PROJECT TRAFFIC ANALYSIS REPORT

Florida Department of Transportation

District 1

PD&E Services for SR 659 (Combee Road)

From US 98 to North Crystal Lake Road

Polk County, Florida

Financial Management Number: 440274-1-22-01

ETDM Number: 14326

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016 and executed by FHWA and FDOT.

This item has been electronically signed and sealed by Michael R. Woodward, P.E. using a Digital Signature.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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Table of Contents

1.0 Executive Summary 1
2.0 Traffic Analysis Assumptions 3
3.0 Introduction 4
3.1 Description of Project 6
3.2 Existing Transit Service 6
3.3 Objective 8
4.0 Traffic Analysis Method 9
4.1 Design Period 9
5.0 Existing Conditions Analysis 10
5.1 Traffic Count Information 10
5.2 Existing Geometry 12
5.3 Existing AADT Volumes 12
5.4 Existing Traffic Volumes 12
5.4.1 Year 2016 Turning Movement Counts 12
5.5 Year 2016 LOS Analysis 17
5.5.1 Year 2016 Arterial LOS Analysis 17
5.5.2 Year 2016 Intersection LOS Analysis 18
5.6 Safety Analysis 19
5.6.1 Historical Crash Analysis 20
5.6.2 Crash Concentrations 23
5.7 Year 2010 Sub-Area Model Validation 25
6.0 Development of Future Traffic Forecast 26
6.1 Development of Design Traffic Characteristics 26
6.1.1 Standard K Factor 26
6.1.2 D Factor 26
6.1.3 T_{24} and T_f Factors 27
6.1.4 Recommended Design Traffic Characteristics 28
6.2 No Build and Build Alternatives 29
6.2.1 No Build Alternative 29
6.2.2 Build Alternative 29
6.3 Future Travel Demand 29
6.3.1 Historical Traffic Growth 29
6.3.2 D1RPM Projection 30
6.3.3 Polk County Population Projections 30
6.3.4 Travel Demand Model 31
6.4 Recommended Future Growth Rare 31

6.5 No Build and Build Future AADT Volumes 31
6.6 Intersection Design Hour Volumes 35
7.0 Alternatives Analysis 38
7.1 No Build Alternative Operational Analysis 38
7.1.1 Geometry – No Build Alternative 38
7.1.2 Future Arterial LOS Analysis – No Build Alternative 38
7.1.3 Intersection Operational Analysis – No Build Alternative 40
7.1.4 Signal Retiming – No Build Alternative 40
7.2 Build Alternative Operational Analysis 41
7.2.1 Geometry –Build Alternative 41
7.2.2 Future Arterial LOS Analysis –Build Alternative 43
7.2.3 Intersection Operational Analysis – Build Alternative 45
7.3 Crash Expectancy 45
8.0 Summary of Analysis Results 48
8.1 Existing Conditions 48
8.2 No Build Alternative 50
8.3 Build Alternative 53
9.0 Access Management 57
9.1 Bicycle and Pedestrian Access 57
9.1.1 Existing Conditions 57
9.1.2 Proposed Conditions 57
9.2 Median Access 57
9.2.1 Existing Conditions 57
9.2.2 Proposed Conditions 57
10.0 Recommendations and Conclusions 59

List of Figures

Figure 1. Project Location 5
Figure 2. Existing Transit Services 7
Figure 3. Traffic Count Locations 11
Figure 4. Existing Intersection Geometry 13
Figure 5. Existing 2016 AADT Volumes 14
Figure 6. Adjusted Existing Turning Movement Volumes 16
Figure 7. Crashes by Time of Day 21
Figure 8. Summary of Crashes by Location 24
Figure 9. Future 2025 AADT Volumes 33
Figure 10. Future 2045 AADT Volumes 34
Figure 11. 2025 Intersection Design Hour Volumes 36
Figure 12. 2045 Intersection Design Hour Volumes 37
Figure 13. Build Intersection Geometry 42
Figure 14. 2016 Existing Roadway and Intersection LOS 49
Figure 15. 2025 No Build Roadway and Intersection LOS 51
Figure 16. 2045 No Build Roadway and Intersection LOS 52
Figure 17. 2025 Build Roadway and Intersection LOS 54
Figure 18. 2045 Build Roadway and Intersection LOS 55

List of Tables

Table 1. Roadway Characteristics of the SR 659 Corridor 6
Table 2. Year 2016 Existing Traffic Volumes and Factors 15
Table 3. Year 2016 Existing Arterial LOS Analysis Summary 18
Table 4. Year 2016 Existing Intersection LOS Analysis Summary 19
Table 5. Summary of Crashes 20
Table 6. Summary of Crashes by Type 22
Table 7. SR 659 Historical FTI Data – D Values 27
Table 8. Recommended Range of D Values 27
Table 9. SR 659 Historical FTI Data – T24 Values 28
Table 10. SR 659 Historical FTI Data – Tf Values 28
Table 11. Recommended Design Traffic Characteristics 29
Table 12. Trend Analysis Growth Rates 30
Table 13. Population Analysis 30
Table 14. Future Traffic Forecasts 31
Table 15. No Build and Build Future AADT Volumes 32
Table 16. Future Arterial LOS Analysis Summary – No Build Alternative 39
Table 17. Future Intersection LOS Summary – No Build Alternative 40
Table 18. Signal Retiming – No Build Alternative 41
Table 19. Future Arterial LOS Analysis Summary – Build Alternative 44
Table 20. Future Intersection LOS Summary –Build Alternative 45
Table 21. Crash Expectancy by CMF Over a 5-Year Period 47
Table 22. Design Year Queue Lengths 56

Appendices

Appendix A: Lakeland Area Mass Transit District Bus Routes and Schedule Information

Appendix B: Methodology

Appendix C: Raw Traffic Counts

Appendix D: FTI 2016 Data

Appendix E: Turn 5 Worksheets

Appendix F: 2013 Quality/Level of Service Handbook Tables

Appendix G: Existing Signal Timings and Existing Synchro Intersection Analysis

Appendix H: Crash Summary Tables

Appendix I: Model Traffic Forecast Technical Memorandum

Appendix J: Historical Traffic Growth Trend Analysis

Appendix K: BEBR Population Projections for Polk County

Appendix L: No Build Alternative Synchro Intersection Analysis

Appendix M: Build Alternative Synchro Intersection Analysis

1.0 Executive Summary

This Project Traffic Analysis Report (PTAR) has been prepared to provide design traffic volumes and traffic analysis in support of a PD&E for SR 659 (Combee Road) from US 98 to North Crystal Lake Drive, Financial Number 440274-1-22-01.

Traffic data were collected and analyzed to document existing Level of Service for study area roadways and intersections. Under existing conditions, several study area roadway segments are not expected to meet their LOS targets and/or volume to capacity ratios during the PM Peak Hour.

A No Build alternative was developed to identify future traffic conditions that are anticipated to occur if the study area roadway is not improved. The No Build geometry for SR 659 is the same as existing geometry for study area roadway segments, consisting of a 2-lane road with occasional two-way left-turn lanes.

Several study area roadway segments under the No Build scenario are anticipated to not meet their LOS targets under Existing (2016), Opening Year (2025), and Design Year (2045) conditions. In the Design Year, no study area roadway segments are anticipated to meet their LOS target, with the exception of the segment south of US 98.

The Build geometry assumes that SR 659 (Combee Road) will remain a 2-lane undivided facility in the future. However, right and left turn-lanes will be added to improve conditions. Associated intersection improvements include:

SR 659 & US 98

- Add one southbound right turn-lane to provide a dedicated turn lane.

SR 659 & Commerce Point Drive

- Add one southbound right turn-lane to provide a dedicated turn lane.

SR 659 & South Crystal Lake Drive

- Add one southbound right turn-lane to provide a dedicated turn lane.

SR 659 & North Crystal Lake Drive

- Add one eastbound left turn-lane to provide a dedicated turn lane.
- Add one southbound right-turn lane to provide a dedicated turn lane.

No study area roadway segments under the Build scenario are anticipated to meet their LOS target under Opening Year (2025) and Design Year (2045) conditions, with exception to the segments of SR 659 south of US 98, from US 98 to Maine Avenue, and

from Maine Avenue to McJunkin Road in the Opening Year (2025), and the segment of SR 659 south of US 98 and from US 98 to Maine Avenue in the Design Year (2045).

All signalized study area intersections are anticipated to meet their LOS target during the Opening Year. By the Design Year, the US 98 intersection is calculated to have a delay of 70.5 seconds and an LOS E, which indicate failing conditions. Several Design Year intersections experience volume to capacity ratios that exceed 1.0.

2.0 Traffic Analysis Assumptions

Assumptions are described using FDOT Form 2-29 of PD&E Manual as shown below.

Traffic forecast for the project was developed using:	
☒ Travel Demand Model Type of Travel Demand Model Used: ☒ Metropolitan Planning Model ☐ Other Model _____	☒ Growth Rates *Refer to Section 6 of the Project Traffic Analysis Report that discusses growth rates*
Is the travel demand model based on the latest adopted Long Range Transportation Plan?	
☒ YES	☐ NO
12/10/2015 Date when MPO adopted the latest Long Range Transportation Plan	Explain why?
2010 Base Year of Travel Demand Model	
2040 Horizon Year of Travel Demand Model	
Long Range Transportation Plan documentation is available at (provide web address): http://polktpo.com/what-we-do/our-planning-documents/long-range-transportation-plan	
Traffic Data and Factors	
Standard K = 9% D Factor = 55.47% T_{Daily} = 10.41%	Data Collection Year 2016 Opening Year = 2025 Interim Year = -- Design Year = 2045
Discuss any changes in land use, economics, population and employment data since the model was built: Interim Socioeconomic data have not been reviewed.	
Traffic Analysis Assumptions	
Discuss study area, data calibration/validation parameters, analysis tools, analysis periods and MOEs. Study area includes all signalized intersections within project limits. The model was calibrated and growth rates developed per the PTF Handbook, as described in Section G. Intersections were analyzed using Synchro Software, Synchro HCM reports, and Synchro Reports. Opening and Design Year peak-hour and daily conditions were analyzed. Measures of effectiveness include delay, LOS targets and volume-to-capacity ratios.	

3.0 Introduction

This Project Traffic Analysis Report (PTAR) has been prepared by Kimley-Horn and Associates, Inc. (Kimley-Horn) on behalf of the Florida Department of Transportation (FDOT), District 1. The study area consists of SR 659 (Combee Road) (Roadway ID 16006000) from US 98 (milepost 0) to North Crystal Lake Drive (milepost 1.360) in Polk County, Florida. The project location is shown in Figure 1.

The purpose of the PTAR is to provide design traffic volumes and traffic analyses in support of a Project Development and Environmental (PD&E) study to evaluate accommodations for pedestrians and bikes, improve transit facilities, and optimize vehicle access.

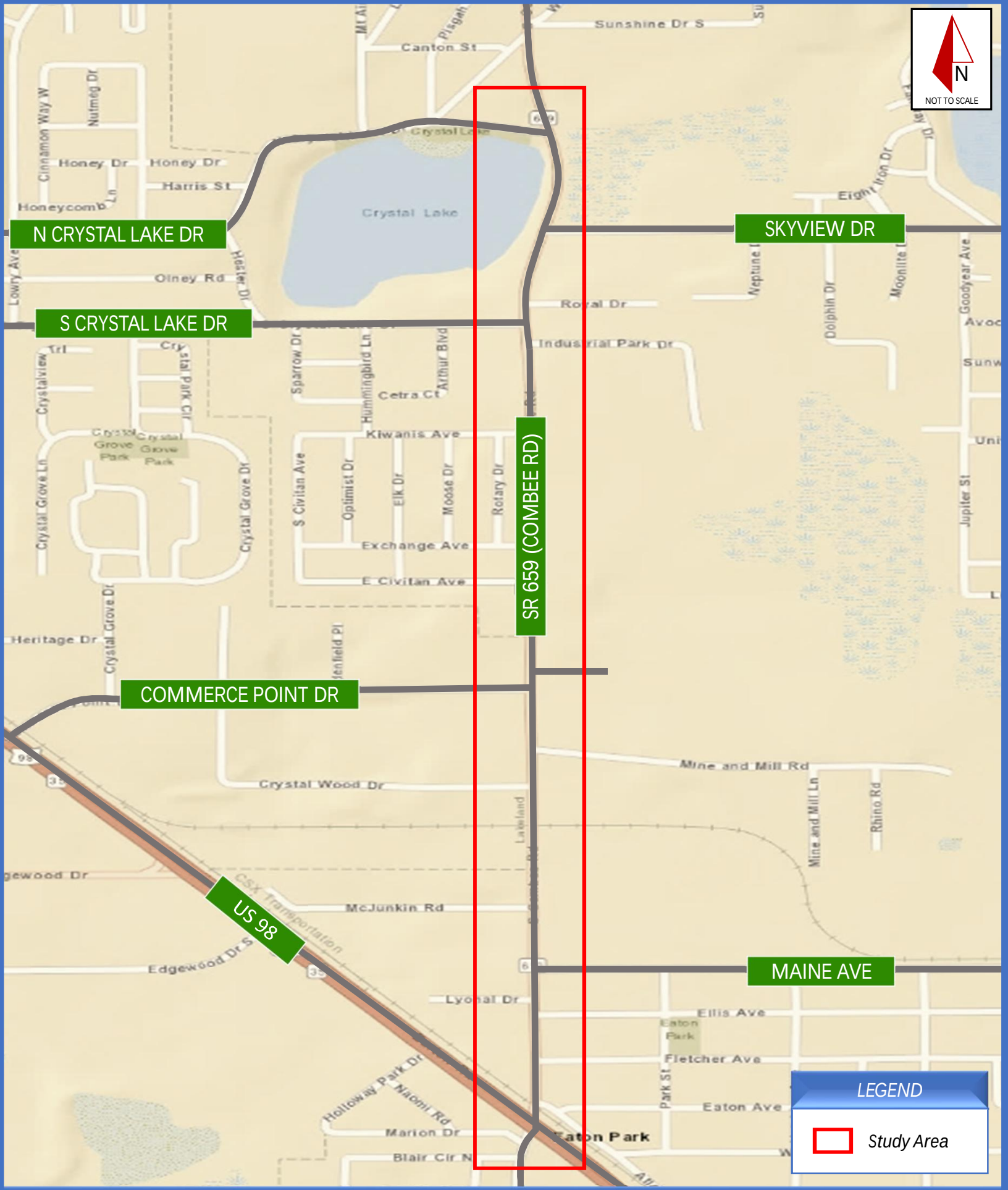

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Figure 1
Project Location
SR 659 (Combee Road)

3.1 Description of Project

SR 659 (Combee Road) is a two-lane, north/south urban minor arterial with a posted speed of 40 miles per hour through the study area. South of the study area, South Combee Road is a small local road that serves a residential area, businesses, and Holloway Park. North of the study area, Combee Road has a rural typical section with two-lanes, no sidewalks, and a narrow border width. It continues north for several miles, terminating just north of the intersection with State Road 33.

SR 659 has a two-way left-turn lane in some segments. There is a two-way left turn lane between US 98 and McJunkin Road on the south end of the study area, and also between Skyview Drive and North Crystal Lake Drive on the north end of the study area. The middle segments between McJunkin Road and Skyview Drive generally do not have left-turn lanes, though there are left-turn lanes at the Commerce Point Drive and South Crystal Lake Drive intersections. Relevant existing characteristics for the study corridor are included in Table 1.

Table 1. Roadway Characteristics of the SR 659 Corridor

SR 659 from US 98 to North Crystal Lake Drive	
Roadway ID	16006000
Mileposts	M.P. 0.000 TO 1.360
State Road	SR 659
Location	Polk County
Area Type	Urban
FDOT LOS Target	LOS D
Functional Classification	Urban Minor Arterial
Access Management Classification	Access Class 05
Speed Limit	40 MPH

3.2 Existing Transit Service

Combee Road is currently served by Route Number 14 of the Lakeland Area Mass Transit District, which has 1-hour headways on weekdays, running from 7:15 am to 6:00 pm. Route 14 transit service is shown in Figure 2.

Bus route schedules and maps are included in Appendix A.

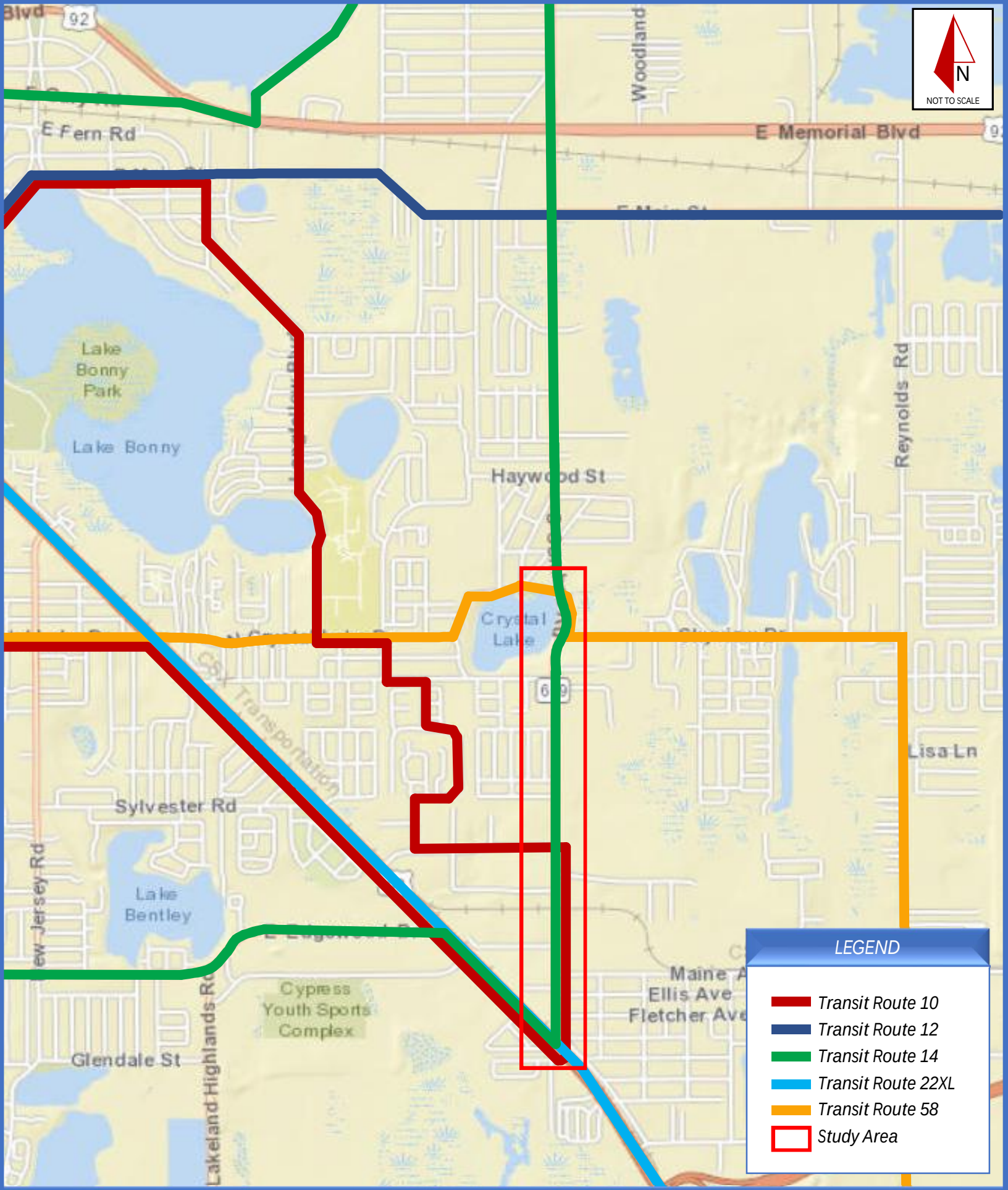

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Figure 2
Existing Transit Services
SR 659 (Combee Road)

3.3 Objective

The objective of this report is to provide the FDOT District 1 with the Annual Average Daily Traffic (AADT), Peak Hour Volume (PHV), and intersection and roadway Level of Service (LOS) for the base year 2016, opening year 2025, and design year 2045. This report includes the development of the design traffic characteristics including Standard K factor, Design Hour Directional Demand (D), and percentage of trucks for both the design hour and daily demand (T_f, T_{24}). These factors were used to determine the future traffic volumes and to perform the future operational analysis. Intersection turning movement queue lengths are also documented.

4.0 Traffic Analysis Method

4.1 Design Period

The following analysis years were considered:

- Existing Year – 2016
- Opening Year – 2025
- Design Year – 2045

Data from the reports were used in the analysis provided herein. The methodology also included assumptions of analysis and buildout years, standard K and D factors, and methods to determine roadway Level of Service (LOS) and intersection operating conditions. The methodology is provided in Appendix B for reference.

5.0 Existing Conditions Analysis

An analysis of existing operating conditions was conducted for the study area segments and intersections. Data collection was conducted to establish existing geometry, intersection turning movement counts, and segment counts. The results of this data collection are presented in the subsequent tables and figures.

5.1 Traffic Count Information

Traffic counts were conducted by others as part of four previous reports that also provide corridor assessments and volume projection data:

- Phase 1 Corridor Analysis for SR 659 from August of 2016 (FPN 436417-1-32-01, TWO 15)
- Intersection Analysis Study for SR 659 at Commerce Point Drive from April of 2017 (FPN 436417-1-32-01, TWO 46)
- Intersection Analysis Study for SR 659 at SR 35 (US 98) from April of 2017 (FPN 436417-1-32-01, TWO 47)
- Traffic Forecast Modeling Technical Memorandum for SR 659 from US 98 to North Crystal Lake Drive from March of 2018

Intersection turning movement counts were conducted for each of the study intersections during the AM Peak Period (7:00 AM and 9:00 AM) and PM Peak Period (4:00 PM to 6:00 PM). Turning movement counts were conducted on Tuesday, January 12, 2016 for the following intersections:

- SR 659 (Combee Road) & US 98
- SR 659 (Combee Road) & Commerce Point Drive

Turning movement counts were conducted on Thursday, January 14, 2016 for the following intersections:

- SR 659 (Combee Road) & Maine Avenue
- SR 659 (Combee Road) & South Crystal Lake Drive
- SR 659 (Combee Road) & Skyview Drive
- SR 659 (Combee Road) & North Crystal Lake Drive

Figure 3 shows the locations of all the traffic counts. Traffic count data were adjusted where appropriate using the latest seasonal and axle factor data from FDOT's FTI 2016. Traffic count summaries are provided in Appendix C, and FDOT's FTI data is provided in Appendix D.

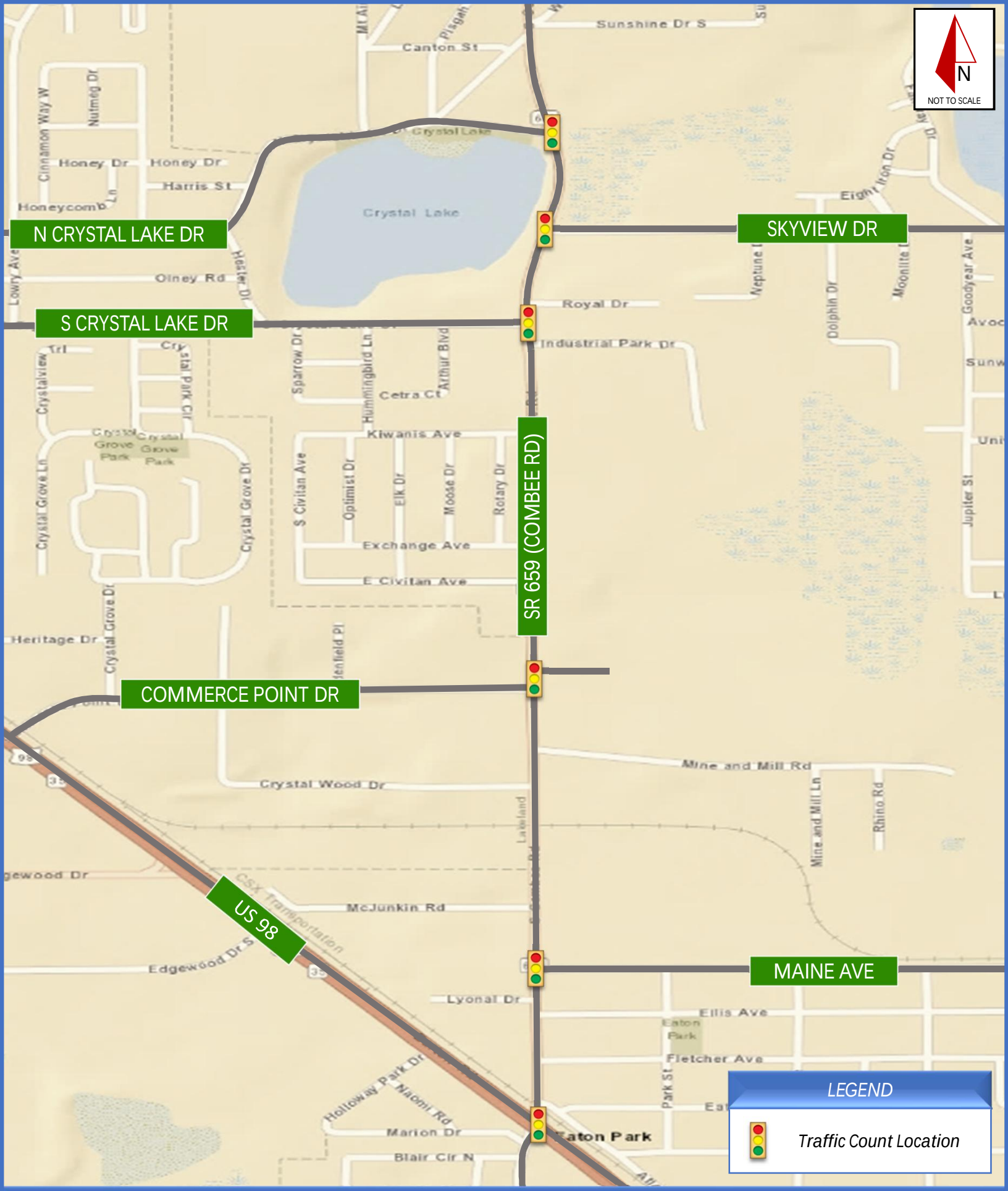

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Figure 3
Traffic Count Location
SR 659 (Combee Road)

5.2 Existing Geometry

The existing geometry in the study area was obtained through review of aerial imagery and confirmed through field observations. SR 659 is currently two lanes throughout all of the study area. Some portions include a two-way left turn lane. Existing geometry at each of the study intersections is illustrated in Figure 4.

5.3 Existing AADT Volumes

Existing AADT Volumes for Year 2016 were obtained from FDOT's 2016 FTI. These volumes are illustrated in Figure 5.

5.4 Existing Traffic Volumes

A summary of the existing traffic volumes is shown in Table 2. Values for D were calculated based on the hourly volume count data. Standard values for K were used based on area type. FTI 2016 was used for the remaining segments. Data from FTI is included in Appendix D.

5.4.1 Year 2016 Turning Movement Counts

Raw turning movement counts were adjusted by the countywide seasonal factor of 1.03, based on information from 2016 FTI. The computer program TURNS5 was used to modify existing PM counts to represent existing design hour turning movement volumes. TURNS5 worksheets are provided in Appendix E. The adjusted turning movement volumes for the PM Peak Hours is shown in Figure 6.

Table 4. Year 2016 Existing Intersection LOS Analysis Summary

Study Intersection	Traffic Control	FDOT LOS Target	Existing Year 2016			
			Overall Delay (Sec/Veh)	Overall LOS	Max V/C	Mvmt.
SR 659 (Combee Rd) &						
US 98	Signalized	D	74.2	E	1.56	SBL
Maine Avenue	Signalized	D	15.5	B	0.71	WBL
Commerce Point Drive	Signalized	D	28.0	C	0.93	EBL
South Crystal Lake Drive	Signalized	D	18.6	B	0.88	EBL
Skyview Drive	Signalized	D	23.9	C	0.84	NBT
North Crystal Lake Drive	Signalized	D	40.9	D	1.07	EBL

As shown in the table, two of the six intersections operate at or above the FDOT LOS target under existing conditions. The SR 659 (Combee Road) intersections with US 98 and North Crystal Lake Drive operate with volume to capacity ratios that exceed 1.0. Printouts from the Synchro analysis and existing signal timings are included in Appendix G.

5.6 Safety Analysis

Crash report data was obtained for a five-year period from January 1, 2013 to December 31, 2017. The crash data was obtained from the University of Florida's Signal Four Analytics online crash database, which compiles statewide crash data from the Florida Highway Patrol (FHP), as well as from local law enforcement agencies, consisting of both long- and short-form crash reports. The data was analyzed to identify specific crash patterns and locations that may indicate a safety concern within the study area. The study area considered is the same as the overall area for the PD&E, from SR 35/SR 700 (US 98/Bartow Road) to North Crystal Lake Drive. Cross-street influence areas were assumed to be 250 feet in each direction east and west of SR 659, except for the intersection at US 98, where only crashes on the north SR 659 leg were considered. Only the extracted coded crash data were reviewed; the corresponding crash reports and narratives were not. The summary crash data tables are included in Appendix H.

The primary safety concern along the study corridor is existing major-street rear-end crashes, which are typically associated with corridor congestion. As this project includes recommendations to address congestion and progression along the corridor, it is likely these improvements will also address some of the rear-end crash trends observed. Additionally, because this project includes extending the existing center

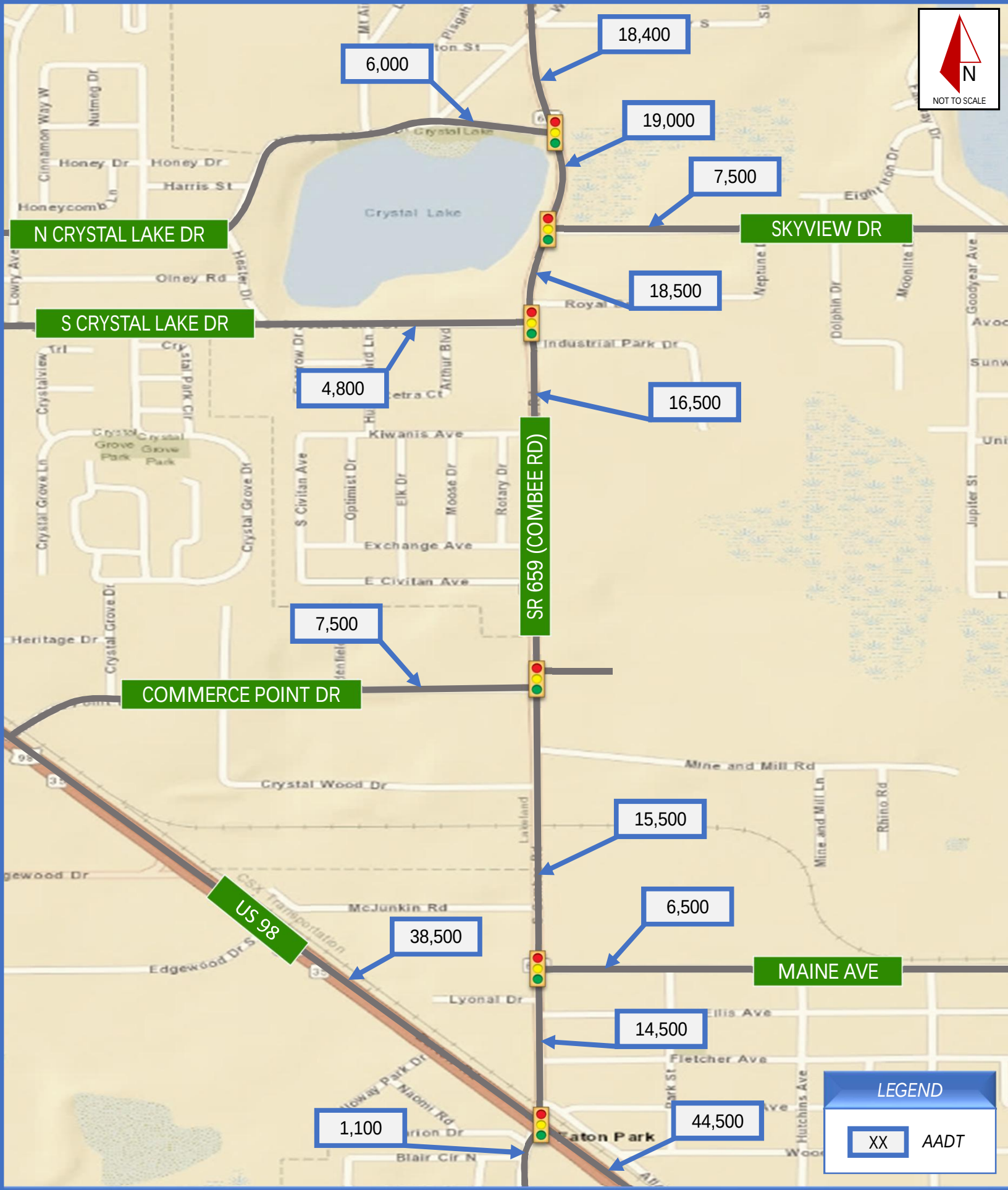

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Figure 5
Existing 2016 AADT Volumes
SR 659 (Combee Road)

Table 2. Year 2016 Existing Traffic Volumes and Factors

Roadway Segment	2016 AADT	2016 DDHV	Peak Direction	Axle Adj. Factor	Seasonal Adj. Factor
Mainline Characteristics					
SR 659 (Combee Road)					
South of US 98	1,100	55	NB	0.94	1.07
US 98 to Maine Avenue	14,500	724	SB	0.94	1.07
Maine Ave to McJunkin Rd	15,500	774	NB	0.94	1.07
McJunkin Road to Commerce Point Drive	15,500	774	NB	0.94	1.07
Commerce Point Drive to South Crystal Lake Drive	16,500	824	NB	0.94	1.07
South Crystal Lake Drive to Skyview Drive	18,500	924	NB	0.94	1.07
Skyview Drive to North Crystal Lake Drive	19,000	948	SB	0.94	1.07
North of North Crystal Lake Drive	18,400	883	NB	0.94	1.07
Side Street Characteristics					
US 98					
West of Combee Road	38,500	1,802	EB	0.94	1.07
East of Combee Road	44,500	2,083	EB	0.94	1.07
Maine Ave					
East of Combee Road	6,500	324	WB	0.94	1.07
Commerce Point Drive					
West of Combee Road	7,500	374	EB	0.94	1.07
South Crystal Lake Drive					
West of Combee Road	4,800	240	EB	0.94	1.07
Skyview Drive					
East of Combee Road	7,500	374	EB	0.94	1.07
North Crystal Lake Drive					
West of Combee Road	6,000	300	EB	0.94	1.07

DDHV = Directional Design Hour Volume

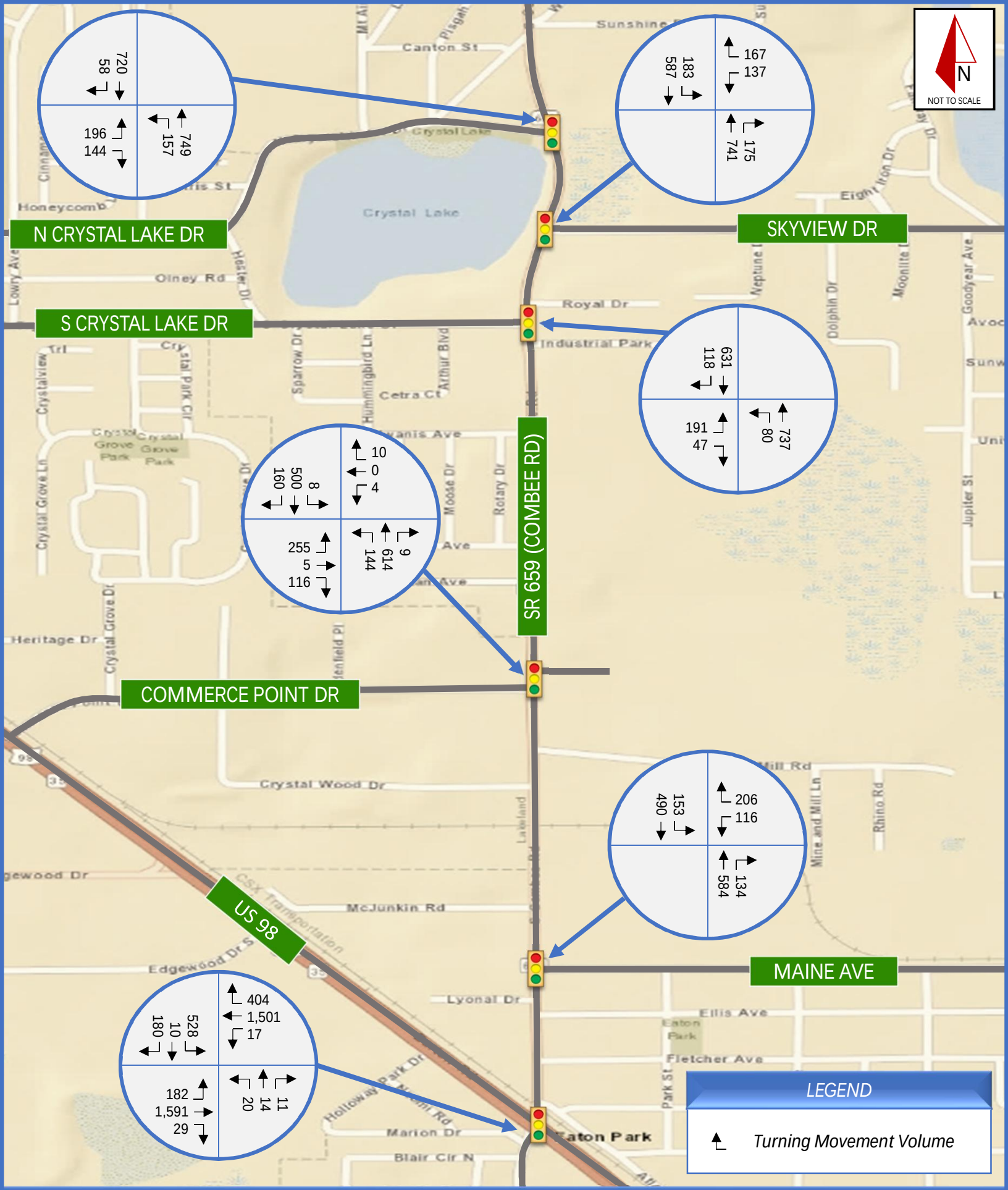

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Figure 6
Adjusted Existing Turning Movement Volumes
SR 659 (Combee Road)

5.5 Year 2016 LOS Analysis

A Level of Service (LOS) analysis was conducted for each of the study area intersections in accordance with the 2010 Highway Capacity Manual (HCM). LOS was evaluated for the study area segments using FDOT's Generalized Volume Tables from the 2013 *Quality/Level of Service Handbook*.

5.5.1 Year 2016 Arterial LOS Analysis

Arterial LOS was evaluated using the Generalized Volume Tables in the 2013 FDOT *Quality/Level of Service Handbook*. SR 659 is classified as an Urban Minor Arterial from north of US 98 to North Crystal Lake Drive, with a posted speed limit of 40 miles per hour. The facility is classified as a Class I State Signalized Arterial, and FDOT's LOS target is D. Polk County's adopted LOS is also D. Relevant tables from the 2013 FDOT *Quality/Level of Service Handbook* are included in Appendix F, with service volumes shown below:

2-Lane service volumes – divided, with left or right turn lanes:

- LOS A – N/A (LOS A is not defined using generalized inputs)
- LOS B – N/A (LOS B is not defined using generalized inputs)
- LOS C – 871 VPH (830 x 1.05)
- LOS D – 924 VPH (880 x 1.05)
- LOS E – N/A (Volumes greater than LOS D become LOS F as intersection capacities have been reached)

2-Lane service volumes – undivided, with no left or right turn lanes:

- LOS A – N/A (LOS A is not defined using generalized inputs)
- LOS B – N/A (LOS B is not defined using generalized inputs)
- LOS C – 664 VPH (830 x 0.80)
- LOS D – 704 VPH (880 x 0.80)
- LOS E – N/A (Volumes greater than LOS D become LOS F as intersection capacities have been reached)

Table 3 shows the existing LOS for SR 659 through the study area. As shown in the table, based on generalized service volumes, all sections of SR 659 currently operate acceptably at the target LOS D for PM Peak Hour conditions, with the exception of SR 659 from McJunkin Road to South Crystal Lake Drive and from Skyview Drive to North Crystal Lake Drive.

Table 3. Year 2016 Existing Arterial LOS Analysis Summary

Roadway Segment	Area Type	FDOT LOS Target	Standard Service Volume @LOS	Exisitng AADT	Standard K Factor	Assigned D Factor	Directional Design Hour Volumes (DDHV)	Arterial LOS	Meets LOS Target?
Existing Year - 2016									
SR 659 (Combee Rd)									
South of US 98	Urban	D	704	1,100	9.00%	55.47%	50	C	YES
US 98 to Maine Avenue	Urban	D	924	14,500	9.00%	55.47%	720	C	YES
Maine Avenue to McJunkin Road	Urban	D	924	15,500	9.00%	55.47%	770	C	YES
McJunkin Road to Commerce Point Drive	Urban	D	704	15,500	9.00%	55.47%	770	F	NO
Commerce Point Drive to South Crystal Lake Drive	Urban	D	704	16,500	9.00%	55.47%	820	F	NO
South Crystal Lake Drive to Skyview Drive	Urban	D	924	18,500	9.00%	55.47%	920	D	YES
Skyview Drive to North Crystal Lake Drive	Urban	D	924	19,000	9.00%	55.47%	950	F	NO
North of North Crystal Lake Drive	Urban	D	704	18,400	9.00%	55.47%	920	F	NO

5.5.2 Year 2016 Intersection LOS Analysis

Intersection analyses were conducted in Trafficware's Synchro 10 Software. The Synchro HCM procedures were used for most intersections; however, three intersections were evaluated using Synchro reports because the HCM procedures were not applicable or they produced inaccurate results (as compared to intersection operational observations). The following intersections were evaluated using Synchro reports:

- SR 659 (Combee Road) at US 98 – the HCM procedures cannot evaluate the shared through/left turn lane.
- SR 659 (Combee Road) at Skyview Drive – the HCM procedures produced inaccurate results for the westbound right turn lane.
- SR 659 (Combee Road) at Maine Avenue – the HCM procedures cannot evaluate the exclusive pedestrian phase.

Existing signal timings from Polk County were incorporated into the analysis for the study intersections where available. All intersections were analyzed as signalized intersections. Table 4 provides a summary of existing intersection performance under PM conditions.

Table 4. Year 2016 Existing Intersection LOS Analysis Summary

Study Intersection	Traffic Control	FDOT LOS Target	Existing Year 2016			
			Overall Delay (Sec/Veh)	Overall LOS	Max V/C	Mvmt.
SR 659 (Combee Rd) &						
US 98	Signalized	D	75.0	E	1.56	SBL
Maine Avenue	Signalized	D	15.5	B	0.71	WBL
Commerce Point Drive	Signalized	D	28.0	C	0.93	EBL
South Crystal Lake Drive	Signalized	D	18.6	B	0.88	EBL
Skyview Drive	Signalized	D	23.9	C	0.84	NBT
North Crystal Lake Drive	Signalized	D	40.9	D	1.07	EBL

As shown in the table, two of the six intersections operate at or above the FDOT LOS target under existing conditions. The SR 659 (Combee Road) intersections with US 98 and North Crystal Lake Drive operate with volume to capacity ratios that exceed 1.0. Printouts from the Synchro analysis and existing signal timings are included in Appendix G.

5.6 Safety Analysis

Crash report data was obtained for a five-year period from January 1, 2013 to December 31, 2017. The crash data was obtained from the University of Florida's Signal Four Analytics online crash database, which compiles statewide crash data from the Florida Highway Patrol (FHP), as well as from local law enforcement agencies, consisting of both long- and short-form crash reports. The data was analyzed to identify specific crash patterns and locations that may indicate a safety concern within the study area. The study area considered is the same as the overall area for the PD&E, from SR 35/SR 700 (US 98/Bartow Road) to North Crystal Lake Drive. Cross-street influence areas were assumed to be 250 feet in each direction east and west of SR 659, except for the intersection at US 98, where only crashes on the north SR 659 leg were considered. Only the extracted coded crash data were reviewed; the corresponding crash reports and narratives were not. The summary crash data tables are included in Appendix H.

The primary safety concern along the study corridor is existing major-street rear-end crashes, which are typically associated with corridor congestion. As this project includes recommendations to address congestion and progression along the corridor, it is likely these improvements will also address some of the rear-end crash trends observed. Additionally, because this project includes extending the existing center

two-way left-turn lanes (TWLTL) from where it currently terminates north of McJunkin Road to North Crystal Lake Drive, crash types typically associated with the presence of a TWLTL were analyzed further as well. Reviewing historical crash data can help identify whether a roadway with an existing TWLTL is actually experiencing crashes related to that TWLTL or whether many of the crashes are a result of typical signalization and congestion.

5.6.1 Historical Crash Analysis

A total of 180 crashes were reported for the five-year period, including 61 injury crashes, resulting in 80 injuries, and no fatal crashes. The number of crashes per year increased between 2013 and 2015, from 36 crashes reported in 2013 to 43 crashes in 2015, before declining again to 32 crashes in 2016 and in 2017. Table 5 summarizes the total number of crashes that occurred within the study area.

Table 5. Summary of Crashes

Year	Total Number of Crashes	Number of Injury Crashes	Number of Fatal Crashes	Number of Dark Crashes	Number of Wet Crashes	Number of Bike/Ped Crashes
2013	36	10	0	2	7	2
2014	37	16	0	4	7	0
2015	43	18	0	1	5	2
2016	32	9	0	1	8	0
2017	32	8	0	4	3	1
Total	180	61	0	12	30	5
Average	36	12.2	0	2.4	6	1
Percent		33.90%	0.00%	6.70%	16.70%	2.80%

The crash data was organized to determine significant trends in the circumstances involved in the crashes, and the following observations were made:

- Nearly seven percent of the crashes occurred during dark conditions, and an additional five percent occurred during dawn/dusk conditions.
- Approximately 17 percent of the crashes occurred on wet pavement.
- Three of the crashes (1.7 percent) reported involved a driver under the influence of drugs or alcohol.
- Over 18 percent of the crashes were attributed to distracted driving.
- A southbound driver was at-fault in approximately 44 percent of the crashes. A northbound driver was at-fault in an additional 31 percent of crashes.

- Over 7 percent of the crashes were single-vehicle crashes, and 10 percent of the crashes involved more than two vehicles. Most crashes, 83%, involved two vehicles.
- The frequency in crashes peaked from 3:00 PM to 6:00 PM, which includes the evening peak hour. A smaller peak in crash frequency occurred from 12:00 PM to 2:00 PM, as depicted in Figure 7.
- The number of crashes per day was more concentrated on weekend days than on weekdays.

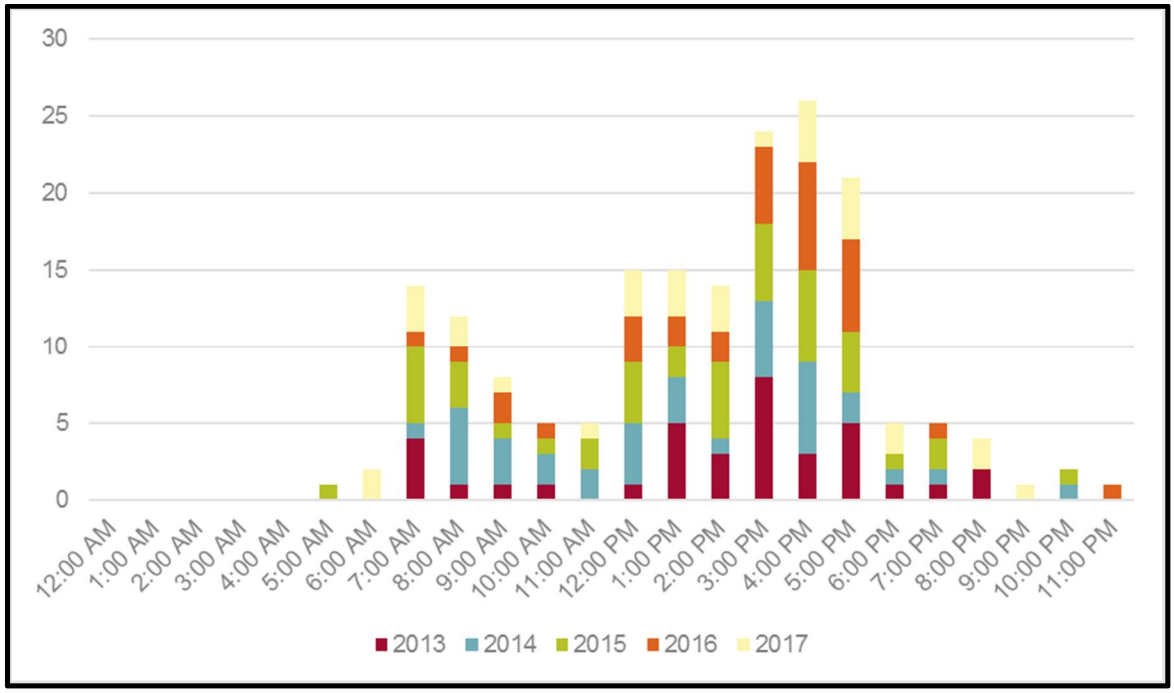

Figure 7. Crashes by Time of Day

A crash type analysis was conducted, and the predominant crash type along the corridor was a rear-end crash (53 percent), which is typical for corridors with signalized intersections that experience congestion. Northbound drivers were at-fault in approximately 52 percent of the rear-end crashes, and southbound drivers were at-fault in over 31 percent of the rear-end crashes. The next most common crash types were left-turn (14 percent) and angle crashes (8 percent). Of the left-turn crashes, over 46 percent were the result of a southbound motorist attempting a left-turn in the path of a northbound motorist. Left-turn crashes were most concentrated at the intersection of SR 659 at Industrial Park Drive (27 percent), which is a side-street stop-controlled intersection located approximately 150 feet south of the signalized intersection at South Crystal Lake Drive. The five left-turn crashes at Industrial Park Drive primarily involve vehicles traveling in the westbound direction. While five crashes in a five-year period is a small number, the crash rate is relatively high considering the peak-hour

volumes are so low, with 33 peak-hour westbound left turns and 27 peak-hour southbound left turns.

Of all the crashes, eight were categorized as “other” or “other single vehicle” unspecified crash types. Table 6 summarizes the number of crashes that occurred by type.

Table 6. Summary of Crashes by Type

Crash Type	2013	2014	2015	2016	2017	Total	Percent
Rear End	20	19	30	17	10	96	53.30%
Left Turn	8	6	2	5	5	26	14.40%
Angle	1	5	4	3	2	15	8.30%
Sideswipe	1	2	1	3	4	11	6.10%
Head On	0	1	1	2	1	5	2.80%
Backed Into	1	1	2	0	1	5	2.80%
Bicycle	1	0	2	0	1	4	2.20%
Hit Ditch	1	0	0	1	1	3	1.70%
Hit Curb	1	0	0	0	1	2	1.10%
Right Turn	0	1	0	0	0	1	0.60%
Hit Parked Vehicle	1	0	0	0	0	1	0.60%
Overturned	0	0	0	0	1	1	0.60%
Pedestrian	1	0	0	0	0	1	0.60%
Hit Tree	0	1	0	0	0	1	0.60%
Other Single Vehicle	0	1	0	0	1	2	1.10%
Other	0	0	1	1	4	6	3.30%

A total of four bicycle crashes and one pedestrian crash were reported within the project limits over the five-year period. Two of the bicycle crashes occurred during dark conditions. The pedestrian crash and one of the bicycle crashes involved alcohol. The locations of the pedestrian and bicycle crashes were varied over the length of the corridor.

The crash types typically associated with the presence of a TWLTL (left-turn, angle, and head-on crashes) were further analyzed to determine whether these crashes were resulting from the presence of the existing TWLTL or from typical corridor congestion. Over the five-year history, 26 left-turn crashes, 15 angle crashes, and 5 head-on crashes were reported. These crash types account for nearly 26 percent of the crashes reported. Of these crashes, 17 occurred along the section of SR 659 with the existing TWLTL, and 29 occurred north of where the existing TWLTL terminates.

The number of crashes per mile for the section with the TWLTL was compared to the number of crashes per mile for the section without the TWLTL to determine whether crash trends are affected by the TWLTL or by other factors:

- Overall Crashes:
  - An average of 169 crashes per mile were reported along the section with the existing TWLTL.
  - An average of 94 crashes per mile was reported along the section north of where the TWLTL terminates.
- Rear-End Collisions
  - An average of 85 rear-end crashes per mile was reported along the section with the TWLTL.
  - An average of 52 rear-end crashes per mile was reported along the section north of the TWLTL termination.
- Crashes typically associated with TWLTL
  - An average of 48 left-turn, angle, and head-on crashes per mile was reported along the section of SR 659 with the existing TWLTL.
  - An average of 23 of these crash types per mile was reported along the section north of its termination.

As shown in the above comparison, all types of crashes have a higher rate on the section with the TWLTL, even crashes that are not typically associated with TWLTL conditions. Therefore, other factors such as congestion levels likely contribute to the crash rates.

5.6.2 Crash Concentrations

The crash data was additionally analyzed to determine the predominant spot locations where crashes occurred during the five-year period. A total of 157 crashes were recorded as intersection-related and the remaining 23 crashes occurred outside of intersection influence areas. The criterion typically used to define a high-crash intersection is an intersection experiencing more than 8 crashes per year, or 40 crashes over the five-year analysis period. None of the intersections were observed to experience this many crashes. The intersections along the study corridor that experienced the most crashes, approximately four crashes per year, were the signalized intersection at South Crystal Lake Drive and the signalized intersection at Skyview Drive, both of which are further analyzed in the sections below. The crashes are summarized by intersection and represented graphically in Figure 8.

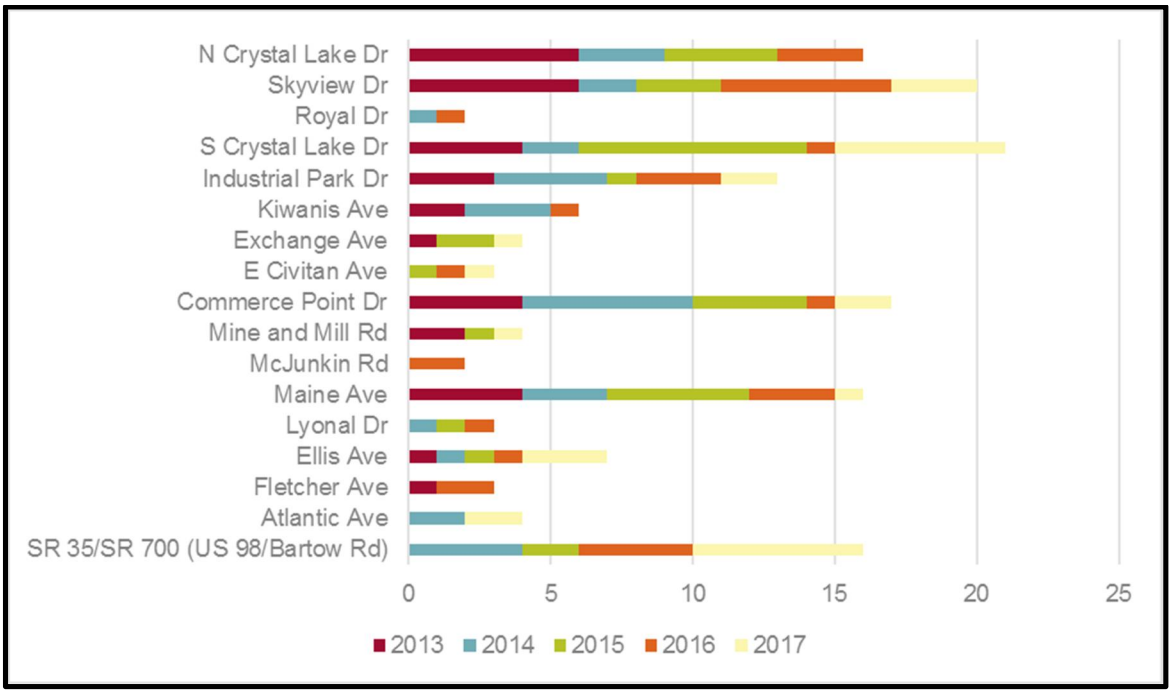

Figure 8. Summary of Crashes by Location

SR 659 at South Crystal Lake Drive

The crash data were further analyzed at the intersection of SR 659 at South Crystal Lake Drive, which experienced a total of 21 crashes over the five-year history. The predominant crash type at the intersection was a rear-end crash (11 crashes), of which nine crashes occurred in the northbound direction. One bicycle crash was reported, and three crashes were reported as “other” or “other single vehicle” unspecified crash types. No significant spikes in crash frequency were observed by time of day; however, the morning, mid-day, and evening peak hours experienced more crashes than the remainder of the day. Five of the crashes were attributed to distracted driving, and one crash involved a motorist under the influence of drugs or alcohol.

SR 659 at Skyview Drive

The crash data were further analyzed at the intersection of SR 659 at Skyview Drive, which experienced a total of 20 crashes over the five-year history. The predominant crash type at the intersection was a rear-end crash (12 crashes), of which half occurred in the southbound direction. Three left-turn crashes, and one bicycle crash were also reported. Five of the crashes occurred during dark conditions, and only two of the crashes occurred on wet pavement. A peak in crash frequency was observed from 3:00 PM to 5:00 PM.

Crashes at the intersection of SR 659 and Industrial Park Drive were also summarized due to the relatively high crash rate and based on concerns expressed by the public during the Kickoff meeting.

SR 659 at Industrial Park Drive

The crash data were further analyzed at the intersection of SR 659 at Industrial Park Drive, which experienced a total of 13 crashes over the five-year history. The predominant crash type at the intersection was left turn (six crashes), with five occurring in the westbound direction and one crash in the southbound direction. Three rear-end crashes and two angle crashes were also reported. The vast majority of the crashes occurred during dry and daylight conditions, and during weekdays. A peak in crash frequency was observed during lunchtime hours (from noon to 1:00 PM), where three of the six left turn collisions occurred. Another peak in crash frequency was observed from 4:00 PM to 6:00 PM.

5.7 Year 2010 Sub-Area Model Validation

As stated in the methodology, the travel demand model was validated by others. The validation memorandum is attached in Appendix I.

6.0 Development of Future Traffic Forecast

Future traffic forecast volumes were developed for study area roadway segments. Factors considered in the development of future traffic volumes include design traffic characteristics, historic trends, adopted future travel demand model volumes and population forecasts.

6.1 Development of Design Traffic Characteristics

Design traffic characteristics were developed in accordance with the Project Traffic Forecasting (PTF) Handbook, January 2014. The primary design traffic characteristics are the Standard K factor, Design Hour Directional Demand (D), and percentage of trucks for both the design hour and daily conditions (T_f, T_{24}). These characteristics will be used in developing the future traffic volumes and conducting future operational analysis.

6.1.1 Standard K Factor

The K Factor defines the proportion between the design hour volume (DHV) and daily volume. As explained in the PTF Handbook, the K Factor "defines the volume of traffic for which the road is designed to handle." FDOT has adopted a Standard K Factor to use in analyses based on area and facility type. For arterials and highway within an urbanized area, the recommended K Factor is 9.0%. Therefore, a K factor of 9.0% will be used for the study area roadways.

6.1.2 D Factor

The Design Hour Directional Demand (D) Factor is used to determine the directional split of traffic during the design hour.

Historical D values for SR 659 were obtained from FDOT's 2016 FTI. The last fourteen years of data for count site 165186 are shown in Table 7. As presented in the table, the historical D values range from 53.30% to 56.35%, with an average of 55.47%.

Table 7. SR 659 Historical FTI Data – D Values

Year	D_{30}
2016	53.30%
2015	55.70%
2014	55.60%
2013	55.90%
2012	55.80%
2010	56.07%
2009	56.35%
2008	55.29%
2007	55.30%
2006	55.83%
2005	54.80%
2004	55.70%
2003	55.20%
Average	55.47%
Minimum	53.30%
Maximum	56.35%

FDOT's PTF Handbook recommends a range of D values based on facility type. A summary of the recommended values for an Urban Arterial are included in Table 8 below.

Table 8. Recommended Range of D Values

Facility Type	FDOT D Values		
	Low	Average	High
Urban Arterial	50.80%	57.90%	67.10%

The average historical D of 55.47% falls in the acceptable range of D values as described in FDOT's PTF Handbook. It is recommended that the average historical D value of 55.47% be used for all segments in the study area.

6.1.3 T_{24} and T_f Factors

Truck percentages were calculated for both Daily (T_{24}) and Peak (T_f) hour conditions. Historical T_{24} values from count site 165186 of FTI 2016 are listed in Table 9. As presented in the table, the historical T_{24} values range from 8.00% to 13.10%, with an average value of 10.41%

Table 9. SR 659 Historical FTI Data – T_{24} Values

Year	T
2016	11.30%
2015	11.20%
2014	9.40%
2013	9.40%
2012	9.40%
2010	10.20%
2009	10.20%
2008	8.00%
2007	11.40%
2006	13.10%
2005	10.40%
2004	10.40%
2003	11.20%
Average	10.41%
Minimum	8.00%
Maximum	13.10%

As explained in the PTF Handbook, T_f is estimated to equal at least half of T_{24}. The historical T_{24} values have been used for this calculation as shown in Table 10 below.

Table 10. SR 659 Historical FTI Data – T_f Values

Year	T_f
Average	5.21%
Minimum	4.00%
Maximum	6.55%

For a conservative analysis, the measured truck factors of 10.41% for T_{24} and 5.21% for T_f were used in the analysis. This is consistent with the recommendation from the PTF Handbook that the T_f value should be at least half of the T_{24}.

6.1.4 Recommended Design Traffic Characteristics

The recommended design characteristics for this study are identified in Table 11.

These are based on a review of historical and measured design traffic characteristics.

Table 11. Recommended Design Traffic Characteristics

Roadway	Standard K Factor	D Factor	T_{24}	T_f
SR 659 (Combee Rd)	9.00%	55.47%	10.41%	5.21%

6.2 No Build and Build Alternatives

6.2.1 No Build Alternative

The No Build traffic forecasts were developed assuming that SR 659 (Combee Road) would remain a two-lane facility in the future. No adjustments to intersection geometry are anticipated for the No Build alternative.

6.2.2 Build Alternative

The Build traffic forecasts were developed assuming that SR 659 (Combee Road) would remain a two-lane facility in the future. However, the Build alternative includes extending the two-way left-turn lane, adding bicycle and pedestrian facilities, improving access management, and improving intersection conditions. While these changes will likely improve operating conditions for vehicles, bicyclists, and pedestrians, the build traffic forecasts are expected to be the same as the no build forecasts.

6.3 Future Travel Demand

In order to evaluate future conditions on the study area roadways, existing traffic volumes were grown to future analysis years. Historical growth, model growth, and population growth were all evaluated and compared to determine the most appropriate method for projecting future traffic volumes. Since the build alternative is focused on multimodal improvements and turn lanes (as opposed to capacity), the build and no-build volumes will be the same.

6.3.1 Historical Traffic Growth

FDOT count site 165186 is located on SR 659 between US 98 and Maine Avenue. Historical AADT data were obtained from FDOT's FTI 2016 for Count Site 165186 and analyzed to determine a growth trend.

The trend analysis for the count site is summarized in Table 12 below. As shown in the table, the R^2 value is below 75%, which is the recommended minimum R^2 value in order to rely on the calculated growth rate. The trends analysis worksheet is included in Appendix J.

Table 12. Trend Analysis Growth Rates

Location	2016 Trend	2025 Trend	2045 Trend	R^2 (%)	Annual Growth Rate (%)
SR 659 (165186, S of Maine Ave)	15,900	16,800	18,900	5.30%	0.65%

6.3.2 D1RPM Projection

The D1RPM travel demand model was run by others to obtain a peak season weekday average daily traffic (PSWADT) volume for each study segment for years 2010 and 2040. The model output conversion factor (MOCF) of 0.96 was applied to obtain the AADT of each study segment. Model growth was used to calculate annual growth rates. An average growth rate for all segments was calculated to be 1.03%. A table showing the growth rate calculations is provided with the technical memorandum prepared by others, which is included in Appendix I.

6.3.3 Polk County Population Projections

BEBR Population projections for Polk County were reviewed. The population growth rates for Polk County were calculated using the BEBR population projections, as shown in Table 13 below.

Table 13. Population Analysis

Estimate	2017 Estimate	2025 Projection	2017 - 2025 Annual Growth Rate (%)	2045	2017 - 2045 Annual Growth Rate (%)
Low Estimate	661,645	705,900	0.84%	784,800	0.66%
Medium Estimate	661,645	768,300	2.01%	943,600	1.52%
High Estimate	661,645	824,900	3.08%	1,143,200	2.60%
Medium-High Average			2.55%		2.06%

Based on the BEBR Low, Medium and High Population Estimates included in Table 13, the anticipated growth for years 2017-2025 ranges from 0.84% to 3.08%, while the anticipated growth for years 2017-2045 ranges from 0.66% to 2.60%. The Polk TPO has adopted an average of the medium and high estimates. The anticipated average medium-high growth for year 2017-2025 is 2.55%, and the anticipated average medium-high growth for year 2017-2045 is 2.06%. An excerpt from the BEBR Florida Population Studies, Bulletin 180 is included in Appendix K.

6.3.4 Travel Demand Model

As described in Section 5.7, future travel demand models were developed to represent Build and No Build conditions for years 2016, 2025 and 2045. The model networks were based on interim year cost feasible networks, with adjustments and refinements made to be consistent with the validated year 2010 model.

6.4 Recommended Future Growth Rare

Recommended future growth rates were applied to volumes developed for study area roadway segments. Future growth rates were determined by comparing the historical growth trend, Polk County population projections and the Travel Demand Model. The selected method and resulting annual growth rate is shown in Table 14.

Table 14. Future Traffic Forecasts

Growth Rate Methodology	Growth Rate (%)
Historic Trend	0.65%
D1RPM Average	1.03%
BEBR (Medium Projection)	1.52%
Avg of Trend, D1RPM, BEBR	1.07%
Recommended	1.07%

6.5 No Build and Build Future AADT Volumes

Future AADT volumes were developed by applying the selected annual growth rate to the actual volumes that were counted in year 2016. The resulting AADT volumes for each of the analysis years are included in Table 15, and illustrated in Figure 9 for year 2025 and Figure 10 for year 2045.

Table 15. No Build and Build Future AADT Volumes

Roadway Segment	2016 AADT	2025 AADT	2045 AADT
Mainline Characteristics			
SR 659 - Combee Road			
South of US 98	1,100	1,200	1,400
US 98 to Maine Ave	14,500	16,000	19,000
Maine Ave to McJunkin Rd	15,500	17,000	20,000
McJunkin Rd to Commerce Point Dr	15,500	17,000	20,000
Commerce Point Dr to S. Crystal Lake Dr	16,500	18,000	22,000
S. Crystal Lake Dr to Skyview Dr	18,500	20,500	24,000
Skyview Dr to N. Crystal Lake Dr	19,000	21,000	25,000
North of N. Crystal Lake Dr	18,400	20,000	24,000
Side Street Characteristics			
US 98			
West of Combee	38,500	42,000	50,000
East of Combee	44,500	49,000	58,000
Maine Ave			
East of Combee	6,500	7,100	8,500
Commerce Point Drive			
West of Combee	7,500	8,200	9,800
South Crystal Lake Drive			
West of Combee	4,800	5,300	6,300
Skyview Drive			
East of Combee	7,500	8,200	9,800
North Crystal Lake Drive			
West of Combee	6,000	6,600	7,900

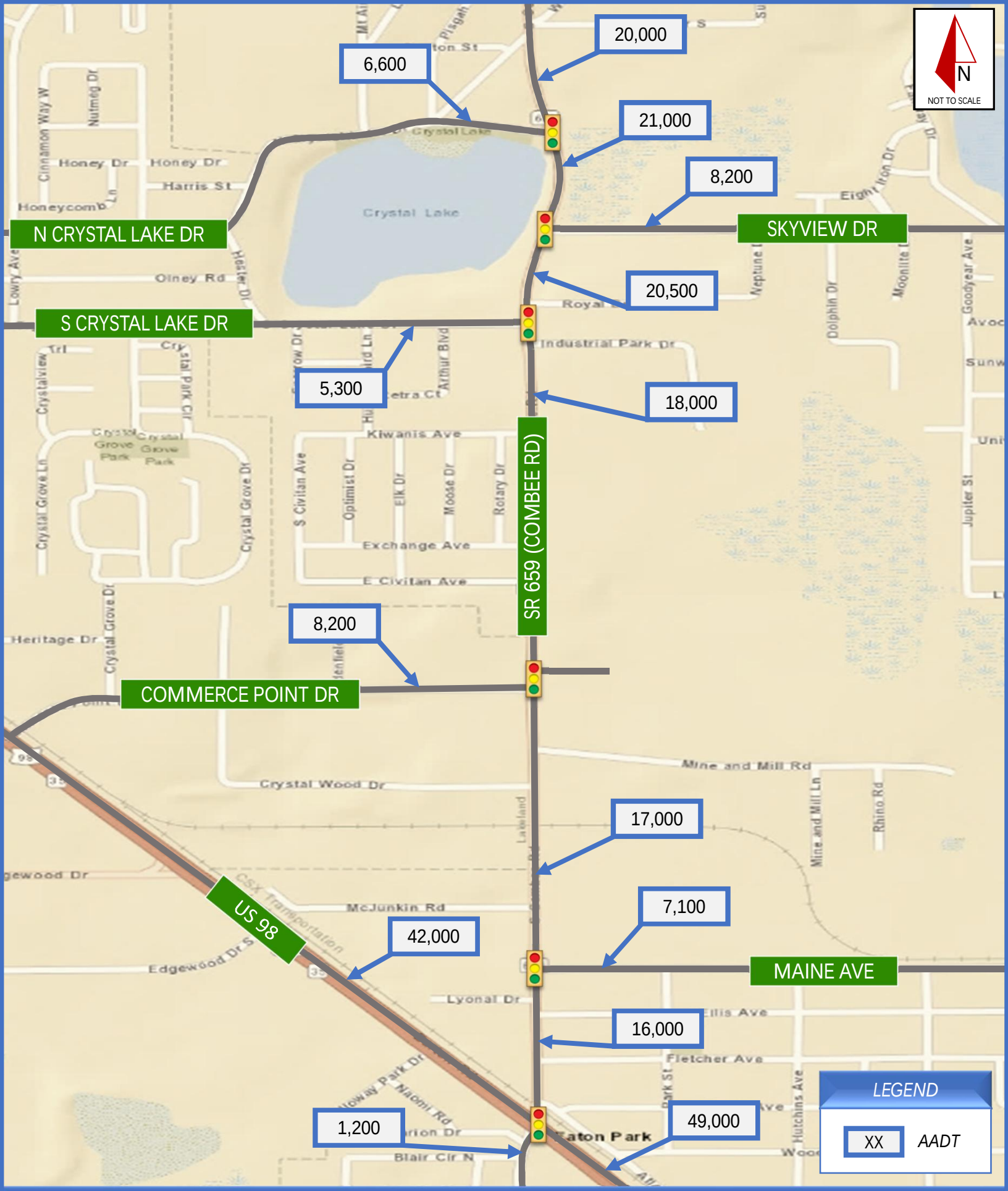

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Figure 9
Future 2025 AADT Volumes
SR 659 (Combee Road)

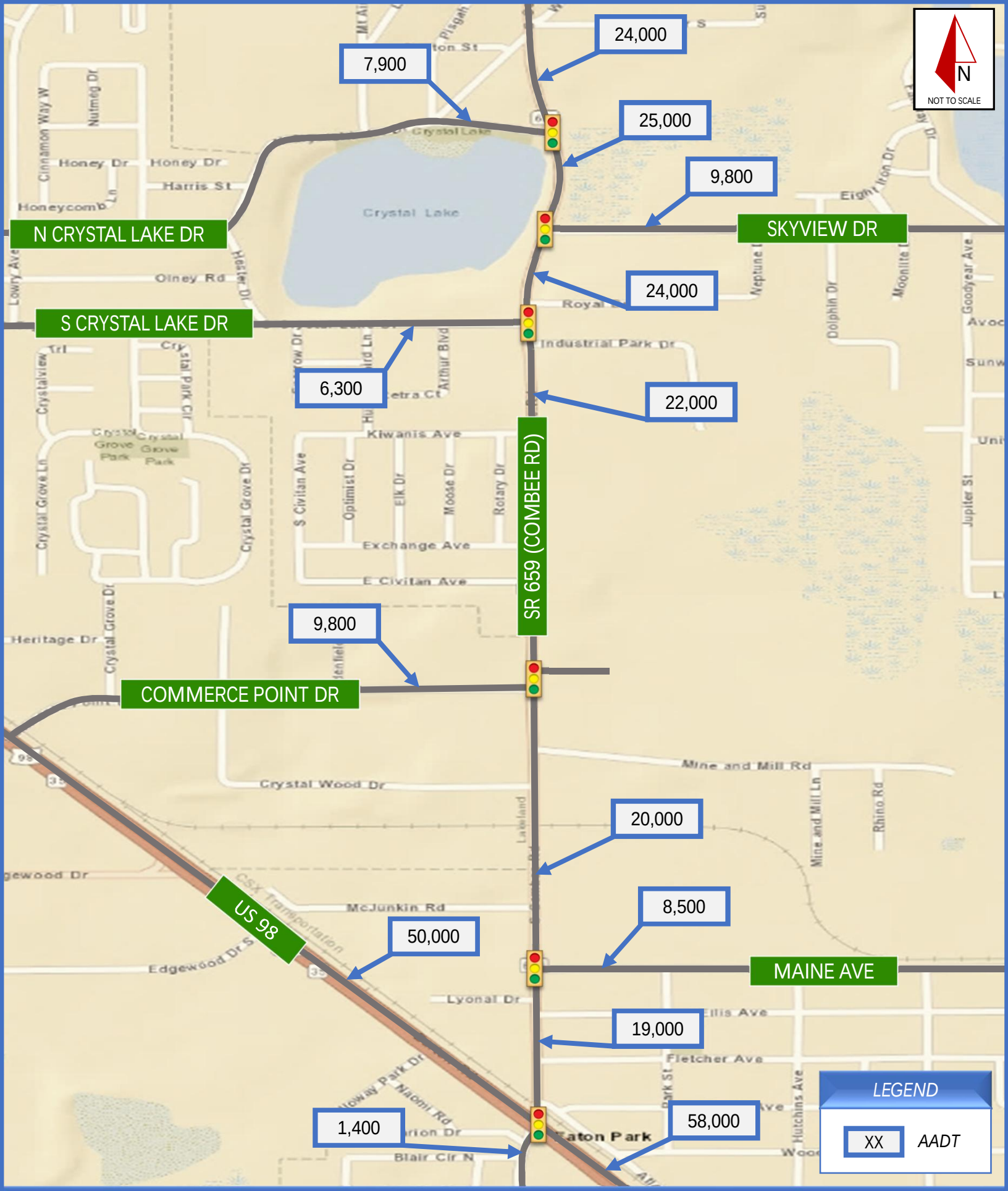

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Figure 10
Future 2045 AADT Volumes
SR 659 (Combee Road)

6.6 Intersection Design Hour Volumes

Future intersection design hour volumes (DHV) for Opening Year (2025) and Design Year (2045) were developed using TURNS5.

The design hour volumes are included in Figure 11 for Opening Year and Figure 12 for Design Year.

