

# **SR 54** Project Development and Environment (PD&E) Study

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

# **Final Traffic Technical Memorandum**

WPI Segment No: 416561-1  
Pasco County

Prepared for the

**Florida Department of Transportation  
District Seven**



**March 2009**

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Prepared by  
**American Consulting Engineers of Florida, LLC**



**March 2009**

**CERTIFICATION OF  
PROJECT TRAFFIC VOLUMES**

**PROJECT:** State Road 54  
From CR 577 (Curley Road) to  
CR 579/CR 54 (Morris Bridge Road)

**WPI Seg. No.:** 416561-1

**COUNTY:** Pasco

**CLIENT:** Florida Department of Transportation  
District Seven

This memorandum includes a summary of data collection efforts, traffic demand projection calculations, and capacity/LOS analysis for the State Road 54 PD&E Study.

“I have followed the Project Traffic Forecasting Procedures adopted by the Florida Department of Transportation to arrive at the project traffic volumes. I have found these to be consistent with the historical traffic data and other available information.”

SIGNATURE: \_\_\_\_\_

NAME: David Bredahl, AICP  
Principal / Project Manager  
American Consulting Engineers of Florida, LLC

DATE: March 2009

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## SECTION 1 - EXECUTIVE SUMMARY

This report examines existing traffic characteristics for the State Road 54 (SR 54) PD&E Study area and documents the methodology used to project future design volumes. The project is located in southeast Pasco County. The limits of the traffic study area extend along SR 54 from Curley Road (CR 577) to Morris Bridge Road (CR 579/CR 54). The roadway is proposed to be widened to at least a four-lane divided facility. Year 2006 traffic volumes ranged from 22,000 vehicles per day (VPD) east of Fox Ridge Boulevard to 27,400 VPD west of Smith Road. Recommended traffic factors for design are summarized in **Table 1** below:

**Table 1**  
**Recommended Traffic Factors**

Factor	Recommended Value
K <sub>30</sub>	9.5 percent
D <sub>30</sub>	57.0 percent
T <sub>24</sub>	7.2 percent
PHF	0.95

The K-Factor (K<sub>30</sub>) and D-Factor (D<sub>30</sub>) were derived from the 2001 through 2005 Florida Traffic Information CD/DVD's for the traffic count stations 5115, 5116, 5102, 5103, and 0026 along SR 54 from Old Pasco Road to east of Morris Bridge Road within Pasco County. Future traffic projections were developed by using the Tampa Bay Regional Planning Model, Version 5.1 (TBRPM 5.1). The 2030 projected traffic volumes for the Build Alternative range from 27,700 VPD west of Meadow Pointe Boulevard to 35,500 VPD east of Foxwood Boulevard.

The Pasco County Long Range Transportation Plan identifies SR 54 as a four-lane divided arterial in its 2025 Cost Affordable Plan. Proposed roadway improvements for other facilities within the study corridor include the following:

- Extension of the Zephyrhills Bypass between SR 54 and CR 54
- Curley Road Extension/Realignment
- Extension of Fox Ridge Boulevard, North of SR 54
- Extension of River Glen Boulevard (formerly known as New River Blvd.) and construction of Wyndfields Boulevard south of SR 54

The overall arterial level of service (LOS) for existing conditions ranges from LOS D to LOS F depending on the segment in question. The level of service for the 2030 Build Alternative is LOS C for both directions for both peak periods. The level of service estimate assumes 4 lanes plus 2 auxiliary lanes on SR 54 west of Foxwood/Ronnoch Boulevard and 4 lanes east of that intersection. Recommended intersection improvements and locations/types of median openings are shown in **Figure 15**. The entire facility is expected to operate at LOS F by approximately year 2020 if the recommended improvements are not made.

## **SECTION 2 – INTRODUCTION**

### **2.1 Project Location and Limits**

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

The west end of the study area is located in Wesley Chapel, an unincorporated census-designated place. The project is located within Sections 9, 10, 13, 14, & 15, Township 26 S, and Range 20 E and Section 18, Township 26 S, Range 21 E. The total length of the proposed project limits is approximately 4.5 miles. The segment of SR 54 to the west, from I-75 to east of Curley Road (CR 577), is currently under design by Pasco County for widening to six lanes. That project also includes a connection to the planned Zephyrhills West Bypass Extension.

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

### **2.2 Report Purpose**

This Traffic Technical Memorandum is being prepared as part of the PD&E Study to study the need for additional highway capacity to meet existing and projected traffic demand resulting from development in southeast Pasco County.

### **2.3 Existing Facility and Proposed Improvements**

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

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

- “Urban Principal Arterial Other” from west of New River to east of the project limits

The existing roadway is a two-lane rural facility with 12-ft travel lanes and 5-ft paved shoulders. Several areas have been widened to provide left-turn and right-turn lanes. From west to east, the posted speed limit varies from 55 miles per hour (mph) to 50 mph. Traffic signals currently exist (or will be in operation) at Curley Road, Meadow Pointe Boulevard, River Glen Boulevard/Wyndfields Boulevard, and Morris Bridge Road. The existing right-of-way typically varies between 80 ft and 100 ft. In addition, the County has obtained (or will obtain) “reserved” right-of-way which is being donated by developers as a stipulation of development orders and rezoning conditions. The existing highway is presently classified as Access Management Class 3 according to FDOT’s straight line diagram inventory. Class 3 standards require a minimum traffic signal spacing of 0.5 miles, which the existing facility meets, and minimum spacing for median openings as follows:

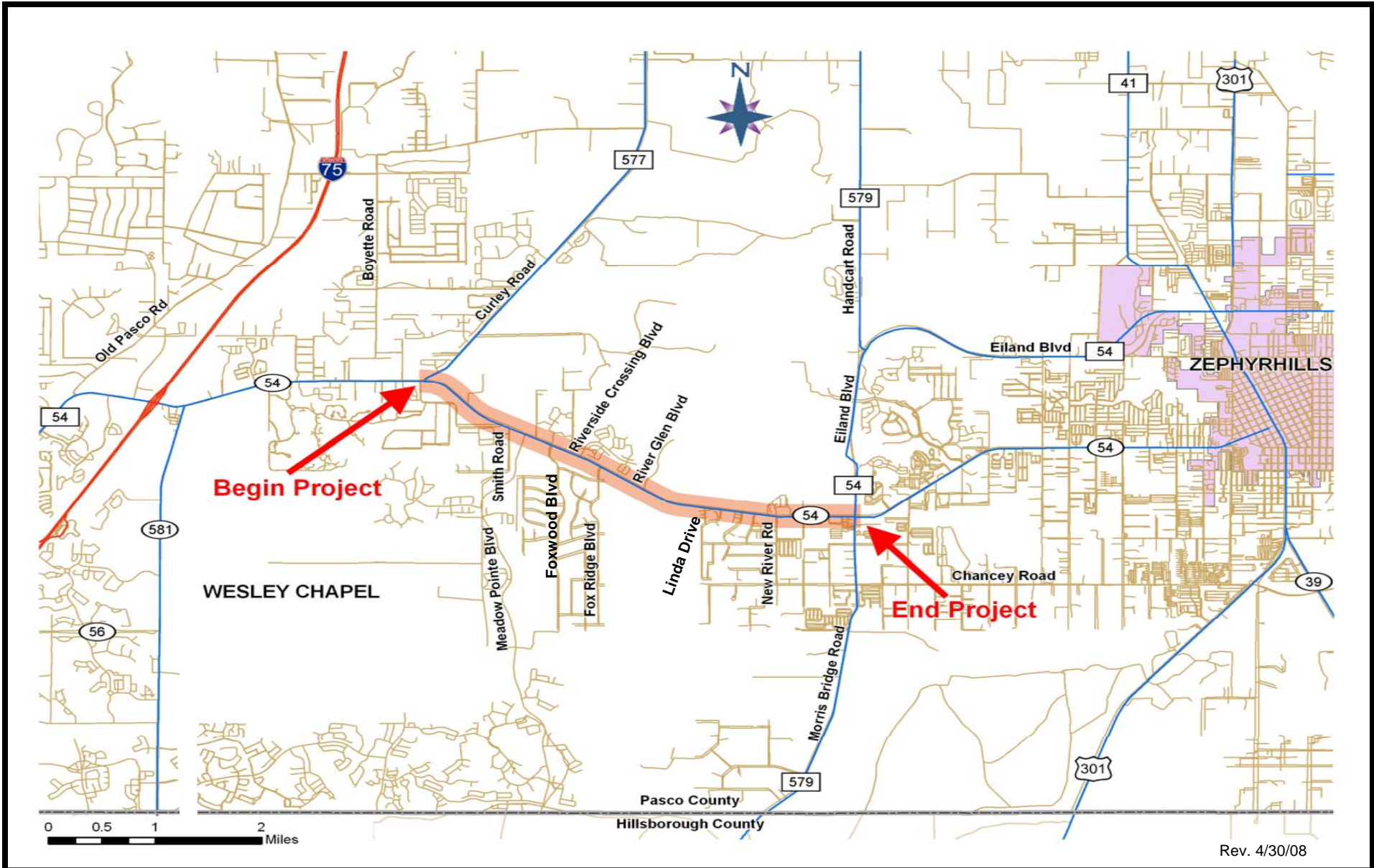
- 0.5 mile for full median openings
- 0.25 mile for directional median openings

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

The Build Alternatives include the widening or reconstruction of the existing highway to a four lane divided arterial with auxiliary lanes from east of Curley Road to Foxwood Boulevard and a four-lane divided arterial east of Foxwood Boulevard. Two different *types* of typical sections were considered: an urban typical section and a suburban typical section (**Figure 3**). The proposed typical sections include 12-ft travel lanes, sidewalks and “trails”, and either 5-ft paved shoulders or 4-ft bicycle lanes, with a closed drainage system, extension or replacement of cross drains, and associated stormwater management facilities for water quality treatment and discharge attenuation.

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





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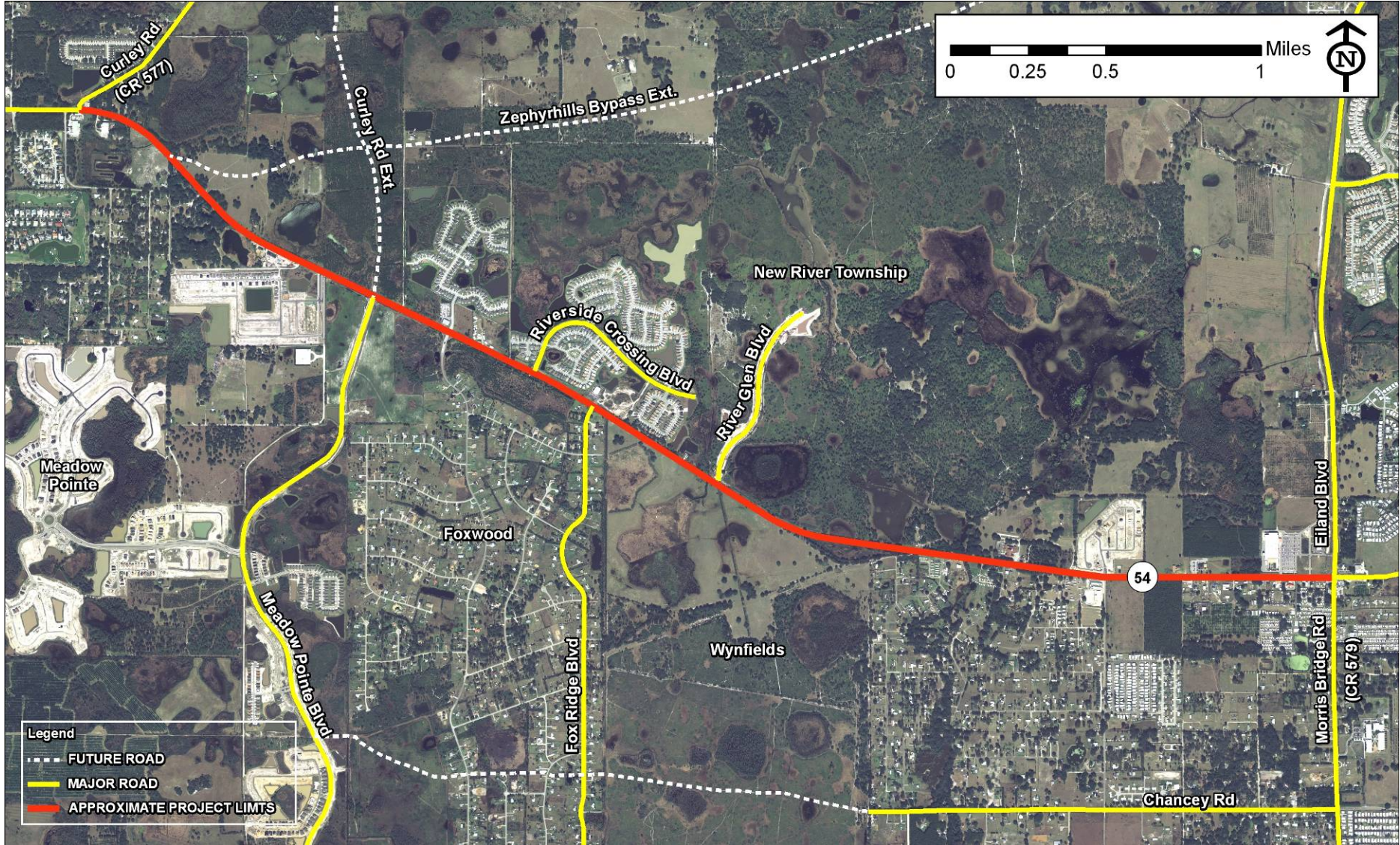
**SR 54 PD&E Study**  
 From Curley Road to Morris Bridge Road  
 Pasco County, Florida  
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**PROJECT LOCATION MAP**

