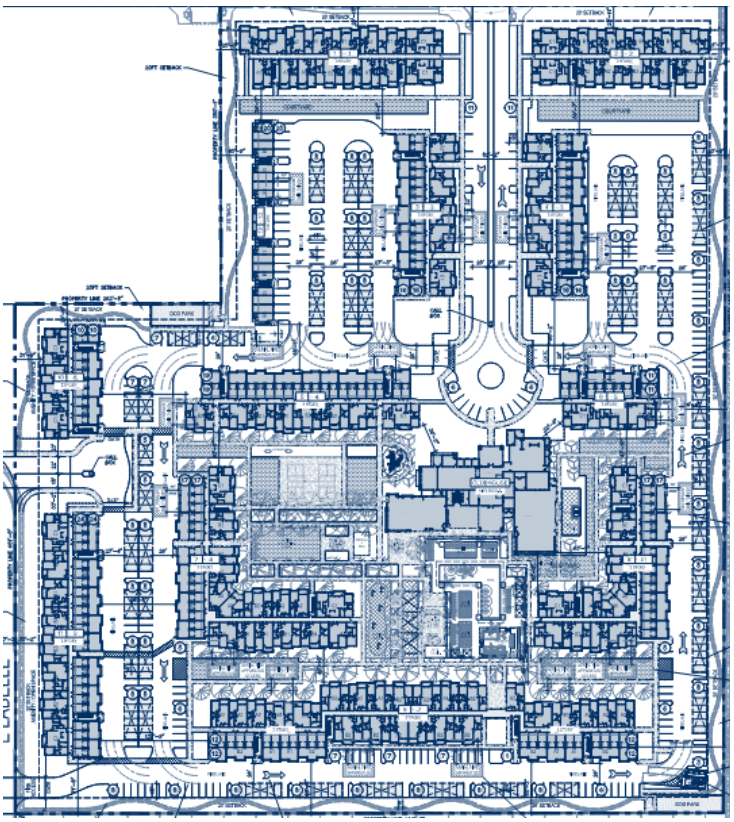
Navona

Traffic Impact Study



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Project Number: 21.5289
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1. INTRODUCTION AND EXECUTIVE SUMMARY

1.1. PURPOSE OF REPORT AND STUDY OBJECTIVES

Lōkahi, LLC (Lōkahi) was retained by Toll Brothers Apartment Living to complete a Traffic Impact Study for the proposed Navona residential development. The proposed development is located along Williams Field Road approximately 650 feet east of Crismon Road in Mesa, Arizona.

The objective of this Traffic Impact Study is to analyze the traffic related impacts of the proposed development to the adjacent roadway network. See **Figure 1** for the vicinity map.

1.2. EXECUTIVE SUMMARY

This report presents the analyses and results of a traffic study prepared for the Navona residential development. The proposed development is anticipated to be comprised of 400 residential units. Of which, there will be 200 one-bedroom, 168 two-bedroom, and 32 three-bedroom units.

This Traffic Impact Study includes:

- Trip Generation for the proposed development
- Level of service analysis for the year 2030 weekday AM and PM peak hours with build out of the proposed Navona residential development

The following are the intersections included in this study:

- Williams Field Road and Crismon Road (1)
- Williams Field Road and Driveway A (2)
- Williams Field Road and Signal Butte Road (3)
- Crismon Road and Unity Avenue (4)

Trip Generation

The trip generation for the proposed Navona residential development was calculated utilizing the Institute of Transportation Engineers (ITE) publication entitled *Trip Generation, 11th Edition*. ITE Land Use Code 220 – Multifamily Housing (Low-Rise) was used to calculate the trips generated by the proposed development.

Trip Generation

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Multifamily Housing (Low-Rise)	220	400	Dwelling Units	2,639	147	35	112	193	122	71

The proposed Navona residential development is anticipated to generate 2,639 weekday trips, with 147 trips occurring during the AM peak hour and 193 occurring during the PM peak hour.

Future Conditions (Year 2030)

The proposed Navona residential development is anticipated to be constructed and open in the year 2024.

However, the portions of the surrounding area are currently under construction and the existing roadways are currently not fully developed. Furthermore, Phase II of the State Route 24 (SR 24) is anticipated to begin construction in the year 2022, which will provide an interchange at Williams Field Road and Signal Butte Road. Traffic patterns are anticipated to change significantly in the area.

With the changing roadway geometrics and construction conditions of this area, the year 2030 was analyzed, as this considers ultimate roadway geometrics and projected traffic volumes that have been vetted and approved by the City of Mesa as part of a prior larger study.

The year 2030 background traffic volumes were obtained from the A*valon Crossing Traffic Impact Study*, dated April 23, 2021. Additionally, the traffic generated by known surrounding developments were included in the year 2030 background traffic volumes.

Capacity analysis was completed for both the AM and PM peak hours for the year 2030, with the build out of the proposed Navona residential development. All movements at the study intersections operate at a LOS D or better, which is an acceptable levels of service.

Recommendations

With the build out of the proposed Navona development, the following are the recommended improvements:

- **Half Street Improvements Adjacent to Project**
    - The developer will be responsible for the half street improvements adjacent to the project frontage along Williams Field Road

- **Williams Field Road and Driveway A (2)**
    - Buildout of a full access stop-controlled driveway
    - Installation of an eastbound right turn deceleration lane
    - Installation of a westbound left turn deceleration lane

2. PROPOSED DEVELOPMENT

The study area is located in the City of Mesa, Arizona. The proposed development is located along Williams Field Road approximately 650 feet east of Crismon Road. See **Figure 1** for a vicinity map.