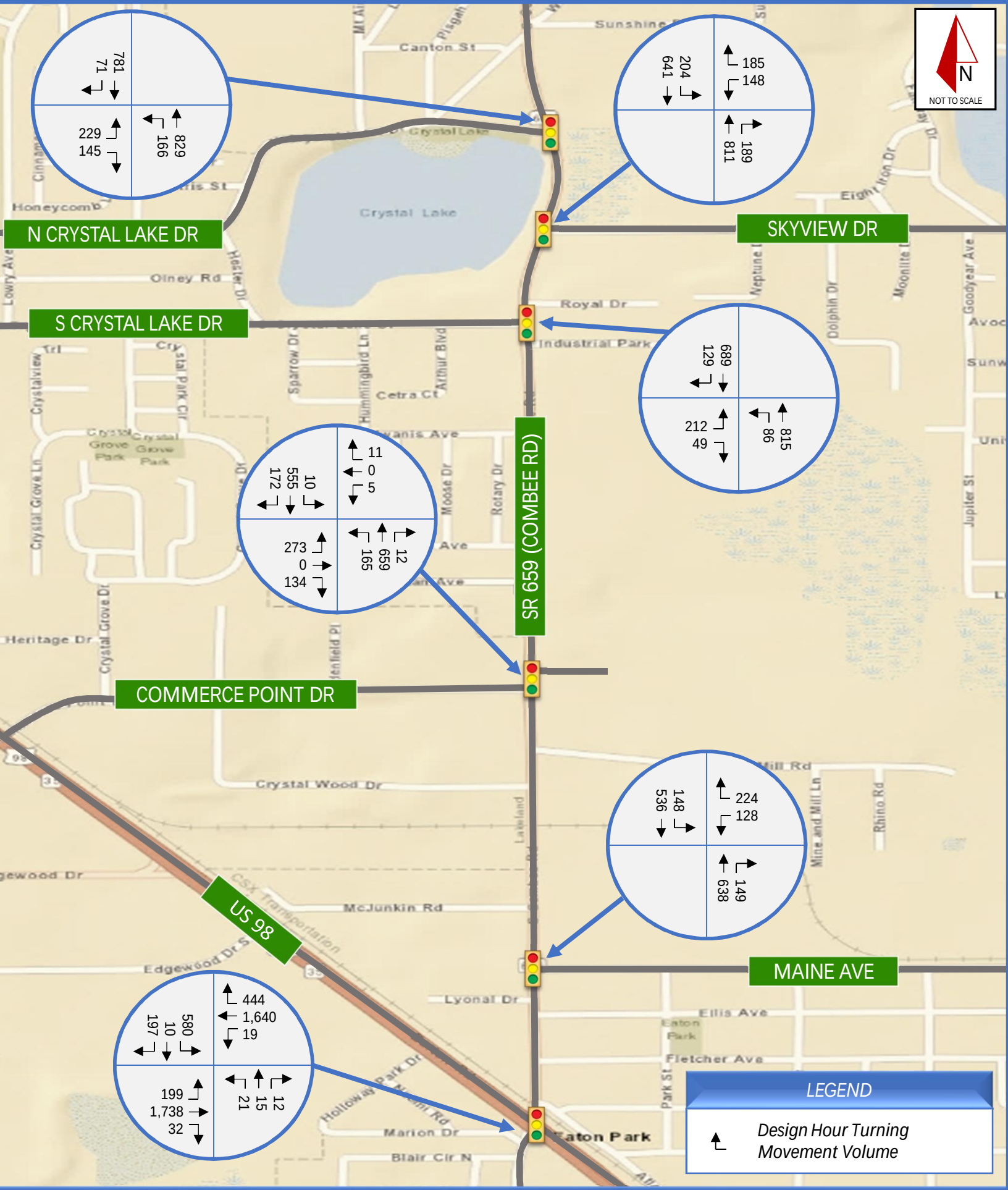

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Figure 11
2025 Intersection Design Hour Volumes
SR 659 (Combee Road)

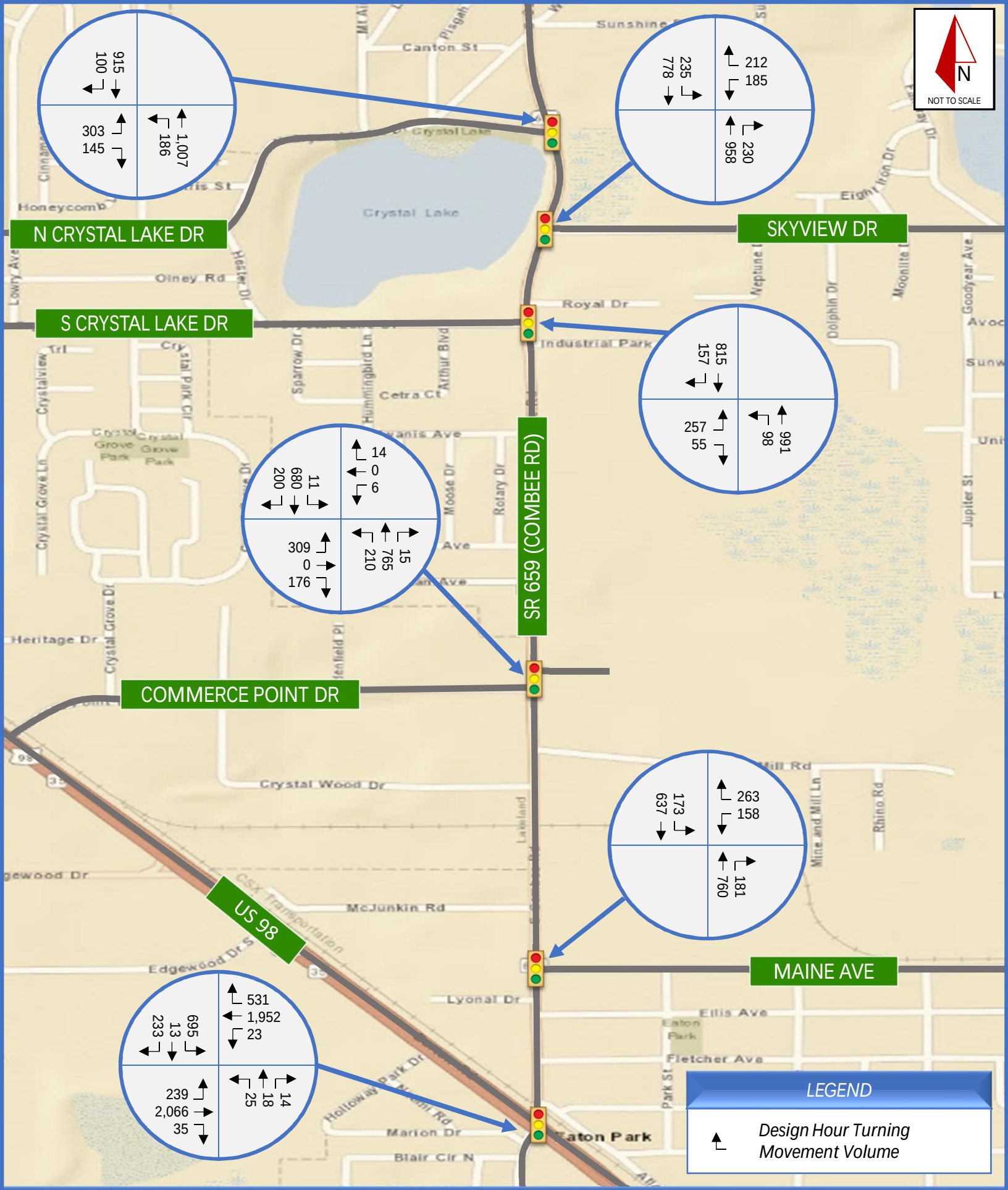

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Figure 12
2045 Intersection Design Hour Volumes
SR 659 (Combee Road)

7.0 Alternatives Analysis

An analysis of future conditions was conducted for No Build and Build conditions for the Opening Year (2025) and Design Year (2045). Build conditions include multimodal improvements and turn lanes. Level of Service (LOS) for roadway segments was calculated using methods described in FDOT's *2013 Quality/Level of Service Handbook*. LOS conditions were calculated for intersections using methods described in the Transportation Research Board's 2010 *Highway Capacity Manual*.

7.1 No Build Alternative Operational Analysis

7.1.1 Geometry – No Build Alternative

The No Build geometry for SR 659 is consistent with the existing geometry for study area roadway segments, consisting of a 2-lane road where some portions include a two-way left-turn lane. The No Build geometry is illustrated in Figure 4 as previously mentioned.

7.1.2 Future Arterial LOS Analysis – No Build Alternative

Under No Build conditions, SR 659 is anticipated to remain a two-lane minor arterial. Therefore, it is anticipated that SR 659 will have the same generalized Peak Hour directional service volumes as existing conditions. Table 16. Future Arterial LOS Analysis Summary – No Build Alternative, shows the anticipated performance of the arterial using generalized service volumes and the anticipated directional design hour volumes for each analysis year. Relevant tables from the 2013 FDOT *Quality/Level of Service Handbook* are included in Appendix F, with service volumes shown below:

<u>2-Lane service volumes – divided, with left or right turn lanes:</u>

- LOS A – N/A (LOS A is not defined using generalized inputs)
- LOS B – N/A (LOS B is not defined using generalized inputs)
- LOS C – 871 VPH (830 x 1.05)
- LOS D – 924 VPH (880 x 1.05)
- LOS E – N/A (Volumes greater than LOS D become LOS F as intersection capacities have been reached)

<u>2-Lane service volumes – undivided, with no left or right turn lanes:</u>

- LOS A – N/A (LOS A is not defined using generalized inputs)
- LOS B – N/A (LOS B is not defined using generalized inputs)
- LOS C – 664 VPH (830 x 0.80)
- LOS D – 704 VPH (880 x 0.80)
- LOS E – N/A (Volumes greater than LOS D become LOS F as intersection capacities have been reached)

Table 16. Future Arterial LOS Analysis Summary – No Build Alternative

Roadway Segment	Area Type	FDOT LOS Target	Standard Service Volume @LOS	No Build AADT	Standard K Factor	Assigned D Factor	Directional Design Hour Volumes (DDHV)	Arterial LOS	Meets LOS Target?
Existing Year - 2016									
SR 659 (Combee Rd)									
South of US 98	Urban	D	704	1,100	9.00%	55.47%	50	C	YES
US 98 to Maine Avenue	Urban	D	924	14,500	9.00%	55.47%	720	C	YES
Maine Avenue to McJunkin Road	Urban	D	924	15,500	9.00%	55.47%	770	C	YES
McJunkin Road to Commerce Point Drive	Urban	D	704	15,500	9.00%	55.47%	770	F	NO
Commerce Point Drive to South Crystal Lake Drive	Urban	D	704	16,500	9.00%	55.47%	820	F	NO
South Crystal Lake Drive to Skyview Drive	Urban	D	924	18,500	9.00%	55.47%	920	D	YES
Skyview Drive to North Crystal Lake Drive	Urban	D	924	19,000	9.00%	55.47%	950	F	NO
North of North Crystal Lake Drive	Urban	D	704	18,400	9.00%	55.47%	920	F	NO
Opening Year - 2025									
SR 659 (Combee Rd)									
South of US 98	Urban	D	704	1,200	9.00%	55.47%	60	C	YES
US 98 to Maine Avenue	Urban	D	924	16,000	9.00%	55.47%	800	C	YES
Maine Avenue to McJunkin Road	Urban	D	924	17,000	9.00%	55.47%	850	D	YES
McJunkin Road to Commerce Point Drive	Urban	D	704	17,000	9.00%	55.47%	850	F	NO
Commerce Point Drive to South Crystal Lake Drive	Urban	D	704	18,000	9.00%	55.47%	900	F	NO
South Crystal Lake Drive to Skyview Drive	Urban	D	924	20,500	9.00%	55.47%	1,000	F	NO
Skyview Drive to North Crystal Lake Drive	Urban	D	924	21,000	9.00%	55.47%	1,000	F	NO
North of North Crystal Lake Drive	Urban	D	704	20,000	9.00%	55.47%	960	F	NO
Design Year - 2045									
SR 659 (Combee Rd)									
South of US 98	Urban	D	704	1,400	9.00%	55.47%	70	C	YES
US 98 to Maine Avenue	Urban	D	924	19,000	9.00%	55.47%	950	F	NO
Maine Avenue to McJunkin Road	Urban	D	924	20,000	9.00%	55.47%	1,000	F	NO
McJunkin Road to Commerce Point Drive	Urban	D	704	20,000	9.00%	55.47%	1,000	F	NO
Commerce Point Drive to South Crystal Lake Drive	Urban	D	704	22,000	9.00%	55.47%	1,100	F	NO
South Crystal Lake Drive to Skyview Drive	Urban	D	924	24,000	9.00%	55.47%	1,200	F	NO
Skyview Drive to North Crystal Lake Drive	Urban	D	924	25,000	9.00%	55.47%	1,200	F	NO
North of North Crystal Lake Drive	Urban	D	704	24,000	9.00%	55.47%	1,200	F	NO

As shown in Table 16, several study area roadway segments under the No Build scenario are anticipated to not meet the LOS target under Existing Year (2016), Opening Year (2025), and Design Year (2045) conditions. In the Opening Year and Design Year, most segments are anticipated to not meet the target, with exception of the segment south of US 98.

7.1.3 Intersection Operational Analysis – No Build Alternative

Intersection analyses were conducted for PM conditions for both analysis years. Volumes from the TURNS5 analysis were analyzed with existing geometry. The results of the analyses are summarized in

Table 17. The No Build alternative Synchro analysis outputs are included in Appendix L.

As shown in Table 17, the US 98 intersection is projected to experience a large intersection delay and operate below the LOS target in the Opening Year (2025). In the Design Year (2045), all but one intersection is projected to operate with congestion based on volume to capacity ratios.

Table 17. Future Intersection LOS Summary – No Build Alternative

Study Intersection	Traffic Control	FDOT LOS Target	Opening Year 2025				Design Year 2045			
			Overall Delay (Sec/Veh)	Overall LOS	Max V/C	Mvmt.	Overall Delay (Sec/Veh)	Overall LOS	Max V/C	Mvmt.
SR 659 (Combee Rd) &										
US 98	Signalized	D	87.6	F	1.70	SBL	138.4	F	2.05	SBL
Maine Avenue	Signalized	D	17.1	B	0.76	WBL	27.6	C	0.92	NBT
Commerce Point Drive	Signalized	D	34.8	C	0.99	SBR	70.6	E	1.20	SBR
South Crystal Lake Drive	Signalized	D	16.9	B	0.89	EBL	37.5	D	1.08	SBR
Skyview Drive	Signalized	D	34.2	C	0.96	NBT	86.5	F	1.26	NBT
North Crystal Lake Drive	Signalized	D	51.3	D	1.18	EBL	99.2	F	1.40	EBL

7.1.4 Signal Retiming – No Build Alternative

Future intersection operating conditions were re-evaluated with potential changes to signal timings. Signal timings were adjusted to reduce volume to capacity ratios and improve the intersection level of service in the Opening Year (2025) and Design Year (2045). Table 18 displays intersection retiming results.

Table 18. Signal Retiming – No Build Alternative

Study Intersection	Traffic Control	FDOT LOS Target	Opening Year 2025				Design Year 2045			
			Overall Delay (Sec/Veh)	Overall LOS	Max V/C	Mvmt.	Overall Delay (Sec/Veh)	Overall LOS	Max V/C	Mvmt.
SR 659 (Combee Rd) &										
US 98	Signalized	D	58.2	E	1.04	SBL	95.0	F	1.25	SBL
Maine Ave	Signalized	D	17.8	B	0.74	NBT	27.7	C	0.92	NBT
Commerce Point Dr	Signalized	D	20.9	C	0.98	EBL	70.5	E	1.16	SBR
S. Crystal Lake Dr	Signalized	D	16.9	B	0.89	EBL	23.7	C	0.98	SBR
Skyview Dr	Signalized	D	30.8	C	0.93	NBT	53.8	D	1.16	WBL
N. Crystal Lake Dr	Signalized	D	54.8	D	1.04	SBR	96.6	F	1.24	SBR

As shown in Table 18, study area intersection conditions are anticipated to improve slightly due to signal retiming. The Opening Year (2025), all intersections are anticipated to operate within the LOS target with the exception of the US 98 intersection. Three of the six intersections are anticipated to operate below the LOS target in the Design Year (2045).

7.2 Build Alternative Operational Analysis

7.2.1 Geometry –Build Alternative

Turn lanes were added to the existing roadway geometry of SR 659 to improve intersection and roadway conditions. Build geometry is consistent for both analysis years. The build geometry for each intersection is as follows:

SR 659 & US 98

- Add one southbound right turn-lane to provide a dedicated turn lane.

SR 659 & Commerce Point Drive

- Add one southbound right turn-lane to provide a dedicated turn lane.

SR 659 & South Crystal Lake Drive

- Add one southbound right turn-lane to provide a dedicated turn lane.

SR 659 & North Crystal Lake Drive

- Add one eastbound left turn-lane to provide a dedicated turn lane.
- Add one southbound right-turn lane to provide a dedicated turn lane.

The build geometry is illustrated in Figure 13.

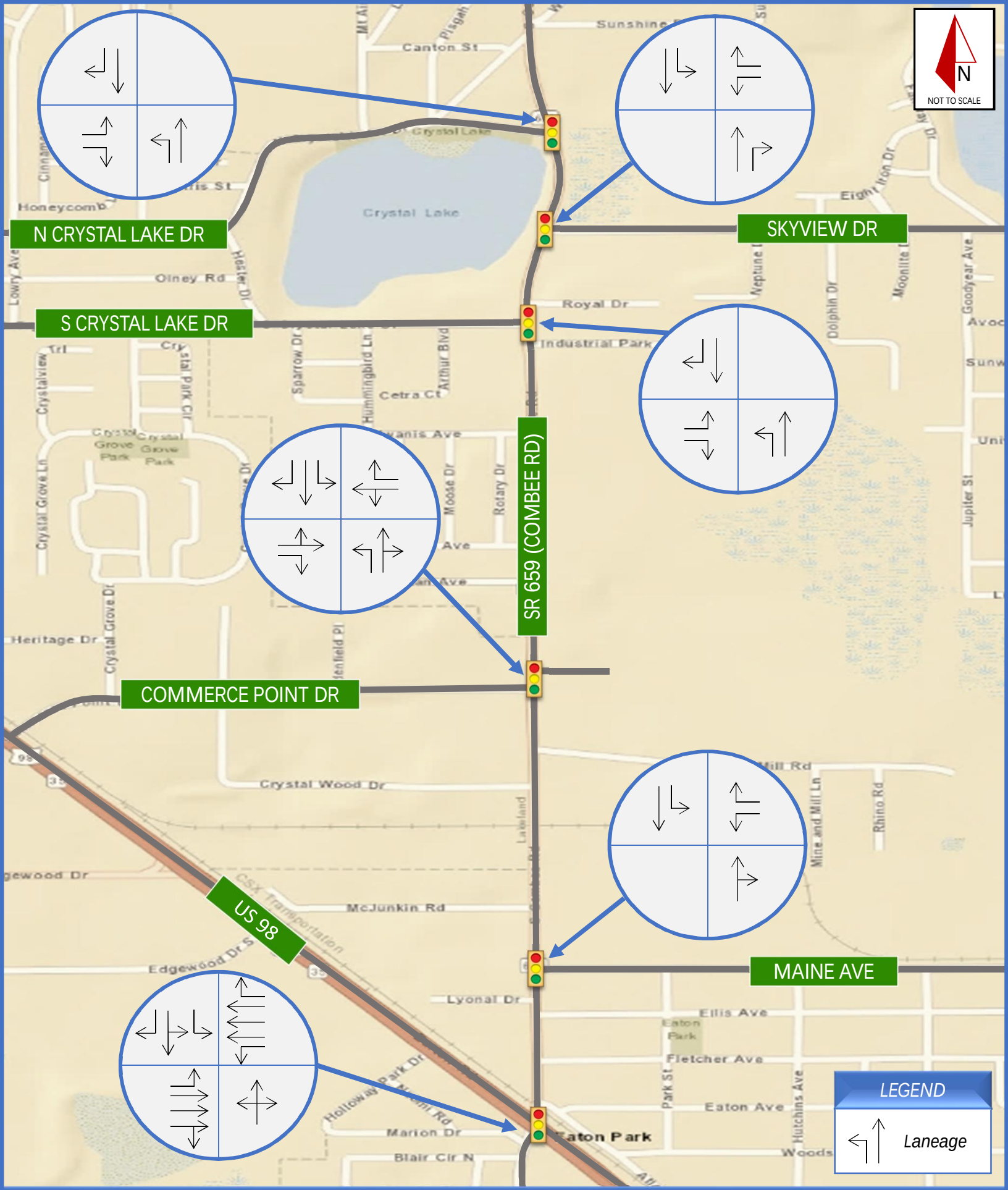

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Figure 13
Build Intersection Geometry
SR 659 (Combee Road)

7.2.2 Future Arterial LOS Analysis –Build Alternative

Under Build conditions, SR 659 is anticipated to remain a two-lane urban minor arterial. Table 19 shows the anticipated performance of the arterial using generalized service volumes and the anticipated directional design hour volumes for each analysis year. Relevant tables from the 2013 FDOT *Quality/Level of Service Handbook* are included in Appendix F, with service volumes shown below:

2-Lane service volumes – divided, with left or right turn lanes:

- LOS A – N/A (LOS A is not defined using generalized inputs)
- LOS B – N/A (LOS B is not defined using generalized inputs)
- LOS C – 871 VPH (830 x 1.05)
- LOS D – 924 VPH (880 x 1.05)
- LOS E – N/A (Volumes greater than LOS D become LOS F as intersection capacities have been reached)

2-Lane service volumes – divided, with left and right turn lanes:

- LOS A – N/A (LOS A is not defined using generalized inputs)
- LOS B – N/A (LOS B is not defined using generalized inputs)
- LOS C – 913 VPH (830 x 1.10)
- LOS D – 968 VPH (880 x 1.10)
- LOS E – N/A (Volumes greater than LOS D become LOS F as intersection capacities have been reached)

2-Lane service volumes – undivided, with no left or right turn lanes:

- LOS A – N/A (LOS A is not defined using generalized inputs)
- LOS B – N/A (LOS B is not defined using generalized inputs)
- LOS C – 664 VPH (830 x 0.80)
- LOS D – 704 VPH (880 x 0.80)
- LOS E – N/A (Volumes greater than LOS D become LOS F as intersection capacities have been reached)

As shown in Table 19, several study area roadway segments in the Opening Year (2025) and Design Year (2045) are expected to not meet the LOS target due to the directional design hour volume exceeding the standard service volume, with exception to the segment south of US 98 and from US 98 to Maine Avenue.

Table 19. Future Arterial LOS Analysis Summary – Build Alternative

Roadway Segment	Area Type	FDOT LOS Target	Standard Service Volume @ LOS	No Build AADT	Standard K Factor	Assigned D Factor	Directional Design Hour Volumes (DDHV)	Arterial LOS	Meets LOS Target?
Opening Year - 2025									
SR 659 (Combee Rd)									
South of US 98	Urban	D	704	1,200	9.00%	55.47%	60	C	YES
US 98 to Maine Ave	Urban	D	968	16,000	9.00%	55.47%	800	C	YES
Maine Ave to McJunkin Rd	Urban	D	924	17,000	9.00%	55.47%	850	C	YES
McJunkin Rd to Commerce Point Dr	Urban	D	704	17,000	9.00%	55.47%	850	F	NO
Commerce Point Dr to S. Crystal Lake Dr	Urban	D	924	18,000	9.00%	55.47%	900	D	YES
S. Crystal Lake Dr to Skyview Dr	Urban	D	924	20,500	9.00%	55.47%	1,000	F	NO
Skyview Dr to N. Crystal Lake Dr	Urban	D	968	21,000	9.00%	55.47%	1,000	F	NO
North of N. Crystal Lake Dr	Urban	D	924	20,000	9.00%	55.47%	960	F	NO
Design Year - 2045									
SR 659 (Combee Rd)									
South of US 98	Urban	D	704	1,400	9.00%	55.47%	70	C	YES
US 98 to Maine Ave	Urban	D	968	19,000	9.00%	55.47%	950	D	YES
Maine Ave to McJunkin Rd	Urban	D	924	20,000	9.00%	55.47%	1,000	F	NO
McJunkin Rd to Commerce Point Dr	Urban	D	704	20,000	9.00%	55.47%	1,000	F	NO
Commerce Point Dr to S. Crystal Lake Dr	Urban	D	924	22,000	9.00%	55.47%	1,100	F	NO
S. Crystal Lake Dr to Skyview Dr	Urban	D	924	24,000	9.00%	55.47%	1,200	F	NO
Skyview Dr to N. Crystal Lake Dr	Urban	D	968	25,000	9.00%	55.47%	1,200	F	NO
North of N. Crystal Lake Dr	Urban	D	924	24,000	9.00%	55.47%	1,200	F	NO

7.2.3 Intersection Operational Analysis – Build Alternative

Intersection analyses were conducted for both analysis years with Build geometry, as identified previously in Figure 13, and with signal retiming improvements. The results of the analyses are summarized in Table 20. The Build alternative Synchro analysis outputs are included in Appendix M.

As shown in Table 20 below, all intersections are expected to meet the LOS target in the Opening year. In the Design Year, one intersection is projected to operate below the LOS target, and all others are expected to meet the LOS target. In the Design Year, several intersections experience volume to capacity ratios that exceed 1.0.

Table 20. Future Intersection LOS Summary –Build Alternative

Study Intersection	Traffic Control	FDOT LOS Target	Opening Year 2025				Design Year 2045			
			Overall Delay (Sec/Veh)	Overall LOS	Max V/C	Mvmt.	Overall Delay (Sec/Veh)	Overall LOS	Max V/C	Mvmt.
SR 659 (Combee Rd) &										
US 98	Signalized	D	45.7	D	0.93	WBT	69	E	1.11	WBT
Maine Ave	Signalized	D	17.5	B	0.74	NBT	28.1	C	0.92	NBT
Commerce Point Dr	Signalized	D	24.6	C	0.98	EBL	37.2	D	1.11	EBL
S. Crystal Lake Dr	Signalized	D	19.8	B	0.89	EBL	17.3	B	0.92	EBL
Skyview Dr	Signalized	D	35.0	D	0.93	WBL	52.9	D	1.16	WBL
N. Crystal Lake Dr	Signalized	D	19.5	B	0.88	EBL	38.9	D	0.99	NBL

7.3 Crash Expectancy

The recommended improvements of this project that would impact the existing crash history are:

- Construction of a center two-way left-turn lane from where the existing one ends north of McJunkin Road to the northern limit of the study section
- Reconfiguration of existing intersection geometry to include the following turn lanes:
    - Southbound right-turn lane onto US 98
    - Southbound right-turn lane onto Commerce Point Drive
    - Southbound right-turn lane onto South Crystal Lake Drive
    - Eastbound left-turn lane from North Crystal Lake Drive onto SR 659

The Federal Highway Administration (FHWA) Crash Modification Factors Clearinghouse website was reviewed to determine the expected impact to historical crash trends when constructing a center two-way left-turn lane and when installing exclusive turn lanes. While a TWLTL is less desirable than a raised median for preventing certain types of

crashes, it is more desirable than the existing undivided, two-lane section. Providing storage in the form of turn lanes and a TWLTL provides physical separation between turning traffic that is slowing or stopping and adjacent through traffic, which is especially beneficial for reducing rear-end crashes.

A crash modification factor (CMF) is an estimated proportion of crashes remaining after implementation of a given countermeasure. A CMF less than one equals an expected reduction in crash frequency. CMFs are rated with a star quality rating that indicates the quality or confidence in the results of the studies producing the CMFs. Star ratings are assigned on a scale of one star to five stars, with five stars indicating the highest and most reliable rating. CMFs with a star rating of less than three were not included in this analysis. The Clearinghouse lists the following CMFs relevant to the construction of a TWLTL and installation of exclusive turn lanes:

- 0.613 CMF for all rear-end crashes when installing a TWLTL on a two-lane road (5-star rating)
- 0.860 CMF for all crashes when installing a right-turn lane (4-star rating)
- 0.748 CMF for all crashes when installing a left-turn lane (4-star rating)

Based on these CMFs and the given crash history along the study corridor, it can be expected that southbound rear-end crashes at the SR 35/SR 700 (US 98), Commerce Point Drive, and South Crystal Lake Drive intersections would decrease by a total of five crashes over a period of five years. Additionally, eastbound left-turn crashes at the North Crystal Lake Drive would reduce by one. The CMF associated with the TWLTL was applied to the remaining rear-end crashes along the corridor starting from north of McJunkin Road to North Crystal Lake Drive, and it was determined that northbound and southbound rear-end crashes along the corridor can be expected to decrease by 22 crashes over a period of five years. Table 21 summarizes the applied CMFs, historical number of crashes, and expected number of crashes.

Table 21. Crash Expectancy by CMF Over a 5-Year Period

Countermeasure	Location	CMF	Applied To:	Historical Number of Crashes	Expected Number of Crashes:
Install Right-Turn Lane	Southbound approach of SR 659 at US 98/SR 35/SR 700	0.860	All Southbound Crashes	11	9
	Southbound approach of SR 659 at Commerce Point Drive			7	6
	Southbound approach of SR 659 at South Crystal Lake Drive			17	14
Install Left-Turn Lane	Eastbound approach of North Crystal Lake Drive at SR 659	0.748	All Eastbound Crashes	3	2
Add TWLTL	North of McJunkin Road to North Crystal Lake Drive	0.613	All Northbound and Southbound Rear-End Crashes	55	33
			Total	93	64

8.0 Summary of Analysis Results

This Project Traffic Analysis Report (PTAR) has been prepared to provide design traffic volumes and traffic analysis in support of a PD&E for SR 659 (Combee Road) from US 98 to North Crystal Lake Drive, Financial Number 440274-1-22-01.

8.1 Existing Conditions

Traffic data were collected and analyzed to document existing Level of Service for study area roadways and intersections. Under existing conditions, several study area roadway segments are not expected to meet their LOS targets and/or volume to capacity ratios during the PM Peak Hour. Existing Level of Service (LOS) conditions are shown in Figure 14.

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Figure 14
2016 Existing Roadway and Intersection LOS
SR 659 (Combee Road)

8.2 No Build Alternative

A No Build alternative was developed to identify future traffic conditions that are anticipated to occur if the study area roadway is not improved. The No Build geometry for SR 659 is the same as existing geometry for study area roadway segments, consisting of a 2-lane road with occasional two-way left-turn lanes.

Several study area roadway segments under the No Build scenario are anticipated to not meet their LOS targets under Existing Conditions (2016), Opening Year (2025), and Design Year (2045) conditions. In the Opening Year and Design Year, few study area roadway segments are anticipated to meet their LOS target, with exception to the segment south of US 98.

Opening Year (2025) and Design Year (2045) roadway and intersection LOS conditions for the No Build scenario are shown in Figure 15 and Figure 16, respectively.

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Figure 15
2025 No Build Roadway and Intersection LOS
SR 659 (Combee Road)

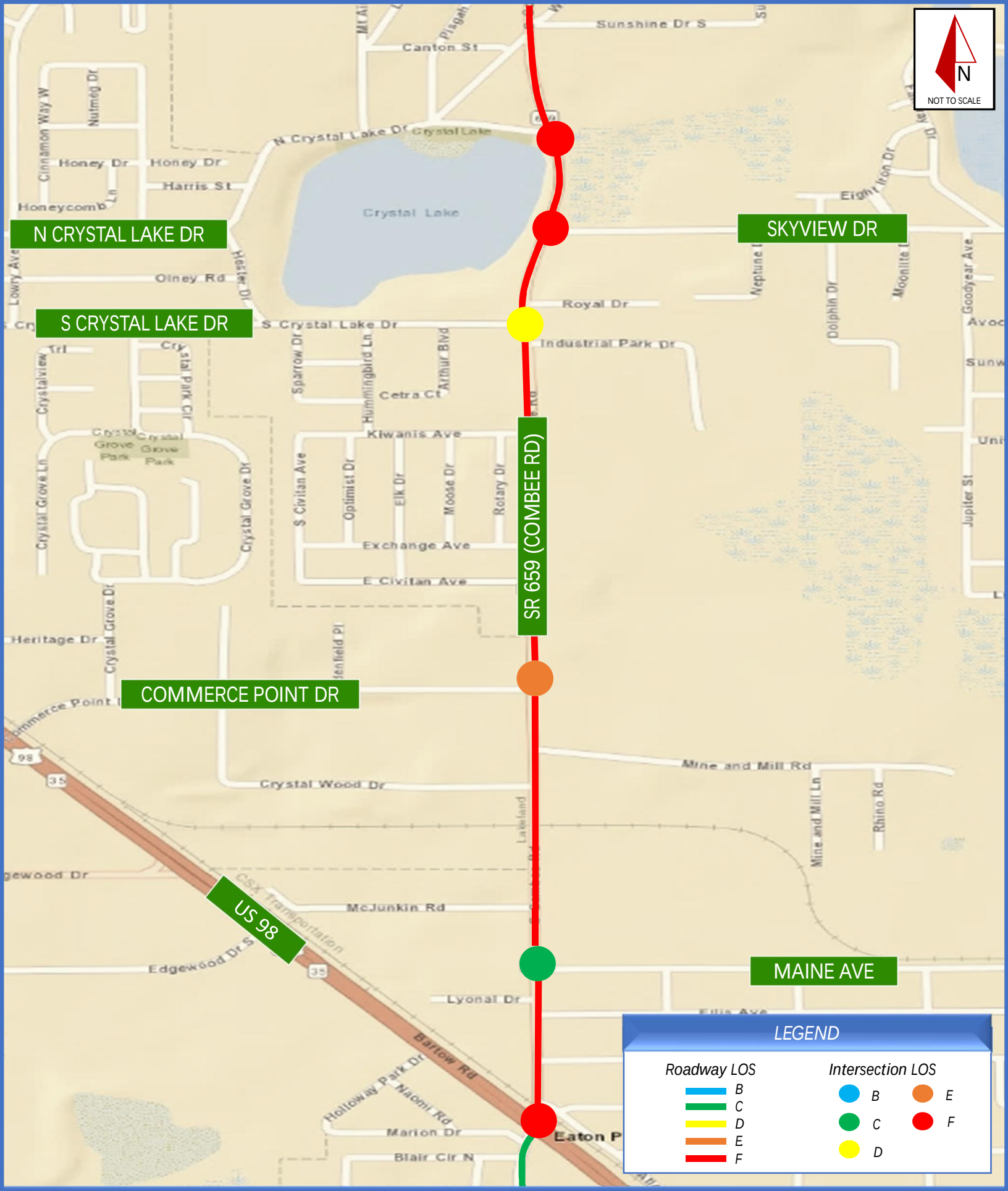

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Figure 16
2045 No Build Roadway and Intersection LOS
SR 659 (Combee Road)

8.3 Build Alternative

The Build geometry assumes that SR 659 (Combee Road) will remain a 2-lane undivided facility in the future. However, right and left turn-lanes will be added to improve conditions. Associated intersection improvements include:

SR 659 & US 98

- Add one southbound right turn-lane to provide a dedicated turn lane.

SR 659 & Commerce Point Drive

- Add one southbound right turn-lane to provide a dedicated turn lane.

SR 659 & South Crystal Lake Drive

- Add one southbound right turn-lane to provide a dedicated turn lane.

SR 659 & North Crystal Lake Drive

- Add one eastbound left turn-lane to provide a dedicated turn lane.
- Add one southbound right-turn lane to provide a dedicated turn lane.

Few study area roadway segments under the Build scenario are anticipated to meet their LOS target under Opening Year (2025) and Design Year (2045) conditions, with exception to the segment of SR 659 south of US 98 to Maine Avenue.

All signalized study area intersections are anticipated to meet their LOS target during the Opening Year. By the Design Year, the US 98 intersection is calculated to have a delay of 69 seconds at LOS E, which indicate failing conditions. Several Design Year intersections experience volume to capacity ratios that exceed 1.0.

Opening Year (2025) and Design Year (2045) roadway and intersection LOS conditions for the Build scenario are shown in Figure 17 and Figure 18, respectively.

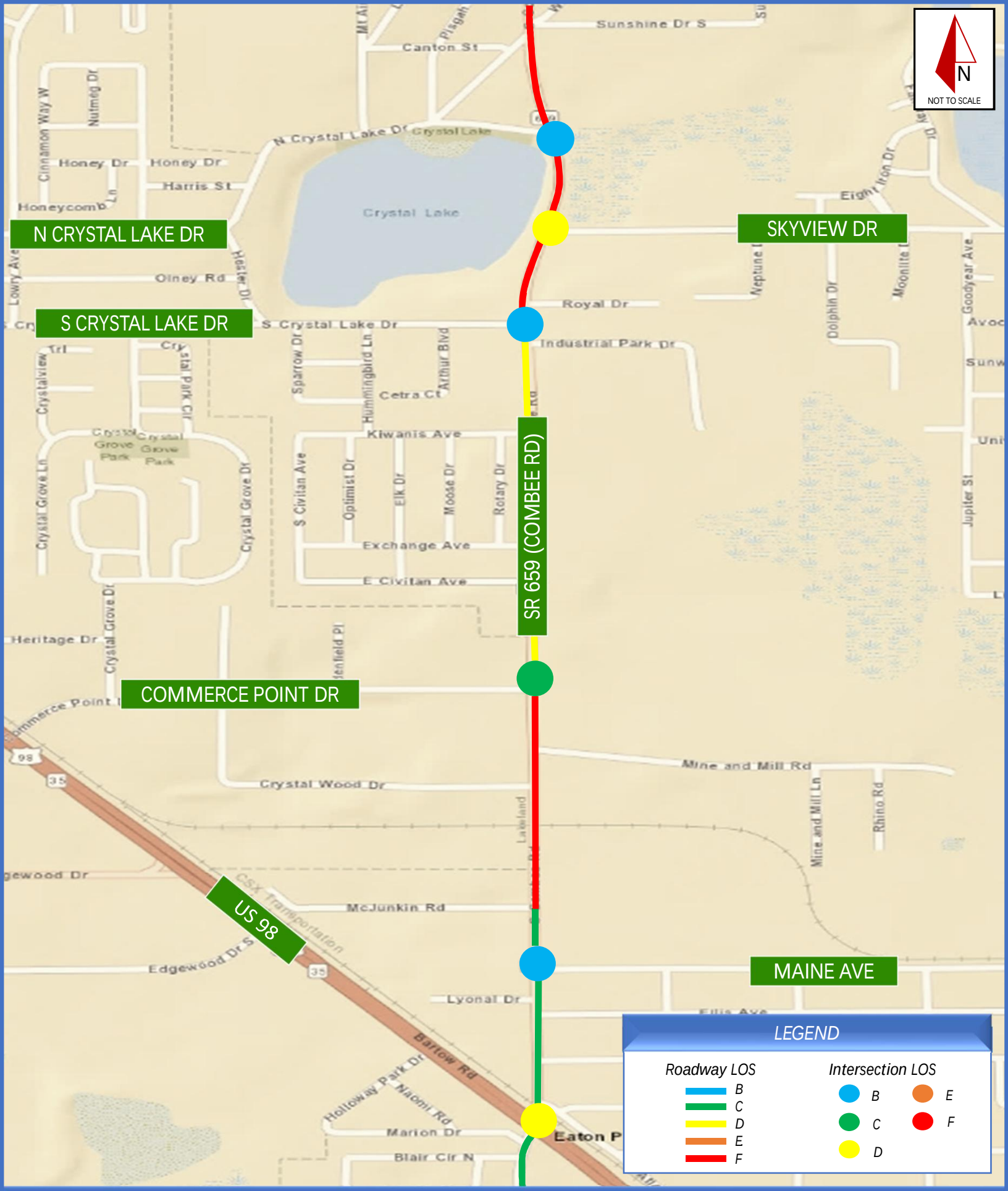

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Figure 17
2025 Build Roadway and Intersection LOS
SR 659 (Combee Road)

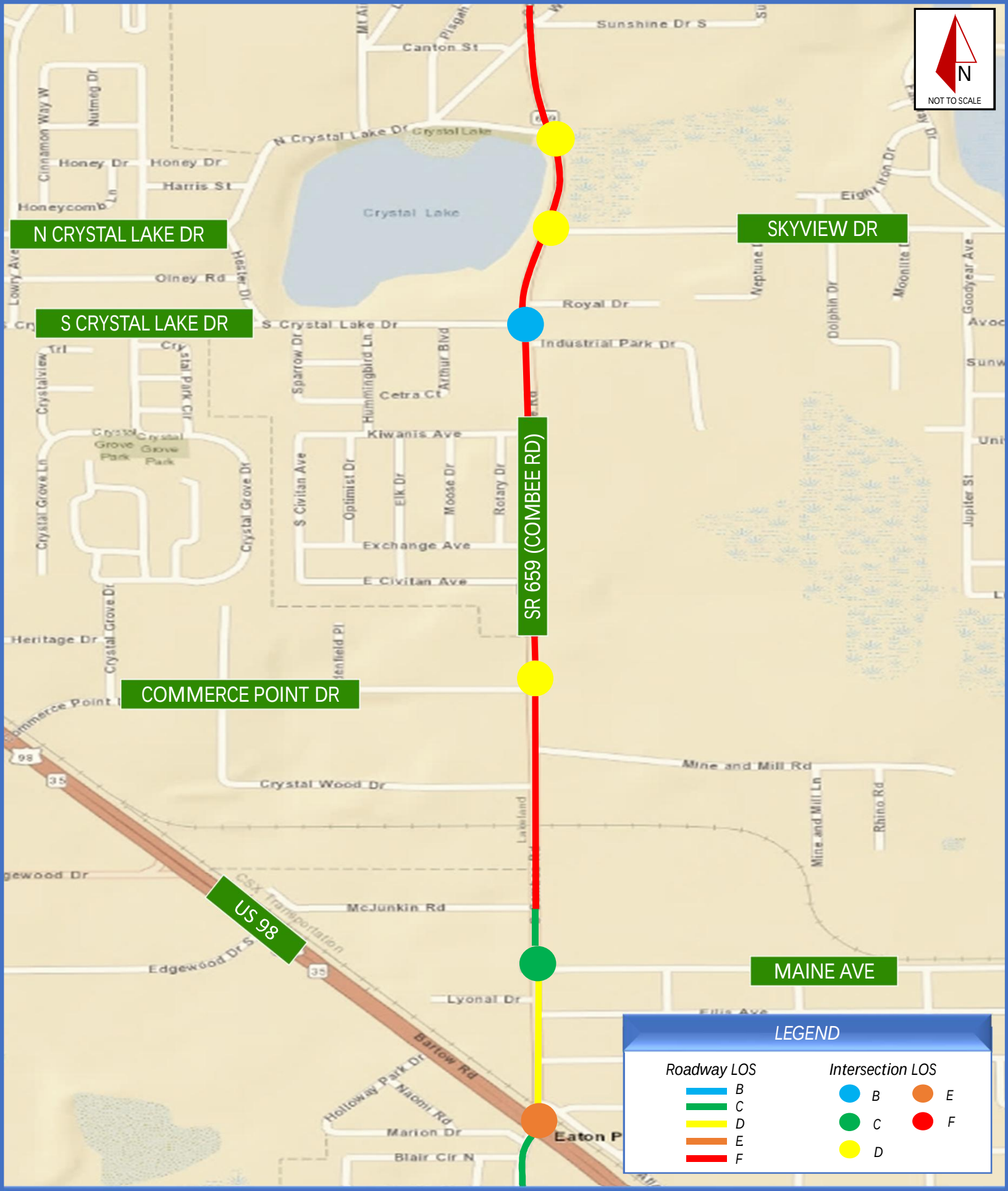

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Figure 18
2045 Build Roadway and Intersection LOS
SR 659 (Combee Road)

Recommended queue storage lengths were developed based on the Build intersection geometry. Design Year queue lengths are shown in Table 22. The lengths provided in this table do not include the deceleration distance needed for turn lanes. When designing the turn lane lengths, the designer should use FDOT Design Standards Index no. 301.

Table 22. Design Year Queue Lengths

Intersction	Design Year 2045		
	Mvmt.	50th % Queue (ft)	95th % Queue (ft)
SR 659 (Combee Rd) &			
US 98	SBL	427	649
	SBR	22	100
Maine Ave	SBL	103	108
	WBL	133	261
	WBR	0	85
Commerce Point Dr	NBL	168	209
	SBL	10	12
	SBT	645	887
	SBR	103	132
	EBL/T	251	411
	EBR	0	60
S. Crystal Lake Dr	NBL	11	21
	SBT	574	824
	SBR	32	46
	EBL	212	365
	EBR	13	52
Skyview Dr	NBR	46	114
	SBL	143	132
N. Crystal Lake Dr	NBL	141	156
	EBL	254	434
	EBR	0	57
	SBT	719	1038
	SBR	14	41

Intersection queue lengths provided by Synchro

9.0 Proposed Typical Sections

9.1 Bicycle and Pedestrian Improvements

9.1.1 Existing Conditions

There are no existing pedestrian facilities on SR 659 from US 98 to S. Crystal Lake Drive. On the west side of SR 659, approximately 200 feet north of the intersection of SR 659 and S. Crystal Lake Drive, a sidewalk begins and extends north past the intersection of SR 659 and N. Crystal Lake Drive. This sidewalk is approximately 1,600 feet long.

No bike lanes exist on SR 659 within the study area.

9.1.2 Project Recommendations

The proposed typical section includes 6-foot wide sidewalks on the east and west side of SR 659 throughout the entire study area. The typical section also includes the addition of curb and gutter on both sides of the road throughout the study area. In some areas, the sidewalk will be adjacent to the back of the curb. Other areas have varying width grass buffers / utility strips between the curb and the sidewalk.

The proposed typical section includes 7- foot wide buffered bike lanes throughout the study area.

9.2 Median Access

9.2.1 Existing Conditions

A two-way left-turn lane currently exists on SR 659 from Fletcher Avenue to McJunkin Road. Dedicated left-turn lanes are located at the following intersections:

- SBL at US 98
- SBL at Maine Avenue
- NBL at Commerce Point Drive
- SBL at the shopping plaza just north of Commerce Point Drive
- NBL at S. Crystal Lake Drive
- SBL at Skyview Drive
- NBL at N Crystal Lake Drive

9.2.2 Project Recommendations

The proposed typical section includes a two-way left-turn lane median from Maine Avenue to N. Crystal Lake Drive, with dedicated turn lanes at the following locations:

- SBL on to Maine Avenue
- NBL on to Commerce Point Drive
- NBL on to S. Crystal Lake Drive
- SBL on to Skyview Drive
- NBL on to N. Crystal Lake Drive

Various alternative median configurations are under consideration from US 98 to Commerce Point Drive.

10.0 Recommendations and Conclusions

The following modifications are recommended to improve operating conditions:

- SR 659 & US 98 - Add a southbound right-turn lane to provide a dedicated turn lane.
- SR 659 & Commerce Point Drive - Add a southbound right-turn lane to provide a dedicated turn lane.
- SR 659 & South Crystal Lake Drive - Add a southbound right-turn lane to provide a dedicated turn lane.
- SR 659 & North Crystal Lake Drive
    - Add a eastbound left-turn lane to provide a dedicated turn lane.
    - Add a southbound right-turn lane to provide a dedicated turn lane.

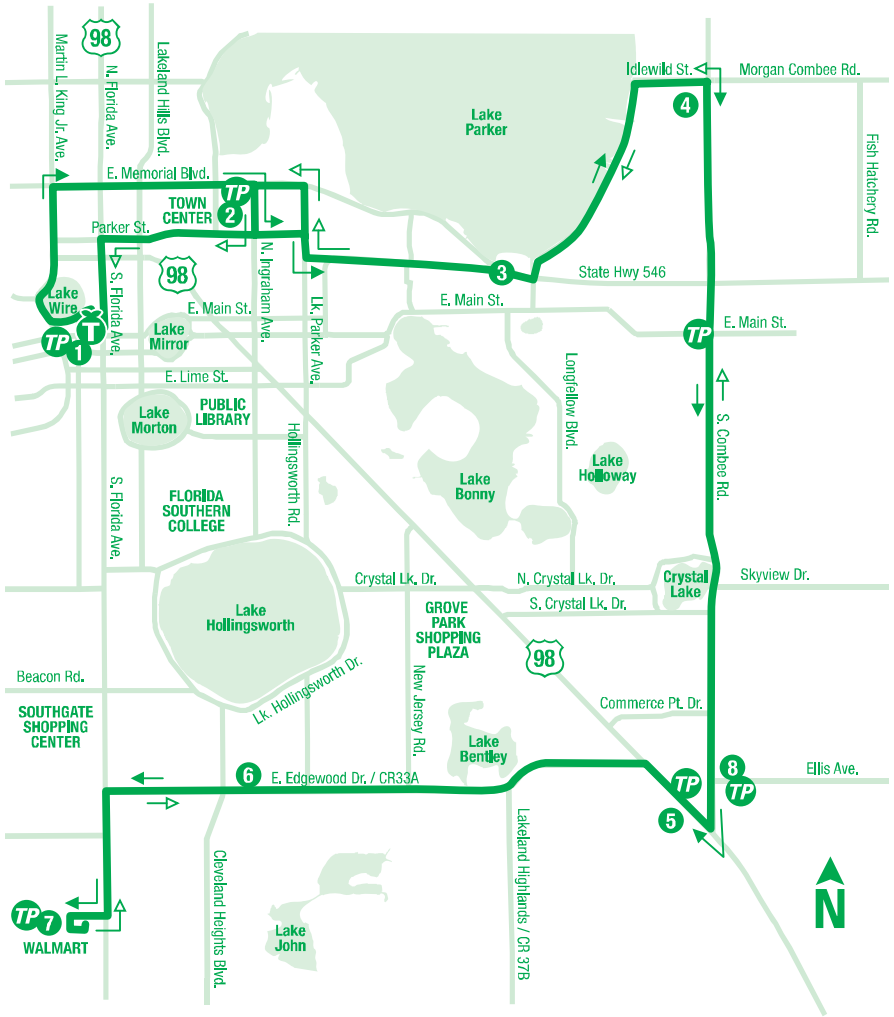
These changes improve the level of service (LOS) and volume to capacity ratios of all study area intersections. In the Opening year (2025), all study intersections are anticipated to meet their LOS target of D and have volume to capacity ratios less than 1.0. In the Design Year (2045), all study intersections are anticipated to meet their LOS target of D, except for the intersection of SR 659 and US 98. Some of the study area intersections are expected to operate with volume to capacity ratios greater than 1.0.

Appendix A:

Lakeland Area Mass Transit District Bus Routes and Schedule Information

14 COMBEE / EDGEWOOD

EFFECTIVE OCTOBER 1, 2018 / EFECTIVO OCTUBRE 1, 2018



WEEKDAYS

❶ Depart Lakeland Downtown Terminal	❷ Town Center at Ingraham Ave.	❸ E. Gary Rd. & E. Memorial Blvd.	❹ Idlewild St. & N. Combee Rd.	❺ Bartow Rd. & S. Combee Rd.	❻ Common Ground Park	❼ Arrive Walmart at Imperial Blvd.
SOUTHBOUND						
7:15	7:23	7:27	7:32	7:45	7:52	7:59
9:15	9:23	9:27	9:32	9:45	9:52	9:59
11:15	11:23	11:27	11:32	11:45	11:52	11:59
1:15	**1:23**	**1:27**	**1:32**	**1:45**	**1:52**	**1:59**
3:15	**3:23**	**3:27**	**3:32**	**3:45**	**3:52**	**3:59**
5:15	**5:23**	**5:27**	**5:32**	**5:45**	**5:52**	**5:59**

WEEKDAYS

❼ Depart Walmart at Imperial Blvd.	❻ Common Ground Park	❽ S. Combee Rd. & Ellis Ave.	❹ Idlewild St. & N. Combee Rd.	❸ E. Gary Rd. & E. Memorial Blvd.	❷ Town Center at Ingraham Ave.	❶ Arrive Lakeland Downtown Terminal
NORTHBOUND						
8:15	8:21	8:29	8:40	8:45	8:51	8:58
10:15	10:21	10:29	10:40	10:45	10:51	10:58
12:15	**12:21**	**12:29**	**12:40**	**12:45**	**12:51**	**12:58**
2:15	**2:21**	**2:29**	**2:40**	**2:45**	**2:51**	**2:58**
4:15	**4:21**	**4:29**	**4:40**	**4:45**	**4:51**	**4:58**
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TP Transfer Points T Lakeland Terminal

TRANSFER POINTS *PUNTOS DE TRANSFERENCIA*

Lakeland Downtown Terminal: Rt 1, 3, 10, 12, 15, 22XL, 45, 46 and 58
E. Main Street & S. Combee Rd.: Rt 12 Lakeland to Winter Haven
E. Main Street & N. Combee Rd.: Rt 12 Winter Haven to Lakeland
Bartow Rd. & S. Combee Rd.: Rt 22XL
Walmart at Imperial Blvd.: Rt 1 and 33
S. Combee Road & Ellis Avenue: Rt 10
Town Center: Rt 10

→ From Terminal to Walmart at Imperial Blvd.
Desde la Terminal hacia Walmart en Imperial Blvd.

⇢ From Walmart at Imperial Blvd. to Terminal
Desde Walmart en Imperial Blvd. hacia la Terminal

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Appendix B:

Methodology

Kimley»Horn

MEMORANDUM

To: Nicole Harris, P.E.
Patrick Bateman, E.I.

From: Mike Woodward, P.E.
Kimley-Horn and Associates, Inc.

Date: May 2, 2018

Subject: Traffic Forecast and Analysis Methodology
SR 659 (Combee Road) PD&E Study from US 98 to N. Crystal Lake Drive
FPID No. 440274-1-22-01

Purpose

The following is a Traffic Forecast and Analysis Methodology outline for the SR 659 (Combee Road) PD&E from US 98 to North Crystal Lake Drive. The analysis will be performed consistent with methods described in the PD&E Manual, Traffic Analysis Handbook, and the Project Traffic Forecasting Handbook. This methodology describes the proposed study area, methods and assumptions for analyzing existing and future traffic, and the type of documentation.

Data Collection

Existing data were collected previously for intersections along the corridor, as documented in the following three reports:

- Intersection Analysis Study – SR 659 (Combee Road) at SR 35 (US 98) – April 2017
- Phase 1 Corridor Analysis – SR 659 (Combee Road) from SR 35 (US 98) to SR 600 (US 92) – August 2016
- Intersection Analysis Study – SR 659 (Combee Road) at Commerce Point Drive – April 2017

Data from these studies will be used for the Project Traffic Analysis Report (PTAR). Additional traffic data collection will not be conducted.

Crash data have been requested from District 1. The data are to include the most recent five years of available data. The data will include the number and type of crashes, crash locations, number of fatalities and injuries, and estimates of property damage.

Study Area

The project area is along SR 659 from US 98 to North Crystal Lake Drive. Intersections within the study area that will be analyzed include:

- SR 659 at US 98
- SR 659 at Maine Avenue
- SR 659 at Commerce Point Drive
- SR 659 at South Crystal Lake Drive
- SR 659 at Skyview Drive
- SR 659 at North Crystal Lake Drive

Analysis Assumptions and Methods

The analysis will be conducted for study area roadway segments and intersections for existing conditions (Year 2016), opening year conditions (Year 2025), and design year (Year 2045) conditions.

Existing data will be balanced by applying the standard K factor and D factor to seasonally adjusted Average Annual Daily Traffic (AADT) to develop design hourly volumes. A Level of Service analysis will be performed for existing conditions using FDOT's Generalized Service Volume Tables from the 2013 Quality/Level of Service Handbook. With a posted speed limit of 40 mph, SR 659 is characterized as a Class I Undivided arterial. The northern and southern sections have left turn lanes, while the central sections do not have left turn lanes. An ARTPLAN analysis will be performed to more accurately calculate the roadway service volumes.

TURNS5 will be used to develop existing year turning movement volumes. Intersection volumes will be balanced to be consistent with the design hour roadway segment volumes for each approach. If the volumes resulting from TURNS5 appear to be unreasonable, other methods will be used, such as those described in NCHRP Report 255. Any manual adjustments will be documented with appropriate justification. Analysis of existing conditions will be based on the Highway Capacity Manual, and will be conducted using Synchro software. SimTraffic may also be used to analyze operating conditions through the corridor.

Future Demand Forecasting

Future Demand Forecasting will be based on the Traffic Forecast Modeling Technical Memorandum prepared by the Department, dated March 2018. The memorandum includes a sub-area validation of the District 1 Cost Feasible 2040 One Regional Planning Model (D1RPM v1.0.3). The validation steps consisted of changes to the area type, facility type, and centroid loadings. The resulting base year volume to count ratio for the study area is 0.98, and the volume to count ratio for SR 659 is 1.01. These differences are well within the Acceptable Standard of +/- 15% for an arterial road, and better than the Preferable Standard of +/- 10%, per FDOT's Project Traffic Forecasting Handbook. The model outputs are in the form of Peak Season Weekly Average Daily Traffic (PSWADT), and will be converted to AADT for analysis purposes using the Model Output Conversion Factor (MOCF) for Polk County.

The March 2018 memo documents how the validation refinements were applied to the Year 2040 model to develop year 2040 Peak Season Weekly Average Daily Traffic volumes. These volumes will be verified for reasonableness using historic trend growth rates and population projections from the Bureau of Economic and Business Research (BEBR).

Since the build alternative is focused on multimodal improvements and turn lanes (as opposed to capacity), the build and no-build volumes will be the same. Separate no-build volumes were not developed in the memo. The SR 659 PD&E will likewise assume that build volumes and no-build volumes will be the same.

Opening year (2025) volumes will be determined by interpolating between existing year (2016) volumes and the model forecast year (2040) volumes. Design year (2045) volumes will be developed by extrapolation.

Analysis of Future Conditions

Analysis of future roadway segment Level-of-Service will be conducted for build and no-build alternatives by comparing future volumes to an ARTPLAN analysis of future conditions. Intersection operating conditions for build and no-build alternatives will be based on the Highway Capacity Manual, and the analysis will be conducted using Synchro software.

The evaluation will include an assessment of future bicycle and pedestrian conditions, and an evaluation of access management.

Transit

Existing and future condition analyses will include an assessment of transit along the corridor. Combee Road is currently served by Route Number 14 of the Lakeland Area Mass Transit District, which has 1-hour headways on weekdays, running from 6:30 am to 6:30 pm, and 1-hour headways on Saturdays, running from 7:30 am to 3:30 pm.

Proposed Approach to Evaluate Safety of Alternatives

Safety analysis will be performed consistent with Part 2, Chapter 2 if the PD&E Manual, based on data to be provided by the Department. Safety needs will be identified for existing and future conditions based on procedures in the Highway Safety Manual.

Roundabout

Volumes developed in the PTAR will be used to perform a level 1 roundabout evaluation. The roundabout evaluation will be documented separately, in the Roundabout Evaluation Technical Memorandum.

Documentation

Results and analysis will be documented in a report for submittal to District 1 staff in a PTAR. A PDF document will be provided electronically. The PTAR will include a transit, bicycle, and pedestrian analysis.

K:\ORL_TPTO\149881000_Combee Road PD&E\Traffic\01_Methodology\Combee_Traffic Methodology.docx

Appendix C:

Raw Traffic Counts

VEHICLE TURNING MOVEMENT COUNT

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	SR 35 (US 98)	**MILEPOST:**	0.000
OBSERVER:	FDA	**DATE OF COUNT:**	1/12/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
NORTH APPROACH:	SR 659 (Combee Road)	**EAST APPROACH:**	SR 35 (US 98)		
SOUTH APPROACH:	SR 659 (Combee Road)	**WEST APPROACH:**	SR 35 (US 98)		
		COUNT PERIODS:	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM		

ALL VEHICLES / ALL MOVEMENTS

Direction	Northbound						Southbound							Eastbound						Westbound							
Start Time	NBU	NBL	NBT	NBR	NBRTOR	Total	SBU	SBL	SBT	SBR	SBRTOR	Total	NS Total	EBU	EBL	EBT	EBR	EBRTOR	Total	WBU	WBL	WBT	WBR	WBRTOR	Total	EW Total	Grand Total
7:00 AM	0	3	1	0	0	4	0	55	0	23	12	90	94	0	36	280	0	0	316	2	1	262	50	39	354	670	764
7:15 AM	0	1	2	0	0	3	0	60	0	16	13	89	92	0	43	304	2	0	349	0	0	346	60	53	459	808	900
7:30 AM	0	4	0	0	0	4	0	97	0	30	9	136	140	1	55	303	1	0	360	1	1	381	81	51	515	875	1,015
7:45 AM	0	2	5	0	1	8	0	72	0	21	16	109	117	0	51	330	1	0	382	3	0	438	76	37	554	936	1,053
Total	**0**	**10**	**8**	**0**	**1**	**19**	**0**	**284**	**0**	**90**	**50**	**424**	**443**	**1**	**185**	**1,217**	**4**	**0**	**1,407**	**6**	**2**	**1,427**	**267**	**180**	**1,882**	**3,289**	**3,732**
8:00 AM	0	1	1	0	1	3	0	78	1	37	12	128	131	2	51	308	1	0	362	1	0	357	54	39	451	813	944
8:15 AM	0	5	1	0	0	6	0	66	0	24	9	99	105	0	38	275	2	0	315	1	0	348	35	40	424	739	844
8:30 AM	0	2	1	0	1	4	0	80	0	30	7	117	121	0	50	293	2	0	345	1	1	287	39	37	365	710	831
8:45 AM	0	2	1	0	0	3	0	69	0	34	11	114	117	2	32	236	2	0	272	3	1	275	22	43	344	616	733
Total	**0**	**10**	**4**	**0**	**2**	**16**	**0**	**293**	**1**	**125**	**39**	**458**	**474**	**4**	**171**	**1,112**	**7**	**0**	**1,294**	**6**	**2**	**1,267**	**150**	**159**	**1,584**	**2,878**	**3,352**
12:00 PM	0	2	4	0	1	7	0	54	0	18	37	109	116	1	57	293	2	0	353	0	0	301	38	31	370	723	839
12:15 PM	0	3	4	1	0	8	0	48	1	23	30	102	110	3	45	305	1	0	354	2	4	300	43	29	378	732	842
12:30 PM	0	4	4	0	0	8	0	73	1	23	32	129	137	1	44	310	2	1	358	1	2	282	18	36	339	697	834
12:45 PM	0	4	4	2	1	11	0	69	0	29	15	113	124	0	67	283	1	0	351	2	0	313	33	30	378	729	853
Total	**0**	**13**	**16**	**3**	**2**	**34**	**0**	**244**	**2**	**93**	**114**	**453**	**487**	**5**	**213**	**1,191**	**6**	**1**	**1,416**	**5**	**6**	**1,196**	**132**	**126**	**1,465**	**2,881**	**3,368**
1:00 PM	0	2	3	0	0	5	0	58	1	34	10	103	108	0	57	280	6	0	343	2	3	285	39	24	353	696	804
1:15 PM	0	6	3	0	0	9	0	63	2	22	6	93	102	1	51	237	4	0	293	0	1	308	40	17	366	659	761
1:30 PM	0	3	1	0	0	4	0	49	0	35	9	93	97	2	61	239	1	0	303	0	0	350	37	24	411	714	811
1:45 PM	0	2	3	1	2	8	0	59	3	20	13	95	103	2	47	226	7	0	282	1	0	297	48	23	369	651	754
Total	**0**	**13**	**10**	**1**	**2**	**26**	**0**	**229**	**6**	**111**	**38**	**384**	**410**	**5**	**216**	**982**	**18**	**0**	**1,221**	**3**	**4**	**1,240**	**164**	**88**	**1,499**	**2,720**	**3,130**
2:00 PM	0	7	1	0	3	11	0	72	7	32	26	137	148	1	44	207	6	0	258	1	0	286	48	37	372	630	778
2:15 PM	0	3	2	0	0	5	0	61	2	22	24	109	114	2	56	239	5	1	303	3	4	270	44	22	343	646	760
2:30 PM	0	2	8	2	1	13	0	67	2	7	28	104	117	3	51	237	5	0	296	0	2	384	42	24	452	748	865
2:45 PM	0	7	2	0	1	10	0	83	1	23	21	128	138	0	58	264	9	0	331	2	1	385	55	22	465	796	934
Total	**0**	**19**	**13**	**2**	**5**	**39**	**0**	**283**	**12**	**84**	**99**	**478**	**517**	**6**	**209**	**947**	**25**	**1**	**1,188**	**6**	**7**	**1,325**	**189**	**105**	**1,632**	**2,820**	**3,337**
3:00 PM	0	4	3	1	0	8	0	72	0	36	20	128	136	4	43	278	5	0	330	1	1	297	30	31	360	690	826
3:15 PM	0	3	3	0	0	6	0	76	0	25	10	111	117	2	60	331	1	0	394	1	0	309	53	22	385	779	896
3:30 PM	0	5	1	0	0	6	0	77	4	35	15	131	137	2	54	288	2	0	346	1	2	305	45	34	387	733	870
3:45 PM	0	2	3	1	0	6	0	88	1	36	16	141	147	2	55	321	6	0	384	2	2	271	38	16	329	713	860
Total	**0**	**14**	**10**	**2**	**0**	**26**	**0**	**313**	**5**	**132**	**61**	**511**	**537**	**10**	**212**	**1,218**	**14**	**0**	**1,454**	**5**	**5**	**1,182**	**166**	**103**	**1,461**	**2,915**	**3,452**
4:00 PM	0	5	2	0	0	7	0	80	1	15	25	121	128	2	42	313	5	0	362	0	1	279	50	14	344	706	834
4:15 PM	0	3	1	0	0	4	0	113	3	34	19	169	173	0	58	360	3	0	421	1	2	270	55	25	353	774	947
4:30 PM	0	6	2	0	0	8	0	125	0	39	20	184	192	0	45	410	4	0	459	4	2	318	55	12	391	850	1,042
4:45 PM	0	8	4	1	0	13	0	97	4	36	20	157	170	0	56	462	8	0	526	2	2	277	51	18	350	876	1,046
Total	**0**	**22**	**9**	**1**	**0**	**32**	**0**	**415**	**8**	**124**	**84**	**631**	**663**	**2**	**201**	**1,545**	**20**	**0**	**1,768**	**7**	**7**	**1,144**	**211**	**69**	**1,438**	**3,206**	**3,869**
5:00 PM	0	7	2	1	0	10	0	136	0	49	14	199	209	2	56	380	5	0	443	1	0	293	30	30	354	797	1,006
5:15 PM	0	7	2	1	0	10	0	94	1	25	16	136	146	1	55	411	4	0	471	0	1	326	48	26	401	872	1,018
5:30 PM	0	5	6	2	0	13	0	90	3	36	14	143	156	2	42	385	9	1	439	2	0	304	33	29	368	807	963
5:45 PM	0	4	3	0	3	10	0	88	2	27	18	135	145	2	52	371	5	0	430	1	2	285	38	37	363	793	938
Total	**0**	**23**	**13**	**4**	**3**	**43**	**0**	**408**	**6**	**137**	**62**	**613**	**656**	**7**	**205**	**1,547**	**23**	**1**	**1,783**	**4**	**3**	**1,208**	**149**	**122**	**1,486**	**3,269**	**3,925**

VEHICLE TURNING MOVEMENT COUNT

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	SR 35 (US 98)	**MILEPOST:**	0.000
OBSERVER:	FDA	**DATE OF COUNT:**	1/12/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
NORTH APPROACH:	SR 659 (Combee Road)	**EAST APPROACH:**	SR 35 (US 98)		
SOUTH APPROACH:	SR 659 (Combee Road)	**WEST APPROACH:**	SR 35 (US 98)		
		COUNT PERIODS:	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM		

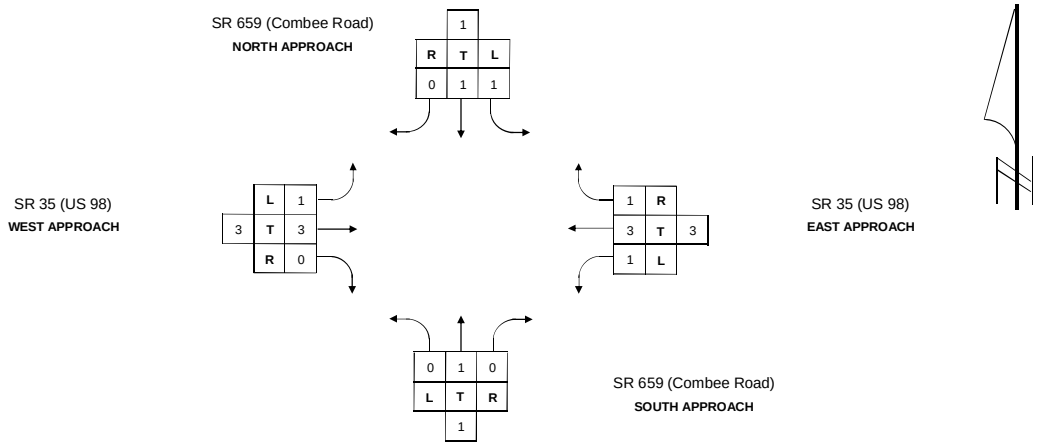
HEAVY VEHICLES (TRUCKS + BUSSES)

Direction	Northbound						Southbound							Eastbound						Westbound							
Start Time	**NBU**	**NBL**	**NBT**	**NBR**	**NBRTOR**	**Total**	**SBU**	**SBL**	**SBT**	**SBR**	**SBRTOR**	**Total**	**NS Total**	**EBU**	**EBL**	**EBT**	**EBR**	**EBRTOR**	**Total**	**WBU**	**WBL**	**WBT**	**WBR**	**WBRTOR**	**Total**	**EW Total**	**Grand Total**
7:00 AM	0	1	0	0	0	1	0	6	0	1	0	7	8	0	0	10	0	0	10	0	1	11	3	1	16	26	34
7:15 AM	0	0	0	0	0	0	0	6	0	0	2	8	8	0	3	8	0	0	11	0	0	19	4	2	25	36	44
7:30 AM	0	1	0	0	0	1	0	12	0	3	0	15	16	0	5	19	0	0	24	0	1	10	4	2	17	41	57
7:45 AM	0	0	0	0	0	0	0	10	0	1	2	13	13	0	3	15	0	0	18	0	0	21	1	1	23	41	54
Total	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**34**	**0**	**5**	**4**	**43**	**45**	**0**	**11**	**52**	**0**	**0**	**63**	**0**	**2**	**61**	**12**	**6**	**81**	**144**	**189**
8:00 AM	0	0	0	0	0	0	0	12	0	3	0	15	15	2	6	12	0	0	20	0	0	10	3	2	15	35	50
8:15 AM	0	0	1	0	0	1	0	10	0	4	0	14	15	0	7	13	1	0	21	0	0	6	5	4	15	36	51
8:30 AM	0	0	0	0	0	0	0	9	0	2	1	12	12	0	7	17	1	0	25	0	0	11	5	5	21	46	58
8:45 AM	0	0	0	0	0	0	0	13	0	2	1	16	16	0	1	13	0	0	14	1	0	13	2	6	22	36	52
Total	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**44**	**0**	**11**	**2**	**57**	**58**	**2**	**21**	**55**	**2**	**0**	**80**	**1**	**0**	**40**	**15**	**17**	**73**	**153**	**211**
12:00 PM	0	0	0	0	0	0	0	6	0	2	0	8	8	0	0	20	0	0	20	0	0	20	8	3	31	51	59
12:15 PM	0	0	0	0	0	0	0	8	0	1	1	10	10	0	2	14	0	0	16	0	1	25	4	3	33	49	59
12:30 PM	0	0	0	0	0	0	0	5	0	0	2	7	7	0	3	20	0	0	23	0	0	17	5	3	25	48	55
12:45 PM	0	0	0	0	0	0	0	16	0	2	0	18	18	0	7	26	0	0	33	0	0	31	4	7	42	75	93
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**35**	**0**	**5**	**3**	**43**	**43**	**0**	**12**	**80**	**0**	**0**	**92**	**0**	**1**	**93**	**21**	**16**	**131**	**223**	**266**
1:00 PM	0	0	0	0	0	0	0	3	0	1	0	4	4	0	7	19	0	0	26	0	0	19	3	4	26	52	56
1:15 PM	0	0	0	0	0	0	0	5	0	1	0	6	6	0	8	16	0	0	24	0	0	22	8	2	32	56	62
1:30 PM	0	0	0	0	0	0	0	6	0	2	0	8	8	0	2	15	0	0	17	0	0	35	11	4	50	67	75
1:45 PM	0	0	0	0	0	0	0	16	0	3	0	19	19	0	4	12	0	0	16	0	0	25	6	2	33	49	68
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**30**	**0**	**7**	**0**	**37**	**37**	**0**	**21**	**62**	**0**	**0**	**83**	**0**	**0**	**101**	**28**	**12**	**141**	**224**	**261**
2:00 PM	0	0	0	0	0	0	0	9	0	1	2	12	12	0	4	5	0	0	9	0	0	33	10	12	55	64	76
2:15 PM	0	0	0	0	0	0	0	1	0	1	0	2	2	0	3	11	0	0	14	0	0	24	10	2	36	50	52
2:30 PM	0	0	1	0	0	1	0	6	0	0	2	8	9	0	1	5	0	0	6	0	1	23	6	5	35	41	50
2:45 PM	0	0	0	0	0	0	0	11	0	0	1	12	12	0	6	8	0	0	14	0	0	19	10	3	32	46	58
Total	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**27**	**0**	**2**	**5**	**34**	**35**	**0**	**14**	**29**	**0**	**0**	**43**	**0**	**1**	**99**	**36**	**22**	**158**	**201**	**236**
3:00 PM	0	0	0	0	0	0	0	5	0	1	0	6	6	0	2	9	0	0	11	0	0	21	2	5	28	39	45
3:15 PM	0	0	0	0	0	0	0	5	0	1	0	6	6	1	4	14	0	0	19	0	0	12	11	1	24	43	49
3:30 PM	0	0	0	0	0	0	0	7	1	1	1	10	10	0	2	10	0	0	12	0	0	11	5	2	18	30	40
3:45 PM	0	0	1	0	0	1	0	2	0	1	0	3	4	0	2	10	1	0	13	0	1	13	2	2	18	31	35
Total	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**19**	**1**	**4**	**1**	**25**	**26**	**1**	**10**	**43**	**1**	**0**	**55**	**0**	**1**	**57**	**20**	**10**	**88**	**143**	**169**
4:00 PM	0	1	0	0	0	1	0	6	0	2	0	8	9	0	2	5	1	0	8	0	0	8	6	3	17	25	34
4:15 PM	0	0	0	0	0	0	0	9	1	1	0	11	11	0	4	3	1	0	8	0	0	9	8	5	22	30	41
4:30 PM	0	0	1	0	0	1	0	4	0	2	1	7	8	0	0	3	1	0	4	0	0	12	4	2	18	22	30
4:45 PM	0	1	0	0	0	1	0	5	1	1	2	9	10	0	3	10	1	0	14	0	0	7	6	3	16	30	40
Total	**0**	**2**	**1**	**0**	**0**	**3**	**0**	**24**	**2**	**6**	**3**	**35**	**38**	**0**	**9**	**21**	**4**	**0**	**34**	**0**	**0**	**36**	**24**	**13**	**73**	**107**	**145**
5:00 PM	0	0	0	0	0	0	0	4	0	1	0	5	5	0	1	5	0	0	6	0	0	8	3	1	12	18	23
5:15 PM	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	5	0	0	5	0	0	6	5	4	15	20	22
5:30 PM	0	0	0	0	0	0	0	4	0	0	0	4	4	0	1	4	0	0	5	0	0	9	0	2	11	16	20
5:45 PM	0	0	0	0	0	0	0	7	0	1	0	8	8	0	1	2	0	0	3	0	0	9	4	8	21	24	32
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**0**	**2**	**0**	**19**	**19**	**0**	**3**	**16**	**0**	**0**	**19**	**0**	**0**	**32**	**12**	**15**	**59**	**78**	**97**

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF VEHICLE MOVEMENTS

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	SR 35 (US 98)	**MILEPOST:**	0.000
OBSERVER:	FDA	**DATE:**	1/12/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
REMARKS:					



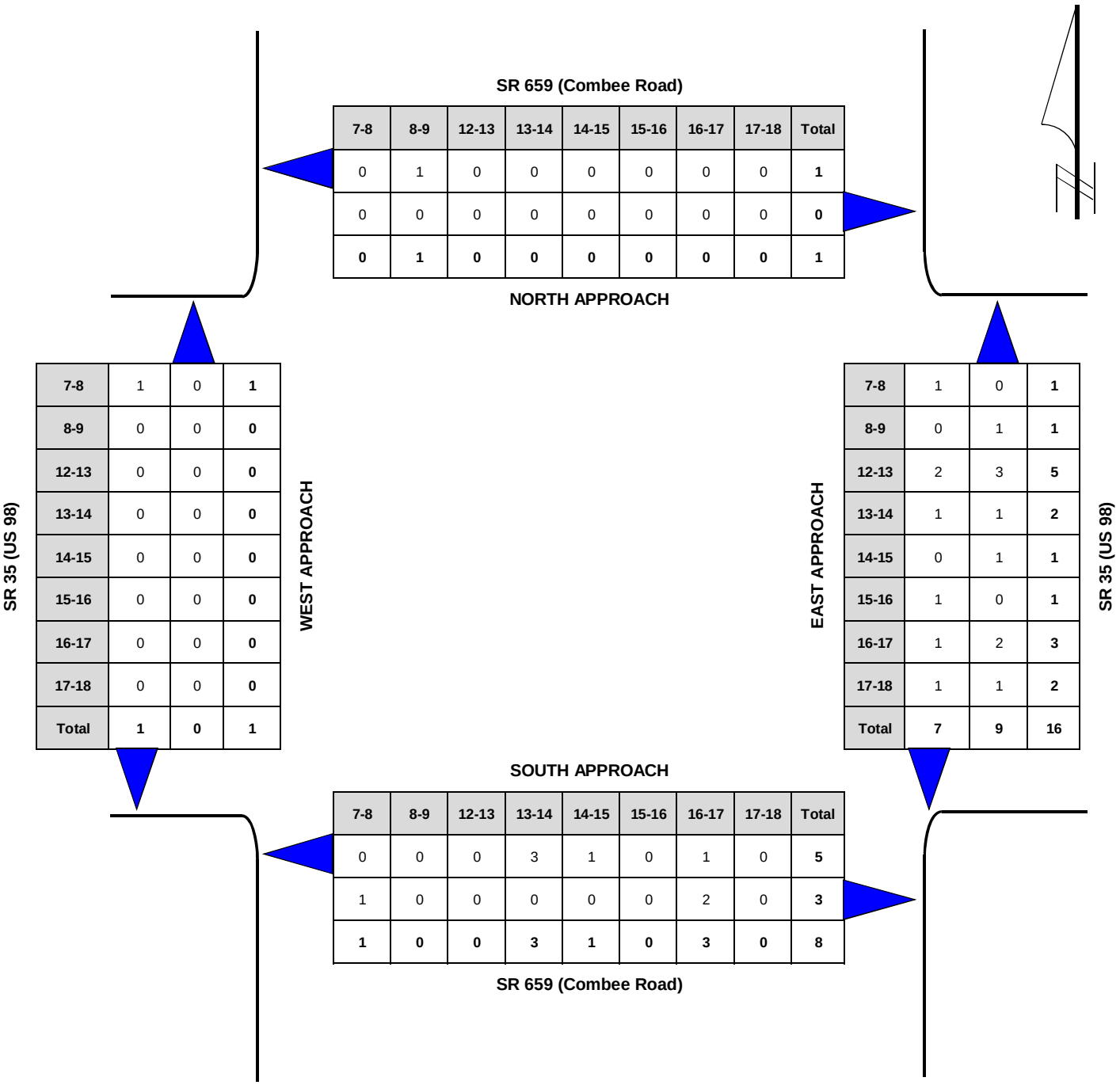
TIME	NORTHBOUND						SOUTHBOUND						TOTAL	EASTBOUND						WESTBOUND						TOTAL
BEGIN/END	U	L	T	R	RTOR	TOT	U	L	T	R	RTOR	TOT	N/S	U	L	T	R	RTOR	TOT	U	L	T	R	RTOR	TOT	E/W
7 - 8	0	10	8	0	1	**19**	0	284	0	90	50	**424**	**443**	1	185	1,217	4	0	**1,407**	6	2	1,427	267	180	**1,882**	**3,289**
8 - 9	0	10	4	0	2	**16**	0	293	1	125	39	**458**	**474**	4	171	1,112	7	0	**1,294**	6	2	1,267	150	159	**1,584**	**2,878**
12 - 13	0	13	16	3	2	**34**	0	244	2	93	114	**453**	**487**	5	213	1,191	6	1	**1,416**	5	6	1,196	132	126	**1,465**	**2,881**
13 - 14	0	13	10	1	2	**26**	0	229	6	111	38	**384**	**410**	5	216	982	18	0	**1,221**	3	4	1,240	164	88	**1,499**	**2,720**
14 - 15	0	19	13	2	5	**39**	0	283	12	84	99	**478**	**517**	6	209	947	25	1	**1,188**	6	7	1,325	189	105	**1,632**	**2,820**
15 - 16	0	14	10	2	0	**26**	0	313	5	132	61	**511**	**537**	10	212	1,218	14	0	**1,454**	5	5	1,182	166	103	**1,461**	**2,915**
16 - 17	0	22	9	1	0	**32**	0	415	8	124	84	**631**	**663**	2	201	1,545	20	0	**1,768**	7	7	1,144	211	69	**1,438**	**3,206**
17 - 18	0	23	13	4	3	**43**	0	408	6	137	62	**613**	**656**	7	205	1,547	23	1	**1,783**	4	3	1,208	149	122	**1,486**	**3,269**
TOTAL	0	124	83	13	15	**235**	0	2,469	40	896	547	**3,952**	**4,187**	40	1,612	9,759	117	3	**11,531**	42	36	9,989	1,428	952	**12,447**	**23,978**
Percentage	0.0%	52.8%	35.3%	5.5%	6.4%	100.0%	0.0%	62.5%	1.0%	22.7%	13.8%	100.0%	N/A	0.3%	14.0%	84.6%	1.0%	0.0%	100.0%	0.3%	0.3%	80.3%	11.5%	7.6%	100.0%	N/A
Maximum	0	23	16	4	5	43	0	415	12	137	114	631	663	10	216	1,547	25	1	1,783	7	7	1,427	267	180	1,882	3,289
Minimum	0	10	4	1	1	16	0	229	1	84	38	384	410	1	171	947	4	1	1,188	3	2	1,144	132	69	1,438	2,720
Total Heavy Veh	4		4	0	0	8	230		3	42	18	293	301	104		358	7	0	469	6		519	168	111	804	1,273
% Heavy Veh	3.2%		4.8%	0.0%		3.4%	9.3%		7.5%	4.2%		7.4%	7.2%	6.3%		3.7%	5.8%		4.1%	7.7%		5.2%	11.7%		6.5%	5.3%

