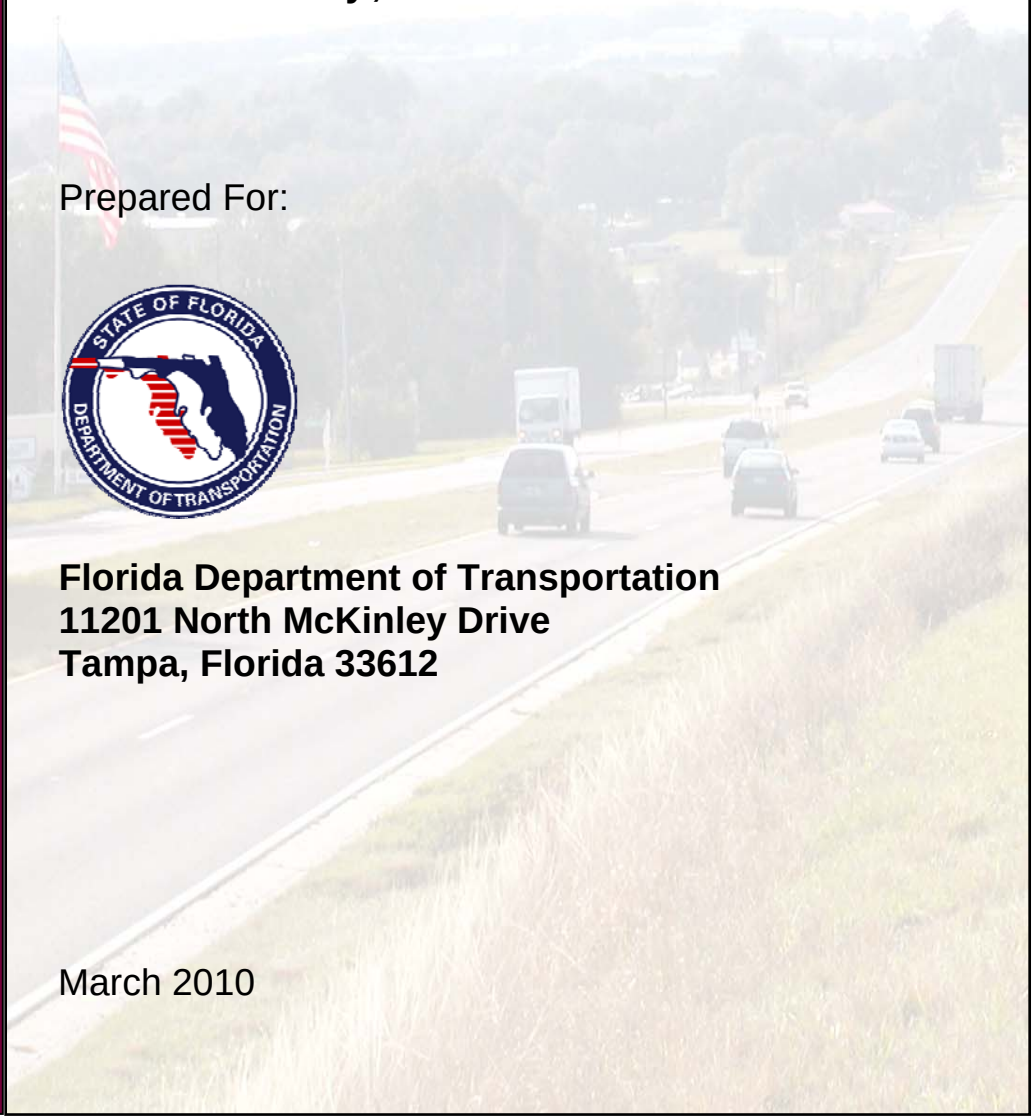
Florida Department of Transportation

Final
Traffic Technical Memorandum

US 301 (SR 39)

From CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)
Pasco County, Florida



Prepared For:

Florida Department of Transportation
11201 North McKinley Drive
Tampa, Florida 33612

March 2010

Final
Traffic Technical Memorandum

US 301 (SR 39)
From CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)
Pasco County, Florida

Prepared For:

Florida Department of Transportation

Prepared By:

HDR Engineering, Inc.
5426 Bay Center Drive, Suite 400
Tampa, FL 33609

EXECUTIVE SUMMARY

A Project Development and Environment (PD&E) study to evaluate alternative capacity improvements along US 301 (SR 39) in Pasco County was prepared for the Florida Department of Transportation (FDOT). The purpose of this PD&E Study was to develop a plan to accommodate future growth in an organized manner and to maintain mobility along a regionally significant transportation corridor. The limits of this PD&E Study are from south of CR 54 (Eiland Boulevard) (south project limit) to US 98 Bypass (SR 533) (north project limit), a distance of 7.6 miles. This Traffic Technical Memorandum was completed and reviewed by FDOT prior to the change in this PD&E Study's scope of work, which modified the southern project limit to include the segment from north of Geiger Road to CR 54. As a result, the analyses performed in this report reflect the original project limits from CR 54 to US 98 Bypass, a distance of 7.1 miles.

EXISTING CONDITIONS

The eleven study intersections are listed below:

- CR 54
- Daughtery Road
- Spanish Trails Boulevard[1]
- Townview Square Shopping Center Entrance
- Kossik Road
- Wire Road[1]
- Centennial Road
- US 98 (SR 700)[1]
- CR 52A (Clinton Avenue)
- Morningside Drive
- US 98 Bypass

[1]Indicates an unsignalized intersection

The major findings as a result of the existing year (2008) analysis can be summarized as follows:

Based on the overall intersection LOS analysis, three intersections (CR 54, US 98, and CR 52A) are operating at failing LOS.

According to the arterial analysis, the LOS D standard was met in both the northbound and southbound directions (AM and PM peak periods).

As part of the PD&E study, crash data for the five most recent years (2003 to 2007) was analyzed. Each segment within the study limits was determined to have an average crash rate that is significantly greater than the statewide average crash rate. Widening US 301 from a four-lane facility to a six-lane facility would potentially improve safety by reducing the occurrence of crashes.

US 301 is designated by FDOT District Seven as an Access Class 5 roadway from CR 54 to Pretty Pond Road and an Access Class 3 roadway from Pretty Pond Road to the end of the project limits. A future access management plan was developed based on the FDOT access classification spacing standard for median openings.

FUTURE CONDITIONS

The major findings as a result of the overall intersection level of service analyses can be summarized as follows:

Design Year (2035) No-Build: Five intersections (CR 54, Daughtery Road, Centennial Road, US 98, and CR 52A) are expected to operate at failing LOS during both the AM and PM peak periods.

Design Year (2035) Build: All eleven intersections, with the exception of CR 54, are expected to operate at or above the LOS D standard during both the AM and PM peak periods.

Opening Year (2015) and Interim year (2025): All eleven intersections are expected to operate at or above the LOS D standard during both the AM and PM peak periods.

The major findings as a result of the arterial analyses can be summarized as follows:

Design Year (2035) No-Build: The segments from CR 54 to Daughtery Road and from Daughtery Road to Townview Square Shopping Center Entrance are expected to operate at failing LOS in both the northbound and southbound directions during both the AM and PM peak periods.

Design Year (2035) Build, Opening Year (2015), and Interim Year (2025): All segments are expected to operate above the LOS D standard in both the northbound and southbound directions during both the AM and PM peak periods.

For all intersections except US 98 and US 98 Bypass only one Build alternative was considered for the design year (2035). However, due to a flashing signal at US 98 and a related PD&E study that included the US 98 Bypass intersection, multiple alternatives were analyzed at these two intersections before determining a recommended alternative.

CONCLUSION

In conclusion, US 301 will experience improvements in LOS and delay when it is widened from a four-lane facility to a six-lane facility. While a few approaches will continue to experience deficient LOS conditions, the overall corridor will operate more efficiently. Travel speeds will be improved, crashes will be reduced, and access will be enhanced.

A summary of the impacts that could occur if US 301 was widened to six-lanes from CR 54 to US 98 Bypass was presented at the Alternatives Public Workshop held on June 3, 2009. The purpose of the Alternatives Public Workshop was to solicit public input regarding the proposed Build Alternatives and the No-Build Alternative for the proposed project. On July 16, 2009 the FDOT determined a Recommended Build Alternative would be presented at the Study's Public Hearing in addition to the No-Build Alternative. The Recommended Build Alternative determination was based on the results of the Build Alternative's impact evaluation, public feedback received during the public involvement process, and consistency with current transportation plans.

As a result of this determination, the Recommended Build Alternative consists of widening US 301 to a six-lane roadway facility in Segment A only (from south of CR 54 to north of Kossik Road) and maintaining the existing four-lanes on US 301 in Segments B-D (from north of Kossik Road to US 98 Bypass). The recommended typical section for the six-lane widening is a low-speed urban typical section. The section of US 301 between Kossik Road and Wire Road will be used to transition the proposed six-lanes into the existing four-lane roadway. To minimize traffic congestion and improve safety north of Kossik Road, Transportation System Management (TSM) improvements will be provided. The TSM improvements could include, but not be limited to, median modifications on US 301 from north of Kossik Road to the US 98 Bypass and turn lane at four signalized intersections: Centennial Road, CR 52A, Morningside Drive, and US 98 Bypass. **Appendix H** contains an analysis of the TSM improvements. The analysis results indicate that the recommended TSM improvements result in LOS D or better for the design year (2035)

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GLOSSARY OF TERMS

AADT	Annual Average Daily Traffic
ADT	Average Daily Traffic
AMRC	Access Management Review Committee
CCC	Chairs Coordinating Committee
DDHV	Directional Design Hour Volumes
DHV	Design Hour Volume
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FSUTMS	Florida Standard Urban Transportation Modeling Structure
FTI	Florida Traffic Information
FY	Fiscal Year
HCM	Highway Capacity Manual
LOS	Level of Service
LRTP	Long Range Transportation Plan
MOCF	Model Output Conversion Factor
MPH	Miles per Hour
MPO	Metropolitan Planning Organization
NEPA	National Environmental Policy Act
PD&E	Project Development and Environment
PSWADT	Peak Season Weekday Average Daily Traffic
ROW	Right-of-Way
SHS	State Highway System
TAZ	Traffic Analysis Zones
TBRPM	Tampa Bay Regional Planning Model
TIF	Transportation Impact Fee
TSM	Transportation System Management
TTM	Traffic Technical Memorandum
TWSC	Two-way Stop Controlled
VPD	Vehicles per Day
ZDATA	Socio-Economic Zonal Data

SECTION 1
INTRODUCTION

1.1 INTRODUCTION

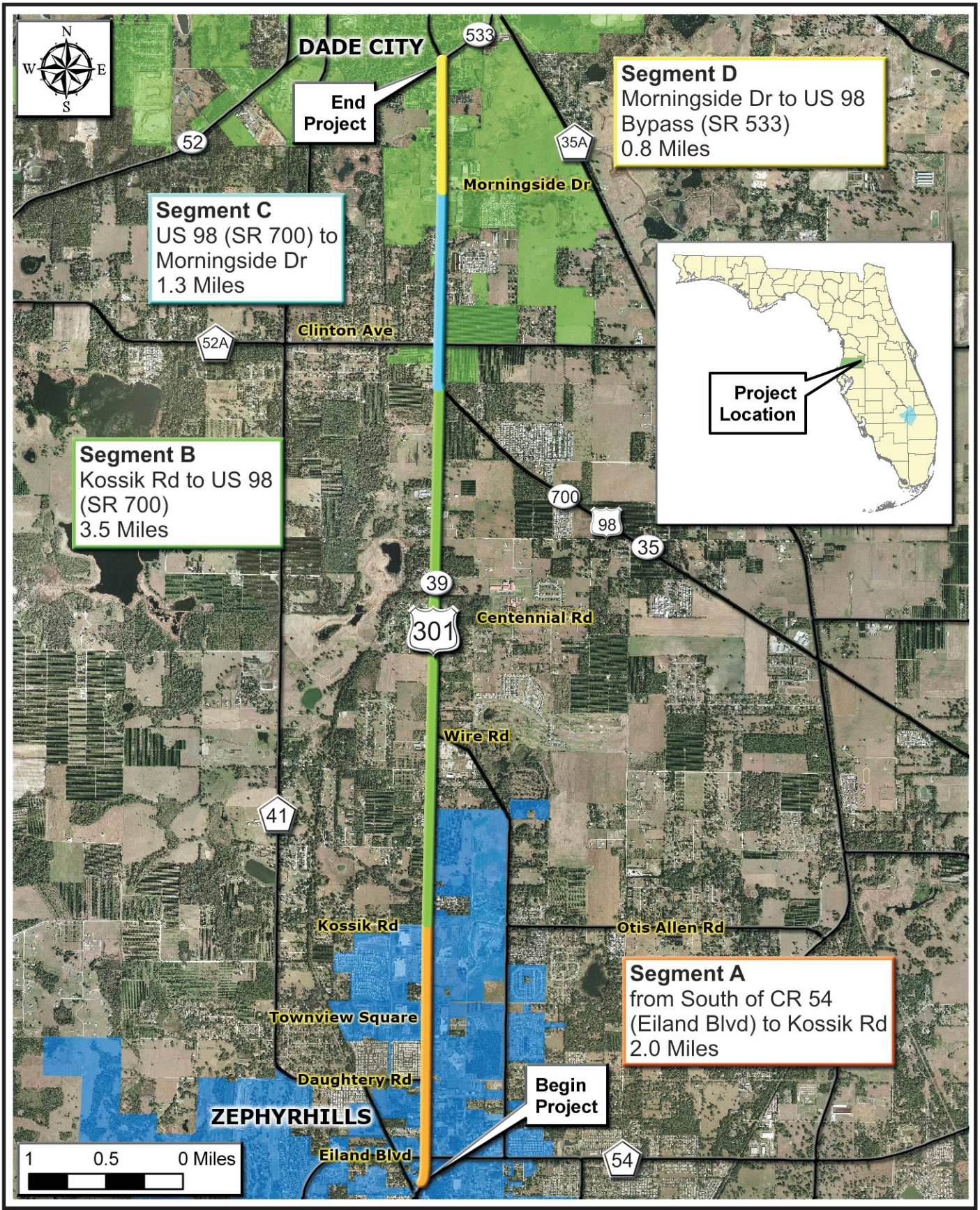
The FDOT conducted a PD&E study to evaluate alternative capacity improvements along US 301 (SR 39) in Pasco County. The purpose of this PD&E Study was to develop a plan to accommodate future growth in an organized manner and to maintain mobility along a regionally significant transportation corridor. The PD&E study limits are from south of CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533). US 98 Bypass intersects US 301 at two locations. For this study, the southernmost intersection of US 98 Bypass and US 301 is referred to as US 98 Bypass because this is the only intersection of US 98 Bypass that falls within the project limits. This Traffic Technical Memorandum was completed and reviewed by FDOT prior to the change in scope to incorporate the segment from north of Geiger Road to CR 54. As a result, the analyses performed in this report reflect project limits from CR 54 to US 98 Bypass, a distance of 7.1 miles. The project location map, as shown on **Exhibit 1**, illustrates the location and limits of the PD&E Study.

1.2 PLAN CONSISTENCY

The *Pasco County Comprehensive Plan*[1] designates US 301 as a principal arterial. The 2035 Cost Affordable Roadway Plan component of the *Pasco County MPO 2035 LRTP*[1] includes six lanes from south of CR 54 to Kossik Road.

1.3 PURPOSE AND NEED

Motorists in Pasco County are faced with increased traffic congestion and delay as demand from the County's growth continues to place pressure on the existing transportation system. To assess the effects of continued growth along US 301, the FDOT initiated a PD&E Study that evaluated the impacts of providing alternative roadway capacity improvements to the facility. The purpose of this PD&E Study was to develop a plan to accommodate future growth in an organized



US 301 (SR 39) PD&E Study from South of CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**LOCATION MAP**	**EXHIBIT 1**

manner and to maintain mobility along a regionally significant transportation corridor. The need for improvement along US 301 within the study limits was established based on the evaluation of the following:

- Existing and future quality of traffic operations along US 301 assuming the existing roadway conditions
- Traffic safety conditions for the time period between the years 2003 and 2007
- Consistency with local government plans
- Projected future socioeconomic growth of Pasco County

The objective of the PD&E Study was to provide documented environmental and engineering analyses that will assist the FDOT and Federal Highway Administration (FHWA) in reaching a decision on the location and conceptual design for improvements to US 301. This particular report documents the following items:

- The development of traffic parameters for the estimation of the existing year (2008), design year (2035), opening year (2015), and interim year (2025) design hour volumes (DHV)
- Analysis of the existing year (2008) traffic conditions and LOS analysis
- Access management for the Build (six-lanes) Alternative (road widening) conditions
- The development of future traffic projections for the design year (2035), opening year (2015), and interim year (2025) traffic conditions
- Analysis of the design year (2035), opening year (2015), and interim year (2025) capacity and LOS analysis of the design alternatives for this project

The PD&E Study also satisfies the requirements of the National Environmental Policy Act (NEPA) and other applicable federal requirements, in order for this project to qualify for federal-aid funding of its subsequent phases (design, right-of-way [ROW] acquisition and construction).

1.4 PROJECT DESCRIPTION

US 301 is a four-lane divided north-south arterial that connects the cities of Zephyrhills and Dade City. The US 301 roadway provides an important connection to the regional and statewide transportation network linking the Tampa Bay region to the remainder of the state and nation. US 301

is identified as a regional roadway by the West Central Florida Metropolitan Planning Organization's (MPO's) Chairs Coordinating Committee (CCC) and is included in the Regional Roadway Network. US 301 is designated as an emergency evacuation route and currently operates as an existing truck route. The 2035 Cost Affordable Roadway Plan of the *Pasco County MPO 2035 Long Range Transportation Plan (LRTP)*[2] identifies the need to widen US 301 to six lanes from south of CR 54 to Kossik Road and from US 98 to CR52A (Clinton Avenue). This PD&E study evaluated the physical, social, cultural, environmental and economic impacts of providing alternative improvements to US 301 that include, but are not limited to, a No-Build alternative, Build alternatives that consider the widening of US 301 to six lanes from CR 54 to US 98 Bypass, Transportation System Management (TSM) improvements and median modifications to improve safety and mobility throughout the limits of the PD&E study.

US 301, within the study area, has eight signalized intersections and connects the cities of Zephyrhills and Dade City. In 2008, US 301 from CR 54 to the US 98 Bypass carried between 22,500 and 31,800 vehicles per day (vpd). By 2035, US 301 within these limits is expected to reach volumes between 32,200 and 47,500 vpd. The LOS standard in the study area is LOS D, as set forth by Pasco County. Currently, all of the existing intersections, with the exception of CR 54, US 98 (SR 700), and CR 52A, operate at, or better than, the LOS D standard during both the AM and PM peak hours. Without access management strategies, traffic operations and/or capacity improvements within the study area, it is anticipated that an increasing number of intersection approaches will not operate at an acceptable LOS and motorists will experience high delays under future conditions.

Safety issues for motorists and pedestrians have been a concern along US 301 in Pasco County. The actual crash rates per million vehicle miles for this study corridor were obtained from the FDOT Safety Office for 2003 through 2007. Adding lanes along the US 301 corridor would enhance safety by adding capacity. Roadway congestion would be reduced, thereby decreasing potential conflict with other vehicles.

As a part of the PD&E Study, coordination with transit and local government officials will occur in order to determine what multi-modal accommodations will be studied and evaluated as part of the project alternatives. This will include only existing and planned multi-modal facilities.

Access to intermodal facilities and movement of goods and freight are important considerations in the development of the Pasco County transportation system. Improvements to US 301 will enhance access to activity centers in the area, and movement of freight in eastern Pasco County.

Integration of bicycle facilities and sidewalks are planned on all County and State road projects, for new roads, the widening of existing roads, and the resurfacing of state roads. These projects are planned to be constructed to include a four-foot wide paved shoulder. The segments of US 301 from north of CR 54 to Wire Road and from Beth Street to US 98 Bypass are designated in the MPO's Cost Affordable Plan for bicycle improvements to be implemented between the years of 2010 and 2035.

1.5 UPCOMING PROJECTS

Current and scheduled projects along US 301 in Pasco County that will improve safety and traffic operations include:

- **Proposed Roadways:**
  - US 301 from SR 39 to CR 54
    - Improvement: Widen from 4 lanes to 6 lanes
    - Completion Date: Fiscal Year (FY) 2014
    - Source: FDOT
- **Studies:**
  - CR 54/US 301; CR 54/Final Engineering Design (50-50% with Pasco County)
    - Completion Date: FY 2010
    - Source: Transportation Impact Fee (TIF)/Pasco County

1.6 REFERENCES

1. *Pasco County Comprehensive Plan*; Pasco County Board of County Commissioners; Adopted June 27, 2006.
2. *Pasco County Metropolitan Planning Organization (MPO) 2035 Long Range Transportation Plan (LRTP)*; Tindale Oliver & Associates, Inc. Document A Draft Report December 10, 2009.

SECTION 2
EXISTING CONDITIONS

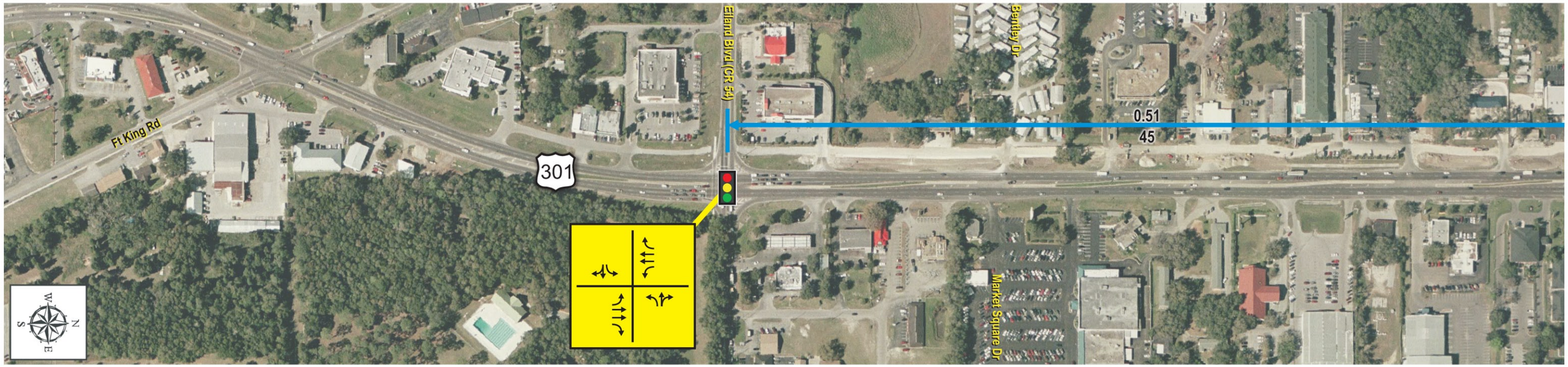
2.1 ROADWAY AND INTERSECTION CHARACTERISTICS

The existing US 301 arterial between CR 54 and the US 98 Bypass is a four-lane divided rural roadway. The posted speed limits on US 301 are 45 miles per hour (mph) from CR 54 to mile post 8.020 (north of Kossik Road), 55 mph from mile post 8.020 to mile post 11.130 (south of US 98), 50 mph from mile post 11.130 to mile post 12.431 (south of Morningside Drive), 45 mph from mile post 12.431 to mile post 13.259 (south of the US 98 Bypass), and 40 mph to the northern limit of the project corridor. The existing year (2008) US 301 arterial signalized intersection locations, arterial segment distances, posted speed limits and intersection lane geometry are shown on **Exhibits 2A-2E**.

2.2 COLLECTION OF TRAFFIC DATA

A comprehensive traffic count program was performed for the US 301 PD&E Study by Southern Traffic Services, Inc. during the months of December 2007 and January 2008. As the ETDM Summary Report (ETAT Mobility Review) states, in the winter months of December and January traffic volumes are typically higher in this area. The traffic count data included 72-hour bi-directional approach counts and 8-hour turning movement volumes performed at ten (10) key intersections along the US 301 study corridor (from CR 54 to US 98 Bypass). **Table 2-1** provides a summary of the existing peak-to-daily ratios (K_{pk}-factor) and directional distributions (D_{pk}-factor) on US 301 and on main cross-streets intersecting SR 39 (US 301). The corridor average K_{pk}-factor and D_{pk}-factor are calculated to be 8.1% and 51.8%, respectively.

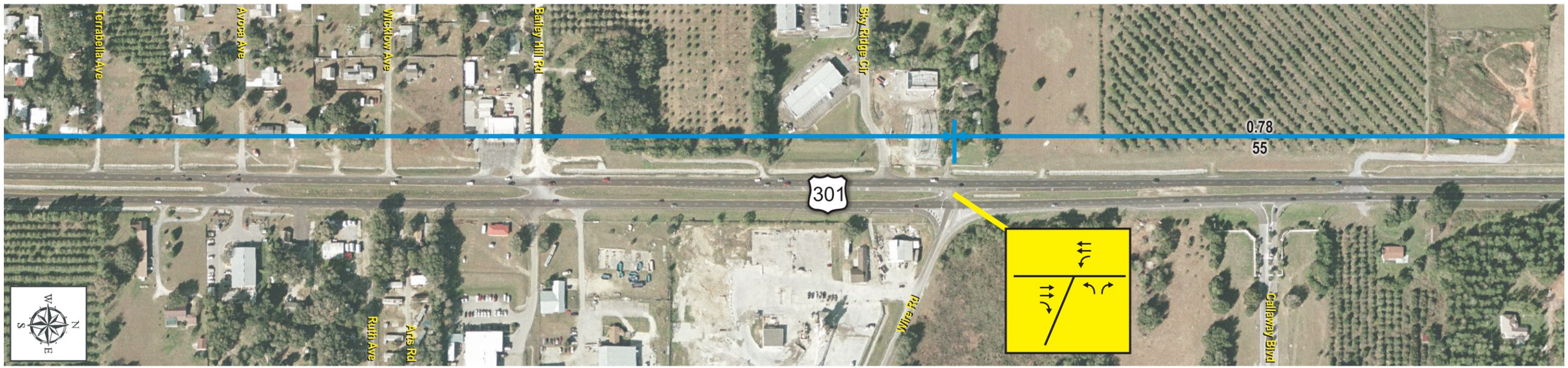
The US 301 study corridor exhibits atypical traffic conditions due to the type of adjacent land uses and socio-demographic characteristics, which generally constitute a retirement-age population. In addition, instead of the corridor exhibiting clearly defined AM and PM peak hours associated with a typical home-to-work based trip pattern, there is a peak mid-afternoon time period spanning most of the day. This results in a low peak-to-daily ratio (8.1%).



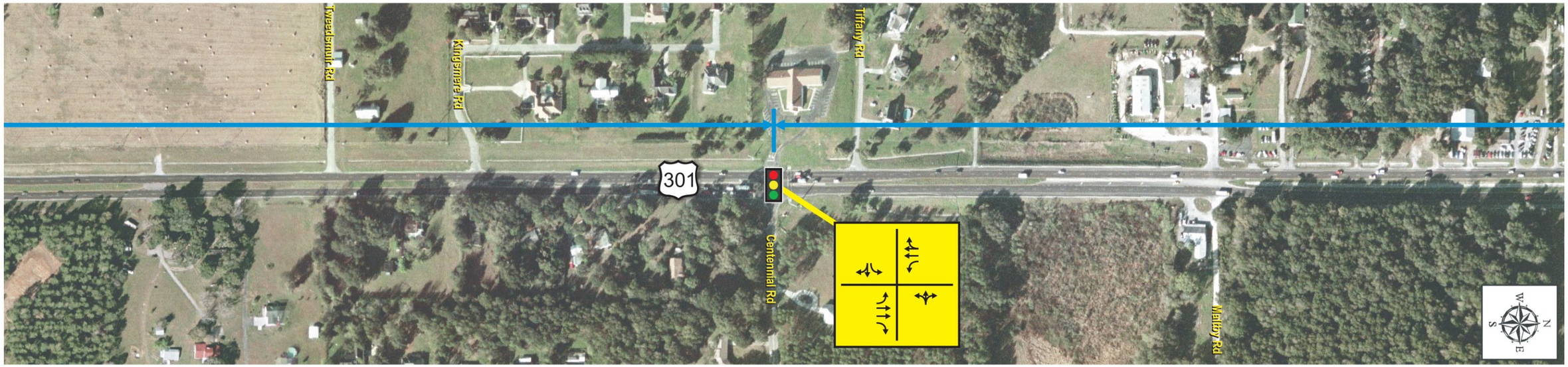
300 150 0 300 Feet

Signal
Flash Signal
Lane Geometry
XXX (distance in miles)
XX (posted speed in MPH)

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**EXISTING YEAR (2008) CORRIDOR LANE GEOMETRY**	**EXHIBIT 2A**



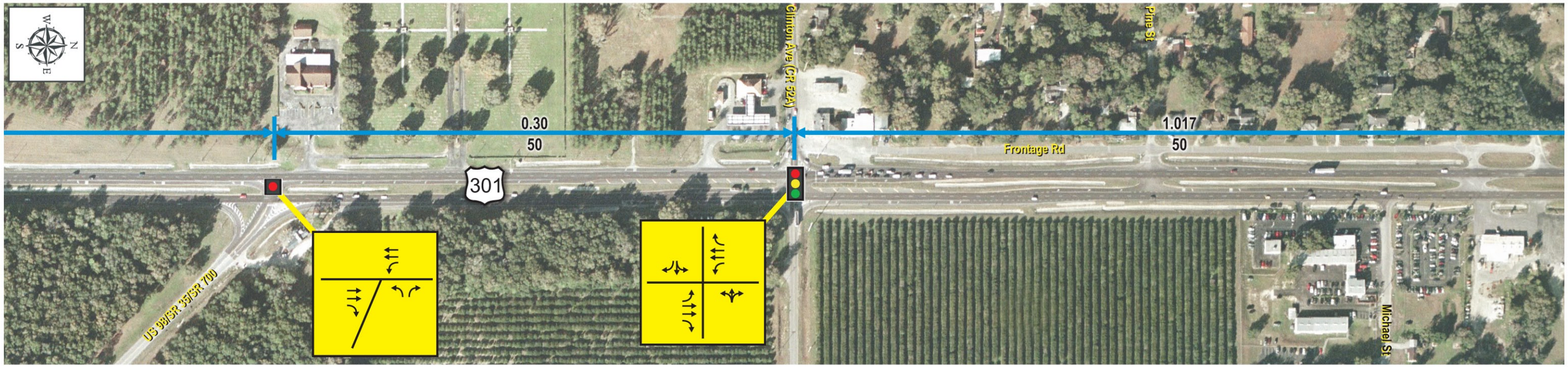
US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**EXISTING YEAR (2008) CORRIDOR LANE GEOMETRY**	**EXHIBIT 2B**



300 150 0 300 Feet

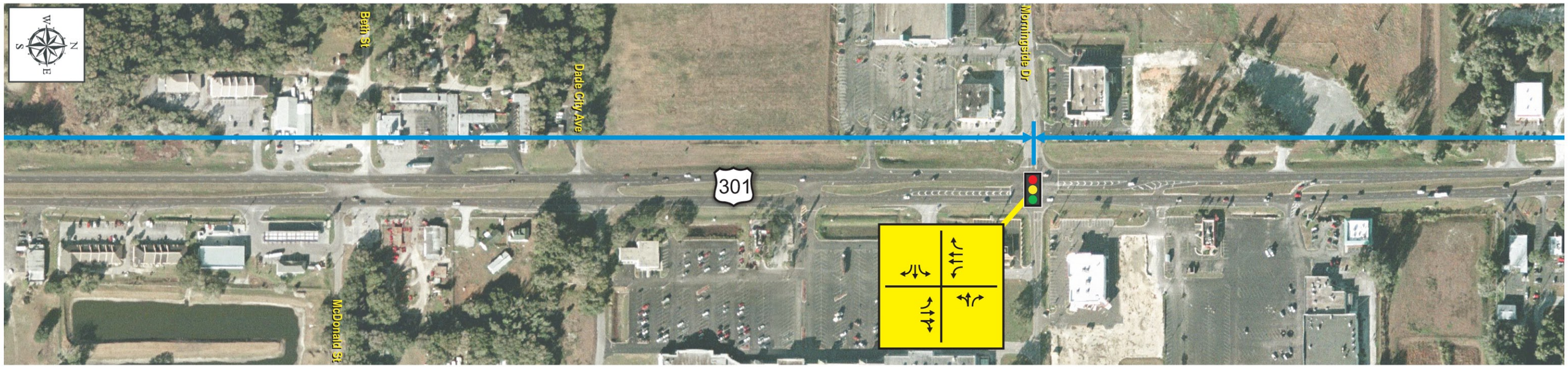
Signal
Flash Signal
Lane Geometry
XXX (distance in miles)
XX (posted speed in MPH)

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**EXISTING YEAR (2008) CORRIDOR LANE GEOMETRY**	**EXHIBIT 2C**



300 150 0 300 Feet

Signal
Flash Signal
Lane Geometry
XXX (distance in miles)
XX (posted speed in MPH)



US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

EXISTING YEAR (2008) CORRIDOR LANE GEOMETRY

EXHIBIT 2D

300 150 0 300 Feet

Signal
Flash Signal
Lane Geometry
XXX (distance in miles)
XX (posted speed in MPH)