The proposed Navona residential development will be comprised of 400 residential units. Of which, there will be 200 one-bedroom, 168 two-bedroom, and 32 three-bedroom units.

The proposed development is anticipated to be open in the year 2024.

There are two (2) proposed access points to the proposed Navona residential development:

> **Williams Field Road and Driveway A (2)** is located approximately 1,000 feet east of Crismon Road. This will be a full access driveway, providing all movements into and out of the site. This access location has been vetted with the City of Mesa.
>
> Additionally, a full access driveway will be located on the west side of the site and will intersect with Unity Avenue. This driveway will provide access to the full access intersection of **Crismon Road and Unity Avenue (4)**, allowing all movements to and from Crismon Road.

In addition, an emergency-only access point will be located along the southwest corner of the development, approximately 400 feet south of Unity Avenue.

See **Figure 2** and **Appendix A** for the proposed site plan.

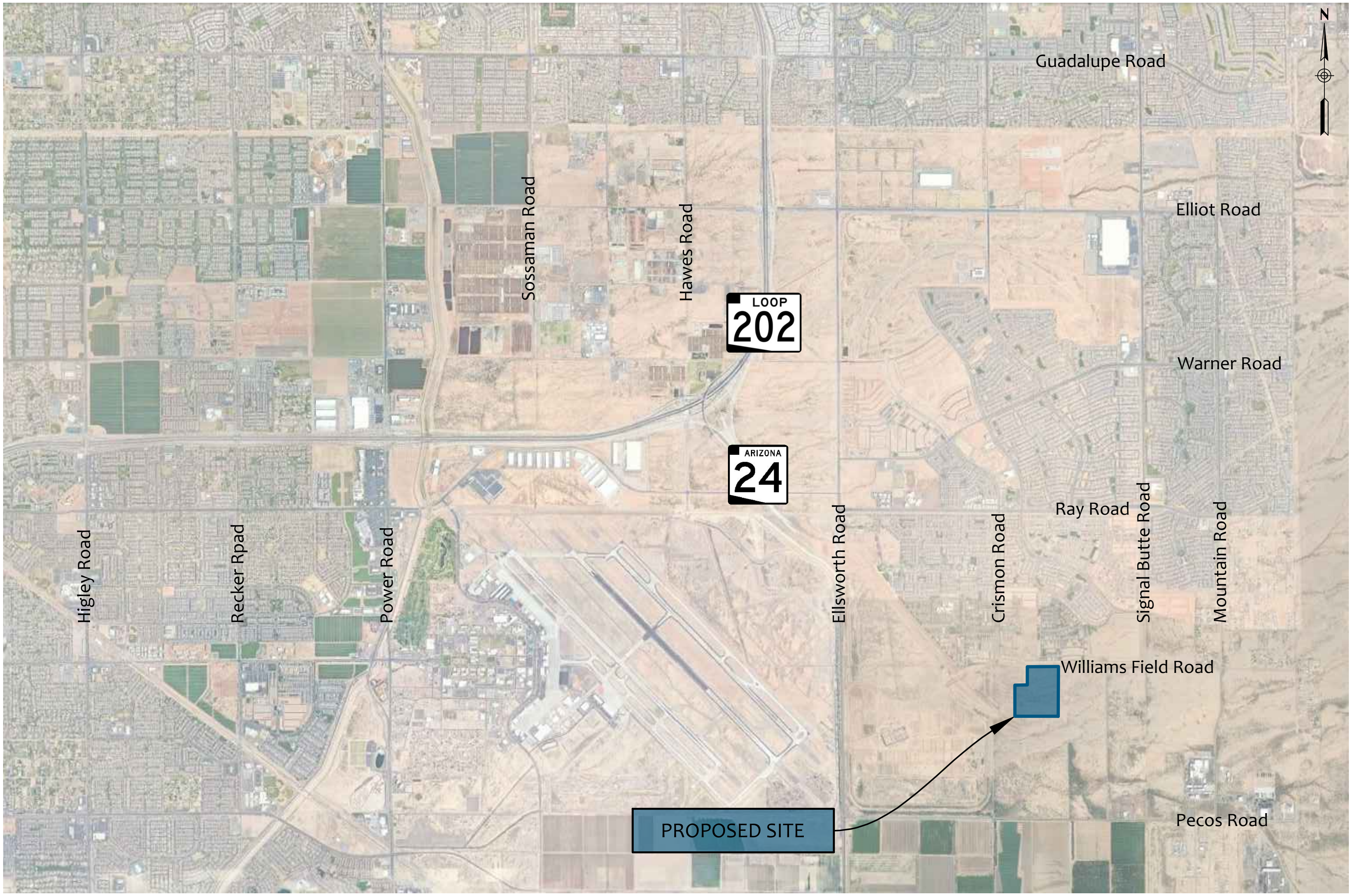


FIGURE 1 | VICINITY MAP

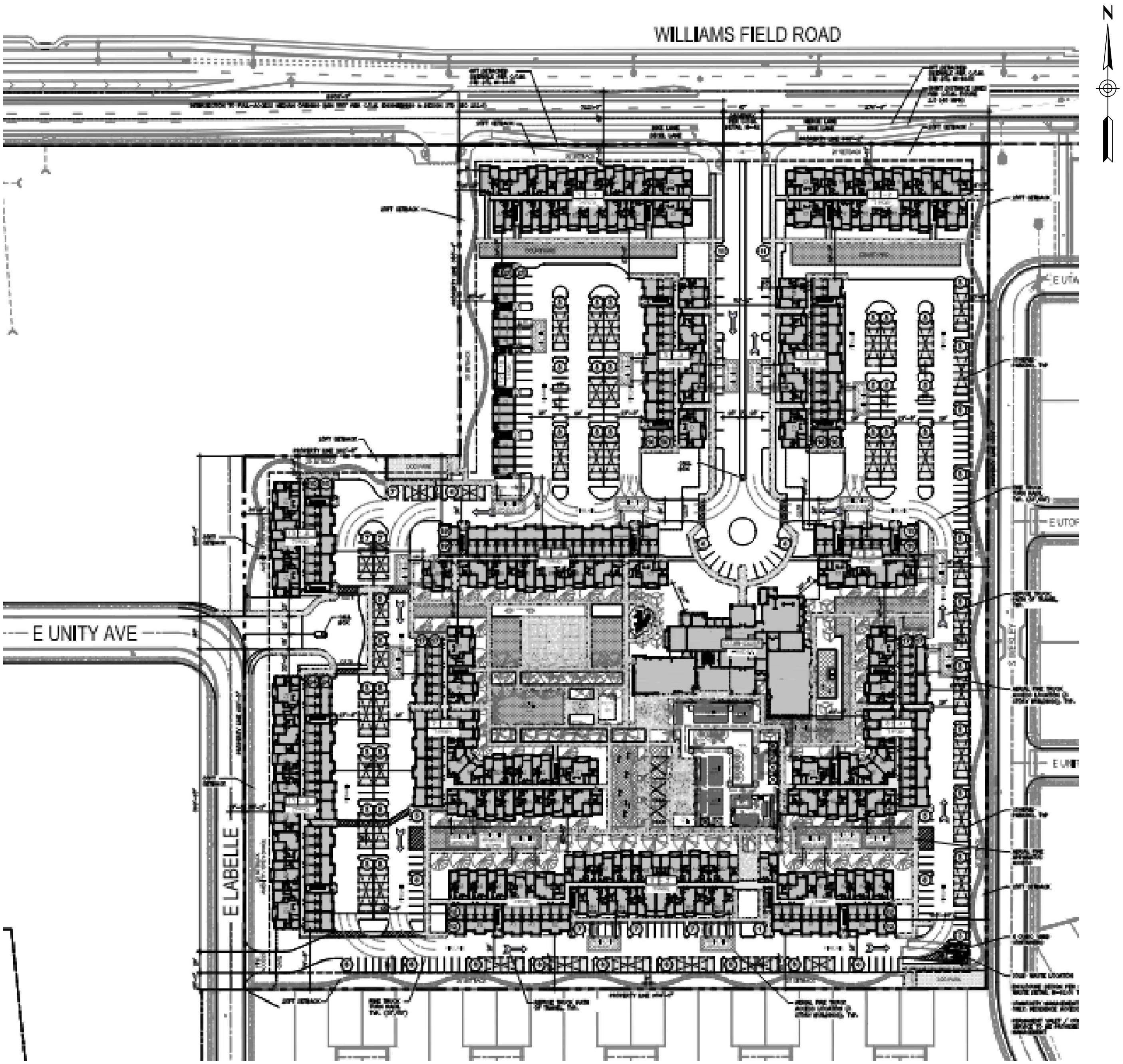


FIGURE 2 | SITE PLAN

3. AREA CONDITIONS

The study area is located in the City of Mesa, Arizona. **Sections 3.1** and **3.2** provide detailed descriptions of the study roadway segments and intersections. See **Figure 3** for the study area.

3.1. STUDY ROADWAY SEGMENTS

