# FINAL PRELIMINARY ENGINEERING REPORT 

For<br>State Road 54<br>Project Development and Environment (PD\&E) Study<br>From West of SR 589 (Suncoast Parkway)<br>To West of SR 45 (US 41)<br>WPI SEG. NO.: 421140-7<br>Pasco County

June 2009

PREPARED FOR:

## Pasco County



In Cooperation with the
Florida Department of Transportation - District 7


# FINAL PRELIMINARY ENGINEERING REPORT 

For<br>State Road 54 Project Development and Environment (PD\&E) Study From West of SR 589 (Suncoast Parkway) to West of SR 45 (US 41)<br>WPI SEG. NO: 421140-7<br>Pasco County<br>Prepared for<br>Pasco County<br>In Cooperation with the<br>Florida Department of Transportation - District 7

June 2009

HDR Engineering, Inc.
Prepared By

James C. Widman, P.E.
Pasco County Responsible Officer

Steve Gordillo, P.E., Project Manager
Name and Title of Engineer
\#50586
P.E. Number

## EXECUTIVE SUMMARY

This Preliminary Engineering Report (PER) was prepared for Pasco County in cooperation with the Florida Department of Transportation (FDOT) as part of the Project Development and Environment (PD\&E) Study for the proposed widening of SR 54 from a four-lane divided roadway to a six-lane divided roadway. The project begins west of SR 589 (Suncoast Parkway) and extends approximately five miles to the east to west of SR 45 (US 41).

Two recommended typical sections were developed to provide the needed roadway geometry within the project limits. The segment from the beginning of the project to Meadowbrook Drive must be widened to the outside of the existing travel lanes. This is necessary in order to provide dual left-turn lanes onto the southbound SR 589 (Suncoast Parkway) on-ramp. Alternatively, the segment from Meadowbrook Drive to the end of the project limits will be widened to the inside of the existing travel lanes, with the existing wide median providing the necessary space to construct one additional travel lane in each direction. The median shoulders will be 12 feet ( ft ) wide and unpaved. The outside shoulders will be 5 ft wide and either constructed or corrected to a two percent cross slope. A 6 ft extended shoulder, at two percent cross slope, will be added to the outside shoulder. Bicycle traffic will be accommodated by designating bike lanes with pavement markings and signs and also providing for inverted profile thermoplastic lane lines along both sides of the roadway for the outer lane (in each direction). The remainder of the extended shoulder will serve to accommodate pedestrian traffic. The existing roadside swales will be re-graded to convey stormwater and, in some areas, will have one to four slopes per design variance. The existing right-of-way (ROW) width along SR 54 within the project limits varies from approximately 250 ft to approximately 350 ft .

Two alternatives were considered, the No-Build Alternative and the Build Alternative. The No-Build Alternative assumed the existing four-lane divided roadway for the SR 54 study corridor. The Build Alternative assumed the six-lane widening of SR 54 from west of SR 589 (Suncoast Parkway) to west of SR 45 (US 41). The Build Alternative was further divided into three alternatives: Alternative A (Signalization at Ashley Glen Boulevard), Alternative B (Directional Median Opening at Ashley Glen Boulevard), and Alternative C (Median Closure at Ashley Glen Boulevard). The only distinction between the alternatives was the type of accessibility assumed at the SR 54/Ashley Glen Boulevard/Northpointe Parkway intersection.

As a result of the Public Hearing, environmental studies and interagency coordination, the Build Alternative has been selected as the Recommended Alternative for the proposed widening of SR 54 from a four-lane divided roadway to a six-lane divided roadway. The documented findings of the evaluation of physical, historical, cultural, social, economic, and environmental impacts of the Recommended Alternative are listed as follows:

- No additional right-of-way (ROW) or relocations will be required. The proposed project is not anticipated to change land use patterns nor affect future development along the project corridor.
- Two jurisdictional wetlands and other water features are likely to be affected by constructing the proposed project. Wetland impacts are minor and will occur to two disturbed (narrow) wetland/other water feature edges. Impacts are estimated to be less than 0.085 acres.
- No National Register of Historic Places (NRHP)-eligible or NRHP-listed cultural resources will be affected as a result of implementing the Recommended Alternative. Community services will not be impacted; however, they may be temporarily affected during construction. This effect is expected to be due to minor delays of traffic occurring during construction.
- No adverse effects to threatened and endangered species are anticipated as a result of implementing the Recommended Alternative.
- Noise impacts should be minor; sound barrier walls are not recommended.
- The stormwater management needs for the proposed project are accounted for in the existing ponds.
- The estimated costs to design and construct the Recommended Alternative are $\$ 3.7$ million and $\$ 24.7$ million, respectively. These costs are anticipated to be paid for by the developer.


## TABLE OF CONTENTS

Section Title Page
EXECUTIVE SUMMARY ..... i
LIST OF TABLES ..... vii
LIST OF FIGURES ..... viii
SECTION 1 RECOMMENDATIONS AND COMMITMENTS ..... 1-1
1.1 Recommendations ..... 1-1
1.2 Commitments ..... 1-1
SECTION 2 INTRODUCTION ..... 2-1
2.1 Purpose. ..... 2-1
2.2 Project Description ..... 2-1
2.3 References ..... 2-1
SECTION 3 NEED FOR IMPROVEMENT ..... 3-1
3.1 Area Needs ..... 3-1
3.1.1 System Linkage ..... 3-1
3.1.2 Transportation Demand ..... 3-1
3.1.3 State or Local Government Authority ..... 3-1
3.1.4 Social Demands or Economic Developments ..... 3-1
3.1.5 Modal Interrelationships ..... 3-1
3.1.6 Capacity Availability ..... 3-3
3.1.7 Safety ..... 3-3
3.2 References ..... 3-3
SECTION 4 EXISTING CONDITIONS ..... 4-1
4.1 Existing Roadway Characteristics ..... 4-1
4.1.1 Functional Classification ..... 4-1
4.1.2 Typical Section ..... 4-1
4.1.3 Pedestrian and Bicycle Facilities. ..... 4-1
4.1.4 Right-of-Way ..... 4-1
4.1.5 Horizontal Alignment ..... 4-3
4.1.6 Vertical Alignment ..... 4-3
4.1.7 Drainage ..... 4-3
4.1.7.1 Surface Water ..... 4-3
4.1.7.2 Groundwater ..... 4-6
4.1.8 Geotechnical Data ..... 4-6
4.1.9 Crash Data ..... 4-9
4.1.10 Intersections and Signalization ..... 4-11
4.1.11 Lighting ..... 4-11
4.1.12 Utilities ..... 4-11
4.1.13 Pavement Conditions ..... 4-14
4.2 Existing Bridges ..... 4-14
4.3 Environmental Characteristics ..... 4-14
4.3.1 Land Use Data ..... 4-14
4.3.1.1 Existing Land Use ..... 4-14
4.3.1.2 Future Land Use ..... 4-16
4.3.2 Community Services ..... 4-16
5.1.1 Historic Sites / Districts / Archeological Sites ..... 4-16
5.1.2 Archaeological Sites ..... 4-16
4.3.3 Natural and Biological Features ..... 4-16
4.3.3.1 Wetlands and Other Water Features ..... 4-16
4.3.3.2 Wildlife and Critical Habitat ..... 4-20
4.3.3.3 Floodplains ..... 4-20
4.3.3.4 Outstanding Florida Waters/Aquatic Preserves ..... 4-20
4.3.4 Potential Contamination Sites ..... 4-22
4.3.5 Farmlands ..... 4-23
4.4 References ..... 4-23
SECTION 5 DESIGN CONTROLS AND STANDARDS ..... 5-1
5.1 Design Publications ..... 5-1
SECTION 6 TRAFFIC ..... 6-1
6.1 Existing Traffic Conditions ..... 6-1
6.1.1 Traffic Analysis Assumptions ..... 6-1
6.1.2 Existing Year (2007) Traffic Volumes ..... 6-2
6.1.3 Existing Year (2007) Level of Service ..... 6-2
6.2 Multimodal Transportation Systems Considerations ..... 6-13
6.2.1 Transit ..... 6-13
6.2.2 Rail ..... 6-13
6.2.3 Aviation ..... 6-13
6.3 Traffic Volume Projections ..... 6-13
6.4 Level of Service ..... 6-20
6.4.1 Design Year (2030) Level of Service ..... 6-20
6.4.2 Opening Year (2010) Level of Service ..... 6-30
6.5 Turn Lane Length Analysis ..... 6-37
6.6 References ..... 6-41
SECTION 7 CORRIDOR ANALYSIS ..... 7-1
7.1 Evaluation Of Alternate Corridors ..... 7-1
7.1.1 Improvement of Parallel Roadways ..... 7-1
7.1.2 Development of a New Roadway Corridor ..... 7-2
7.1.3 Enhancement of Transit Service ..... 7-2
7.1.4 Improvement of the Existing Corridor ..... 7-2
7.2 Corridor Selection ..... 7-2
7.3 References ..... 7-4
SECTION 8 ALTERNATIVE ALIGNMENT ANALYSIS ..... 8-1
8.1 No-Build Alternative ..... 8-1
8.2 Transportation System Management Alternative ..... 8-1
8.3 Build Alternative ..... 8-1
8.4 Evaluation Matrix ..... 8-4
8.5 Recommended Alternative ..... 8-6
SECTION 9 PRELIMINARY DESIGN ANALYSIS ..... 9-1
9.1 Design Traffic Volumes ..... 9-1
9.2 Typical Sections ..... 9-1
9.3 Intersection Concepts and Signal Analysis ..... 9-1
9.4 Alignment and Right-of-Way Needs. ..... 9-4
9.5 Relocations ..... 9-4
9.6 Right-of-Way Costs ..... 9-4
9.7 Construction Cost ..... 9-4
9.8 Preliminary Engineering Costs ..... 9-4
9.9 Recycling and Salvageable Materials ..... 9-4
9.10 User Benefits ..... 9-4
9.11 Pedestrian and Bicycle Facilities ..... 9-4
9.12 Safety ..... 9-5
9.13 Economic and Community Development ..... 9-5
9.14 Environmental Impacts ..... 9-5
9.14.1 Land Use ..... 9-5
9.14.2 Cultural Features and Community Services ..... 9-5
9.14.3 Natural and Biological Impacts ..... 9-5
9.14.4 Physical Impacts ..... 9-6
9.15 Utility Impacts ..... 9-6
9.16 Traffic Control Plan ..... 9-6
9.17 Results of Public Involvement Program ..... 9-7
9.18 Value Engineering ..... 9-7
9.19 Drainage ..... 9-8
9.20 Bridge Analysis ..... 9-8
9.21 Special Features ..... 9-8
9.22 Access Management ..... 9-8
9.23 Aesthetics and Landscaping ..... 9-8
9.24 Reference ..... 9-8
APPENDIX A CONCEPT PLANS ..... A-1
APPENDIX B CONSTRUCTION COST ESTIMATE ..... B-1

## LIST OF TABLES

Table Title Page
Table 3-1 Traffic Information ..... 3-3
Table 4-1 Horizontal Alignment ..... 4-3
Table 4-2 Crash History Overview ..... 4-10
Table 4-3 Type of Crashes ..... 4-11
Table 4-4 Utilities. ..... 4-12
Table 5-1 Design Criteria Matrix SR 54 ..... 5-2
Table 6-1 Comparison of Field Collected Data and FDOT Count Station Data, with State Data for Urban Arterials ..... 6-1
Table 6-2 Existing Year (2007) SR 54 Intersection Analyses Results ..... 6-7
Table 6-3 Existing Year (2007) SR 54 Eastbound Arterial Segment Analyses Results ..... 6-8
Table 6-4 Existing Year (2007) SR 54 Westbound Arterial Segment Analyses Results ..... 6-9
Table 6-5 Design Year (2030) Alternatives Comparison of Intersection Analyses Results ..... 6-21
Table 6-6 Design Year (2030) Alternatives Comparison of Eastbound Arterial Segment Analyses Results ..... 6-22
Table 6-7 Design Year (2030) Alternatives Comparison of Westbound Arterial Segment Analyses Results ..... 6-23
Table 6-8 Opening Year (2010) Proposed Project Intersection Analyses Results ..... 6-34
Table 6-9 Opening Year (2010) Proposed Project Eastbound Arterial Segment Analyses Results ..... 6-35
Table 6-10 Opening Year (2010) Proposed Project Westbound Arterial Segment Analyses Results ..... 6-36
Table 6-11 Turn Lane Lengths ..... 6-37
Table 8-1 Evaluation Matrix ..... 8-4

## LIST OF FIGURES

Figure Title Page
Figure 1-1 - Recommended Build Typical Section from Crossings Boulevard to Meadowbrook Drive - STA. 1714+96.00-STA. 1769+92.71 ..... 1-2
Figure 1-2 - Recommended Build Typical Section from Meadowbrook Drive to Sofia Drive - STA. 1769+92.91-STA. 1977+86.10 ..... 1-3
Figure 2-1 - Project Location Map ..... 2-2
Figure 3-1 - Approved Developments Location Map ..... 3-2
Figure 4-1 - Existing Typical Section ..... 4-2
Figure 4-2 - USGS Quadrangle Map ..... 4-4
Figure 4-3 - Basin Map ..... 4-5
Figure 4-4 - Pasco County Soil Survey ..... 4-7
Figure 4-5 - Existing Land Use ..... 4-15
Figure 4-6 - Future Land Use ..... 4-17
Figure 4-8 - Pasco and Hillsborough County FEMA Map ..... 4-22
Figure 6-1 - Existing Year (2007) Opening Year (2010) and Design Year (2030) AADT Volumes ..... 6-3
Figure 6-2A - Existing (2007) Design Hour Volumes ..... 6-4
Figure 6-2B - Existing (2007) Design Hour Volumes ..... 6-5
Figure 6-2C - Existing (2007) Design Hour Volumes ..... 6-6
Figure 6-3A - Existing (2007) Level of Service (LOS) and Lane Geometry ..... 6-10
Figure 6-3B - Existing (2007) Level of Service (LOS) and Lane Geometry ..... 6-11
Figure 6-3C - Existing (2007) Level of Service (LOS) and Lane Geometry ..... 6-12
Figure 6-4A - 2030 Design Hour Volumes. ..... 6-14
Figure 6-4B - 2030 Design Hour Volumes ..... 6-15
Figure 6-4C - 2030 Design Hour Volumes ..... 6-16
Figure 6-5A - 2010 Design Hour Volumes ..... 6-17
Figure 6-5B - 2010 Design Hour Volumes ..... 6-18
Figure 6-5C - 2010 Design Hour Volumes ..... 6-19
Figure 6-6A - Design Year (2030) No-Build Alternative (Signal at Ashley Glen Boulevard/Northpointe Parkway) Level of Service (LOS) and Lane Geometry. ..... 6-24
Figure 6-6B - Design Year (2030) No-Build Alternative (Signal at Ashley Glen Boulevard/Northpointe Parkway) Level of Service (LOS) and Lane Geometry ..... 6-25
Figure 6-6C - Design Year (2030) No-Build Alternative (Signal at Ashley Glen Boulevard/Northpointe Parkway) Level of Service (LOS) and Lane Geometry ..... 6-26
Figure 6-7A - Design Year (2030) Alternative A (Signal at Ashley Glen Boulevard/Northpointe Parkway) Level of Service (LOS) and Lane Geometry ..... 6-27
Figure 6-7B - Design Year (2030) Alternative A (Signal at Ashley Glen Boulevard/Northpointe Parkway) Level of Service (LOS) and Lane Geometry ..... 6-28
Figure 6-7C - Design Year (2030) Alternative A (Signal at Ashley Glen Boulevard/Northpointe Parkway) Level of Service (LOS) and Lane Geometry. ..... 6-29
Figure 6-8A - Opening Year (2010) Level of Service (LOS) and Lane Geometry ..... 6-31
Figure 6-8B - Opening Year (2010) Level of Service (LOS) and Lane Geometry ..... 6-32
Figure 6-8C - Opening Year (2010) Level of Service (LOS) and Lane Geometry ..... 6-33
Figure 7-1 - 2030 Roadway Network ..... 7-3
Figure 8-1 - Proposed Typical Section from Crossings Boulevard to Meadowbrook Drive - STA. 1714+96.00-STA 1769+92.71 ..... 8-2
Figure 8-2 - Proposed Typical Section from Meadowbrook Drive to Sofia Drive STA. 1769+92.91-STA 1977+86.10 ..... 8-3
Figure 9-1 - Recommended Build Typical Section from Crossings Boulevard to Meadowbrook Drive - STA. 1714+96.00-STA. 1769+92.71 ..... 9-2
Figure 9-2 - Recommended Build Typical Section from Meadowbrook Drive to Sofia Drive - STA. 1769+92.91-STA. 1977+86.10 ..... 9-3

## Section 1 Recommendations and Commitments

### 1.1 RECOMMENDATIONS

A Project Development and Environment (PD\&E) Study was prepared to evaluate improvement alternatives along the SR 54 corridor in Pasco County, Florida. The limits of the study extend from west of SR 589 (Suncoast Parkway) to west of SR 45 (US 41). The length of the study is approximately five miles. The design year for the study is 2030.

Both the existing and design year conditions were evaluated for a No-Build and Build Alternative, in order to determine the most appropriate recommendation for this project. The No-Build Alternative included an existing four-lane typical section, while the Build Alternative proposed widening of SR 54 to a six-lane divided roadway facility. After completing technical analyses and a public involvement process, the study concluded that, without capacity improvements made to the existing roadway facility, future increases in traffic volume will further exacerbate current deficient Levels of Service (LOS) on SR 54. The following proposed improvement concepts are, therefore, recommended to improve existing and future traffic conditions.