FLORIDA DEPARTMENT OF TRANSPORTATION

PEDESTRIAN MOVEMENT SUMMARY

SECTION 16006000
STATE ROUTE SR 659 (Combee Road)
OBSERVER FDA
COUNTY Polk
MILEPOST 0.000
COUNT HOURS 7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM

CITY Lakeland
INTERSECTING ROUTE SR 35 (US 98)
DATE OF COUNT 1/12/16
WEATHER Good
COMPLETED BY DL
DATE 6/22/16



SR 659 (Combee Road) — NORTH APPROACH

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	1	0	0	0	0	0	0	**1**
0	0	0	0	0	0	0	0	**0**
0	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**

SR 35 (US 98) — WEST APPROACH

7-8	1	0	**1**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**1**	**0**	**1**

SR 35 (US 98) — EAST APPROACH

7-8	1	0	**1**
8-9	0	1	**1**
12-13	2	3	**5**
13-14	1	1	**2**
14-15	0	1	**1**
15-16	1	0	**1**
16-17	1	2	**3**
17-18	1	1	**2**
Total	**7**	**9**	**16**

SR 659 (Combee Road) — SOUTH APPROACH

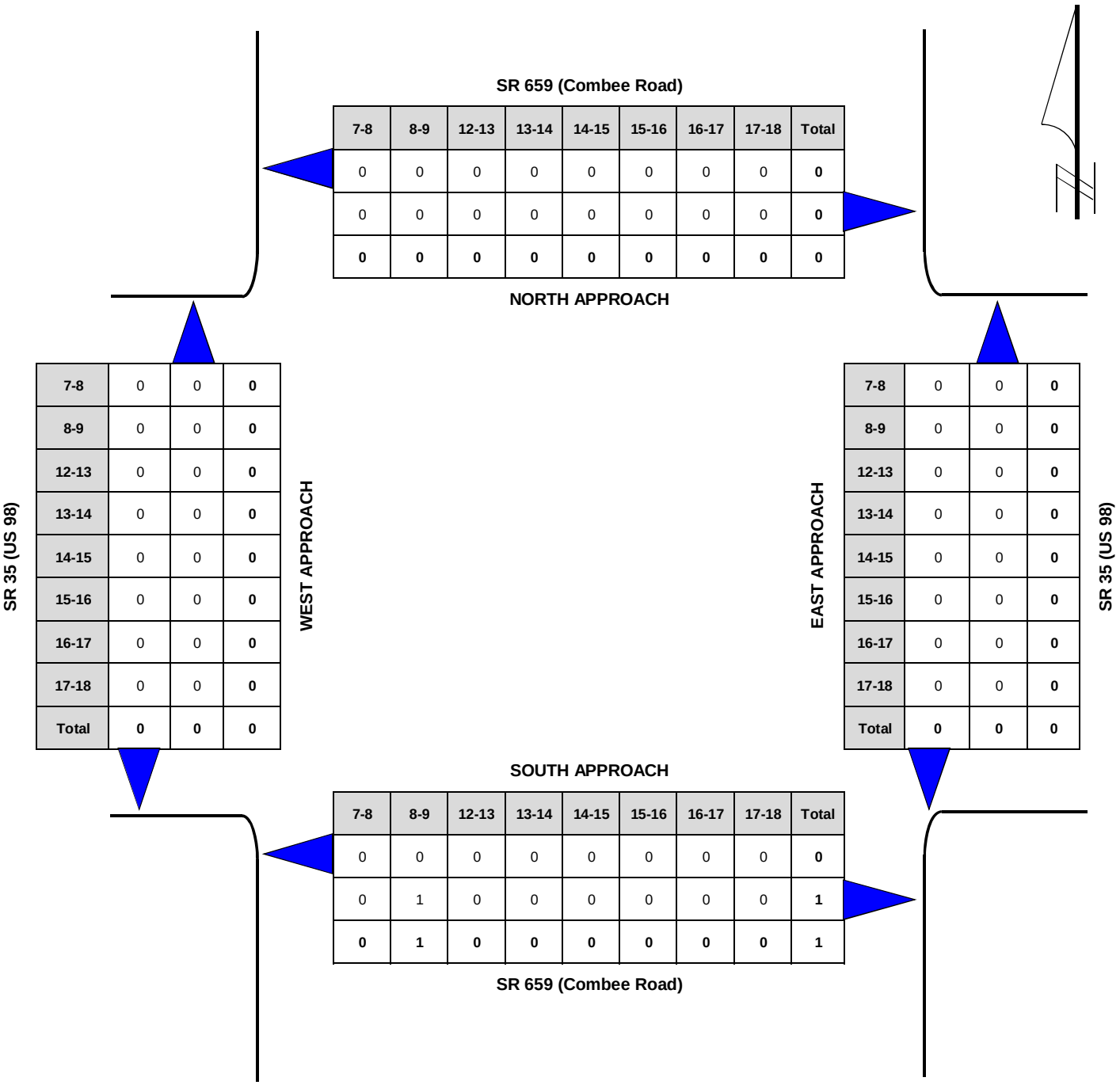
7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	3	1	0	1	0	**5**
1	0	0	0	0	0	2	0	**3**
1	**0**	**0**	**3**	**1**	**0**	**3**	**0**	**8**

FLORIDA DEPARTMENT OF TRANSPORTATION

BICYCLE MOVEMENT SUMMARY

SECTION 16006000
STATE ROUTE SR 659 (Combee Road)
OBSERVER FDA
COUNTY Polk
MILEPOST 0.000
COUNT HOURS 7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM

CITY Lakeland
INTERSECTING ROUTE SR 35 (US 98)
DATE OF COUNT 1/12/16
WEATHER Good
COMPLETED BY DL
DATE 6/22/16



NORTH APPROACH

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	0	0	**0**
0	0	0	0	0	0	0	0	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

WEST APPROACH

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

EAST APPROACH

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

SOUTH APPROACH

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	0	0	**0**
0	1	0	0	0	0	0	0	**1**
0	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**

VEHICLE TURNING MOVEMENT COUNT

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	Maine Avenue	**MILEPOST:**	0.215
OBSERVER:	FDA	**DATE OF COUNT:**	1/14/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
NORTH APPROACH:	SR 659 (Combee Road)	**EAST APPROACH:**	Maine Avenue		
SOUTH APPROACH:	SR 659 (Combee Road)	**WEST APPROACH:**	N/A		
		COUNT PERIODS:	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM		

ALL VEHICLES / ALL MOVEMENTS

Direction	Northbound						Southbound							Eastbound						Westbound							
Start Time	NBU	NBL	NBT	NBR	NBRTOR	Total	SBU	SBL	SBT	SBR	SBRTOR	Total	NS Total	EBU	EBL	EBT	EBR	EBRTOR	Total	WBU	WBL	WBT	WBR	WBRTOR	Total	EW Total	Grand Total
7:00 AM	0	0	96	24	1	121	0	29	78	0	0	107	228	0	0	0	0	0	0	0	13	0	6	12	31	31	259
7:15 AM	0	0	115	26	4	145	0	28	69	0	0	97	242	0	0	0	0	0	0	0	23	0	11	14	48	48	290
7:30 AM	0	0	141	37	1	179	0	37	112	0	0	149	328	0	0	0	0	0	0	0	30	0	25	22	77	77	405
7:45 AM	0	0	148	31	2	181	0	34	85	0	0	119	300	0	0	0	0	0	0	0	26	0	11	32	69	69	369
Total	**0**	**0**	**500**	**118**	**8**	**626**	**0**	**128**	**344**	**0**	**0**	**472**	**1,098**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**92**	**0**	**53**	**80**	**225**	**225**	**1,323**
8:00 AM	0	0	107	28	2	137	0	25	107	0	0	132	269	0	0	0	0	0	0	0	30	0	22	13	65	65	334
8:15 AM	0	0	107	19	1	127	0	20	92	0	0	112	239	0	0	0	0	0	0	0	24	0	10	15	49	49	288
8:30 AM	0	0	107	19	2	128	0	17	90	0	0	107	235	0	0	0	0	0	0	0	19	0	8	10	37	37	272
8:45 AM	0	0	89	12	2	103	0	21	88	0	0	109	212	0	0	0	0	0	0	0	20	0	9	20	49	49	261
Total	**0**	**0**	**410**	**78**	**7**	**495**	**0**	**83**	**377**	**0**	**0**	**460**	**955**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**93**	**0**	**49**	**58**	**200**	**200**	**1,155**
12:00 PM	0	0	102	20	1	123	0	30	85	0	0	115	238	0	0	0	0	0	0	0	29	0	14	25	68	68	306
12:15 PM	0	0	100	20	1	121	1	35	78	0	0	114	235	0	0	0	0	0	0	0	27	0	9	19	55	55	290
12:30 PM	0	0	97	24	3	124	0	25	112	0	0	137	261	0	0	0	0	0	0	0	22	0	6	11	39	39	300
12:45 PM	0	0	107	26	1	134	0	23	103	0	0	126	260	0	0	0	0	0	0	0	16	0	6	18	40	40	300
Total	**0**	**0**	**406**	**90**	**6**	**502**	**1**	**113**	**378**	**0**	**0**	**492**	**994**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**94**	**0**	**35**	**73**	**202**	**202**	**1,196**
1:00 PM	0	0	88	23	4	115	0	26	83	0	0	109	224	0	0	0	0	0	0	0	19	0	17	7	43	43	267
1:15 PM	0	0	99	25	0	124	0	23	75	0	0	98	222	0	0	0	0	0	0	0	28	0	14	14	56	56	278
1:30 PM	0	0	96	29	1	126	0	27	84	0	0	111	237	0	0	0	0	0	0	0	16	0	27	5	48	48	285
1:45 PM	0	0	96	18	3	117	0	16	89	0	0	105	222	0	0	0	0	0	0	0	21	0	17	7	45	45	267
Total	**0**	**0**	**379**	**95**	**8**	**482**	**0**	**92**	**331**	**0**	**0**	**423**	**905**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**84**	**0**	**75**	**33**	**192**	**192**	**1,097**
2:00 PM	0	0	115	17	1	133	0	21	105	0	0	126	259	0	0	0	0	0	0	0	19	0	4	21	44	44	303
2:15 PM	1	0	100	22	2	125	0	27	104	0	0	131	256	0	0	0	0	0	0	0	10	0	3	21	34	34	290
2:30 PM	0	0	108	15	1	124	0	34	82	0	0	116	240	0	0	0	0	0	0	0	26	0	14	26	66	66	306
2:45 PM	0	0	110	30	2	142	0	37	106	0	0	143	285	0	0	0	0	0	0	0	22	0	12	27	61	61	346
Total	**1**	**0**	**433**	**84**	**6**	**524**	**0**	**119**	**397**	**0**	**0**	**516**	**1,040**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**77**	**0**	**33**	**95**	**205**	**205**	**1,245**
3:00 PM	0	0	100	15	2	117	0	31	106	0	0	137	254	0	0	0	0	0	0	0	30	0	27	42	99	99	353
3:15 PM	0	0	114	25	5	144	0	21	102	0	0	123	267	0	0	0	0	0	0	0	29	0	5	18	52	52	319
3:30 PM	0	0	124	19	7	150	0	26	110	0	0	136	286	0	0	0	0	0	0	0	37	0	25	35	97	97	383
3:45 PM	0	0	128	22	3	153	0	24	121	0	0	145	298	0	0	0	0	0	0	0	20	0	8	28	56	56	354
Total	**0**	**0**	**466**	**81**	**17**	**564**	**0**	**102**	**439**	**0**	**0**	**541**	**1,105**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**116**	**0**	**65**	**123**	**304**	**304**	**1,409**
4:00 PM	0	0	98	12	2	112	0	33	139	0	0	172	284	0	0	0	0	0	0	0	25	0	6	36	67	67	351
4:15 PM	0	0	111	20	3	134	0	28	136	0	0	164	298	0	0	0	0	0	0	0	34	0	9	19	62	62	360
4:30 PM	0	0	91	19	1	111	0	28	132	0	0	160	271	0	0	0	0	0	0	0	29	0	9	25	63	63	334
4:45 PM	0	0	101	25	2	128	0	25	136	0	0	161	289	0	0	0	0	0	0	0	36	0	7	29	72	72	361
Total	**0**	**0**	**401**	**76**	**8**	**485**	**0**	**114**	**543**	**0**	**0**	**657**	**1,142**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**124**	**0**	**31**	**109**	**264**	**264**	**1,406**
5:00 PM	0	0	92	29	0	121	0	37	173	0	0	210	331	0	0	0	0	0	0	0	33	0	11	34	78	78	409
5:15 PM	0	0	97	27	4	128	0	26	120	0	0	146	274	0	0	0	0	0	0	0	23	0	7	27	57	57	331
5:30 PM	0	0	100	19	5	124	0	30	108	0	0	138	262	0	0	0	0	0	0	0	20	0	8	27	55	55	317
5:45 PM	0	0	102	24	0	126	0	22	111	0	0	133	259	0	0	0	0	0	0	0	29	0	1	28	58	58	317
Total	**0**	**0**	**391**	**99**	**9**	**499**	**0**	**115**	**512**	**0**	**0**	**627**	**1,126**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**105**	**0**	**27**	**116**	**248**	**248**	**1,374**

VEHICLE TURNING MOVEMENT COUNT

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	Maine Avenue	**MILEPOST:**	0.215
OBSERVER:	FDA	**DATE OF COUNT:**	1/14/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
NORTH APPROACH:	SR 659 (Combee Road)	**EAST APPROACH:**	Maine Avenue		
SOUTH APPROACH:	SR 659 (Combee Road)	**WEST APPROACH:**	N/A		
		COUNT PERIODS:	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM		

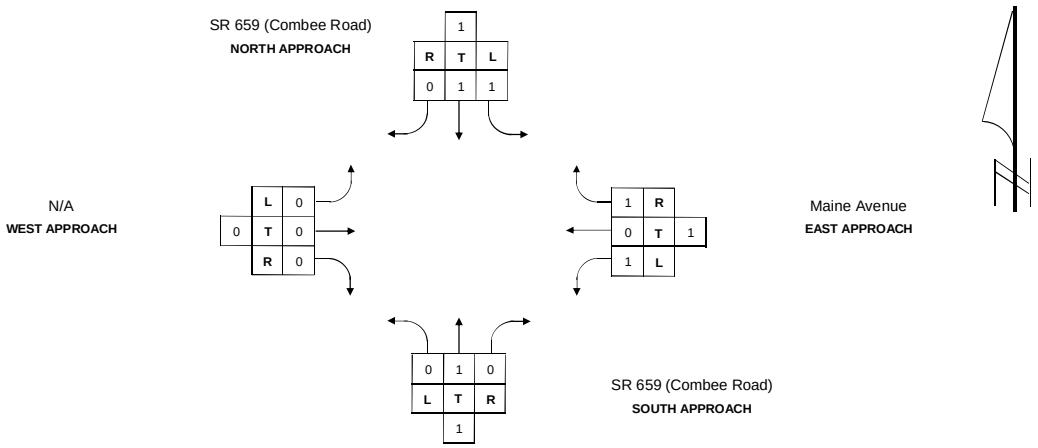
HEAVY VEHICLES (TRUCKS + BUSSES)

Direction	Northbound						Southbound							Eastbound						Westbound							
Start Time	NBU	NBL	NBT	NBR	NBRTOR	Total	SBU	SBL	SBT	SBR	SBRTOR	Total	NS Total	EBU	EBL	EBT	EBR	EBRTOR	Total	WBU	WBL	WBT	WBR	WBRTOR	Total	EW Total	Grand Total
7:00 AM	0	0	7	1	0	8	0	1	12	0	0	13	21	0	0	0	0	0	0	0	0	0	0	1	1	1	22
7:15 AM	0	0	7	0	0	7	0	3	3	0	0	6	13	0	0	0	0	0	0	0	3	0	2	5	10	10	23
7:30 AM	0	0	12	2	0	14	0	1	13	0	0	14	28	0	0	0	0	0	0	0	2	0	3	2	7	7	35
7:45 AM	0	0	7	2	0	9	0	3	10	0	0	13	22	0	0	0	0	0	0	0	4	0	0	1	5	5	27
Total	**0**	**0**	**33**	**5**	**0**	**38**	**0**	**8**	**38**	**0**	**0**	**46**	**84**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**5**	**9**	**23**	**23**	**107**
8:00 AM	0	0	8	1	0	9	0	5	14	0	0	19	28	0	0	0	0	0	0	0	7	0	4	1	12	12	40
8:15 AM	0	0	12	5	0	17	0	1	12	0	0	13	30	0	0	0	0	0	0	0	5	0	1	1	7	7	37
8:30 AM	0	0	12	4	0	16	0	4	11	0	0	15	31	0	0	0	0	0	0	0	3	0	3	1	7	7	38
8:45 AM	0	0	8	2	0	10	0	2	10	0	0	12	22	0	0	0	0	0	0	0	4	0	1	2	7	7	29
Total	**0**	**0**	**40**	**12**	**0**	**52**	**0**	**12**	**47**	**0**	**0**	**59**	**111**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**19**	**0**	**9**	**5**	**33**	**33**	**144**
12:00 PM	0	0	7	4	0	11	0	4	6	0	0	10	21	0	0	0	0	0	0	0	1	0	3	3	7	7	28
12:15 PM	0	0	7	2	0	9	0	2	7	0	0	9	18	0	0	0	0	0	0	0	4	0	1	0	5	5	23
12:30 PM	0	0	9	2	0	11	0	2	7	0	0	9	20	0	0	0	0	0	0	0	3	0	2	0	5	5	25
12:45 PM	0	0	10	5	0	15	0	2	12	0	0	14	29	0	0	0	0	0	0	0	2	0	2	2	6	6	35
Total	**0**	**0**	**33**	**13**	**0**	**46**	**0**	**10**	**32**	**0**	**0**	**42**	**88**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**8**	**5**	**23**	**23**	**111**
1:00 PM	0	0	9	6	0	15	0	1	4	0	0	5	20	0	0	0	0	0	0	0	1	0	2	1	4	4	24
1:15 PM	0	0	14	4	0	18	0	4	5	0	0	9	27	0	0	0	0	0	0	0	2	0	2	1	5	5	32
1:30 PM	0	0	10	6	1	17	0	5	5	0	0	10	27	0	0	0	0	0	0	0	1	0	5	0	6	6	33
1:45 PM	0	0	10	2	0	12	0	1	14	0	0	15	27	0	0	0	0	0	0	0	7	0	2	3	12	12	39
Total	**0**	**0**	**43**	**18**	**1**	**62**	**0**	**11**	**28**	**0**	**0**	**39**	**101**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**11**	**5**	**27**	**27**	**128**
2:00 PM	0	0	22	3	0	25	0	0	9	0	0	9	34	0	0	0	0	0	0	0	1	0	0	1	2	2	36
2:15 PM	0	0	14	4	0	18	0	2	3	0	0	5	23	0	0	0	0	0	0	0	1	0	0	2	3	3	26
2:30 PM	0	0	11	2	0	13	0	4	11	0	0	15	28	0	0	0	0	0	0	0	3	0	2	0	5	5	33
2:45 PM	0	0	14	6	0	20	0	5	9	0	0	14	34	0	0	0	0	0	0	0	3	0	0	4	7	7	41
Total	**0**	**0**	**61**	**15**	**0**	**76**	**0**	**11**	**32**	**0**	**0**	**43**	**119**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**2**	**7**	**17**	**17**	**136**
3:00 PM	0	0	6	3	2	11	0	6	4	0	0	10	21	0	0	0	0	0	0	0	1	0	0	0	1	1	22
3:15 PM	0	0	11	2	1	14	0	2	8	0	0	10	24	0	0	0	0	0	0	0	1	0	1	2	4	4	28
3:30 PM	0	0	9	3	0	12	0	7	7	0	0	14	26	0	0	0	0	0	0	0	2	0	5	3	10	10	36
3:45 PM	0	0	9	2	1	12	0	5	5	0	0	10	22	0	0	0	0	0	0	0	0	0	0	2	2	2	24
Total	**0**	**0**	**35**	**10**	**4**	**49**	**0**	**20**	**24**	**0**	**0**	**44**	**93**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**6**	**7**	**17**	**17**	**110**
4:00 PM	0	0	8	3	0	11	0	4	7	0	0	11	22	0	0	0	0	0	0	0	1	0	1	1	3	3	25
4:15 PM	0	0	10	4	1	15	0	3	6	0	0	9	24	0	0	0	0	0	0	0	1	0	0	1	2	2	26
4:30 PM	0	0	4	4	0	8	0	3	4	0	0	7	15	0	0	0	0	0	0	0	1	0	1	1	3	3	18
4:45 PM	0	0	8	3	0	11	0	3	4	0	0	7	18	0	0	0	0	0	0	0	5	0	1	1	7	7	25
Total	**0**	**0**	**30**	**14**	**1**	**45**	**0**	**13**	**21**	**0**	**0**	**34**	**79**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**3**	**4**	**15**	**15**	**94**
5:00 PM	0	0	4	3	0	7	0	8	2	0	0	10	17	0	0	0	0	0	0	0	2	0	0	3	5	5	22
5:15 PM	0	0	3	3	1	7	0	3	3	0	0	6	13	0	0	0	0	0	0	0	0	0	0	0	0	0	13
5:30 PM	0	0	2	1	0	3	0	2	0	0	0	2	5	0	0	0	0	0	0	0	1	0	1	0	2	2	7
5:45 PM	0	0	7	3	0	10	0	2	8	0	0	10	20	0	0	0	0	0	0	0	0	0	0	0	0	0	20
Total	**0**	**0**	**16**	**10**	**1**	**27**	**0**	**15**	**13**	**0**	**0**	**28**	**55**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**3**	**7**	**7**	**62**

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF VEHICLE MOVEMENTS

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	Maine Avenue	**MILEPOST:**	0.215
OBSERVER:	FDA	**DATE:**	1/14/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
REMARKS:					



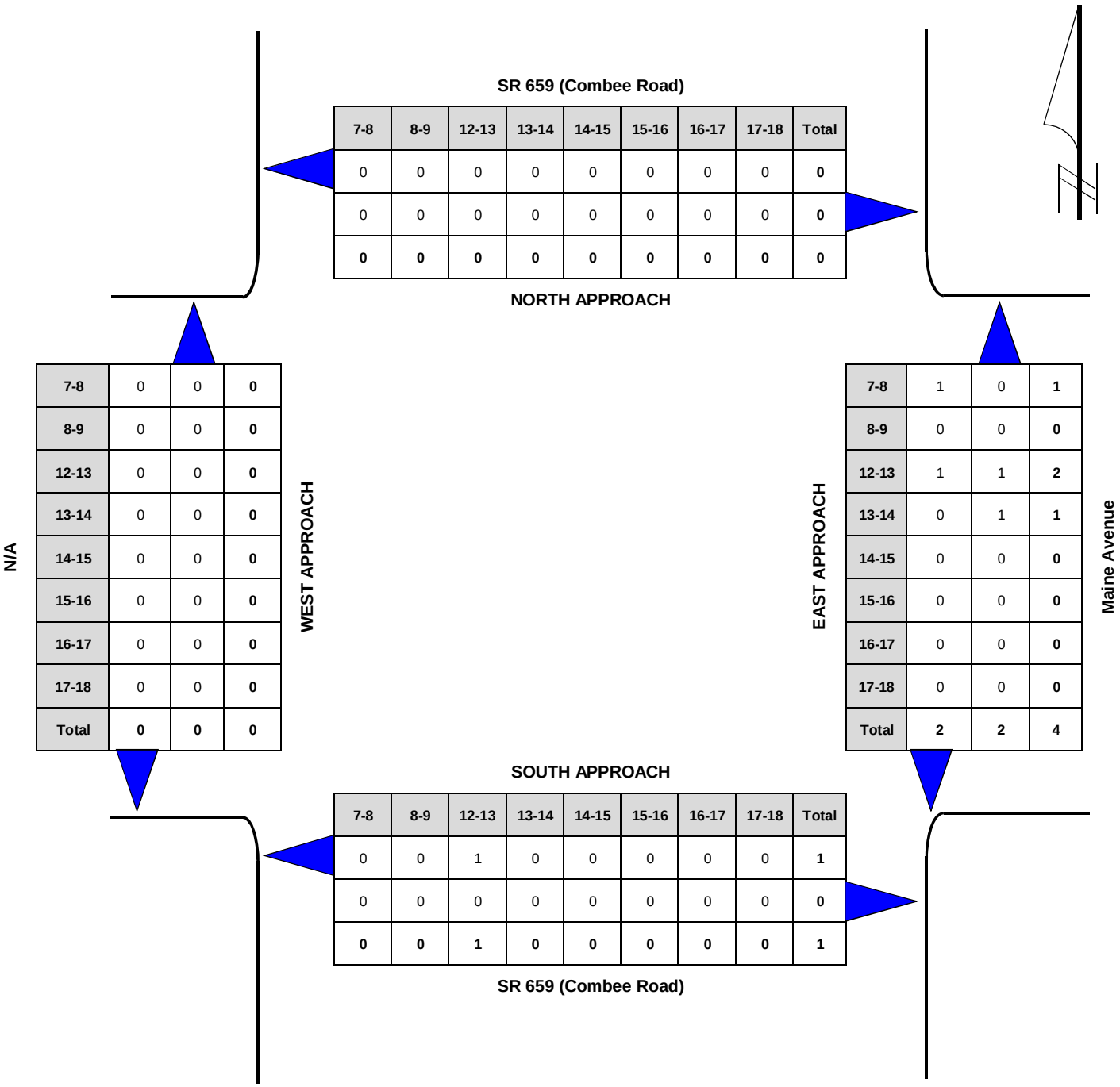
TIME	NORTHBOUND						SOUTHBOUND						TOTAL	EASTBOUND						WESTBOUND						TOTAL
BEGIN/END	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**N/S**	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**E/W**
7 - 8	0	0	500	118	8	**626**	0	128	344	0	0	**472**	**1,098**	0	0	0	0	0	**0**	0	92	0	53	80	**225**	**225**
8 - 9	0	0	410	78	7	**495**	0	83	377	0	0	**460**	**955**	0	0	0	0	0	**0**	0	93	0	49	58	**200**	**200**
12 - 13	0	0	406	90	6	**502**	1	113	378	0	0	**492**	**994**	0	0	0	0	0	**0**	0	94	0	35	73	**202**	**202**
13 - 14	0	0	379	95	8	**482**	0	92	331	0	0	**423**	**905**	0	0	0	0	0	**0**	0	84	0	75	33	**192**	**192**
14 - 15	1	0	433	84	6	**524**	0	119	397	0	0	**516**	**1,040**	0	0	0	0	0	**0**	0	77	0	33	95	**205**	**205**
15 - 16	0	0	466	81	17	**564**	0	102	439	0	0	**541**	**1,105**	0	0	0	0	0	**0**	0	116	0	65	123	**304**	**304**
16 - 17	0	0	401	76	8	**485**	0	114	543	0	0	**657**	**1,142**	0	0	0	0	0	**0**	0	124	0	31	109	**264**	**264**
17 - 18	0	0	391	99	9	**499**	0	115	512	0	0	**627**	**1,126**	0	0	0	0	0	**0**	0	105	0	27	116	**248**	**248**
TOTAL	1	0	3,386	721	69	**4,177**	1	866	3,321	0	0	**4,188**	**8,365**	0	0	0	0	0	**0**	0	785	0	368	687	**1,840**	**1,840**
Percentage	0.0%	0.0%	81.1%	17.3%	1.7%	100.0%	0.0%	20.7%	79.3%	0.0%	0.0%	100.0%	N/A	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	42.7%	0.0%	20.0%	37.3%	100.0%	N/A
Maximum	1	0	500	118	17	626	1	128	543	0	0	657	1,142	0	0	0	0	0	0	0	124	0	75	123	304	304
Minimum	1	0	379	76	6	482	1	83	331	0	0	423	905	0	0	0	0	0	0	0	77	0	27	33	192	192
Total Heavy Veh	0		291	97	7	395	100		235	0	0	335	730	0		0	0	0	0	72		0	45	45	162	162
% Heavy Veh	0.0%		8.6%	13.2%		9.5%	11.5%		7.1%	0.0%		8.0%	8.7%	0.0%		0.0%	0.0%		0.0%	9.2%		0.0%	8.5%		8.8%	8.8%

FLORIDA DEPARTMENT OF TRANSPORTATION

PEDESTRIAN MOVEMENT SUMMARY

SECTION 16006000
STATE ROUTE SR 659 (Combee Road)
OBSERVER FDA
COUNTY Polk
MILEPOST 0.215
COUNT HOURS 7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM

CITY Lakeland
INTERSECTING ROUTE Maine Avenue
DATE OF COUNT 1/14/16
WEATHER Good
COMPLETED BY DL
DATE 6/22/16



7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	0	0	**0**
0	0	0	0	0	0	0	0	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

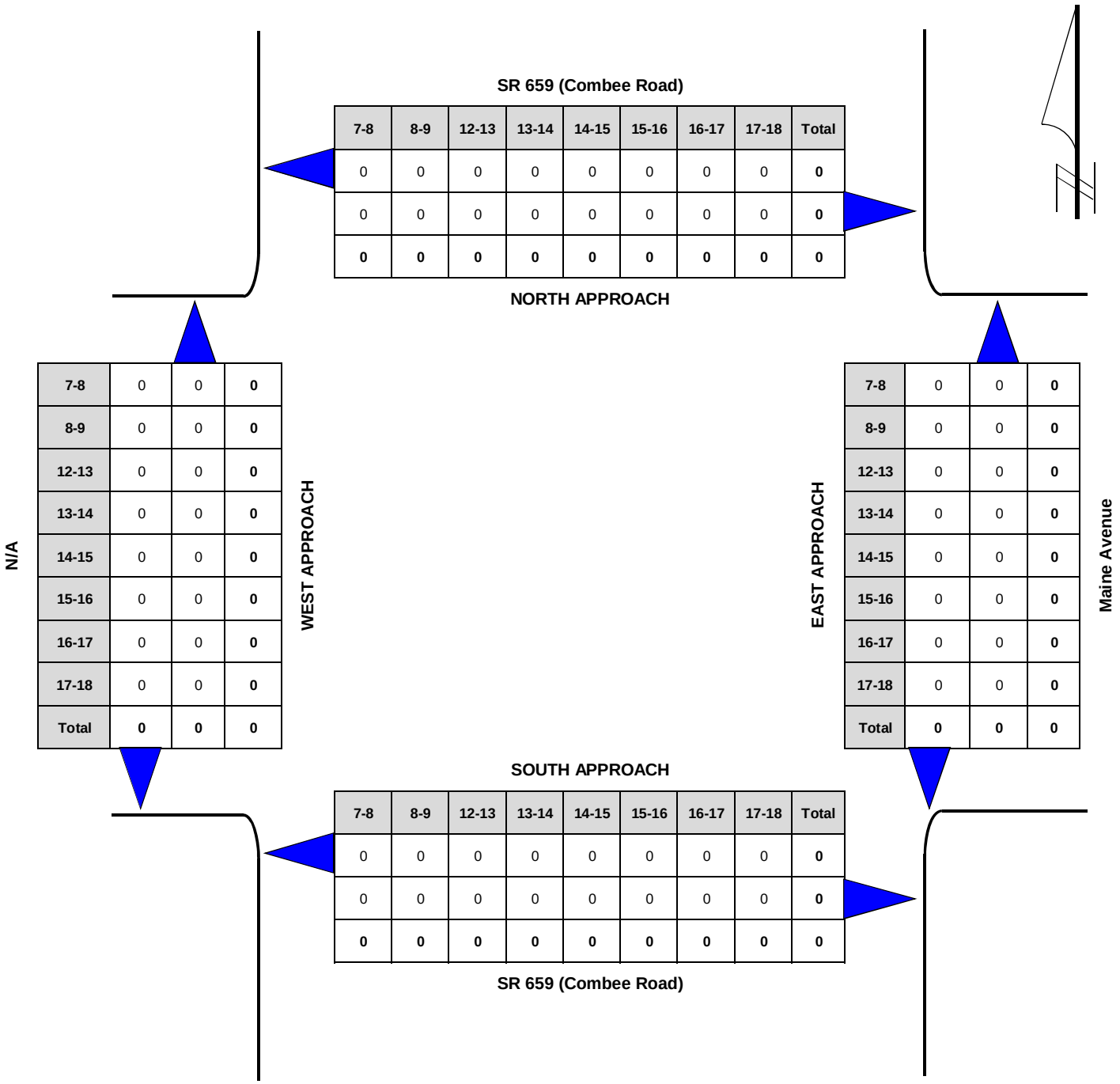
7-8	1	0	**1**
8-9	0	0	**0**
12-13	1	1	**2**
13-14	0	1	**1**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**2**	**2**	**4**

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	1	0	0	0	0	0	**1**
0	0	0	0	0	0	0	0	**0**
0	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**

FLORIDA DEPARTMENT OF TRANSPORTATION

BICYCLE MOVEMENT SUMMARY

SECTION	16006000	**CITY**	Lakeland
STATE ROUTE	SR 659 (Combee Road)	**INTERSECTING ROUTE**	Maine Avenue
OBSERVER	FDA	**DATE OF COUNT**	1/14/16
COUNTY	Polk	**WEATHER**	Good
MILEPOST	0.215	**COMPLETED BY**	DL
COUNT HOURS	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM	**DATE**	6/22/16



7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	0	0	**0**
0	0	0	0	0	0	0	0	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	0	0	**0**
0	0	0	0	0	0	0	0	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

VEHICLE TURNING MOVEMENT COUNT

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	Commerce Point Drive	**MILEPOST:**	0.596
OBSERVER:	FDA	**DATE OF COUNT:**	1/12/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
NORTH APPROACH:	SR 659 (Combee Road)	**EAST APPROACH:**	Commerce Point Drive		
SOUTH APPROACH:	SR 659 (Combee Road)	**WEST APPROACH:**	Commerce Point Drive		
		COUNT PERIODS:	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM		

ALL VEHICLES / ALL MOVEMENTS

Direction	Northbound						Southbound							Eastbound						Westbound							
Start Time	NBU	NBL	NBT	NBR	NBRTOR	Total	SBU	SBL	SBT	SBR	SBRTOR	Total	NS Total	EBU	EBL	EBT	EBR	EBRTOR	Total	WBU	WBL	WBT	WBR	WBRTOR	Total	EW Total	Grand Total
7:00 AM	0	15	65	1	0	81	0	2	94	16	1	113	194	0	26	0	12	15	53	0	0	0	0	1	1	54	248
7:15 AM	0	20	99	3	0	122	0	2	109	35	5	151	273	0	29	0	5	12	46	0	0	0	0	0	0	46	319
7:30 AM	0	26	124	2	0	152	0	3	127	52	3	185	337	0	23	0	3	23	49	0	0	0	0	2	2	51	388
7:45 AM	0	41	127	1	0	169	0	2	110	48	0	160	329	0	35	0	12	12	59	0	2	0	2	1	5	64	393
Total	**0**	**102**	**415**	**7**	**0**	**524**	**0**	**9**	**440**	**151**	**9**	**609**	**1,133**	**0**	**113**	**0**	**32**	**62**	**207**	**0**	**2**	**0**	**2**	**4**	**8**	**215**	**1,348**
8:00 AM	0	37	103	2	0	142	0	0	105	33	1	139	281	0	40	0	5	18	63	0	0	0	0	3	3	66	347
8:15 AM	0	26	83	2	0	111	0	1	100	32	1	134	245	0	45	0	5	12	62	0	0	0	0	0	0	62	307
8:30 AM	0	13	92	4	0	109	0	2	92	35	0	129	238	0	33	0	3	6	42	0	1	0	0	2	3	45	283
8:45 AM	0	21	87	0	0	108	0	0	92	28	0	120	228	0	24	0	4	11	39	0	0	0	1	3	4	43	271
Total	**0**	**97**	**365**	**8**	**0**	**470**	**0**	**3**	**389**	**128**	**2**	**522**	**992**	**0**	**142**	**0**	**17**	**47**	**206**	**0**	**1**	**0**	**1**	**8**	**10**	**216**	**1,208**
12:00 PM	0	28	106	2	0	136	0	2	102	34	1	139	275	0	44	0	2	12	58	0	2	0	1	0	3	61	336
12:15 PM	0	33	93	1	0	127	0	2	89	42	1	134	261	0	35	0	12	21	68	0	2	0	1	1	4	72	333
12:30 PM	0	16	88	0	0	104	0	2	101	40	1	144	248	0	39	0	10	14	63	0	0	0	1	2	3	66	314
12:45 PM	0	23	98	3	0	124	0	1	98	21	2	122	246	0	43	0	9	15	67	0	0	0	0	0	0	67	313
Total	**0**	**100**	**385**	**6**	**0**	**491**	**0**	**7**	**390**	**137**	**5**	**539**	**1,030**	**0**	**161**	**0**	**33**	**62**	**256**	**0**	**4**	**0**	**3**	**3**	**10**	**266**	**1,296**
1:00 PM	0	18	82	1	0	101	0	2	100	15	9	126	227	0	44	0	9	13	66	0	0	0	1	2	3	69	296
1:15 PM	0	22	82	0	0	104	0	1	75	22	3	101	205	0	28	0	3	12	43	0	0	0	0	0	0	43	248
1:30 PM	0	26	100	2	0	128	0	1	95	25	2	123	251	0	46	0	5	11	62	0	0	0	2	0	2	64	315
1:45 PM	0	24	89	2	0	115	0	1	84	39	3	127	242	0	20	0	5	12	37	0	1	0	1	0	2	39	281
Total	**0**	**90**	**353**	**5**	**0**	**448**	**0**	**5**	**354**	**101**	**17**	**477**	**925**	**0**	**138**	**0**	**22**	**48**	**208**	**0**	**1**	**0**	**4**	**2**	**7**	**215**	**1,140**
2:00 PM	0	19	105	1	0	125	0	2	115	29	5	151	276	0	43	0	12	8	63	0	0	0	2	3	5	68	344
2:15 PM	0	15	96	0	0	111	0	0	97	37	2	136	247	0	43	0	3	9	55	0	2	0	0	1	3	58	305
2:30 PM	0	16	119	0	0	135	0	3	97	37	4	141	276	0	42	0	7	16	65	0	1	0	0	2	3	68	344
2:45 PM	0	16	121	1	0	138	0	0	114	40	2	156	294	0	43	0	15	14	72	0	0	0	0	2	2	74	368
Total	**0**	**66**	**441**	**2**	**0**	**509**	**0**	**5**	**423**	**143**	**13**	**584**	**1,093**	**0**	**171**	**0**	**37**	**47**	**255**	**0**	**3**	**0**	**2**	**8**	**13**	**268**	**1,361**
3:00 PM	0	43	139	0	0	182	0	1	107	32	0	140	322	0	42	0	10	3	55	0	0	0	1	1	2	57	379
3:15 PM	0	15	119	0	0	134	0	0	106	29	6	141	275	0	51	0	7	8	66	0	3	0	0	1	4	70	345
3:30 PM	0	39	146	1	0	186	0	1	100	29	2	132	318	0	47	0	7	10	64	0	0	0	2	0	2	66	384
3:45 PM	0	21	143	1	0	165	0	1	125	34	1	161	326	0	41	0	8	3	52	0	2	0	0	0	2	54	380
Total	**0**	**118**	**547**	**2**	**0**	**667**	**0**	**3**	**438**	**124**	**9**	**574**	**1,241**	**0**	**181**	**0**	**32**	**24**	**237**	**0**	**5**	**0**	**3**	**2**	**10**	**247**	**1,488**
4:00 PM	0	39	138	1	0	178	0	1	122	42	5	170	348	0	40	0	5	10	55	0	1	0	1	3	5	60	408
4:15 PM	0	27	121	0	0	148	0	0	109	34	0	143	291	0	40	0	4	11	55	0	0	0	0	3	3	58	349
4:30 PM	0	29	114	0	0	143	0	0	104	27	1	132	275	0	62	0	10	18	90	0	1	0	0	1	2	92	367
4:45 PM	0	30	117	0	0	147	0	0	103	45	0	148	295	0	53	0	16	11	80	0	1	0	1	0	2	82	377
Total	**0**	**125**	**490**	**1**	**0**	**616**	**0**	**1**	**438**	**148**	**6**	**593**	**1,209**	**0**	**195**	**0**	**35**	**50**	**280**	**0**	**3**	**0**	**2**	**7**	**12**	**292**	**1,501**
5:00 PM	0	30	138	0	0	168	0	0	150	40	0	190	358	0	49	0	26	18	93	0	4	0	1	0	5	98	456
5:15 PM	0	16	112	0	0	128	0	0	106	36	0	142	270	0	33	0	3	14	50	0	2	0	0	0	2	52	322
5:30 PM	0	29	115	0	0	144	0	0	118	39	0	157	301	0	44	0	3	14	61	0	1	0	0	1	2	63	364
5:45 PM	0	15	110	1	0	126	0	0	99	21	0	120	246	0	34	0	9	7	50	0	0	0	0	0	0	50	296
Total	**0**	**90**	**475**	**1**	**0**	**566**	**0**	**0**	**473**	**136**	**0**	**609**	**1,175**	**0**	**160**	**0**	**41**	**53**	**254**	**0**	**7**	**0**	**1**	**1**	**9**	**263**	**1,438**

VEHICLE TURNING MOVEMENT COUNT

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	Commerce Point Drive	**MILEPOST:**	0.596
OBSERVER:	FDA	**DATE OF COUNT:**	1/12/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
NORTH APPROACH:	SR 659 (Combee Road)	**EAST APPROACH:**	Commerce Point Drive		
SOUTH APPROACH:	SR 659 (Combee Road)	**WEST APPROACH:**	Commerce Point Drive		
		COUNT PERIODS:	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM		

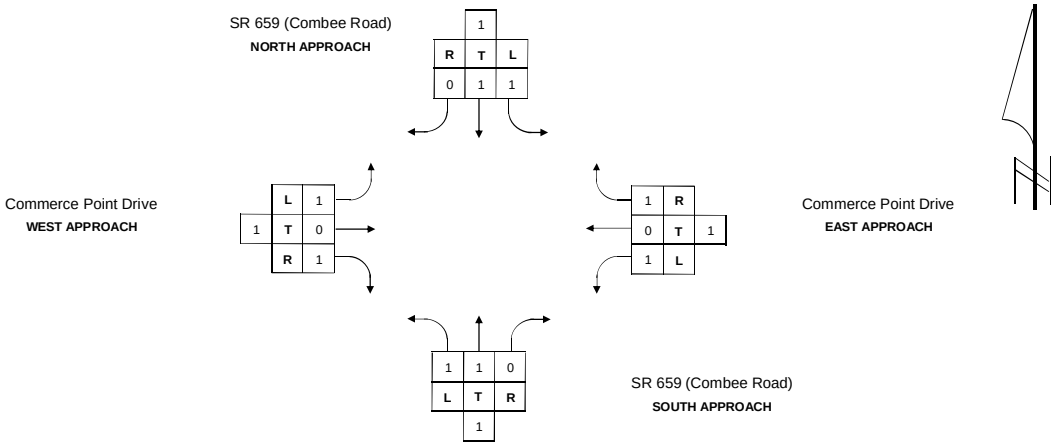
HEAVY VEHICLES (TRUCKS + BUSSES)

Direction	Northbound						Southbound							Eastbound						Westbound							
Start Time	**NBU**	**NBL**	**NBT**	**NBR**	**NBRTOR**	**Total**	**SBU**	**SBL**	**SBT**	**SBR**	**SBRTOR**	**Total**	**NS Total**	**EBU**	**EBL**	**EBT**	**EBR**	**EBRTOR**	**Total**	**WBU**	**WBL**	**WBT**	**WBR**	**WBRTOR**	**Total**	**EW Total**	**Grand Total**
7:00 AM	0	1	6	1	0	8	0	0	9	2	0	11	19	0	1	0	1	3	5	0	0	0	0	1	1	6	25
7:15 AM	0	0	11	0	0	11	0	0	9	2	1	12	23	0	1	0	0	0	1	0	0	0	0	0	0	1	24
7:30 AM	0	2	10	1	0	13	0	0	10	3	0	13	26	0	2	0	0	0	2	0	0	0	0	0	0	2	28
7:45 AM	0	0	5	0	0	5	0	0	17	1	0	18	23	0	2	0	0	0	2	0	0	0	0	0	0	2	25
Total	**0**	**3**	**32**	**2**	**0**	**37**	**0**	**0**	**45**	**8**	**1**	**54**	**91**	**0**	**6**	**0**	**1**	**3**	**10**	**0**	**0**	**0**	**0**	**1**	**1**	**11**	**102**
8:00 AM	0	3	16	0	0	19	0	0	11	0	0	11	30	0	1	0	0	3	4	0	0	0	0	0	0	4	34
8:15 AM	0	0	12	0	0	12	0	0	10	0	0	10	22	0	4	0	0	1	5	0	0	0	0	0	0	5	27
8:30 AM	0	0	14	0	0	14	0	0	10	4	0	14	28	0	0	0	1	0	1	0	0	0	0	0	0	1	29
8:45 AM	0	2	8	0	0	10	0	0	11	3	0	14	24	0	1	0	1	0	2	0	0	0	0	1	1	3	27
Total	**0**	**5**	**50**	**0**	**0**	**55**	**0**	**0**	**42**	**7**	**0**	**49**	**104**	**0**	**6**	**0**	**2**	**4**	**12**	**0**	**0**	**0**	**0**	**1**	**1**	**13**	**117**
12:00 PM	0	0	10	0	0	10	0	0	11	1	0	12	22	0	1	0	0	1	2	0	0	0	0	0	0	2	24
12:15 PM	0	1	9	0	0	10	0	0	8	2	1	11	21	0	2	0	0	2	4	0	0	0	0	0	0	4	25
12:30 PM	0	0	6	0	0	6	0	0	8	1	0	9	15	0	1	0	2	0	3	0	0	0	0	0	0	3	18
12:45 PM	0	5	12	1	0	18	0	0	11	0	1	12	30	0	2	0	0	1	3	0	0	0	0	0	0	3	33
Total	**0**	**6**	**37**	**1**	**0**	**44**	**0**	**0**	**38**	**4**	**2**	**44**	**88**	**0**	**6**	**0**	**2**	**4**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**100**
1:00 PM	0	1	7	0	0	8	0	0	5	1	1	7	15	0	1	0	0	1	2	0	0	0	0	0	0	2	17
1:15 PM	0	1	10	0	0	11	0	0	6	1	0	7	18	0	1	0	1	2	4	0	0	0	0	0	0	4	22
1:30 PM	0	3	7	1	0	11	0	0	6	1	0	7	18	0	6	0	3	2	11	0	0	0	0	0	0	11	29
1:45 PM	0	7	7	0	0	14	0	0	9	2	0	11	25	0	1	0	1	0	2	0	0	0	0	0	0	2	27
Total	**0**	**12**	**31**	**1**	**0**	**44**	**0**	**0**	**26**	**5**	**1**	**32**	**76**	**0**	**9**	**0**	**5**	**5**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**19**	**95**
2:00 PM	0	1	15	0	0	16	0	0	5	0	1	6	22	0	0	0	2	1	3	0	0	0	0	0	0	3	25
2:15 PM	0	0	15	0	0	15	0	0	3	1	0	4	19	0	3	0	0	1	4	0	0	0	0	0	0	4	23
2:30 PM	0	0	11	0	0	11	0	0	14	0	0	14	25	0	2	0	1	0	3	0	0	0	0	0	0	3	28
2:45 PM	0	2	8	0	0	10	0	0	4	5	0	9	19	0	2	0	4	2	8	0	0	0	0	0	0	8	27
Total	**0**	**3**	**49**	**0**	**0**	**52**	**0**	**0**	**26**	**6**	**1**	**33**	**85**	**0**	**7**	**0**	**7**	**4**	**18**	**0**	**0**	**0**	**0**	**0**	**0**	**18**	**103**
3:00 PM	0	1	7	0	0	8	0	0	11	1	0	12	20	0	3	0	0	0	3	0	0	0	0	0	0	3	23
3:15 PM	0	1	12	0	0	13	0	0	9	0	0	9	22	0	1	0	2	0	3	0	0	0	0	1	1	4	26
3:30 PM	0	2	12	0	0	14	0	0	11	0	0	11	25	0	1	0	1	2	4	0	0	0	0	0	0	4	29
3:45 PM	0	0	9	0	0	9	0	0	9	1	0	10	19	0	1	0	1	0	2	0	0	0	0	0	0	2	21
Total	**0**	**4**	**40**	**0**	**0**	**44**	**0**	**0**	**40**	**2**	**0**	**42**	**86**	**0**	**6**	**0**	**4**	**2**	**12**	**0**	**0**	**0**	**0**	**1**	**1**	**13**	**99**
4:00 PM	0	3	7	0	0	10	0	0	14	1	0	15	25	0	1	0	0	2	3	0	0	0	0	0	0	3	28
4:15 PM	0	0	7	0	0	7	0	0	5	0	0	5	12	0	3	0	0	0	3	0	0	0	0	1	1	4	16
4:30 PM	0	1	5	0	0	6	0	0	5	1	0	6	12	0	2	0	0	0	2	0	0	0	0	0	0	2	14
4:45 PM	0	1	7	0	0	8	0	0	3	0	0	3	11	0	1	0	0	0	1	0	0	0	0	0	0	1	12
Total	**0**	**5**	**26**	**0**	**0**	**31**	**0**	**0**	**27**	**2**	**0**	**29**	**60**	**0**	**7**	**0**	**0**	**2**	**9**	**0**	**0**	**0**	**0**	**1**	**1**	**10**	**70**
5:00 PM	0	1	7	0	0	8	0	0	8	0	0	8	16	0	2	0	1	2	5	0	0	0	0	0	0	5	21
5:15 PM	0	1	5	0	0	6	0	0	3	0	0	3	9	0	1	0	1	0	2	0	0	0	0	0	0	2	11
5:30 PM	0	0	1	0	0	1	0	0	1	1	0	2	3	0	0	0	1	1	2	0	0	0	0	0	0	2	5
5:45 PM	0	1	7	0	0	8	0	0	10	0	0	10	18	0	1	0	0	0	1	0	0	0	0	0	0	1	19
Total	**0**	**3**	**20**	**0**	**0**	**23**	**0**	**0**	**22**	**1**	**0**	**23**	**46**	**0**	**4**	**0**	**3**	**3**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**56**

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF VEHICLE MOVEMENTS

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	Commerce Point Drive	**MILEPOST:**	0.596
OBSERVER:	FDA	**DATE:**	1/12/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
REMARKS:	Offset intersection, approximately 50' from centerline of western approach to centerline of eastern approach				



TIME	NORTHBOUND						SOUTHBOUND						TOTAL	EASTBOUND						WESTBOUND						TOTAL
BEGIN/END	U	L	T	R	RTOR	TOT	U	L	T	R	RTOR	TOT	N/S	U	L	T	R	RTOR	TOT	U	L	T	R	RTOR	TOT	E/W
7 - 8	0	102	415	7	0	**524**	0	9	440	151	9	**609**	**1,133**	0	113	0	32	62	**207**	0	2	0	2	4	**8**	**215**
8 - 9	0	97	365	8	0	**470**	0	3	389	128	2	**522**	**992**	0	142	0	17	47	**206**	0	1	0	1	8	**10**	**216**
12 - 13	0	100	385	6	0	**491**	0	7	390	137	5	**539**	**1,030**	0	161	0	33	62	**256**	0	4	0	3	3	**10**	**266**
13 - 14	0	90	353	5	0	**448**	0	5	354	101	17	**477**	**925**	0	138	0	22	48	**208**	0	1	0	4	2	**7**	**215**
14 - 15	0	66	441	2	0	**509**	0	5	423	143	13	**584**	**1,093**	0	171	0	37	47	**255**	0	3	0	2	8	**13**	**268**
15 - 16	0	118	547	2	0	**667**	0	3	438	124	9	**574**	**1,241**	0	181	0	32	24	**237**	0	5	0	3	2	**10**	**247**
16 - 17	0	125	490	1	0	**616**	0	1	438	148	6	**593**	**1,209**	0	195	0	35	50	**280**	0	3	0	2	7	**12**	**292**
17 - 18	0	90	475	1	0	**566**	0	0	473	136	0	**609**	**1,175**	0	160	0	41	53	**254**	0	7	0	1	1	**9**	**263**
TOTAL	0	788	3,471	32	0	**4,291**	0	33	3,345	1,068	61	**4,507**	**8,798**	0	1,261	0	249	393	**1,903**	0	26	0	18	35	**79**	**1,982**

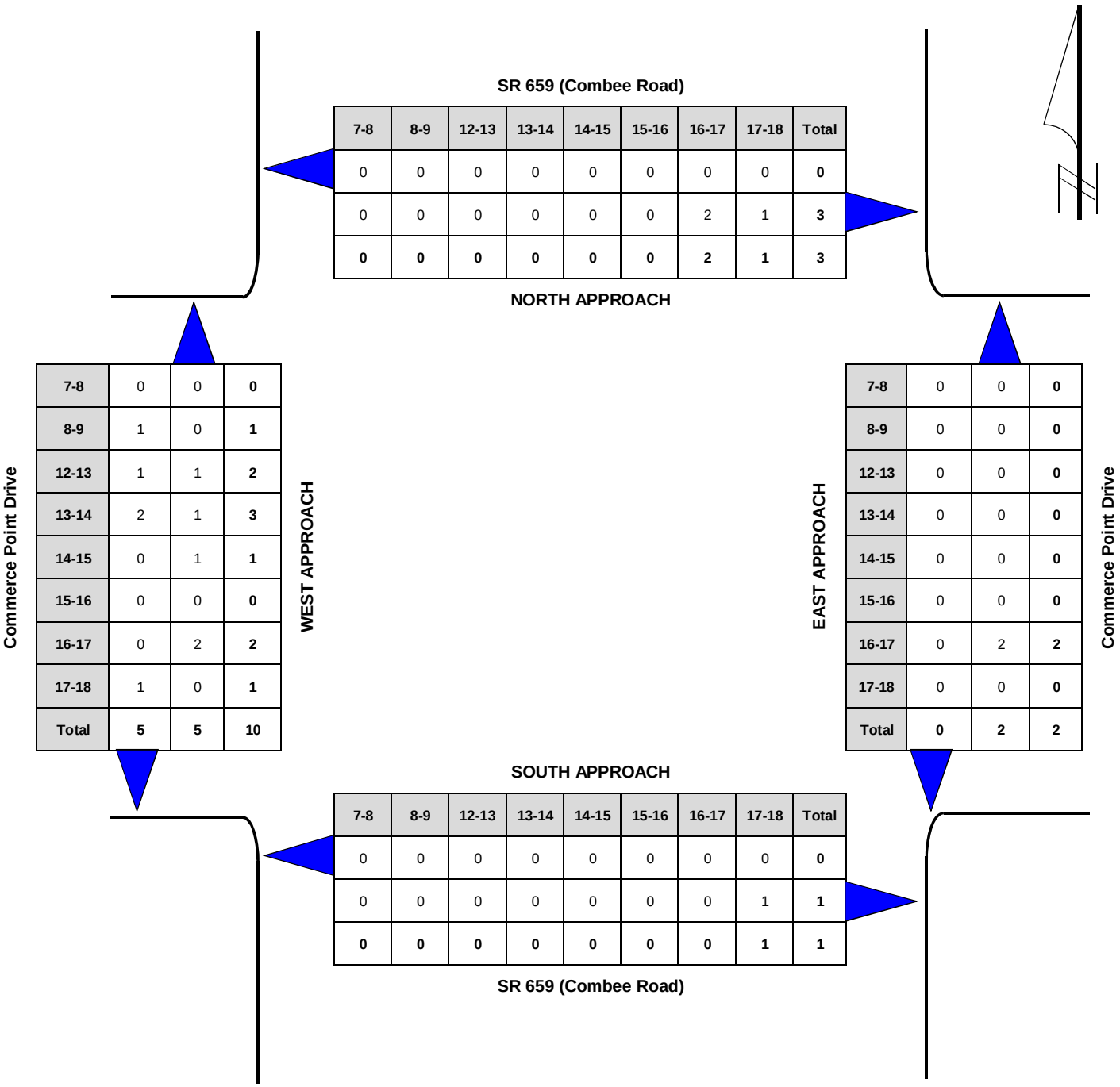
Percentage	0.0%	18.4%	80.9%	0.7%	0.0%	100.0%	0.0%	0.7%	74.2%	23.7%	1.4%	100.0%	N/A	0.0%	66.3%	0.0%	13.1%	20.7%	100.0%	0.0%	32.9%	0.0%	22.8%	44.3%	100.0%	N/A
Maximum	0	125	547	8	0	667	0	9	473	151	17	609	1,241	0	195	0	41	62	280	0	7	0	4	8	13	292
Minimum	0	66	353	1	0	448	0	1	354	101	2	477	925	0	113	0	17	24	206	0	1	0	1	1	7	215
Total Heavy Veh	41		285	4	0	330	0		266	35	5	306	636	51		0	24	27	102	0		0	0	4	4	106
% Heavy Veh	5.2%		8.2%	12.5%		7.7%	0.0%		8.0%	3.5%		6.8%	7.2%	4.0%		0.0%	7.9%		5.4%	0.0%		0.0%	7.5%		5.1%	5.3%

FLORIDA DEPARTMENT OF TRANSPORTATION

PEDESTRIAN MOVEMENT SUMMARY

SECTION 16006000
STATE ROUTE SR 659 (Combee Road)
OBSERVER FDA
COUNTY Polk
MILEPOST 0.596
COUNT HOURS 7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM

CITY Lakeland
INTERSECTING ROUTE Commerce Point Drive
DATE OF COUNT 1/12/16
WEATHER Good
COMPLETED BY DL
DATE 6/22/16



NORTH APPROACH

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	0	0	**0**
0	0	0	0	0	0	2	1	**3**
0	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**3**

WEST APPROACH (Commerce Point Drive)

7-8	0	0	**0**
8-9	1	0	**1**
12-13	1	1	**2**
13-14	2	1	**3**
14-15	0	1	**1**
15-16	0	0	**0**
16-17	0	2	**2**
17-18	1	0	**1**
Total	**5**	**5**	**10**

EAST APPROACH (Commerce Point Drive)

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	2	**2**
17-18	0	0	**0**
Total	**0**	**2**	**2**

SOUTH APPROACH

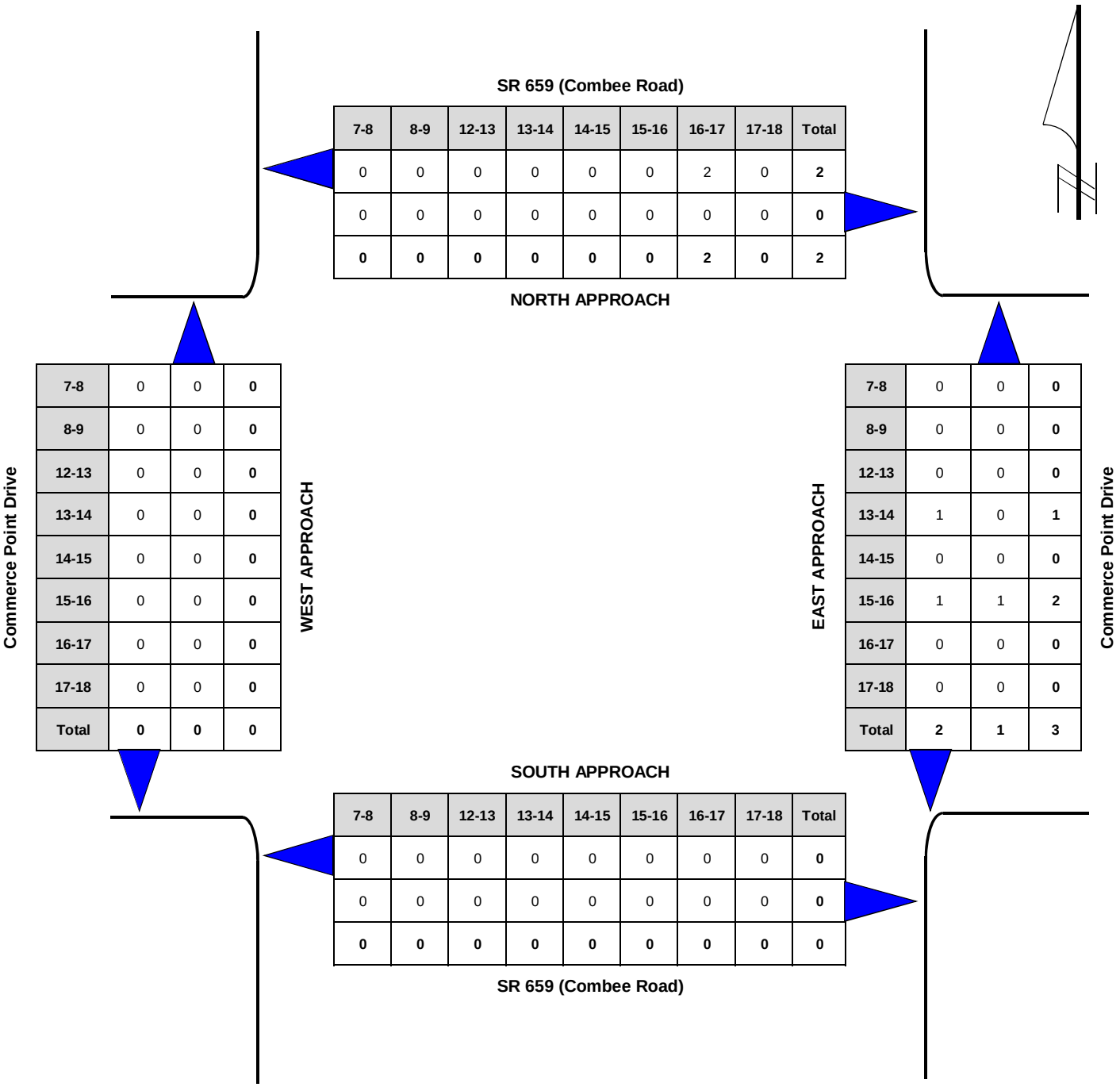
7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	0	0	**0**
0	0	0	0	0	0	0	1	**1**
0	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**

FLORIDA DEPARTMENT OF TRANSPORTATION

BICYCLE MOVEMENT SUMMARY

SECTION 16006000
STATE ROUTE SR 659 (Combee Road)
OBSERVER FDA
COUNTY Polk
MILEPOST 0.596
COUNT HOURS 7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM

CITY Lakeland
INTERSECTING ROUTE Commerce Point Drive
DATE OF COUNT 1/12/16
WEATHER Good
COMPLETED BY DL
DATE 6/22/16



7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	2	0	**2**
0	0	0	0	0	0	0	0	**0**
0	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	1	0	**1**
14-15	0	0	**0**
15-16	1	1	**2**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**2**	**1**	**3**

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	0	0	**0**
0	0	0	0	0	0	0	0	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

VEHICLE TURNING MOVEMENT COUNT

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	South Crystal Lake Drive	**MILEPOST:**	1.097
OBSERVER:	FDA	**DATE OF COUNT:**	1/14/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
NORTH APPROACH:	SR 659 (Combee Road)	**EAST APPROACH:**	N/A		
SOUTH APPROACH:	SR 659 (Combee Road)	**WEST APPROACH:**	South Crystal Lake Drive		
		COUNT PERIODS:	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM		

ALL VEHICLES / ALL MOVEMENTS

Direction	Northbound						Southbound							Eastbound						Westbound							
Start Time	NBU	NBL	NBT	NBR	NBRTOR	Total	SBU	SBL	SBT	SBR	SBRTOR	Total	NS Total	EBU	EBL	EBT	EBR	EBRTOR	Total	WBU	WBL	WBT	WBR	WBRTOR	Total	EW Total	Grand Total
7:00 AM	0	6	67	0	0	73	0	0	116	10	0	126	199	0	13	0	5	11	29	0	0	0	0	0	0	29	228
7:15 AM	0	8	125	0	0	133	0	0	134	15	1	150	283	0	17	0	2	14	33	0	0	0	0	0	0	33	316
7:30 AM	0	8	151	0	0	159	0	0	162	17	2	181	340	0	20	0	8	10	38	0	0	0	0	0	0	38	378
7:45 AM	0	10	128	0	0	138	0	0	176	14	1	191	329	0	17	0	13	9	39	0	0	0	0	0	0	39	368
Total	**0**	**32**	**471**	**0**	**0**	**503**	**0**	**0**	**588**	**56**	**4**	**648**	**1,151**	**0**	**67**	**0**	**28**	**44**	**139**	**0**	**0**	**0**	**0**	**0**	**0**	**139**	**1,290**
8:00 AM	0	13	122	0	0	135	0	0	145	19	0	164	299	0	15	0	9	10	34	0	0	0	0	0	0	34	333
8:15 AM	0	8	127	0	0	135	0	0	139	12	1	152	287	0	17	0	3	10	30	0	0	0	0	0	0	30	317
8:30 AM	0	6	99	0	0	105	0	0	123	17	0	140	245	0	15	0	6	11	32	0	0	0	0	0	0	32	277
8:45 AM	0	10	96	0	0	106	0	0	120	14	2	136	242	0	19	0	5	10	34	0	0	0	0	0	0	34	276
Total	**0**	**37**	**444**	**0**	**0**	**481**	**0**	**0**	**527**	**62**	**3**	**592**	**1,073**	**0**	**66**	**0**	**23**	**41**	**130**	**0**	**0**	**0**	**0**	**0**	**0**	**130**	**1,203**
12:00 PM	0	19	136	0	0	155	0	0	123	18	0	141	296	0	18	0	1	6	25	0	0	0	0	0	0	25	321
12:15 PM	0	11	132	0	0	143	0	0	121	21	0	142	285	0	14	0	6	11	31	0	0	0	0	0	0	31	316
12:30 PM	0	13	129	0	0	142	0	0	126	15	4	145	287	0	32	0	8	6	46	0	0	0	0	0	0	46	333
12:45 PM	0	7	126	0	0	133	0	0	141	14	1	156	289	0	21	0	7	5	33	0	0	0	0	0	0	33	322
Total	**0**	**50**	**523**	**0**	**0**	**573**	**0**	**0**	**511**	**68**	**5**	**584**	**1,157**	**0**	**85**	**0**	**22**	**28**	**135**	**0**	**0**	**0**	**0**	**0**	**0**	**135**	**1,292**
1:00 PM	0	11	130	0	0	141	0	0	108	22	4	134	275	0	21	0	2	10	33	0	0	0	0	0	0	33	308
1:15 PM	0	11	114	0	0	125	0	0	145	11	1	157	282	0	25	0	2	9	36	0	0	0	0	0	0	36	318
1:30 PM	0	17	135	0	0	152	0	0	115	18	2	135	287	0	24	0	3	8	35	0	0	0	0	0	0	35	322
1:45 PM	0	16	124	0	0	140	0	0	99	21	3	123	263	0	25	0	2	4	31	0	0	0	0	0	0	31	294
Total	**0**	**55**	**503**	**0**	**0**	**558**	**0**	**0**	**467**	**72**	**10**	**549**	**1,107**	**0**	**95**	**0**	**9**	**31**	**135**	**0**	**0**	**0**	**0**	**0**	**0**	**135**	**1,242**
2:00 PM	0	12	132	0	0	144	0	0	98	15	5	118	262	0	35	0	6	5	46	0	0	0	0	0	0	46	308
2:15 PM	0	7	146	0	0	153	0	0	94	15	2	111	264	0	26	0	2	8	36	0	0	0	0	0	0	36	300
2:30 PM	0	13	138	0	0	151	0	0	113	14	0	127	278	0	33	0	4	4	41	0	0	0	0	0	0	41	319
2:45 PM	0	11	133	0	0	144	0	0	140	13	2	155	299	0	22	0	4	13	39	0	0	0	0	0	0	39	338
Total	**0**	**43**	**549**	**0**	**0**	**592**	**0**	**0**	**445**	**57**	**9**	**511**	**1,103**	**0**	**116**	**0**	**16**	**30**	**162**	**0**	**0**	**0**	**0**	**0**	**0**	**162**	**1,265**
3:00 PM	0	13	157	0	0	170	0	0	117	13	0	130	300	0	32	0	8	6	46	0	0	0	0	0	0	46	346
3:15 PM	0	11	138	0	0	149	0	0	118	25	4	147	296	0	21	0	6	7	34	0	0	0	0	0	0	34	330
3:30 PM	0	14	156	0	0	170	0	0	122	23	0	145	315	0	32	0	3	6	41	0	0	0	0	0	0	41	356
3:45 PM	0	12	136	0	0	148	0	0	115	20	1	136	284	0	20	0	4	4	28	0	0	0	0	0	0	28	312
Total	**0**	**50**	**587**	**0**	**0**	**637**	**0**	**0**	**472**	**81**	**5**	**558**	**1,195**	**0**	**105**	**0**	**21**	**23**	**149**	**0**	**0**	**0**	**0**	**0**	**0**	**149**	**1,344**
4:00 PM	0	14	164	0	0	178	0	0	127	28	2	157	335	0	35	0	10	4	49	0	0	0	0	0	0	49	384
4:15 PM	0	18	150	0	0	168	0	0	144	11	2	157	325	0	38	0	1	5	44	0	0	0	0	0	0	44	369
4:30 PM	0	21	140	0	0	161	0	0	126	20	2	148	309	0	39	0	8	7	54	0	0	0	0	0	0	54	363
4:45 PM	0	18	145	0	0	163	0	0	150	15	2	167	330	0	47	0	8	9	64	0	0	0	0	0	0	64	394
Total	**0**	**71**	**599**	**0**	**0**	**670**	**0**	**0**	**547**	**74**	**8**	**629**	**1,299**	**0**	**159**	**0**	**27**	**25**	**211**	**0**	**0**	**0**	**0**	**0**	**0**	**211**	**1,510**
5:00 PM	0	30	194	0	0	224	0	0	125	21	3	149	373	0	37	0	9	6	52	0	0	0	0	0	0	52	425
5:15 PM	0	12	140	0	0	152	0	0	147	22	3	172	324	0	24	0	7	5	36	0	0	0	0	0	0	36	360
5:30 PM	0	10	140	0	0	150	0	0	108	20	5	133	283	0	31	0	1	1	33	0	0	0	0	0	0	33	316
5:45 PM	0	15	120	0	0	135	0	0	105	17	2	124	259	0	23	0	6	6	35	0	0	0	0	0	0	35	294
Total	**0**	**67**	**594**	**0**	**0**	**661**	**0**	**0**	**485**	**80**	**13**	**578**	**1,239**	**0**	**115**	**0**	**23**	**18**	**156**	**0**	**0**	**0**	**0**	**0**	**0**	**156**	**1,395**

VEHICLE TURNING MOVEMENT COUNT

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	South Crystal Lake Drive	**MILEPOST:**	1.097
OBSERVER:	FDA	**DATE OF COUNT:**	1/14/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
NORTH APPROACH:	SR 659 (Combee Road)	**EAST APPROACH:**	N/A		
SOUTH APPROACH:	SR 659 (Combee Road)	**WEST APPROACH:**	South Crystal Lake Drive		
		COUNT PERIODS:	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM		

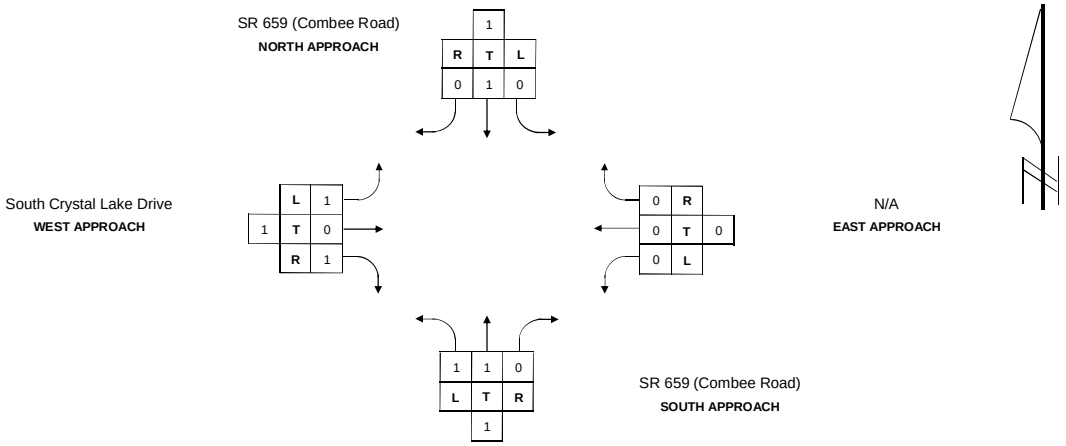
HEAVY VEHICLES (TRUCKS + BUSSES)

