Project Development and Environment Study

S.R. 31

From S.R. 80 (Palm Beach Blvd) to S.R. 78 (Bayshore Rd.)

Project Traffic Analysis Report
Addendum

Financial Project ID: 441942-1-22-01
ETDM No.: 14359
Lee County, Florida

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.

Prepared for the

Florida Department of Transportation
District One

FDOT Project Manager:
Patrick Bateman, PE.
Florida Department of Transportation
District One
801 N. Broadway Avenue
Bartow, Florida 33830

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Section 1.0
EXECUTIVE SUMMARY

This is an addendum to the Project Traffic Analysis Report (PTAR) which was submitted in April 2020. This addendum was prepared to document the following:

- The change of project analysis years to Opening Year (2025) and Design Year (2045) to be consistent with the "*SR 31 PD&E Study from SR 78 to Cook Brown Road*", which is to the immediate north of this study. The PTAR submitted in April 2020 shows Opening Year (2026) and Design Year (2046).
- Revised safety evaluation of SR 31 study corridor (segment only) for a five-year period of 2017-2021.
- Revisions to Annual Average Daily Traffic (AADT) and Design Hour Volumes (DHVs) along the study corridor as a result of the proposed SR 31 realignment to the east and the proposed access modifications.
- Traffic evaluation of the directional median openings located at NW Development Driveway N/RaceTrac Driveway N & LJ's Lounge Driveway and the traffic evaluation of the proposed full median opening at Marina & Restaurant Entrance. This full median opening was developed because of the proposed realignment of SR 31 study corridor to the east.

Based on the future year analysis results, the SR 31 study corridor in the No-Build condition is not expected to operate at acceptable LOS condition (LOS D) or better, under both Opening Year (2025) and Design Year (2045) conditions. In the Build condition, the proposed widening of SR 31 to a six-lane facility is expected to improve traffic operations within the study area. The intersection and median opening traffic conditions in the Opening Year (2025) and Design Year (2045) are discussed in the following subsections.

1.1 SR 31 at SR 80 Intersection

Screening of intersection alternatives for the SR 31 at SR 80 signalized intersection were performed utilizing FDOT's Intersection Control Evaluation (ICE) process and documented separately. Please refer to the "*ICE Technical Analysis Memorandum – Traffic and Safety Analysis at SR 80 and SR 31, Lee County, FL, August 2022*" for the intersection control strategies that were identified and evaluated as part of this PD&E Study.

1.2 Directional Median Openings

Under Build (**Alternative A**) w/ at-grade SR 31 at SR 80 intersection geometry, the proposed directional median openings along SR 31 located at the Frontage Roads (NW Development Driveway N/ RaceTrac Driveway N) and LJ's Lounge are expected to perform at acceptable LOS conditions (LOS D) or better, for the Opening Year (2025). However, in the Design Year (2045) the left turns at the directional median openings are expected to experience excessive delays.

Under Build (**Alternative B**) w/ grade-separated crossover SR 31 at SR 80 intersection geometry, the proposed directional median opening along LJ's Lounge is expected to perform at acceptable LOS conditions (LOS D) or better, for the Opening Year (2025). Similar to Build **Alternative A**, in the Design Year (2045) the left turns at the LJ's Lounge directional median opening are expected to experience excessive delays.

In the Design Year (2045), the directional median openings are expected to experience excessive delays. To address this, closing the directional median openings should be considered as a long-term improvement with the directional median openings serving as an interim solution. In **Alternative A**, the northbound and southbound left-turn operations will be impacted at the SR 80 intersection and the Marina Drive (Dock Entrance)/ Restaurant Driveway intersection as the U-turns will share the left-turn lane to make this movement. In **Alternative B**, only the northbound left-turn operations will be impacted at the Marina Drive (Dock Entrance)/ Restaurant Driveway intersection as the U-turns will have to share the left-turn lane to make this movement. The southbound left-turn operations (which are grade-separated via a cross-over intersection) will not be impacted as the U-turning traffic will be using the proposed Texas U-turn at the SR 80 intersection.

1.3 SR 31 at Marina and Restaurant Entrance Intersection

The combined Marina Drive (Dock Entrance)/Restaurant Driveway intersection with the proposed realignment of SR 31 showed a need for signalization starting from the Opening Year (2025) conditions based on Synchro operational evaluation and warrants analysis, where warrants 1 and 2 were satisfied.

Section 2.0
TRAFFIC ANALYSIS ASSUMPTIONS

No change from the PTAR submitted in April 2020.

Section 3.0
INTRODUCTION

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environmental (PD&E) Study (Financial Project Number – 441942-1-22-01) for SR 31 from SR 80 (Palm Beach Boulevard) to SR 78 (Bayshore Road) in Lee County, Florida. This is an addendum to the Project Traffic Analysis Report (PTAR) which was submitted in April 2020. This addendum was prepared to document the following:

- The change of project analysis years to Opening Year (2025) and Design Year (2045) to be consistent with the "SR 31 PD&E Study from SR 78 to Cook Brown Road", which is to the immediate north of this study. The PTAR submitted in April 2020 shows Opening Year (2026) and Design Year (2046).
- Revised safety evaluation of SR 31 study corridor (segment only) for a five-year period of 2017-2021.
- Revisions to Annual Average Daily Traffic (AADT) and Design Hour Volumes (DHVs) along the study corridor as a result of the proposed SR 31 realignment to the east and the proposed access modifications.
- Traffic evaluation of the directional median openings located at NW Development Driveway N/RaceTrac Driveway N & LJ's Lounge Driveway and the traffic evaluation of the proposed full median opening at Marina & Restaurant Entrance. This full median opening was developed because of the proposed realignment of SR 31 study corridor to the east.

Screening of intersection alternatives for the SR 31 at SR 80 signalized intersection were performed utilizing FDOT's Intersection Control Evaluation (ICE) process and documented separately. Please refer to the "*ICE Technical Analysis Memorandum – Traffic and Safety Analysis at SR 80 and SR 31, Lee County, FL, August 2022*" for the intersection control strategies that were identified and evaluated as part of this PD&E Study.

3.1 Description of the Project

No change from the PTAR submitted in April 2020.

3.2 Objective

No change from the PTAR submitted in April 2020.

3.3 Methodology

No change from the PTAR submitted in April 2020.

3.4 Transportation Plan Consistency

No change from the PTAR submitted in April 2020.

Section 4.0
TRAFFIC ANALYSIS METHOD

No change from the PTAR submitted in April 2020.

Section 5.0
EXISTING CONDITIONS

No change from the PTAR submitted in April 2020 except safety evaluation section.

5.1 Existing Roadway Characteristics

No change from the PTAR submitted in April 2020.

5.2 Multi-Modal Facilities

No change from the PTAR submitted in April 2020.

5.3 Traffic Data Collection

No change from the PTAR submitted in April 2020.

5.4 Existing Design Traffic Characteristics

No change from the PTAR submitted in April 2020.

5.4.1 K Factor

No change from the PTAR submitted in April 2020.

5.4.2 D Factor

No change from the PTAR submitted in April 2020.

5.4.3 T_{24} Factor

No change from the PTAR submitted in April 2020.

5.5 Existing Year (2019) LOS Analysis

No change from the PTAR submitted in April 2020.

5.5.1 Existing Roadway LOS Analysis

No change from the PTAR submitted in April 2020.

5.5.2 Existing Year HCM Capacity Analysis

No change from the PTAR submitted in April 2020.

5.5.3 Existing Intersection Analysis – Synchro

No change from the PTAR submitted in April 2020.

5.6 Safety Evaluation

In addition to the traffic operations, safety is an important consideration in evaluating intersection alternatives. Typically, historical crash data is reviewed to gain an understanding of the current crash patterns at study intersections. Crash records were reviewed, and various crash metrics are summarized to support identification and evaluation of alternatives.

5.6.1 Historic Crash Summary

Crash data for the SR 31 segment between SR 80 and SR 78 was obtained for the most recent five-year period (2017 -2021) from FDOT D1 (2018-2021) and SSOGis (2017). The crash data obtained for this study is provided in **Appendix A**. A total of 33 crashes were reported during the five-year analysis period. Number of crashes per year varied from one to thirteen. **Figure 5-1** shows the crashes by year. Out of the 33 crashes reported, one (3%) fatal crash, eleven (33%) of the crashes resulted in injuries and the remaining 21 (64%) were property damage only crashes. A pedestrian was involved in the fatal crash which occurred during the daylight, clear weather, dry roadway surface condition and the event happened on the shoulder along SR 31. Based on the long report, the vehicle was traveling southbound on SR 31, north of Palm Beach Boulevard and the pedestrian was walking northbound on the west side paved shoulder. The front right of the vehicle collided with the pedestrian. Rear-end crashes accounted for 34% (11) of the total crashes. Majority of crashes (64%) occurred under daylight conditions. 3 (9%) crashes occurred under wet road surface conditions. **Figure 5-2** shows the summary of crashes by severity, crash type, lighting conditions and road surface conditions. Crash locations based on type of crashes and severity are depicted on **Figure 5-3 and 5-4**, respectively.

5.6.2 Intersection and Location Specific Crashes

Please refer to the ICE memorandum prepared for the SR 31 at SR 80 intersection for crash analysis related to this intersection.

A total seven crashes were reported at the West Marina Drive intersection. Major contributing factors are rear-ended (43%), head-on (29%), and angle crashes (14%).

Over a period of five years (2017-2021), there were ten crashes that took place on the drawbridge. Out of these crashes, 60% (6) were rear-end collisions which were caused by failure to stop.

Figure 5-1: SR 31 Segment Crash History

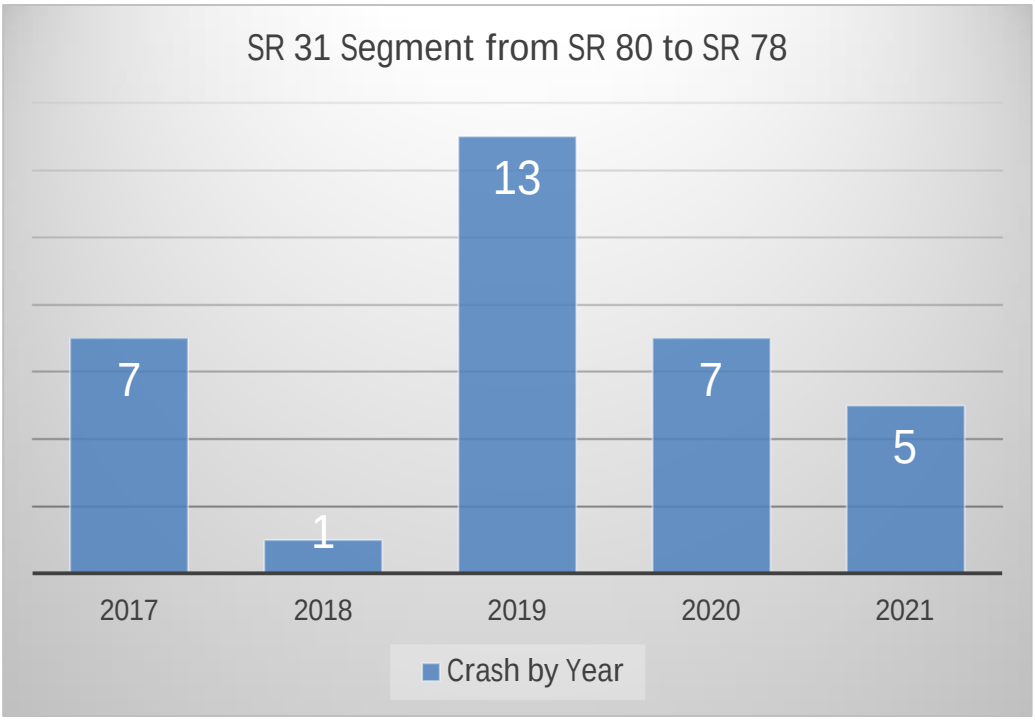


Figure 5-2: SR 31 Segment Crash Summary (2017-2021)

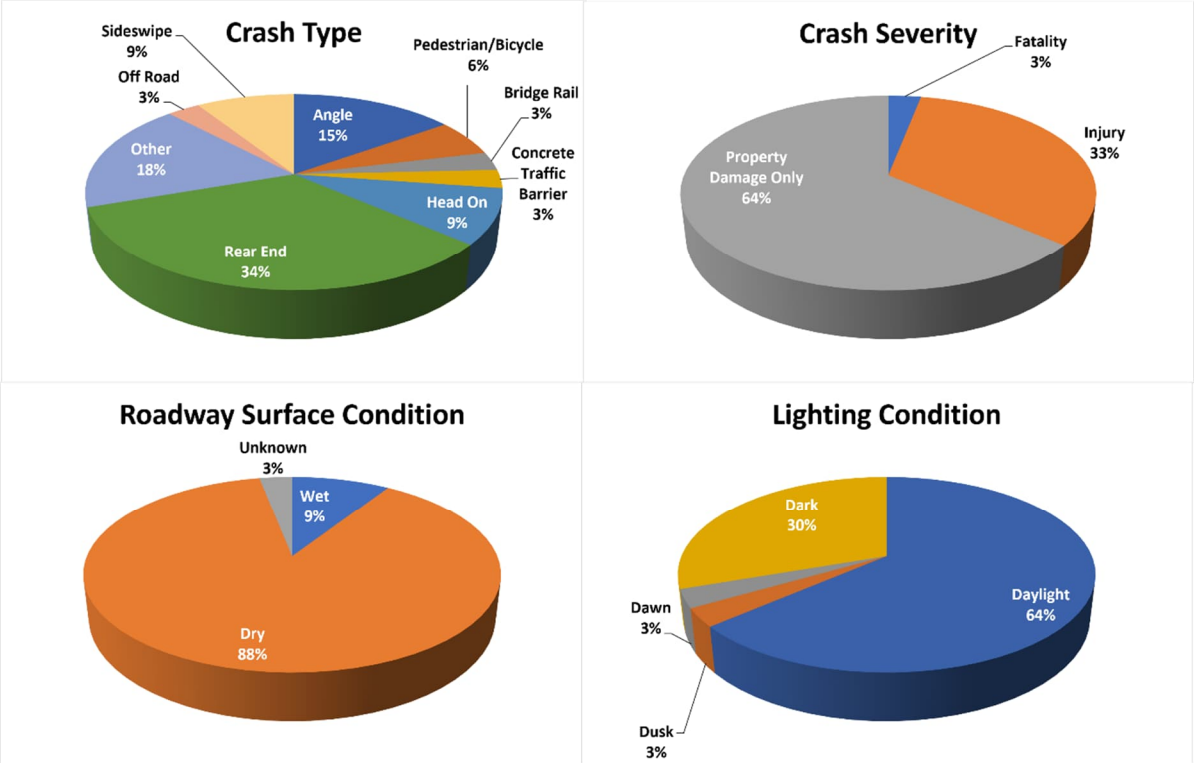


Figure 5-3: Location and Type of Crashes

Figure 5-4: Location and Severity of Crashes

5.6.3 Segment Crash Safety Ratio

Segment crash safety ratio was calculated to compare the annual crash rate of the midblock of SR 31 to the critical crash rate of similar segment throughout District One, Lee County. This method has historically been used by the FDOT and some local agencies to identify high crash locations. This method considers the traffic volumes at specific sites, considers the variance in crash data by including regional or statewide averages, and classifies roadway/intersection types into categories for more applicable comparisons. However, the safety crash ratio method includes the following limitations:

- Assumes a linear relationship between traffic volume and crashes
- Does not consider crash severity

The critical crash rate is based on the average crash rate for a similar facility adjusted by vehicle exposure and a probability constant. The safety ratio represents the actual crash rate divided by the critical crash rate. If a segment has an actual crash rate higher than the critical crash rate (i.e., safety ratio > 1.0), it may have a safety deficiency. Based on **Table 5-1**, the safety ratio for this segment is less than one. The crash rate calculation methodology is documented in **Appendix A**.

Table 5-1: Segment Crash Safety Ratio

Description	Total Crashes	Actual Crash Rate	Average Crash Rate*	Critical Crash Rate	Safety Ratio
SR 31 Segment	33	1.057	0.446	1.258	0.841

**FDOT CAR Lee County, 5-year Average Crash Rate (2015 - 2019). See Appendix A*

Crash Rate Crashes per Million Vehicle Miles Travelled (MVMT)

Rural 2-3Ln 2Wy Undivided

5.6.4 Highway Safety Manual (HSM) - Predictive Crash Analysis

The ICE memorandum completed for the SR 31 at SR 80 intersection includes predictive safety analysis for segment of SR 31study corridor from SR 80 to LJ's Lounge Driveway. This addendum includes predictive safety analysis for the SR 31 study segment from LJ's Lounge Driveway to south of SR 78, which is the northern section of the study corridor and the intersection of SR 31 at Marina Drive (Dock Entrance)/ Restaurant Entrance, which is also located in the northern section of the study corridor.

The No-Build crash prediction analysis was not conducted due to the limitation of the HSM tools for 2-lane roadway where the AADTs exceed the range of data used to develop one or more of the SPFs.

The Build crash prediction analysis was conducted using the NCHRP 17-58 (6 to 8 lane segments) (750-020-21d), which apply a combination of Safety Performance Functions (SPFs) and Crash Modification Factors (CMFs). It is important to note that the safety analysis tools available to date

are deterministic in nature and estimate future crashes mainly based on AADT and roadway characteristics.

Predictive crash analysis conducted for the SR 31 study segment estimated 7 crashes in the Opening Year (2025) and 15 in the Design Year (2045). Predictive crash analysis conducted for the Marina Drive (Dock Entrance)/ Restaurant Entrance intersection estimated 9 crashes in the Opening Year (2025) and 12 crashes in the Design Year (2045).

Predictive crash calculation sheets for the Build condition are provided in **Appendix B**.

Section 6.0
DEVELOPMENT OF FUTURE YEAR TRAFFIC FORECASTS

Future year traffic forecasts for the major roadways in the study area were developed by the Department as part of the PD&E study conducted on SR 31 from SR 80 to Cook Brown Road. These major roadway traffic forecasts and local developments adjacent to the project corridor were used to develop study corridor specific AADTs and DHVs for the No-Build condition and were documented in the "*Traffic Forecasts Memorandum*" prepared as part of this study.

The No-Build traffic forecasts and the access plan prepared for the Build alternatives was used to develop the Build traffic forecasts for this study. The Build alternatives access management plan is documented in the "*Access Management Memorandum*" prepared for this study.

6.1 Description of Alternatives

Based on discussions with the Department, No-Build Alternative and Build Alternatives were evaluated for Opening Year and Design Year. All the alternatives considered are described in this section.

6.1.1 No-Build Alternative

Similar to existing conditions, the No-Build Alternative assumes that the SR 31 project corridor is a two-lane arterial facility. The intersection geometries and driveway access locations were also assumed to be the same as existing in the No-Build condition.

6.1.2 Build Alternatives

Based on the forecasted future traffic demand, SR 31 is planned to be widened to a six-lane divided facility from SR 80 to Horseshoe Road and a four-lane divided facility from Horseshoe Road to Cook Brown Road. Therefore, within the project limits, SR 31 is assumed to be six-lane divided facility.

The proposed intersection geometries and median opening/ driveway access locations in the Build condition differ from the No-Build as the proposed corridor is a divided roadway. Also, in the proposed Build alternatives, the median opening/ driveway locations vary depending on whether SR 31 at SR 80 intersection is at-grade or grade-separated.

The location of median openings for Build (**Alternative A**) w/ at-grade SR 31 at SR 80 intersection geometry are listed below:

- Directional Median Openings:
  - SR 31 at Frontage Roads (NW Development Driveway N/ RaceTrac Driveway N)
  - SR 31 at LJ's Lounge

- Full Median Opening
  - SR 31 at Marina and Restaurant Entrance
  - SR 80 at RaceTrac Driveway E

The location of median openings for Build (**Alternative B**) w/ grade-separated crossover SR 31 at SR 80 intersection geometry are listed below:

- Directional Median Openings:
  - SR 31 at LJ's Lounge
  - SR 80 at RaceTrac Driveway E (eastbound directional median opening only)
- Full Median Opening
  - SR 31 at Marina and Restaurant Entrance

The screening of alternatives for the SR 31 at SR 80 signalized intersection were performed utilizing FDOT's ICE process and documented separately. Please refer to the "*ICE Technical Analysis Memorandum – Traffic and Safety Analysis at SR 80 and SR 31, Lee County, FL, August 2022*" for the intersection control strategies that were identified and evaluated as part of this PD&E Study.

Figure 6-1 shows the No-Build schematic diagram and the proposed Build configuration schematic diagrams with the revised alignment and access changes.

6.2 AADTs and DHVs

Figure 6-2 illustrates the No-Build and Build AADTs for the major road segments and driveways within the study area for Opening Year (2025) and Design Year (2045).

Figure 6-3 and **6-4** illustrates the No-Build DHVs for Opening Year (2025) and Design Year (2045), respectively.

Figure 6-5, 6-6, 6-7 and **6-8** illustrates the Build DHVs for Opening Year (2025) and Design Year (2045), respectively. The Build configuration assumes the proposed access changes along the project corridor to re-distribute the driveway traffic along the project corridor

6.3 Lane Geometry

Figure 6-9 and **6-10** illustrates the intersection geometry used for the Build analysis.

Figure 6-1: No-Build and Build Configuration Schematics

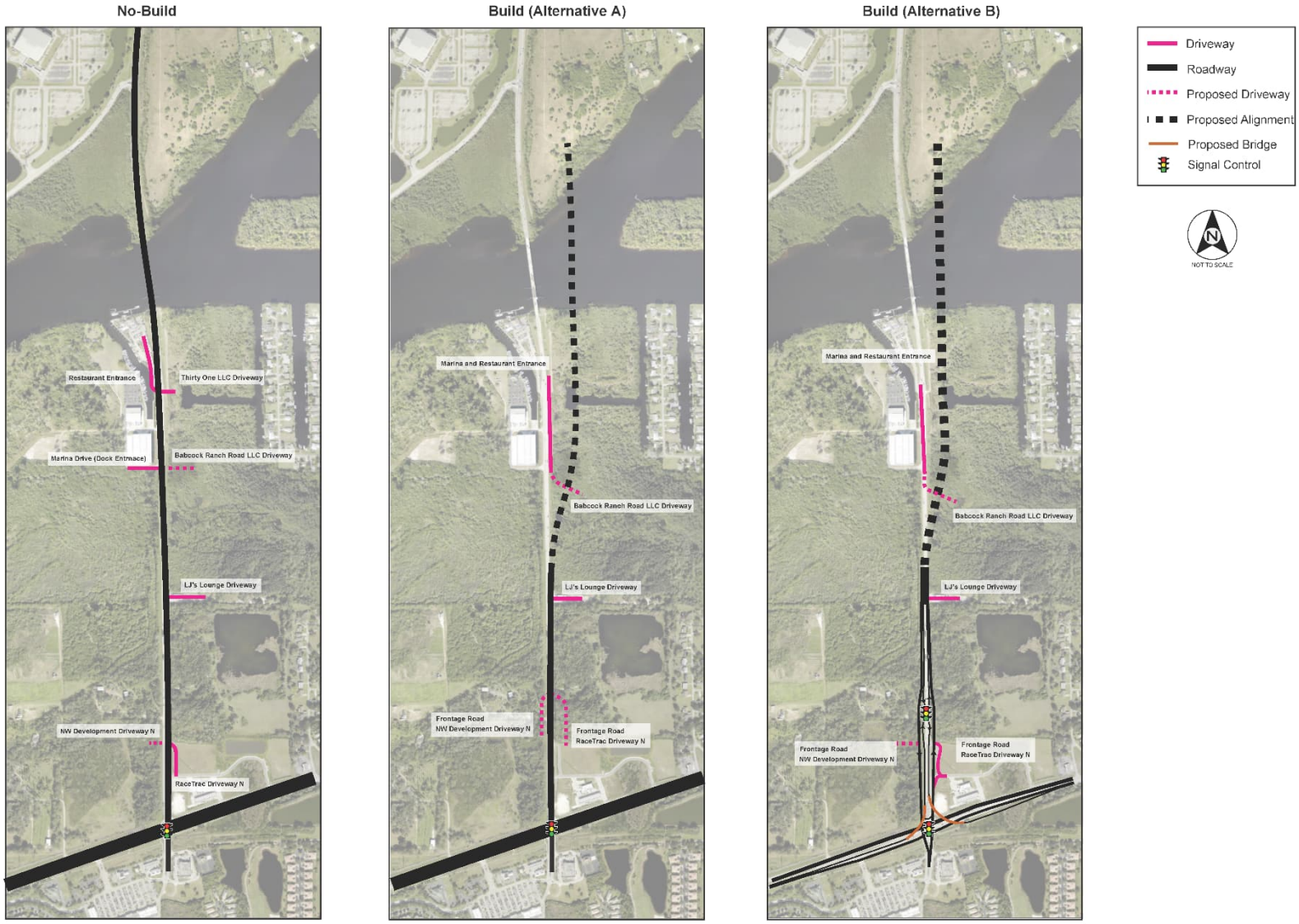
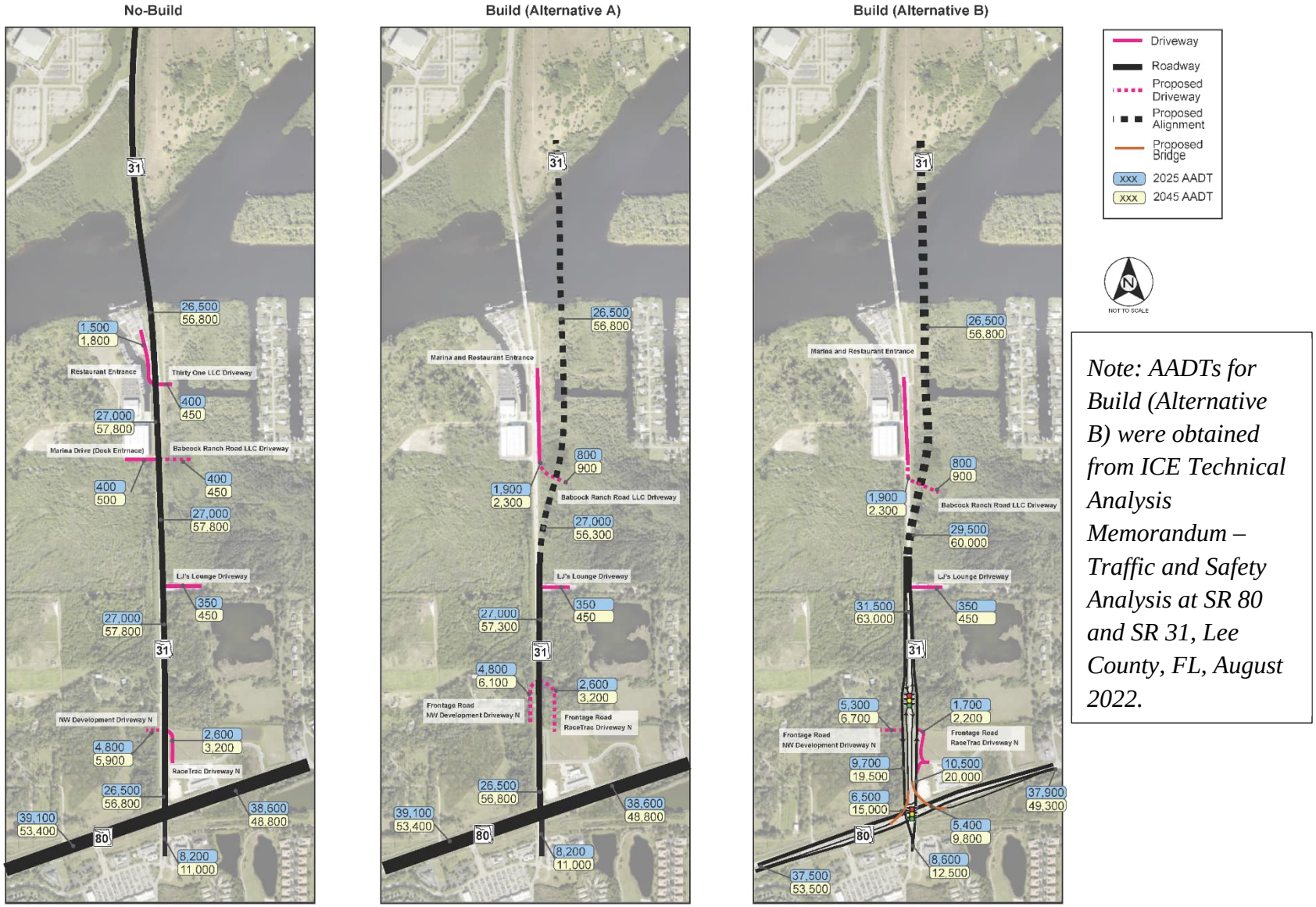


Figure 6-2: Annual Average Daily Traffic (AADT) Volumes



Note: AADTs for Build (Alternative B) were obtained from ICE Technical Analysis Memorandum – Traffic and Safety Analysis at SR 80 and SR 31, Lee County, FL, August 2022.

