.67	Future development
3A	3.9		3.9	0.5	$ 75,231	5	31,460	$ 193,164	0	600	$ 150,000	$ -	$ 220,428	$ 638,824	0	4.81	$5.45	Not convient to outfall
3B	3.9		3.9	0	$ 75,231	5	31,460	$ 193,164	0	0	$ -	$ -	$ 220,428	$ 488,824	0.731	5.95	$6.44	Most desirable hydraulically
3C	4.9		4.9	0	$ 94,521	5	39,527	$ 242,694	0	0	$ -	$ -	$ 220,428	$ 557,643	0	2.49	$3.05	Convienient to outfall
4A	2		2	0	$ 38,580	5	16,133	$ 99,059	700	200	$ 225,000	$ -	$ 39,935	$ 402,574	0	1.58	$1.98	Biscects property
4B	2.1		2.1	0	$ 40,509	5	16,940	$ 104,012	600	100	$ 175,000	$ -	$ 39,935	$ 359,456	0.053	1.13	$1.49	Same owner as 3C
4C	2		2	0	$ 38,580	15	48,400	$ 297,176	500	500	$ 250,000	$ -	$ 39,935	$ 625,691	0	2.06	$2.69	Future development considerations
5A	2.7	0.5	3.2	0	$ 61,728	5	25,813	$ 158,494	2000	2000	$ 1,000,000	$ -	$ 177,923	$ 1,398,145	0	1.94	$3.34	Least desirable hydraulically
5B	2.7	0.5	3.2	0	$ 61,728	5	25,813	$ 158,494	450	0	$ 112,500	$ -	$ 177,923	$ 510,645	0	1.84	$2.35	Frontage
5C	2.7	0.5	3.2	0.5	$ 61,728	5	25,813	$ 158,494	0	400	$ 100,000	$ -	$ 177,923	$ 498,145	0	1.00	$1.50	Rear - check easement cost included
6A	2		2	0	$ 38,580	5	16,133	$ 99,059	0	250	$ 62,500	$ 20,000	$ 81,240	$ 301,379	0	0.57	$0.87	Least expensive site
6B	2		2	0	$ 38,580	5	16,133	$ 99,059	0	0	$ -	$ 20,000	$ 81,240	$ 238,879	0	1.21	$1.45	Could combine with 5C
6C	2		2	0.5	$ 38,580	5	16,133	$ 99,059	0	0	$ -	$ 20,000	$ 81,240	$ 238,879	0	0.87	$1.11	Could combine with 5B
7A	5.8	2.4	8.2	0	$ 158,178	5	66,147	$ 406,141	400	0	$ 100,000	$ -	$ 327,537	$ 991,856	0.085	3.22	$4.21	Lowest in elevation
7B	5.1	1.5	6.6	0	$ 127,314	5	53,240	$ 326,894	0	0	$ -	$ -	$ 327,537	$ 781,745	0	2.89	$3.67	Excellent proximity to outfall
7C	5.1	1.5	6.6	0	$ 127,314	5	53,240	$ 326,894	0	700	$ 175,000	$ -	$ 327,537	$ 956,745	0	3.52	$4.48	Requires demolition/relocations
8A	4.2	0.75	4.95	0	$ 95,486	5	39,930	$ 245,170	500	0	$ 125,000	$ -	$ 324,213	$ 789,869	0	1.19	$1.98	Excellent proximity to outfall
8B	4.7	1.0	5.7	0	$ 109,953	5	45,980	$ 282,317	0	0	$ -	$ -	$ 324,213	$ 716,484	0.052	9.64	$10.36	Would have to wrap around a cell tower
8C	4.2	1.0	6.8	1	$ 131,172	1	10,971	$ 67,360	550	500	$ 262,500	$ -	$ 324,213	$ 785,245	0.178	3.50	$4.29	Least convienient location
9A	**6.2**		6.2	1	$ 119,598	10	100,027	$ 614,164	600	600	$ 300,000	$ -	$ 106,454	$ 1,140,216	0	**1.82**	$2.96	Consider historical outfall
9B	**6.0**		6	0	$ 115,740	5	48,400	$ 297,176	400	0	$ 100,000	$ -	$ 106,454	$ 619,370	0.159	**40.10**	$40.72	New apartments under const. here
9C	**6.0**		6	0	$ 115,740	5	48,400	$ 297,176	0	0	$ -	$ -	$ 106,454	$ 519,370	0	**4.21**	$4.73	Future development considerations
10A	**2.5**		2.5	0	$ 48,225	5	20,167	$ 123,823	0	0	$ -	$ -	$ 143,045	$ 315,093	0	**2.26**	$2.58	
10B	**2.5**		2.5	0	$ 48,225	5	20,167	$ 123,823	0	0	$ -	$ -	$ 143,045	$ 315,093	0	**3.03**	$3.35	
10C	3.8		3.8	0	$ 73,302	2	12,261	$ 75,285	0	0	$ -	$ -	$ 143,045	$ 291,631	0.6	2.18	$2.47	Would involve multiple relocations
														$5,993,010		$16.88	$22.87	Totals for current least expensive sites

[1]Right of way cost estimates dated 9/19/07

Notes: Preliminary recommended site

FPC = Flood plain compensation sties **NNNN** **December 2007 Revisions**

Source: American Consulting Engineers of Florida, LLC

8.6 Recommended Alternative

Both of the two Build alternatives presented at the public workshop held in November 2007 included:

- A 4-Lane with Auxiliary Lanes Urban typical section between east of Curley Road and Foxwood Boulevard
- A 4-Lane Suburban typical section between Foxwood Boulevard and Linda Drive
- A 4-Lane Urban typical section between Linda Drive and east of Morris Bridge Road

All of these typical sections include wider border areas, compared to FDOT's standard typicals, which are consistent with Pasco County's standard typical sections, since there is a high probability that this road will revert to a county road in the future at such time that SR 56 is extended east to US 301.

Alignment Recommendation

Based on information summarized in the Evaluation Matrix and considering public comments received at the workshop, alignment **Alternative A** is recommended as the recommended "preferred alternative" for the following reasons:

- Alternative A has the lowest right-of-way (ROW) and overall costs
- Alternative A has the lowest number of relocations of businesses and residences (4 vs. 17)
- Environmental impact differences are mixed: Alternative A has higher floodplain impacts but lower wetland impacts. A also has 5 contamination sites vs. 4 for B.
- There were no public comments from the workshop which favored A vs. B. In general, there was overwhelming public support for a Build alternative vs. the No-Build alternative.

Laneage Recommendation

In addition to evaluating these two Build alternatives, additional right of way (ROW) cost estimates were received in March 2008 for future construction of the entire project to an expanded six lanes with 166-ft ROW. These additional cost estimates had been requested by the Pasco MPO staff and/or committees. All ROW cost estimates (totals of all phases) are summarized in **Table 8-3**, with the shaded cell (Alternative A, 4 lanes + auxiliary lanes) the recommended alternative.

Table 8-3. Right-of-Way Cost and Relocations Comparisons

Alternative	New Cost Est. for 6 Lanes for Entire Project ($million)	Previous ROW Cost 4L w Aux + 4 Lanes ($million)	Differences ($million)
Alternative A	69.7 (16 relocations)	46.3 (4 relocations)	23.4 (12 relocations)
Alternative B	78.7 (27 relocations)	66.1 (17 relocations)	12.6 (10 relocations)
Difference B-A	9.0 (11 relocations)	19.8 (13 relocations)	

Notes: includes ROW costs and relocations for "most reasonable pond sites." Relocations exclude personal property and signs.