**FIGURE 1**

Traffic Technical Memorandum





February 2007 Aerial Photos

**SR 54 PD&E Study**  
 From Curley Road to Morris Bridge Road  
 Pasco County, Florida  
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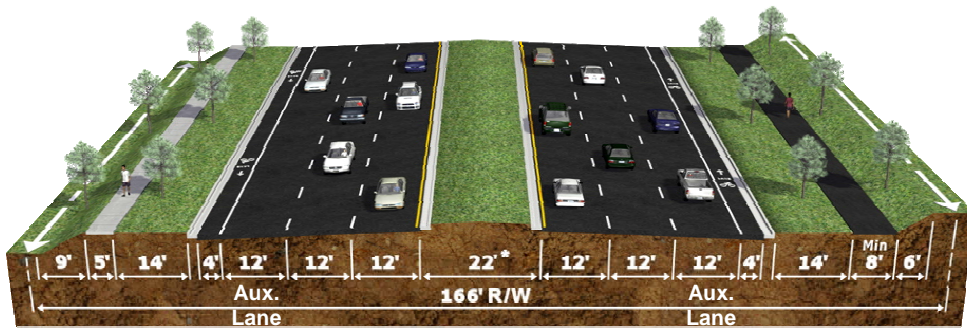
**AREA AERIAL PHOTOGRAPH**

**FIGURE 2**

Traffic Technical Memorandum



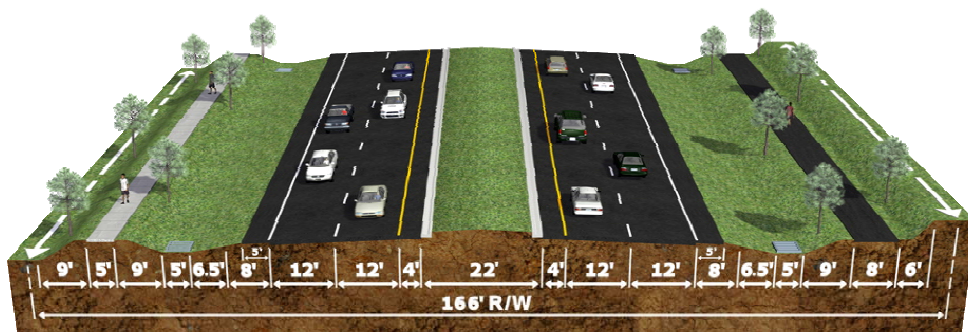
(Looking east for all sections)



**Four-Lane Divided with Auxiliary Lanes Urban Typical Section**

From Curley Road to Foxwood Blvd

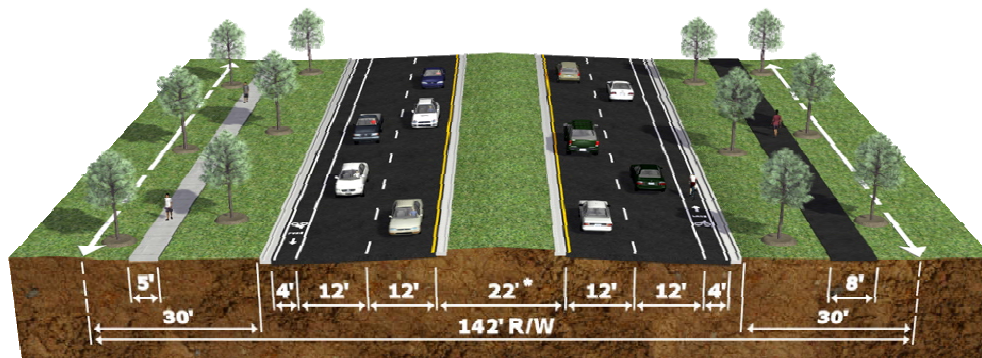
Design Speed = 45 mph



**Four-Lane Divided Suburban Typical Section**

From Foxwood Blvd to Linda Drive

Design Speed = 55 mph



**Four-Lane Divided Urban Typical Section**

From Linda Drive to Morris Bridge Road

Design Speed = 45 mph

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

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**SR 54 PD&E Study**

From Curley Road to Morris Bridge Road  
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**SR 54 Proposed Typical Sections  
(Looking East)**

**Figure 3**



## SECTION 3 – EXISTING CONDITIONS & TRAFFIC

### 3.1 Roadway Characteristics

The existing roadway is a two-lane, mostly undivided roadway within the study limits of the proposed project. SR 54 from Curley Road to Morris Bridge Road is currently classified as an “Urban Principal Arterial Other” from west of the project limits to Smith Rd and from west of New River to east of the project limits. The roadway is classified as a “Rural Principal Arterial Other” from Smith Rd to west of New River according to the FHWA 2000 Urban Boundaries and Functional Classification Map. Signalized intersections exist at the intersections of SR 54 at Curley Road, SR 54 at Meadow Pointe Boulevard and SR 54 at Morris Bridge Road. The speed limit on SR 54 varies from 50 to 55 miles per hour. There are 5-foot paved shoulders for the entire length of the project. Existing geometry at the signalized and unsignalized intersections is shown in **Figure 4**.

### 3.2 Traffic Characteristics

Area-wide traffic counts for this part of Pasco County are shown in **Figure 5**. Traffic counts outside of the immediate study area were obtained from the FDOT 2005 Florida Traffic Information DVD. The traffic counts are presented in Annual Average Daily Traffic (AADT) format.

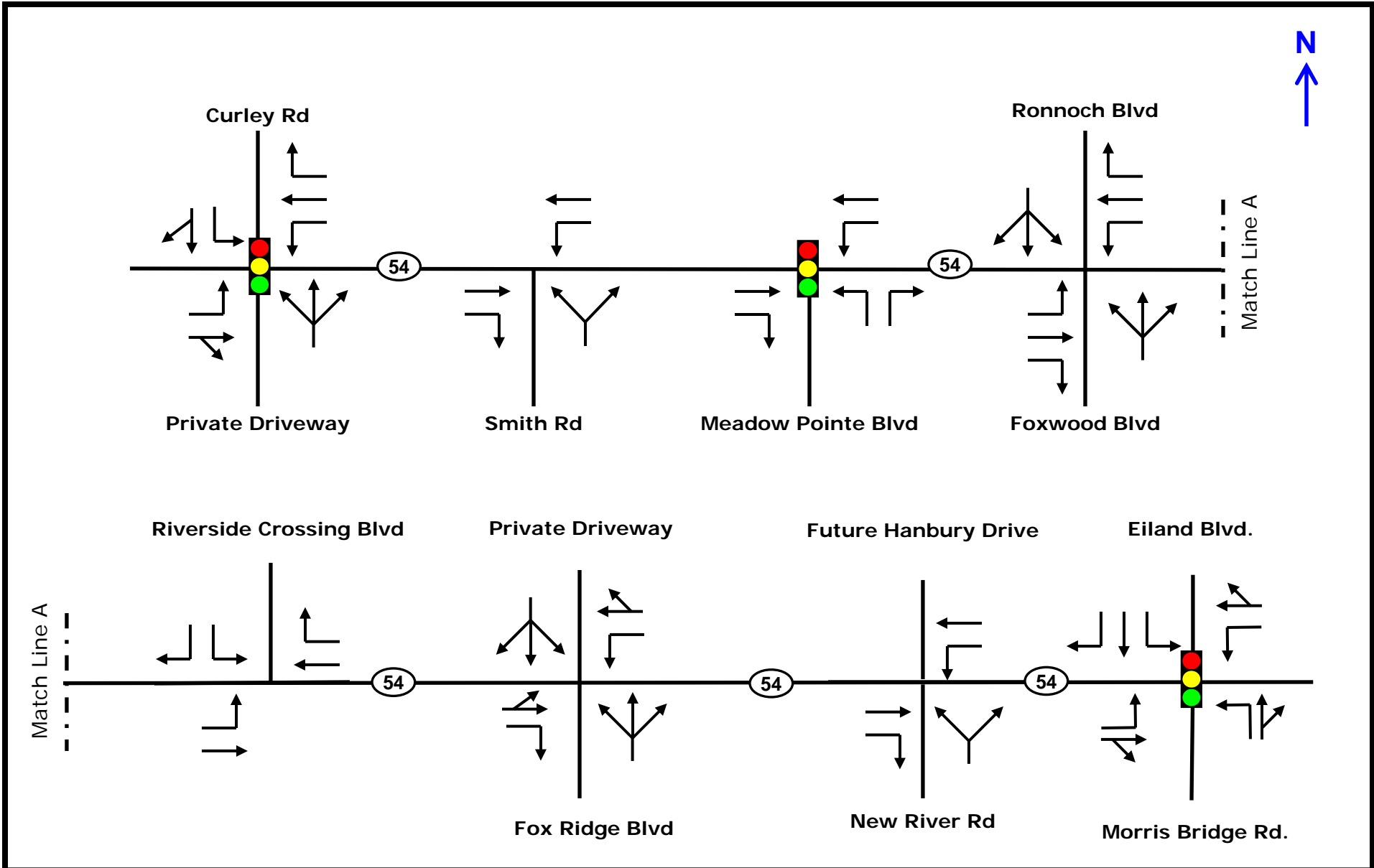
#### 3.2.1 Existing Approach Counts

Approach counts were collected for a consecutive 72-hour period from Tuesday May 23 thru Thursday May 26, 2006 as part of this traffic study. These raw counts were adjusted for seasonal variation using a seasonal adjustment factor and an axle-adjustment factor. The adjustment factors that were used are shown in **Table 2** below.

**Table 2: Traffic Count Adjustment Factors**

Intersection	Seasonal Adjustment Factor	Axle Adjustment Factor
All Intersections	1.00	0.98

The seasonal and axle adjustment factors were applied to the raw traffic counts (as determined by the week of the year the raw count was taken) to adjust the traffic counts to AADTs.