Figure 6-3: No-Build – Opening Year (2025) Design Hour Volumes

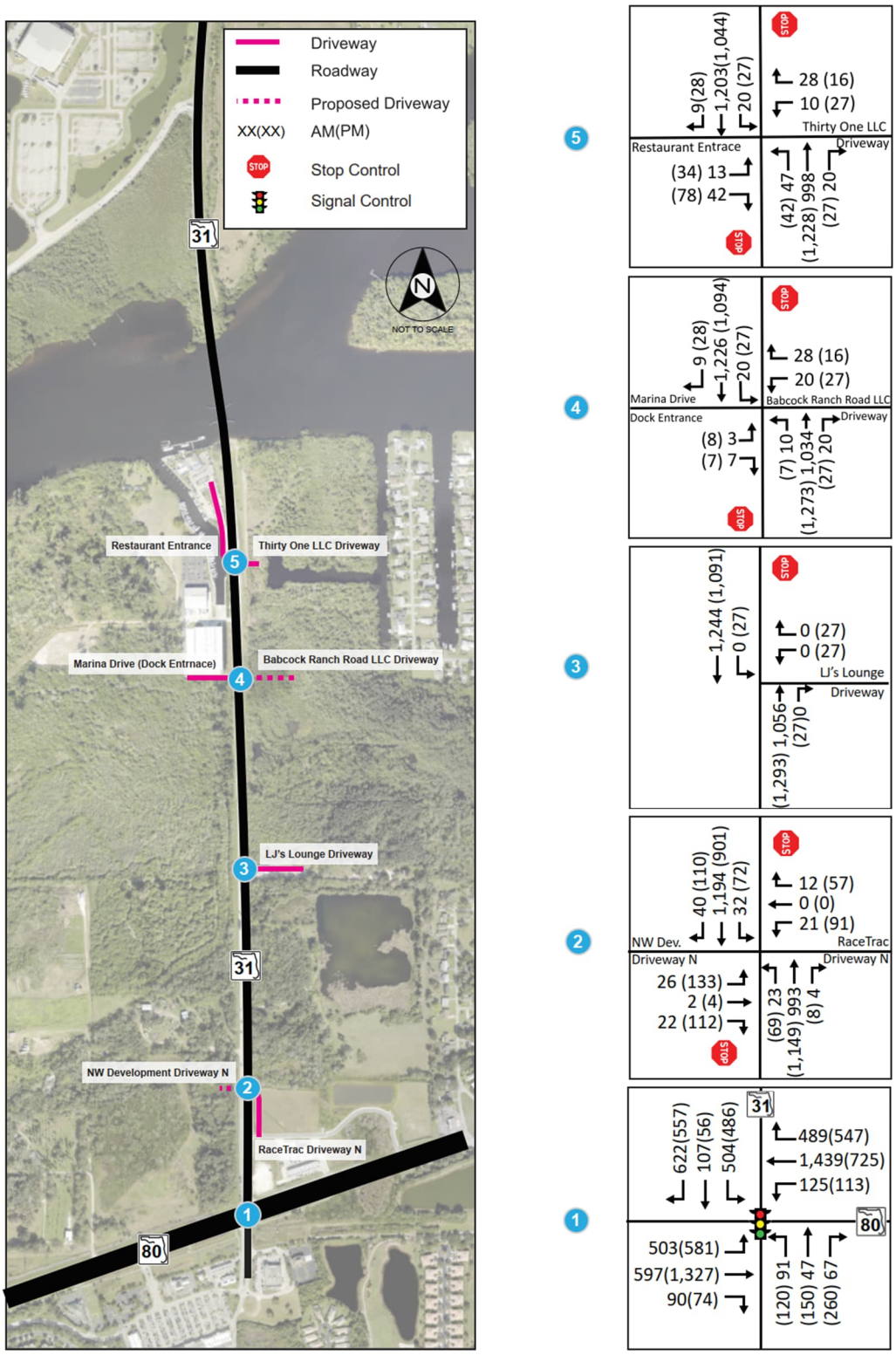


Figure 6-4: No-Build - Design Year (2045) Design Hour Volumes

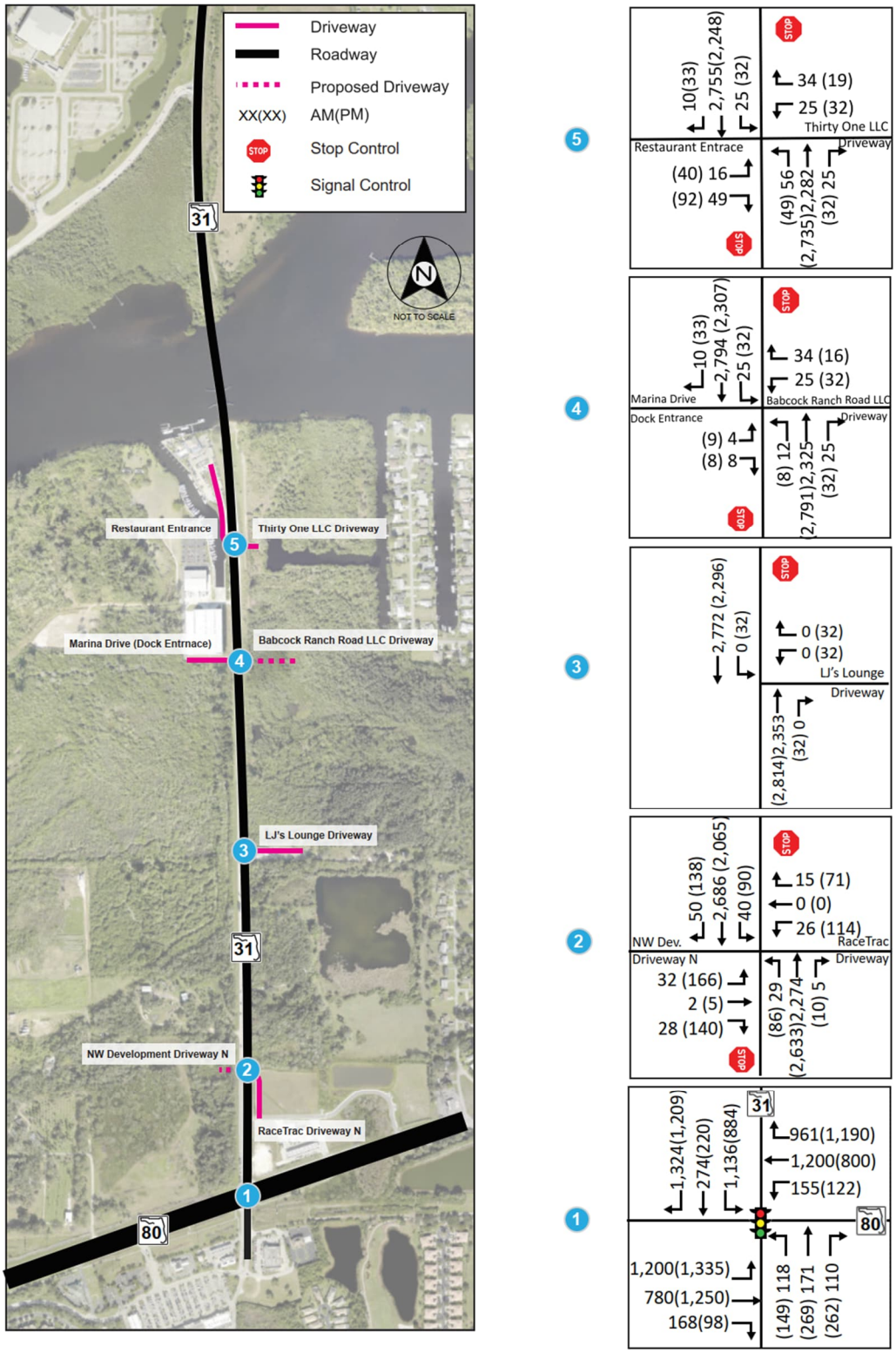


Figure 6-5: Build (Alternative A) – Opening Year (2025) Design Hour Volumes

AT-GRADE: SR 31 AT SR 80 INTERSECTION

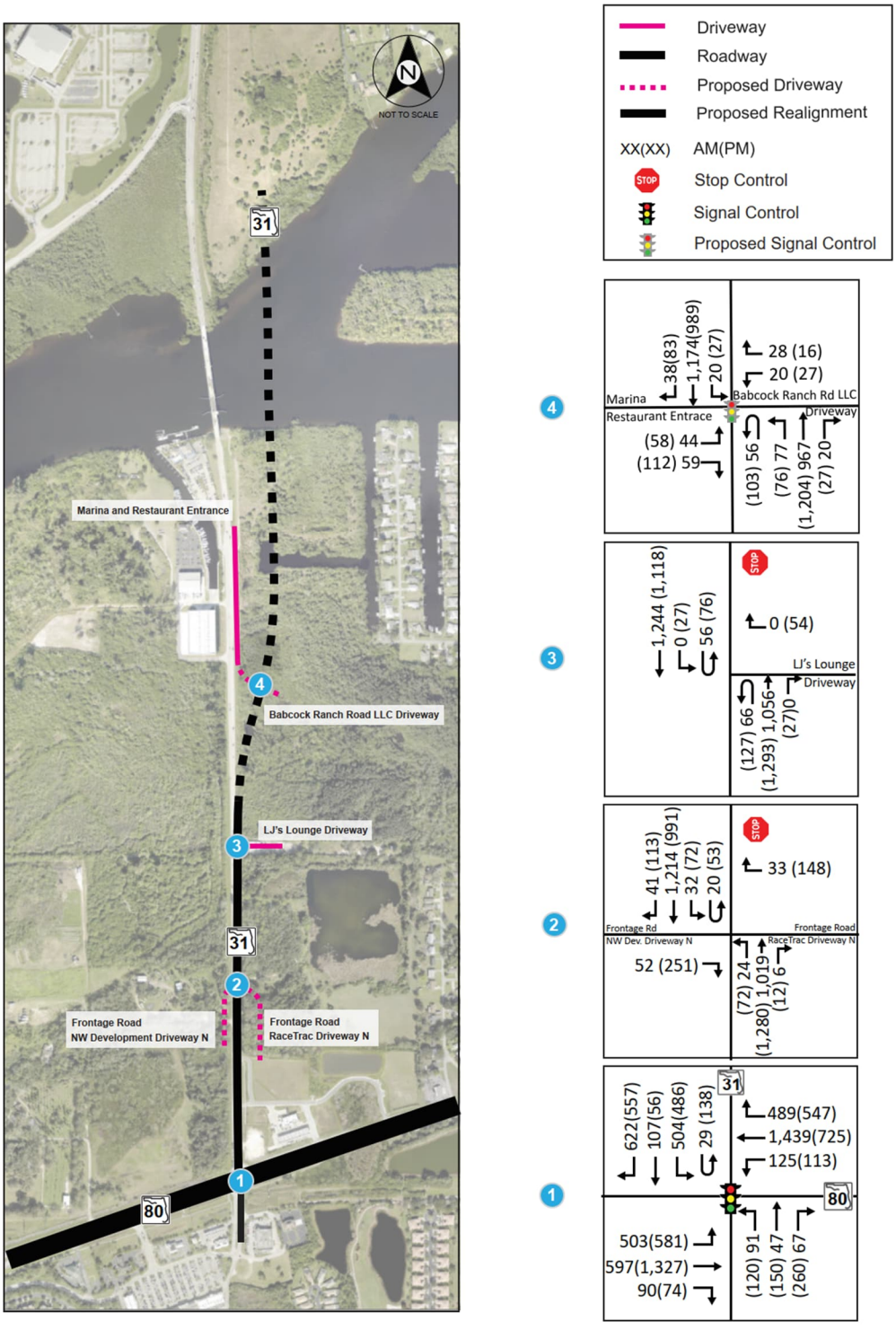


Figure 6-6: Build (Alternative A) - Design Year (2045) Design Hour Volumes

AT-GRADE: SR 31 AT SR 80 INTERSECTION

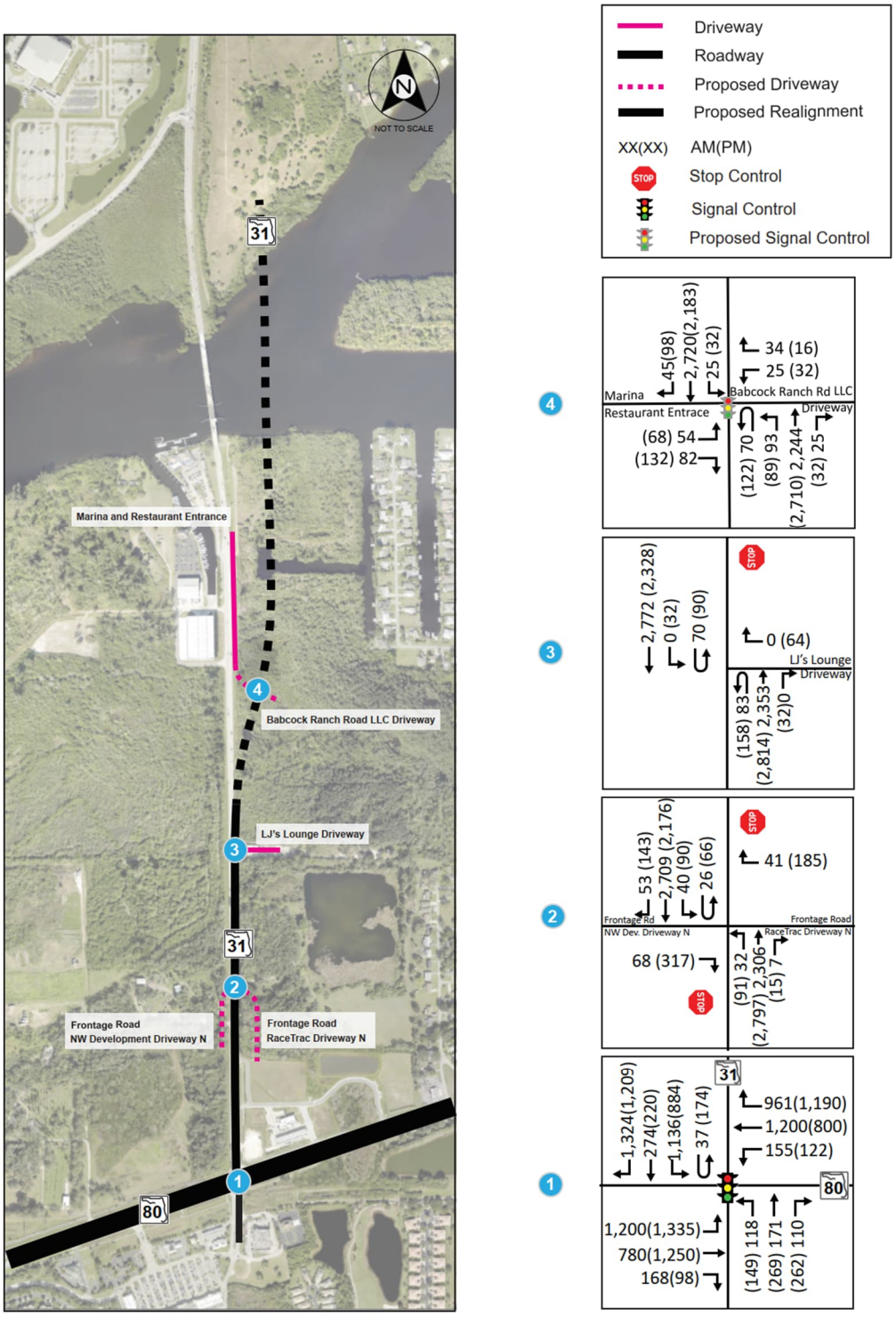


Figure 6-7: Build (Alternative B) – Opening Year (2025) Design Hour Volumes

FLYOVER OVERPASS WITH CROSSOVER: SR 31 AT SR 80 INTERSECTION

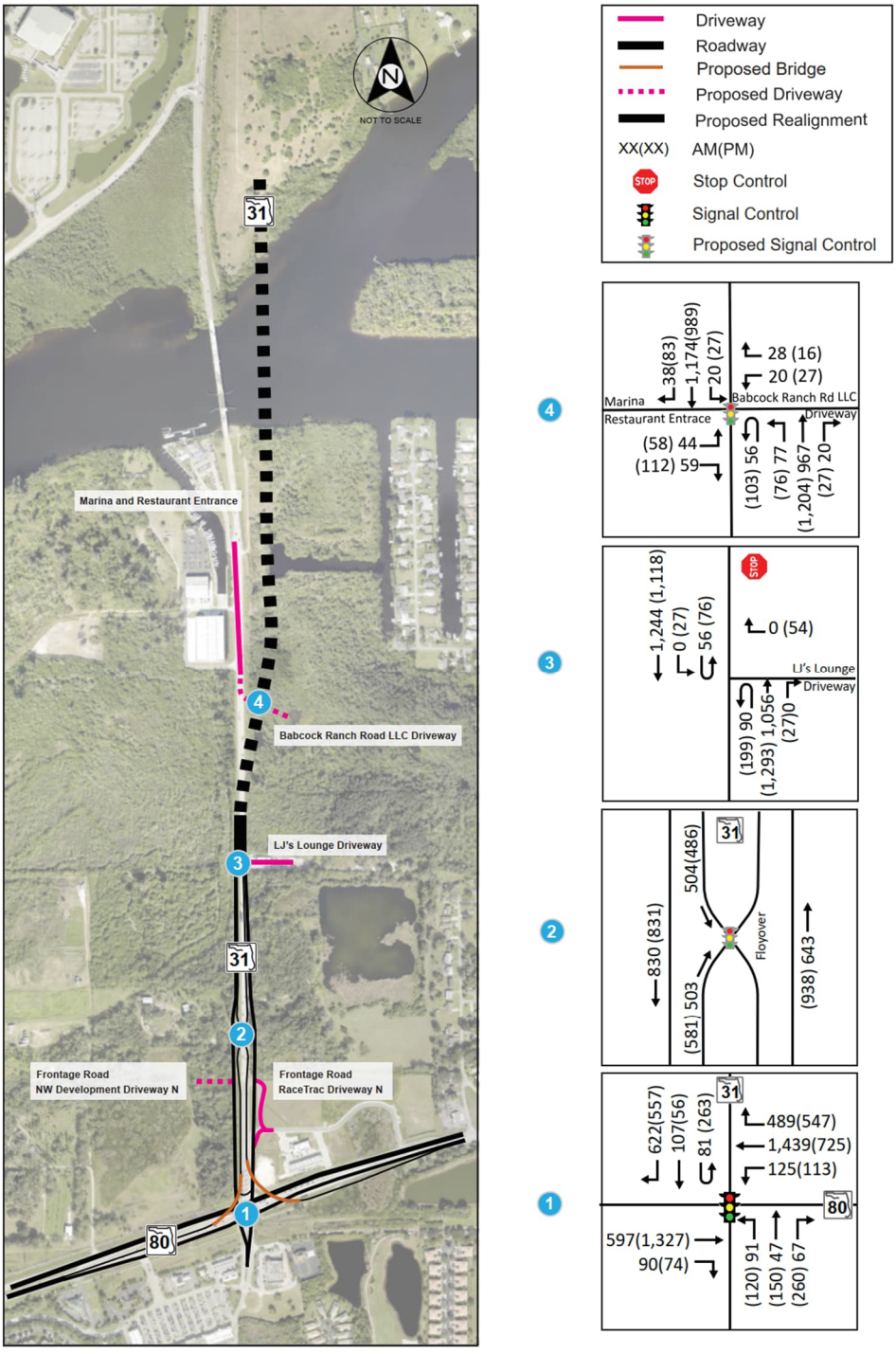


Figure 6-8: Build (Alternative B) - Design Year (2045) Design Hour Volumes

FLYOVER OVERPASS WITH CROSSOVER: SR 31 AT SR 80 INTERSECTION

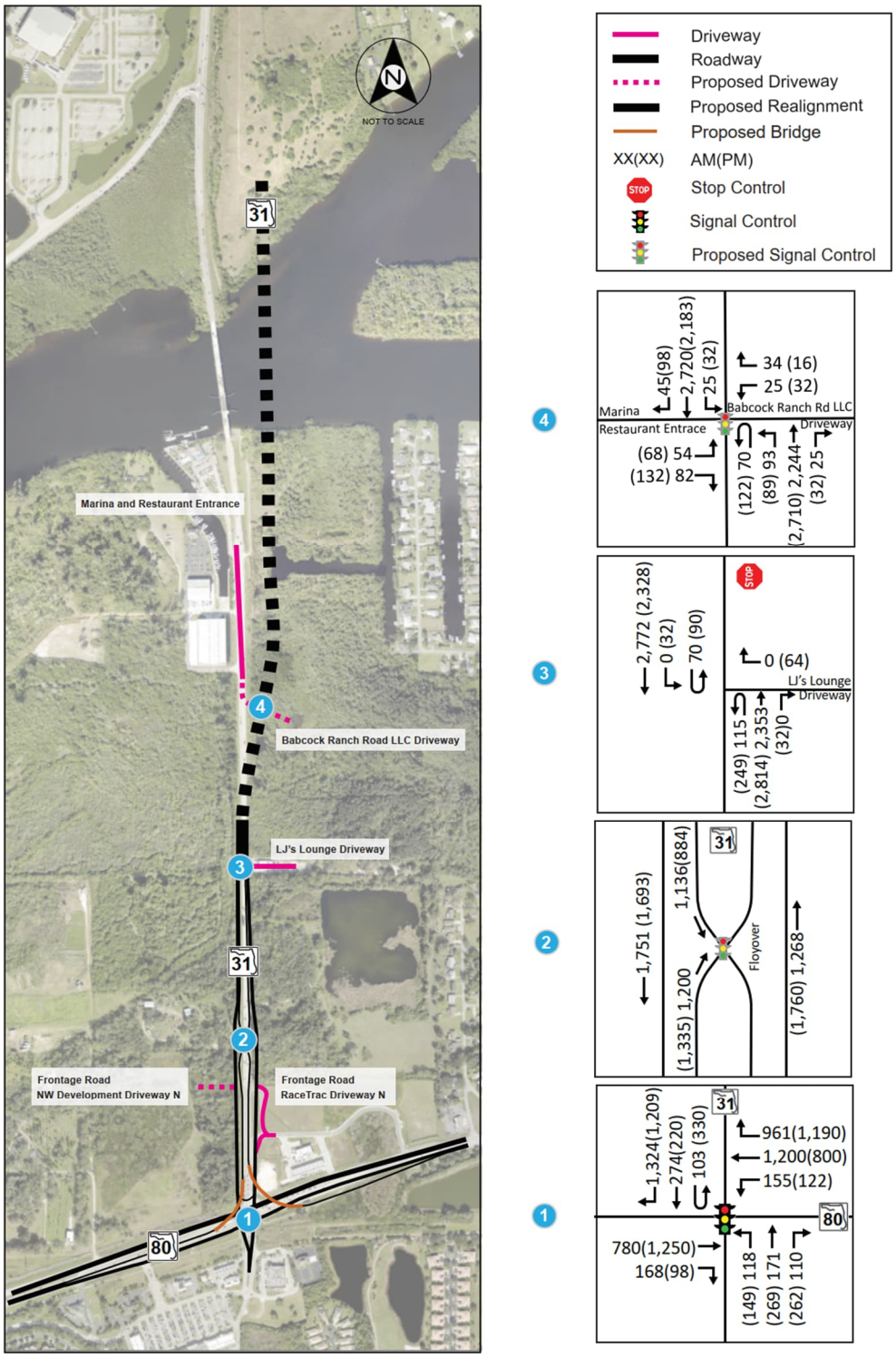


Figure 6-9: Build Alternative (Alternative A) – Lane Geometry

AT-GRADE: SR 31 AT SR 80 INTERSECTION

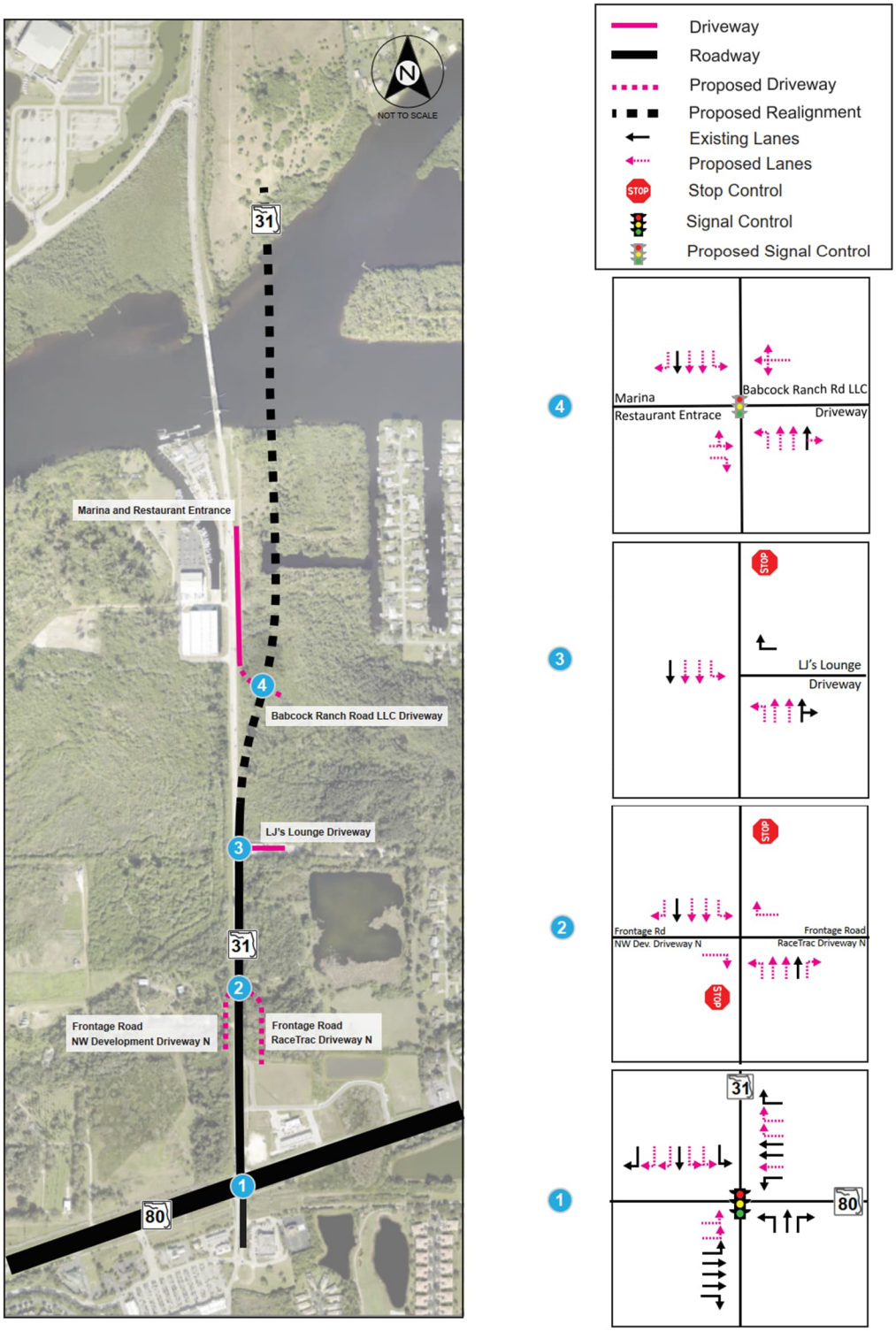
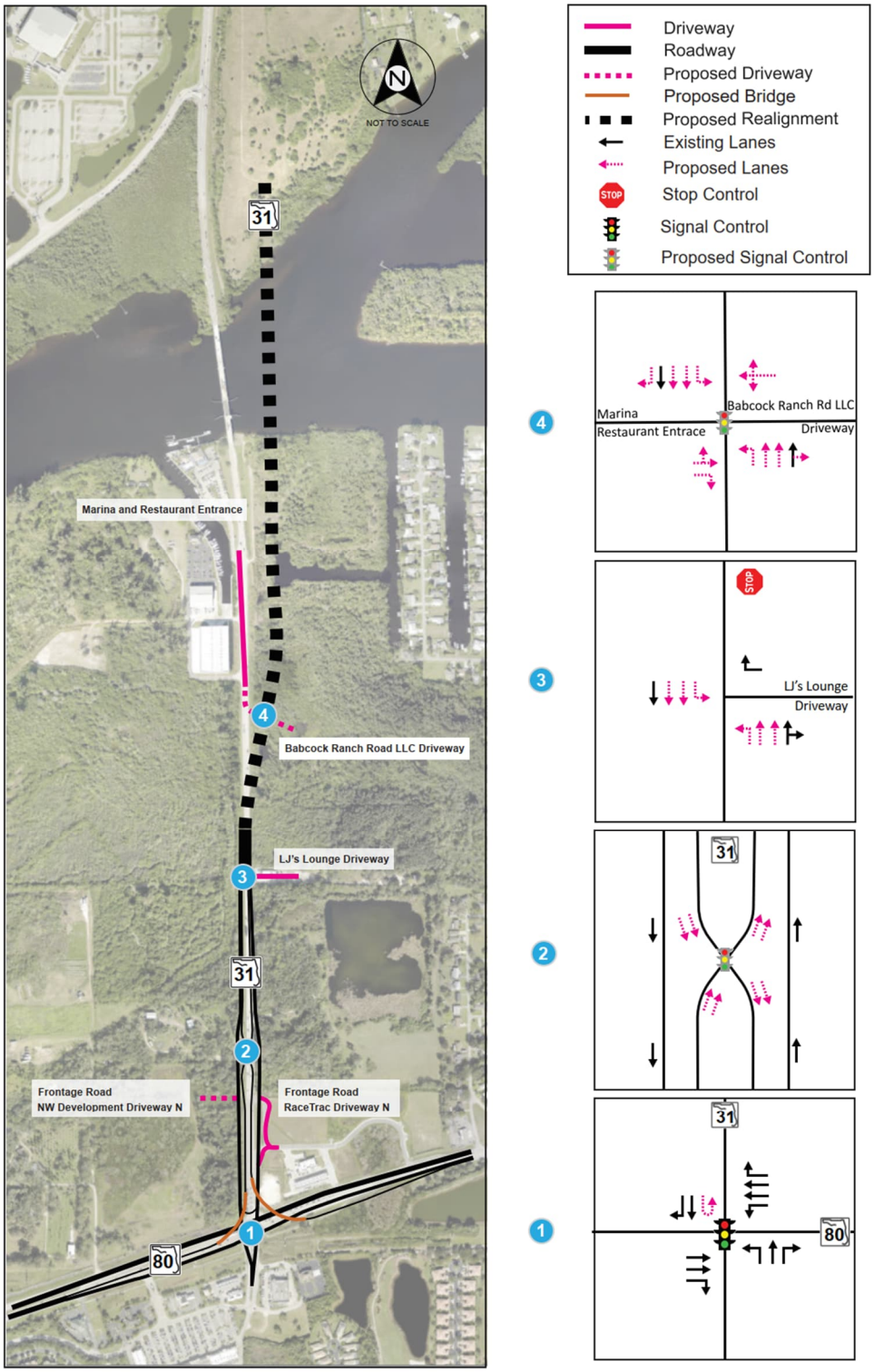


Figure 6-10: Build Alternative (Alternative B) – Lane Geometry

FLYOVER OVERPASS WITH CROSSOVER: SR 31 AT SR 80 INTERSECTION



Section 7.0
ALTERNATIVES ANALYSIS

Utilizing the forecasted volumes, future year capacity analyses was performed for opening year (2025) and design year (2045). This section provides a summary of the traffic analysis conducted for No-Build and Build alternatives. Screening of intersection alternatives for the SR 31 at SR 80 signalized intersection were performed utilizing FDOT's ICE process and documented separately. Please refer to the "*ICE Technical Analysis Memorandum – Traffic and Safety Analysis at SR 80 and SR 31, Lee County, FL, August 2022*" for the intersection control strategies that were identified and evaluated as part of this PD&E Study.