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

EXISTING YEAR (2008) CORRIDOR LANE GEOMETRY

EXHIBIT 2E

Table 2-1
Existing Peak-to-Daily Ratios and Directional Distributions

Intersection	Analysis Time Period	Intersection Leg																			
		East					West					South					North				
		Pk Hr Vol	Pk Hr	K	D	Pk Dir	Pk Hr Vol	Pk Hr	K	D	Pk Dir	Pk Hr Vol	Pk Hr	K	D	Pk Dir	Pk Hr Vol	Pk Hr	K	D	Pk Dir
CR 54 (Eiland Boulevard)	AM Peak (7:00-10:00)	1043	9:00-10:00	6.80%	57.33%	WB	1056	9:00-10:00	6.57%	55.02%	EB	1809	9:00-10:00	6.29%	53.18%	NB	1766	9:00-10:00	6.11%	55.83%	NB
	AM Off-Peak (10:00-11:00)	1122	10:30-11:30	7.31%	56.77%	WB	1211	10:45-11:45	7.53%	50.12%	EB	2255	10:45-11:45	7.84%	50.51%	SB	2124	10:45-11:45	7.35%	50.33%	SB
	Midday Peak (11:00-1:00)	1119	11:45-12:45	7.29%	52.10%	WB	1195	11:00-12:00	7.43%	51.30%	EB	2386	12:00-1:00	8.29%	50.71%	NB	2222	11:45-12:45	7.69%	51.94%	SB
	PM Off-Peak (1:00-4:00)	1178	2:00-3:00	7.68%	52.72%	WB	1243	1:45-2:45	7.73%	50.04%	WB	2384	12:45-1:45	8.28%	52.94%	NB	2246	2:00-3:00	7.77%	52.63%	SB
	PM Peak (4:00-7:00)	1125	4:00-5:00	7.33%	50.40%	EB	1279	4:30-5:30	7.96%	56.45%	WB	2080	4:15-5:15	7.23%	51.01%	SB	2088	4:00-5:00	7.23%	53.30%	SB
	Design Peak Hour	**1178**	**2:00-3:00**	**7.68%**	**52.72%**	**WB**	**1279**	**4:30-5:30**	**7.96%**	**56.45%**	**WB**	**2386**	**12:00-1:00**	**8.29%**	**50.71%**	**NB**	**2246**	**2:00-3:00**	**7.77%**	**52.63%**	**SB**
Daugherty Road	AM Peak (7:00-10:00)	410	8:15-9:15	6.95%	50.98%	EB	353	9:00-10:00	7.05%	57.79%	EB	1931	9:00-10:00	6.28%	54.84%	NB	1924	9:00-10:00	6.23%	54.57%	NB
	AM Off-Peak (10:00-11:00)	477	10:45-11:45	8.08%	55.56%	WB	412	10:45-11:45	8.23%	53.64%	EB	2316	10:45-11:45	7.53%	52.29%	NB	2406	10:45-11:45	7.79%	52.83%	NB
	Midday Peak (11:00-1:00)	480	11:15-12:15	8.14%	55.83%	WB	416	11:30-12:30	8.31%	51.92%	EB	2405	11:30-12:30	7.82%	51.02%	NB	2491	11:15-12:15	8.07%	52.15%	NB
	PM Off-Peak (1:00-4:00)	508	2:00-3:00	8.61%	56.50%	WB	436	3:15-4:15	8.71%	51.61%	EB	2413	2:00-3:00	7.85%	51.06%	NB	2473	12:30-1:30	8.01%	51.19%	NB
	PM Peak (4:00-7:00)	474	4:00-5:00	8.03%	62.24%	WB	408	4:00-5:00	8.15%	50.25%	WB	2246	4:00-5:00	7.31%	50.13%	NB	2239	4:00-5:00	7.25%	51.36%	NB
	Design Peak Hour	**508**	**2:00-3:00**	**8.61%**	**56.50%**	**WB**	**436**	**3:15-4:15**	**8.71%**	**51.61%**	**EB**	**2413**	**2:00-3:00**	**7.85%**	**51.06%**	**NB**	**2491**	**11:15-12:15**	**8.07%**	**52.15%**	**NB**
Townview Square Shopping Center Entrance	AM Peak (7:00-10:00)	378	9:00-10:00	6.76%	52.65%	EB	359	9:00-10:00	5.42%	57.66%	WB	1710	9:00-10:00	6.15%	56.84%	NB	1660	9:00-10:00	6.06%	54.28%	NB
	AM Off-Peak (10:00-11:00)	539	10:30-11:30	9.63%	54.73%	EB	576	10:45-11:45	8.69%	54.17%	WB	2154	10:45-11:45	7.74%	56.64%	NB	2056	10:45-11:45	7.51%	55.30%	NB
	Midday Peak (11:00-1:00)	572	11:45-12:45	10.22%	52.80%	EB	676	12:00-1:00	10.20%	51.04%	WB	2260	11:15-12:15	8.12%	56.68%	NB	2128	11:15-12:15	7.77%	54.84%	NB
	PM Off-Peak (1:00-4:00)	538	12:15-1:15	9.62%	52.60%	EB	668	12:15-1:15	10.08%	51.05%	WB	2268	1:45-2:45	8.15%	56.92%	NB	2169	1:45-2:45	7.92%	53.99%	NB
	PM Peak (4:00-7:00)	425	4:00-5:00	7.60%	53.18%	WB	500	4:00-5:00	7.54%	50.00%	EB	2025	4:00-5:00	7.28%	56.89%	NB	2053	4:30-5:30	7.50%	58.94%	NB
	Design Peak Hour	**572**	**11:45-12:45**	**10.22%**	**52.80%**	**EB**	**676**	**12:00-1:00**	**10.20%**	**51.04%**	**WB**	**2268**	**1:45-2:45**	**8.15%**	**56.92%**	**NB**	**2169**	**1:45-2:45**	**7.92%**	**53.99%**	**NB**
Kossik Road	AM Peak (7:00-10:00)						320	9:00-10:00	6.45%	59.06%	WB	1424	9:00-10:00	6.31%	57.23%	SB	1441	7:30-8:30	6.30%	57.46%	SB
	AM Off-Peak (10:00-11:00)						425	10:30-11:30	8.57%	56.24%	WB	1633	10:45-11:45	7.24%	54.56%	SB	1590	10:45-11:45	6.95%	54.59%	SB
	Midday Peak (11:00-1:00)						488	11:45-12:45	9.84%	53.48%	WB	1700	11:30-12:30	7.54%	53.94%	SB	1686	11:45-12:45	7.37%	54.15%	SB
	PM Off-Peak (1:00-4:00)						499	12:45-1:45	10.06%	52.10%	WB	1751	1:45-2:45	7.76%	53.34%	SB	1775	2:15-3:15	7.76%	51.27%	SB
	PM Peak (4:00-7:00)						364	4:00-5:00	7.34%	53.85%	EB	1692	4:30-5:30	7.50%	50.71%	SB	1757	4:30-5:30	7.68%	50.14%	SB
	Design Peak Hour						**499**	**12:45-1:45**	**10.06%**	**52.10%**	**WB**	**1751**	**1:45-2:45**	**7.76%**	**53.34%**	**SB**	**1775**	**2:15-3:15**	**7.76%**	**51.27%**	**SB**
Wire Road	AM Peak (7:00-10:00)	188	9:00-10:00	7.34%	54.26%	WB						1538	7:30-8:30	6.36%	54.94%	SB	1613	7:30-8:30	6.59%	53.01%	SB
	AM Off-Peak (10:00-11:00)	190	9:15-10:15	7.42%	52.63%	WB						1724	10:45-11:45	7.13%	51.57%	SB	1680	10:45-11:45	6.87%	50.30%	NB
	Midday Peak (11:00-1:00)	200	12:00-1:00	7.81%	52.00%	WB						1809	11:45-12:45	7.48%	51.08%	SB	1771	12:00-1:00	7.24%	50.88%	NB
	PM Off-Peak (1:00-4:00)	238	3:30-4:30	9.29%	52.52%	EB						1948	3:00-4:00	8.05%	50.26%	SB	1976	3:00-4:00	8.08%	50.10%	NB
	PM Peak (4:00-7:00)	221	4:00-5:00	8.63%	50.68%	EB						1931	4:15-5:15	7.98%	53.18%	NB	1953	4:30-5:30	7.98%	53.51%	NB
	Design Peak Hour	**238**	**3:30-4:30**	**9.29%**	**52.52%**	**EB**						**1948**	**3:00-4:00**	**8.05%**	**50.26%**	**SB**	**1976**	**3:00-4:00**	**8.08%**	**50.10%**	**NB**
Centential Road	AM Peak (7:00-10:00)	656	7:45-8:45	18.03%	55.03%	EB						1638	7:30-8:30	6.69%	52.20%	SB	1675	7:45-8:45	6.78%	54.33%	SB
	AM Off-Peak (10:00-11:00)	423	9:15-10:15	11.62%	56.50%	WB						1685	10:45-11:45	6.88%	50.62%	NB	1686	10:45-11:45	6.83%	50.36%	NB
	Midday Peak (11:00-1:00)	106	11:00-12:00	2.91%	50.94%	EB						1759	12:00-1:00	7.18%	50.88%	NB	1758	12:00-1:00	7.12%	50.80%	NB
	PM Off-Peak (1:00-4:00)	730	3:00-4:00	20.06%	58.77%	WB						1981	3:00-4:00	8.09%	50.08%	SB	2064	3:00-4:00	8.36%	51.36%	NB
	PM Peak (4:00-7:00)	342	4:30-5:30	9.40%	52.05%	WB						1956	4:30-5:30	7.99%	53.63%	NB	1980	4:30-5:30	8.02%	53.84%	NB
	Design Peak Hour	**730**	**3:00-4:00**	**20.06%**	**58.77%**	**WB**						**1981**	**3:00-4:00**	**8.09%**	**50.08%**	**SB**	**2064**	**3:00-4:00**	**8.36%**	**51.36%**	**NB**
SR 700 (US 98)	AM Peak (7:00-10:00)	511	9:00-10:00	6.69%	54.60%	WB						1745	7:45-8:45	6.91%	53.35%	SB	1873	9:00-10:00	6.69%	54.56%	SB
	AM Off-Peak (10:00-11:00)	550	10:45-11:45	7.20%	50.18%	EB						1719	9:15-10:15	6.81%	50.79%	SB	1909	10:45-11:45	6.82%	52.85%	SB
	Midday Peak (11:00-1:00)	568	12:00-1:00	7.43%	50.53%	WB						1797	12:00-1:00	7.12%	50.97%	NB	1973	12:00-1:00	7.05%	52.91%	SB
	PM Off-Peak (1:00-4:00)	567	1:15-2:15	7.42%	51.32%	EB						2071	3:00-4:00	8.21%	52.34%	NB	2184	3:00-4:00	7.81%	52.52%	SB
	PM Peak (4:00-7:00)	573	4:45-5:45	7.50%	52.88%	EB						2005	4:30-5:30	7.94%	54.56%	NB	2176	4:30-5:30	7.78%	50.74%	SB
	Design Peak Hour	**573**	**4:45-5:45**	**7.50%**	**52.88%**	**EB**						**2071**	**3:00-4:00**	**8.21%**	**52.34%**	**NB**	**2184**	**3:00-4:00**	**7.81%**	**52.52%**	**SB**
CR 52A (Clinton Avenue)	AM Peak Hour (7:00-10:00)	157	7:45-8:45	7.99%	62.42%	WB	1151	8:00-9:00	7.80%	55.86%	EB	1873	9:00-10:00	6.69%	54.56%	SB	1739	9:00-10:00	6.50%	50.72%	NB
	AM Off-Peak (10:00-11:00)	130	10:30-11:30	6.61%	60.77%	WB	905	9:15-10:15	6.13%	55.47%	EB	1909	10:45-11:45	6.82%	52.85%	SB	1961	10:45-11:45	7.33%	51.50%	NB
	Midday Peak Hour (11:00-1:00)	133	12:00-1:00	6.77%	54.14%	WB	960	12:00-1:00	6.50%	50.52%	EB	1973	12:00-1:00	7.05%	52.91%	SB	2080	12:00-1:00	7.77%	50.14%	SB
	PM Off-Peak (1:00-4:00)	157	3:30-4:30	7.99%	55.41%	WB	1166	3:45-4:45	7.90%	54.20%	WB	2184	3:00-4:00	7.81%	52.52%	SB	2128	3:45-4:45	7.95%	52.73%	NB
	PM Peak (4:00-7:00)	160	5:00-6:00	8.14%	51.25%	WB	1247	4:45-5:45	8.45%	55.09%	WB	2176	4:30-5:30	7.78%	50.74%	SB	2172	4:15-5:15	8.12%	50.69%	NB
	Design Peak Hour	**160**	**5:00-6:00**	**8.14%**	**51.25%**	**WB**	**1247**	**4:45-5:45**	**8.45%**	**55.09%**	**WB**	**2184**	**3:00-4:00**	**7.81%**	**52.52%**	**SB**	**2172**	**4:15-5:15**	**8.12%**	**50.69%**	**NB**
Morningside Drive	AM Peak (7:00-10:00)	287	9:00-10:00	5.44%	58.89%	WB	239	9:00-10:00	4.89%	65.69%	WB	1653	9:00-10:00	6.33%	50.88%	SB	1605	9:00-10:00	6.16%	51.34%	SB
	AM Off-Peak (10:00-11:00)	422	10:45-11:45	8.00%	57.58%	WB	382	10:45-11:45	7.82%	59.69%	WB	1887	10:45-11:45	7.22%	50.24%	SB	1873	10:45-11:45	7.19%	50.24%	SB
	Midday Peak (11:00-1:00)	543	12:00-1:00	10.29%	60.77%	WB	428	12:00-1:00	8.76%	62.15%	WB	2140	12:00-1:00	8.19%	50.42%	SB	2067	12:00-1:00	7.93%	50.27%	SB
	PM Off-Peak (1:00-4:00)	526	12:15-1:15	9.97%	61.22%	WB	440	3:45-4:45	9.01%	65.23%	WB	2110	12:15-1:15	8.08%	50.33%	SB	2043	12:15-1:15	7.84%	50.02%	NB
	PM Peak (4:00-7:00)	457	4:45-5:45	8.66%	57.33%	WB	502	4:30-5:30	10.28%	63.94%	WB	2094	4:30-5:30	8.02%	51.81%	NB	2123	4:30-5:30	8.15%	50.02%	SB
	Design Peak Hour	**543**	**12:00-1:00**	**10.29%**	**60.77%**	**WB**	**502**	**4:30-5:30**	**10.28%**	**63.94%**	**WB**	**2140**	**12:00-1:00**	**8.19%**	**50.42%**	**SB**	**2123**	**4:30-5:30**	**8.15%**	**50.02%**	**SB**
SR 533 (US 98 Bypass)	AM Peak (7:00-10:00)	885	9:00-10:00	6.26%	53.45%	WB						1784	9:00-10:00	6.30%	51.51%	SB	1091	9:00-10:00	6.18%	51.42%	SB
	AM Off-Peak (10:00-11:00)	1032	10:45-11:45	7.30%	50.68%	WB						2048	10:45-11:45	7.23%	50.15%	NB	1265	10:45-11:45	7.16%	52.17%	SB
	Midday Peak (11:00-1:00)	1168	12:00-1:00	8.26%	50.43%	EB						2346	12:00-1:00	8.28%	51.45%	NB	1555	12:00-1:00	8.80%	51.32%	NB
	PM Off-Peak (1:00-4:00)	1153	12:15-1:15	8.16%	51.52%	EB						2318	12:15-1:15	8.18%	52.29%	NB	1503	12:15-1:15	8.51%	52.50%	NB
	PM Peak (4:00-7:00)	1153	4:45-5:45	8.16%	54.81%	EB						2236	4:30-5:30	7.89%	52.86%	NB	1441	4:30-5:30	8.16%	51.15%	NB
	Design Peak Hour	**1168**	**12:00-1:00**	**8.26%**	**50.43%**	**EB**						**2346**	**12:00-1:00**	**8.28%**	**51.45%**	**NB**	**1555**	**12:00-1:00**	**8.80%**	**51.32%**	**NB**
	Corridor Average			**10.0%**	**54.3%**				**9.3%**	**55.0%**				**8.1%**	**51.9%**				**8.1%**	**51.6%**	

Note: The design peak hour volume is the highest volume of the AM Peak, AM Off-Peak, Midday Peak, PM Peak, and PM Off-Peak volumes

2.3 TRAFFIC PARAMETERS

The recommended design hour traffic factors were estimated using historical traffic count data obtained from the FDOT 2007 Florida Traffic Information (FTI) DVD. **Tables 2-2 to 2-4** provide a summary of the historical traffic characteristics recorded at several FDOT traffic count stations along the US 301 study corridor during the five-year period from 2003-2007. Based on five-year averages of the recorded traffic characteristics and comparison of these average values to state and national acceptable ranges obtained from the *FDOT Project Traffic Forecasting Handbook*[1], the design hour traffic factors recommended for the US 301 study corridor are as follows:

K_{30} = 9.4 percent;
D_{30} = 56.0 percent; and
DHT = 3.0 percent - US 301
4.0 percent - US 98 Bypass
7.0 percent - US 98

The intent of selecting appropriate design hour traffic factors is to ensure that the facility under study is designed to accommodate a specific level of future traffic loading. Highlighted in red in **Table 2-1** are values that are observed to be greater than the recommended design hour traffic factors. As seen in this table, there were very few occurrences where calculated peak-to-daily ratios or directional distributions on US 301 were greater than the recommended design hour traffic factors. Thus, it can be inferred that the recommended design traffic factors represent a conservative approach to estimating existing (30th highest hour) and future traffic loadings along the US 301 study corridor.

Several recent studies performed in the general area of the US 301 study corridor were also referenced to ensure consistency among the various documented design hour traffic factors. These studies include: *US 98 Dade City Bypass PD&E Study from US 301 South to US 301 North [FPN: 256423 1]*[2], *US 301 (SR 41) PD&E Study from SR 39 to CR 54 [FPN: 256422 1]*[3], and the *US 301 Corridor Study, City of Dade City to City of Zephyrhills*[4].

Table 2-2
Summary of Historical Design Hour Traffic Factors (K_{30})

Reference Number	Location of Count	Count Station	Milepost	Count Year					5-Year Average	Recommended K_{30}-Factor
				2003	2004	2005	2006	2007		
US 301										
1	South of CR 54	140019	6.13	9.30	9.40	9.40	9.38	9.26	9.35	**9.4%**
2	North of CR 54	140014	6.39	9.30	9.40	9.40	9.38	9.26	9.35	
3	South of Wire Road	145502	8.10	9.30	9.40	9.40	9.38	9.26	9.35	
4	South of US 98	140053	11.30	9.30	9.40	9.40	9.38	9.26	9.35	
5	North of US 98	140052	11.41	9.30	9.40	9.40	9.38	9.26	9.35	
6	South of US 98 Bypass	140030	13.29	9.30	9.40	9.40	9.38	9.26	9.35	
7	North of US 98 Bypass	145010	13.51	9.30	9.40	9.40	9.38	9.26	9.35	
1-7	**US 301 Corridor Average**			9.30	9.40	9.40	9.38	9.26	9.35	
Major Cross-Streets										
1	US 98 Bypass East of US 301	140070	0.10	9.30	9.40	9.40	9.38	9.26	9.35	**9.4%**
2	US 98 East of US 301	140054	8.12	9.30	9.40	9.40	9.38	9.26	9.35	
1-2	**Major Cross-Streets Average**			9.30	9.40	9.40	9.38	9.26	9.35	

Source: Florida Department of Transportation 2007 Florida Traffic Information (FTI) DVD

Table 2-3
Summary of Historical Design Hour Directional Traffic Factors (D_{30})

Reference Number	Location of Count	Count Station	Milepost	Count Year					5-Year Average	Recommended D_{30}-Factor
				2003	2004	2005	2006	2007		
US 301										
1	South of CR 54	140019	6.13	56.80	57.90	55.20	56.87	52.68	55.89	**56.0%**
2	North of CR 54	140014	6.39	56.80	57.90	55.20	56.87	52.68	55.89	
3	South of Wire Road	145502	8.10	--	57.90	55.20	56.87	52.68	55.66	
4	South of US 98	140053	11.30	56.80	57.90	55.20	56.87	52.68	55.89	
5	North of US 98	140052	11.41	56.80	57.90	55.20	56.87	52.68	55.89	
6	South of US 98 Bypass	140030	13.29	56.80	57.90	55.20	56.87	52.68	55.89	
7	North of US 98 Bypass	145010	13.51	56.80	57.90	55.20	56.87	52.68	55.89	
1-7	**US 301 Corridor Average**			56.80	57.90	55.20	56.87	52.68	55.86	
Major Cross-Streets										
1	US 98 Bypass East of US 301	140070	0.10	56.80	57.90	55.20	56.87	52.68	55.89	**56.0%**
2	US 98 East of US 301	140054	8.12	56.80	57.90	55.20	56.87	52.68	55.89	
1-2	**Major Cross-Streets Average**			56.80	57.90	55.20	56.87	52.68	55.89	

Source: Florida Department of Transportation 2007 Florida Traffic Information (FTI) DVD

Table 2-4
Summary of Historical Daily Truck Factors

Reference Number	Location of Count	Count Station	Milepost	Count Year					5-Year Average	Recommended T_{24}-Factor
				2003	2004	2005	2006	2007		
US 301										
1	South of CR 54	140019	6.13	7.00	8.70	8.70	6.30	3.90	6.92	**6.0**
2	North of CR 54	140014	6.39	5.20	6.70	6.70	8.20	4.00	6.16	
3	South of Wire Road	145502	8.10	5.50	5.50	5.50	6.60	4.10	5.44	
4	South of US 98	140053	11.30	9.00	7.60	7.60	7.50	5.90	7.52	
5	North of US 98	140052	11.41	5.60	3.40	3.40	3.40	5.90	4.34	
6	South of US 98 Bypass	140030	13.29	6.60	6.60	8.60	6.60	4.10	6.50	
7	North of US 98 Bypass	145010	13.51	9.50	3.60	3.60	4.30	3.50	4.90	
1-7	**US 301 Corridor Average**			6.91	6.01	6.30	6.13	4.49	5.97	
Major Cross-Streets										
1	US 98 Bypass East of US 301	140070	0.10	6.40	6.70	6.70	9.40	7.20	7.28	**7.0/13.0***
2	US 98 East of US 301	140054	8.12	16.70	11.70	11.70	12.70	12.70	13.10	
1-2	**Major Cross-Streets Average**			11.55	9.20	9.20	11.05	9.95	10.19	

Note: *A daily truck percentage of 7.0 percent is assumed in the analysis of traffic operations on US 98 Bypass and 13.0 percent for US 98
Source: Florida Department of Transportation 2007 Florida Traffic Information (FTI) DVD

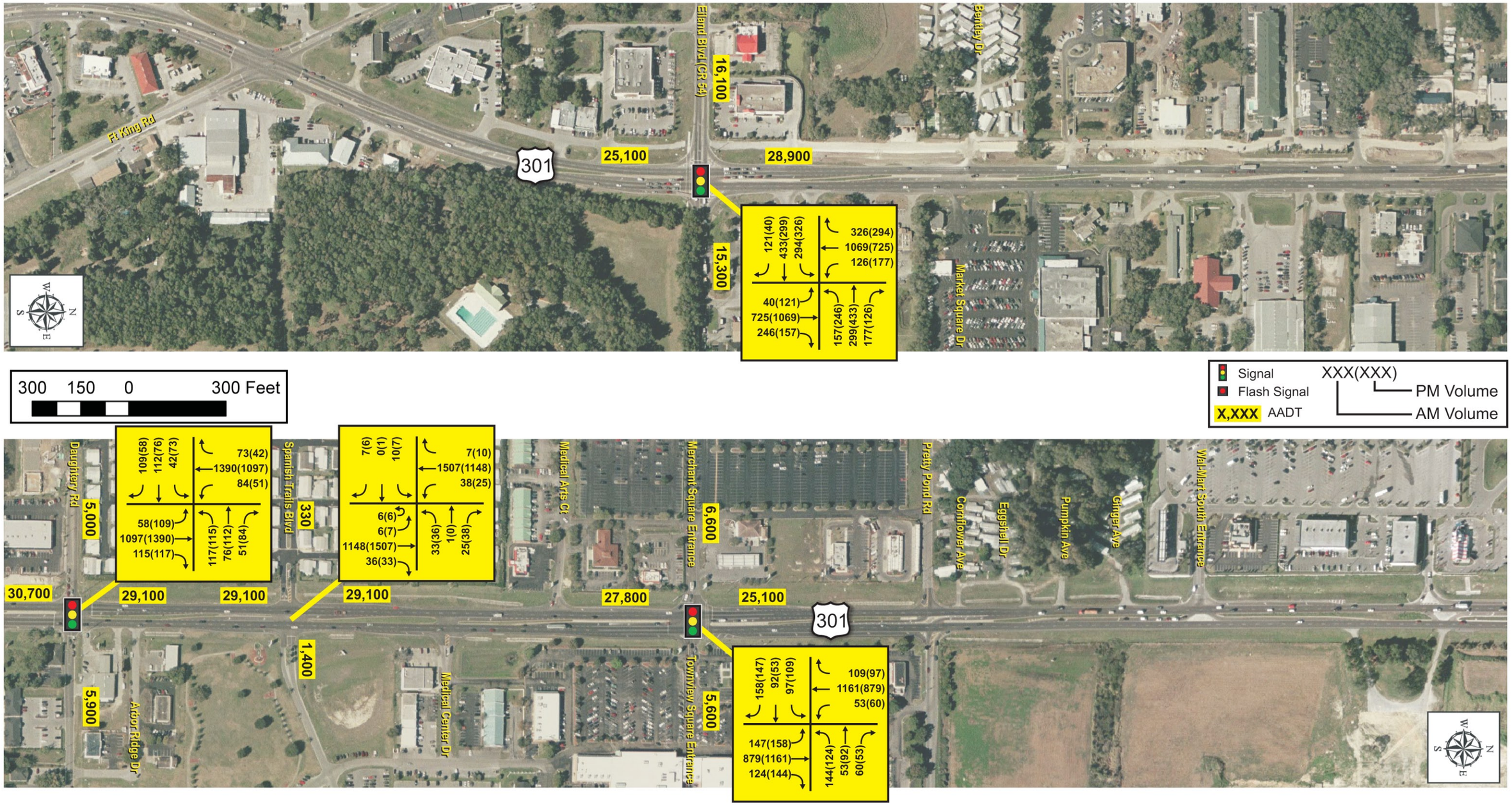
2.4 DEVELOPMENT OF EXISTING YEAR (2008) DESIGN HOUR TRAFFIC VOLUMES

The existing year (2008) Annual Average Daily Traffic (AADT) volumes were estimated from automatic counters, which continuously collected data for a 72-hour period. The average daily traffic counts (ADT) obtained from the field data were multiplied by a seasonal adjustment factor of 1.01 and an axle conversion factor of 0.99 to estimate AADT. These factors were obtained from the 2007 FDOT FTI DVD. The estimated existing year (2008) AADT volumes are shown in **Exhibits 3A-3E**. The existing year (2008) directional design hour volumes (DDHV) were obtained by multiplying the AADT volumes by the recommended K_{30}- and D_{30}-factors of 9.4% and 56.0% respectively. A K_{30}-factor of 20.06% (derived from the field data) was used for the east leg of the US 301/Centennial Road intersection to account for higher traffic volumes occurring during the commencement and dismissal of students at several nearby schools: Centennial Middle School, Centennial Elementary and East Pasco Adventist Academy.

In this study, southbound US 301 was selected as the peak direction for the AM period and northbound US 301 as the peak direction for the PM period. Even though the traffic count data indicates that the peak direction changes from segment to segment, the general trend of traffic volumes supports the above conclusion. Design hour turning movements were developed for the PM peak period by multiplying existing turning percentages with the DDHV. A manual smoothing process was performed in order to satisfy the K_{30}- and D_{30}-factors. The design hour volumes that were developed for the PM peak period were used to estimate the AM design hour volumes by using the volumes of the reciprocal traffic movements.

2.5 EXISTING YEAR (2008) INTERSECTION LEVEL OF SERVICE ANALYSIS

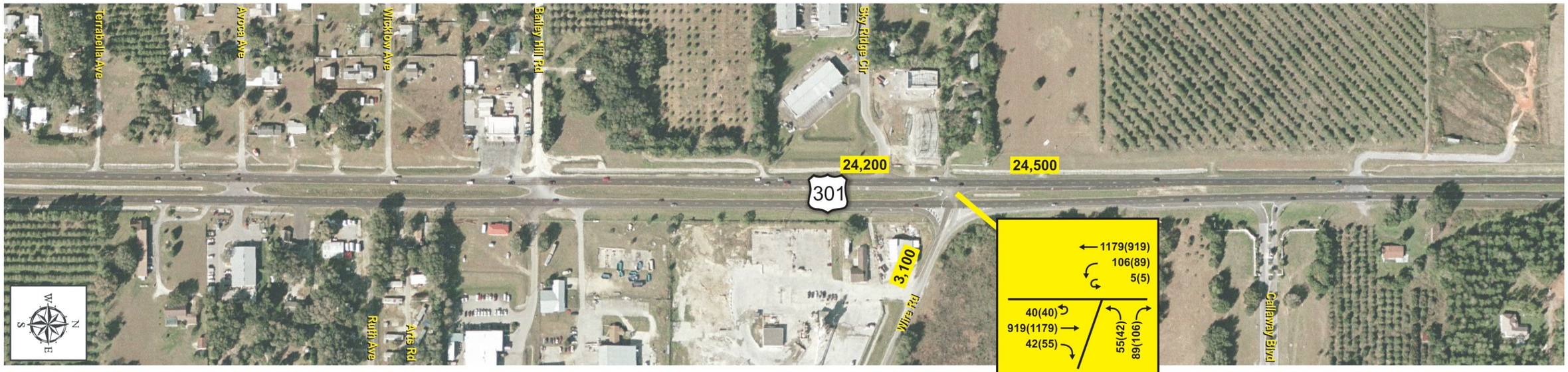
Signalized and unsignalized intersection LOS was estimated using the Highway Capacity Manual (HCM) module of the Synchro 7.0 Version (Build 761) software. The overall LOS was calculated using the weighted average delay for all intersection turning movements. The overall delay was calculated to evaluate at what point failing operations on the side street approaches warrant possible signalization. If traffic demand on the side street approaches is low, and failing LOS occurs, then signalization may not necessarily be needed. However, if side street volumes are high and failing LOS occurs, signalization may in fact be needed. Existing year (2008) lane geometry, design hour turning movement traffic volumes, and signal timing plans obtained from the Pasco County Traffic Operations



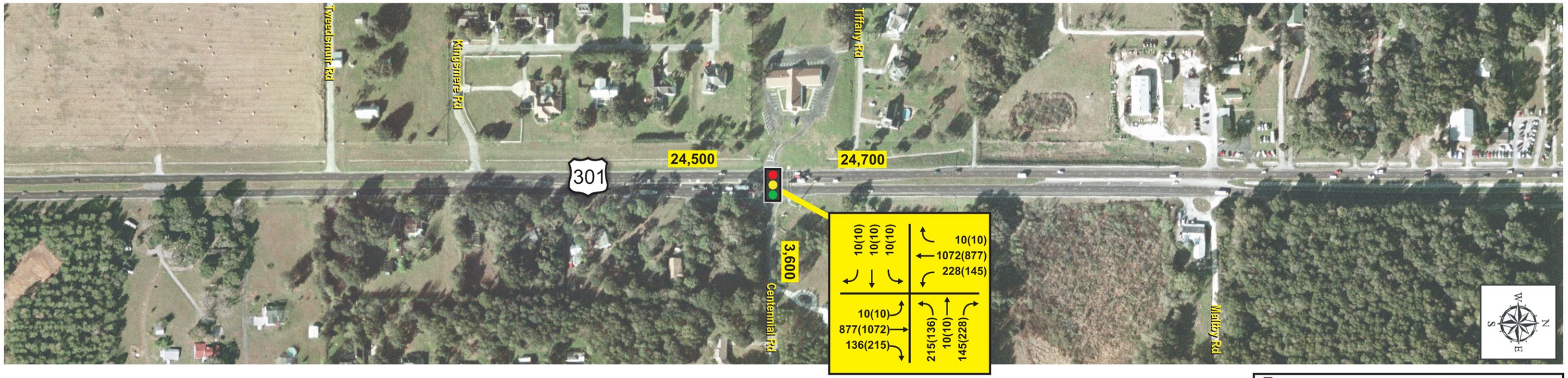
US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**EXISTING YEAR (2008) AADT AND TURNING MOVEMENT VOLUMES**	**EXHIBIT 3A**

300 150 0 300 Feet

Signal
Flash Signal
X,XXX AADT
XXX(XXX)
PM Volume
AM Volume



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**EXISTING YEAR (2008) AADT AND TURNING MOVEMENT VOLUMES**	**EXHIBIT 3B**



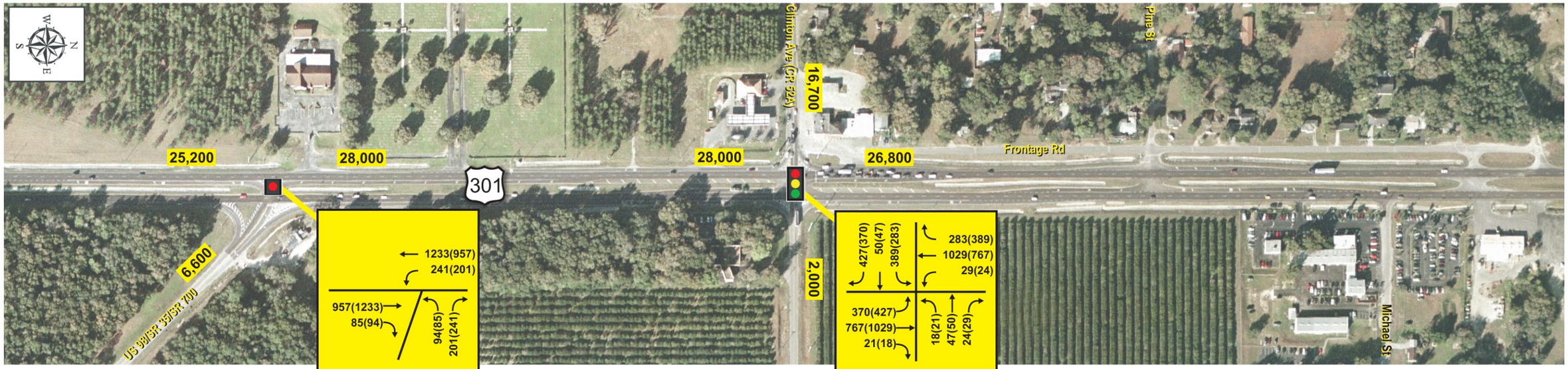
300 150 0 300 Feet

Signal
Flash Signal
X,XXX AADT
XXX(XXX)
PM Volume
AM Volume

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

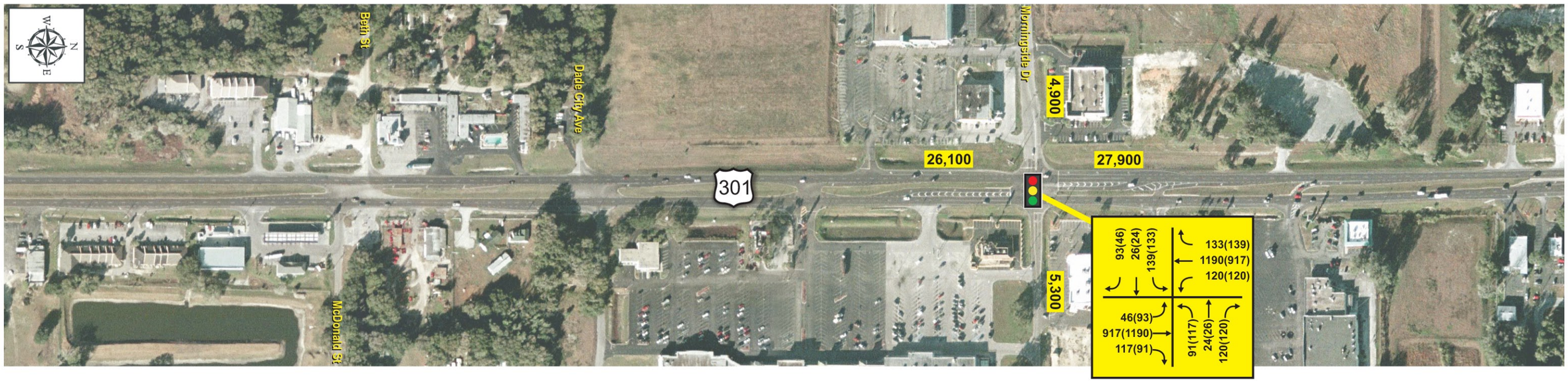
EXISTING YEAR (2008) AADT AND TURNING MOVEMENT VOLUMES

EXHIBIT 3C



300 150 0 300 Feet

Signal
Flash Signal
X,XXX AADT
XXX(XXX) PM Volume / AM Volume



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**EXISTING YEAR (2008) AADT AND TURNING MOVEMENT VOLUMES**	**EXHIBIT 3D**

300 150 0 300 Feet

Signal
Flash Signal
X,XXX AADT
XXX(XXX)
PM Volume
AM Volume

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

EXISTING YEAR (2008) AADT AND TURNING MOVEMENT VOLUMES

EXHIBIT 3E

Division were used in the analysis. The existing signal timing plans are located in **Appendix A** (under separate cover). The existing year (2008) LOS and control delay results for the eleven study intersections are summarized in **Table 2-5** and **Table 2-6,** respectively and shown on **Exhibits 4A-4E**. The existing year (2008) Synchro intersection analysis sheets are included in **Appendix B** (under separate cover).