Williams Field Road, within the vicinity of the study area, runs east-west and currently provides one (1) travel lane in each direction of travel. There is a posted speed limit of 45 miles per hour (mph). According to the *Southeast Mesa Land Use and Transportation Plan*, Williams Field Road, generally to the east of Crismon Road, is classified as an arterial. To the west of Crismon Road, Williams Field Road is classified as a future arterial. According to the *Southeast Mesa Land Use and Transportation Plan*, by the year 2030, Williams Field Road is anticipated to be a 4-lane roadway.

Crismon Road, within the vicinity of the study area, is a north-south roadway that generally provides two (2) travel lanes in each direction of travel with a center raised median. Currently, Crismon Road terminates at Williams Field Road. There is a posted speed limit of 35 mph. According to the *Southeast Mesa Land Use and Transportation Plan*, Crismon Road, within the study area, is classified as a future arterial. According to the *Southeast Mesa Land Use and Transportation Plan*, by the year 2030, Crismon Road, south of Williams Field Road is anticipated to be a 4-lane roadway. However, the *Avalon Crossing Traffic Impact Study*, dated April 23, 2021, indicates that Crismon Road is not anticipated to connect to Germann Road until the year 2040. See **Appendix B** for the *Avalon Crossing Traffic Impact Study* dated, April 23, 2021.