7.1 Future Year Roadway Analysis

No change from the PTAR submitted in April 2020. The analysis years changed to Opening Year (2025) and Design Year (2045). However, the traffic volumes used for the analysis remained the same.

7.1.1 No-Build Alternative HCM Capacity Analysis

No change from the PTAR submitted in April 2020.

7.1.2 Build Alternative HCM Capacity Analysis

No change from the PTAR submitted in April 2020.

7.2 Future Year Intersection Analysis

Intersection analysis was conducted using Synchro. The delay and LOS conditions at the signalized and unsignalized conditions were reported using the HCM 6th Edition module in Synchro. The following intersections were evaluated under the Build conditions:

- Directional Median Openings:
  - SR 31 at Frontage Roads (NW Development Driveway N/ RaceTrac Driveway N) – This directional median opening was proposed only with the at-grade (**Alternative A**) SR 31 and SR 80 intersection geometry.
  - SR 31 at LJ's Lounge – This directional median opening was proposed with both at-grade (**Alternative A**) and grade-separated (**Alternative B**) SR 31 and SR 80 intersection geometry
- Full Median Opening

  SR 31 at Marina and Restaurant Entrance (Signal) – Preliminary evaluation conducted for this median opening by assuming bi-directional and full median openings (without a signal) has shown excessive delay conditions for the traffic entering and exiting the Marina and Restaurant Entrance driveway. This median opening will remain signalized under both at-grade

(**Alternative A**) and grade-separated (**Alternative B**) SR 31 and SR 80 intersection geometry. **Appendix C** presents the preliminary synchro evaluation results for this median opening.

7.2.1 Warrants Analysis - SR 31 at Marina and Restaurant Entrance Intersection

In addition to the preliminary Synchro analysis conducted for the SR 31 at Marina and Restaurant Entrance intersection, a traffic signal warrants analysis as outlined in the Manual of Uniform Traffic Control Devices (MUTCD), was also performed for the Opening Year (2025) conditions using form 750-020-01. The eight-hour volumes required for future traffic evaluation were developed based on existing traffic counts collected at the Marina and Restaurant driveways and SR 31. The following warrants which were applicable for this future proposed intersection geometry were evaluated:

Warrant 1 (eight-hour vehicular volume) – This warrant is applicable where a large volume of intersecting traffic is the principal reason to consider a traffic signal. To meet this warrant, specific traffic volumes on the major street and the higher volume minor street approach must be met or exceeded for at least eight hours on an average day. Because the traffic volume on major street (SR 31) is heavy and the traffic on the minor intersecting street suffers excessive delay, the Interruption of Continuous Traffic, Condition B, volume thresholds were used in Warrant 1. In addition, the 70% volume level was used as one of the volume level criteria in accordance with the MUTCD guidelines as the proposed posted speed limit along SR 31 in the Build condition is 45 mph. This warrant was satisfied as Warrant 1 - Condition B is 100% met for eight hours.

Warrant 2 (four-hour vehicular volume) – Four Hour Vehicular Volumes: This warrant is intended to be applied where the volume of the intersecting traffic is the principal reason to install a traffic signal. This warrant requires the volumes of any four hours to be plotted above the applicable curve, shown on analysis sheets for Warrant 2. This warrant was satisfied as four-hour volumes were plotted above the applicable curve.

A summary of the warrant analysis results is presented in **Table 7-1**. The eight-hour peak volumes developed for warrants analysis and the signal warrants evaluation worksheets are presented in **Appendix D**.

Table 7-1: Warrants Analysis - SR 31 at Marina and Restaurant Entrance

Warrant #	Warrant Name	Satisfied (Yes/No)
		Year 2025
1	Eight-Hour Vehicular Volume	Yes
2	Four-Hour Vehicular Volume	Yes

7.2.2 No-Build Alternative Intersection Analysis

Intersection analysis was not conducted for the No-Build alternative as the segment analysis from the PTAR submitted in April 2020 reported LOS F conditions.

7.2.3 Build Alternative Intersection Analysis

The Build condition intersection evaluation was conducted for the Opening Year (2025) and Design Year (2045). The delay and LOS conditions are presented in **Table 7-2** and **7-3** when analyzed with at-grade SR 31 at SR 80 intersection geometry (**Alternative A**) for the Opening Year (2025) and Design Year (2045), respectively. The delay and LOS conditions are presented in **Table 7-4** and **7-5** when analyzed with grade-separated crossover SR 31 at SR 80 intersection geometry (**Alternative B**) for the Opening Year (2025) and Design Year (2045), respectively. **Appendix E** presents the Synchro analysis outputs for the Opening Year (2025) and Design Year (2045) conditions.

Directional Median Openings

Under Build (**Alternative A**) w/ at-grade SR 31 at SR 80 intersection geometry, the proposed directional median openings along SR 31 located at the Frontage Roads (NW Development Driveway N/ RaceTrac Driveway N) and LJ's Lounge are expected to perform at acceptable LOS conditions (LOS D) or better, for the Opening Year (2025). However, in the Design Year (2045) the left turns at the directional median openings are expected to experience excessive delays.

Under Build (**Alternative B**) w/ grade-separated crossover SR 31 at SR 80 intersection geometry, the proposed directional median opening along LJ's Lounge is expected to perform at acceptable LOS conditions (LOS D) or better, for the Opening Year (2025). Similar to Build (**Alternative A**), in the Design Year (2045) the left turns at the LJ's Lounge directional median opening are expected to experience excessive delays.

In the Design Year (2045), as the directional median openings were expected to experience excessive delays, closure of directional median openings and re-routing traffic to make U-turns at SR 80 intersection and the Marina Drive (Dock Entrance)/Restaurant Driveway intersection were evaluated. The operational evaluation shows that the U-turns located SR 80 intersection (via Texas U-turn) and the Marina Drive (Dock Entrance)/Restaurant Driveway intersection will be processed without any significant impacts to the overall intersection operations. **Appendix F** presents the Design Year (2045) Synchro analysis outputs for the median closure analysis for **Alternative B** only, which is selected as the preferred alternative.

SR 31 at Marina and Restaurant Entrance Intersection

Under Build (**Alternative A** & **Alternative B**) traffic conditions, traffic operational analysis conducted for the combined Marina Drive (Dock Entrance)/Restaurant Driveway with the proposed realignment of SR 31 and with signalization shows acceptable LOS conditions

Table 7-2: Build (Alternative A) – Opening Year (2025) Intersection Delay/LOS

AM Peak													
Roadway	**Cross-Street**	**Eastbound**			**Westbound**			**Northbound**			**Southbound**			**Overall**
		Left	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**	
SR 31	SR 80**	Refer to ICE Memorandum												
	Frontage Roads NW Dev. Drwy N/RaceTrac Drwy N*	-	-	16.8/C	-	-	14.4/B	19.5/C	-	-	15.1/C	-	-	19.5/C
	LJs Lounge*	-	-	-	-	-	0/A	14.1/B	-	-	12.2/B	-	-	14.1/B
	Marina Dr (Dock Ent)/ Restaurant Drwy**	26.6/C	0/A	30.1/C	27.3/C	0/A	0/A	51/D	6.6/A	7/A	36.8/D	9.8/A	7.1/A	12/B
PM Peak														
SR 31	SR 80**	Refer to ICE Memorandum												
	Frontage Roads NW Dev. Drwy N/RaceTrac Drwy N*	-	-	26.1/D	-	-	24.1/C	19.3/C	-	-	32.6/D	-	-	32.6/D
	LJs Lounge*	-	-	-	-	-	18.2/C	14.2/B	-	-	21.5/C	-	-	21.5/C
	Marina Dr (Dock Ent)/ Restaurant Drwy**	27/C	0/A	32.9/C	27/C	0/A	0/A	40.5/D	8.3/A	8.9/A	38.4/D	11.8/B	9.7/A	13.8/B

Note: 00.0/X - Delay/LOS. LOS E and LOS F movements are shown in yellow and orange, respectively. Delay is reported in sec/veh

** Unsignalized intersections with directional median openings/ ** Signalized intersections*

Worst movement delay was reported as overall intersection delay for unsignalized intersections

Table 7-3: Build (Alternative A) – Design Year (2045) Intersection Delay/LOS

AM Peak													
Roadway	**Cross-Street**	**Eastbound**			**Westbound**			**Northbound**			**Southbound**			**Overall**
		Left	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**	
SR 31	SR 80**	Refer to ICE Memorandum												
	Frontage Roads NW Dev. Drwy N/RaceTrac Drwy N*	-	-	89.4/F	-	-	38.7/E	227.6/F	-	-	130/F	-	-	227.6/F
	LJs Lounge*	-	-	-	-	-	0/A	131.9/F	-	-	47.7/E	-	-	131.9/F
	Marina Dr (Dock Ent)/ Restaurant Drwy**	54.5/D	0/A	59.1/E	56.4/E	0/A	0/A	74.3/E	8.6/A	9.7/A	70.9/E	20.9/C	7.6/A	18.9/B
PM Peak														
SR 31	SR 80**	Refer to ICE Memorandum												
	Frontage Roads NW Dev. Drwy N/RaceTrac Drwy N*	-	-	520.9/F	-	-	541/F	300.8/F	-	-	-	-	-	541/F
	LJs Lounge*	-	-	-	-	-	105.4/F	141.7/F	-	-	1574.1/F	-	-	1574.1/F
	Marina Dr (Dock Ent)/ Restaurant Drwy**	42.3/D	0/A	51.6/D	44.1/D	0/A	0/A	59.2/E	15.5/B	18.6/B	59.1/E	20.8/C	10.6/B	21.4/C

Note: 00.0/X - Delay/LOS. LOS E and LOS F movements are shown in yellow and orange, respectively. Delay is reported in sec/veh

** Unsignalized intersections with directional median openings/ ** Signalized intersections*

Worst movement delay was reported as overall intersection delay for unsignalized intersections

Table 7-4: Build (Alternative B) – Opening Year (2025) Intersection Delay/LOS

AM Peak														
Roadway	**Cross-Street**	**Eastbound**			**Westbound**			**Northbound**			**Southbound**			**Overall**
		Left	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**	
SR 31	SR 80**	Refer to ICE Memorandum												
	Frontage Roads NW Dev. Drwy N/RaceTrac Drwy N*	Not Applicable												
	LJs Lounge*	-	-	-	-	-	0/A	14.7/B	-	-	12.2/B	-	-	14.7/B
	Marina Dr (Dock Ent)/ Restaurant Drwy**	26.6/C	0/A	30.1/C	27.3/C	0/A	0/A	51/D	6.6/A	7/A	36.8/D	9.8/A	7.1/A	12/B
PM Peak														
SR 31	SR 80**	Refer to ICE Memorandum												
	Frontage Roads NW Dev. Drwy N/RaceTrac Drwy N*	Not Applicable												
	LJs Lounge*	-	-	-	-	-	18.2/C	16.3/C	-	-	21.5/C	-	-	21.5/C
	Marina Dr (Dock Ent)/ Restaurant Drwy**	24.8/C	0/A	30.2/C	24.7/C	0/A	0/A	121.6/F	8.8/A	9.4/A	35.6/D	10.6/B	8.7/A	18.7/B

Note: 00.0/X - Delay/LOS. LOS E and LOS F movements are shown in yellow and orange, respectively. Delay is reported in sec/veh

** Unsignalized intersections with directional median openings/ ** Signalized intersections*

Worst movement delay was reported as overall intersection delay for unsignalized intersections

Table 7-5: Build (Alternative B) – Design Year (2045) Intersection Delay/LOS

AM Peak														
Roadway	**Cross-Street**	**Eastbound**			**Westbound**			**Northbound**			**Southbound**			**Overall**
		Left	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**	
SR 31	SR 80**	Refer to ICE Memorandum												
	Frontage Roads NW Dev. Drwy N/RaceTrac Drwy N*	Not Applicable												
	LJs Lounge*	-	-	-	-	-	0/A	231/F	-	-	47.7/E	-	-	231/F
	Marina Dr (Dock Ent)/ Restaurant Drwy**	45.1/D	0/A	51.2/D	46.9/D	0/A	0/A	109.8/F	9.1/A	10.2/B	58.7/E	19.9/B	6.8/A	19.3/B
PM Peak														
SR 31	SR 80**	Refer to ICE Memorandum												
	Frontage Roads NW Dev. Drwy N/RaceTrac Drwy N*	Not Applicable												
	LJs Lounge*	-	-	-	-	-	105.4/F	368.7/F	-	-	1574.1/F	-	-	1574.1/F
	Marina Dr (Dock Ent)/ Restaurant Drwy**	37.7/D	0/A	46/D	38.9/D	0/A	0/A	85.9/F	17/B	20.8/C	52.8/D	20/B	10/A	22.7/C

Note: 00.0/X - Delay/LOS. LOS E and LOS F movements are shown in yellow and orange, respectively. Delay is reported in sec/veh

** Unsignalized intersections with directional median openings/ ** Signalized intersections*

Worst movement delay was reported as overall intersection delay for unsignalized intersections

Section 8.0
SUMMARY OF ANALYSIS RESULTS

Based on the future year analysis results, the SR 31 study corridor in the No-Build condition is not expected to operate at acceptable LOS condition (LOS D) or better, under both Opening Year (2025) and Design Year (2045) conditions. In the Build condition, the proposed widening of SR 31 to a six-lane facility is expected to improve traffic operations within the study area. The intersection and median opening traffic conditions in the Opening Year (2025) and Design Year (2045) are discussed in the following subsections.

8.1 SR 31 at SR 80 Intersection

Please refer to the "*ICE Technical Analysis Memorandum – Traffic and Safety Analysis at SR 80 and SR 31, Lee County, FL, August 2022*" prepared for this intersection as part of the PD&E study.

8.2 Directional Median Openings

Under Build (**Alternative A**) w/ at-grade SR 31 at SR 80 intersection geometry, the proposed directional median openings along SR 31 located at the Frontage Roads (NW Development Driveway N/ RaceTrac Driveway N) and LJ's Lounge are expected to perform at acceptable LOS conditions (LOS D) or better, for the Opening Year (2025). However, in the Design Year (2045) the left turns at the directional median openings are expected to experience excessive delays.

Under Build (**Alternative B**) w/ grade-separated crossover SR 31 at SR 80 intersection geometry, the proposed directional median opening along LJ's Lounge is expected to perform at acceptable LOS conditions (LOS D) or better, for the Opening Year (2025). Similar to Build **Alternative A**, in the Design Year (2045) the left turns at the LJ's Lounge directional median opening are expected to experience excessive delays.

In the Design Year (2045), the directional median openings are expected to experience excessive delays. To address this, closing the directional median openings should be considered as a long-term improvement with the directional median openings serving as an interim solution. In **Alternative A**, the northbound and southbound left-turn operations will be impacted at the SR 80 intersection and the Marina Drive (Dock Entrance)/ Restaurant Driveway intersection as the U-turns will have to share the left-turn lane to make this movement. In **Alternative B**, only the northbound left-turn operations will be impacted at the Marina Drive (Dock Entrance)/ Restaurant Driveway intersection as the U-turns will have to share the left-turn lane to make this movement. The southbound left-turn operations (which are grade-separated via a cross-over intersection) will not be impacted as the U-turning traffic will be using the proposed Texas U-turn at the SR 80 intersection.

8.3 SR 31 at Marina and Restaurant Entrance Intersection

The combined Marina Drive (Dock Entrance)/Restaurant Driveway intersection with the proposed realignment of SR 31 showed a need for signalization starting from the Opening Year (2025) conditions based on Synchro operational evaluation and warrants analysis, where warrants 1 and 2 were satisfied.

APPENDICES

Appendix A
Raw Crash Data 2017-2021
Lee County – Average Crash Rates Table
Segment Crash Rate Calculation Methodology

SR 31 Segment Crash Data 2017-2021

REPORT_NUM	CRASH_YEAR	CRASH_DATE	REPORT_DAT	INVESTIGAT	FORM_TYPE	TOTAL_NUMB	TOTAL_NU_1	COUNTY_COD	CITY_CODE	COUNTY_NAM	CITY_NAME	RURAL_OR_U
88081233	2019	3/27/2019 14:20	3/27/2019 15:24	FHPF19OFF016384	L		2	5	18	0 Lee	Unincorporated	Rural
88779853	2019	9/18/2019 9:43	9/18/2019 0:00	19-444098	S		2	2	18	40 Lee	Fort Myers	Urban
88260799	2019	11/27/2019 13:33	11/27/2019 14:21	FHPF19OFF059323	L		3	8	18	0 Lee	Unincorporated	Rural
88779264	2019	8/29/2019 17:27	8/29/2019 0:00	19-412215	L		2	4	18	0 Lee	Unincorporated	Rural
87983014	2019	3/6/2019 17:15	3/6/2019 0:00	19-112974	L		4	5	18	40 Lee	Fort Myers	Urban
89223777	2020	2/22/2020 12:35	2/22/2020 0:00	20-092060	L		2	2	18	0 Lee	Unincorporated	Rural
88783665	2020	1/4/2020 12:05	1/4/2020 0:00	20-005900	L		1	2	18	0 Lee	Unincorporated	Rural
88783824	2020	1/8/2020 8:45	1/8/2020 0:00	20-011660	S		2	2	18	0 Lee	Unincorporated	Rural
88179414	2020	4/6/2020 13:17	4/6/2020 13:39	FHPF20OFF015811	L		1	1	18	47 Lee	North Fort Myers	Rural
88341022	2020	9/2/2020 20:15	9/10/2020 14:58	FHPF20OFF037419	L		1	1	18	0 Lee	Unincorporated	Rural
88782977	2019	12/16/2019 13:01	12/16/2019 0:00	19-592283	L		1	1	18	0 Lee	Unincorporated	Rural
88146961	2019	7/14/2019 20:25	7/14/2019 21:11	FHPF19OFF035954	L		2	2	18	0 Lee	Unincorporated	Rural
88780677	2019	10/13/2019 7:05	10/13/2019 0:00	19-485400	L		2	6	18	0 Lee	Unincorporated	Rural
88777157	2019	6/18/2019 12:47	6/18/2019 0:00	19-289088	S		1	1	18	0 Lee	Unincorporated	Rural
88783490	2019	12/30/2019 15:42	12/30/2019 0:00	19-614932	L		3	4	18	0 Lee	Unincorporated	Rural
88186940	2019	9/21/2019 22:44	9/21/2019 23:07	FHPF19OFF048026	L		2	2	18	0 Lee	Unincorporated	Rural
24277788	2021	3/14/2021 13:26	3/14/2021 0:00	21-125139	L		2	2	18	0 Lee	Unincorporated	Rural
89231503	2020	11/30/2020 11:32	11/30/2020 0:00	20-560108	L		2	4	18	0 Lee	Unincorporated	Rural
88448289	2021	3/15/2021 13:52	3/15/2021 14:48	FHPF21OFF012237	L		2	2	18	0 Lee	Unincorporated	Rural
89225972	2020	5/19/2020 10:23	5/19/2020 0:00	20-245871	L		2	2	18	0 Lee	Unincorporated	Rural
24277866	2021	3/16/2021 14:20	3/16/2021 0:00	21-128971	S		2	2	18	0 Lee	Unincorporated	Rural
87177773	2018	3/4/2018 11:20	3/4/2018 12:49	FHPF18OFF015240	L		1	3	18	40 Lee	Fort Myers	Rural
24692634	2021	11/18/2021 18:04	11/18/2021 0:00	21-577300	L		2	2	18	0 Lee	Unincorporated	Rural
24692636	2021	11/19/2021 17:59	11/19/2021 0:00	21-577292	L		2	2	18	0 Lee	Unincorporated	Rural
87984240	2019	4/7/2019 22:30	4/8/2019 0:00	19-168521	L		1	1	18	0 Lee	Unincorporated	Rural
87983310	2019	3/13/2019 16:30	3/13/2019	19-125240	L		3	7	18	0 Lee	Unincorporated	Rural

Report_Num	Agency_Report_Number	Reporting_Agency	Form_Type	Crash_Date	Crash_Time	City	County	Crash_Street	Intersecting_Street	Offset_Distance	Offset_Direction	Crash_Type
85418925	FHPF17OFF002065	FHP	Long	1/9/2017 0:00	4:38 PM	Unincorporated	Lee	SR-31	SR-80 (PALM BEACH BLVD	5280	North	Rear End
85473783	FHPF17OFF006279	FHP	Long	1/28/2017 0:00	7:02 PM	North Fort Myers	Lee	SR 31	BAYSHORE RD	792	South	Head On
85591991	FHPF17OFF083825	FHP	Long	12/12/2017 0:00	6:36 PM	Fort Myers	Lee	SR 31	SR 80 (PALM BEACH BLVD)	2500	North	Left Turn
86380579	17-032995	Lee Co SO	Long	1/22/2017 0:00	11:35 AM	Unincorporated	Lee	SR 31	PALM BEACH BLVD	0	North	Other
86832507	17-172388	Lee Co SO	Long	4/17/2017 0:00	8:42 PM	Unincorporated	Lee	SR 31	PALM BEACH BLVD	1000	North	Sideswipe
86832675	17-180107	Lee Co SO	Short	4/22/2017 0:00	12:35 PM	Unincorporated	Lee	SR 31	PALM BEACH BLVD	0	North	Off Road
87380925	17-500441	Lee Co SO	Short	11/2/2017 0:00	11:18 AM	Unincorporated	Lee	SR 31	BAYSHORE RD	2500	South	Other

REPORT_NUM	NOTIFIED_T	DISPATCHED	ARRIVED_TI	CLEARED_TI	COMPLETED_	NOTIFIED_B	ON_STREET_	STREET_ADD	LATITUDE	LONGITUDE	FEET_FROM_
88081233	3/27/2019 14:25	3/27/2019 14:27	3/27/2019 14:57	3/27/2019 18:16	Y	Law Enforcement	SR 31	0	26.71254961	-81.7603012	36
88779853	9/18/2019 9:45	9/18/2019 9:50	9/18/2019 10:01	9/18/2019 10:45	Y	Law Enforcement	SR 31	0	26.7123149	-81.76029678	49
88260799	11/27/2019 13:37	11/27/2019 13:38	11/27/2019 13:59	11/27/2019 14:37	Y	Law Enforcement	SR-31	0	26.71604658	-81.76062593	1316
88779264	8/29/2019 17:27	8/29/2019 18:44	8/29/2019 18:50	8/29/2019 19:40	Y	Law Enforcement	SR-31	0	26.71699137	-81.76078835	1664
87983014	3/6/2019 17:23	3/6/2019 17:37	3/6/2019 18:17	3/6/2019 19:00	Y	Law Enforcement	SR-31	0	26.71248919	-81.76033529	14
89223777	2/22/2020 12:40	2/22/2020 12:43	2/22/2020 13:11	2/22/2020 14:14	Y	Law Enforcement	SR 31	17101	26.71351858	-81.76036368	0
88783665	1/4/2020 12:07	1/4/2020 12:09	1/4/2020 12:13	1/4/2020 13:26	Y	Law Enforcement	SR-31	0	26.71763998	-81.76090083	1552
88783824	1/8/2020 8:48	1/8/2020 8:50	1/8/2020 9:08	1/8/2020 10:26	Y	Law Enforcement	SR-31	0	26.72061474	-81.76108003	465
88179414	4/6/2020 13:21	4/6/2020 13:26	4/6/2020 13:49	4/6/2020 14:26	Y	Law Enforcement	STATE ROAD 31	0	26.70744192	-81.76024344	1824
88341022	9/3/2020 4:28	9/3/2020 4:29	9/3/2020 4:44	9/3/2020 11:08	Y	Law Enforcement	STATE ROAD 31	0	26.71106289	-81.76028096	-32804942
88782977	12/16/2019 13:01	12/16/2019 13:16	12/16/2019 13:28	12/16/2019 14:13	Y	Law Enforcement	SR-31	0	26.71690251	-81.76075405	1630
88146961	7/14/2019 20:30	7/14/2019 20:32	7/14/2019 20:51	7/14/2019 22:03	Y	Law Enforcement	S.R.31	0	26.71339001	-81.76034	0
88780677	10/13/2019 7:08	10/13/2019 7:13	10/13/2019 7:23	10/13/2019 8:30	Y	Law Enforcement	SR-31	0	26.71687426	-81.76074093	1620
88777157	6/18/2019 12:47	6/18/2019 12:55	6/18/2019 13:15	6/18/2019 14:25	Y	Law Enforcement	SR-31	0	26.71749504	-81.76085356	1606
88783490	12/30/2019 15:42	12/30/2019 15:53	12/30/2019 16:19	12/30/2019 17:15	Y	Law Enforcement	SR-31	0	26.71651122	-81.7607362	1488
88186940	9/21/2019 22:49	9/21/2019 22:50	9/21/2019 23:01	9/22/2019 0:11	Y	Law Enforcement	STATE ROAD 31	0	26.71242297	-81.76029936	10
24277788	3/14/2021 13:26	3/14/2021 13:36	3/14/2021 13:44	3/14/2021 15:22	Y	Law Enforcement	SR-31	0	26.70244019	-81.76011604	182
89231503	11/30/2020 11:34	11/30/2020 11:37	11/30/2020 11:53	11/30/2020 13:30	Y	Law Enforcement	SR-31	0	26.71736085	-81.76086449	1654
88448289	3/15/2021 13:58	3/15/2021 13:59	3/15/2021 14:26	3/15/2021 17:33	Y	Law Enforcement	STATE ROAD 31	0	26.71259701	-81.76030336	0
89225972	5/19/2020 10:25	5/19/2020 10:25	5/19/2020 10:32	5/19/2020 12:30	Y	Law Enforcement	SR 31	16991	26.71254521	-81.76030124	35
24277866	3/16/2021 14:25	3/16/2021 14:31	3/16/2021 14:54	3/16/2021 15:25	Y	Law Enforcement	SR-31	0	26.71808142	-81.76095594	1390
87177773	3/4/2018 11:25	3/4/2018 11:27	3/4/2018 11:55	3/4/2018 16:19	Y	Law Enforcement	SR-31	0	26.7098945	-81.76033337	931
24692634	11/18/2021 18:04	11/18/2021 18:07	11/18/2021 18:07	11/18/2021 18:42	Y	Law Enforcement	SR-31	0	26.70736694	-81.76027249	1851
24692636	11/19/2021 17:59	11/19/2021 17:59	11/19/2021 17:59	11/19/2021 19:12	Y	Law Enforcement	SR-31	0	26.7026253	-81.7601939	250
87984240	4/7/2019 22:40	4/7/2019 22:45	4/7/2019 22:52	4/7/2019 23:56	Y	Law Enforcement	SR-31	0	26.70515812	-81.76017942	1172
87983310	3/13/2019 16:38	3/13/2019 17:02	3/13/2019 17:23	3/13/2019 18:15	Y	Law Enforcement	SR-31	0	26.71232247	-81.76010911	0