Year 2030 build alternative levels of service (LOS) were presented in Section 6. Since the laneage as shown in Alternatives A and B provide a future LOS which meets the Department's minimum LOS standards for the design year 2030, the 4 lane scenario as included in Alternatives A and B is recommended to be retained. This scenario supplies added operational capacity within the influence area of the SR 54/Meadow Pointe Boulevard intersection through the use of auxiliary lanes thru the intersection. Acquiring additional right-of-way now for constructing the entire project as 6 lanes would result in $23.4 million additional ROW costs as well as 12 additional relocations (for Alternative A). For Alternative B, it would increase the cost by $12.6 million and result in 10 additional relocations. In either case, the overall costs for Alternative A are less than Alternative B.

SECTION 9 – PRELIMINARY DESIGN ANALYSIS

9.1 Design Traffic Volumes

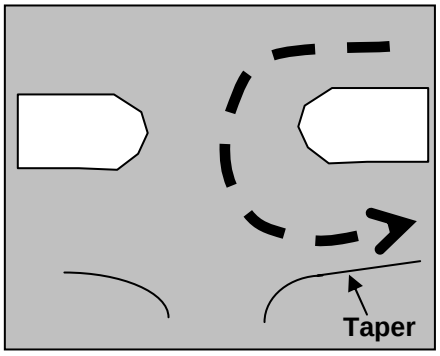
Future directional design hour volumes (DDHV) are shown in **Figure 6-7** in Section 6 of this report, along with future AADTs and other traffic-related information.

9.2 Typical Sections and Design Speed

Recommended typical sections and design speeds by segment are shown in **Figure 8-2** in Section 8. All recommended typical sections meet or exceed the minimum requirements of FDOT's *Plans Preparation Manual*. A Typical Section Package and a Design Variation were approved by the District Design Engineer on December 22, 2008. The Design Variation is for the narrower-than-standard shared-use path (**Appendix D**).

9.3 Intersection Concepts and Signal Analysis

Recommended intersection laneage is shown in **Figure 6-8** in Section 6 along with recommendations regarding traffic signal locations. These locations are discussed in Section 6.5.3.



With the proposed addition of raised medians, U-turns will be required at many median openings along SR 54 due to proposed directional median openings at many locations and due to the need to provide access to abutting properties. To facilitate U-turns at these locations, it is recommended that the intersection radii at minor intersections include tapers or other means of pavement widening (e.g. bus bays) along SR 54 (see inset figure). In addition, additional pavement widening should be considered at non-intersection median opening locations also.

Auxiliary Lanes – (See exhibits in **Appendix D** that go along with this section.) Auxiliary lanes are proposed east and west of the Meadow Pointe intersection (eastbound 4350 ft upstream and 1300 ft downstream; westbound 1300 ft upstream and 3400 ft downstream). The westbound auxiliary lane is added at the Foxwood/Ronnoch

intersection and drops at the Zephyrhills Bypass intersection. The eastbound auxiliary lane is added east of the split of SR 54 and drops at the Foxwood Boulevard intersection. Based on the operational analysis at the SR 54/Meadow Pointe intersection, in the east-west directions, providing 2 thru lanes and 1 thru-right lane provides an acceptable level of service of D. This results in the need for the auxiliary lanes in the vicinity of this intersection. Accounting for acceleration downstream and queue/deceleration upstream of this intersection; the proximity of Foxwood, Jireh, Smith and Wesley Chapel Loop intersections, the area of influence where the auxiliary lanes would be needed for the Meadow Pointe intersection extends approximately 1650 ft to the west and 1300 ft to the east. The 5-year crash history indicates a spike of crashes at the westernmost Wesley Chapel Loop intersection, likely due to the extreme skew angle. The SR 54/Zephyrhills intersection requires 2 thru and 1 right turn lane and its area of influence extends to a point approximately 1330 ft west of the acceleration distance for westbound SR 54 from Meadow Pointe. Developments to the north and south to the west of the Meadow Pointe are under site development review by the County. During meetings with the FDOT concerning SR 54 access management, it was determined that 1 new right turn lane will be included for eastbound SR 54 west of Wesley Chapel Loop, and 2 new westbound right turns will be included between the areas of influence of the signalized intersection. This leaves 2 gaps for westbound lanes of 350 ft and 280 ft where a right turn lane/auxiliary lane would not be needed. In the eastbound direction, gaps of 1350 ft and 1000 ft would exist between the proposed beginning of the eastbound auxiliary lane and Wesley Chapel Loop. Considering the sight distance for "maneuver E" (speed/path/direction change) in AASHTO "Greenbook" Exhibit 3-3, at 1030 ft for 50 mph, maintaining the noted gaps would not be advisable. Based on operational influences of the signalized and unsignalized intersections, the added eastbound and westbound auxiliary lanes are needed. These auxiliary lanes are not needed for capacity purposes. As such, the STIP and LRTP would only reflect capacity needs and would not be based on a sensitive enough operational analysis to identify that the auxiliary lanes are appropriate.

9.4 Alignment and Right-of-Way Needs

The proposed roadway alignment is shown on the conceptual design plans included in **Appendix B**. The recommended alignment is mostly shifted toward the north side, to minimize impacts to businesses and environmental features. The concept plans also show the areas where right-of-way is proposed to be acquired. The acreages proposed for right-of-way acquisition (for both roadway widening and stormwater management facilities) are shown in the Evaluation Matrix (**Table 8-1**) and Pond Evaluation Matrix (**Table 8-2**).

9.5 Relocations

The proposed project will require right-of-way acquisition to widen the roadway and for the placement of stormwater ponds. A total of 4 relocations are expected in conjunction with the proposed project including 2 residences, the Wesley Chapel Church and Christian School Nazarene, and the former Hills Grocery [October 2008 update: a CVS Pharmacy is under construction at the former Hills Grocery site; potential business damages due to loss of parking are expected.] These are identified on the conceptual design plans in **Appendix B**. For the relocations resulting from this project, the FDOT will carry out a right-of-way acquisition and relocation program in accordance with Florida Statute 339.09 and Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (Public Law 91-646 as amended by Public Law 100-17. A *Conceptual Stage Relocation Plan* (CSRP; Reference 9-1) is currently being prepared for the proposed project. There are expected to be ample sites available for displaced relocates to relocate to, should they decide to stay within the project vicinity.

The FDOT provides advanced notification of impending right-of-way acquisition. Before acquiring right-of-way, all properties are appraised on the basis of comparable sales and land use values in the area. Owners of property to be acquired will be offered and paid fair market value for their property rights.

9.6 Cost Estimates

Preliminary cost estimates for the Build Alternative ($millions, rounded) are included in **Table 9-1**.

Table 9-1. Total Costs of the Build Alternative

Design & Construction Inspection…...	$10
Right of Way – Roadway Only …….	35
Right of Way – Ponds and Floodplain Compensation …….	16
Wetlands Mitigation and Construction (roadway & ponds)……..	51
Total (revised 6/08)	$112

A breakdown of these costs by study segment is included in the Evaluation Matrix (**Table 8-1**).

9.7 Recycling of Salvageable Materials

During construction of the project, recycling of reusable materials will occur to the greatest extent possible. Where feasible, removal and recycling of the existing pavement and base material for use in the new pavement will be considered. This will help reduce the volume of the materials that need to hauled away and disposed of potentially reduce the cost of purchasing new materials for construction. Other materials such as signs, drainage pipes, etc., will also be salvaged and reused for regular maintenance operations if they are deemed to be in acceptable condition.