The recommended typical section (see Figures 1-1 and 1-2) adds one lane in each direction to SR 54 to widen the facility from four lanes to six lanes. To create dual left-turn lanes at the SR 589 (Suncoast Parkway) ramps, outside widening will occur at the beginning of the project. To avoid acquiring additional right-of-way (ROW), median widening will occur for the remainder of the project. The median shoulders will be 12 ft wide and unpaved. The outside shoulders will be slope corrected or newly constructed at 2 percent for 5 ft . Bicycle traffic will be accommodated by designating bike lanes with pavement markings and signs and also providing for inverted profile thermoplastic lane lines along both sides of the roadway for the outer lane (in each direction). The remainder of the extended shoulder will serve to accommodate pedestrian traffic. The existing swales will be re-graded to accommodate the stormwater and existing drainage structures will be modified as needed.

### 1.2 COMMITMENTS

To minimize the impacts of this project on local residents and business owners, and optimize the effectiveness of the improvements, the following commitments were made during the PD\&E study process:

- All construction activities shall adhere to the latest edition of the FDOT Standard Specifications for Road and Bridge Construction.




## Section 2 Introduction

### 2.1 PURPOSE

The purpose of this Preliminary Engineering Report (PER) was to document the findings of the engineering evaluation for the improvements to SR 54 in Pasco County, Florida from west of SR 589 (Suncoast Parkway) to west of SR 45 (US 41). This report presents the engineering data and analysis needed to define the proposed project and documents the existing physical features of the roadway and the existing environmental characteristics within the project study limits. This study defined the need and requirements for the project, including the analysis of existing and projected traffic conditions. An evaluation matrix, which compares the relative strengths and weaknesses of the No-Build and Build Alternatives, is included in Section 8.0. This matrix helps identify the Recommended Alternative by evaluating the physical, social, economic, and environmental impacts of the conceptual design. The conceptual design plans are included in Appendix A.

This study was conducted in accordance with Florida Department of Transportation (FDOT) guidelines and related state, and local government requirements. Other supporting documents prepared for this study include: a State Environmental Impact Report ${ }^{1}$ (SEIR), Traffic Analysis Report ${ }^{2}$ and an Environmental Technical Compendium ${ }^{3}$, Noise Study Report ${ }^{4}$, Historic Structures Survey Technical Memorandum ${ }^{5}$, and a Contamination Screening Evaluation Memorandum (CSEM) ${ }^{6}$.

### 2.2 PROJECT DESCRIPTION

SR 54 is a principal arterial roadway that serves east-west travel in southern Pasco County. Due to its connection to north-south regional roadways such as SR 55 (US 19), SR 589 (Suncoast Parkway), SR 45 (US 41) and SR 93 (I-75), SR 54 links Pasco County to the remainder of the state. This study focuses on an existing five-mile (approximate), four-lane divided segment of SR 54 from west of SR 589 (Suncoast Parkway) to west of SR 45 (US 41) that is proposed to be widened to a six-lane divided roadway.

This study evaluated the proposed widening of SR 54 to six lanes within the limits noted on Figure 2-1. Other improvements will include widening the inside and outside shoulders to accommodate bicyclists and pedestrians. Signalization upgrades are planned for the existing intersections at the SR 589 (Suncoast Parkway) ramp termini and at Oakstead Boulevard. The Traffic Analysis Report ${ }^{2}$ indicated a need for signalization; therefore, traffic signals at the Ashley Glen Boulevard/Northpointe Parkway, Ballantrae Boulevard and Sunlake Boulevard intersections will be provided when warranted. The proposed roadway improvements will not require acquisition of additional right-of-way (ROW).

### 2.3 REFERENCES

1. State Environmental Impact Report; HDR Engineering, Inc.;
2. Traffic Analysis Report; HDR Engineering, Inc.;
3. Environmental Technical Compendium; HDR Engineering, Inc.;
4. Noise Study Report; KB Environmental Sciences, Inc.;
5. Historic Structures Survey Technical Memorandum ; ACI;
6. Contamination Screening Evaluation Memorandum (CSEM); HDR Engineering, Inc.;


## Section 3 Need for Improvement

### 3.1 AREA NEEDS

### 3.1.1 SYSTEM LINKAGE

SR 54 is a principal arterial roadway that provides for east-west travel in southern Pasco County. It is an important component to the State Highway System (SHS) because it links north-south regional roadways such as SR 55 (US 19), SR 589 (Suncoast Parkway), SR 45 (US 41) and SR 93 (I-75) in Pasco County to the remainder of the state. The proposed project provides continuity between the existing six-lane divided roadway sections that currently exist west and east of the project study limits.

### 3.1.2 TRANSPORTATION DEMAND

Motorists in Pasco County are faced with increased traffic congestion and delay as the demands from the County's growth continues to place pressures on the existing transportation system. In particular, five Developments of Regional Impact (DRI) and nine Master Planned Unit Developments (MPUD) have been approved within the project area over the past eight years (see Figure 3-1).

### 3.1.3 STATE OR LOCAL GOVERNMENT AUTHORITY

The proposed project is consistent with the Transportation Element of the Pasco County Comprehensive Plan ${ }^{1}$ and the Pasco County Metropolitan Planning Organization (MPO) 2025 Long Range Transportation Plan (LRTP) ${ }^{2}$. In addition, the widening project is listed in the Pasco County Transportation Capital Improvement Program (CIP), FY 2008-2012³.

### 3.1.4 SOCIAL DEMANDS OR ECONOMIC DEVELOPMENTS

As residential units, commercial properties and office space are built as part of the approved developments, the enhancement of regional connectivity and preservation of sufficient operating conditions is important. Hence, the proposed project will provide a safe and efficient transportation facility for this area of Pasco County. It is intended to accommodate future traffic volumes, enhance motorist safety and improve hurricane evacuation time.

### 3.1.5 MODAL INTERRELATIONSHIPS

While the automobile continues to be the vehicle of choice in the area's transportation system, Pasco County has recognized the need to promote alternative modes of transportation to better accommodate the area's growth. Currently, Pasco County Public Transit (PCPT) does not have an existing transit route that travels within the SR 54 study limits. There are plans for implementation of a SR 54 CrossCounty Connector transit route in 2011. The route would provide travel along SR 54 between the existing transit systems located in New Port Richey and the City of Zephyrhills.

The proposed project includes wider outside paved shoulders that will enhance the travel conditions for bicyclists traveling along the SR 54 corridor. Further improvement to modal interrelationships will occur between bicyclists and transit, by the implementation of PCPT's Bikes on Buses program as part of the proposed SR 54 Cross-County Connector transit route.

### 3.1.6 CAPACITY AVAILABILITY

A Traffic Analysis Report ${ }^{4}$ completed in August 2008 documents the existing year (2007) and design year (2030) annual average daily traffic (AADT) volumes. Table 3-1 summarizes the ranges of existing and design year AADT volume for the study corridor. The Pasco County Comprehensive Plan ${ }^{2}$ documents the adopted minimum operational standard for SR 54 as level of service (LOS) D. Based upon the Quality/Level of Service Handbook ${ }^{5}$ Generalized Level of Service Tables, the existing LOS D capacity for SR 54 as a four-lane divided roadway facility is 35,700 vehicles per day (vpd). As shown in Table 3-1, the existing four-lane divided roadway is exceeding the LOS D capacity. Based upon the Florida Department of Transportation (FDOT) LOS Tables, improving SR 54 to a six-lane divided roadway increases the LOS D capacity to 53,500 vpd. With the proposed six-lane divided roadway improvement, the anticipated 2030 AADT volumes within portions of the study corridor are expected to exceed the LOS D capacity. As will be further discussed in Section 6 of this report, the 2030 roadway segments expected to exceed the LOS D capacity are located to the west of Meadowbrook Boulevard and to the east of Oakstead Boulevard.

Table 3-1 Traffic Information

| SR 54 from west of SR 589 (Suncoast <br> Parkway) to west of SR 45 (US 41) | AADT | LOS D Capacity |
| :---: | :---: | :---: |
| Existing Year (2007) | 40,200 to 50,800 | 35,700 |
| Design Year (2030) | 44,500 to 81,900 | 53,500 |

### 3.1.7 SAFETY

The proposed project will help relieve traffic congestion and is expected to reduce the number of crashes along the corridor. The proposed six-lane widening is expected to reduce traffic congestion along the SR 54 study corridor by increasing the throughput capacity of the roadway at its key signalized intersections. The propensity for rear-end crashes to occur along the SR 54 study corridor will be lessened as a result of reduced vehicle delay, fewer stopped vehicles and shorter vehicle queues. In addition, the Traffic Analysis Report ${ }^{4}$ indicated the need to provide new traffic signals at Ashley Glen Boulevard/Northpointe Parkway, Ballantrae Boulevard and Sunlake Boulevard intersections. Signalization (only when warranted) would reduce the likelihood of severe right-angle crashes occurring at these highly utilized unsignalized median openings. Lastly, the proposed project will increase the outside paved shoulder width from 5 (foot) ft to 5 ft plus a 6 ft extended paved shoulder. Bicycle traffic will be accommodated by designating bike lanes with pavement markings and signs and also providing for inverted profile thermoplastic lane lines along both sides of the roadway for the outer lane (in each direction). The remainder of the extended shoulder will serve to accommodate pedestrian traffic.

### 3.2 REFERENCES

1. 2025 Long Range Transportation Plan; Pasco County Metropolitan Planning Organization; January 2005.
2. Pasco County Comprehensive Plan; Pasco County Board of County Commissioners; Adopted June 2006.
3. Transportation Capital Improvement Program, FY 2008-2012; Pasco County Engineering Services; October 2007.
4. Traffic Analysis Report; HDR Engineering, Inc.;
5. Quality/Level of Service (LOS) Handbook 2002 (and 2007 Issue Papers); Florida Department of Transportation; 2002 and 2007.

## Section 4 Existing Conditions

### 4.1 EXISTING ROADWAY CHARACTERISTICS

### 4.1.1 FUNCTIONAL CLASSIFICATION

The functional classification for SR 54 from west of the SR 589 (Suncoast Parkway) to west of SR 45 (US 41) is Urban Principal Arterial.

### 4.1.2 TYPICAL SECTION

Existing SR 54, within the study limits, is a 4-lane divided rural roadway from west of the SR 589 (Suncoast Parkway) to west of SR 45 (US 41). Figure 4-1 shows the existing typical section, which consists of four 12 -foot (ft) lanes (two lanes in each direction) with an inside paved shoulder width of two ft ( 8 ft total) and an outside paved shoulder width of five ft ( 10 ft total). The typical section also includes a varying width grass median (approximately 58 ft and 72 ft ) and large grass swales. At the east end of the project ( 0.35 miles west of SR 45 [US 41]), the typical section
 changes to a curb and gutter section.

### 4.1.3 PEDESTRIAN AND BICYCLE FACILITIES

Currently, a 10 -ft shared-use path is only provided along the south side of SR 54 from the SR 589 (Suncoast Parkway) to Meadowbrook Drive. As indicated in the SR 54 Bicycle/Pedestrian Feasibility Study ${ }^{1}$, the existing SR 54 typical section has $12-\mathrm{ft}$ wide outside lanes and $5-\mathrm{ft}$ wide paved shoulders, which meet the Florida Department of Transportation (FDOT) general standard for bicycle accommodation. This is confirmed in the FDOT Statewide Bicycle Facilities Study ${ }^{2}$, which includes a statewide inventory of bicycle facilities on state roads and documents the existing 5 -ft paved shoulders on this section of SR 54 as an existing on-road bikeway.

### 4.1.4 RIGHT-OF-WAY

The existing right-of-way (ROW) width along SR 54 within the project limits varies from approximately 250 ft to approximately 350 ft .


### 4.1.5 HORIZONTAL ALIGNMENT

The existing horizontal alignment of SR 54 contains several superelevated curves that are summarized in Table 4-1.

Table 4-1
Horizontal Alignment

| Curve | Length | Radius | Superelevation Rate |
| :---: | :---: | :---: | :---: |
| CL1 | $1,392.72 \mathrm{ft}$ | $3,819.72 \mathrm{ft}$ | $4.3 \%$ |
| CL2 | 896.67 ft | $2,864.79 \mathrm{ft}$ | $5.5 \%$ |
| CL3 | $2,486.44 \mathrm{ft}$ | $2,864.79 \mathrm{ft}$ | $5.5 \%$ |
| CL4 | $2,042.54 \mathrm{ft}$ | $1,637.00 \mathrm{ft}$ | $8.6 \%$ |
| CL5 | $1,888.16 \mathrm{ft}$ | $2,291.83 \mathrm{ft}$ | $6.7 \%$ |
| CL6 | $1,524.77 \mathrm{ft}$ | $2,864.79 \mathrm{ft}$ | $5.5 \%$ |

### 4.1.6 VERTICAL ALIGNMENT

The existing roadway grades are very flat for SR 54 . Centerline grades vary from 0.196 to 0.45 percent within the project limits.

### 4.1.7 DRAINAGE

### 4.1.7.1 Surface Water

SR 54's existing drainage systems, including its stormwater management facilities, from west of the SR 589 (Suncoast Parkway) to west of SR 45 (US 41) were recently built. These systems were built for the SR 589 (Suncoast Parkway) project (WPI 7155802) and the SR 54 two-lane to four-lane divided highway project (WPI 7115977). A rural typical section was used with a depressed median and outside roadside ditches. Linear ponds were permitted in the roadway ROW and offsite floodplain mitigation sites were excavated on property acquired for this purpose. The project was permitted by the Southwest Florida Water Management District (SWFWMD) under Environmental Resource Permit (ERP) No. 43016251.00.

The entire project lies in the Pinellas-Anclote River Basin in Pasco County. This basin is approximately 120 square miles in size and ultimately discharges to the Gulf of Mexico. The terrain is generally flat as indicated on the USGS Quadrangle Map in Figure 4-2. The proposed project's drainage analysis divided the project into seven sub-basins (Basins IIIC SR 54, IIID SR 54, and Basin A through E). These are all a part of the Sandy Branch Basin and the South Branch Basin of the Anclote River as shown in the Basin Map in Figure 4-3. Twelve cross drains, with sizes ranging from a double 24-inch Reinforced Concrete Pipe (RCP) to a double 48 -inch RCP, convey runoff across SR 54.



Drainage conveyance systems consist of cross drains, median drains, side drains, linear ponds and two nearby ponds. The linear ponds outfall to the existing cross drains' drainage ways. Side drains convey or act as equalizers through the driveways located in the linear ponds. Median drains simply convey median drainage to the outside ponds.

SR 54's existing stormwater management facilities consist of linear ponds along the roadside, two nearby ponds and existing floodplain compensation sites. The ponds were designed to meet SWFWMD treatment and attenuation requirements (25-year FLMOD storm) and are in compliance with Rule 14-86, the Department's critical storm event up to the 100 -year storms. The linear ponds are designed as wet ponds with the littoral shelf set less than one ft below the control elevation. Water quality volume accounts for all directly impervious area, including existing and proposed pavement. All of the stormwater management facilities for Basins A through E were designed and permitted for a six-lane highway in anticipation of upgrading SR 54. The existing floodplain compensation sites mitigated floodplain impacts on a cup-for-cup basis by excavating uplands contiguous to the floodplain.

### 4.1.7.2 Groundwater

The seasonal high groundwater table is generally shallow through the project limits and varies with the terrain. The seasonal high water table ranges from a low elevation of about 50.6 ft (North American Vertical Datun [NAVD], 1988) near the west end of the project and gradually increases to a high elevation of about 64.0 ft (NAVD '88) near the east end of the project.

### 4.1.8 GEOTECHNICAL DATA

According to the United States Department of Agriculture (USDA), Soil Conservation Service (SCS) Pasco County Soil Survey, there are 20 primary soil-mapping units noted within the project alignment. The general soil descriptions are presented in the sub-sections below, as described in the Soil Survey. The USDA Vicinity Maps are illustrated in Figure 4-4.

Wauchula Fine Sand (1) - This nearly level to gently sloping, poorly drained soil is in broad, low areas in the flatwoods and on wet seepage hillsides in the uplands. Slopes are smooth to concave. In most years, under natural conditions, the water table is at a depth of less than 10 inches for about 1 to 4 months. It is at a depth of 10 to 40 inches for as long as 6 months, except during very dry periods, when it drops below 40 inches
Pomona Fine Sand (2) - This nearly level soil is in large areas on low ridges in the flatwoods. Slopes are smooth to 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 to 3 months and at a depth of 10 to 40 inches for 6 months or more.
Pineda Fine Sand (3) - This poorly drained, nearly level soil is in the flatwoods. Individual areas are irregular in shape. Slopes range from 0 to 2 percent. The water table is within a depth of 10 inches for 1 to 6 months in most years. In lower lying areas, water rises above the surface for a brief period after exceptionally heavy rainfall. Permeability is rapid in the surface layer, the subsurface layer, and the sandy part of the subsoil. It is slow to very slow in the loamy lower part of the subsoil.


Felda Fine Sand (4) - This poorly drained, nearly level soil is on low-lying, broad areas in the flatwoods. Slopes range from 0 to 2 percent. Under natural conditions, the water table is within 10 inches of the surface for 2 to 6 months each year.
Myakka Fine Sand (5) - This nearly level, poorly drained soil is on broad areas in the flatwoods. Slopes are smooth to concave and range from 0 to 2 percent. The water table is at a depth of less than 10 inches during the very dry seasons. The available water capacity is medium in the subsoil and very low in the other layers. Permeability is rapid in the surface and subsurface layers and the substratum and is moderate to moderately rapid in the subsoil. Natural fertility is low.