Report_Num	Vehicles	Non_Motorists	Fatalities	Injuries	Alcohol_Related	Distraction_Related	Drug_Related	Estimated_Damages	Weather_Condition	Light_Condition	Street_Number
85418925	2	0	0	2	N	Y	N	5000	Clear	Dusk	0
85473783	2	0	0	1	Y	N	N	10000	Clear	Dark - Not Lighted	0
85591991	2	0	0	0	N	N	N	1750	Clear	Dark - Not Lighted	0
86380579	1	0	0	0	N	Y	N	100	Cloudy	Daylight	17283
86832507	2	0	0	0	N	Y	N	6000	Clear	Dark - Not Lighted	0
86832675	1	0	0	0	N	Y	N	0	Cloudy	Daylight	17283
87380925	1	0	0	0	N	Y	N	0	Clear	Daylight	0

REPORT_NUM	DIRECTION_	FROM_INTER	MILEPOST_N	ROAD_SYSTE	TYPE_OF_SH	TYPE_OF_IN	PHOTOS_TAK	LIGHT_COND
88081233	South	PALM BEACH BLVD		State	Paved	T-Intersection	N	Daylight
88779853	South	MARINA DR W		State	Paved	Not at Intersection	N	Daylight
88260799	South	SR-80 (PALM BEACH BOULEVARD)		State	Paved	Not at Intersection	N	Daylight
88779264	North	W MARINA DR		County	Unpaved	Not at Intersection	N	Daylight
87983014	North	W MARINA DR		County	Paved	Not at Intersection	N	Daylight
89223777				County	Unpaved	T-Intersection	N	Daylight
88783665	South	BAYSHORE RD		County	Unpaved	Other	N	Daylight
88783824	South	BAYSHORE RD		State	Paved	Not at Intersection	N	Daylight
88179414	North	BAYSHORE ROAD		Interstate	Paved	Not at Intersection	N	Daylight
88341022	South	STATE ROAD 80 (PALM BEACH BOULEVARD)		State	Unpaved	Not at Intersection	N	Dark - Not Lighted
88782977	North	W MARINA DR		County	Unpaved	Not at Intersection	N	Daylight
88146961		BOAT HOUSE (DRIVEWAY ALLEY ACCESS)		State	Paved	Not at Intersection	N	Dark - Lighted
88780677	North	W MARINA DR		State	Paved	Not at Intersection	N	Dawn
88777157	South	BAYSHORE RD		County	Curb	Not at Intersection	N	Unknown
88783490	North	W MARINA DR		State	Curb	Not at Intersection	Y	Daylight
88186940	South	WEST MARINA DRIVE		County	Paved	T-Intersection	N	Dark - Not Lighted
24277788	North	PALM BEACH BLVD		State	Unpaved	T-Intersection	Y	Daylight
89231503	South	BAYSHORE RD		State	Paved	Not at Intersection	N	Daylight
88448289		WEST MARINA DRIVE		State	Unpaved	Not at Intersection	N	Daylight
89225972	North			State	Unpaved	Not at Intersection	N	Daylight
24277866	South	BAYSHORE RD		State	Unpaved	Not at Intersection	Y	Daylight
87177773	South	SR-80 (PALM BEACH BLVD)		State	Paved	Not at Intersection	Y	Daylight
24692634	South	W MARINA DR		State	Paved	Not at Intersection	N	Dark - Not Lighted
24692636	North	PALM BEACH BLVD		State	Paved	Not at Intersection	Y	Dark - Not Lighted
87984240	North	PALM BEACH BLVD		State	Unpaved	Not at Intersection	N	Dark - Not Lighted
87983310		W MARINA DR		State	Paved	T-Intersection	N	Daylight

Report_Num	Crash_Type_Detailed	Crash_Type_Dir	Crash_Severity	Within_City_Limits	Manner_of_Collision	First_Harmful_Event	First_HE_Location	First_HE_Relation_to_Jct
85418925	Rear End	S	Injury	N	Front to Rear	Motor Vehicle in Transport	On Roadway	Non-Junction
85473783	Head On	NS	Injury	N	Front to Front	Motor Vehicle in Transport	On Roadway	Non-Junction
85591991	Left Entering	W	Property Damage Only	N	Angle	Motor Vehicle in Transport	On Roadway	Non-Junction
86380579	Single Vehicle	S	Property Damage Only	N	Other	Motor Vehicle in Transport	On Roadway	Non-Junction
86832507	Same Direction Sideswipe	S	Property Damage Only	N	Sideswipe, Same Direction	Motor Vehicle in Transport	On Roadway	Non-Junction
86832675	Off Road	N	Property Damage Only	N		Other Traffic Barrier	On Roadway	Other
87380925	Single Vehicle	S	Property Damage Only	N	Other	Motor Vehicle in Transport	On Roadway	Other

REPORT_NUM	WEATHER_CO	ROAD_SURFA	SCHOOL_BUS	TYPE_OF_IM	FIRST_HARM	LOCATION	INTERCHANG	JUNCTION_F
88081233	Clear	Dry	N	Angle	Motor Vehicle in Transport	On Roadway	N	Driveway/Alley Access Related
88779853	Clear	Dry	N	Other	Motor Vehicle in Transport	On Roadway	N	Non-Junction
88260799	Clear	Dry	N	Front to Rear	Motor Vehicle in Transport	On Roadway	N	Non-Junction
88779264	Clear	Dry	N	Front to Rear	Motor Vehicle in Transport	On Roadway	N	Non-Junction
87983014	Clear	Dry	N	Front to Rear	Motor Vehicle in Transport	On Roadway	N	Through Roadway
89223777	Clear	Dry	N	Angle	Motor Vehicle in Transport	On Roadway	N	Intersection
88783665	Cloudy	Dry	N	Other Traffic Barrier	Other Traffic Barrier	On Roadway	N	Other
88783824	Clear	Dry	N	Front to Rear	Motor Vehicle in Transport	On Roadway	N	Through Roadway
88179414	Clear	Dry	N	Bridge Rail	Bridge Rail	On Roadway	N	Non-Junction
88341022	Clear	Dry	N	Concrete Traffic Barrier	Concrete Traffic Barrier	On Roadway	N	Non-Junction
88782977	Clear	Dry	N	Other Fixed Object	Other Fixed Object	On Roadway	N	Non-Junction
88146961	Clear	Dry	N	Sideswipe, Opposite Direction	Motor Vehicle in Transport	On Roadway	N	Non-Junction
88780677	Clear	Dry	N	Sideswipe, Opposite Direction	Motor Vehicle in Transport	On Roadway	N	Through Roadway
88777157	Other	Unknown	N	Other Fixed Object	Other Fixed Object	On Roadway	N	Other
88783490	Clear	Dry	N	Front to Rear	Motor Vehicle in Transport	On Roadway	N	Non-Junction
88186940	Clear	Dry	N	Front to Front	Motor Vehicle in Transport	On Roadway	Y	Intersection
24277788	Clear	Dry	N	Angle	Motor Vehicle in Transport	On Roadway	N	Intersection
89231503	Rain	Wet	N	Front to Rear	Motor Vehicle in Transport	On Roadway	N	Through Roadway
88448289	Clear	Dry	N	Front to Front	Motor Vehicle in Transport	On Roadway	N	Non-Junction
89225972	Clear	Dry	N	Front to Rear	Motor Vehicle in Transport	On Roadway	N	Entrance/Exit Ramp
24277866	Clear	Dry	N	Front to Rear	Motor Vehicle in Transport	On Roadway	N	Non-Junction
87177773	Clear	Dry	N	Other	Pedestrian	Shoulder	N	Non-Junction
24692634	Cloudy	Wet	N	Front to Rear	Motor Vehicle in Transport	On Roadway	N	Non-Junction
24692636	Cloudy	Wet	N	Angle	Motor Vehicle in Transport	On Roadway	N	Non-Junction
87984240	Clear	Dry	N	Bicycle	Pedalcycle	On Roadway	N	Non-Junction
87983310	Clear	Dry	N	Front to Rear	Motor Vehicle in Transport	On Roadway	N	Intersection-Related

Report_Num	First_HE_Within_Interchange	Type_of_Intersection	Road_Sys_Identifier	Type_of_Shoulder	Road_Surf_Cond	Contrib_Circum_Road1	Contrib_Circum_Road2	Contrib_Circum_Road3
85418925	N	Not at Intersection	State	Paved	Dry	None		
85473783	N	Not at Intersection	State	Paved	Dry	None		
85591991	N	Not at Intersection	State	Paved	Dry	None		
86380579	N	Not at Intersection	State	Paved	Dry	None		
86832507	N	Not at Intersection	State	Paved	Dry	None		
86832675		Other	State		Dry	None		
87380925	N	Not at Intersection	State	Curb	Dry	None		

REPORT_NUM	ROAD_CIRCU	ROAD_CIR_1	ROAD_CIR_2	ENVIRONMEN	ENVIRONM_1	ENVIRONM_2	WORK_ZONE_	CRASH_IN_W	TYPE_OF_WO
88081233	None			None			N		
88779853	None			None			N		
88260799	None			None			N		
88779264	None			None			N		
87983014	None			None			N		
89223777	None			None			N		
88783665	None			None			N		
88783824	None			None			N		
88179414	None			None			N		
88341022	None			None			N		
88782977	None			None			N		
88146961	None			None			N		
88780677	None			None			N		
88777157	None			None			N		
88783490	None			None			N		
88186940	None			None			N		
24277788	None			None			N		
89231503	Road Surface Condition			None			N		
88448289	None			None			N		
89225972	None			None			N		
24277866	None			None			N		
87177773	None			None			N		
24692634	Road Surface Condition			None			N		
24692636	None			None			N		
87984240	None			None			N		
87983310	None			None			N		

Report_Num	Contrib_Circum_Env1	Contrib_Circum_Env2	Contrib_Circum_Env3	School_Bus_Related	Work_Zone_Related	Type_of_Work_Zone	Loc_in_Work_Zone	Workers_in_Work_Zone	Law_Enforcement_in_Work_Zone
85418925	None			N	N				
85473783	None			N	N				
85591991	None			N	N				
86380579	None			N	N				
86832507	None			N	N				
86832675					N				
87380925	None			N	N				

REPORT_NUM	WORKERS_PR	LAW_ENFORC	INVESTIG_1	INVESTIG_2	INVESTIG_3	LOAD_DATE	CODEABLE	S4_CRASH_T	S4_CRASH_1
88081233			TROOPER	Florida Highway Patrol	Florida Highway Patrol (FHP)	4/11/2019 15:15	Y	Left Leaving	Left Turn
88779853			DEPUTY	Lee County Sheriff's Office	Sheriff's Office (SO)	9/19/2019 14:35	N	Other	Other
88260799			TROOPER	Florida Highway Patrol	Florida Highway Patrol (FHP)	12/9/2019 14:53	Y	Rear End	Rear End
88779264			DEPUTY	Lee County Sheriff's Office	Sheriff's Office (SO)	8/31/2019 14:10	Y	Rear End	Rear End
87983014			DEPUTY	Lee County Sheriff's Office	Sheriff's Office (SO)	3/7/2019 14:45	N	Rear End	Rear End
89223777			CSA	Lee County Sheriff's Office	Sheriff's Office (SO)	2/23/2020 13:44	Y	Left Rear	Left Turn
88783665			CSA	Lee County Sheriff's Office	Sheriff's Office (SO)	1/6/2020 14:09	Y	Off Road	Off Road
88783824			CSA	Lee County Sheriff's Office	Sheriff's Office (SO)	1/9/2020 14:38	N	Rear End	Rear End
88179414			TPR	Florida Highway Patrol	Florida Highway Patrol (FHP)	4/14/2020 13:50	Y	Off Road	Off Road
88341022			TPR	Florida Highway Patrol	Florida Highway Patrol (FHP)	9/10/2020 14:20	Y	Off Road	Off Road
88782977			CSA	Lee County Sheriff's Office	Sheriff's Office (SO)	12/18/2019 17:49	Y	Off Road	Off Road
88146961			TROOPER	Florida Highway Patrol	Florida Highway Patrol (FHP)	7/19/2019 14:07	Y	Opposing Sideswipe	Sideswipe
88780677			DEPUTY	Lee County Sheriff's Office	Sheriff's Office (SO)	10/14/2019 14:01	Y	Opposing Sideswipe	Sideswipe
88777157			CSA	Lee County Sheriff's Office	Sheriff's Office (SO)	6/19/2019 14:37	Y	Off Road	Off Road
88783490			CPL	Lee County Sheriff's Office	Sheriff's Office (SO)	1/1/2020 14:12	N	Rear End	Rear End
88186940			TROOPER	Florida Highway Patrol	Florida Highway Patrol (FHP)	9/23/2019 14:01	Y	Left Entering	Left Turn
24277788			DETECTIVE	Lee County Sheriff's Office	Sheriff's Office (SO)	3/16/2021 14:30	Y	Right Angle	Angle
89231503			DEPUTY FIRST CLASS	Lee County Sheriff's Office	Sheriff's Office (SO)	12/2/2020 14:54	Y	Rear End	Rear End
88448289			TPR	Florida Highway Patrol	Florida Highway Patrol (FHP)	3/21/2021 13:47	Y	Head On	Head On
89225972			DEPUTY FIRST CLASS	Lee County Sheriff's Office	Sheriff's Office (SO)	5/27/2020 14:10	Y	Left Leaving	Left Turn
24277866			CSA	Lee County Sheriff's Office	Sheriff's Office (SO)	3/17/2021 14:18	N	Rear End	Rear End
87177773			TROOPER	Florida Highway Patrol	Florida Highway Patrol (FHP)	3/19/2018 13:59	Y	Pedestrian	Pedestrian
24692634			DFC	Lee County Sheriff's Office	Sheriff's Office (SO)	11/20/2021 13:36	Y	Rear End	Rear End
24692636			DFC	Lee County Sheriff's Office	Sheriff's Office (SO)	11/20/2021 13:36	Y	Unknown	Unknown
87984240			DEPUTY	Lee County Sheriff's Office	Sheriff's Office (SO)	4/13/2019 15:22	Y	Bicycle	Bicycle
87983310			CSA	Lee County Sheriff's Office	Sheriff's Office (SO)	3/15/2019 14:48	Y	Rear End	Rear End

Report_Num	Mopeds	Motorcycles	Passengers	Bicyclists	Pedestrians	Fatalities_Unrestrained	Injuries_Unrestrained	Possible_Injuries	Non_Incapacitating_Injuries
85418925	0	0	3	0	0	0	0	0	2
85473783	0	0	0	0	0	0	0	0	0
85591991	0	0	1	0	0	0	0	0	0
86380579	0	0	0	0	0	0	0	0	0
86832507	0	0	0	0	0	0	0	0	0
86832675	0	0	0	0	0	0	0	0	0
87380925	0	0	1	0	0	0	0	0	0

REPORT_NUM	S4_CRASH_S	S4_CRASH_2	S4_DAY_OR_	S4_IS_AGGR	S4_IS_ALCO	S4_IS_CMV_	S4_IS_DIST	S4_IS_DRUG	S4_IS_HIT_
88081233	No Injury	No Injury	DAY	N	N	Y	N	N	N
88779853	No Injury	No Injury	DAY	N	N	N	N	N	N
88260799	Serious Injury	Incapacitating Injury	DAY	N	N	N	Y	N	N
88779264	No Injury	No Injury	DAY	N	N	N	N	N	N
87983014	No Injury	No Injury	DAY	N	N	N	N	N	N
89223777	No Injury	No Injury	DAY	N	N	N	N	N	N
88783665	No Injury	No Injury	DAY	N	N	N	Y	N	N
88783824	No Injury	No Injury	DAY	N	N	N	N	N	N
88179414	No Injury	No Injury	DAY	N	N	Y	Y	N	N
88341022	No Injury	No Injury	NIGHT	N	N	N	N	N	Y
88782977	No Injury	No Injury	DAY	N	N	Y	N	N	N
88146961	No Injury	No Injury	NIGHT	N	Y	N	N	N	N
88780677	No Injury	No Injury	DAY	N	N	N	N	N	Y
88777157	No Injury	No Injury	DAY	N	N	N	N	N	Y
88783490	No Injury	No Injury	DAY	Y	N	N	N	N	N
88186940	Injury	Possible Injury	NIGHT	N	N	N	Y	N	N
24277788	Injury	Possible Injury	DAY	N	N	N	N	N	N
89231503	Injury	Possible Injury	DAY	N	N	N	N	N	N
88448289	Injury	Non-Incapacitating Injury	DAY	N	N	Y	N	N	N
89225972	No Injury	No Injury	DAY	N	N	N	Y	N	N
24277866	No Injury	No Injury	DAY	N	N	N	N	N	N
87177773	Fatality	Fatal (within 30 days)	DAY	N	N	N	N	N	N
24692634	Serious Injury	Incapacitating Injury	DAY	N	N	N	N	N	N
24692636	Serious Injury	Incapacitating Injury	DAY	N	N	N	N	N	Y
87984240	Injury	Non-Incapacitating Injury	NIGHT	N	N	N	N	N	N
87983310	Injury	Possible Injury	DAY	N	N	N	N	N	N

Report_Num	Incapacitating_Injuries	Fatalities_30_Days	Non_Traffic_Fatalities	Transported_by_EMS	Transported_by_Law_Enforcement	Transported_by_Other	Citations	Property_Dmg_Amt	Vehicle_Dmg_Amt
85418925	0	0	0	2	0	0	1	0	5000
85473783	1	0	0	2	0	0	5	0	10000
85591991	0	0	0	0	0	0	1	0	1750
86380579	0	0	0	0	0	0	0	0	100
86832507	0	0	0	0	0	0	1	0	6000
86832675	0	0	0	0	0	0	0	0	0
87380925	0	0	0	0	0	0	0	0	0

REPORT_NUM	S4_IS_INTE	S4_IS_LANE	S4_IS_SPEE	S4_NONE_IN	S4_INJURY_	S4_POSSIBL
88081233	N	Y	N	5	0	0
88779853	N	N	N	2	0	0
88260799	N	N	N	6	2	1
88779264	N	N	N	4	0	0
87983014	N	N	N	5	0	0
89223777	Y	N	N	2	0	0
88783665	N	Y	N	2	0	0
88783824	N	N	N	2	0	0
88179414	N	N	N	1	0	0
88341022	N	Y	N	1	0	0
88782977	N	N	N	1	0	0
88146961	N	Y	N	2	0	0
88780677	N	Y	N	5	0	0
88777157	N	N	N	0	0	0
88783490	N	N	Y	4	0	0
88186940	Y	N	N	0	2	2
24277788	Y	N	N	1	1	1
89231503	N	N	N	3	1	1
88448289	N	Y	N	0	2	1
89225972	N	Y	N	2	0	0
24277866	N	N	N	2	0	0
87177773	N	N	N	2	0	0
24692634	N	N	N	1	1	0
24692636	N	N	N	0	1	0
87984240	N	N	N	0	1	0
87983310	Y	N	N	6	1	1

Report_Num	S4_Mapping	S4_Decimal_Degree_Longitude	S4_Decimal_Degree_Latitude	S4_Albers_X	S4_Albers_Y	S4_Mapping_Date
85418925	Mapped, On Network	-81.76062593	26.71604662	622377.8469	303244.7957	1/11/2017 0:00
85473783	Mapped, On Network	-81.76111611	26.71972139	622321.7692	303651.8013	2/8/2017 0:00
85591991	Mapped, On Network	-81.76025267	26.70843335	622430.2587	302400.419	12/22/2017 0:00
86380579	Mapped, On Network	-81.76036437	26.71408777	622407.7674	303027.8413	1/23/2017 0:00
86832507	Mapped, On Network	-81.76020114	26.70431709	622443.6751	301943.6208	4/19/2017 0:00
86832675	Mapped, On Network	-81.76036437	26.71408777	622407.7674	303027.8413	4/23/2017 0:00
87380925	Mapped, On Network	-81.76047656	26.71506428	622394.6589	303136.0283	11/3/2017 0:00

Lee County - Average Crash Rates Table

District	County	Crash Rate Category	Average Crash Rate	Influence Area Crashes	Crash Count	Millions Entering Vehicles
1	Lee	Interstate Urban	0.48592	1	2395	4931
1	Lee	Interstate Rural	0.33573	0	163	486
1	Lee	Toll Road Urban	0	0	0	0
1	Lee	Toll Road Rural	0	0	0	0
1	Lee	Urban Other Limited Access	0	0	0	0
1	Lee	Rural Other Limited Access	0	0	0	0
1	Lee	Ramp Urban	0	361	38	8
1	Lee	Ramp Rural	0	995	735	258
1	Lee	Urban 2-3Ln 2Wy Divd Rasd	21.67104	205	51	12
1	Lee	Urban 2-3Ln 2Wy Divd Pavd	4.10853	82	363	108
1	Lee	Urban 2-3Ln 2Wy Undivd	6.32592	47	41	14
1	Lee	Suburban 2-3Ln 2Wy Divd Rasd	6.70918	39	265	45
1	Lee	Suburban 2-3Ln 2Wy Divd Pavd	3.29995	158	685	255
1	Lee	Suburban 2-3Ln 2Wy Undivd	0.97159	22	401	435
1	Lee	Rural 2-3Ln 2Wy Divd Rasd	0	0	0	4
1	Lee	Rural 2-3Ln 2Wy Divd Pavd	2.40905	1	29	12
1	Lee	Rural 2-3Ln 2Wy Undivd	0.446	0	26	58
1	Lee	Urban 4-5Ln 2Wy Divd Rasd	3.12448	234	2503	876
1	Lee	Urban 4-5Ln 2Wy Divd Pavd	1.80074	41	354	219
1	Lee	Urban 4-5Ln 2Wy Undivd	5.05676	36	168	40
1	Lee	Suburban 4-5Ln 2Wy Divd Rasd	2.21096	471	2399	1298
1	Lee	Suburban 4-5Ln 2Wy Divd Pavd	1.52661	18	500	339
1	Lee	Suburban 4-5Ln 2Wy Undivd	0	0	0	0
1	Lee	Rural 4-5Ln 2Wy Divd Rasd	0.73886	3	199	273
1	Lee	Rural 4-5Ln 2Wy Divd Pavd	0	0	0	0
1	Lee	Rural 4-5Ln 2Wy Undivd	0	0	0	0
1	Lee	Urban 6+Ln 2Wy Divd Rasd	2.84582	324	3117	1209
1	Lee	Urban 6+Ln 2Wy Divd Pavd	5.1132	19	1332	264
1	Lee	Urban 6+Ln 2Wy Undivd	0	0	0	1
1	Lee	Suburban 6+Ln 2Wy Divd Rasd	2.17622	276	4928	2391
1	Lee	Suburban 6+Ln 2Wy Divd Pavd	0	0	0	0
1	Lee	Suburban 6+Ln 2Wy Undivd	0	0	0	0
1	Lee	Rural 6+Ln 2Wy Divd Rasd	0	0	0	0
1	Lee	Rural 6+Ln 2Wy Divd Pavd	0	0	0	0
1	Lee	Rural 6+Ln 2Wy Undivd	0	0	0	0
1	Lee	Urban One Way	3.66094	127	244	101
1	Lee	Suburban One Way	2.95697	50	48	33
1	Lee	Rural One Way	0	2	0	0
1	Lee	Undefined	0	98	158	0
1	Lee	Not Coded	1.59981	733	21142	13673

County	Crash Rate Category	Total Centerline Miles	Average Economic Loss Per Crash	Average Economic Loss Per Injury	Total Property Damage Only Crashes	Total Crashes With Highest Injury Possible
Lee	Interstate Urban	142	202809	221380	1616	359
Lee	Interstate Rural	29	208367	208169	118	19
Lee	Toll Road Urban	0	0	0	0	0
Lee	Toll Road Rural	0	0	0	0	0
Lee	Urban Other Limited Access	0	0	0	0	0
Lee	Rural Other Limited Access	0	0	0	0	0
Lee	Ramp Urban	4	96430	97034	261	82
Lee	Ramp Rural	90	141823	142651	1097	368
Lee	Urban 2-3Ln 2Wy Divd Rasd	3	205869	194922	154	67
Lee	Urban 2-3Ln 2Wy Divd Pavd	18	94142	115001	257	102
Lee	Urban 2-3Ln 2Wy Undivd	5	40777	30346	64	19
Lee	Suburban 2-3Ln 2Wy Divd Rasd	6	115072	129724	182	74
Lee	Suburban 2-3Ln 2Wy Divd Pavd	43	257639	319875	463	177
Lee	Suburban 2-3Ln 2Wy Undivd	94	343441	428140	255	83
Lee	Rural 2-3Ln 2Wy Divd Rasd	0	0	0	0	0
Lee	Rural 2-3Ln 2Wy Divd Pavd	4	880936	878176	15	8
Lee	Rural 2-3Ln 2Wy Undivd	23	656424	1082453	13	3
Lee	Urban 4-5Ln 2Wy Divd Rasd	83	208581	212512	1608	665
Lee	Urban 4-5Ln 2Wy Divd Pavd	24	273200	318362	218	95
Lee	Urban 4-5Ln 2Wy Undivd	5	138064	157836	103	72
Lee	Suburban 4-5Ln 2Wy Divd Rasd	122	230904	259283	1574	708
Lee	Suburban 4-5Ln 2Wy Divd Pavd	29	157394	169875	285	135
Lee	Suburban 4-5Ln 2Wy Undivd	0	0	0	0	0
Lee	Rural 4-5Ln 2Wy Divd Rasd	38	586538	637056	107	39
Lee	Rural 4-5Ln 2Wy Divd Pavd	0	0	0	0	0
Lee	Rural 4-5Ln 2Wy Undivd	0	0	0	0	0
Lee	Urban 6+Ln 2Wy Divd Rasd	81	155904	168539	2014	894
Lee	Urban 6+Ln 2Wy Divd Pavd	17	170953	175876	749	383
Lee	Urban 6+Ln 2Wy Undivd	0	0	0	0	0
Lee	Suburban 6+Ln 2Wy Divd Rasd	134	172005	175905	3056	1344
Lee	Suburban 6+Ln 2Wy Divd Pavd	0	0	0	0	0
Lee	Suburban 6+Ln 2Wy Undivd	0	0	0	0	0
Lee	Rural 6+Ln 2Wy Divd Rasd	0	0	0	0	0
Lee	Rural 6+Ln 2Wy Divd Pavd	0	0	0	0	0
Lee	Rural 6+Ln 2Wy Undivd	0	0	0	0	0
Lee	Urban One Way	23	165220	193438	207	120
Lee	Suburban One Way	7	453988	474594	51	21
Lee	Rural One Way	15	95955	114450	1	0
Lee	Undefined	0	220582	221619	132	90
Lee	Not Coded	1039	198783	215063	12855	5226

County	Crash Rate Category	Total Crashes With Highest Injury Non Incapacitating	Total Crashes With Highest Injury Incapacitating	Total Crashes Involving Traffic Fatality	Total Crashes With Only Injury Non Traffic Fatality	Total Non Injured Persons
Lee	Interstate Urban	293	98	26	4	4825
Lee	Interstate Rural	19	5	2	0	280
Lee	Toll Road Urban	0	0	0	0	0
Lee	Toll Road Rural	0	0	0	0	0
Lee	Urban Other Limited Access	0	0	0	0	0
Lee	Rural Other Limited Access	0	0	0	0	0
Lee	Ramp Urban	45	10	1	0	895
Lee	Ramp Rural	196	57	10	2	3916
Lee	Urban 2-3Ln 2Wy Divd Rasd	28	4	3	0	553
Lee	Urban 2-3Ln 2Wy Divd Pavd	61	25	0	0	961
Lee	Urban 2-3Ln 2Wy Undivd	5	0	0	0	211
Lee	Suburban 2-3Ln 2Wy Divd Rasd	38	9	1	0	756
Lee	Suburban 2-3Ln 2Wy Divd Pavd	138	53	11	1	1778
Lee	Suburban 2-3Ln 2Wy Undivd	52	24	9	0	981
Lee	Rural 2-3Ln 2Wy Divd Rasd	0	0	0	0	0
Lee	Rural 2-3Ln 2Wy Divd Pavd	4	1	2	0	49
Lee	Rural 2-3Ln 2Wy Undivd	3	6	1	0	30
Lee	Urban 4-5Ln 2Wy Divd Rasd	325	110	29	0	6241
Lee	Urban 4-5Ln 2Wy Divd Pavd	57	19	6	0	955
Lee	Urban 4-5Ln 2Wy Undivd	24	4	1	0	428
Lee	Suburban 4-5Ln 2Wy Divd Rasd	432	121	34	1	6275
Lee	Suburban 4-5Ln 2Wy Divd Pavd	74	21	3	0	1117
Lee	Suburban 4-5Ln 2Wy Undivd	0	0	0	0	0
Lee	Rural 4-5Ln 2Wy Divd Rasd	31	17	8	0	420
Lee	Rural 4-5Ln 2Wy Divd Pavd	0	0	0	0	0
Lee	Rural 4-5Ln 2Wy Undivd	0	0	0	0	0
Lee	Urban 6+Ln 2Wy Divd Rasd	410	99	23	1	8030
Lee	Urban 6+Ln 2Wy Divd Pavd	160	47	10	2	3208
Lee	Urban 6+Ln 2Wy Undivd	0	0	0	0	0
Lee	Suburban 6+Ln 2Wy Divd Rasd	589	173	41	1	12655
Lee	Suburban 6+Ln 2Wy Divd Pavd	0	0	0	0	0
Lee	Suburban 6+Ln 2Wy Undivd	0	0	0	0	0
Lee	Rural 6+Ln 2Wy Divd Rasd	0	0	0	0	0
Lee	Rural 6+Ln 2Wy Divd Pavd	0	0	0	0	0
Lee	Rural 6+Ln 2Wy Undivd	0	0	0	0	0
Lee	Urban One Way	32	6	3	3	900
Lee	Suburban One Way	20	3	3	0	223
Lee	Rural One Way	1	0	0	0	8
Lee	Undefined	24	7	3	0	537
Lee	Not Coded	2729	839	215	11	49510