Direction	Northbound						Southbound							Eastbound						Westbound							
Start Time	**NBU**	**NBL**	**NBT**	**NBR**	**NBRTOR**	**Total**	**SBU**	**SBL**	**SBT**	**SBR**	**SBRTOR**	**Total**	**NS Total**	**EBU**	**EBL**	**EBT**	**EBR**	**EBRTOR**	**Total**	**WBU**	**WBL**	**WBT**	**WBR**	**WBRTOR**	**Total**	**EW Total**	**Grand Total**
7:00 AM	0	0	2	0	0	2	0	0	8	0	0	8	10	0	0	0	0	2	2	0	0	0	0	0	0	2	12
7:15 AM	0	2	9	0	0	11	0	0	8	1	0	9	20	0	0	0	0	0	0	0	0	0	0	0	0	0	20
7:30 AM	0	1	9	0	0	10	0	0	8	1	0	9	19	0	0	0	0	0	0	0	0	0	0	0	0	0	19
7:45 AM	0	3	11	0	0	14	0	0	13	0	0	13	27	0	2	0	2	0	4	0	0	0	0	0	0	4	31
Total	**0**	**6**	**31**	**0**	**0**	**37**	**0**	**0**	**37**	**2**	**0**	**39**	**76**	**0**	**2**	**0**	**2**	**2**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**82**
8:00 AM	0	0	11	0	0	11	0	0	13	1	0	14	25	0	1	0	0	0	1	0	0	0	0	0	0	1	26
8:15 AM	0	0	14	0	0	14	0	0	10	0	0	10	24	0	0	0	0	0	0	0	0	0	0	0	0	0	24
8:30 AM	0	0	14	0	0	14	0	0	12	0	0	12	26	0	2	0	0	0	2	0	0	0	0	0	0	2	28
8:45 AM	0	0	15	0	0	15	0	0	10	0	0	10	25	0	1	0	0	0	1	0	0	0	0	0	0	1	26
Total	**0**	**0**	**54**	**0**	**0**	**54**	**0**	**0**	**45**	**1**	**0**	**46**	**100**	**0**	**4**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**104**
12:00 PM	0	2	12	0	0	14	0	0	9	1	0	10	24	0	0	0	0	0	0	0	0	0	0	0	0	0	24
12:15 PM	0	0	9	0	0	9	0	0	5	0	0	5	14	0	0	0	0	1	1	0	0	0	0	0	0	1	15
12:30 PM	0	0	12	0	0	12	0	0	9	1	0	10	22	0	1	0	0	0	1	0	0	0	0	0	0	1	23
12:45 PM	0	0	9	0	0	9	0	0	5	0	0	5	14	0	0	0	1	0	1	0	0	0	0	0	0	1	15
Total	**0**	**2**	**42**	**0**	**0**	**44**	**0**	**0**	**28**	**2**	**0**	**30**	**74**	**0**	**1**	**0**	**1**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**77**
1:00 PM	0	1	9	0	0	10	0	0	5	0	0	5	15	0	1	0	0	0	1	0	0	0	0	0	0	1	16
1:15 PM	0	1	9	0	0	10	0	0	17	1	0	18	28	0	0	0	0	0	0	0	0	0	0	0	0	0	28
1:30 PM	0	0	8	0	0	8	0	0	6	0	0	6	14	0	2	0	0	0	2	0	0	0	0	0	0	2	16
1:45 PM	0	1	10	0	0	11	0	0	9	1	1	11	22	0	0	0	0	0	0	0	0	0	0	0	0	0	22
Total	**0**	**3**	**36**	**0**	**0**	**39**	**0**	**0**	**37**	**2**	**1**	**40**	**79**	**0**	**3**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**82**
2:00 PM	0	0	10	0	0	10	0	0	11	0	0	11	21	0	0	0	0	0	0	0	0	0	0	0	0	0	21
2:15 PM	0	0	12	0	0	12	0	0	11	0	0	11	23	0	0	0	0	0	0	0	0	0	0	0	0	0	23
2:30 PM	0	0	14	0	0	14	0	0	10	0	0	10	24	0	0	0	0	0	0	0	0	0	0	0	0	0	24
2:45 PM	0	0	7	0	0	7	0	0	12	1	0	13	20	0	1	0	0	0	1	0	0	0	0	0	0	1	21
Total	**0**	**0**	**43**	**0**	**0**	**43**	**0**	**0**	**44**	**1**	**0**	**45**	**88**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**89**
3:00 PM	0	0	14	0	0	14	0	0	14	0	0	14	28	0	0	0	0	0	0	0	0	0	0	0	0	0	28
3:15 PM	0	0	15	0	0	15	0	0	4	1	0	5	20	0	0	0	2	0	2	0	0	0	0	0	0	2	22
3:30 PM	0	1	12	0	0	13	0	0	7	0	0	7	20	0	0	0	0	1	1	0	0	0	0	0	0	1	21
3:45 PM	0	0	7	0	0	7	0	0	8	0	0	8	15	0	1	0	0	0	1	0	0	0	0	0	0	1	16
Total	**0**	**1**	**48**	**0**	**0**	**49**	**0**	**0**	**33**	**1**	**0**	**34**	**83**	**0**	**1**	**0**	**2**	**1**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**87**
4:00 PM	0	0	11	0	0	11	0	0	9	1	0	10	21	0	0	0	1	0	1	0	0	0	0	0	0	1	22
4:15 PM	0	0	11	0	0	11	0	0	7	0	0	7	18	0	0	0	0	1	1	0	0	0	0	0	0	1	19
4:30 PM	0	0	6	0	0	6	0	0	8	0	0	8	14	0	0	0	0	0	0	0	0	0	0	0	0	0	14
4:45 PM	0	1	7	0	0	8	0	0	6	0	0	6	14	0	0	0	0	0	0	0	0	0	0	0	0	0	14
Total	**0**	**1**	**35**	**0**	**0**	**36**	**0**	**0**	**30**	**1**	**0**	**31**	**67**	**0**	**0**	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**69**
5:00 PM	0	0	9	0	0	9	0	0	7	0	0	7	16	0	2	0	0	0	2	0	0	0	0	0	0	2	18
5:15 PM	0	0	7	0	0	7	0	0	3	0	0	3	10	0	0	0	0	0	0	0	0	0	0	0	0	0	10
5:30 PM	0	0	4	0	0	4	0	0	4	1	0	5	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9
5:45 PM	0	0	2	0	0	2	0	0	5	0	0	5	7	0	0	0	1	0	1	0	0	0	0	0	0	1	8
Total	**0**	**0**	**22**	**0**	**0**	**22**	**0**	**0**	**19**	**1**	**0**	**20**	**42**	**0**	**2**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**45**

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF VEHICLE MOVEMENTS

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	South Crystal Lake Drive	**MILEPOST:**	1.097
OBSERVER:	FDA	**DATE:**	1/14/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
REMARKS:					



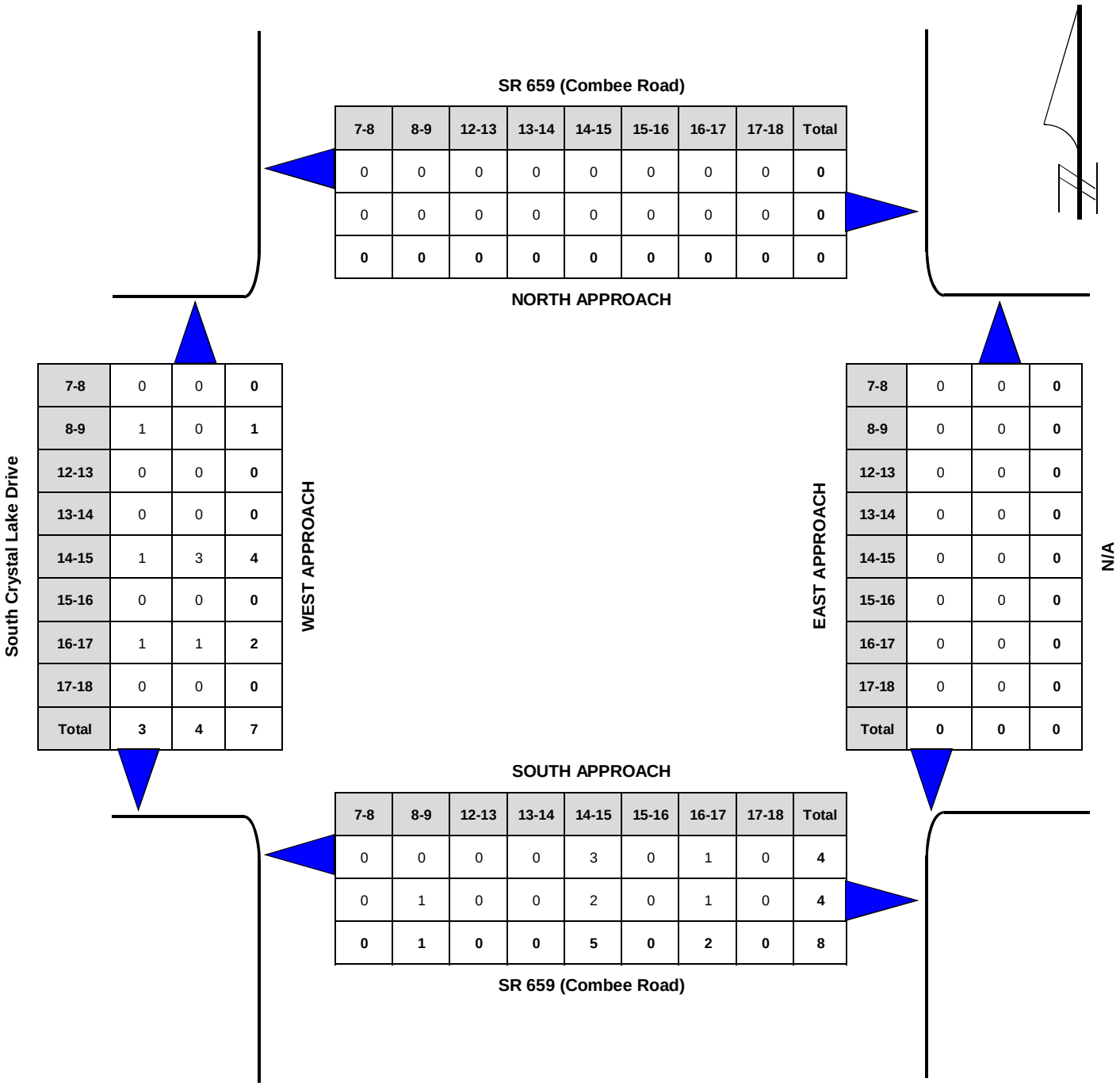
TIME	NORTHBOUND						SOUTHBOUND						TOTAL	EASTBOUND						WESTBOUND						TOTAL
BEGIN/END	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**N/S**	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**E/W**
7 - 8	0	32	471	0	0	**503**	0	0	588	56	4	**648**	**1,151**	0	67	0	28	44	**139**	0	0	0	0	0	**0**	**139**
8 - 9	0	37	444	0	0	**481**	0	0	527	62	3	**592**	**1,073**	0	66	0	23	41	**130**	0	0	0	0	0	**0**	**130**
12 - 13	0	50	523	0	0	**573**	0	0	511	68	5	**584**	**1,157**	0	85	0	22	28	**135**	0	0	0	0	0	**0**	**135**
13 - 14	0	55	503	0	0	**558**	0	0	467	72	10	**549**	**1,107**	0	95	0	9	31	**135**	0	0	0	0	0	**0**	**135**
14 - 15	0	43	549	0	0	**592**	0	0	445	57	9	**511**	**1,103**	0	116	0	16	30	**162**	0	0	0	0	0	**0**	**162**
15 - 16	0	50	587	0	0	**637**	0	0	472	81	5	**558**	**1,195**	0	105	0	21	23	**149**	0	0	0	0	0	**0**	**149**
16 - 17	0	71	599	0	0	**670**	0	0	547	74	8	**629**	**1,299**	0	159	0	27	25	**211**	0	0	0	0	0	**0**	**211**
17 - 18	0	67	594	0	0	**661**	0	0	485	80	13	**578**	**1,239**	0	115	0	23	18	**156**	0	0	0	0	0	**0**	**156**
TOTAL	0	405	4,270	0	0	**4,675**	0	0	4,042	550	57	**4,649**	**9,324**	0	808	0	169	240	**1,217**	0	0	0	0	0	**0**	**1,217**
Percentage	0.0%	8.7%	91.3%	0.0%	0.0%	100.0%	0.0%	0.0%	86.9%	11.8%	1.2%	100.0%	N/A	0.0%	66.4%	0.0%	13.9%	19.7%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	N/A
Maximum	0	71	599	0	0	670	0	0	588	81	13	648	1,299	0	159	0	28	44	211	0	0	0	0	0	0	211
Minimum	0	32	444	0	0	481	0	0	445	56	3	511	1,073	0	66	0	9	18	130	0	0	0	0	0	0	130
Total Heavy Veh	13		311	0	0	324	0		273	11	1	285	609	14		0	7	5	26	0		0	0	0	0	26
% Heavy Veh	3.2%		7.3%	0.0%		6.9%	0.0%		6.8%	2.0%		6.1%	6.5%	1.7%		0.0%	2.9%		2.1%	0.0%		0.0%	0.0%		0.0%	2.1%

FLORIDA DEPARTMENT OF TRANSPORTATION

PEDESTRIAN MOVEMENT SUMMARY

SECTION 16006000
STATE ROUTE SR 659 (Combee Road)
OBSERVER FDA
COUNTY Polk
MILEPOST 1.097
COUNT HOURS 7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM

CITY Lakeland
INTERSECTING ROUTE South Crystal Lake Drive
DATE OF COUNT 1/14/16
WEATHER Good
COMPLETED BY DL
DATE 6/22/16



	7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
	0	0	0	0	0	0	0	0	**0**
	0	0	0	0	0	0	0	0	**0**
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

7-8	0	0	**0**
8-9	1	0	**1**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	1	3	**4**
15-16	0	0	**0**
16-17	1	1	**2**
17-18	0	0	**0**
Total	**3**	**4**	**7**

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

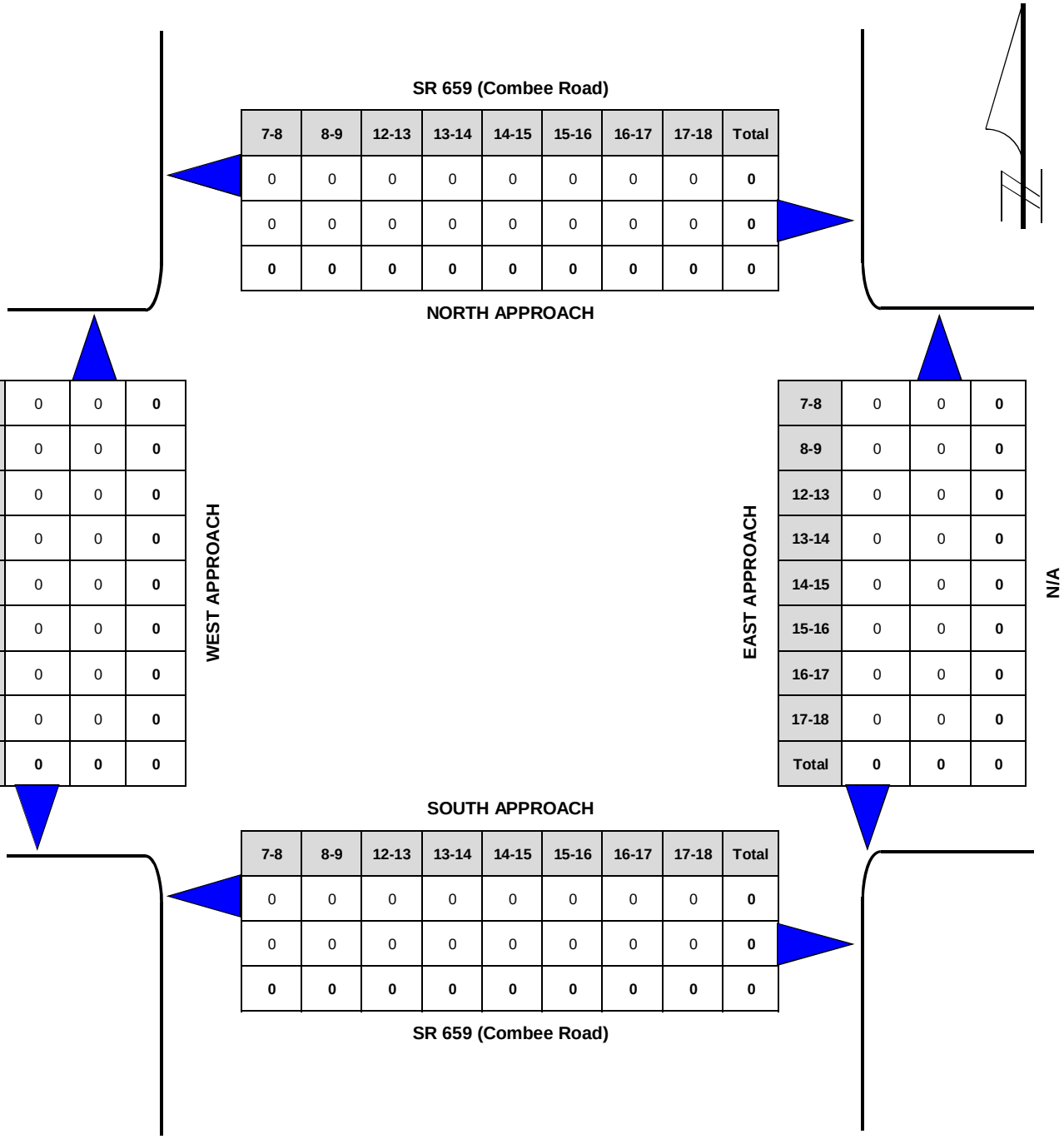
	7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
	0	0	0	0	3	0	1	0	**4**
	0	1	0	0	2	0	1	0	**4**
	0	**1**	**0**	**0**	**5**	**0**	**2**	**0**	**8**

FLORIDA DEPARTMENT OF TRANSPORTATION

BICYCLE MOVEMENT SUMMARY

SECTION 16006000
STATE ROUTE SR 659 (Combee Road)
OBSERVER FDA
COUNTY Polk
MILEPOST 1.097
COUNT HOURS 7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM

CITY Lakeland
INTERSECTING ROUTE South Crystal Lake Drive
DATE OF COUNT 1/14/16
WEATHER Good
COMPLETED BY DL
DATE 6/22/16



7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	0	0	**0**
0	0	0	0	0	0	0	0	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	0	0	**0**
0	0	0	0	0	0	0	0	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

VEHICLE TURNING MOVEMENT COUNT

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	Skyview Drive	**MILEPOST:**	1.223
OBSERVER:	FDA	**DATE OF COUNT:**	1/14/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
NORTH APPROACH:	SR 659 (Combee Road)	**EAST APPROACH:**	Skyview Drive		
SOUTH APPROACH:	SR 659 (Combee Road)	**WEST APPROACH:**	N/A		
		COUNT PERIODS:	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM		

ALL VEHICLES / ALL MOVEMENTS

Direction	Northbound						Southbound							Eastbound						Westbound							
Start Time	**NBU**	**NBL**	**NBT**	**NBR**	**NBRTOR**	**Total**	**SBU**	**SBL**	**SBT**	**SBR**	**SBRTOR**	**Total**	**NS Total**	**EBU**	**EBL**	**EBT**	**EBR**	**EBRTOR**	**Total**	**WBU**	**WBL**	**WBT**	**WBR**	**WBRTOR**	**Total**	**EW Total**	**Grand Total**
7:00 AM	0	0	80	8	2	90	0	16	106	0	0	122	212	0	0	0	0	0	0	0	23	0	4	28	55	55	267
7:15 AM	0	0	124	7	7	138	0	13	115	0	0	128	266	0	0	0	0	0	0	0	39	0	18	19	76	76	342
7:30 AM	0	0	146	8	13	167	0	19	145	0	0	164	331	0	0	0	0	0	0	0	45	0	20	22	87	87	418
7:45 AM	0	0	122	14	14	150	0	24	162	0	0	186	336	0	0	0	0	0	0	0	32	0	11	27	70	70	406
Total	**0**	**0**	**472**	**37**	**36**	**545**	**0**	**72**	**528**	**0**	**0**	**600**	**1,145**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**139**	**0**	**53**	**96**	**288**	**288**	**1,433**
8:00 AM	0	0	102	11	11	124	0	24	118	0	0	142	266	0	0	0	0	0	0	0	38	0	14	15	67	67	333
8:15 AM	0	0	127	23	2	152	0	17	126	0	0	143	295	0	0	0	0	0	0	0	29	0	15	32	76	76	371
8:30 AM	0	0	100	10	6	116	0	39	120	0	0	159	275	0	0	0	0	0	0	0	35	0	10	21	66	66	341
8:45 AM	0	0	88	13	6	107	0	24	101	0	0	125	232	0	0	0	0	0	0	0	28	0	9	19	56	56	288
Total	**0**	**0**	**417**	**57**	**25**	**499**	**0**	**104**	**465**	**0**	**0**	**569**	**1,068**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**130**	**0**	**48**	**87**	**265**	**265**	**1,333**
12:00 PM	0	0	122	25	4	151	0	31	119	0	0	150	301	0	0	0	0	0	0	0	24	0	14	18	56	56	357
12:15 PM	0	0	124	37	2	163	0	26	115	0	0	141	304	0	0	0	0	0	0	0	26	0	18	25	69	69	373
12:30 PM	0	0	118	28	6	152	0	33	112	0	0	145	297	0	0	0	0	0	0	0	32	0	18	16	66	66	363
12:45 PM	0	0	119	24	3	146	0	29	132	0	0	161	307	0	0	0	0	0	0	0	26	0	14	27	67	67	374
Total	**0**	**0**	**483**	**114**	**15**	**612**	**0**	**119**	**478**	**0**	**0**	**597**	**1,209**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**108**	**0**	**64**	**86**	**258**	**258**	**1,467**
1:00 PM	0	0	111	25	4	140	0	27	95	0	0	122	262	0	0	0	0	0	0	0	28	0	10	18	56	56	318
1:15 PM	0	0	105	30	2	137	0	30	134	0	0	164	301	0	0	0	0	0	0	0	18	0	6	32	56	56	357
1:30 PM	0	0	120	38	4	162	0	40	117	0	0	157	319	0	0	0	0	0	0	0	29	0	14	19	62	62	381
1:45 PM	0	0	111	30	1	142	0	31	85	0	0	116	258	0	0	0	0	0	0	0	23	0	12	25	60	60	318
Total	**0**	**0**	**447**	**123**	**11**	**581**	**0**	**128**	**431**	**0**	**0**	**559**	**1,140**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**98**	**0**	**42**	**94**	**234**	**234**	**1,374**
2:00 PM	0	0	127	32	2	161	0	29	96	0	0	125	286	0	0	0	0	0	0	0	25	0	15	18	58	58	344
2:15 PM	0	0	137	25	3	165	0	37	93	0	0	130	295	0	0	0	0	0	0	0	24	0	17	19	60	60	355
2:30 PM	0	0	136	33	4	173	0	44	97	0	0	141	314	0	0	0	0	0	0	0	36	0	20	13	69	69	383
2:45 PM	0	0	122	34	4	160	0	41	132	0	0	173	333	0	0	0	0	0	0	0	22	0	25	21	68	68	401
Total	**0**	**0**	**522**	**124**	**13**	**659**	**0**	**151**	**418**	**0**	**0**	**569**	**1,228**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**107**	**0**	**77**	**71**	**255**	**255**	**1,483**
3:00 PM	0	0	127	27	30	184	0	38	118	0	0	156	340	0	0	0	0	0	0	0	17	0	12	32	61	61	401
3:15 PM	0	0	139	25	9	173	0	50	114	0	0	164	337	0	0	0	0	0	0	0	33	0	16	14	63	63	400
3:30 PM	0	0	142	25	14	181	0	46	118	0	0	164	345	0	0	0	0	0	0	0	32	0	32	18	82	82	427
3:45 PM	0	0	122	26	15	163	0	42	124	0	0	166	329	0	0	0	0	0	0	0	26	0	21	24	71	71	400
Total	**0**	**0**	**530**	**103**	**68**	**701**	**0**	**176**	**474**	**0**	**0**	**650**	**1,351**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**108**	**0**	**81**	**88**	**277**	**277**	**1,628**
4:00 PM	0	0	124	29	22	175	0	53	124	0	0	177	352	0	0	0	0	0	0	0	28	0	16	23	67	67	419
4:15 PM	0	0	150	40	21	211	0	50	148	0	0	198	409	0	0	0	0	0	0	0	26	0	13	23	62	62	471
4:30 PM	0	0	128	30	20	178	0	60	111	0	0	171	349	0	0	0	0	0	0	0	39	0	12	32	83	83	432
4:45 PM	0	0	150	36	20	206	0	49	134	0	0	183	389	0	0	0	0	0	0	0	30	0	14	20	64	64	453
Total	**0**	**0**	**552**	**135**	**83**	**770**	**0**	**212**	**517**	**0**	**0**	**729**	**1,499**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**123**	**0**	**55**	**98**	**276**	**276**	**1,775**
5:00 PM	0	0	165	47	6	218	0	47	85	0	0	132	350	0	0	0	0	0	0	0	26	0	19	21	66	66	416
5:15 PM	0	0	144	21	13	178	0	47	142	0	0	189	367	0	0	0	0	0	0	0	26	0	17	23	66	66	433
5:30 PM	0	0	125	34	5	164	0	55	120	0	0	175	339	0	0	0	0	0	0	0	18	0	14	22	54	54	393
5:45 PM	0	0	115	24	8	147	0	50	91	0	0	141	288	0	0	0	0	0	0	0	21	0	10	32	63	63	351
Total	**0**	**0**	**549**	**126**	**32**	**707**	**0**	**199**	**438**	**0**	**0**	**637**	**1,344**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**91**	**0**	**60**	**98**	**249**	**249**	**1,593**

VEHICLE TURNING MOVEMENT COUNT

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	Skyview Drive	**MILEPOST:**	1.223
OBSERVER:	FDA	**DATE OF COUNT:**	1/14/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
NORTH APPROACH:	SR 659 (Combee Road)	**EAST APPROACH:**	Skyview Drive		
SOUTH APPROACH:	SR 659 (Combee Road)	**WEST APPROACH:**	N/A		
		COUNT PERIODS:	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM		

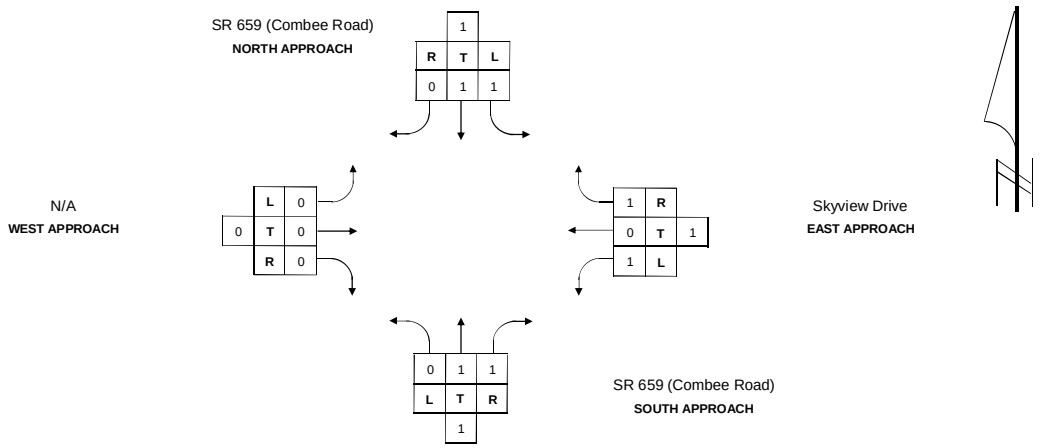
HEAVY VEHICLES (TRUCKS + BUSSES)

Direction	Northbound						Southbound							Eastbound						Westbound							
Start Time	NBU	NBL	NBT	NBR	NBRTOR	Total	SBU	SBL	SBT	SBR	SBRTOR	Total	NS Total	EBU	EBL	EBT	EBR	EBRTOR	Total	WBU	WBL	WBT	WBR	WBRTOR	Total	EW Total	Grand Total
7:00 AM	0	0	2	0	0	2	0	3	9	0	0	12	14	0	0	0	0	0	0	0	2	0	0	2	4	4	18
7:15 AM	0	0	8	0	0	8	0	0	8	0	0	8	16	0	0	0	0	0	0	0	0	0	0	2	2	2	18
7:30 AM	0	0	9	0	1	10	0	1	6	0	0	7	17	0	0	0	0	0	0	0	2	0	0	2	4	4	21
7:45 AM	0	0	8	2	2	12	0	1	13	0	0	14	26	0	0	0	0	0	0	0	0	0	1	0	1	1	27
Total	**0**	**0**	**27**	**2**	**3**	**32**	**0**	**5**	**36**	**0**	**0**	**41**	**73**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**1**	**6**	**11**	**11**	**84**
8:00 AM	0	0	9	0	1	10	0	2	13	0	0	15	25	0	0	0	0	0	0	0	0	0	1	0	1	1	26
8:15 AM	0	0	14	0	0	14	0	0	9	0	0	9	23	0	0	0	0	0	0	0	1	0	1	2	4	4	27
8:30 AM	0	0	16	0	0	16	0	1	9	0	0	10	26	0	0	0	0	0	0	0	0	0	1	1	2	2	28
8:45 AM	0	0	11	0	1	12	0	1	10	0	0	11	23	0	0	0	0	0	0	0	0	0	1	0	1	1	24
Total	**0**	**0**	**50**	**0**	**2**	**52**	**0**	**4**	**41**	**0**	**0**	**45**	**97**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**4**	**3**	**8**	**8**	**105**
12:00 PM	0	0	10	1	0	11	0	1	11	0	0	12	23	0	0	0	0	0	0	0	1	0	0	0	1	1	24
12:15 PM	0	0	8	1	0	9	0	2	4	0	0	6	15	0	0	0	0	0	0	0	0	0	0	1	1	1	16
12:30 PM	0	0	15	0	0	15	0	0	7	0	0	7	22	0	0	0	0	0	0	0	2	0	0	0	2	2	24
12:45 PM	0	0	10	0	0	10	0	1	5	0	0	6	16	0	0	0	0	0	0	0	0	0	0	1	1	1	17
Total	**0**	**0**	**43**	**2**	**0**	**45**	**0**	**4**	**27**	**0**	**0**	**31**	**76**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**2**	**5**	**5**	**81**
1:00 PM	0	0	6	1	0	7	0	1	8	0	0	9	16	0	0	0	0	0	0	0	1	0	1	2	4	4	20
1:15 PM	0	0	9	0	0	9	0	1	16	0	0	17	26	0	0	0	0	0	0	0	1	0	0	2	3	3	29
1:30 PM	0	0	11	1	0	12	0	1	10	0	0	11	23	0	0	0	0	0	0	0	0	0	1	0	1	1	24
1:45 PM	0	0	9	0	0	9	0	1	6	0	0	7	16	0	0	0	0	0	0	0	2	0	0	0	2	2	18
Total	**0**	**0**	**35**	**2**	**0**	**37**	**0**	**4**	**40**	**0**	**0**	**44**	**81**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**4**	**10**	**10**	**91**
2:00 PM	0	0	15	0	0	15	0	0	10	0	0	10	25	0	0	0	0	0	0	0	0	0	0	0	0	0	25
2:15 PM	0	0	10	0	1	11	0	1	13	0	0	14	25	0	0	0	0	0	0	0	0	0	5	0	5	5	30
2:30 PM	0	0	17	1	0	18	0	4	10	0	0	14	32	0	0	0	0	0	0	0	0	0	0	0	0	0	32
2:45 PM	0	0	8	0	0	8	0	3	11	0	0	14	22	0	0	0	0	0	0	0	0	0	2	1	3	3	25
Total	**0**	**0**	**50**	**1**	**1**	**52**	**0**	**8**	**44**	**0**	**0**	**52**	**104**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**1**	**8**	**8**	**112**
3:00 PM	0	0	13	0	0	13	0	3	12	0	0	15	28	0	0	0	0	0	0	0	1	0	0	0	1	1	29
3:15 PM	0	0	16	1	1	18	0	1	6	0	0	7	25	0	0	0	0	0	0	0	1	0	3	0	4	4	29
3:30 PM	0	0	9	1	0	10	0	2	5	0	0	7	17	0	0	0	0	0	0	0	2	0	1	2	5	5	22
3:45 PM	0	0	8	1	0	9	0	2	7	0	0	9	18	0	0	0	0	0	0	0	1	0	0	1	2	2	20
Total	**0**	**0**	**46**	**3**	**1**	**50**	**0**	**8**	**30**	**0**	**0**	**38**	**88**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**4**	**3**	**12**	**12**	**100**
4:00 PM	0	0	7	1	0	8	0	1	10	0	0	11	19	0	0	0	0	0	0	0	0	0	1	0	1	1	20
4:15 PM	0	0	12	1	0	13	0	4	9	0	0	13	26	0	0	0	0	0	0	0	0	0	0	0	0	0	26
4:30 PM	0	0	5	1	0	6	0	0	7	0	0	7	13	0	0	0	0	0	0	0	1	0	0	1	2	2	15
4:45 PM	0	0	6	0	0	6	0	0	5	0	0	5	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Total	**0**	**0**	**30**	**3**	**0**	**33**	**0**	**5**	**31**	**0**	**0**	**36**	**69**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**3**	**3**	**72**
5:00 PM	0	0	8	2	0	10	0	1	5	0	0	6	16	0	0	0	0	0	0	0	0	0	0	0	0	0	16
5:15 PM	0	0	4	0	0	4	0	1	3	0	0	4	8	0	0	0	0	0	0	0	0	0	0	1	1	1	9
5:30 PM	0	0	3	0	0	3	0	0	3	0	0	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
5:45 PM	0	0	3	0	0	3	0	0	5	0	0	5	8	0	0	0	0	0	0	0	0	0	0	1	1	1	9
Total	**0**	**0**	**18**	**2**	**0**	**20**	**0**	**2**	**16**	**0**	**0**	**18**	**38**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**2**	**40**

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF VEHICLE MOVEMENTS

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	Skyview Drive	**MILEPOST:**	1.223
OBSERVER:	FDA	**DATE:**	1/14/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
REMARKS:					



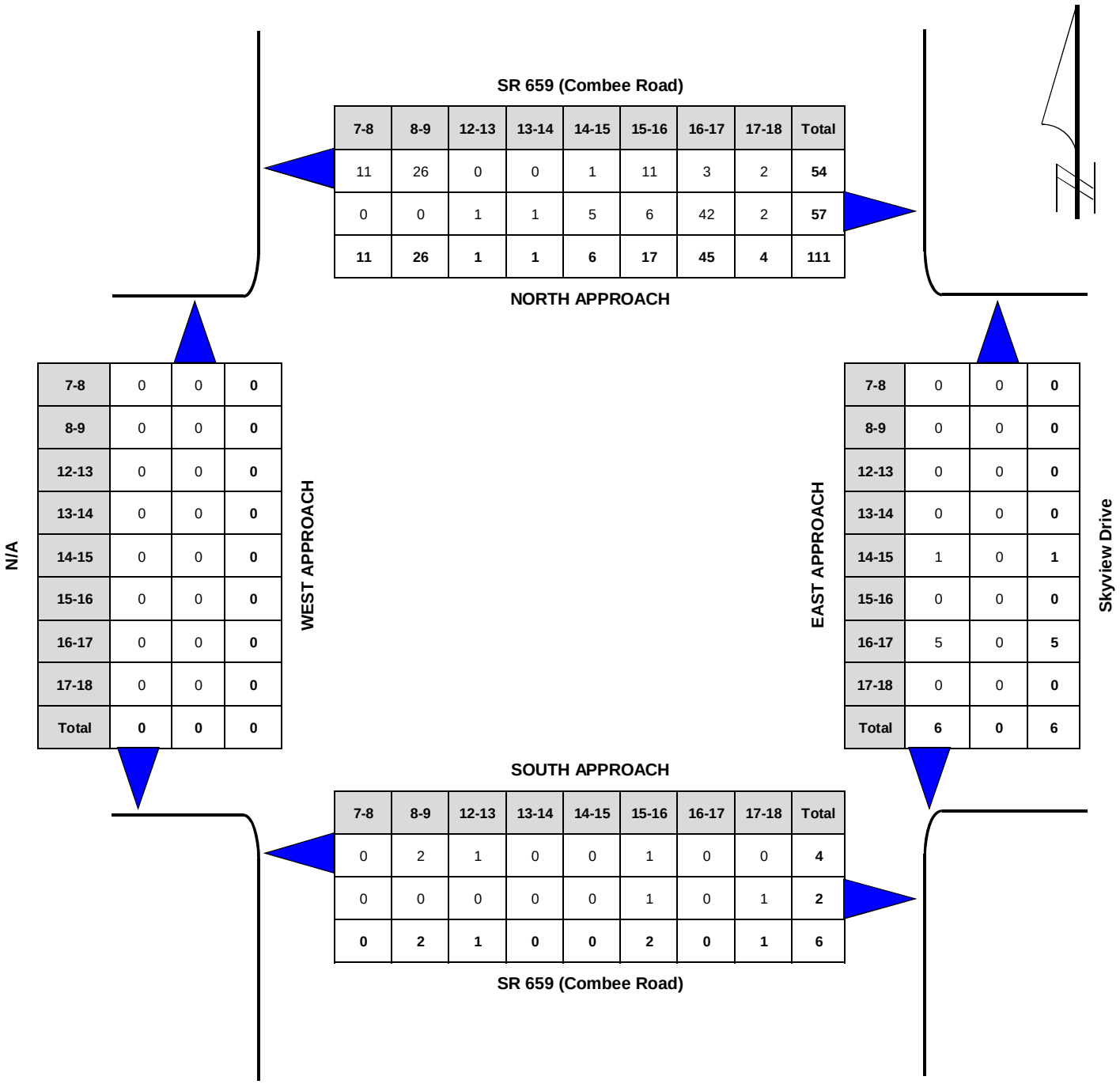
TIME	NORTHBOUND						SOUTHBOUND						TOTAL	EASTBOUND						WESTBOUND						TOTAL
BEGIN/END	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**N/S**	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**E/W**
7 - 8	0	0	472	37	36	**545**	0	72	528	0	0	**600**	**1,145**	0	0	0	0	0	**0**	0	139	0	53	96	**288**	**288**
8 - 9	0	0	417	57	25	**499**	0	104	465	0	0	**569**	**1,068**	0	0	0	0	0	**0**	0	130	0	48	87	**265**	**265**
12 - 13	0	0	483	114	15	**612**	0	119	478	0	0	**597**	**1,209**	0	0	0	0	0	**0**	0	108	0	64	86	**258**	**258**
13 - 14	0	0	447	123	11	**581**	0	128	431	0	0	**559**	**1,140**	0	0	0	0	0	**0**	0	98	0	42	94	**234**	**234**
14 - 15	0	0	522	124	13	**659**	0	151	418	0	0	**569**	**1,228**	0	0	0	0	0	**0**	0	107	0	77	71	**255**	**255**
15 - 16	0	0	530	103	68	**701**	0	176	474	0	0	**650**	**1,351**	0	0	0	0	0	**0**	0	108	0	81	88	**277**	**277**
16 - 17	0	0	552	135	83	**770**	0	212	517	0	0	**729**	**1,499**	0	0	0	0	0	**0**	0	123	0	55	98	**276**	**276**
17 - 18	0	0	549	126	32	**707**	0	199	438	0	0	**637**	**1,344**	0	0	0	0	0	**0**	0	91	0	60	98	**249**	**249**
TOTAL	0	0	3,972	819	283	**5,074**	0	1,161	3,749	0	0	**4,910**	**9,984**	0	0	0	0	0	**0**	0	904	0	480	718	**2,102**	**2,102**
Percentage	0.0%	0.0%	78.3%	16.1%	5.6%	100.0%	0.0%	23.6%	76.4%	0.0%	0.0%	100.0%	N/A	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	43.0%	0.0%	22.8%	34.2%	100.0%	N/A
Maximum	0	0	552	135	83	770	0	212	528	0	0	729	1,499	0	0	0	0	0	0	0	139	0	81	98	288	288
Minimum	0	0	417	37	11	499	0	72	418	0	0	559	1,068	0	0	0	0	0	0	0	91	0	42	71	234	234
Total Heavy Veh	0		299	15	7	321	40		265	0	0	305	626	0		0	0	0	0	18		0	19	22	59	59
% Heavy Veh	0.0%		7.5%	2.0%		6.3%	3.4%		7.1%	0.0%		6.2%	6.3%	0.0%		0.0%	0.0%		0.0%	2.0%		0.0%	3.4%		2.8%	2.8%

FLORIDA DEPARTMENT OF TRANSPORTATION

PEDESTRIAN MOVEMENT SUMMARY

SECTION 16006000
STATE ROUTE SR 659 (Combee Road)
OBSERVER FDA
COUNTY Polk
MILEPOST 1.223
COUNT HOURS 7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM

CITY Lakeland
INTERSECTING ROUTE Skyview Drive
DATE OF COUNT 1/14/16
WEATHER Good
COMPLETED BY DL
DATE 6/22/16



7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
11	26	0	0	1	11	3	2	**54**
0	0	1	1	5	6	42	2	**57**
11	**26**	**1**	**1**	**6**	**17**	**45**	**4**	**111**

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

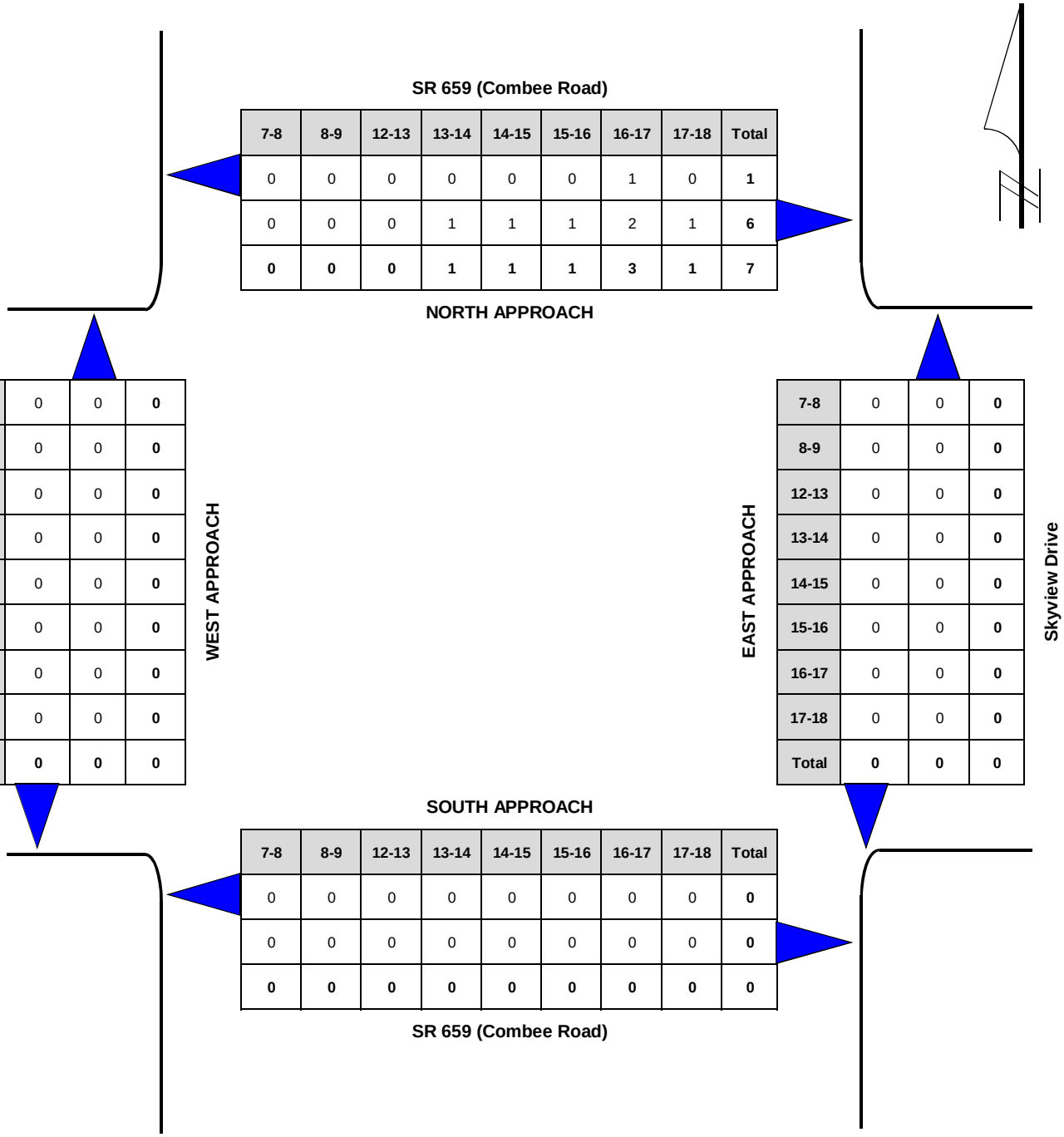
7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	1	0	**1**
15-16	0	0	**0**
16-17	5	0	**5**
17-18	0	0	**0**
Total	**6**	**0**	**6**

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	2	1	0	0	1	0	0	**4**
0	0	0	0	0	1	0	1	**2**
0	**2**	**1**	**0**	**0**	**2**	**0**	**1**	**6**

FLORIDA DEPARTMENT OF TRANSPORTATION

BICYCLE MOVEMENT SUMMARY

SECTION	16006000	**CITY**	Lakeland
STATE ROUTE	SR 659 (Combee Road)	**INTERSECTING ROUTE**	Skyview Drive
OBSERVER	FDA	**DATE OF COUNT**	1/14/16
COUNTY	Polk	**WEATHER**	Good
MILEPOST	1.223	**COMPLETED BY**	DL
COUNT HOURS	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM	**DATE**	6/22/16



NORTH APPROACH

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	1	0	**1**
0	0	0	1	1	1	2	1	**6**
0	**0**	**0**	**1**	**1**	**1**	**3**	**1**	**7**

WEST APPROACH

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

EAST APPROACH

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

SOUTH APPROACH

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	0	0	**0**
0	0	0	0	0	0	0	0	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

VEHICLE TURNING MOVEMENT COUNT

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	North Crystal Lake Drive	**MILEPOST:**	1.360
OBSERVER:	FDA	**DATE OF COUNT:**	1/14/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
NORTH APPROACH:	SR 659 (Combee Road)	**EAST APPROACH:**	N/A		
SOUTH APPROACH:	SR 659 (Combee Road)	**WEST APPROACH:**	North Crystal Lake Drive		
		COUNT PERIODS:	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM		

ALL VEHICLES / ALL MOVEMENTS

Direction	Northbound						Southbound							Eastbound						Westbound							
Start Time	NBU	NBL	NBT	NBR	NBRTOR	Total	SBU	SBL	SBT	SBR	SBRTOR	Total	NS Total	EBU	EBL	EBT	EBR	EBRTOR	Total	WBU	WBL	WBT	WBR	WBRTOR	Total	EW Total	Grand Total
7:00 AM	0	12	93	0	0	105	0	0	111	0	0	111	216	0	5	0	5	6	16	0	0	0	0	0	0	16	232
7:15 AM	0	14	140	0	0	154	0	0	125	1	0	126	280	0	7	0	2	5	14	0	0	0	0	0	0	14	294
7:30 AM	0	11	164	0	0	175	0	0	163	1	0	164	339	0	8	0	2	10	20	0	0	0	0	0	0	20	359
7:45 AM	0	28	128	0	0	156	0	0	158	0	0	158	314	0	7	0	8	6	21	0	0	0	0	0	0	21	335
Total	**0**	**65**	**525**	**0**	**0**	**590**	**0**	**0**	**557**	**2**	**0**	**559**	**1,149**	**0**	**27**	**0**	**17**	**27**	**71**	**0**	**0**	**0**	**0**	**0**	**0**	**71**	**1,220**
8:00 AM	0	30	102	0	0	132	0	0	140	5	0	145	277	0	5	0	5	9	19	0	0	0	0	0	0	19	296
8:15 AM	0	43	128	0	0	171	0	0	110	4	0	114	285	0	10	0	12	8	30	0	0	0	0	0	0	30	315
8:30 AM	0	25	104	0	0	129	0	0	132	0	0	132	261	0	9	0	19	8	36	0	0	0	0	0	0	36	297
8:45 AM	0	27	89	0	0	116	0	0	96	2	1	99	215	0	9	0	17	11	37	0	0	0	0	0	0	37	252
Total	**0**	**125**	**423**	**0**	**0**	**548**	**0**	**0**	**478**	**11**	**1**	**490**	**1,038**	**0**	**33**	**0**	**53**	**36**	**122**	**0**	**0**	**0**	**0**	**0**	**0**	**122**	**1,160**
12:00 PM	0	14	147	0	0	161	0	0	135	2	1	138	299	0	6	0	6	8	20	0	0	0	0	0	0	20	319
12:15 PM	0	21	140	0	0	161	0	0	117	4	0	121	282	0	7	0	6	15	28	0	0	0	0	0	0	28	310
12:30 PM	0	26	131	0	0	157	0	0	129	1	0	130	287	0	9	0	9	10	28	0	0	0	0	0	0	28	315
12:45 PM	0	22	135	0	0	157	0	0	143	1	1	145	302	0	4	0	10	5	19	0	0	0	0	0	0	19	321
Total	**0**	**83**	**553**	**0**	**0**	**636**	**0**	**0**	**524**	**8**	**2**	**534**	**1,170**	**0**	**26**	**0**	**31**	**38**	**95**	**0**	**0**	**0**	**0**	**0**	**0**	**95**	**1,265**
1:00 PM	0	20	117	0	0	137	0	0	109	6	0	115	252	0	5	0	6	14	25	0	0	0	0	0	0	25	277
1:15 PM	0	19	125	0	0	144	0	0	146	3	0	149	293	0	15	0	19	2	36	0	0	0	0	0	0	36	329
1:30 PM	0	20	136	0	0	156	0	0	131	3	1	135	291	0	7	0	7	9	23	0	0	0	0	0	0	23	314
1:45 PM	0	25	125	0	0	150	0	0	102	2	0	104	254	0	4	0	4	7	15	0	0	0	0	0	0	15	269
Total	**0**	**84**	**503**	**0**	**0**	**587**	**0**	**0**	**488**	**14**	**1**	**503**	**1,090**	**0**	**31**	**0**	**36**	**32**	**99**	**0**	**0**	**0**	**0**	**0**	**0**	**99**	**1,189**
2:00 PM	0	21	141	0	0	162	0	0	112	1	0	113	275	0	7	0	5	10	22	0	0	0	0	0	0	22	297
2:15 PM	0	27	142	0	0	169	0	0	123	2	0	125	294	0	8	0	4	8	20	0	0	0	0	0	0	20	314
2:30 PM	0	12	159	0	0	171	0	0	115	3	0	118	289	0	8	0	8	16	32	0	0	0	0	0	0	32	321
2:45 PM	0	26	144	0	0	170	0	0	154	0	0	154	324	0	10	0	7	10	27	0	0	0	0	0	0	27	351
Total	**0**	**86**	**586**	**0**	**0**	**672**	**0**	**0**	**504**	**6**	**0**	**510**	**1,182**	**0**	**33**	**0**	**24**	**44**	**101**	**0**	**0**	**0**	**0**	**0**	**0**	**101**	**1,283**
3:00 PM	0	28	146	0	0	174	0	0	136	3	0	139	313	0	9	0	15	7	31	0	0	0	0	0	0	31	344
3:15 PM	0	19	143	0	0	162	0	0	144	4	0	148	310	0	9	0	11	10	30	0	0	0	0	0	0	30	340
3:30 PM	0	31	168	0	0	199	0	0	157	2	1	160	359	0	8	0	12	7	27	0	0	0	0	0	0	27	386
3:45 PM	0	29	134	0	0	163	0	0	141	3	0	144	307	0	11	0	10	5	26	0	0	0	0	0	0	26	333
Total	**0**	**107**	**591**	**0**	**0**	**698**	**0**	**0**	**578**	**12**	**1**	**591**	**1,289**	**0**	**37**	**0**	**48**	**29**	**114**	**0**	**0**	**0**	**0**	**0**	**0**	**114**	**1,403**
4:00 PM	0	26	140	0	0	166	0	0	153	4	0	157	323	0	24	0	37	11	72	0	0	0	0	0	0	72	395
4:15 PM	0	30	154	0	0	184	0	0	143	4	0	147	331	0	14	0	22	14	50	0	0	0	0	0	0	50	381
4:30 PM	0	25	152	0	0	177	0	0	144	2	0	146	323	0	13	0	17	14	44	0	0	0	0	0	0	44	367
4:45 PM	0	22	156	0	0	178	0	0	154	3	0	157	335	0	11	0	14	5	30	0	0	0	0	0	0	30	365
Total	**0**	**103**	**602**	**0**	**0**	**705**	**0**	**0**	**594**	**13**	**0**	**607**	**1,312**	**0**	**62**	**0**	**90**	**44**	**196**	**0**	**0**	**0**	**0**	**0**	**0**	**196**	**1,508**
5:00 PM	0	27	177	0	0	204	0	0	153	2	0	155	359	0	20	0	27	7	54	0	0	0	0	0	0	54	413
5:15 PM	0	20	160	0	0	180	0	0	156	4	0	160	340	0	12	0	16	9	37	0	0	0	0	0	0	37	377
5:30 PM	0	26	128	0	0	154	0	0	139	5	1	145	299	0	10	0	26	9	45	0	0	0	0	0	0	45	344
5:45 PM	0	24	134	0	0	158	0	0	114	3	0	117	275	0	10	0	13	14	37	0	0	0	0	0	0	37	312
Total	**0**	**97**	**599**	**0**	**0**	**696**	**0**	**0**	**562**	**14**	**1**	**577**	**1,273**	**0**	**52**	**0**	**82**	**39**	**173**	**0**	**0**	**0**	**0**	**0**	**0**	**173**	**1,446**

VEHICLE TURNING MOVEMENT COUNT

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	North Crystal Lake Drive	**MILEPOST:**	1.360
OBSERVER:	FDA	**DATE OF COUNT:**	1/14/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
NORTH APPROACH:	SR 659 (Combee Road)	**EAST APPROACH:**	N/A		
SOUTH APPROACH:	SR 659 (Combee Road)	**WEST APPROACH:**	North Crystal Lake Drive		
		COUNT PERIODS:	7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM		

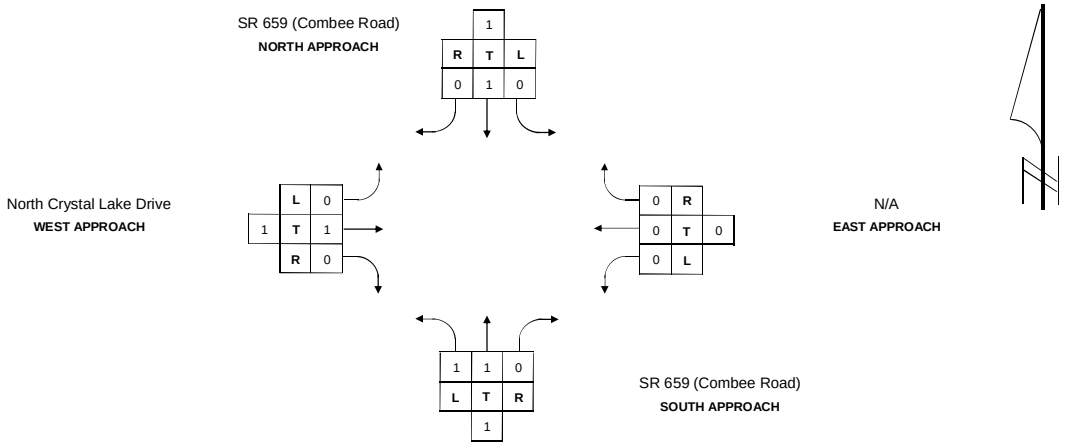
HEAVY VEHICLES (TRUCKS + BUSSES)

Direction	Northbound						Southbound							Eastbound						Westbound							
Start Time	NBU	NBL	NBT	NBR	NBRTOR	Total	SBU	SBL	SBT	SBR	SBRTOR	Total	NS Total	EBU	EBL	EBT	EBR	EBRTOR	Total	WBU	WBL	WBT	WBR	WBRTOR	Total	EW Total	Grand Total
7:00 AM	0	0	4	0	0	4	0	0	9	0	0	9	13	0	0	0	1	1	2	0	0	0	0	0	0	2	15
7:15 AM	0	0	10	0	0	10	0	0	8	0	0	8	18	0	0	0	0	0	0	0	0	0	0	0	0	0	18
7:30 AM	0	3	7	0	0	10	0	0	10	0	0	10	20	0	0	0	0	0	0	0	0	0	0	0	0	0	20
7:45 AM	0	0	8	0	0	8	0	0	14	0	0	14	22	0	0	0	0	0	0	0	0	0	0	0	0	0	22
Total	**0**	**3**	**29**	**0**	**0**	**32**	**0**	**0**	**41**	**0**	**0**	**41**	**73**	**0**	**0**	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**75**
8:00 AM	0	1	9	0	0	10	0	0	14	1	0	15	25	0	1	0	0	2	3	0	0	0	0	0	0	3	28
8:15 AM	0	4	10	0	0	14	0	0	9	0	0	9	23	0	2	0	2	0	4	0	0	0	0	0	0	4	27
8:30 AM	0	1	17	0	0	18	0	0	9	0	0	9	27	0	3	0	0	1	4	0	0	0	0	0	0	4	31
8:45 AM	0	2	11	0	0	13	0	0	12	1	0	13	26	0	1	0	1	0	2	0	0	0	0	0	0	2	28
Total	**0**	**8**	**47**	**0**	**0**	**55**	**0**	**0**	**44**	**2**	**0**	**46**	**101**	**0**	**7**	**0**	**3**	**3**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**114**
12:00 PM	0	0	13	0	0	13	0	0	12	0	0	12	25	0	0	0	0	1	1	0	0	0	0	0	0	1	26
12:15 PM	0	1	9	0	0	10	0	0	4	0	0	4	14	0	1	0	1	0	2	0	0	0	0	0	0	2	16
12:30 PM	0	0	17	0	0	17	0	0	8	0	0	8	25	0	0	0	0	0	0	0	0	0	0	0	0	0	25
12:45 PM	0	0	10	0	0	10	0	0	5	0	0	5	15	0	1	0	1	0	2	0	0	0	0	0	0	2	17
Total	**0**	**1**	**49**	**0**	**0**	**50**	**0**	**0**	**29**	**0**	**0**	**29**	**79**	**0**	**2**	**0**	**2**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**84**
1:00 PM	0	2	7	0	0	9	0	0	8	0	0	8	17	0	0	0	0	0	0	0	0	0	0	0	0	0	17
1:15 PM	0	2	9	0	0	11	0	0	16	1	0	17	28	0	1	0	1	0	2	0	0	0	0	0	0	2	30
1:30 PM	0	0	13	0	0	13	0	0	11	0	0	11	24	0	1	0	0	0	1	0	0	0	0	0	0	1	25
1:45 PM	0	1	10	0	0	11	0	0	6	0	0	6	17	0	0	0	1	0	1	0	0	0	0	0	0	1	18
Total	**0**	**5**	**39**	**0**	**0**	**44**	**0**	**0**	**41**	**1**	**0**	**42**	**86**	**0**	**2**	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**90**
2:00 PM	0	0	14	0	0	14	0	0	8	0	0	8	22	0	1	0	0	0	1	0	0	0	0	0	0	1	23
2:15 PM	0	4	9	0	0	13	0	0	13	0	0	13	26	0	0	0	0	0	0	0	0	0	0	0	0	0	26
2:30 PM	0	1	16	0	0	17	0	0	11	0	0	11	28	0	0	0	2	0	2	0	0	0	0	0	0	2	30
2:45 PM	0	2	8	0	0	10	0	0	14	0	0	14	24	0	2	0	0	1	3	0	0	0	0	0	0	3	27
Total	**0**	**7**	**47**	**0**	**0**	**54**	**0**	**0**	**46**	**0**	**0**	**46**	**100**	**0**	**3**	**0**	**2**	**1**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**106**
3:00 PM	0	1	11	0	0	12	0	0	13	0	0	13	25	0	0	0	2	0	2	0	0	0	0	0	0	2	27
3:15 PM	0	2	15	0	0	17	0	0	8	0	0	8	25	0	0	0	0	0	0	0	0	0	0	0	0	0	25
3:30 PM	0	2	11	0	0	13	0	0	9	0	0	9	22	0	0	0	0	0	0	0	0	0	0	0	0	0	22
3:45 PM	0	0	9	0	0	9	0	0	7	0	0	7	16	0	0	0	0	0	0	0	0	0	0	0	0	0	16
Total	**0**	**5**	**46**	**0**	**0**	**51**	**0**	**0**	**37**	**0**	**0**	**37**	**88**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**90**
4:00 PM	0	2	6	0	0	8	0	0	9	0	0	9	17	0	1	0	3	0	4	0	0	0	0	0	0	4	21
4:15 PM	0	2	10	0	0	12	0	0	9	0	0	9	21	0	1	0	0	1	2	0	0	0	0	0	0	2	23
4:30 PM	0	1	6	0	0	7	0	0	7	0	0	7	14	0	2	0	0	0	2	0	0	0	0	0	0	2	16
4:45 PM	0	0	7	0	0	7	0	0	4	0	0	4	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Total	**0**	**5**	**29**	**0**	**0**	**34**	**0**	**0**	**29**	**0**	**0**	**29**	**63**	**0**	**4**	**0**	**3**	**1**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**71**
5:00 PM	0	0	10	0	0	10	0	0	7	0	0	7	17	0	1	0	1	0	2	0	0	0	0	0	0	2	19
5:15 PM	0	1	6	0	0	7	0	0	4	0	0	4	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
5:30 PM	0	0	4	0	0	4	0	0	7	0	0	7	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
5:45 PM	0	0	4	0	0	4	0	0	7	0	0	7	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Total	**0**	**1**	**24**	**0**	**0**	**25**	**0**	**0**	**25**	**0**	**0**	**25**	**50**	**0**	**1**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**52**

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF VEHICLE MOVEMENTS

SECTION:	16006000	**CITY:**	Lakeland	**COUNTY:**	Polk
STATE ROUTE:	SR 659 (Combee Road)	**INTERSECTING ROUTE:**	North Crystal Lake Drive	**MILEPOST:**	1.360
OBSERVER:	FDA	**DATE:**	1/14/16	**COMPLETED BY:**	DL
WEATHER:	Good	**ROAD CONDITION:**	Good	**DATE COMPLETED:**	6/22/16
REMARKS:					



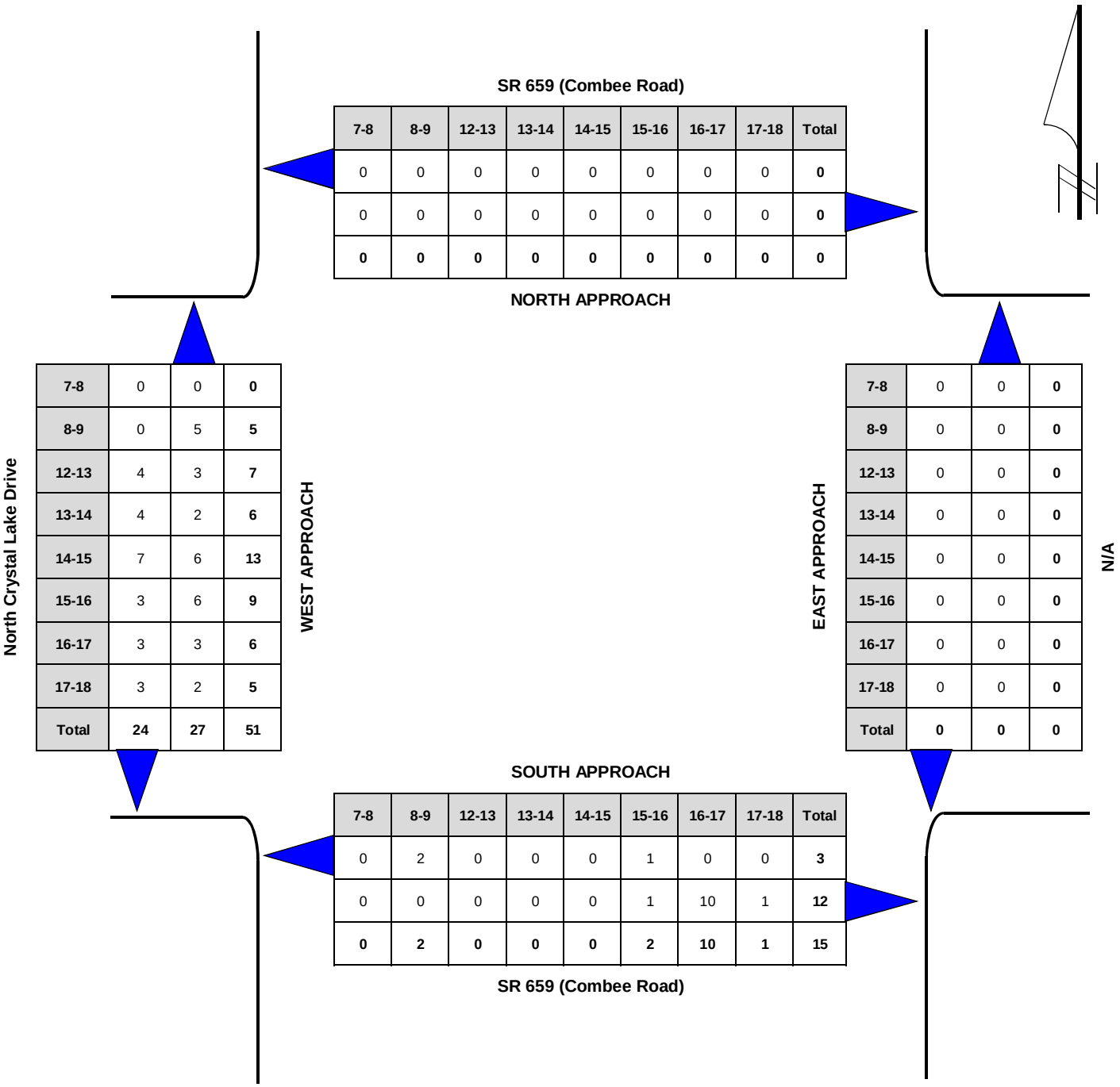
TIME	NORTHBOUND						SOUTHBOUND						TOTAL	EASTBOUND						WESTBOUND						TOTAL
BEGIN/END	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**N/S**	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**U**	**L**	**T**	**R**	**RTOR**	**TOT**	**E/W**
7 - 8	0	65	525	0	0	**590**	0	0	557	2	0	**559**	**1,149**	0	27	0	17	27	**71**	0	0	0	0	0	**0**	**71**
8 - 9	0	125	423	0	0	**548**	0	0	478	11	1	**490**	**1,038**	0	33	0	53	36	**122**	0	0	0	0	0	**0**	**122**
12 - 13	0	83	553	0	0	**636**	0	0	524	8	2	**534**	**1,170**	0	26	0	31	38	**95**	0	0	0	0	0	**0**	**95**
13 - 14	0	84	503	0	0	**587**	0	0	488	14	1	**503**	**1,090**	0	31	0	36	32	**99**	0	0	0	0	0	**0**	**99**
14 - 15	0	86	586	0	0	**672**	0	0	504	6	0	**510**	**1,182**	0	33	0	24	44	**101**	0	0	0	0	0	**0**	**101**
15 - 16	0	107	591	0	0	**698**	0	0	578	12	1	**591**	**1,289**	0	37	0	48	29	**114**	0	0	0	0	0	**0**	**114**
16 - 17	0	103	602	0	0	**705**	0	0	594	13	0	**607**	**1,312**	0	62	0	90	44	**196**	0	0	0	0	0	**0**	**196**
17 - 18	0	97	599	0	0	**696**	0	0	562	14	1	**577**	**1,273**	0	52	0	82	39	**173**	0	0	0	0	0	**0**	**173**
TOTAL	0	750	4,382	0	0	**5,132**	0	0	4,285	80	6	**4,371**	**9,503**	0	301	0	381	289	**971**	0	0	0	0	0	**0**	**971**
Percentage	0.0%	14.6%	85.4%	0.0%	0.0%	100.0%	0.0%	0.0%	98.0%	1.8%	0.1%	100.0%	N/A	0.0%	31.0%	0.0%	39.2%	29.8%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	N/A
Maximum	0	125	602	0	0	705	0	0	594	14	2	607	1,312	0	62	0	90	44	196	0	0	0	0	0	0	196
Minimum	0	65	423	0	0	548	0	0	478	2	1	490	1,038	0	26	0	17	27	71	0	0	0	0	0	0	71
Total Heavy Veh	35		310	0	0	345	0		292	3	0	295	640	19		0	16	7	42	0		0	0	0	0	42
% Heavy Veh	4.7%		7.1%	0.0%		6.7%	0.0%		6.8%	3.5%		6.7%	6.7%	6.3%		0.0%	3.4%		4.3%	0.0%		0.0%	0.0%		0.0%	4.3%

FLORIDA DEPARTMENT OF TRANSPORTATION

PEDESTRIAN MOVEMENT SUMMARY

SECTION 16006000
STATE ROUTE SR 659 (Combee Road)
OBSERVER FDA
COUNTY Polk
MILEPOST 1.360
COUNT HOURS 7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM

CITY Lakeland
INTERSECTING ROUTE North Crystal Lake Drive
DATE OF COUNT 1/14/16
WEATHER Good
COMPLETED BY DL
DATE 6/22/16



	7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
	0	0	0	0	0	0	0	0	**0**
	0	0	0	0	0	0	0	0	**0**
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

7-8	0	0	**0**
8-9	0	5	**5**
12-13	4	3	**7**
13-14	4	2	**6**
14-15	7	6	**13**
15-16	3	6	**9**
16-17	3	3	**6**
17-18	3	2	**5**
Total	**24**	**27**	**51**

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

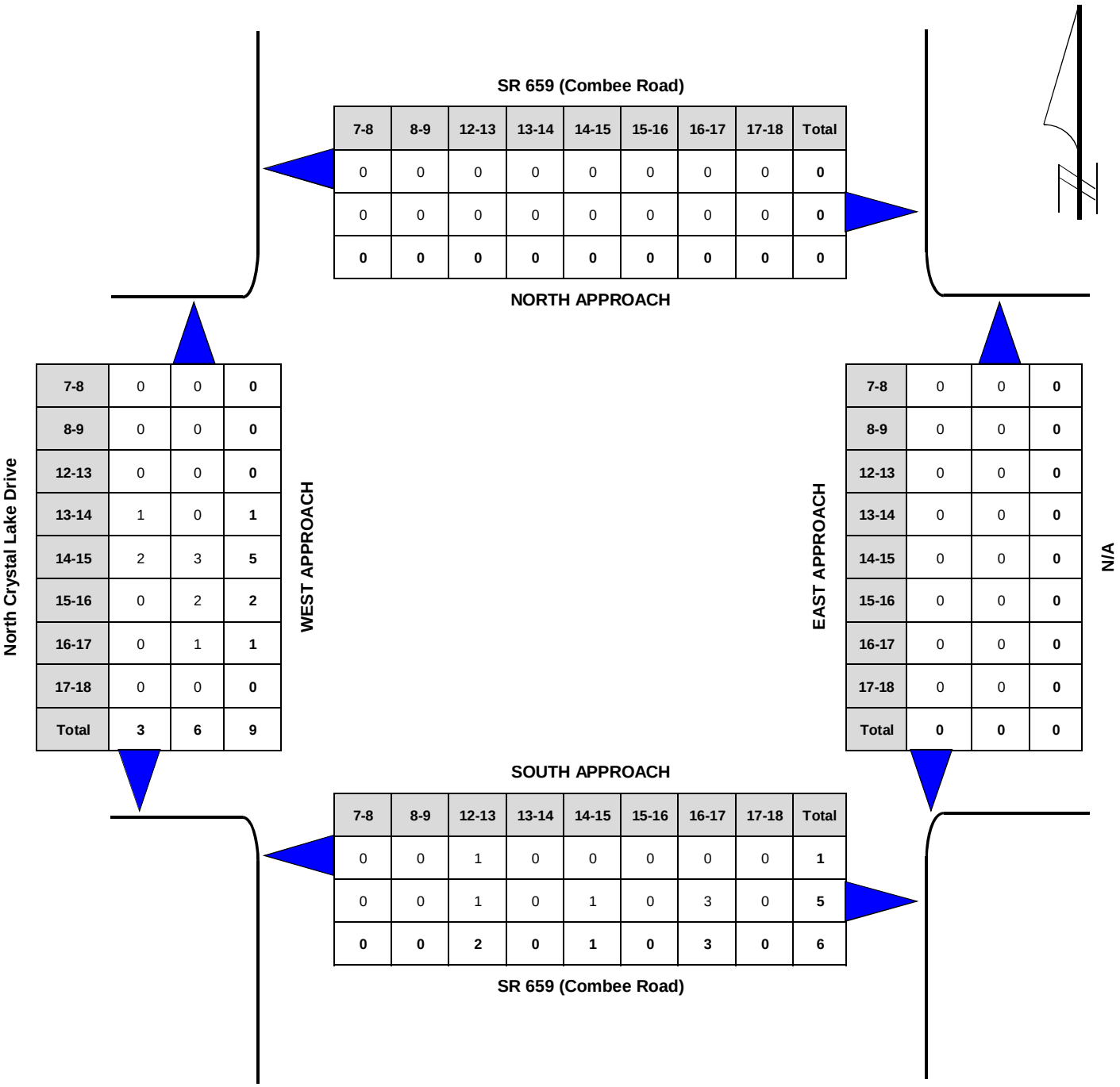
	7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
	0	2	0	0	0	1	0	0	**3**
	0	0	0	0	0	1	10	1	**12**
	0	**2**	**0**	**0**	**0**	**2**	**10**	**1**	**15**

FLORIDA DEPARTMENT OF TRANSPORTATION

BICYCLE MOVEMENT SUMMARY

SECTION 16006000
STATE ROUTE SR 659 (Combee Road)
OBSERVER FDA
COUNTY Polk
MILEPOST 1.360
COUNT HOURS 7:00 AM - 9:00 AM, 12:00 PM - 6:00 PM

CITY Lakeland
INTERSECTING ROUTE North Crystal Lake Drive
DATE OF COUNT 1/14/16
WEATHER Good
COMPLETED BY DL
DATE 6/22/16



NORTH APPROACH

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	0	0	0	0	0	0	**0**
0	0	0	0	0	0	0	0	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

WEST APPROACH

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	1	0	**1**
14-15	2	3	**5**
15-16	0	2	**2**
16-17	0	1	**1**
17-18	0	0	**0**
Total	**3**	**6**	**9**

EAST APPROACH

7-8	0	0	**0**
8-9	0	0	**0**
12-13	0	0	**0**
13-14	0	0	**0**
14-15	0	0	**0**
15-16	0	0	**0**
16-17	0	0	**0**
17-18	0	0	**0**
Total	**0**	**0**	**0**

SOUTH APPROACH

7-8	8-9	12-13	13-14	14-15	15-16	16-17	17-18	Total
0	0	1	0	0	0	0	0	**1**
0	0	1	0	1	0	3	0	**5**
0	**0**	**2**	**0**	**1**	**0**	**3**	**0**	**6**

Appendix D:

FTI 2016 Data

2016 Peak Season Factor Category Report - Report Type: ALL

Category: 1600 POLK COUNTYWIDE

MOCF: 0.96

Week	Dates	SF	PSCF
1	01/01/2016 - 01/02/2016	0.97	1.01
2	01/03/2016 - 01/09/2016	1.00	1.04
3	01/10/2016 - 01/16/2016	1.03	1.07
4	01/17/2016 - 01/23/2016	1.02	1.06
5	01/24/2016 - 01/30/2016	1.00	1.04
6	01/31/2016 - 02/06/2016	0.99	1.03
* 7	02/07/2016 - 02/13/2016	0.97	1.01
* 8	02/14/2016 - 02/20/2016	0.96	1.00
* 9	02/21/2016 - 02/27/2016	0.95	0.99
*10	02/28/2016 - 03/05/2016	0.95	0.99
*11	03/06/2016 - 03/12/2016	0.94	0.98
*12	03/13/2016 - 03/19/2016	0.93	0.97
*13	03/20/2016 - 03/26/2016	0.94	0.98
*14	03/27/2016 - 04/02/2016	0.95	0.99
*15	04/03/2016 - 04/09/2016	0.96	1.00
*16	04/10/2016 - 04/16/2016	0.96	1.00
*17	04/17/2016 - 04/23/2016	0.97	1.01
*18	04/24/2016 - 04/30/2016	0.98	1.02
*19	05/01/2016 - 05/07/2016	0.99	1.03
20	05/08/2016 - 05/14/2016	1.00	1.04
21	05/15/2016 - 05/21/2016	1.01	1.05
22	05/22/2016 - 05/28/2016	1.02	1.06
23	05/29/2016 - 06/04/2016	1.03	1.07
24	06/05/2016 - 06/11/2016	1.04	1.08
25	06/12/2016 - 06/18/2016	1.05	1.09
26	06/19/2016 - 06/25/2016	1.05	1.09
27	06/26/2016 - 07/02/2016	1.06	1.10
28	07/03/2016 - 07/09/2016	1.06	1.10
29	07/10/2016 - 07/16/2016	1.07	1.11
30	07/17/2016 - 07/23/2016	1.06	1.10
31	07/24/2016 - 07/30/2016	1.06	1.10
32	07/31/2016 - 08/06/2016	1.06	1.10
33	08/07/2016 - 08/13/2016	1.06	1.10
34	08/14/2016 - 08/20/2016	1.05	1.09
35	08/21/2016 - 08/27/2016	1.05	1.09
36	08/28/2016 - 09/03/2016	1.05	1.09
37	09/04/2016 - 09/10/2016	1.05	1.09
38	09/11/2016 - 09/17/2016	1.05	1.09
39	09/18/2016 - 09/24/2016	1.04	1.08
40	09/25/2016 - 10/01/2016	1.02	1.06
41	10/02/2016 - 10/08/2016	1.01	1.05
42	10/09/2016 - 10/15/2016	1.00	1.04
43	10/16/2016 - 10/22/2016	0.99	1.03
44	10/23/2016 - 10/29/2016	0.99	1.03
45	10/30/2016 - 11/05/2016	0.99	1.03
46	11/06/2016 - 11/12/2016	0.99	1.03
47	11/13/2016 - 11/19/2016	0.99	1.03
48	11/20/2016 - 11/26/2016	0.98	1.02
49	11/27/2016 - 12/03/2016	0.98	1.02
50	12/04/2016 - 12/10/2016	0.98	1.02
51	12/11/2016 - 12/17/2016	0.97	1.01
52	12/18/2016 - 12/24/2016	1.00	1.04
53	12/25/2016 - 12/31/2016	1.03	1.07