Table 2-5
Existing Year (2008) US 301 Intersection Level of Service Summary

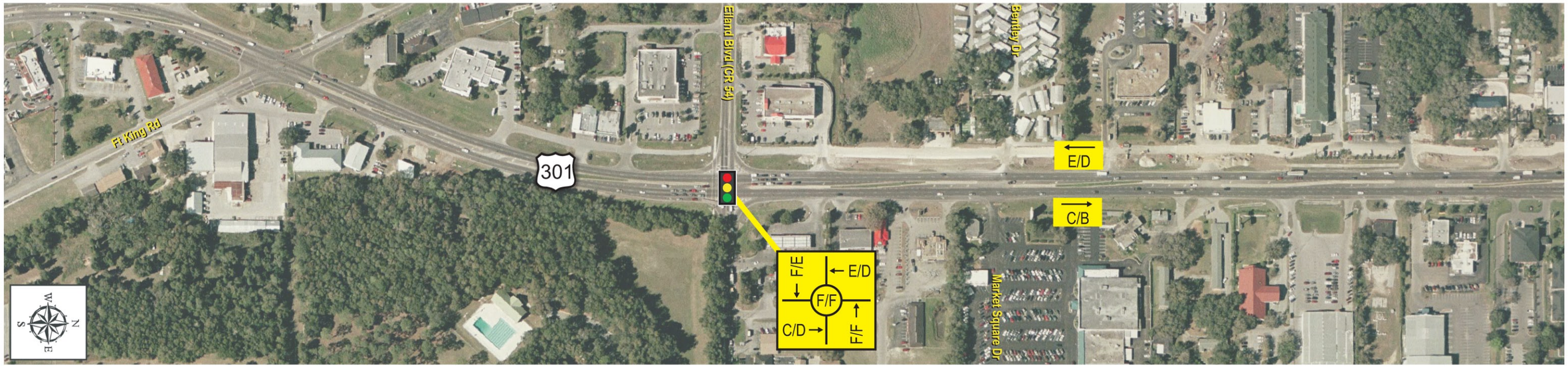
Cross-Street	Level of Service (LOS)				
	US 301 NB Mainline AM / PM	**US 301 SB Mainline AM / PM**	**EB AM / PM**	**WB AM / PM**	**Overall AM / PM**
CR 54	C / D	E / D	**F / E**	**F / F**	**F / F**
Daughtery Road	B / A	B / A	D / **E**	**F / E**	C / B
Spanish Trails Boulevard[1]	B[2] / B[2]	B[2] / B[2]	D / D	C / **E**	A / A
Townview Square Shopping Center Entrance	B / C	B / B	E / E	D / **E**	C / C
Kossik Road	A / A	B / B	D / D		B / B
Wire Road[1]	A / A	B[2] / B[2]		**F / F**	B / B
Centennial Road	D / C	C / B	C / C	D / D	C / C
US 98[1]	A / A	B[2] / C[2]		**F / F**	**F / F**
CR 52A	C / D	D / C	**F / E**	D / C	**E** / D
Morningside Drive	B / B	A / A	D / D	C / D	B / B
US 98 Bypass	C / C	B / B		C / C	B / C

[1] Indicates two-way stop controlled (TWSC) intersection.
[2] LOS on US 301 is reported for the left-turn movements only; overall LOS is determined using the weighted average delay for all intersection movements.
Bold – Indicates level of service exceeding the minimum acceptable level of service standard D.

Table 2-6
Existing Year (2008) US 301 Intersection Control Delay Summary

Cross-Street	HCM Average Control Delay (sec/veh)				
	US 301 NB Mainline AM / PM	US 301 SB Mainline AM / PM	EB AM / PM	WB AM / PM	Overall AM / PM
CR 54	33.2 / 49.9	58.3 / 36.8	125.0 / 55.5	188.4 / >5 min.	86.6 / 97.3
Daughtery Road	15.3 / 5.7	16.8 / 7.9	45.8 / 61.9	80.1 / 63.8	23.2 / 15.4
Spanish Trails Boulevard[1]	13.4[2] / 10.9[2]	11.2[2] / 14.0[2]	30.6 / 30.8	24.2 / 43.1	0.9 / 1.4
Townview Square Shopping Center Entrance	19.9 / 22.2	19.5 / 18.2	56.8 / 56.2	53.4 / 56.0	26.7 / 27.3
Kossik Road	5.6 / 6.8	14.3 / 15.1	38.1 / 43.3		13.4 / 14.1
Wire Road[1]	0.0 / 0.0	11.3[2] / 13.2[2]		200.9 / 154.8	12.6 / 10.1
Centennial Road	39.8 / 30.1	25.3 / 17.3	24.8 / 24.1	49.4 / 46.0	34.0 / 27.4
US 98[1]	0.0 / 0.0	14.6[2] / 18.4[2]		>5 min. / >5 min.	106.3 / 117.1
CR 52A	32.8 / 51.5	44.0 / 31.0	143.5 / 68.5	39.0 / 34.0	65.0 / 47.4
Morningside Drive	15.2 / 18.8	6.9 / 6.5	39.1 / 42.5	32.8 / 36.7	14.6 / 17.1
US 98 Bypass	20.1 / 30.6	13.0 / 10.0		22.4 / 20.5	18.5 / 23.4

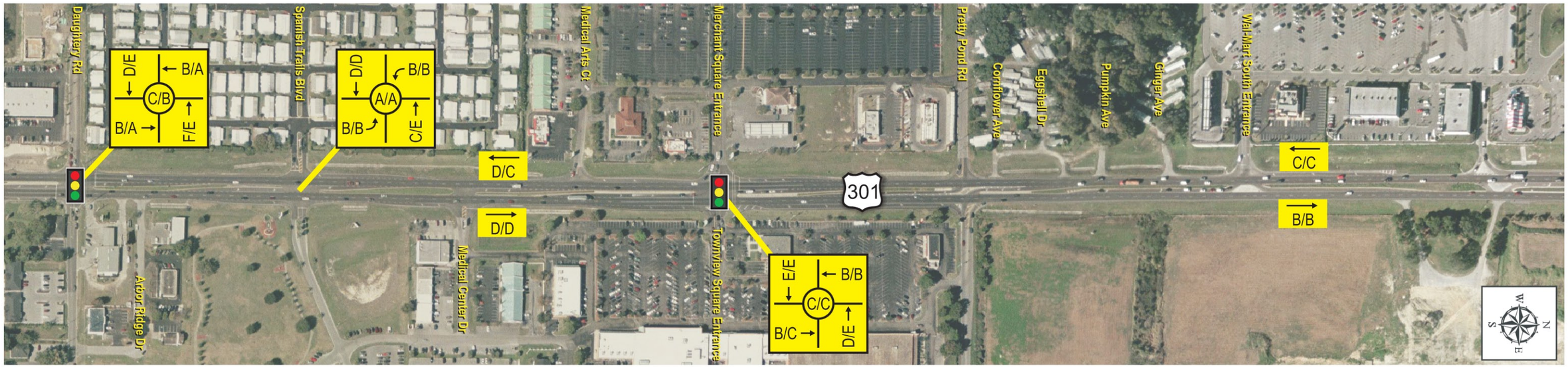
[1] Indicates two-way stop controlled (TWSC) intersection.
[2] Delay is reported for the left-turn movements only; overall delay is the weighted average delay for all intersection movements.



300 150 0 300 Feet

X/X
PM LOS
AM LOS

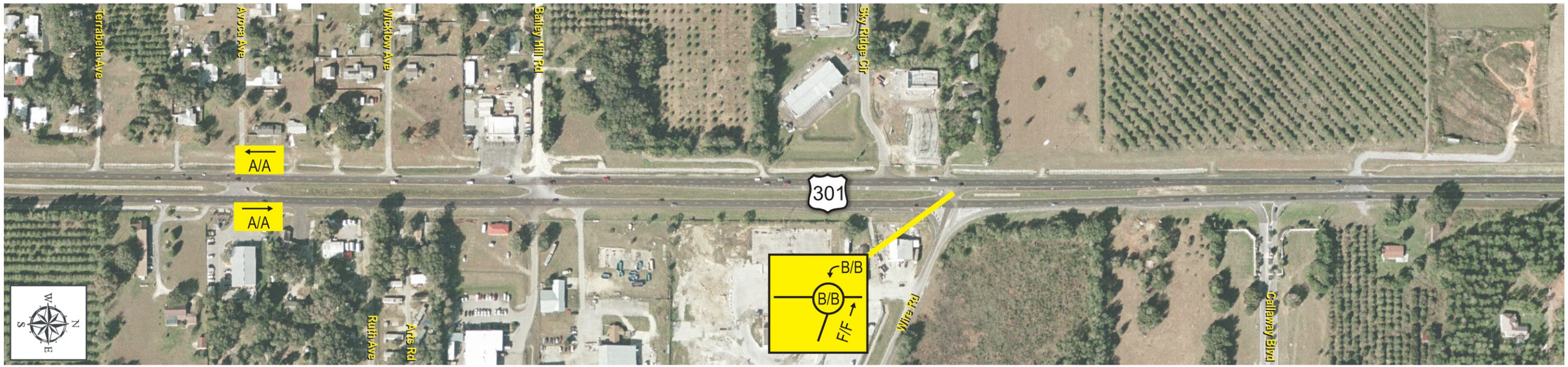
Existing Lane
Signal
Flash Signal



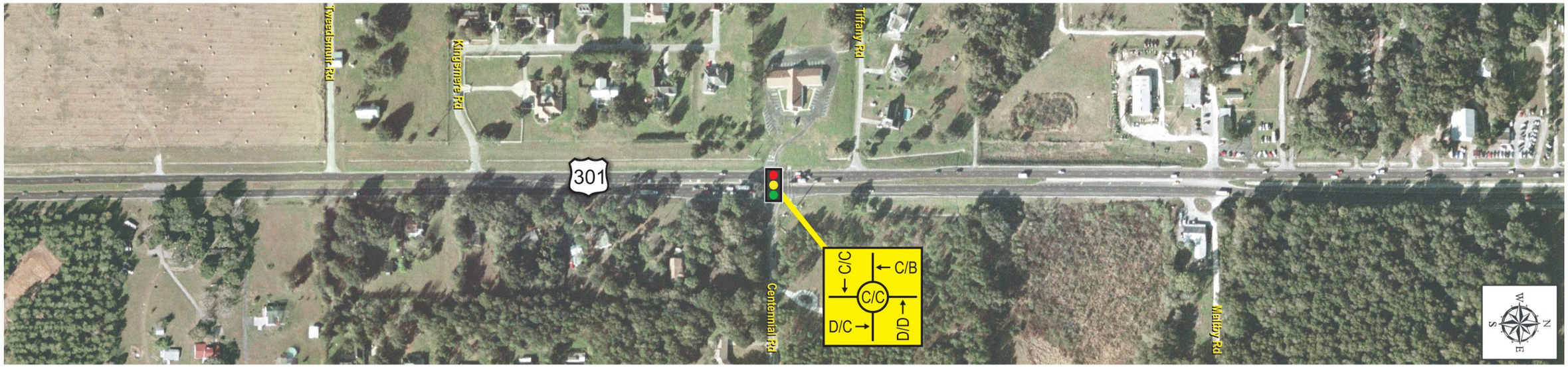
US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)

EXISTING YEAR (2008) CORRIDOR LEVEL OF SERVICE (LOS)

EXHIBIT 4A



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**EXISTING YEAR (2008) CORRIDOR LEVEL OF SERVICE (LOS)**	**EXHIBIT 4B**

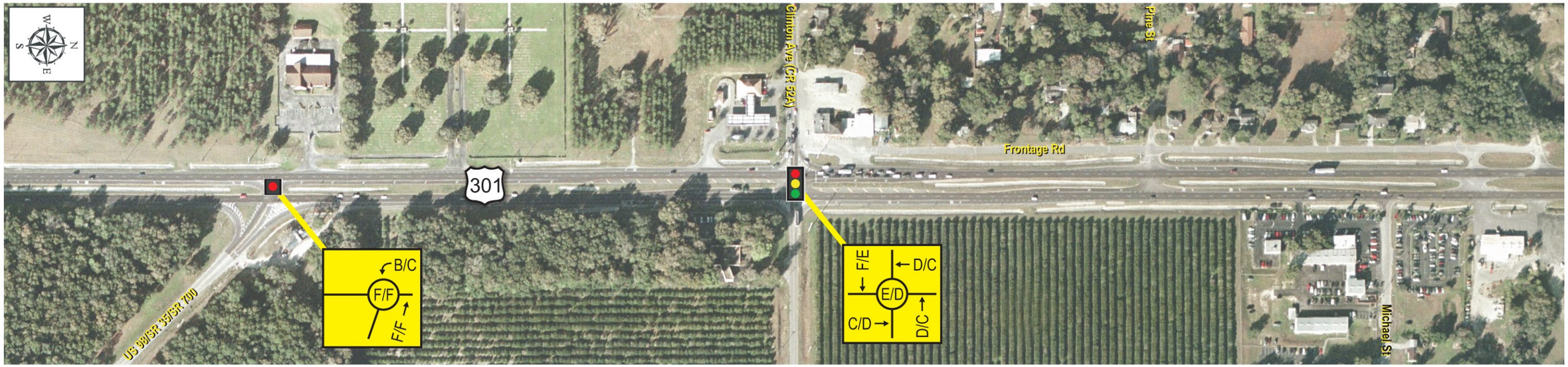


300 150 0 300 Feet

X/X
PM LOS
AM LOS

Existing Lane
Signal
Flash Signal

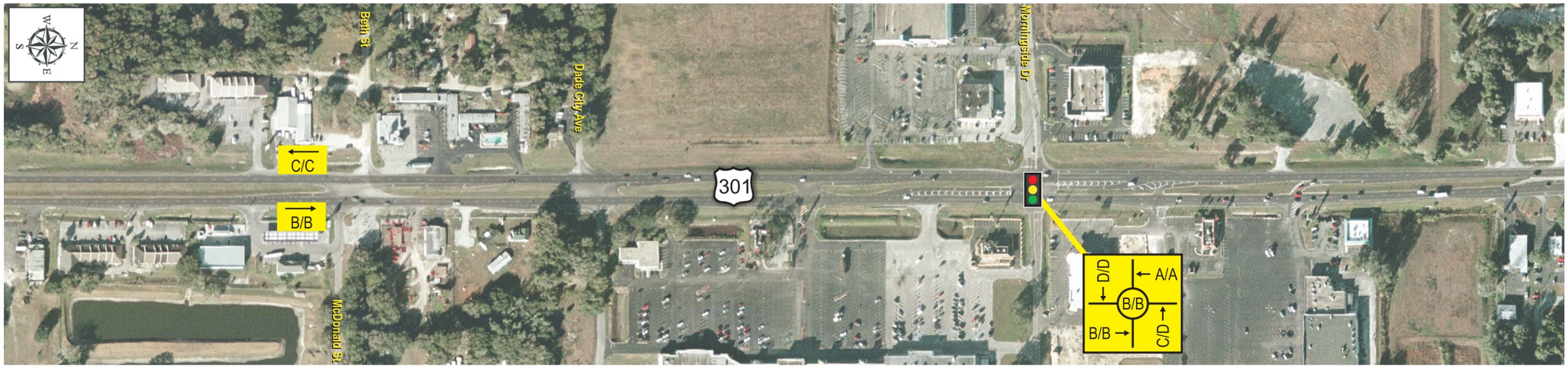
US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**EXISTING YEAR (2008) CORRIDOR LEVEL OF SERVICE (LOS)**	**EXHIBIT 4C**



300 150 0 300 Feet

X/X
PM LOS
AM LOS

Existing Lane
Signal
Flash Signal



US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

EXISTING YEAR (2008) CORRIDOR LEVEL OF SERVICE (LOS)

EXHIBIT 4D

300 150 0 300 Feet

X/X
PM LOS
AM LOS

Existing Lane
Signal
Flash Signal

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**EXISTING YEAR (2008) CORRIDOR LEVEL OF SERVICE (LOS)**	**EXHIBIT 4E**

2.6 EXISTING YEAR (2008) ARTERIAL ANALYSIS

The existing year (2008) US 301 arterial segment LOS analyses were conducted using the estimated existing year (2008) design hour volumes. The arterial segment LOS analysis was conducted using the Synchro 7.0 Version (Build 761) software. For the arterial analysis, the free flow speed was assumed to be the posted speed limit. The US 301 arterial functional and design categories were determined to be Principal Arterial and High-Speed (posted speed limit 45-55 mph), respectively, based on Exhibit 10-4 of the HCM 2000. The urban street class of the US 301 arterial was established as Class I using Exhibit 10-3 of the HCM 2000. The existing arterial LOS results for the northbound and southbound directions of US 301 are summarized in **Table 2-7** and **Table 2-8,** respectively and shown on **Exhibits 4A-4E**.

Table 2-7
Existing Year (2008) US 301 Arterial Northbound Level of Service Summary

US 301 Segment	Segment Length (miles)	Posted Speed (mph)	Arterial Speed (mph)		Arterial LOS	
			AM	PM	AM	PM
CR 54 to Daughtery Road	0.51	45	30.0	35.5	C	B
Daughtery Road to Townview Square Shopping Center Entrance	0.36	45	26.4	22.3	D	D
Townview Square Shopping Center Entrance to Kossik Road	0.65	45	40.4	39.5	B	B
Kossik Road to Centennial Road	2.01	55	41.9	41.8	B	B
Centennial Road to CR 52A	1.76	50	44.6	43.8	A	A
CR 52A to Morningside Drive	1.02	50	41.2	39.4	B	B
Morningside Drive to SR 533	0.82	45	31.2	25.4	C	D
CR 54 to US 98 Bypass (Entire Northbound Arterial)	7.12	45-55	38.5	36.9	B	B

Table 2-8
Existing Year (2008) US 301 Arterial Southbound Level of Service Summary

US 301 Segment	Segment Length (miles)	Posted Speed (mph)	Arterial Speed (mph)		Arterial LOS	
			AM	PM	AM	PM
US 98 Bypass to Morningside Drive	0.82	45	40.5	41.2	B	B
Morningside Drive to CR 52A	1.02	50	30.6	33.9	C	C
CR 52A to Centennial Road	1.76	55	44.8	47.7	A	A
Centennial Road to Kossik Road	2.01	55	49.0	48.9	A	A
Kossik Road to Townview Square Shopping Center Entrance	0.65	45	32.0	33.1	C	C
Townview Square Shopping Center Entrance to Daughtery Road	0.36	45	23.9	30.0	D	C
Daughtery Road to CR 54	0.51	45	17.7	23.2	**E**	D
US 98 Bypass to CR 54 (Entire Southbound Arterial)	7.12	45-55	36.0	39.2	B	B

2.7 CRASH ANALYSIS

Crash data for the US 301 study corridor was obtained from FDOT District Seven for the five most recent years (2003 to 2007). The FDOT data includes crash location, number and type of crash and crash severity. The crash data was analyzed on both a segment and intersection basis. The roadway was divided into four segments so that each segment is representative of either a suburban, rural, or urban area. The segment from south of CR 54 to north of Pretty Pond Road is suburban. The segment from north of Pretty Pond Road to CR 52A is rural. The segment from CR 52A to north of Countryside Place is suburban. The segment from north of Countryside Place to US 98 Bypass is urban. Intersection crashes were identified to be crashes occurring within 250-feet of intersection midpoint.

As shown in **Table 2-9**, 810 crashes occurred along the US 301 mainline (an average of 162 crashes per year) during the five-year study period. There were four fatalities and 783 injuries for this five year period. **Table 2-9** involves the calculation of a crash rate, critical crash rate, and safety ratio. The crash rate is calculated accordingly: Crash Rate = (Total Crashes * 10^6) / (365 * segment length * AADT), the units are displayed as the number of crashes per million vehicle miles. The critical crash rate uses the following formula: Critical Crash Rate = Statewide Crash Rate + [K * (Statewide Crash Rate / V) $^{1/2}$] – [1 / (2 * V)]; where V = (AADT * 365) / 10^6 and K = 1.645. The safety ratio is then determined by dividing the crash rate by the critical crash rate. Safety ratios greater than 1.000 indicate that the incidence of vehicle collisions is above average; therefore, traffic safety at these locations may need to be improved. The average crash rate for the entire US 301 corridor was 3.209 crashes per million

vehicle miles traveled; however, for the US 301 segment between CR 52A and north of Countryside Place the average crash rate was 4.681.

Table 2-9
US 301 Crash History Overview

Segment	2003	2004	2005	2006	2007	Total	Average
CR 54 to North of Pretty Pond Road							
Fatal Crashes (Fatalities)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	1 (1)	0 (0)
Injury Crashes (Injuries)	28 (51)	37 (66)	23 (37)	31 (57)	27 (43)	146 (254)	29 (51)
Property Damage Only	7	23	18	19	22	89	18
Total Crashes	35	60	41	51	49	236	47
AADT	23,000	21,500	26,500	33,500	37,000	-	28,300
Distance (miles)	1.068	1.068	1.068	1.068	1.068	-	1.068
Crash Rate	3.904	7.159	3.969	3.905	3.397	-	4.278
Statewide Avg. Crash Rate	1.452	1.415	1.461	1.371	1.357	-	1.411
Critical Crash Rate	2.058	2.031	2.031	1.866	1.827	-	1.958
Safety Ratio	1.897	3.524	1.954	2.093	1.860	-	2.186
North of Pretty Pond Road to CR 52A							
Fatal Crashes (Fatalities)	0 (0)	0 (0)	2 (3)	0 (0)	0 (0)	2 (3)	0 (1)
Injury Crashes (Injuries)	23 (53)	30 (70)	28 (60)	32 (62)	23 (59)	136 (304)	27 (61)
Property Damage Only	4	6	14	16	14	54	11
Total Crashes	27	36	44	48	37	192	38
AADT	18,200	19,600	24,000	25,500	26,000	-	22,700
Distance (miles)	4.260	4.260	4.260	4.260	4.260	-	4.260
Crash Rate	0.954	1.181	1.179	1.211	0.915	-	1.088
Statewide Avg. Crash Rate	0.703	0.665	0.592	0.591	0.578	-	0.626
Critical Crash Rate	0.945	0.892	0.786	0.779	0.762	-	0.841
Safety Ratio	1.010	1.325	1.500	1.554	1.201	-	1.293

Table 2-9 (continued)
US 301 Crash History Overview

Segment	2003	2004	2005	2006	2007	Total	Average
CR 52A to North of Countryside Place							
Fatal Crashes (Fatalities)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Injury Crashes (Injuries)	17 (26)	24 (42)	28 (50)	27 (44)	16 (36)	112 (198)	22 (40)
Property Damage Only	33	38	53	46	27	197	39
Total Crashes	50	62	81	73	43	309	77
AADT	25,000	17,800	26,000	29,000	31,000	-	25,800
Distance (miles)	1.402	1.402	1.402	1.402	1.402	-	1.402
Crash Rate	3.908	6.807	6.088	4.919	2.711	-	4.681
Statewide Avg. Crash Rate	1.452	1.415	1.461	1.371	1.357	-	1.411
Critical Crash Rate	1.967	2.008	1.969	1.837	1.807	-	1.914
Safety Ratio	1.987	3.389	3.093	2.677	1.500	-	2.445
North of Countryside Place to US 98 Bypass							
Fatal Crashes (Fatalities)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Injury Crashes (Injuries)	5 (9)	5 (6)	2 (2)	6 (8)	2 (2)	20 (27)	4 (5)
Property Damage Only	7	19	12	9	6	53	11
Total Crashes	12	24	14	15	8	73	15
AADT	27,000	28,500	30,500	32,000	30,500	-	29,700
Distance (miles)	0.483	0.483	0.483	0.483	0.483	-	0.483
Crash Rate	2.521	4.777	2.604	2.659	1.488	-	2.788
Statewide Avg. Crash Rate	2.620	2.669	2.692	2.547	2.429	-	2.591
Critical Crash Rate	3.735	3.768	3.763	3.564	3.442	-	3.643
Safety Ratio	0.675	1.268	0.692	0.746	0.432	-	0.765
Total – CR 54 to US 98 Bypass							
Fatal Crashes (Fatalities)	0 (0)	0 (0)	2 (3)	1 (1)	0 (0)	3 (4)	1 (1)
Injury Crashes (Injuries)	73 (139)	96 (184)	81 (149)	96 (171)	68 (140)	414 (783)	83 (157)
Property Damage Only	51	86	97	90	69	393	79
Total Crashes	124	182	180	187	137	810	162
AADT*	20,800	20,100	25,200	27,800	28,900	-	24,600
Distance (miles)	7.213	7.213	7.213	7.213	7.213	-	7.213
Crash Rate	2.822	4.981	3.460	3.173	2.128	-	3.209
Statewide Avg. Crash Rate*	1.088	1.056	1.030	0.989	0.969	-	1.026
Critical Crash Rate	1.629	1.596	1.512	1.440	1.407	-	1.512
Safety Ratio	1.733	3.121	2.288	2.204	1.513	-	2.122

Source: FDOT District Seven, 2003–2007 Crash Data
Note: The AADT values and Statewide Average Crash Rates for the Total Corridor reflect weighted averages based on length of segment

The types of US 301 crashes are summarized in **Table 2-10**. The analysis indicates that rear-end and angle crashes occurred with the highest frequency. Excessive driveways and median openings that do not meet the access management standards, likely is the cause of these rear-end crashes. The angle crashes are probably due to drivers running red lights because of increased levels of traffic congestion and associated delays. Therefore, adequate access management and Transportation System Management (TSM) strategies potentially could help reduce the number of crashes along the US 301 corridor.

Table 2-11 shows the US 301 crashes that occur in close proximity (within 250-feet) of the midpoint of intersections along the US 301 mainline. The data collected was organized according to the node assigned to a given location. Based on the last five-year crash average, CR 52A had the highest crash rate (crashes per million entering vehicles) along the US 301 mainline.

Table 2-10
US 301 Crash Type

Crash Type	2003	2004	2005	2006	2007	Total	Percentage	Average
Rear-end	44	57	61	51	35	248	30.6	50
Angle	29	36	30	47	30	172	21.2	34
Other	21	32	32	28	28	141	17.4	28
Left-turn	11	18	21	18	23	91	11.2	18
Sideswipe	7	11	15	14	8	55	6.8	11
Motor Vehicle	2	8	3	6	3	22	2.7	4
Run-off/Overturn	5	5	4	4	1	19	2.3	4
Fixed Object	3	3	2	6	3	17	2.1	3
Right-turn	1	4	5	2	4	16	2.0	3
Pedestrian/Bicycle	3	4	3	3	0	13	1.6	3
Head-on	2	4	0	1	2	9	1.1	2
Back-up	0	0	1	2	1	4	0.5	1
Moveable Object	0	0	1	1	1	3	0.4	1
Total	**128**	**182**	**178**	**183**	**139**	**810**	**100**	**162**

Table 2-11
US 301 Intersection Crashes

Intersection	Mile Post	2003	2004	2005	2006	2007	Total	Total Entering Daily Traffic Volume	Crash Rate
CR 52A	11.637	19	25	36	26	17	123	36,800	1.653
Morningside Drive	12.654	11	14	14	23	11	73	32,100	1.246
CR 54	6.354	8	19	13	18	15	73	42,700	0.770
Daughtery Road	6.862	9	11	10	8	10	48	35,400	0.743
Countryside Place	12.993	10	11	16	8	3	48	25,800	1.019
Centennial Road	9.879	2	5	11	14	14	46	26,400	0.955
Pretty Pond Road	7.362	7	20	4	8	6	45	28,300	0.871
Wire Road/TLC Lane	9.103	8	3	4	2	6	23	25,900	0.487
Kossik Road	7.867	4	1	2	6	5	18	25,800	1.911
Townview Square Shopping Center Entrance	7.220	1	4	1	4	3	13	32,600	0.219
US 98 Bypass	13.476	2	2	0	1	0	5	31,800	0.086

Note: Intersection related crashes are assumed to occur 250-ft from intersection midpoint; side street crashes were not considered.

2.8 TRANSIT OPERATIONS

As a part of the PD&E Study, coordination with transit and local government officials occurred in order to determine what multi-modal accommodations would be studied and evaluated as part of the project alternatives. These accommodations would include only existing and planned multi-modal facilities. Transit services are currently available on US 301 between the City of Zephyrhills and the City of Dade City, with limited transit service to the eastern limits of CR 54. Route 30 is an established fixed route that provides a north/south link between the two cities via US 301. This route, which has one-hour headways, begins at 7:15 AM and ends at 5:00 PM, Monday through Friday. The only transit improvement proposed within the study corridor is the installation of bus shelters at needed locations. Other transit enhancements that are expected over the next decade include expanded hours/days of service, and increased connectivity with additional local and express service routes.

2.9 REFERENCES

1. *Florida Department of Transportation Traffic Forecasting Handbook*, 2002
2. *US 98 Dade City Bypass PD&E Study from US 301 South to US 301 North [FPN: 256423 1]*, 2002
3. *US 301 (SR 41) PD&E Study from SR 39 to CR 54 [FPN: 256422 1]*, 2000
4. *US 301 Corridor Study, City of Dade City to City of Zephyrhills*, 2002

SECTION 3
ACCESS MANAGEMENT

3.1 ACCESS MANAGEMENT

Access management provides for the orderly movement of traffic to and from adjacent land uses along a roadway and helps a facility to operate in a more efficient, safe and accessible manner by reducing potential vehicle and pedestrian conflict points. The Florida Department of Transportation (FDOT) has developed minimum driveway spacing standards for connections, median openings, and signalized intersections on the State Highway System (SHS). The minimum spacing standards are summarized in **Table 3-1**. US 301 in Pasco County is designated as Access Class 5 from CR 54 to Pretty Pond Road and Access Class 3 from Pretty Pond Road to US 98 Bypass.

Table 3-1
Access Classification and Standards for Controlled Access Facilities

Access Class	Facility Design Features (Median Treatment and Access Roads)	Minimum Connection Spacing (ft) (>45mph / ≤45mph)	Minimum Median Opening Spacing (ft) (>45mph / ≤45mph)		Minimum Signal Spacing (mi) (>45mph / ≤45mph)
			Bi-Directional	Full	
2	Restrictive w/ Service Roads	1,320 / 660	1,320	2,640	0.5
3	**Restrictive**	**660 / 440**	**1,320**	**2,640**	**0.5**
4	Non-Restrictive	660 / 440	N/A	N/A	0.5
5	**Restrictive**	**440 / 245**	**660**	**2,640 / 1,320**	**0.5 / 0.25**
6	Non-Restrictive	440 / 245	N/A	N/A	0.25
7	Both	125	330	660	0.25

Source: State Highway System Access Management Classification System and Standards, Florida Administrative Chapter 14-97.

3.2 MEDIAN OPENINGS

Median openings consist of full and directional median openings. Full median openings allow all turning movements to occur, but directional median openings allow some turning movements and restrict others. Typically, through and left-out movements from cross-streets are restricted at directional median openings. A full median opening can be a signalized or an unsignalized

intersection. The location and type of the existing and proposed median openings along the US 301 study corridor are summarized in **Table 3-2** and **Table 3-3.** In addition, the proposed median openings are shown on **Exhibits 5A-5G.** The median spacing shown in **Exhibits 5A-5G** is the actual spacing between proposed median openings. However, in **Table 3-2** and **Table 3-3**, the median spacing takes into account the spacing to the north and south of the median and records the lower of the two values. This method was used in order to be more conservative when evaluating percent compliance with FDOT access class standards. In **Table 3-2** and **Table 3-3** the median spacing for median openings with full access is calculated the same way; however, instead of using the first median opening north and south of the desired median opening, the spacing is measured from the nearest full median opening to the north and south. The smaller of the two values is then recorded in the appropriate table. In order to be consistent with the Zephyr Commons development site plan, which has been approved by FDOT, the proposed median openings from Pretty Pond Road to Kossik Road were adopted in this study. On May 27, 2009 the Access Management Review Committee (AMRC) conditionally approved the proposed access management plan presented in **Table 3-3**. Approval was contingent on closing the median opening at the Beth Street/McDonald Street intersection A copy of the approval letter is included in **Appendix C** (under separate cover).