County	Crash Rate Category	Total Persons With Possible Injury	Total Persons With Non Incapacitating Injury	Total Persons With Incapacitating Injury	Total Traffic Fatalities	Total Non Traffic Fatalities
Lee	Interstate Urban	676	411	133	29	4
Lee	Interstate Rural	38	26	7	2	0
Lee	Toll Road Urban	0	0	0	0	0
Lee	Toll Road Rural	0	0	0	0	0
Lee	Urban Other Limited Access	0	0	0	0	0
Lee	Rural Other Limited Access	0	0	0	0	0
Lee	Ramp Urban	138	64	10	1	0
Lee	Ramp Rural	625	275	64	10	2
Lee	Urban 2-3Ln 2Wy Divd Rasd	104	41	4	3	0
Lee	Urban 2-3Ln 2Wy Divd Pavd	201	87	30	0	0
Lee	Urban 2-3Ln 2Wy Undivd	23	6	0	0	0
Lee	Suburban 2-3Ln 2Wy Divd Rasd	122	57	14	1	0
Lee	Suburban 2-3Ln 2Wy Divd Pavd	383	233	84	13	1
Lee	Suburban 2-3Ln 2Wy Undivd	175	77	48	11	0
Lee	Rural 2-3Ln 2Wy Divd Rasd	0	0	0	0	0
Lee	Rural 2-3Ln 2Wy Divd Pavd	14	8	3	2	0
Lee	Rural 2-3Ln 2Wy Undivd	6	9	6	2	0
Lee	Urban 4-5Ln 2Wy Divd Rasd	1122	467	130	30	1
Lee	Urban 4-5Ln 2Wy Divd Pavd	208	87	27	7	0
Lee	Urban 4-5Ln 2Wy Undivd	144	38	6	1	0
Lee	Suburban 4-5Ln 2Wy Divd Rasd	1204	641	172	39	2
Lee	Suburban 4-5Ln 2Wy Divd Pavd	225	102	30	3	0
Lee	Suburban 4-5Ln 2Wy Undivd	0	0	0	0	0
Lee	Rural 4-5Ln 2Wy Divd Rasd	77	51	37	8	0
Lee	Rural 4-5Ln 2Wy Divd Pavd	0	0	0	0	0
Lee	Rural 4-5Ln 2Wy Undivd	0	0	0	0	0
Lee	Urban 6+Ln 2Wy Divd Rasd	1479	568	129	26	1
Lee	Urban 6+Ln 2Wy Divd Pavd	723	225	52	10	2
Lee	Urban 6+Ln 2Wy Undivd	0	0	0	0	0
Lee	Suburban 6+Ln 2Wy Divd Rasd	2320	821	221	41	1
Lee	Suburban 6+Ln 2Wy Divd Pavd	0	0	0	0	0
Lee	Suburban 6+Ln 2Wy Undivd	0	0	0	0	0
Lee	Rural 6+Ln 2Wy Divd Rasd	0	0	0	0	0
Lee	Rural 6+Ln 2Wy Divd Pavd	0	0	0	0	0
Lee	Rural 6+Ln 2Wy Undivd	0	0	0	0	0
Lee	Urban One Way	210	50	6	4	6
Lee	Suburban One Way	54	29	7	3	0
Lee	Rural One Way	1	1	0	0	0
Lee	Undefined	160	43	7	3	0
Lee	Not Coded	9223	3929	1131	234	14

Safety Ratio Estimation

Actual Crash Rate Estimation

The segment crash rate was calculated as crashes per million vehicles miles travel (MVMT). The formula used to calculate the segment crash rate is as follows:

$$R = \frac{C \times 1{,}000{,}000}{V \times 365 \times N \times L}$$

Where: R = Crash rate for segment expressed as crashes per million vehicles miles travel (MVMT)

C = Total number of segment-related crashes.

N = Number of years of data

V = Traffic volumes for the segment (AADT)

L = Length of the segment (mile)

Average Crash Rate was considered from FDOT CAR Lee County, 5-year Average Crash Rate (2015 - 2019). See **Appendix A.**

Confidence Level values:

	Confidence Level	Value
K (probability constant) =	90	1.282
	95	1.645
	99	2.327

Applied 99% confidence level value of 2.327

Critical Crash Rate:

Rc = Critical Crash Rate in MVMT

Rc = Ra + K*sqrt(Ra/Va) + (1/(2Va))

Where, Ra is Average Crash Rate rate

K is 99% confidence level value of 2.327

Va is exposure in MVMT V = (AADT*365*years*miles)/(10^6)

Safety Ratio is Actual Crash Rate divided by Critical Crash Rate

Description	Total Crashes	Crash Avg/Year	Average AADT	Actual Crash Rate	Average Crash Rate*	V	Critical Crash Rate	Safety Ratio
SR 31 Segment	33	6.6	13,180	1.057	0.446	4.811	1.258	0.841

**FDOT CAR Lee County, 5-year Average Crash Rate (2015 - 2019)*

Crash Rate Crashes per Million Vehicle Miles Travelled (MVMT)

Rural 2-3Ln 2Wy Undivded

Note: CAR average crash rates for intersections include a 250 ft radius influence area

The critical crash rate is based on the average crash rate for a similar facility adjusted by vehicle exposure and a probability constant. The safety ratio represents the actual crash rate divided by the critical crash rate. If a segment has an actual crash rate higher than the critical crash rate (i.e., safety ratio > 1.0), it may have a safety deficiency.

Segment Length	6850	1.297348485

Appendix B
HSM Predictive Crash Analysis

HSM Chapter 12 NCHRP 17-58 Spreadsheet

Developed by: Michael P. Pratt, Srinivas R. Geedipally, Hadi Khazraee, and Dominique Lord
Version 2

FOREWORD

This software can be used to assist with the assessment of the safety performance of urban and suburban arterial facilities, including segments and intersections. It is intended for use by engineers and technicians responsible for safety analysis or management of urban streets.

This software is intended for use with the updated Chapter 12 of the Highway Safety Manual. The analyst is encouraged to read the document so that he or she will have an understanding of how best to use the software and interpret its output.

The equations used in this software are documented in this chapter. Analysts should refer to the chapter whenever they have questions about the modeling approach, assumptions, or limitations.

INSTRUCTIONS

Each cell on the analysis worksheets has been color-coded to indicate the type of data entered or displayed. The following list indentifies the meaning of each cell color.

Blue cells represent "input data." Each time the worksheet is used, the values in these cells should be changed to represent the segment or intersection being evaluated. Input data must be provided by the analyst.
Yellow cells represent "calibration factors." The values in these cells represent reasonable values for most situations and do not need to be changed. Calibration factors can be changed to more accurately reflect local conditions. However, field data from sites local to the agency should be the basis for this change.
Purple cells represent "key output variables." The values are computed using the input data, calibration factors, and default values.
Note: White, gray, and purple cells are locked and cannot be changed.

DISCLAIMER

No warranty is made by the developers or their employer as to the accuracy, completeness, or reliability of this software and its associated equations and documentation. No responsibility is assumed by the developers for incorrect results or damages resulting from the use of this software.

FDOT Modifications

Modifications by Kittelson & Associates, Inc
Version 1.2 (May 2020)

The Florida Department of Transportation (FDOT) has modified this workbook to include crash cost computations. The intent of these modifications is to support the analysis shown in Chapter 14, Manual of Uniform Traffic Studies (MUTS) for Roadway Lighting Justification. The NCHRP 17-58 research considered the presence of roadway lighting in the development of a recommended road segment crash prediction model (CPM). However, the NCHRP 17-58 CPM does not contain a lighting-presence-related crash modification factor (CMF). Fortunately, the Final Report for NCHRP 17-58 includes Tables 24, 25 and 26 providing information which can be used to convert the 17-58 SPF predictions such that they correspond to a base condition of "no lighting present." The adjusted SPF can then be used with an "add roadway segment lighting" CMF to obtain reliable estimates of the average crash frequency when lighting is (or is not) present.

The CMFs listed in the Highway Safety Manual (HSM) for adding roadway segment lighting are based upon NCHRP 617. The NCHRP 617 Final Report indicates that a CMF value of 0.94 is appropriate when adding lighting to a roadway segment. This CMF applies to total crashes (i.e., all crash types and severities) for a full day (i.e., daytime and nighttime combined).

The adjusted SPF is used with the aforementioned CMF to compute the predicted crash frequency (or Np) of a road segment. If crash data is available, the expected crash frequency (or Ne) can be computed. The user should always select "site-specific" in the "Totals" worksheet tab when conducting Empirical Bays analysis or applying crash data. Project level analysis is not appropriate for lighting analysis.

The crash cost calculations for street segments are done in the following two worksheets: "TWS Crash Cost" and "OWS Crash Cost", with TWS being two-way street and OWS being one-way street. Each worksheet presents the calculations for one segment and has the ability to compute the life-cycle costs. At the top of each worksheet, user input fields are provided for: opening year, analysis period (years), traffic growth rate and rate of return (always 4% for FDOT projects). Each worksheet calculates a new value of Np or Ne for each analysis year in the analysis period. This crash frequency is then distributed by crash severity using the KABCO scale (i.e., K= fatality, A= incapacitating injury, etc.) crash distribution. The default severity distribution (provided in the Factors worksheet) was developed for FDOT roadways using 2013-2017 crash data. The annual crash cost is based upon values provided in the FDOT Design Manual, Table 122.6.2 – FDOT KABCO Crash Costs. The "TWS Crash Cost" and "OWS Crash Cost" worksheets are capable of applying the CMF to compute the with and without light crash costs. Each segment's total with and without crash costs are reported in the "Crash Cost Totals" worksheet.

The intersection crash costs are also computed using this workbook. In the "Intersections" tab, the user should always select "No" in Line 29 for the is "Lighting Present?" as this is the base condition. The intersection lighting CMF will be computed and applied for the with lighting condition in the "Intx Crash Cost" worksheet tab. Please note the intersection lighting CMF only applies to vehicle to vehicle crashes. The worksheet applies the CMF to no lighting vehicular crashes and then adds in the vehicle-pedestrian and vehicle-bicycle crashes before the KABCO distribution. Similar to the segment crash costs worksheets, the intersection with and without crash costs are computed in the "Intx Crash Cost" worksheet tab and reported in the "Crash Cost Totals" worksheet.

Safety Prediction Worksheet for Two-Way Urban and Suburban Arterial Segments

General Information

Analyst	
Agency	
Date	4/10/2023
Location	Lee County

Site Information

Street number	
Street name	SR 31
Segment number	
Analysis year	2025

Add to Totals worksheet | Restore equations | Reset input cells

Output Summary

Predicted crash frequency, crashes / year

	F+I	PDO	Total
Total crashes	2.885	4.313	7.198
Multiple-vehicle crashes	2.279	3.748	
Single-vehicle crashes	0.444	0.566	
Vehicle-pedestrian crashes	0.106		
Vehicle-bicycle crashes	0.056		

Combined CMF

	F+I	PDO
Multiple-vehicle crashes	0.815	0.815
Single-vehicle crashes	0.895	0.895

Severity distribution for F+I crashes

K	A	B	C
0.054	0.227	0.882	1.722

Input Data		Value	Advisory Messages
Basic Roadway Data			
Area type		Suburban	.
Segment type		6D	.
Segment length, mi		0.84	.
Annual average daily traffic (AADT), veh/day		29500	.
Number of highway-rail grade crossings present		0	.
Posted speed limit, mi/h		45	.
Automated speed enforcement present?		No	.
Access Data			
Driveway count	Major commercial	1	1 major comm. driveways per mile.
	Major industrial	0	.
	Minor	0	.
Cross Section Data			
Lane width, ft		12	.
Outside shoulder width, ft		4	.
Median width, ft		22	.
Median barrier present?		No	.
Roadside Data			
Roadside fixed object count			.
Average roadside fixed object offset, ft		0	.

Calibration Factors	Value	Default Values
Local calibration factor (C)	1.000	1.000
Adjustment factor for pedestrians (f_{ped})	0.015	0.015
Adjustment factor for bicyclists (f_{bike})	0.008	0.008
Severity distribution calibration factor ($C_{sdf,tws}$)	1.000	1.000

Crash Modification Factors	F+I		PDO	
	Multiple	Single	Multiple	Single
Lane width	1.000	1.000	1.000	1.000
Outside shoulder width	0.931	0.931	0.931	0.931
Median width	0.961	0.961	0.961	0.961
Median barrier	1.000	1.000	1.000	1.000
Highway-rail grade crossing	1.000	1.000	1.000	1.000
Major commercial driveways	0.972		0.972	
Major industrial driveways	0.989		0.989	
Minor driveways	0.947		0.947	
Automated speed enforcement	1.000	1.000	1.000	1.000
Roadside fixed objects		1.000		1.000

	Intercept		AADT coefficient	
	F+I	PDO	F+I	PDO
Multiple	-11.56	-9.21	1.24	1.06
Single	-5.26	-4.71	0.46	0.43

	K	A	B
Constant	-5.114	-1.735	-0.575
Area type	-0.471	-0.251	-0.251
Speed	0.044	0.000	0.000
6D	-0.333	-0.292	-0.094
8D	-0.230	-0.523	-0.237
V	-3.458	-2.027	-0.669
P	0.019	0.079	0.306

Intercept				
Segment type	Multiple,F+I	Single,F+I	Multiple,PDO	Single,PDO
6U	-15.42	-4.54	-15.68	-3.98
6D	-11.56	-5.26	-9.21	-4.71
7T	-11.44	-4.54	-9.2	-3.98
8D	-11.38	-5.36	-8.84	-4.34

AADT coefficient				
Segment type	Multiple,F+I	Single,F+I	Multiple,PDO	Single,PDO
6U	1.63	0.37	1.7	0.34
6D	1.24	0.46	1.06	0.43
7T	1.24	0.37	1.06	0.34
8D	1.24	0.46	1.06	0.43

Minimum	Maximum
0	118000
0	3
0	116.592
0	84
0	100.128
9	27
0	14
0	240
0	426.72
0	30

Segment type	Minimum	Maximum
6U	0	78000
6D	0	118000
7T	0	94000
8D	0	152000

Segment type	f_{ped}, ≤ 30 mph	f_{ped}, ≥ 35 mph	f_{bike}, ≤ 30 mph	f_{bike}, ≥ 35 mph
6U	0.018	0.013	0.013	0.007
6D	0.029	0.015	0.007	0.008
7T	0.034	0.014	0.025	0.001
8D	0.023	0.023	0.014	0.014

		F+I coefficients		PDO coefficients	
Value	Base	Multiple	Single	Multiple	Single
12	12	-0.0219	-0.0219	-0.0219	-0.0219
4	1.5	-0.0285	-0.0285	-0.0285	-0.0285
22	15	-0.0057	-0.0057	-0.0057	-0.0057
0		-0.5106	0.6766	-0.5106	0.6766
0	0	0.0388	0.0388	0.0388	0.0388
1.19047619	2	0.035		0.035	
0	1	0.0107		0.0107	
0	10	0.0054		0.0054	
0	0	0.83	0.83	1	1
0			0.131		0.131

Safety Prediction Worksheet for Urban and Suburban Arterial Intersections

General Information

Analyst	
Agency	
Date	4/10/2023
Location	Lee County

Site Information

Major street name	SR 31
Minor street name	Marina Dr
Intersection number	2
Analysis year	2025

Add to Totals worksheet | Restore equations | Reset input cells

Output Summary

Predicted crash frequency, crashes / year

	F+I	PDO	Total
Total crashes	4.836	4.357	9.193
Total-vehicle crashes	4.656	4.357	
Vehicle-pedestrian crashes	0.009		
Vehicle-bicycle crashes	0.171		

Combined CMF

	F+I	PDO
Total-vehicle crashes	0.674	0.674
Vehicle-pedestrian crashes	1.000	

Severity distribution for F+I crashes

K	A	B	C
0.026	0.255	1.278	3.276

Input Data	*Value*	*Advisory Messages*
Intersection Data		
Area type	Suburban	.
Number of legs	4	**4SG intersection type**
Traffic control type	Signalized	.
Lighting present?	Yes	.
Red-light cameras present?	No	.
Daily pedestrian volume crossing all legs (peds/day)	10	.
Maximum number of lanes crossed by a pedestrian	8	.
Number of bus stops within 1,000 ft of intersection	0	.
School(s) present within 1,000 ft of intersection?	No	.
Alcohol sales establishments within 1,000 ft	0	.

Street Data	*Major*	*Minor*	.
Street configuration	Two-way	Two-way	**2x2 intersection configuration**
Annual average daily traffic (AADT), veh/day	29500	1900	.
Number of through lanes	6	2	.
Number of approaches with left-turn lanes	2	2	.
Number of left-turn movements with protected phasing	2	0	.
Number of right-turn movements prohibited on red	0	0	.
Number of U-turn movements prohibited	0	0	.
Number of approaches with right-turn channelization	0	0	.

Calibration Factors	*Value*	*Default Values*
Local calibration factor (C)	2.270	1.000
Adjustment factor for pedestrians for stop control (f_{ped})	0.049	0.049
Adjustment factor for bicyclists (f_{bike})	0.019	0.019
Severity distribution calibration factor, 2-way ($C_{sdf,twi}$)	1.000	1.000
Severity distribution calibration factor, 1-way ($C_{sdf,owi}$)	1.000	1.000
Probability of fatality given K+A severity ($P_{K\|K+A}$)	0.094	0.094

Manner of Collision Proportions

2x2 intersections	3ST, F+I	3ST, PDO	3SG, F+I	3SG, PDO	4ST, F+I	4ST, PDO	4SG, F+I	4SG, PDO
Rear-end collision proportion	0.094	0.154	0.120	0.189	0.079	0.098	0.083	0.148
Angle colllision proportion	0.764	0.629	0.676	0.554	0.806	0.707	0.746	0.552
1x2 or 1x1 intersections	3ST, F+I	3ST, PDO	3SG, F+I	3SG, PDO	4ST, F+I	4ST, PDO	4SG, F+I	4SG, PDO
Rear-end collision proportion	0.100	0.100	0.111	0.143	0.047	0.065	0.030	0.059
Angle colllision proportion	0.300	0.250	0.889	0.571	0.822	0.706	0.837	0.733

Crash Modification Factors	*F+I*	*PDO*
Total-vehicle crash CMFs		
Lighting	0.911	0.911
Red-light cameras	1.000	1.000
Left-turn signal phasing	0.740	0.740
Right-turn-on-red	1.000	1.000
U-turn prohibition	1.000	1.000
Right-turn channelization	1.000	1.000
Number of lanes	1.000	1.000
Vehicle-pedestrian crash CMFs		
Bus stops	1.000	
Schools	1.000	
Alcohol sales establishments	1.000	

2x2,F+I	2x2,PDO

4SG	F+I	PDO
Intercept	-4.63	-3.77
Major AADT	0.36	0.27
Minor AADT	0.27	0.27
SPF	6.91	6.47
Two-way Signalized	K+A	B
Constant	-1.767	-0.725
Area type	-0.116	-0.116
RTOR	-1.166	-1.074
U-turn	-0.142	-0.069
Major LT	-0.178	-0.108
Lighting	-0.331	0.000
Minor LT	0.000	0.000
Minor RT channel	0.000	0.000
Major RT channel	0.000	0.000
V	-2.4540	-0.9410
P	0.0582	0.2644

	3SG	4SG	
Intercept	-6.60	-9.53	-9.53
Total AADT	0.05	0.40	0.40
AADT ratio	0.24	0.26	0.26
PedVol	0.41	0.45	0.45
Lanes	0.09	0.04	0.04
Npedbase			

Major config	Minor config	Config	Check
2	2	2x2	1

Coefficients by intersection type						
Intercept	2x2,F+I	1x2,F+I	1x1,F+I	2x2,PDO	1x2,PDO	1x1,PDO
3ST	-15.03	-9.12	-9.22	-14.97	-17.6	-17.99
3SG	-7.11	-11.21	-11.31	-5.07	-7.07	-7.46
4ST	-10.08	-10.83	-10.93	-12.01	-12.06	-12.46
4SG	-4.63	-5.47	-5.57	-3.77	-5.92	-6.31
Major AADT	2x2,F+I	1x2,F+I	1x1,F+I	2x2,PDO	1x2,PDO	1x1,PDO
3ST	1.09	0.65	0.65	1.35	1.53	1.53
3SG	0.65	0.59	0.59	0.47	0.49	0.49
4ST	0.58	0.67	0.67	0.67	0.86	0.86
4SG	0.36	0.18	0.18	0.27	0.38	0.38
Minor AADT	2x2,F+I	1x2,F+I	1x1,F+I	2x2,PDO	1x2,PDO	1x1,PDO
3ST	0.53	0.11	0.11	0.15	0.31	0.31
3SG	0.16	0.56	0.56	0.14	0.35	0.35
4ST	0.6	0.41	0.41	0.75	0.51	0.51
4SG	0.27	0.37	0.37	0.27	0.36	0.36

K+A	Two-way Signalized
Constant	-1.767
Area type	-0.116
RTOR	-1.166
U-turn	-0.142
Major LT	-0.178
Lighting	-0.331
Minor LT	
Minor RT channel	
Major RT channel	

Check values	Major							
Minor	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	1	0	1
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	1	0	1
5	0	0	0	0	0	0	0	0
6	0	0	0	1	0	1	0	1
7	0	0	0	0	0	0	0	0
8	0	1	0	1	0	1	0	1

2x2	Major							
Minor	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	1	0	1
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	1	0	1
5	0	0	0	0	0	0	0	0
6	0	0	0	1	0	1	0	1
7	0	0	0	0	0	0	0	0
8	0	1	0	1	0	1	0	1

Major

Minimum	Maximum	Check
0	137600	1

Minor

Minimum	Maximum	Check
0	68400	1

Ped max values	Major	Minor	PedVol
3SG	74300	51500	34200
4SG	80200	49100	12600
Value	80200	49100	12600

Configuration	$P_{K\|K+A}$
Two-way Signalized	0.094
One-way Signalized	0.046
Two-way stop	0.043

f_{ped} for ST	3	4
Two-way	0.051	0.049
One-way	0.015	0.02

f_{bike}	Two-way	One-way
3ST	0.048	0.018
3SG	0.029	0.016
4ST	0.039	0.022
4SG	0.019	0.012

Value	F+I	PDO	Two-way,F+I	One-way,F+I	Two-way,PDO	One-way,PDO
1	0.38	0.38	0.38	0.38	0.38	0.38
2	0.86	0.86	0.86	1	0.86	1
0	0.98	0.98	0.98	0.98	0.98	0.98
0	0.96	0.96	0.96	1	0.96	1
0	0.2175	0.2175	0.2175	0	0.2175	0
	0.194	0.194	0.194	0.242	0.194	0.242

Proportions	0.235
Configuration	Lighting
3ST	0.238
3SG	0.235
4ST	0.229
4SG	0.235

Street	Base #	P
Major	6	0.939
Minor	2	0.061

$p_{ra(mv+sv)(FI)}$	0.746
$p_{ra(mv+sv)(PDO)}$	0.552
$p_{re(mv+sv)(FI)}$	0.083
$p_{re(mv+sv)(PDO)}$	0.148
p_{ra}	0.652
p_{re}	0.114
c_{ra}	0.74
c_{re}	1.18

Value	0	1	2	3	4	5	6	7	8	Max
0	1	2.78								4.15
0	1									1.35
0	1	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.56

One-way Signalized	Two-way stop
-2.042	-1.106
-0.407	-0.382
-0.296	
	-0.918
-0.306	

B	Two-way Signalized	One-way Signalized	Two-way stop
Constant	-0.725	-0.741	-0.361
Area type	-0.116	-0.099	-0.278
RTOR	-1.074		
U-turn	-0.069		
Major LT	-0.108	-0.255	
Lighting			-0.397
Minor LT			-0.434
Minor RT channel		-0.504	
Major RT channel		0.557	

Max AADTs	Major	Minor
2x2,3ST	66800	8600
2x2,4ST	54600	4600
2x2,3SG	94000	31000
2x2,4SG	137600	68400
1x2,3ST	42700	13400
1x2,4ST	23400	19200
1x2,3SG	43800	58800
1x2,4SG	77000	98900
1x1,3ST	16900	11100
1x1,4ST	11000	6800
1x1,3SG	20100	7500
1x1,4SG	24300	16900

1x2	Major							
Minor	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
2	0	1	1	1	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	1	1	1	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	1	1	1	0	0	0	0
7	0	0	0	0	0	0	0	0
8	0	1	1	1	0	0	0	0

1x1	Major							
Minor	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
2	0	1	1	1	0	0	0	0
3	0	1	1	1	0	0	0	0
4	0	1	1	1	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0

HSM Chapter 12 NCHRP 17-58 Spreadsheet

Developed by: Michael P. Pratt, Srinivas R. Geedipally, Hadi Khazraee, and Dominique Lord
Version 2

FOREWORD

This software can be used to assist with the assessment of the safety performance of urban and suburban arterial facilities, including segments and intersections. It is intended for use by engineers and technicians responsible for safety analysis or management of urban streets.

This software is intended for use with the updated Chapter 12 of the Highway Safety Manual. The analyst is encouraged to read the document so that he or she will have an understanding of how best to use the software and interpret its output.

The equations used in this software are documented in this chapter. Analysts should refer to the chapter whenever they have questions about the modeling approach, assumptions, or limitations.

INSTRUCTIONS

Each cell on the analysis worksheets has been color-coded to indicate the type of data entered or displayed. The following list indentifies the meaning of each cell color.

Blue cells represent "input data." Each time the worksheet is used, the values in these cells should be changed to represent the segment or intersection being evaluated. Input data must be provided by the analyst.
Yellow cells represent "calibration factors." The values in these cells represent reasonable values for most situations and do not need to be changed. Calibration factors can be changed to more accurately reflect local conditions. However, field data from sites local to the agency should be the basis for this change.
Purple cells represent "key output variables." The values are computed using the input data, calibration factors, and default values.
Note: White, gray, and purple cells are locked and cannot be changed.

DISCLAIMER

No warranty is made by the developers or their employer as to the accuracy, completeness, or reliability of this software and its associated equations and documentation. No responsibility is assumed by the developers for incorrect results or damages resulting from the use of this software.

FDOT Modifications

Modifications by Kittelson & Associates, Inc
Version 1.2 (May 2020)

The Florida Department of Transportation (FDOT) has modified this workbook to include crash cost computations. The intent of these modifications is to support the analysis shown in Chapter 14, Manual of Uniform Traffic Studies (MUTS) for Roadway Lighting Justification. The NCHRP 17-58 research considered the presence of roadway lighting in the development of a recommended road segment crash prediction model (CPM). However, the NCHRP 17-58 CPM does not contain a lighting-presence-related crash modification factor (CMF). Fortunately, the Final Report for NCHRP 17-58 includes Tables 24, 25 and 26 providing information which can be used to convert the 17-58 SPF predictions such that they correspond to a base condition of "no lighting present." The adjusted SPF can then be used with an "add roadway segment lighting" CMF to obtain reliable estimates of the average crash frequency when lighting is (or is not) present.

The CMFs listed in the Highway Safety Manual (HSM) for adding roadway segment lighting are based upon NCHRP 617. The NCHRP 617 Final Report indicates that a CMF value of 0.94 is appropriate when adding lighting to a roadway segment. This CMF applies to total crashes (i.e., all crash types and severities) for a full day (i.e., daytime and nighttime combined).

The adjusted SPF is used with the aforementioned CMF to compute the predicted crash frequency (or Np) of a road segment. If crash data is available, the expected crash frequency (or Ne) can be computed. The user should always select "site-specific" in the "Totals" worksheet tab when conducting Empirical Bays analysis or applying crash data. Project level analysis is not appropriate for lighting analysis.

The crash cost calculations for street segments are done in the following two worksheets: "TWS Crash Cost" and "OWS Crash Cost", with TWS being two-way street and OWS being one-way street. Each worksheet presents the calculations for one segment and has the ability to compute the life-cycle costs. At the top of each worksheet, user input fields are provided for: opening year, analysis period (years), traffic growth rate and rate of return (always 4% for FDOT projects). Each worksheet calculates a new value of Np or Ne for each analysis year in the analysis period. This crash frequency is then distributed by crash severity using the KABCO scale (i.e., K= fatality, A= incapacitating injury, etc.) crash distribution. The default severity distribution (provided in the Factors worksheet) was developed for FDOT roadways using 2013-2017 crash data. The annual crash cost is based upon values provided in the FDOT Design Manual, Table 122.6.2 – FDOT KABCO Crash Costs. The "TWS Crash Cost" and "OWS Crash Cost" worksheets are capable of applying the CMF to compute the with and without light crash costs. Each segment's total with and without crash costs are reported in the "Crash Cost Totals" worksheet.