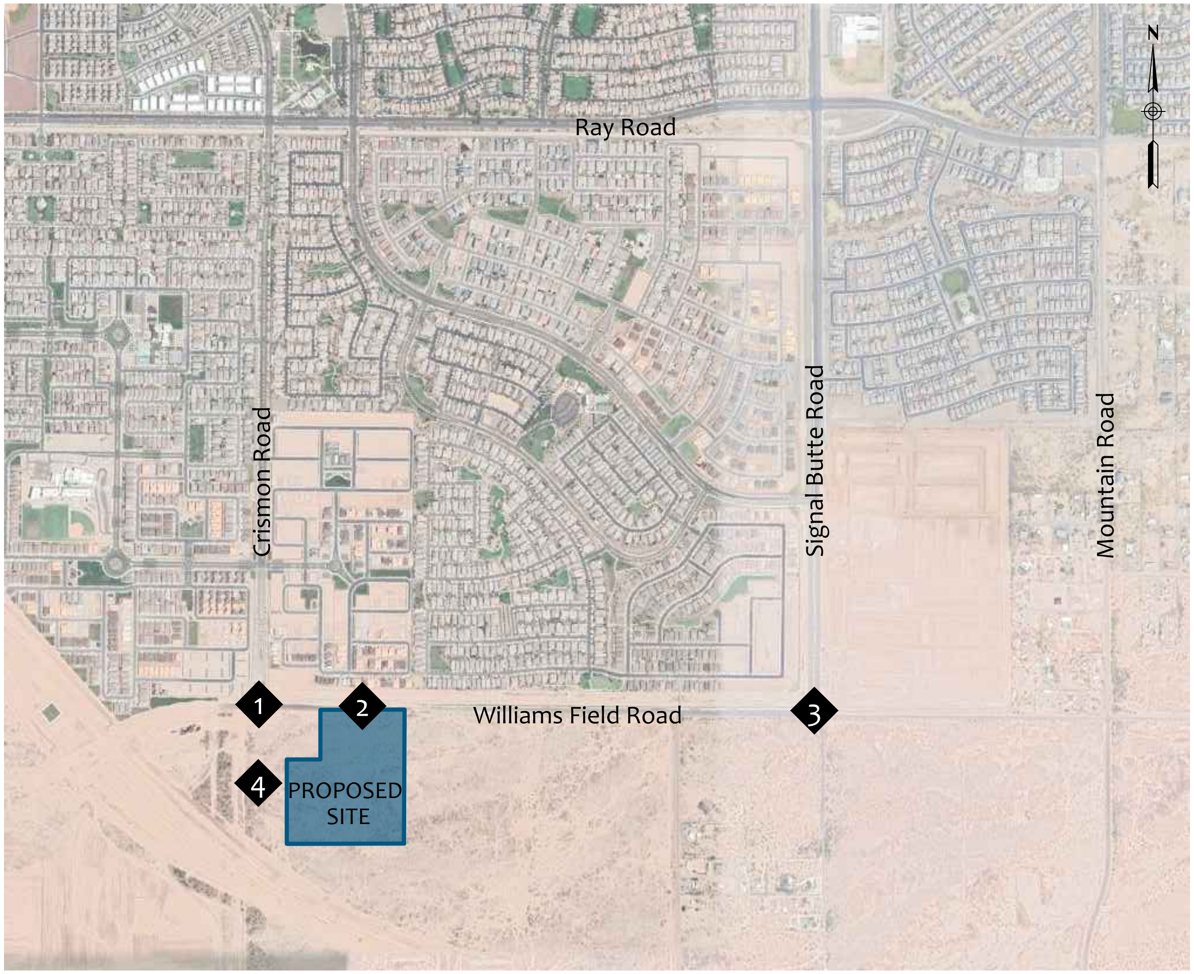
Signal Butte Road, within the vicinity of the study area, is a north-south roadway that generally provides one (1) travel lanes in each direction of travel with a center two-way left turn lane, between Williams Field Road and Tripoli Avenue. North of Tripoli Avenue, Signal Butte Road generally provides three (3) travel lanes in each direction of travel with a center two-way left turn lane. Currently, Signal Butte Road terminates at Williams Field Road. There is a posted speed limit of 45 mph. According to the *Southeast Mesa Land Use and Transportation Plan*, Crismon Road, within the study area, is classified as an arterial and will ultimately be a 6-lane roadway.

3.2. STUDY INTERSECTIONS

Williams Field Road and Crismon Road (1) is currently a T-intersection with no existing traffic control device. The southbound and westbound approaches only currently providing pavement markings, while the west leg of the intersection does not currently provide connection to the west. The southbound approach provides one (1) travel lane (southbound to eastbound). The westbound approach provides one (1) travel lane (westbound to northbound)

Williams Field Road and Signal Butte Road (3) is currently two-way stop-controlled intersection, with the stop control on the northbound and southbound approaches. Each approach provides one

(1) shared left-through-right turn lane. Currently, the north and south legs of the intersection have an approximate offset of 40-feet (centerline to centerline).



LEGEND

X Intersection

FIGURE 3 | STUDY AREA

3.3. STUDY AREA LAND USE

Currently, the proposed site and the adjacent land uses are vacant and undeveloped. Single family residential homes generally occupy the surrounding area to the north, on the north side of Williams Field Road.