9.8 User Benefits (Safety, Etc.)

The public will realize benefits after the proposed improvements are constructed. Savings in travel time, reduced vehicle operating costs, reduced traffic crash related costs and reduced emergency response times are the primary benefits. Bicyclists and pedestrians will be able to more safely share the facility with motorists. The proposed multiuse trail on the south side will provide a facility for transportation and recreational opportunities for walkers and joggers, in-line skaters, bicyclists, and other nonmotorized users.

9.9 Multimodal Considerations

Pedestrian and Bicycle Facilities - Pedestrian accommodations would be provided with the inclusion of a continuous sidewalk on the north side of SR 54 and an 8-ft multiuse trail on the south side of SR 54 in accordance with Pasco County's standard typical sections. These will be connected to any existing sidewalks on intersecting streets. Pedestrian features and cross walks will also be included at the signalized intersections to provide safer crossing opportunities. Bicycle accommodations would be provided by the inclusion of 4-ft bicycle lanes in the urban typical section areas and by the inclusion of 5-ft paved shoulders in the suburban typical section areas of the proposed project. As noted above, the multiuse trail will also provide a facility for other nonmotorized users. In areas where wetlands are contiguous to the existing or proposed right-of-way, boardwalks may be required to accommodate the sidewalk and trail in those areas. There are presently no transit stops within the corridor so no bus turnouts or bus stops have been included on the conceptual design plans.

Transit - There are no existing transit routes along the project corridor, but future local transit service is proposed according to the Pasco County 2025 LRTP. In addition, Pasco County's Five-Year Transit Development Plan (2006-2010) proposes to implement limited cross-county connector service on SR 54. Therefore, the FDOT will coordinate

with Pasco County regarding potential transit amenities needed during the project development and design phases of the project. Access to intermodal facilities is an important consideration in the development of the Pasco County transportation system. The county's Comprehensive Plan identifies SR 54 as an existing truck route (highways that carry the majority of freight and goods in Pasco County). Improvements to SR 54 will also enhance access to two general aviation facilities and to activity centers in the area. Pedestrian and bicycle accommodations are discussed above in Section 9.9.

9.10 Economic and Community Development

As previously discussed in Section 3.2, traffic demand is expected to steadily increase in the coming years due to the many DRIs and MPUDs (developments) located both along SR 54 and within the area surrounding the proposed project. Expanding the capacity of this two-lane facility will help facilitate economic growth within southeast Pasco County, improve mobility, and provide safer access to the many businesses, agencies, and institutions located along the project.

9.11 Environmental Effects

9.11.1 Community (Land Use, Services, & Cohesion)

Land Use – Existing and planned future land use is described in Section 4.3.1 and illustrated in **Figures 4-11** and **4-12**, respectively. Given the projected future growth and land use designations, the proposed project is not expected to induce secondary development or change existing area land use.

Community Cohesion - Increasing the width of the existing roadway will not divide the current and future communities. Half of the corridor consists of 0 to 6 percent minority populations while the remaining half of the corridor consists of 7 to 20 percent minority populations, based on the GIS maps included in the ETDM summary report. The average income of residences along the corridor range from $30,000 to $79,999, with a majority between $50,000 and $79,999. These populations are presently served by access to SR 54 and that will continue.

The recommended alternative does not traverse neighborhoods consisting primarily of minority groups, nor is it routed through primarily low property value neighborhoods, based on field observations and year 2000 census data. The two census tracts adjacent to the project area are tracts 321.01 and 321.02. The combined population statistics for these two tracts includes the following breakdown:

93.9 percent White
2.0 percent Black
0.4 percent American Indian/Alaska Native
1.1 percent Asian
1.2 percent Other race
1.4 percent multiracial

The project has been developed in accordance with the Civil Rights Act of 1964, as amended by the Civil Rights Act of 1968. Additionally, the project is in compliance with Executive Order 12898, Environmental Justice, issued on February 11, 1994. The project is not expected to cause harm to elderly, physically challenged, non-driving, transit dependent, or minority individuals.

Community Services - There are several community and social service facilities along the project corridor as shown in **Figure 4-13** including the Fraternal Order of Eagles community center, a day care center, numerous churches, and the New River Branch public library. There is an approved day care center not yet under construction at the intersection of SR 54 and Ronnoch Boulevard. This daycare is on the north side of SR 54 and will not be impacted by the proposed project. The Creative World School, located north of the existing roadway, will also not be impacted. A portion of the properties owned by the Zephryhills Calvary Baptist Church, Seventh Day Adventist Church, Trinity United Methodist Church, New River Methodist Church, and Westside Baptist Church, will be required for right-of-way, and their respective access driveways will not be impacted. The Wesley Chapel Church and Christian School Nazarene will require relocation. A portion of the property owned by the Fraternal Order of Eagles and the respective Eagles Flea Market, as well as the Pasco County Library System will be required for additional right-of-way. No existing structures or access to these facilities will be impacted.

Local traffic patterns at several locations along SR 54 will change slightly with the proposed project. To improve safety, raised medians with numerous directional median openings will be constructed. These will result in left turns from minor side street approaches being prohibited at some intersections, including Smith Road, Ronnoch Boulevard/Foxwood Boulevard, and Fox Ridge Boulevard. Other than the expected relocation of the church noted above, no impacts to community service facilities are expected other than minor changes to access and minor right-of-way acquisition.

9.11.2 Water Quality

Although additional impervious surface will be added due to the proposed improvements, there should be no degradation of surface water quality. Stormwater runoff will be

treated, and impacts to the adjacent water bodies will be avoided. The proposed project stormwater facility design will include at a minimum, the water quantity requirements for water quality impacts as required by the SWFWMD in Rules 40D-1, 40D-4, 40D-40, 40D-45, and 40D-400, FAC and the Environmental Protection Agency (EPA). A *Water Quality Impact Evaluation* (WQIE) checklist was completed for this project and is included in the Categorical Exclusion environmental document. The project is not located within the areas designated at sole-source aquifers (Volusia-Florida Aquifer, Biscayne Aquifer or streamflow and recharge source zones). There are no known underground injection wells permitted under Chapter 62-28, FAC that may be impacted by the proposed project. During the design phase, a geotechnical evaluation will be conducted of specific pond sites for potential of sinkhole development. Should the results of the geotechnical study indicate a potential for ground water contamination as a result of pond construction/operation, the FDOT will coordinate with the SWFWMD during the permitting of such sites.

9.11.3 Wetlands

As previously described in Section 4.3.3 and as detailed in the *Wetland Evaluation and Biological Assessment Report* (*WEBAR*; Reference 4-3), a total of 25 wetlands and 7 surface waters were identified along the project corridor. None of the Other Surface Waters (OSW's) should be impacted by the proposed roadway improvements. Implementation of the proposed project with the recommended alignment could impact approximately 10 wetlands for a total impact of approximately 1.97 acres of wetlands (**Table 9-2**). The wetlands that may be impacted range from freshwater marshes to streams and waterways, including New River, along with some systems that contain forested pockets and open water. Many of the wetland impacts will occur to wetlands that have been previously impacted by the original construction of the roadway or by ongoing development in the surrounding areas.