The intersection crash costs are also computed using this workbook. In the "Intersections" tab, the user should always select "No" in Line 29 for the is "Lighting Present?" as this is the base condition. The intersection lighting CMF will be computed and applied for the with lighting condition in the "Intx Crash Cost" worksheet tab. Please note the intersection lighting CMF only applies to vehicle to vehicle crashes. The worksheet applies the CMF to no lighting vehicular crashes and then adds in the vehicle-pedestrian and vehicle-bicycle crashes before the KABCO distribution. Similar to the segment crash costs worksheets, the intersection with and without crash costs are computed in the "Intx Crash Cost" worksheet tab and reported in the "Crash Cost Totals" worksheet.

Safety Prediction Worksheet for Two-Way Urban and Suburban Arterial Segments

General Information

Analyst	
Agency	
Date	4/10/2023
Location	Lee County

Site Information

Street number	
Street name	SR 31
Segment number	
Analysis year	2045

Add to Totals worksheet | Restore equations | Reset input cells

Output Summary

Predicted crash frequency, crashes / year

	F+I	PDO	Total
Total crashes	6.453	8.722	15.175
Multiple-vehicle crashes	5.496	7.954	
Single-vehicle crashes	0.616	0.768	
Vehicle-pedestrian crashes	0.223		
Vehicle-bicycle crashes	0.119		

Combined CMF

	F+I	PDO
Multiple-vehicle crashes	0.815	0.815
Single-vehicle crashes	0.895	0.895

Severity distribution for F+I crashes

K	A	B	C
0.121	0.507	1.973	3.852

Input Data		Value	Advisory Messages
Basic Roadway Data			
Area type		Suburban	.
Segment type		6D	.
Segment length, mi		0.84	.
Annual average daily traffic (AADT), veh/day		60000	.
Number of highway-rail grade crossings present		0	.
Posted speed limit, mi/h		45	.
Automated speed enforcement present?		No	.
Access Data			
Driveway count	Major commercial	1	1 major comm. driveways per mile.
	Major industrial	0	.
	Minor	0	.
Cross Section Data			
Lane width, ft		12	.
Outside shoulder width, ft		4	.
Median width, ft		22	.
Median barrier present?		No	.
Roadside Data			
Roadside fixed object count			.
Average roadside fixed object offset, ft		0	.

Calibration Factors	Value	Default Values
Local calibration factor (C)	1.000	1.000
Adjustment factor for pedestrians (f_{ped})	0.015	0.015
Adjustment factor for bicyclists (f_{bike})	0.008	0.008
Severity distribution calibration factor ($C_{sdf,tws}$)	1.000	1.000

Crash Modification Factors	F+I		PDO	
	Multiple	Single	Multiple	Single
Lane width	1.000	1.000	1.000	1.000
Outside shoulder width	0.931	0.931	0.931	0.931
Median width	0.961	0.961	0.961	0.961
Median barrier	1.000	1.000	1.000	1.000
Highway-rail grade crossing	1.000	1.000	1.000	1.000
Major commercial driveways	0.972		0.972	
Major industrial driveways	0.989		0.989	
Minor driveways	0.947		0.947	
Automated speed enforcement	1.000	1.000	1.000	1.000
Roadside fixed objects		1.000		1.000

	Intercept		AADT coefficient	
	F+I	PDO	F+I	PDO
Multiple	-11.56	-9.21	1.24	1.06
Single	-5.26	-4.71	0.46	0.43

	K	A	B
Constant	-5.114	-1.735	-0.575
Area type	-0.471	-0.251	-0.251
Speed	0.044	0.000	0.000
6D	-0.333	-0.292	-0.094
8D	-0.230	-0.523	-0.237
V	-3.458	-2.027	-0.669
P	0.019	0.079	0.306

Intercept				
Segment type	Multiple,F+I	Single,F+I	Multiple,PDO	Single,PDO
6U	-15.42	-4.54	-15.68	-3.98
6D	-11.56	-5.26	-9.21	-4.71
7T	-11.44	-4.54	-9.2	-3.98
8D	-11.38	-5.36	-8.84	-4.34

AADT coefficient				
Segment type	Multiple,F+I	Single,F+I	Multiple,PDO	Single,PDO
6U	1.63	0.37	1.7	0.34
6D	1.24	0.46	1.06	0.43
7T	1.24	0.37	1.06	0.34
8D	1.24	0.46	1.06	0.43

Minimum	Maximum
0	118000
0	3
0	116.592
0	84
0	100.128
9	27
0	14
0	240
0	426.72
0	30

Segment type	Minimum	Maximum
6U	0	78000
6D	0	118000
7T	0	94000
8D	0	152000

Segment type	f_{ped}, ≤ 30 mph	f_{ped}, ≥ 35 mph	f_{bike}, ≤ 30 mph	f_{bike}, ≥ 35 mph
6U	0.018	0.013	0.013	0.007
6D	0.029	0.015	0.007	0.008
7T	0.034	0.014	0.025	0.001
8D	0.023	0.023	0.014	0.014

		F+I coefficients		PDO coefficients	
Value	Base	Multiple	Single	Multiple	Single
12	12	-0.0219	-0.0219	-0.0219	-0.0219
4	1.5	-0.0285	-0.0285	-0.0285	-0.0285
22	15	-0.0057	-0.0057	-0.0057	-0.0057
0		-0.5106	0.6766	-0.5106	0.6766
0	0	0.0388	0.0388	0.0388	0.0388
1.19047619	2	0.035		0.035	
0	1	0.0107		0.0107	
0	10	0.0054		0.0054	
0	0	0.83	0.83	1	1
0			0.131		0.131

Safety Prediction Worksheet for Urban and Suburban Arterial Intersections

General Information

Analyst	
Agency	
Date	4/10/2023
Location	Lee County

Site Information

Major street name	SR 31
Minor street name	Marina Dr
Intersection number	2
Analysis year	2045

Add to Totals worksheet | Restore equations | Reset input cells

Output Summary

Predicted crash frequency, crashes / year

	F+I	PDO	Total
Total crashes	6.566	5.557	12.123
Total-vehicle crashes	6.330	5.557	
Vehicle-pedestrian crashes	0.010		
Vehicle-bicycle crashes	0.226		

Combined CMF

	F+I	PDO
Total-vehicle crashes	0.674	0.674
Vehicle-pedestrian crashes	1.000	

Severity distribution for F+I crashes

K	A	B	C
0.036	0.346	1.736	4.448

Input Data	*Value*	*Advisory Messages*
Intersection Data		
Area type	Suburban	.
Number of legs	4	**4SG intersection type**
Traffic control type	Signalized	.
Lighting present?	Yes	.
Red-light cameras present?	No	.
Daily pedestrian volume crossing all legs (peds/day)	10	.
Maximum number of lanes crossed by a pedestrian	8	.
Number of bus stops within 1,000 ft of intersection	0	.
School(s) present within 1,000 ft of intersection?	No	.
Alcohol sales establishments within 1,000 ft	0	.

Street Data	*Major*	*Minor*	.
Street configuration	Two-way	Two-way	**2x2 intersection configuration**
Annual average daily traffic (AADT), veh/day	60000	2300	.
Number of through lanes	6	2	.
Number of approaches with left-turn lanes	2	2	.
Number of left-turn movements with protected phasing	2	0	.
Number of right-turn movements prohibited on red	0	0	.
Number of U-turn movements prohibited	0	0	.
Number of approaches with right-turn channelization	0	0	.

Calibration Factors	*Value*	*Default Values*
Local calibration factor (C)	2.270	1.000
Adjustment factor for pedestrians for stop control (f_{ped})	0.049	0.049
Adjustment factor for bicyclists (f_{bike})	0.019	0.019
Severity distribution calibration factor, 2-way ($C_{sdf,twi}$)	1.000	1.000
Severity distribution calibration factor, 1-way ($C_{sdf,owi}$)	1.000	1.000
Probability of fatality given K+A severity ($P_{K\|K+A}$)	0.094	0.094

Manner of Collision Proportions

2x2 intersections	3ST, F+I	3ST, PDO	3SG, F+I	3SG, PDO	4ST, F+I	4ST, PDO	4SG, F+I	4SG, PDO
Rear-end collision proportion	0.094	0.154	0.120	0.189	0.079	0.098	0.083	0.148
Angle colllision proportion	0.764	0.629	0.676	0.554	0.806	0.707	0.746	0.552
1x2 or 1x1 intersections	3ST, F+I	3ST, PDO	3SG, F+I	3SG, PDO	4ST, F+I	4ST, PDO	4SG, F+I	4SG, PDO
Rear-end collision proportion	0.100	0.100	0.111	0.143	0.047	0.065	0.030	0.059
Angle colllision proportion	0.300	0.250	0.889	0.571	0.822	0.706	0.837	0.733

Crash Modification Factors	*F+I*	*PDO*
Total-vehicle crash CMFs		
Lighting	0.911	0.911
Red-light cameras	1.000	1.000
Left-turn signal phasing	0.740	0.740
Right-turn-on-red	1.000	1.000
U-turn prohibition	1.000	1.000
Right-turn channelization	1.000	1.000
Number of lanes	1.000	1.000
Vehicle-pedestrian crash CMFs		
Bus stops	1.000	
Schools	1.000	
Alcohol sales establishments	1.000	

2x2,F+I	2x2,PDO

4SG	F+I	PDO
Intercept	-4.63	-3.77
Major AADT	0.36	0.27
Minor AADT	0.27	0.27
SPF	9.40	8.25
Two-way Signalized	K+A	B
Constant	-1.767	-0.725
Area type	-0.116	-0.116
RTOR	-1.166	-1.074
U-turn	-0.142	-0.069
Major LT	-0.178	-0.108
Lighting	-0.331	0.000
Minor LT	0.000	0.000
Minor RT channel	0.000	0.000
Major RT channel	0.000	0.000
V	-2.4540	-0.9410
P	0.0582	0.2644

	3SG	4SG	
Intercept	-6.60	-9.53	-9.53
Total AADT	0.05	0.40	0.40
AADT ratio	0.24	0.26	0.26
PedVol	0.41	0.45	0.45
Lanes	0.09	0.04	0.04
Npedbase			

Major config	Minor config	Config	Check
2	2	2x2	1

Coefficients by intersection type						
Intercept	2x2,F+I	1x2,F+I	1x1,F+I	2x2,PDO	1x2,PDO	1x1,PDO
3ST	-15.03	-9.12	-9.22	-14.97	-17.6	-17.99
3SG	-7.11	-11.21	-11.31	-5.07	-7.07	-7.46
4ST	-10.08	-10.83	-10.93	-12.01	-12.06	-12.46
4SG	-4.63	-5.47	-5.57	-3.77	-5.92	-6.31
Major AADT	2x2,F+I	1x2,F+I	1x1,F+I	2x2,PDO	1x2,PDO	1x1,PDO
3ST	1.09	0.65	0.65	1.35	1.53	1.53
3SG	0.65	0.59	0.59	0.47	0.49	0.49
4ST	0.58	0.67	0.67	0.67	0.86	0.86
4SG	0.36	0.18	0.18	0.27	0.38	0.38
Minor AADT	2x2,F+I	1x2,F+I	1x1,F+I	2x2,PDO	1x2,PDO	1x1,PDO
3ST	0.53	0.11	0.11	0.15	0.31	0.31
3SG	0.16	0.56	0.56	0.14	0.35	0.35
4ST	0.6	0.41	0.41	0.75	0.51	0.51
4SG	0.27	0.37	0.37	0.27	0.36	0.36

K+A	Two-way Signalized
Constant	-1.767
Area type	-0.116
RTOR	-1.166
U-turn	-0.142
Major LT	-0.178
Lighting	-0.331
Minor LT	
Minor RT channel	
Major RT channel	

Check values	Major							
Minor	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	1	0	1
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	1	0	1
5	0	0	0	0	0	0	0	0
6	0	0	0	1	0	1	0	1
7	0	0	0	0	0	0	0	0
8	0	1	0	1	0	1	0	1

2x2	Major							
Minor	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	1	0	1
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	1	0	1
5	0	0	0	0	0	0	0	0
6	0	0	0	1	0	1	0	1
7	0	0	0	0	0	0	0	0
8	0	1	0	1	0	1	0	1

Major

Minimum	Maximum	Check
0	137600	1

Minor

Minimum	Maximum	Check
0	68400	1

Ped max values	Major	Minor	PedVol
3SG	74300	51500	34200
4SG	80200	49100	12600
Value	80200	49100	12600

Configuration	$P_{K\|K+A}$
Two-way Signalized	0.094
One-way Signalized	0.046
Two-way stop	0.043

f_{ped} for ST	3	4
Two-way	0.051	0.049
One-way	0.015	0.02

f_{bike}	Two-way	One-way
3ST	0.048	0.018
3SG	0.029	0.016
4ST	0.039	0.022
4SG	0.019	0.012

Value	F+I	PDO	Two-way,F+I	One-way,F+I	Two-way,PDO	One-way,PDO
1	0.38	0.38	0.38	0.38	0.38	0.38
2	0.86	0.86	0.86	1	0.86	1
0	0.98	0.98	0.98	0.98	0.98	0.98
0	0.96	0.96	0.96	1	0.96	1
0	0.2175	0.2175	0.2175	0	0.2175	0
	0.194	0.194	0.194	0.242	0.194	0.242

Proportions	0.235
Configuration	Lighting
3ST	0.238
3SG	0.235
4ST	0.229
4SG	0.235

Street	Base #	P
Major	6	0.963
Minor	2	0.037

$p_{ra(mv+sv)(FI)}$	0.746
$p_{ra(mv+sv)(PDO)}$	0.552
$p_{re(mv+sv)(FI)}$	0.083
$p_{re(mv+sv)(PDO)}$	0.148
p_{ra}	0.655
p_{re}	0.113
c_{ra}	0.74
c_{re}	1.18

Value	0	1	2	3	4	5	6	7	8	Max
0	1	2.78								4.15
0	1									1.35
0	1	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.56

One-way Signalized	Two-way stop
-2.042	-1.106
-0.407	-0.382
-0.296	
	-0.918
-0.306	

B	Two-way Signalized	One-way Signalized	Two-way stop
Constant	-0.725	-0.741	-0.361
Area type	-0.116	-0.099	-0.278
RTOR	-1.074		
U-turn	-0.069		
Major LT	-0.108	-0.255	
Lighting			-0.397
Minor LT			-0.434
Minor RT channel		-0.504	
Major RT channel		0.557	

Max AADTs	Major	Minor
2x2,3ST	66800	8600
2x2,4ST	54600	4600
2x2,3SG	94000	31000
2x2,4SG	137600	68400
1x2,3ST	42700	13400
1x2,4ST	23400	19200
1x2,3SG	43800	58800
1x2,4SG	77000	98900
1x1,3ST	16900	11100
1x1,4ST	11000	6800
1x1,3SG	20100	7500
1x1,4SG	24300	16900

1x2	Major							
Minor	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
2	0	1	1	1	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	1	1	1	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	1	1	1	0	0	0	0
7	0	0	0	0	0	0	0	0
8	0	1	1	1	0	0	0	0

1x1	Major							
Minor	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
2	0	1	1	1	0	0	0	0
3	0	1	1	1	0	0	0	0
4	0	1	1	1	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0

Appendix C
Preliminary Synchro Analysis
SR 31 at Marina and Restaurant Entrance

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	123	0	0	28	56	77	1011	20	20	1174	38
Future Vol, veh/h	0	0	123	0	0	28	56	77	1011	20	20	1174	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	400	-	-	150	-	220
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	6	2	6	2	2	2	2	6	6	2	2	6	6
Mvmt Flow	0	0	129	0	0	29	59	81	1064	21	21	1236	40

Major/Minor	Minor2			Minor1			Major1				Major2		
Conflicting Flow All	-	-	618	-	-	543	902	1276	0	0	1085	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.22	-	-	7.14	5.64	5.42	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.96	-	-	3.92	2.32	3.16	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	363	0	0	414	498	277	-	-	356	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-	-
Platoon blocked, %									-	-		-	-
Mov Cap-1 Maneuver	-	-	363	-	-	414	297	297	-	-	356	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.3	14.4	3.1	0.3
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	297	-	-	363	414	356	-	-
HCM Lane V/C Ratio	0.471	-	-	0.357	0.071	0.059	-	-
HCM Control Delay (s)	27.5	-	-	20.3	14.4	15.7	-	-
HCM Lane LOS	D	-	-	C	B	C	-	-
HCM 95th %tile Q(veh)	2.4	-	-	1.6	0.2	0.2	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	197	0	0	16	103	76	1262	27	27	989	83
Future Vol, veh/h	0	0	197	0	0	16	103	76	1262	27	27	989	83
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	400	-	-	150	-	220
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	6	2	6	2	2	2	2	6	6	2	2	6	6
Mvmt Flow	0	0	207	0	0	17	108	80	1328	28	28	1041	87

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	-	-	521	-	-	678	760	1128	0	0	1356	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.22	-	-	7.14	5.64	5.42	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.96	-	-	3.92	2.32	3.16	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	420	0	0	338	597	328	-	-	262	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-	-
Platoon blocked, %									-	-		-	-
Mov Cap-1 Maneuver	-	-	420	-	-	338	322	322	-	-	262	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.6	16.2	3.8	0.5
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	322	-	-	420	338	262	-	-
HCM Lane V/C Ratio	0.585	-	-	0.494	0.05	0.108	-	-
HCM Control Delay (s)	30.9	-	-	21.6	16.2	20.4	-	-
HCM Lane LOS	D	-	-	C	C	C	-	-
HCM 95th %tile Q(veh)	3.5	-	-	2.7	0.2	0.4	-	-

Intersection	
Int Delay, s/veh	12.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	161	0	0	34	70	93	2298	25	25	2720	45
Future Vol, veh/h	0	0	161	0	0	34	70	93	2298	25	25	2720	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	400	-	-	150	-	220
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	2	5	2	2	2	2	5	5	2	2	5	5
Mvmt Flow	0	0	169	0	0	36	74	98	2419	26	26	2863	47

Major/Minor	Minor2		Minor1			Major1					Major2		
Conflicting Flow All	-	-	1432	-	-	1223	2090	2910	0	0	2445	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.2	-	-	7.14	5.64	5.4	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.95	-	-	3.92	2.32	3.15	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	~ 103	0	0	147	107	~ 40	-	-	74	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-	-
Platoon blocked, %									-	-		-	-
Mov Cap-1 Maneuver	-	-	~ 103	-	-	147	~ -5	~ -5	-	-	74	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 401.9	37.2		0.7
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	+	-	-	103	147	74	-	-
HCM Lane V/C Ratio	-	-	-	1.645	0.243	0.356	-	-
HCM Control Delay (s)	-	-	-	-$ 401.9	37.2	78.4	-	-
HCM Lane LOS	-	-	-	F	E	F	-	-
HCM 95th %tile Q(veh)	-	-	-	13.1	0.9	1.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	14.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	232	0	0	16	122	89	2778	32	32	2183	98
Future Vol, veh/h	0	0	232	0	0	16	122	89	2778	32	32	2183	98
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	400	-	-	150	-	220
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	2	5	2	2	2	2	5	5	2	2	5	5
Mvmt Flow	0	0	244	0	0	17	128	94	2924	34	34	2298	103

Major/Minor	Minor2		Minor1			Major1					Major2		
Conflicting Flow All	-	-	1149	-	-	1479	1677	2401	0	0	2958	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.2	-	-	7.14	5.64	5.4	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.95	-	-	3.92	2.32	3.15	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	~ 161	0	0	98	183	~ 75	-	-	40	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-	-
Platoon blocked, %									-	-		-	-
Mov Cap-1 Maneuver	-	-	~ 161	-	-	98	~ -4	~ -4	-	-	40	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 313.3	49.2		3.4
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	+	-	-	161	98	40	-	-
HCM Lane V/C Ratio	-	-	-	1.517	0.172	0.842	-	-
HCM Control Delay (s)	-	-	-	$ 313.3	49.2	247.5	-	-
HCM Lane LOS	-	-	-	F	E	F	-	-
HCM 95th %tile Q(veh)	-	-	-	16.1	0.6	3.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	10.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	44	0	59	20	0	28	56	77	967	20	20	1174	38
Future Vol, veh/h	44	0	59	20	0	28	56	77	967	20	20	1174	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	-	400	-	-	150	-	220
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	6	2	6	2	2	2	2	6	6	2	2	6	6
Mvmt Flow	46	0	62	21	0	29	59	81	1018	21	21	1236	40

Major/Minor	Minor2			Minor1			Major1				Major2		
Conflicting Flow All	1965	2597	618	1845	2627	520	902	1276	0	0	1039	0	0
Stage 1	1278	1278	-	1309	1309	-	-	-	-	-	-	-	-
Stage 2	687	1319	-	536	1318	-	-	-	-	-	-	-	-
Critical Hdwy	6.52	6.54	7.22	6.44	6.54	7.14	5.64	5.42	-	-	5.34	-	-
Critical Hdwy Stg 1	7.42	5.54	-	7.34	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.82	5.54	-	6.74	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.86	4.02	3.96	3.82	4.02	3.92	2.32	3.16	-	-	3.12	-	-
Pot Cap-1 Maneuver	64	25	363	79	23	429	498	277	-	-	375	-	-
Stage 1	123	235	-	121	227	-	-	-	-	-	-	-	-
Stage 2	359	225	-	453	225	-	-	-	-	-	-	-	-
Platoon blocked, %									-	-		-	-
Mov Cap-1 Maneuver	~ 38	13	363	42	12	429	323	323	-	-	375	-	-
Mov Cap-2 Maneuver	~ 38	13	-	42	12	-	-	-	-	-	-	-	-
Stage 1	70	222	-	68	128	-	-	-	-	-	-	-	-
Stage 2	189	127	-	354	212	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	173	88.9	2.9	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	323	-	-	38	363	89	375	-	-
HCM Lane V/C Ratio	0.433	-	-	1.219	0.171	0.568	0.056	-	-
HCM Control Delay (s)	24.4	-	-	$ 382.2	17	88.9	15.2	-	-
HCM Lane LOS	C	-	-	F	C	F	C	-	-
HCM 95th %tile Q(veh)	2.1	-	-	4.7	0.6	2.6	0.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	23

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	58	0	112	27	0	16	103	76	1204	27	27	989	83
Future Vol, veh/h	58	0	112	27	0	16	103	76	1204	27	27	989	83
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	-	400	-	-	150	-	220
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	6	2	6	2	2	2	2	6	6	2	2	6	6
Mvmt Flow	61	0	118	28	0	17	108	80	1267	28	28	1041	87

Major/Minor	Minor2			Minor1			Major1				Major2		
Conflicting Flow All	1980	2768	521	2129	2841	648	760	1128	0	0	1295	0	0
Stage 1	1097	1097	-	1657	1657	-	-	-	-	-	-	-	-
Stage 2	883	1671	-	472	1184	-	-	-	-	-	-	-	-
Critical Hdwy	6.52	6.54	7.22	6.44	6.54	7.14	5.64	5.42	-	-	5.34	-	-
Critical Hdwy Stg 1	7.42	5.54	-	7.34	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.82	5.54	-	6.74	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.86	4.02	3.96	3.82	4.02	3.92	2.32	3.16	-	-	3.12	-	-
Pot Cap-1 Maneuver	62	19	420	53	17	354	597	328	-	-	281	-	-
Stage 1	165	287	-	68	154	-	-	-	-	-	-	-	-
Stage 2	271	151	-	495	261	-	-	-	-	-	-	-	-
Platoon blocked, %									-	-		-	-
Mov Cap-1 Maneuver	~ 34	9	420	~ 22	8	354	383	383	-	-	281	-	-
Mov Cap-2 Maneuver	~ 34	9	-	~ 22	8	-	-	-	-	-	-	-	-
Stage 1	84	258	-	35	79	-	-	-	-	-	-	-	-
Stage 2	132	77	-	321	235	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	227	$ 448.1	2.9	0.5
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	383	-	-	34	420	34	281	-	-
HCM Lane V/C Ratio	0.492	-	-	1.796	0.281	1.331	0.101	-	-
HCM Control Delay (s)	23.1	-	-	-$ 632.8	16.9	$ 448.1	19.2	-	-
HCM Lane LOS	C	-	-	F	C	F	C	-	-
HCM 95th %tile Q(veh)	2.6	-	-	6.8	1.1	4.9	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	73.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	54	0	82	25	0	34	70	93	2244	25	25	2720	45
Future Vol, veh/h	54	0	82	25	0	34	70	93	2244	25	25	2720	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	-	400	-	-	150	-	220
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	2	5	2	2	2	2	5	5	2	2	5	5
Mvmt Flow	57	0	86	26	0	36	74	98	2362	26	26	2863	47

Major/Minor	Minor2			Minor1			Major1				Major2		
Conflicting Flow All	4204	5647	1432	3916	5681	1194	2090	2910	0	0	2388	0	0
Stage 1	2915	2915	-	2719	2719	-	-	-	-	-	-	-	-
Stage 2	1289	2732	-	1197	2962	-	-	-	-	-	-	-	-
Critical Hdwy	6.5	6.54	7.2	6.44	6.54	7.14	5.64	5.4	-	-	5.34	-	-
Critical Hdwy Stg 1	7.4	5.54	-	7.34	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.8	5.54	-	6.74	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.85	4.02	3.95	3.82	4.02	3.92	2.32	3.15	-	-	3.12	-	-
Pot Cap-1 Maneuver	~ 2	0	103	~ 4	0	154	107	~ 40	-	-	79	-	-
Stage 1	~ 8	34	-	~ 11	44	-	-	-	-	-	-	-	-
Stage 2	151	43	-	177	32	-	-	-	-	-	-	-	-
Platoon blocked, %									-	-		-	-
Mov Cap-1 Maneuver	-	0	103	-	0	154	~ 30	~ 30	-	-	79	-	-
Mov Cap-2 Maneuver	-	0	-	-	0	-	-	-	-	-	-	-	-
Stage 1	~ 8	23	-	~ 11	0	-	-	-	-	-	-	-	-
Stage 2	-	0	-	~ 19	21	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			162.4	0.6
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	~ 30	-	-	-	103	-	79	-	-
HCM Lane V/C Ratio	5.719	-	-	-	0.838	-	0.333	-	-
HCM Control Delay (s)	$ 2423.3	-	-	-	124	-	71.8	-	-
HCM Lane LOS	F	-	-	-	F	-	F	-	-
HCM 95th %tile Q(veh)	20.8	-	-	-	4.7	-	1.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	79.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	68	0	132	32	0	16	122	89	2710	32	32	2183	98
Future Vol, veh/h	68	0	132	32	0	16	122	89	2710	32	32	2183	98
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	-	400	-	-	150	-	220
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	2	5	2	2	2	2	5	5	2	2	5	5
Mvmt Flow	72	0	139	34	0	17	128	94	2853	34	34	2298	103

Major/Minor	Minor2			Minor1			Major1				Major2		
Conflicting Flow All	3951	5697	1149	4301	5783	1444	1677	2401	0	0	2887	0	0
Stage 1	2366	2366	-	3314	3314	-	-	-	-	-	-	-	-
Stage 2	1585	3331	-	987	2469	-	-	-	-	-	-	-	-
Critical Hdwy	6.5	6.54	7.2	6.44	6.54	7.14	5.64	5.4	-	-	5.34	-	-
Critical Hdwy Stg 1	7.4	5.54	-	7.34	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.8	5.54	-	6.74	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.85	4.02	3.95	3.82	4.02	3.92	2.32	3.15	-	-	3.12	-	-
Pot Cap-1 Maneuver	~ 3	0	161	~ 2	0	104	183	~ 75	-	-	43	-	-
Stage 1	~ 20	67	-	~ 4	21	-	-	-	-	-	-	-	-
Stage 2	97	20	-	240	59	-	-	-	-	-	-	-	-
Platoon blocked, %									-	-		-	-
Mov Cap-1 Maneuver	-	0	161	-	0	104	~ 43	~ 43	-	-	43	-	-
Mov Cap-2 Maneuver	-	0	-	-	0	-	-	-	-	-	-	-	-
Stage 1	~ 20	14	-	~ 4	0	-	-	-	-	-	-	-	-
Stage 2	-	0	-	~ 7	12	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			146.5	3
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	~ 43	-	-	-	161	-	43	-	-
HCM Lane V/C Ratio	5.165	-	-	-	0.863	-	0.783	-	-
HCM Control Delay (s)	$ 2049.9	-	-	-	94.7	-	218.5	-	-
HCM Lane LOS	F	-	-	-	F	-	F	-	-
HCM 95th %tile Q(veh)	25.6	-	-	-	6	-	3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Appendix D
Warrants Analysis
SR 31 at Marina and Restaurant Entrance