Tavares Sand (6) - This nearly level to gently sloping, moderately well drained soil is on low ridges and knolls throughout the county. Areas are irregular in shape. 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. The available water capacity is very low. Permeability is very rapid.

Sellers Mucky Loam Fine Sand (8) - This nearly level, very poorly drained soil is in depressions. Slopes are generally concave and less than 2 percent. In most years, under natural conditions, the soil is ponded during wet seasons for 3 to 6 months and the water table is within a depth of about 10 inches for 6 to 12 months. The available water capacity is high in the organic surface layer, medium in the dark-colored layers to a depth of about 24 inches, and low below this depth. Permeability is rapid throughout; however, internal drainage is slow, impeded by a shallow water table.

Wabasso Fine Sand (10) - This nearly level, poorly drained soil is in broad flatwoods. Individual areas are irregular in shape. Slopes are less than 2 percent. In most years, the water table is at a depth of 10 to 40 inches for more than 6 months if this soil is in an unaltered state. It is at a depth of more than 40 inches during very dry seasons.
Adamsville Fine Sand (11) - This nearly level, somewhat poorly drained soil is on low broad flats that are less than 2 ft higher in elevation than the adjacent sloughs. Individual areas are irregular in shape and range from 5 to 200 acres. Slopes are less than 2 percent. In most years, under natural conditions, the water table is at a depth of 20 to 40 inches of the surface for less than 2 weeks during very wet seasons. It recedes to a depth of more than 40 inches during dry periods. In this soil, available water capacity is low to very low. Permeability is rapid.
Zephyr Muck (16) - This nearly level, poorly drained soil is in depressions. Typically, the surface layer is black muck about 13 inches thick. Slopes are smooth to concave and are less than 2 percent. This soil is ponded for more than 6 months in most years.
Smyrna Fine Sand (21) - This nearly level, poorly drained soil is on broad flatwood areas. Individual areas are irregular in shape. Slopes are smooth to concave and range from 0 to 2 percent. The water table is at a depth of less than 10 inches for a period of 1 to 4 months in most years and between 10 and 40 inches for more than 6 months. In rainy seasons or after heavy rains, the water table may rise above the surface briefly.
Basinger Fine Sand (22) - This poorly drained nearly level soil is in poorly defined drainageways and sloughs in the flatwoods. Individual areas are irregular shapes. Slopes are less than 2 percent. The water table is at a depth of less than 10 inches for 2 to 6 months annually and at a depth of 10 to 30 inches for a period of more than 6 months in most years. Permeability is very rapid throughout the soil. The available water capacity is very low in the surface and subsurface layers, medium in the subsoil, and low in the substratum.

Basinger Fine Sand, depressional (23) - This nearly level, poorly drained soil is in depressional areas in the flatwoods. It is also along the edges of some lakes. Slopes are smooth to concave and range from 0 to 2 percent. The soil is ponded for 6 to 9 months or more in most years.

Narcoossee Fine Sands (26) - This somewhat poorly drained soil is on low knolls and ridges in the flatwoods. Individual areas are irregular in shape. Slopes are less than 2 percent. In most years, under natural conditions, the water table is at a depth of 2 to 3.5 ft for 4 to 6 months. During extended dry periods, the water table recedes to a depth of more than 60 inches. During the wet season, after heavy rains, the water table may briefly rise above a depth of 2 ft .

Anclote Fine Sand (27) - This nearly level, very poorly drained soil is in depressions along draingeways and low areas surrounding some inland bodies of water. Individual areas range from somewhat oblong to nearly circular. Slopes are commonly concave and are less than 2 percent. In most years, under natural conditions, the water table is near or above the surface during wet seasons for 3 to 6 months. The water table recedes to a depth of more than 20 inches during dry seasons.

Pits (28) - Pits are excavations from which soil and geological material have been removed, primarily for use in road construction and for foundations. Some pits were constructed to retain water runoff. Small areas of waste material, mostly mixed sand and sandy loam, are piled or scattered around the edges of the pits. Pits, locally called borrow pits, are mostly small, but a few are large.

Eaugallie Fine Sand (35) - This is a nearly level, poorly drained soil on low ridges in the flatwoods. Slopes are smooth to 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 to 4 months and within a depth of 40 inches for more than 6 months. The available water capacity is very low in the surface layer, the subsurface layer, and the layer between the upper and lower parts of the subsoil, and it is medium to low in the subsoil. Natural fertility is low. Permeability is moderate to moderately rapid in the subsoil and is rapid in the other layers.
Pomello Fine Sand (42) - This nearly level to gentle sloping, moderately well drained soil is on low ridges in the flatwoods. Individual areas are irregular in shape. Slopes are smooth to concave. The water table is at a depth of 24 to 40 inches for 1 to 4 months and at a depth of 40 to 60 inches for 8 months during most years. Permeability is very rapid in the surface and subsurface layers and is moderately rapid in the subsoil.
Cassia Fine Sand (46) - This nearly level to gently sloping, somewhat poorly drained soil is on low ridges in the flatwoods. Slopes are smooth to concave. The water table is at a depth of 15 to 40 inches for a period of about 6 months in most years and recedes to a depth of more than 40 inches during very dry seasons. The available water capacity is low in the surface and subsurface layers and is medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderate to moderately rapid in the subsoil, and rapid in the substratum.
Samsula Muck (52) - This very poorly drained, nearly level soil is in low depressional areas. Slopes are less than 2 percent. In most years, under natural conditions, the water table is at or near the surface for 6 to 12 months and is commonly above the surface for very long periods. The available water capacity is very high in the muck layers and low in the sandy layers. Permeability is rapid throughout.

### 4.1.9 CRASH DATA

Crash data was obtained from the FDOT's Crash Analysis Reporting Program (CAR) for 2002 through 2006. Crash data was reported between Crossings Boulevard (mile post 12.879) and SR 45
(US 41) (milepost 18.201) (mileposts based on FDOT straight line diagrams dated July 2004). The crash data collected was summarized statistically based on the number of crashes, the frequency of crashes, the crash rate, the critical crash rate, and the safety ratio. The five year (2002 to 2006) crash history between Crossings Boulevard and SR 45 (US 41) is summarized below in Table 4-2. There were 307 crashes reported for the five year (2002-2006) period and there were an average of 61 crashes per year. There were 15 fatalities and 341 injuries reported in this five year period.

Table 4-2
Crash History Overview

| Year | Fatal Crash <br> Statistics | Injury Crash <br> Statistics |  |  | Total Crash <br> Statistics |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Crashes | Fatalities | Injuries | Crashes | Injuries | Crashes | Fatalities | Injuries |
| $\mathbf{2 0 0 2}$ |  | 1 | 2 | 0 | 11 | 16 | 18 | 2 | 16 |
| $\mathbf{2 0 0 3}$ | 23,000 | 1 | 1 | 1 | 20 | 31 | 26 | 1 | 31 |
| $\mathbf{2 0 0 4}$ | 26,000 | 2 | 2 | 1 | 31 | 76 | 53 | 2 | 76 |
| $\mathbf{2 0 0 5}$ | 40,000 | 2 | 2 | 5 | 34 | 75 | 57 | 2 | 75 |
| $\mathbf{2 0 0 6}$ | 43,500 | 5 | 8 | 5 | 63 | 143 | 153 | 8 | 143 |
| Total |  | $\mathbf{1 1}$ | $\mathbf{1 5}$ | $\mathbf{1 2}$ | $\mathbf{1 5 9}$ | $\mathbf{3 4 1}$ | $\mathbf{3 0 7}$ | $\mathbf{1 5}$ | $\mathbf{3 4 1}$ |

SR 54 Roadway Segment Length (used for crash analysis) $=5.322$ miles
Total Number of Crashes (2002-2006) = 307
Average Number of Crashes (per year) $=61$
Average Vehicle Miles Traveled (per year) $=59.83$ million
Crash Rate (millions vehicle miles) $=1.02$
Statewide Average Crash Rate (4-Lanes 2-Way Divided) $=2.660$
Critical Crash Rate (millions of vehicle miles) $=3.320$
Safety Ratio $=0.307$
Crash data at the SR 589 (Suncoast Parkway) interchange area is summarized as follows:
Total Number of Crashes (2002-2006) $=30$ (10 percent of the study area crashes)
Average Number of Crashes (per year) $=6$
Rear-end Crashes $=18(60$ percent $)$
Angle Crashes $=7$ ( 23 percent)
The types of crashes are shown in Table 4-3. Of the 307 reported crashes, 133 (43 percent) were rearend collisions, 75 ( 24 percent) were angle crashes and 18 ( 6 percent) were sideswipes. The proposed six-lane widening of SR 54 is expected to reduce the propensity for rear-end crashes through reduced vehicle delay, fewer stopped vehicles and shorter vehicle queues. In addition, the Traffic Analysis Report ${ }^{4}$ indicated the need to provide new traffic signals at Ashley Glen Boulevard/Northpointe Parkway, Ballantrae Boulevard and Sunlake Boulevard intersections. Signalization (only when
warranted) would reduce the likelihood of severe right-angle crashes occurring at these highly utilized unsignalized median openings.

Table 4-3
Type of Crashes

| Number | Percent | Category |
| :---: | :---: | :--- |
| 133 | 43.32 | Rear-end Collision |
| 7 | 2.28 | Head-on Collision |
| 75 | 24.43 | Angle Collision |
| 9 | 2.93 | Left-turn Collision |
| 3 | 0.98 | Right-turn Collision |
| 18 | 5.86 | Sideswipe Collision |
| 1 | 0.33 | Collision with pedestrian |
| 1 | 0.33 | Collision with bicycle |
| 0 | 0.00 | Moving vehicle hit sign/sign post |
| 3 | 0.98 | Moving vehicle hit utility pole/light pole |
| 6 | 1.95 | Overturned |
| 18 | 5.86 | Unknown |
| 33 | 10.75 | All other |

### 4.1.10 INTERSECTIONS AND SIGNALIZATION

Four signalized intersections exist within the project study limits. The first is at SR 54 and Crossings Boulevard. The second and third are at the SR 589 (Suncoast Parkway) southbound and northbound ramps, respectively. The fourth signalized intersection is at SR 54 and Oakstead Boulevard.

Within the project limits there are eight non-signalized intersections. These intersections are: Northpointe Parkway, Meadowbrook Drive, Ballantrae Boulevard, Mentmore Boulevard, Stonegate Falls Drive/Henley Road, Evergreen Lane, Wilson Road/Shirecrest Cove Way, and Devonoak Boulevard.

### 4.1.11 LIGHTING

Roadway lighting exists at the SR 54/SR 589 (Suncoast Parkway) interchange area. The existing light poles are aluminum cobrahead in opposite side configuration with approximately 15 -ft truss bracket arms. The mounting height is approximately 45 feet.

### 4.1.12 UTILITIES

## Existing Utilities

Major utility companies along the corridor were contacted to provide information regarding their facilities within the project area. Listed below in Table 4-4 are those companies that provided contact information and plans showing their utilities.

Table 4-4 Utilities

| Utility Company | Name | Address | City/State/Zip | Phone |
| :--- | :--- | :--- | :--- | :---: |
| Progress Energy - <br> Distribution | Mr. Nick Koulianos | 2166 Palmetto St. Bldg B | Clearwater, FL 33765 | $727-562-5639$ |
| Synergetic Design, Inc. <br> (Progress Energy - <br> Transmission) | Mr. David Stephens | 21754 SR 54 Suite 101 | Lutz, FL 33549 | $813-948-3137$ |
| Pasco County Traffic | Mr. Robert W. Reck | 7530 Little Rd. | New Port Richey, FL <br> 34654 | $727-847-8139$ |
| Pasco County Utilities | Mr. Bruce Kennedy | 7530 Little Rd. | New Port Richey, FL <br> 34654 | $727-847-8040$ |
| Bright House Networks | Mr. Jose Martinez | 30432 SR 54 | Wesley Chapel, FL <br> 33543 | $813-862-0522$ |
| Verizon Florida | Mr. Mike Little | 1909 US 301 N. | Tampa, FL 33619 | $813-989-7935$ |
| Withlacoochee River <br> Electric Co-op | Mr. Brent Postma | 1 Pasco Center Dist. <br> Office <br> 30461 Commerce Drive | San Antonio, FL <br> 33576 | $727-868-9465$ |
| Tampa Bay Water | Mr. Rick Menzies | 9302 Stannum Rd. | Tampa, FL 33619 | $813-996-7009$ |
| Florida Gas <br> Transmission | Mr. Joe Sanchez | 601 S. Lake Destiny Rd. <br> Suite 450 | Maitland, FL 32751 | $407-838-7171$ |
| TECO Peoples Gas | Mr. Frank Kistner | 1400 Channelside Dr. | Tampa, FL 33601 | $813-275-3731$ |

Utility owners provided the following information regarding existing or proposed utilities within the corridor.

## Progress Energy - Distribution

This utility has kV overhead electric lines that run adjacent to the ROW lines on both sides of the road for the length of the project. The lines go underground at the SR 589 (Suncoast Parkway).

## Progress Energy - Transmission

The transmission lines are overhead and run adjacent to the ROW lines on the north side of SR 54. The transmission lines cross over to the south side ROW line at the middle of the project. After running parallel to the south side ROW line, the transmission lines cross back over to the north side ROW line after Devonoak Boulevard.

## Pasco County Traffic Operations

While not a utility, there are signalized intersections at Crossings Boulevard, SR 589 (Suncoast Parkway) southbound ramp, northbound ramp, and Oakstead Boulevard.

## Pasco County Utilities

There are several water and force main lines along SR 54 within the project limits. A six-inch force main and an eight-inch water main run along the south side of the road from the beginning of the project to Meadowbrook Drive. From there, the two lines cross SR 54 and proceed north along Meadowbrook Drive. A 12-inch force main and a 12-inch water main are located on the north side of
the road, near the intersection with Ballantrae Boulevard. These two lines also proceed north along Ballantrae Boulevard. From Oakstead Boulevard to Stonegate Falls Drive, along the north side of SR 54 , runs a water main of undetermined size.

## Bright House Networks

The overhead cable lines are on the same poles as the Progress Distribution lines. They begin east of the Suncoast Parkway, on the south side of SR 54. The lines follow the poles and cross SR 54 underground, near the Progress Distribution overhead crossing. They remain on the north side of SR 54 for the remainder of the project. There are additional underground crossings at Meadowbrook Drive, Ballantrae Boulevard, Henley Road, and Wilson Road/Shirecrest Cove Way.

Verizon Florida, Inc.
There is a buried telephone line that runs parallel to the ROW on the south side of SR 54 for the entire project limits. The buried line consists of two, four, and six four-inch PVC conduits. The conduit runs parallel to the ROW on the north side of the road. There are conduit crossings of SR 54 at the major side roads and at Hailey Lane. After Hailey Lane the conduit is located on both sides of the road for the remainder of the project.

## Withlacoochee River Electric Cooperative

This utility had a crossing that has since been turned over to Progress Energy.

## Tampa Bay Water

This utility has a 42 -inch water main that crosses SR 54 at a location between Ballantrae Boulevard and Mentmore Boulevard.

## Florida Gas Transmission

This utility has a crossing approximately $1,700 \mathrm{ft}$ east of Sofia Drive which places it outside of the project limits.

## TECO People's Gas

There is a 6 -inch gas main along the north side ROW that has line crossings at Crossings Boulevard and near Northpointe Parkway. That line goes from the beginning of the project to just after Mentmore Boulevard where it crosses over to the south side ROW line. There are line crossings at Oakstead Boulevard and Stonegate Falls Drive. At Henley Road, the line splits and a six-inch gas main goes down Henley Road and a two-inch gas main continues on the south side of SR 54. The two-inch line crosses over to outside the north side ROW line before Devonoak Boulevard and then continues up that roadway.

## Railroad

There are no existing railroad facilities in the project limits. A CSX rail line does exist outside the project area, 1,750 feet east of Sofia Drive. Traffic Control Plans included with the phased submittal of Contract Plans for the design of this six-lane widening project indicates that the CSX rail line will not be in the influence area of construction.

### 4.1.13 PAVEMENT CONDITIONS

The existing pavement along SR 54 within the project limits is in good condition. This is primarily due to the widening of a portion of the project limits from two lanes to four lanes within the last five years.

### 4.2 EXISTING BRIDGES

The study limits have two existing structures that carry SR 589 (Suncoast Parkway) over SR 54. Each structure consists of two spans. The vertical clearance of the existing bridge number 140072 is 17.25 ft and 18.70 ft for bridge number 140073. The bridges were evaluated using a sufficiency rating from the National Bridge Inventory provided by the Federal Highway Administration (FHWA), which is indicative of bridge sufficiency to remain in service. The result of this method is a percentage in which $100 \%$ would represent an entirely sufficient bridge and $0 \%$ would represent an entirely insufficient or deficient bridge. The bridge ratings are 99.4 for bridge number 140072, and 99.4 for bridge number 140073. The construction of both bridges was completed in 1999. There will be no modifications made to the existing SR 589 (Suncoast Parkway) bridge structures over SR 54 with the proposed six-lane widening of SR 54.