Table 3-2
US 301 Corridor Existing Median Openings

Cross-Street	Mile Post	Type of Access	Type of Traffic Control	FDOT Access Classification	Maximum Posted Speed (mph)	Existing Spacing (ft)		Percent Compliant with FDOT Access	
						Signal	Median	Signal	Median
CR 54	**6.354**	**Full**	**Signalized**	**5**	**45**	**1,390**	**820**	**100**	**62**
Market Square Road/Bentley Road	6.509	Full	Unsignalized	5	45	-	660	-	50
Unnamed	6.633	Full	Unsignalized	5	45	-	570	-	43
Unnamed	6.740	Full	Unsignalized	5	45	-	570	-	43
Daughtery Road	**6.862**	**Full**	**Signalized**	**5**	**45**	**1,890**	**640**	**100**	**49**
Spanish Trails Boulevard/East Pasco Medical Center	6.992	Full	Unsignalized	5	45	-	470	-	35
Medical Center Drive	7.080	Full	Unsignalized	5	45	-	470	-	35
Townview Square Shopping Center Entrance/Merchant Square Entrance	**7.220**	**Full**	**Signalized**	**5**	**45**	**1,890**	**740**	**100**	**56**
Pretty Pond Road	7.362	Bi-Directional	Unsignalized	5	45	-	750	-	100
Wal-Mart S. Entrance	7.520	NB-Directional	Unsignalized	3	45	-	780	-	59
Wal-Mart North Driveway	7.668	SB-Directional	Unsignalized	3	45	-	780	-	59
Kossik Road	**7.867**	**Full**	**Signalized**	**3**	**45**	**3,420**	**370**	**100**	**14**
Unnamed	7.937	Full	Unsignalized	3	45	-	370	-	14
Unnamed (No Access)	8.231	Full/U-turn Only	Unsignalized	3	55	-	1370	-	100
Poncan Circle	8.490	Full	Unsignalized	3	55	-	1130	-	43
Avoca Avenue	8.704	Full	Unsignalized	3	55	-	870	-	33
Bailey Hill Road/Roberts Road	8.868	Full	Unsignalized	3	55	-	870	-	33
Wire Road/TLC Lane	9.106	Full	Unsignalized	3	55	-	1210	-	46

Table 3-2 (continued)
US 301 Corridor Existing Median Openings

Cross-Street	Mile Post	Type of Access	Type of Traffic Control	FDOT Access Classification	Maximum Posted Speed (mph)	Existing Spacing (ft)		Percent Compliant with FDOT Access Class	
						Signal	Median	Signal	Median
Unnamed	9.334	Full	Unsignalized	3	55	-	1030	-	39
Unnamed	9.529	Full	Unsignalized	3	55	-	990	-	37
Kingsmere Road	9.716	Full	Unsignalized	3	55	-	860	-	33
Centennial Road	**9.879**	**Full**	**Signalized**	**3**	**55**	**9,280**	**860**	**100**	**33**
Maltby Road	10.129	Full	Unsignalized	3	55	-	80	-	3
Townsend Road	10.381	Full	Unsignalized	3	55	-	910	-	34
Unnamed	10.553	Full	Unsignalized	3	55	-	50	-	2
Unnamed	10.813	Full/U-Turn Only	Unsignalized	3	55	-	1320	-	100
Unnamed	11.121	Full/U-Turn Only	Unsignalized	3	55	-	1170	-	88
SR 35/US 98	11.342	SB-Directional	Unsignalized	3	50	-	1170	-	88
CR 52A	**11.637**	**Full**	**Signalized**	**3**	**50**	**5,370**	**1090**	**100**	**41**
Pine Street	11.843	Full	Unsignalized	3	50	-	960	-	36
Frontage Road Access	12.024	Full	Unsignalized	3	50	-	960	-	36
McDonald Street	12.255	Full	Unsignalized	3	50	-	120	-	4
Beth Street	12.277	Full	Unsignalized	3	50	-	120	-	4
Rene Street	12.399	Full	Unsignalized	3	50	-	640	-	24
Morningside Plaza N. Entrance	12.523	Full	Unsignalized	3	45	-	660	-	25
Morningside Drive	**12.654**	**Full**	**Signalized**	**3**	**45**	**4,340**	**690**	**100**	**26**
Unnamed	12.724	SB-Directional	Unsignalized	3	45	-	370	-	28
Dade Village Entrance	12.799	SB-Directional	Unsignalized	3	45	-	400	-	30

Table 3-2 (continued)
US 301 Corridor Existing Median Openings

Cross-Street	Mile Post	Type of Access	Type of Traffic Control	FDOT Access Classification	Maximum Posted Speed (mph)	Existing Spacing (ft)		Percent Compliant with FDOT Access Class	
						Signal	Median	Signal	Median
Countryside Place	12.993	Full	Unsignalized	3	45	-	80	-	3
Unnamed	13.007	Full	Unsignalized	3	45	-	80	-	3
Unnamed	13.024	Full	Unsignalized	3	45	-	90	-	3
Unnamed	13.054	Full	Unsignalized	3	45	-	110	-	4
Unnamed	13.073	Full	Unsignalized	3	45	-	110	-	4
Willingham Avenue	13.199	Full	Unsignalized	3	45	-	310	-	12
Lake Drive/Heather Plaza	13.257	Full	Unsignalized	3	45	-	300	-	11
E. Shadow Avenue	13.314	Partial	Unsignalized	3	40	-	260	-	20
E. Sunset Avenue/Hillside Lane	13.363	Full	Unsignalized	3	40	-	260	-	10
E. Dixie Avenue	13.413	Full	Unsignalized	3	40	-	260	-	20
US 98 Bypass	**13.476**	**Full**	**Signalized**	**3**	**40**	**2,970**	**330**	**100**	**13**

Bold – indicates signalized intersection

Table 3-3
US 301 Corridor Proposed Median Openings

Median Opening Number	Cross-Street	Mile Post	Type of Access	Type of Traffic Control	FDOT Access Classification	Maximum Posted Speed (mph)	Proposed Spacing (ft)		Percent Compliant with FDOT Access Cl	
							Signal	Median	Signal	Median
1	**CR 54**	**6.354**	**Full**	**Signalized**	**5**	**45**	**1,390**	**1,390**	**100**	**100**
2	Market Square Drive/Bentley Drive	6.509	Bi-Directional	Unsignalized	5	45	-	570	-	43
3	Pierre Lane	6.616	Bi-Directional	Unsignalized	5	45	-	570	-	43
4	Unnamed (Golden Coral and Eye Glass World Driveways)	6.740	Bi-Directional	Unsignalized	5	45	-	640	-	49
5	**Daughtery Road**	**6.862**	**Full**	**Signalized**	**5**	**45**	**2,640**	**2,640**	**100**	**100**
6	Spanish Trails Boulevard/East Pasco Medical Center	6.992	Bi-Directional	Unsignalized	5	45	-	470	-	35
7	Medical Center Drive	7.080	SB-Directional	Unsignalized	5	45	-	470	-	35
8	Townview Square Shopping Center Entrance/ Merchant Square Entrance	7.220	Bi-Directional	Unsignalized	5	45	-	750	-	100
9	**Pretty Pond Road**	**7.362**	**Full**	**Signalized**	**5**	**45**	**2,640**	**2,640**	**100**	**100**
10	Wal-Mart South Driveway	7.520	Bi-Directional	Unsignalized	3	45	-	780	-	59
11	Wal-Mart North Driveway	7.668	Bi-Directional	Unsignalized	3	45	-	780	-	59
12	**Kossik Road**	**7.867**	**Full**	**Signalized**	**3**	**45**	**2,670**	**2,670**	**100**	**100**
13	Unnamed (Vacant Driveway)	7.938	Closed							
14	Unnamed (south of Phelps Road)	8.239	Closed							
15	Poncan Circle	8.490	Full	Unsignalized	3	55	-	2,000	-	76
16	Avoca Avenue	8.704	Closed							
17	Bailey Hill Road/Roberts Road	8.868	Full	Unsignalized	3	55	-	1,260	-	48
18	Wire Road/TLC Lane	9.106	Full	Unsignalized	3	55	-	1,260	-	48

Table 3-3 (continued)
US 301 Corridor Proposed Median Openings

Median Opening Number	Cross-Street	Mile Post	Type of Access	Type of Traffic Control	FDOT Access Classification	Maximum Posted Speed (mph)	Proposed Spacing (ft)		Percent Compliant with FDOT Access Class	
							Signal	Median	Signal	Median
19	Unnamed (north of Callaway Boulevard)	9.332	Closed							
20	Unnamed (south of Tweedsmuir Road)	9.527	Closed							
21	Kingsmere Road	9.716	Closed							
22	**Centennial Road**	**9.879**	**Full**	**Signalized**	**3**	**55**	**9,280**	**2,650**	**100**	**100**
23	Maltby Road	10.129	NB-Directional	Unsignalized	3	55	-	1,320	-	100
24	Townsend Road	10.381	Full	Unsignalized	3	55	-	2,650	-	100
25	Unnamed (Aarons, Fastonal, Whirlpool, Masters-Hill, etc.)	10.550	Closed							
26	Unnamed (south of Musselman Road)	10.809	Closed							
27	Musselman Road	10.889	Full	Unsignalized	3	55	-	2,390	-	91
28	Unnamed (south of US 98)	11.120	Closed							
29	US 98	11.342	Full	Unsignalized	3	50	-	1,560	-	59
30	**CR 52A**	**11.637**	**Full**	**Signalized**	**3**	**50**	**5,370**	**1,560**	**100**	**59**
31	Pine Street	11.843	Closed							
32	Unnamed (Citrus Dodge Driveway and Frontage Road Access)	12.024	Bi-Directional	Unsignalized	3	50	-	1,980	-	100
33	Beth Street/McDonald Street	12.255	Closed							
34	Unnamed	12.278	Closed							
35	Rene Street	12.399	Full	Unsignalized	3	50	-	1,350	-	51

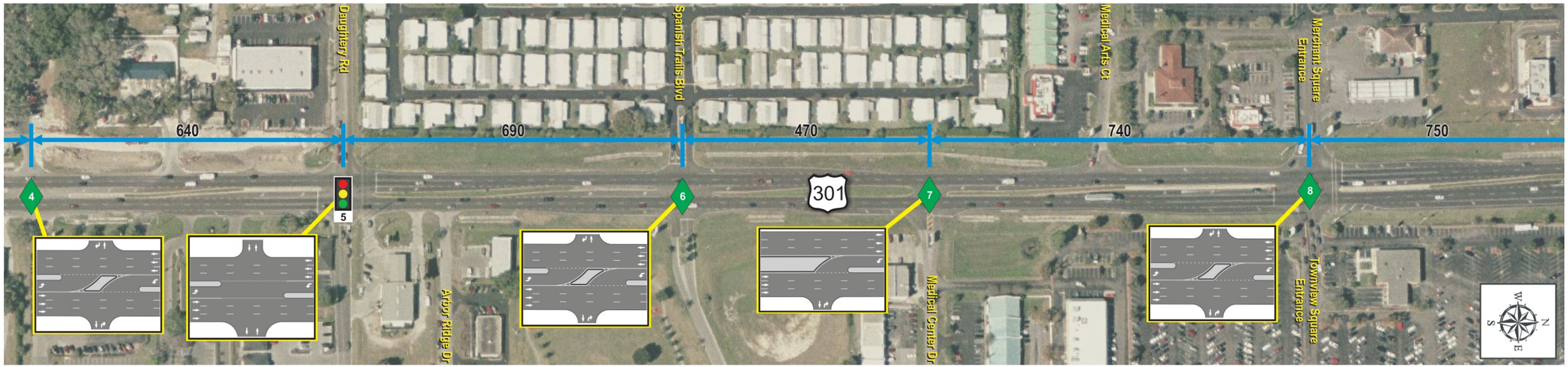
Table 3-3 (continued)
US 301 Corridor Proposed Median Openings

Median Opening Number	Cross-Street	Mile Post	Type of Access	Type of Traffic Control	FDOT Access Classification	Maximum Posted Speed (mph)	Proposed Spacing (ft)		Percent Compliant with FDOT Access Cl	
							Signal	Median	Signal	Median
36	Morningside Plaza N. Entrance	12.523	Closed							
37	**Morningside Drive**	**12.654**	**Full**	**Signalized**	**3**	**45**	**4,340**	**1,350**	**100**	**51**
38	Unnamed	12.724	Closed							
39	Dade Village Entrance	12.799	Closed							
40	Countryside Place	12.993	Bi-Directional	Unsignalized	3	45	-	1,090	-	82
41 - 44	Multiple Driveways Between MP 12.993 and MP 13.199	12.993 to 13.199	Closed							
45	Willingham Avenue	13.199	Full	Unsignalized	3	45	-	1,460	-	55
46	Lake Drive/Heather Plaza	13.257	Closed							
47	E. Shadow Avenue	13.314	Closed							
48	E. Sunset Avenue/Hillside Lane	13.363	Closed							
49	E. Dixie Avenue	13.413	Closed							
50	**US 98 Bypass**	**13.476**	**Full**	**Signalized**	**3**	**40**	**2,970**	**410**	**100**	**15**

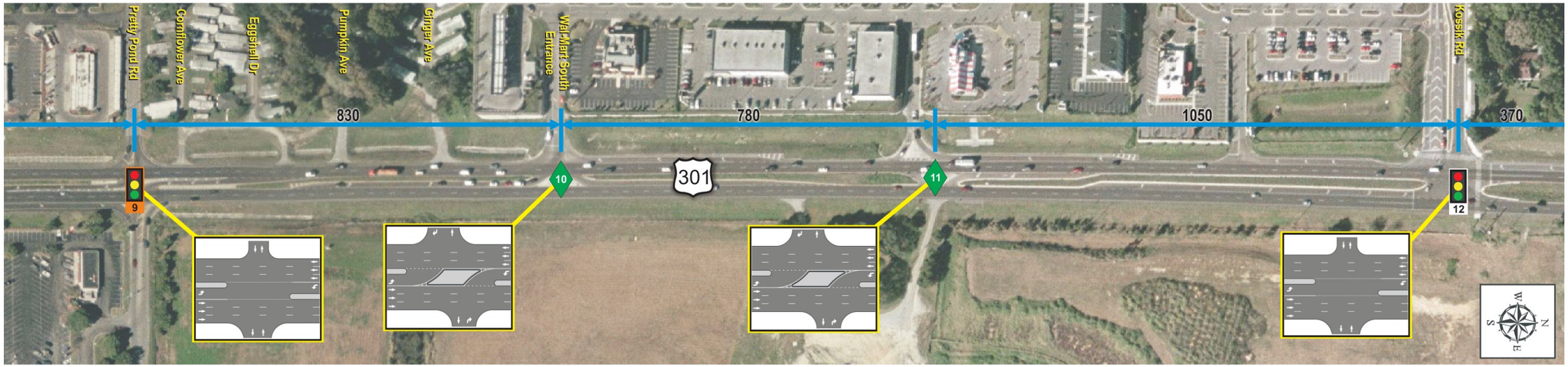
Bold – indicates signalized intersection

200 100 0 200 Feet

Existing Signal
Proposed Signal
Flash Signal
XXX (distance in feet)

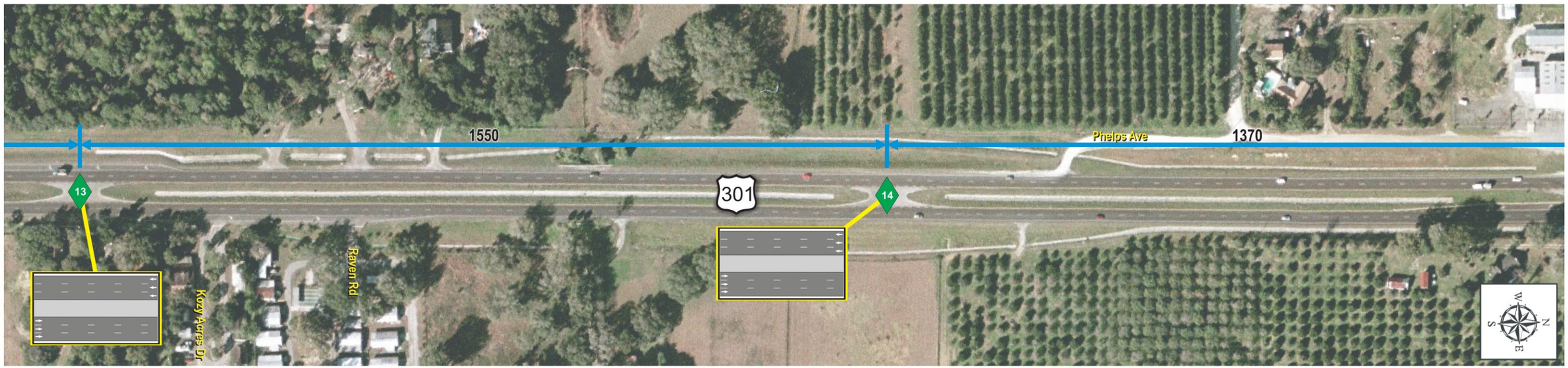


US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**PROPOSED MEDIAN OPENINGS**	**EXHIBIT 5A**

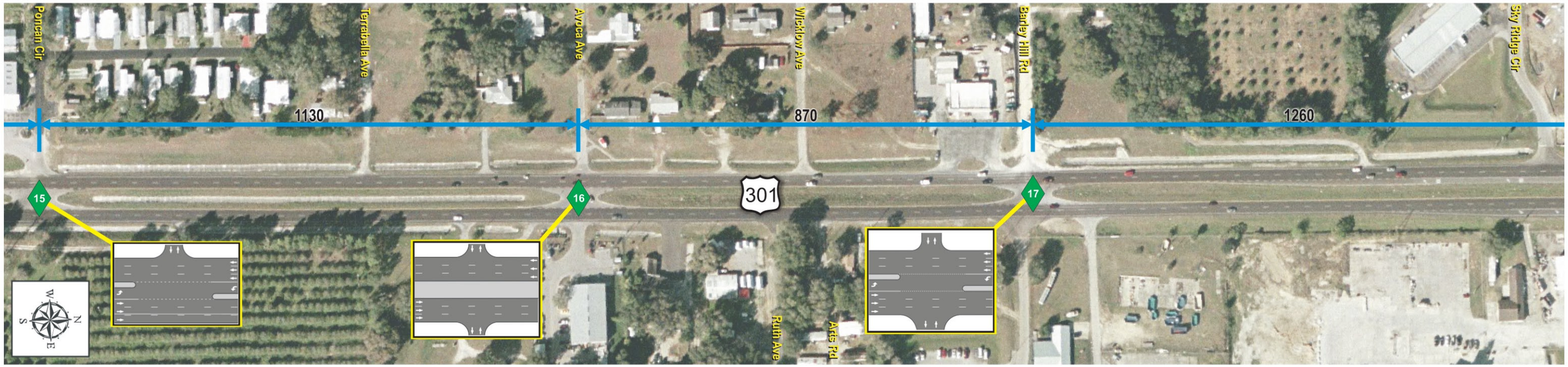


200 100 0 200 Feet

Existing Signal
Proposed Signal
Flash Signal
XXX (distance in feet)

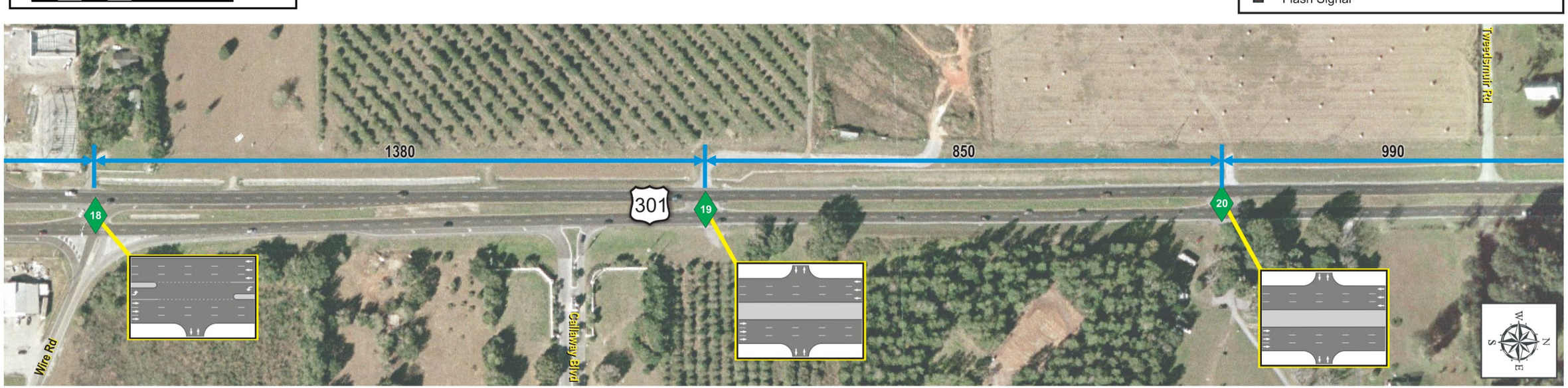


US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**PROPOSED MEDIAN OPENINGS**	**EXHIBIT 5B**

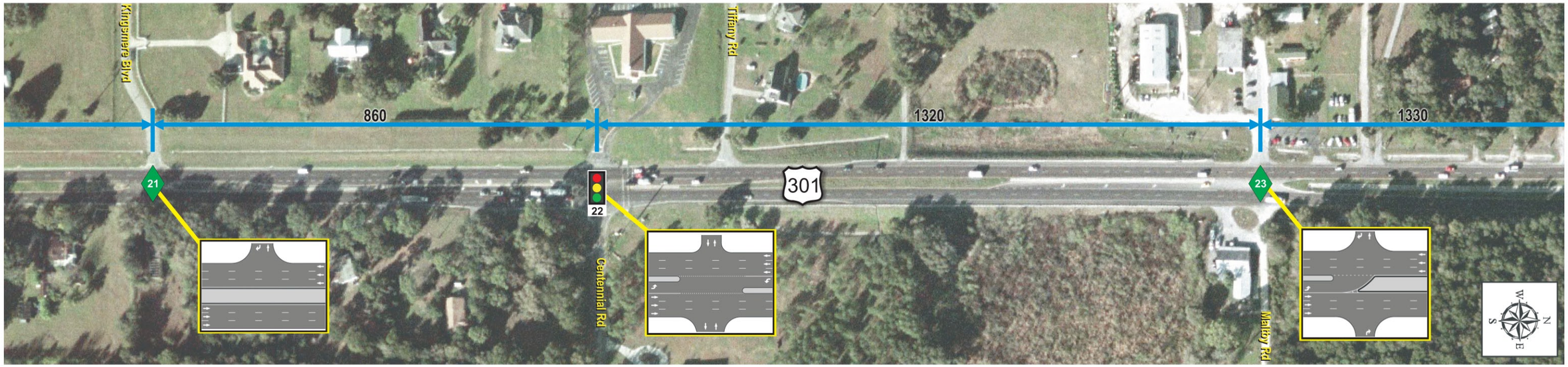


200 100 0 200 Feet

Existing Signal
Proposed Signal
Flash Signal
XXX (distance in feet)

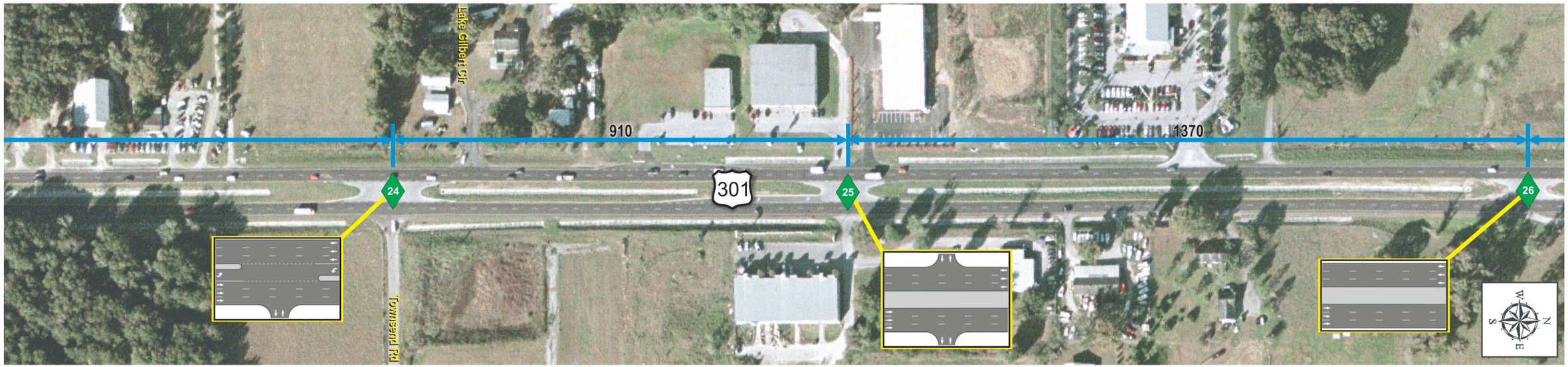


US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**PROPOSED MEDIAN OPENINGS**	**EXHIBIT 5C**

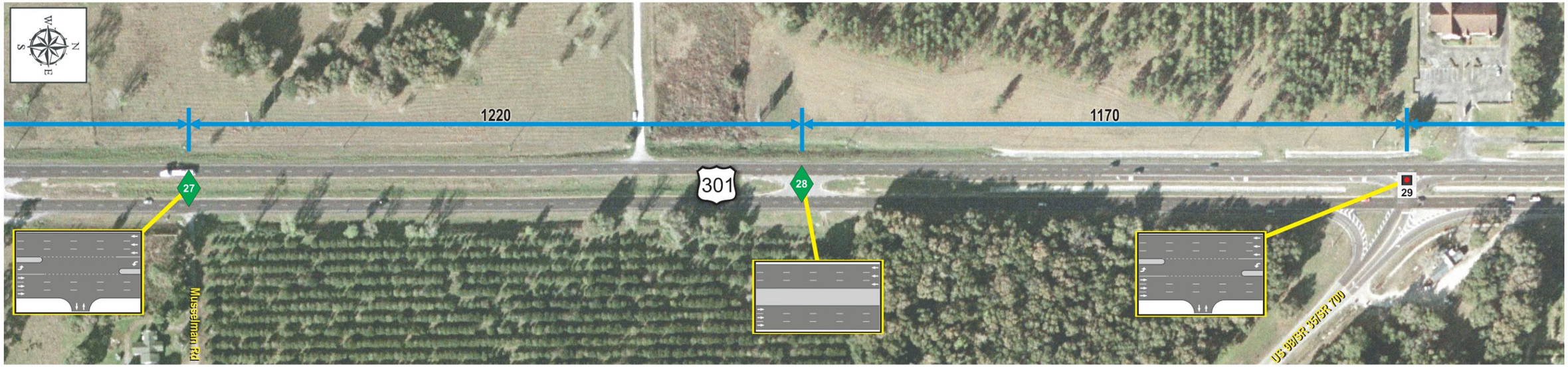


200 100 0 200 Feet

Existing Signal
Proposed Signal
Flash Signal
XXX (distance in feet)

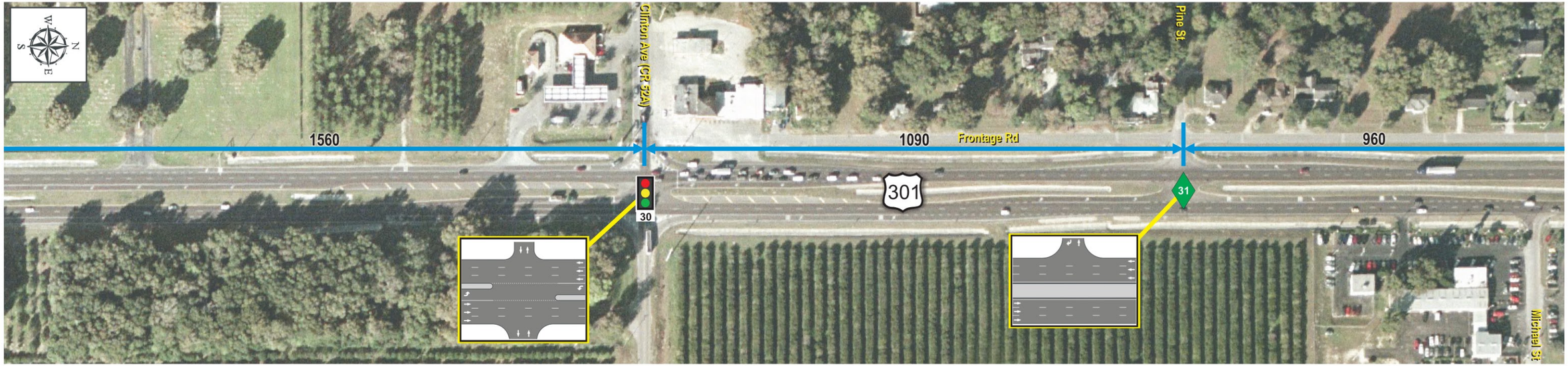


US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**PROPOSED MEDIAN OPENINGS**	**EXHIBIT 5D**



200 100 0 200 Feet

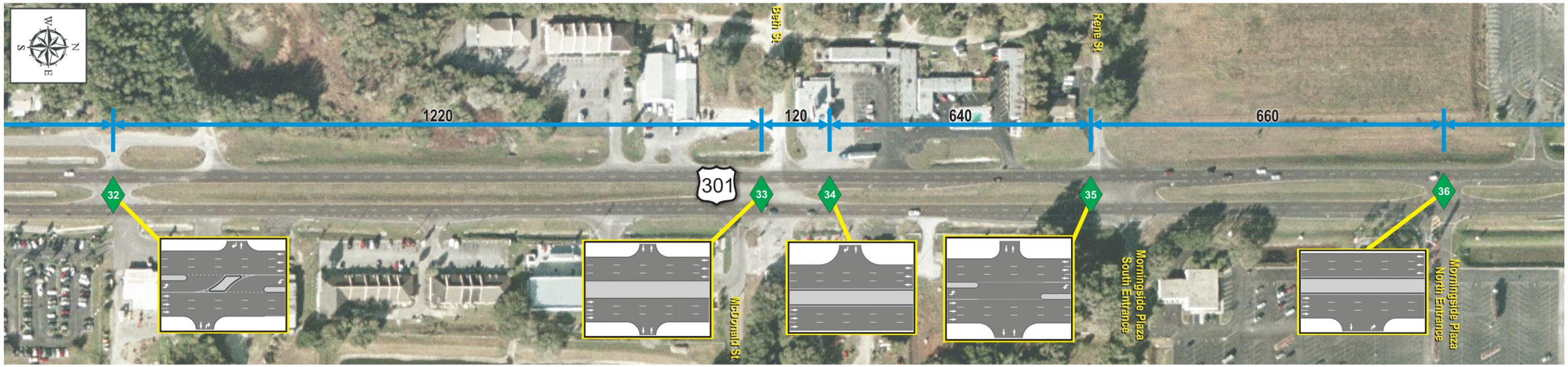
Existing Signal
Proposed Signal
Flash Signal
XXX (distance in feet)



US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

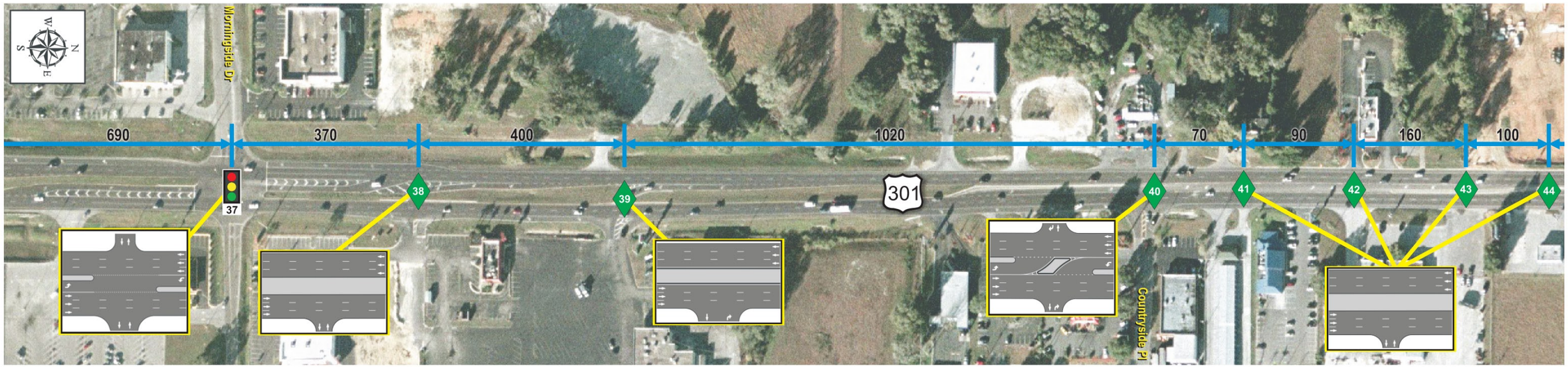
PROPOSED MEDIAN OPENINGS

EXHIBIT 5E

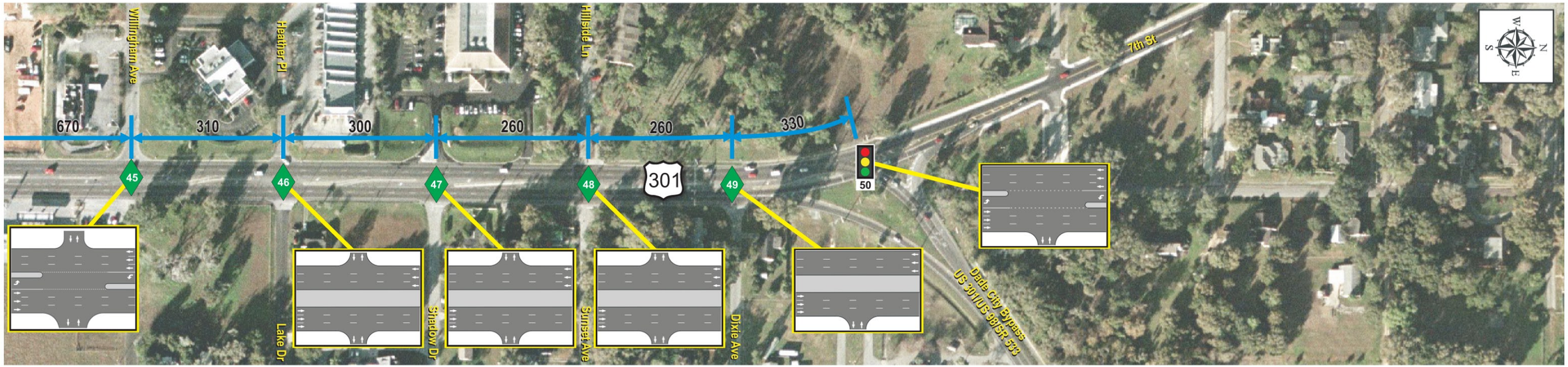


200 100 0 200 Feet

Existing Signal
Proposed Signal
Flash Signal
XXX (distance in feet)



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**PROPOSED MEDIAN OPENINGS**	**EXHIBIT 5F**



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**PROPOSED MEDIAN OPENINGS**	**EXHIBIT 5G**

SECTION 4
FUTURE CONDITIONS

4.1 DEVELOPMENT OF DESIGN YEAR (2035) TRAFFIC PROJECTIONS

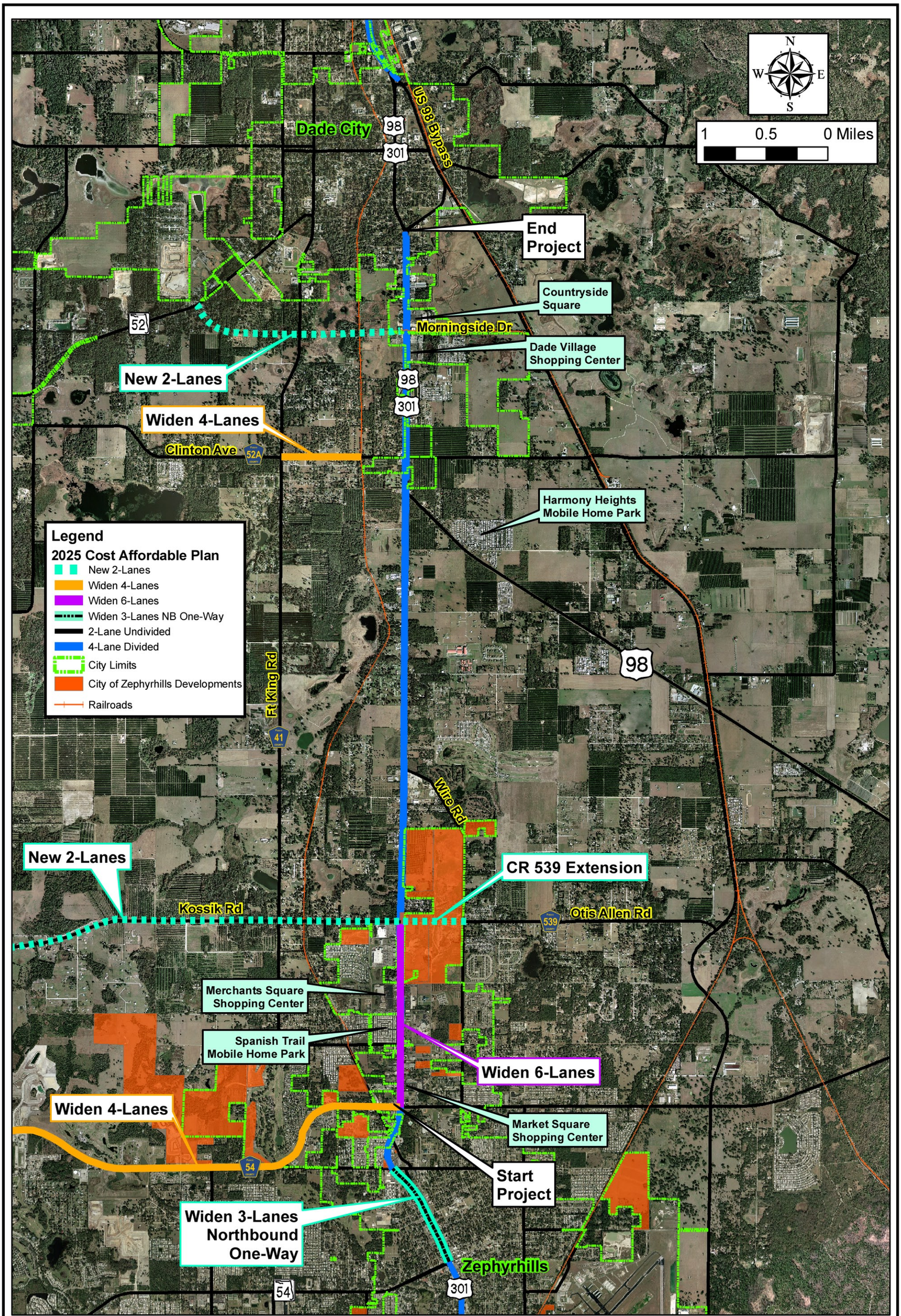
The purpose of this section is to summarize the travel demand forecasting conducted for the US 301 Project Development & Environment (PD&E) study from CR 54 to US 98 Bypass. This section provides an overview of both the process that was used to develop the future year traffic projections for the study area, and the specific values resulting from this process.

The design year for this study is 2035, the opening year is 2015, and the interim year is 2025. The travel demand model that was used to derive the future year traffic projections for the US 301 PD&E Study is the Tampa Bay Regional Planning Model (TBRPM) Version 6.1. The TBRPM is based on the Florida Standard Urban Transportation Modeling Structure (FSUTMS) and is recognized by the Florida Department of Transportation (FDOT), as well as the five Metropolitan Planning Organizations (MPOs) located within FDOT District 7, as the accepted travel demand forecasting model for the Tampa Bay Region. The TBRPM includes Hillsborough, Pinellas, Pasco, Hernando, and Citrus Counties and the Port Manatee area, located in Manatee County.

The TBRPM was validated in the year 2000 by the FDOT and met or exceeded the required validation criteria. The previously adopted 2025 Financially Feasible Long Range Transportation Plan (LRTP) roadway networks for Pasco County (as represented in the Year 2025 TBRPM) was used to develop the forecast volumes. **Exhibit 6** depicts the roadway laneage that was included in the Pasco County MPO's previously adopted 2025 Financially Feasible LRTP for the key roadways within or adjacent to the US 301 study area.

4.1.1 Model Network Refinement

Prior to obtaining future traffic volumes from the TBRPM, the 2025 model network was reviewed and adjustments were made. Given that the TBRPM is based on averages, these adjustments were necessary in order to insure that the model was accurately reflecting the previously adopted 2025 Financially Feasible LRTP, and the observations obtained in the field.