24 Hour Existing Counts (2019) - Marina and Restaurant Ent.

Time	EB	WB	NB	SB	Major St. Approaches	Highest Minor St. Approach	Total Volume	Rank by Minor Approach
12:00 AM	4	0	25	40	66	4	69	18
1:00 AM	0	0	19	27	46	0	46	24
2:00 AM	1	0	12	29	41	1	41	22
3:00 AM	1	0	24	38	61	1	62	21
4:00 AM	2	0	37	55	93	2	94	20
5:00 AM	1	0	141	118	259	1	260	22
6:00 AM	3	0	343	376	719	3	722	19
7:00 AM	5	0	456	444	900	5	904	17
8:00 AM	7	0	376	502	878	7	885	16
9:00 AM	13	0	386	376	762	13	775	15
10:00 AM	14	0	372	364	735	14	749	14
11:00 AM	27	0	406	373	779	27	806	12
12:00 PM	63	0	427	433	860	63	924	7
1:00 PM	83	0	454	457	912	83	994	5
2:00 PM	82	0	451	459	910	82	992	6
3:00 PM	99	0	509	541	1,050	99	1,149	1
4:00 PM	58	0	533	528	1,061	58	1,119	9
5:00 PM	60	0	579	577	1,156	60	1,217	8
6:00 PM	85	0	441	440	881	85	966	2
7:00 PM	84	0	316	320	636	84	720	4
8:00 PM	84	0	229	266	496	84	580	3
9:00 PM	54	0	162	197	360	54	414	10
10:00 PM	34	0	96	129	225	34	259	11
11:00 PM	17	0	47	65	112	17	129	13

Marina/Restaurant/Babcock Ranch Road at SR 31 Signal Warrant Volumes (Year 2025)								
Time	EB	WB	NB	SB	Major St. Approaches	Highest Minor St. Approach	Total Volume	Rank by Minor Approach
12:00 AM	3	2	55	75	131	3	135	20
1:00 AM	1	1	41	51	92	1	93	24
2:00 AM	1	1	26	54	80	1	82	23
3:00 AM	1	1	51	71	122	1	124	22
4:00 AM	2	3	81	103	184	3	189	21
5:00 AM	1	9	306	221	527	9	537	19
6:00 AM	4	10	745	702	1,447	10	1,461	18
7:00 AM	5	18	990	829	1,818	18	1,841	13
8:00 AM	7	16	817	937	1,754	16	1,777	15
9:00 AM	13	12	838	703	1,541	13	1,566	17
10:00 AM	14	14	806	680	1,486	14	1,515	16
11:00 AM	27	16	880	698	1,578	27	1,621	12
12:00 PM	63	27	926	810	1,736	63	1,826	9
1:00 PM	83	38	985	871	1,856	83	1,977	7
2:00 PM	82	38	978	874	1,852	82	1,972	8
3:00 PM	99	44	1,104	1,030	2,134	99	2,276	3
4:00 PM	103	48	1,120	1,232	2,352	103	2,503	2
5:00 PM	170	43	1,410	1,099	2,509	170	2,722	1
6:00 PM	85	27	956	823	1,779	85	1,891	4
7:00 PM	85	22	686	598	1,285	85	1,392	5
8:00 PM	84	17	498	498	996	84	1,097	6
9:00 PM	54	12	352	369	721	54	787	10
10:00 PM	35	8	209	240	450	35	492	11
11:00 PM	17	4	101	122	223	17	244	14

SIGNAL WARRANT ANALYSIS

Introduction

- The Signal Warrant Analysis Spreadsheets are a tool for assisting traffic engineers when evaluating the need for a traffic signal installation
- The filled spreadsheets can be used as part of the supporting documents for the signal warrant evaluation

Note: This templates are a useful resource, but it remains necessary to apply engineering judgment and to consider specific environmental, traffic, geometric, and operational conditions

Instructions

Fill in "Orange" areas only	
Automated cells based on in Input Data in "orange" cells	
General Information	Fill in below the general information including: District, County (drop-down menu) City, Engineer, Date Major and Minor Street with corresponding number of lanes and speed limits
Enter Eight Hour Volumes	Any 8 hours of an average day. Major-street and minor-street volumes shall be for the same 8 hours; however, the 8 hours satisfied in Condition A shall not be required to be the same 8 hours satisfied in Condition B for 80% columns only. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.
Enter Four Hour Volumes	Any 4 hours of an average day. Vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only, not required to be on the same approach during each of the 4 hours)
Enter Pedestrian Volumes (4-hr)	Pedestrians per hour crossing the major street (total of all crossings)
Enter Peak Hour Volumes	Vehicular: Any four consecutive 15-minute periods of an average day Pedestrian: Any four consecutive 15-minute periods of an average day representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings)

Input Data

Form 750-020-01
TRAFFIC ENGINEERING
10/15

City:
County: **12 – Lee**
District: **One**
Engineer: **AECOM**
Date: **April 5th, 2023**

Major Street: **SR 31**
Minor Street: **arina/Restaurant Entran**
Lanes: **6**
Lanes: **2**
Major Approach Speed: **45**
Minor Approach Speed: **30**

Eight Hour Volumes (Condition A)

Hours	Major Street (total of both approaches)	Minor Street (one direction only)
5:00 PM	2509	170
4:00 PM	2352	103
3:00 PM	2134	99
6:00 PM	1779	85
7:00 PM	1285	85
8:00 PM	996	84
1:00 PM	1856	83
2:00 PM	1852	82

Eight Hour Volumes (Condition B)

Hours	Major Street (total of both approaches)	Minor Street (one direction only)
5:00 PM	2509	170
4:00 PM	2352	103
3:00 PM	2134	99
6:00 PM	1779	85
7:00 PM	1285	85
8:00 PM	996	84
1:00 PM	1856	83
2:00 PM	1852	82

Highest Four Hour Vehicular Volumes

Hours	Major Street (total of both approaches)	Minor Street (one direction only)
5:00 PM	2509	170
4:00 PM	2352	103
3:00 PM	2134	99
6:00 PM	1779	85

Highest Four Hour Pedestrian Volumes

Hours	Major Street (total of both approaches)	Pedestrian Crossings on Major Street

Vehicular Peak Hour Volumes

Peak Hour	Major Street (total of both approaches)	Minor Street (one direction only)	Total Entering Volume
5:00 PM	2509	170	2722

Pedestrian Peak Hour Volumes

Peak Hour	Major Street (total of both approaches)	Pedestrian Crossing Volumes on Major Street

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:		Engineer:	AECOM
County:	12 – Lee	Date:	April 5th, 2023
District:	One		

Major Street:	SR 31	Lanes:	6	Major Approach Speed:	45
Minor Street:	Marina/Restaurant Entrance	Lanes:	2	Minor Approach Speed:	30

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

Volume Level Criteria

1. Is the posted speed or 85th-percentile of major street > 40 mph (70 km/h)? ☑ Yes ☐ No
2. Is the intersection in a built-up area of an isolated community with a population < 10,000? ☐ Yes ☑ No

"70%" volume level **may** be used if Question 1 **or** 2 above is answered "Yes" ☑ 70% ☐ 100%

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME

Warrant 1 is satisfied if Condition A or Condition B is "100%" satisfied for eight hours. ☑ Yes ☐ No

Warrant 1 is also satisfied if both Condition A and Condition B are "80%" satisfied (should only be applied after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems). ☐ Yes ☐ No

Condition A - Minimum Vehicular Volume

Condition A is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

100% Satisfied: ☐ Yes ☐ No
80% Satisfied: ☐ Yes ☐ No
70% Satisfied: ☐ Yes ☑ No

Number of Lanes for moving traffic on each approach		Vehicles per hour on major-street (total of both approaches)			Vehicles per hour on minor-street (one direction only)		
Major	Minor	100%[a]	80%[b]	70%[c]	100%[a]	80%[b]	70%[c]
1	1	500	400	350	150	120	105
2 or more	1	600	480	420	150	120	105
2 or more	2 or more	600	480	420	200	160	140
1	2 or more	500	400	350	200	160	140

[a] Basic Minimum hourly volume
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures
[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Record 8 highest hours and the corresponding major-street and minor-street volumes in the Instructions Sheet.

Street	Eight Highest Hours							
	5:00 PM	4:00 PM	3:00 PM	6:00 PM	7:00 PM	8:00 PM	1:00 PM	2:00 PM
Major	2,509	2,352	2,134	1,779	1,285	996	1,856	1,852
Minor	170	103	99	85	85	84	83	82

Existing Volumes

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

Condition B - Interruption of Continuous Traffic

Condition B is intended for application where Condition A is not satisfied and the traffic volume on a major street is so heavy that traffic on the minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

Applicable:	☑ Yes	☐ No
100% Satisfied:	☐ Yes	☐ No
80% Satisfied:	☐ Yes	☐ No
70% Satisfied:	☑ Yes	☐ No

Number of Lanes for moving traffic on each approach		Vehicles per hour on major-street (total of both approaches)			Vehicles per hour on minor-street (one direction only)		
Major	**Minor**	**100%[a]**	**80%[b]**	**70%[c]**	**100%[a]**	**80%[b]**	**70%[c]**
1	1	750	600	525	75	60	53
2 or more	1	900	720	630	75	60	53
2 or more	2 or more	900	720	630	100	80	70
1	2 or more	750	600	525	100	80	70

[a] Basic Minimum hourly volume

[b] Used for combination of Conditions A and B after adequate trial of other remedial measures

[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Record 8 highest hours and the corresponding major-street and minor-street volumes in the Instructions Sheet.

Eight Highest Hours								
Street	**5:00 PM**	**4:00 PM**	**3:00 PM**	**6:00 PM**	**7:00 PM**	**8:00 PM**	**1:00 PM**	**2:00 PM**
Major	2,509	2,352	2,134	1,779	1,285	996	1,856	1,852
Minor	170	103	99	85	85	84	83	82

Existing Volumes

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:		Engineer:	AECOM
County:	12 – Lee	Date:	April 5th, 2023
District:	One		

Major Street:	SR 31	Lanes:	6	Major Approach Speed:	45
Minor Street:	Marina/Restaurant Entrance	Lanes:	2	Minor Approach Speed:	30

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

Volume Level Criteria

1. Is the posted speed or 85th-percentile of major street > 40 mph (70 km/h)? ☑ Yes ☐ No
2. Is the intersection in a built-up area of an isolated community with a population < 10,000? ☐ Yes ☑ No

"70%" volume level **may** be used if Question 1 **or** 2 above is answered "Yes" ☑ Yes ☐ No

WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME

If all four points lie above the appropriate line, then the warrant is satisfied.

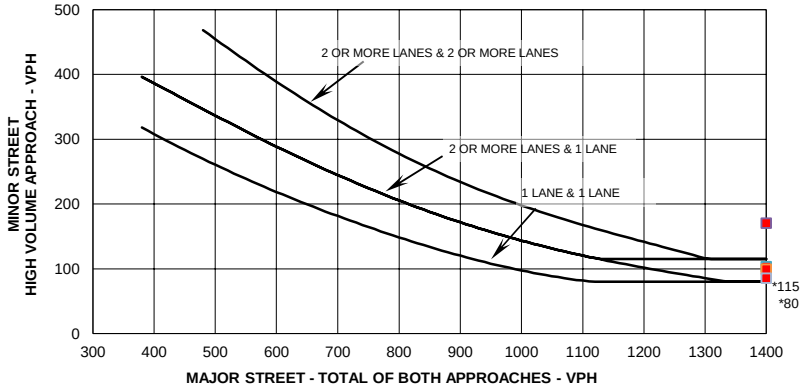
Applicable: ☑ Yes ☐ No
Satisfied: ☑ Yes ☐ No

Plot four volume combinations on the applicable figure below.

100% Volume Level

Four Highest Hours	Volumes	
	Major Street	Minor Street
5:00 PM	2509	170
4:00 PM	2352	103
3:00 PM	2134	99
6:00 PM	1779	85

FIGURE 4C-1: Criteria for "100%" Volume Level



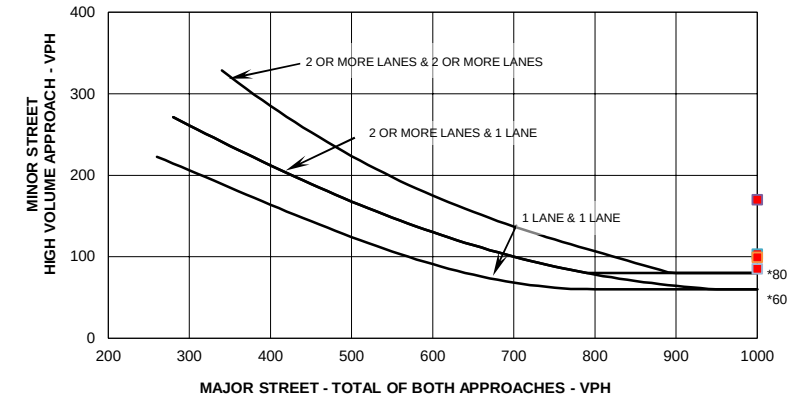
** Note: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

70% Volume Level

Four Highest Hours	Volumes	
	Major Street	Minor Street
5:00 PM	2509	170
4:00 PM	2352	103
3:00 PM	2134	99
6:00 PM	1779	85

FIGURE 4C-2: Criteria for "70%" Volume Level

(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 60 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Appendix E
Build Synchro Outputs

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	52	0	0	33	24	1019	6	20	32	1214	41
Future Vol, veh/h	0	0	52	0	0	33	24	1019	6	20	32	1214	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	0	-	-	0	150	-	150	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	6	2	2	2	6	2
Mvmt Flow	0	0	55	0	0	35	25	1073	6	21	34	1278	43

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	-	-	639	-	-	537	1321	0	0	783	1079	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.64	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	2.32	3.12	-	-
Pot Cap-1 Maneuver	0	0	359	0	0	418	273	-	-	579	358	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	-	-	359	-	-	418	273	-	-	410	410	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.8	14.4	0.4	0.6
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	273	-	-	359	418	410	-	-
HCM Lane V/C Ratio	0.093	-	-	0.152	0.083	0.134	-	-
HCM Control Delay (s)	19.5	-	-	16.8	14.4	15.1	-	-
HCM Lane LOS	C	-	-	C	B	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.5	0.3	0.5	-	-

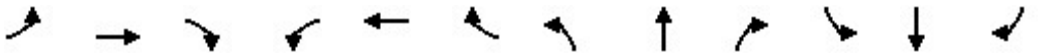
Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	66	0	1056	0	56	0	1244	0
Future Vol, veh/h	0	0	0	0	0	0	66	0	1056	0	56	0	1244	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	0	-	150	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	6	2	2	2	6	2
Mvmt Flow	0	0	0	0	0	0	69	0	1112	0	59	0	1309	0

Major/Minor	Minor1			Major1				Major2				
Conflicting Flow All	-	-	556	956	1309	0	0	811	1112	0	0	
Stage 1	-	-	-	-	-	-	-	-	-	-	-	
Stage 2	-	-	-	-	-	-	-	-	-	-	-	
Critical Hdwy	-	-	7.14	5.64	5.34	-	-	5.64	5.34	-	-	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	
Follow-up Hdwy	-	-	3.92	2.32	3.12	-	-	2.32	3.12	-	-	
Pot Cap-1 Maneuver	0	0	406	465	277	-	-	559	345	-	0	
Stage 1	0	0	-	-	-	-	-	-	-	-	0	
Stage 2	0	0	-	-	-	-	-	-	-	-	0	
Platoon blocked, %						-	-			-		
Mov Cap-1 Maneuver	-	0	406	465	465	-	-	559	559	-	-	
Mov Cap-2 Maneuver	-	0	-	-	-	-	-	-	-	-	-	
Stage 1	-	0	-	-	-	-	-	-	-	-	-	
Stage 2	-	0	-	-	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	0	0.8	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	465	-	-	-	559	-
HCM Lane V/C Ratio	0.149	-	-	-	0.105	-
HCM Control Delay (s)	14.1	-	-	0	12.2	-
HCM Lane LOS	B	-	-	A	B	-
HCM 95th %tile Q(veh)	0.5	-	-	-	0.4	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	0	59	20	0	28	133	967	20	20	1174	38
Future Volume (veh/h)	44	0	59	20	0	28	133	967	20	20	1174	38
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1870	1811	1870	1870	1870	1811	1811	1870	1870	1811	1811
Adj Flow Rate, veh/h	46	0	62	21	0	29	140	1018	21	21	1236	40
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	2	6	2	2	2	6	6	2	2	6	6
Cap, veh/h	242	0	119	118	12	61	172	2982	61	44	2584	802
Arrive On Green	0.08	0.00	0.08	0.08	0.00	0.08	0.10	0.60	0.60	0.02	0.52	0.52
Sat Flow, veh/h	1580	0	1535	423	150	790	1725	4986	103	1781	4944	1535
Grp Volume(v), veh/h	46	0	62	50	0	0	140	673	366	21	1236	40
Grp Sat Flow(s),veh/h/ln	1580	0	1535	1363	0	0	1725	1648	1793	1781	1648	1535
Q Serve(g_s), s	0.0	0.0	2.3	0.8	0.0	0.0	4.8	6.2	6.2	0.7	9.5	0.8
Cycle Q Clear(g_c), s	1.5	0.0	2.3	2.3	0.0	0.0	4.8	6.2	6.2	0.7	9.5	0.8
Prop In Lane	1.00		1.00	0.42		0.58	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	242	0	119	191	0	0	172	1971	1072	44	2584	802
V/C Ratio(X)	0.19	0.00	0.52	0.26	0.00	0.00	0.81	0.34	0.34	0.48	0.48	0.05
Avail Cap(c_a), veh/h	550	0	460	518	0	0	172	1971	1072	148	2584	802
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	26.6	26.5	0.0	0.0	26.4	6.1	6.1	28.9	9.1	7.0
Incr Delay (d2), s/veh	0.4	0.0	3.5	0.7	0.0	0.0	24.6	0.5	0.9	7.9	0.6	0.1
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	0.6	0.0	0.9	0.7	0.0	0.0	3.0	1.6	1.8	0.4	2.7	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	30.1	27.3	0.0	0.0	51.0	6.6	7.0	36.8	9.8	7.1
LnGrp LOS	C	A	C	C	A	A	D	A	A	D	A	A
Approach Vol, veh/h		108			50			1179			1297	
Approach Delay, s/veh		28.6			27.3			12.0			10.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	41.9		10.6	12.0	37.4		10.6				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	19.0		18.0	6.0	18.0		18.0				
Max Q Clear Time (g_c+I1), s	2.7	8.2		4.3	6.8	11.5		4.3				
Green Ext Time (p_c), s	0.0	4.7		0.3	0.0	4.0		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		12.0	
HCM 6th LOS		B	

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	251	0	0	148	72	1280	12	53	72	991	113
Future Vol, veh/h	0	0	251	0	0	148	72	1280	12	53	72	991	113
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	0	-	-	0	150	-	150	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	264	0	0	156	76	1347	13	56	76	1043	119

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	-	-	522	-	-	674	1162	0	0	984	1360	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.64	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	2.32	3.12	-	-
Pot Cap-1 Maneuver	0	0	428	0	0	341	327	-	-	448	261	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	-	-	428	-	-	341	327	-	-	258	258	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.1	24.1	1	3.3
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	327	-	-	428	341	258	-	-
HCM Lane V/C Ratio	0.232	-	-	0.617	0.457	0.51	-	-
HCM Control Delay (s)	19.3	-	-	26.1	24.1	32.6	-	-
HCM Lane LOS	C	-	-	D	C	D	-	-
HCM 95th %tile Q(veh)	0.9	-	-	4	2.3	2.7	-	-

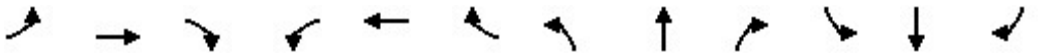
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	54	127	0	1293	27	76	27	1118	0
Future Vol, veh/h	0	0	0	0	0	54	127	0	1293	27	76	27	1118	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	0	-	150	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	57	134	0	1361	28	80	28	1177	0

Major/Minor	Minor1			Major1				Major2			
Conflicting Flow All	-	-	695	859	1177	0	0	1014	1389	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	5.64	5.34	-	-	5.64	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	2.32	3.12	-	-	2.32	3.12	-	-
Pot Cap-1 Maneuver	0	0	330	526	321	-	-	432	253	-	0
Stage 1	0	0	-	-	-	-	-	-	-	-	0
Stage 2	0	0	-	-	-	-	-	-	-	-	0
Platoon blocked, %						-	-			-	
Mov Cap-1 Maneuver	-	0	330	526	526	-	-	325	325	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-	-	-	-	-	-
Stage 1	-	0	-	-	-	-	-	-	-	-	-
Stage 2	-	0	-	-	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.2	1.2	1.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	526	-	-	330	325	-
HCM Lane V/C Ratio	0.254	-	-	0.172	0.334	-
HCM Control Delay (s)	14.2	-	-	18.2	21.5	-
HCM Lane LOS	B	-	-	C	C	-
HCM 95th %tile Q(veh)	1	-	-	0.6	1.4	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	0	112	27	0	16	179	1204	27	27	989	83
Future Volume (veh/h)	58	0	112	27	0	16	179	1204	27	27	989	83
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1870	1811	1870	1870	1870	1811	1811	1870	1870	1811	1811
Adj Flow Rate, veh/h	61	0	118	28	0	17	188	1267	28	28	1041	87
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	2	6	2	2	2	6	6	2	2	6	6
Cap, veh/h	280	0	170	157	20	53	231	2897	64	54	2368	735
Arrive On Green	0.11	0.00	0.11	0.11	0.00	0.11	0.13	0.58	0.58	0.03	0.48	0.48
Sat Flow, veh/h	1531	0	1535	612	179	480	1725	4977	110	1781	4944	1535
Grp Volume(v), veh/h	61	0	118	45	0	0	188	839	456	28	1041	87
Grp Sat Flow(s),veh/h/ln	1531	0	1535	1270	0	0	1725	1648	1791	1781	1648	1535
Q Serve(g_s), s	0.0	0.0	4.8	0.5	0.0	0.0	6.9	9.3	9.3	1.0	9.0	2.0
Cycle Q Clear(g_c), s	2.1	0.0	4.8	2.5	0.0	0.0	6.9	9.3	9.3	1.0	9.0	2.0
Prop In Lane	1.00		1.00	0.62		0.38	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	280	0	170	230	0	0	231	1919	1043	54	2368	735
V/C Ratio(X)	0.22	0.00	0.70	0.20	0.00	0.00	0.82	0.44	0.44	0.51	0.44	0.12
Avail Cap(c_a), veh/h	512	0	425	459	0	0	292	1919	1043	137	2368	735
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	27.9	26.6	0.0	0.0	27.4	7.6	7.6	31.0	11.2	9.4
Incr Delay (d2), s/veh	0.4	0.0	5.1	0.4	0.0	0.0	13.2	0.7	1.3	7.3	0.6	0.3
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	0.9	0.0	1.9	0.6	0.0	0.0	3.4	2.5	2.9	0.5	2.8	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.0	0.0	32.9	27.0	0.0	0.0	40.5	8.3	8.9	38.4	11.8	9.7
LnGrp LOS	C	A	C	C	A	A	D	A	A	D	B	A
Approach Vol, veh/h		179			45			1483			1156	
Approach Delay, s/veh		30.9			27.0			12.6			12.3	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	43.8		13.2	14.7	37.1		13.2				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	24.0		18.0	11.0	18.0		18.0				
Max Q Clear Time (g_c+I1), s	3.0	11.3		6.8	8.9	11.0		4.5				
Green Ext Time (p_c), s	0.0	6.5		0.5	0.1	3.8		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		13.8	
HCM 6th LOS		B	

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	68	0	0	41	32	2306	7	26	40	2709	53
Future Vol, veh/h	0	0	68	0	0	41	32	2306	7	26	40	2709	53
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	0	-	-	0	150	-	150	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	5	2	2	2	5	2
Mvmt Flow	0	0	72	0	0	43	34	2427	7	27	42	2852	56

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	-	-	1426	-	-	1214	2908	0	0	1772	2434	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.64	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	2.32	3.12	-	-
Pot Cap-1 Maneuver	0	0	107	0	0	149	42	-	-	162	75	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	-	-	107	-	-	149	42	-	-	87	87	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	89.4	38.7	3.1	3
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	42	-	-	107	149	87	-	-
HCM Lane V/C Ratio	0.802	-	-	0.669	0.29	0.799	-	-
HCM Control Delay (s)	227.6	-	-	89.4	38.7	130	-	-
HCM Lane LOS	F	-	-	F	E	F	-	-
HCM 95th %tile Q(veh)	3.1	-	-	3.4	1.1	4.1	-	-

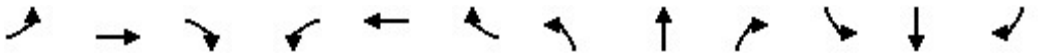
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	83	0	2353	0	70	0	2772	0
Future Vol, veh/h	0	0	0	0	0	0	83	0	2353	0	70	0	2772	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	0	-	150	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	5	2	2	2	5	2
Mvmt Flow	0	0	0	0	0	0	87	0	2477	0	74	0	2918	0

Major/Minor	Minor1			Major1				Major2				
Conflicting Flow All	-	-	1239	2130	2918	0	0	1808	2477	0	0	
Stage 1	-	-	-	-	-	-	-	-	-	-	-	
Stage 2	-	-	-	-	-	-	-	-	-	-	-	
Critical Hdwy	-	-	7.14	5.64	5.34	-	-	5.64	5.34	-	-	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	
Follow-up Hdwy	-	-	3.92	2.32	3.12	-	-	2.32	3.12	-	-	
Pot Cap-1 Maneuver	0	0	143	101	42	-	-	155	71	-	0	
Stage 1	0	0	-	-	-	-	-	-	-	-	0	
Stage 2	0	0	-	-	-	-	-	-	-	-	0	
Platoon blocked, %						-	-			-		
Mov Cap-1 Maneuver	-	0	143	101	101	-	-	155	155	-	-	
Mov Cap-2 Maneuver	-	0	-	-	-	-	-	-	-	-	-	
Stage 1	-	0	-	-	-	-	-	-	-	-	-	
Stage 2	-	0	-	-	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	0	4.5	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	101	-	-	-	155	-
HCM Lane V/C Ratio	0.865	-	-	-	0.475	-
HCM Control Delay (s)	131.9	-	-	0	47.7	-
HCM Lane LOS	F	-	-	A	E	-
HCM 95th %tile Q(veh)	4.9	-	-	-	2.2	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	0	82	25	0	34	163	2244	25	25	2720	45
Future Volume (veh/h)	54	0	82	25	0	34	163	2244	25	25	2720	45
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1870	1826	1870	1870	1870	1826	1826	1870	1870	1826	1826
Adj Flow Rate, veh/h	57	0	86	26	0	36	172	2362	26	26	2863	47
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	2	5	2	2	2	5	5	2	2	5	5
Cap, veh/h	158	0	129	64	15	50	199	3774	41	43	3250	1009
Arrive On Green	0.08	0.00	0.08	0.08	0.00	0.08	0.11	0.74	0.74	0.02	0.65	0.65
Sat Flow, veh/h	1178	0	1547	253	182	602	1739	5083	56	1781	4985	1547
Grp Volume(v), veh/h	57	0	86	62	0	0	172	1543	845	26	2863	47
Grp Sat Flow(s),veh/h/ln	1178	0	1547	1037	0	0	1739	1662	1816	1781	1662	1547
Q Serve(g_s), s	0.0	0.0	6.5	2.0	0.0	0.0	11.7	26.8	26.9	1.7	56.4	1.3
Cycle Q Clear(g_c), s	5.9	0.0	6.5	7.9	0.0	0.0	11.7	26.8	26.9	1.7	56.4	1.3
Prop In Lane	1.00		1.00	0.42		0.58	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	158	0	129	129	0	0	199	2467	1348	43	3250	1009
V/C Ratio(X)	0.36	0.00	0.67	0.48	0.00	0.00	0.86	0.63	0.63	0.60	0.88	0.05
Avail Cap(c_a), veh/h	250	0	232	226	0	0	246	2467	1348	89	3250	1009
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.1	0.0	53.4	53.6	0.0	0.0	52.2	7.4	7.4	58.0	17.1	7.5
Incr Delay (d2), s/veh	1.4	0.0	5.8	2.7	0.0	0.0	22.1	1.2	2.2	12.9	3.8	0.1
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(95%),veh/ln	3.1	0.0	4.9	3.5	0.0	0.0	10.3	12.6	14.1	1.7	27.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.5	0.0	59.1	56.4	0.0	0.0	74.3	8.6	9.7	70.9	20.9	7.6
LnGrp LOS	D	A	E	E	A	A	E	A	A	E	C	A
Approach Vol, veh/h		143			62			2560			2936	
Approach Delay, s/veh		57.3			56.4			13.4			21.1	
Approach LOS		E			E			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	95.1		16.0	19.8	84.2		16.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	78.0		18.0	17.0	67.0		18.0				
Max Q Clear Time (g_c+I1), s	3.7	28.9		8.5	13.7	58.4		9.9				
Green Ext Time (p_c), s	0.0	30.5		0.3	0.1	8.3		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		18.9	
HCM 6th LOS		B	

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	49.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	317	0	0	185	91	2797	15	66	90	2176	143
Future Vol, veh/h	0	0	317	0	0	185	91	2797	15	66	90	2176	143
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	0	-	-	0	150	-	150	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	5	2	2	2	5	2
Mvmt Flow	0	0	334	0	0	195	96	2944	16	69	95	2291	151