Table 9-2. SR 54 Wetland Classifications and Impact Acreage

Wetland	FLUCCS & USFWS Classification	Potential Impact Acreage
W1	Freshwater Marsh and Forested (641, 617) - PEM1/PFO6	0
W2	Cypress and Freshwater Marsh (621, 641) - PFO6C/PEM1H	0
W3	Vegetated Non-forested Wetlands (640) - PSS1C	0
W4	Freshwater Marsh (641) - POW/PEM1H	0.002
W5	Freshwater Marsh (641) - PEM1	0
W6	Vegetated Non-forested wetlands (640) – PSS1C	0
W7	Freshwater Marsh (641) - POW/PEM1H	0
W8	Vegetated Non-forested wetlands (640) – PSS1C	0
W9	Open Water (500) - POWC	0
W10	Open Water (500) - POWC	0
W11	Vegetated Non-forested Wetlands (640) - PSS1C	0
W12	Wetland Scrub (631) - PSS6A	0.045
W13	Freshwater Marsh (641) - PEM1F	0
W14	Freshwater Marsh (641) - PEM1A	0
W15	Vegetated Non-forested Wetlands (640) - PSS1A	0.172
W16	Freshwater Marsh (641) - PEM1F	0.021
W17	Freshwater Marsh (641) - PEM1F	0.279
W18	Freshwater Marsh (641) - PEM1C	0
W19	Freshwater Marsh (641) - PEM1F	0.179
W20	Freshwater Marsh (641) - PEM1F	0.648
W21	Vegetated Non-forested Wetlands (640) - PSS1C	0.533
W22	Freshwater Marsh (641) - PEM1C	0
W23	Stream and Waterway (510) - R2OW	0.058
W24	Stream and Waterway (510) - R2OW	0.028
W25	Freshwater Marsh (641) - PEM1	0
SW1	Water (500) - PUB2Hx	0
SW2	Stormwater Facility - PUBHx	0
SW3	Stormwater Facility - PUBHx	0
SW4	Stormwater Facility - PUBHx	0
SW5	Stormwater Facility - PUBHx	0
SW6	Stormwater Facility - PUBHx	0
SW7	Stormwater Facility - PUBHx	0
Total Acreage		**1.97**

The Uniform Mitigation Assessment Method (UMAM) was conducted to assess wetland functions and values for the representative wetlands within the study corridor. The final rating (delta value) is expressed numerically with a number between 0 and 1, with 1 representing the highest quality wetland, and 0 reflecting the lowest quality wetland. UMAM assessments were conducted for the potentially impacted wetland types. The delta values ranged from 0.34 to 0.80. There will be more wetland impact to moderate and high quality wetlands (delta value $\geq$ 0.60) than lower quality systems. The functional loss of a wetland system is the estimated loss of function by the proposed impacts and is calculated by multiplying the delta value by the impact acreage. Functional loss values for individual wetlands along the project corridor range from 0.002 to 0.518. Functional loss values are used to determine the amount of mitigation that would be required to offset the loss. Different formulas are used based on the type of proposed mitigation. The total functional loss value for impacts along the project corridor is 1.35 (**Table 9-3**).

Table 9-3. SR 54 Wetland Functional Loss Analysis

Wetland	Impact Acreage	Delta Value	Functional Loss
W4	0.002	0.77	0.002
W12	0.045	0.47	0.021
W15	0.172	0.57	0.098
W16	0.021	0.67	0.014
W17	0.279	0.70	0.195
W19	0.179	0.60	0.107
W20	0.648	0.80	0.518
W21	0.533	0.67	0.357
W23	0.058	0.34	0.02
W24	0.028	0.47	0.013
Total	**1.97**		**1.35**

All practicable measures to reduce impacts to wetlands will be implemented during design and construction of this project. This would include considerations during the design phase for using boardwalks to minimize impacts where the proposed sidewalk or trail impacts existing wetlands. Mitigation for wetland impacts will be required as a result of the proposed roadway improvements. The use of off-site regional mitigation banks, or the transfer of the proper amount of funds for use by the Water Management District, as provided in Florida Statute 373.4137, are viable options for mitigation of wetland impacts for this project. Also, on-site mitigation, either by creation,

enhancement, or conservation of wetlands, is another alternative. An Environmental Resource Permit will be required from the SWFWMD and a Section 404 Dredge and Fill Permit will be required from the USACE prior to construction.

9.11.4 Wildlife and Habitat

Data collection, research, and coordination conducted with respect to wildlife and habitat are described in Section 4.3.3 and detailed in the *WEBAR* (Reference 4-3). Field observations, literature reviews, and agency database searches were conducted to identify federal- and state-listed species and to identify potential critical habitat for these species in accordance with 50 CFR Part 402 of the Endangered Species Act of 1973, as amended, and Part 2, Chapter 27 of the FDOT's *PD&E Manual: Wildlife and Habitat Impacts*. This project has also been subject to the FDOT's Efficient Transportation Decision Making (ETDM) process in which coordination with the Florida Fish and Wildlife Conservation Commission (FFWCC), the United States Fish and Wildlife Service (USFWS) and the Florida Natural Areas Inventory (FNAI) was initiated. A literature review and agency database search was conducted to determine the presence and/or absence of federal-listed and state-listed species and their critical habitat. Agency coordination and field surveys were then conducted in each habitat type in September and October of 2006, as well as March and June of 2007 to identify any protected species and/or critical or potential habitat within the project corridor. In addition, random surveys were performed along the corridor throughout the duration of the study to obtain data on resident and transient species.

The Eastern Indigo Snake has the potential to exist along the project corridor; therefore the contractor will implement the Standard Protection Measures for the Eastern Indigo Snake (1999) during construction of the project. Snowy egret, white ibis and little blue heron (all SSC in Florida) were observed along and/or adjacent to the project corridor. During other field visits, the Southwest Florida Water Management District observed both mature and immature wood stork and sandhill crane in the project area. Protective measures during construction will be implemented to prevent harm to these species. Mitigation for wetland impacts will be conducted to prevent any net loss of habitat for the above species.

The proposed roadway improvements are not anticipated to adversely impact any federal- or state-listed species or their critical habitat. No state or federally listed threatened or endangered floral species were observed within the project corridor. No essential fish habitat exists within the project corridor. A letter from the USFWS dated June 16, 2008, stated that the project may affect, but is not likely to adversely affect the eastern indigo snake and the wood stork. A telephone conversation record with Mr. Todd Mecklenberg

of USFWS on March 6, 2009, illustrates the USFWS's acceptance of mitigation for wetland impacts under Section 373.4137, F.S. (Senate Bill) to offset impacts to the core foraging area for the wood stork. On-site wetland mitigation is the preferred alternative; however the use of the Senate Bill is an acceptable method of mitigation.

A review for habitat connectivity and wildlife crossings was conducted during the PD&E Study. No large tracts of wildlife habitat were discovered that may warrant a wildlife crossing. Trout Creek is located approximately 1-1.5 miles southwest of the corridor and has been disturbed and bisected by residential development, so there is no direct connection to SR 54. The triple box culvert at New River provides access to both sides of SR 54 for many species. Strategic habitat for wading birds is located within the vicinity of the project, but a wildlife corridor provides no added benefit to wading birds. A wildlife corridor would not be beneficial to the species observed and anticipated along the project corridor. The FFWCC, in an e-mail dated March 26, 2009, concurred with this conclusion. This correspondence is documented in the *WEBAR* (Section 6.4).