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**ADOPTED 2025 COST AFFORDABLE LRTP LANEAGE**	**EXHIBIT 6**

1. US 301 number of lanes is coded as six lanes between Kossik Road and US 98 Bypass.
2. US 98 Bypass number of lanes is coded as two lanes between the southern and northern intersections of US 98 Bypass and US 301.
3. Curley Road number of lanes is coded as four lanes between Prospect Road and CR 52A.
4. US 301 facility type is changed from 24 (divided arterial class Ib) to 23 (divided arterial class Ia) between Daughtery Road and Kossik Road.
5. US 98 Bypass facility type is changed from 23 (divided arterial class Ia with bays) to 31 (undivided arterial unsignalized with bays) between US 301 and SR 52 (Meridian Avenue).
6. US 98 Bypass facility type is changed from 23 (divided arterial class Ia with bays) to 32 (undivided arterial class Ia with bays) between SR 52 (Meridian Avenue) and US 301.
7. Howard Avenue is coded in the model network between SR 52 (21st Street) and SR 553 (Lakeland Road).
8. Morningside Drive is coded in the model network between US 301 and Old Lakeland Highway.
9. A missing turn prohibitor is coded at the US 301 and US 98 Bypass intersection.
10. Missing turn prohibitors are coded at the US 301 and Pretty Pond Road intersection.
11. Pretty Pond Road facility type is changed from 47 (low speed collector) to 46 (other local undivided collector without bays) between Green Slope Drive and Wire Road.
12. Kossik Road facility type is changed from 43 (major local undivided collector without bays) to 41 (major local divided collector) between US 301 and Wire Road.
13. Green Slope Drive facility type is changed from 42 (major local undivided collector with bays) to 45 (other local undivided collector with bays) between Daughtery Road and Kossik Road.
14. Dairy Road is coded in the model network between Daughtery Road and CR 54.
15. CR 52A facility type is changed from 42 (major local undivided collector with bays) to 31 (undivided arterial unsignalized with bays) between SR 52 and Fort King Road.
16. CR 52A facility type is changed from 41 (major local undivided collector with bays) to 23 (divided arterial class Ia with bays) between Fort King Road and US 301.
17. Wire Road facility type is changed from 46 (other local undivided collector without bays) to 45 (other local undivided collector with bays) between Otis Allen Road and US 301.

18. Fort King Highway facility type is changed from 42 (major local undivided collector with bays) to 45 (other local undivided collector with bays) between Geiger Road/North Avenue and Daughtery Road.

19. The locations of the centroids 2007, 2008, 2009, 2015, 2016, 2019, 2020, 2021, 2024, 2027, 2028, 2031, 2032, 2036, 2056, 2059, 2060, 2061, 2089, 2131 and associated centroid connectors are adjusted to appropriately represent the zonal traffic loadings to the adjacent roads.

4.1.2 Socio-Economic Zonal Data Revisions

The socio-economic zonal data (ZDATA) of the TBRPM were also reviewed to ensure that proposed developments are reflected in the appropriate Traffic Analysis Zones (TAZ). The proposed developments shown in **Table 4-1** were incorporated into the 2025 ZDATA, resulting in the numbers shown in **Table 4-2**. These developments are illustrated in **Exhibit 7**.

The 2025 TBRPM was run and the 2025 Peak Season Weekday Average Daily Traffic (PSWADT) volumes were obtained from the model output and reviewed for reasonableness. The 2025 AADT volumes were obtained by multiplying the 2025 PSWADT volumes by 0.96. This value is the Model Output Conversion Factor (MOCF) for Pasco County.

Table 4-1
Proposed Developments

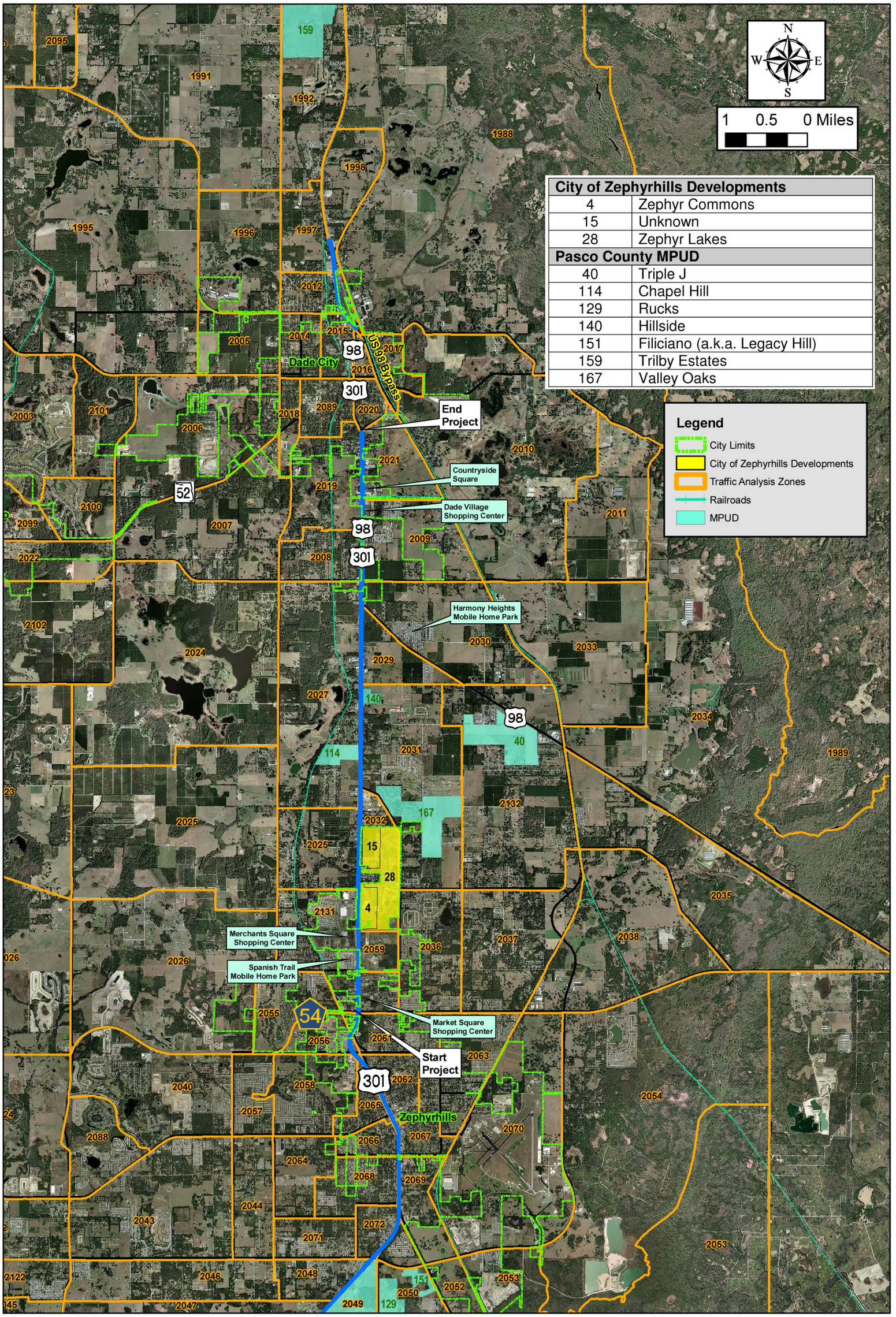
Development	TAZ	Dwelling Units	Commercial Employment	Service Employment
Triple J	2132	791	-	-
Chapel Hill	2027	96	-	-
Rucks	2049	510	300	-
Hillside	2027	55	-	-
Two Rivers	2047, 2130	7000	-	4536
Feliciano / Legacy Hills	2050	190	-	-
Trilby Estates	1992	95	-	-
Valley Oaks	2031	582	-	-
Zephyr Commons	2032	-	1188	-
Zephyr Lakes	2032	553	-	-

Table 4-2
Revised Year 2025 Model ZDATA

TAZ	Dwelling Units	Population	Total Employment
1992	1,384	1,954	240
2027	692	1,708	589
2031	951	2,443	493
2032	836	1,205	1,867
2047	3,748	9,068	5,242
2049	844	2,451	2,098
2050	555	1,140	96
2130	3,540	6,284	165
2132	1,701	4,303	446

4.1.3 Development of Daily Traffic Volumes

The design year (2035) AADT volumes were estimated by extrapolating the growth in traffic volume between year 2008 traffic counts and year 2025 model projected AADT volumes. The year 2025 revised model AADT is included in **Table 4-3**. The term revised refers to the fact that the 2025 model network was adjusted to replicate cost feasible projects in the previously adopted 2025 Pasco County LRTP, as well as anticipated development. The existing year (2008), the opening year (2015), the model year (2025), and the projected design year (2035) AADT volumes are shown in **Table 4-3**.



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**PROPOSED DEVELOPMENTS**	**EXHIBIT 7**

Table 4-3
AADT Traffic Projections

Traffic Count Location	Year 2008 Counts AADT	Year 2015 Projected AADT	Year 2025 Revised Model AADT	Year 2035 Projected AADT
US 301				
South of CR 54	25,100	28,600	33,600	38,700
North of CR 54	28,900	33,600	40,300	47,000
South of Daughtery Road	30,700	35,000	41,100	47,500
North of Daughtery Road	29,100	33,300	39,400	45,200
South of Spanish Trails Boulevard	29,100	33,400	39,300	45,200
North of Spanish Trails Boulevard	29,100	33,300	39,200	45,200
South of Townview Square Shopping Center Entrance	27,800	31,500	36,800	41,900
North of Townview Square Shopping Center Entrance	25,100	28,700	33,700	38,900
South of Kossik Road	22,500	25,100	28,700	32,200
North of Kossik Road	24,000	26,800	30,600	34,500
South of Wire Road	24,200	28,900	35,700	42,600
North of Wire Road	24,500	28,800	35,000	41,000
South of Centennial Road	24,500	28,900	35,200	41,000
North of Centennial Road	24,700	29,200	35,400	40,100
South of US 98	25,200	29,100	34,600	40,000
North of US 98	28,000	32,200	38,100	44,200
South of CR 52A	28,000	32,200	38,300	44,200
North of CR 52A	26,800	30,300	35,400	40,400
South of Morningside Drive	26,100	28,200	31,300	34,400
North of Morningside Drive	27,900	29,500	32,000	34,400
South of US 98 Bypass	31,800	32,700	34,000	35,400
North of US 98 Bypass	17,700	18,900	19,900	20,600
CR 54				
West of US 301	16,100	17,500	19,500	21,600
East of US 301	15,300	16,900	19,200	21,500
Daughtery Road				
West of US 301	5,000	5,500	6,200	6,900
East of US 301	5,900	6,200	6,700	7,100
Spanish Trails Boulevard				
West of US 301	330	400	400	500
East of US 301	1,400	1,600	1,900	2,200
Townview Square Shopping Center Entrance				
West of US 301	6,600	7,300	7,700	8,200
East of US 301	5,600	5,900	6,400	6,900
Kossik Road				
West of US 301	5,000	6,800	9,000	11,200
East of US 301	NA	3,200	7,800	12,300

Table 4-3 (continued)
AADT Traffic Projections

Traffic Count Location	Year 2008 Counts AADT	Year 2015 Projected AADT	Year 2025 Revised Model AADT	Year 2035 Projected AADT
Wire Road				
East of US 301	3,100	3,800	4,700	5,600
Centennial Road				
East of US 301	3,600	4,000	4,900	6,000
US 98				
East of US 301	6,600	7,000	7,500	8,100
CR 52A				
West of US 301	16,700	18,300	20,600	22,800
East of US 301	2,000	2,500	3,300	4,000
Morningside Drive				
West of US 301	4,900	5,300	5,900	6,500
East of US 301	5,300	5,800	6,400	7,100
US 98 Bypass				
East of US 301	14,100	14,300	14,700	14,800

The opening year (2015) AADT volumes were calculated by interpolating between the existing year (2008) and the interim year (2025) AADT volumes. The AADT volumes for opening year (2015), interim year (2025), and design year (2035) can be seen on **Exhibits 8A-8E**.

4.1.4 Development of Design Hour Volumes

The design year (2035) 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 56.0 percent. Similar to the existing design hour volumes, a K_{30}-factor of 20.06 percent (derived from the field data) was used for the east leg of the US 301/Centennial Road intersection to account for higher traffic volumes during school commencement and dismissal. Design hour intersection turning movement volumes were estimated by multiplying the DDHV by field collected manual turning movement percentages for the afternoon peak period. A manual smoothing process was performed in order to satisfy the K_{30}- and D_{30}-factors. The design year volumes that were developed for the PM peak period were used to estimate the AM design year volumes by using the volumes of the reciprocal traffic movements. The resulting AM and PM peak hour turning movement volumes for the design year 2035 are included on **Exhibits 9A-9E**.

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**ANNUAL AVERAGE DAILY TRAFFIC (AADT) PROJECTIONS: OPENING YEAR (2015), INTERIM YEAR (2025), AND DESIGN YEAR (2035)**	**EXHIBIT 8A**

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**ANNUAL AVERAGE DAILY TRAFFIC (AADT) PROJECTIONS: OPENING YEAR (2015), INTERIM YEAR (2025), AND DESIGN YEAR (2035)**	**EXHIBIT 8B**

300 150 0 300 Feet

Signal
Flash Signal
Proposed Roadway

XXX - 2015 AADT
XXX - 2025 AADT
XXX - 2035 AADT

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**ANNUAL AVERAGE DAILY TRAFFIC (AADT) PROJECTIONS: OPENING YEAR (2015), INTERIM YEAR (2025), AND DESIGN YEAR (2035)**	**EXHIBIT 8C**

300 150 0 300 Feet

Signal
Flash Signal
Proposed Roadway

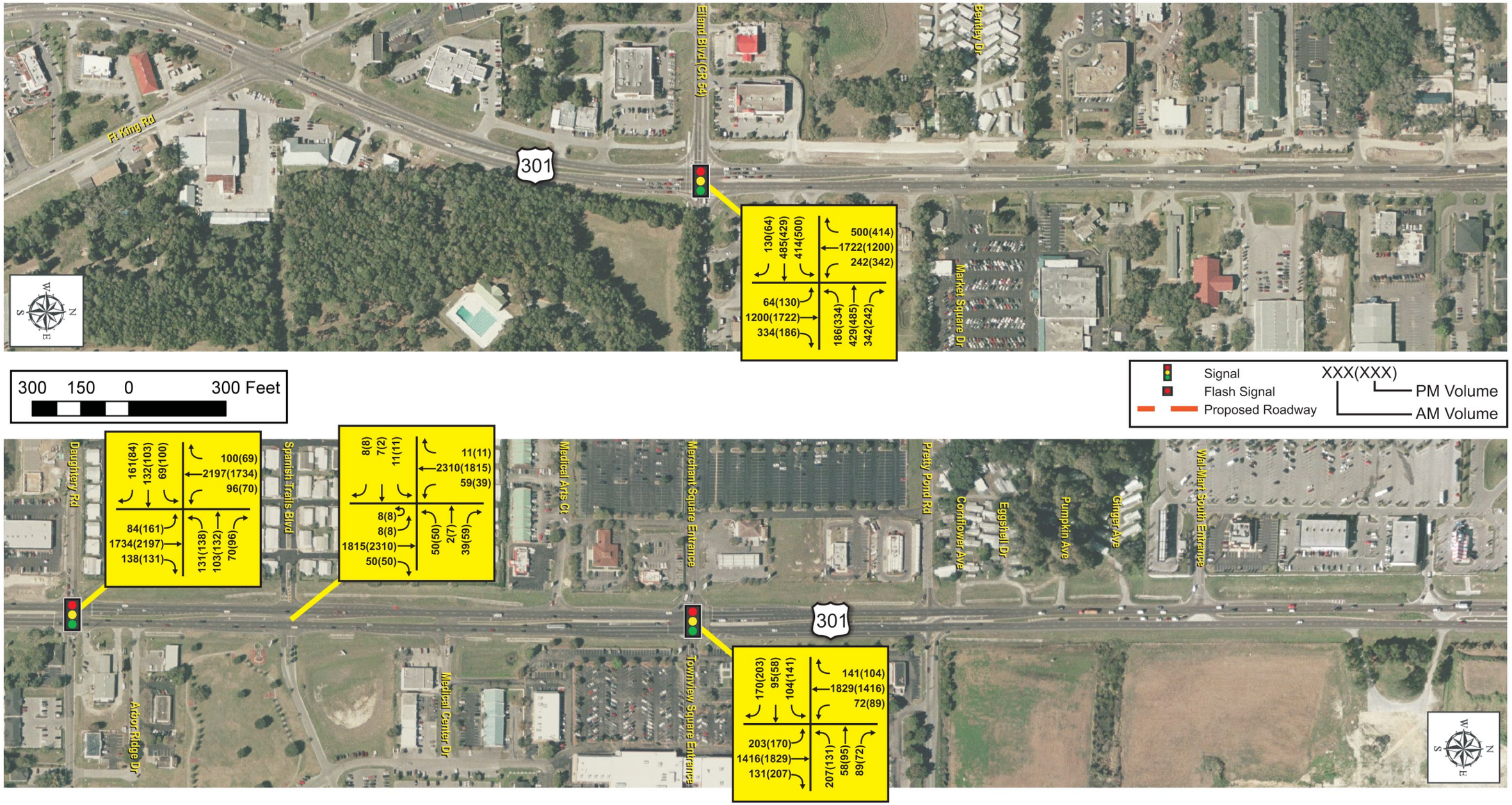
XXX - 2015 AADT
XXX - 2025 AADT
XXX - 2035 AADT

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)

ANNUAL AVERAGE DAILY TRAFFIC (AADT) PROJECTIONS: OPENING YEAR (2015), INTERIM YEAR (2025), AND DESIGN YEAR (2035)

EXHIBIT 8D

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**ANNUAL AVERAGE DAILY TRAFFIC (AADT) PROJECTIONS: OPENING YEAR (2015), INTERIM YEAR (2025), AND DESIGN YEAR (2035)**	**EXHIBIT 8E**



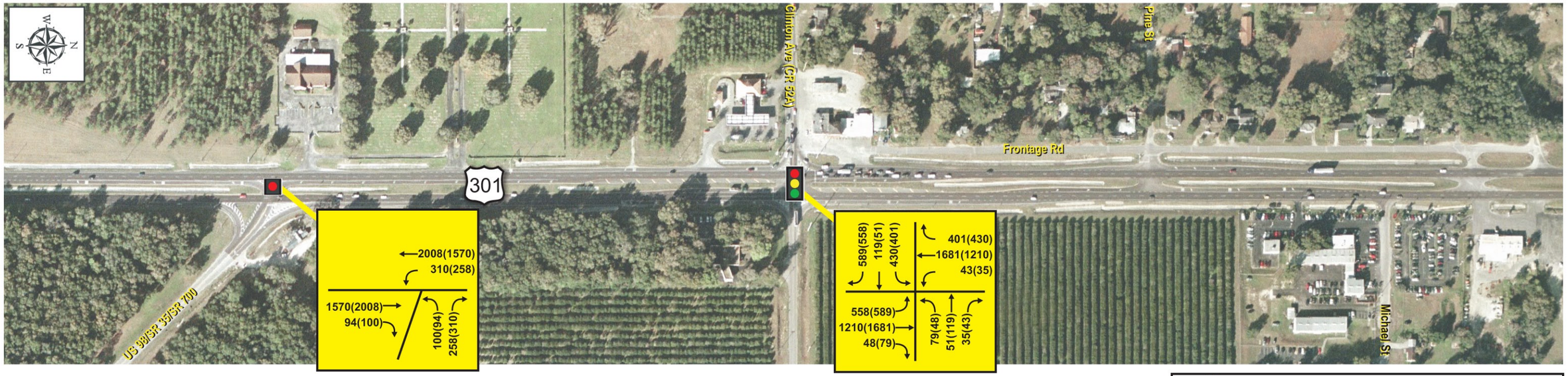
US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**DESIGN YEAR (2035) TURNING MOVEMENT VOLUMES**	**EXHIBIT 9A**

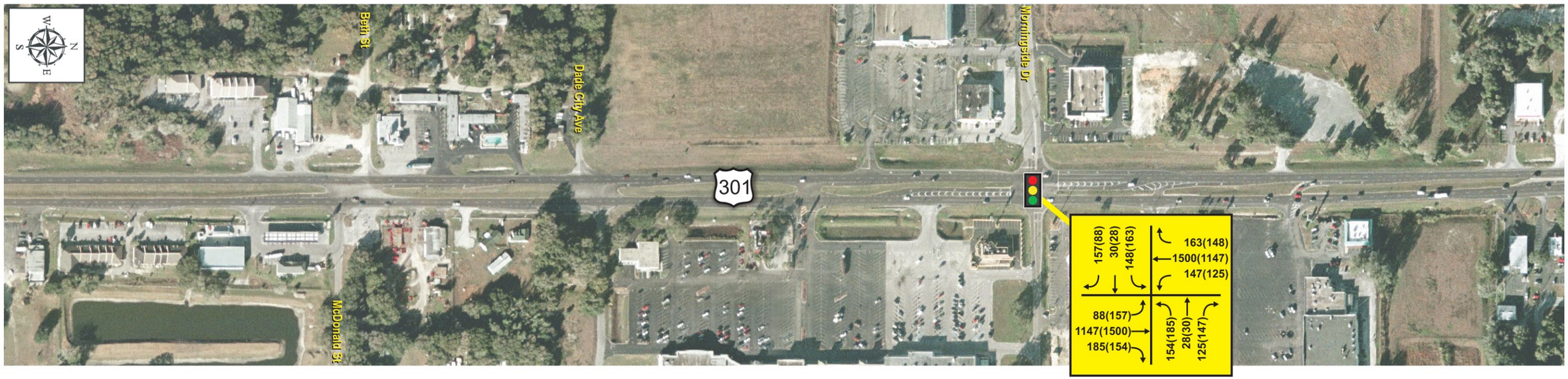
US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**DESIGN YEAR (2035) TURNING MOVEMENT VOLUMES**	**EXHIBIT 9B**

300 150 0 300 Feet

Signal
Flash Signal
Proposed Roadway
XXX(XXX)
PM Volume
AM Volume

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**DESIGN YEAR (2035) TURNING MOVEMENT VOLUMES**	**EXHIBIT 9C**





US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**DESIGN YEAR (2035) TURNING MOVEMENT VOLUMES**	**EXHIBIT 9D**

300 150 0 300 Feet

Signal
Flash Signal
Proposed Roadway
XXX(XXX)
PM Volume
AM Volume

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

DESIGN YEAR (2035) TURNING MOVEMENT VOLUMES

EXHIBIT 9E

4.2 DESIGN YEAR (2035) NO-BUILD INTERSECTION LEVEL OF SERVICE ANALYSIS

Signalized intersection level of service (LOS) was estimated using the Highway Capacity Manual (HCM) methodology module of the Synchro software. In the No-Build intersection LOS analysis, with the exception of Kossik Road, existing year (2008) geometric conditions and design year (2035) Build (six-lanes) design hour turning movement traffic volumes, with respect to individual intersections, were used. For the Kossik Road intersection the lane geometry for the No-Build analysis was based on the proposed roadway that is to be built on the east leg of the intersection. The only difference between the Build and No-Build analysis of the Kossik Road intersection is that the No-Build analysis has two northbound and two southbound through lanes along US 301 and the Build analysis has three northbound and three southbound through lanes along US 301. By using the design year (2035) Build (six-lanes) volumes, as opposed to using the TBRPM to obtain a separate set of No-Build volumes, the benefit of the Build alternative can be measured. In anticipation of increased traffic volumes, signal timing was optimized to reflect the higher traffic volumes that can be expected in the future. The analysis results for the eleven study intersections are summarized in **Table 4-4** and **Table 4-5.** The design year (2035) No-Build alternative lane geometry and LOS is shown on **Exhibits 10A-10E**. The design year (2035) Synchro intersection analysis sheets for No-Build conditions are included in **Appendix D** (under separate cover).

Table 4-4
Design Year (2035) No-Build US 301 Intersection Level of Service Summary

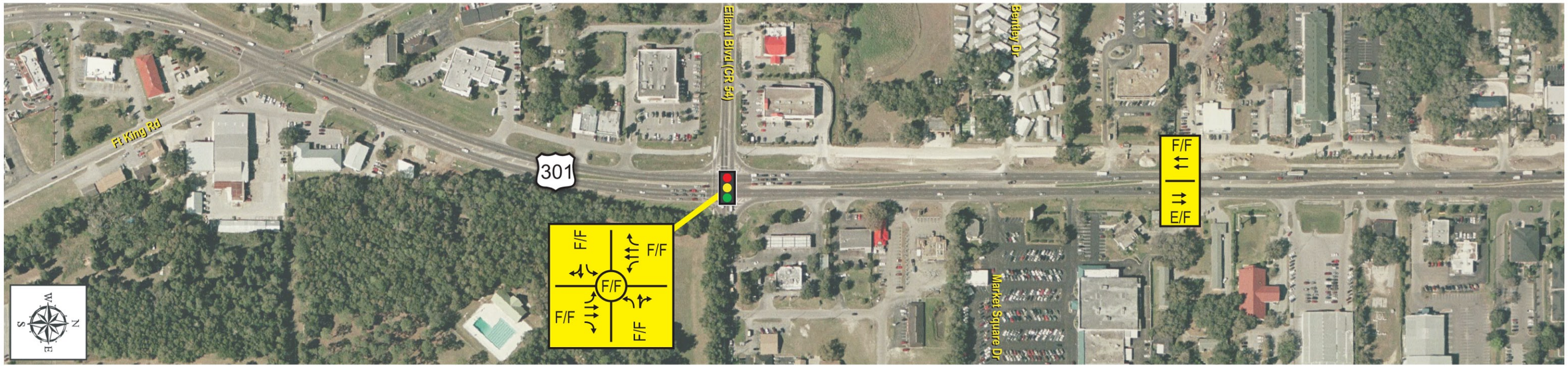
Cross-Street	Level of Service (LOS)				
	US 301 NB Mainline AM / PM	**US 301 SB Mainline AM / PM**	**EB AM / PM**	**WB AM / PM**	**Overall AM / PM**
CR 54	**F** / **F**	**F** / **F**	**F** / **F**	**F** / **F**	**F** / **F**
Daughtery Road	D / **E**	**E** / D	**E** / **E**	**F** / **E**	**E** / **E**
Spanish Trails Boulevard[1]	D[2] / C[2]	C[2] / **E**[2]	**F** / **F**	**F** / **F**	A / B
Townview Square Shopping Center Entrance	D / D	D / C	**E** / **E**	**E** / **E**	D / D
Kossik Road	D / D	C / C	D / D	D / D	D / D
Wire Road[1]	A / A	C[2] / **F**[2]		**F** / **F**	C / C
Centennial Road	**F** / **F**	**F** / **E**	C / C	**F** / **F**	**F** / **F**
US 98[1]	A / A	**F**[2] / **F**[2]		**F** / **F**	**F** / **F**
CR 52A	**F** / **F**	**E** / **E**	**F** / **F**	**F** / **E**	**F** / **F**
Morningside Drive	C / D	B / A	D / **E**	D / D	B / C
US 98 Bypass	B / **E**	B / B		D / C	C / D

[1] Indicates two-way stop controlled (TWSC) intersection.
[2] LOS on US 301 is reported for the left-turn movements only; overall LOS is determined using the weighted average delay for all intersection movements.
Bold – Indicates level of service exceeding the minimum acceptable level of service standard D.

Table 4-5
Design Year (2035) No-Build US 301 Intersection Control Delay Summary

Cross-Street	HCM Average Control Delay (sec/veh)				
	US 301 NB Mainline AM / PM	**US 301 SB Mainline AM / PM**	**EB AM / PM**	**WB AM / PM**	**Overall AM / PM**
CR 54	> 5 min. / > 5 min.	260.6 / 81.6	182.6 / 249.3	137.9 / 229.8	242.4 / > 5 min.
Daughtery Road	40.0 / 79.8	67.3 / 37.5	78.6 / 71.3	> 5 min. / 78.9	76.4 / 63.4
Spanish Trails Boulevard[1]	33.6[2] / 17.1[2]	19.9[2] / 49.1[2]	182.5 / > 5 min.	55.3 / > 5 min.	2.5 / 15.2
Townview Square Shopping Center Entrance	46.2 / 42.9	49.8 / 30.5	63.9 / 73.5	75.8 / 63.0	51.6 / 42.5
Kossik Road	36.8 / 37.6	32.9 / 29.3	50.2 / 42.5	49.1 / 43.1	38.4 / 36.2
Wire Road[1]	0.0 / 0.0	23.4[2] / 55.1[2]		> 5 min. / > 5 min.	34.5 / 28.3
Centennial Road	141.1 / 164.4	191.4 / 66.8	27.4 / 32.9	209.1 / 198.6	170.3 / 129.3
US 98[1]	0.0 / 0.0	76.5[2] / 190.1[2]		> 5 min. / > 5 min.	87.8 / 104.2
CR 52A	150.4 / 202.4	59.0 / 64.0	> 5 min. / 143.7	> 5 min. / 68.3	256.9 / 141.5
Morningside Drive	20.1 / 39.4	10.5 / 9.7	50.4 / 71.2	41.7 / 43.7	20.0 / 31.2
US 98 Bypass	17.1 / 56.2	19.8 / 14.5		36.6 / 23.7	22.6 / 39.3

[1] Indicates two-way stop controlled (TWSC) intersection.
[2]Delay is reported for the left-turn movements only; overall delay is the weighted average delay for all intersection movements.

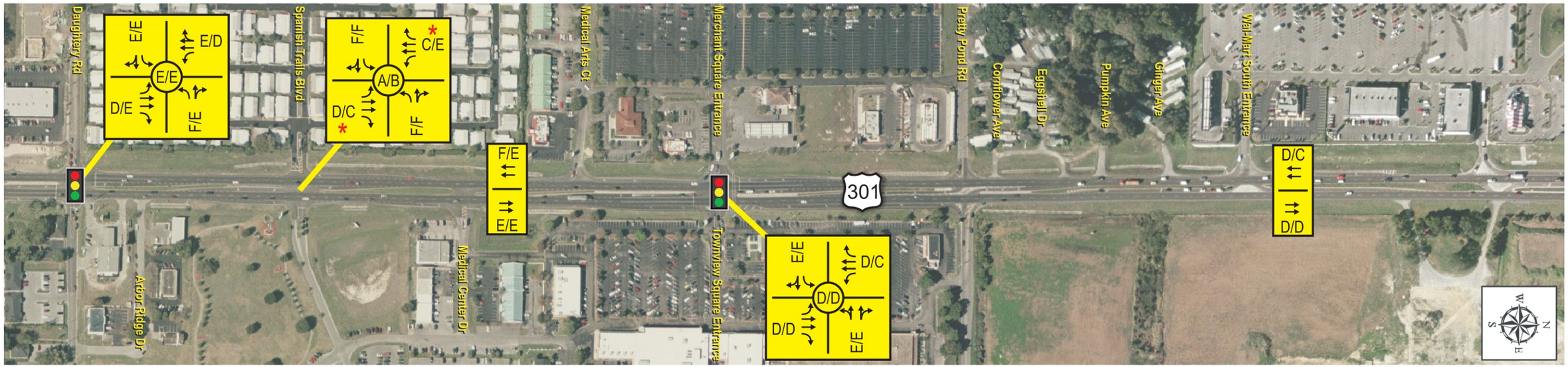


300 150 0 300 Feet

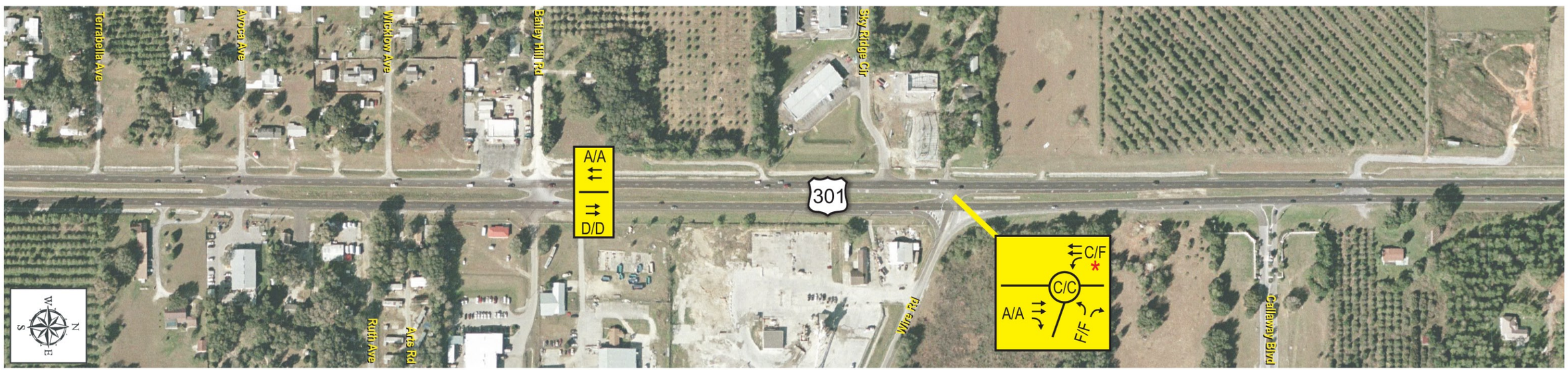
* Left-Turn LOS

Proposed Roadway
Existing Lane
Signal
Flash Signal

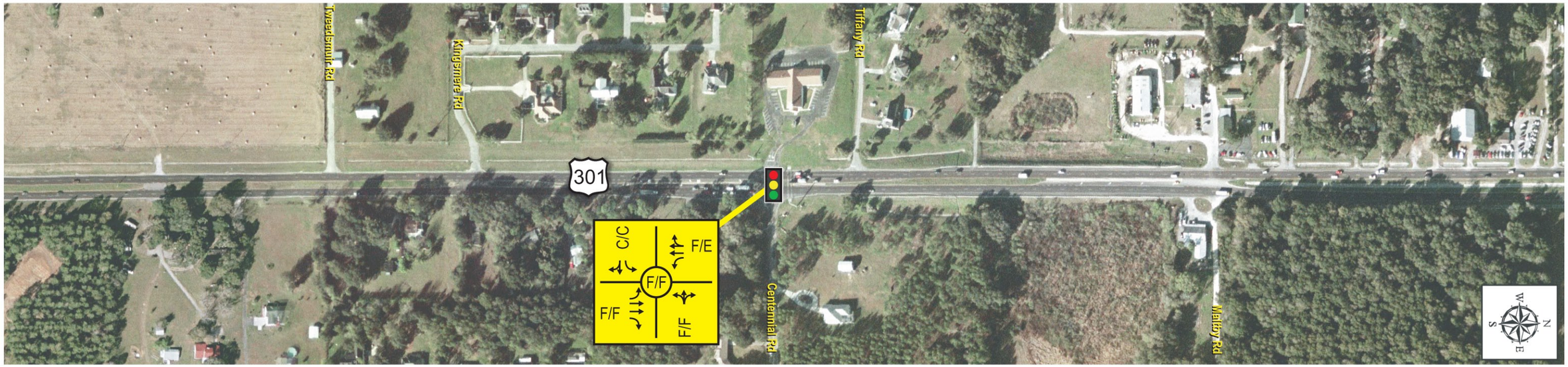
X/X
PM LOS
AM LOS



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**DESIGN YEAR (2035) NO-BUILD ALTERNATIVE LEVEL OF SERVICE (LOS) AND LANE GEOMETRY**	**EXHIBIT 10A**



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**DESIGN YEAR (2035) NO-BUILD ALTERNATIVE LEVEL OF SERVICE (LOS) AND LANE GEOMETRY**	**EXHIBIT 10B**



300 150 0 300 Feet

* Left-Turn LOS

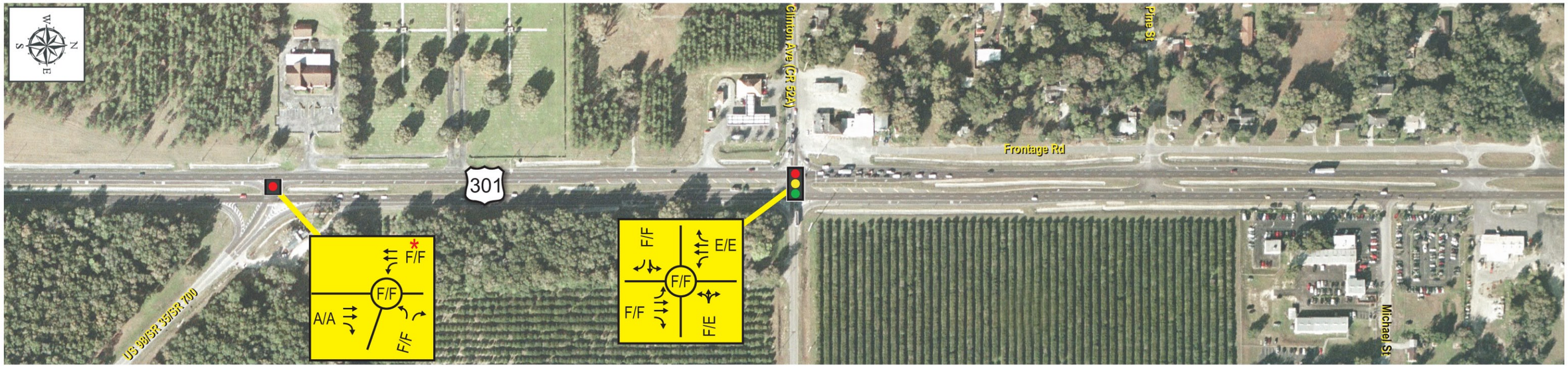
Proposed Roadway
Existing Lane
Signal
Flash Signal