Major/Minor	Minor2		Minor1			Major1				Major2			
Conflicting Flow All	-	-	1146	-	-	1472	2442	0	0	2149	2960	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.64	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	2.32	3.12	-	-
Pot Cap-1 Maneuver	0	0	~ 166	0	0	~ 99	~ 74	-	-	99	~ 40	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	-	-	~ 166	-	-	~ 99	~ 74	-	-	~ -5	~ -5	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 520.9	$ 541	9.4	
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	~ 74	-	-	166	99	+	-	-
HCM Lane V/C Ratio	1.294	-	-	2.01	1.967	-	-	-
HCM Control Delay (s)	$ 300.8	-	-	-$ 520.9	$ 541	-	-	-
HCM Lane LOS	F	-	-	F	F	-	-	-
HCM 95th %tile Q(veh)	7.5	-	-	25.8	16.4	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	40.1

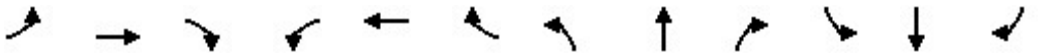
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	64	158	0	2814	32	90	32	2328	0
Future Vol, veh/h	0	0	0	0	0	64	158	0	2814	32	90	32	2328	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	0	-	150	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	5	2	2	2	5	2
Mvmt Flow	0	0	0	0	0	67	166	0	2962	34	95	34	2451	0

Major/Minor	Minor1			Major1				Major2			
Conflicting Flow All	-	-	1498	1789	2451	0	0	2187	2996	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	5.64	5.34	-	-	5.64	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	2.32	3.12	-	-	2.32	3.12	-	-
Pot Cap-1 Maneuver	0	0	95	~ 159	73	-	-	~ 94	38	-	0
Stage 1	0	0	-	-	-	-	-	-	-	-	0
Stage 2	0	0	-	-	-	-	-	-	-	-	0
Platoon blocked, %						-	-			-	
Mov Cap-1 Maneuver	-	0	95	~ 159	159	-	-	~ 33	~ 33	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-	-	-	-	-	-
Stage 1	-	0	-	-	-	-	-	-	-	-	-
Stage 2	-	0	-	-	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	105.4	7.5	78.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	159	-	-	95	~ 33	-
HCM Lane V/C Ratio	1.046	-	-	0.709	3.892	-
HCM Control Delay (s)	141.7	-	-	105.8	$ 1574.1	-
HCM Lane LOS	F	-	-	F	F	-
HCM 95th %tile Q(veh)	8.4	-	-	3.6	15.1	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	0	132	32	0	16	211	2710	32	32	2183	98
Future Volume (veh/h)	68	0	132	32	0	16	211	2710	32	32	2183	98
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1870	1826	1870	1870	1870	1826	1826	1870	1870	1826	1826
Adj Flow Rate, veh/h	72	0	139	34	0	17	222	2853	34	34	2298	103
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	2	5	2	2	2	5	5	2	2	5	5
Cap, veh/h	229	0	174	118	12	35	256	3439	41	54	2796	868
Arrive On Green	0.11	0.00	0.11	0.11	0.00	0.11	0.15	0.68	0.68	0.03	0.56	0.56
Sat Flow, veh/h	1403	0	1547	514	105	309	1739	5078	60	1781	4985	1547
Grp Volume(v), veh/h	72	0	139	51	0	0	222	1863	1024	34	2298	103
Grp Sat Flow(s),veh/h/ln	1403	0	1547	928	0	0	1739	1662	1815	1781	1662	1547
Q Serve(g_s), s	0.0	0.0	8.8	2.3	0.0	0.0	12.5	41.2	41.7	1.9	37.6	3.1
Cycle Q Clear(g_c), s	4.8	0.0	8.8	7.1	0.0	0.0	12.5	41.2	41.7	1.9	37.6	3.1
Prop In Lane	1.00		1.00	0.67		0.33	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	229	0	174	164	0	0	256	2251	1229	54	2796	868
V/C Ratio(X)	0.31	0.00	0.80	0.31	0.00	0.00	0.87	0.83	0.83	0.62	0.82	0.12
Avail Cap(c_a), veh/h	324	0	279	255	0	0	330	2251	1229	89	2796	868
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.5	0.0	43.3	43.0	0.0	0.0	41.7	11.9	11.9	47.9	17.9	10.3
Incr Delay (d2), s/veh	0.8	0.0	8.3	1.1	0.0	0.0	17.4	3.7	6.7	11.2	2.9	0.3
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(95%),veh/ln	3.1	0.0	6.7	2.3	0.0	0.0	10.6	19.0	21.9	1.8	19.4	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.3	0.0	51.6	44.1	0.0	0.0	59.2	15.5	18.6	59.1	20.8	10.6
LnGrp LOS	D	A	D	D	A	A	E	B	B	E	C	B
Approach Vol, veh/h		211			51			3109			2435	
Approach Delay, s/veh		48.4			44.1			19.7			20.9	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	73.7		17.2	20.7	62.1		17.2				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	59.0		18.0	19.0	45.0		18.0				
Max Q Clear Time (g_c+I1), s	3.9	43.7		10.8	14.5	39.6		9.1				
Green Ext Time (p_c), s	0.0	14.0		0.5	0.2	5.0		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		21.4
HCM 6th LOS		C

Notes

User approved ignoring U-Turning movement.

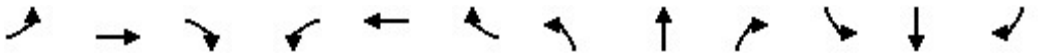
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	90	0	1056	0	56	0	1244	0
Future Vol, veh/h	0	0	0	0	0	0	90	0	1056	0	56	0	1244	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	0	-	150	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	6	2	2	2	6	2
Mvmt Flow	0	0	0	0	0	0	95	0	1112	0	59	0	1309	0

Major/Minor	Minor1			Major1				Major2			
Conflicting Flow All	-	-	556	956	1309	0	0	811	1112	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	5.64	5.34	-	-	5.64	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	2.32	3.12	-	-	2.32	3.12	-	-
Pot Cap-1 Maneuver	0	0	406	465	277	-	-	559	345	-	0
Stage 1	0	0	-	-	-	-	-	-	-	-	0
Stage 2	0	0	-	-	-	-	-	-	-	-	0
Platoon blocked, %						-	-			-	
Mov Cap-1 Maneuver	-	0	406	465	465	-	-	559	559	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-	-	-	-	-	-
Stage 1	-	0	-	-	-	-	-	-	-	-	-
Stage 2	-	0	-	-	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	1.2	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	465	-	-	-	559	-
HCM Lane V/C Ratio	0.204	-	-	-	0.105	-
HCM Control Delay (s)	14.7	-	-	0	12.2	-
HCM Lane LOS	B	-	-	A	B	-
HCM 95th %tile Q(veh)	0.8	-	-	-	0.4	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	0	59	20	0	28	133	967	20	20	1174	38
Future Volume (veh/h)	44	0	59	20	0	28	133	967	20	20	1174	38
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1870	1811	1870	1870	1870	1811	1811	1870	1870	1811	1811
Adj Flow Rate, veh/h	46	0	62	21	0	29	140	1018	21	21	1236	40
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	2	6	2	2	2	6	6	2	2	6	6
Cap, veh/h	242	0	119	118	12	61	172	2982	61	44	2584	802
Arrive On Green	0.08	0.00	0.08	0.08	0.00	0.08	0.10	0.60	0.60	0.02	0.52	0.52
Sat Flow, veh/h	1580	0	1535	423	150	790	1725	4986	103	1781	4944	1535
Grp Volume(v), veh/h	46	0	62	50	0	0	140	673	366	21	1236	40
Grp Sat Flow(s),veh/h/ln	1580	0	1535	1363	0	0	1725	1648	1793	1781	1648	1535
Q Serve(g_s), s	0.0	0.0	2.3	0.8	0.0	0.0	4.8	6.2	6.2	0.7	9.5	0.8
Cycle Q Clear(g_c), s	1.5	0.0	2.3	2.3	0.0	0.0	4.8	6.2	6.2	0.7	9.5	0.8
Prop In Lane	1.00		1.00	0.42		0.58	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	242	0	119	191	0	0	172	1971	1072	44	2584	802
V/C Ratio(X)	0.19	0.00	0.52	0.26	0.00	0.00	0.81	0.34	0.34	0.48	0.48	0.05
Avail Cap(c_a), veh/h	550	0	460	518	0	0	172	1971	1072	148	2584	802
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	26.6	26.5	0.0	0.0	26.4	6.1	6.1	28.9	9.1	7.0
Incr Delay (d2), s/veh	0.4	0.0	3.5	0.7	0.0	0.0	24.6	0.5	0.9	7.9	0.6	0.1
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	0.6	0.0	0.9	0.7	0.0	0.0	3.0	1.6	1.8	0.4	2.7	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	30.1	27.3	0.0	0.0	51.0	6.6	7.0	36.8	9.8	7.1
LnGrp LOS	C	A	C	C	A	A	D	A	A	D	A	A
Approach Vol, veh/h		108			50			1179			1297	
Approach Delay, s/veh		28.6			27.3			12.0			10.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	41.9		10.6	12.0	37.4		10.6				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	19.0		18.0	6.0	18.0		18.0				
Max Q Clear Time (g_c+I1), s	2.7	8.2		4.3	6.8	11.5		4.3				
Green Ext Time (p_c), s	0.0	4.7		0.3	0.0	4.0		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		12.0	
HCM 6th LOS		B	

Notes

User approved ignoring U-Turning movement.

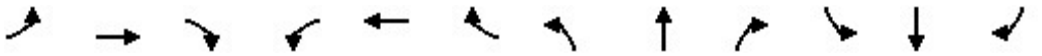
Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	54	199	0	1293	27	76	27	1118	0
Future Vol, veh/h	0	0	0	0	0	54	199	0	1293	27	76	27	1118	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	0	-	150	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	57	209	0	1361	28	80	28	1177	0

Major/Minor	Minor1			Major1				Major2			
Conflicting Flow All	-	-	695	859	1177	0	0	1014	1389	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	5.64	5.34	-	-	5.64	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	2.32	3.12	-	-	2.32	3.12	-	-
Pot Cap-1 Maneuver	0	0	330	526	321	-	-	432	253	-	0
Stage 1	0	0	-	-	-	-	-	-	-	-	0
Stage 2	0	0	-	-	-	-	-	-	-	-	0
Platoon blocked, %						-	-			-	
Mov Cap-1 Maneuver	-	0	330	526	526	-	-	325	325	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-	-	-	-	-	-
Stage 1	-	0	-	-	-	-	-	-	-	-	-
Stage 2	-	0	-	-	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.2	2.1	1.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	526	-	-	330	325	-
HCM Lane V/C Ratio	0.398	-	-	0.172	0.334	-
HCM Control Delay (s)	16.3	-	-	18.2	21.5	-
HCM Lane LOS	C	-	-	C	C	-
HCM 95th %tile Q(veh)	1.9	-	-	0.6	1.4	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	0	112	27	0	16	179	1204	27	27	989	83
Future Volume (veh/h)	58	0	112	27	0	16	179	1204	27	27	989	83
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1870	1811	1870	1870	1870	1811	1811	1870	1870	1811	1811
Adj Flow Rate, veh/h	61	0	118	28	0	17	188	1267	28	28	1041	87
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	2	6	2	2	2	6	6	2	2	6	6
Cap, veh/h	292	0	173	167	21	55	172	2768	61	55	2409	748
Arrive On Green	0.11	0.00	0.11	0.11	0.00	0.11	0.10	0.56	0.56	0.03	0.49	0.49
Sat Flow, veh/h	1522	0	1535	617	188	489	1725	4977	110	1781	4944	1535
Grp Volume(v), veh/h	61	0	118	45	0	0	188	839	456	28	1041	87
Grp Sat Flow(s),veh/h/ln	1522	0	1535	1295	0	0	1725	1648	1791	1781	1648	1535
Q Serve(g_s), s	0.0	0.0	4.4	0.3	0.0	0.0	6.0	9.1	9.1	0.9	8.2	1.8
Cycle Q Clear(g_c), s	1.9	0.0	4.4	2.2	0.0	0.0	6.0	9.1	9.1	0.9	8.2	1.8
Prop In Lane	1.00		1.00	0.62		0.38	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	292	0	173	243	0	0	172	1833	996	55	2409	748
V/C Ratio(X)	0.21	0.00	0.68	0.18	0.00	0.00	1.09	0.46	0.46	0.51	0.43	0.12
Avail Cap(c_a), veh/h	553	0	460	501	0	0	172	1833	996	148	2409	748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	0.0	25.6	24.4	0.0	0.0	27.0	7.9	7.9	28.6	10.0	8.4
Incr Delay (d2), s/veh	0.4	0.0	4.7	0.4	0.0	0.0	94.6	0.8	1.5	7.0	0.6	0.3
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	0.8	0.0	1.7	0.6	0.0	0.0	6.8	2.5	2.9	0.5	2.4	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	0.0	30.2	24.7	0.0	0.0	121.6	8.8	9.4	35.6	10.6	8.7
LnGrp LOS	C	A	C	C	A	A	F	A	A	D	B	A
Approach Vol, veh/h		179			45			1483			1156	
Approach Delay, s/veh		28.4			24.7			23.3			11.0	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.9	39.4		12.8	12.0	35.2		12.8				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	19.0		18.0	6.0	18.0		18.0				
Max Q Clear Time (g_c+I1), s	2.9	11.1		6.4	8.0	10.2		4.2				
Green Ext Time (p_c), s	0.0	4.7		0.5	0.0	4.1		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		18.7	
HCM 6th LOS		B	

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	5.7

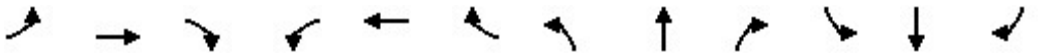
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	115	0	2353	0	70	0	2772	0
Future Vol, veh/h	0	0	0	0	0	0	115	0	2353	0	70	0	2772	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	0	-	150	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	5	2	2	2	5	2
Mvmt Flow	0	0	0	0	0	0	121	0	2477	0	74	0	2918	0

Major/Minor	Minor1			Major1				Major2			
Conflicting Flow All	-	-	1239	2130	2918	0	0	1808	2477	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	5.64	5.34	-	-	5.64	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	2.32	3.12	-	-	2.32	3.12	-	-
Pot Cap-1 Maneuver	0	0	143	~ 101	42	-	-	155	71	-	0
Stage 1	0	0	-	-	-	-	-	-	-	-	0
Stage 2	0	0	-	-	-	-	-	-	-	-	0
Platoon blocked, %						-	-			-	
Mov Cap-1 Maneuver	-	0	143	~ 101	101	-	-	155	155	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-	-	-	-	-	-
Stage 1	-	0	-	-	-	-	-	-	-	-	-
Stage 2	-	0	-	-	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	10.8	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	101	-	-	-	155	-
HCM Lane V/C Ratio	1.199	-	-	-	0.475	-
HCM Control Delay (s)	231	-	-	0	47.7	-
HCM Lane LOS	F	-	-	A	E	-
HCM 95th %tile Q(veh)	8.1	-	-	-	2.2	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	0	82	25	0	34	163	2244	25	25	2720	45
Future Volume (veh/h)	54	0	82	25	0	34	163	2244	25	25	2720	45
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1870	1826	1870	1870	1870	1826	1826	1870	1870	1826	1826
Adj Flow Rate, veh/h	57	0	86	26	0	36	172	2362	26	26	2863	47
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	2	5	2	2	2	5	5	2	2	5	5
Cap, veh/h	180	0	125	75	14	53	174	3626	40	46	3186	989
Arrive On Green	0.08	0.00	0.08	0.08	0.00	0.08	0.10	0.71	0.71	0.03	0.64	0.64
Sat Flow, veh/h	1334	0	1547	298	177	657	1739	5083	56	1781	4985	1547
Grp Volume(v), veh/h	57	0	86	62	0	0	172	1543	845	26	2863	47
Grp Sat Flow(s),veh/h/ln	1334	0	1547	1132	0	0	1739	1662	1816	1781	1662	1547
Q Serve(g_s), s	0.0	0.0	5.4	1.8	0.0	0.0	9.9	24.8	24.9	1.4	48.7	1.1
Cycle Q Clear(g_c), s	4.1	0.0	5.4	6.0	0.0	0.0	9.9	24.8	24.9	1.4	48.7	1.1
Prop In Lane	1.00		1.00	0.42		0.58	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	180	0	125	143	0	0	174	2371	1295	46	3186	989
V/C Ratio(X)	0.32	0.00	0.69	0.43	0.00	0.00	0.99	0.65	0.65	0.57	0.90	0.05
Avail Cap(c_a), veh/h	316	0	279	287	0	0	174	2371	1295	89	3186	989
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	0.0	44.7	44.8	0.0	0.0	44.9	7.7	7.7	48.2	15.3	6.7
Incr Delay (d2), s/veh	1.0	0.0	6.5	2.1	0.0	0.0	64.9	1.4	2.6	10.6	4.6	0.1
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(95%),veh/ln	2.5	0.0	4.1	2.8	0.0	0.0	11.7	11.5	12.9	1.4	22.9	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.1	0.0	51.2	46.9	0.0	0.0	109.8	9.1	10.2	58.7	19.9	6.8
LnGrp LOS	D	A	D	D	A	A	F	A	B	E	B	A
Approach Vol, veh/h		143			62			2560			2936	
Approach Delay, s/veh		48.8			46.9			16.2			20.0	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	77.3		14.1	16.0	69.9		14.1				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	59.0		18.0	10.0	54.0		18.0				
Max Q Clear Time (g_c+I1), s	3.4	26.9		7.4	11.9	50.7		8.0				
Green Ext Time (p_c), s	0.0	23.0		0.4	0.0	3.2		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		19.3
HCM 6th LOS		B

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	51.8

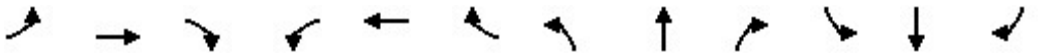
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	64	249	0	2814	32	90	32	2328	0
Future Vol, veh/h	0	0	0	0	0	64	249	0	2814	32	90	32	2328	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	0	-	150	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	5	2	2	2	5	2
Mvmt Flow	0	0	0	0	0	67	262	0	2962	34	95	34	2451	0

Major/Minor	Minor1			Major1				Major2			
Conflicting Flow All	-	-	1498	1789	2451	0	0	2187	2996	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	5.64	5.34	-	-	5.64	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	2.32	3.12	-	-	2.32	3.12	-	-
Pot Cap-1 Maneuver	0	0	95	~ 159	73	-	-	~ 94	38	-	0
Stage 1	0	0	-	-	-	-	-	-	-	-	0
Stage 2	0	0	-	-	-	-	-	-	-	-	0
Platoon blocked, %						-	-			-	
Mov Cap-1 Maneuver	-	0	95	~ 159	159	-	-	~ 33	~ 33	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-	-	-	-	-	-
Stage 1	-	0	-	-	-	-	-	-	-	-	-
Stage 2	-	0	-	-	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	105.4	29.7	78.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	159	-	-	95	~ 33	-
HCM Lane V/C Ratio	1.648	-	-	0.709	3.892	-
HCM Control Delay (s)	$ 368.7	-	-	105.4	$ 1574.1	-
HCM Lane LOS	F	-	-	F	F	-
HCM 95th %tile Q(veh)	18.3	-	-	3.6	15.1	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	0	132	32	0	16	211	2710	32	32	2183	98
Future Volume (veh/h)	68	0	132	32	0	16	211	2710	32	32	2183	98
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1870	1826	1870	1870	1870	1826	1826	1870	1870	1826	1826
Adj Flow Rate, veh/h	72	0	139	34	0	17	222	2853	34	34	2298	103
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	2	5	2	2	2	5	5	2	2	5	5
Cap, veh/h	246	0	178	129	13	38	232	3317	39	57	2750	854
Arrive On Green	0.11	0.00	0.11	0.11	0.00	0.11	0.13	0.65	0.65	0.03	0.55	0.55
Sat Flow, veh/h	1448	0	1547	545	113	329	1739	5078	60	1781	4985	1547
Grp Volume(v), veh/h	72	0	139	51	0	0	222	1863	1024	34	2298	103
Grp Sat Flow(s),veh/h/ln	1448	0	1547	987	0	0	1739	1662	1815	1781	1662	1547
Q Serve(g_s), s	0.0	0.0	7.9	1.9	0.0	0.0	11.4	39.8	40.4	1.7	34.5	2.9
Cycle Q Clear(g_c), s	4.1	0.0	7.9	6.0	0.0	0.0	11.4	39.8	40.4	1.7	34.5	2.9
Prop In Lane	1.00		1.00	0.67		0.33	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	246	0	178	180	0	0	232	2171	1186	57	2750	854
V/C Ratio(X)	0.29	0.00	0.78	0.28	0.00	0.00	0.96	0.86	0.86	0.60	0.84	0.12
Avail Cap(c_a), veh/h	365	0	309	294	0	0	232	2171	1186	99	2750	854
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.0	0.0	38.7	38.1	0.0	0.0	38.7	12.3	12.4	43.0	16.8	9.7
Incr Delay (d2), s/veh	0.7	0.0	7.3	0.9	0.0	0.0	47.1	4.7	8.4	9.8	3.2	0.3
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(95%),veh/ln	2.7	0.0	5.9	2.0	0.0	0.0	12.2	18.6	21.7	1.6	17.7	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.7	0.0	46.0	38.9	0.0	0.0	85.9	17.0	20.8	52.8	20.0	10.0
LnGrp LOS	D	A	D	D	A	A	F	B	C	D	B	A
Approach Vol, veh/h		211			51			3109			2435	
Approach Delay, s/veh		43.2			38.9			23.2			20.0	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	64.8		16.3	18.0	55.7		16.3				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	49.0		18.0	12.0	42.0		18.0				
Max Q Clear Time (g_c+I1), s	3.7	42.4		9.9	13.4	36.5		8.0				
Green Ext Time (p_c), s	0.0	6.3		0.5	0.0	5.0		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		22.7	
HCM 6th LOS		C	

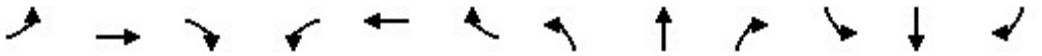
Notes

User approved ignoring U-Turning movement.

Appendix F
Design Year (2045)
Directional Median Opening Closure Analysis

HCM 6th Signalized Intersection Summary
3: SR 31 & Marina Dr/ Restaurant

05/16/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	0	82	25	0	34	278	2244	25	25	2720	45
Future Volume (veh/h)	54	0	82	25	0	34	278	2244	25	25	2720	45
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1870	1826	1870	1870	1870	1826	1826	1870	1870	1826	1826
Adj Flow Rate, veh/h	57	0	86	26	0	36	293	2362	26	26	2863	47
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	2	5	2	2	2	5	5	2	2	5	5
Cap, veh/h	142	0	144	55	13	47	319	3887	43	39	3007	933
Arrive On Green	0.09	0.00	0.09	0.09	0.00	0.09	0.18	0.76	0.76	0.02	0.60	0.60
Sat Flow, veh/h	1003	0	1547	228	137	505	1739	5083	56	1781	4985	1547
Grp Volume(v), veh/h	57	0	86	62	0	0	293	1543	845	26	2863	47
Grp Sat Flow(s),veh/h/ln	1003	0	1547	870	0	0	1739	1662	1816	1781	1662	1547
Q Serve(g_s), s	0.0	0.0	8.0	3.1	0.0	0.0	24.8	30.6	30.7	2.2	80.3	1.9
Cycle Q Clear(g_c), s	8.8	0.0	8.0	11.9	0.0	0.0	24.8	30.6	30.7	2.2	80.3	1.9
Prop In Lane	1.00		1.00	0.42		0.58	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	142	0	144	115	0	0	319	2541	1388	39	3007	933
V/C Ratio(X)	0.40	0.00	0.60	0.54	0.00	0.00	0.92	0.61	0.61	0.66	0.95	0.05
Avail Cap(c_a), veh/h	178	0	186	154	0	0	464	2541	1388	71	3007	933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.6	0.0	65.3	67.0	0.0	0.0	60.1	7.8	7.8	72.8	27.7	12.2
Incr Delay (d2), s/veh	1.8	0.0	3.9	3.9	0.0	0.0	18.0	1.1	2.0	17.4	8.5	0.1
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(95%),veh/ln	4.0	0.0	6.0	4.5	0.0	0.0	18.2	14.8	16.4	2.1	41.3	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.5	0.0	69.2	70.8	0.0	0.0	78.2	8.8	9.8	90.2	36.3	12.3
LnGrp LOS	E	A	E	E	A	A	E	A	A	F	D	B
Approach Vol, veh/h		143			62			2681			2936	
Approach Delay, s/veh		68.5			70.8			16.7			36.4	
Approach LOS		E			E			B			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	120.7		20.0	33.5	96.5		20.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	108.0		18.0	40.0	74.0		18.0				
Max Q Clear Time (g_c+I1), s	4.2	32.7		10.8	26.8	82.3		13.9				
Green Ext Time (p_c), s	0.0	38.3		0.3	0.7	0.0		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	173	0	0	171	0	0
Future Vol, veh/h	173	0	0	171	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	2	2	2	2	2
Mvmt Flow	182	0	0	180	0	0

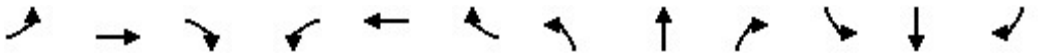
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	91	-	-	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	90	-	-	-	-	-
Critical Hdwy	6.35	-	-	-	-	-
Critical Hdwy Stg 1	6.7	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.7	-	-	-	-	-
Pot Cap-1 Maneuver	868	0	0	-	-	0
Stage 1	972	0	0	-	-	0
Stage 2	879	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	868	-	-	-	-	-
Mov Cap-2 Maneuver	868	-	-	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	879	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	868	-
HCM Lane V/C Ratio	-	0.21	-
HCM Control Delay (s)	-	10.2	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.8	-

HCM 6th Signalized Intersection Summary
3: SR 31 & Marina Dr/ Restaurant

05/16/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	0	132	32	0	16	460	2710	32	32	2183	98
Future Volume (veh/h)	68	0	132	32	0	16	460	2710	32	32	2183	98
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1870	1826	1870	1870	1870	1826	1826	1870	1870	1826	1826
Adj Flow Rate, veh/h	72	0	139	34	0	17	484	2853	34	34	2298	103
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	2	5	2	2	2	5	5	2	2	5	5
Cap, veh/h	196	0	164	94	9	29	506	3698	44	48	2315	719
Arrive On Green	0.11	0.00	0.11	0.11	0.00	0.11	0.29	0.73	0.73	0.03	0.46	0.46
Sat Flow, veh/h	1327	0	1547	455	85	270	1739	5078	60	1781	4985	1547
Grp Volume(v), veh/h	72	0	139	51	0	0	484	1863	1024	34	2298	103
Grp Sat Flow(s),veh/h/ln	1327	0	1547	810	0	0	1739	1662	1815	1781	1662	1547
Q Serve(g_s), s	0.0	0.0	11.5	3.5	0.0	0.0	35.5	45.1	45.7	2.5	59.5	5.0
Cycle Q Clear(g_c), s	6.8	0.0	11.5	10.3	0.0	0.0	35.5	45.1	45.7	2.5	59.5	5.0
Prop In Lane	1.00		1.00	0.67		0.33	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	196	0	164	132	0	0	506	2420	1322	48	2315	719
V/C Ratio(X)	0.37	0.00	0.85	0.39	0.00	0.00	0.96	0.77	0.77	0.70	0.99	0.14
Avail Cap(c_a), veh/h	241	0	214	176	0	0	522	2420	1322	69	2315	719
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.0	0.0	57.1	57.7	0.0	0.0	45.3	10.9	11.0	62.7	34.6	20.0
Incr Delay (d2), s/veh	1.1	0.0	20.9	1.8	0.0	0.0	28.3	2.4	4.5	16.8	17.0	0.4
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(95%),veh/ln	4.2	0.0	9.3	3.1	0.0	0.0	26.1	20.8	23.6	2.4	34.8	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.1	0.0	78.0	59.5	0.0	0.0	73.6	13.4	15.5	79.5	51.6	20.4
LnGrp LOS	E	A	E	E	A	A	E	B	B	E	D	C
Approach Vol, veh/h		211			51			3371			2435	
Approach Delay, s/veh		70.5			59.5			22.7			50.7	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	100.7		19.8	43.8	66.4		19.8				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	89.0		18.0	39.0	55.0		18.0				
Max Q Clear Time (g_c+I1), s	4.5	47.7		13.5	37.5	61.5		12.3				
Green Ext Time (p_c), s	0.0	34.0		0.3	0.3	0.0		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		35.9
HCM 6th LOS		D

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	452	0	0	269	0	0
Future Vol, veh/h	452	0	0	269	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	2	2	2	2	2
Mvmt Flow	476	0	0	283	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	143	-	-	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Critical Hdwy	6.35	-	-	-	-	-
Critical Hdwy Stg 1	6.7	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.7	-	-	-	-	-
Pot Cap-1 Maneuver	813	0	0	-	-	0
Stage 1	972	0	0	-	-	0
Stage 2	829	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	813	-	-	-	-	-
Mov Cap-2 Maneuver	813	-	-	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	829	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	813	-
HCM Lane V/C Ratio	-	0.585	-
HCM Control Delay (s)	-	15.5	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	3.9	-