* Peak Season

2016 Weekly Axle Factor Category Report - Report Type: ALL

County: 16 - POLK

Week	Dates	1619 SR659/COMBEE,CR546-SR33	1620 SR544,US92-OLD LUCERNE	1621 SR546,I-4 - CR563	1622 SR559,US92-LK MATTIE
1	01/01/2016 - 01/02/2016	0.94	0.93	0.91	0.79
2	01/03/2016 - 01/09/2016	0.94	0.93	0.91	0.79
3	01/10/2016 - 01/16/2016	0.94	0.93	0.91	0.79
4	01/17/2016 - 01/23/2016	0.94	0.93	0.91	0.79
5	01/24/2016 - 01/30/2016	0.94	0.93	0.91	0.79
6	01/31/2016 - 02/06/2016	0.94	0.94	0.92	0.79
7	02/07/2016 - 02/13/2016	0.94	0.94	0.92	0.79
8	02/14/2016 - 02/20/2016	0.94	0.94	0.92	0.79
9	02/21/2016 - 02/27/2016	0.94	0.94	0.92	0.79
10	02/28/2016 - 03/05/2016	0.94	0.94	0.92	0.79
11	03/06/2016 - 03/12/2016	0.94	0.93	0.92	0.79
12	03/13/2016 - 03/19/2016	0.94	0.93	0.92	0.79
13	03/20/2016 - 03/26/2016	0.94	0.93	0.92	0.79
14	03/27/2016 - 04/02/2016	0.94	0.93	0.92	0.79
15	04/03/2016 - 04/09/2016	0.94	0.93	0.92	0.79
16	04/10/2016 - 04/16/2016	0.94	0.93	0.92	0.79
17	04/17/2016 - 04/23/2016	0.94	0.93	0.92	0.79
18	04/24/2016 - 04/30/2016	0.94	0.94	0.92	0.79
19	05/01/2016 - 05/07/2016	0.94	0.94	0.92	0.79
20	05/08/2016 - 05/14/2016	0.94	0.95	0.92	0.79
21	05/15/2016 - 05/21/2016	0.94	0.95	0.92	0.79
22	05/22/2016 - 05/28/2016	0.94	0.95	0.93	0.79
23	05/29/2016 - 06/04/2016	0.94	0.95	0.93	0.79
24	06/05/2016 - 06/11/2016	0.94	0.94	0.94	0.79
25	06/12/2016 - 06/18/2016	0.94	0.94	0.94	0.79
26	06/19/2016 - 06/25/2016	0.94	0.94	0.94	0.79
27	06/26/2016 - 07/02/2016	0.94	0.94	0.94	0.79
28	07/03/2016 - 07/09/2016	0.94	0.94	0.94	0.79
29	07/10/2016 - 07/16/2016	0.94	0.94	0.94	0.79
30	07/17/2016 - 07/23/2016	0.94	0.94	0.94	0.79
31	07/24/2016 - 07/30/2016	0.94	0.94	0.94	0.79
32	07/31/2016 - 08/06/2016	0.94	0.94	0.94	0.79
33	08/07/2016 - 08/13/2016	0.94	0.94	0.94	0.79
34	08/14/2016 - 08/20/2016	0.94	0.94	0.93	0.79
35	08/21/2016 - 08/27/2016	0.94	0.94	0.93	0.79
36	08/28/2016 - 09/03/2016	0.94	0.94	0.93	0.79
37	09/04/2016 - 09/10/2016	0.94	0.94	0.93	0.79
38	09/11/2016 - 09/17/2016	0.94	0.94	0.93	0.79
39	09/18/2016 - 09/24/2016	0.94	0.94	0.93	0.79
40	09/25/2016 - 10/01/2016	0.94	0.94	0.93	0.79
41	10/02/2016 - 10/08/2016	0.94	0.94	0.93	0.79
42	10/09/2016 - 10/15/2016	0.94	0.94	0.92	0.79
43	10/16/2016 - 10/22/2016	0.94	0.94	0.92	0.79
44	10/23/2016 - 10/29/2016	0.94	0.94	0.92	0.79
45	10/30/2016 - 11/05/2016	0.94	0.94	0.92	0.79
46	11/06/2016 - 11/12/2016	0.94	0.94	0.92	0.79
47	11/13/2016 - 11/19/2016	0.94	0.94	0.92	0.79
48	11/20/2016 - 11/26/2016	0.94	0.94	0.92	0.79
49	11/27/2016 - 12/03/2016	0.94	0.94	0.92	0.79
50	12/04/2016 - 12/10/2016	0.94	0.93	0.91	0.79
51	12/11/2016 - 12/17/2016	0.94	0.93	0.91	0.79
52	12/18/2016 - 12/24/2016	0.94	0.93	0.91	0.79
53	12/25/2016 - 12/31/2016	0.94	0.93	0.91	0.79

COUNTY: 16
STATION: 0028
DESCRIPTION: SR 35, 700/US 98 SOUTHEAST OF SYLVESTER ROAD, LKND
START DATE: 03/15/2016
START TIME: 0000

	DIRECTION: N					DIRECTION: S					COMBINED
TIME	1ST	2ND	3RD	4TH	TOTAL	1ST	2ND	3RD	4TH	TOTAL	TOTAL
0000	39	31	24	32	126	47	55	37	43	182	308
0100	22	23	21	19	85	36	30	15	25	106	191
0200	20	18	24	27	89	27	24	23	34	108	197
0300	19	19	37	35	110	17	19	19	22	77	187
0400	33	41	47	47	168	24	54	62	61	201	369
0500	32	82	120	128	362	49	80	124	113	366	728
0600	153	205	361	285	1004	128	217	252	253	850	1854
0700	272	392	449	448	1561	299	325	382	376	1382	2943
0800	429	451	399	323	1602	384	342	335	267	1328	2930
0900	313	288	273	339	1213	268	261	253	214	996	2209
1000	292	295	310	325	1222	265	260	242	268	1035	2257
1100	284	301	343	360	1288	262	277	257	278	1074	2362
1200	357	325	379	301	1362	304	285	308	312	1209	2571
1300	319	287	326	339	1271	303	323	325	282	1233	2504
1400	316	343	362	349	1370	291	338	355	380	1364	2734
1500	345	339	410	382	1476	420	390	417	386	1613	3089
1600	296	353	351	389	1389	399	403	433	434	1669	3058
1700	388	447	382	355	1572	463	407	418	402	1690	3262
1800	304	330	313	233	1180	348	310	248	246	1152	2332
1900	211	181	191	176	759	245	200	193	219	857	1616
2000	170	167	131	153	621	192	220	163	167	742	1363
2100	138	157	148	122	565	152	143	123	121	539	1104
2200	95	95	72	74	336	141	119	96	72	428	764
2300	71	49	42	39	201	87	74	64	53	278	479
24-HOUR TOTALS:					20932					20479	41411

PEAK VOLUME INFORMATION

	DIRECTION: N		DIRECTION: S		COMBINED DIRECTIONS	
	HOUR	VOLUME	HOUR	VOLUME	HOUR	VOLUME
A.M.	730	1777	730	1484	730	3261
P.M.	1645	1606	1630	1737	1645	3328
DAILY	730	1777	1630	1737	1645	3328

TRUCK PERCENTAGE 6.15 6.06 6.11

CLASSIFICATION SUMMARY DATABASE

DIR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTTRK	TOTVOL
N	101	15003	4540	77	450	111	0	256	385	7	0	1	1	0	0	1288	20932
S	107	14568	4563	79	506	79	6	244	308	15	0	1	3	0	0	1241	20479

GENERATED BY SPS 5.0.48P

COUNTY: 16
STATION: 3044
DESCRIPTION: SR 659/COMBEE RD, N OF WAYNESVILLE AVENUE
START DATE: 06/29/2016
START TIME: 1400

	DIRECTION: N					DIRECTION: S					COMBINED
TIME	1ST	2ND	3RD	4TH	TOTAL	1ST	2ND	3RD	4TH	TOTAL	TOTAL
0000	15	26	19	12	72	24	26	18	14	82	154
0100	13	11	13	10	47	16	13	8	23	60	107
0200	8	16	7	15	46	9	12	15	12	48	94
0300	15	18	31	25	89	16	20	18	21	75	164
0400	16	21	30	27	94	14	20	29	23	86	180
0500	27	39	56	48	170	34	42	53	59	188	358
0600	58	96	103	108	365	47	88	104	120	359	724
0700	104	138	131	130	503	116	142	148	162	568	1071
0800	133	116	120	106	475	129	102	121	109	461	936
0900	108	121	126	116	471	120	126	103	129	478	949
1000	106	110	143	123	482	108	117	122	121	468	950
1100	147	114	152	117	530	135	131	141	146	553	1083
1200	152	162	140	154	608	144	134	125	135	538	1146
1300	140	133	164	142	579	116	142	132	141	531	1110
1400	171	142	134	139	586	114	147	131	137	529	1115
1500	163	134	186	176	659	122	132	149	173	576	1235
1600	155	177	147	195	674	146	121	186	153	606	1280
1700	222	179	162	155	718	156	196	153	135	640	1358
1800	133	128	93	106	460	142	118	110	92	462	922
1900	106	85	96	98	385	96	92	91	81	360	745
2000	84	88	68	68	308	82	64	89	77	312	620
2100	74	49	58	47	228	74	55	70	52	251	479
2200	51	48	35	39	173	50	52	55	31	188	361
2300	36	33	21	17	107	35	40	32	11	118	225
24-HOUR TOTALS:					8829					8537	17366

PEAK VOLUME INFORMATION

	DIRECTION: N		DIRECTION: S		COMBINED DIRECTIONS	
	HOUR	VOLUME	HOUR	VOLUME	HOUR	VOLUME
A.M.	715	532	715	581	715	1113
P.M.	1645	758	1630	691	1630	1434
DAILY	1645	758	1630	691	1630	1434

TRUCK PERCENTAGE 9.38 9.18 9.28

CLASSIFICATION SUMMARY DATABASE

DIR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTTRK	TOTVOL
N	61	5806	2134	12	298	86	4	192	233	1	0	1	1	0	0	828	8829
S	52	5609	2092	12	308	75	5	188	191	5	0	0	0	0	0	784	8537

GENERATED BY SPS 5.0.48P

COUNTY: 16
STATION: 5186
DESCRIPTION: SR 659/COMBEE RD, S OF MAINE AVENUE
START DATE: 07/12/2016
START TIME: 0000

	DIRECTION: N					DIRECTION: S					COMBINED
TIME	1ST	2ND	3RD	4TH	TOTAL	1ST	2ND	3RD	4TH	TOTAL	TOTAL
0000	18	10	6	10	44	12	15	12	8	47	91
0100	8	6	8	10	32	15	10	5	12	42	74
0200	8	5	12	14	39	13	16	11	13	53	92
0300	10	8	11	10	39	6	7	10	12	35	74
0400	13	15	19	17	64	14	24	21	27	86	150
0500	33	33	65	82	213	19	46	48	69	182	395
0600	58	71	86	128	343	68	82	100	127	377	720
0700	121	112	139	160	532	101	106	133	107	447	979
0800	128	141	105	120	494	115	90	107	117	429	923
0900	107	107	101	102	417	80	91	99	98	368	785
1000	87	104	107	97	395	102	109	92	107	410	805
1100	113	117	95	127	452	94	116	102	123	435	887
1200	140	119	111	104	474	119	118	125	121	483	957
1300	120	114	140	117	491	107	98	117	109	431	922
1400	110	139	133	120	502	127	107	122	119	475	977
1500	120	124	149	137	530	115	135	143	131	524	1054
1600	132	135	151	152	570	149	131	160	141	581	1151
1700	134	155	142	122	553	174	156	123	111	564	1117
1800	103	78	71	99	351	105	96	65	90	356	707
1900	83	68	70	50	271	83	75	88	60	306	577
2000	50	50	48	54	202	67	54	45	38	204	406
2100	50	34	34	40	158	36	35	45	31	147	305
2200	30	34	14	22	100	31	35	29	22	117	217
2300	29	17	23	18	87	25	20	29	18	92	179
24-HOUR TOTALS:					7353					7191	14544

PEAK VOLUME INFORMATION

	DIRECTION: N		DIRECTION: S		COMBINED DIRECTIONS	
	HOUR	VOLUME	HOUR	VOLUME	HOUR	VOLUME
A.M.	730	568	645	467	730	1013
P.M.	1630	592	1630	631	1630	1223
DAILY	1630	592	1630	631	1630	1223

TRUCK PERCENTAGE 11.32 11.24 11.28

CLASSIFICATION SUMMARY DATABASE

DIR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTTRK	TOTVOL
N	41	4428	2052	9	326	91	6	188	210	0	0	2	0	0	0	832	7353
S	45	4205	2133	11	341	89	4	196	160	7	0	0	0	0	0	808	7191

GENERATED BY SPS 5.0.48P

Appendix E:

Turn 5 Worksheets

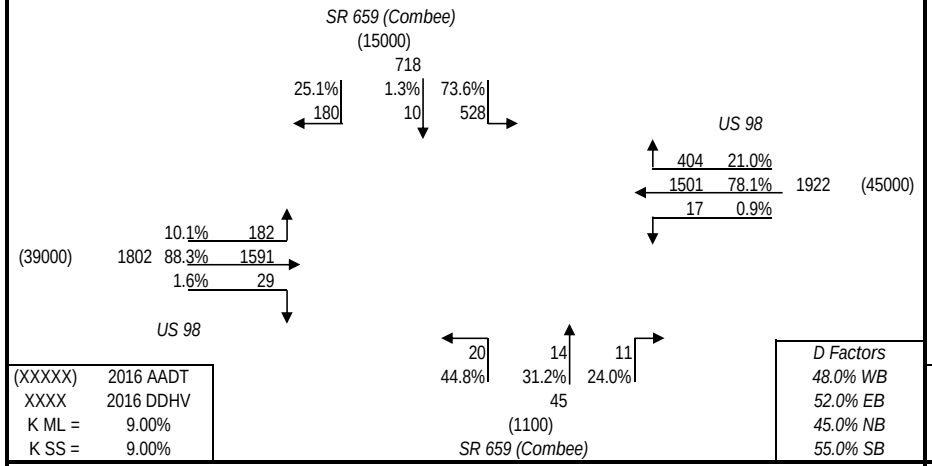
TURNS5 INITIAL TURNING VOLUME SUMMARY

Highway:	US 98	**County:**	Polk
Intersection:	SR 659 (Combee)		
Project:	Combee Road PD&E	**Analyst:**	0
		Date:	24-Jul-18

Approach-To-Approach	2016 Initial Estimate	2016 Final Estimate	2016 Calculated Volume	2025 Final Estimate	2025 Calculated Volume	2035 Final Estimate	2035 Calculated Volume	2045 Final Estimate	2045 Calculated Volume
West-To-North (LT)	0.120	0.101	182	0.101	199	0.101	218	0.102	239
West-To-East (Thru)	0.866	0.883	1591	0.883	1738	0.884	1904	0.883	2066
West-To-South (RT)	0.014	0.016	29	0.016	32	0.015	32	0.015	35
Total Flow From West:			**1802**		**1969**		**2154**		**2340**
East-To-South (LT)	0.006	0.009	17	0.009	19	0.009	21	0.009	23
East-To-West (Thru)	0.811	0.781	1501	0.780	1640	0.779	1795	0.779	1952
East-To-North (RT)	0.183	0.210	404	0.211	444	0.212	489	0.212	531
Total Flow From East:			**1922**		**2103**		**2305**		**2506**
North-To-East (LT)	0.664	0.736	528	0.737	580	0.738	638	0.739	695
North-To-South (Thru)	0.011	0.013	10	0.013	10	0.014	12	0.013	13
North-To-West (RT)	0.325	0.251	180	0.250	197	0.248	214	0.248	233
Total Flow From North:			**718**		**787**		**864**		**941**
South-To-West (LT)	0.511	0.448	20	0.447	21	0.445	24	0.445	25
South-To-North (Thru)	0.298	0.312	14	0.312	15	0.313	16	0.313	18
South-To-East (RT)	0.191	0.240	11	0.241	12	0.242	13	0.242	14
Total Flow From South:			**45**		**48**		**53**		**57**

PROJECT TRAFFIC FOR US 98 AT SR 659 (Combee)

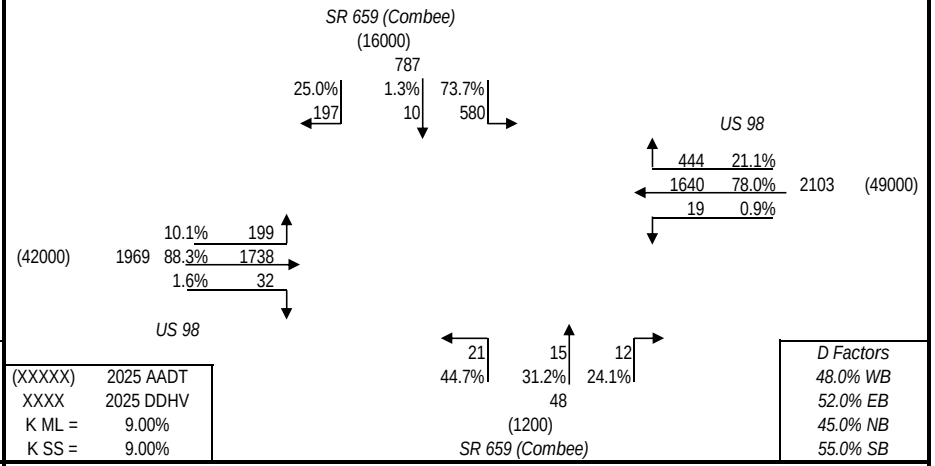
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2016



(XXXXX)	2016 AADT
XXXX	2016 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
48.0% WB
52.0% EB
45.0% NB
55.0% SB

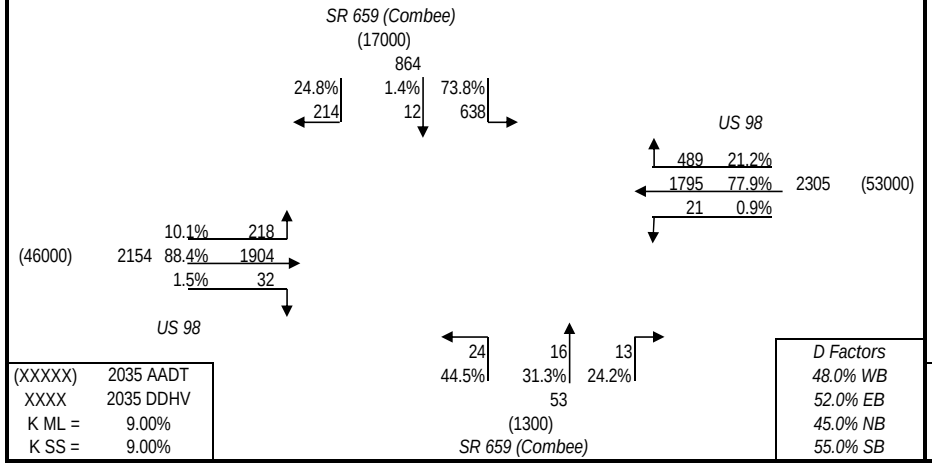
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2025



(XXXXX)	2025 AADT
XXXX	2025 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
48.0% WB
52.0% EB
45.0% NB
55.0% SB

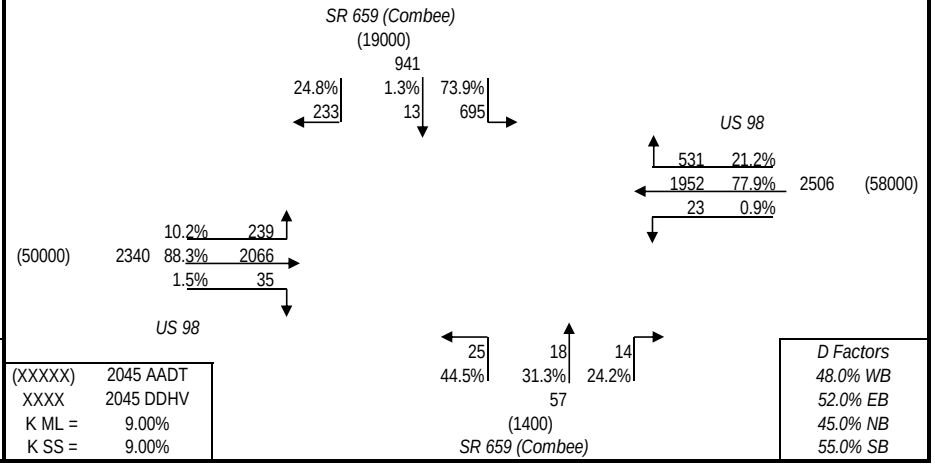
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2035



(XXXXX)	2035 AADT
XXXX	2035 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
48.0% WB
52.0% EB
45.0% NB
55.0% SB

DESIGN HOUR TURNING MOVEMENTS IN YEAR 2045

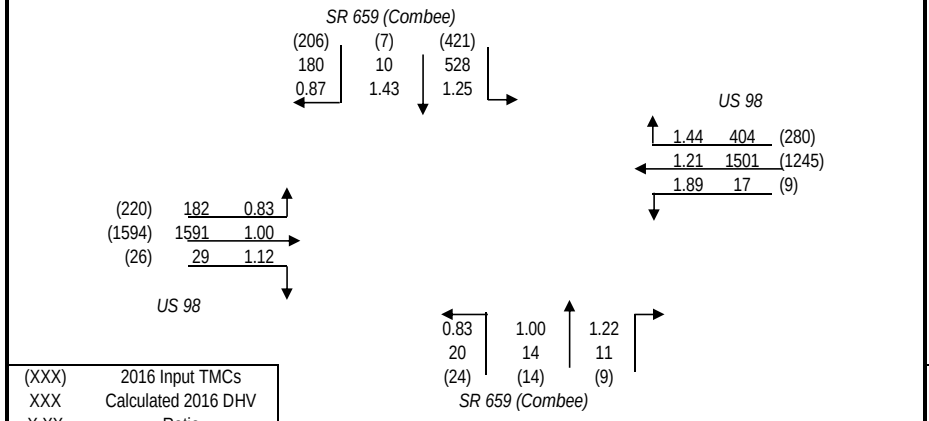


(XXXXX)	2045 AADT
XXXX	2045 DDHV
K ML =	9.00%
K SS =	9.00%

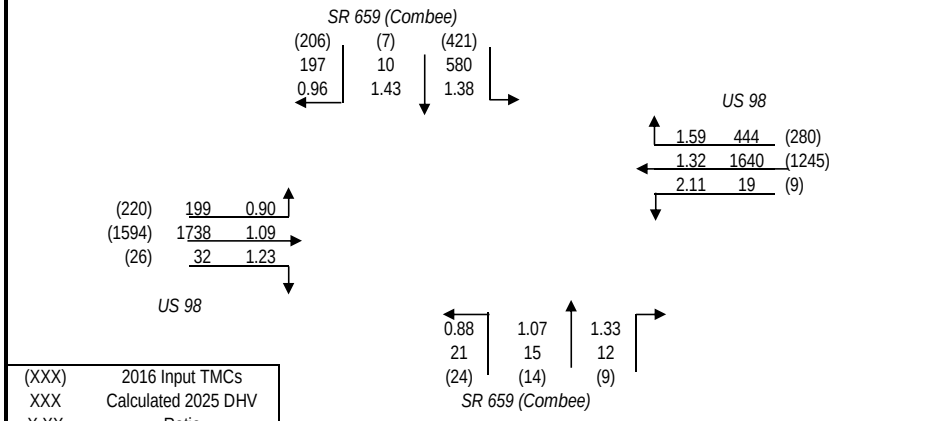
D Factors
48.0% WB
52.0% EB
45.0% NB
55.0% SB

PROJECT TRAFFIC FOR US 98 AT SR 659 (Combee)

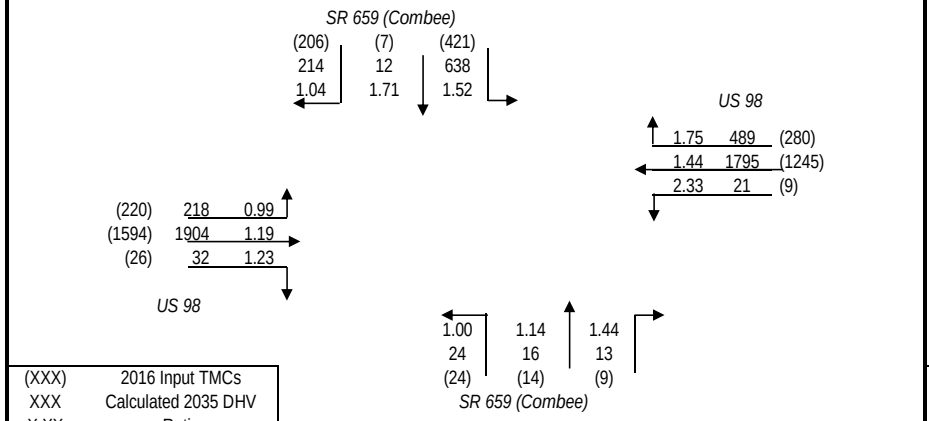
2016 INPUT TMCs COMPARED TO 2016 DHV



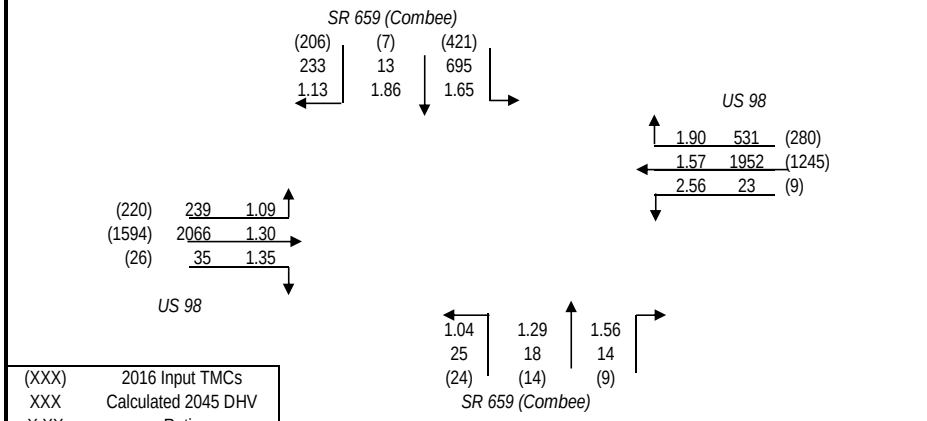
2016 INPUT TMCs COMPARED TO 2025 DHV



2016 INPUT TMCs COMPARED TO 2035 DHV



2016 INPUT TMCs COMPARED TO 2045 DHV



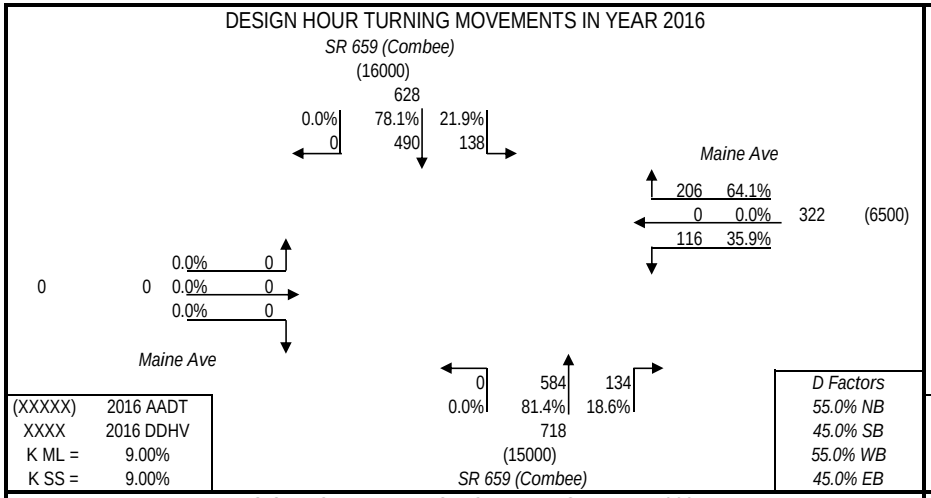
TURNS5 INITIAL TURNING VOLUME SUMMARY

Highway:	SR 659 (Combee)	**County:**	Polk
Intersection:	Maine Ave		
Project:	Combee Road PD&E	**Analyst:**	0
		Date:	24-Jul-18

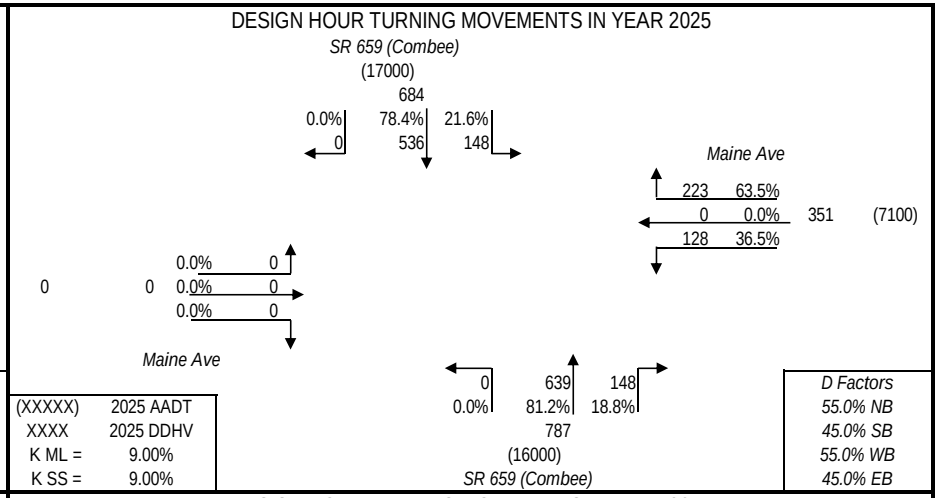
Approach-To-Approach	2016 Initial Estimate	2016 Final Estimate	2016 Calculated Volume	2025 Final Estimate	2025 Calculated Volume	2035 Final Estimate	2035 Calculated Volume	2045 Final Estimate	2045 Calculated Volume
West-To-North (LT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
West-To-East (Thru)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
West-To-South (RT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
Total Flow From West:			**0**		**0**		**0**		**0**
East-To-South (LT)	0.382	0.359	116	0.365	128	0.371	142	0.375	156
East-To-West (Thru)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
East-To-North (RT)	0.618	0.641	206	0.635	223	0.629	241	0.625	260
Total Flow From East:			**322**		**351**		**383**		**416**
North-To-East (LT)	0.190	0.219	138	0.216	148	0.214	160	0.212	172
North-To-South (Thru)	0.810	0.781	490	0.784	536	0.786	587	0.788	638
North-To-West (RT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
Total Flow From North:			**628**		**684**		**747**		**810**
South-To-West (LT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
South-To-North (Thru)	0.825	0.814	584	0.812	639	0.810	700	0.809	761
South-To-East (RT)	0.175	0.186	134	0.188	148	0.190	164	0.191	180
Total Flow From South:			**718**		**787**		**864**		**941**

PROJECT TRAFFIC FOR SR 659 (Combee) AT Maine Ave

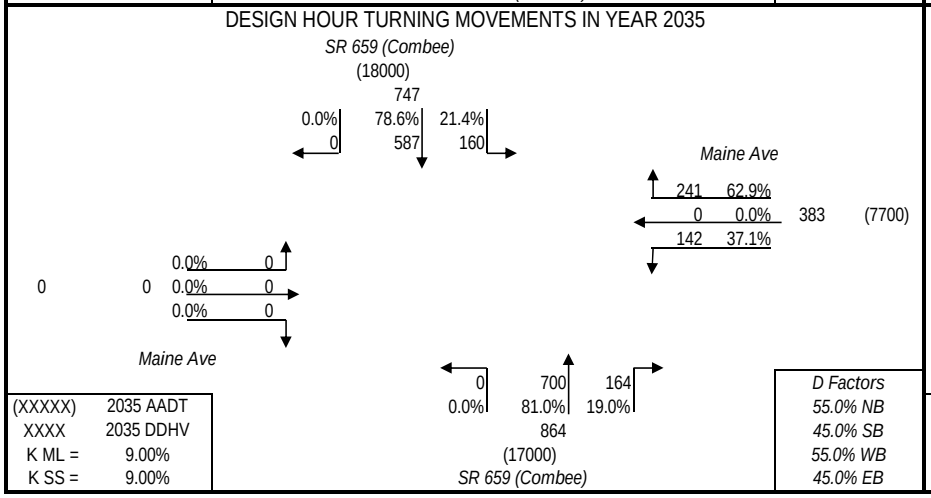
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2016



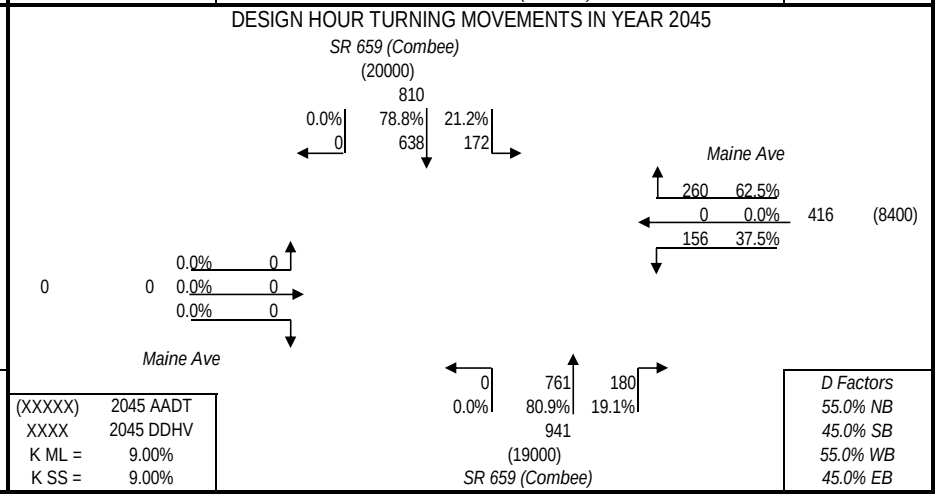
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2025



DESIGN HOUR TURNING MOVEMENTS IN YEAR 2035

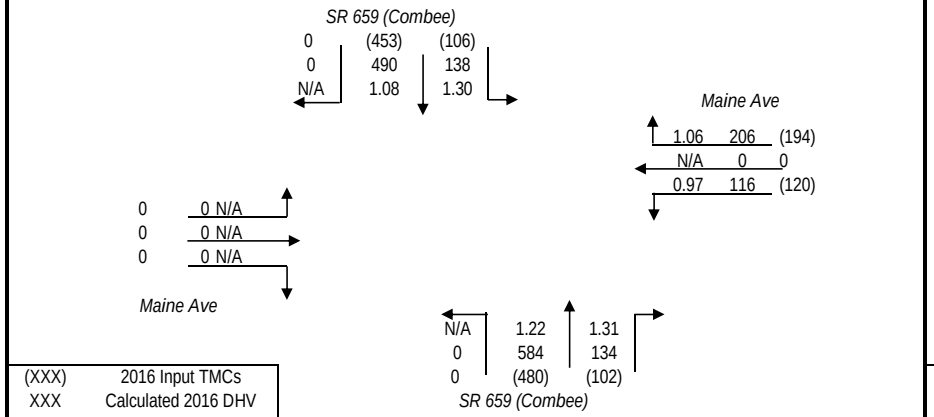


DESIGN HOUR TURNING MOVEMENTS IN YEAR 2045



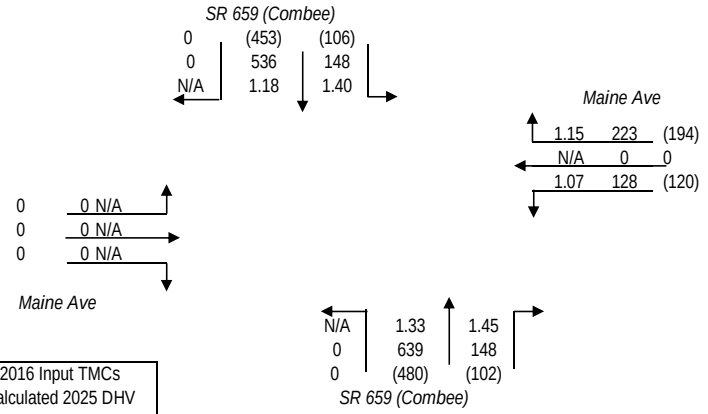
PROJECT TRAFFIC FOR SR 659 (Combee) AT Maine Ave

2016 INPUT TMCs COMPARED TO 2016 DHV



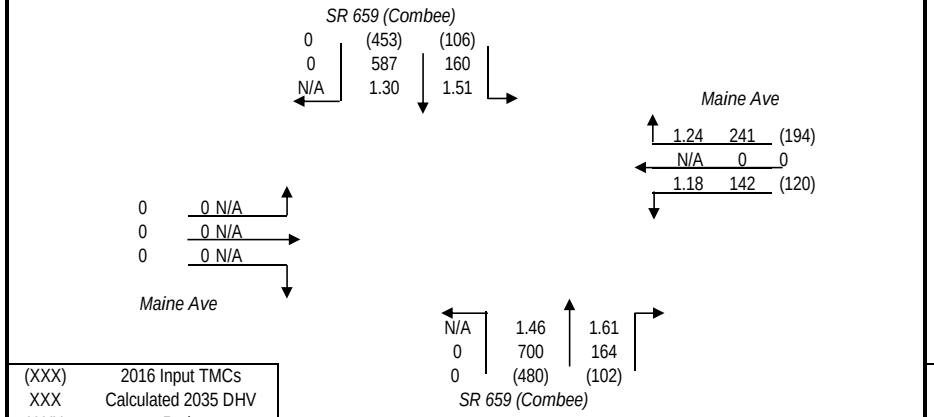
(XXX)	2016 Input TMCs
XXX	Calculated 2016 DHV
X.XX	Ratio

2016 INPUT TMCs COMPARED TO 2025 DHV



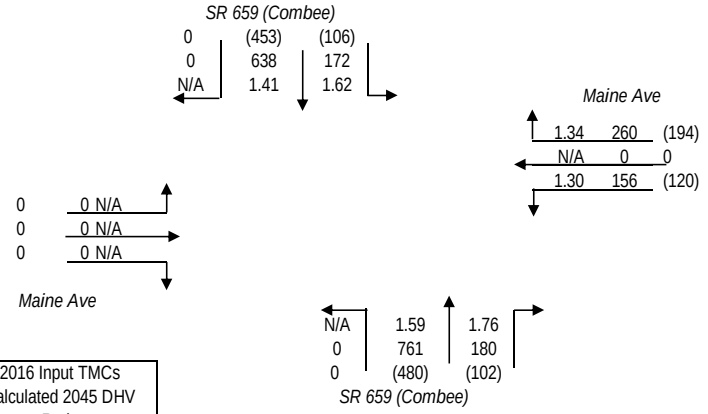
(XXX)	2016 Input TMCs
XXX	Calculated 2025 DHV
X.XX	Ratio

2016 INPUT TMCs COMPARED TO 2035 DHV



(XXX)	2016 Input TMCs
XXX	Calculated 2035 DHV
X.XX	Ratio

2016 INPUT TMCs COMPARED TO 2045 DHV



(XXX)	2016 Input TMCs
XXX	Calculated 2045 DHV
X.XX	Ratio

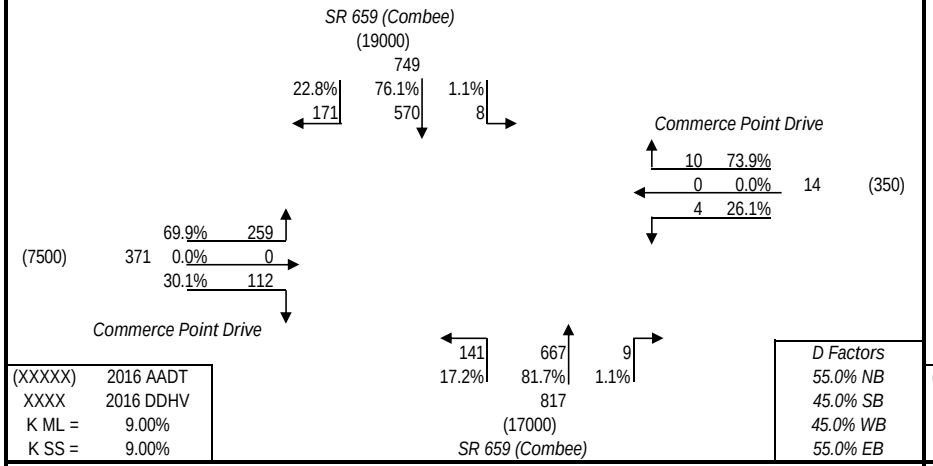
TURNS5 INITIAL TURNING VOLUME SUMMARY

Highway:	SR 659 (Combee)	**County:**	Polk
Intersection:	Commerce Point Drive		
Project:	Combee Road PD&E	**Analyst:**	0
		Date:	24-Jul-18

	2016	2016		2025		2035		2045	
Approach-To-Approach	**Initial Estimate**	**Final Estimate**	**Calculated Volume**	**Final Estimate**	**Calculated Volume**	**Final Estimate**	**Calculated Volume**	**Final Estimate**	**Calculated Volume**
West-To-North (LT)	0.693	0.699	259	0.673	273	0.649	288	0.627	301
West-To-East (Thru)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
West-To-South (RT)	0.307	0.301	112	0.327	132	0.351	155	0.373	179
Total Flow From West:			**371**		**405**		**443**		**480**
East-To-South (LT)	0.267	0.261	4	0.285	5	0.308	6	0.329	7
East-To-West (Thru)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
East-To-North (RT)	0.733	0.739	10	0.715	11	0.692	12	0.671	13
Total Flow From East:			**14**		**16**		**18**		**20**
North-To-East (LT)	0.003	0.011	8	0.012	9	0.012	10	0.012	10
North-To-South (Thru)	0.736	0.761	570	0.762	595	0.763	622	0.764	650
North-To-West (RT)	0.261	0.228	171	0.226	177	0.225	184	0.224	191
Total Flow From North:			**749**		**781**		**816**		**851**
South-To-West (LT)	0.203	0.172	141	0.188	164	0.204	190	0.218	216
South-To-North (Thru)	0.794	0.817	667	0.799	696	0.782	727	0.766	758
South-To-East (RT)	0.003	0.011	9	0.013	11	0.014	13	0.016	16
Total Flow From South:			**817**		**871**		**930**		**990**

PROJECT TRAFFIC FOR SR 659 (Combee) AT Commerce Point Drive

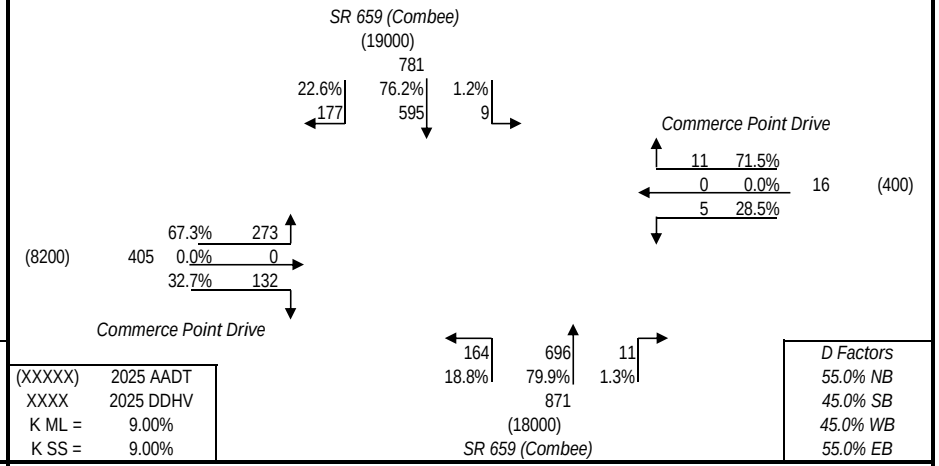
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2016



(XXXXX)	2016 AADT
XXXX	2016 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
55.0% NB
45.0% SB
45.0% WB
55.0% EB

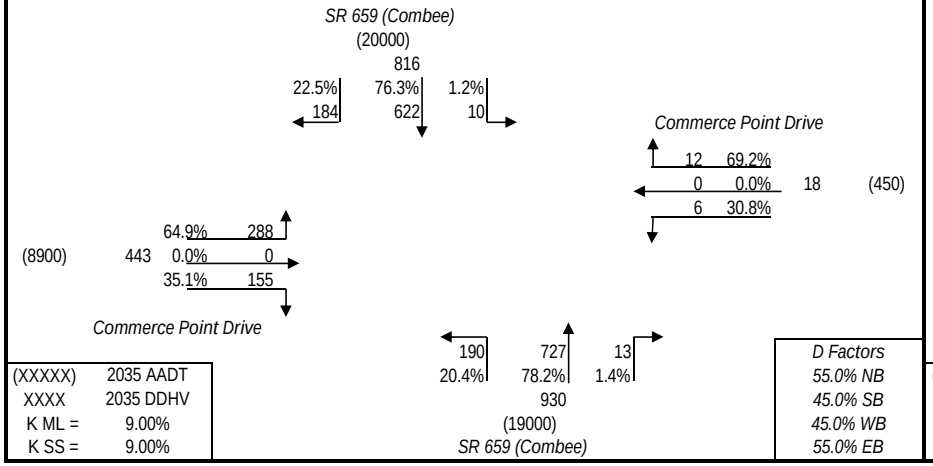
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2025



(XXXXX)	2025 AADT
XXXX	2025 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
55.0% NB
45.0% SB
45.0% WB
55.0% EB

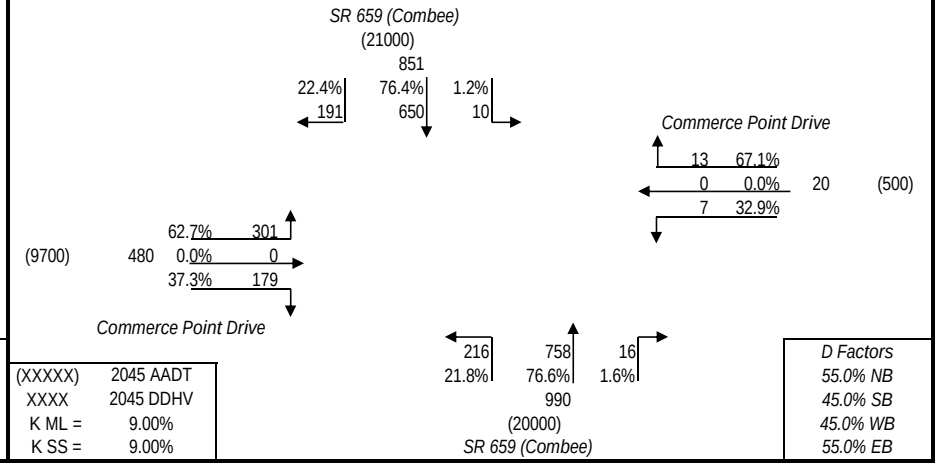
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2035



(XXXXX)	2035 AADT
XXXX	2035 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
55.0% NB
45.0% SB
45.0% WB
55.0% EB

DESIGN HOUR TURNING MOVEMENTS IN YEAR 2045

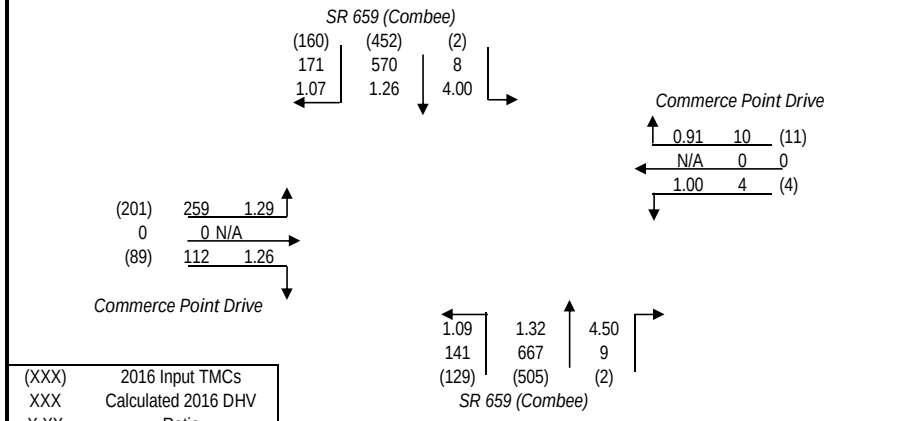


(XXXXX)	2045 AADT
XXXX	2045 DDHV
K ML =	9.00%
K SS =	9.00%

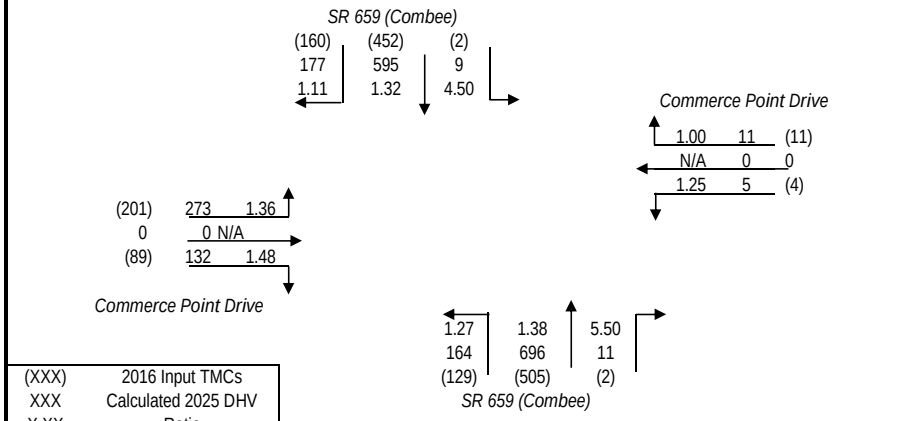
D Factors
55.0% NB
45.0% SB
45.0% WB
55.0% EB

PROJECT TRAFFIC FOR SR 659 (Combee) AT Commerce Point Drive

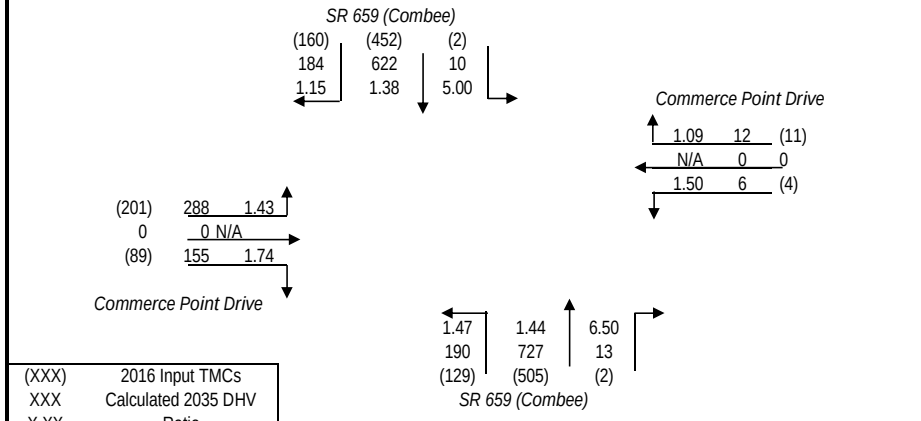
2016 INPUT TMCs COMPARED TO 2016 DHV



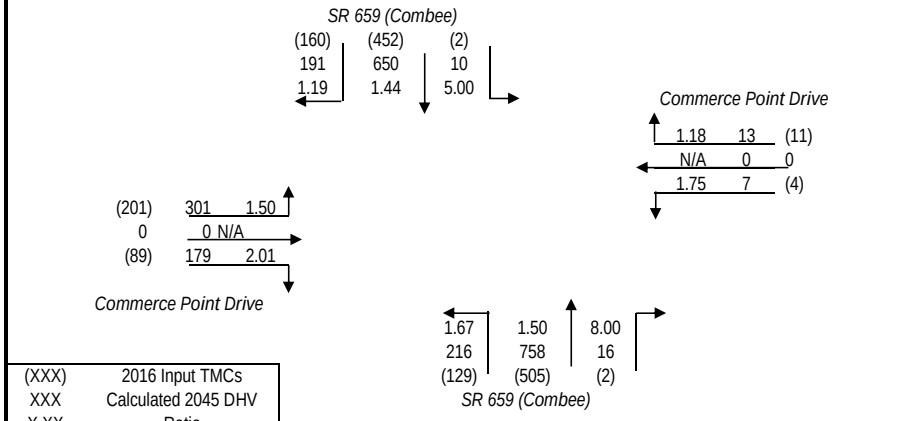
2016 INPUT TMCs COMPARED TO 2025 DHV



2016 INPUT TMCs COMPARED TO 2035 DHV



2016 INPUT TMCs COMPARED TO 2045 DHV



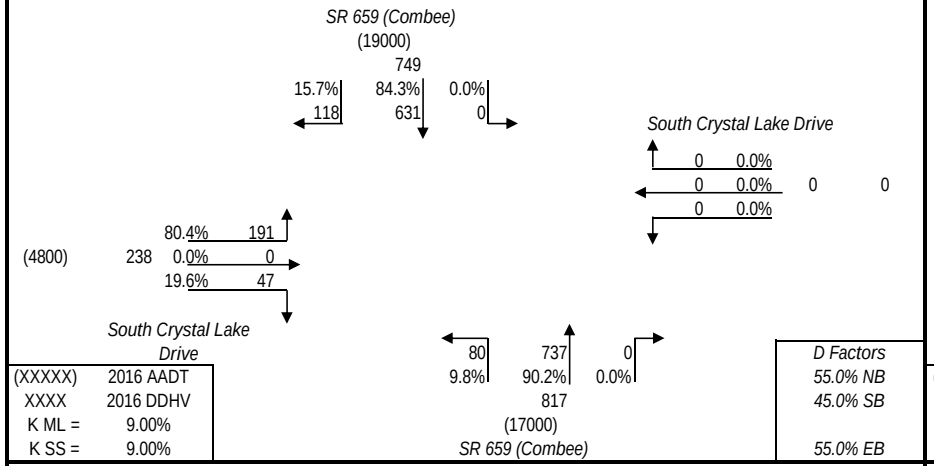
TURNS5 INITIAL TURNING VOLUME SUMMARY

Highway:	SR 659 (Combee)	**County:**	Polk
Intersection:	South Crystal Lake Drive		
Project:	Combee Road PD&E	**Analyst:**	0
		Date:	24-Jul-18

Approach-To-Approach	2016 Initial Estimate	2016 Final Estimate	2016 Calculated Volume	2025 Final Estimate	2025 Calculated Volume	2035 Final Estimate	2035 Calculated Volume	2045 Final Estimate	2045 Calculated Volume
West-To-North (LT)	0.752	0.804	191	0.813	211	0.823	233	0.830	255
West-To-East (Thru)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
West-To-South (RT)	0.248	0.196	47	0.187	48	0.177	50	0.170	52
Total Flow From West:			**238**		**259**		**283**		**307**
East-To-South (LT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
East-To-West (Thru)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
East-To-North (RT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
Total Flow From East:			**0**		**0**		**0**		**0**
North-To-East (LT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
North-To-South (Thru)	0.868	0.843	631	0.840	687	0.836	748	0.834	811
North-To-West (RT)	0.132	0.157	118	0.160	131	0.164	147	0.166	161
Total Flow From North:			**749**		**818**		**895**		**972**
South-To-West (LT)	0.107	0.098	80	0.095	84	0.092	89	0.089	93
South-To-North (Thru)	0.893	0.902	737	0.905	802	0.908	874	0.911	947
South-To-East (RT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
Total Flow From South:			**817**		**886**		**963**		**1040**

PROJECT TRAFFIC FOR SR 659 (Combee) AT South Crystal Lake Drive

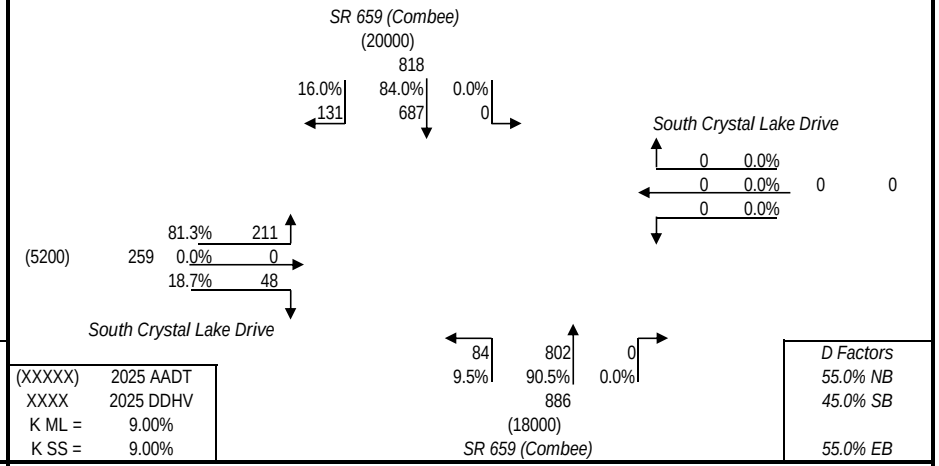
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2016



(XXXXX)	2016 AADT
XXXX	2016 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
55.0% NB
45.0% SB
55.0% EB

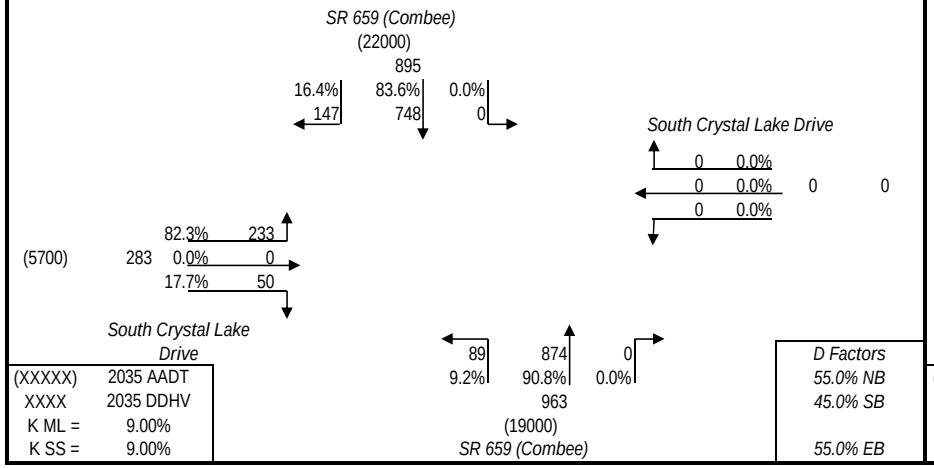
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2025



(XXXXX)	2025 AADT
XXXX	2025 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
55.0% NB
45.0% SB
55.0% EB

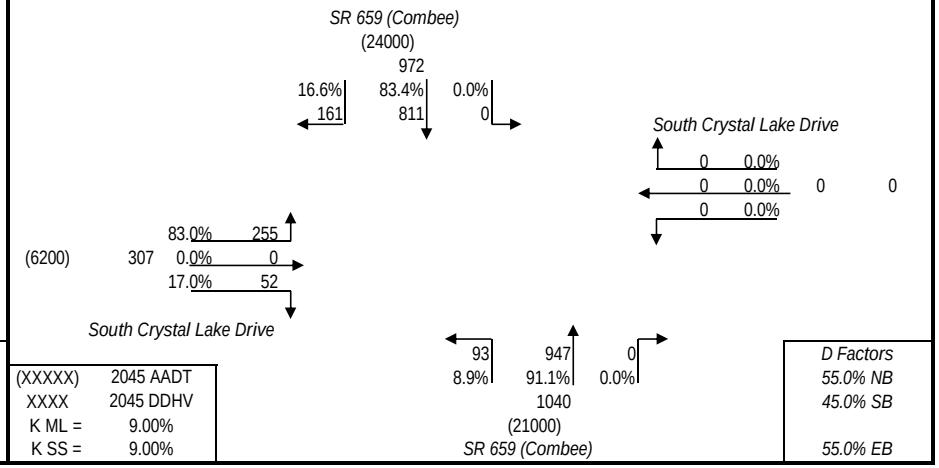
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2035



(XXXXX)	2035 AADT
XXXX	2035 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
55.0% NB
45.0% SB
55.0% EB

DESIGN HOUR TURNING MOVEMENTS IN YEAR 2045

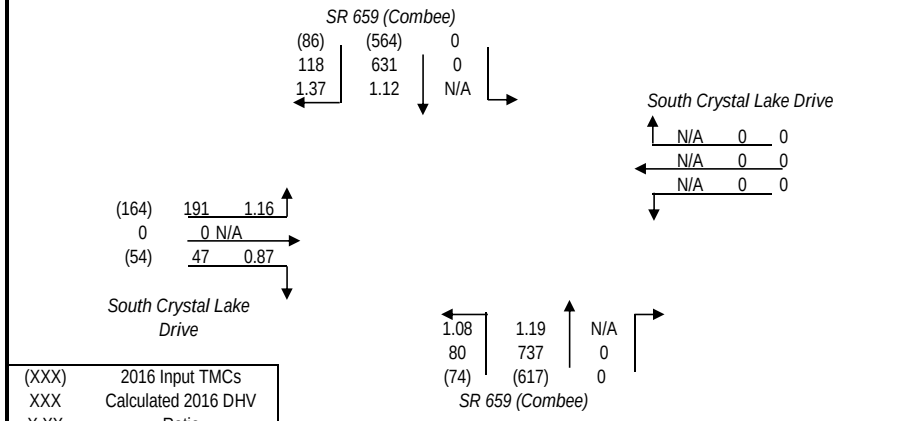


(XXXXX)	2045 AADT
XXXX	2045 DDHV
K ML =	9.00%
K SS =	9.00%

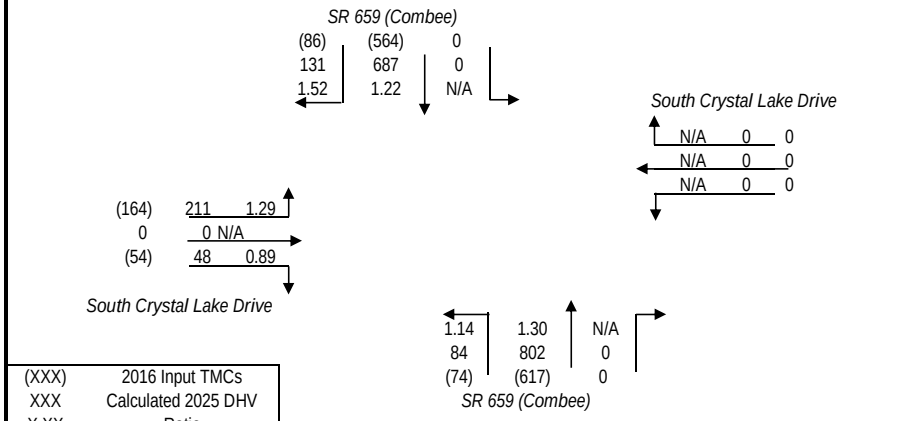
D Factors
55.0% NB
45.0% SB
55.0% EB

PROJECT TRAFFIC FOR SR 659 (Combee) AT South Crystal Lake Drive

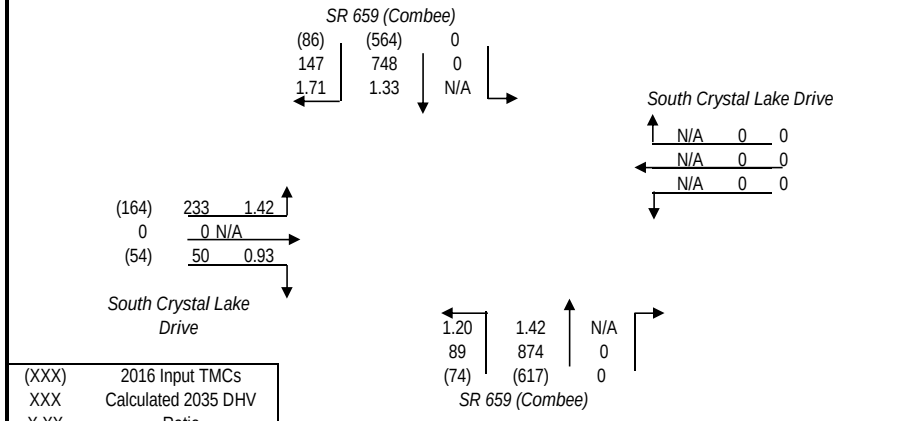
2016 INPUT TMCs COMPARED TO 2016 DHV



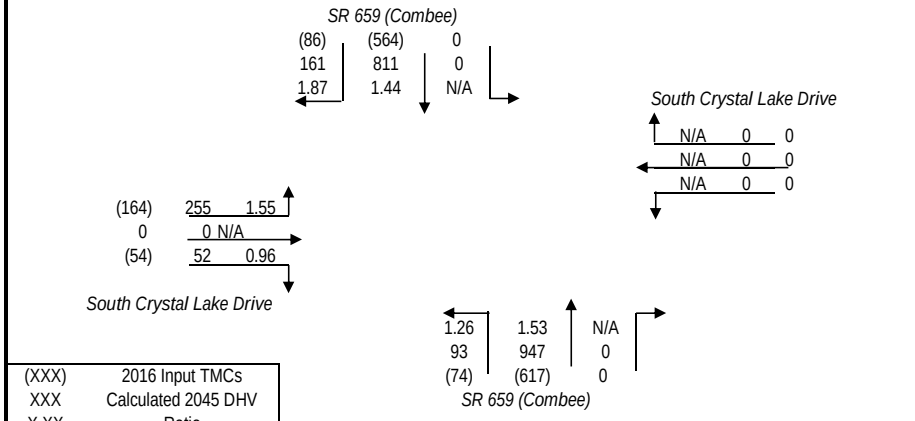
2016 INPUT TMCs COMPARED TO 2025 DHV



2016 INPUT TMCs COMPARED TO 2035 DHV



2016 INPUT TMCs COMPARED TO 2045 DHV



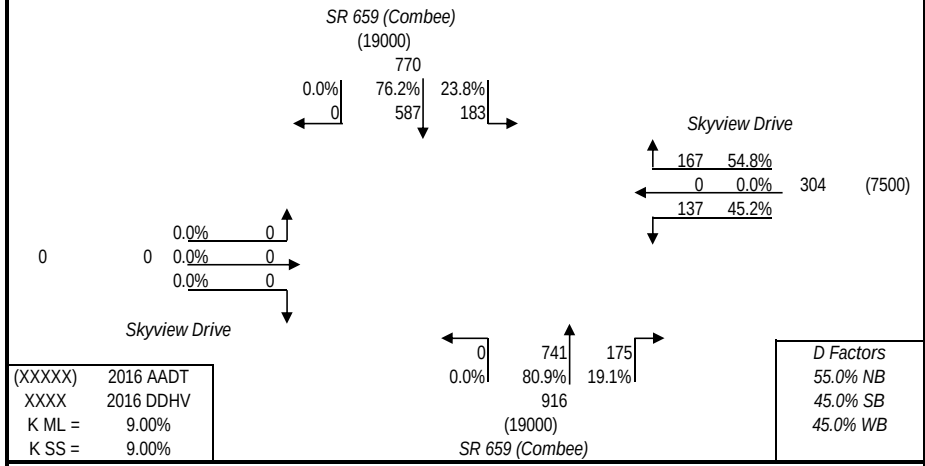
TURNS5 INITIAL TURNING VOLUME SUMMARY

Highway:	SR 659 (Combee)	**County:**	Polk
Intersection:	Skyview Drive		
Project:	Combee Road PD&E	**Analyst:**	0
		Date:	24-Jul-18

Approach-To-Approach	2016 Initial Estimate	2016 Final Estimate	2016 Calculated Volume	2025 Final Estimate	2025 Calculated Volume	2035 Final Estimate	2035 Calculated Volume	2045 Final Estimate	2045 Calculated Volume
West-To-North (LT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
West-To-East (Thru)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
West-To-South (RT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
Total Flow From West:			**0**		**0**		**0**		**0**
East-To-South (LT)	0.514	0.452	137	0.445	147	0.439	159	0.466	183
East-To-West (Thru)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
East-To-North (RT)	0.486	0.548	167	0.555	184	0.561	203	0.534	210
Total Flow From East:			**304**		**331**		**362**		**393**
North-To-East (LT)	0.291	0.238	183	0.240	203	0.241	224	0.230	233
North-To-South (Thru)	0.709	0.762	587	0.760	642	0.759	705	0.770	780
North-To-West (RT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
Total Flow From North:			**770**		**845**		**929**		**1013**
South-To-West (LT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
South-To-North (Thru)	0.716	0.809	741	0.812	812	0.814	891	0.807	959
South-To-East (RT)	0.284	0.191	175	0.188	188	0.186	203	0.193	229
Total Flow From South:			**916**		**1000**		**1094**		**1188**

PROJECT TRAFFIC FOR SR 659 (Combee) AT Skyview Drive

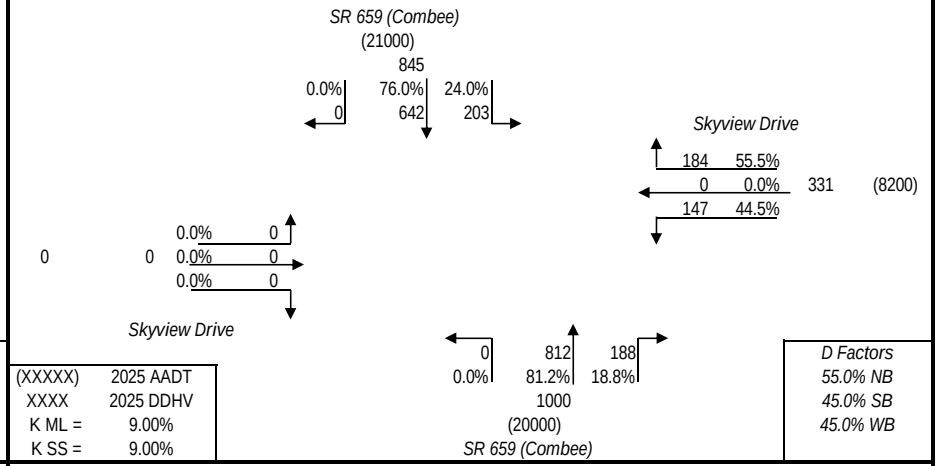
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2016



(XXXXX)	2016 AADT
XXXX	2016 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
55.0% NB
45.0% SB
45.0% WB

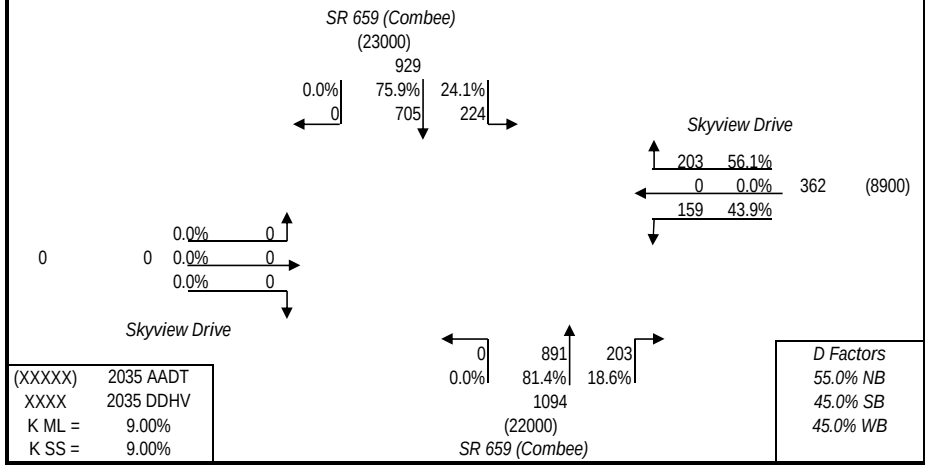
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2025



(XXXXX)	2025 AADT
XXXX	2025 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
55.0% NB
45.0% SB
45.0% WB

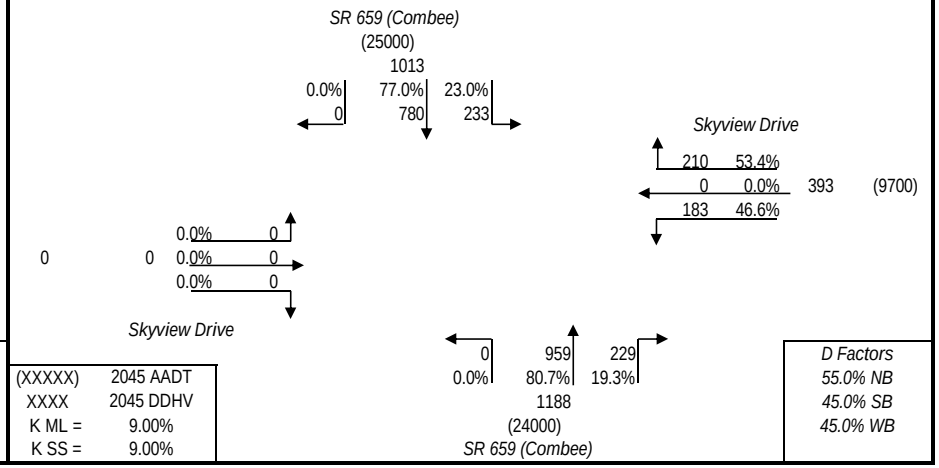
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2035



(XXXXX)	2035 AADT
XXXX	2035 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
55.0% NB
45.0% SB
45.0% WB

DESIGN HOUR TURNING MOVEMENTS IN YEAR 2045

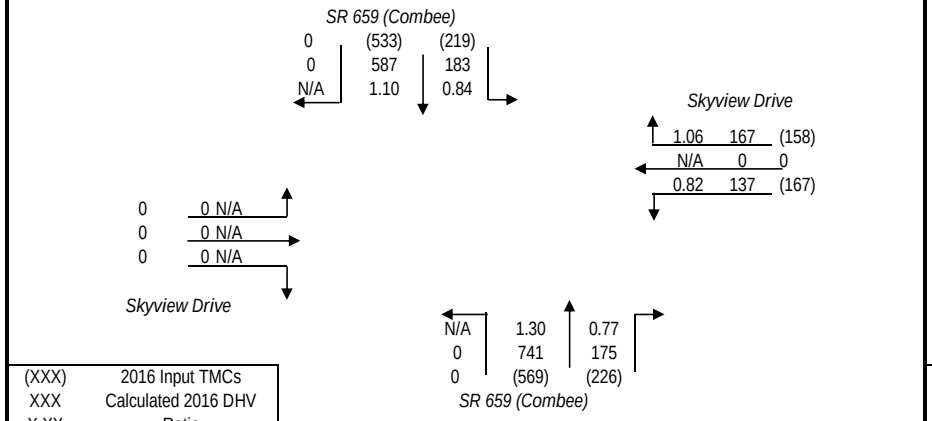


(XXXXX)	2045 AADT
XXXX	2045 DDHV
K ML =	9.00%
K SS =	9.00%

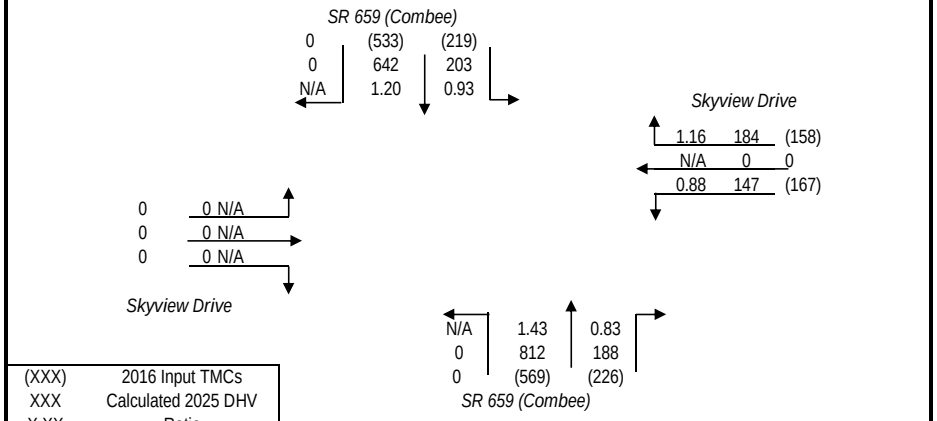
D Factors
55.0% NB
45.0% SB
45.0% WB

PROJECT TRAFFIC FOR SR 659 (Combee) AT Skyview Drive

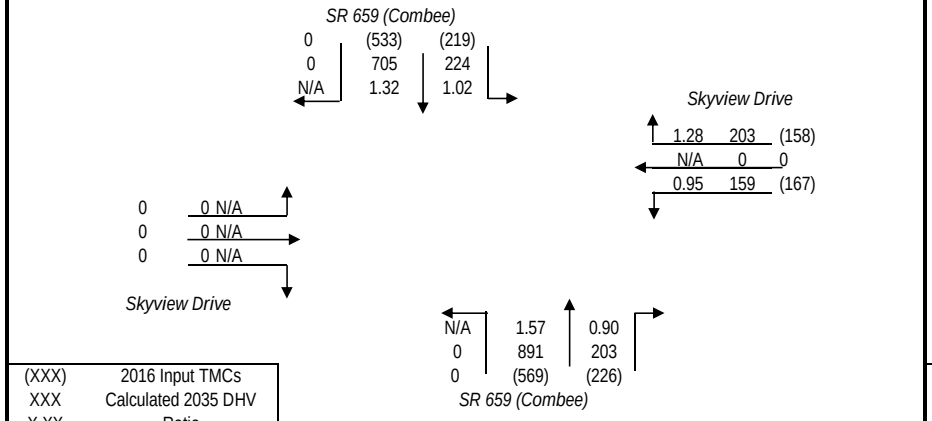
2016 INPUT TMCs COMPARED TO 2016 DHV



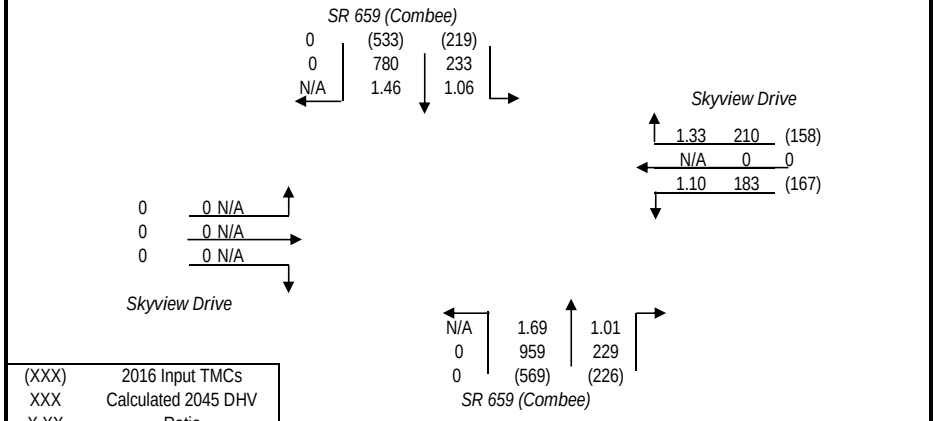
2016 INPUT TMCs COMPARED TO 2025 DHV



2016 INPUT TMCs COMPARED TO 2035 DHV



2016 INPUT TMCs COMPARED TO 2045 DHV



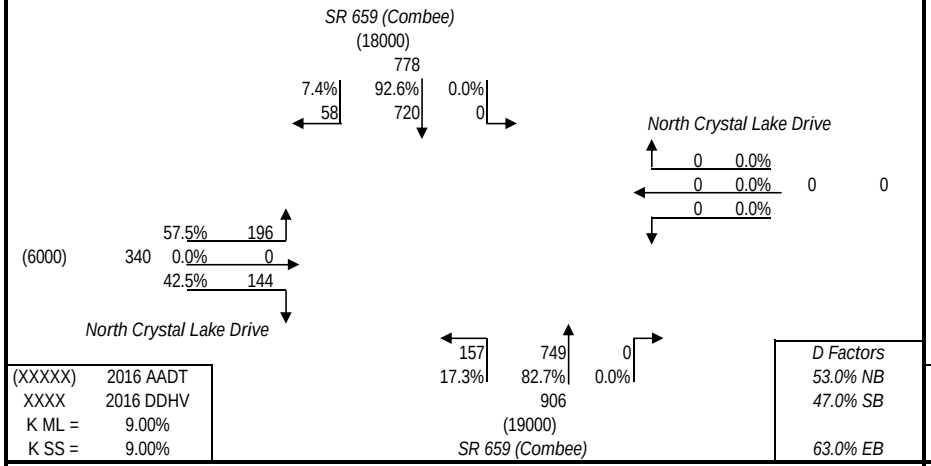
TURNS5 INITIAL TURNING VOLUME SUMMARY

Highway:	SR 659 (Combee)	**County:**	Polk
Intersection:	North Crystal Lake Drive		
Project:	Combee Road PD&E	**Analyst:**	0
		Date:	24-Jul-18