9.11.5 Cultural Resources

As previously discussed in Section 4.3.2, a *Cultural Resource Assessment Survey* (*CRAS;* Reference 4-2) of the project area (including potential pond sites) documented the presence of no historic structures and no archaeological sites. The results of the CRAS indicate that the SR 54 corridor will have no effect on any archaeological sites or historic resources that are listed, determined eligible, or considered potentially eligible for listing in the NRHP. No further work is recommended. A letter dated February 12, 2008 from the State Historic Preservation Officer (SHPO) concurred with a finding of "no adverse effect". A copy of the SHPO letter is included in the project files.

9.11.6 Contamination

As previously discussed in Section 4.3.4, a *Contamination Screening Evaluation Report* (*CSER*; Reference 4-4) was prepared. Of the 7 sites evaluated in the *CSER*, none were assigned "High" risk ratings, 2 were assigned "Medium" risk ratings, 3 were assigned "Low" risk ratings, and 2 were assigned "No" risk ratings.

The two facilities ranked "medium" includes the Cumberland Farms and former Hills Grocery. Due to potential contamination near the project areas, additional environmental assessment activities are recommended at these two locations. The former Hills Grocery is presently being redeveloped into a CVS Pharmacy. The additional assessment activities should consist of soil and groundwater testing, and are recommended to occur during the design phase to determine the potential impact from the sites on construction.

9.11.7 Noise

A *Noise Study Report* (*NSR*; Reference 9-2) was prepared for the proposed project. The results of the analysis indicate that existing (2006) and no-build (2030) exterior traffic noise levels are predicted to range from 52.0 to 65.4 dBA at the 116 noise-sensitive sites evaluated, with traffic noise levels predicted to be below the FHWA's Noise Abatement Criteria (NAC) at all of the sites. In the future (2030), with the proposed improvements to SR 54, exterior traffic noise levels are predicted to range from 54.5 to 69.3 dBA, with levels predicted to approach, meet, or exceed the NAC at 30 of the 116 sites. The 30 noise-sensitive sites are all single-family residences. When compared to the existing/no-build condition, exterior traffic noise levels are predicted to increase 0.3 to 6.4 dBA with the proposed improvements to SR 54, with none of the increases considered "substantial" (15 dBA or more).

Noise abatement measures were evaluated for the noise sensitive areas predicted to be affected by the proposed SR 54 improvements. Based on the analysis, construction of three noise barriers along SR 54 appears to be a feasible and cost-reasonable method of reducing predicted traffic noise impacts for some of the affected noise-sensitive sites. Those locations are residences on White Bay Circle, River Haven Mobile Homes, and Ralph's Trailer Park. The locations of these potential noise barriers are shown on the conceptual design plans (sheets 9, 10, 13 and 18) included in **Appendix B**.

Although these barriers are identified as feasible and cost-reasonable, they are still subject to an engineering feasibility review to ensure that the barriers could be built as planned. This review will consider items like drainage, utilities, safety, constructability, maintainability, right-of-way needs, and any other issues that may preclude providing the noise barriers that have been identified. In addition, public input will be solicited as part of future project phases.

9.11.8 Floodplains

Existing drainage and floodplain conditions are discussed in Section 4.1.7. In accordance with Executive Order 11988, "Floodplain Management," USDOT Order 5650.2, "Floodplain Management and Protection," and Chapter 23, Code of Federal Regulations, part 650A, effects to floodplains from the construction of the proposed improvements to SR 54 were considered and documented in the *Location Hydraulics Report* (*LHR;* Reference 9-3).

No flooding problems were identified with any of the drainage structures on this project. SR 54 has no history of stormwater overtopping due to the existing floodplain. Therefore, no emergency services or evacuation opportunities will be adversely affected. All of the floodplain encroachments will be transverse encroachments of existing floodplain crossings and be minimal due to the proposed roadway alignment following the same general alignment as the existing highway.

The project's drainage design will be consistent with local (FEMA), FDOT, and Southwest Florida Water Management District's (SWFWMD) design guidelines. Therefore, no significant changes in base flood elevations or limits will occur. The proposed project is consistent with the local Comprehensive Plan for 2025; it is included in the Pasco County Metropolitan Planning Organization's (MPO) Year 2025 Cost Affordable Long-Range Transportation Plan for the period from 2016 to 2025, as a four-lane divided facility. The proposed project will not encourage floodplain development due to local (FEMA) floodplain and SWFWMD regulations.

Based on the FDOT's floodplain categories, this project falls under "Category 3: projects involving modification to existing drainage structures." Floodplain encroachments do not vary significantly with any of the alternatives. The modifications to drainage structures included in this project will result in an insignificant change in their capacity to carry floodwater. This change will cause minimal increases in flood heights and flood limits. These minimal increases will not result in any significant adverse impacts on the natural and beneficial floodplain values or any significant change in flood risks or damage. There will not be a significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that this encroachment is not significant. As shown in **Table 8-1**, the estimated area of potential floodplain encroachment is approximately 2.41 acres for the Recommended Alternative.

9.12 Maintenance of Traffic

SR 54 provides access to numerous businesses along this corridor. Due to its importance, SR 54 should remain functional throughout the duration of the construction phase. The existing two travel lanes should be maintained to the maximum extent possible. Lane closures, if necessary, should occur during night or other off-peak hours.

The following conceptual construction sequence will help maintain traffic operations along SR 54:

- Relocate existing utilities within the newly-expanded right-of-way.

- Construct ponds and new underground stormwater collection system
- Construct temporary pavement as necessary to maintain existing two-way traffic.
- Construct and/or widen the eastbound or westbound lanes (travel lanes, shoulders or curb and gutter, and sidewalks) while maintaining existing two-way traffic on a combination of the existing pavement and newly constructed or temporary pavement.
- Shift traffic to the newly-completed sections of pavement
- Remove temporary pavement where applicable.
- Construct the raised medians in the center

9.13 Utility Impacts

Existing utilities are described in Section 4.1.12 and shown on Figure **4-10**. Depending on the location and depth of the utilities, construction of the proposed project will likely require adjustments or relocation of some facilities. Cost for utility adjustments are not included in the total estimated project costs presented in Section 9.6, since they will be incurred by the utility owners in most cases. The project is expected to have minimal impacts to utilities with the exception of some 3-ft diameter Withlacoochee River Electric Cooperative transmission line poles located on the south side of SR 54 west of Smith Road. These poles will require relocation in order to meet current design and safety standards.

9.14 Results of Public Involvement Program

A Public Involvement Program/Plan (PIP) was developed for this Study to plan the various opportunities utilized to inform and solicit feedback from local business owners, public officials, agencies, and other stakeholders and interested parties. The program included an Advance Notification (AN) Package, an Alternatives Public Workshop, newsletters, and a Public Hearing. The results of the entire program are summarized in the *Comments and Coordination Report* (Reference 9-4).

The FDOT initiated early project coordination by distribution of an AN package. The FDOT, through the AN process, informed a number of federal, state, regional, and local agencies of this project and its scope of anticipated activities. An AN Package was mailed to the Florida State Clearinghouse on June 15th, 2006. On the same date, a separate letter and copy of the AN Package was also sent to the five Native American tribes listed in the FDOT *PD&E Manual*. Comments were received from four of the agencies notified, including:

- Southwest Florida Water Management District – SWFWMD

- Tampa Bay Regional Planning Council - TBRPC
- Florida Department of Environmental Protection
- U.S. Fish and Wildlife Service

A complete summary of the agency comments and FDOT's responses are included in the *Comments and Coordination Report* (Reference 9-4).