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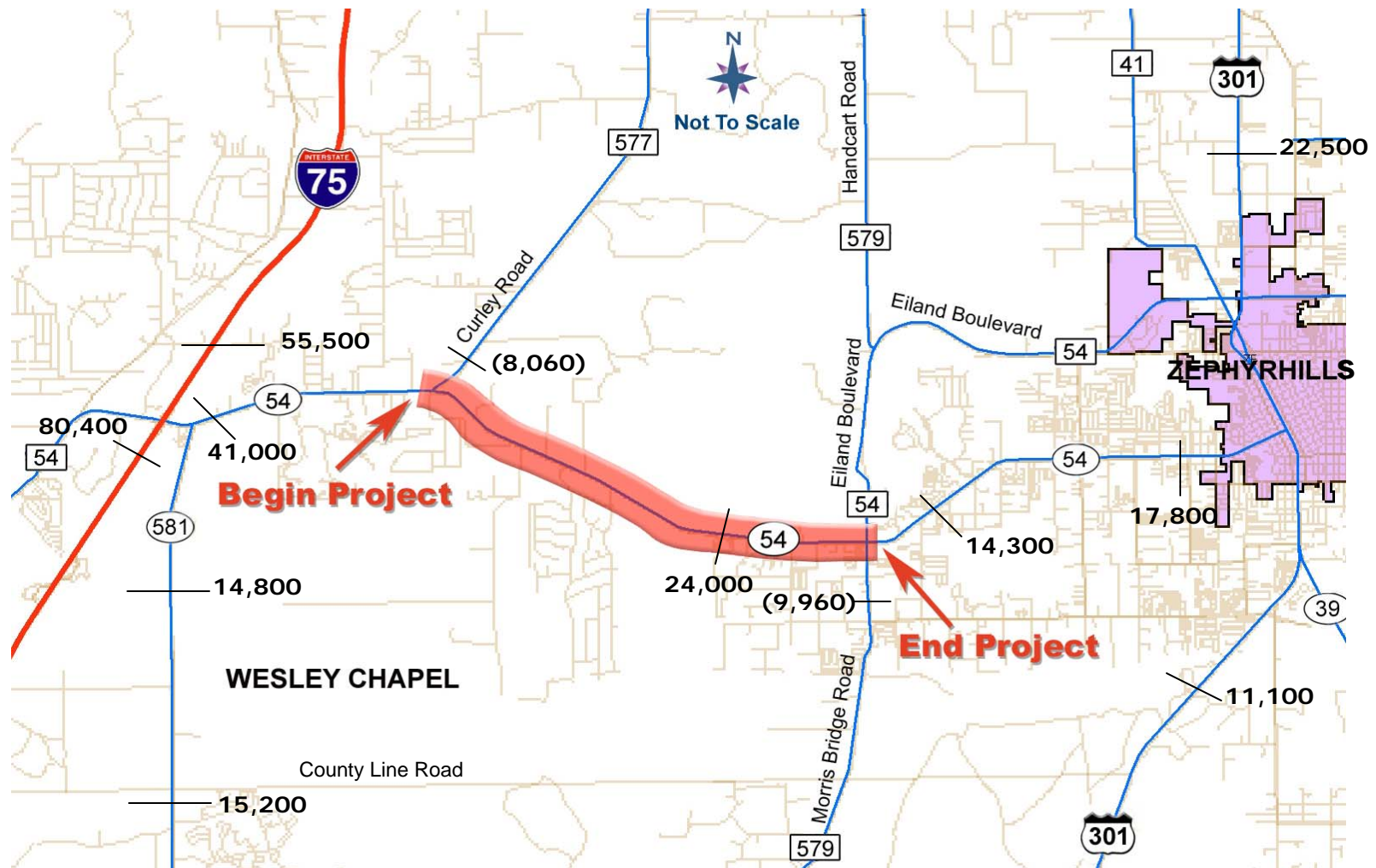
**SR 54 EXISTING INTERSECTION LANE GEOMETRY**

**FIGURE 4**



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XXX = AADT From FDOT 2005 Florida Traffic Information DVD

(XXX) = 2007 Traffic Counts from Pasco County

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**SR 54 PD&E Study**

From Curley Road to Morris Bridge Road  
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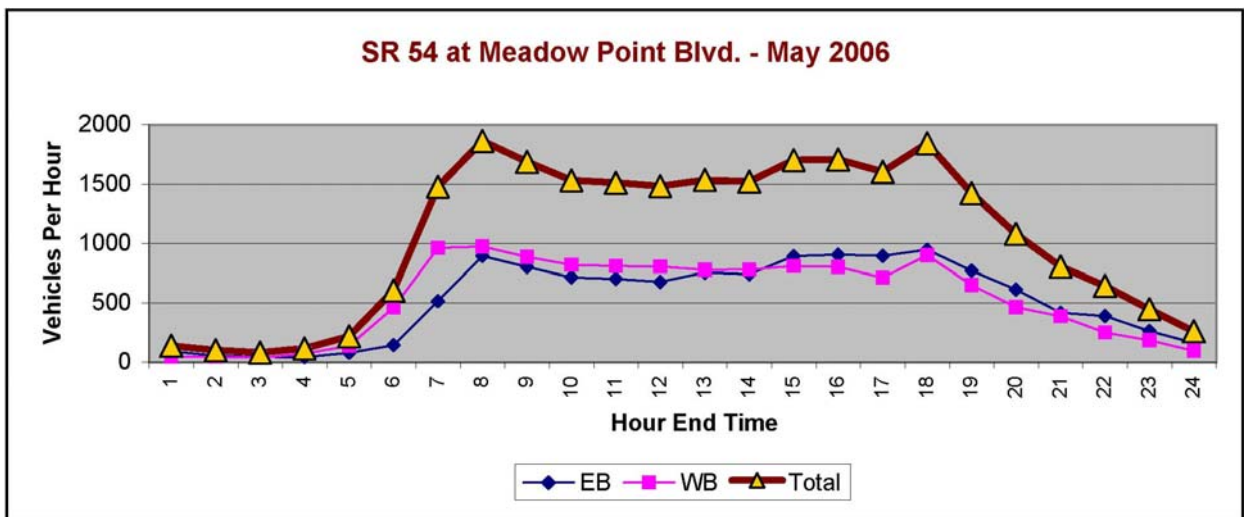
**EXISTING AREA-WIDE TRAFFIC COUNTS**

**FIGURE 5**

Traffic Technical Memorandum



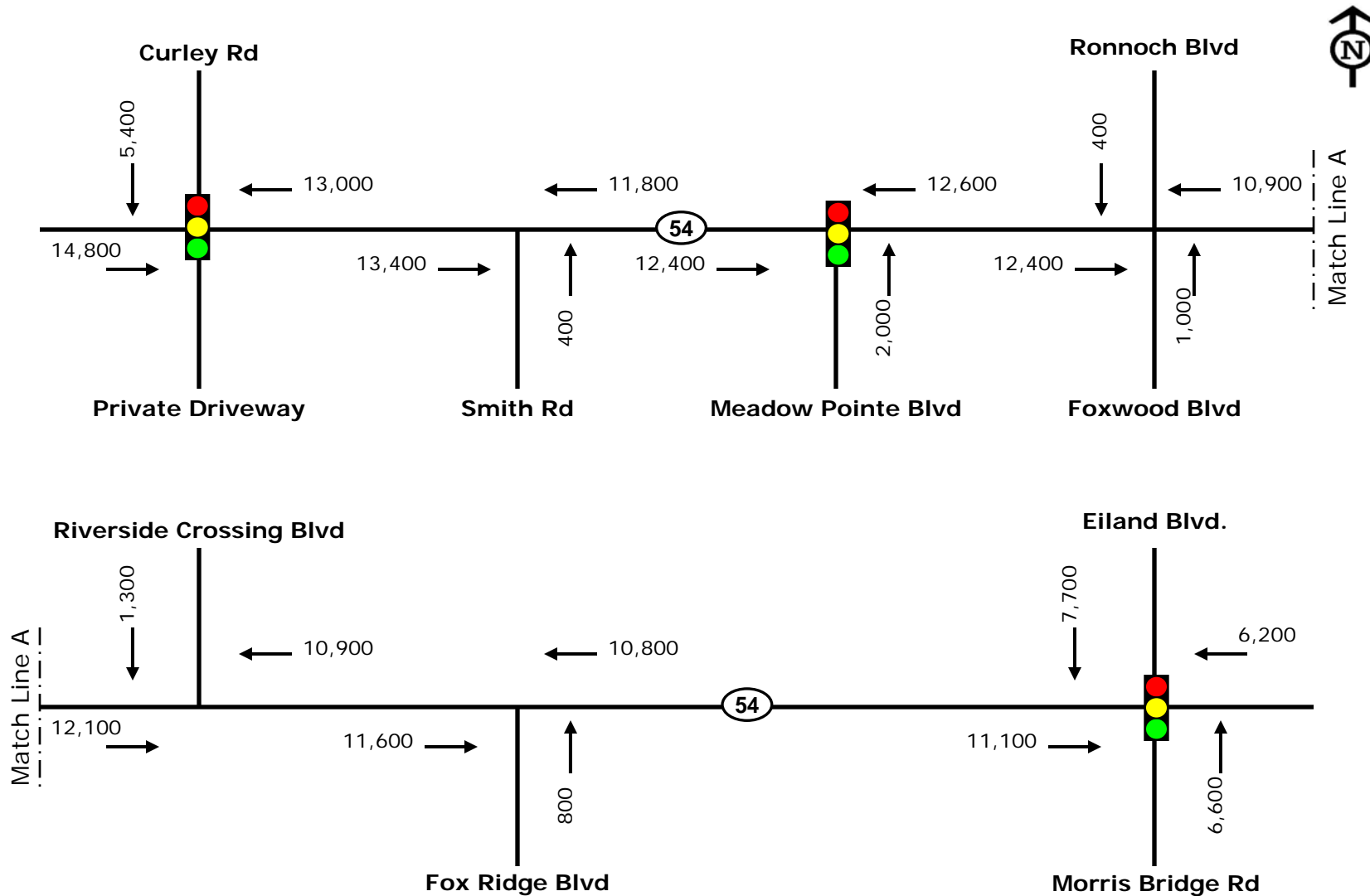
Existing time-of-day variation in traffic on SR 54 is illustrated in **Figure 6**. After traffic volumes build up to the a.m. peak period, they continue to stay heavy throughout most of the day, after which they gradually drop off following the p.m. peak period. This heavier mid-day traffic pattern may be due to the extreme traffic congestion which occurs on SR 54 between I-75 and Curley Road. Motorists appear to be making a higher percentage of their trips “off-peak” in order to avoid the extreme peak period congestion which occurs to the west of Curley Road. In addition, Zephyrhills is a primary origin and destination for many trips to and from populated areas of west Pasco County and the Tampa urban area.



**Figure 6 – Time of Day Variation in Traffic on SR 54**

**Figure 7** graphically shows all of the 2006 machine traffic counts and the estimated AADT. These machine counts are summarized in **Table 3**. The machine count printouts are included in **Appendix A**. The overall average a.m. peak hour occurs from 7:00 to 8:00 a.m., and the p.m. peak hour occurs from 5:00 to 6:00 p.m. Traffic is generally heavier westbound in the morning (to Interstate 75) and reverses peak direction in the afternoon.





**SR 54 PD&E Study**

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**YEAR 2006 APPROACH AADT VOLUMES (ADJUSTED)**

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**FIGURE 7**

Traffic Technical Memorandum



**Table 3  
Existing Approach AADT Volumes (Adjusted)**

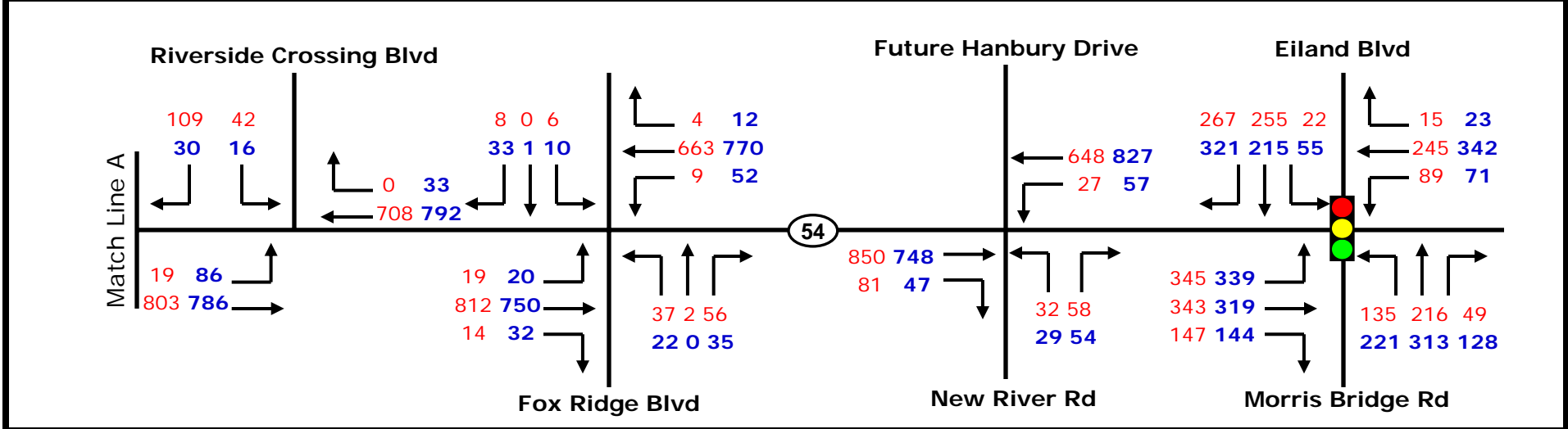
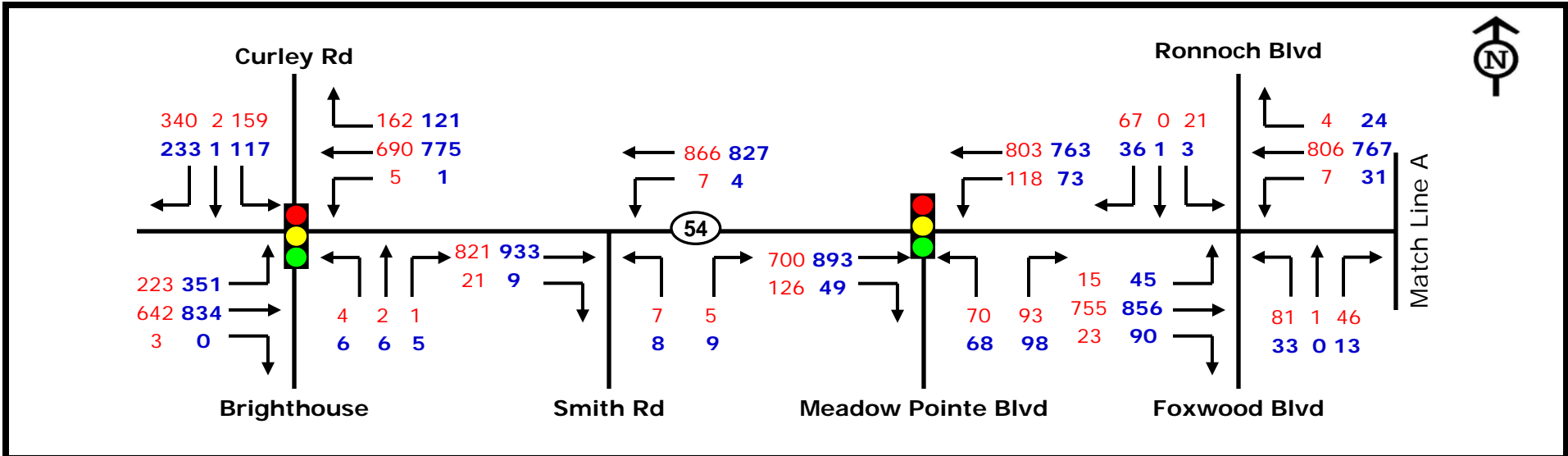
INTERSECTION	AADT APPROACH VOLUMES				Intersection Total
	SOUTH BOUND	WEST BOUND	NORTH BOUND	EAST BOUND	
SR 54 at Curley Road	5,400	13,000		14,800	33,200
SR 54 at Smith Road		11,800	400	13,400	25,600
SR 54 at Meadow Pointe Blvd		12,600	2,000	12,400	27,000
SR 54 at Foxwood Boulevard	400	10,900	1,000	12,400	24,700
SR 54 at Riverside Crossing Blvd	1,300	10,900		12,100	24,300
SR 54 at Fox Ridge Boulevard		10,800	800	11,600	23,200
SR 54 at Morris Bridge Road	7,700	6,200	6,600	11,100	31,600