3.4. SITE ACCESSIBILITY

Roadway System

The study area is located in the City of Mesa, Arizona. The State Route 24 (SR 24) alignment is located approximately one-quarter mile south and west of the proposed development. Additionally, State Route 202 (SR 202) is located approximately two (2) miles to the west and one and one-half miles to the north.

Pedestrian Facilities

Williams Field Road provides sidewalks on the north side of the roadway, between Crismon Road and Signal Butte Road. Additionally, there is an approximate 300-foot segment of sidewalk on the north side of Williams Field Road, west of Crismon Road.

Crismon Road provides continuous sidewalks on each side of the roadway, north of Williams Field Road.

North of Williams Field Road, Signal Butte Road provides an approximate one-half mile segment of sidewalks on the west side of the roadway. North of this point, Signal Butte Road generally provides continuous sidewalks on both sides of the roadway.

Bicycle Facilities

Crismon Road provides bicycle lanes in each direction of travel, north of Williams Field Road.

Similarly, Signal Butte Road provides bicycle lanes in each direction of travel, north of Williams Field Road.

4. EXISTING CONDITIONS

4.1. EXISTING LAND USE

According to the site plan, the proposed site will occupy a portion of the existing 304-35-004N parcel. According to the Maricopa County Assessor's website, parcel 304-35-004N is comprised of approximately 20.1 acres and is zoned for Planned Community (PC) District land uses. According to the City of Mesa Cods of Ordinances, the PC District is anticipated to accommodate large-scale, unified and comprehensively planned developments that encourage and promote innovate and sustainable residential and non-residential land uses. See Appendix C for detailed parcel information.

4.2. EXISTING TRAFFIC COUNTS

A local data collection firm, All Traffic Data Services, was utilized to collect traffic counts. On Tuesday, December 14, 2021, four (4) hours of typical weekday turning movements were counted during the AM (7:00 to 9:00 am) and PM (4:00 to 6:00 pm) peak hours at the following intersections, respectively:

- Williams Field Road and Crismon Road (1)
- Williams Field Road and Signal Butte Road (3)

Additionally, on Tuesday, December 14, 2021, bi-directional tube counts for 24-hours in 15-minute intervals were collected along the following roadway segments:

- Crismon Road, north of Cadence Parkway

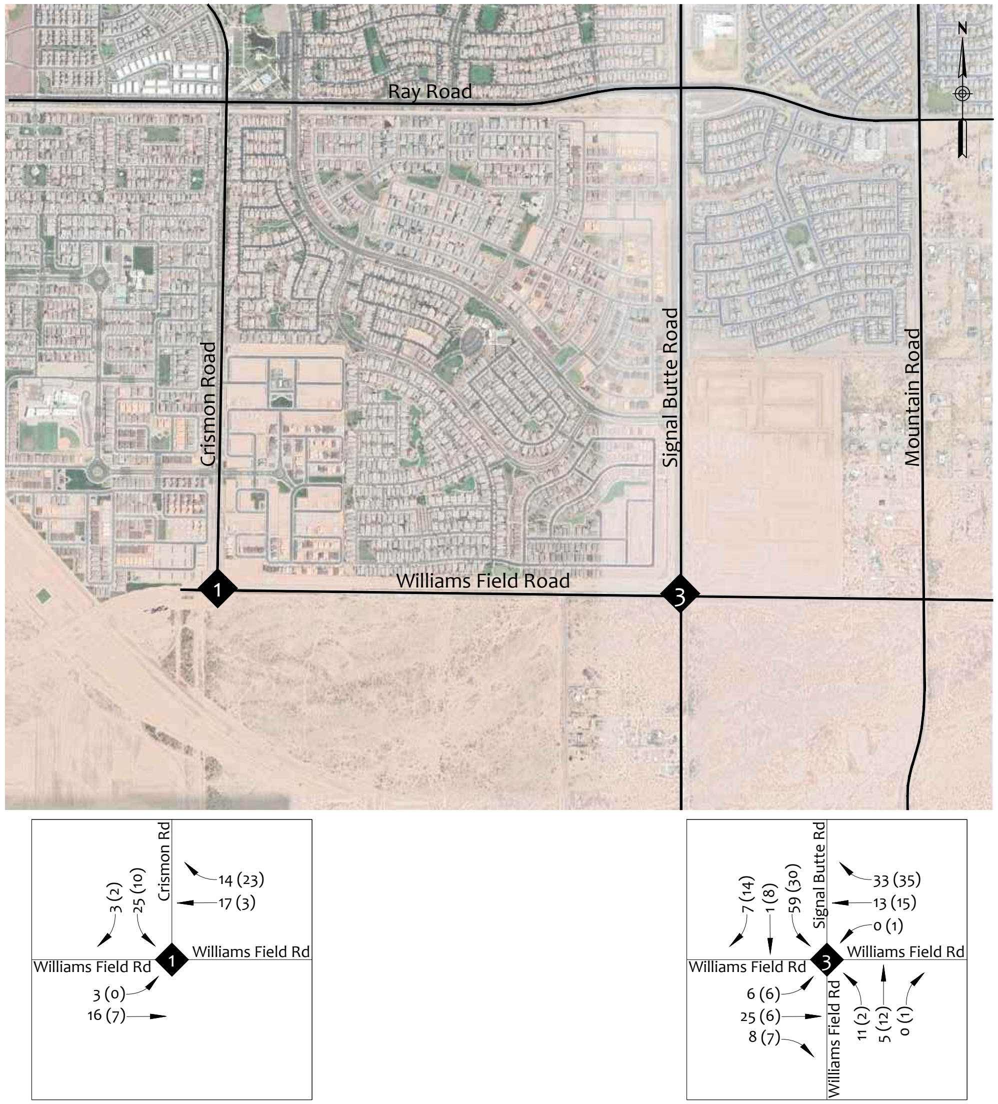
The turning movement counts were then analyzed for the highest 1-hour within each time period.