### 4.3 ENVIRONMENTAL CHARACTERISTICS

### 4.3.1 LAND USE DATA

### 4.3.1.1 Existing Land Use

The SR 54 ROW extends through a rapidly developing portion of Pasco County. The predominant land use adjacent to the ROW corridor is unimproved/improved pasture and undeveloped open land. Large areas of crop, pastureland, and shrub brush land occur adjacent to segments of the roadway. Specialty farms and tree crops are also present. Significant tracts of open land are developing into residential land use. Commercial services exist near the intersections of SR 45 (US 41) and the SR 589 (Suncoast Parkway). There are 14 developments approved that are in various stages of construction along the corridor. Figure 2-2 displays the location of these developments.

Areas adjacent to the project ROW are dotted with native uplands, cypress domes, forested wetlands, wet prairies and freshwater marshes, as well as manmade lakes and reservoirs. In general, the land within the SR 54 ROW is vegetated with sod and frequently maintained; however, in some locations, cypress domes and freshwater marshes encroach into the ROW. The existing land use cove is displayed in Figure 4-5.

### 4.3.1.2 Future Land Use

The future land uses as displayed in Figure 4-6 are consistent with proposed developments approved by Pasco County along the SR 54 corridor. The future land use categories include retail/office/residential, residential and employment center.

### 4.3.2 COMMUNITY SERVICES

Community services include schools, school districts, religious institutions, medical facilities, parks and recreational areas, libraries, community centers, social service agencies, daycare centers, emergency services, elderly or special needs housing and senior centers. The facilities identified within the project area include:

1. Sunlake High School
2. Charles S. Rushe Middle School
3. Church of the Lakes
4. Willow Bend Community Church
5. Suncoast Trail

### 5.1.1 HISTORIC SITES / DISTRICTS I ARCHEOLOGICAL SITES

A Historic Structures Survey Technical Memorandum was prepared for the proposed project. The objective of this survey was to identify any cultural resources within the project's Area of Potential Effect (APE) and to assess their eligibility for listing in the National Register of Historic Places (NRHP). This Memorandum was prepared in accordance with the procedures contained in FS 267. No NRHP-eligible or NRHP-listed historic resources were identified within the project’s APE. The State Historic Preservation Officer (SHPO) concurred on December 5, 2008 that no historic resources would be affected by the proposed project.

### 5.1.2 ARCHAEOLOGICAL SITES

An archaeological survey was not prepared for the proposed project since it would be constructed within the existing SR 54 ROW. This ROW area was previously surveyed for any archaeological resources prior to the construction of the existing four lane section within the ROW.

### 4.3.3 NATURAL AND BIOLOGICAL FEATURES

The natural environment along the project's ROW has been altered through construction of drainage swales, stormwater retention facilities, and floodplain compensation areas. Additionally, the road has been widened and the slopes vegetated with sod. Descriptions of the existing natural and biological features found within the project corridor are described below.

### 4.3.3.1 Wetlands and Other Water Features

Field surveys were conducted to evaluate previously approved jurisdictional wetlands and previously permitted other surface water (OSW) features within the SR 54 ROW. All existing wetland and OSW features within and immediately adjacent to the ROW were documented. These features included roadside swales, dry retention areas, stormwater ponds and floodplain compensation areas.


A pre-application meeting occurred with the SWFWMD in July of 2007 to discuss existing drainage features and the status of previous wetland jurisdictional determinations. Wetland impacts within the ROW were previously quantified and mitigated as part of ERP No. 43016251.00 - SR 54 Meadowbrook Drive to SR 45 (US 41). The wetland jurisdictional limits were formally approved by the SWFWMD and the U.S. Army Corps of Engineers (USACE) July 1995.

Twenty-seven jurisdictional wetlands were identified as part of the aforementioned permit. Only two will be impacted by the current SR 54 widening (Wetland \#27 and \#28). One impact is proposed to the 0.05 acre edge of Wetland \#27; the other impact is proposed along the 0.08 acre sodded edge of Wetland \#28. Wetland \#27 is believed to be man-made. Total impact to previously delineated wetlands is estimated at 0.085 acres.

## Wetland \#27

Wetland \#27 appears to be an upland-cut, man-made drainage feature historically excavated between wetland \#25 and wetland \#28 (Figure 4-7). This feature is hardened and currently functions as a stormwater drainage feature. The system extends beyond the ROW to the south as an herbaceous ditch, and connects via culvert to wetland \#28 to the north. The predominant soils include Myakka fine sand and Narcoossee fine sand. Both native soils are nonhydric. Bassinger fine sand (hydric) is also present in the area.
 Additional impacts incurred as part of the proposed widening include 0.005 acres of this water feature.

## Wetland \#28

Beyond the ROW, wetland \#28 exists as a cypress swamp (Figure 4-6). The majority of the area is impacted within the existing ROW. A remnant, non-forested, wetland fringe remains along the outer ROW where the roadway slope ties into the wetland edge. The remainder of this wetland is filled and vegetated with sod. Associated soils include Sellers mucky loamy fine sand and Basinger fine sand. Both native soils are hydric. Additional wetland impacts proposed as part of this subsequent widening include impacts to 0.08 acres along the narrow herbaceous edge of the remaining wetland feature. Due to the size, location, and minimal habitat value of the area, mitigation is not currently proposed for this impact.

## Mitigation

The current expansion of SR 54 avoids and minimizes wetland impacts to the greatest extent possible. The project is planned to occur within the existing ROW. Minor adjustments to the existing stormwater management features are proposed to offset placement of new impervious surface for turn lanes and a multi-use recreational trail. Two minor wetland impacts are anticipated. The SWFWMD may consider the proposed impacts de minimus. Mitigation should either be minimal or not required due to the insignificant size, habitat type, impact location, and minimal habitat value.


### 4.3.3.2 Wildlife and Critical Habitat

Improvements associated with the expansion of SR 54 within the ROW will not adversely affect state and federally-listed species or adversely modify any critical habitat. A wildlife and habitat evaluation has been prepared in conjunction with the use of Florida Natural Areas Inventory (FNAI) data, field surveys and previous wildlife and critical habitat evaluations prepared for the previous SR 54 two to four lane construction project undertaken by the Department.

## Threatened and Endangered Wildlife

Habitat within and adjacent to the proposed project was evaluated using aerial photography and subsequently verified in the field. The Florida Fish and Wildlife Conservation Commission (FWC), the U.S. Fish and Wildlife Service (USFWS), and the FNAI database records were reviewed prior to the survey to assess local information on protected wildlife. During field reconnaissance, listed species were not observed. Adverse impacts to protected species are not expected, as habitat quality within the ROW is low. Also, the surrounding area is largely developed. Therefore, no mitigation is proposed. Additional information regarding the proposed project's lack of involvement with threatened and endangered species is provided in a separately prepared Environmental Technical Compendium.

### 4.3.3.3 Floodplains

The proposed project's involvement within floodplains was assessed using automated information provided by the Federal Emergency Management Agency (FEMA). No floodplain impacts are anticipated to occur as a result of the proposed project. According to information in permit 4316251.00, a floodplain surplus exists ( 5.29 acre ft) for the proposed project.

The project study limits are within FEMA designated Flood Zones A, AE, and X. Flood Zones A and AE denote areas subject to a one percent or greater chance of flooding annually. Flood zone X denotes areas of minimal flood hazard from the principle flood source in this area. Areas designated by X are determined to be outside the 0.2 percent chance of flooding annually.

Figure 4-8 depicts land along the project corridor within both Flood Zone A and Flood Zone X. Areas that fall within Flood Zone A are contained within the designated 100 year flood zone; however, as mentioned previously, floodplain impacts were addressed as part of permit 4316251.00. Any additional impacts are expected to be addressed in the proposed ditch expansions. Areas that fall within Flood Zone X will not result in significant impacts to the FEMA designated 100-year floodplain.

### 4.3.3.4 Outstanding Florida Waters/Aquatic Preserves

The entire project lies within the Pinellas-Anclote River Basin. The basin is approximately 120 square miles and ultimately discharges to the Gulf of Mexico. The major waterway within the vicinity of the project is the Anclote River. The river consists of several tributaries including Sandy Branch, which is bisected by the SR 54 corridor. Neither the Anclote River nor Sandy Branch is considered an Outstanding Florida Water (OFW).


### 4.3.4 POTENTIAL CONTAMINATION SITES

A Contamination Screening Evaluation Memorandum (CSEM) ${ }^{3}$ was prepared for this Project Development and Environment (PD\&E) Study. A summary of the findings contained in that report is presented in this section. Each property within and/or adjacent to the project corridor must have a conscious determination of the contamination potential. All properties should be assigned a rating of (1) None; (2) Low; (3) Medium, or (4) High. The four contamination ratings are explained as follows:

None - After a review of all available information, there is nothing to indicate contamination would be a problem. It is possible that contaminants could have been handled on the property; however, all information indicates problems should not be expected.

Low - The former or current operation has a hazardous waste generator identification (ID) number or deals with hazardous materials; however, based on all available information there is no reason to believe there would be any involvement with contamination. This is the lowest possible rating a gasoline station operating within current regulations could receive. This could also be applied to a retail hardware store that blends paint.

Medium - After a review of all available information, indications are found that identify known soil and/or water contamination and that the problem does not need remediation, is being remediated (i.e., air stripping of ground water, etc.), or that continued monitoring is required. The complete details of remediation requirements are important to determine what must be done if the property were to be acquired. A recommendation should be made on each property falling into this category to its acceptability for use within the proposed project, what actions might be required if the property is acquired, and the possible alternatives if there is a need to avoid the property.

High - After a review of all available information, there is a potential for contamination problems. A recommendation must be included for what further assessment is required. Properties that were previously used as gasoline stations and have not been evaluated or assessed would probably receive this rating.
\{ XE "Figure 4-8 - Pasco and Hillsborough County FEMA Map " \}A regulatory review (records search) of federal and state environmental records was conducted in July 2007. The records reviewed include information compiled by the United States Environmental Protection Agency (USEPA) and the Florida Department of Environmental Protection (FDEP). Environmental Data Management Inc. (EDM) of Largo, Florida conducted a database search of potential hazardous and petroleum sites within the project study limits. Some of the USEPA and FDEP data bases that were reviewed include: The Underground/Aboveground Storage Tanks List (TANKS), The Leaking Underground Storage Tanks List (LUST), and The State Designated Brownfields List (BRWNFLDS).

The corridor screening evaluation for the project resulted in a "Low" ranking for one site, and "None" risk ranking for four sites. The "Low" site was ranked based on its involvement with petroleum products.

The site which was ranked as "Low" is the Shell-Suncoast station located at 16138 SR 54. ShellSuncoast was ranked as "Low" due to the lack of regulatory issues and the newer age of the underground storage tanks (July 2004) located on-site.

### 4.3.5 FARMLANDS

It has been determined that the provisions of the Farmland Protection Policy Act of 1984 do not apply to this project.

### 4.4 REFERENCES

1. $\operatorname{SR} 54$ Bicycle/Pedestrian Feasibility Study; HDR Engineering, Inc.;
2. Statewide Bicycle Facilities Study; Florida Department of Transportation;
3. Contamination Screening Evaluation Memorandum; HDR Engineering, Inc.;

## Section 5 Design Controls and Standards

### 5.1 DESIGN PUBLICATIONS

Table 5-1 summarizes the major design criteria for the project. All criteria are subject to change and only current criteria will be used during the final design phase. Design and construction criteria for the proposed improvements will adhere to Florida Department of Transportation (FDOT) standards for the design of such roadways and will comply with the recommended standard practices as set forth in the following documents:

FDOT Plans Preparation Manual, Volumes I and II, English, January 2006 (revised January 2008)
Florida Bicycle Facilities Planning and Design Manual (revised April 2000)
FDOT Soils and Foundations Handbook (2006)
FDOT Structures Design Guidelines (LRFD, July 2006)
FDOT CADD Manual, January 2003
FDOT CADD Production Criteria Handbook, May 2003 (revised 2007)
FDOT Manual on Uniform Traffic Studies 2000 (revised 2003)
FDOT Standard Specifications for Road and Bridge Construction (2007 edition)
FDOT Utility Accommodations Manual 2007
FDOT Design Standards (January 2008) (English)
FDOT Drainage Manual (2006)
FDOT Flexible Pavement Design Manual, March 2008
AASHTO A Policy on Geometric Design of Highways and Streets (2004)
FDOT Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways (Florida Greenbook) (2005)
Federal Highway Administration - Manual on Uniform Traffic Control Devices (2003)
Transportation Research Board Highway Capacity Manual
FDOT Quality/Level of Service (LOS) Handbook 2002 (and 2007 Issue Papers)
US Department of Agriculture/Natural Resource Conservation Service (USDA/NRCS) Soil Survey of Pasco County, Florida
FDOT - Florida Land Use, Cover and Forms Classification System (FLUCFCS, 1999)

Table 5-1
Design Criteria Matrix SR 54

| Design Element | 60 mph ( 55 mph ) Design Speed |  | Source |
| :---: | :---: | :---: | :---: |
| Cross Section |  |  |  |
| Lane Widths |  |  | P.P.M. Volume I Table 2.1.1 |
| Bicycle Accommodation | on exte | shoulder | Per FDOT Design Engineer |
| Clear Zone |  | ft) | P.P.M. Volume I Table 2.11.11 |
| Median Width |  |  | P.P.M. Volume I Table 2.2.1 |
| Cross Slope Inside Lanes Outside Lanes Inside Shoulder |  |  | P.P.M. Volume I Figure 2.1.1 and Table 2.3.2 |
| Shoulder Width | $\begin{gathered} \hline \frac{\text { Outside }}{12 \mathrm{ft}} \\ 5 \mathrm{ft} \\ \text { Paved } \end{gathered}$ | $\begin{gathered} \frac{\text { Inside }}{12 \mathrm{ft}} \\ 0 \mathrm{ft} \\ \text { Paved } \end{gathered}$ | P.P.M. Volume I Table 2.3.2 |
| Extended Shoulder Width |  |  | Per FDOT Design Engineer |
| Extended Shoulder Slope |  |  | Per FDOT Design Engineer |
| Border Width |  |  | P.P.M. Volume I Table 2.5.1 |
| Posted Speed | 60 mp | $5 \mathrm{mph})$ | Match Existing |
| Horizontal Alignment |  |  |  |
| Minimum Curve Radius |  | 25 ft | P.P.M. Volume I Table 2.8.2a |
| Maximum Deflection (no curve) |  |  | P.P.M. Volume I Table 2.8.1a |
| Maximum Superelevation |  |  | FDOT Index 510 |
| Vertical Alignment |  |  |  |
| Maximum Grade |  |  | P.P.M. Volume I Table 2.6.1 |
| Base Clearance Above Design High Water |  |  | P.P.M. Volume I Table 2.6.3 |
| Minimum Stopping Sight Distance | 570 | ft) | P.P.M. Volume I Table 2.7.1 |
| Vertical Curve Length | $\begin{aligned} & 400 \mathrm{ft} \\ & 300 \mathrm{ft} \end{aligned}$ | t) Crest <br> ft) Sag | P.P.M. Volume I <br> Table 2.8.5, Table 2.8.6 |

## Section 6 Traffic

The purpose of this section is to summarize the existing and future geometric and operational conditions along SR 54 which are documented in the Traffic Analysis Report ${ }^{1}$. The proposed widening of SR 54 to six lanes will increase the capacity of SR 54 for the planned and approved developments in southern Pasco County. Additionally, the proposed project will provide Pasco County with a consistent roadway cross section that will match the existing six-lane cross sections of SR 54 west of SR 589 (Suncoast Parkway) and west of SR 45 (US 41).

### 6.1 EXISTING TRAFFIC CONDITIONS

An extensive data collection effort was undertaken to document the existing traffic conditions along SR 54. This included collecting seventy-two hour bi-directional machine counts, vehicle class and turning movement counts within the study limits during the Fall of 2007. Field reviews were also completed to obtain information regarding existing intersection geometry and to observe operating conditions within the study limits. The culmination of the existing data collection effort provided the traffic analysis assumptions and the design hour volumes to complete the existing operational analysis.

### 6.1.1 TRAFFIC ANALYSIS ASSUMPTIONS

Acceptable traffic parameters for the SR 54 study corridor were determined by comparing the field collected seventy-hour bidirectional traffic count data and the Florida Department of Transportation (FDOT) site data to the statewide traffic data. Additional information regarding the field collected data and the FDOT site data is documented in the Traffic Analysis Report ${ }^{1}$. The statewide minimum and maximum $\mathrm{K}_{30}$ and $\mathrm{D}_{30}$ factors for an urban arterial roadway, obtained from the Project Traffic Forecasting Handbook ${ }^{2}$, are documented in Table 6-1.