### 3.2.2 Existing Intersection Turning Volumes

Manual 8-hour intersection Turning Movement Counts (TMCs) were collected in May 2006 at the following intersections:

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

The counts were collected for the AM peak period (7 a.m. to 10 a.m.), the mid-day period (11 a.m. to 1 p.m.) and the PM peak period (3 p.m. to 6 p.m.). The detail count data along with summaries are included in **Appendix C**. The AM and PM peak hour turning movement counts are shown graphically in **Figure 8**.



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

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

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**AM & PM PEAK HOUR ADJUSTED EXISTING VOLUMES FOR 2006**

**FIGURE 8**



### 3.3 Existing Levels of Service

Existing calculated Levels Of Service (LOS) for the signalized and unsignalized intersections within the study limits are shown in **Table 4**. Intersection Level of Service was calculated based on observed turning movement counts. Arterial LOS was calculated using two-way peak hour volumes. Two of the intersections are currently signalized, including SR 54 at Meadow Point Boulevard and SR 54 at Morris Bridge Road. SR 54 at Curley Road is west of the expected limits of construction for this project, and it is being reconstructed by Pasco County as part of the project to the west of this project. Levels of service were calculated using the Highway Capacity Software (HCS+, version 5.2) for unsignalized and signalized intersection and SYNCHRO version 6.

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

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

**Table 4  
Existing (2006) Levels of Service**

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

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

<sup>2</sup>The LOS results are based on HighPlan 2007. The values in parenthesis are average travel speed.

## **SECTION 4 – DEVELOPMENT OF TRAFFIC FORECASTS**

### **4.1 Introduction**

The methodology followed for forecasting future traffic for SR 54 is consistent with the FDOT published procedures for developing design traffic in the Project Traffic Forecasting Handbook, March 2006.

### **4.2 Design Year**

For traffic analysis purposes the following traffic years were used:

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

The No-Build alternative assumes the existing two-lane roadway will remain in place. For the No-Build Alternative, the road improvements currently programmed in the State's Work Program and the Pasco and Hillsborough County Transportation Improvement Programs (TIP) as well as Long Range Transportation Plans (LRTP) are included. Of significance, the No-Build Alternative includes the West Zephyrhills Bypass extension, a road parallel to this section of SR 54 (between Curley Road and Handcart Road connecting with Eiland Road) as well as the Chancey Road extension. In addition, SR 56 is planned to be extended eastward from SR 581 to US 301.

### **4.3 Recommended Traffic Design Factors (K<sub>30</sub>, D<sub>30</sub>, T<sub>24</sub> & PHF)**

The FDOT District 7 Planning staff-approved K<sub>30</sub>, D<sub>30</sub>, and T<sub>24</sub> factors used in this study are as follows: K<sub>30</sub> = 9.5 percent; D<sub>30</sub> = 57.0 percent; and T<sub>24</sub> = 7.2 percent. This approval is documented in **Appendix D**.

#### 4.3.1 Design Hour Factor ( $K_{30}$ )

The K (or Design Hour) Factor is of major importance in the determination of Design Hour Volumes (DHV). It is defined as the ratio of DHV to the Annual Average Daily Traffic (AADT) occurring during the 30<sup>th</sup> highest hour of the year.

The  $K_{30}$  and related DHV are influenced by the timing of trips during the day.  $K_{30}$  will be lower on roads which serve many trip making purposes distributed during the day. Roads which serve few purposes will normally experience high hourly variance. **Table 5** shows the recommended  $K_{30}$  values to be used (if telemetry sites on roads similar to a project are unavailable to estimate  $K_{30}$ ) for project traffic forecasting.

**Table 5**  
**Recommended  $K_{30}$ ,  $D_{30}$  and  $T_{24}$  for Traffic Forecasting**

Year	$K_{30}$	$D_{30}$	$T_{24}$
2001	9.72	57.10	8.3
2002	9.60	57.88	7.2
2003	9.32	56.84	7.0
2004	9.45	57.88	6.7
2005	9.42	55.15	6.7
<b>Average</b>	<b>9.50</b>	<b>56.97</b>	<b>7.2</b>

Source: Florida Traffic Information Database for Traffic Count Stations 0026, 5102, 5103, 5115 and 5116 along SR 54 within Pasco County.

#### 4.3.2 Directional Factor ( $D_{30}$ )

The directional “D Factor” is defined as the percentage of design hour traffic in the dominant direction of flow. The directional distribution factor or  $D_{30}$ , is based on the 200th Highest Hour Traffic Count Report and is referred to as  $D_{30}$ . The  $D_{30}$  values are available from FDOT’s FTI databases. If traffic counts for the project site are not available, 24 (urban) or 48 (rural) hour classification counts should be obtained to determine hourly traffic volume distribution. This will allow the identification of the peak hour of the day and peak direction during the peak hour. The recommended  $D_{30}$  value is shown in **Table 5**.

### 4.3.3 Design Hour Trucks (DHT)

Vehicle classification counts were collected and summarized from 2001 to 2005 and presented as a percentage of daily traffic. These “truck” counts included trucks as well as buses. The truck ( $T_{24}$ ) factor recommended for the SR 54 corridor is 7.2 percent as shown in **Table 5**. Design hour trucks (DHT) is  $\frac{1}{2}$  the daily T factor or 3.6 percent.

### 4.3.4 Peak Hour Factor

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

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

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

## 4.4 Pasco County MPO’s 2025 Long-Range Transportation Plan

The Pasco County Metropolitan Planning Organization’s (MPO) adopted Year 2025 Cost Affordable Long-Range Transportation Plan (LRTP) was used for the analysis of the opening year 2010 traffic. The roadway network shows the “cost-affordable” improvements that have been adopted to serve travel needs through year 2025. The LRTP is illustrated in **Figure 9**. The adopted plan includes these projects that are in or near this project’s study area:

- Extend the Zephyrhills Bypass to SR 54
- Extend Chancey Road to US 301
- Widen Meadow Point Boulevard to 4-Lanes
- Widen SR 56 to 4-Lanes and extend it eastward to US 301



- Extend New River Blvd north of SR 54 and construct Wyndfields Blvd (“Stanley” on the map figure) south of SR 54
- Widen SR 54 west of Curley Road to 6-Lanes

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

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

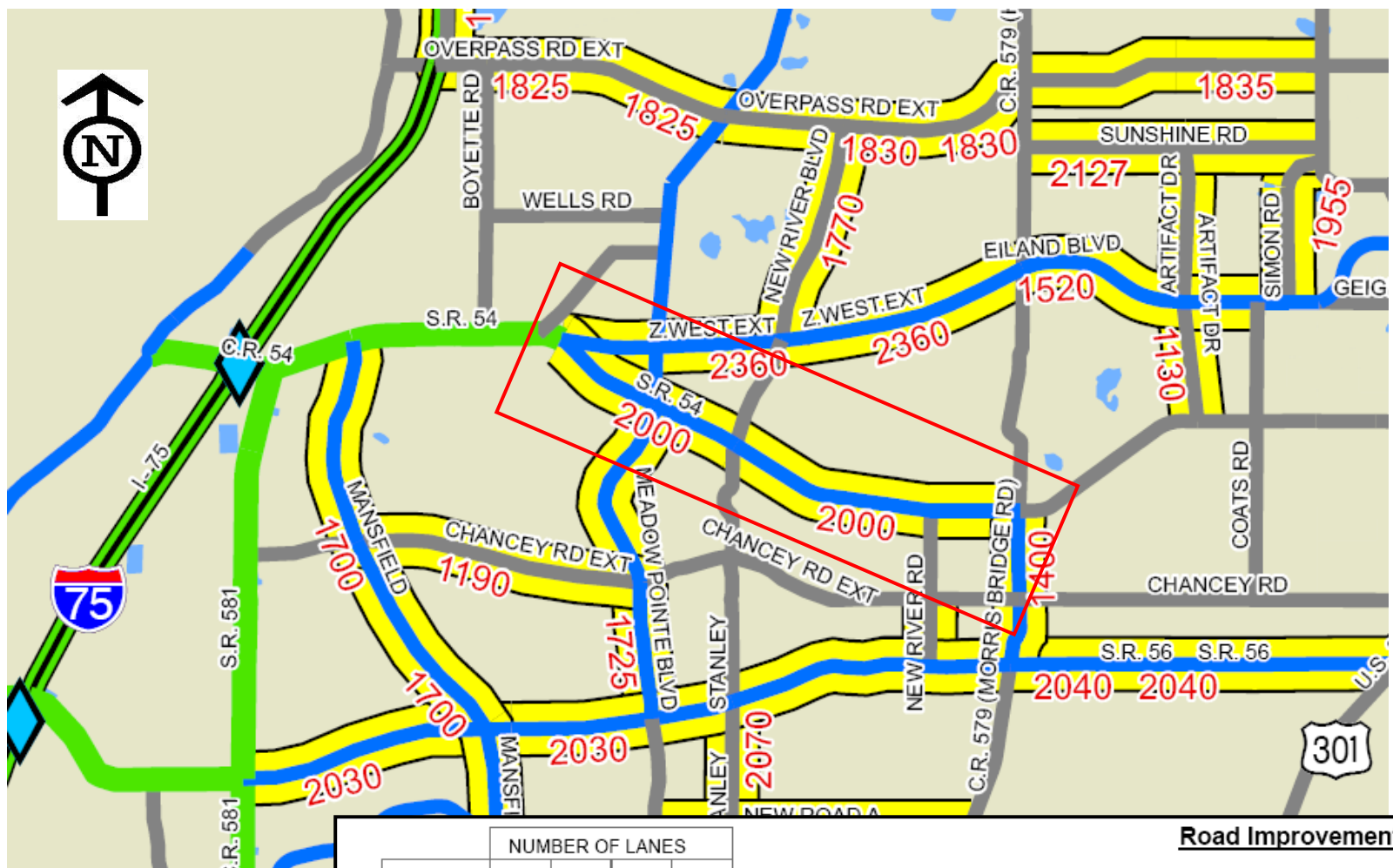
**TABLE 6  
Roadway Improvements Timetable**