Approach-To-Approach	2016 Initial Estimate	2016 Final Estimate	2016 Calculated Volume	2025 Final Estimate	2025 Calculated Volume	2035 Final Estimate	2035 Calculated Volume	2045 Final Estimate	2045 Calculated Volume
West-To-North (LT)	0.315	0.575	196	0.620	231	0.660	269	0.694	307
West-To-East (Thru)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
West-To-South (RT)	0.685	0.425	144	0.380	141	0.340	138	0.306	135
Total Flow From West:			**340**		**372**		**407**		**442**
East-To-South (LT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
East-To-West (Thru)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
East-To-North (RT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
Total Flow From East:			**0**		**0**		**0**		**0**
North-To-East (LT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
North-To-South (Thru)	0.978	0.926	720	0.916	792	0.907	872	0.898	950
North-To-West (RT)	0.022	0.074	58	0.084	73	0.093	89	0.102	108
Total Flow From North:			**778**		**865**		**961**		**1058**
South-To-West (LT)	0.147	0.173	157	0.165	162	0.157	167	0.149	171
South-To-North (Thru)	0.853	0.827	749	0.835	818	0.843	896	0.851	974
South-To-East (RT)	0.000	0.000	0	0.000	0	0.000	0	0.000	0
Total Flow From South:			**906**		**980**		**1063**		**1145**

PROJECT TRAFFIC FOR SR 659 (Combee) AT North Crystal Lake Drive

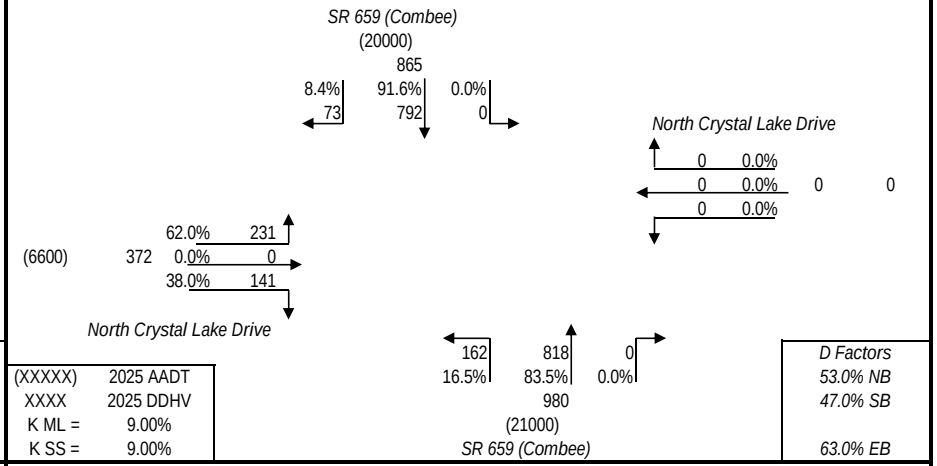
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2016



(XXXXX)	2016 AADT
XXXX	2016 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
53.0% NB
47.0% SB
63.0% EB

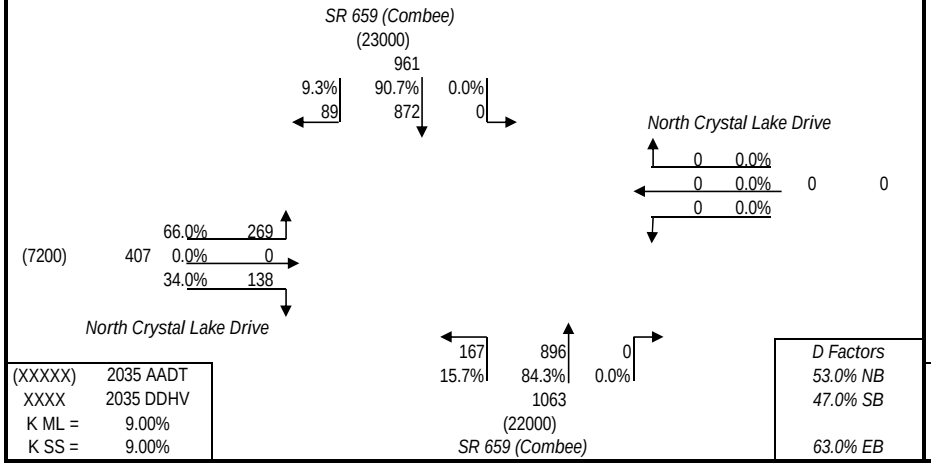
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2025



(XXXXX)	2025 AADT
XXXX	2025 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
53.0% NB
47.0% SB
63.0% EB

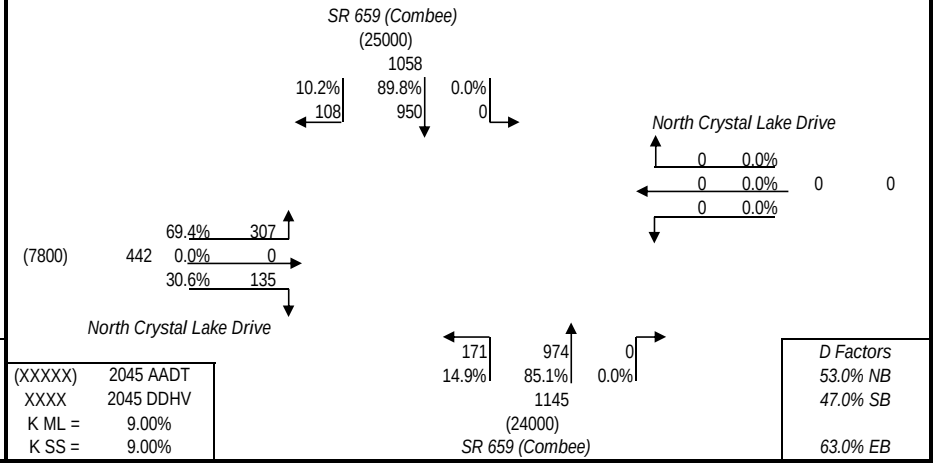
DESIGN HOUR TURNING MOVEMENTS IN YEAR 2035



(XXXXX)	2035 AADT
XXXX	2035 DDHV
K ML =	9.00%
K SS =	9.00%

D Factors
53.0% NB
47.0% SB
63.0% EB

DESIGN HOUR TURNING MOVEMENTS IN YEAR 2045

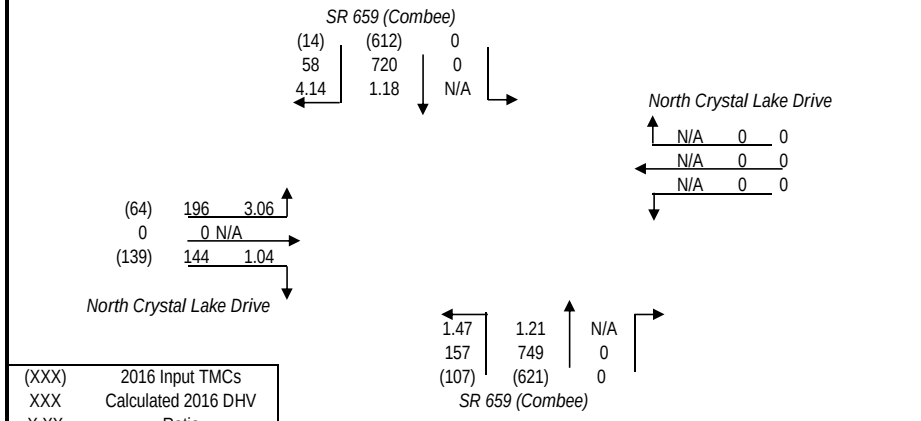


(XXXXX)	2045 AADT
XXXX	2045 DDHV
K ML =	9.00%
K SS =	9.00%

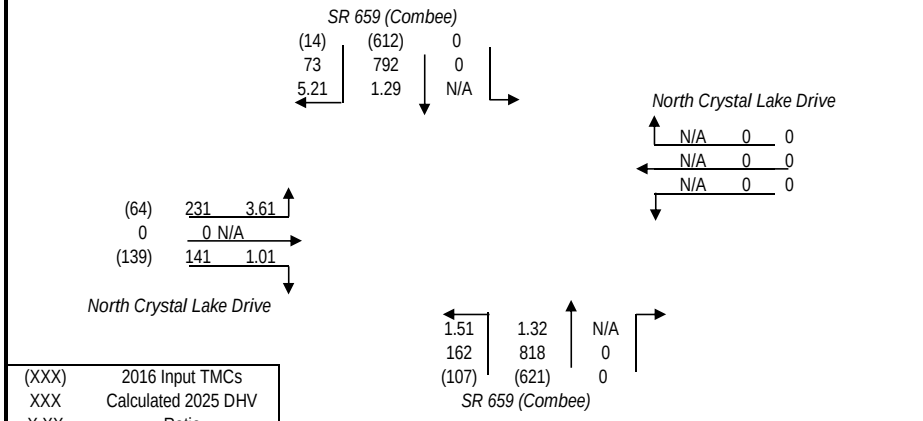
D Factors
53.0% NB
47.0% SB
63.0% EB

PROJECT TRAFFIC FOR SR 659 (Combee) AT North Crystal Lake Drive

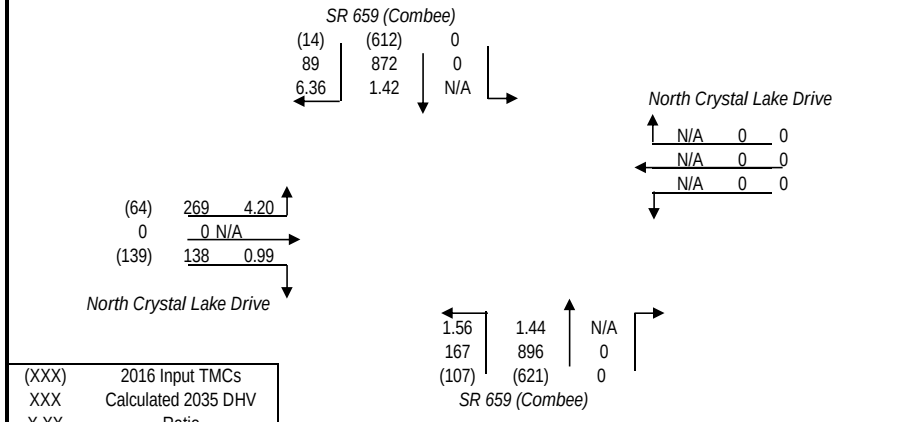
2016 INPUT TMCs COMPARED TO 2016 DHV



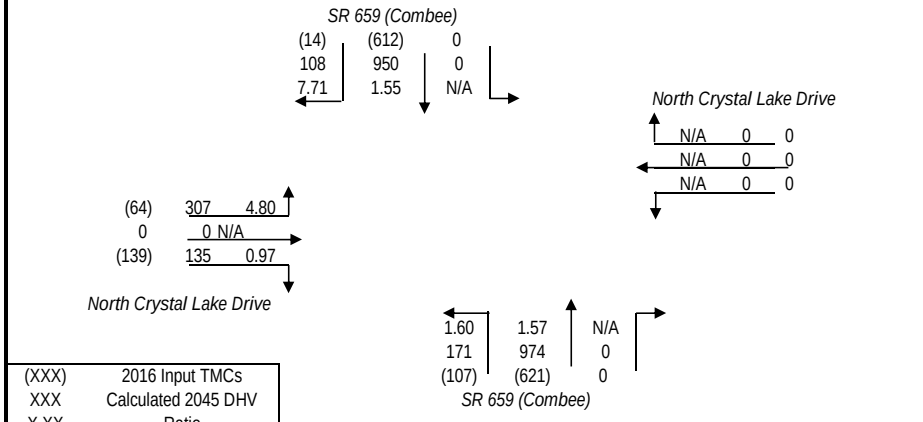
2016 INPUT TMCs COMPARED TO 2025 DHV



2016 INPUT TMCs COMPARED TO 2035 DHV



2016 INPUT TMCs COMPARED TO 2045 DHV



Appendix F:

FDOT 2013 Quality/Level of Service Handbook Tables

TABLE 7

Generalized **Peak Hour Directional** Volumes for Florida's **Urbanized Areas**[1]

12/18/12

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	830	880	**
2	Divided	*	1,910	2,000	**
3	Divided	*	2,940	3,020	**
4	Divided	*	3,970	4,040	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
1	Undivided	*	370	750	800
2	Divided	*	730	1,630	1,700
3	Divided	*	1,170	2,520	2,560
4	Divided	*	1,610	3,390	3,420

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
1	Divided	Yes	No	+5%
1	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding directional volumes in this table by 1.2

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
2	2,260	3,020	3,660	3,940
3	3,360	4,580	5,500	6,080
4	4,500	6,080	7,320	8,220
5	5,660	7,680	9,220	10,360
6	7,900	10,320	12,060	12,500

Freeway Adjustments

Auxiliary Lane	Ramp Metering
+ 1,000	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
1	Undivided	420	840	1,190	1,640
2	Divided	1,810	2,560	3,240	3,590
3	Divided	2,720	3,840	4,860	5,380

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
1	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

BICYCLE MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	150	390	1,000
50-84%	110	340	1,000	>1,000
85-100%	470	1,000	>1,000	**

PEDESTRIAN MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	140	480
50-84%	*	80	440	800
85-100%	200	540	880	>1,000

BUS MODE (Scheduled Fixed Route)[3]

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

[1]Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the Highway Capacity Manual and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of motorized vehicles, not number of bicyclists or pedestrians using the facility.

[3] Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Planning Office
www.dot.state.fl.us/planning/systems/sm/los/default.shtm

Appendix G:

Existing Signal Timings and Existing Synchro Intersection Analysis

Timing Report

District-Wide Traffic Signal Retiming

Contract Number: C9807
Financial Project: 421907-1-32-02
Task Work Order 14

SR 659 / Combee Road
Between Main St / CR 542 and Gary Rd

Polk County, Florida

Prepared for:

Florida Department of Transportation
District 1

Prepared by:

Albeck Gerken, Inc.
1911 North US 301, Suite 410
Tampa, Florida 33619

July 2015

9-2-15

Professional Engineer: Peter J. Yauch
Florida PE No.: 33922

Time of Day Plan

Designed By:	Existing
Date:	
Checked By:	
Date:	

System ID: ***16060C***
Section: ***16060000***
Arterial: ***SR 35/700/US 98/Bartow Rd***
From: ***PSC/USF Entrance***
To: ***Edgewood Dr***

ALL SEASON PLAN

Day	Time	Plan Number	Cycle Length
Monday Thru Friday	0000 - 0515	-	FREE
	0515 - 0900	1	150
	0900 - 1100	2	100
	1100 - 1500	3	110
	1500 - 1830	4	150
	1830 - 2130	5	100
	2130 - 2359	-	FREE
Saturday	0000 - 0600	-	FREE
	0600 - 2359	3	110
Sunday	0000 - 0600	-	FREE
	0600 - 2300	3	110
	2300 - 2359	-	FREE

Designed By:	TS
Date:	6/29/2015
Checked By:	PY
Date:	6/29/2015

Location Details			
Section:	***16060000***	Mile Post:	***7.829***
Major Street:	***SR 35 / 700 / US 98***	Orientation:	***N-S***
Minor Street:	***Combee Rd***	Orientation:	***E-W***
Signal ID:	***559***	System ID:	***16060C***

Controller Timings (seconds)

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction	***NBLT***	***SB***		***WB***	***SBLT***	***NB***		***EB***	
Turn Type	***Prot***				***Prot***				
Min Green	***5***	***12***		***7***	***5***	***12***		***7***	
Ext	***3.0***	***5.0***		***4.0***	***4.0***	***5.0***		***4.0***	
Yellow	***4.8***	***4.8***		***4.4***	***4.8***	***4.8***		***3.7***	
All Red	***3.0***	***2.4***		***3.0***	***3.0***	***2.2***		***4.2***	
Max I	***15***	***40***		***20***	***20***	***40***		***30***	
Max II	***15***	***20***		***38***	***45***	***20***		***50***	
Walk		***7***				***7***		***7***	
Flashing Don't Walk		***26***				***26***		***34***	
Detector Memory									
Det. Cross Switch.									
Dual Entry		***ON***				***ON***			
Vehicle Recall		***MIN***				***MIN***			
CNA									
Rest in Walk									
Coord Phase		***YES***				***YES***			

Coordination Timings (seconds)

Pattern	C-S-O	Cycle Length	Splits								Offset	Sequence
1	***1-1-1***	***150***	***16***	***88***		***28***	***30***	***74***		***18***	***84***	***1***
2	***2-1-1***	***100***	***16***	***48***		***18***	***21***	***43***		***18***	***60***	***1***
3	***3-1-1***	***110***	***16***	***58***		***18***	***29***	***45***		***18***	***1***	***1***
4	***4-1-1***	***150***	***16***	***78***		***38***	***34***	***60***		***18***	***52***	***1***
5	***5-1-1***	***100***	***16***	***48***		***18***	***16***	***48***		***18***	***49***	***1***

Offset Reference Point
Beginning of Green

Notes:
1) Use 'Max I' during FREE Operation and 'Max Inh' during coordination.
2) Use Fixed Force Offs
3) Sequence 1 used during FREE Operation.
2) Program 8 seconds detection delay for minor street right turn movements.
3) Program 3 seconds detection delay fo minor street left turn movements.
4) Max recall for Ø2 and Ø6 during coordination
5) Controller Brand: Econolite ATC 2070

SOP 9 (Sequence 1)

Ring - 1	1	2	8	4
Ring - 2	5	6		

Time of Day Plan

Designed By:	Existing
Date:	
Checked By:	
Date:	

System ID: ***16006A***
Section: ***16006000***
Arterial: ***SR 659***
From: ***Maine Ave***
To: ***N Crystal Lk Dr***

ALL SEASON PLAN

Day	Time	Plan Number	Cycle Length
Monday Thru Friday	0000 - 0600	-	FREE
	0600 - 1000	1	110
	1000 - 1400	2	100
	1400 - 1815	3	120
	1815 - 2200	4*	85
	2200 - 0000	-	FREE
Saturday	0000 - 0900	-	FREE
	0900 - 1200	9*	85
	1200 - 1900	10*	90
	1900 - 2300	9*	85
	2300 - 0000	-	
Sunday	0000 - 0600	-	FREE
	0600 - 1200	12*	125
	1200 - 2100	9*	85
	2100 - 0000	-	FREE

* Main Ave and Commerce Point operate in FREE mode at the following times:

- Weekdays from 1815 to 0000
- Saturday before 1000 and after 1500
- Sunday all day

Designed By:	TS
Date:	6/13/2015
Checked By:	PY
Date:	6/13/2015

Location Details			
Section:	***16006000***	Mile Post:	***0.215***
Major Street:	***SR 659/ Combee Rd***	Orientation:	***N-S***
Minor Street:	***Maine Ave***	Orientation:	***E-W***
Signal ID:	***560***	System ID:	***16006A***

Controller Timings (seconds)

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction		***SB***		***WB***	***SBLT***	***NB***			
Turn Type					***Prot/Perm***				
Min Green		***12***		***7***	***5***	***12***			
Ext		***5.0***		***3.0***	***3.0***	***5.0***			
Yellow		***4.4***		***4.1***	***4.4***	***4.4***			
All Red		***2.6***		***2.1***	***2.6***	***2.6***			
Max I		***50***		***20***	***20***	***50***			
Max II		***25***		***30***	***20***	***25***			
Walk									
Flashing Don't Walk									
Detector Memory									
Det. Cross Switch.					***Ø2***				
Dual Entry		***ON***				***ON***			
Vehicle Recall		***MIN***				***MIN***			
CNA		***ON***				***ON***			
Rest in Walk									
Coord Phase		***YES***				***YES***			

Coordination Timings (seconds)

Pattern	C-S-O	Cycle Length	Splits								Offset	Sequence
1		***110***		***90***		***20***	***20***	***70***			***69***	***1***
2		***100***		***80***		***20***	***20***	***60***			***76***	***1***
3		***120***		***100***		***20***	***20***	***80***			***52***	***1***
4		***85***		***65***		***20***	***20***	***45***			***23***	***1***
9		***85***		***64***		***21***	***21***	***43***			***50***	***1***
10		***90***		***71***		***19***	***15***	***56***			***10***	***1***
12		***125***		***98***		***27***	***20***	***78***			***16***	***1***

Offset Reference Point
Beginning of Second Main Street Green

Notes:
1) Use Fixed Force Offs
2) Use 'Max I' during FREE Operation and Max Inh during coordination
3) Sequence 1 used during FREE operation
4) Program 8 seconds detection delay for minor street right turn movements
5) Program 3 seconds detection delay for minor street left turn movements
6) Max recall Ø2 and Ø6 during coordination.
7) Program phase restrictions to omit phase 5 when phase 6 is green
8) Controller Brand: Econolite ATC 2070

SOP 12 (Sequence 1)

Ring - 1	2		4
Ring - 2	5	6	

Designed By:	TS
Date:	6/13/2015
Checked By:	PY
Date:	6/13/2015

Location Details			
Section:	***16006000***	Mile Post:	***0.596***
Major Street:	***SR 659/ Combee Rd***	Orientation:	***N-S***
Minor Street:	***Commerce Point Dr***	Orientation:	***E-W***
Signal ID:	***561***	System ID:	***16006A***

Controller Timings (seconds)

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction	***NBLT***	***SB***		***WB***		***NB***		***EB***	
Turn Type	***Prot/Perm***								
Min Green	***5***	***12***		***7***		***12***		***7***	
Ext	***3.0***	***5.0***		***3.0***		***5.0***		***3.0***	
Yellow	***4.4***	***4.4***		***3.4***		***4.4***		***4.0***	
All Red	***2.8***	***2.8***		***3.0***		***2.8***		***3.0***	
Max I	***20***	***50***		***15***		***50***		***20***	
Max II	***20***	***25***		***15***		***25***		***30***	
Walk		***7***						***7***	
Flashing Don't Walk		***24***						***15***	
Detector Memory									
Det. Cross Switch.	***Ø6***								
Dual Entry		***ON***				***ON***			
Vehicle Recall		***MIN***				***MIN***			
CNA		***ON***				***ON***			
Rest in Walk									
Coord Phase		***YES***				***YES***			

Coordination Timings (seconds)

Pattern	C-S-O	Cycle Length	Splits								Offset	Sequence
1		***110***	***20***	***42***		***20***		***62***		***28***	***6***	***1***
2		***100***	***16***	***43***		***19***		***59***		***22***	***17***	***1***
3		***120***	***20***	***52***		***20***		***72***		***28***	***108***	***1***
4		***85***	***16***	***35***		***17***		***51***		***17***	***56***	***1***
9		***85***	***16***	***35***		***17***		***51***		***17***	***0***	***1***
10		***90***	***16***	***40***		***17***		***56***		***17***	***58***	***1***
12		***125***	***16***	***71***		***17***		***87***		***21***	***65***	***1***

Offset Reference Point
Beginning of Second Main Street Green

Notes:
1) Use Fixed Force Offs
2) Use 'Max I' during FREE Operation and Max Inh during coordination
3) Sequence 1 used during FREE operation
4) Program phase restrictions to omit phase 1 when phase 2 is green.
5) Program 8 seconds detection delay for minor street right turn movements
6) Program 3 seconds detection delay for minor street left turn movements
7) Max recall Ø2 and Ø6 during coordination.
8) Controller Brand: Econolite ATC 2070

SOP Special (Sequence 1)

Ring - 1	1	2	4	8
Ring - 2	6			

Designed By:	TS
Date:	6/13/2015
Checked By:	PY
Date:	6/13/2015

Location Details			
Section:	***16006000***	Mile Post:	***1.097***
Major Street:	***SR 659/ Combee Rd***	Orientation:	***N-S***
Minor Street:	***S Crystal Lk Dr***	Orientation:	***E-W***
Signal ID:	***562***	System ID:	***16006A***

Controller Timings (seconds)

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction	***NBLT***	***SB***				***NB***		***EB***	
Turn Type	***Prot/Perm***								
Min Green	***5***	***12***				***12***		***7***	
Ext	***3.0***	***5.0***				***5.0***		***3.0***	
Yellow	***4.4***	***4.4***				***4.4***		***3.7***	
All Red	***2.9***	***2.9***				***2.9***		***2.0***	
Max I	***20***	***50***				***50***		***20***	
Max II	***20***	***25***				***25***		***30***	
Walk		***7***						***7***	
Flashing Don't Walk		***23***						***13***	
Detector Memory									
Det. Cross Switch.	***Ø6***								
Dual Entry		***ON***				***ON***			
Vehicle Recall		***MIN***				***MIN***			
CNA		***ON***				***ON***			
Rest in Walk									
Coord Phase		***YES***				***YES***			

Coordination Timings (seconds)

Pattern	C-S-O	Cycle Length	Splits								Offset	Sequence
1		***110***	***20***	***64***				***84***		***26***	***46***	***1***
2		***100***	***20***	***60***				***80***		***20***	***56***	***1***
3		***120***	***20***	***74***				***94***		***26***	***34***	***1***
4		***85***	***20***	***41***				***61***		***24***	***19***	***1***
9		***85***	***18***	***44***				***62***		***23***	***0***	***1***
10		***90***	***16***	***58***				***74***		***16***	***0***	***1***
11		***125***	***16***	***92***				***108***		***17***	***0***	***1***

Offset Reference Point
Beginning of Second Main Street Green

Notes:
1) Use 'Max I' during FREE Operation and Max Inh during coordination
2) Use Fixed Force Offs
3) Sequence 1 used during FREE operation
4) Program 8 seconds detection delay for minor street right turn movements
5) Program 3 seconds detection delay for minor street left turn movements
6) Max recall Ø2 and Ø6 during coordination.
7) Program phase restrictions to omit phase 1 when phase 2 is green.
8) Controller Brand: Econolite ATC 2070

SOP Special (Sequence 1)

Ring - 1	1	2	
Ring - 2	6		8

Designed By:	TS
Date:	6/13/2015
Checked By:	PY
Date:	6/13/2015

Location Details			
Section:	***16006000***	Mile Post:	***1.223***
Major Street:	***SR 659/ Combee Rd***	Orientation:	***N-S***
Minor Street:	***Skyview Dr***	Orientation:	***E-W***
Signal ID:	***563***	System ID:	***16006A***

Controller Timings (seconds)

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction		***SB***		***WB***	***SBLT***	***NB***		***EX PED***	
Turn Type					***Prot/Perm***				
Min Green		***12***		***7***	***5***	***12***		***15***	
Ext		***5.0***		***3.0***	***3.0***	***5.0***		***3.0***	
Yellow		***4.5***		***3.7***	***4.4***	***4.5***		***3.0***	
All Red		***3.0***		***2.1***	***3.0***	***3.0***		***1.0***	
Max I		***50***		***20***	***20***	***50***		***31***	
Max II		***25***		***30***	***20***	***25***		***31***	
Walk								***10***	
Flashing Don't Walk								***22***	
Detector Memory									
Det. Cross Switch.					***Ø2***				
Dual Entry		***ON***				***ON***			
Vehicle Recall		***MIN***				***MIN***			
CNA		***ON***				***ON***			
Rest in Walk									
Coord Phase		***YES***				***YES***			

Coordination Timings (seconds)

Pattern	C-S-O	Cycle Length	Splits								Offset	Sequence
1		***110***		***67***		***25***	***20***	***47***		***18***	***56***	***1***
2		***100***		***45***		***17***	***16***	***29***		***38***	***76***	***1***
3		***120***		***62***		***20***	***20***	***42***		***38***	***56***	***1***
4		***85***		***41***		***16***	***16***	***25***		***28***	***41***	***1***
9		***85***		***41***		***16***	***16***	***25***		***28***	***76***	***1***
10		***90***		***44***		***16***	***16***	***28***		***30***	***3***	***1***
12		***125***		***70***		***25***	***16***	***54***		***30***	***0***	***1***

Offset Reference Point
Beginning of Second Main Street Green

Notes:
1) Use 'Max I' during FREE Operation and Max Inh during coordination
2) Use Fixed Force Offs
3) Sequence 1 used during FREE operation
4) Program 8 seconds detection delay for minor street right turn movements
5) Program 3 seconds detection delay for minor street left turn movements
6) Max recall Ø2 and Ø6 during coordination
7) Program phase restrictions to omit phase 5 when phase 6 is green
8) Controller Brand: Econolite ATC 2070

SOP Special(Sequence 1)

Ring - 1		2	4	8
Ring - 2	5	6		

Designed By:	TS
Date:	6/13/2015
Checked By:	PY
Date:	6/13/2015

Location Details			
Section:	***16006000***	Mile Post:	***1.360***
Major Street:	***SR 539/ Combee Rd***	Orientation:	***N-S***
Minor Street:	***N Crystal Lk Dr***	Orientation:	***E-W***
Signal ID:	***564***	System ID:	***16006A***

Controller Timings (seconds)

Movement # (Controller Phase Ø)	1	2	3	4	5	6	7	8	Notes
Direction	***NBLT***	***SB***				***NB***		***EB***	
Turn Type	***Prot/Perm***								
Min Green	***5***	***12***				***12***		***7***	
Ext	***3.0***	***5.0***				***5.0***		***3.0***	
Yellow	***4.4***	***4.5***				***4.5***		***3.7***	
All Red	***2.3***	***2.3***				***2.3***		***2.0***	
Max I	***20***	***50***				***50***		***20***	
Max II	***20***	***25***				***25***		***30***	
Walk		***7***						***7***	
Flashing Don't Walk		***13***						***13***	
Detector Memory									
Det. Cross Switch.	***Ø6***								
Dual Entry		***ON***				***ON***			
Vehicle Recall		***MIN***				***MIN***			
CNA		***ON***				***ON***			
Rest in Walk									
Coord Phase		***YES***				***YES***			

Coordination Timings (seconds)

Pattern	C-S-O	Cycle Length	Splits								Offset	Sequence
1		***110***	***20***	***63***				***83***		***27***	***55***	***1***
2		***100***	***20***	***53***				***73***		***27***	***65***	***1***
3		***120***	***20***	***69***				***89***		***31***	***53***	***1***
4		***85***	***20***	***38***				***58***		***27***	***74***	***1***
9		***85***	***18***	***47***				***65***		***20***	***0***	***1***
10		***90***	***15***	***58***				***73***		***17***	***83***	***1***
12		***125***	***17***	***83***				***100***		***25***	***9***	***1***

Offset Reference Point
Beginning of Second Main Street Green

Notes:
1) Use 'Max I' during FREE Operation and Max Inh during coordination
2) Use Fixed Force Offs
3) Sequence 1 used during FREE operation
4) Program 8 seconds detection delay for minor street right turn movements
5) Max recall Ø2 and Ø6 during coordination
6) Program phase restrictions to omit phase 1 when phase 2 is green
7) Controller Brand: Econolite ATC 2070

SOP Special (Sequence 1)

Ring - 1	1	2	8
Ring - 2		6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	1591	29	17	1501	404	20	14	11	528	10	180
Future Volume (vph)	182	1591	29	17	1501	404	20	14	11	528	10	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	16
Storage Length (ft)	415		0	500		500	0		0	450		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	140			50			25			70		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.997				0.850		0.967			0.922	
Flt Protected	0.950			0.950				0.978		0.950	0.978	
Satd. Flow (prot)	1719	4925	0	1719	4940	1538	0	1711	0	1633	1550	0
Flt Permitted	0.950			0.950				0.287		0.725	0.831	
Satd. Flow (perm)	1719	4925	0	1719	4940	1538	0	502	0	1246	1317	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				439		8			32	
Link Speed (mph)		50			50			25			40	
Link Distance (ft)		2295			2276			842			1194	
Travel Time (s)		31.3			31.0			23.0			20.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	198	1729	32	18	1632	439	22	15	12	574	11	196
Shared Lane Traffic (%)										30%		
Lane Group Flow (vph)	198	1761	0	18	1632	439	0	49	0	402	379	0
Turn Type	Prot	NA		Prot	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6	6		8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	13.0	19.2		13.0	20.0	20.0	15.0	15.0		14.0	14.0	
Total Split (s)	34.0	78.0		16.0	60.0	60.0	18.0	18.0		38.0	38.0	
Total Split (%)	22.7%	52.0%		10.7%	40.0%	40.0%	12.0%	12.0%		25.3%	25.3%	
Maximum Green (s)	26.2	70.8		8.2	53.0	53.0	10.1	10.1		31.0	31.0	
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	3.7	3.7		4.8	4.8	
All-Red Time (s)	3.0	2.4		3.0	2.2	2.2	4.2	4.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	7.8	7.2		7.8	7.0	7.0		7.9		7.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)	21.7	77.5		6.9	57.5	57.5		10.1		31.0	31.0	
Actuated g/C Ratio	0.14	0.52		0.05	0.38	0.38		0.07		0.21	0.21	
v/c Ratio	0.80	0.69		0.23	0.86	0.51		1.20		1.56	1.28	
Control Delay	84.4	30.1		75.4	48.7	5.1		250.3		310.2	190.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	84.4	30.1		75.4	48.7	5.1		250.3		310.2	190.3	
LOS	F	C		E	D	A		F		F	F	
Approach Delay		35.6			39.8			250.3			252.0	
Approach LOS		D			D			F			F	
Queue Length 50th (ft)	189	501		17	541	0		~50		~583	~466	
Queue Length 95th (ft)	274	570		46	#643	78		#145		#809	#689	
Internal Link Dist (ft)		2215			2196			762			1114	
Turn Bay Length (ft)	415			500		500				450		
Base Capacity (vph)	300	2545		93	1893	860		41		257	297	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.66	0.69		0.19	0.86	0.51		1.20		1.56	1.28	

Intersection Summary

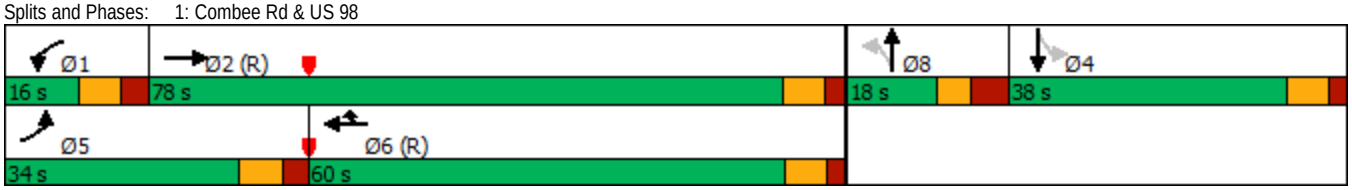
Area Type: Other

Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.56	
Intersection Signal Delay: 74.2	Intersection LOS: E
Intersection Capacity Utilization 84.3%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Combee Rd & US 98



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	116	206	584	134	153	490
Future Volume (vph)	116	206	584	134	153	490
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0		0	130	
Storage Lanes	1	1		0	1	
Taper Length (ft)	50				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.975			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	1538	1764	0	1719	1810
Flt Permitted	0.950				0.235	
Satd. Flow (perm)	1719	1538	1764	0	425	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		224	18			
Link Speed (mph)	35		40			40
Link Distance (ft)	899		1194			2014
Travel Time (s)	17.5		20.4			34.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	126	224	635	146	166	533
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	224	781	0	166	533
Turn Type	Prot	Prot	NA		pm+pt	NA
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		5.0	12.0
Minimum Split (s)	13.5	13.5	19.0		13.0	19.0
Total Split (s)	20.0	20.0	80.0		20.0	100.0
Total Split (%)	16.7%	16.7%	66.7%		16.7%	83.3%
Maximum Green (s)	13.8	13.8	73.0		13.0	93.0
Yellow Time (s)	4.1	4.1	4.4		4.4	4.4
All-Red Time (s)	2.1	2.1	2.6		2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	12.4	12.4	79.0		94.4	94.4
Actuated g/C Ratio	0.10	0.10	0.66		0.79	0.79
v/c Ratio	0.71	0.62	0.67		0.39	0.37
Control Delay	73.4	14.5	16.3		7.8	3.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	73.4	14.5	16.3		7.8	3.5
LOS	E	B	B		A	A
Approach Delay	35.7		16.3			4.5
Approach LOS	D		B			A
Queue Length 50th (ft)	95	0	344		21	70
Queue Length 95th (ft)	#169	75	511		m21	m65
Internal Link Dist (ft)	819		1114			1934
Turn Bay Length (ft)	200				130	
Base Capacity (vph)	197	375	1167		474	1423
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.64	0.60	0.67		0.35	0.37

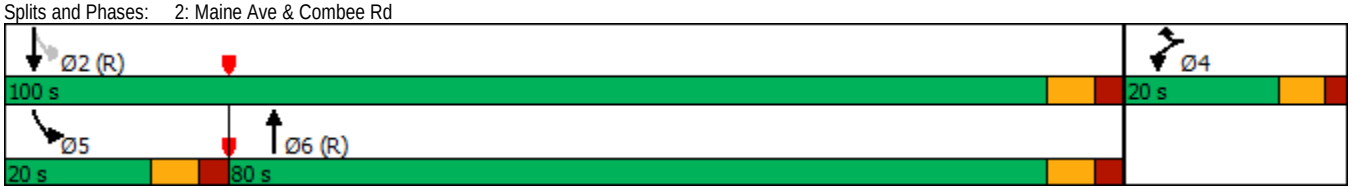
Intersection Summary	
Area Type:	Other
Cycle Length: 120	

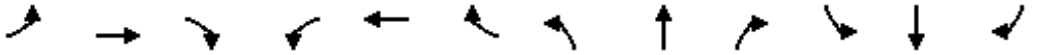
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 15.5	Intersection LOS: B
Intersection Capacity Utilization 70.6%	ICU Level of Service C
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Maine Ave & Combee Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	255	5	116	4	0	10	144	614	9	8	500	160
Future Volume (veh/h)	255	5	116	4	0	10	144	614	9	8	500	160
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1810	1900	1810	1810	1810	1810	1900	1810	1810	1900
Adj Flow Rate, veh/h	277	5	126	4	0	11	157	667	10	9	543	174
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5	5	5	5	5	5	5
Cap, veh/h	296	5	269	40	0	35	323	1121	17	402	609	195
Arrive On Green	0.17	0.17	0.17	0.02	0.00	0.02	0.21	1.00	1.00	0.62	0.62	0.62
Sat Flow, veh/h	1694	31	1538	1723	0	1538	1723	1778	27	737	1314	421
Grp Volume(v), veh/h	282	0	126	4	0	11	157	0	677	9	0	717
Grp Sat Flow(s),veh/h/ln	1725	0	1538	1723	0	1538	1723	0	1805	737	0	1735
Q Serve(g_s), s	19.3	0.0	8.8	0.3	0.0	0.8	4.9	0.0	0.0	0.6	0.0	42.2
Cycle Q Clear(g_c), s	19.3	0.0	8.8	0.3	0.0	0.8	4.9	0.0	0.0	0.6	0.0	42.2
Prop In Lane	0.98		1.00	1.00		1.00	1.00		0.01	1.00		0.24
Lane Grp Cap(c), veh/h	302	0	269	40	0	35	323	0	1138	402	0	805
V/C Ratio(X)	0.93	0.00	0.47	0.10	0.00	0.31	0.49	0.00	0.60	0.02	0.00	0.89
Avail Cap(c_a), veh/h	302	0	269	195	0	174	323	0	1138	402	0	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.70	0.00	0.70	0.52	0.00	0.52
Uniform Delay (d), s/veh	48.8	0.0	44.5	57.4	0.0	57.7	18.8	0.0	0.0	12.4	0.0	20.4
Incr Delay (d2), s/veh	34.9	0.0	1.3	1.1	0.0	4.9	3.6	0.0	1.6	0.1	0.0	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.2	0.0	3.8	0.1	0.0	0.4	2.5	0.0	0.5	0.1	0.0	21.8
LnGrp Delay(d),s/veh	83.7	0.0	45.7	58.5	0.0	62.6	22.4	0.0	1.6	12.5	0.0	28.6
LnGrp LOS	F		D	E		E	C		A	B		C
Approach Vol, veh/h		408			15			834			726	
Approach Delay, s/veh		72.0			61.5			5.5			28.4	
Approach LOS		E			E			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	20.0	62.8		9.2		82.8		28.0
Change Period (Y+Rc), s	* 7.2	* 7.2		6.4		* 7.2		7.0
Max Green Setting (Gmax), s	* 13	* 45		13.6		* 65		21.0
Max Q Clear Time (g_c+I1), s	6.9	44.2		2.8		2.0		21.3
Green Ext Time (p_c), s	0.2	0.3		0.0		5.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	191	47	80	737	631	118
Future Volume (veh/h)	191	47	80	737	631	118
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1810	1810	1900
Adj Flow Rate, veh/h	208	51	87	801	686	128
Adj No. of Lanes	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	237	211	624	1365	872	163
Arrive On Green	0.14	0.14	0.07	0.51	1.00	1.00
Sat Flow, veh/h	1723	1538	1723	1810	1484	277
Grp Volume(v), veh/h	208	51	87	801	0	814
Grp Sat Flow(s),veh/h/ln	1723	1538	1723	1810	0	1761
Q Serve(g_s), s	14.2	3.5	1.9	37.4	0.0	0.0
Cycle Q Clear(g_c), s	14.2	3.5	1.9	37.4	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.16
Lane Grp Cap(c), veh/h	237	211	624	1365	0	1034
V/C Ratio(X)	0.88	0.24	0.14	0.59	0.00	0.79
Avail Cap(c_a), veh/h	292	260	624	1365	0	1034
HCM Platoon Ratio	1.00	1.00	0.67	0.67	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.78	0.78	0.00	0.81
Uniform Delay (d), s/veh	50.8	46.2	5.5	16.5	0.0	0.0
Incr Delay (d2), s/veh	21.6	0.6	0.4	1.4	0.0	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	1.6	1.0	19.2	0.0	1.4
LnGrp Delay(d),s/veh	72.3	46.7	5.9	18.0	0.0	5.0
LnGrp LOS	E	D	A	B		A
Approach Vol, veh/h	259			888	814	
Approach Delay, s/veh	67.3			16.8	5.0	
Approach LOS	E			B	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.0	77.8				97.8		22.2
Change Period (Y+Rc), s	7.3	7.3				7.3		5.7
Max Green Setting (Gmax), s	12.7	66.7				86.7		20.3
Max Q Clear Time (g_c+I1), s	3.9	2.0				39.4		16.2
Green Ext Time (p_c), s	0.1	7.1				6.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.6
HCM 2010 LOS	B

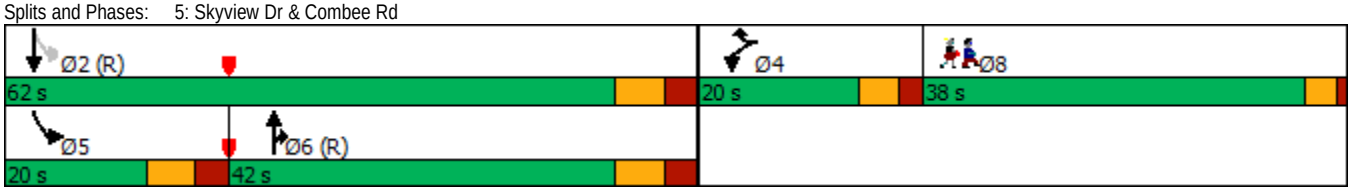
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Lane Configurations							
Traffic Volume (vph)	137	167	741	175	183	587	
Future Volume (vph)	137	167	741	175	183	587	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	215	0		275	240		
Storage Lanes	1	1		1	1		
Taper Length (ft)	140				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor	0.82						
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1719	1538	1810	1538	1719	1810	
Flt Permitted	0.950				0.112		
Satd. Flow (perm)	1414	1538	1810	1538	203	1810	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		182		119			
Link Speed (mph)	30		40			40	
Link Distance (ft)	1162		673			716	
Travel Time (s)	26.4		11.5			12.2	
Confl. Peds. (#/hr)	42	42					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	149	182	805	190	199	638	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	149	182	805	190	199	638	
Turn Type	Prot	Prot	NA	Prot	pm+pt	NA	
Protected Phases	4	4	6	6	5	2	8
Permitted Phases					2		
Detector Phase	4	4	6	6	5	2	
Switch Phase							
Minimum Initial (s)	7.0	7.0	12.0	12.0	5.0	12.0	15.0
Minimum Split (s)	12.8	12.8	19.5	19.5	12.4	19.5	22.0
Total Split (s)	20.0	20.0	42.0	42.0	20.0	62.0	38.0
Total Split (%)	16.7%	16.7%	35.0%	35.0%	16.7%	51.7%	32%
Maximum Green (s)	14.2	14.2	34.5	34.5	12.6	54.5	34.0
Yellow Time (s)	3.7	3.7	4.5	4.5	4.4	4.5	3.0
All-Red Time (s)	2.1	2.1	3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8	5.8	7.5	7.5	7.4	7.5	
Lead/Lag	Lead	Lead	Lag	Lag	Lead		Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max	None
Walk Time (s)							7.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	13.3	13.3	63.7	63.7	84.7	84.6	
Actuated g/C Ratio	0.11	0.11	0.53	0.53	0.71	0.70	
v/c Ratio	0.78	0.55	0.84	0.22	0.64	0.50	
Control Delay	78.8	13.7	32.9	10.4	18.4	6.0	
Queue Delay	0.0	2.4	0.8	0.0	0.0	0.9	
Total Delay	78.8	16.0	33.6	10.4	18.4	6.9	
LOS	E	B	C	B	B	A	
Approach Delay	44.3		29.2			9.6	
Approach LOS	D		C			A	
Queue Length 50th (ft)	113	0	239	16	35	18	
Queue Length 95th (ft)	#212	68	#1055	m91	m63	m348	
Internal Link Dist (ft)	1082		593			636	
Turn Bay Length (ft)	215			275	240		
Base Capacity (vph)	203	342	960	871	333	1275	
Starvation Cap Reductn	0	0	0	0	0	355	
Spillback Cap Reductn	0	74	32	0	0	123	
Storage Cap Reductn	0	0	0	0	0	0	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Reduced v/c Ratio	0.73	0.68	0.87	0.22	0.60	0.69	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 23.9		Intersection LOS: C	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Skyview Dr & Combee Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	196	144	157	749	720	58
Future Volume (veh/h)	196	144	157	749	720	58
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1900	1810	1810	1810	1900
Adj Flow Rate, veh/h	213	157	171	814	783	63
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	5	5	5	5
Cap, veh/h	199	146	276	1240	946	76
Arrive On Green	0.21	0.21	0.04	0.46	0.57	0.57
Sat Flow, veh/h	942	694	1723	1810	1653	133
Grp Volume(v), veh/h	371	0	171	814	0	846
Grp Sat Flow(s),veh/h/ln	1640	0	1723	1810	0	1786
Q Serve(g_s), s	25.3	0.0	4.6	41.8	0.0	46.2
Cycle Q Clear(g_c), s	25.3	0.0	4.6	41.8	0.0	46.2
Prop In Lane	0.57	0.42	1.00			0.07
Lane Grp Cap(c), veh/h	346	0	276	1240	0	1022
V/C Ratio(X)	1.07	0.00	0.62	0.66	0.00	0.83
Avail Cap(c_a), veh/h	346	0	369	1240	0	1022
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.52	0.52	0.00	1.00
Uniform Delay (d), s/veh	47.4	0.0	22.1	21.5	0.0	20.8
Incr Delay (d2), s/veh	69.2	0.0	1.2	1.4	0.0	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.1	0.0	3.3	21.4	0.0	24.7
LnGrp Delay(d),s/veh	116.5	0.0	23.3	23.0	0.0	28.5
LnGrp LOS	F		C	C		C
Approach Vol, veh/h	371			985	846	
Approach Delay, s/veh	116.5			23.0	28.5	
Approach LOS	F			C	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	13.5	75.5				89.0		31.0
Change Period (Y+Rc), s	* 6.7	* 6.8				* 6.8		5.7
Max Green Setting (Gmax), s	* 13	* 62				* 82		25.3
Max Q Clear Time (g_c+I1), s	6.6	48.2				43.8		27.3
Green Ext Time (p_c), s	0.2	5.1				6.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	40.9
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Appendix H:

Crash Summary Tables

Crash Data Detail - 2013

SR 659
BMP: 0.000 EMP: 1.360 Length: 1.360 Miles County: Polk
Period: 1/1/2013 Through 12/31/2013 Duration: 365 Days City: Lakeland

Crash No	Location	Direction	Date	Weekday	Hour	Type	Lighting	Weather	Pavement	Drugs/ Alcohol	Distracted Driving	# Vehicles	# Non-Motorists	# Injuries	#Fatalities
83192001	SR 659 (Combee Rd) at Industrial Park Dr	W	1/15/2013	Monday	9	Hit Parked Vehicle	Daylight	Cloudy	Dry	No	No	2	0	0	0
83470268	SR 659 (Combee Rd) at Industrial Park Dr	S	2/20/2013	Saturday	14	Left Turn	Daylight	Clear	Dry	No	No	2	0	0	0
83227966	SR 659 (Combee Rd) at S Crystal Lake Dr	N	3/1/2013	Saturday	7	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
83267525	SR 659 (Combee Rd), 70 ft South of Skyview Dr	N	3/11/2013	Friday	13	Rear End	Daylight	Cloudy	Dry	No	No	2	0	0	0
83267533	Maine Ave, 20 ft East of SR 659 (Combee Rd)	W	3/20/2013	Tuesday	10	Rear End	Daylight	Cloudy	Dry	No	No	2	0	0	0
83267540	SR 659 (Combee Rd), 250 ft North of Maine Ave	N	4/5/2013	Sunday	15	Backed Into	Daylight	Cloudy	Dry	No	No	2	0	0	0
83295211	Industrial Park Dr at SR 659 (Combee Rd)	W	4/5/2013	Monday	16	Left Turn	Daylight	Clear	Dry	No	Yes	2	0	0	0
81998007	SR 659 (Combee Rd), 30 ft South of Commerce Point Dr	S	4/19/2013	Saturday	14	Rear End	Daylight	Cloudy	Dry	No	No	2	0	0	0
83295223	SR 659 (Combee Rd) at Kiwanis Ave	S	4/23/2013	Saturday	7	Bicycle	Daylight	Clear	Dry	No	No	1	1	1	0
83975411	Commerce Point Dr, 100 ft West of SR 659 (Combee Rd)	S	4/23/2013	Tuesday	17	Left Turn	Daylight	Clear	Dry	No	No	2	0	1	0
83235323	Maine Ave at SR 659 (Combee Rd)	W	5/1/2013	Tuesday	17	Rear End	Daylight	Rain	Wet	No	No	2	0	0	0
83921657	SR 659 (Combee Rd) at Mine and Mill Rd	N	5/3/2013	Sunday	15	Rear End	Daylight	Cloudy	Wet	No	No	2	0	2	0
83469261	S Crystal Lake Dr, 300 ft West of SR 659 (Combee Rd)	E	5/9/2013	Tuesday	17	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
84034072	SR 659 (Combee Rd), 75 ft North of S Crystal Lake Dr	S	5/16/2013	Saturday	7	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
83327833	SR 659 (Combee Rd), 10 ft North of Skyview Dr	S	5/19/2013	Friday	20	Rear End	Dark - UK	Cloudy	Dry	No	No	2	0	5	0
84034372	SR 659 (Combee Rd), 100 ft South of Skyview Dr	S	6/11/2013	Sunday	15	Left Turn	Daylight	Clear	Dry	No	No	2	0	0	0
83469347	SR 659 (Combee Rd) at Skyview Dr	W	6/12/2013	Wednesday	18	Hit Curb	Daylight	Rain	Wet	No	Yes	1	0	0	0
83469720	SR 659 (Combee Rd) at N Crystal Lake Dr	N	6/17/2013	Tuesday	17	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
83330643	SR 659 (Combee Rd), 50 ft North of S Crystal Lake Dr	S	6/20/2013	Thursday	19	Rear End	Dusk	Cloudy	Wet	No	No	2	0	1	0
83327850	N Crystal Lake Dr, 50 ft West of SR 659 (Combee Rd)	E	6/25/2013	Sunday	15	Left Turn	Daylight	Cloudy	Dry	No	No	2	0	1	0
84034707	SR 659 (Combee Rd), 100 ft South of Commerce Point Dr	N	7/3/2013	Friday	13	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
84034698	SR 659 (Combee Rd) at Kiwanis Ave	S	8/8/2013	Monday	16	Rear End	Daylight	Rain	Wet	No	No	2	0	0	0
83921720	SR 659 (Combee Rd) at Skyview Dr	S	8/16/2013	Friday	13	Rear End	Daylight	Clear	Dry	No	No	2	0	1	0
83675757	SR 659 (Combee Rd) at N Crystal Lake Dr	S	8/25/2013	Thursday	12	Left Turn	Daylight	Clear	Dry	No	Yes	2	0	0	0
83317369	SR 659 (Combee Rd), 120 ft South of Skyview Dr	S	8/27/2013	Monday	16	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
83317876	SR 659 (Combee Rd) at Mine and Mill Rd	N	8/30/2013	Sunday	15	Rear End	Daylight	Clear	Dry	No	No	3	0	1	0
83319215	SR 659 (Combee Rd) at Ellis Ave	W	9/9/2013	Saturday	7	Left Turn	Daylight	Clear	Dry	No	No	2	0	0	0
83307883	SR 659 (Combee Rd), 200 ft South of S Crystal Lake Dr	N	9/13/2013	Friday	13	Sideswipe	Daylight	Cloudy	Dry	No	No	2	0	0	0
84035861	SR 659 (Combee Rd), 20 ft North of Fletcher Ave	UK	9/30/2013	Saturday	14	Angle	Daylight	Clear	Dry	No	No	3	0	0	0
83677784	SR 659 (Combee Rd), 100 ft North of N Crystal Lake Dr	S	10/29/2013	Sunday	8	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
83678447	SR 659 (Combee Rd), 100 ft South of Maine Ave	N	11/15/2013	Tuesday	17	Rear End	Dusk	Cloudy	Wet	No	No	2	0	0	0
83683899	SR 659 (Combee Rd), 500 ft South of S Crystal Lake Dr	N	11/20/2013	Sunday	15	Rear End	Daylight	Cloudy	Wet	No	No	2	0	0	0
84292774	SR 659 (Combee Rd) at Commerce Point Dr	N	11/20/2013	Friday	20	Hit Ditch	Dark - Lit	Clear	Dry	No	No	1	0	2	0
83291948	SR 659 (Combee Rd), 20 ft South of N Crystal Lake Dr	N	11/26/2013	Friday	13	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
83330682	SR 659 (Combee Rd) at N Crystal Lake Dr	N	12/4/2013	Sunday	15	Left Turn	Daylight	Clear	Dry	No	No	2	0	0	0
84293193	SR 659 (Combee Rd) at Exchange Ave	N	12/12/2013	Sunday	15	Pedestrian	Daylight	Clear	Dry	Yes	No	1	1	1	0

Crash Data Detail - 2014

SR 659
BMP: 0.000 EMP: 1.360 Length: 1.360 Miles County: Polk
Period: 1/1/2014 Through 12/31/2014 Duration: 365 Days City: Lakeland

Crash No	Location	Direction	Date	Weekday	Hour	Type	Lighting	Weather	Pavement	Drugs/ Alcohol	Distracted Driving	# Vehicles	# Non-Motorists	# Injuries	#Fatalities
84293368	SR 659 (Combee Rd), 290 ft South of Crystal Wood Dr	S	1/11/2014	Wednesday	18	Backed Into	Dark - Lit	Rain	Wet	No	No	2	0	0	0
83677824	SR 659 (Combee Rd), 200 ft North of Commerce Point Dr	S	2/10/2014	Sunday	8	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
84292793	SR 659 (Combee Rd) at N Crystal Lake Dr	S	2/11/2014	Sunday	8	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
83721980	SR 659 (Combee Rd), 160 ft South of Maine Ave	N	2/17/2014	Sunday	15	Rear End	Daylight	Clear	Dry	No	Yes	3	0	1	0
83683935	SR 659 (Combee Rd), 200 ft North of Commerce Point Dr	N	2/28/2014	Thursday	12	Rear End	Daylight	Clear	Dry	No	No	2	0	2	0
83468416	SR 659 (Combee Rd) at Maine Ave	S	3/10/2014	Wednesday	11	Left Turn	Daylight	Clear	Dry	No	No	2	0	2	0
84293815	SR 659 (Combee Rd), 20 ft North of Atlantic Ave	N	3/20/2014	Sunday	8	Angle	Daylight	Cloudy	Dry	No	No	2	0	0	0
83691698	SR 659 (Combee Rd), 20 ft North of SR 35/SR 700/US 98	S	4/8/2014	Saturday	14	Rear End	Daylight	Rain	Wet	No	No	2	0	0	0
83697738	SR 659 (Combee Rd), 50 ft South of Royal Dr	N	4/30/2014	Monday	16	Rear End	Daylight	Rain	Wet	No	No	3	0	0	0
83726703	SR 659 (Combee Rd), 300 ft North of McJunkin Rd	S	6/16/2014	Monday	16	Rear End	Daylight	Rain	Wet	No	Yes	2	0	1	0
84624151	SR 659 (Combee Rd) at Atlantic Ave	S	6/18/2014	Sunday	8	Left Turn	Daylight	Clear	Dry	No	No	2	0	0	0
83767798	SR 659 (Combee Rd), 10 ft North of Industrial Park Dr	S	6/20/2014	Friday	13	Rear End	Daylight	Cloudy	Dry	No	No	2	0	1	0
83773113	SR 659 (Combee Rd), 20 ft North of S Crystal Lake Dr	N	7/7/2014	Sunday	15	Rear End	Daylight	Cloudy	Dry	No	Yes	2	0	0	0
83773119	SR 659 (Combee Rd), 200 ft North of S Crystal Lake Dr	S	7/18/2014	Tuesday	10	Rear End	Daylight	Cloudy	Dry	No	No	2	0	0	0
83745509	SR 659 (Combee Rd), 10 ft South of Ellis Ave	S	7/18/2014	Sunday	15	Sideswipe	Daylight	Clear	Dry	No	Yes	2	0	0	0
83778236	SR 659 (Combee Rd), 50 ft South of Commerce Point Dr	W	9/2/2014	Thursday	12	Left Turn	Daylight	Clear	Dry	Yes	Yes	2	0	0	0
84624636	SR 659 (Combee Rd) at Lyonal Dr	W	9/2/2014	Sunday	15	Angle	Daylight	Clear	Dry	No	No	2	0	0	0
83742207	Commerce Point Dr, 50 ft West of SR 659 (Combee Rd)	N	9/19/2014	Monday	9	Angle	Daylight	Cloudy	Dry	No	No	2	0	0	0
84625657	SR 659 (Combee Rd) at N Crystal Lake Dr	N	9/22/2014	Friday	13	Rear End	Daylight	Rain	Wet	No	No	2	0	1	0
84625009	SR 659 (Combee Rd) at N Crystal Lake Dr	S	10/15/2014	Thursday	12	Left Turn	Daylight	Clear	Dry	No	No	2	0	0	0
84626536	SR 659 (Combee Rd) at Kiwanis Ave	S	10/23/2014	Tuesday	17	Rear End	Daylight	Clear	Dry	No	No	2	0	1	0
84520109	SR 659 (Combee Rd), 25 ft North of Industrial Park Dr	W	10/28/2014	Friday	13	Left Turn	Daylight	Clear	Dry	No	No	2	0	0	0
84520112	SR 659 (Combee Rd) at Kiwanis Ave	S	11/3/2014	Sunday	15	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
84625435	SR 659 (Combee Rd), 270 ft North of McJunkin Rd	N	11/5/2014	Thursday	12	Right Turn	Daylight	Clear	Dry	No	No	2	0	0	0
84625823	SR 659 (Combee Rd), 50 ft South of Skyview Dr	N	11/5/2014	Monday	16	Sideswipe	Daylight	Clear	Dry	No	No	3	0	1	0
84626352	SR 659 (Combee Rd) at Industrial Park Dr	N	11/10/2014	Sunday	8	Angle	Daylight	Clear	Dry	No	No	3	0	0	0
84518401	SR 659 (Combee Rd), 50 ft North of SR 35/SR 700/US 98	S	11/10/2014	Tuesday	10	Rear End	Daylight	Cloudy	Dry	No	No	2	0	1	0
84623669	SR 659 (Combee Rd), 250 ft South of Skyview Dr	N	11/13/2014	Monday	9	Rear End	Daylight	Clear	Dry	No	Yes	2	0	1	0
84626154	SR 659 (Combee Rd), 200 ft North of Commerce Point Dr	S	11/18/2014	Monday	9	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
84625795	SR 659 (Combee Rd), 70 ft South of Maine Ave	W	11/26/2014	Wednesday	11	Other Single Vehicle	Daylight	Rain	Wet	No	No	1	0	0	0
84543264	SR 659 (Combee Rd), 20 ft North of Industrial Park Dr	S	12/7/2014	Tuesday	17	Hit Tree	Dark - Lit	Clear	Dry	No	No	1	0	0	0
85686712	SR 659 (Combee Rd), 50 ft South of Kiwanis Ave	S	12/11/2014	Saturday	7	Left Turn	Daylight	Clear	Dry	No	No	3	0	1	0
84625406	SR 35/SR 700/US 98 at SR 659 (Combee Rd)	N	12/13/2014	Sunday	22	Angle	Dark - Lit	Clear	Dry	No	No	2	0	1	0
84543270	SR 659 (Combee Rd) at SR 35/SR 700/US 98	S	12/15/2014	Monday	16	Rear End	Daylight	Clear	Dry	No	No	2	0	1	0
84624915	SR 659 (Combee Rd), 270 ft North of McJunkin Rd	N	12/15/2014	Monday	16	Head On	Daylight	Clear	Dry	No	No	2	0	2	0
85686862	SR 659 (Combee Rd), 500 ft South of Exchange Ave	N	12/29/2014	Monday	16	Rear End	Daylight	Clear	Dry	No	No	2	0	1	0
84520141	SR 659 (Combee Rd), 15 ft North of Commerce Point Dr	S	12/30/2014	Thursday	19	Rear End	Dark - Lit	Rain	Wet	No	No	3	0	1	0

Crash Data Detail - 2015

SR 659
BMP: 0.000 EMP: 1.360 Length: 1.360 Miles County: Polk
Period: 1/1/2015 Through 12/31/2015 Duration: 365 Days City: Lakeland

Crash No	Location	Direction	Date	Weekday	Hour	Type	Lighting	Weather	Pavement	Drugs/ Alcohol	Distracted Driving	# Vehicles	# Non-Motorists	# Injuries	#Fatalities
84627086	SR 659 (Combee Rd), 25 ft North of Industrial Park Dr	S	1/4/2015	Sunday	8	Rear End	Daylight	Clear	Dry	No	No	2	0	1	0
84625600	SR 659 (Combee Rd) at Maine Ave	N	1/6/2015	Saturday	7	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
84292689	SR 659 (Combee Rd), 100 ft South of Exchange Ave	N	1/16/2015	Wednesday	11	Rear End	Daylight	Clear	Dry	No	No	2	0	1	0
85687213	SR 659 (Combee Rd), 600 ft South of Maine Ave	N	1/23/2015	Monday	16	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
85687214	SR 659 (Combee Rd), 550 ft South of Maine Ave	N	1/23/2015	Monday	16	Rear End	Daylight	Clear	Dry	No	Yes	3	0	0	0
85687653	SR 659 (Combee Rd), 400 ft North of Commerce Point Dr	N	1/30/2015	Wednesday	11	Rear End	Daylight	Clear	Dry	No	No	2	0	2	0
83784413	Ellis Ave, 22 ft East of SR 659 (Combee Rd)	W	2/2/2015	Tuesday	17	Head On	Dusk	Clear	Dry	No	No	2	0	0	0
84498131	SR 659 (Combee Rd), 700 ft South of Skyview Dr	N	2/3/2015	Monday	9	Sideswipe	Daylight	Clear	Dry	No	Yes	2	0	0	0
84558684	SR 659 (Combee Rd), 75 ft North of Exchange Ave	S	2/7/2015	Thursday	12	Rear End	Daylight	Cloudy	Dry	No	No	2	0	1	0
85687427	SR 659 (Combee Rd) at N Crystal Lake Dr	S	2/11/2015	Sunday	15	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
83776153	SR 659 (Combee Rd) at N Crystal Lake Dr	N	3/19/2015	Saturday	14	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
85729688	Commerce Point Dr, 150 ft West of SR 659 (Combee Rd)	UK	3/23/2015	Tuesday	17	Angle	Daylight	Clear	Dry	No	No	2	0	0	0
84623793	SR 659 (Combee Rd) at S Crystal Lake Dr	S	4/8/2015	Thursday	19	Rear End	Daylight	Clear	Dry	No	No	2	0	4	0
85688200	SR 659 (Combee Rd) at Lyonal Dr	S	4/10/2015	Thursday	12	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
82779858	SR 659 (Combee Rd) at Maine Ave	S	4/14/2015	Sunday	15	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
84894940	SR 659 (Combee Rd) at SR 35/SR 700/US 98	W	4/14/2015	Wednesday	18	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
82782311	SR 659 (Combee Rd), 300 ft North of Atlantic Ave	S	4/22/2015	Saturday	7	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
84892569	SR 659 (Combee Rd), 20 ft North of N Crystal Lake Dr	S	5/15/2015	Monday	16	Rear End	Daylight	Cloudy	Dry	No	Yes	2	0	1	0
84551377	SR 659 (Combee Rd), 300 ft North of SR 35/SR 700/US 98	E	6/2/2015	Saturday	7	Left Turn	Daylight	Clear	Dry	No	No	2	0	0	0
83468767	SR 659 (Combee Rd) at S Crystal Lake Dr	S	6/16/2015	Sunday	8	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
84034097	SR 659 (Combee Rd) at Skyview Dr	S	6/24/2015	Saturday	7	Rear End	Daylight	Clear	Dry	No	No	2	0	2	0
86126373	Commerce Point Dr, 112 ft West of SR 659 (Combee Rd)	E	6/24/2015	Monday	16	Rear End	Daylight	Rain	Wet	No	No	2	0	0	0
83466361	SR 659 (Combee Rd) at Skyview Dr	S	6/29/2015	Thursday	5	Bicycle	Dawn	Clear	Dry	No	No	1	1	1	0
82780952	SR 659 (Combee Rd), 50 ft South of Maine Ave	N	7/7/2015	Tuesday	10	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
86082120	Maine Ave, 10 ft East of SR 659 (Combee Rd)	W	7/7/2015	Sunday	15	Rear End	Daylight	Cloudy	Dry	No	No	2	0	0	0
86082470	SR 659 (Combee Rd) at S Crystal Lake Dr	S	7/9/2015	Saturday	14	Rear End	Daylight	Clear	Dry	No	No	2	0	1	0
86082196	SR 659 (Combee Rd), 500 ft North of Maine Ave	N	7/24/2015	Monday	16	Rear End	Daylight	Rain	Wet	No	No	2	0	1	0
86082095	SR 659 (Combee Rd), 50 ft South of S Crystal Lake Dr	N	7/24/2015	Sunday	22	Bicycle	Daylight	Clear	Dry	Yes	No	1	1	1	0
82780035	SR 659 (Combee Rd), 10 ft North of S Crystal Lake Dr	S	8/2/2015	Tuesday	17	Rear End	Daylight	Rain	Wet	No	No	2	0	0	0
84892597	SR 659 (Combee Rd) at SR 35/SR 700/US 98	W	8/10/2015	Thursday	12	Rear End	Daylight	Clear	Dry	No	Yes	2	0	1	0
86083295	SR 659 (Combee Rd), 290 ft South of Crystal Wood Dr	S	8/28/2015	Saturday	7	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
85144976	Maine Ave, 20 ft East of SR 659 (Combee Rd)	W	9/14/2015	Friday	13	Backed Into	Daylight	Cloudy	Dry	No	No	2	0	0	0
86082902	SR 659 (Combee Rd), 50 ft North of S Crystal Lake Dr	S	9/23/2015	Thursday	12	Angle	Daylight	Rain	Wet	No	No	2	0	0	0
86083436	Skyview Dr at SR 659 (Combee Rd)	W	9/27/2015	Friday	13	Rear End	Daylight	Clear	Dry	No	No	2	0	1	0
86083437	S Crystal Lake Dr, 20 ft West of SR 659 (Combee Rd)	E	9/30/2015	Monday	16	Other	Daylight	Clear	Dry	No	No	2	0	0	0
86084232	SR 659 (Combee Rd), 450 ft North of SR 35/SR 700/US 98	S	10/6/2015	Saturday	14	Rear End	Daylight	Clear	Dry	No	Yes	3	0	1	0
84564653	Commerce Point Dr, 200 ft West of SR 659 (Combee Rd)	N	10/9/2015	Sunday	8	Angle	Daylight	Clear	Dry	No	No	2	0	1	0
86083960	SR 659 (Combee Rd), 200 ft South of N Crystal Lake Dr	S	10/30/2015	Saturday	14	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
86127131	Commerce Point Dr, 100 ft West of SR 659 (Combee Rd)	S	11/9/2015	Tuesday	17	Left Turn	Daylight	Rain	Wet	No	No	2	0	0	0
85151244	SR 659 (Combee Rd), 25 ft South of Mine and Mill Rd	N	12/4/2015	Sunday	15	Rear End	Daylight	Clear	Dry	No	No	2	0	1	0
86084949	SR 659 (Combee Rd), 300 ft North of S Crystal Lake Dr	S	12/11/2015	Saturday	14	Angle	Daylight	Clear	Dry	No	No	2	0	1	0
86312141	SR 659 (Combee Rd) at E Civitan Ave	S	12/15/2015	Sunday	15	Rear End	Daylight	Clear	Dry	No	No	3	0	2	0
85156346	S Crystal Lake Dr at SR 659 (Combee Rd)	W	12/16/2015	Thursday	19	Backed Into	Dark - Lit	Clear	Dry	No	No	2	0	0	0

Crash Data Detail - 2016

SR 659
BMP: 0.000 EMP: 1.360 Length: 1.360 Miles County: Polk
Period: 1/1/2016 Through 12/31/2016 Duration: 366 Days City: Lakeland

Crash No	Location	Direction	Date	Weekday	Hour	Type	Lighting	Weather	Pavement	Drugs/ Alcohol	Distracted Driving	# Vehicles	# Non-Motorists	# Injuries	#Fatalities
86312849	SR 659 (Combee Rd) at Industrial Park Dr	W	2/1/2016	Monday	16	Left Turn	Daylight	Clear	Dry	No	No	2	0	0	0
86313922	Maine Ave at SR 659 (Combee Rd)	W	2/5/2016	Tuesday	17	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
86312768	SR 35/SR 700/US 98 at SR 659 (Combee Rd)	N	2/12/2016	Monday	9	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
86314087	SR 659 (Combee Rd) at Lyonal Dr	S	2/19/2016	Friday	13	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
86082329	SR 659 (Combee Rd), 100 ft North of Kiwanis Ave	S	2/25/2016	Tuesday	17	Rear End	Daylight	Clear	Dry	No	No	3	0	1	0
86313334	SR 659 (Combee Rd), 100 ft South of Fletcher Ave	UK	3/1/2016	Tuesday	10	Angle	Daylight	Clear	Dry	No	No	2	0	0	0
85148529	SR 659 (Combee Rd), 150 ft North of SR 35/SR 700/US 98	S	3/3/2016	Monday	9	Rear End	Daylight	Cloudy	Dry	No	No	3	0	0	0
86314393	SR 659 (Combee Rd) at Royal Dr	W	3/23/2016	Sunday	15	Left Turn	Daylight	Clear	Dry	No	No	2	0	1	0
86442624	SR 659 (Combee Rd), 125 ft South of McJunkin Rd	N	4/4/2016	Saturday	14	Hit Ditch	Daylight	Clear	Dry	No	No	1	0	1	0
85274103	SR 659 (Combee Rd) at SR 35/SR 700/US 98	N	4/11/2016	Tuesday	17	Head On	Daylight	Clear	Dry	No	No	2	0	1	0
86083713	SR 659 (Combee Rd), 315 ft North of Kiwanis Ave	N	4/12/2016	Monday	16	Other	Daylight	Clear	Dry	No	No	2	0	0	0
86442225	SR 659 (Combee Rd) at Skyview Dr	S	4/14/2016	Thursday	19	Left Turn	Daylight	Rain	Wet	No	No	2	0	0	0
86443894	SR 35/SR 700/US 98 at SR 659 (Combee Rd)	N	6/3/2016	Sunday	15	Rear End	Daylight	Clear	Dry	No	Yes	3	0	0	0
83786268	SR 659 (Combee Rd), 20 ft North of N Crystal Lake Dr	S	6/7/2016	Sunday	8	Rear End	Daylight	Rain	Wet	No	No	2	0	2	0
86442887	N Crystal Lake Dr at SR 659 (Combee Rd)	E	6/9/2016	Tuesday	17	Rear End	Daylight	Rain	Wet	No	No	2	0	0	0
85346672	SR 659 (Combee Rd), 30 ft South of Skyview Dr	N	6/21/2016	Monday	16	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
86444036	SR 659 (Combee Rd), 50 ft South of S Crystal Lake Dr	S	6/30/2016	Saturday	7	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
86444105	SR 659 (Combee Rd) at E Civitan Ave	N	7/6/2016	Monday	16	Rear End	Daylight	Clear	Dry	No	No	2	0	1	0
86347699	Commerce Point Dr, 20 ft West of SR 659 (Combee Rd)	E	7/18/2016	Sunday	15	Rear End	Daylight	Rain	Wet	No	No	2	0	0	0
85351921	N Crystal Lake Dr, 25 ft West of SR 659 (Combee Rd)	E	7/27/2016	Monday	16	Rear End	Daylight	Cloudy	Dry	No	No	2	0	0	0
86443357	SR 659 (Combee Rd) at Maine Ave	N	7/27/2016	Monday	23	Angle	Dark - Lit	Rain	Wet	No	No	2	0	0	0
85274126	SR 659 (Combee Rd) at Maine Ave	W	8/2/2016	Tuesday	17	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
86444631	McJunkin Rd at SR 659 (Combee Rd)	N	8/8/2016	Monday	16	Sideswipe	Daylight	Cloudy	Dry	No	No	2	0	0	0
86444313	SR 659 (Combee Rd) at Ellis Ave	S	8/15/2016	Friday	13	Angle	Daylight	Clear	Dry	No	No	2	0	2	0
86445387	SR 659 (Combee Rd), 250 ft of Skyview Dr	S	8/15/2016	Sunday	15	Rear End	Daylight	Rain	Wet	No	No	2	0	0	0
86445366	SR 659 (Combee Rd), 20 ft North of Skyview Dr	W	8/31/2016	Monday	16	Rear End	Daylight	Rain	Wet	No	No	2	0	0	0
86445877	SR 659 (Combee Rd), 10 ft North of Skyview Dr	S	9/11/2016	Saturday	14	Rear End	Daylight	Clear	Dry	No	No	2	0	1	0
86446075	SR 659 (Combee Rd), 10 ft North of Fletcher Ave	S	9/15/2016	Thursday	12	Sideswipe	Daylight	Clear	Dry	No	No	2	0	0	0
85308904	SR 659 (Combee Rd), 300 ft North of SR 35/SR 700/US 98	S	9/29/2016	Sunday	15	Sideswipe	Daylight	Rain	Wet	No	No	2	0	0	0
85363531	SR 659 (Combee Rd) at Industrial Park Dr	W	12/7/2016	Thursday	12	Left Turn	Daylight	Clear	Dry	No	Yes	2	0	0	0
85383694	SR 659 (Combee Rd) at Industrial Park Dr	S	12/16/2016	Tuesday	17	Left Turn	Dusk	Clear	Dry	No	No	2	0	2	0
86312510	Skyview Dr, 50 ft East of SR 659 (Combee Rd)	E	12/30/2016	Thursday	12	Head On	Daylight	Cloudy	Dry	No	No	2	0	0	0

Crash Data Detail - 2017

SR 659
BMP: 0.000 EMP: 1.360 Length: 1.360 Miles County: Polk
Period: 1/1/2017 Through 12/31/2017 Duration: 365 Days City: Lakeland

Crash No	Location	Direction	Date	Weekday	Hour	Type	Lighting	Weather	Pavement	Drugs/ Alcohol	Distracted Driving	# Vehicles	# Non-Motorists	# Injuries	#Fatalities
85687124	SR 659 (Combee Rd), 10 ft South of Ellis Ave	N	1/17/2017	Saturday	7	Left Turn	Daylight	Clear	Dry	No	Yes	2	0	1	0
86937380	SR 659 (Combee Rd) at E Civitan Ave	S	2/9/2017	Saturday	7	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
85420025	SR 659 (Combee Rd) at Ellis Ave	E	2/17/2017	Saturday	14	Left Turn	Daylight	Clear	Dry	No	No	2	0	0	0
85478617	Skyview Dr, 300 ft East of SR 659 (Combee Rd)	W	2/21/2017	Friday	6	Left Turn	Dawn	Clear	Dry	No	No	2	0	0	0
86938181	SR 659 (Combee Rd) at Atlantic Ave	S	3/6/2017	Tuesday	17	Other	Daylight	Clear	Dry	No	No	3	0	1	0
86937842	SR 659 (Combee Rd), 200 ft North of Skyview Dr	S	3/6/2017	Friday	20	Hit Curb	Dark - Lit	Clear	Dry	No	No	1	0	0	0
86937773	SR 659 (Combee Rd) at Skyview Dr	S	4/18/2017	Wednesday	11	Left Turn	Daylight	Clear	Dry	No	No	2	0	2	0
85503699	SR 659 (Combee Rd) at Industrial Park Dr	N	4/28/2017	Wednesday	18	Angle	Daylight	Clear	Dry	No	No	2	0	0	0
86937361	SR 659 (Combee Rd) at Ellis Ave	UK	5/5/2017	Saturday	7	Other	Daylight	Cloudy	Wet	No	No	3	0	0	0
85501717	SR 659 (Combee Rd), 20 ft North of SR 35/SR 700/US 98	S	5/9/2017	Saturday	21	Rear End	Dark - Lit	Clear	Dry	No	No	2	0	0	0
85409163	SR 659 (Combee Rd), 250 ft South of Commerce Point Dr	S	5/22/2017	Monday	16	Sideswipe	Daylight	Clear	Dry	No	Yes	2	0	0	0
85447332	SR 659 (Combee Rd), 30 ft South of Skyview Dr	UK	5/24/2017	Sunday	15	Rear End	Daylight	Rain	Wet	No	No	2	0	0	0
85478665	SR 659 (Combee Rd) at S Crystal Lake Dr	N	5/30/2017	Monday	9	Other Single Vehicle	Daylight	Clear	Dry	No	Yes	1	0	0	0
85478664	SR 659 (Combee Rd) at S Crystal Lake Dr	S	5/30/2017	Thursday	12	Rear End	Daylight	Clear	Dry	No	Yes	2	0	0	0
85474725	SR 659 (Combee Rd) at SR 35/SR 700/US 98	S	7/5/2017	Friday	13	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
86939324	SR 659 (Combee Rd), 50 ft South of S Crystal Lake Dr	UK	7/8/2017	Thursday	12	Other	Daylight	Clear	Dry	No	No	2	0	0	0
85443863	SR 659 (Combee Rd) at SR 35/SR 700/US 98	N	7/18/2017	Friday	13	Rear End	Daylight	Cloudy	Dry	No	No	2	0	0	0
86939912	SR 659 (Combee Rd), 400 ft North of Commerce Point Dr	N	8/16/2017	Monday	16	Sideswipe	Daylight	Clear	Dry	No	No	2	0	0	0
85503574	SR 659 (Combee Rd), 150 ft South of Commerce Point Dr	N	8/18/2017	Saturday	14	Sideswipe	Daylight	Clear	Dry	No	No	2	0	0	0
86995227	SR 659 (Combee Rd), 100 ft North of Maine Ave	S	8/23/2017	Monday	16	Angle	Daylight	Cloudy	Dry	No	No	2	0	1	0
86995702	SR 659 (Combee Rd) at Industrial Park Dr	W	8/28/2017	Thursday	12	Left Turn	Daylight	Rain	Wet	No	No	2	0	0	0
87331593	SR 659 (Combee Rd), 500 ft North of Commerce Point Dr	S	9/1/2017	Tuesday	17	Rear End	Dusk	Clear	Dry	No	No	3	0	0	0
85513224	SR 659 (Combee Rd), 100 ft North of SR 35/SR 700/US 98	S	9/20/2017	Saturday	14	Rear End	Daylight	Clear	Dry	No	No	3	0	1	0
85513226	SR 659 (Combee Rd), 350 ft North of Commerce Point Dr	S	9/21/2017	Monday	16	Rear End	Daylight	Clear	Dry	No	No	2	0	0	0
86939818	SR 659 (Combee Rd) at Exchange Ave	N	10/3/2017	Friday	20	Sideswipe	Dawn	Clear	Dry	No	No	2	0	0	0
87332340	SR 659 (Combee Rd) at S Crystal Lake Dr	S	10/16/2017	Tuesday	17	Overturned	Daylight	Clear	Dry	No	No	2	0	0	0
87332182	SR 659 (Combee Rd), 100 ft North of SR 35/SR 700/US 98	S	11/2/2017	Friday	6	Bicycle	Dark - Lit	Clear	Dry	No	No	1	1	0	0
87331542	SR 659 (Combee Rd) at SR 35/SR 700/US 98	W	11/9/2017	Friday	13	Rear End	Daylight	Cloudy	Dry	No	No	2	0	1	0
87332563	SR 659 (Combee Rd), 100 ft South of S Crystal Lake Dr	S	11/9/2017	Tuesday	17	Hit Ditch	Dusk	Clear	Dry	No	No	1	0	0	0
85568654	SR 659 (Combee Rd), 150 ft South of Mine and Mill Rd	UK	11/15/2017	Sunday	8	Other	Daylight	Clear	Dry	No	No	2	0	0	0
87332494	S Crystal Lake Dr, 20 ft West of SR 659 (Combee Rd)	E	12/11/2017	Wednesday	18	Head On	Dark - Lit	Clear	Dry	No	No	2	0	1	0
85528166	SR 659 (Combee Rd), 30 ft North of Atlantic Ave	S	12/20/2017	Sunday	8	Backed Into	Daylight	Clear	Dry	No	No	2	0	1	0

Appendix I:

Model Traffic Forecast Technical Memorandum

TECHNICAL MEMORANDUM

TRAFFIC FORECAST MODELING

SR 659 (COMBEE RD) SR FROM US 98 TO N CRYSTAL LAKE DR

POLK COUNTY, FLORIDA

March 2018

FDOT

Traffic Forecast Modeling Technical Memorandum
SR 659 (Combee Rd) from US 98 (Bartow Rd) to N Crystal Lake Dr
Polk County, Florida

Introduction

This Technical Memorandum presents the details of the Model Traffic Forecasts developed in support of the PD&E Study for SR 659 (Combee Rd) from US 98 to N Crystal Lake Dr in Polk County, Florida. This study involves potential improvements Combee Rd from north of US 98 to N Crystal Lake Dr. A map showing the study area and the project limits is shown below.