AM Peak Hour	7:00 am – 8:00 am
PM Peak Hour	4:15 pm – 5:15 pm

See **Figure 4** for the existing AM and PM peak hour traffic volumes. This data gives a picture of current conditions, but does not represent consistent travel patterns to be expected in the area. As previously described, there are many roadway connections that are either in interim conditions or not built at this time. See **Appendix D** for detailed traffic count data.

4.3. EXISTING CAPACITY ANALYSIS

Typically, a Traffic Impact Study includes a capacity analysis for the existing conditions, traffic volumes, and roadway network to provide a baseline analysis for comparison to future analyses. However, since the roadways in the surrounding area are currently under construction or have not been constructed to date, the traffic volumes reflect a very temporary condition rather than a true baseline condition. Therefore, an existing conditions capacity analysis was not completed.



LEGEND

AM (PM)	Peak Hour Traffic Volumes
X	Intersection

FIGURE 4 | EXISTING TRAFFIC VOLUMES

5. PROJECTED TRAFFIC

5.1. TRIP GENERATION

The trip generation was calculated utilizing the Institute of Transportation Engineers (ITE) publication entitled *Trip Generation, 11th Edition*. The ITE trip generation rates and fitted curve equations are based on studies that measure trip generation characteristics for various types of land uses. The rates are expressed in terms of trips per unit of land use type. This publication is the standard for the transportation engineering profession.

The proposed Navona residential development will be comprised of 400 dwelling units. Therefore, the trip generation for the proposed development was calculated utilizing the ITE Land Use 220 – Multifamily Housing (Low-Rise). The total trip generation for the proposed development is shown in **Table 1** below.

Table 1 – Trip Generation

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Multifamily Housing (Low-Rise)	220	400	Dwelling Units	2,639	147	35	112	193	122	71

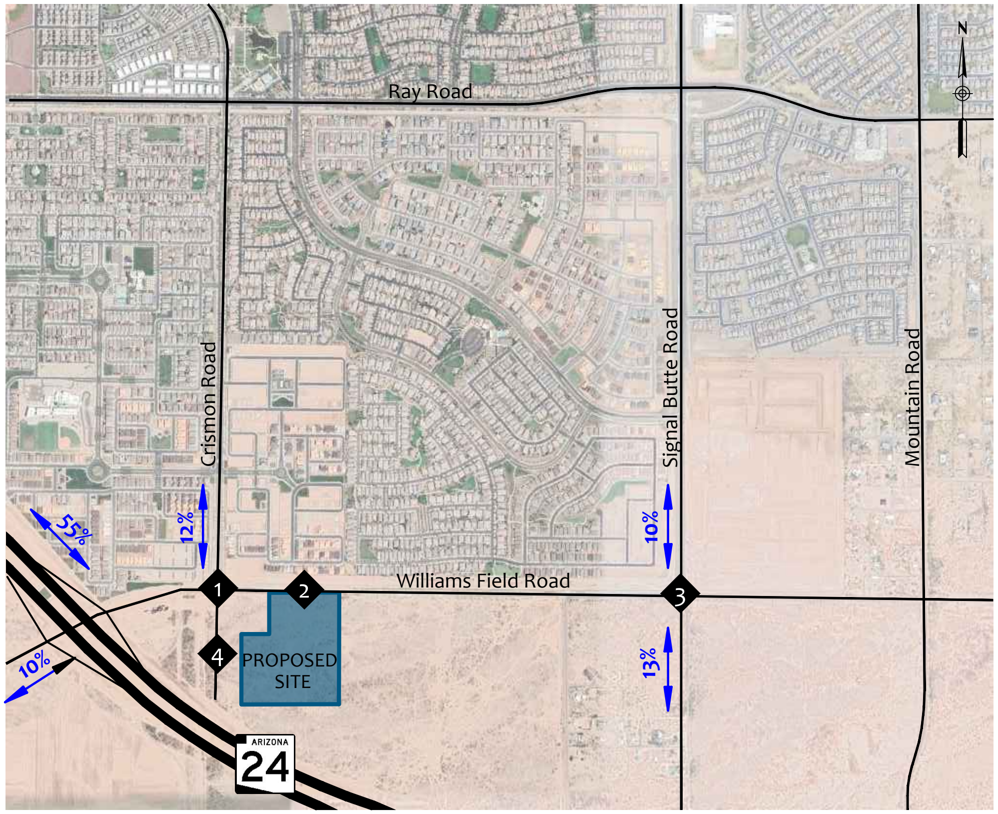
The proposed Navona residential development is anticipated to generate 2,639 weekday trips, with 147 trips occurring during the AM peak hour and 193 occurring during the PM peak hour.

Detailed trip generation calculations are provided in **Appendix E**.