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

(Table continued on next page)

**Table 6 (Continued)**

<b>Roadway</b>	<b>Segment</b>	<b>Road Improvement</b>	<b>Construction Time Frame</b>
Porter Blvd.	SR 56 – SR 54	4-lanes	2016
Chancey Rd.	SR 581 – Porter Blvd	4-lanes	2016
Chancey Rd.	Meadow Point Blvd – Morris Bridge Rd.	2-lanes	2016
Chancey Rd.	Meadow Point Blvd – Morris Bridge Rd.	4-lanes	2030
Mansfield Blvd.	SR 56 – School Entrance	4-lanes	2016
Wynfields Blvd.	SR 56 – Chancey Rd. Extension	2-lanes	2016
Overpass Rd.	Old Pasco Rd. – Watergrass Entrance.	4-lanes	2016
Overpass Rd.	Watergrass Entrance – Fort King Rd.	4-lanes	2030
Clinton Ave.	Curley Rd. – SR 52	2-lanes	2016



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

**Road Improvements**

◆ Existing Interchange      ■■■■ Add Lanes

▭ Study Area

Source: Pasco County MPO  
LRTP, Map 3-7

**SR 54 PD&E Study**  
From Curley Road to Morris Bridge Road  
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**PASCO COUNTY MPO'S YEAR 2025 LRTP COST AFFORDABLE PLAN (2016-2025)**

**FIGURE 9**

Traffic Technical Memorandum



#### **4.5 Regional Transportation Analysis Model Runs**

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

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

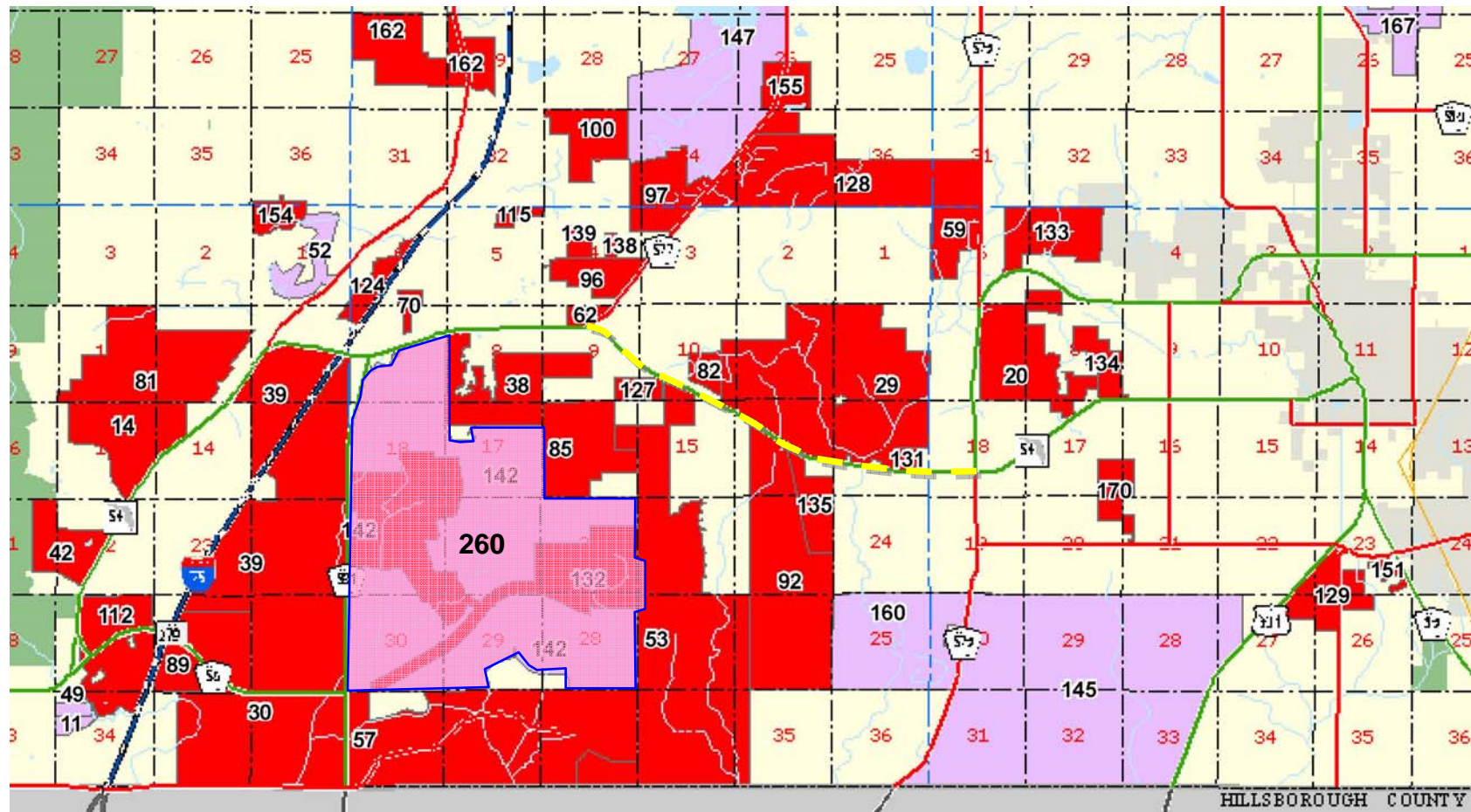
- SR 52 (north),
- SR 56 (south),
- US 301 (east), and
- US 41 (west).

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

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

area, their socio-economic data is based on their phasing schedules. **Figure 10** shows the location of the DRIs (as well as MPUDs).

The DRIs and MPUDs land use projections are based on a linear interpolation from the existing development level until buildout. A buildout of 2030 was assumed for all approved and proposed development. All centroid connections in the model were also checked for reasonableness and adjusted to reflect the proper loading points for each development. The model was then executed for all alternatives under study and the future year travel demand was identified.



**Selected DRIs and MPUDs Near Study Area**

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

**Legend**

- Approved
- Proposed
- Study Limits

Pasco County, Florida  
 Geographic Information Systems (GIS)  
 Engineering Services  
 Survey Department

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

Growth Management  
 Revised: May 18, 2007

©\work\enr\growth\map\GIS\MPUDs\ashton.mxd

**SR 54 PD&E Study**

From Curley Road to Morris Bridge Road  
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**DRI's and MPUD's Near the Study Area**

**FIGURE 10**

Traffic Technical Memorandum



#### **4.6 Future Year AADT and Directional Design Hour Volumes**

The Annual Average Daily Traffic (AADT) volumes were developed using the following procedure:

1. An estimate of the land use data (ZDATA) was obtained by interpolating between the 2000 and 2025 socio-economic data sets for each of the future years (2010, 2020, and 2030). Year 2030 estimates were based on extrapolation of year 2025 data.
2. A review of the other DRIs within the study area was conducted to determine the level of development anticipated for the various future years. For those DRIs that are currently substantially developed, a buildout corresponding with the DRI phasing schedule was assumed.
3. The TBRPM roadway network was updated for the new roadway improvements anticipated to be constructed in the study area for each of the future years based on committed improvements, developer-funded projects, engineering judgment, and discussions with Pasco County and FDOT District 7.
4. The TBRPM corresponding with the ZDATA and roadway network improvements anticipated for each of the future years was executed. Peak Season Weekday Average Daily Traffic (PSWADT) volumes were converted to AADT volumes using a Model Output Conversion Factor (MOCF) of 0.96.
5. The TBRPM for each of the future year's forecast volumes was checked for reasonableness with appropriate adjustments to account for the model's assignment of future traffic when compared with historical traffic trends.

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

(FDOT District 7, Wal-Mart, Wiregrass Ranch, Goodman and Pasco County) that the traffic be updated accordingly. Updates included the following specific tasks:

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

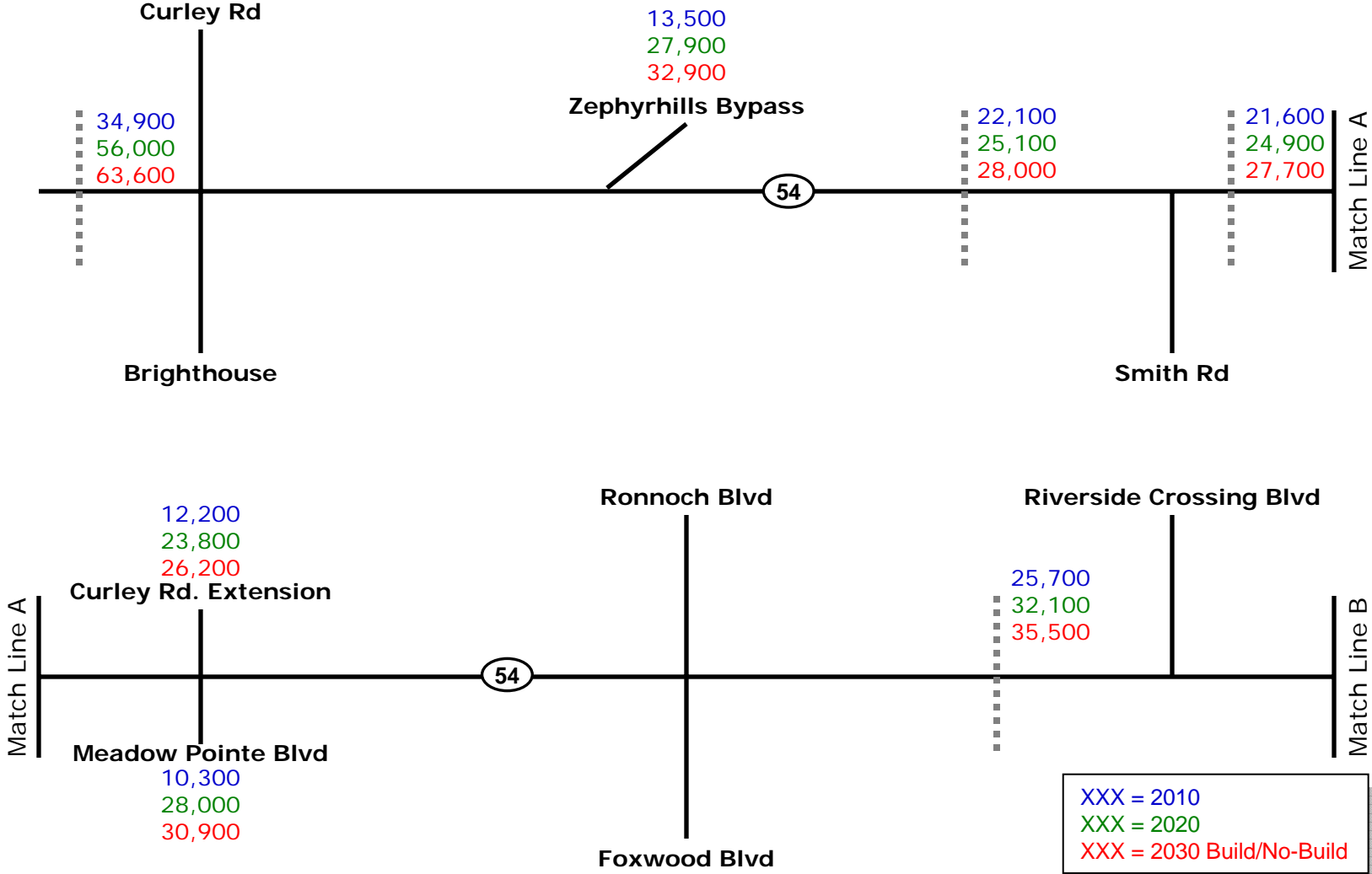


For the future No-Build Alternative, the road improvements currently programmed in the state's Work Program and the Pasco and Hillsborough County Transportation Improvement Programs are included. Of significance, the No-Build Alternative includes the Zephyrhills By-Pass, a parallel arterial to the PD&E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

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

The AADT volumes for the analysis years 2010, 2020, and 2030 are illustrated in **Figures 11-A** and **11-B**. The predicted traffic growth trends by segment for the project corridor are shown in **Figure 12**.