Table 6-1
Comparison of Field Collected Data and FDOT Count Station Data, with State Data for Urban Arterials

|  | Corridor Major <br> Roads Field Data |  | Corridor Minor <br> Access Roads <br> Field Data |  | FDOT Site Data |  | State <br> Data* |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\mathrm{K}_{100}$ | $\mathrm{D}_{100}$ | $\mathrm{~K}_{100}$ | $\mathrm{D}_{100}$ | $\mathrm{~K}_{30}$ | $\mathrm{D}_{30}$ | $\mathrm{~K}_{30}$ | $\mathrm{D}_{30}$ |
| Observed <br> Minimum | 8.05 | 50.60 | 8.33 | 49.64 | 9.38 | 55.15 | 9.20 | 50.80 |
| Observed <br> Maximum | 9.66 | 60.40 | 11.79 | 68.19 | 9.45 | 57.88 | 11.50 | 67.10 |

* Source: Project Traffic Forecasting Handbook

By comparing the minimum and maximum K and D factors for all data sources summarized in Table 6-1, and obtaining input from the FDOT, reasonable estimates were determined for these factors. The following $\mathrm{K}_{30}$ and $\mathrm{D}_{30}$ factors determined to be acceptable by the FDOT to develop the existing and future design hour traffic volumes for the SR 54 study corridor include:

$$
\begin{aligned}
& K_{30}=9.4 \% \\
& D_{30}=57.0 \%
\end{aligned}
$$

In addition, the truck $\left(\mathrm{T}_{24}\right)$ factors determined acceptable to use for the future traffic analyses include the following:

$$
\begin{aligned}
& \mathrm{T}_{24}(\text { SR } 54)=11 \% \\
& \mathrm{~T}_{24}(\text { SR } 589 \text { [Suncoast Parkway] Ramps) }=11 \% \\
& \mathrm{T}_{24} \text { (Minor Access Roads) }=\mathbf{4} \%
\end{aligned}
$$

According the Pasco County Comprehensive Plan ${ }^{3}$, the adopted level of service (LOS) standard for SR 54 is LOS D.

### 6.1.2 EXISTING YEAR (2007) TRAFFIC VOLUMES

The three days worth of count data was averaged for a 24 -hour period and then multiplied by an axle adjustment factor and a weekly seasonal adjustment factor to derive Annual Average Daily Traffic (AADT) volumes. These factors were obtained from the year 2006 FDOT Florida Traffic Information (FTI) DVD. The existing (2007) AADT volumes are displayed in Figure 6-1.

The existing year (2007) directional design hour volumes (DDHV) were obtained by multiplying the AADT volumes first by the $K_{30}$ factor of 9.4 percent and then by the $D_{30}$ factor of 57.0 percent. Within the proposed project's study limits, eastbound is the peak direction of travel for the AM peak hour and westbound is the peak direction of travel for the PM peak hour. The peak direction assumptions for side streets were based on the existing peak hour traffic count data. The AM and PM design peak hour intersection turning movement volumes were estimated by multiplying the DDHV by the AM and PM field collected manual turning movement percentages, respectively. The existing year (2007) AM and PM design peak hour turning movement volumes are shown on Figures 6-2 (A-C).

### 6.1.3 EXISTING YEAR (2007) LEVEL OF SERVICE

Existing geometry collected during field reviews and existing signal timing data obtained from Pasco County were used in the traffic operations analyses. Operational analyses were estimated using the Highway Capacity Manual (HCM) methodology of the Synchro 7 software and the Highway Capacity Software (HCS).


SR 54
from West of SR 589 (Suncoast Parkway) to West of SR 45 (US 41)

EXISTING YEAR (2007), OPENING YEAR (2010) AND DESIGN YEAR (2030) AADT VOLUMES




The evaluation of the existing design hour volumes and existing geometry revealed that three of the four existing signalized intersections operate below the LOS D standard during at least one peak hour. As shown in Table 6-2, The SR 54/Crossings Boulevard intersection is the only intersection currently operating at an acceptable LOS standard. It operates at LOS D/C during the AM/PM peak hours. Analyses of the SR 54 arterial segments indicate that one segment (between Crossings Boulevard and SR 589 [Suncoast Parkway] southbound ramp) is at LOS F/E conditions during the AM/PM peak hours. The eastbound and westbound arterial operational results are displayed in Tables 6-3 and 6-4. Existing lane geometry and LOS results are displayed in Figures 6-3 (A-C).

Table 6-2
Existing Year (2007) SR 54 Intersection Analyses Results

| 2007 Intersections |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 Intersection | Traffic Control | Delay (sec/veh) |  |  | LOS |  |  |
|  |  | AM | I | PM | AM | I | PM |
| Crossings Boulevard | Signal | 45.1 | 1 | 25.2 | D | 1 | C |
| SR 589 (Suncoast Parkway) Southbound Ramps | Signal | 79.5 | 1 | 49.0 | E | / | D |
| SR 589 (Suncoast Parkway) Northbound Ramps | Signal | 25.1 | / | 183.0 | C | 1 | F |
| Ashley Glen Boulevard/Northpointe Parkway | Two-Way Stop Control | -- | 1 | -- | F | 1 | F |
| Meadowbrook Drive (1) | Two-Way Stop Control | -- | 1 | -- | F | 1 | F |
| Ballantrae Boulevard (1) | Two-Way Stop Control) | -- | 1 | -- | F | 1 | F |
| Mentmore Boulevard (1) | Two-Way Stop Control | -- | 1 | -- | D | 1 | F |
| Oakstead Boulevard | Signal | 117.6 | 1 | 176.9 | F | 1 | F |
| Stonegate Falls Boulevard/Henley Road (1) | Two-Way Stop Control | -- | 1 | -- | F | 1 | F |
| Wilson Road/Shirecrest Cove Way (1) | Two-Way Stop Control | -- | 1 | -- | F | / | F |

Notes:
(1) Only LOS (not delay) was reported for the unsignalized intersections, the LOS reported is for the worst minor street approach.

Table 6-3
Existing Year (2007) SR 54 Eastbound Arterial Segment Analyses Results

| 2007 Arterial Segments - Eastbound |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 Between |  | Segment Length (miles) | Flow Speed (mph) | Measures of Effectiveness |  |  |
|  |  | AM I PM |  | AM | 1 PM |
| Synchro-HCM Analysis |  |  |  | Speed (mph) |  | OS |
| Crossings Boulevard | SR 589 (Suncoast Parkway) Southbound Ramps |  | 0.21 | 55 | 5.5 / 18.6 | F | 1 E |
| SR 589 (Suncoast Parkway) Southbound Ramps | SR 589 (Suncoast Parkway) Northbound Ramps | 0.12 | 55 | 24.1 / 33.0 | D | 1 C |
| HCM Analysis - Multilane Highways Module |  |  |  | Density (pc/mi/In) |  | OS |
| SR 589 (Suncoast Parkway) Northbound Ramps | Ashley Glen Boulevard/Northpointe Parkway | 0.22 | 55 | 22.6 / 17.0 | C | 1 B |
| Ashley Glen <br> Boulevard/Northpointe <br> Parkway | Meadowbrook Drive | 0.50 | 55 | 22.2 / 17.0 | C | 1 B |
| Meadowbrook Drive | Ballantrae Boulevard | 0.42 | 55 | $22.6 \quad 16.8$ | C | B |
| Ballantrae Boulevard | Mentmore Boulevard | 1.49 | 55 | 22.3 / 16.3 | C | 1 B |
| Mentmore Boulevard | Oakstead Boulevard | 0.60 | 55 | 23.0 / 17.3 | C | 1 B |
| Oakstead Boulevard | Stonegate Falls Boulevard | 0.48 | 55 | 26.1 / 19.2 | D | 1 C |
| Stonegate Falls Boulevard | Wilson Road /Shirecrest Cove Way | 0.55 | 55 | 26.6 / 20.0 | D | 1 C |

Table 6-4
Existing Year (2007) SR 54 Westbound Arterial Segment Analyses Results

| 2007 Arterial Segments - Westbound |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 Between |  | Segment Length (miles) | Flow Speed (mph) | Measures of Effectiveness |  |  |
|  |  | AM I PM |  | AM | 1 PM |
| Synchro-HCM Analysis |  |  |  | Speed (mph) |  | OS |
| Crossings Boulevard | SR 589 (Suncoast Parkway) Southbound Ramps |  | 0.21 | 55 | 30.8 / 23.7 | C | 1 D |
| SR 589 (Suncoast Parkway) Southbound Ramps | SR 589 (Suncoast Parkway) Northbound Ramps | 0.12 | 55 | 26.1 / 5.0 |  | 1 F |
| HCM Analysis - Multilane Highways Module |  |  |  | Density (pc/mi/ln) |  | OS |
| SR 589 (Suncoast Parkway) Northbound Ramps | Ashley Glen Boulevard/Northpointe Parkway | 0.22 | 55 | 16.9 / 22.5 | B | 1 C |
| Ashley Glen Boulevard/Northpointe Parkway | Meadowbrook Drive | 0.50 | 55 | 17.2 / 22.4 | B | 1 C |
| Meadowbrook Drive | Ballantrae Boulevard | 0.42 | 55 | $17.0 \quad 22.3$ | B | C |
| Ballantrae Boulevard | Mentmore Boulevard | 1.49 | 55 | 16.7 / 21.3 | B | 1 C |
| Mentmore Boulevard | Oakstead Boulevard | 0.60 | 55 | 17.5 / 22.4 | B | 1 C |
| Oakstead Boulevard | Stonegate Falls Boulevard | 0.48 | 55 | 19.2 / 25.4 | C | 1 C |
| Stonegate Falls Boulevard | Wilson Road /Shirecrest Cove Way | 0.55 | 55 | 20.0 / 26.4 | C | 1 D |





### 6.2 MULTIMODAL TRANSPORTATION SYSTEMS CONSIDERATIONS

### 6.2.1 TRANSIT

Currently, Pasco County Public Transit (PCPT) does not have an existing transit route that services the SR 54 study corridor. There are plans for implementation of a SR 54 Cross-County Connector transit route in 2011. The planned route would service travel along SR 54 between the existing transit systems in New Port Richey and the City of Zephyrhills.

### 6.2.2 RAIL

There is no existing railroad that crosses SR 54 within the proposed project limits. A CSX rail line does exist outside the project area, 1,750 feet east of Sofia Drive. Traffic Control Plans included with the phased submittal of Contract Plans for the design of this six-lane widening project indicates that the CSX rail line will not be in the influence area of construction.

### 6.2.3 AVIATION

There are no public or private aviation facilities located in the vicinity of the proposed project.

### 6.3 TRAFFIC VOLUME PROJECTIONS

Two methodologies were used to estimate future daily traffic projections for this study. The Tampa Bay Regional Planning Model, Version 6.0, (TBRPM) was used to determine the design year (2030) AADT volumes. Opening year (2010) AADT volumes were estimated by using a growth rate methodology. Details regarding the TBRPM study area validation/refinements and the growth rate assumptions are provided in the Traffic Analysis Report ${ }^{1}$. Both the design year (2030) and opening year (2010) AADT volumes are displayed in Figure 6-1.

The design year (2030) and opening year (2010) DDHV were obtained by multiplying the AADT volumes by the $\mathrm{K}_{30}$ and $\mathrm{D}_{30}$ factors discussed in Section 6.1.1. Peak direction assumptions used for the existing condition were also assumed for the future condition. For proposed new intersections, the peak direction of the side street was based on the type of future development being accessed. The Traffic Analysis Report ${ }^{1}$ provides more detailed information regarding the calculations of the DDHV.

The majority of the 2030 and 2010 design turning movement volumes were estimated by multiplying the DDHV by the AM and PM peak hour field collected manual turning movement percentages. For proposed new intersections, a manual method (which was based on the ratio of the intersection leg DDHV volumes) was used to estimate design hour volumes at these locations. The resulting 2030 AM and PM turning movement traffic volumes are shown on Figures 6-4 (A-C). Figure 6-5 (A-C) displays the 2010 AM and PM turning movement volumes.







### 6.4 LEVEL OF SERVICE

### 6.4.1 DESIGN YEAR (2030) LEVEL OF SERVICE

The operating conditions of the No-Build and Build Alternatives were evaluated for projected traffic loadings in the design year (2030). Initially the evaluation of future traffic conditions for the proposed project considered only the widening of SR 54 from a four-lane to a six-lane divided roadway and its associated intersection improvements. Due to concerns regarding the close proximity of the SR 54/SR 589 (Suncoast Parkway) northbound ramp intersection to the existing full median opening located at the SR 54/Ashley Glen Boulevard/Northpointe Parkway intersection, additional proposed improvements were considered for this location. They included: A) Signalization, B) Directional Median Opening and C) Median Closure at the SR 54/Ashley Glen Boulevard/Northpointe Parkway intersection.

The operational analysis results documented in the Traffic Analysis Report ${ }^{1}$ revealed that concept A is expected to provide the most efficient operating conditions for the design year (2030). Based on these findings, the operational results are identified for the No-Build and the Build Alternative that includes concept A (herein known as Build Alternative A).

## No-Build Alternative

- Assumed existing four-lane divided roadway for the SR 54 study corridor. Due to the proposed development assumptions and the committed roadway improvements (i.e. Sunlake Boulevard), certain intersection improvements were considered as part of the No-Build Alternative.


## Build Alternative A

- Assumed signalization of the SR 54/Ashley Glen Boulevard/Northpointe Parkway intersection.
- Due the 2030 projected traffic demand, assumed a six-lane roadway widening with two additional auxiliary lanes for SR 54 from west of Crossings Boulevard to east of Ashley Glen Boulevard.
- Assumed that the remainder of the proposed project limits, from east of Ashley Glen Boulevard to west of SR 45 (US 41), was assumed to be widened to a six-lane roadway for the 2030 operational analyses.

The comparison of the intersection analyses results displayed in Table 6-5 indicates that Build Alternative A is expected to have the fewest intersections exceeding the LOS D standard during the design year (2030). Five of the 12 proposed project intersections are expected to operate at LOS E or F during either the AM and/or PM peak hours. With the No-Build Alternative, 11 of the 12 intersections would operate at LOS E or F conditions.

The comparison of the eastbound and westbound arterial segment analyses displayed in Table 6-6 and Table 6-7 complements the results presented for the intersection analyses. The Build Alternative A lane geometry assumptions and LOS results are shown in Figures 6-6 (A-C) for the No-Build Alternative and Figures 6-7 (A-C) for Build Alternative A.

| 2030 Intersections |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 Intersection | Traffic Control | No-Build Alternative |  |  |  |  |  | Build Alternative A (Signalization) |  |  |  |  |  |
|  |  | Delay (sec/veh) |  |  | LOS |  |  | Delay (sec/veh) |  |  | LOS |  |  |
|  |  | AM | 1 | PM | AM | 1 | PM | AM | I | PM | AM | I | PM |
| Crossings Boulevard | Signal | 148.3 | 1 | 88.6 | F | 1 | F | 102.3 | 1 | 53.9 | F | 1 | D |
| SR 589 (Suncoast Parkway) Southbound Ramps | Signal | 168.0 | 1 | 169.1 | F | 1 | F | 31.2 | 1 | 23.5 | C | 1 | C |
| SR 589 (Suncoast Parkway) Northbound Ramps | Signal | 201.6 | 1 | 140.9 | F | 1 | F | 39.3 | / | 33.0 | D | 1 | C |
| Ashley Glen Boulevard / Northpointe Parkway | Signal (if warranted) | 189.5 | 1 | 276.4 | F | 1 | F | 64.4 | / | 133.5 | E | 1 | F |
| Meadowbrook Drive | Signal (if warranted) | 97.1 | 1 | 102.4 | F | 1 | F | 34.8 | / | 35.9 | C | 1 | D |
| Ballantrae Boulevard / Development Access Road | Signal (if warranted) | 79.5 | 1 | 95.1 | E | 1 | F | 31.2 | / | 38.6 | C | 1 | D |
| Sunlake Centre Access Road / Long Lake Ranch West Access Road | Signal (if warranted) | 60.6 | 1 | 64.9 | E | 1 | E | 26.3 | / | 33.3 | C | 1 | C |
| Sunlake Boulevard | Signal (if warranted) | 105.4 | 1 | 85.6 | F | / | F | 71.7 | / | 58.6 | E | 1 | E |
| Mentmore Boulevard | Stop Sign (SB Right-turn) | -- | 1 | -- | $\begin{gathered} \mathrm{C} \\ (1) \\ \hline \end{gathered}$ | 1 | $\begin{gathered} \mathrm{D} \\ (1) \\ \hline \end{gathered}$ | -- | 1 | -- | $\begin{gathered} \text { C } \\ (1) \\ \hline \end{gathered}$ | 1 | $\begin{gathered} \text { D } \\ (1) \\ \hline \end{gathered}$ |
| Oakstead Boulevard Road / Long Lake Ranch East Access Road | Signal | 184.4 | / | 171.1 | F | 1 | F | 112.2 | / | 101.0 | F | 1 | F |
| Stonegate Falls Boulevard / Henley Road | Signal (if warranted) | 164.5 | / | 135.4 | F | / | F | 67.2 | / | 35.5 | E | 1 | D |
| Wilson Road / Shirecrest Cove Way | Signal (if warranted) | 157.6 | 1 | 167.1 | F | / | F | 27.6 | / | 51.1 | C | 1 | D |