5.2. TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution procedure determines the general pattern of travel for vehicles entering and exiting the proposed development. The trip distribution for the proposed Navona residential development is based on the distribution of the anticipated traffic patterns along the surrounding roadway network, as shown in the *Avalon Crossing Traffic Impact Study*, dated April 23, 2021. Additional trip distribution considerations for the Navona residential development is based on permitted movements at the proposed site driveways and probable routes. The trip distribution is shown in **Figure 5**.

The site generated traffic volumes are shown in **Figure 6**.



LEGEND

XX%	Trip Distribution Percentages
X	Intersection

FIGURE 5 | TRIP DISTRIBUTION

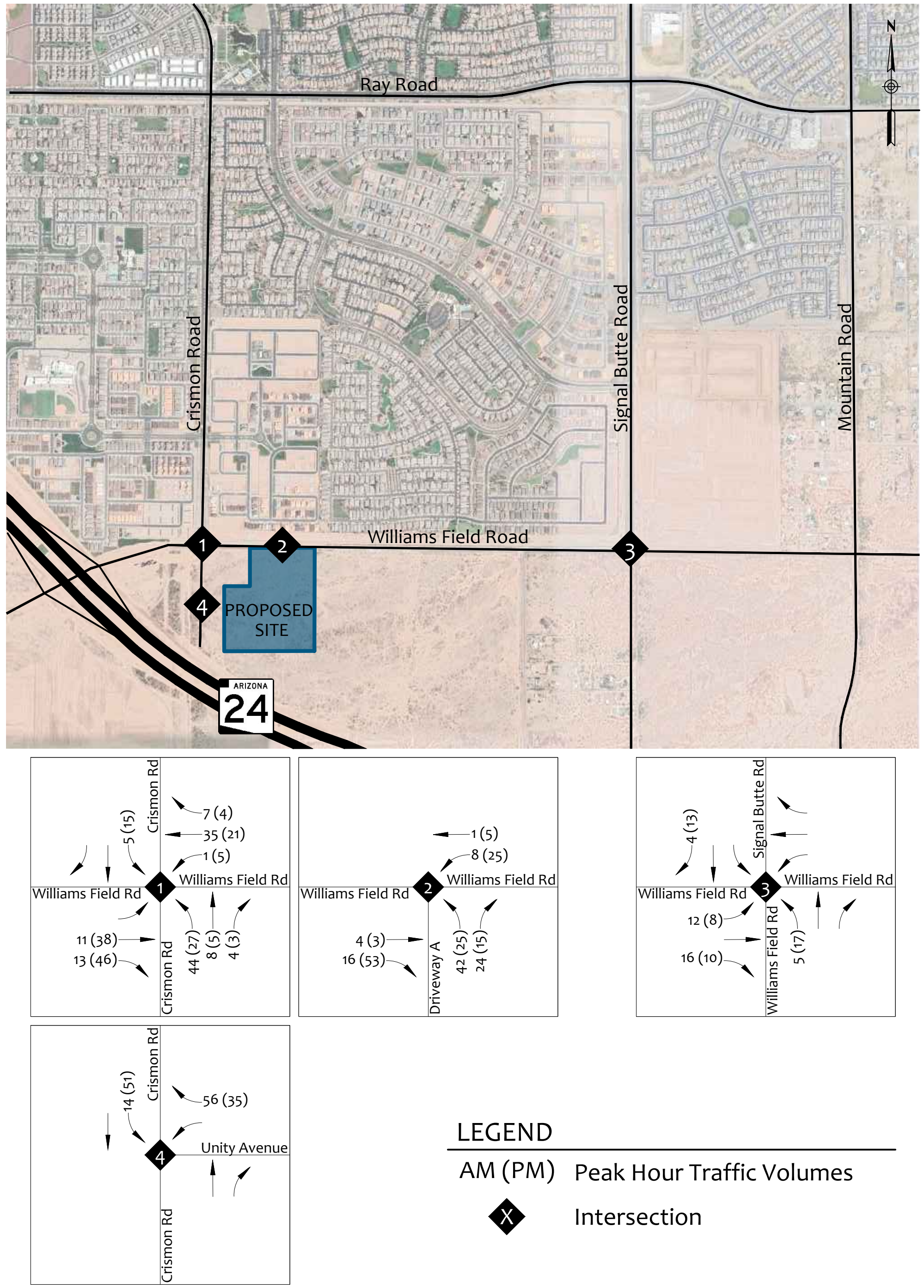


FIGURE 6 | SITE TRAFFIC VOLUMES

6. FUTURE CONDITIONS (YEAR 2030)

The proposed Navona residential development is anticipated to open in the year 2024. However, as previously mentioned, the roadway network traffic patterns are anticipated to change significantly with extension of the SR 24, the planned roadway improvements, as well as the future development in the surrounding area.

According to the Arizona Department of Transportation's website, the SR 24 Phase II (Ellsworth Road to Ironwood Drive) is anticipated to begin construction in the year 2022 and is anticipated to last for 20-24 months. According to the *Southeast Mesa Land Use and Transportation Plan*, the SR 24, within the study area, is anticipated to provide two (2) general purpose freeway travel lane in each direction of travel, and an interchange will be provided at Williams Field Road. Therefore, traffic patterns are anticipated to change significantly in the area.

With the changing geometrics and construction conditions of this area, the year 2030 was analyzed, as this considers ultimate roadway geometrics and projected traffic volumes that have been vetted and approved by the City of Mesa as part of a prior larger study.