NOT TO SCALE



XXX = 2010  
 XXX = 2020  
 XXX = 2030 Build/No-Build

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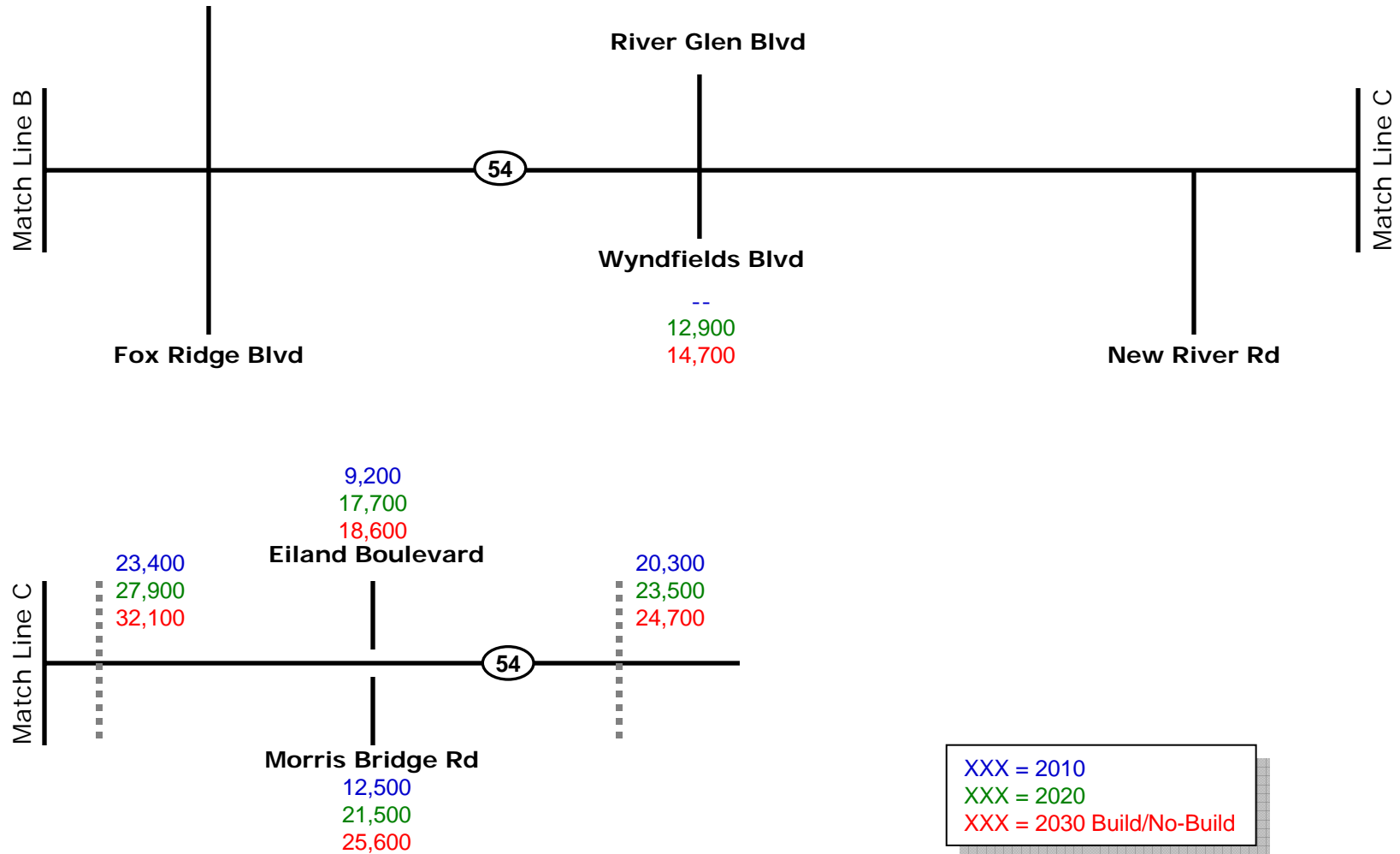
**FUTURE YEAR (2010, 2020, & 2030)**  
**PROJECTED AADTS**

**FIGURE 11-A**



Traffic Technical Memorandum

NOT TO SCALE



XXX = 2010  
 XXX = 2020  
 XXX = 2030 Build/No-Build

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**SR 54 PD&E Study**

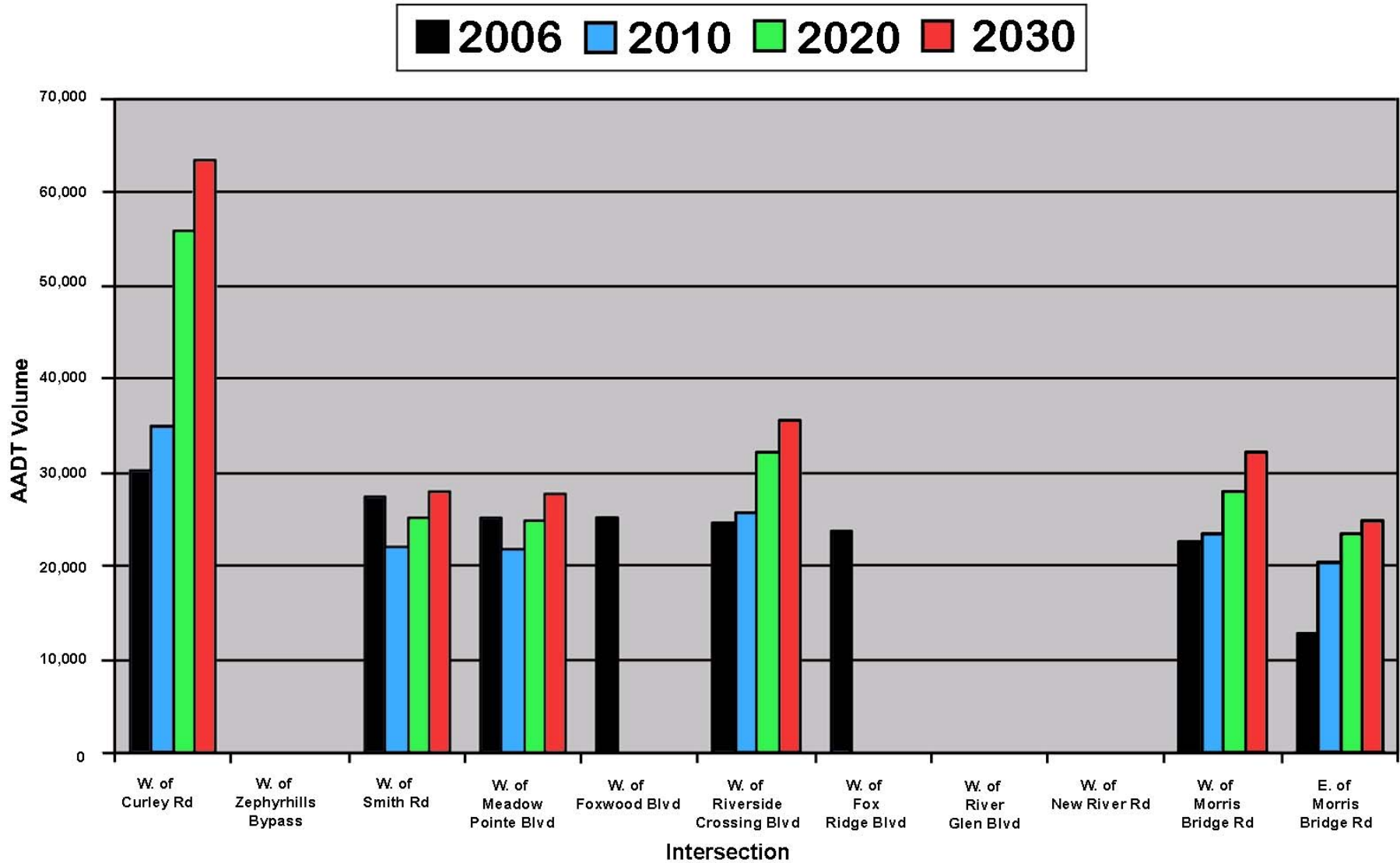
From Curley Road to Morris Bridge Road  
Pasco County, Florida  
WPI Segment No. 416561-1

**FUTURE YEAR (2010, 2020, & 2030)  
PROJECTED AADTS**

**FIGURE 11-B**

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**SR 54 PD&E Study**

From Curley Road to Morris Bridge Road  
Pasco County, Florida  
WPI Segment No. 416561-1