(1) Only LOS was reported for the unsignalized intersections, the LOS reported is for the worst minor street approach.
Comparison of Eastbound Arterial Segment Analyses Results

| 2030 Arterial Segments - Eastbound |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 Eastbound Between |  | Segment Length (miles) | Flow Speed (mph) | No-Build Alternative |  |  |  |  |  | Build Alternative A (Signalization) |  |  |  |  |  |
|  |  | Speed (mph) |  | LOS |  |  | Speed (mph) |  |  | LOS |  |  |
|  |  | AM |  | 1 | PM | AM | 1 | PM | AM | I | PM | AM | I | PM |
| Crossings Boulevard | SR 589 (Suncoast Parkway) Southbound Ramps |  | 0.21 | 55 | 2.9 | 1 | 16.2 | F | 1 | E | 19.9 | 1 | 21.3 | E | / | D |
| SR 589 (Suncoast Parkway) Southbound Ramps | SR 589 (Suncoast Parkway) Northbound Ramps |  | 0.12 | 55 | 1.4 | 1 | 3.7 | F | 1 | F | 9.1 | 1 | 23.1 | F | / | D |
| SR 589 (Suncoast Parkway) Northbound Ramps | Ashley Glen Boulevard / Northpointe Parkway | 0.22 | 55 | 3.8 | 1 | 13.6 | F | 1 | F | 16.6 | 1 | 14.0 | E | / | F |
| Ashley Glen Boulevard / Northpointe Parkway | Meadowbrook Drive | 0.50 | 55 | 13.0 | 1 | 34.4 | F | 1 | B | 37.5 | 1 | 25.2 | B | / | D |
| Meadowbrook Drive | Ballantrae Boulevard / Development Access Road | 0.42 | 55 | 13.3 | 1 | 28.6 | F | 1 | C | 31.8 | 1 | 26.1 | C | / | D |
| Ballantrae Boulevard / Development Access Road | Sunlake Centre Access Road / Long Lake Ranch West Access Road | 0.78 | 55 | 24.0 | 1 | 40.6 | D | 1 | B | 44.5 | 1 | 39.5 | A | 1 | B |
| Sunlake Centre Access Road / Long Lake Ranch Access Road | Sunlake Boulevard | 0.43 | 55 | 11.4 | 1 | 16.4 | F | 1 | E | 17.7 | 1 | 24.0 | E | / | D |
| Sunlake Boulevard | Oakstead Boulevard / Long Lake Ranch East Access Road | 0.88 | 55 | 10.9 | 1 | 27.2 | F | 1 | C | 19.7 | 1 | 33.4 | E | 1 | C |
| Oakstead Boulevard / Long Lake Ranch East Access Road | Stonegate Falls Boulevard / Henley Road | 0.48 | 55 | 6.3 | 1 | 23.7 | F | 1 | D | 17.8 | 1 | 39.1 | E | 1 | B |
| Stonegate Falls Boulevard / Henley Road | Wilson Road / Shirecrest Cove Way | 0.55 | 55 | 8.3 | 1 | 25.1 | F | 1 | D | 41.2 | 1 | 36.9 | B | / | B |
| Crossings Boulevard | Wilson Road / Shirecrest Cove Way | 4.61 | 55 | 7.9 | 1 | 21.7 | F | 1 | D | 24.1 | 1 | 29.1 | D | 1 | C |

Table 6-7
Comparison of Westbound Arterial Segment Analyses Results

| 2030 Arterial Segments - Westbound |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 Westbound Between |  | Segment Length (miles) | Flow Speed (mph) | No-Build Alternative |  |  |  |  |  | Build Alternative A (Signalization) |  |  |  |  |  |
|  |  | Speed (mph) |  | LOS |  |  | Speed (mph) |  |  | LOS |  |  |
|  |  | AM |  | 1 | PM | AM | I | PM | AM | I | PM | AM | 1 | PM |
| Crossings Boulevard | SR 589 (Suncoast Parkway) <br> Southbound Ramps |  | 0.21 | 55 | 18.8 | 1 | 15.6 | E | 1 | F | 16.6 | 1 | 20.6 | E | 1 | E |
| SR 589 (Suncoast Parkway) Southbound Ramps | SR 589 (Suncoast Parkway) Northbound Ramps |  | 0.12 | 55 | 6.0 | 1 | 1.5 | F | 1 | F | 27.6 | 1 | 18.5 | C | 1 | E |
| SR 589 (Suncoast Parkway) Northbound Ramps | Ashley Glen Boulevard / Northpointe Parkway | 0.22 | 55 | 5.8 | 1 | 4.5 | F | 1 | F | 17.4 | 1 | 16.4 | E | 1 | E |
| Ashley Glen Boulevard / Northpointe Parkway | Meadowbrook Drive | 0.50 | 55 | 8.4 | 1 | 4.6 | F | 1 | F | 14.9 | 1 | 10.0 | F | 1 | F |
| Meadowbrook Drive | Ballantrae Boulevard / Development Access Road | 0.42 | 55 | 26.1 | 1 | 7.9 | D | 1 | F | 27.3 | 1 | 29.6 | C | 1 | C |
| Ballantrae Boulevard / <br> Development Access Road | Sunlake Centre Access Road / Long Lake Ranch Access Road | 0.78 | 55 | 37.5 | / | 15.6 | B | 1 | F | 37.5 | 1 | 36.7 | B | 1 | B |
| Sunlake Centre Access Road / Long Lake Ranch Access Road | Sunlake Boulevard | 0.43 | 55 | 24.9 | 1 | 14.2 | D | 1 | F | 26.9 | 1 | 27.3 | D | 1 | C |
| Sunlake Boulevard | Oakstead Boulevard / Long Lake Ranch East Access Road | 0.88 | 55 | 34.8 | 1 | 31.4 | B | 1 | C | 35.2 | 1 | 34.7 | B | 1 | B |
| Oakstead Boulevard / Long Lake Ranch East Access Road | Stonegate Falls Boulevard / Henley Road | 0.48 | 55 | 22.8 | 1 | 7.2 | D | 1 | F | 25.1 | 1 | 13.1 | D | 1 | F |
| Stonegate Falls Boulevard / Henley Road | Wilson Road / Shirecrest Cove Way | 0.55 | 55 | 31.1 | 1 | 8.2 | C | 1 | F | 31.4 | 1 | 30.3 | C | 1 | C |
| Crossings Boulevard | Wilson Road / Shirecrest Cove Way | 4.61 | 55 | 18.6 | 1 | 8.3 | E | 1 | F | 25.9 | 1 | 21.7 | D | 1 | D |








### 6.4.2 OPENING YEAR (2010) LEVEL OF SERVICE

For the opening year (2010) projected traffic conditions, operational analyses were completed for Build Alternative A. A few distinctions exist between the opening year (2010) traffic analyses when compared to the design year (2030) traffic analyses. Based on the 2010 projected design hour volumes, there was only a need to consider the six-lane widening project, plus auxiliary lanes along SR 54 from the west of Crossings Boulevard to the SR 589 (Suncoast Parkway) southbound ramps. The remainder of the proposed project study limits was assumed to be widened to six lanes for the 2010 operational analyses.

A graphical representation of the overall intersection and approach LOS results are displayed in Figures 6-8 A-C. Figures 6-8 A-C identify the lane geometry needed to achieve overall LOS D or better traffic operations in the opening year (2010). The lane geometry shown on the concept plans included in Appendix A is required to meet the conditions of the six-lane widening of SR 54 from west of SR 589 (Suncoast Parkway) to west of SR 45 (US 41) as required for the Bexley Ranch Development of Regional Impact (DRI No. 255). The average delay and LOS results from the intersection operational analyses are summarized in Table 6-8. Results from the 2010 analyses indicate that one signalized intersection (SR 54/Crossings Boulevard) is expected to operate below the LOS D standard during the AM peak hour. All the unsignalized intersections, as shown in Figures 6-8 A-C, are expected to have cross streets operating at LOS F conditions. However, signalization analyses were not conducted at this time due to the relatively low left-turn volumes and cross street volumes expected during the 2010 AM and PM peak hours. The unsignalized intersections are expected to be monitored to determine when signalization is warranted.

Two SR 54 arterial segments are expected to operate at LOS F during either the AM or PM peak hours. As shown in Figures 6-8 A-C, the segments are located east and west of the SR 589 (Suncoast Parkway) interchange. The arterial segment speeds and LOS results are summarized in Table 6-9 for the eastbound arterial segment and in Table 6-10 for the westbound arterial segments.




Table 6-8
Opening Year (2010) Proposed Project Intersection Analyses Results

| 2010 Intersections |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 Intersection | Traffic Control | Delay (sec/veh) |  |  | LOS |  |  |
|  |  | AM | I | PM | AM | I | PM |
| Crossings Boulevard | Signal | 32.5 | 1 | 35.3 | C | 1 | D |
| SR 589 (Suncoast Parkway) Southbound Ramps | Signal | 32.3 | 1 | 10.9 | C | 1 | B |
| SR 589 (Suncoast Parkway) Northbound Ramps | Signal | 14.6 | 1 | 51.8 | B | 1 | D |
| Ashley Glen Boulevard/Northpointe Parkway | Signal (if warranted) | 25.3 | 1 | 32.8 | C | 1 | C |
| Meadowbrook Drive (1) | Two-Way Stop Control | -- | / | -- | F | / | F |
| Ballantrae Boulevard | Signal (if warranted) | 11.6 | 1 | 14.3 | B | 1 | B |
| Sunlake Boulevard | Signal (if warranted) | 19.6 | / | 16.3 | B | 1 | B |
| Mentmore Boulevard (1) | Two-Way Stop Control | -- | 1 | -- | C | 1 | D |
| Oakstead Boulevard | Signal | 17.5 | 1 | 17.7 | B | / | B |
| Stonegate Falls Boulevard/Henley <br> Road (1) | Two-Way Stop Control | -- | / | -- | F | / | F |
| Wilson Road/Shirecrest Cove Way (1) | Two-Way Stop Control | -- | 1 | -- | F | / | F |

Notes:
(1) Only LOS was reported for the unsignalized intersections, the LOS reported is for the worst minor street approach.

Table 6-9
Opening Year (2010) Proposed Project Eastbound Arterial Segment Analyses Results

## 2010 Arterial Segments - Eastbound

| SR 54 Between |  | Segment Length (miles) | Flow Speed (mph) | Speed (mph) |  |  | LOS |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | AM |  | I |  | AM | 1 | PM |
| Crossings Boulevard | SR 589 (Suncoast Parkway) Southbound Ramps |  | 0.21 | 55 | 13.1 | 1 | 26.8 | F | / | D |
| SR 589 (Suncoast Parkway) Southbound Ramps | SR 589 (Suncoast Parkway) Northbound Ramps | 0.12 | 55 | 34.0 | 1 | 31.1 | B | / | C |
| SR 589 (Suncoast Parkway) Northbound Ramps | Ashley Glen <br> Boulevard/Northpointe <br> Parkway | 0.22 | 55 | 23.0 | 1 | 29.0 | D | / | C |
| Ashley Glen Boulevard/Northpointe Parkway | Ballantrae Boulevard | 0.92 | 55 | 50.9 | 1 | 46.7 | A | 1 | A |
| Ballantrae Boulevard | Sunlake Boulevard | 1.21 | 55 | 53.5 | 1 | 53.3 | A | 1 | A |
| Sunlake Boulevard | Oakstead Boulevard | 0.88 | 55 | 45.4 | 1 | 50.7 | A | 1 | A |
| Oakstead Boulevard | Wilson Road/Shirecrest Cove Way | 1.04 | 55 | 55.1 | 1 | 55.1 | A | 1 | A |
| Crossings Boulevard | Wilson Road/Shirecrest Cove Way | 4.61 | 55 | 42.5 | 1 | 46.9 | A | 1 | A |

Table 6-10
Opening Year (2010) Proposed Project
Westbound Arterial Segment Analyses Results

## 2010 Arterial Segments - Westbound

| SR 54 Between |  | Segment Length (miles) | Flow Speed (mph) | Speed (mph) |  |  | LOS |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | AM |  | I |  | AM | I | PM |
| Crossings Boulevard | SR 589 (Suncoast Parkway) Southbound Ramps |  | 0.21 | 55 | 20.3 | 1 | 18.4 | E | 1 | E |
| SR 589 (Suncoast Parkway) Southbound Ramps | SR 589 (Suncoast Parkway) Northbound Ramps | 0.12 | 55 | 28.1 | 1 | 26.3 | C | 1 | D |
| SR 589 (Suncoast Parkway) Northbound Ramps | Ashley Glen <br> Boulevard/Northpointe <br> Parkway | 0.22 | 55 | 26.3 | / | 11.5 | D | 1 | F |
| Ashley Glen Boulevard/Northpointe Parkway | Ballantrae Boulevard | 0.92 | 55 | 41.9 | 1 | 39.7 | B | 1 | B |
| Ballantrae Boulevard | Sunlake Boulevard | 1.21 | 55 | 51.4 | 1 | 52.1 | A | 1 | A |
| Sunlake Boulevard | Oakstead Boulevard | 0.88 | 55 | 37.0 | 1 | 44.7 | B | 1 | A |
| Oakstead Boulevard | Wilson Road/Shirecrest Cove Way | 1.04 | 55 | 42.0 | / | 41.4 | A | 1 | A |
| Crossings Boulevard | Wilson Road/Shirecrest Cove Way | 4.61 | 55 | 39.3 | 1 | 36.3 | B | 1 | B |

### 6.5 TURN LANE LENGTH ANALYSIS

A vehicle queuing analysis was conducted to estimate the anticipated future storage lengths for the proposed project's intersection turn lanes. The queue lengths were estimated for the 2030 Build Alternative. The detailed assumptions and the results of the queue analysis are documented in the Traffic Analysis Report ${ }^{1}$. Table 6-11 provides a summary of the recommended turn lane lengths along the SR 54 study corridor.

Table 6-11
Turn Lane Lengths

| Intersection | Queue Length (ft.) |  |  | Deceleration <br> Length (ft.) | Storage Lane Length (ft.) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Alt. A | Alt. B | Alt. C |  | Alt. A | Alt. B | Alt. C |
| SR 54 \& Crossings Boulevard |  |  |  |  |  |  |  |
| SR 54 - Eastbound Left | 100 | 100 | 100 | 260 | 360 | 360 | 360 |
| SR 54 - Eastbound Through | 675 | 675 | 675 | - | - | - | - |
| SR 54 - Eastbound Right | 325 | 325 | 325 | 260 | 585 | 585 | 585 |
| SR 54 - Westbound Left | 600 | 600 | 600 | 260 | 860 | 860 | 860 |
| SR 54 - Westbound Through-Right | 400 | 400 | 400 | - | - | - | - |
| Crossings Blvd. - Northbound Through-Left | 350 | 350 | 350 | - | - | - | - |
| Crossings Blvd. - Northbound Right | 550 | 550 | 550 | 145 | 695 | 695 | 695 |
| Crossings Blvd. - Southbound Left | 100 | 100 | 100 | 145 | 245 | 245 | 245 |
| Crossings Blvd. - Southbound Through-Right | 75 | 75 | 75 | - | - | - | - |
| SR 54 \& Suncoast Parkway SB Ramps |  |  |  |  |  |  |  |
| SR 54 - Extended Eastbound Left | 200 | 200 | 225 | 260 | 460 | 460 | 485 |
| SR 54 - Eastbound Through | 625 | 625 | 650 | - | - | - | - |
| SR 54 - Eastbound Right | 525 | 525 | 550 | 260 | 785 | 785 | 810 |
| SR 54 - Westbound Left | 525 | 550 | 575 | - | - | - | - |
| SR 54 - Westbound Through | 300 | 300 | 300 | - | - | - | - |
| Suncoast Parkway - Southbound Left | 425 | 425 | 425 | 145 | 570 | 570 | 570 |
| Suncoast Parkway - Southbound Right | 375 | 375 | 375 | 145 | 520 | 520 | 520 |
| SR 54 \& Suncoast Parkway NB Ramps |  |  |  |  |  |  |  |
| SR 54 - Eastbound Left | 350 | 350 | 350 | - | - | - | - |
| SR 54 - Eastbound Through | 550 | 550 | 550 | - | - | - | - |
| SR 54 - Extended Westbound Left | 375 | 400 | 450 | 260 | 635 | 660 | 710 |
| SR 54 - Westbound Through | 650 | 650 | 650 | - | - | - | - |
| SR 54 - Westbound Right | 175 | 175 | 200 | 260 | 435 | 435 | 460 |
| Suncoast Parkway - Northbound Left | 525 | 525 | 550 | 145 | 670 | 670 | 695 |
| Suncoast Parkway - Northbound Right | 500 | 500 | 500 | 145 | 645 | 645 | 645 |

Table 6-11 (continued) Turn Lane Lengths

## SR 54 \& North Pointe Pkwy.I Ashley Glen Blvd.

| SR 54 - Eastbound Left | 575 | 450 | - | 260 | 835 | 710 | - |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 - Eastbound Through | 500 | - | - | - | - |  | - |
| SR 54 - Eastbound Right | 250 | - | - | 260 | 510 |  | - |
| SR 54 - Westbound Left | 200 | 225 | - | 260 | 460 | 485 | - |
| SR 54 - Westbound Through | 675 | - | - | - | - |  | - |
| SR 54 - Westbound Right | 275 | - | - | 260 | 535 |  | - |
| North Pointe Pkwy. - Northbound Left | 300 | - | - | 145 | 445 |  | - |
| North Pointe Pkwy - Northbound Through | 75 | - | - | - | - |  | - |
| North Pointe Pkwy - Northbound Right | 225 | 550 | 550 | 145 | 370 |  | - |
| Ashley Glen Boulevard - Southbound Left | 200 | - | - | 185 | 385 |  | - |
| Ashley Glen Boulevard - Southbound Through | 75 | - | - | - | - |  | - |
| Ashley Glen Boulevard - Southbound Right | 625 | 475 | 475 | 185 | 810 | - | - |
| SR 54 \& Meadowbre Drive |  |  |  |  |  |  |  |