An **Alternatives Public Workshop** was held on November 14, 2007 from 4:30 p.m. to 7:00 p.m. at the Links of Lake Bernadette, 5430 Links Lane in Zephyrhills, Florida. Approximately 85 persons (excluding staff) attended the workshop (**Figure 9-1**). The purpose of the workshop was to provide the public an opportunity to review the various alternatives under consideration and to receive their comments. The workshop was an informal format with displays available for review and a comment box for receiving public comments. A project "video" (PowerPoint presentation with audio narration) ran continuously. FDOT representatives were available for one-on-one questions and answers. Draft documents available for review at the Workshop included:

- Draft Preliminary Engineering Report
- Draft Alternative Stormwater Management Facility Report
- Draft Contamination Screening Evaluation Report
- Draft Location Hydraulic Report
- Draft Wetland Evaluation & Biological Assessment Report
- Final Route & Pond Study of the Zephyrhills West Bypass Extension (Pasco County)
- Final Route Study Curley Road South (Pasco County)
- Pre-Final design plans SR 54 from SR 581 to CR 577 (Pasco County)

A total of 27 written comments were received at the workshop. Prior to the workshop, a total of 6 comments were received, and following the workshop a total of 6 comments were received. Most of these comments involved requests for copies of the workshop displays. Most attendees expressed strong support for the proposed project, and a number of comments said to carry more than four lanes all the way to the east end of the project. The comments received following the workshop included:

- "Unacceptable timeline, must be done sooner" (2 similar comments)
- "Traffic signal needed at New River Road" (2 comments)
- "Need to address the water drainage"

A **Public Hearing** for the study was held on Thursday, August 14, 2008 from 5:00 p.m. to 7:00 p.m. at the Trinity United Methodist Church, 33425 State Road 54 in Wesley

SR 54 PD&E Study
From Curley Road to Morris Bridge Road
Pasco County, Florida
WPI Segment No. 416561-1

PUBLIC WORKSHOP PHOTOS

Figure 9-1

Chapel, Florida. The hearing provided an opportunity for the public to comment and provide input regarding specific location, design, socio-economic effects, and environmental effects associated with the recommended alternative. The public hearing was held in accordance with 23 CFR 771 and Titles VI and VIII of the Civil Rights Act of 1964 and 1968 and the American with Disabilities Act of 1990. A detailed account of the hearing is included in the *Public Hearing Scrapbook* and in the *Comments and Coordination Report.* Prior to the hearing, a newsletter announcement was mailed to all affected property owners, agencies, and other interested parties.

Approximately 77 citizens attended the hearing, along with approximately 20 FDOT staff and their consultants as well as several local government representatives. The informal session of the public hearing was held from 5:00 p.m. to 6:00 pm, followed by the formal session that began at 6:00 pm. During the informal session, citizens were given an opportunity to review a handout, various exhibits, and to ask questions of FDOT staff and their consultants. The exhibits included an evaluation matrix, projected future traffic volumes, transportation capital improvement projects 2008-2012, alternative typical sections, and the proposed conceptual design. Copies of the materials presented at the hearing are included in the *Public Hearing Scrapbook*. A continuous-loop PowerPoint presentation ran during the informal part of the hearing in a separate room, and a court reporter was present the entire time to record informal comments as well as the formal presentation.

Table were set-up for use by FDOT's representatives to disseminate information regarding: right-of-way acquisition procedures, access management, noise study results, safety, and My Florida 511, a personalized travel information service. In addition, copies of all study reports were placed on display for the public's use. All reports had also been placed on public display at the New River Branch Library from July 23, 2008 through August 25, 2008.

The formal portion of the hearing covered the following topics:

- Purpose of the hearing
- Reference to the exhibit with State and Federal laws cited
- Ways to comment

Following the formal presentation, attendees were given an opportunity to make oral statements for the record; no one chose to make any statements. Following this segment, the formal session was adjourned at approximately 6:08 p.m., and the informal session resumed until 7:00 p.m. A transcript of the oral presentation as well as all oral comments made is included in the *Comments and Coordination Report*.

Prior to the hearing a total of thirty seven (37) comments were received via U.S. mail, a total of eight (8) written were received at the hearing, and five (5) additional comment forms or letters were received within the 10-day comment period following the hearing. In addition, three (3) oral comments were received by the court reporter (one of which was a duplicate of a written comment) for a total of 52 comments received. Copies of the comment forms are included in the *Comments and Coordination Report*. Many of the written comments received involved requests for copies of the plans or the various reports. Most attendees expressed strong support for the proposed project and many citizens expressed frustration that it is taking so long to make any improvements. Most site-specific comments involved concerns regarding access restrictions due to the addition of raised medians, which will prevent left turns into and out of many properties that now have no restrictions on access.

9.15 Value Engineering Results

A Value Engineering (VE) team kick off meeting was held on January 14, 2008. The VE team's report was issued on May 6, 2008. The VE Study Team made the following five value recommendations:

1 – Change 6-lane section from urban to suburban:	Savings: $ 2,607,000-
2 – Change 4-lane section urban to suburban:	Savings: $ 4,129,200-
3 – Reduce 6-lane section to 4-lane:	Savings: $ 1,174,300-
4 – Delete 4' pavement strips at 4-lane suburban section:	Savings: $ 775,500-
5 – Change 4-lane suburban section to rural:	Savings: $ 2,812,000-
	Maximum total potential Savings: $ 7,511,700-

The project's study team evaluated each of the suggestions and recommended that none of them be incorporated into the preferred alternative's design. The reasons range from the recommendations being contrary to coordination with Pasco County, requiring a design variation from FDOT standard typical sections, and the team's estimate that additional land acquisition costs would more than offset the construction cost savings.

One of the recommendations (Number 3) could be considered as an *interim* construction cost savings. However by year 2020 (based on the PD&E traffic analysis) the 4-lane plus auxiliary lane section as depicted in the recommended alternative would be required to meet level of service criteria. Included below are the five (5) VE Study recommendations and specific responses to them.

VE Study recommendations:

1. **Change 6-lane section from urban to suburban: "Savings: $2,607,000"**
   Response: The existing functional classification in this section is urban. Use of the suburban section may not be consistent with the existing classification. Pasco County will be widening SR 54 west of this study as a 6-lane urban roadway. As the west end of the study meets the County's project, using an urban section is consistent with the County's urban section. Lastly, additional right-of-way (ROW) would be required to construct this section as a suburban section. The overall ROW width would need to be approximately 34 feet wider to accommodate the added width required for the median and horizontal clearance outside the pavement area. By extrapolating land acquisition costs within this area from the FDOT's ROW cost estimates, the Department would have to expend an additional $5.5 million to acquire an additional 5.9 acres of land. This added land acquisition would result in a net loss (negative savings) of approximately $2.9 million. Therefore, VE recommendation 1 is not recommended for implementation.
2. **Change 4-lane section from urban to suburban: "Savings: $4,129,000"**
   Response: The existing functional classification in this section is urban. Use of the suburban section may not be consistent with the existing classification. Additional ROW would be required to construct this section as a suburban section. The overall ROW width would need to be 166 feet to be consistent with the central portion of the project. Pasco County MPO asked the team to evaluate this additional ROW width. The FDOT cost estimate identified an added cost of $23.4 million. Subtracting the VE study savings from this cost, implementing this recommendation would cost the Department an additional $19.4 million. Therefore, VE recommendation 2 is not recommended for implementation.