**SR 54 AADT FOR ALL YEARS**

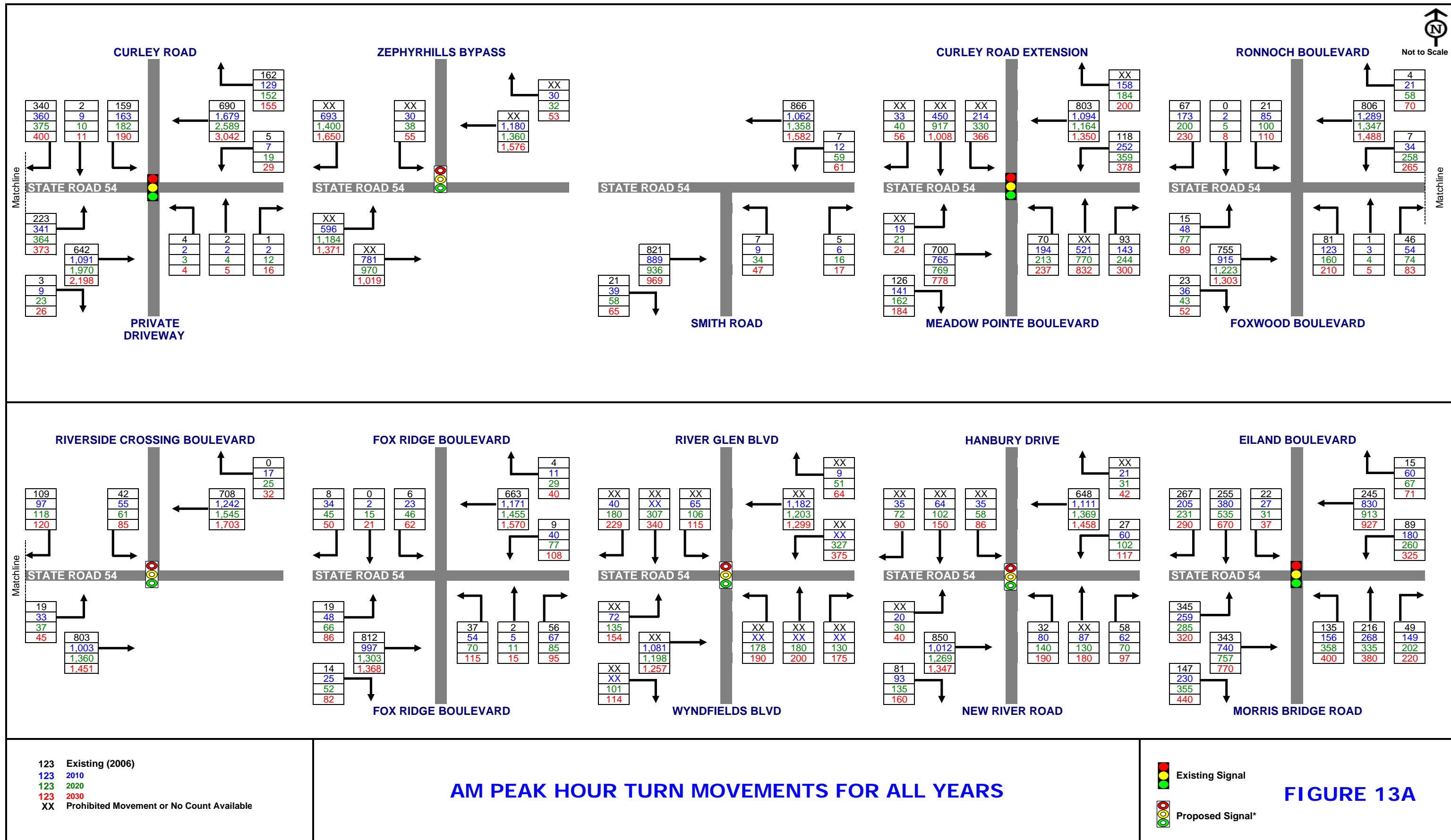
**FIGURE 12**

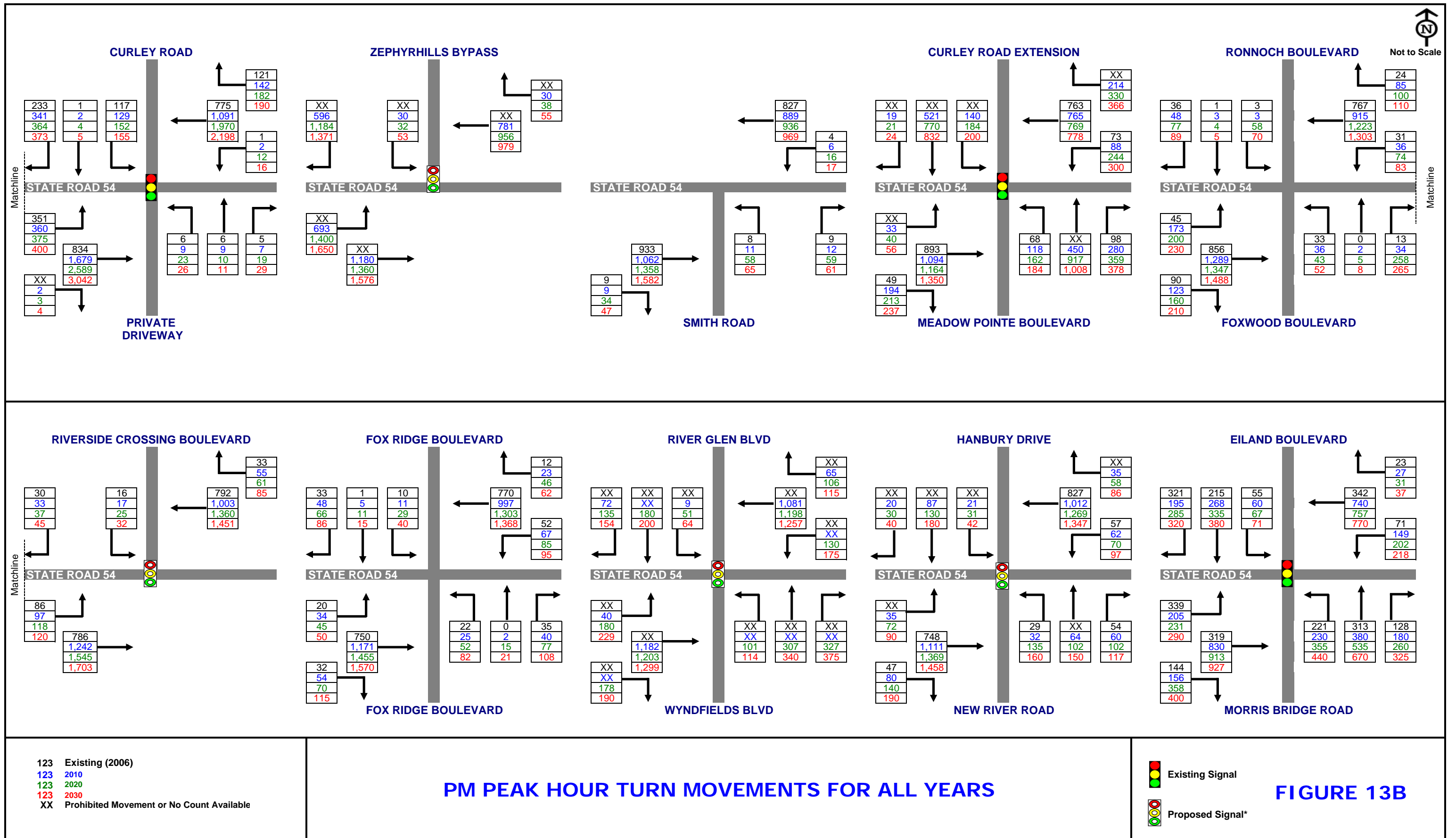
Traffic Technical Memorandum

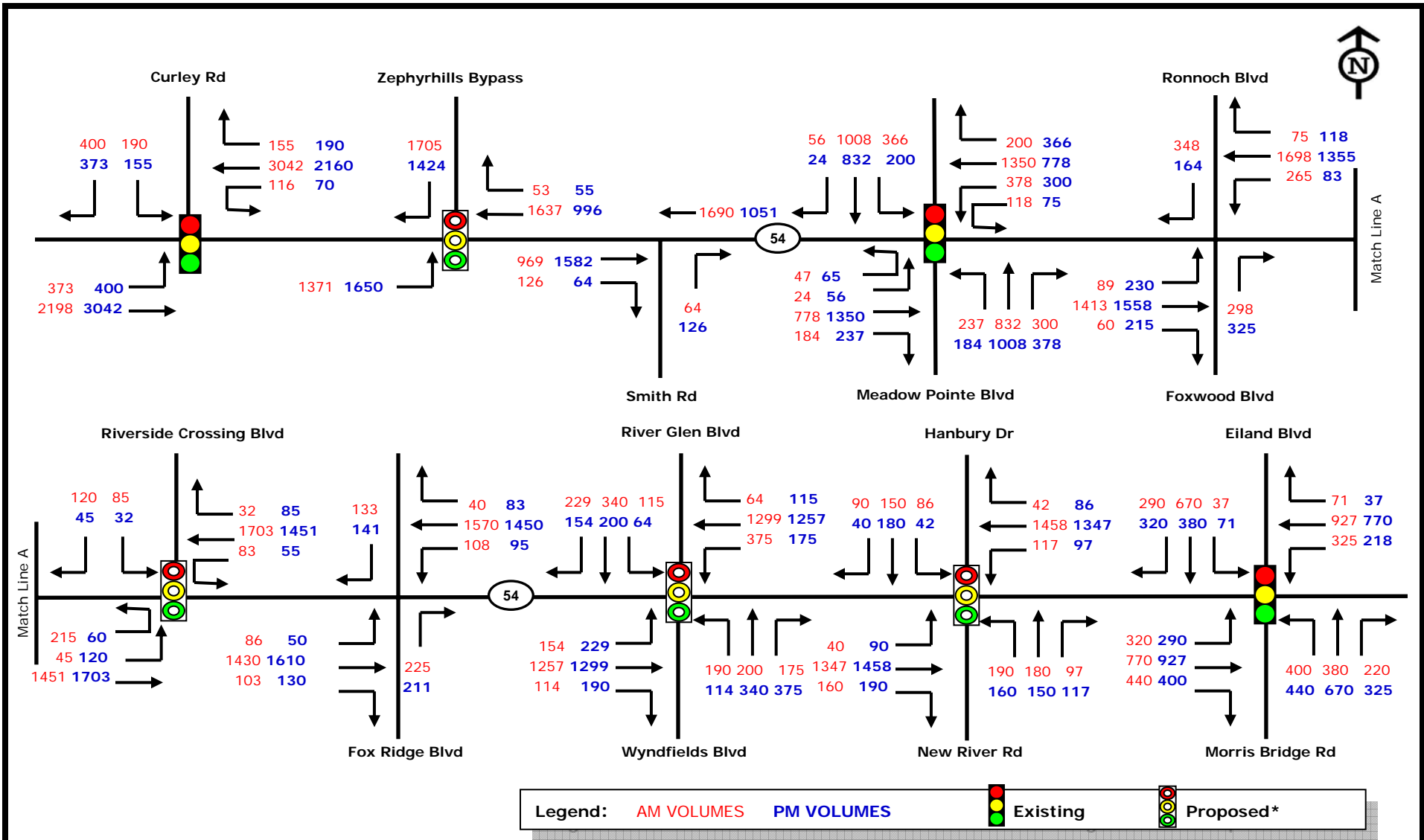


Directional Design Hour Volumes (DDHV) were calculated using the previously recommended K and D Factors. The  $K_{30}$ -factor of 9.5 percent was derived from the averaging the count stations (stations 26, 5102, 5103, 5115, and 5116) along SR 54 located within the PD&E and Traffic Study project limits. An overall  $D_{30}$ -factor of 57 percent is assumed for the future years. The directional distribution for each of the future years is based on the percentage of the turning movements for each of the existing intersections along SR 54 with the project limits. For new roadways, the directional distribution is based on the proximity of existing roadway turning movement percentages for the new roadway's forecasted AADT volume. **Figure 13 (sheets A and B)** illustrate the peak-hour volumes for the all analysis years.

In addition, for the design year build alternative, manual adjustments were made to the DDHV to account for the effects of proposed raised medians, directional median openings, and full median openings. Tentative locations of these features have been established based on the roadway's Class 3 access management classification, which requires ¼-mile spacing between directional median openings and ½-mile spacing between full median openings or traffic signals. At intersections proposed to have either no median opening or directional median openings only, side-street motorists will have to make a right turn and then a U-turn if they want to make a left turn. These manual adjustments to the DDHV are shown in **Figure 14**.







Source: URS (Adjusted for the directional median openings)

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

**SR 54 PD&E Study**

From Curley Road to Morris Bridge Road  
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**2030 Peak Hour Turning Volumes Adjusted For  
Proposed Median Modifications**

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**Figure 14**

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## SECTION 5 – DESIGN YEAR PROJECTED CONDITIONS

### 5.1 Improvement Alternatives

Basic Build Alternatives considered included mainline widening consistent with the MPO's 2025 Needs Plan, which shows a 4 lane-divided roadway on SR 54 between Curley Road and Morris Bridge Road. In addition, intersection improvements were considered at all major intersections as well as a 4-lanes with 2 auxiliary lanes mainline west of Meadow Pointe Boulevard. In addition to the Build Alternatives, a year 2030 No-Build alternative was evaluated which assumes maintaining the existing two-lane condition along SR 54 throughout the Study limits.

### 5.2 Future Levels of Service

#### 5.2.1 No-Build Alternative Capacity Analysis

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

For the overall arterial, level of service (LOS) estimates for the No-Build Alternative were developed using FDOT's ArtPlan and HighPlan 2007 software. The results of the analysis are shown in **Table 7**. Based on this methodology, the *uninterrupted flow* segments are expected to be operating at LOS F by year 2021, if the roadway is not widened to at least 4 through lanes. The segments at the west and east ends, which include signalized intersections (*interrupted flow*), are already operating at LOS F (based on ArtPlan), and peak hour travel speeds are expected to continue to decline as the traffic volumes continue to increase. Traffic flow under LOS F conditions will be mostly "stop and go" for the entire peak period, and under these conditions, speeds are difficult to predict.

**Table 7. Predicted Segment Levels of Service for the No-Build Alternative**

#	<b>SR 54 Segment</b>	AADT Projections			<b>Distances</b>
		2030 Build		<b>Difference</b>	
		<b>2006 ("Baseline")</b>	<b>or No-Build</b>		
1	Curley to 0.25 mi East of Meadow Pointe Blvd	25,300	27,900	2,600	1.4 mi.
2	<b>0.25 mi East of Meadow Pointe Blvd to Riverside Crossing</b>	<b>24,000</b>	<b>35,500</b>	<b>11,500</b>	<b>0.324</b> mi.
3	<b>Riverside Crossing Blvd to 0.25 mi west of Morris Bridge Rd</b>	<b>21,900</b>	<b>32,100</b>	<b>10,200</b>	<b>2.50</b> mi.
	<b>Weighted Average for Segments 2 &amp; 3</b>	<b>22,141</b>	<b>32,490</b>	<b>10,349</b>	<b>2.82</b> mi.
4	0.25 mi. west of Morris Bridge Rd to 0.25 mi. east of Morris Bridge Rd	17,300	28,400	11,100	0.5 mi. 4.72 mi.

To estimate the No-Build volumes for 2010, 2020, etc., a linear interpolation between 2005 ("existing") volumes and the 2030 No-Build volumes was made, as shown below.

Year	Segments 2 and 3					
	Segment 1	Weighted Average	Average	From HighPlan		Segment 4
	LOS*			Estimated	AADT	Avg. Spd
2006	F		22,141	36.9	D	F
2007	F		22,572	36.6	E	F
2008	F		23,003	36.3	E	F
2009	F		23,435	35.9	E	F
2010	F		23,866	35.6	E	F
2011	F		24,297	35.3	E	F
2012	F		24,728	34.9	E	F
2013	F		25,159	34.6	E	F
2014	F		25,591	34.2	E	F
2015	F		26,022	33.9	E	F
2016	F		26,453	33.6	E	F
2017	F		26,884	33.2	E	F
2018	F		27,316	32.9	E	F
2019	F		27,747	32.5	E	F
2020	F		28,178	32.2	E	F
2021	F		28,609	31.9	F	F
2022	F		29,040	31.6	F	F
2023	F		29,472	31.3	F	F
2024	F		29,903	31.0	F	F
2025	F		30,334	30.6	F	F
2026	F		30,765	30.3	F	F
2027	F		31,196	30.0	F	F
2028	F		31,628	29.7	F	F
2029	F		32,059	29.4	F	F
2030	F		32,490	29.1	F	F

\* LOS for Segments 1 and 4 estimated using FDOT's ArtPlan 2007 software.

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### 5.2.2 *Build Alternative Capacity Analysis*

Future projected LOS for the signalized and unsignalized intersections within the study limits are shown in **Table 6** based on the intersection laneage proposed in Section 5.3. The LOS results were determined from SYNCHRO (version 6) and the Highway Capacity Software (HCS+, version 5.2), based on the projected peak period directional design hour volumes (DDHV).