SR 54 \& Meadowbrook Drive

| SR 54 - Eastbound Left | 225 | 500 | 600 | 260 | 485 | 760 | 860 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 - Eastbound Through | 500 | 775 | 750 | - | - |  | - |
| SR 54 - Eastbound Right | 125 | 175 | 175 | 260 | 385 | 435 | 435 |
| SR 54 - Westbound Left | 250 | 250 | 250 | 260 | 510 | 510 | 510 |
| SR 54 - Westbound Through | 500 | 900 | 925 | - | - |  | - |
| SR 54 - Westbound Right | 150 | 200 | 225 | 260 | 410 | 460 | 485 |
| Meadowbrook Drive - Northbound Left | 175 | 175 | 175 | 145 | 320 | 320 | 320 |
| Meadowbrook Drive - Northbound Through | 100 | 100 | 100 | - | - |  | - |
| Meadowbrook Drive - Northbound Right | 400 | 375 | 375 | 145 | 545 | 520 | 520 |
| Meadowbrook Drive - Southbound Left | 175 | 325 | 325 | 145 | 320 | 470 | 470 |
| Meadowbrook Drive - Southbound Through | 125 | 100 | 100 | - | - |  | - |
| Meadowbrook Drive - Southbound Right | 375 | 575 | 550 | 145 | 520 | 720 | 695 |

SR 54 \& Ballantrae Boulevard

| SR 54 - Eastbound Left | 250 | 375 | 375 | 260 | 510 | 635 | 635 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 - Eastbound Through | 525 | 675 | 675 | - | - |  | - |
| SR 54 - Eastbound Right | 225 | 275 | 275 | 260 | 485 | 535 | 535 |
| SR 54 - Westbound Left | 225 | 225 | 225 | 260 | 485 | 485 | 485 |
| SR 54 - Westbound Through | 550 | 750 | 750 | - | - | - | - |
| SR 54 - Westbound Right | 125 | 150 | 150 | 260 | 385 | 410 | 410 |
| Access Road - Northbound Left | 375 | 375 | 375 | 145 | 520 | 520 | 520 |
| Access Road - Northbound Through | 50 | 50 | 50 | - | - | - | - |

Table 6-11 (continued) Turn Lane Lengths

| Access Road - Northbound Right | 325 | 300 | 300 | 145 | 470 | 445 | 445 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Ballantrae Boulevard - Southbound Left | 175 | 175 | 175 | 145 | 320 | 320 | 320 |
| Ballantrae Boulevard - Southbound Through | 50 | 50 | 50 | - | - | - | - |
| Ballantrae Boulevard - Southbound Right | 350 | 625 | 625 | 145 | 495 | 770 | 770 |
| SR 54 \& Long Lake Ranch / Sunlake Center |  |  |  |  |  |  |  |
| SR 54 - Eastbound Left | 375 | 375 | 375 | 260 | 635 | 635 | 635 |
| SR 54 - Eastbound Through | 475 | 475 | 475 | - | - | - | - |
| SR 54 - Eastbound Right | 150 | 150 | 150 | 260 | 410 | 410 | 410 |
| SR 54 - Westbound Left | 200 | 200 | 200 | 260 | 460 | 460 | 460 |
| SR 54 - Westbound Through | 525 | 500 | 500 | - | - | - | - |
| SR 54 - Westbound Right | 75 | 75 | 75 | 260 | 335 | 335 | 335 |
| Long Lake Ranch - Northbound Left | 275 | 275 | 275 | 145 | 420 | 420 | 420 |
| Long Lake Ranch - Northbound Through | 50 | 50 | 50 | - | - | - | - |
| Long Lake Ranch - Northbound Right | 150 | 150 | 150 | 145 | 295 | 295 | 295 |
| Sunlake Center - Southbound Left | 175 | 175 | 175 | 145 | 320 | 320 | 320 |
| Sunlake Center - Southbound Through | 50 | 50 | 50 | - | - | - | - |
| Sunlake Center - Southbound Right | 325 | 350 | 350 | 145 | 470 | 495 | 495 |
| SR 54 \& Sunlake Boulevard |  |  |  |  |  |  |  |
| SR 54 - Eastbound Left | 325 | 400 | 400 | 260 | 585 | 660 | 660 |
| SR 54 - Eastbound Through | 575 | 575 | 575 | - | - | - | - |
| SR 54 - Eastbound Right | 525 | 575 | 575 | 260 | 785 | 835 | 835 |
| SR 54 - Westbound Left | 475 | 475 | 475 | 260 | 735 | 735 | 735 |
| SR 54 - Westbound Through | 500 | 575 | 575 | - | - | - | - |
| SR 54 - Westbound Right | 400 | 450 | 450 | 260 | 660 | 710 | 710 |
| Sunlake Boulevard - Northbound Left | 475 | 500 | 500 | 185 | 660 | 685 | 685 |
| Sunlake Boulevard - Northbound Through | 200 | 175 | 175 | - | - | - | - |
| Sunlake Boulevard - Northbound Right | 525 | 525 | 525 | 185 | 710 | 710 | 710 |
| Sunlake Boulevard - Southbound Left | 375 | 375 | 375 | 185 | 560 | 560 | 560 |
| Sunlake Boulevard - Southbound Through | 175 | 175 | 175 | - | - | - | - |
| Sunlake Boulevard - Southbound Right | 450 | 675 | 675 | 185 | 635 | 760 | 760 |
| SR 54 \& Mentmore Boulevard |  |  |  |  |  |  |  |
| Mentmore Boulevard - Southbound Right | 225 | 225 | 225 |  | - | - | - |
| SR 54 \& Oakstead Boulevard |  |  |  |  |  |  |  |
| SR 54 - Eastbound Left | 275 | 275 | 275 | 260 | 535 | 535 | 535 |
| SR 54 - Eastbound Through | 700 | 700 | 700 | - | - | - | - |

Table 6-11 (continued) Turn Lane Lengths

| SR 54 - Eastbound Right | 250 | 250 | 250 | 260 | 510 | 510 | 510 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 - Westbound Left | 475 | 475 | 475 | 260 | 735 | 735 | 735 |
| SR 54 - Westbound Through | 650 | 650 | 650 | - | - | - | - |
| SR 54 - Westbound Right | 475 | 475 | 475 | 260 | 735 | 735 | 735 |
| Access Road - Northbound Left | 250 | 250 | 250 | 145 | 395 | 395 | 395 |
| Access Road - Northbound Through | 150 | 150 | 150 | - | - | - | - |
| Access Road - Northbound Right | 550 | 550 | 550 | 145 | 695 | 695 | 695 |
| Oakstead Boulevard - Southbound Left | 500 | 500 | 500 | 145 | 645 | 645 | 645 |
| Oakstead Boulevard - Southbound Through | 150 | 150 | 150 | - | - | - | - |
| Oakstead Boulevard - Southbound Right | 325 | 325 | 325 | 145 | 470 | 470 | 470 |

SR 54 \& Henley Road I Stonegate Falls Blvd.

| SR 54 - Eastbound Left | 175 | 175 | 175 | 260 | 435 | 435 | 435 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 - Eastbound Through | 575 | 575 | 575 | - |  |  |  |
| SR 54 - Eastbound Right | 200 | 200 | 200 | 260 | 460 | 460 | 460 |
| SR 54 - Westbound Left | 275 | 275 | 275 | 260 | 535 | 535 | 535 |
| SR 54 - Westbound Through | 525 | 525 | 525 | - | - | - | - |
| SR 54 - Westbound Right | 125 | 125 | 125 | 260 | 385 | 385 | 385 |
| Hanley Road - Northbound Left | 325 | 325 | 325 | 145 | 470 | 470 | 470 |
| Hanley Road - Northbound Through | 50 | 50 | 50 | - | - | - | - |
| Hanley Road - Northbound Right | 425 | 425 | 425 | 145 | 570 | 570 | 570 |
| Stonegate Falls Blvd. - Southbound Left | 200 | 200 | 200 | 145 | 345 | 345 | 345 |
| Stonegate Falls Blvd. - Southbound Through | 50 | 50 | 50 | - | - | - | - |
| Stonegate Falls Blvd. - Southbound Right | 325 | 325 | 325 | 145 | 470 | 470 | 470 |

SR 54 \& Shirecrest Cove Way I Wilson Road

| SR 54 - Eastbound Left | 225 | 225 | 225 | 260 | 485 | 485 | 485 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SR 54 - Eastbound Through | 475 | 475 | 475 | - | - | - | - |
| SR 54 - Eastbound Right | 50 | 50 | 50 | 260 | 310 | 310 | 310 |
| SR 54 - Westbound Left | 100 | 100 | 100 | 260 | 360 | 360 | 360 |
| SR 54 - Westbound Through | 550 | 550 | 550 | - | - | - | - |
| SR 54 - Westbound Right | 75 | 75 | 75 | 260 | 335 | 335 | 335 |
| Shirecrest Cove - Northbound Through-Left- <br> Right | 125 | 125 | 125 | - | - | - | - |
| Wilson Road - Southbound Left | 275 | 275 | 275 | 145 | 420 | 420 | 420 |
| Wilson Road - Southbound Through-Right | 350 | 350 | 350 | - | - | - | - |

### 6.6 REFERENCES

1. Traffic Analysis Report; HDR Engineering, Inc.;
2. Project Traffic Forecasting Handbook; Florida Department of Transportation; October 2002.
3. Pasco County Comprehensive Plan; Pasco County Board of County Commissioners; Adopted September 11, 2006.

## Section 7 Corridor Analysis

### 7.1 EVALUATION OF ALTERNATE CORRIDORS

In an effort to identify potential alternative corridors that could serve the future travel demand of the SR 54 study area, the following options were considered:

- Improvement to other existing parallel roadways within the region;
- Development of a new roadway corridor;
- Enhancement of transit service within the study limits; and
- Roadway improvements within the study limits.


### 7.1.1 IMPROVEMENT OF PARALLEL ROADWAYS

A review of the existing roadway network within the study limits revealed the presence of only a few east/west arterial roadways located within five miles of the study area. The following paragraphs discuss if improvements to any of the parallel roadways would be feasible alternatives to the proposed improvements addressed by this study.

Lutz Lake Fern Road and Van Dyke Road are two minor arterials located in north-central Hillsborough County that run parallel to the SR 54 study corridor. Both of these Hillsborough County maintained roadways are located south of SR 54. There are no nearby parallel routes north of the SR 54 study corridor. The Lutz Lake Fern Road and Van Dyke Road corridors have two-lane typical sections, which connect SR 45 (US 41) to Gunn Highway (CR 587). The Van Dyke Road connection to SR 45 (US 41) is made through two collectors: Simmons Road and Crenshaw Lake Road. In addition to the two minor arterials, the terminus of the four-lane section of SR 589 (Veterans Expressway) at SR 597 (Dale Mabry Highway) is located midway between Lutz Lake Fern Road and Van Dyke Road.

Although there exist the above-referenced parallel roadways, the ability for these roadways to relieve traffic congestion on the SR 54 study corridor may be limited by their regional connectivity. The SR 54 corridor currently forms a southern connection between the western and eastern limits of Pasco County, while Van Dyke Road and Lutz Lake Fern Road only provide connections between SR 45 (US 41) and Gunn Highway (CR 587). In addition, there is insufficient roadway capacity available on Lutz Lake Fern Road and Van Dyke Road to accommodate excess traffic demand from SR 54, as Hillsborough County identifies these minor arterials as deficient roadways in their Transportation Concurrency Management System. Moreover, Hillsborough County designates Van Dyke Road and Lutz Lake Fern Road to be constrained corridors west of the SR 589 (Suncoast Parkway) even though the Hillsborough County Metropolitan Planning Organization (MPO) 2025 Long Range Transportation Plan Update ${ }^{1}$ indicates the need for four-lanes by the year 2025. Funding for the fourlaning projects is currently not available.

Based on this review, it was determined that improvements to any of the existing parallel roadways, in lieu of improving SR 54, would not address the projected traffic demand along SR 54. Therefore, improvements to existing parallel roadways are not considered viable alternative corridor options.

### 7.1.2 DEVELOPMENT OF A NEW ROADWAY CORRIDOR

Several new roadways are planned to be constructed within the SR 54 study area by the year 2030. Figure 7-1 illustrates the projected 2030 roadway network. Many of the new roadways proposed by the year 2030 will provide local access to development located off of the State Highway System (SHS). Only the planned extension of Ridge Road to connect Moon Lake Road (CR 587) with SR 45 (US 41) would have a marginal impact in relieving traffic volumes on the SR 54 corridor. This improvement is identified in the Pasco County 2025 LRTP Update ${ }^{2}$ as a cost affordable project planned to be constructed in the 2010-2015 timeframe. In addition, proposed interchanges on SR 589 (Suncoast Parkway) at Lutz Lake Fern Road and Ridge Road could reduce travel demand at the SR 54/SR 589 (Suncoast Parkway) interchange. However, the location of these improvements relative to the SR 54 study corridor minimizes the benefit in accommodating future travel demand on SR 54. Although not part of the 2025 Needs Plan, Pasco County has realized the possible benefits of providing an extension of Tower Road west of SR 589 (Suncoast Parkway). Right-of-way in Starkey Ranch is currently being reserved by Pasco County for this new roadway alignment, even though there is no funding available for construction. Thus, the development of a new roadway corridor is not considered a cost feasible alternative to address the capacity needs of the SR 54 corridor.

### 7.1.3 ENHANCEMENT OF TRANSIT SERVICE

Pasco County has recognized the need to promote alternative modes of transportation to better accommodate the area's growth. Currently, Pasco County Public Transit (PCPT) does not have an existing transit route that travels within the SR 54 study limits. There are plans for implementation of a SR 54 Cross-County Connector transit route in 2011. The route would provide travel along SR 54 between the existing transit systems located in New Port Richey and the City of Zephyrhills.

### 7.1.4 IMPROVEMENT OF THE EXISTING CORRIDOR

The existing SR 54 study corridor consists of a four-lane divided typical section. Currently, six-lane typical sections exist on SR 54 east and west of the project limits. Once the proposed six-lane project is complete, a consistent six-lane typical section would be provided on SR 54 from SR 55 (US 19) to SR 93 (I-75). The existing right-of-way (ROW) is sufficient to accommodate the proposed six-lane widening. The need for six-lanes along this corridor is consistent with the 2016-2025 Cost Affordable Plan of the Pasco County MPO 2025 LRTP Update ${ }^{2}$ and the Pasco County Comprehensive Plan ${ }^{3}$, Transportation Element. Therefore, roadway improvements to the existing corridor are a viable corridor alternative.

### 7.2 CORRIDOR SELECTION

In conclusion, the existing corridor is the recommended corridor for further consideration, and a more detailed development and evaluation of alternative corridors, such as with an impacts evaluation matrix, appear to be unnecessary. Therefore, the most feasible corridor alternative identified in this Project Development and Environment (PD\&E) study is improving the existing SR 54 corridor.


### 7.3 REFERENCES

1. Hillsborough County Metropolitan Planning Organization 2025 Long Range Transportation Plan Update; Hillsborough County MPO; Adopted November 10, 2004, Amended June 5, 2007.
2. Pasco County Metropolitan Planning Organization 2025 Long Range Transportation Plan Update; Tindale Oliver \& Associates, Inc.; Final Report January 2005.
3. Pasco County Comprehensive Plan; Pasco County Board of County Commissioners; Adopted June 27, 2006.

## Section 8 Alternative Alignment Analysis

### 8.1 NO-BUILD ALTERNATIVE

The No-Build Alternative will not provide any additional roadway improvements within the study area, leaving the existing facility unchanged from its present configuration. The combination of the lack of improvements and steadily increasing traffic will result in increased congestion, longer travel times, and the possibility of higher crash rates within the proposed project's study limits. Additionally, the No-Build Alternative is not consistent with the 2025 Long Range Transportation Plan for the Pasco County Metropolitan Planning Organization and the approved Development Order (DO) for the Bexley Ranch Development of Regional Impact (DRI).

The No-Build Alternative has the following advantages: no roadway construction or utility costs; no traffic disruptions due to construction; no environmental impacts; and no engineering costs.

### 8.2 TRANSPORTATION SYSTEM MANAGEMENT ALTERNATIVE

The Transportation System Management (TSM) Alternative includes those types of activities designed to maximize the use of the existing transportation system. A TSM project is a limited construction alternative that includes minor improvements to enhance capacity. These strategies include increased mass transit usage, lane-use restrictions for high-occupancy vehicles, reverse lane operations for highoccupancy vehicles, intersection widening, signalization improvements, and provisions for bicyclists and pedestrians. The advantage of this alternative is the limited expenditure of funds to relieve congestion problems and minimal environmental impacts. While some increased efficiency might be realized through minor improvements, the overall goal of providing increased capacity would not be realized by implementing the TSM Alternative. Therefore, this is not a viable alternative.

### 8.3 BUILD ALTERNATIVE

The proposed typical section (see Figures 8-1 and 8-2) adds one lane in each direction to SR 54 to widen the facility from four lanes to six lanes. To create dual left-turn lanes at the SR 589 (Suncoast Parkway) ramps, outside widening will occur at the beginning of the project. To avoid acquiring additional right-of-way (ROW), median widening will occur for the remainder of the project. The median shoulders will be 12 ft wide and unpaved. The outside shoulders will be slope corrected or newly constructed at 2 percent for 5 ft . The appropriate pedestrian and bicyclists accommodations are being incorporated into the project's design plans. The outside shoulders will be 5 ft wide and either constructed or corrected to a two percent cross slope. A 6 ft extended shoulder, at two percent cross slope, will be added to the outside shoulder. Bicycle traffic will be accommodated by designating bike lanes with pavement markings and signs and also providing for inverted profile thermoplastic lane lines along both sides of the roadway for the outer lane (in each direction). The remainder of the extended shoulder will serve to accommodate pedestrian traffic. The extended shoulder will replace the existing 10 -ft shared-use path on the south side of SR 54 between SR 589 (Suncoast Parkway) and Meadowbrook Drive. A special transition used to connect the extended shoulder to existing pedestrian and bicycle facilities east and west of the project limits will not be needed, as the extended shoulders will be transitioned into an existing urban typical section with sidewalks east of Sofia Drive and an existing rural typical section with 5 -ft shoulders west of SR 589 (Suncoast Parkway).