3. **Reduce 6-lane section to 4-lane: "Savings: $1,174,300"**
   Response: Based on the traffic analysis, an arterial analysis of the segment yields a four-lane typical section will meet level of service criteria. However the year 2030 analysis at the SR 54/Meadow Pointe-Relocated Curley intersection yields a substandard level of service (LOS) with four through lanes on SR 54. By adding auxiliary through lanes on SR 54 (one in each direction) the future LOS meets criteria. Based on the analysis, the auxiliary lanes will not be needed until year 2020. Since the PD&E study recommendations are intended for a 20-year design period, eliminating these from the recommended alternative is not appropriate. Therefore, VE recommendation 3 is not recommended for implementation. Should the Department decide to lower initial construction costs, these auxiliary lanes may be deferred until a later time, however the typical section should be constructed in such a way to accommodate a widening around year 2020 with the least cost as possible. Should construction costs continue to inflate, it could be less costly to construct the

auxiliary lanes with the initial construction. The Department, however, may elect to defer construction of these lanes no later than year 2020 based on the traffic analysis.

4. **Delete 4-ft pavement strips at 4-lane suburban section: "Savings: $775,500"**
   Response: Per the latest Plans Preparation Manual (PPM), Volume I, Chapter 2, Figure 2.16.1, a 4-lane high speed suburban section requires 4-ft inside shoulders to allow the median width to be 30 feet (minimum required). Eliminating the shoulders as suggested would require a Design Variation. Normally during the PD&E Study phase, the alternatives are developed without the need for Design Variations, unless constraints exist that would warrant such deviation from standards. Therefore, VE recommendation 4 is not recommended for implementation.

5. **Change 4-lane suburban section to rural: "Savings: $2,812,000"**
   Response: Additional ROW would be required to construct this section as a rural section. The overall ROW width would need to be 200 feet per the Pasco County standard typical sections which were used. By extrapolating land acquisition costs within this area from the FDOT's ROW cost estimates, the Department would have to expend an additional $3.6 million to acquire an additional 8.88 acres of land. This added land acquisition would result in a net loss (negative savings) of approximately $800,000. Therefore, VE recommendation 5 is not recommended for implementation.

9.16 Drainage and Stormwater Management

A *Draft Alternative Stormwater Management Facility Report* (Reference 8-1) was prepared for the proposed project which identifies pond site alternatives (three per subbasin) and floodplain compensation (FPC) sites and includes an alternatives analysis for selection of recommended pond sites. This study analyzed pond site alternatives that are hydraulically feasible and environmentally permissible based on the best available information. These alternatives were compared based on estimated costs and environmental impacts. Selection of acceptable pond sites is difficult due to the extent of development in this area leaving little land available for use as stormwater management facilities. Preliminary locations for alternative stormwater management facilities are shown in **Appendix A**. A pond alternatives evaluation matrix is included in **Table 8-2.**

The project area was divided into 10 sub-basins according to existing topography and the existing cross drains within the project limits. Basin 1 begins approximately at the eastern limits of Pasco County's Curley Road Realignment and Zephyrhills Bypass Extension projects. The alternative stormwater management facilities (SMFs) are sized based on the difference in the volume of runoff (100-year 10-day storm event for areas

within a closed basin and the 100-year 24-hour storm event for areas within an open basin) from the proposed roadway and right-of-way width as compared with the existing roadway and right-of-way width. For determination of the required area, a maximum storage depth of 3.5 feet was assumed for the closed basin design and a maximum storage depth of 2 feet was assumed for the open basin design and adjustments in the required area were made if appropriate for an alternative site, based on the topography. Additional consideration was given to required easements for conveying stormwater to the SMF or discharging from the SMF to the outfall. Floodplain compensation areas are identified separately from the SMF as needed based on compensation to be provided and topography of the area to be used for compensation. The alternative SMF sites were sized to meet both the requirements of SFWMD and FDOT's Critical Duration for stormwater quantity control as set forth in Florida Administrative Code (FAC) Chapter 14-86.

9.17 Structures

There are no bridge structures located within the Study limits. However, as noted in Section 4.2, a 35-ft concrete box bridge culvert is located at New River (beginning mile post 14.864). Designated as bridge number 140014, it consists of a triple 11-ft x 8-ft concrete box, each barrel 57.2 feet in length perpendicular to the roadway. It was constructed in 1957 and its sufficiency rating is 85 based on an inspection conducted on February 1, 2007. Field review revealed it to be in good condition. Determination of widening verses replacement will be made at the time this project goes to the final design phase. No difference in environmental impacts is expected for widening verses replacement, as worst-case impacts were assumed based on proposed ROW line to proposed ROW line.

9.18 Special Features

No special design features have been identified at this time.

9.19 Access Management

A meeting was held with the FDOT's District Access Management Engineer in September 2007 to explain the proposed access management plan for the proposed project. This meeting was documented in a memo dated September 26, 2007, which outlined the proposed access management parameters for the build alternatives. In November 2007 the alternatives public workshop was held that depicted median openings noted in the September 2007 memo. Several public comments were received at the workshop related to median openings that were considered when the project build

alternative was refined in early 2008. Additional coordination regarding this issue occurred in June and August 2008. The existing access management classification is Class 3. No change is recommended. The minimum spacing for full and directional median openings should ideally follow the standards for Access Class 3 shown in **Table 5-1**.

Table 9-4 shows the proposed median opening locations for the recommended build alternative, which involves widening SR 54 from existing 2-lanes (with no medians) to a multilane divided highway. In addition, the conceptual design plans included in **Appendix B** show the locations of proposed directional and full median openings as depicted in the table.

There are several locations where intersections could become signalized in the future when warranted, based on development order commitments. These locations are footnoted in the table. They are located at proposed full median openings that meet minimum spacing standards, and would also meet minimum signal spacing requirements.

There are several proposed median opening locations that do not meet minimum Access Class 3 standards for directional openings. In general, the District Access Management Engineer provided verbal concurrence. **Table 9-5** lists these locations that do not fully meet access classification standards and discusses the special considerations.

Additional changes in proposed median openings near the west end of the project were made in August 2008, after a meeting held with a property owner representative and the Department's access management engineer. These changes included:

- Just west of station 680 (located approximately 1100 feet west of the eastern intersection of SR 54/Wesley Chapel Loop), a half-directional median opening for westbound left/U-turns was removed, and instead a new half-directional left turn for eastbound motorists was added near station 684, to serve the future development planned on the north side of SR 54.

- At Wesley Chapel Loop (near station 691) the bi-directional left turns partial median opening was revised to remove the eastbound left turns, resulting in a westbound to southbound left turn movement only in the median area.

The above two openings will serve as a "split directional" opening.