With the intersection laneage proposed (discussed in Section 5.3), all of the proposed signalized intersections are predicted to operate at LOS C or D in the a.m. and p.m. peak periods in the design year 2030. For the unsignalized intersections, the predicted side street LOS ranges from B to F; all three intersections are proposed to have left-turns prohibited from the side streets, due to access management requirements.

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

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

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

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

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

**Table 8 - Future Peak Hour Levels of Service**

2030 Build LOS and Delay (sec/vehicle)/ Arterial Speed (mph)										
Signalized Intersections (Existing & Future) <sup>1</sup>	AM					PM				
	LOS (Delay)					LOS (Delay)				
	EB	WB	NB	SB	Overall	EB	WB	NB	SB	Overall
SR 54 at:										
Zephyrhills Bypass Extension*	C (33.4)	D (44.4)	D (44.0)		D (41.1)	C (23.0)	C (27.3)	C (33.9)		C (27.2)
Meadow Pointe Blvd	D (53.8)	D (53.4)	D (45.7)	E (63.9)	D (54.3)	E (58.9)	D (46.9)	E (59.9)	D (51.4)	D (54.7) ***
Riverside Crossing Blvd*	C (34.8)	D (46.5)		D (36.7)	D (40.6)	D (36.6)	C (23.3)		C (34.3)	C (30.6)
River Glen**/Wyndfields Blvd*	E (62.4)	D (39.1)	E (64.8)	E (65.0)	D (53.9)	D (50.5)	D (46.8)	D (46.7)	D (40.1)	D (47.6)
Hanbury Drive/New River Road*	D (38.2)	D (52.9)	D (48.2)	D (47.0)	D (46.1)	D (47.3)	D (48.5)	D (51.1)	D (50.6)	D (48.4)
Morris Bridge Rd	D (43.8)	C (33.2)	D (46.3)	E (65.0)	D (45.7)	D (44.9)	D (43.3)	D (45.2)	D (46.1)	D (44.8)

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

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

<sup>1</sup>Results of signalized and unsignalized intersections were based on HCS+.

\*\*\*Table Revised 3/16/09

<sup>2</sup>Results of arterial analysis were from Synchro.

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

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

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

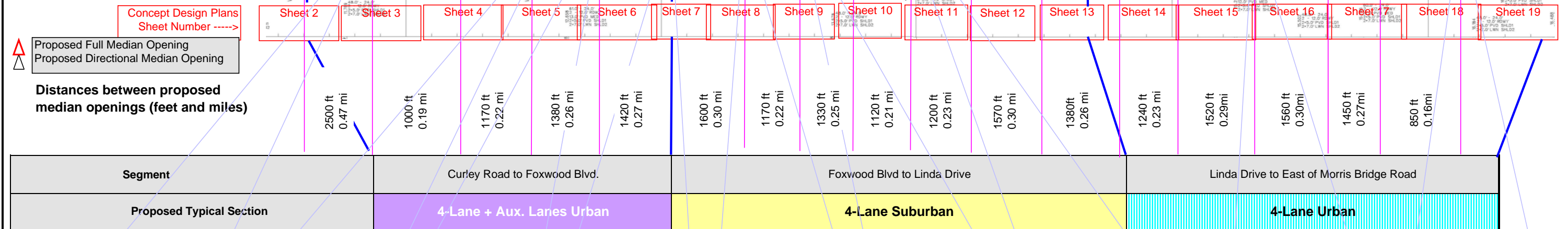
**Table 8** (above) also shows the overall projected *arterial* LOS for the 2030 Build Alternative. Arterial LOS was derived from SYNCHRO. For the year 2030 Build Alternative, the overall arterial peak period LOS is predicted to be LOS C for both directions for both peak periods, as shown in **Table 8**. The analysis excluded the intersection of existing Curley Road/SR 54, since that intersection falls outside the expected limits of construction for this project. Arterial analysis printouts are included at the end of **Appendix F**. At the west end of the project, widening to 4 lanes plus 2 auxiliary lanes will be needed by approximately year 2020, based on the future traffic projections and SYNCHRO analysis.

### **5.3 Intersection Geometric Recommendations**

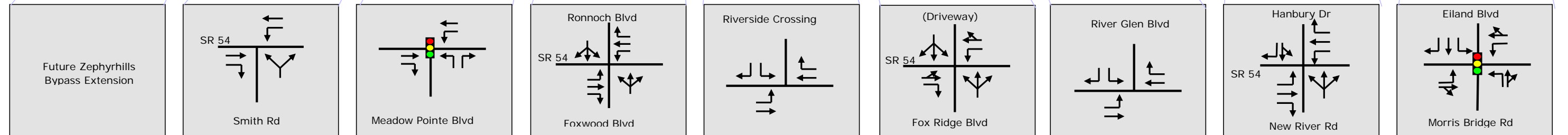
Future recommended laneage at major intersections is shown in **Figure 15**, based on design-year projected a.m. and p.m. peak hour turning volumes. In addition, proposed locations, types, and spacing of median openings are shown in this same figure.

Recommended lengths for auxiliary lanes at signalized intersections are shown in **Table 9**, also based on the same projected turning volumes. **Table 10** shows recommended auxiliary lane lengths at the major unsignalized intersections. Prior to the end of the future design phase, these auxiliary lane lengths should be reevaluated based on updated design hour volumes for both the a.m. and p.m. peak periods.

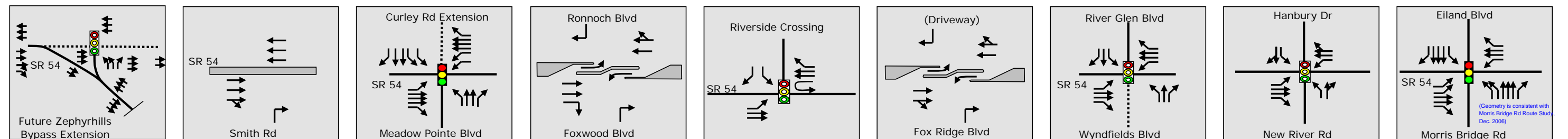
**Figure 15: Roadway Alternatives Evaluation Matrix**



**Existing Intersection Geometry**



**Proposed Intersection Geometry**



Existing Traffic Signal

\*Proposed Future Traffic Signal

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



**TABLE 9: RECOMMENDED AUXILIARY LANE LENGTHS - SIGNALIZED INTERSECTIONS**

Based on Year 2030 Peak Directional Design Hour Volumes

Intersection Approach & Lane Group	(1) Peak Hour Traffic (VPH)	(2) Cycle Length (Sec.)	(3) (1- g/c)	(4) No. of Prop. Lanes	(5) Random Arrival Factor K	(6)	(7) "L" Distance From Index No. 301 (ft)	(8) Column (5) + Column (6) (feet)	(9) Recommended Lane Lengths <sup>1</sup> (ft.)	Foot Notes	
						Req Queue (ft) From ITE Formula					
<b>SR 54 &amp; Curley Road Ext/Meadow Pointe Blvd. Intersection</b>											
EB	Left	121	150	0.86	1	1.5	225	185	410	425	2
	Thru	1350	150	0.65	3	1.5	634	0	634	650	2
	Right	237	150	0.52	1	1.5	267	185	452	500	2
WB	Left	496	150	0.83	2	1.5	446	185	631	650	2
	Thru	1350	150	0.66	3	1.5	644	0	644	650	2
	Right	366	150	0.52	1	1.5	412	185	597	600	2
NB	Left	237	150	0.49	1	1.5	247	145	392	400	3
	Thru	1008	150	0.70	2	1.5	750	0	750	750	3
	Right	378	150	0.70	1	1.5	562	145	707	725	3
SB	Left	366	150	0.89	2	1.5	346	145	491	500	3
	Thru	1008	150	0.63	2	1.5	675	0	675	675	3
	Right	56	150	0.63	1	1.5	75	145	220	225	3
<b>SR 54 &amp; Riverside Crossing Blvd. Intersection*</b>											
EB	Left	260	120	0.31	1	1.5	140	240	380	400	4
	Thru	1703	120	0.45	2	1.5	664	0	664	675	4
	Right	83	120	0.33	1	1.5	47	240	287	300	4
WB	Left	83	120	0.33	1	1.5	47	240	287	300	4
	Thru	1703	120	0.48	2	1.5	708	0	708	725	4
	Right	85	120	0.16	1	1.5	24	240	264	275	4
SB	Left	85	120	0.75	1	1.5	108	145	253	250	3
	Right	120	120	0.75	1	1.5	153	145	298	300	3
<b>SR 54 &amp; Wyndfields Blvd./River Glen Blvd. Intersection*</b>											
EB	Left	229	150	0.40	1	1.5	198	240	438	450	4
	Thru	1257	150	0.62	2	1.5	844	0	844	850	4
	Right	190	150	0.48	1	1.5	198	240	438	450	4
WB	Left	375	150	0.37	1	1.5	301	240	541	550	4
	Thru	1257	150	0.58	2	1.5	790	0	790	800	4
	Right	115	150	0.48	1	1.5	120	240	360	375	4
NB	Left	190	150	0.68	1	1.5	275	145	420	425	3
	Thru	340	150	0.76	1	1.5	549	0	549	550	3
	Right	375	150	0.58	1	1.5	462	145	607	625	3
SB	Left	115	150	0.68	1	1.5	166	145	311	325	3
	Thru	340	150	0.79	1	1.5	571	0	571	575	3
	Right	229	150	0.69	1	1.5	336	145	481	500	3

**TABLE 9: RECOMMENDED AUXILIARY LANE LENGTHS - SIGNALIZED INTERSECTIONS**

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Based on Year 2030 Peak Directional Design Hour Volumes

Intersection Approach & Lane Group	(1) Peak Hour Traffic (VPH)	(2) Cycle Length (Sec.)	(3) (1- g/c)	(4) No. of Prop. Lanes		(5)	(6) "L" Distance From Index No. 301 (ft)	(7) Column (5) + Column (6) (feet)	(8) Recommended Lane Lengths <sup>1</sup> (ft.)	Foot Notes
						Req. Queue (ft) From ITE Formula				

**SR 54 & Hanbury Dr./New River Road Intersection\***

EB	Left	90	150	0.39	1	1.5	76	185	261	275	2
	Thru	1458	150	0.54	2	1.5	853	0	853	875	2
	Right	190	150	0.42	1	1.5	173	185	358	375	2
WB	Left	117	150	0.41	1	1.5	104	185	289	300	2
	Thru	1458	150	0.53	2	1.5	837	0	837	850	2
NB	Left	190	150	0.64	1	1.5	258	145	403	425	3
	Thru	180	150	0.76	1	1.5	291	0	291	300	3
SB	Left	86	150	0.65	1	1.5	119	145	264	275	3
	Thru	180	150	0.78	1	1.5	298	0	298	300	3

**SR 54 & Morris Bridge Road Intersection** (All lane lengths proposed to match those shown on the concept plans contained in the CR 579 - Morris Bridge Road Route Study Report, dated December 20, 2006.)

EB	Left				2					550	
	Right				1					700	
WB	Left				1					500	
	Right				1					325	
NB	Left				2					650	
	Right				1					850	
SB	Left				1					650	
	Right				1					750	

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

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

<sup>4</sup> The 240 ft from Index 301, based on design speed of 50 mph.

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

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

Source: ITE's Traffic Engineering Handbook, 1999.



### RECOMMENDED AUXILIARY LANE LENGTHS - UNSIGNALIZED INTERSECTIONS

Based on Year 2030 Peak Directional Design Hour Volumes

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

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

<sup>1</sup> All recommendations rounded to nearest 25 ft.

<sup>2</sup>The storage length is from M.D. Hamerlink Curve from Institute of Transportation Engineers (ITE) Traffic Engineering Handbook.

<sup>3</sup>The storage length is from FDOT's Florida Greenbook.

<sup>4</sup>The 240 ft total deceleration length from Design Standards Index #301, based on design speed of 50 mph.

<sup>5</sup>The storage values calculated from the Florida Greenbook are recommended as they appear more reasonable.

## **APPENDICES**

APPENDIX A: INTERSECTION APPROACH MACHINE COUNTS

APPENDIX B: ADJUSTMENTS FOR AADTs & TURNING MOVEMENT COUNT SUMMARIES

APPENDIX C: TURNING MOVEMENT COUNTS

APPENDIX D: CONFIRMATION OF K, D, & T FACTORS

APPENDIX E: EXISTING LEVEL OF SERVICE PRINTOUTS

APPENDIX F: FUTURE LEVEL OF SERVICE PRINTOUTS

APPENDIX G: TRAFFIC DATA SHEETS FOR AIR & NOISE ANALYSIS