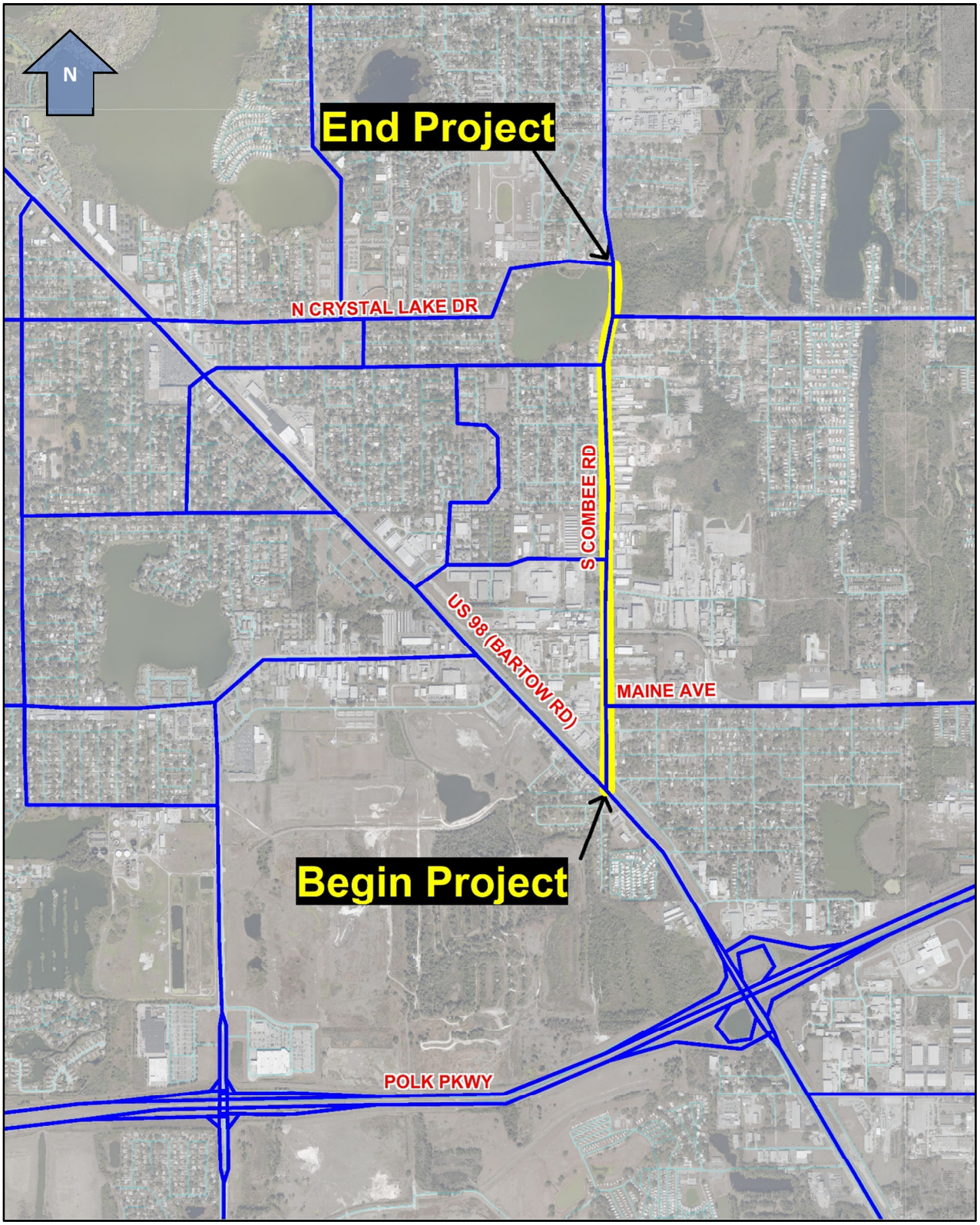
This effort involved conducting a sub-area base year (2010) validation refinement for the study area, as well as development of a refined forecast (2040) model.

The traffic model applied for this study was based on the current adopted District 1 Cost Feasible 2040 One Regional Planning Model (D1RPM v1.0.3). The D1RPM is a travel demand forecasting tool developed by FDOT District 1, in conjunction with the six District MPO/TPOs in support of their current 2040 Long Range Transportation Plans (LRTP). This model was adopted by the Polk County MPO for use in developing traffic forecasts within the County.

Model Sub-Area Validation

The original 2010 base year model validation was refined for the project study area to ensure that the base year model is replicating 2010 traffic conditions and counts. The model refinement was performed by using the guidelines identified in "FDOT Project Traffic Forecasting Handbook". Validation criteria including volume over count (v/c) ratios were used to assess the accuracy of the base year model.

Study Area Map



The following model revisions were incorporated as part of the sub-area validation effort:

- SR 659 From US92 to US98 - Facility Type (FT) 33 to FT 32
- Commerce Point Dr from US 98 to Combee Rd - FT 45 to FT 47
- Crystal Lake Dr S, from US 98 to Combee Rd - FT 42 to FT 45
- Commerce Point Dr from US 98 to Combee Rd - FT 45 to FT 47
- Commerce Point Dr from US 98 to Combee Rd – Area Type (AT) 31 to AT 42
- US 98 from Combee Rd to Crystal Lake S - FT 24 to FT 23
- Crystal Lake Dr S, from US 98 to Combee Rd - FT 42 to FT 45
- Crystal Lake Dr N from Smithfield Ave to Combee Rd - FT 45 to FT 42
- Crystal Lake Dr N from Smithfield Ave to Combee Rd - AT 42 to AT 31
- TAZ 227 - revised centroid loading
- TAZ 234 - revised centroid loading
- TAZ 258 - revised centroid loading
- TAZ 242 - revised centroid loading

These revisions resulted in improved validation performance for the study area and for SR 659. The following tables and plots show the original 2010 model level of validation, as well as the level of validation after refinement.

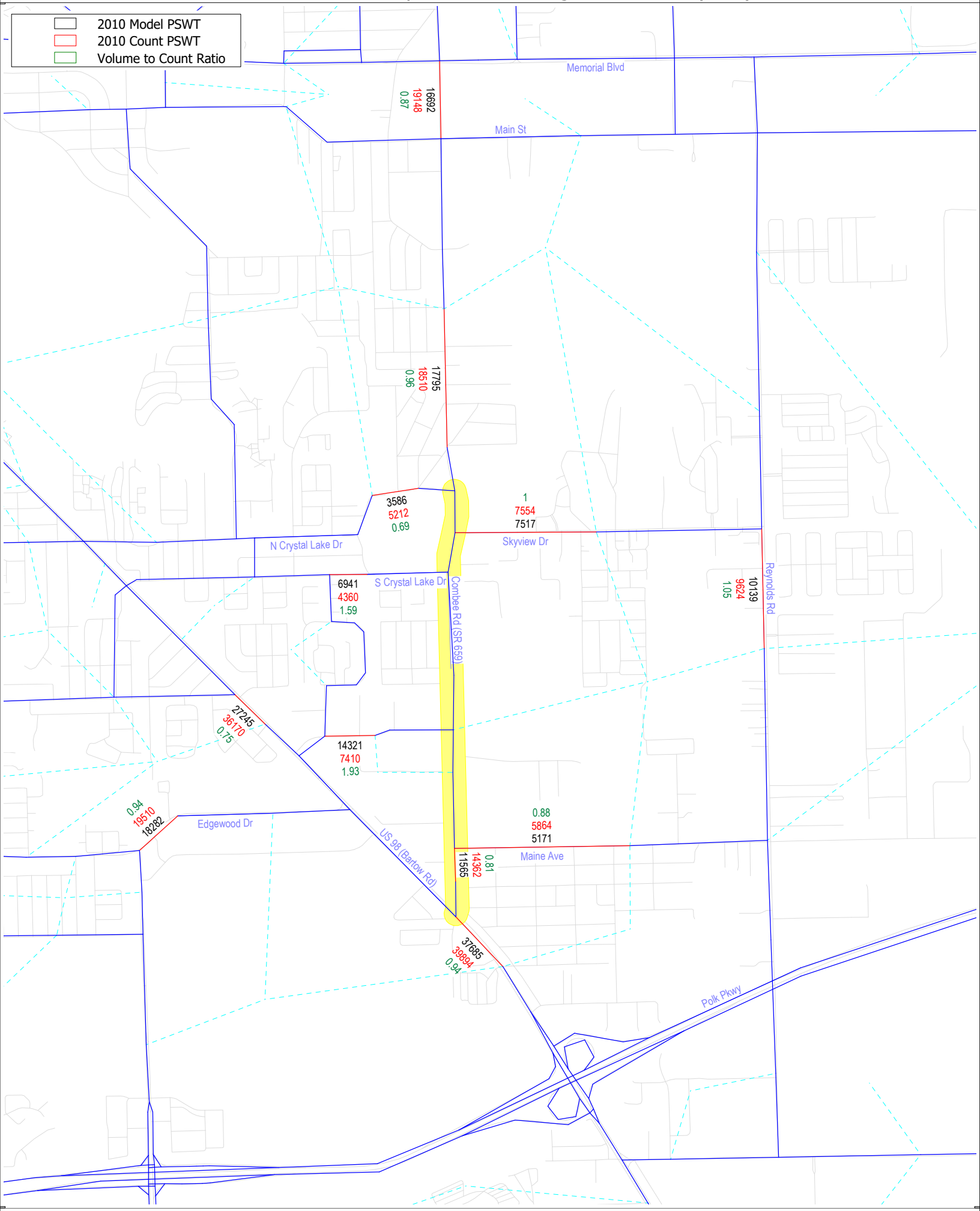
ORIGINAL VALIDATION

SL	ROADWAY	AT	FT	ANODE	BNODE	VOLUME	COUNT	V/C RATIO
34	Commerce Point Dr	31	45	6006	8899	7107	3,705	1.92
34	Commerce Point Dr	31	45	8899	6006	7,214	3,705	1.95
34	E Edgewood Dr	42	23	7348	7357	9,389	9,755	0.96
34	E Edgewood Dr	42	23	7357	7348	8,893	9,755	0.91
34	Maine Ave	31	45	7351	7355	3,045	2,932	1.04
34	Maine Ave	31	45	7355	7351	2,127	2,932	0.73
34	N Crystal Lake Dr	31	42	7184	8897	1,799	2,606	0.69
34	N Crystal Lake Dr	31	42	8897	7184	1,787	2,606	0.69
34	Reynolds Rd	31	43	7203	7301	5,025	4,812	1.04
34	Reynolds Rd	31	43	7301	7203	5,117	4,812	1.06
34	S Crystal Lake Dr	42	42	7241	8896	3,366	2,180	1.54
34	S Crystal Lake Dr	42	42	8896	7241	3,575	2,180	1.64
34	Skyview Dr	31	45	7204	7205	3,640	3,777	0.96
34	Skyview Dr	31	45	7205	7204	3,878	3,777	1.03
34	SR 35-US 98 (Bartow Rd)	42	24	7302	8878	13,403	18,085	0.74
34	SR 35-US 98 (Bartow Rd)	42	23	7390	7409	19,090	19,947	0.96
34	SR 35-US 98 (Bartow Rd)	42	23	7409	7390	18,594	19,947	0.93
34	SR 35-US 98 (Bartow Rd)	42	24	8878	7302	13,841	18,085	0.77
34	SR 659 (Combee Rd)	31	33	6764	6844	8,400	9,574	0.88
34	SR 659 (Combee Rd)	31	33	6844	6764	8,293	9,574	0.87
34	SR 659 (Combee Rd)	31	33	7062	9853	8,934	9,255	0.97
34	SR 659 (Combee Rd)	31	33	7350	7355	5,120	7,181	0.71
34	SR 659 (Combee Rd)	31	33	7355	7350	6,445	7,181	0.9
34	SR 659 (Combee Rd)	31	33	9853	7062	8,861	9,255	0.96
					Study Area	**176,943**	**187,618**	**0.94**
					SR 659	**46,053**	**52,020**	**0.89**

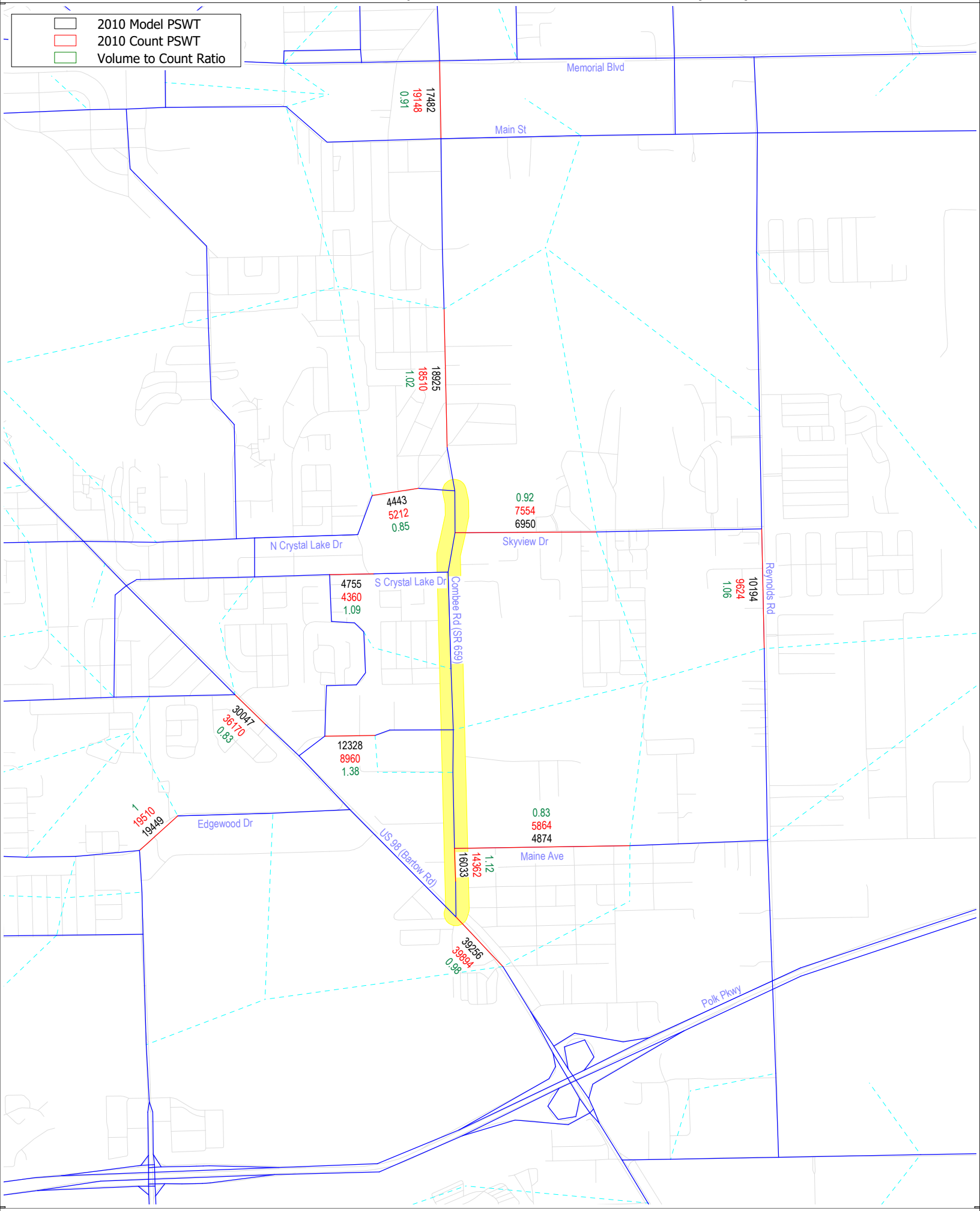
REFINED VALIDATION

SL	ROADWAY	AT	FT	ANODE	BNODE	VOLUME	COUNT	V/C RATIO
34	Commerce Point Dr	42	47	6006	8899	6018	4,480	1.34
34	Commerce Point Dr	42	47	8899	6006	6,312	4,480	1.41
34	E Edgewood Dr	42	23	7348	7357	9,989	9,755	1.02
34	E Edgewood Dr	42	23	7357	7348	9,460	9,755	0.97
34	Maine Ave	31	45	7351	7355	2,807	2,932	0.96
34	Maine Ave	31	45	7355	7351	2,068	2,932	0.71
34	N Crystal Lake Dr	31	45	7184	8897	2,171	2,606	0.83
34	N Crystal Lake Dr	31	45	8897	7184	2,272	2,606	0.87
34	Reynolds Rd	31	43	7203	7301	5,042	4,812	1.05
34	Reynolds Rd	31	43	7301	7203	5,152	4,812	1.07
34	S Crystal Lake Dr	42	45	7241	8896	2,313	2,180	1.06
34	S Crystal Lake Dr	42	45	8896	7241	2,443	2,180	1.12
34	Skyview Dr	31	45	7204	7205	3,445	3,777	0.91
34	Skyview Dr	31	45	7205	7204	3,506	3,777	0.93
34	SR 35-US 98 (Bartow Rd)	42	23	7302	8878	14,886	18,085	0.82
34	SR 35-US 98 (Bartow Rd)	42	23	7390	7409	19,829	19,947	0.99
34	SR 35-US 98 (Bartow Rd)	42	23	7409	7390	19,427	19,947	0.97
34	SR 35-US 98 (Bartow Rd)	42	23	8878	7302	15,162	18,085	0.84
34	SR 659 (Combee Rd)	31	32	6764	6844	8,809	9,574	0.92
34	SR 659 (Combee Rd)	31	32	6844	6764	8,674	9,574	0.91
34	SR 659 (Combee Rd)	31	32	7062	9853	9,527	9,255	1.03
34	SR 659 (Combee Rd)	31	32	7350	7355	7,565	7,181	1.05
34	SR 659 (Combee Rd)	31	32	7355	7350	8,468	7,181	1.18
34	SR 659 (Combee Rd)	31	32	9853	7062	9,398	9,255	1.02
					STUDY AREA	**184,743**	**189,168**	**0.98**
					SR 659	**52,441**	**52,020**	**1.01**

D1RPM v1.0.3_Combee Rd from US 98 to N Crystal Lake Dr - Original Base Year (2010) Validation



D1RPM v1.0.3_Combee Rd from US 98 to N Crystal Lake Dr - Refined Base Year (2010) Validation

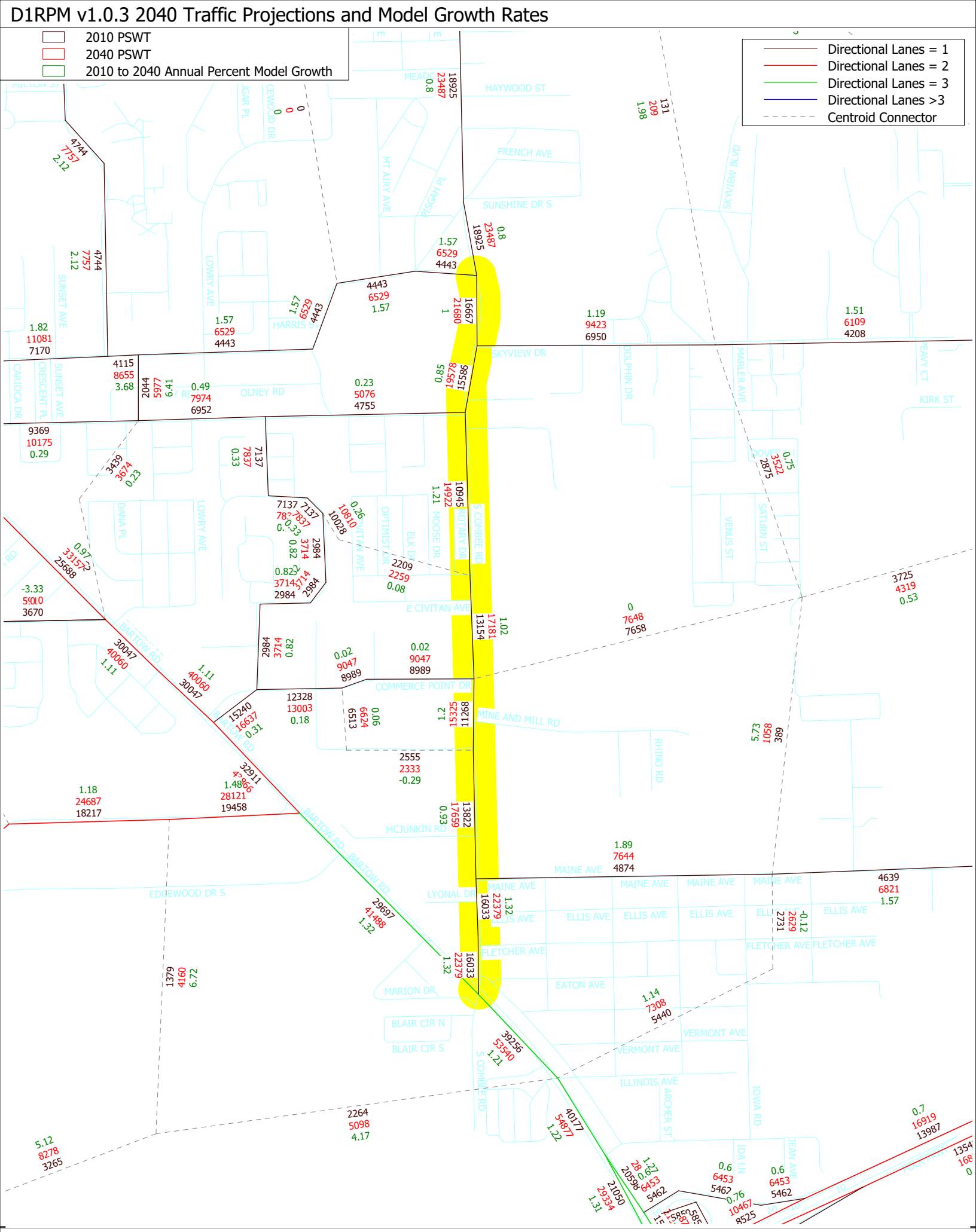


Forecast Model Development

Forecast model networks were developed by applying appropriate base year validation refinements to the 2040 LRTP Cost Feasible model network.

A plot showing the resulting 2040 Peak Season Weekday Average Daily Traffic (PSWT) is shown below. This plot also shows 2010 PSWT and the percent annual model growth from 2010 to 2040, which is about 1 percent for this corridor.

D1RPM v1.0.3 2040 Traffic Projections and Model Growth Rates



Location	MOCF	PSWADT		AADT		Annual Growth Rate (%)
		2010	2040	2010	2040	
US 659 (Combee Rd)						
US 98 to Maine Avenue	0.96	16,033	22,379	16,000	22,000	1.25%
Maine Avenue to McJunkin	0.96	13,822	17,659	14,000	17,000	0.71%
McJunkin Road to Commerce Point Drive	0.96	12,545	16,492	13,000	16,000	0.77%
Commerce Point Drive to South Crystal Lake Drive	0.96	12,050	16,052	12,000	16,000	1.11%
South Crystal Lake Drive to Skyview Drive	0.96	15,586	19,578	15,000	19,000	0.89%
Skyview Drive to North Crystal Lake Drive	0.96	16,667	21,680	17,000	21,000	0.78%
Combee Road Average						0.92%
US 98						
West of Combee Road	0.96	29,697	41,488	29,000	40,000	1.26%
East of Combee Road	0.96	39,256	53,540	38,000	52,000	1.23%
Maine Avenue						
East of Combee Road	0.96	4,874	7,644	4,700	7,400	1.91%
Commerce Point Drive						
West of Combee Road	0.96	8,989	9,047	8,700	8,700	0.00%
South Crystal Lake Drive						
West of Combee Road	0.96	4,755	5,076	4,600	4,900	0.22%
Skyview Drive						
East of Combee Road	0.96	6,950	9,423	6,700	9,100	1.19%
North Crystal Lake Drive						
West of Combee Road	0.96	4,443	6,529	4,300	6,300	1.55%
Overall Average				183,000	239,400	1.03%

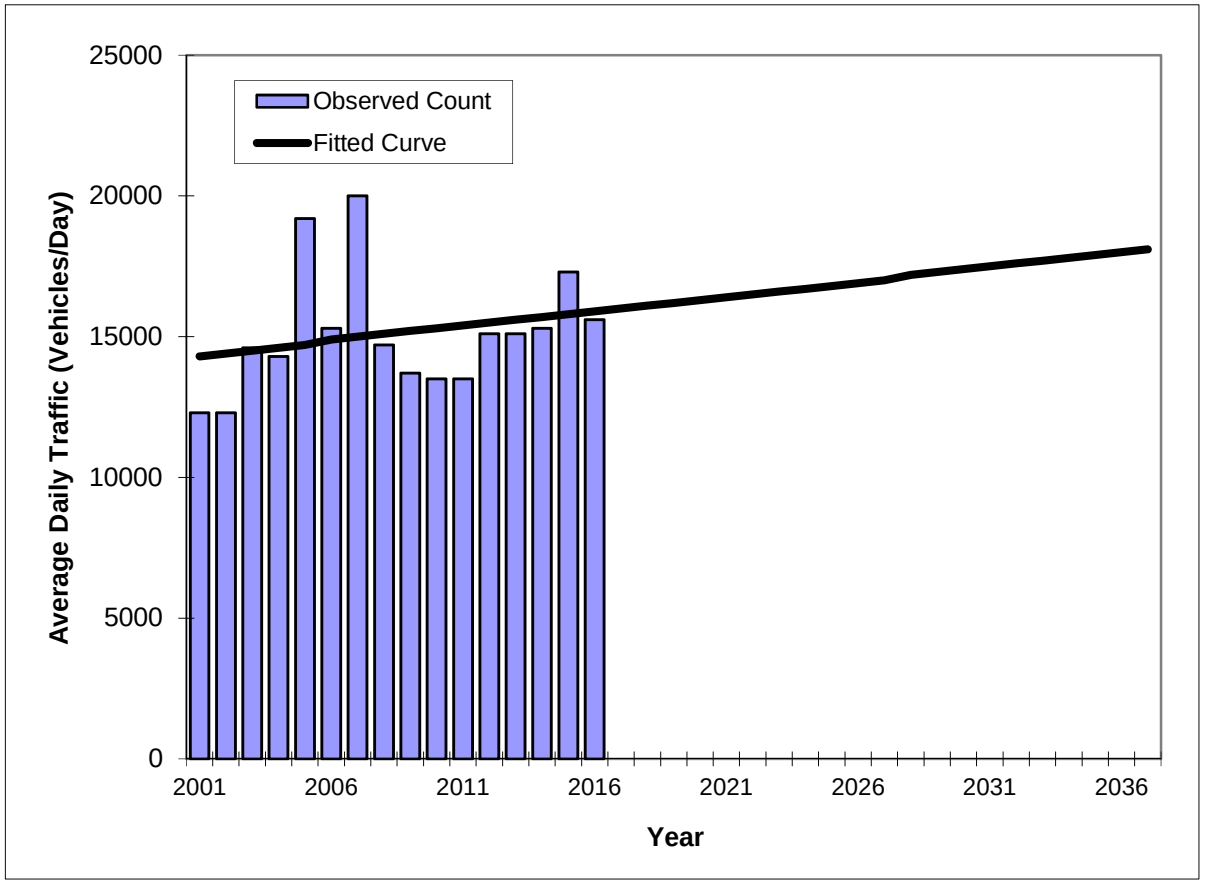
Appendix J:

Historical Traffic Growth Trend Analysis

TRAFFIC TRENDS

SR 659 -- S Of Maine Ave

County:	Polk
Station #:	165186
Highway:	SR 659



Year	Traffic (ADT/AADT) Count*	Trend**
2001	12300	14300
2002	12300	14400
2003	14600	14500
2004	14300	14600
2005	19200	14700
2006	15300	14900
2007	20000	15000
2008	14700	15100
2009	13700	15200
2010	13500	15300
2011	13500	15400
2012	15100	15500
2013	15100	15600
2014	15300	15700
2015	17300	15800
2016	15600	15900
2025 Opening Year Trend		
2025	N/A	16800
2030 Mid-Year Trend		
2030	N/A	17400
2040 Design Year Trend		
2040	N/A	18400
TRANPLAN Forecasts/Trends		

*Axle-Adjusted

** Annual Trend Increase:	105
Trend R-squared:	5.3%
Trend Annual Historic Growth Rate:	0.75%
Trend Growth Rate (2016 to Design Year):	0.66%
Printed:	1-May-18

Straight Line Growth Option

Appendix K:

BEBR Population Projections for Polk County

College of Liberal Arts and Sciences
Bureau of Economic and Business Research

BEBR

Florida Population Studies

Volume 51, Bulletin 180, January 2018

Projections of Florida Population by County, 2020–2045, with Estimates for 2017

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Ying Wang, Research Demographer

The Bureau of Economic and Business Research (BEBR) has been making population projections for Florida and its counties since the 1970s. This report presents our most recent set of projections and describes the methodology used to construct those projections. To account for uncertainty regarding future population growth, we publish three series of projections. We believe the medium series is the most likely to provide accurate forecasts in most circumstances, but the low and high series provide an indication of the uncertainty surrounding the medium series. It should be noted that these projections refer solely to permanent residents of Florida; they do not include tourists or seasonal residents.

State projections

The starting point for the state-level projections was the April 1, 2010 census population count by age, sex, race, and Hispanic origin, as adjusted by the National Center for Health Statistics (NCHS) in the Vintage 2014 bridged race population estimates. Projections were made in one-year intervals using a cohort-component methodology in which births, deaths, and migration are projected separately for each age-sex cohort in Florida for non-Hispanic whites, non-Hispanic nonwhites, and Hispanics. We applied three different sets of assumptions to provide low, medium, and high series of projections. Although the low and high series do not provide absolute bounds on future population change, they provide a reasonable range in which Florida's future population is likely to fall.

Survival rates were applied by single year of age, sex, race, and Hispanic origin to project future deaths in the population. These rates were based on Florida Life Tables for 2007–2013, using mortality data published by the Office of Vital Statistics in the Florida Department of Health. The survival rates were adjusted upward each year until 2044 to account for projected increases in life expectancy. These adjustments were based on projected increases in survival rates released by the U.S. Census Bureau. We used the same mortality assumptions for all three series of projections because there is less uncertainty regarding future changes in mortality rates than is true for migration and fertility rates.

Domestic migration rates by age and sex were based on Public Use Microdata Sample (PUMS) files from the 2005–2009 and 2011–2015 American Community Survey (ACS) 5-year estimates. We chose an average of those two sets of migration estimates because the recession of 2007–2009 had a substantial impact on migration patterns in Florida, affecting in- and out-migration in both time periods; in addition, projections based on more than one time period tend to be more accurate than those based on a single time period. The 2005–2009 data are the earliest ACS 5-year migration

estimates that are available, and the 2011–2015 data were the most recent at the time the state projections were made (December 2017).

For all three racial/ethnic groups, we applied smoothing techniques to the age/sex-specific migration rates to adjust for data irregularities caused by small sample size. The smoothed in- and out-migration rates were weighted to account for recent changes in Florida's population growth rates. Projections of domestic in-migration were made by applying weighted in-migration rates to the projected population of the United States (minus Florida), using the most recent set of national projections produced by the U.S. Census Bureau. Projections of out-migration were made by applying weighted out-migration rates to the Florida population. In both instances, rates were calculated separately for males and females by race and ethnicity for each age up to 90+.

For the medium projection series, in-migration weights for non-Hispanic whites varied from 1.17 to 1.05, and out-migration weights varied from 0.97 to 0.96; for non-Hispanic nonwhites and for Hispanics, in-migration weights varied from 1.13 to 1.05, and out-migration weights varied from 0.97 to 0.96. For the low projection series, the in-migration weights described above were lowered for all three racial/ethnic groups over time – from 6% in 2017–2020 to 11% in 2040–2045; the out-migration weights were raised by the same margins. For the high projection series, the in-migration weights described above were raised for all three racial/ethnic groups over time – from 6% in 2017–2020 to 11% in 2040–2045; the out-migration weights were lowered by the same margins.

The distribution of foreign immigrants for the three racial/ethnic groups by age and sex was also based on an average of the patterns observed for 2005–2009 and 2011–2015. Again, we smoothed the estimates to account for irregularities in the age/sex distribution of immigrants. For the medium projection series, we held foreign immigration at an average of the 2005–2009 and 2011–2015 levels, with some short-term adjustments based on recent trends. In addition, we made minor adjustments to the racial/ethnic distribution of those migrants based on recent trends. For the low series, foreign immigration was projected to decrease by 1,500 per year from the average of the 2005–2009 and 2011–2015 levels; for the high series, foreign immigration was projected to increase by 1,000 per year. Foreign emigration was assumed to equal 25% of foreign immigration for each series of projections.

Projections were made in one-year intervals, with each projection serving as the base for the following projection. Projected in-migration for each one-year interval was added to the survived Florida population at the end of the interval and projected out-migration was subtracted, giving a projection of the population age one and older. Births were projected by applying age-specific birth rates (adjusted for child mortality) to the projected female population of each racial/ethnic group. These birth rates were based on Florida birth data for 2007–2013 published by the Office of Vital Statistics in the Florida Department of Health. They imply a total fertility rate (TFR) of 1.66 births per woman for non-Hispanic whites, 2.08 births per woman for non-Hispanic nonwhites, 1.92 births per woman for Hispanics, and 1.83 births per woman for total population. These rates were adjusted in the short-term projections to make them consistent with recent fertility trends. We also raised them long-term since the age-specific fertility rates calculated using the 2007–2013 birth data were lower than they had been in the past due to the recession. By 2025, these rates imply a total fertility rate of 1.74 births per woman for non-Hispanic whites, 2.19 births per woman for non-Hispanic nonwhites, 2.05 births per woman for Hispanics, and 1.92 births per woman for total population.

As a final step, projections for non-Hispanic whites, non-Hispanic nonwhites, and Hispanics were added together to provide projections of the total population. The medium projections of total population for 2018–2022 were adjusted to be consistent with the state population forecasts for those years produced by the State of Florida's Demographic Estimating Conference (DEC) held December 5, 2017. These projections include an

adjustment to account for estimated population increases for Florida associated with the impacts of Hurricane Maria on Puerto Rico and the U.S. Virgin Islands. The DEC estimated a net permanent increase in the state's population of about 53,000 as a result of the hurricane-induced migration of Puerto Ricans and U.S. Virgin Islanders moving to Florida permanently. None of the projections after 2022 had any further adjustments. In this publication, we provide projections for 2020, 2025, 2030, 2035, 2040, and 2045. State projections for other years are available by request.

County projections

The cohort-component method is a good way to make population projections at the state level, but is not necessarily the best way to make projections at the county level. Many counties in Florida are so small that the number of persons in each age-sex category is inadequate for making reliable cohort-component projections, given the lack of detailed small-area data. Even more important, county growth patterns are so volatile that a single technique based on data from a single time period may provide misleading results. We believe more useful projections of total population can be made by using several different techniques and historical base periods.

For counties, we started with the population estimate constructed by BEBR for April 1, 2017. We made projections for each county using four different techniques. After 2020, the projections were made in five-year increments. The four techniques were:

1. Linear – the population will change by the same number of persons in each future year as the average annual change during the base period.

2. Exponential – the population will change at the same percentage rate in each future year as the average annual rate during the base period.

3. Share-of-growth – each county's share of state population growth in the future will be the same as its share during the base period.

4. Shift-share – each county's share of the state population will change by the same annual amount in the future as the average annual change during the base period.

For the linear and share-of-growth techniques we used base periods of two, ten, and twenty years (2015–2017, 2007–2017, and 1997–2017), yielding three sets of projections for each technique. For the exponential and shift-share techniques we used base periods of five and fifteen years (2012–2017 and 2002–2017), yielding two sets of projections for each technique. This methodology produced ten projections for each county for each projection year (2020, 2025, 2030, 2035, 2040 and 2045). From these, we calculated four averages: one using all ten projections (AVE-10), one that excluded the highest and lowest projections (AVE-8), one that excluded the two highest and two lowest projections (AVE-6), and one that excluded the three highest and three lowest projections (AVE-4). Based on the results of previous research, we designated the last of the four averages (AVE-4) as the default technique for each county. We evaluated the resulting projections by comparing them with historical population trends and with the level of population growth projected for the state as a whole. For counties in which AVE-4 did not provide reasonable projections, we selected the technique producing projections that fit most closely with our evaluation criteria.

For 55 counties we selected AVE-4, the average in which the three highest and three lowest projections were excluded. For Flagler, Jackson, and Jefferson counties, we selected AVE-8; for St. Lucie County, we selected AVE-10; for Sarasota County, we selected the share-of-growth technique with a base period of twenty years; for Franklin and Union counties, we selected an average of projections made with the share-of-growth technique with base periods of ten years and twenty years; for Baker, Gadsden, and Hamilton counties, we selected an average of projections made with the share-of-growth technique with a base period of ten years and the exponential technique with a base period of fifteen years; for Putnam County, we selected an average of projections made with the share-of-growth technique with a base period

of twenty years and the exponential technique with a base period of five years; and for Monroe County, we selected an average of projections made with the share-of-growth technique with a base period of twenty years and the linear technique with a base period of ten years.

We made two adjustments related to the impacts of hurricanes Irma and Maria. First, we made a manual adjustment to the short-term projections for Monroe County to account for estimated population losses associated with the impacts of Hurricane Irma. Second, for all counties, we made an adjustment related to the migration of Puerto Ricans and U.S. Virgin Islanders to Florida following Hurricane Maria. We distributed the above described estimated increase in the state's population of about 53,000 in proportion to each county's average share of in-migration from Puerto Rico and the U.S. Virgin Islands over the period 2005–2016.

We also made adjustments in several counties to account for changes in institutional populations such as university students and prison inmates. Adjustments were made only in counties in which institutional populations account for a large proportion of total population or where changes in the institutional population have been substantially different than changes in the rest of the population. In the present set of projections, adjustments were made for Alachua, Baker, Bradford, Calhoun, Columbia, DeSoto, Dixie, Franklin, Gadsden, Gilchrist, Glades, Gulf, Hamilton, Hardee, Hendry, Holmes, Jackson, Jefferson, Lafayette, Leon, Liberty, Madison, Okeechobee, Santa Rosa, Sumter, Suwannee, Taylor, Union, Wakulla, Walton, and Washington counties.

Range of county projections

The techniques described in the previous section were used to construct the medium series of county projections. This is the series we believe will generally provide the most accurate forecasts of future population change. We also constructed low and high projections to provide an indication of the uncertainty surrounding the medium county projections. The low and high projections were based on analyses of past population forecast errors for counties in Florida, broken down by population size and growth rate. They indicate the range into which approximately three-quarters of future county populations will fall, if the future distribution of forecast errors is similar to the past distribution.

The range between the low and high projections varies according to a county's population size in 2017 (less than 30,000; 30,000 to 199,999; and 200,000 or more), rate of population growth between 2007 and 2017 (less than 7.5%; 7.5–15%; 15–30%; and 30% or more), and the length of the projection horizon (on average, projection errors grow with the length of the projection horizon). Our studies have found that the distribution of absolute percent errors tends to remain fairly stable over time, leading us to believe that the low and high projections provide a reasonable range of errors for most counties. It must be emphasized, however, that the actual future population of any given county could be below the low projection or above the high projection.

For the medium series of projections, the sum of the county projections equals the state projection for each year (except for slight differences due to rounding). For the low and high series, however, the sum of the county projections does not equal the state projection. The sum of the low projections for counties is lower than the state's low projection and the sum of the high projections for counties is higher than the state's high projection. This occurs because potential variation around the medium projection is greater for counties than for the state as a whole.

Acknowledgement

Funding for these projections was provided by the Florida Legislature.

Projections of Florida Population by County, 2020–2045, with Estimates for 2017 (continued)

County and State	Estimates April 1, 2017	Projections, April 1					
		2020	2025	2030	2035	2040	2045
MIAMI-DADE	2,743,095						
Low		2,737,000	2,816,200	2,877,400	2,920,400	2,955,800	2,972,000
Medium		2,872,800	3,062,600	3,215,100	3,350,400	3,477,600	3,592,200
High		3,009,200	3,291,200	3,556,500	3,810,600	4,073,900	4,329,600
MONROE	76,889						
Low		72,000	70,100	68,500	66,900	65,300	63,600
Medium		75,300	75,900	76,300	76,700	77,000	77,400
High		79,200	81,900	84,700	87,500	90,300	93,100
NASSAU	80,456						
Low		79,800	83,300	86,100	87,800	88,500	88,500
Medium		85,700	93,800	100,900	107,000	112,300	117,200
High		91,400	103,300	115,200	126,400	136,900	147,600
OKALOOSA	195,488						
Low		191,900	193,500	194,900	195,900	195,600	194,800
Medium		201,200	209,800	216,900	223,600	229,100	234,200
High		211,000	226,200	240,900	256,100	270,600	285,100
OKEECHOBEE	41,140						
Low		40,100	39,800	39,600	39,300	38,900	38,300
Medium		42,000	43,100	44,100	44,900	45,600	46,300
High		44,100	46,500	49,000	51,300	53,700	56,100
ORANGE	1,313,880						
Low		1,341,900	1,422,600	1,489,800	1,535,700	1,573,200	1,600,500
Medium		1,425,900	1,576,700	1,705,500	1,814,900	1,917,000	2,013,600
High		1,505,200	1,711,500	1,913,400	2,098,300	2,279,600	2,463,100
OSCEOLA	337,614						
Low		357,200	400,000	434,000	460,500	480,600	495,700
Medium		384,500	452,400	509,300	560,200	606,200	649,800
High		408,700	495,500	579,500	659,400	733,400	808,100
PALM BEACH	1,414,144						
Low		1,403,800	1,434,500	1,464,500	1,484,900	1,493,300	1,493,000
Medium		1,473,000	1,559,600	1,636,400	1,703,700	1,760,000	1,809,800
High		1,543,400	1,676,400	1,810,200	1,937,500	2,058,200	2,174,900
PASCO	505,709						
Low		509,300	531,700	553,700	573,300	588,100	598,700
Medium		534,800	578,600	618,400	656,000	689,000	719,000
High		560,000	621,400	684,400	748,100	810,600	872,200
PINELLAS	962,003						
Low		944,900	942,700	941,400	934,400	925,000	913,600
Medium		980,100	1,005,000	1,025,000	1,039,300	1,051,300	1,061,600
High		1,018,300	1,069,200	1,117,700	1,161,500	1,203,800	1,244,800
POLK	661,645						
Low		671,100	705,900	736,000	757,600	772,000	784,800
Medium		704,900	768,300	822,000	867,500	906,100	943,600
High		737,800	824,900	909,700	988,500	1,064,000	1,143,200
PUTNAM	73,176						
Low		70,300	68,600	67,100	65,500	63,900	62,200
Medium		73,600	74,200	74,700	75,100	75,400	75,700
High		77,300	80,100	82,900	85,700	88,400	91,100
ST. JOHNS	229,715						
Low		237,500	261,700	280,800	295,200	305,800	314,000
Medium		255,300	295,800	329,600	359,600	386,600	412,700
High		271,800	324,200	375,000	422,800	466,600	511,900
ST. LUCIE	297,634						
Low		299,900	314,700	328,600	340,500	351,000	360,400
Medium		315,000	342,500	367,000	389,600	410,600	431,200
High		329,800	367,800	406,100	444,300	483,800	525,100

Appendix L:

No Build Alternative Synchro Intersection Analysis

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	1738	32	19	1640	444	21	15	12	580	10	197
Future Volume (vph)	199	1738	32	19	1640	444	21	15	12	580	10	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	16
Storage Length (ft)	415		0	500		500	0		0	450		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	140			50			25			70		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.997				0.850		0.966			0.924	
Flt Protected	0.950			0.950				0.978		0.950	0.977	
Satd. Flow (prot)	1719	4925	0	1719	4940	1538	0	1710	0	1633	1552	0
Flt Permitted	0.950			0.950				0.286		0.723	0.826	
Satd. Flow (perm)	1719	4925	0	1719	4940	1538	0	500	0	1243	1312	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				483		9			31	
Link Speed (mph)		50			50			25			40	
Link Distance (ft)		2295			2276			842			1194	
Travel Time (s)		31.3			31.0			23.0			20.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	216	1889	35	21	1783	483	23	16	13	630	11	214
Shared Lane Traffic (%)										31%		
Lane Group Flow (vph)	216	1924	0	21	1783	483	0	52	0	435	420	0
Turn Type	Prot	NA		Prot	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6	6		8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	13.0	19.2		13.0	20.0	20.0	15.0	15.0		14.0	14.0	
Total Split (s)	34.0	78.0		16.0	60.0	60.0	18.0	18.0		38.0	38.0	
Total Split (%)	22.7%	52.0%		10.7%	40.0%	40.0%	12.0%	12.0%		25.3%	25.3%	
Maximum Green (s)	26.2	70.8		8.2	53.0	53.0	10.1	10.1		31.0	31.0	
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	3.7	3.7		4.8	4.8	
All-Red Time (s)	3.0	2.4		3.0	2.2	2.2	4.2	4.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	7.8	7.2		7.8	7.0	7.0		7.9		7.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)	22.7	77.4		7.1	56.5	56.5		10.1		31.0	31.0	
Actuated g/C Ratio	0.15	0.52		0.05	0.38	0.38		0.07		0.21	0.21	
v/c Ratio	0.83	0.76		0.26	0.96	0.55		1.24		1.70	1.42	
Control Delay	86.8	32.4		76.5	58.8	5.3		261.2		366.0	248.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	86.8	32.4		76.5	58.8	5.3		261.2		366.0	248.1	
LOS	F	C		E	E	A		F		F	F	
Approach Delay		37.9			47.7			261.3			308.1	
Approach LOS		D			D			F			F	
Queue Length 50th (ft)	206	579		20	630	0		~54		~654	~557	
Queue Length 95th (ft)	#300	653		51	#771	82		#151		#885	#789	
Internal Link Dist (ft)		2215			2196			762			1114	
Turn Bay Length (ft)	415			500		500				450		
Base Capacity (vph)	300	2542		93	1859	880		42		256	295	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.72	0.76		0.23	0.96	0.55		1.24		1.70	1.42	

Intersection Summary

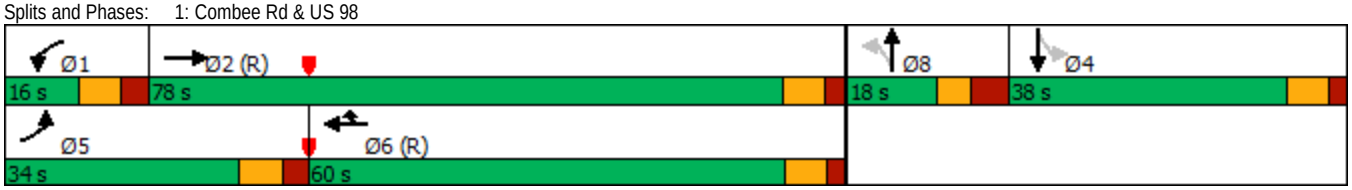
Area Type: Other

Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.70	
Intersection Signal Delay: 87.6	Intersection LOS: F
Intersection Capacity Utilization 89.9%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Combee Rd & US 98



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	128	224	638	149	148	536
Future Volume (vph)	128	224	638	149	148	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0		0	130	
Storage Lanes	1	1		0	1	
Taper Length (ft)	50				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.974			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	1538	1762	0	1719	1810
Flt Permitted	0.950				0.195	
Satd. Flow (perm)	1719	1538	1762	0	353	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		243	18			
Link Speed (mph)	35		40			40
Link Distance (ft)	899		1194			2014
Travel Time (s)	17.5		20.4			34.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	139	243	693	162	161	583
Shared Lane Traffic (%)						
Lane Group Flow (vph)	139	243	855	0	161	583
Turn Type	Prot	Prot	NA		pm+pt	NA
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		5.0	12.0
Minimum Split (s)	13.5	13.5	19.0		13.0	19.0
Total Split (s)	20.0	20.0	80.0		20.0	100.0
Total Split (%)	16.7%	16.7%	66.7%		16.7%	83.3%
Maximum Green (s)	13.8	13.8	73.0		13.0	93.0
Yellow Time (s)	4.1	4.1	4.4		4.4	4.4
All-Red Time (s)	2.1	2.1	2.6		2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	12.8	12.8	78.8		94.0	94.0
Actuated g/C Ratio	0.11	0.11	0.66		0.78	0.78
v/c Ratio	0.76	0.64	0.74		0.44	0.41
Control Delay	77.5	14.4	18.8		10.2	3.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	77.5	14.4	18.8		10.2	3.4
LOS	E	B	B		B	A
Approach Delay	37.3		18.8			4.9
Approach LOS	D		B			A
Queue Length 50th (ft)	105	0	408		25	75
Queue Length 95th (ft)	#197	79	607		m19	m62
Internal Link Dist (ft)	819		1114			1934
Turn Bay Length (ft)	200				130	
Base Capacity (vph)	197	391	1162		424	1417
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.71	0.62	0.74		0.38	0.41

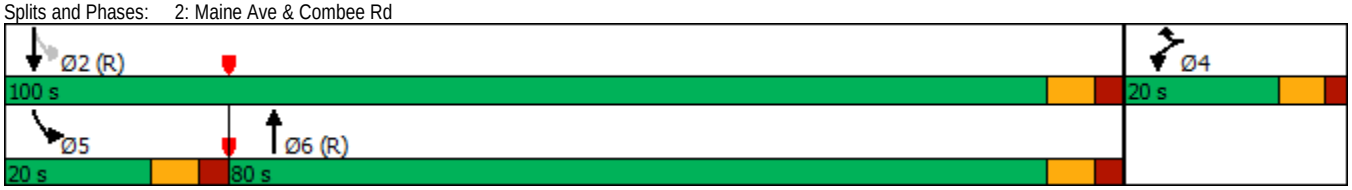
Intersection Summary	
Area Type:	Other
Cycle Length: 120	

Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 17.1	Intersection LOS: B
Intersection Capacity Utilization 74.8%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Maine Ave & Combee Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	0	134	5	0	11	165	659	12	10	555	172
Future Volume (veh/h)	273	0	134	5	0	11	165	659	12	10	555	172
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1810	1900	1810	1810	1810	1810	1900	1810	1810	1900
Adj Flow Rate, veh/h	297	0	146	5	0	12	179	716	13	11	603	187
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5	5	5	5	5	5	5
Cap, veh/h	302	0	269	43	0	39	255	1113	20	384	612	190
Arrive On Green	0.17	0.00	0.17	0.03	0.00	0.03	0.21	1.00	1.00	0.61	0.61	0.61
Sat Flow, veh/h	1723	0	1538	1723	0	1538	1723	1772	32	703	1326	411
Grp Volume(v), veh/h	297	0	146	5	0	12	179	0	729	11	0	790
Grp Sat Flow(s),veh/h/ln	1723	0	1538	1723	0	1538	1723	0	1804	703	0	1737
Q Serve(g_s), s	20.6	0.0	10.4	0.3	0.0	0.9	6.1	0.0	0.0	0.7	0.0	53.4
Cycle Q Clear(g_c), s	20.6	0.0	10.4	0.3	0.0	0.9	6.1	0.0	0.0	0.7	0.0	53.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.02	1.00		0.24
Lane Grp Cap(c), veh/h	302	0	269	43	0	39	255	0	1133	384	0	801
V/C Ratio(X)	0.98	0.00	0.54	0.11	0.00	0.31	0.70	0.00	0.64	0.03	0.00	0.99
Avail Cap(c_a), veh/h	302	0	269	195	0	174	255	0	1133	384	0	801
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.63	0.00	0.63	0.40	0.00	0.40
Uniform Delay (d), s/veh	49.3	0.0	45.1	57.2	0.0	57.5	23.5	0.0	0.0	12.6	0.0	22.8
Incr Delay (d2), s/veh	47.5	0.0	2.2	1.2	0.0	4.4	9.8	0.0	1.8	0.1	0.0	16.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	0.0	4.6	0.2	0.0	0.4	6.0	0.0	0.6	0.1	0.0	28.9
LnGrp Delay(d),s/veh	96.8	0.0	47.3	58.3	0.0	61.9	33.3	0.0	1.8	12.7	0.0	39.7
LnGrp LOS	F		D	E		E	C		A	B		D
Approach Vol, veh/h		443			17			908			801	
Approach Delay, s/veh		80.5			60.8			8.0			39.3	
Approach LOS		F			E			A			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	20.0	62.6		9.4		82.6		28.0
Change Period (Y+Rc), s	* 7.2	* 7.2		6.4		* 7.2		7.0
Max Green Setting (Gmax), s	* 13	* 45		13.6		* 65		21.0
Max Q Clear Time (g_c+I1), s	8.1	55.4		2.9		2.0		22.6
Green Ext Time (p_c), s	0.2	0.0		0.0		5.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	34.8
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	212	49	86	815	689	129
Future Volume (veh/h)	212	49	86	815	689	129
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1810	1810	1900
Adj Flow Rate, veh/h	230	53	93	886	749	140
Adj No. of Lanes	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	258	230	591	1343	854	160
Arrive On Green	0.15	0.15	0.11	0.74	1.00	1.00
Sat Flow, veh/h	1723	1538	1723	1810	1483	277
Grp Volume(v), veh/h	230	53	93	886	0	889
Grp Sat Flow(s),veh/h/ln	1723	1538	1723	1810	0	1761
Q Serve(g_s), s	15.7	3.6	2.1	29.7	0.0	0.0
Cycle Q Clear(g_c), s	15.7	3.6	2.1	29.7	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.16
Lane Grp Cap(c), veh/h	258	230	591	1343	0	1013
V/C Ratio(X)	0.89	0.23	0.16	0.66	0.00	0.88
Avail Cap(c_a), veh/h	292	260	591	1343	0	1013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.71	0.71	0.00	0.77
Uniform Delay (d), s/veh	50.1	44.9	5.8	7.8	0.0	0.0
Incr Delay (d2), s/veh	25.4	0.5	0.4	1.8	0.0	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	1.6	1.0	15.2	0.0	2.4
LnGrp Delay(d),s/veh	75.5	45.5	6.2	9.6	0.0	8.5
LnGrp LOS	E	D	A	A		A
Approach Vol, veh/h	283			979	889	
Approach Delay, s/veh	69.9			9.3	8.5	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.0	76.4				96.4		23.6
Change Period (Y+Rc), s	7.3	7.3				7.3		5.7
Max Green Setting (Gmax), s	12.7	66.7				86.7		20.3
Max Q Clear Time (g_c+I1), s	4.1	2.0				31.7		17.7
Green Ext Time (p_c), s	0.1	8.4				8.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

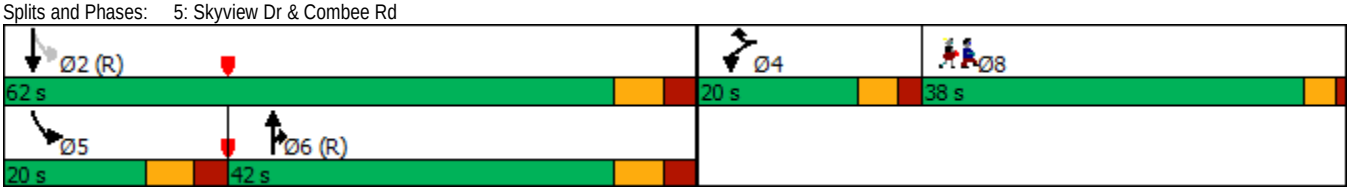
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Lane Configurations							
Traffic Volume (vph)	148	185	811	189	204	641	
Future Volume (vph)	148	185	811	189	204	641	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	215	0		275	240		
Storage Lanes	1	1		1	1		
Taper Length (ft)	140				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor	0.82						
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1719	1538	1810	1538	1719	1810	
Flt Permitted	0.950				0.061		
Satd. Flow (perm)	1414	1538	1810	1538	110	1810	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		201		117			
Link Speed (mph)	30		40			40	
Link Distance (ft)	1162		679			730	
Travel Time (s)	26.4		11.6			12.4	
Confl. Peds. (#/hr)	42	42					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	161	201	882	205	222	697	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	161	201	882	205	222	697	
Turn Type	Prot	Prot	NA	Prot	pm+pt	NA	
Protected Phases	4	4	6	6	5	2	8
Permitted Phases					2		
Detector Phase	4	4	6	6	5	2	
Switch Phase							
Minimum Initial (s)	7.0	7.0	12.0	12.0	5.0	12.0	15.0
Minimum Split (s)	12.8	12.8	19.5	19.5	12.4	19.5	22.0
Total Split (s)	20.0	20.0	42.0	42.0	20.0	62.0	38.0
Total Split (%)	16.7%	16.7%	35.0%	35.0%	16.7%	51.7%	32%
Maximum Green (s)	14.2	14.2	34.5	34.5	12.6	54.5	34.0
Yellow Time (s)	3.7	3.7	4.5	4.5	4.4	4.5	3.0
All-Red Time (s)	2.1	2.1	3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8	5.8	7.5	7.5	7.4	7.5	
Lead/Lag	Lead	Lead	Lag	Lag	Lead		Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max	None
Walk Time (s)							7.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	13.6	13.6	60.7	60.7	84.4	84.3	
Actuated g/C Ratio	0.11	0.11	0.51	0.51	0.70	0.70	
v/c Ratio	0.83	0.57	0.96	0.25	0.76	0.55	
Control Delay	83.9	13.5	46.1	11.4	37.0	6.6	
Queue Delay	0.0	2.8	8.6	0.0	0.0	1.2	
Total Delay	83.9	16.3	54.7	11.4	37.0	7.8	
LOS	F	B	D	B	D	A	
Approach Delay	46.4		46.6			14.9	
Approach LOS	D		D			B	
Queue Length 50th (ft)	123	0	383	24	96	19	
Queue Length 95th (ft)	#236	71	#1216	m91	m99	m332	
Internal Link Dist (ft)	1082		599			650	
Turn Bay Length (ft)	215			275	240		
Base Capacity (vph)	203	359	916	836	298	1271	
Starvation Cap Reductn	0	0	0	0	0	343	
Spillback Cap Reductn	0	78	40	0	0	186	
Storage Cap Reductn	0	0	0	0	0	0	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Reduced v/c Ratio	0.79	0.72	1.01	0.25	0.74	0.75	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 34.2		Intersection LOS: C	
Intersection Capacity Utilization 79.4%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Skyview Dr & Combee Rd



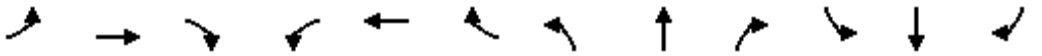
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	229	145	166	829	781	71
Future Volume (veh/h)	229	145	166	829	781	71
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1900	1810	1810	1810	1900
Adj Flow Rate, veh/h	249	158	180	901	849	77
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	5	5	5	5
Cap, veh/h	212	134	224	1240	932	85
Arrive On Green	0.21	0.21	0.04	0.46	0.57	0.57
Sat Flow, veh/h	1005	638	1723	1810	1635	148
Grp Volume(v), veh/h	408	0	180	901	0	926
Grp Sat Flow(s),veh/h/ln	1647	0	1723	1810	0	1783
Q Serve(g_s), s	25.3	0.0	4.9	48.5	0.0	55.7
Cycle Q Clear(g_c), s	25.3	0.0	4.9	48.5	0.0	55.7
Prop In Lane	0.61	0.39	1.00			0.08
Lane Grp Cap(c), veh/h	347	0	224	1240	0	1017
V/C Ratio(X)	1.18	0.00	0.80	0.73	0.00	0.91
Avail Cap(c_a), veh/h	347	0	313	1240	0	1017
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.33	0.33	0.00	1.00
Uniform Delay (d), s/veh	47.4	0.0	27.5	23.3	0.0	23.1
Incr Delay (d2), s/veh	104.9	0.0	3.6	1.3	0.0	13.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.6	0.0	3.8	24.6	0.0	31.1
LnGrp Delay(d),s/veh	152.3	0.0	31.0	24.6	0.0	36.6
LnGrp LOS	F		C	C		D
Approach Vol, veh/h	408			1081	926	
Approach Delay, s/veh	152.3			25.7	36.6	
Approach LOS	F			C	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	13.8	75.2				89.0		31.0
Change Period (Y+Rc), s	* 6.7	* 6.8				* 6.8		5.7
Max Green Setting (Gmax), s	* 13	* 62				* 82		25.3
Max Q Clear Time (g_c+I1), s	6.9	57.7				50.5		27.3
Green Ext Time (p_c), s	0.2	2.5				7.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	51.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	239	2066	35	23	1952	531	25	18	14	695	13	233
Future Volume (vph)	239	2066	35	23	1952	531	25	18	14	695	13	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	16
Storage Length (ft)	415		0	500		500	0		0	450		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	140			50			25			70		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.998				0.850		0.967			0.924	
Flt Protected	0.950			0.950				0.979		0.950	0.977	
Satd. Flow (prot)	1719	4930	0	1719	4940	1538	0	1713	0	1633	1552	0
Flt Permitted	0.950			0.950				0.284		0.717	0.820	
Satd. Flow (perm)	1719	4930	0	1719	4940	1538	0	497	0	1233	1302	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				577		8			31	
Link Speed (mph)		50			50			25			40	
Link Distance (ft)		2295			2276			842			1194	
Travel Time (s)		31.3			31.0			23.0			20.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	260	2246	38	25	2122	577	27	20	15	755	14	253
Shared Lane Traffic (%)										31%		
Lane Group Flow (vph)	260	2284	0	25	2122	577	0	62	0	521	501	0
Turn Type	Prot	NA		Prot	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6	6		8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	13.0	19.2		13.0	20.0	20.0	15.0	15.0		14.0	14.0	
Total Split (s)	34.0	78.0		16.0	60.0	60.0	18.0	18.0		38.0	38.0	
Total Split (%)	22.7%	52.0%		10.7%	40.0%	40.0%	12.0%	12.0%		25.3%	25.3%	
Maximum Green (s)	26.2	70.8		8.2	53.0	53.0	10.1	10.1		31.0	31.0	
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	3.7	3.7		4.8	4.8	
All-Red Time (s)	3.0	2.4		3.0	2.2	2.2	4.2	4.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	7.8	7.2		7.8	7.0	7.0		7.9		7.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)	25.1	77.3		7.2	54.1	54.1		10.1		31.0	31.0	
Actuated g/C Ratio	0.17	0.52		0.05	0.36	0.36		0.07		0.21	0.21	
v/c Ratio	0.91	0.90		0.30	1.19	0.63		1.55		2.05	1.71	
Control Delay	94.4	39.5		78.3	133.7	5.9		376.2		515.6	366.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	94.4	39.5		78.3	133.7	5.9		376.2		515.6	366.4	
LOS	F	D		E	F	A		F		F	F	
Approach Delay		45.1			106.1			376.2			442.4	
Approach LOS		D			F			F			F	
Queue Length 50th (ft)	251	785		24	~928	0		~77		~840	~735	
Queue Length 95th (ft)	#408	#920		58	#1019	91		#182		#1084	#977	
Internal Link Dist (ft)		2215			2196			762			1114	
Turn Bay Length (ft)	415			500		500				450		
Base Capacity (vph)	300	2542		93	1781	923		40		254	293	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.87	0.90		0.27	1.19	0.63		1.55		2.05	1.71	

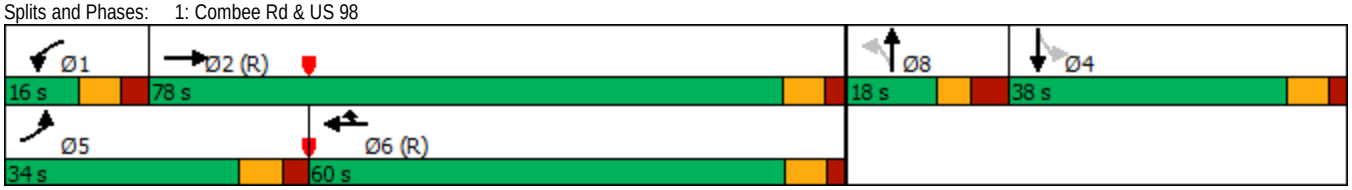
Intersection Summary	
Area Type:	Other

Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 2.05	
Intersection Signal Delay: 138.4	Intersection LOS: F
Intersection Capacity Utilization 102.5%	ICU Level of Service G
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Combee Rd & US 98



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	158	263	760	181	173	637
Future Volume (vph)	158	263	760	181	173	637
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0		0	130	
Storage Lanes	1	1		0	1	
Taper Length (ft)	50				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.974			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	1538	1762	0	1719	1810
Flt Permitted	0.950				0.082	
Satd. Flow (perm)	1719	1538	1762	0	148	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		286	18			
Link Speed (mph)	35		40			40
Link Distance (ft)	899		1194			2014
Travel Time (s)	17.5		20.4			34.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	286	826	197	188	692
Shared Lane Traffic (%)						
Lane Group Flow (vph)	172	286	1023	0	188	692
Turn Type	Prot	Prot	NA		pm+pt	NA
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		5.0	12.0
Minimum Split (s)	13.5	13.5	19.0		13.0	19.0
Total Split (s)	20.0	20.0	80.0		20.0	100.0
Total Split (%)	16.7%	16.7%	66.7%		16.7%	83.3%
Maximum Green (s)	13.8	13.8	73.0		13.0	93.0
Yellow Time (s)	4.1	4.1	4.4		4.4	4.4
All-Red Time (s)	2.1	2.1	2.6		2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	13.6	13.6	75.0		93.2	93.2
Actuated g/C Ratio	0.11	0.11	0.62		0.78	0.78
v/c Ratio	0.89	0.67	0.92		0.72	0.49
Control Delay	93.2	14.1	35.2		31.1	4.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	93.2	14.1	35.2		31.1	4.8
LOS	F	B	D		C	A
Approach Delay	43.8		35.2			10.4
Approach LOS	D		D			B
Queue Length 50th (ft)	133	0	677		101	92
Queue Length 95th (ft)	#261	85	#1029		m77	m64
Internal Link Dist (ft)	819		1114			1934
Turn Bay Length (ft)	200				130	
Base Capacity (vph)	197	429	1108		284	1405
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.87	0.67	0.92		0.66	0.49

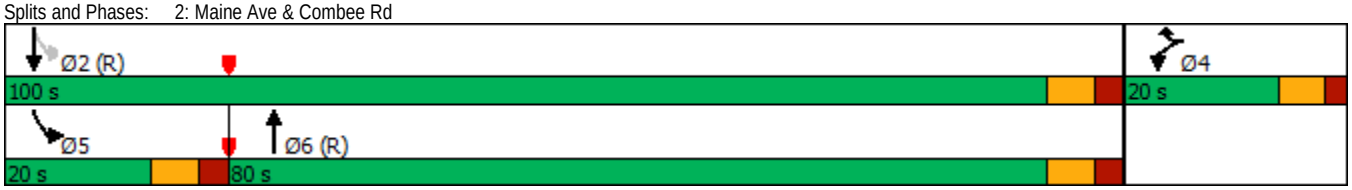
Intersection Summary	
Area Type:	Other
Cycle Length: 120	

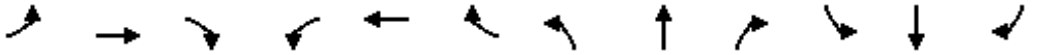
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 27.6	Intersection LOS: C
Intersection Capacity Utilization 86.2%	ICU Level of Service E
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Maine Ave & Combee Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	309	0	176	6	0	14	210	765	15	11	680	200
Future Volume (veh/h)	309	0	176	6	0	14	210	765	15	11	680	200
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1810	1900	1810	1810	1810	1810	1900	1810	1810	1900
Adj Flow Rate, veh/h	336	0	191	7	0	15	228	832	16	12	739	217
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5	5	5	5	5	5	5
Cap, veh/h	302	0	269	52	0	47	244	1102	21	347	614	180
Arrive On Green	0.17	0.00	0.17	0.03	0.00	0.03	0.21	1.00	1.00	0.61	0.61	0.61
Sat Flow, veh/h	1723	0	1538	1723	0	1538	1723	1769	34	629	1345	395
Grp Volume(v), veh/h	336	0	191	7	0	15	228	0	848	12	0	956
Grp Sat Flow(s),veh/h/ln	1723	0	1538	1723	0	1538	1723	0	1804	629	0	1740
Q Serve(g_s), s	21.0	0.0	14.0	0.5	0.0	1.1	11.3	0.0	0.0	0.9	0.0	54.8
Cycle Q Clear(g_c), s	21.0	0.0	14.0	0.5	0.0	1.1	11.3	0.0	0.0	0.9	0.0	54.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.02	1.00		0.23
Lane Grp Cap(c), veh/h	302	0	269	52	0	47	244	0	1124	347	0	794
V/C Ratio(X)	1.11	0.00	0.71	0.13	0.00	0.32	0.94	0.00	0.75	0.03	0.00	1.20
Avail Cap(c_a), veh/h	302	0	269	195	0	174	244	0	1124	347	0	794
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.38	0.00	0.38	0.09	0.00	0.09
Uniform Delay (d), s/veh	49.5	0.0	46.6	56.6	0.0	57.0	31.9	0.0	0.0	13.0	0.0	23.6
Incr Delay (d2), s/veh	86.1	0.0	8.4	1.1	0.0	3.9	22.6	0.0	1.8	0.0	0.0	93.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.2	0.0	6.6	0.2	0.0	0.5	8.9	0.0	0.6	0.2	0.0	46.4
LnGrp Delay(d),s/veh	135.6	0.0	55.0	57.8	0.0	60.9	54.5	0.0	1.8	13.0	0.0	116.6
LnGrp LOS	F		D	E		E	D		A	B		F
Approach Vol, veh/h		527			22			1076			968	
Approach Delay, s/veh		106.4			59.9			13.0			115.3	
Approach LOS		F			E			B			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	20.0	62.0		10.0		82.0		28.0
Change Period (Y+Rc), s	* 7.2	* 7.2		6.4		* 7.2		7.0
Max Green Setting (Gmax), s	* 13	* 45		13.6		* 65		21.0
Max Q Clear Time (g_c+I1), s	13.3	56.8		3.1		2.0		23.0
Green Ext Time (p_c), s	0.0	0.0		0.0		7.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	70.6
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	257	55	98	991	815	157
Future Volume (veh/h)	257	55	98	991	815	157
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1810	1810	1900
Adj Flow Rate, veh/h	279	60	107	1077	886	171
Adj No. of Lanes	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	292	260	249	1307	820	158
Arrive On Green	0.17	0.17	0.11	0.72	1.00	1.00
Sat Flow, veh/h	1723	1538	1723	1810	1475	285
Grp Volume(v), veh/h	279	60	107	1077	0	1057
Grp Sat Flow(s),veh/h/ln	1723	1538	1723	1810	0	1759
Q Serve(g_s), s	19.3	4.0	2.6	49.0	0.0	65.2
Cycle Q Clear(g_c), s	19.3	4.0	2.6	49.0	0.0	65.2
Prop In Lane	1.00	1.00	1.00			0.16
Lane Grp Cap(c), veh/h	292	260	249	1307	0	978
V/C Ratio(X)	0.96	0.23	0.43	0.82	0.00	1.08
Avail Cap(c_a), veh/h	292	260	249	1307	0	978
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.44	0.44	0.00	0.61
Uniform Delay (d), s/veh	49.4	43.1	26.2	11.4	0.0	0.0
Incr Delay (d2), s/veh	41.1	0.4	2.4	2.8	0.0	47.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.5	1.7	2.2	25.2	0.0	13.0
LnGrp Delay(d),s/veh	90.5	43.5	28.6	14.2	0.0	47.8
LnGrp LOS	F	D	C	B		F
Approach Vol, veh/h	339			1184	1057	
Approach Delay, s/veh	82.2			15.5	47.8	
Approach LOS	F			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.0	74.0				94.0		26.0
Change Period (Y+Rc), s	7.3	7.3				7.3		5.7
Max Green Setting (Gmax), s	12.7	66.7				86.7		20.3
Max Q Clear Time (g_c+I1), s	4.6	67.2				51.0		21.3
Green Ext Time (p_c), s	0.1	0.0				11.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	37.5
HCM 2010 LOS	D