Table 9-4. Access Management Review

Access Classification: Acess Classification 3 (Rule 14-97)

Minimum Median Spacing: Directional: 1320 feet Full: 2640 feet Signal: 2640 feet

Access Management - Proposed Median Opening Locations

Rev. 10/15/08

Median Opening #	Approx. STA.	Median Opening Type	Signal?	North side road/connection	South side road/connection	Intersecting Access Type	Directional Openings: Distance Between Openings	Directional Openings: Meets Std or % Deviation	Full Openings: Distance Between Openings	Full Openings: Meets Std or % Deviation	Traffic Signals: Distance Between Signals (1)	Traffic Signals: Meets Std or % Deviation	Comments
1	644+00	Full	Yes	Curley Road	Private Entrance	Signalized							
							2500	Meets	2500	5%	2500	5%	
2	669+00	Full (2)	Yes	--	North-East leg is the Zephyrhills by-pass	Signalized (2)							
							1480	Meets	3600	Meets	3600	Meets	
3	683+80	Directional EB only		--	--	For EB left and U-turns							Combined, these two openings function as a single "Split Directional" opening.
							Not Applicable						
4	691+00	Directional WB Only		--	Wesley Chapel Loop	Public Side Street; WB left and U turns only							
							1400	Meets					Smith Rd 450' east of Wesley Chapel Loop opening on south side
5	705+00	Full	Yes	Proposed Curley Rd Extension	Meadow Pointe Blvd	Signalized							
							1420	Meets	3020	Meets	17410	Meets	Jireh Rd 530' east of Meadow Pointe Blvd opening on north side
6	719+00	Directional		Ronnoch Blvd	Foxwood Blvd	Public Side Streets							
							1600	Meets					Bilmar Rd 1130' east of Foxwood Blvd opening on north side
7	735+00	Full (3)		Riverside Crossing	--	Public Side Street (3)							
							1170	11%	3620	Meets			
8	806+00	Directional		--	Fox Ridge Blvd	Public Side Street							
							1330	Meets					
9	819+00	Directional		--	--	For EB / WB U-turns							
							1120	15%					
10	830+50	Full (3)		River Glen Blvd	Wyndfields Blvd (Future)	Public Side Streets (3)							
							1200	9%	4150	Meets			
11	842+50	Directional		--	Ashton Oaks Blvd	Public Side Street							
							1570	Meets					
12	858+00	Directional		--	--	For EB / WB U-turns							
							1380	Meets					Linda Dr 900' east of EB/WB u-turn opening on south side
13	872+00	Full		--	Loury Drive	Public Side Street							
							1240	6%	2760	Meets			Lado Dr 1050 east of Loury Dr opening on south side
14	884+50	Directional		Trinity United Methodist Church	--	Church Access							
							1520	Meets					Ernest Dr 430' east of Church opening on south side
15	900+00	Full (3)		Hanbury Drive	New River Road	Public Side Streets (3)							
							1560	Meets	3860	Meets			Brook Manor 1090' east of Hanbury on north side and Apfel Rd 1320' east of Hanbury Drive on south side
16	915+00	Directional		New River Library	--	Public Library							
							1450	Meets					Mowrey 650' east of Library and Cobb Dr 1060' east of Library on south side
17	929+50	Dir. (EB only)		Home Depot Entrance	--	Business Access							(Existing directional opening)
							850	36%					Ball Lane 250' east of Home Depot Ent on south side
18	938+00	Full	Yes	Eiland Rd (CR 54)	Morris Bridge Rd (CR 579)	Signalized							

Notes:

(1) Existing signals, additional intersections may be signalized in future if warrants met

(2) County plans show stop sign, but signal will be installed when Z'Hills By-pass is built

(3) Intersection could become signalized in future if warrants are met - all possible future locations meet spacing requirements

Table 9-5. Access Management Spacing Standards Variations

Opening #		Opening #	Approx. Spacing (ft)	Comments/ Recommendations DAME = District Access Management Engineer for FDOT District Seven
7	to	8	1170	Both openings 7 and 8 are at existing side streets. Opening 7 feeds a subdivision that could become signalized based on development order (if warranted). It is not practical to alter these existing side streets
9	to	10	1120	Opening 9 is a u-turn directional and opening 10 is a full opening with a potential for future signalization (if warranted) based upon a development order. Opening 9 could be shifted slightly west to increase spacing, however the DAME indicated that shifting it could leave little depth for development access due to existing wetlands south of the R/W line.
10	to	11	1200	Opening 10 is noted above as full opening. Opening 11 aligns at a side street on the south side. It is not practical to alter the locations
13	to	14	1240	Opening 13 is a full opening at a side street. Opening 14 is a directional opening for a large religious institution on the north side. It is not practical to alter locations
17	to	18	850	Opening 17 is at the location of an existing directional opening for the Home Depot entrance. Opening 18 is at the signalized intersection with Morris Bridge/Eiland. Opening 17 is shown as EB directional only based on recommendation of the DAME. Locations cannot be altered that would bring spacing into full compliance

Revised 10/15/08

9.20 Potential Construction Segments & Phasing

Due to potential funding limitations at the time of construction, several options exist to segregate the proposed project into various construction segments. One option would be to segregate them based on the proposed typical sections. This would result in the following segments:

1. Curley Road to Foxwood Drive: 1.42 miles
2. Foxwood Drive to Linda Drive: 1.68 miles
3. Linda Drive to East of Morris Bridge Rd: 1.64 miles

Other options are available and these could consider other factors such as required utility relocations, planned developer right-of-way contributions, and variation in traffic congestion from segment to segment.

Advance funding for right-of-way acquisition could include securing potential off-site pond areas, or negotiating with properties that become listed for sale by the property owners. As developments are submitted for approval to Pasco County, provisions for land dedications and accommodations of drainage, floodplain and wetland impacts should be considered in accordance with the Pasco County Comprehensive Plan (shown in **Figure 3-4**) and Land Development Code.

Regarding construction phasing, at present, congestion is highest near the west end (especially west of Meadow Pointe Boulevard), but existing traffic patterns are expected to change as Pasco County and FDOT construct various intersecting and parallel facilities, therefore, phasing options should be evaluated based on traffic conditions at the time prior to construction contract letting.

SECTION 10 - REFERENCES

1-1 ETDM Programming Screen Summary Report for Project #6651 – SR 54 from Curley Road to Morris Bridge Road, published by FDOT's Environmental Management Office on August 17, 2006.

4-1 Soil Survey for Pasco County – Published by the Natural Resources Conservation Service, US Department of Agriculture, 1982.

4-2 Cultural Resources Assessment Survey for SR 54, prepared by Archaeological Consultants, Inc. September 2007.

4-3 Wetland Evaluation and Biological Assessment Report for SR 54, prepared by American Consulting Engineers of Florida, LLC. October 2008.

4-4 Contamination Screening Evaluation Report for SR 54, prepared by American Consulting Engineers of Florida, LLC. October 2008.

6-1 Final Traffic Technical Memorandum for SR 54, prepared by American Consulting Engineers of Florida, LLC. June 2008.

6-2 Florida Department of Transportation's Project Traffic Forecasting Handbook, March 2006. Transportation Statistics Office. www.dot.state.fl.us/planning

8-1 Alternative Stormwater Management Facility Report for SR 54, prepared by American Consulting Engineers of Florida, LLC. October 2008.

9-1 Conceptual Stage Relocation Plan for SR 54, prepared by HDR , Inc. August 2008

9-2 Noise Study Report for SR 54, prepared by the Florida Department of Transportation. October 2008.

9-3 Location Hydraulics Report for SR 54, prepared by American Consulting Engineers of Florida, LLC. October 2008.

9-4 Comments and Coordination Report for SR 54, prepared by American Consulting Engineers of Florida, LLC. October 2008

SECTION 11 – APPENDICES

A: Drainage Maps with Alternative Pond Sites (1”=400’ scale)

B: Conceptual Design Plans for Recommended Alternative (1”=100’ scale)

C: Design Variation for Multiuse Path Width

D: Auxiliary Lane Length Documentation