X/X
PM LOS
AM LOS

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

DESIGN YEAR (2035) NO-BUILD ALTERNATIVE LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 10C

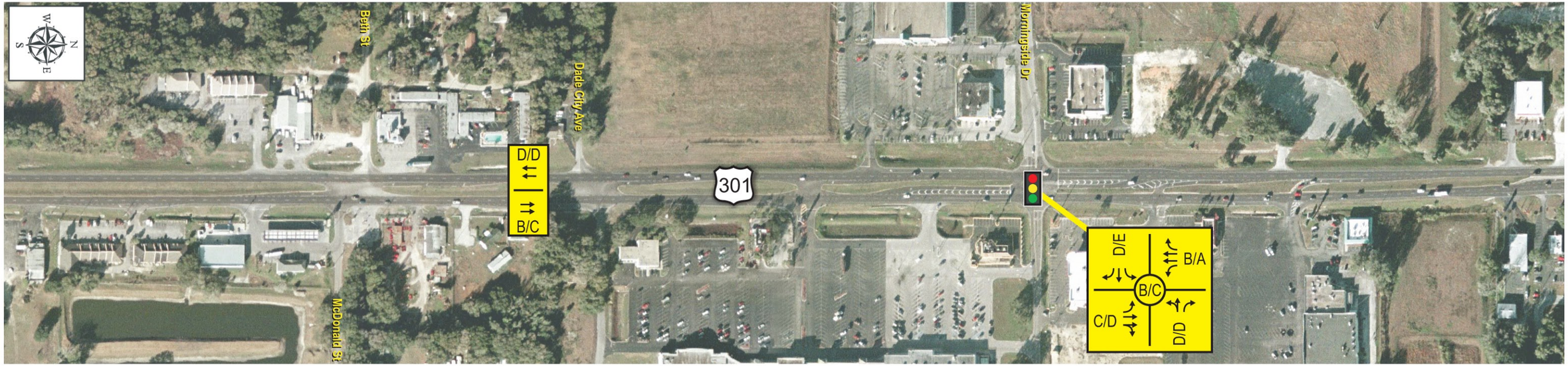


300 150 0 300 Feet

* Left-Turn LOS

Proposed Roadway
Existing Lane
Signal
Flash Signal

X/X
PM LOS
AM LOS



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)

DESIGN YEAR (2035) NO-BUILD ALTERNATIVE LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 10D

300 150 0 300 Feet

* Left-Turn LOS

Proposed Roadway
Existing Lane
Signal
Flash Signal

X/X
PM LOS
AM LOS

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

DESIGN YEAR (2035) NO-BUILD ALTERNATIVE
LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 10E

4.3 DESIGN YEAR (2035) NO-BUILD ARTERIAL ANALYSIS

The design year (2035) No-Build arterial LOS analyses for the US 301 roadway segments within the study area were conducted using the estimated design year (2035) DDHV. The arterial segment LOS analysis was conducted using the Synchro 7.0 Version (Build 761) software. For the arterial analysis, the free flow speed was assumed to be the posted speed limit. The US 301 arterial functional and design categories were determined to be Principal Arterial and High-Speed (posted speed limit 45-55 mph), respectively, based on Exhibit 10-4 of the HCM 2000. The urban street class of the US 301 arterial was established as Class I using Exhibit 10-3 of the HCM 2000. The US 301 northbound and southbound arterial segment LOS results for the design year (2035) conditions are summarized in **Table 4-6** and **Table 4-7,** respectively and shown on **Exhibits 10A-10E.**

Table 4-6
Design Year (2035) No-Build US 301 Arterial
Northbound Level of Service Summary

US 301 Segment	Segment Length (miles)	Posted Speed (mph)	Arterial Speed (mph)		Arterial LOS	
			AM	PM	AM	PM
CR 54 to Daughtery Road	0.51	45	21.0	15.6	**E**	**F**
Daughtery Road to Townview Square Shopping Center Entrance	0.36	45	18.0	16.8	**E**	**E**
Townview Square Shopping Center Entrance to Kossik Road	0.65	45	24.9	25.3	D	D
Kossik Road to Centennial Road	2.01	55	24.5	22.3	D	D
Centennial Road to CR 52A	1.76	50	44.5	32.9	A	C
CR 52A to Morningside Drive	1.02	50	39.5	32.2	B	C
Morningside Drive to US 98 Bypass	0.82	45	32.4	18.8	C	**E**
CR 54 to US 98 Bypass (Entire Northbound Arterial)	7.12	45-55	29.4	23.9	C	D

Table 4-7
Design Year (2035) No-Build US 301 Arterial
Southbound Level of Service Summary

US 301 Segment	Segment Length (miles)	Posted Speed (mph)	Arterial Speed (mph)		Arterial LOS	
			AM	PM	AM	PM
US 98 Bypass to Morningside Drive	0.82	45	38.8	39.5	B	B
Morningside Drive to CR 52A	1.02	50	26.0	25.6	D	D
CR 52A to Centennial Road	1.76	55	21.9	38.1	D	B
Centennial Road to Kossik Road	2.01	55	43.8	43.7	A	A
Kossik Road to Townview Square Shopping Center Entrance	0.65	45	22.4	29.0	D	C
Townview Square Shopping Center Entrance to Daughtery Road	0.36	45	12.6	17.6	**F**	**E**
Daughtery Road to CR 54	0.51	45	5.1	14.0	**F**	**F**
US 98 Bypass to CR 54 (Entire Southbound Arterial)	7.12	45-55	20.7	30.7	**E**	C

4.4 DESIGN YEAR (2035) BUILD INTERSECTION LEVEL OF SERVICE ANALYSIS

In the Build Alternative, US 301 from CR 54 to US 98 Bypass is a six lane facility; three lanes in the northbound direction and three lanes in the southbound direction. Highway capacity analyses were employed to determine the lane geometry along US 301 required to meet adopted LOS standards. Five Build Alternatives were analyzed for US 98 because the access management plan revealed that the segment from CR 52A to US 98 does not currently meet access class spacing criteria. In addition, for several reasons, two Build Alternatives were considered for US 98 Bypass. The first reason was to prevent widening US 301 to the north of US 98 Bypass because of the negative impact this would cause to the Dade City historic district. The second reason was to see if the recommended lane geometry in the US 98 Dade City Bypass PD&E Study from US 301 South to US 301 North [FPN: 256423 1][1] would work based on the traffic volumes in this study. Only the recommended alternative for each of these intersections was included in the Synchro analysis of the Build Alternative. The US 98 and US 98 Bypass alternatives analyzed are described in Sections 4.6 and 4.7 of this report.

Signalized intersection LOS was estimated using the HCM methodology module of Synchro software and the geometry required to achieve acceptable LOS. Signal timing was optimized to reflect the addition of

the recommended lane geometry in the future. The analysis results for the eleven (11) study intersections are summarized in **Table 4-8** and **Table 4-9.** The design year (2035) Build Alternative lane geometry and LOS is also shown on **Exhibits 11A-11E**. The design year (2035) Synchro intersection analysis sheets for the Build conditions are included in **Appendix E** (under separate cover).

Table 4-8
Design Year (2035) Build US 301
Intersection Level of Service Summary

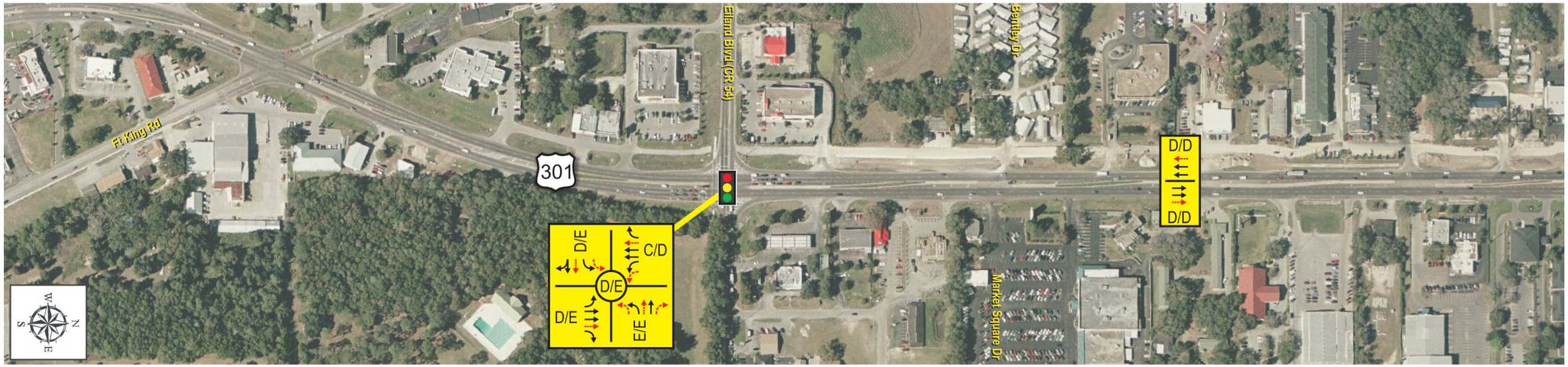
Cross-Street	Level of Service (LOS)				
	US 301 NB Mainline AM / PM	**US 301 SB Mainline AM / PM**	**EB AM / PM**	**WB AM / PM**	**Overall AM / PM**
CR 54	D / **E**	C / D	D / **E**	**E** / **E**	D / **E**
Daughtery Road	D / C	B / B	D / D	D / D	C / C
Spanish Trails Boulevard[1]	C[2] / B[2]	B[2] / B[2]	D / D	B / **E**	A / A
Townview Square Shopping Center Entrance	C / B	D / C	D / **E**	**E** / **E**	D / C
Kossik Road	B / C	C / D	D / **E**	D / **E**	C / D
Wire Road[1]	A / A	C[2] / **F**[2]		**F** / **F**	C / C
Centennial Road	D / D	D / C	C / C	D / D	D / C
US 98	C / C	B / A		D / D	C / B
CR 52A	C / B	D / D	**E** / D	**E** / **E**	D / C
Morningside Drive	B / C	B / B	C / D	C / D	B / C
US 98 Bypass	C / C	A / A		C / D	C / C

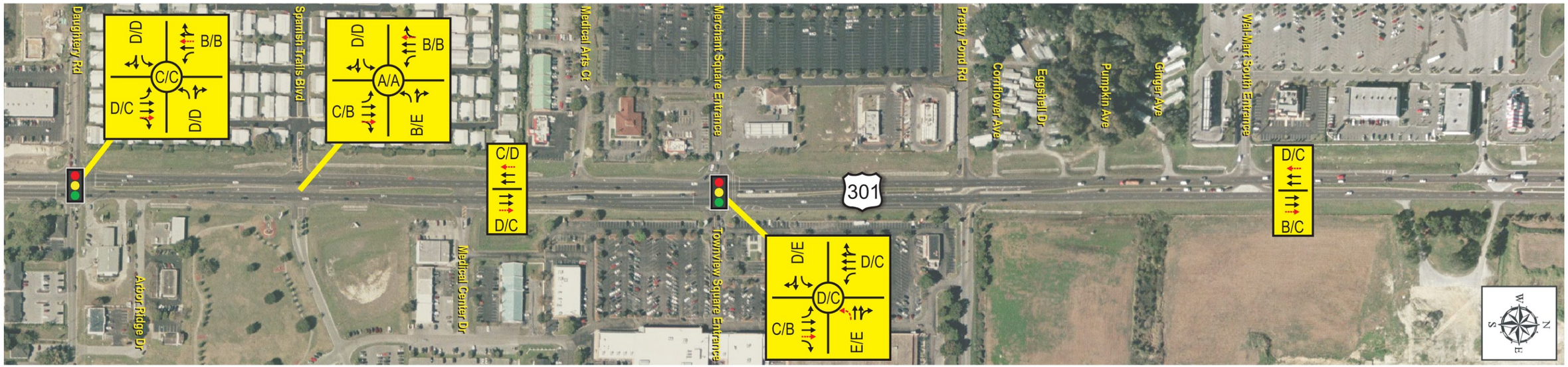
[1] Indicates two-way stop controlled (TWSC) intersection.
[2]LOS on US 301 is reported for the left-turn movements only; overall LOS is determined using the weighted average delay for all intersection movements.
Bold – Indicates level of service exceeding the minimum acceptable level of service standard D.

Table 4-9
Design Year (2035) Build US 301
Intersection Control Delay Summary

Cross-Street	HCM Average Control Delay (sec/veh)				
	US 301 NB Mainline AM / PM	**US 301 SB Mainline AM / PM**	**EB AM / PM**	**WB AM / PM**	**Overall AM / PM**
CR 54	43.8 / 71.1	28.4 / 38.6	41.9 / 63.4	61.3 / 76.7	40.0 / 60.3
Daughtery Road	37.9 / 31.0	12.5 / 19.4	37.8 / 49.0	51.6 / 51.6	26.6 / 29.2
Spanish Trails Boulevard[1]	18.4[2] / 14.9[2]	11.3[2] / 14.5[2]	25.5 / 34.2	12.0 / 37.5	0.6 / 1.3
Townview Square Shopping Center Entrance	24.1 / 13.9	50.0 / 30.6	53.4 / 75.5	76.2 / 78.4	42.3 / 29.6
Kossik Road	15.0 / 30.9	34.2 / 43.3	51.6 / 55.9	50.8 / 79.7	32.4 / 45.5
Wire Road[1]	0.0 / 0.0	23.4[2] / 55.1[2]		> 5 min. / > 5 min.	34.0 / 26.9
Centennial Road	51.8 / 36.1	44.8 / 31.5	26.1 / 25.6	54.2 / 36.8	48.1 / 34.2
US 98	27.9 / 24.6	11.0 / 6.9		51.6 / 51.7	20.8 / 19.7
CR 52A	32.5 / 15.9	48.7 / 41.3	64.4 / 46.9	55.3 / 60.9	46.7 / 31.8
Morningside Drive	17.1 / 20.6	18.4 / 18.7	27.3 / 43.1	30.9 / 39.5	19.7 / 23.3
US 98 Bypass	22.0 / 24.8	0.0 / 0.0		26.8 / 38.5	24.3 / 29.8

[1] Indicates two-way stop controlled (TWSC) intersection.
[2]Delay is reported for the left-turn movements only; overall delay is the weighted average delay for all intersection movements.





US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**DESIGN YEAR (2035) BUILD ALTERNATIVE LEVEL OF SERVICE (LOS) AND LANE GEOMETRY**	**EXHIBIT 11A**

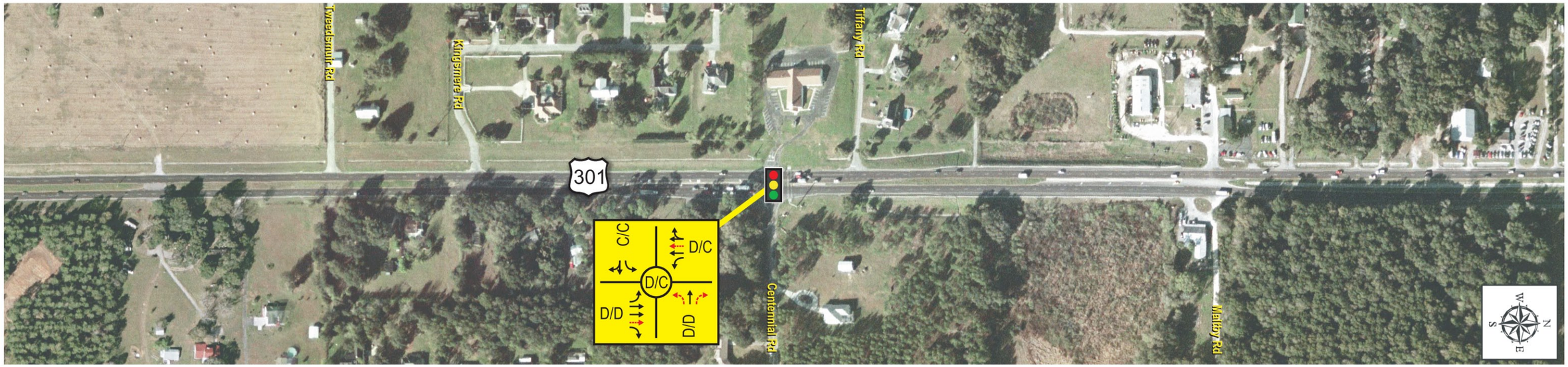
300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

DESIGN YEAR (2035) BUILD ALTERNATIVE
LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 11B



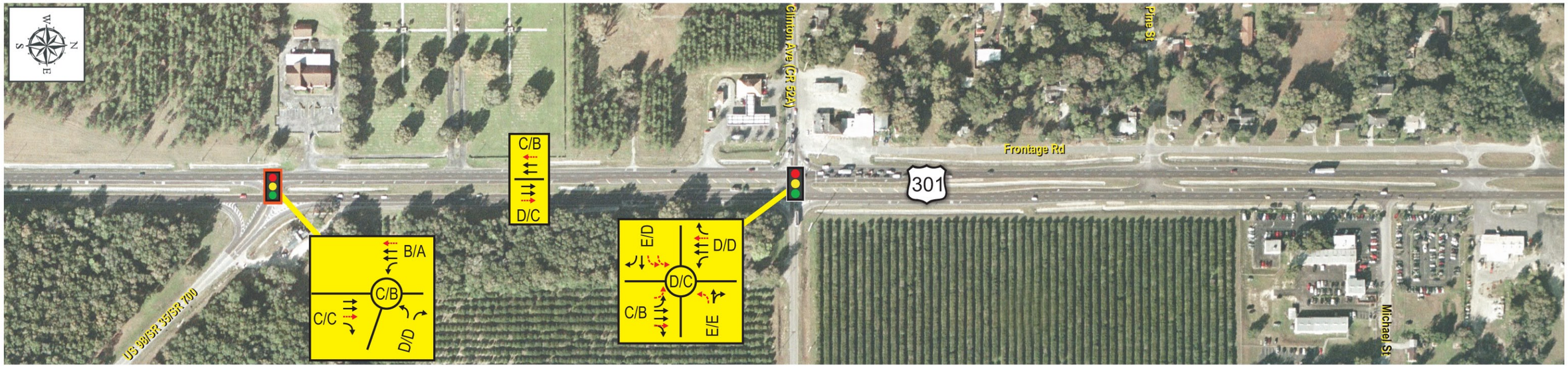
300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

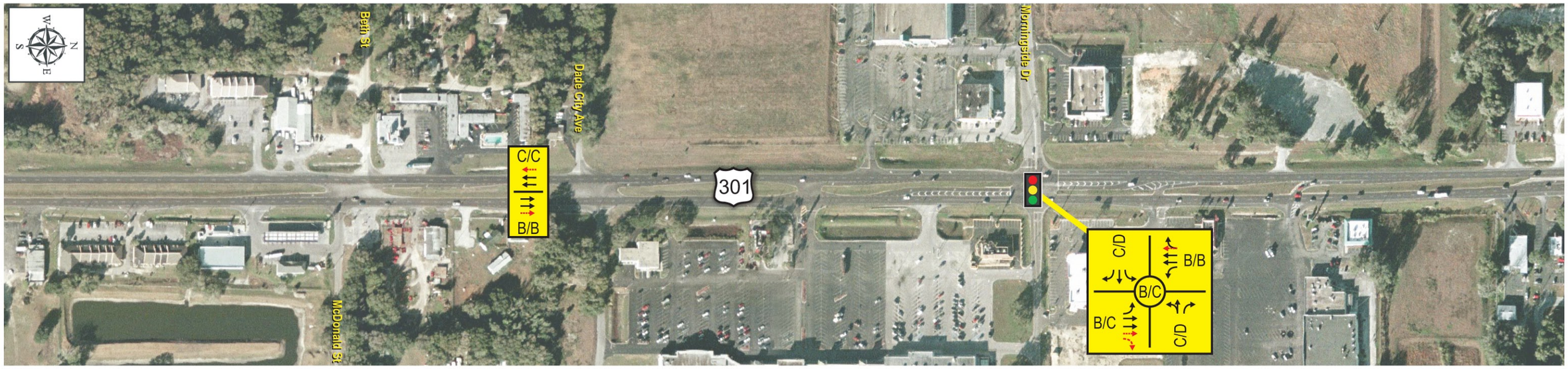
DESIGN YEAR (2035) BUILD ALTERNATIVE
LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 11C



300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS



US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

DESIGN YEAR (2035) BUILD ALTERNATIVE
LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 11D

300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

DESIGN YEAR (2035) BUILD ALTERNATIVE
LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 11E

4.5 DESIGN YEAR (2035) BUILD ARTERIAL ANALYSIS

The design year (2035) Build arterial LOS analyses for the US 301 roadway segments within the study area were conducted using the estimated design year (2035) DDHV. The arterial segment LOS analysis was conducted using the Synchro 7.0 Version (Build 761) software. For the arterial analysis, the free flow speed was assumed to be the posted speed limit. The US 301 arterial functional and design categories were determined to be Principal Arterial and High-Speed (posted speed limit 45-55 mph), respectively, based on Exhibit 10-4 of the HCM 2000. The urban street class of the US 301 arterial was established as Class I using Exhibit 10-3 of the HCM 2000. The US 301 northbound and southbound arterial segment LOS results for the design year (2035) conditions are summarized in **Table 4-10** and **Table 4-11,** respectively and shown on **Exhibits 11A-11E.**

Table 4-10
Design Year (2035) Build US 301 Arterial
Northbound Level of Service Summary

US 301 Segment	Segment Length (miles)	Posted Speed (mph)	Arterial Speed (mph)		Arterial LOS	
			AM	PM	AM	PM
CR 54 to Daughtery Road	0.51	45	22.8	25.4	D	D
Daughtery Road to Townview Square Shopping Center Entrance	0.36	45	25.2	27.2	D	C
Townview Square Shopping Center Entrance to Kossik Road	0.65	45	37.0	29.4	B	C
Kossik Road to Centennial Road	2.01	55	39.0	39.7	B	B
Centennial Road to US 98	1.46	55	42.1	43.2	A	A
US 98 to CR 52A	0.29	55	21.4	27.7	D	C
CR 52A to Morningside Drive	1.02	50	40.1	40.3	B	B
Morningside Drive to US 98 Bypass	0.82	45	32.3	31.6	C	C
CR 54 to US 98 Bypass (Entire Northbound Arterial)	7.12	45-55	34.8	35.3	B	B

Table 4-11
Design Year (2035) Build US 301 Arterial
Southbound Level of Service Summary

US 301 Segment	Segment Length (miles)	Posted Speed (mph)	Arterial Speed (mph)		Arterial LOS	
			AM	PM	AM	PM
US 98 Bypass to Morningside Drive	0.82	45	35.1	36.4	B	B
Morningside Drive to CR 52A	1.02	50	29.9	32.1	C	C
CR 52A to US 98	0.29	55	31.3	36.2	C	B
US 98 to Centennial Road	1.46	55	41.0	45.8	B	A
Centennial Road to Kossik Road	2.01	55	46.7	41.2	A	B
Kossik Road to Townview Square Shopping Center Entrance	0.65	45	23.7	32.4	D	C
Townview Square Shopping Center Entrance to Daughtery Road	0.36	45	27.1	24.2	C	D
Daughtery Road to CR 54	0.51	45	24.2	22.2	D	D
US 98 Bypass to CR 54 (Entire Southbound Arterial)	7.12	45-55	34.4	35.5	B	B

4.6 DESIGN YEAR (2035) BUILD ANALYSIS OF US 98 ALTERNATIVES

In order to identify the most cost-effective improvement to future traffic operations at the US 301 and US 98 intersection, five alternatives, in addition to the No-Build alternative, were analyzed. These alternatives include: Alternative 1 - Build-Full unsignalized; Alternative 2 - Build-Directional unsignalized; Alternative 3 - Build-Signal (One Southbound Left Turn Lane); Alternative 4 - Build-Signal (Two Southbound Left Turn Lanes); and Alternative 5 - New Musselman Road intersection. These alternatives are described in greater detail below and are depicted on **Exhibit 12**.

Alternative 1:

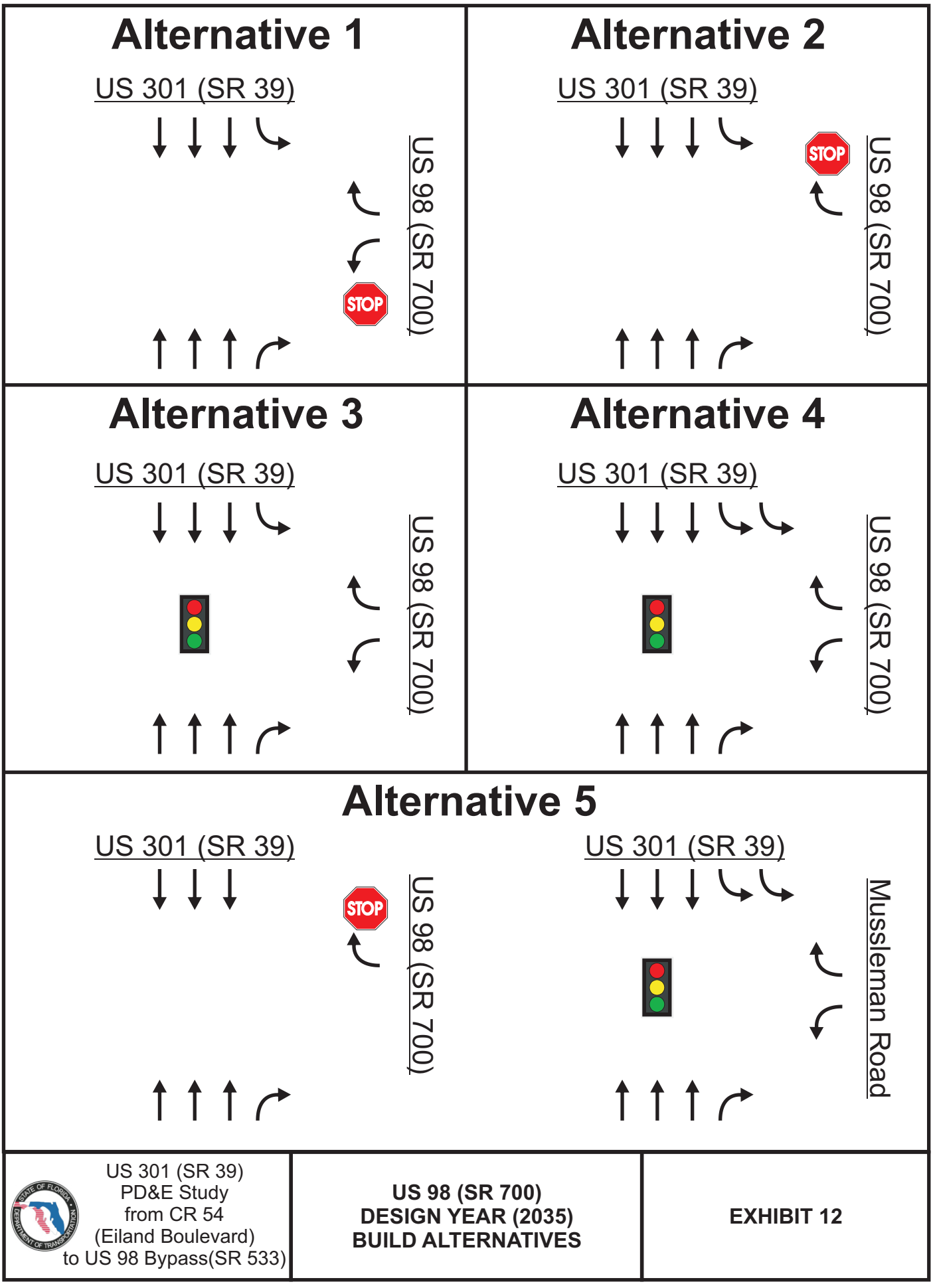
Build-Full:

Northbound – three through lanes; one right turn lane

Southbound – three through lanes; one left turn lane,

Westbound – one left turn lane; one right turn lane

The intersection would remain unsignalized.



US 301 (SR 39)
PD&E Study
from CR 54
(Eiland Boulevard)
to US 98 Bypass(SR 533)

US 98 (SR 700)
DESIGN YEAR (2035)
BUILD ALTERNATIVES

EXHIBIT 12

Alternative 2:

Build-Directional:

Northbound – three through lanes; one right turn lane

Southbound – three through lanes; one left turn lane

Westbound – one right turn lane

The intersection would remain unsignalized.

Alternative 3:

Build Signal (One Southbound Left Turn Lane):

Northbound – three through lanes; one right turn lane

Southbound – three through lanes; one left turn lane

Westbound – one left turn lane; one right turn lane

The intersection would be signalized.

Alternative 4:

Build Signal (Two Southbound Left Turn Lanes):

Northbound – three through lanes; one right turn lane

Southbound – three through lanes; two southbound left turn lanes

Westbound – one left turn lane; one right turn lane

The intersection would be signalized.

Alternative 5:

New Musselman Road Intersection:

US 98:

Northbound – three through lanes; and one right turn lane.

Southbound – three through lanes

Westbound – one right turn lane

The US 98 intersection would remain unsignalized.

Musselman:

Northbound – three through lanes; one right turn lane.

Southbound – three through lanes; two left turn lanes

Westbound – one right turn lane; one left turn lane

The Musselman intersection would be signalized.

For each of the five Build alternatives, as well as the No-Build alternative, intersection LOS at US 98 was estimated using the HCM methodology module of the Synchro software. Signal timing was optimized to

reflect the differences in lane geometry. The analysis results for the six alternatives are summarized in **Table 4-12** and **Table 4-13.**

Table 4-12
Design Year (2035) Build Analysis of US 98 Alternatives
Intersection Level of Service Summary

Build Alternative Number	Alternative	Level of Service (LOS)				
		US 301 NB Mainline AM / PM	US 301 SB Mainline AM / PM	EB AM / PM	WB AM / PM	Overall AM / PM
---	No-Build[1]	A / A	**F**[2] / **F**[2]		**F** / **F**	**F** / **F**
1	Build-Full[1]	A / A	**F**[2] / **F**[2]		**F** / **F**	**F** / **F**
2	Build-Directional[1]	A / A	**F**[2] / **F**[2]		A / A	A / B
3	Build-Signal (One Southbound Left Turn Lane)	C / C	A / A		D / D	B / B
4	Build-Signal (Two Southbound Left Turn Lanes)	B / C	B / B		B / C	B / B
5	Musselman[3]	A / A	A / A		A / A	A / A

[1] Indicates two-way stop controlled (TWSC) intersection.
[2]LOS on US 301 is reported for the left-turn movements only; overall LOS is determined using the weighted average delay for all intersection movements.
[3] Indicates two-way stop controlled (TWSC) intersection at US 98, although Musselman is signalized.
Bold – indicates level of service exceeding the minimum acceptable level of service standard D.

Table 4-13
Design Year (2035) Build Analysis of US 98 Alternatives
Intersection Control Delay Summary

Alternative Number	Alternative	HCM Average Control Delay (sec/veh)				
		US 301 NB Mainline AM / PM	US 301 SB Mainline AM / PM	EB AM / PM	WB AM / PM	Overall AM / PM
---	No-Build[1]	0.0 / 0.0	76.5[2] / 190.1[2]		> 5 min. / > 5 min.	87.8 / 104.2
1	Build-Full[1]	0.0 / 0.0	76.5[2] / 190.1[2]		> 5 min. / > 5 min.	87.8 / 104.2
2	Build-Directional[1]	0.0 / 0.0	76.5[2] / 190.1[2]		0.0 / 0.0	5.5 / 11.3
3	Build-Signal (One Southbound Left Turn Lane)	26.7 / 23.4	5.9 / 7.0		50.6 / 51.0	17.6 / 19.0
4	Build-Signal (Two Southbound Left Turn Lanes)	17.7 / 20.7	11.1 / 11.3		19.1 / 27.5	14.3 / 17.3
5	Musselman[3]	0.0 / 0.0	0.0 / 0.0		0.0 / 0.0	0.0 / 0.0

[1] Indicates two-way stop controlled (TWSC) intersection. Delay on US 301 is reported for the left-turn movements only, and overall delay is the weighted average delay for all intersection movements.
[2]Delay is reported for the left-turn movements only; overall delay is the weighted average delay for all intersection movements.
[3] Indicates two-way stop controlled (TWSC) intersection for US 98, although Musselman is signalized.

The recommended alternative would be the Build-Signal (One Southbound Left Turn Lane). Although it does not correct the fact that US 98 is not currently in compliance with signal spacing standards, this alternative requires the least improvements in order to achieve the acceptable LOS D, or better, for all approaches. Furthermore, there is presently a signal, which operates in flash mode, located at this intersection. This makes this alternative more cost effective.

4.7 DESIGN YEAR (2035) BUILD ANALYSIS OF US 98 BYPASS

In order to provide the best Build alternative for US 98 Bypass, three alternatives, including the No-Build alternative, were analyzed. These alternatives are described in greater detail below and are depicted on **Exhibit 13**.

Alternative 1:

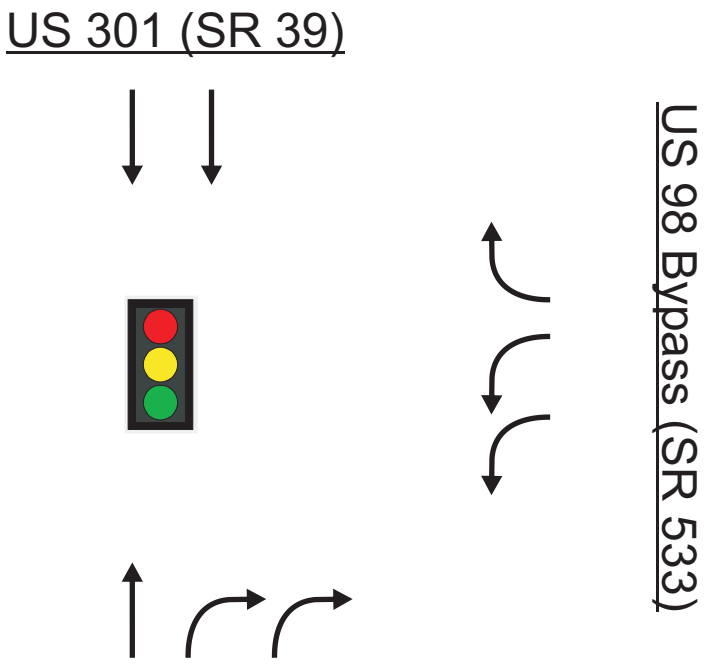
Northbound – one through lane; two right turn lanes
Southbound – two through lanes
Westbound – two left turn lanes; one right turn lane
The intersection would be signalized.