The existing swales will be re-graded to accommodate the stormwater and existing drainage structures will be modified as needed.

The following are the advantages of the Build Alternative:

- Provides two additional lanes, one in each direction, which will increase capacity.
- No adverse environmental impacts have been identified.
- No ROW acquisition is required.
- The roadway will be a continuous six-lane section from Crossings Boulevard to the existing curb and gutter section west of SR 45 (US 41).
- A reduction in crashes is expected.


### 8.4 EVALUATION MATRIX

A qualitative analysis was conducted to determine the advantages and disadvantages of the No-Build and Build Alternatives. Each alternative was evaluated in relation to engineering, socio-economic, and environmental criteria, as well as various cost factors. The comparative Alternatives Evaluation Matrix is presented in Table 8-1.

| Table 8-1 Evaluation Matrix |  |  |
| :---: | :---: | :---: |
| Evaluation Matrix |  |  |
| Evaluation Category | Alternative |  |
|  | No-Build | Build |
| Project Length | 5.0 miles |  |
| Number of Lanes Required | 4 | 6 |
| Engineering |  |  |
| Functional Relationship with Transportation Network | Does not meet the objectives of the Pasco County MPO 2025 Long Range Transportation Plan (LRTP). | Will meet the objectives of the Pasco County MPO 2025 LRTP. |
| Traffic Operation | This alternative does not enhance the local transportation system. | Widening SR 54 from four to six lanes will increase capacity and enhance traffic operations. |
| Vehicle Safety | With increased traffic on SR 54, the potential for increased crashes is higher. | Increasing the number of lanes from four to six will increase capacity and should improve vehicle safety. |

Table 8-1 (Cont.) Evaluation Matrix

| Evaluation Matrix |  |  |
| :---: | :---: | :---: |
| Evaluation Category | Alternative |  |
|  | No-Build | Build |
| Pedestrian/Bicycle Facilities | A ten-ft shared-use path exists along the south side of SR 54 from the SR 589 (Suncoast Parkway) to Meadowbrook Drive. Five-ft paved shoulders currently exist along the entire length of the proposed project. Due to high existing posted speed limits and the heavy traffic volumes, the existing paved shoulders are not viewed by Florida Department of Transportation (FDOT) District 7 as an adequate and safe bicycle facility. | The appropriate pedestrian and bicyclists accommodations are being incorporated into the project's design plans. The outside shoulders will be 5 ft wide and either constructed or corrected to a two percent cross slope. A 6 ft extended shoulder, at two percent cross slope, will be added to the outside shoulder. Bicycle traffic will be accommodated by designating bike lanes with pavement markings and signs and also providing for inverted profile thermoplastic lane lines along both sides of the roadway for the outer lane (in each direction). The remainder of the extended shoulder will serve to accommodate pedestrian traffic. |
| Evacuation | No Improvement | The increase in capacity will enhance evacuation from the area. |
| Socio-Economic |  |  |
| Potential Relocations of Businesses or Residential | No Relocations | No Relocations |
| ROW Acquisition (acres) | 0 | 0 |
| Community Services/Features | No Change | No Change |
| Impact to Parks/Recreation Areas | None | None |
| Environmental |  |  |
| Wetlands | 0 Acres | Minor impacts to wetlands will occur (0.085 acres). |
|  <br> Endangered Species (Potential) | No Change | No Change |
| Number of Potential Contaminated Sites | No Change | No Change |
| Noise Sensitive Sites | 0 | 39 |
| Floodplains | 0 | 0 |

Table 8-1 (Cont.) Evaluation Matrix

| Evaluation Matrix |  |  |
| :---: | :---: | :---: |
| Evaluation Category | Alternative |  |
|  | No-Build | Build |
| Farmlands | No Change | No Change |
| Cultural/Historical | No Change | No Change |
| Potential to Encounter Archaeological Sites | None | None |
| Cost |  |  |
| ROW | \$ 0 | \$ 0 |
| Construction* | \$ 0 | \$24,738,136 |
| Total Project Cost | \$ 0 | \$24,738,136 |

* See Appendix B for 60\% Opinion of Probable Cost


### 8.5 RECOMMENDED ALTERNATIVE

The recommended alternative is the Build Alternative, which widens SR 54 to six lanes as proposed in Figures 8-1 and 8-2. The decision to select the Build Alternative was based on the numerous benefits described in Section 8.3, and the inability of the No-Build Alternative to meet existing and future transportation needs of the SR 54 study corridor as evaluated in Table 8-1.

## Section 9 Preliminary Design Analysis

This section presents an analysis of the Recommended Alternative for the proposed project. The Recommended Alternative includes widening SR 54 within the study limits to a six-lane divided roadway with improvements to drainage and signalization.

### 9.1 DESIGN TRAFFIC VOLUMES

The process to develop the design year (2030) traffic volumes was previously discussed in Section 6 of this report. The design hour traffic volumes used to analyze the traffic operations for the study area intersections in the No-Build Alternative are illustrated in Figures 6-4 A-C. These same traffic volumes were also utilized in the Build Alternatives analysis of the proposed six-lane divided roadway from west of the SR 589 (Suncoast Parkway) to west of SR 45 (US 41).

### 9.2 TYPICAL SECTIONS

There are two recommended typical sections for widening SR 54 to six travel lanes (three in each direction). From the beginning of the project until Meadowbrook Drive it is necessary to widen to the outside of the existing travel lanes. This will allow for dual left-turn lanes onto the SR 589 (Suncoast Parkway) ramps. The remainder of the project will utilize one-lane median widening. The median shoulders will be 12 feet ( ft ) wide and unpaved. The outside shoulders will be 5 ft wide and either constructed or corrected to a 2 percent cross slope. A 6 -ft extended shoulder will be added to the outside shoulder, also at a 2 percent cross slope. The appropriate pedestrian and bicyclists accommodations are being incorporated into the project's design plans. The outside shoulders will be 5 ft wide and either constructed or corrected to a two percent cross slope. A 6 ft extended shoulder, at two percent cross slope, will be added to the outside shoulder. Bicycle traffic will be accommodated by designating bike lanes with pavement markings and signs and also providing for inverted profile thermoplastic lane lines along both sides of the roadway for the outer lane (in each direction). The remainder of the extended shoulder will serve to accommodate pedestrian traffic (see Figures 9-1 and 9-2). The existing swales will be re-graded to accommodate stormwater and, in some areas, will have one to four slopes per a design variance.

### 9.3 INTERSECTION CONCEPTS AND SIGNAL ANALYSIS

Signalization exists at the following roadways intersecting SR 54 within the study limits:

- Crossings Boulevard
- SR 589 (Suncoast Parkway) Southbound Ramp
- SR 589 (Suncoast Parkway) Northbound Ramp
- Oakstead Boulevard

These signals would be upgraded as part of the proposed project. Traffic signals at the three intersections listed below will be provided only when warranted:

- Northpointe Parkway / Ashley Glen (future leg)
- Ballantrae Boulevard
- Sunlake Boulevard (future road)




### 9.4 ALIGNMENT AND RIGHT-OF-WAY NEEDS

No additional right-of-way (ROW) will be required.

### 9.5 RELOCATIONS

No relocations are required.

### 9.6 RIGHT-OF-WAY COSTS

No ROW is needed for this project.

### 9.7 CONSTRUCTION COST

The anticipated cost to construct the Recommended Alternative is $\$ 24.7$ million, which is anticipated to be paid for by the developer. A summary of the construction costs is shown in Appendix B.

### 9.8 PRELIMINARY ENGINEERING COSTS

The estimated preliminary engineering cost for the Recommended Alternative is $\$ 3.7$ million, which is to be paid for by the developer.

### 9.9 RECYCLING AND SALVAGEABLE MATERIALS

Some existing asphalt pavement and roadway base course must be removed to widen SR 54 and may be able to be reused. However, additional evaluation will be necessary to determine composition, age of the asphalt, and quality of the base course prior to its use.

### 9.10 USER BENEFITS

The following user benefits will be realized with the implementation of the Recommended Alternative:

- The number of roadway lanes will increase from four to six to accommodate the projected traffic volume increases.
- Outside shoulders will be extended to accommodate bicyclists and pedestrians in the corridor. This will allow connectivity to the existing shared-use path along SR 589 (Suncoast Parkway).


### 9.11 PEDESTRIAN AND BICYCLE FACILITIES

The Recommended Alternative will include outside shoulders that are to be 5 ft wide and either constructed or corrected to a two percent cross slope. A 6 ft extended shoulder, at two percent cross slope, will be added to the outside shoulder. Bicycle traffic will be accommodated by designating bike lanes with pavement markings and signs and also providing for inverted profile thermoplastic lane lines along both sides of the roadway for the outer lane (in each direction). The remainder of the extended shoulder will serve to accommodate pedestrian traffic. Currently, a shared-use path is only provided for a portion of the project near SR 589 (Suncoast Parkway).

### 9.12 SAFETY

The design of safety-related features has been incorporated into every aspect of design in this project. Some of the design aspects that have been considered are:

Effective clear zone widths have been factored into the typical sections.
Lane tapers, deceleration, and storage lengths have been designed for turn lanes per Florida Department of Transportation (FDOT) standards. Adequate provisions for vertical and horizontal sight distances have been incorporated into the design.
Pedestrian and bicycle facilities have been added to the length of the project.
All curbed medians will be offset four ft due to the design speed.

### 9.13 ECONOMIC AND COMMUNITY DEVELOPMENT

The Cost Affordable component of the Pasco County MPO 2025 Long Range Transportation Plan (LRTP) calls for the widening of SR 54 to a six-lane divided roadway facility. This plan was developed after a thorough evaluation of the future population and development growth within the region of the project. The proposed widening is also consistent with the County's growth management strategies to enhance property values and quality of life while preserving the viability and function of the roadway facility. The Recommended Build Alternative responds to the projected need to maintain the desired level-of-service (LOS) along the SR 54 study corridor and will allow easier access to businesses and residential communities along the SR 54 study corridor.

### 9.14 ENVIRONMENTAL IMPACTS

### 9.14.1 LAND USE

The proposed project is not anticipated to change land use patterns nor affect future development along the project corridor.

### 9.14.2 CULTURAL FEATURES AND COMMUNITY SERVICES

No National Register of Historic Places (NRHP)-eligible or NRHP-listed cultural resources will be affected as a result of implementing the Recommended Alternative. Community services will not be impacted, however, they may be temporarily affected during construction. This effect is expected to be due to minor delays of traffic occurring during construction.

### 9.14.3 NATURAL AND BIOLOGICAL IMPACTS

Twenty-seven jurisdictional wetlands and other water features were identified as part of the previously permitted (43016251.00) SR 54 widening. Only two of these jurisdictional features are likely to be affected by constructing the proposed project (see Section 4.3.5.1 Wetlands). The anticipated impacts are insignificant and will occur to two disturbed (narrow) wetland/other water feature edges. Impacts are estimated to be less than 0.085 acres.

Impacts to threatened and endangered species are not anticipated. An Endangered Species Biological Assessment was not prepared for the project's Project Development and Environment (PD\&E) Study; however listed species surveys occurred, and the Florida Fish and Wildlife Conservation

Commission (FWC), the U.S. Fish and Wildlife Service (USFWS), and the Florida Natural Areas Inventory (FNAI) database records were reviewed to better assess local wildlife (see Section 4.3.5.2 Wildlife and Critical Habitat). No adverse effects are anticipated as a result of implementing the Recommended Alternative.

### 9.14.4 PHYSICAL IMPACTS

Physical impacts resulting from implementation of the proposed project are anticipated, as follows:
Temporary decline in air quality, increase in noise, and disturbance of soils resulting from the proposed construction activities.

Increase in noise due to proximity of vehicles to adjacent facilities and an increase in traffic volume resulting from the continued urban growth along the corridor. The Noise Study Report ${ }^{1}$ indicates that noise impacts should be minor; sound barrier walls are not recommended.

Minor modification of drainage features to accommodate additional impervious surface and increases in stormwater volumes.

### 9.15 UTILITY IMPACTS

As listed in Section 4.1.12 of this report, there are several utilities located in the project area that intersect or run parallel to the proposed project. Utility companies were contacted and requested to submit design plans of their existing and planned facilities along the project area. There will be continual coordination with the utility companies throughout the design and construction processes.

### 9.16 TRAFFIC CONTROL PLAN

The construction of the proposed project is likely to be built by implementing the following four phases of the traffic control plan:

## Phase I

Maintain traffic on the existing lanes of SR 54.
Mill the friction course from the existing outside shoulder and place temporary overbuild on shoulder at 0.02 ft .

Construct linear ditch adjustments, drainage structures and cross drains.
Construct new signals at SR 589 (Suncoast Parkway) west ramp, SR 589 (Suncoast Parkway) east ramp, Ashley Glen Boulevard/Northpointe Parkway, Ballantrae Boulevard, Sunlake Boulevard, and Oakstead Boulevard.
Place signal heads in temporary location for use in Phase II traffic control plans.

## Phase II

Shift traffic onto outside shoulder and outside lanes as shown in each direction.
Remove conflicting striping and restripe per Phase II traffic control plan.
Construct inside widening and all median work.

## Phase III

Shift traffic to new widened lane and existing inside lane.
Remove conflicting striping and restripe per Phase III traffic control plans.
Adjust signal heads for use on Phase III traffic control plans.
Mill and resurface $3 / 4$ inch of the temporary overbuild to prepare for final pavement layer.
Construct 6-ft extended shoulder, outside widening and all other grading required for linear ponds.

## Phase IV

Maintain traffic in final configuration.
Remove any temporary pavement, construct median path, and complete any minor clean up work.
Apply final layers of pavement using night time lane closures.
Apply final thermoplastic striping.
Open all lanes to traffic.
Complete any miscellaneous work.

### 9.17 RESULTS OF PUBLIC INVOLVEMENT PROGRAM

The Public Hearing was held on Thursday, November 6, 2008, at the Holy Trinity Lutheran Church, Lutz, Florida. The hearing was held from 5:00 p.m. to 7:00 p.m. and a formal Public Hearing PowerPoint presentation started at 6:00 p.m. The FDOT designated staff to preside over the Public Hearing. The FDOT and its consultant were present to assist the public. The Public Hearing provided an opportunity for the public to express their input regarding the project. The formal presentation included a summary of the need for the facility, and relative merits of the preferred alternative based on its level of traffic service and socio-economic impacts. A total of 35 persons registered as having attended the Hearing including Pasco County and FDOT staff.

Following the presentation, a comment and question period took place. During this time, two individuals made verbal comments for the record. Three people submitted written comments at the Public Hearing and/or within the ten (10) day response period following the Public Hearing. One comment questioned why the six-lane widening of SR 54 was not done in the first place, instead of the recent four-lane widening of SR 54. Another comment was concerned about stormwater runoff into canals located in the Meadowbrook Estates neighborhood. This citizen was also in favor of a traffic signal at Meadowbrook Drive and a bicycle path on the south side of SR 54 from SR 589 (Suncoast Parkway) to Crossings Boulevard. The third written comment requested that sidewalks and bicycle paths be located along the highway. Responses to these comments are included in the Comments and Coordination Report ${ }^{2}$.

### 9.18 VALUE ENGINEERING

Value Engineering was not included as part of this project.

### 9.19 DRAINAGE

As mentioned earlier, the stormwater management needs for the proposed project were accounted for in the existing ponds in Basins A through E. Minor modifications to the median, including median drains will be necessary. However, additional treatment and attenuation volumes will have to be accounted for due to the inclusion of additional left and right-turn lanes, and the sidewalk/multi-use path. Also, any pond volume lost as a result of new driveways will be replaced to ensure both FDOT and SWFMWD criteria are met. The additional volume will be provided by various methods. The primary method will be to revise the side slopes from 1:6 to $1: 4$ to increase the width of the ponds. While this is not a desirable side slope, it will often be necessary due to ROW constraints. Some ponds that were previously providing only attenuation will be converted to wet ponds to increase water quality treatment. While this is the preferred method to increase pond size, it will be used only at some locations. The as-built weir and orifice elevations will be used except at locations where control structures will be replaced.

### 9.20 BRIDGE ANALYSIS

The proposed project will not impact the two existing structures located in the study limits.

### 9.21 SPECIAL FEATURES

No special features are included as part of this project at this time.

### 9.22 ACCESS MANAGEMENT

SR 54 is currently classified as a Class 5 roadway for the entire study area. With this classification, full median openings are allowed every half mile ( $2,640 \mathrm{ft}$ ) and directional median openings are allowed every 660 ft . No new openings are being added to the roadway with this project. Access Connection Permit applications have been submitted to the FDOT for review. Approval of these permits is conditional upon meeting the provisions set forth in the Notice of Intent to Issue Permit, which are being addressed in the ongoing design of the six-lane widening project.

### 9.23 AESTHETICS AND LANDSCAPING

No landscaping or aesthetic features were included as part of this project.

### 9.24 REFERENCE

1. Noise Study Report; KB Environmental Sciences, Inc.;
2. Comments and Coordination Report; HDR Engineering, Inc.;

## Appendix A

Concept Plans





















## Appendix B

## Construction Cost Estimate





${ }^{* * *}$ Phase II Submittal Estimate Only. Opinion of Probable Cost is Subject to Change.