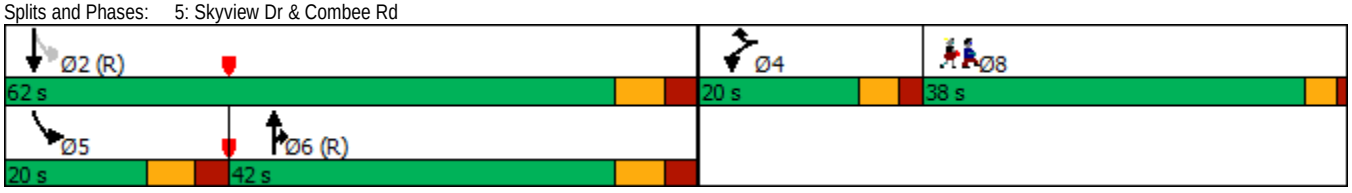
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Lane Configurations							
Traffic Volume (vph)	185	212	958	230	235	778	
Future Volume (vph)	185	212	958	230	235	778	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	215	0		275	240		
Storage Lanes	1	1		1	1		
Taper Length (ft)	140				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor	0.82						
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1719	1538	1810	1538	1719	1810	
Flt Permitted	0.950				0.067		
Satd. Flow (perm)	1414	1538	1810	1538	121	1810	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		230		121			
Link Speed (mph)	30		40			40	
Link Distance (ft)	1162		673			716	
Travel Time (s)	26.4		11.5			12.2	
Confl. Peds. (#/hr)	42	42					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	201	230	1041	250	255	846	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	201	230	1041	250	255	846	
Turn Type	Prot	Prot	NA	Prot	pm+pt	NA	
Protected Phases	4	4	6	6	5	2	8
Permitted Phases					2		
Detector Phase	4	4	6	6	5	2	
Switch Phase							
Minimum Initial (s)	7.0	7.0	12.0	12.0	5.0	12.0	15.0
Minimum Split (s)	12.8	12.8	19.5	19.5	12.4	19.5	22.0
Total Split (s)	20.0	20.0	42.0	42.0	20.0	62.0	38.0
Total Split (%)	16.7%	16.7%	35.0%	35.0%	16.7%	51.7%	32%
Maximum Green (s)	14.2	14.2	34.5	34.5	12.6	54.5	34.0
Yellow Time (s)	3.7	3.7	4.5	4.5	4.4	4.5	3.0
All-Red Time (s)	2.1	2.1	3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8	5.8	7.5	7.5	7.4	7.5	
Lead/Lag	Lead	Lead	Lag	Lag	Lead		Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max	None
Walk Time (s)							7.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	14.2	14.2	54.7	54.7	83.8	83.7	
Actuated g/C Ratio	0.12	0.12	0.46	0.46	0.70	0.70	
v/c Ratio	0.99	0.60	1.26	0.33	0.69	0.67	
Control Delay	113.9	13.3	153.4	14.7	30.4	8.7	
Queue Delay	0.0	68.3	0.7	0.0	0.0	27.7	
Total Delay	113.9	81.5	154.0	14.7	30.4	36.4	
LOS	F	F	F	B	C	D	
Approach Delay	96.6		127.0			35.0	
Approach LOS	F		F			D	
Queue Length 50th (ft)	158	0	~910	55	104	20	
Queue Length 95th (ft)	#313	76	m#1451	m93	m79	m357	
Internal Link Dist (ft)	1082		593			636	
Turn Bay Length (ft)	215			275	240		
Base Capacity (vph)	203	384	825	767	371	1262	
Starvation Cap Reductn	0	0	0	0	0	364	
Spillback Cap Reductn	0	234	89	0	0	448	
Storage Cap Reductn	0	0	0	0	0	0	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Reduced v/c Ratio	0.99	1.53	1.41	0.33	0.69	1.04	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 86.5		Intersection LOS: F	
Intersection Capacity Utilization 90.9%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Skyview Dr & Combee Rd



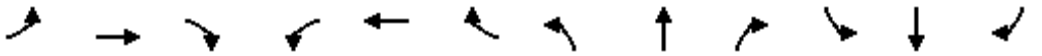
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	303	145	186	1007	915	100
Future Volume (veh/h)	303	145	186	1007	915	100
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1900	1810	1810	1810	1900
Adj Flow Rate, veh/h	329	158	202	1095	995	109
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	5	5	5	5
Cap, veh/h	236	113	229	1240	851	93
Arrive On Green	0.21	0.21	0.07	0.46	0.53	0.53
Sat Flow, veh/h	1118	537	1723	1810	1603	176
Grp Volume(v), veh/h	488	0	202	1095	0	1104
Grp Sat Flow(s),veh/h/ln	1659	0	1723	1810	0	1779
Q Serve(g_s), s	25.3	0.0	9.7	66.1	0.0	63.7
Cycle Q Clear(g_c), s	25.3	0.0	9.7	66.1	0.0	63.7
Prop In Lane	0.67	0.32	1.00			0.10
Lane Grp Cap(c), veh/h	350	0	229	1240	0	944
V/C Ratio(X)	1.40	0.00	0.88	0.88	0.00	1.17
Avail Cap(c_a), veh/h	350	0	251	1240	0	944
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.09	0.09	0.00	1.00
Uniform Delay (d), s/veh	47.4	0.0	41.0	28.1	0.0	28.1
Incr Delay (d2), s/veh	194.5	0.0	3.4	1.0	0.0	87.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	30.5	0.0	6.8	33.4	0.0	53.9
LnGrp Delay(d),s/veh	241.9	0.0	44.4	29.1	0.0	115.8
LnGrp LOS	F		D	C		F
Approach Vol, veh/h	488			1297	1104	
Approach Delay, s/veh	241.9			31.5	115.8	
Approach LOS	F			C	F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	18.5	70.5				89.0		31.0
Change Period (Y+Rc), s	* 6.7	* 6.8				* 6.8		5.7
Max Green Setting (Gmax), s	* 13	* 62				* 82		25.3
Max Q Clear Time (g_c+I1), s	11.7	65.7				68.1		27.3
Green Ext Time (p_c), s	0.1	0.0				7.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	99.2
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	1738	32	19	1640	444	21	15	12	580	10	197
Future Volume (vph)	199	1738	32	19	1640	444	21	15	12	580	10	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	16
Storage Length (ft)	415		0	500		500	0		0	450		0
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	140			50			25			70		
Satd. Flow (prot)	1719	4925	0	1719	4940	1538	0	1710	0	1633	1550	0
Flt Permitted	0.950			0.950				0.978		0.950	0.978	
Satd. Flow (perm)	1719	4925	0	1719	4940	1538	0	1710	0	1633	1550	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				483		8			35	
Link Speed (mph)		50			50			25			40	
Link Distance (ft)		2295			2276			842			1194	
Travel Time (s)		31.3			31.0			23.0			20.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)										30%		
Lane Group Flow (vph)	216	1924	0	21	1783	483	0	52	0	441	414	0
Turn Type	Prot	NA		Prot	NA	Prot	Split	NA		Split	NA	
Protected Phases	5	2		1	6	6	8	8		4	4	
Permitted Phases												
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	13.0	19.2		13.0	20.0	20.0	15.0	15.0		14.0	14.0	
Total Split (s)	28.0	73.0		16.0	61.0	61.0	15.0	15.0		46.0	46.0	
Total Split (%)	18.7%	48.7%		10.7%	40.7%	40.7%	10.0%	10.0%		30.7%	30.7%	
Maximum Green (s)	20.2	65.8		8.2	54.0	54.0	7.1	7.1		39.0	39.0	
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	3.7	3.7		4.8	4.8	
All-Red Time (s)	3.0	2.4		3.0	2.2	2.2	4.2	4.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	7.8	7.2		7.8	7.0	7.0		7.9		7.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)	20.1	72.4		7.1	54.1	54.1		7.1		39.0	39.0	
Actuated g/C Ratio	0.13	0.48		0.05	0.36	0.36		0.05		0.26	0.26	
v/c Ratio	0.94	0.81		0.26	1.00	0.56		0.59		1.04	0.97	
Control Delay	108.9	37.4		76.5	69.1	5.4		85.5		107.4	85.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	108.9	37.4		76.5	69.1	5.4		85.5		107.4	85.8	
LOS	F	D		E	E	A		F		F	F	
Approach Delay		44.7			55.7			85.5			96.9	
Approach LOS		D			E			F			F	
Queue Length 50th (ft)	213	619		20	~641	0		43		~488	394	
Queue Length 95th (ft)	#376	697		51	#759	80		#103		#718	#626	
Internal Link Dist (ft)		2215			2196			762			1114	
Turn Bay Length (ft)	415			500		500				450		
Base Capacity (vph)	231	2378		93	1781	863		88		424	428	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	0.94	0.81		0.23	1.00	0.56		0.59		1.04	0.97	

Intersection Summary

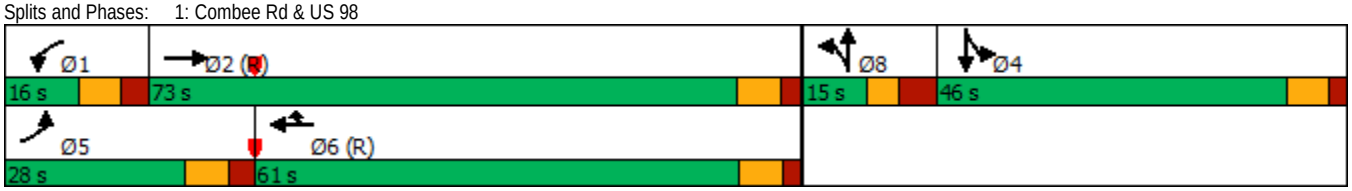
Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 140

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 58.2	Intersection LOS: E
Intersection Capacity Utilization 89.9%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Combee Rd & US 98



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	128	224	638	149	148	536
Future Volume (vph)	128	224	638	149	148	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0		0	130	
Storage Lanes	1	1		0	1	
Taper Length (ft)	50				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.974			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	1538	1762	0	1719	1810
Flt Permitted	0.950				0.192	
Satd. Flow (perm)	1719	1538	1762	0	347	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		243	18			
Link Speed (mph)	35		40			40
Link Distance (ft)	2133		1194			2014
Travel Time (s)	41.6		20.4			34.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	139	243	693	162	161	583
Shared Lane Traffic (%)						
Lane Group Flow (vph)	139	243	855	0	161	583
Turn Type	Prot	Prot	NA		pm+pt	NA
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		5.0	12.0
Minimum Split (s)	13.5	13.5	19.0		13.0	19.0
Total Split (s)	21.0	21.0	79.0		20.0	99.0
Total Split (%)	17.5%	17.5%	65.8%		16.7%	82.5%
Maximum Green (s)	14.8	14.8	72.0		13.0	92.0
Yellow Time (s)	4.1	4.1	4.4		4.4	4.4
All-Red Time (s)	2.1	2.1	2.6		2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	13.3	13.3	78.2		93.5	93.5
Actuated g/C Ratio	0.11	0.11	0.65		0.78	0.78
v/c Ratio	0.73	0.63	0.74		0.44	0.41
Control Delay	73.2	13.8	19.5		10.9	5.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	73.2	13.8	19.5		10.9	5.6
LOS	E	B	B		B	A
Approach Delay	35.5		19.5			6.8
Approach LOS	D		B			A
Queue Length 50th (ft)	104	0	420		31	120
Queue Length 95th (ft)	#185	78	626		m31	m111
Internal Link Dist (ft)	2053		1114			1934
Turn Bay Length (ft)	200				130	
Base Capacity (vph)	212	402	1154		418	1409
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.66	0.60	0.74		0.39	0.41

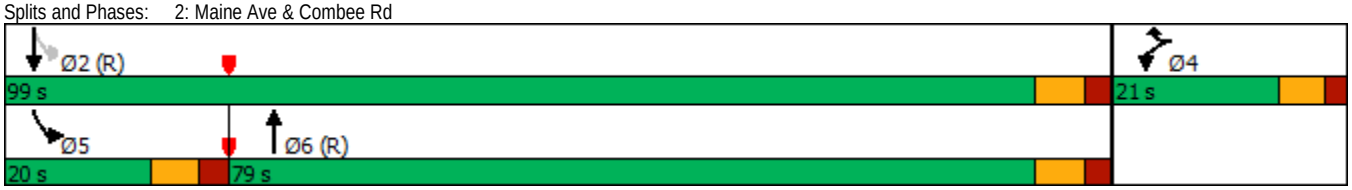
Intersection Summary	
Area Type:	Other
Cycle Length: 120	

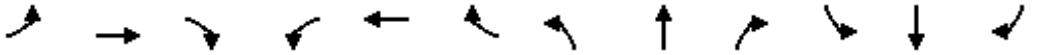
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 17.8	Intersection LOS: B
Intersection Capacity Utilization 74.8%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Maine Ave & Combee Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	0	134	5	0	11	165	659	12	10	555	172
Future Volume (veh/h)	273	0	134	5	0	11	165	659	12	10	555	172
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1810	1900	1810	1810	1810	1810	1900	1810	1810	1900
Adj Flow Rate, veh/h	297	0	146	5	0	12	179	716	13	11	603	187
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5	5	5	5	5	5	5
Cap, veh/h	302	0	269	43	0	39	506	1113	20	413	667	207
Arrive On Green	0.17	0.00	0.17	0.03	0.00	0.03	0.13	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1723	0	1538	1723	0	1538	1723	1772	32	703	1326	411
Grp Volume(v), veh/h	297	0	146	5	0	12	179	0	729	11	0	790
Grp Sat Flow(s),veh/h/ln	1723	0	1538	1723	0	1538	1723	0	1804	703	0	1737
Q Serve(g_s), s	20.6	0.0	10.4	0.3	0.0	0.9	6.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	20.6	0.0	10.4	0.3	0.0	0.9	6.1	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.02	1.00		0.24
Lane Grp Cap(c), veh/h	302	0	269	43	0	39	506	0	1133	413	0	874
V/C Ratio(X)	0.98	0.00	0.54	0.11	0.00	0.31	0.35	0.00	0.64	0.03	0.00	0.90
Avail Cap(c_a), veh/h	302	0	269	195	0	174	506	0	1133	413	0	874
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.63	0.00	0.63	0.40	0.00	0.40
Uniform Delay (d), s/veh	49.3	0.0	45.1	57.2	0.0	57.5	10.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	47.5	0.0	2.2	1.2	0.0	4.4	1.2	0.0	1.8	0.0	0.0	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	0.0	4.6	0.2	0.0	0.4	3.0	0.0	0.6	0.0	0.0	1.6
LnGrp Delay(d),s/veh	96.8	0.0	47.3	58.3	0.0	61.9	12.0	0.0	1.8	0.0	0.0	6.7
LnGrp LOS	F		D	E		E	B		A	A		A
Approach Vol, veh/h		443			17			908			801	
Approach Delay, s/veh		80.5			60.8			3.8			6.6	
Approach LOS		F			E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	15.0	67.6		9.4		82.6		28.0
Change Period (Y+Rc), s	* 7.2	* 7.2		6.4		* 7.2		7.0
Max Green Setting (Gmax), s	* 7.8	* 50		13.6		* 65		21.0
Max Q Clear Time (g_c+I1), s	8.1	2.0		2.9		2.0		22.6
Green Ext Time (p_c), s	0.0	6.9		0.0		5.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	212	49	86	815	689	129
Future Volume (veh/h)	212	49	86	815	689	129
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1810	1810	1900
Adj Flow Rate, veh/h	230	53	93	886	749	140
Adj No. of Lanes	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	258	230	591	1343	854	160
Arrive On Green	0.15	0.15	0.11	0.74	1.00	1.00
Sat Flow, veh/h	1723	1538	1723	1810	1483	277
Grp Volume(v), veh/h	230	53	93	886	0	889
Grp Sat Flow(s),veh/h/ln	1723	1538	1723	1810	0	1761
Q Serve(g_s), s	15.7	3.6	2.1	29.7	0.0	0.0
Cycle Q Clear(g_c), s	15.7	3.6	2.1	29.7	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.16
Lane Grp Cap(c), veh/h	258	230	591	1343	0	1013
V/C Ratio(X)	0.89	0.23	0.16	0.66	0.00	0.88
Avail Cap(c_a), veh/h	292	260	591	1343	0	1013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.71	0.71	0.00	0.77
Uniform Delay (d), s/veh	50.1	44.9	5.8	7.8	0.0	0.0
Incr Delay (d2), s/veh	25.4	0.5	0.4	1.8	0.0	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	1.6	1.0	15.2	0.0	2.4
LnGrp Delay(d),s/veh	75.5	45.5	6.2	9.6	0.0	8.5
LnGrp LOS	E	D	A	A		A
Approach Vol, veh/h	283			979	889	
Approach Delay, s/veh	69.9			9.3	8.5	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.0	76.4				96.4		23.6
Change Period (Y+Rc), s	7.3	7.3				7.3		5.7
Max Green Setting (Gmax), s	12.7	66.7				86.7		20.3
Max Q Clear Time (g_c+I1), s	4.1	2.0				31.7		17.7
Green Ext Time (p_c), s	0.1	8.4				8.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

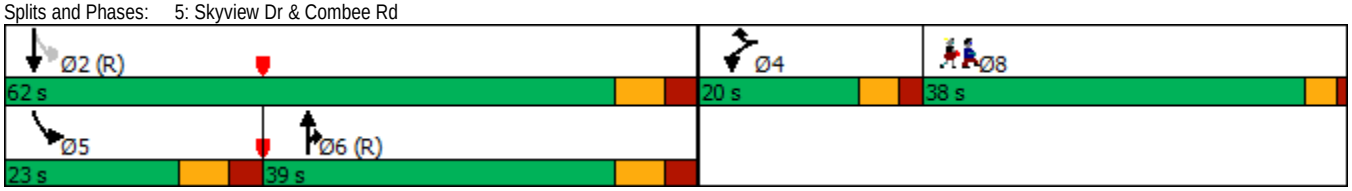
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Lane Configurations							
Traffic Volume (vph)	148	185	811	189	204	641	
Future Volume (vph)	148	185	811	189	204	641	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	215	0		275	240		
Storage Lanes	1	1		1	1		
Taper Length (ft)	140				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor	0.82						
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1719	1538	1810	1538	1719	1810	
Flt Permitted	0.950				0.059		
Satd. Flow (perm)	1414	1538	1810	1538	107	1810	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		201		113			
Link Speed (mph)	30		40			40	
Link Distance (ft)	1162		679			730	
Travel Time (s)	26.4		11.6			12.4	
Confl. Peds. (#/hr)	42	42					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	161	201	882	205	222	697	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	161	201	882	205	222	697	
Turn Type	Prot	Prot	NA	Prot	pm+pt	NA	
Protected Phases	4	4	6	6	5	2	8
Permitted Phases					2		
Detector Phase	4	4	6	6	5	2	
Switch Phase							
Minimum Initial (s)	7.0	7.0	12.0	12.0	5.0	12.0	15.0
Minimum Split (s)	12.8	12.8	19.5	19.5	12.4	19.5	22.0
Total Split (s)	20.0	20.0	39.0	39.0	23.0	62.0	38.0
Total Split (%)	16.7%	16.7%	32.5%	32.5%	19.2%	51.7%	32%
Maximum Green (s)	14.2	14.2	31.5	31.5	15.6	54.5	34.0
Yellow Time (s)	3.7	3.7	4.5	4.5	4.4	4.5	3.0
All-Red Time (s)	2.1	2.1	3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8	5.8	7.5	7.5	7.4	7.5	
Lead/Lag	Lead	Lead	Lag	Lag	Lead		Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max	None
Walk Time (s)							7.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	13.6	13.6	62.8	62.8	84.4	84.3	
Actuated g/C Ratio	0.11	0.11	0.52	0.52	0.70	0.70	
v/c Ratio	0.83	0.57	0.93	0.24	0.84	0.55	
Control Delay	83.9	13.5	40.0	10.0	40.4	6.8	
Queue Delay	0.0	3.1	4.7	0.0	0.0	1.2	
Total Delay	83.9	16.6	44.7	10.0	40.4	8.0	
LOS	F	B	D	B	D	A	
Approach Delay	46.5		38.2			15.9	
Approach LOS	D		D			B	
Queue Length 50th (ft)	123	0	416	31	110	25	
Queue Length 95th (ft)	#236	71	#1173	m86	m96	m339	
Internal Link Dist (ft)	1082		599			650	
Turn Bay Length (ft)	215			275	240		
Base Capacity (vph)	203	359	947	858	309	1271	
Starvation Cap Reductn	0	0	0	0	0	343	
Spillback Cap Reductn	0	82	40	0	0	190	
Storage Cap Reductn	0	0	0	0	0	0	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Reduced v/c Ratio	0.79	0.73	0.97	0.24	0.72	0.75	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 30.8		Intersection LOS: C	
Intersection Capacity Utilization 79.4%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Skyview Dr & Combee Rd



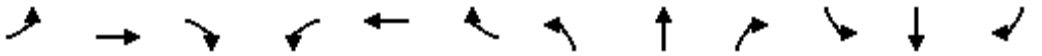
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	229	145	166	829	781	71
Future Volume (veh/h)	229	145	166	829	781	71
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1900	1810	1810	1810	1900
Adj Flow Rate, veh/h	249	158	180	901	849	77
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	5	5	5	5
Cap, veh/h	263	167	194	1148	819	74
Arrive On Green	0.26	0.26	0.05	0.43	0.50	0.50
Sat Flow, veh/h	1005	638	1723	1810	1635	148
Grp Volume(v), veh/h	408	0	180	901	0	926
Grp Sat Flow(s),veh/h/ln	1647	0	1723	1810	0	1783
Q Serve(g_s), s	29.2	0.0	8.3	51.6	0.0	60.1
Cycle Q Clear(g_c), s	29.2	0.0	8.3	51.6	0.0	60.1
Prop In Lane	0.61	0.39	1.00			0.08
Lane Grp Cap(c), veh/h	431	0	194	1148	0	894
V/C Ratio(X)	0.95	0.00	0.93	0.78	0.00	1.04
Avail Cap(c_a), veh/h	443	0	194	1148	0	894
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.38	0.38	0.00	1.00
Uniform Delay (d), s/veh	43.5	0.0	38.8	27.4	0.0	29.9
Incr Delay (d2), s/veh	29.4	0.0	24.0	2.1	0.0	39.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.8	0.0	7.2	26.4	0.0	39.4
LnGrp Delay(d),s/veh	72.9	0.0	62.8	29.6	0.0	69.8
LnGrp LOS	E		E	C		F
Approach Vol, veh/h	408			1081	926	
Approach Delay, s/veh	72.9			35.1	69.8	
Approach LOS	E			D	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	16.0	66.9				82.9		37.1
Change Period (Y+Rc), s	* 6.7	* 6.8				* 6.8		5.7
Max Green Setting (Gmax), s	* 9.3	* 59				* 75		32.3
Max Q Clear Time (g_c+I1), s	10.3	62.1				53.6		31.2
Green Ext Time (p_c), s	0.0	0.0				6.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	54.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	239	2066	35	23	1952	531	25	18	14	695	13	233
Future Volume (vph)	239	2066	35	23	1952	531	25	18	14	695	13	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	16
Storage Length (ft)	415		0	500		500	0		0	450		150
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	140			50			25			70		
Satd. Flow (prot)	1719	4930	0	1719	4940	1538	0	1713	0	1633	1552	0
Flt Permitted	0.950			0.950				0.979		0.950	0.978	
Satd. Flow (perm)	1719	4930	0	1719	4940	1538	0	1713	0	1633	1552	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				577		8			34	
Link Speed (mph)		50			50			25			40	
Link Distance (ft)		2295			2276			842			1194	
Travel Time (s)		31.3			31.0			23.0			20.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)										30%		
Lane Group Flow (vph)	260	2284	0	25	2122	577	0	62	0	528	494	0
Turn Type	Prot	NA		Prot	NA	Prot	Split	NA		Split	NA	
Protected Phases	5	2		1	6	6	8	8		4	4	
Permitted Phases												
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	13.0	19.2		13.0	20.0	20.0	15.0	15.0		14.0	14.0	
Total Split (s)	28.0	75.0		14.0	61.0	61.0	15.0	15.0		46.0	46.0	
Total Split (%)	18.7%	50.0%		9.3%	40.7%	40.7%	10.0%	10.0%		30.7%	30.7%	
Maximum Green (s)	20.2	67.8		6.2	54.0	54.0	7.1	7.1		39.0	39.0	
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	3.7	3.7		4.8	4.8	
All-Red Time (s)	3.0	2.4		3.0	2.2	2.2	4.2	4.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	7.8	7.2		7.8	7.0	7.0		7.9		7.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	C-Max	Max	Max		Max	Max	
Act Effct Green (s)	20.2	73.4		6.1	54.0	54.0		7.1		39.0	39.0	
Actuated g/C Ratio	0.13	0.49		0.04	0.36	0.36		0.05		0.26	0.26	
v/c Ratio	1.13	0.95		0.36	1.19	0.63		0.70		1.25	1.15	
Control Delay	153.6	46.3		84.5	134.7	5.8		98.8		173.9	137.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	153.6	46.3		84.5	134.7	5.8		98.8		173.9	137.9	
LOS	F	D		F	F	A		F		F	F	
Approach Delay		57.3			107.0			98.8			156.5	
Approach LOS		E			F			F			F	
Queue Length 50th (ft)	~293	~868		24	~916	0		53		~673	~571	
Queue Length 95th (ft)	#477	#957		58	#1006	90		#132		#917	#813	
Internal Link Dist (ft)		2215			2196			762			1114	
Turn Bay Length (ft)	415			500		500				450		
Base Capacity (vph)	231	2413		71	1778	922		88		424	428	
Starvation Cap Reductn	0	0		0	0	0		0		0	0	
Spillback Cap Reductn	0	0		0	0	0		0		0	0	
Storage Cap Reductn	0	0		0	0	0		0		0	0	
Reduced v/c Ratio	1.13	0.95		0.35	1.19	0.63		0.70		1.25	1.15	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

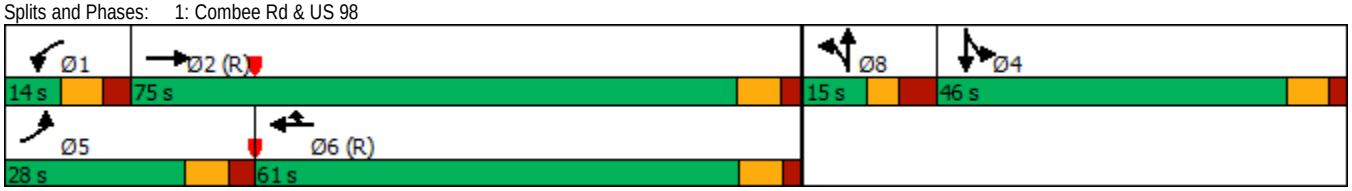
Natural Cycle: 150

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.25	
Intersection Signal Delay: 95.0	Intersection LOS: F
Intersection Capacity Utilization 102.5%	ICU Level of Service G
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Combee Rd & US 98



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	158	263	760	181	173	637
Future Volume (vph)	158	263	760	181	173	637
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0		0	130	
Storage Lanes	1	1		0	1	
Taper Length (ft)	50				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.974			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	1538	1762	0	1719	1810
Flt Permitted	0.950				0.082	
Satd. Flow (perm)	1719	1538	1762	0	148	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		286	18			
Link Speed (mph)	35		40			40
Link Distance (ft)	2389		1194			2014
Travel Time (s)	46.5		20.4			34.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	286	826	197	188	692
Shared Lane Traffic (%)						
Lane Group Flow (vph)	172	286	1023	0	188	692
Turn Type	Prot	Prot	NA		pm+pt	NA
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		5.0	12.0
Minimum Split (s)	13.5	13.5	19.0		13.0	19.0
Total Split (s)	20.0	20.0	80.0		20.0	100.0
Total Split (%)	16.7%	16.7%	66.7%		16.7%	83.3%
Maximum Green (s)	13.8	13.8	73.0		13.0	93.0
Yellow Time (s)	4.1	4.1	4.4		4.4	4.4
All-Red Time (s)	2.1	2.1	2.6		2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	13.6	13.6	75.0		93.2	93.2
Actuated g/C Ratio	0.11	0.11	0.62		0.78	0.78
v/c Ratio	0.89	0.67	0.92		0.72	0.49
Control Delay	93.2	14.1	35.2		30.3	5.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	93.2	14.1	35.2		30.3	5.1
LOS	F	B	D		C	A
Approach Delay	43.8		35.2			10.5
Approach LOS	D		D			B
Queue Length 50th (ft)	133	0	677		101	109
Queue Length 95th (ft)	#261	85	#1029		m80	m81
Internal Link Dist (ft)	2309		1114			1934
Turn Bay Length (ft)	200				130	
Base Capacity (vph)	197	429	1108		284	1405
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.87	0.67	0.92		0.66	0.49

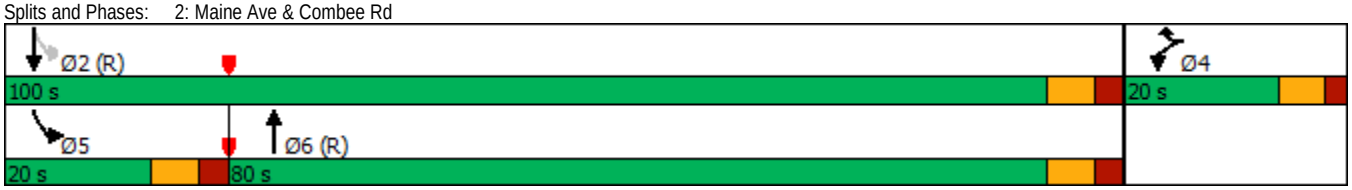
Intersection Summary	
Area Type:	Other
Cycle Length: 120	

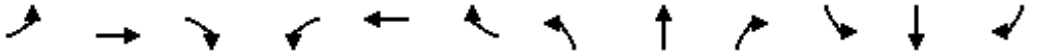
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 27.7	Intersection LOS: C
Intersection Capacity Utilization 86.2%	ICU Level of Service E
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Maine Ave & Combee Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	309	0	176	6	0	14	210	765	15	11	680	200
Future Volume (veh/h)	309	0	176	6	0	14	210	765	15	11	680	200
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1810	1900	1810	1810	1810	1810	1900	1810	1810	1900
Adj Flow Rate, veh/h	336	0	191	7	0	15	228	832	16	12	739	217
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5	5	5	5	5	5	5
Cap, veh/h	302	0	269	52	0	47	215	1102	21	357	636	187
Arrive On Green	0.17	0.00	0.17	0.03	0.00	0.03	0.18	1.00	1.00	0.47	0.47	0.47
Sat Flow, veh/h	1723	0	1538	1723	0	1538	1723	1769	34	629	1345	395
Grp Volume(v), veh/h	336	0	191	7	0	15	228	0	848	12	0	956
Grp Sat Flow(s),veh/h/ln	1723	0	1538	1723	0	1538	1723	0	1804	629	0	1740
Q Serve(g_s), s	21.0	0.0	14.0	0.5	0.0	1.1	10.8	0.0	0.0	1.2	0.0	56.8
Cycle Q Clear(g_c), s	21.0	0.0	14.0	0.5	0.0	1.1	10.8	0.0	0.0	1.2	0.0	56.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.02	1.00		0.23
Lane Grp Cap(c), veh/h	302	0	269	52	0	47	215	0	1124	357	0	823
V/C Ratio(X)	1.11	0.00	0.71	0.13	0.00	0.32	1.06	0.00	0.75	0.03	0.00	1.16
Avail Cap(c_a), veh/h	302	0	269	195	0	174	215	0	1124	357	0	823
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.38	0.00	0.38	0.26	0.00	0.26
Uniform Delay (d), s/veh	49.5	0.0	46.6	56.6	0.0	57.0	33.6	0.0	0.0	17.0	0.0	31.6
Incr Delay (d2), s/veh	86.1	0.0	8.4	1.1	0.0	3.9	54.6	0.0	1.8	0.0	0.0	76.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.2	0.0	6.6	0.2	0.0	0.5	10.3	0.0	0.6	0.2	0.0	44.7
LnGrp Delay(d),s/veh	135.6	0.0	55.0	57.8	0.0	60.9	88.2	0.0	1.8	17.0	0.0	108.2
LnGrp LOS	F		D	E		E	F		A	B		F
Approach Vol, veh/h		527			22			1076			968	
Approach Delay, s/veh		106.4			59.9			20.1			107.1	
Approach LOS		F			E			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	18.0	64.0		10.0		82.0		28.0
Change Period (Y+Rc), s	* 7.2	* 7.2		6.4		* 7.2		7.0
Max Green Setting (Gmax), s	* 11	* 47		13.6		* 65		21.0
Max Q Clear Time (g_c+I1), s	12.8	58.8		3.1		2.0		23.0
Green Ext Time (p_c), s	0.0	0.0		0.0		7.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	70.5
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	257	55	98	991	815	157
Future Volume (veh/h)	257	55	98	991	815	157
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1810	1810	1900
Adj Flow Rate, veh/h	279	60	107	1077	886	171
Adj No. of Lanes	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	292	260	459	1307	906	175
Arrive On Green	0.17	0.17	0.05	0.72	1.00	1.00
Sat Flow, veh/h	1723	1538	1723	1810	1475	285
Grp Volume(v), veh/h	279	60	107	1077	0	1057
Grp Sat Flow(s),veh/h/ln	1723	1538	1723	1810	0	1759
Q Serve(g_s), s	19.3	4.0	2.6	49.0	0.0	0.0
Cycle Q Clear(g_c), s	19.3	4.0	2.6	49.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.16
Lane Grp Cap(c), veh/h	292	260	459	1307	0	1081
V/C Ratio(X)	0.96	0.23	0.23	0.82	0.00	0.98
Avail Cap(c_a), veh/h	292	260	459	1307	0	1081
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.44	0.44	0.00	0.58
Uniform Delay (d), s/veh	49.4	43.1	6.6	11.4	0.0	0.0
Incr Delay (d2), s/veh	41.1	0.4	0.5	2.8	0.0	16.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.5	1.7	1.3	25.2	0.0	4.9
LnGrp Delay(d),s/veh	90.5	43.5	7.2	14.2	0.0	16.3
LnGrp LOS	F	D	A	B		B
Approach Vol, veh/h	339			1184	1057	
Approach Delay, s/veh	82.2			13.5	16.3	
Approach LOS	F			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	13.0	81.0				94.0		26.0
Change Period (Y+Rc), s	7.3	7.3				7.3		5.7
Max Green Setting (Gmax), s	5.7	73.7				86.7		20.3
Max Q Clear Time (g_c+I1), s	4.6	2.0				51.0		21.3
Green Ext Time (p_c), s	0.0	12.3				11.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.7
HCM 2010 LOS	C

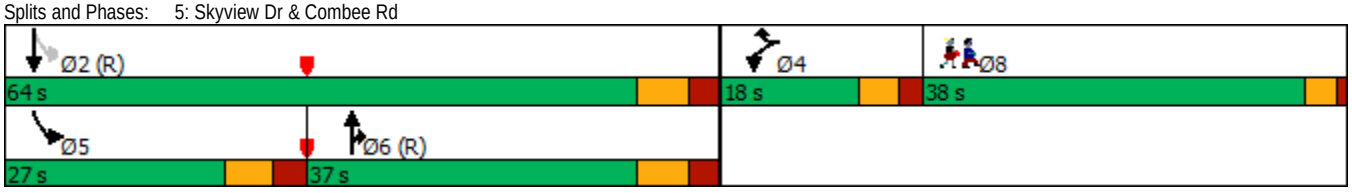
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Lane Configurations							
Traffic Volume (vph)	185	212	958	230	235	778	
Future Volume (vph)	185	212	958	230	235	778	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	215	0		275	240		
Storage Lanes	1	1		1	1		
Taper Length (ft)	140				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor	0.79						
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1719	1538	1810	1538	1719	1810	
Flt Permitted	0.950				0.059		
Satd. Flow (perm)	1364	1538	1810	1538	107	1810	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		230		115			
Link Speed (mph)	30		40			40	
Link Distance (ft)	3473		673			716	
Travel Time (s)	78.9		11.5			12.2	
Confl. Peds. (#/hr)	42	42					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	201	230	1041	250	255	846	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	201	230	1041	250	255	846	
Turn Type	Prot	Prot	NA	Prot	pm+pt	NA	
Protected Phases	4	4	6	6	5	2	8
Permitted Phases					2		
Detector Phase	4	4	6	6	5	2	
Switch Phase							
Minimum Initial (s)	7.0	7.0	12.0	12.0	5.0	12.0	15.0
Minimum Split (s)	12.8	12.8	19.5	19.5	12.4	19.5	22.0
Total Split (s)	18.0	18.0	37.0	37.0	27.0	64.0	38.0
Total Split (%)	15.0%	15.0%	30.8%	30.8%	22.5%	53.3%	32%
Maximum Green (s)	12.2	12.2	29.5	29.5	19.6	56.5	34.0
Yellow Time (s)	3.7	3.7	4.5	4.5	4.4	4.5	3.0
All-Red Time (s)	2.1	2.1	3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8	5.8	7.5	7.5	7.4	7.5	
Lead/Lag	Lead	Lead	Lag	Lag	Lead		Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max	None
Walk Time (s)							7.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	12.2	12.2	62.9	62.9	85.8	85.7	
Actuated g/C Ratio	0.10	0.10	0.52	0.52	0.72	0.71	
v/c Ratio	1.16	0.64	1.10	0.29	0.90	0.65	
Control Delay	163.6	15.0	81.0	13.3	46.2	7.8	
Queue Delay	1.9	5.3	1.2	0.0	0.0	8.0	
Total Delay	165.6	20.4	82.2	13.3	46.2	15.8	
LOS	F	C	F	B	D	B	
Approach Delay	88.1		68.8			22.8	
Approach LOS	F		E			C	
Queue Length 50th (ft)	~183	0	598	46	142	42	
Queue Length 95th (ft)	#336	78	m#1417	m114	m79	m250	
Internal Link Dist (ft)	3393		593			636	
Turn Bay Length (ft)	215			275	240		
Base Capacity (vph)	174	362	948	860	354	1292	
Starvation Cap Reductn	0	0	0	0	0	370	
Spillback Cap Reductn	18	81	70	0	0	405	
Storage Cap Reductn	0	0	0	0	0	0	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Reduced v/c Ratio	1.29	0.82	1.19	0.29	0.72	0.95	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 53.8		Intersection LOS: D	
Intersection Capacity Utilization 90.9%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Skyview Dr & Combee Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	303	145	186	1007	915	100
Future Volume (veh/h)	303	145	186	1007	915	100
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1900	1810	1810	1810	1900
Adj Flow Rate, veh/h	329	158	202	1095	995	109
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	5	5	5	5
Cap, veh/h	282	136	208	1164	804	88
Arrive On Green	0.25	0.25	0.06	0.43	0.50	0.50
Sat Flow, veh/h	1118	537	1723	1810	1603	176
Grp Volume(v), veh/h	488	0	202	1095	0	1104
Grp Sat Flow(s),veh/h/ln	1659	0	1723	1810	0	1779
Q Serve(g_s), s	30.3	0.0	9.9	69.5	0.0	60.2
Cycle Q Clear(g_c), s	30.3	0.0	9.9	69.5	0.0	60.2
Prop In Lane	0.67	0.32	1.00			0.10
Lane Grp Cap(c), veh/h	419	0	208	1164	0	892
V/C Ratio(X)	1.17	0.00	0.97	0.94	0.00	1.24
Avail Cap(c_a), veh/h	419	0	208	1164	0	892
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.09	0.09	0.00	1.00
Uniform Delay (d), s/veh	44.9	0.0	40.8	31.9	0.0	29.9
Incr Delay (d2), s/veh	97.4	0.0	12.7	2.0	0.0	116.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	25.2	0.0	7.4	35.4	0.0	58.1
LnGrp Delay(d),s/veh	142.3	0.0	53.5	34.0	0.0	146.4
LnGrp LOS	F		D	C		F
Approach Vol, veh/h	488			1297	1104	
Approach Delay, s/veh	142.3			37.0	146.4	
Approach LOS	F			D	F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	67.0				84.0		36.0
Change Period (Y+Rc), s	* 6.7	* 6.8				* 6.8		5.7
Max Green Setting (Gmax), s	* 10	* 60				* 77		30.3
Max Q Clear Time (g_c+I1), s	11.9	62.2				71.5		32.3
Green Ext Time (p_c), s	0.0	0.0				3.7		0.0

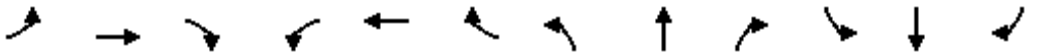
Intersection Summary	
HCM 2010 Ctrl Delay	96.6
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Appendix M:

Build Alternative Synchro Intersection Analysis



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	1738	32	19	1640	444	21	15	12	580	10	197
Future Volume (vph)	199	1738	32	19	1640	444	21	15	12	580	10	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	16
Storage Length (ft)	415		0	500		500	0		0	450		350
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	140			50			25			70		
Satd. Flow (prot)	1719	4925	0	1719	4940	1538	0	1710	0	1633	1640	1743
Flt Permitted	0.950			0.950				0.978		0.950	0.954	
Satd. Flow (perm)	1719	4925	0	1719	4940	1538	0	1710	0	1633	1640	1743
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				483		8				214
Link Speed (mph)		50			50			25			40	
Link Distance (ft)		2295			2276			842			1194	
Travel Time (s)		31.3			31.0			23.0			20.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)										49%		
Lane Group Flow (vph)	216	1924	0	21	1783	483	0	52	0	321	320	214
Turn Type	Prot	NA		Prot	NA	Prot	Split	NA		Split	NA	Prot
Protected Phases	5	2		1	6	6	8	8		4	4	4
Permitted Phases												
Detector Phase	5	2		1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	19.2		13.0	20.0	20.0	15.0	15.0		14.0	14.0	14.0
Total Split (s)	30.0	78.0		16.0	64.0	64.0	16.0	16.0		40.0	40.0	40.0
Total Split (%)	20.0%	52.0%		10.7%	42.7%	42.7%	10.7%	10.7%		26.7%	26.7%	26.7%
Maximum Green (s)	22.2	70.8		8.2	57.0	57.0	8.1	8.1		33.0	33.0	33.0
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	3.7	3.7		4.8	4.8	4.8
All-Red Time (s)	3.0	2.4		3.0	2.2	2.2	4.2	4.2		2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	7.8	7.2		7.8	7.0	7.0		7.9		7.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	Max	Max		Max	Max	Max
Act Effct Green (s)	21.3	77.4		7.1	57.9	57.9		8.1		33.0	33.0	33.0
Actuated g/C Ratio	0.14	0.52		0.05	0.39	0.39		0.05		0.22	0.22	0.22
v/c Ratio	0.89	0.76		0.26	0.93	0.54		0.53		0.89	0.89	0.39
Control Delay	97.2	32.4		76.5	54.6	5.0		77.8		83.8	83.0	7.9
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	97.2	32.4		76.5	54.6	5.0		77.8		83.8	83.0	7.9
LOS	F	C		E	D	A		E		F	F	A
Approach Delay		38.9			44.3			77.8			64.5	
Approach LOS		D			D			E			E	
Queue Length 50th (ft)	209	579		20	617	0		43		324	323	0
Queue Length 95th (ft)	#353	653		51	#722	77		91		#511	#507	69
Internal Link Dist (ft)		2215			2196			762			1114	
Turn Bay Length (ft)	415			500		500				450		350
Base Capacity (vph)	254	2542		93	1907	889		99		359	360	550
Starvation Cap Reductn	0	0		0	0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.85	0.76		0.23	0.93	0.54		0.53		0.89	0.89	0.39

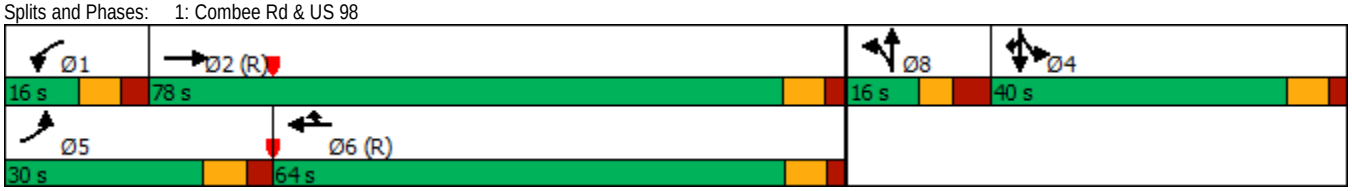
Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 100

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 45.7	Intersection LOS: D
Intersection Capacity Utilization 83.9%	ICU Level of Service E
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Combee Rd & US 98



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	128	224	638	149	148	536
Future Volume (vph)	128	224	638	149	148	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0		0	130	
Storage Lanes	1	1		0	1	
Taper Length (ft)	50				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.974			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	1538	1762	0	1719	1810
Flt Permitted	0.950				0.192	
Satd. Flow (perm)	1719	1538	1762	0	347	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		243	18			
Link Speed (mph)	35		40			40
Link Distance (ft)	2133		1194			2014
Travel Time (s)	41.6		20.4			34.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	139	243	693	162	161	583
Shared Lane Traffic (%)						
Lane Group Flow (vph)	139	243	855	0	161	583
Turn Type	Prot	Prot	NA		pm+pt	NA
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		5.0	12.0
Minimum Split (s)	13.5	13.5	19.0		13.0	19.0
Total Split (s)	21.0	21.0	79.0		20.0	99.0
Total Split (%)	17.5%	17.5%	65.8%		16.7%	82.5%
Maximum Green (s)	14.8	14.8	72.0		13.0	92.0
Yellow Time (s)	4.1	4.1	4.4		4.4	4.4
All-Red Time (s)	2.1	2.1	2.6		2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	13.3	13.3	78.2		93.5	93.5
Actuated g/C Ratio	0.11	0.11	0.65		0.78	0.78
v/c Ratio	0.73	0.63	0.74		0.44	0.41
Control Delay	73.2	13.8	19.5		13.1	3.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	73.2	13.8	19.5		13.1	3.9
LOS	E	B	B		B	A
Approach Delay	35.5		19.5			5.9
Approach LOS	D		B			A
Queue Length 50th (ft)	104	0	420		30	43
Queue Length 95th (ft)	#185	78	626		m63	147
Internal Link Dist (ft)	2053		1114			1934
Turn Bay Length (ft)	200				130	
Base Capacity (vph)	212	402	1154		418	1409
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.66	0.60	0.74		0.39	0.41

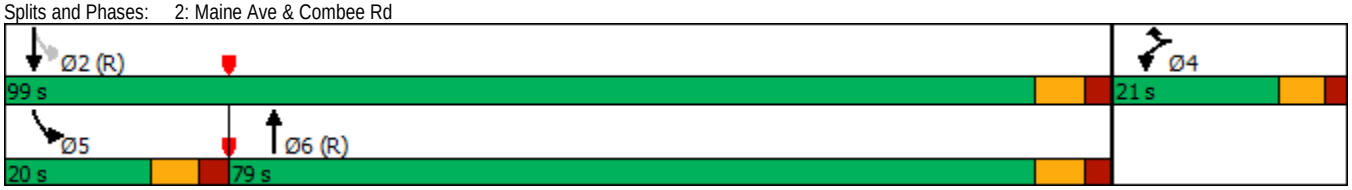
Intersection Summary	
Area Type:	Other
Cycle Length: 120	

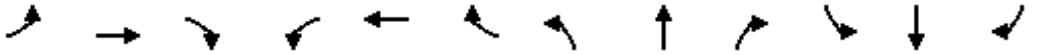
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 17.5	Intersection LOS: B
Intersection Capacity Utilization 74.8%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Maine Ave & Combee Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	0	134	5	0	11	165	659	12	10	555	172
Future Volume (veh/h)	273	0	134	5	0	11	165	659	12	10	555	172
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1810	1900	1810	1810	1810	1810	1900	1810	1810	1810
Adj Flow Rate, veh/h	297	0	146	5	0	12	179	716	13	11	603	187
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5	5	5	5	5	5	5
Cap, veh/h	302	0	269	43	0	39	375	1113	20	413	910	774
Arrive On Green	0.17	0.00	0.17	0.03	0.00	0.03	0.13	1.00	1.00	0.67	0.67	0.67
Sat Flow, veh/h	1723	0	1538	1723	0	1538	1723	1772	32	703	1810	1538
Grp Volume(v), veh/h	297	0	146	5	0	12	179	0	729	11	603	187
Grp Sat Flow(s),veh/h/ln	1723	0	1538	1723	0	1538	1723	0	1804	703	1810	1538
Q Serve(g_s), s	20.6	0.0	10.4	0.3	0.0	0.9	6.1	0.0	0.0	0.6	23.8	5.8
Cycle Q Clear(g_c), s	20.6	0.0	10.4	0.3	0.0	0.9	6.1	0.0	0.0	0.6	23.8	5.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	302	0	269	43	0	39	375	0	1133	413	910	774
V/C Ratio(X)	0.98	0.00	0.54	0.11	0.00	0.31	0.48	0.00	0.64	0.03	0.66	0.24
Avail Cap(c_a), veh/h	302	0	269	195	0	174	375	0	1133	413	910	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.63	0.00	0.63	0.72	0.72	0.72
Uniform Delay (d), s/veh	49.3	0.0	45.1	57.2	0.0	57.5	14.2	0.0	0.0	10.0	13.8	10.8
Incr Delay (d2), s/veh	47.5	0.0	2.2	1.2	0.0	4.4	2.7	0.0	1.8	0.1	2.8	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	0.0	4.6	0.2	0.0	0.4	3.1	0.0	0.6	0.1	12.3	2.5
LnGrp Delay(d),s/veh	96.8	0.0	47.3	58.3	0.0	61.9	17.0	0.0	1.8	10.1	16.5	11.4
LnGrp LOS	F		D	E		E	B		A	B	B	B
Approach Vol, veh/h		443			17			908			801	
Approach Delay, s/veh		80.5			60.8			4.8			15.2	
Approach LOS		F			E			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	15.0	67.6		9.4		82.6		28.0
Change Period (Y+Rc), s	* 7.2	* 7.2		6.4		* 7.2		7.0
Max Green Setting (Gmax), s	* 7.8	* 50		13.6		* 65		21.0
Max Q Clear Time (g_c+I1), s	8.1	25.8		2.9		2.0		22.6
Green Ext Time (p_c), s	0.0	4.7		0.0		5.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.6
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	212	49	86	815	689	129
Future Volume (veh/h)	212	49	86	815	689	129
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1810	1810	1810
Adj Flow Rate, veh/h	230	53	93	886	749	140
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	258	230	369	1343	1147	975
Arrive On Green	0.15	0.15	0.05	0.74	0.63	0.63
Sat Flow, veh/h	1723	1538	1723	1810	1810	1538
Grp Volume(v), veh/h	230	53	93	886	749	140
Grp Sat Flow(s),veh/h/ln	1723	1538	1723	1810	1810	1538
Q Serve(g_s), s	15.7	3.6	2.1	29.7	31.0	4.4
Cycle Q Clear(g_c), s	15.7	3.6	2.1	29.7	31.0	4.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	258	230	369	1343	1147	975
V/C Ratio(X)	0.89	0.23	0.25	0.66	0.65	0.14
Avail Cap(c_a), veh/h	292	260	369	1343	1147	975
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.71	0.71	0.76	0.76
Uniform Delay (d), s/veh	50.1	44.9	11.2	7.8	13.7	8.9
Incr Delay (d2), s/veh	25.4	0.5	1.2	1.8	2.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	1.6	1.1	15.2	16.1	1.9
LnGrp Delay(d),s/veh	75.5	45.5	12.3	9.6	15.9	9.1
LnGrp LOS	E	D	B	A	B	A
Approach Vol, veh/h	283			979	889	
Approach Delay, s/veh	69.9			9.9	14.9	
Approach LOS	E			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	13.0	83.4				96.4		23.6
Change Period (Y+Rc), s	7.3	7.3				7.3		5.7
Max Green Setting (Gmax), s	5.7	73.7				86.7		20.3
Max Q Clear Time (g_c+I1), s	4.1	33.0				31.7		17.7
Green Ext Time (p_c), s	0.0	6.4				8.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	19.8
HCM 2010 LOS	B

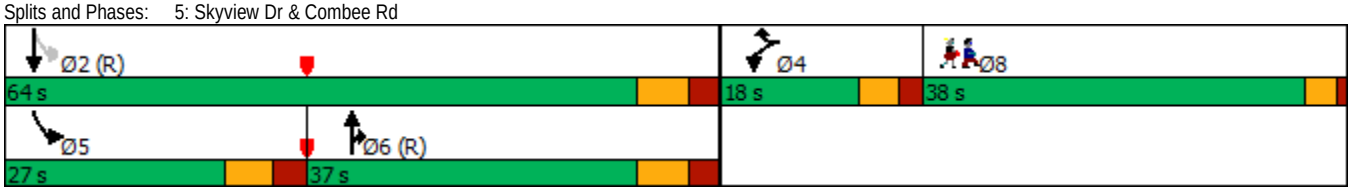
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Lane Configurations							
Traffic Volume (vph)	148	185	811	189	204	641	
Future Volume (vph)	148	185	811	189	204	641	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	215	0		275	240		
Storage Lanes	1	1		1	1		
Taper Length (ft)	140				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor	0.79						
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1719	1538	1810	1538	1719	1810	
Flt Permitted	0.950				0.074		
Satd. Flow (perm)	1364	1538	1810	1538	134	1810	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		201		111			
Link Speed (mph)	30		40			40	
Link Distance (ft)	1162		679			730	
Travel Time (s)	26.4		11.6			12.4	
Confl. Peds. (#/hr)	42	42					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	161	201	882	205	222	697	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	161	201	882	205	222	697	
Turn Type	Prot	Prot	NA	Prot	pm+pt	NA	
Protected Phases	4	4	6	6	5	2	8
Permitted Phases					2		
Detector Phase	4	4	6	6	5	2	
Switch Phase							
Minimum Initial (s)	7.0	7.0	12.0	12.0	5.0	12.0	15.0
Minimum Split (s)	12.8	12.8	19.5	19.5	12.4	19.5	22.0
Total Split (s)	18.0	18.0	37.0	37.0	27.0	64.0	38.0
Total Split (%)	15.0%	15.0%	30.8%	30.8%	22.5%	53.3%	32%
Maximum Green (s)	12.2	12.2	29.5	29.5	19.6	56.5	34.0
Yellow Time (s)	3.7	3.7	4.5	4.5	4.4	4.5	3.0
All-Red Time (s)	2.1	2.1	3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8	5.8	7.5	7.5	7.4	7.5	
Lead/Lag	Lead	Lead	Lag	Lag	Lead		Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max	None
Walk Time (s)							7.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	12.2	12.2	65.3	65.3	85.8	85.7	
Actuated g/C Ratio	0.10	0.10	0.54	0.54	0.72	0.71	
v/c Ratio	0.93	0.60	0.90	0.23	0.83	0.54	
Control Delay	104.9	14.9	38.2	9.5	45.9	18.4	
Queue Delay	0.0	0.2	4.5	0.0	0.0	0.7	
Total Delay	104.9	15.0	42.7	9.5	45.9	19.1	
LOS	F	B	D	A	D	B	
Approach Delay	55.0		36.4			25.5	
Approach LOS	E		D			C	
Queue Length 50th (ft)	126	0	687	16	128	317	
Queue Length 95th (ft)	#259	73	#1148	m94	m207	496	
Internal Link Dist (ft)	1082		599			650	
Turn Bay Length (ft)	215			275	240		
Base Capacity (vph)	174	336	985	887	359	1292	
Starvation Cap Reductn	0	0	0	0	0	275	
Spillback Cap Reductn	0	6	62	0	0	48	
Storage Cap Reductn	0	0	0	0	0	0	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Reduced v/c Ratio	0.93	0.61	0.96	0.23	0.62	0.69	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 56 (47%), Referenced to phase 2:SBTL and 6:NBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 35.0		Intersection LOS: D	
Intersection Capacity Utilization 79.4%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Skyview Dr & Combee Rd



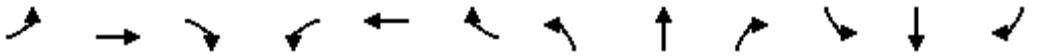
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	229	145	166	829	781	71
Future Volume (veh/h)	229	145	166	829	781	71
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1810	1810	1810
Adj Flow Rate, veh/h	249	158	180	901	849	77
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	283	252	322	1324	1122	954
Arrive On Green	0.16	0.16	0.11	1.00	0.62	0.62
Sat Flow, veh/h	1723	1538	1723	1810	1810	1538
Grp Volume(v), veh/h	249	158	180	901	849	77
Grp Sat Flow(s),veh/h/ln	1723	1538	1723	1810	1810	1538
Q Serve(g_s), s	16.9	11.5	4.6	0.0	40.3	2.4
Cycle Q Clear(g_c), s	16.9	11.5	4.6	0.0	40.3	2.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	283	252	322	1324	1122	954
V/C Ratio(X)	0.88	0.63	0.56	0.68	0.76	0.08
Avail Cap(c_a), veh/h	363	324	374	1324	1122	954
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.43	0.43	1.00	1.00
Uniform Delay (d), s/veh	49.0	46.7	15.9	0.0	16.3	9.1
Incr Delay (d2), s/veh	17.9	2.5	0.7	1.2	4.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	5.0	2.8	0.5	21.5	1.1
LnGrp Delay(d),s/veh	66.9	49.3	16.5	1.2	21.1	9.3
LnGrp LOS	E	D	B	A	C	A
Approach Vol, veh/h	407			1081	926	
Approach Delay, s/veh	60.0			3.8	20.1	
Approach LOS	E			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	13.4	81.2				94.6		25.4
Change Period (Y+Rc), s	* 6.7	* 6.8				* 6.8		5.7
Max Green Setting (Gmax), s	* 10	* 65				* 82		25.3
Max Q Clear Time (g_c+I1), s	6.6	42.3				2.0		18.9
Green Ext Time (p_c), s	0.2	6.6				8.4		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	239	2066	35	23	1952	531	25	18	14	695	13	233
Future Volume (vph)	239	2066	35	23	1952	531	25	18	14	695	13	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	16
Storage Length (ft)	415		0	500		500	0		0	450		350
Storage Lanes	1		0	1		1	0		0	1		0
Taper Length (ft)	140			50			25			70		
Satd. Flow (prot)	1719	4930	0	1719	4940	1538	0	1713	0	1633	1640	1743
Flt Permitted	0.950			0.950				0.979		0.950	0.954	
Satd. Flow (perm)	1719	4930	0	1719	4940	1538	0	1713	0	1633	1640	1743
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				577		8				225
Link Speed (mph)		50			50			25			40	
Link Distance (ft)		2295			2276			842			1195	
Travel Time (s)		31.3			31.0			23.0			20.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)										49%		
Lane Group Flow (vph)	260	2284	0	25	2122	577	0	62	0	385	384	253
Turn Type	Prot	NA		Prot	NA	Prot	Split	NA		Split	NA	Prot
Protected Phases	5	2		1	6	6	8	8		4	4	4
Permitted Phases												
Detector Phase	5	2		1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	12.0		5.0	12.0	12.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	19.2		13.0	20.0	20.0	15.0	15.0		14.0	14.0	14.0
Total Split (s)	29.0	79.0		15.0	65.0	65.0	15.0	15.0		41.0	41.0	41.0
Total Split (%)	19.3%	52.7%		10.0%	43.3%	43.3%	10.0%	10.0%		27.3%	27.3%	27.3%
Maximum Green (s)	21.2	71.8		7.2	58.0	58.0	7.1	7.1		34.0	34.0	34.0
Yellow Time (s)	4.8	4.8		4.8	4.8	4.8	3.7	3.7		4.8	4.8	4.8
All-Red Time (s)	3.0	2.4		3.0	2.2	2.2	4.2	4.2		2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	7.8	7.2		7.8	7.0	7.0		7.9		7.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	Max	Max		Max	Max	Max
Act Effct Green (s)	21.2	77.8		6.7	58.0	58.0		7.1		34.0	34.0	34.0
Actuated g/C Ratio	0.14	0.52		0.04	0.39	0.39		0.05		0.23	0.23	0.23
v/c Ratio	1.07	0.89		0.32	1.11	0.61		0.70		1.04	1.04	0.44
Control Delay	137.7	38.8		80.7	100.6	5.3		98.8		112.8	111.4	11.0
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	137.7	38.8		80.7	100.6	5.3		98.8		112.8	111.4	11.0
LOS	F	D		F	F	A		F		F	F	B
Approach Delay		48.9			80.2			98.8			87.1	
Approach LOS		D			F			F			F	
Queue Length 50th (ft)	~281	780		24	~867	0		53		~427	~423	22
Queue Length 95th (ft)	#466	#907		58	#957	84		#132		#649	#645	100
Internal Link Dist (ft)		2215			2196			762			1115	
Turn Bay Length (ft)	415			500		500				450		350
Base Capacity (vph)	242	2557		82	1910	948		88		370	371	569
Starvation Cap Reductn	0	0		0	0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	1.07	0.89		0.30	1.11	0.61		0.70		1.04	1.04	0.44

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

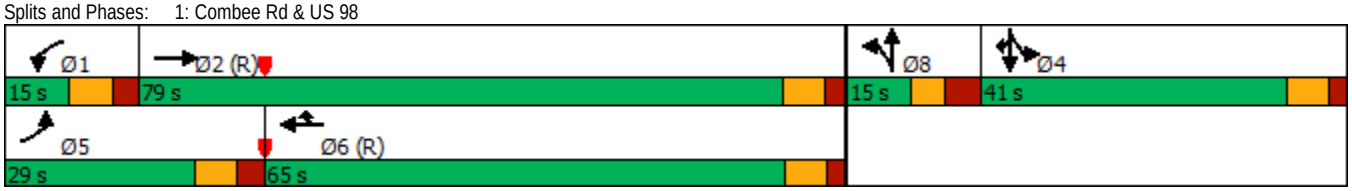
Natural Cycle: 150

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 69.0	Intersection LOS: E
Intersection Capacity Utilization 95.4%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Combee Rd & US 98



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	158	263	760	181	173	637
Future Volume (vph)	158	263	760	181	173	637
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200	0		0	130	
Storage Lanes	1	1		0	1	
Taper Length (ft)	50				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.974			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	1538	1762	0	1719	1810
Flt Permitted	0.950				0.082	
Satd. Flow (perm)	1719	1538	1762	0	148	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		286	18			
Link Speed (mph)	35		40			40
Link Distance (ft)	2389		1194			2014
Travel Time (s)	46.5		20.4			34.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	286	826	197	188	692
Shared Lane Traffic (%)						
Lane Group Flow (vph)	172	286	1023	0	188	692
Turn Type	Prot	Prot	NA		pm+pt	NA
Protected Phases	4	4	6		5	2
Permitted Phases					2	
Detector Phase	4	4	6		5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		5.0	12.0
Minimum Split (s)	13.5	13.5	19.0		13.0	19.0
Total Split (s)	20.0	20.0	80.0		20.0	100.0
Total Split (%)	16.7%	16.7%	66.7%		16.7%	83.3%
Maximum Green (s)	13.8	13.8	73.0		13.0	93.0
Yellow Time (s)	4.1	4.1	4.4		4.4	4.4
All-Red Time (s)	2.1	2.1	2.6		2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.2	6.2	7.0		7.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Act Effct Green (s)	13.6	13.6	75.0		93.2	93.2
Actuated g/C Ratio	0.11	0.11	0.62		0.78	0.78
v/c Ratio	0.89	0.67	0.92		0.72	0.49
Control Delay	93.2	14.1	35.2		36.8	4.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	93.2	14.1	35.2		36.8	4.9
LOS	F	B	D		D	A
Approach Delay	43.8		35.2			11.8
Approach LOS	D		D			B
Queue Length 50th (ft)	133	0	677		103	109
Queue Length 95th (ft)	#261	85	#1029		m108	m99
Internal Link Dist (ft)	2309		1114			1934
Turn Bay Length (ft)	200				130	
Base Capacity (vph)	197	429	1108		284	1405
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.87	0.67	0.92		0.66	0.49

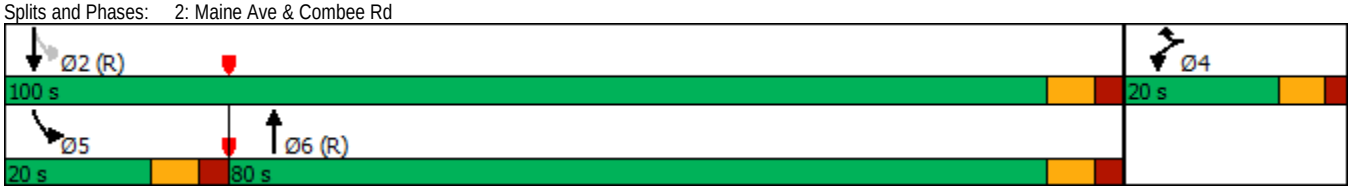
Intersection Summary	
Area Type:	Other
Cycle Length: 120	

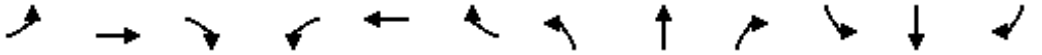
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 28.1	Intersection LOS: C
Intersection Capacity Utilization 86.2%	ICU Level of Service E
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Maine Ave & Combee Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	309	0	176	6	0	14	210	765	15	11	680	200
Future Volume (veh/h)	309	0	176	6	0	14	210	765	15	11	680	200
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1810	1900	1810	1810	1810	1810	1900	1810	1810	1810
Adj Flow Rate, veh/h	336	0	191	7	0	15	228	832	16	12	739	217
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5	5	5	5	5	5	5
Cap, veh/h	302	0	269	52	0	47	277	1102	21	357	856	728
Arrive On Green	0.17	0.00	0.17	0.03	0.00	0.03	0.18	1.00	1.00	0.47	0.47	0.47
Sat Flow, veh/h	1723	0	1538	1723	0	1538	1723	1769	34	629	1810	1538
Grp Volume(v), veh/h	336	0	191	7	0	15	228	0	848	12	739	217
Grp Sat Flow(s),veh/h/ln	1723	0	1538	1723	0	1538	1723	0	1804	629	1810	1538
Q Serve(g_s), s	21.0	0.0	14.0	0.5	0.0	1.1	8.2	0.0	0.0	1.2	43.7	10.4
Cycle Q Clear(g_c), s	21.0	0.0	14.0	0.5	0.0	1.1	8.2	0.0	0.0	1.2	43.7	10.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	302	0	269	52	0	47	277	0	1124	357	856	728
V/C Ratio(X)	1.11	0.00	0.71	0.13	0.00	0.32	0.82	0.00	0.75	0.03	0.86	0.30
Avail Cap(c_a), veh/h	302	0	269	195	0	174	277	0	1124	357	856	728
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.38	0.00	0.38	0.53	0.53	0.53
Uniform Delay (d), s/veh	49.5	0.0	46.6	56.6	0.0	57.0	22.3	0.0	0.0	17.0	28.2	19.4
Incr Delay (d2), s/veh	86.1	0.0	8.4	1.1	0.0	3.9	10.1	0.0	1.8	0.1	6.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.2	0.0	6.6	0.2	0.0	0.5	4.5	0.0	0.6	0.2	23.3	4.5
LnGrp Delay(d),s/veh	135.6	0.0	55.0	57.8	0.0	60.9	32.4	0.0	1.8	17.1	34.6	20.0
LnGrp LOS	F		D	E		E	C		A	B	C	B
Approach Vol, veh/h		527			22			1076			968	
Approach Delay, s/veh		106.4			59.9			8.3			31.1	
Approach LOS		F			E			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	18.0	64.0		10.0		82.0		28.0
Change Period (Y+Rc), s	* 7.2	* 7.2		6.4		* 7.2		7.0
Max Green Setting (Gmax), s	* 11	* 47		13.6		* 65		21.0
Max Q Clear Time (g_c+I1), s	10.2	45.7		3.1		2.0		23.0
Green Ext Time (p_c), s	0.0	0.7		0.0		7.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	37.2
HCM 2010 LOS	D

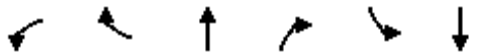
Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	257	55	98	991	815	157
Future Volume (veh/h)	257	55	98	991	815	157
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1810	1810	1810
Adj Flow Rate, veh/h	279	60	107	1077	886	171
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	305	272	455	1293	1097	933
Arrive On Green	0.18	0.18	0.05	0.71	1.00	1.00
Sat Flow, veh/h	1723	1538	1723	1810	1810	1538
Grp Volume(v), veh/h	279	60	107	1077	886	171
Grp Sat Flow(s),veh/h/ln	1723	1538	1723	1810	1810	1538
Q Serve(g_s), s	19.1	4.0	2.6	50.3	0.0	0.0
Cycle Q Clear(g_c), s	19.1	4.0	2.6	50.3	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	305	272	455	1293	1097	933
V/C Ratio(X)	0.92	0.22	0.24	0.83	0.81	0.18
Avail Cap(c_a), veh/h	320	286	455	1293	1097	933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.44	0.44	0.58	0.58
Uniform Delay (d), s/veh	48.5	42.3	7.0	12.1	0.0	0.0
Incr Delay (d2), s/veh	28.9	0.4	0.5	3.0	3.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	1.7	1.3	25.9	1.2	0.1
LnGrp Delay(d),s/veh	77.4	42.7	7.5	15.0	3.8	0.3
LnGrp LOS	E	D	A	B	A	A
Approach Vol, veh/h	339			1184	1057	
Approach Delay, s/veh	71.3			14.3	3.2	
Approach LOS	E			B	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	13.0	80.1				93.1		26.9
Change Period (Y+Rc), s	7.3	7.3				7.3		5.7
Max Green Setting (Gmax), s	5.7	71.7				84.7		22.3
Max Q Clear Time (g_c+I1), s	4.6	2.0				52.3		21.1
Green Ext Time (p_c), s	0.0	8.9				10.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B



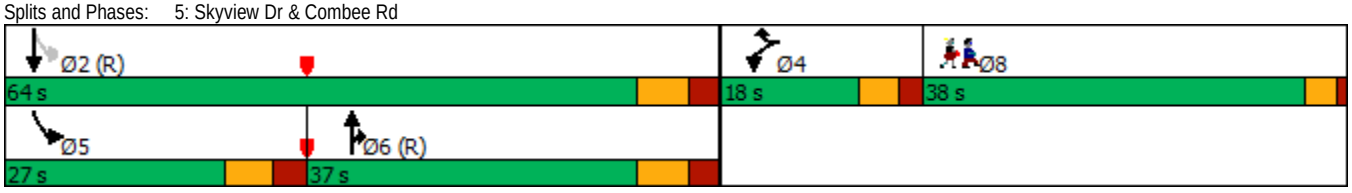
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Lane Configurations							
Traffic Volume (vph)	185	212	958	230	235	778	
Future Volume (vph)	185	212	958	230	235	778	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	215	0		275	240		
Storage Lanes	1	1		1	1		
Taper Length (ft)	140				50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor	0.79						
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1719	1538	1810	1538	1719	1810	
Flt Permitted	0.950				0.059		
Satd. Flow (perm)	1364	1538	1810	1538	107	1810	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		230		115			
Link Speed (mph)	30		40			40	
Link Distance (ft)	3473		673			716	
Travel Time (s)	78.9		11.5			12.2	
Confl. Peds. (#/hr)	42	42					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	201	230	1041	250	255	846	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	201	230	1041	250	255	846	
Turn Type	Prot	Prot	NA	Prot	pm+pt	NA	
Protected Phases	4	4	6	6	5	2	8
Permitted Phases					2		
Detector Phase	4	4	6	6	5	2	
Switch Phase							
Minimum Initial (s)	7.0	7.0	12.0	12.0	5.0	12.0	15.0
Minimum Split (s)	12.8	12.8	19.5	19.5	12.4	19.5	22.0
Total Split (s)	18.0	18.0	37.0	37.0	27.0	64.0	38.0
Total Split (%)	15.0%	15.0%	30.8%	30.8%	22.5%	53.3%	32%
Maximum Green (s)	12.2	12.2	29.5	29.5	19.6	56.5	34.0
Yellow Time (s)	3.7	3.7	4.5	4.5	4.4	4.5	3.0
All-Red Time (s)	2.1	2.1	3.0	3.0	3.0	3.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8	5.8	7.5	7.5	7.4	7.5	
Lead/Lag	Lead	Lead	Lag	Lag	Lead		Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max	None
Walk Time (s)							7.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							20
Act Effct Green (s)	12.2	12.2	62.9	62.9	85.8	85.7	
Actuated g/C Ratio	0.10	0.10	0.52	0.52	0.72	0.71	
v/c Ratio	1.16	0.64	1.10	0.29	0.90	0.65	
Control Delay	163.6	15.0	81.6	13.7	61.0	6.5	
Queue Delay	0.1	5.3	1.2	0.0	0.0	1.5	
Total Delay	163.7	20.4	82.7	13.7	61.0	7.9	
LOS	F	C	F	B	E	A	
Approach Delay	87.2		69.3			20.2	
Approach LOS	F		E			C	
Queue Length 50th (ft)	~183	0	598	46	143	17	
Queue Length 95th (ft)	#336	78	m#1450	m114	m132	m398	
Internal Link Dist (ft)	3393		593			636	
Turn Bay Length (ft)	215			275	240		
Base Capacity (vph)	174	362	948	860	354	1292	
Starvation Cap Reductn	0	0	0	0	0	255	
Spillback Cap Reductn	1	81	68	0	0	91	
Storage Cap Reductn	0	0	0	0	0	0	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Reduced v/c Ratio	1.16	0.82	1.18	0.29	0.72	0.82	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 52.9		Intersection LOS: D	
Intersection Capacity Utilization 90.9%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Skyview Dr & Combee Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	303	145	186	1007	915	100
Future Volume (veh/h)	303	145	186	1007	915	100
Number	3	18	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1810	1810	1810
Adj Flow Rate, veh/h	329	158	202	1095	995	109
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	349	311	205	1255	1013	861
Arrive On Green	0.20	0.20	0.08	0.69	0.56	0.56
Sat Flow, veh/h	1723	1538	1723	1810	1810	1538
Grp Volume(v), veh/h	329	158	202	1095	995	109
Grp Sat Flow(s),veh/h/ln	1723	1538	1723	1810	1810	1538
Q Serve(g_s), s	22.6	11.0	9.1	56.4	64.5	4.0
Cycle Q Clear(g_c), s	22.6	11.0	9.1	56.4	64.5	4.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	349	311	205	1255	1013	861
V/C Ratio(X)	0.94	0.51	0.99	0.87	0.98	0.13
Avail Cap(c_a), veh/h	349	311	205	1255	1013	861
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	47.2	42.5	39.0	14.3	25.8	12.5
Incr Delay (d2), s/veh	33.6	1.3	15.8	0.9	24.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.0	4.8	7.6	28.0	38.9	1.8
LnGrp Delay(d),s/veh	80.7	43.9	54.8	15.2	50.0	12.8
LnGrp LOS	F	D	D	B	D	B
Approach Vol, veh/h	487			1297	1104	
Approach Delay, s/veh	68.8			21.3	46.4	
Approach LOS	E			C	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	16.0	74.0				90.0		30.0
Change Period (Y+Rc), s	* 6.7	* 6.8				* 6.8		5.7
Max Green Setting (Gmax), s	* 9.3	* 67				* 83		24.3
Max Q Clear Time (g_c+I1), s	11.1	66.5				58.4		24.6
Green Ext Time (p_c), s	0.0	0.5				10.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	38.9
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.