Alternative 2:

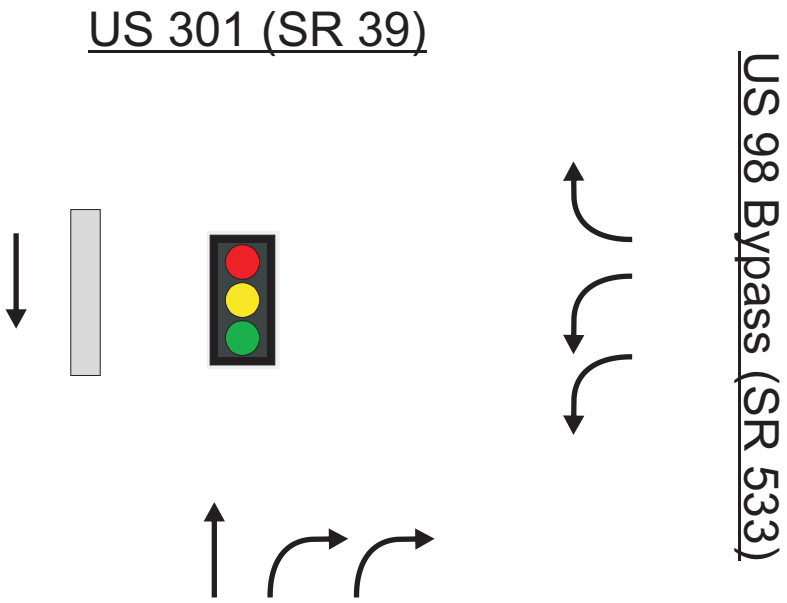
Northbound – one through lane; two right turn lanes
Southbound – one through lane
Westbound – two left turn lanes; one right turn lane
The intersection would be signalized. The southbound through lane would operate freely.

For each of the alternatives, as well as the No-Build alternative, signalized intersection LOS at US 98 Bypass was estimated using the HCM methodology module of Synchro software. Signal timing was optimized to reflect the lane geometry in the future. The analysis results for the three alternatives are summarized in **Table 4-14** and **Table 4-15.**

Alternative 1



Alternative 2



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass(SR 533)	**US 98 BYPASS (SR 533) BUILD ALTERNATIVES**	**EXHIBIT 13**

Table 4-14
Design Year (2035) Build Analysis of US 98 Bypass Alternatives
Intersection Level of Service Summary

Alternative	HCM Average Control Delay (sec/veh)				
	US 301 NB Mainline AM / PM	**US 301 SB Mainline AM / PM**	**EB AM / PM**	**WB AM / PM**	**Overall AM / PM**
No-Build	B / **E**	B / B		D / C	C / D
1	C / C	B / A		C / **E**	C / C
2	C / C	A / A		C / D	B / C

Table 4-15
Design Year (2035) Build Analysis of US 98 Bypass Alternatives
Intersection Control Delay Summary

Alternative	Level of Service (LOS)				
	US 301 NB Mainline AM / PM	**US 301 SB Mainline AM / PM**	**EB AM / PM**	**WB AM / PM**	**Overall AM / PM**
No-Build	17.1 / 56.2	19.8 / 14.5		36.6 / 23.7	22.6 / 39.3
1	24.3 / 24.4	10.8 / 6.5		33.6 / 55.3	21.7 / 25.6
2	22.3 / 24.8	0.0 / 0.0		26.5 / 38.5	16.0 / 20.8

The recommended alternative would be Alternative Two because this is the only alternative where every approach has met or exceeded the acceptable LOS D. This alternative is also consistent with the recommended alternative of *US 98 Dade City Bypass PD&E Study from US 301 South to US 301 North (FPN: 256423 1)*[1].

4.8 INTERSECTION QUEUE LENGTH ANALYSIS

The required storage lengths for intersection turn lanes along the US 301 arterial were estimated using the *Red Time Formula Method*.[2] The primary formula used in this method is: Queue Length = (DHV)*(1+truck%)*(Arrival Factor)*(1-g/C)*(Cycle Length)*(25')/3600*(# of Lanes). The anticipated queue lengths in through lanes were also reviewed, since lane queuing can sometimes block access to left turn lanes. The design year (2035) queue lengths are summarized by individual movement in **Table 4-16**.

Table 4-16
Design Year (2035) Queue Lengths

US 301 Intersections	Lane	Queue Length (feet)		Deceleration and Taper Length (feet)	Recommended Turn Length (feet)
		AM	PM		
CR 54	Eastbound Left	275	400	240	640
	Eastbound Through-Right	300	350	---	---
	Westbound Left	175	325	185	510
	Westbound Through	275	375	---	---
	Westbound Right	375	375	185	560
	Northbound Left	125	250	240	625
	Northbound Through	375	575	---	---
	Northbound Right	325	250	240	565
	Southbound Left	200	325	240	565
	Southbound Through	450	475	---	---
	Southbound Right	400	475	240	715
Daughtery Road	Eastbound Left	100	175	145	320
	Eastbound Through-Right	300	275	---	---
	Westbound Left	175	225	145	370
	Westbound Through-Right	200	325	---	---
	Northbound Left	150	300	240	625
	Northbound Through-Right	450	575	---	---
	Southbound Left	150	150	240	550
	Southbound Through-Right	425	500	---	---
Townview Square Shopping Center Entrance	Eastbound Left	150	250	145	395
	Eastbound Through-Right	325	450	---	---
	Westbound Left	300	275	145	445
	Westbound Through-Right	150	175	---	---
	Northbound Left	275	325	240	565
	Northbound Through	325	400	---	---
	Northbound Right	125	175	240	415
	Southbound Left	125	200	240	525
	Southbound Through-Right	475	400	---	---
Kossik Road	Eastbound Left	200	225	155	380
	Eastbound Through	175	200	---	---
	Eastbound Right	325	150	155	480
	Westbound Left	175	275	145	420
	Westbound Through	175	225	---	---
	Westbound Right	250	525	145	670
	Northbound Left	175	375	290	665
	Northbound Through	300	475	---	---
	Northbound Right	250	275	290	565
	Southbound Left	350	325	405	755
	Southbound Through	275	425	---	---
	Southbound Right	200	350	405	755
Centennial Road	Eastbound Left	75	75	145	220

Table 4-16 (continued)
Design Year (2035) Queue Lengths

US 301 Intersections	Lane	Queue Length (feet)		Deceleration and Taper Length (feet)	Recommended Turn Length (feet)
		AM	PM		
	Eastbound Through-Right	125	75	---	---
	Westbound Left	325	225	145	470
	Westbound Through	75	75	---	---
	Westbound Right	225	300	145	445
	Northbound Left	100	100	405	505
	Northbound Through	400	350	---	---
	Northbound Right	250	250	405	655
	Southbound Left	350	275	405	755
	Southbound Through-Right	400	275	---	---
US 98	Westbound Left	175	175	405	580
	Westbound Right	375	425	405	830
	Northbound Through	350	350	---	---
	Northbound Right	100	100	405	505
	Southbound Left	325	325	350	675
	Southbound Through	150	125	---	---
CR 52A	Eastbound Left	300	275	290	590
	Eastbound Through	150	75	---	---
	Eastbound Right	500	475	290	790
	Westbound Left	150	75	290	440
	Westbound Through-Right	150	250	---	---
	Northbound Left	350	325	350	700
	Northbound Through-Right	275	375	---	---
	Southbound Left	75	75	350	500
	Southbound Through	450	375	---	---
	Southbound Right	325	400	350	750
Morningside Drive	Eastbound Left	150	150	145	295
	Eastbound Through	50	50	---	---
	Eastbound Right	150	125	145	295
	Westbound Left-Through	175	200	---	---
	Westbound Right	150	150	145	295
	Northbound Left	125	175	350	525
	Northbound Through	225	225	---	---
	Northbound Right	125	100	350	475
	Southbound Left	150	150	290	440
	Southbound Through-Right	250	225	---	---
US 98 Bypass	Westbound Left	275	275	185	460
	Westbound Right	50	50	185	235
	Northbound Through	300	325	---	---
	Northbound Right	25	25	290	315
	Southbound Through	25	25	---	---

The required deceleration lengths for the intersection turn lanes were determined based on *FDOT 2008 Design Standards Index No. 301*[3] which is shown in **Table 4-17**. For the determination of the deceleration length, the design speed was assumed to be 5 mph more than the posted speed limit.

Table 4-17
Required Deceleration Lengths for Intersection Turn Lanes

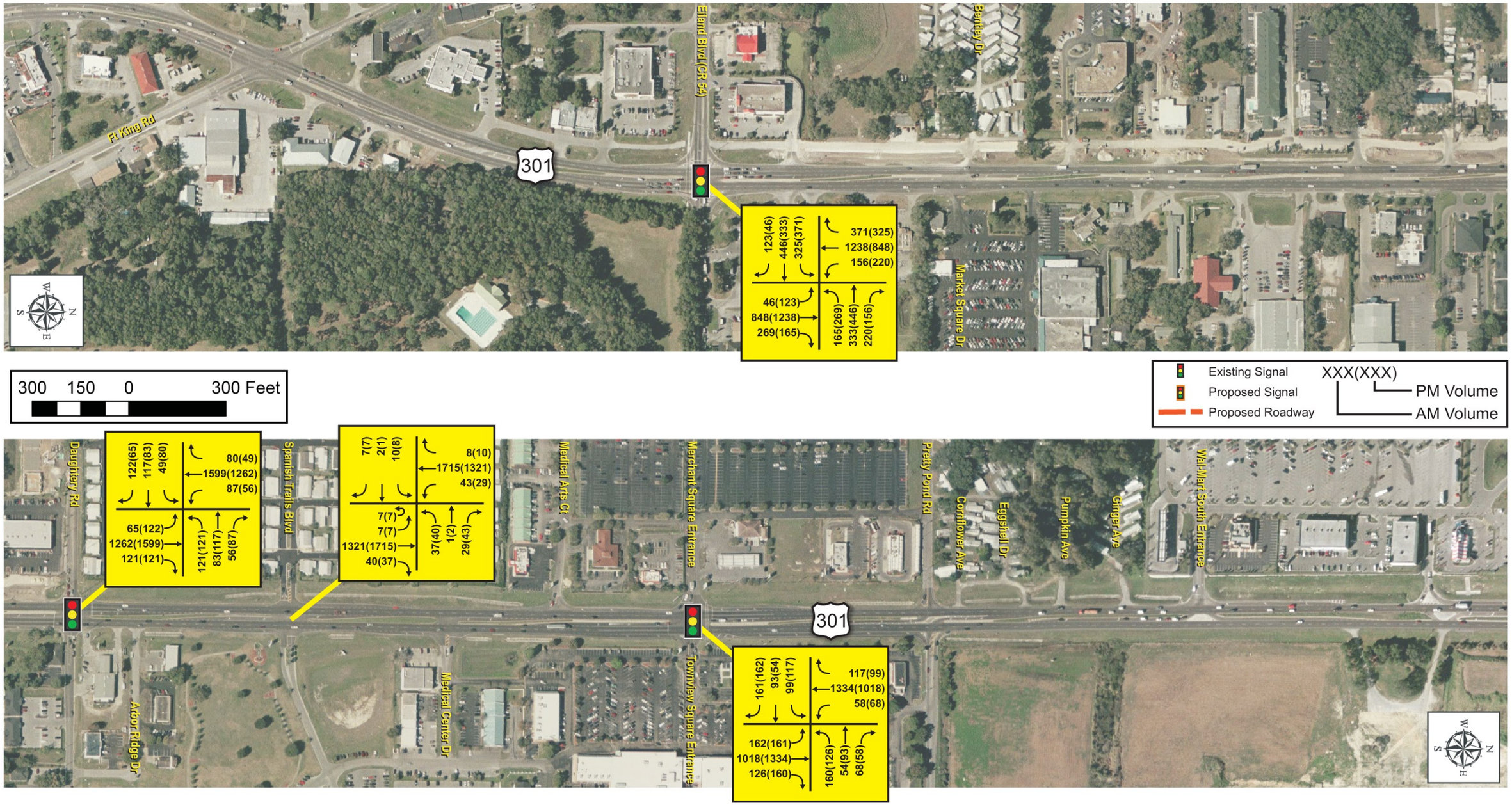
Design Speed (mph)	Urban	Rural
	Total Deceleration and Taper Length, L (feet)	
35	145	---
40	155	---
45	185	---
50	240	290
55	---	350
60	---	405
65	---	460

4.9 DEVELOPMENT OF OPENING YEAR (2015) DESIGN HOUR VOLUMES

The opening year (2015) AM and PM design peak hour intersection turning movement volumes were estimated by interpolating the existing year (2008) and the design year (2035) traffic volumes. The estimated opening year (2015) AM and PM design peak hour turning movement traffic volumes are shown on **Exhibits 14A-14E**.

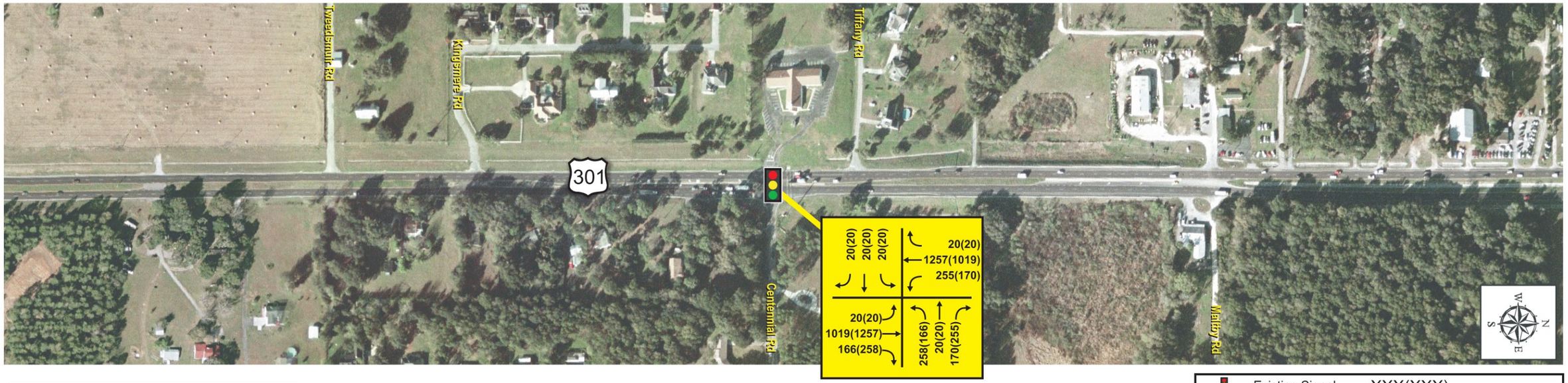
4.10 OPENING YEAR (2015) INTERSECTION LEVEL OF SERVICE ANALYSIS

Signalized intersection LOS was estimated using the HCM methodology module of Synchro software. In anticipation of increased traffic volumes, signal timing was optimized to reflect the higher traffic volumes that can be expected in the future. The analysis results for the eleven study intersections are summarized in **Table 4-18** and **Table 4-19.** The opening year (2015) lane geometry and level of service is also shown on **Exhibits 15A-15E**. The opening year (2015) Synchro intersection analysis sheets are included in **Appendix F** (under separate cover).



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**OPENING YEAR (2015) TURNING MOVEMENT VOLUMES**	**EXHIBIT 14A**

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**OPENING YEAR (2015) TURNING MOVEMENT VOLUMES**	**EXHIBIT 14B**



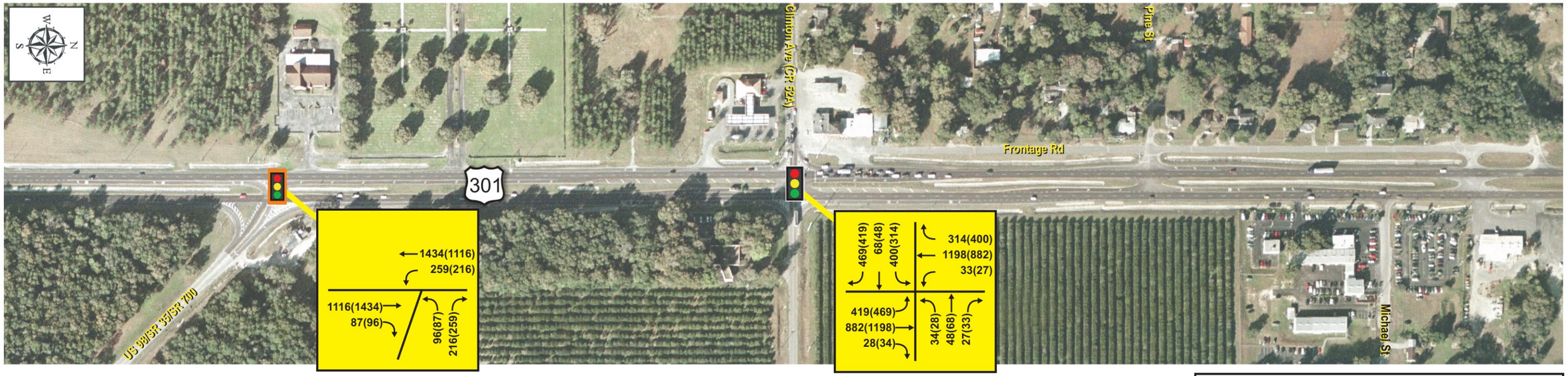
300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
XXX(XXX)
PM Volume
AM Volume

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

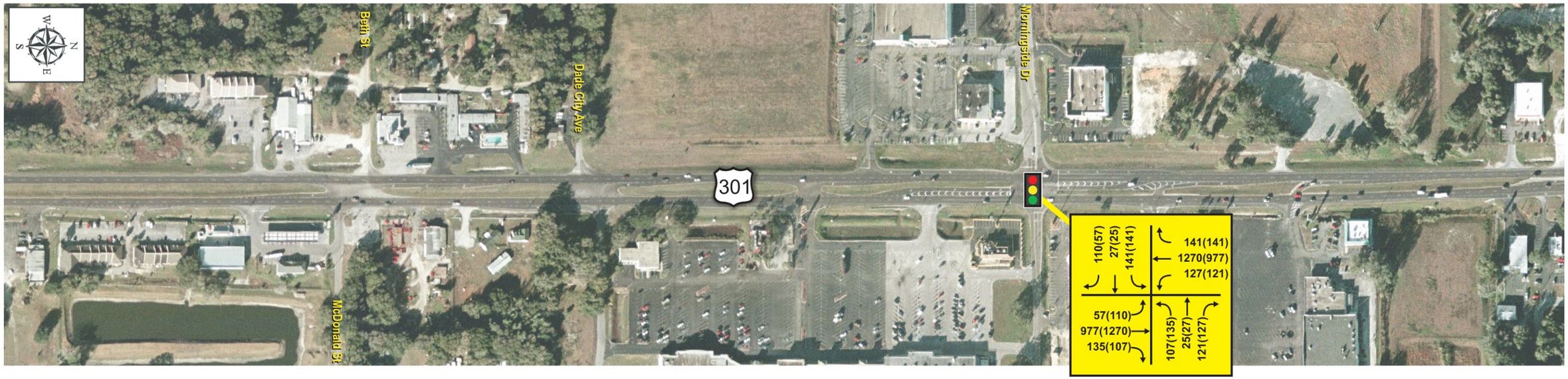
OPENING YEAR (2015) TURNING MOVEMENT VOLUMES

EXHIBIT 14C



300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
XXX(XXX)
PM Volume
AM Volume



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**OPENING YEAR (2015) TURNING MOVEMENT VOLUMES**	**EXHIBIT 14D**

300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
XXX(XXX)
PM Volume
AM Volume

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**OPENING YEAR (2015) TURNING MOVEMENT VOLUMES**	**EXHIBIT 14E**

Table 4-18
Opening Year (2015) US 301
Intersection Level of Service Summary

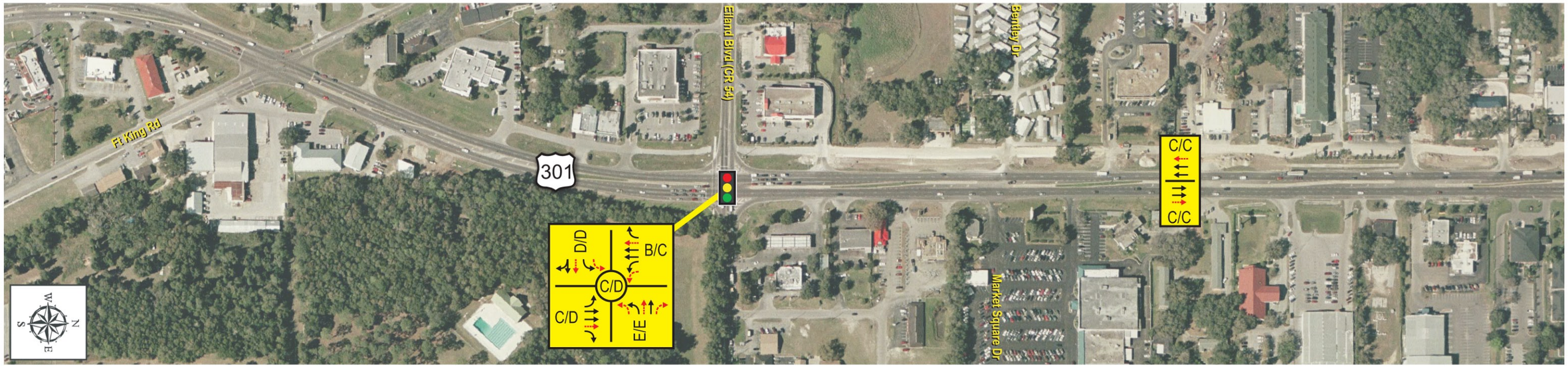
Cross-Street	Level of Service (LOS)				
	US 301 NB Mainline AM / PM	**US 301 SB Mainline AM / PM**	**EB AM / PM**	**WB AM / PM**	**Overall AM / PM**
CR 54	C / D	B / C	D / D	**E** / **E**	C / D
Daughtery Road	C / B	A / A	C / D	D / D	B / B
Spanish Trails Boulevard[1]	B[2] / B[2]	B[2] / B[2]	C / C	B / C	A / A
Townview Square Shopping Center Entrance	B / B	C / B	D / **E**	D / D	C / C
Kossik Road	A / B	B / C	D / D	D / D	B / C
Wire Road[1]	A / A	B / C[2]		**F / F**	C / C
Centennial Road	C / B	C / B	C / C	C / C	C / B
US 98	B / B	A / A		D / D	B / B
CR 52A	B / B	C / D	D / D	D / D	C / C
Morningside Drive	B / B	B / B	C / C	C / C	B / B
US 98 Bypass	B / B	A / A		C / C	C / C

[1] Indicates two-way stop controlled (TWSC) intersection.
[2]LOS on US 301 is reported for the left-turn movements only; overall LOS is determined using the weighted average delay for all intersection movements.
Bold – Indicates level of service exceeding the minimum acceptable level of service standard D.

Table 4-19
Opening Year (2015) US 301
Intersection Control Delay Summary

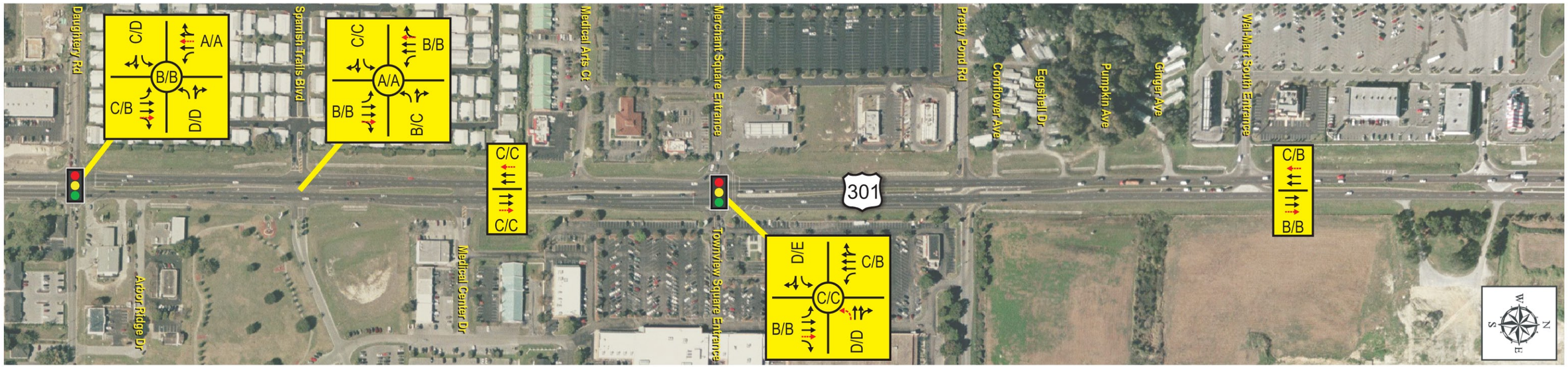
Cross-Street	HCM Average Control Delay (sec/veh)				
	US 301 NB Mainline AM / PM	**US 301 SB Mainline AM / PM**	**EB AM / PM**	**WB AM / PM**	**Overall AM / PM**
CR 54	24.5 / 43.5	12.8 / 22.9	47.6 / 46.9	56.5 / 68.7	29.6 / 42.6
Daughtery Road	24.5 / 16.9	6.4 / 9.2	34.3 / 38.2	38.5 / 43.1	17.7 / 17.6
Spanish Trails Boulevard[1]	12.6[2] / 11.7[2]	10.7[2] / 13.5[2]	16.9 / 20.1	10.5 / 22.8	0.5 / 0.9
Townview Square Shopping Center Entrance	10.3 / 10.8	28.7 / 15.6	51.9 / 59.8	50.8 / 54.8	25.9 / 20.7
Kossik Road	9.1 / 11.6	17.6 / 24.6	51.6 / 53.5	52.6 / 52.6	20.0 / 23.5
Wire Road[1]	0.0 / 0.0	13.3[2] / 16.9[2]		> 5 min. / > 5 min.	31.1 / 20.9
Centennial Road	23.8 / 18.0	21.2 / 17.9	21.2 / 21.0	31.1 / 24.0	23.5 / 18.8
US 98	13.8 / 19.6	8.7 / 7.0		51.1 / 53.8	14.7 / 18.1
CR 52A	17.1 / 12.6	34.3 / 35.9	47.0 / 45.3	54.8 / 54.7	32.1 / 28.3
Morningside Drive	12.8 / 17.0	13.9 / 16.4	31.9 / 24.7	25.6 / 23.7	16.0 / 17.9
US 98 Bypass	19.0 / 19.5	0.0 / 0.0		21.5 / 26.6	20.2 / 22.2

[1] Indicates two-way stop controlled (TWSC) intersection.
[2]Delay is reported for the left-turn movements only; overall delay is the weighted average delay for all intersection movements.



300 150 0 300 Feet

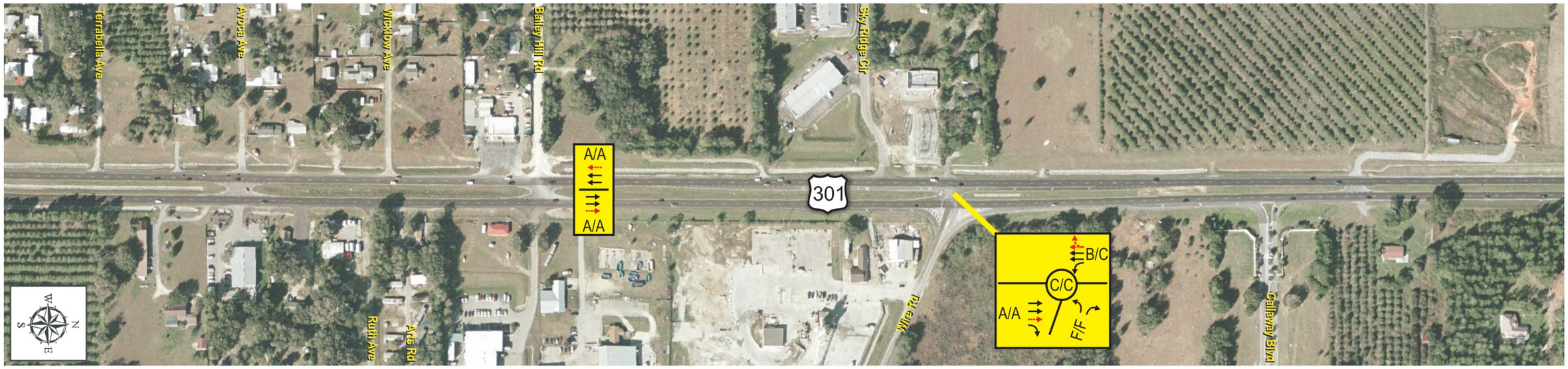
Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**OPENING YEAR (2015) BUILD ALTERNATIVE LEVEL OF SERVICE (LOS) AND LANE GEOMETRY**	**EXHIBIT 15A**

300 150 0 300 Feet

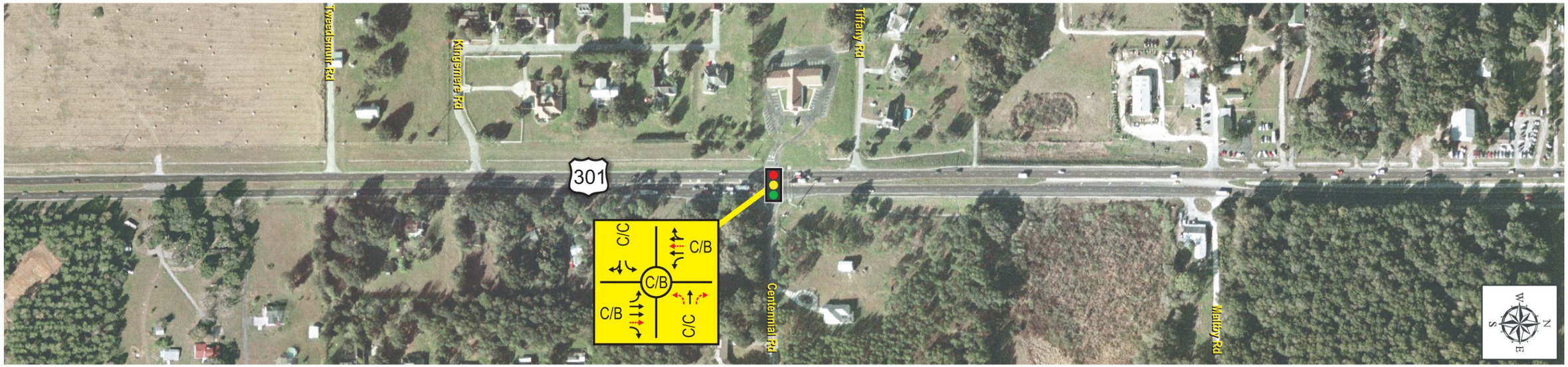
Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS



US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

OPENING YEAR (2015) BUILD ALTERNATIVE
LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 15B



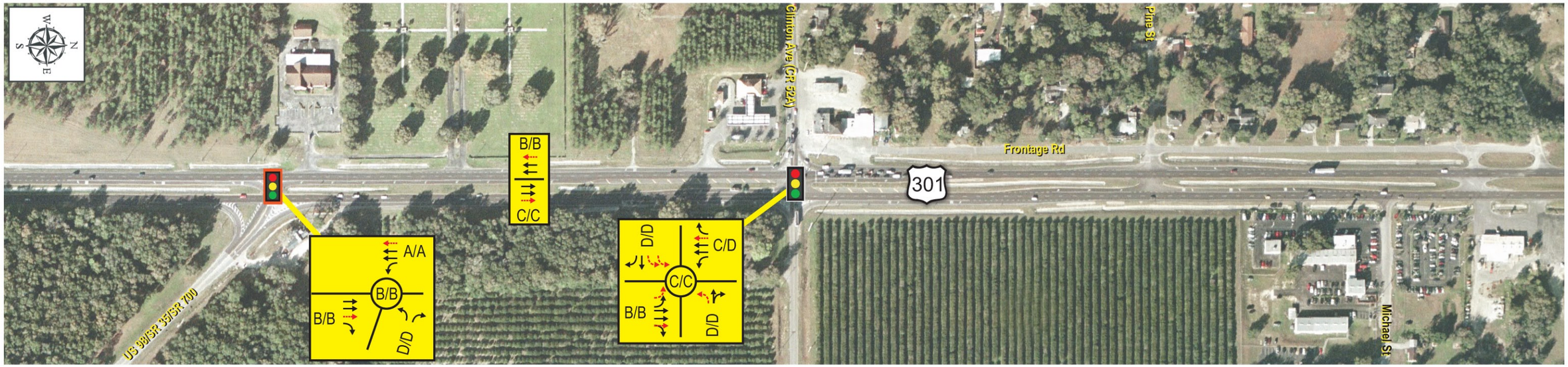
300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

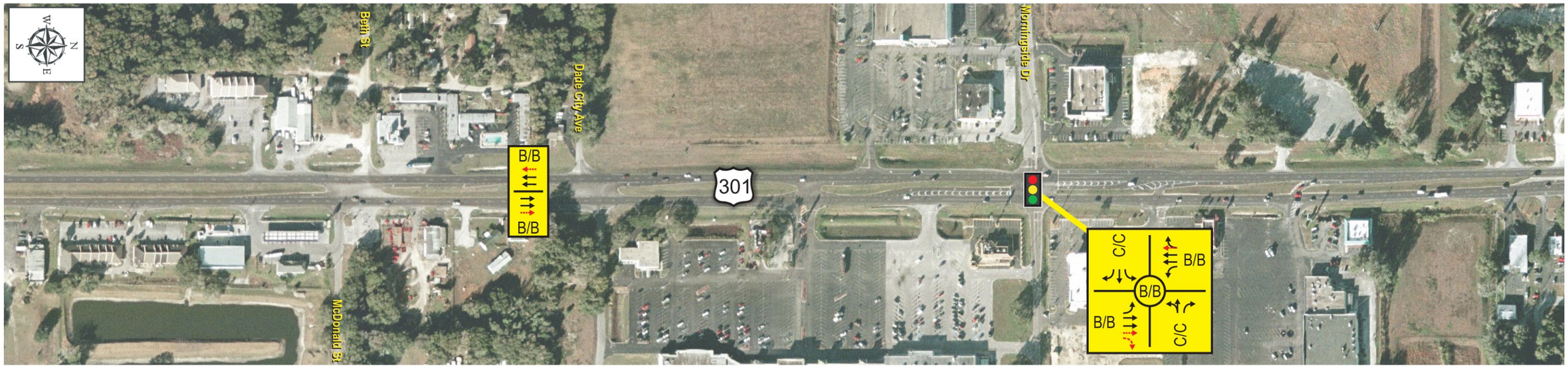
OPENING YEAR (2015) BUILD ALTERNATIVE
LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 15C



300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS



US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

OPENING YEAR (2015) BUILD ALTERNATIVE
LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 15D

300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

OPENING YEAR (2015) BUILD ALTERNATIVE
LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 15E

4.11 OPENING YEAR (2015) ARTERIAL ANALYSIS

The opening year (2015) arterial LOS analyses for the US 301 roadway segments within the study area were conducted using the estimated opening year (2015) DDHV. The arterial segment LOS analysis was conducted using the Synchro 7.0 Version (Build 761) software. For the arterial analysis, the free flow speed was assumed to be the posted speed limit. The US 301 arterial functional and design categories were determined to be Principal Arterial and High-Speed (posted speed limit 45-55 mph), respectively, based on Exhibit 10-4 of the HCM 2000. The urban street class of the US 301 arterial was established as Class I using Exhibit 10-3 of the HCM 2000. The US 301 northbound and southbound arterial segment LOS results for the opening year (2015) conditions are summarized in **Table 4-20** and **Table 4-21,** respectively and shown on **Exhibits 15A-15E.**

Table 4-20
Opening Year (2015) US 301 Arterial
Northbound Level of Service Summary

US 301 Segment	Segment Length (miles)	Posted Speed (mph)	Arterial Speed (mph)		Arterial LOS	
			AM	PM	AM	PM
CR 54 to Daughtery Road	0.51	45	27.4	31.2	C	C
Daughtery Road to Townview Square Shopping Center Entrance	0.36	45	30.1	29.6	C	C
Townview Square Shopping Center Entrance to Kossik Road	0.65	45	41.1	41.1	B	B
Kossik Road to Centennial Road	2.01	55	44.8	46.8	A	A
Centennial Road to US 98	1.46	55	47.8	45.2	A	A
US 98 to CR 52A	0.29	55	29.4	31.6	C	C
CR 52A to Morningside Drive	1.02	50	41.7	40.8	B	B
Morningside Drive to US 98 Bypass	0.82	45	33.2	33.2	C	C
CR 54 to US 98 Bypass (Entire Northbound Arterial)	7.12	45-55	39.4	39.9	B	B

Table 4-21
Opening Year (2015) US 301 Arterial
Southbound Level of Service Summary

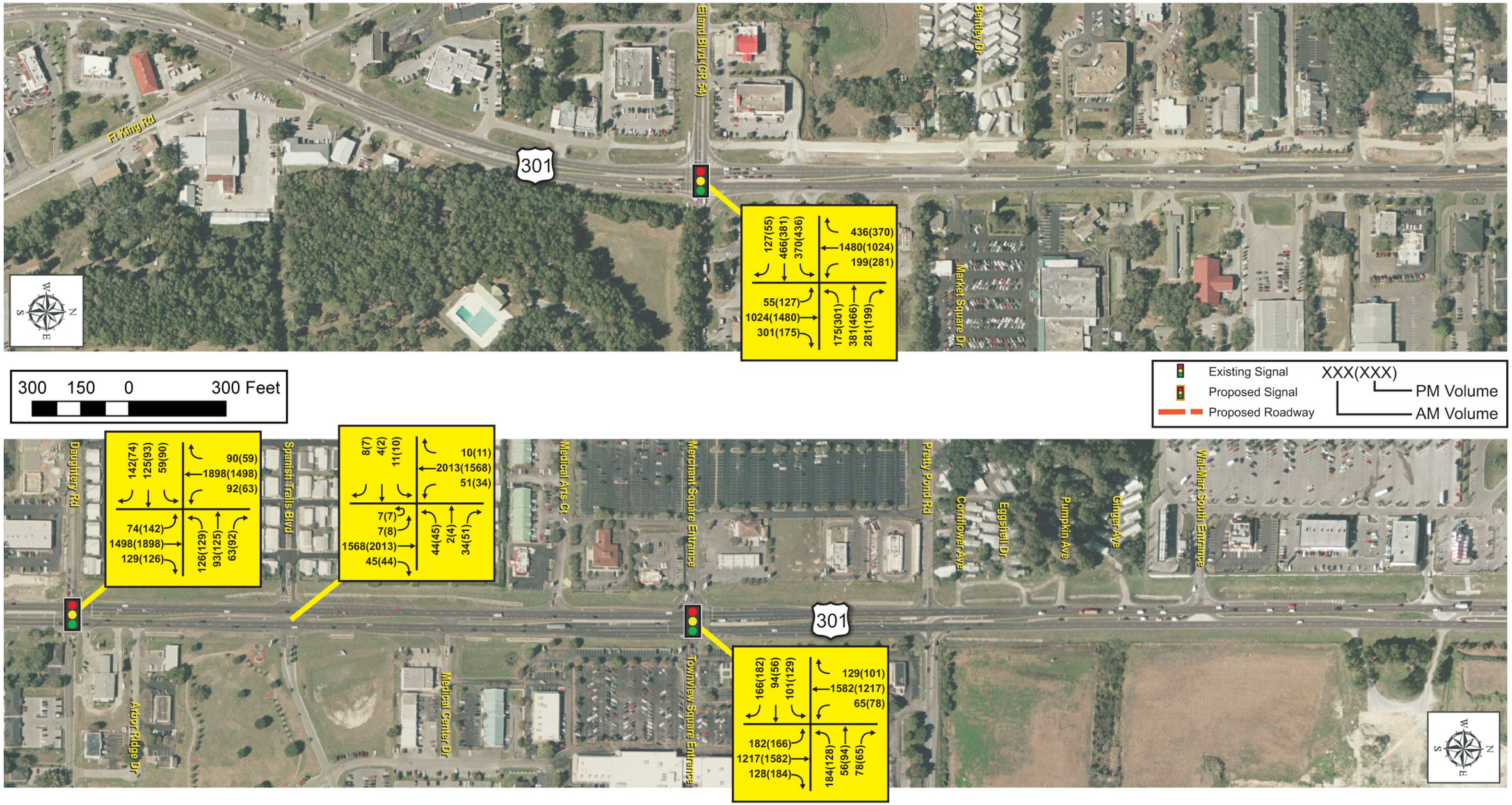
US 301 Segment	Segment Length (miles)	Posted Speed (mph)	Arterial Speed (mph)		Arterial LOS	
			AM	PM	AM	PM
US 98 Bypass to Morningside Drive	0.82	45	37.4	37.3	B	B
Morningside Drive to CR 52A	1.02	50	34.3	34.1	B	B
CR 52A to US 98	0.29	55	36.9	36.6	B	B
US 98 to Centennial Road	1.46	55	46.6	49.0	A	A
Centennial Road to Kossik Road	2.01	55	48.8	46.5	A	A
Kossik Road to Townview Square Shopping Center Entrance	0.65	45	29.4	35.6	C	B
Townview Square Shopping Center Entrance to Daughtery Road	0.36	45	32.2	30.0	C	C
Daughtery Road to CR 54	0.51	45	33.7	30.9	C	C
US 98 Bypass to CR 54 (Entire Southbound Arterial)	7.12	45-55	39.5	39.7	B	B

4.12 DEVELOPMENT OF INTERIM YEAR (2025) DESIGN HOUR VOLUMES

The interim year (2025) AM and PM design peak hour intersection turning movement volumes were estimated by interpolating the existing year (2008) and the design year (2035) traffic volumes. The estimated interim year (2025) AM and PM design peak hour turning movement traffic volumes are shown on **Exhibits 16A-16E**.

4.13 INTERIM YEAR (2025) INTERSECTION LEVEL OF SERVICE ANALYSIS

Signalized LOS was estimated using the HCM methodology module of Synchro software. Signal timing was optimized to accommodate traffic volumes with the Build alternative lane geometry. The analysis results for the eleven study intersections are summarized in **Table 4-22** and **Table 4-23.** The interim year (2025) lane geometry and level of service is also shown on **Exhibits 17A-17E**. The interim year (2025) Synchro intersection analysis sheets are included in **Appendix G** (under separate cover).



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**INTERIM YEAR (2025) TURNING MOVEMENT VOLUMES**	**EXHIBIT 16A**

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**INTERIM YEAR (2025) TURNING MOVEMENT VOLUMES**	**EXHIBIT 16B**

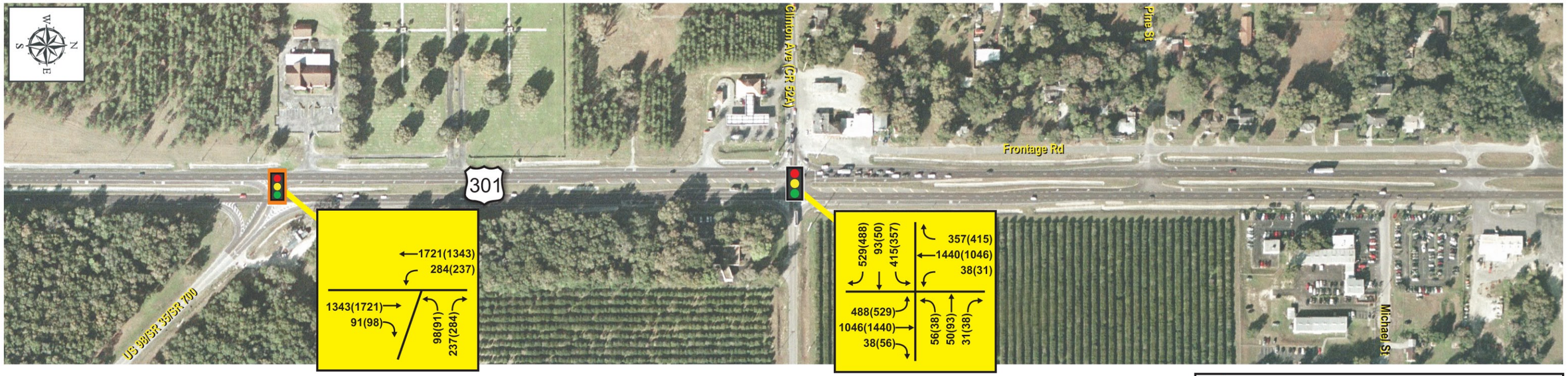
300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
XXX(XXX)
PM Volume
AM Volume

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

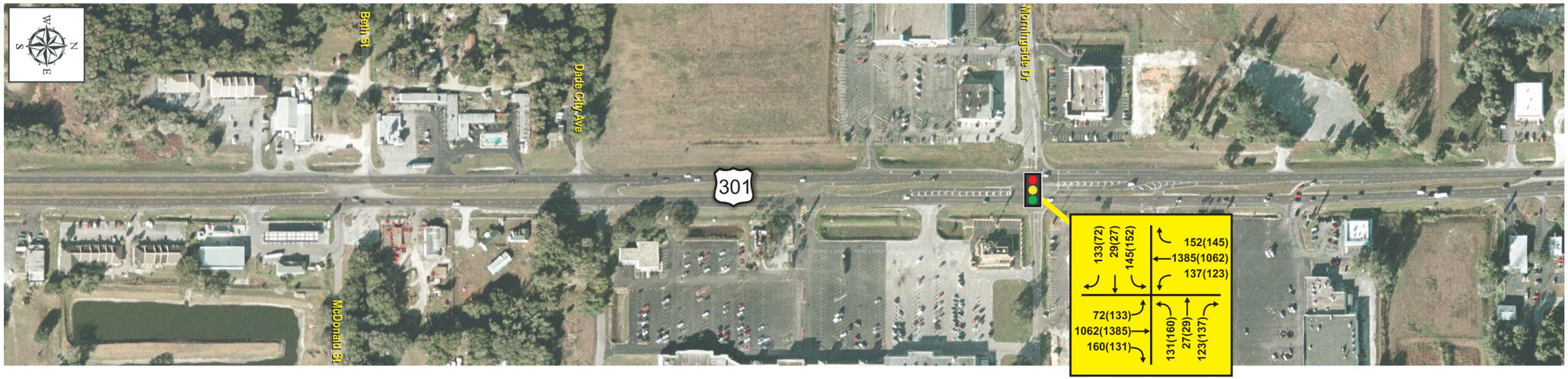
INTERIM YEAR (2025) TURNING MOVEMENT VOLUMES

EXHIBIT 16C



300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
XXX(XXX)
PM Volume
AM Volume



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**INTERIM YEAR (2025) TURNING MOVEMENT VOLUMES**	**EXHIBIT 16D**

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

INTERIM YEAR (2025) TURNING MOVEMENT VOLUMES

EXHIBIT 16E

Table 4-22
Interim Year (2025) US 301
Intersection Level of Service Summary

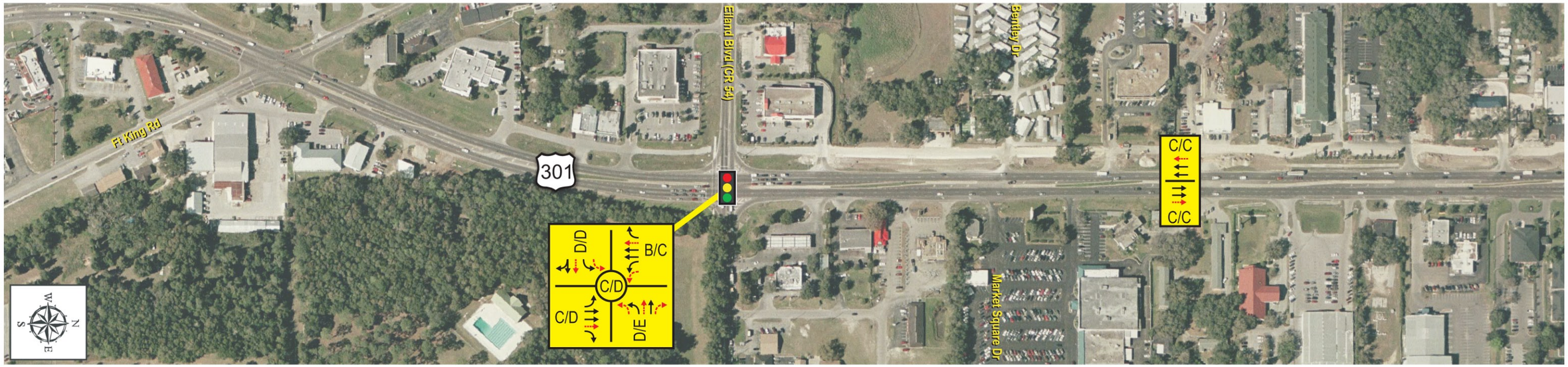
Cross-Street	Level of Service (LOS)				
	US 301 NB Mainline AM / PM	**US 301 SB Mainline AM / PM**	**EB AM / PM**	**WB AM / PM**	**Overall AM / PM**
CR 54	C / D	B / C	D / D	D / **E**	C / D
Daughtery Road	C / B	B / A	D / D	D / D	C / B
Spanish Trails Boulevard[1]	B[2] / B[2]	B[2] / C[2]	C / **E**	B / D	A / A
Townview Square Shopping Center Entrance	B / C	D / B	D / **E**	**E / E**	C / C
Kossik Road	B / B	C / C	D / D	D / D	C / C
Wire Road[1]	A / A	C[2] / D[2]		**F / F**	C / C
Centennial Road	D / C	C / C	C / C	D / C	C / C
US 98	B / C	B / A		C / D	B / B
CR 52A	C / B	D / D	**E** / D	D / **E**	D / C
Morningside Drive	B / B	B / B	C / C	C / C	B / B
US 98 Bypass	C / C	A / A		C / C	C / C

[1] Indicates two-way stop controlled (TWSC) intersection.
[2]LOS on US 301 is reported for the left-turn movements only; overall LOS is determined using the weighted average delay for all intersection movements.
Bold – Indicates level of service exceeding the minimum acceptable level of service standard D.

Table 4-23
Interim Year (2025) US 301
Intersection Control Delay Summary

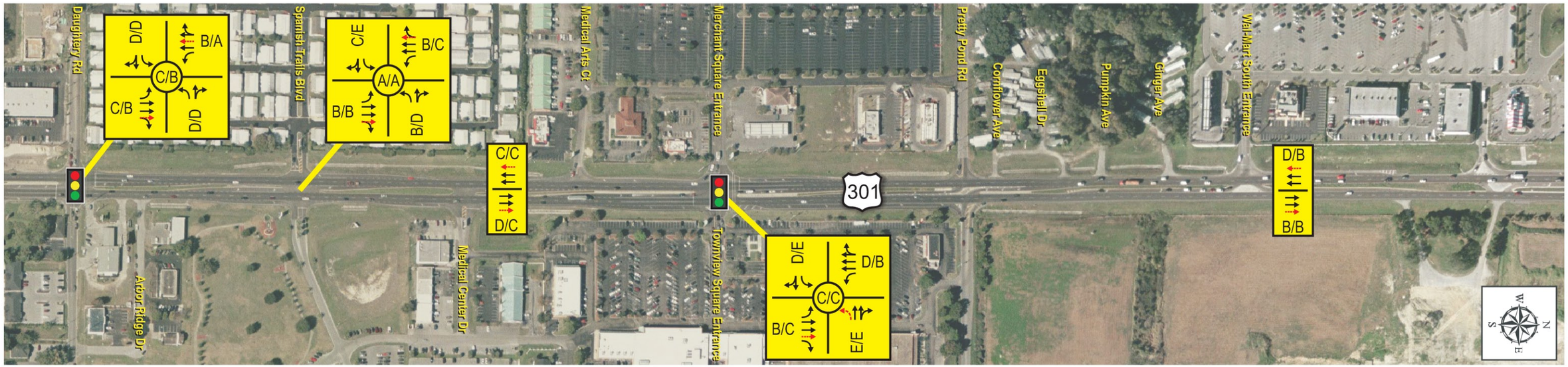
Cross-Street	HCM Average Control Delay (sec/veh)				
	SR 39 (US 301) NB Mainline AM / PM	SR 39 (US 301) SB Mainline AM / PM	EB AM / PM	WB AM / PM	Overall AM / PM
CR 54	33.2 / 45.2	17.2 / 34.3	40.7 / 45.4	53.5 / 73.0	31.4 / 46.9
Daughtery Road	25.6 / 17.2	10.2 / 9.5	36.0 / 39.6	43.4 / 45.5	20.2 / 17.9
Spanish Trails Boulevard[1]	14.5[2] / 13.5[2]	11.6[2] / 15.5[2]	21.8 / 38.7	11.7 / 34.7	0.6 / 1.3
Townview Square Shopping Center Entrance	17.2 / 20.8	37.3 / 14.9	52.5 / 60.0	60.5 / 55.6	32.8 / 24.9
Kossik Road	10.1 / 15.7	24.2 / 25.3	51.6 / 54.4	50.5 / 53.0	25.2 / 27.7
Wire Road[1]	0.0 / 0.0	16.9[2] / 26.2[2]		> 5 min. / > 5 min.	31.2 / 24.0
Centennial Road	38.6 / 25.8	25.0 / 20.5	23.7 / 25.0	44.2 / 30.4	32.7 / 24.5
US 98	13.7 / 21.4	14.6 / 7.1		25.3 / 53.7	15.2 / 18.6
CR 52A	30.0 / 13.3	40.7 / 40.0	58.5 / 46.9	51.9 / 58.0	41.4 / 30.2
Morningside Drive	16.0 / 19.2	15.0 / 17.7	27.3 / 26.2	26.3 / 27.0	17.4 / 19.9
US 98 Bypass	20.8 / 22.0	0.0 / 0.0		23.6 / 31.2	22.2 / 25.4

[1] Indicates two-way stop controlled (TWSC) intersection.
[2]Delay is reported for the left-turn movements only; overall delay is the weighted average delay for all intersection movements.



300 150 0 300 Feet

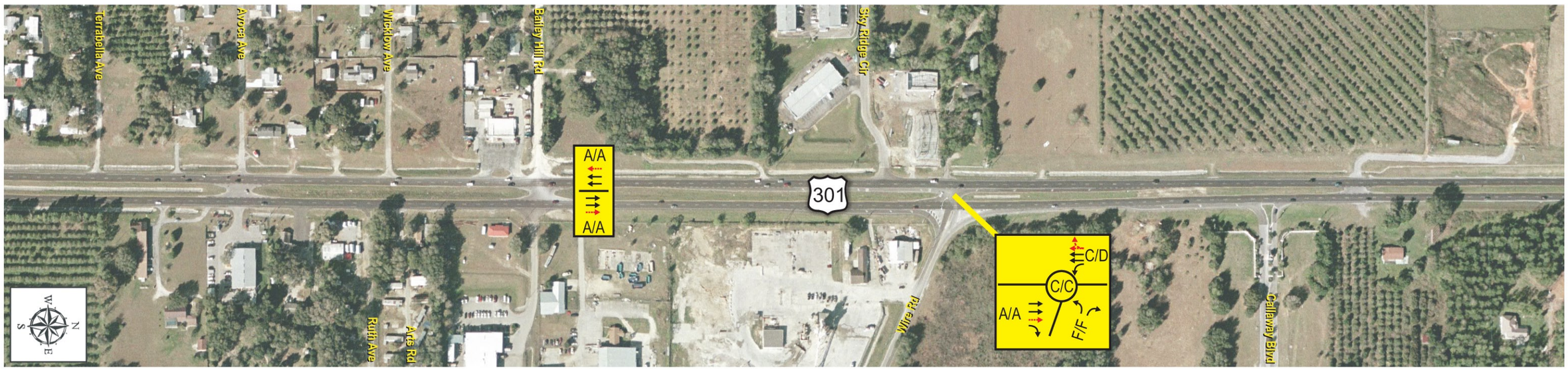
Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS



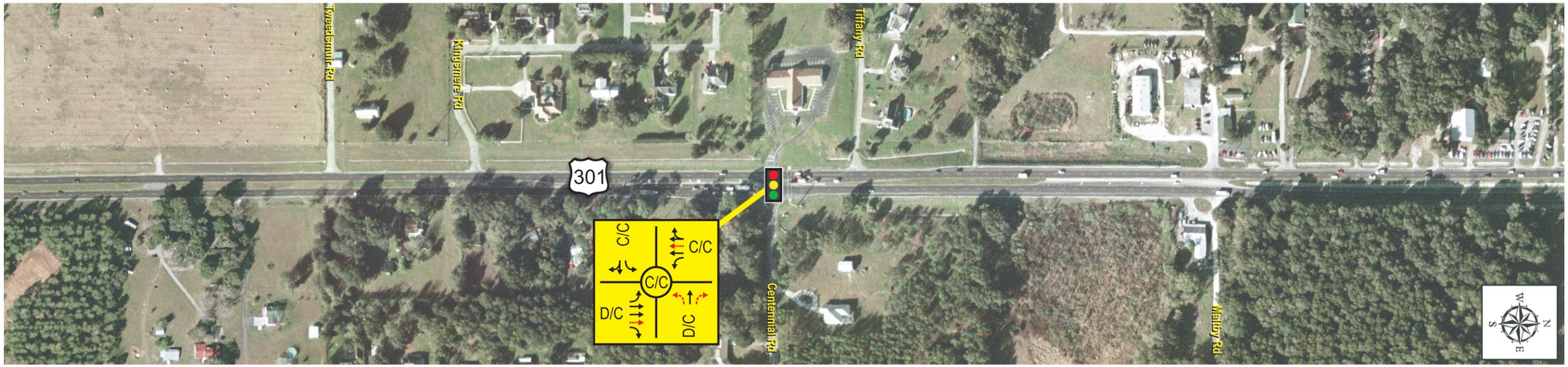
US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**INTERIM YEAR (2025) BUILD ALTERNATIVE LEVEL OF SERVICE (LOS) AND LANE GEOMETRY**	**EXHIBIT 17A**

300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS



US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**INTERIM YEAR (2025) BUILD ALTERNATIVE LEVEL OF SERVICE (LOS) AND LANE GEOMETRY**	**EXHIBIT 17B**



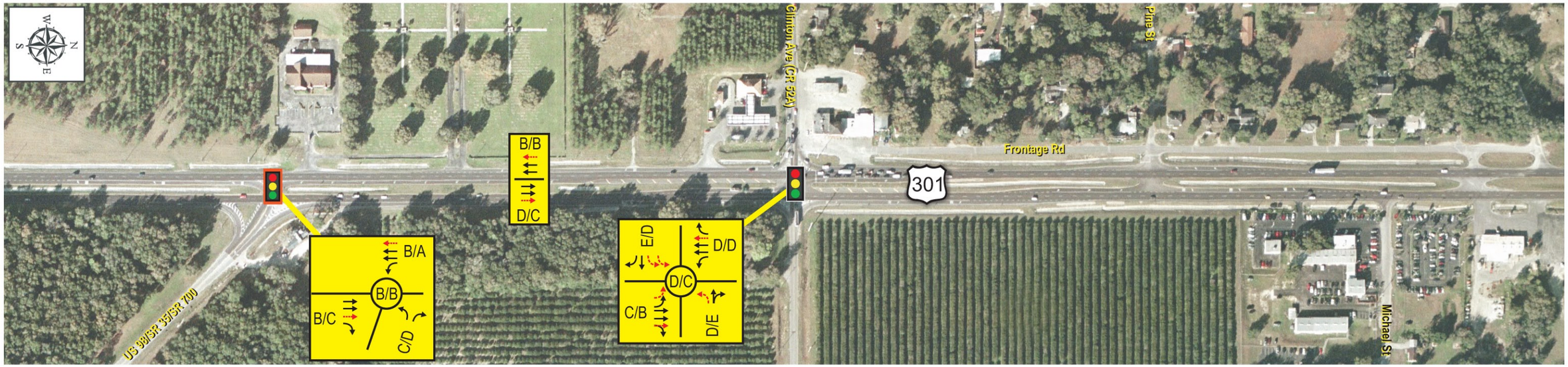
300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS

US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

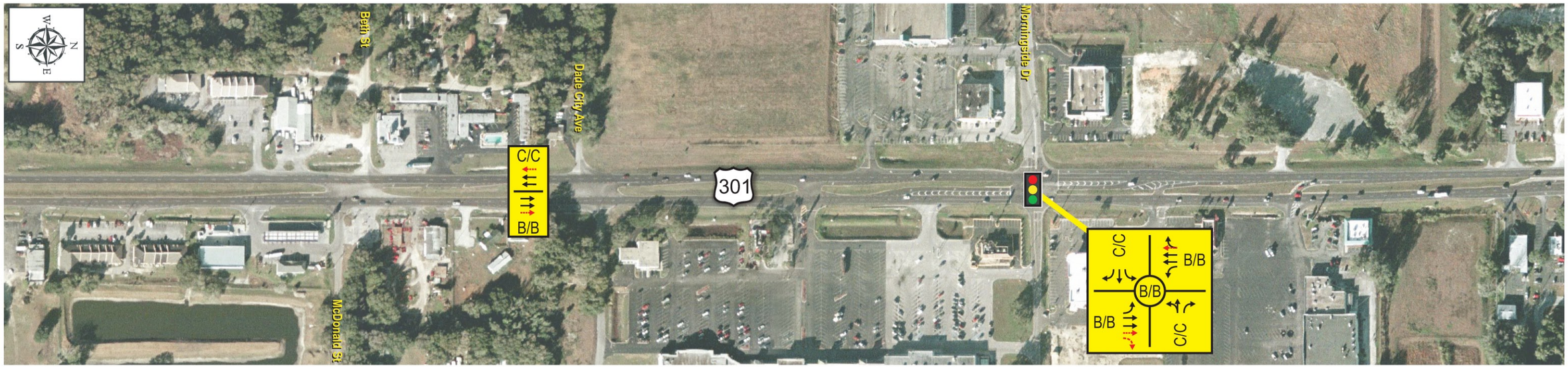
INTERIM YEAR (2025) BUILD ALTERNATIVE
LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 17C



300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS



US 301 (SR 39) PD&E Study
from CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)

INTERIM YEAR (2025) BUILD ALTERNATIVE
LEVEL OF SERVICE (LOS) AND LANE GEOMETRY

EXHIBIT 17D

300 150 0 300 Feet

Existing Signal
Proposed Signal
Proposed Roadway
Proposed Lane
Existing Lane
X/X
PM LOS
AM LOS

US 301 (SR 39) PD&E Study from CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**INTERIM YEAR (2025) BUILD ALTERNATIVE LEVEL OF SERVICE (LOS) AND LANE GEOMETRY**	**EXHIBIT 17E**

4.14 INTERIM YEAR (2025) ARTERIAL ANALYSIS

The interim year (2025) arterial LOS analyses for the US 301 roadway segments within the study area were conducted using the estimated interim year (2025) DDHV. The arterial segment LOS analysis was conducted using the Synchro 7.0 Version (Build 761) software. For the arterial analysis, the free flow speed was assumed to be the posted speed limit. The US 301 arterial functional and design categories were determined to be Principal Arterial and High-Speed (posted speed limit 45-55 mph), respectively, based on Exhibit 10-4 of the HCM 2000. The urban street class of the US 301 arterial was established as Class I using Exhibit 10-3 of the HCM 2000. The US 301 northbound and southbound arterial segment LOS results for the interim year (2025) conditions are summarized in **Table 4-24** and **Table 4-25,** respectively and shown on **Exhibits 17A-17E.**

Table 4-24
Interim Year (2025) US 301 Arterial
Northbound Level of Service Summary

US 301 Segment	Segment Length (miles)	Posted Speed (mph)	Arterial Speed (mph)		Arterial LOS	
			AM	PM	AM	PM
CR 54 to Daughtery Road	0.51	45	27.3	31.2	C	C
Daughtery Road to Townview Square Shopping Center Entrance	0.36	45	25.7	29.3	D	C
Townview Square Shopping Center Entrance to Kossik Road	0.65	45	39.4	38.9	B	B
Kossik Road to Centennial Road	2.01	55	42.2	43.9	A	A
Centennial Road to US 98	1.46	55	47.6	44.5	A	A
US 98 to CR 52A	0.29	55	22.8	30.1	D	C
CR 52A to Morningside Drive	1.02	50	41.2	40.4	B	B
Morningside Drive to US 98 Bypass	0.82	45	32.6	32.4	C	C
CR 54 to US 98 Bypass (Entire Northbound Arterial)	7.12	45-55	37.5	38.7	B	B

Table 4-25
Interim Year (2025) US 301 Arterial
Southbound Level of Service Summary

US 301 Segment	Segment Length (miles)	Posted Speed (mph)	Arterial Speed (mph)		Arterial LOS	
			AM	PM	AM	PM
US 98 Bypass to Morningside Drive	0.82	45	37.1	36.9	B	B
Morningside Drive to CR 52A	1.02	50	32.1	32.5	C	C
CR 52A to US 98	0.29	55	34.5	36.4	B	B
US 98 to Centennial Road	1.46	55	44.7	46.2	A	A
Centennial Road to Kossik Road	2.01	55	47.6	46.6	A	A
Kossik Road to Townview Square Shopping Center Entrance	0.65	45	26.7	35.4	D	B
Townview Square Shopping Center Entrance to Daughtery Road	0.36	45	29.4	29.8	C	C
Daughtery Road to CR 54	0.51	45	30.3	27.5	C	C
US 98 Bypass to CR 54 (Entire Southbound Arterial)	7.12	45-55	37.4	38.4	B	B

4.15 REFERENCES

1. *US 98 Dade City Bypass PD&E Study from US 301 South to US 301 North [FPN: 256423 1]*, 2002

2. *Martin Wohl & Brian, Traffic Systems Analyses for Engineers & Planners*, (New York: McGraw Hill, 1967)

3. *FDOT Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System*, 2008

SECTION 5
SUMMARY AND CONCLUSIONS

5.1 EXISTING YEAR (2008)

The existing year (2008) signalized intersection analysis indicates that seven of the eleven US 301 study intersections have at least one approach operating at level of service (LOS) E or F during the design hour. The existing year (2008) arterial analysis shows that all but one of the US 301 arterial segments between CR 54 and US 98 Bypass operate at LOS D or better. The segment from CR 54 to Daughtery Road is operating at LOS E in the southbound direction during the design hour.

5.2 CRASH ANALYSIS

An analysis of crash data for the most recent 5-year period (2003-2007) revealed that the average crash rate, in crashes per million vehicle miles traveled (VMT), for the entire US 301 study corridor was 3.209. For the US 301 segments from CR 54 to Pretty Pond Road and CR 52A to Countryside Place, the average crash rate was significantly greater than 4.0. This is significantly high given that the yearly average of the Florida average crash rates for urban and rural segments is 2.660 and 0.647, respectively. The analysis showed that rear-end and angle crashes occurred with the highest frequency. These types of crashes are likely caused by excessive driveways and inappropriate median opening spacing on US 301. Therefore, implementation of access management and transportation system management strategies could potentially help reduce the number of crashes.

5.3 ACCESS MANAGEMENT

The FDOT District Seven designates US 301 as an Access Class 5 roadway from CR 54 to Pretty Pond Road and an Access Class 3 roadway for the remainder of the corridor. The existing spacing between median openings does not satisfy the Florida Department of Transportation (FDOT) access classification spacing standard. The proposed access management plan detailed in this study would provide safe and efficient access to land uses along the US 301 corridor, while providing mobility to the motorists.

5.4 DESIGN YEAR (2035)

A No-Build alternative was analyzed to determine future operating conditions on US 301 if no improvements were made by the design year (2035). The analysis results indicated that ten of the eleven US 301 study intersections have at least one approach operating at LOS E or F. Two of these intersections, CR 54 and CR 52A, are projected to operate at LOS E or LOS F for all approaches during both the AM and PM peak period. An analysis of arterial operations indicates that the US 301 segments between CR 54 and Townview Square Shopping Center entrance is projected to operate at LOS E or LOS F in both the northbound and southbound directions. Also, the segment from Morningside Drive to US 98 Bypass is projected to operate at LOS E in the northbound direction during the PM peak period. The overall arterial operation on US 301 is projected to be at LOS E during the AM peak period in the southbound direction.

For the Build Scenario with the design year (2035) design hour traffic conditions, all intersections, except for CR 54, have an overall intersection LOS D or better for both the AM and PM peak periods. CR 54 has an overall intersection LOS D for the AM Peak Period; however, during the PM peak period this intersection is projected to experience LOS E conditions. The design year (2035) Build alternative arterial analysis indicates that all of the US 301 arterial segments would operate at an average LOS D or better. This affirms the need to widen the segment of US 301 from CR 54 to US 98 Bypass from a four-lane facility to a six-lane facility.

5.5 OPENING YEAR (2015) AND INTERIM YEAR (2025)

Analyses were also performed for the opening year (2015) and interim year (2025). These results further support the need to widen US 301 from a four lane facility to a six lane facility. For comparison purposes the overall intersection LOS and control delay for each of the eleven intersections based on the design year (2035), opening year (2015) and interim year (2025) traffic conditions can be seen in **Table 5-1**.

Table 5-1
Design Year Build (six-lanes) (2035), Opening Year (2015), and Interim Year (2025)
Comparison of Overall Intersection LOS and Overall Control Delay

Cross-Street	Level Of Service (LOS)			HCM Average Control Delay (Sec/Veh)		
	Design Year Build (Six-Lanes) (2035) AM / PM	Interim Year (2025) AM/ PM	Opening Year (2015) AM / PM	Design Year Build (Six-Lanes) (2035) AM / PM	Interim Year (2025) AM/PM	Opening Year (2015) AM/PM
CR 54	D / **E**	C / D	C / D	40.0 / 60.3	31.4 / 46.9	29.6 / 42.6
Daughtery Road	C / C	C / B	B / B	26.6 / 29.2	20.2 / 17.9	17.7 / 17.6
Spanish Trails Boulevard[1]	A / A	A / A	A / A	0.6 / 1.3	0.6 / 1.3	0.5 / 0.9
Townview Square Shopping Center Entrance	D / C	C / C	C / C	42.3 / 29.6	32.8 / 24.9	25.9 / 20.7
Kossik Road	C / D	C / C	B / C	32.4 / 45.5	25.4 / 27.7	20.0 / 23.5
Wire Road[1]	C / C	C / C	C / C	34.0 / 26.9	31.2 / 24.0	31.1 / 20.9
Centennial Road	D / C	C / C	C / B	48.1 / 34.2	32.7 / 24.5	23.5 / 18.8
US 98	C / B	B / B	B / B	20.8 / 19.7	15.2 / 18.6	14.7 / 18.1
CR 52A	D / C	D / C	C / C	46.7 / 31.8	41.4 / 30.2	32.1 / 28.3
Morningside Drive	B / C	B / B	B / B	19.7 / 23.3	17.4 / 19.9	16.0 / 17.9
US 98 Bypass	C / C	C / C	C / C	24.3 / 29.8	22.2 / 25.4	20.2 / 22.2

[1] Indicates two-way stop controlled (TWSC) intersection; overall LOS and delay is determined using the weighted average delay for all intersection movements.
Bold – Indicates level of service exceeding the minimum acceptable level of service standard D.

5.6 CONCLUSION

In conclusion, US 301 will experience improvements in LOS and delay when it is widened from a four-lane facility to a six-lane facility. While a few approaches will continue to experience deficient LOS conditions, the overall corridor will operate more efficiently. Travel speeds will be improved, crashes will be reduced, and access will be enhanced.

A summary of the impacts that could occur if US 301 was widened to six-lanes from south of CR 54 to US 98 Bypass was presented at the Alternatives Public Workshop held on June 3, 2009. The purpose of the Alternatives Public Workshop was to solicit public input regarding the proposed Build Alternatives and the No-Build Alternative for the proposed project. On July 16, 2009 the FDOT determined a Recommended Build Alternative would be presented at the Study's Public Hearing in addition to the No-Build Alternative. The Recommended Build Alternative determination was based on the results of the Build Alternative's impact evaluation, public feedback received during the public involvement process, and consistency with current transportation plans.

As a result of this determination, the Recommended Build Alternative consists of widening US 301 to a six-lane roadway facility in Segment A only (from south of CR 54 to north of Kossik Road) and maintaining the existing four-lanes on US 301 in Segments B-D (from north of Kossik Road to US 98 Bypass). The recommended typical section for the six-lane widening is a low-speed urban typical section. The section of US 301 between Kossik Road and Wire Road will be used to transition the proposed six-lanes into the existing four-lane roadway. To minimize traffic congestion and improve safety north of Kossik Road, Transportation System Management (TSM) improvements will be provided. The TSM improvements could include, but not be limited to, median modifications on US 301 from north of Kossik Road to the US 98 Bypass and Transportation System Management (TSM) improvements at four signalized intersections: Centennial Road, CR 52A, Morningside Drive, and US 98 Bypass.

Appendix H contains an analysis of the TSM improvements. The analysis results indicate that the recommended TSM improvements result in LOS D or better for the design year (2035).