This section analyzes the traffic related impacts the proposed development will have on the surrounding roadway network during the year of 2030.

6.1. YEAR 2030 BACKGROUND TRAFFIC VOLUMES

The year 2030 background traffic volumes were obtained from the *Avalon Crossing Traffic Impact Study*, dated April 23, 2021. According to this study, the traffic along the roadway segments factor in the 2030 Maricopa Association of Governments (MAG) Travel Demand Model, the *Southeast Mesa Land Use and Transportation Plan*, anticipated roadway network connectivity, and were approved by the City of Mesa.

Additionally, the following development projects within the vicinity of the proposed Navona residential development were considered when projecting the future background volumes:

Avalon Crossing

The proposed Avalon Crossing development, located adjacent to the proposed site to the east and south, is anticipated to be comprised of 675 single-family residential units. The trip generation, distribution, and assignment for this development was obtained from the *Avalon Crossing Traffic Impact Study*, dated April 23, 2021.

Commercial Development

The proposed Commercial Development is located on the southeast corner of Williams Field Road and Crismon Road and is assumed to be comprised of the following land use totals:

- Restaurant (with drive-through) 12,658 square feet
- Retail 19,071 square feet

The trip generation for these uses was calculated and is shown in **Table 2** below:

Table 2 – Trip Generation (Commercial Development)

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Fast-Food Restaurant with Drive-Through Window	934	12.7	1000 SF GFA	5,917	565	288	277	418	217	201
Strip Retail Plaza (<40k)	822	19.1	1000 SF GLA	1,038	45	28	17	126	63	63
			Total	6,955	610	316	294	544	280	264

The trip distribution and assignment for this development is based on the distribution of the anticipated traffic patterns along the surrounding roadway network, as shown in the *Avalon Crossing Traffic Impact Study*, dated April 23, 2021.

The year 2030 background traffic volumes are shown in **Figure 7**, which includes the traffic volumes generated by the surrounding developments listed above.

6.2. YEAR 2030 BUILD TRAFFIC VOLUMES

When the site traffic (**Figure 6**) is added to the year 2030 background traffic (**Figure 7**), the result is the 2030 build traffic volumes. This represents the traffic volumes with the build out of the proposed development. The year 2030 build traffic volumes are shown in **Figure 8**.

6.3. YEAR 2030 BUILD CAPACITY ANALYSIS

The year 2030 conditions capacity analysis was completed for the study intersections. The capacity and level of service for the study area intersections were evaluated using the methodology presented in the 6th *Edition of the Highway Capacity Manual*. Traffic analysis software, Synchro Version 11, was used to perform the analyses.

Table 3 is from the 6th *Edition of the Highway Capacity Manual* Exhibit 19-8 and 20-2, which lists the Level of Service (LOS) thresholds for signalized and two-way stop-controlled intersections.

Table 3 – Level of Service Criteria

Level of Service	Control Delay per Vehicle (s/veh)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	0 - 10
B	> 10-20	> 10–15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	> 80	> 50

The year 2030 analysis includes the build out of the 4-lane roadway cross-section for Williams Field Road and for Crismon Road south of Williams Field Road. Additionally, based upon the year 2030 recommendations provided in the *Avalon Crossing Traffic Impact Study*, dated April 23, 2021, below are the following assumptions for the study intersections:

- **Williams Field Road and Crismon Road (1)**
  - According to the *Avalon Crossing Traffic Impact Study*, dated April 23, 2021, Williams Field Road and Crismon Road (1) is anticipated meet traffic signal warrants by the year 2030. Therefore, the installation of a traffic signal is assumed for the year 2030.
  - The northbound approach is anticipated to provide two (2) dedicated left turn lanes, one (1) through lanes, and one (1) shared through-right lane.
  - The southbound approach is anticipated to provide two (2) dedicated left turn lanes, two (2) through lanes, and one (1) dedicated right turn lane.
  - The eastbound and westbound approaches are anticipated to provide one (1) dedicated left turn lane, one (1) through lane, and one (1) shared through-right lane.

- **Williams Field Road and Signal Butte Road (3)**
  - According to the *Avalon Crossing Traffic Impact Study*, dated April 23, 2021, Williams Field Road and Signal Butte Road (3) is anticipated meet traffic signal warrants by the year 2030. Therefore, the installation of a traffic signal is assumed for the year 2030.
  - The northbound and southbound approaches are anticipated to provide one (1) dedicated left turn lane, two (2) through lanes, and one (1) shared through-right lane.
  - The eastbound and westbound approaches are anticipated to provide one (1) dedicated left turn lane, one (1) through lane, and one (1) shared through-right lane.

Additionally, with the build out of the proposed Navona residential development, the following improvements were included in the year 2030 capacity analysis:

- **Williams Field Road and Driveway A (2)**
  - Buildout of a full access driveway
  - Installation of an eastbound right turn deceleration lane
  - Installation of a westbound left turn deceleration lane

The capacity and level of service for the study area intersections were evaluated for the year 2030 build traffic volumes. See **Figure 9**. The detailed capacity analysis sheets can be found in **Appendix F**. The PHF was assumed to be 0.92 for all study intersections. The signal timing was obtained from the *Avalon Crossing Traffic Impact Study*, dated April 23, 2021, capacity analysis sheets.

The results of the 2030 build capacity analyses reveal that all study intersections operate with a level of service (LOS) D, which is an acceptable level of service.

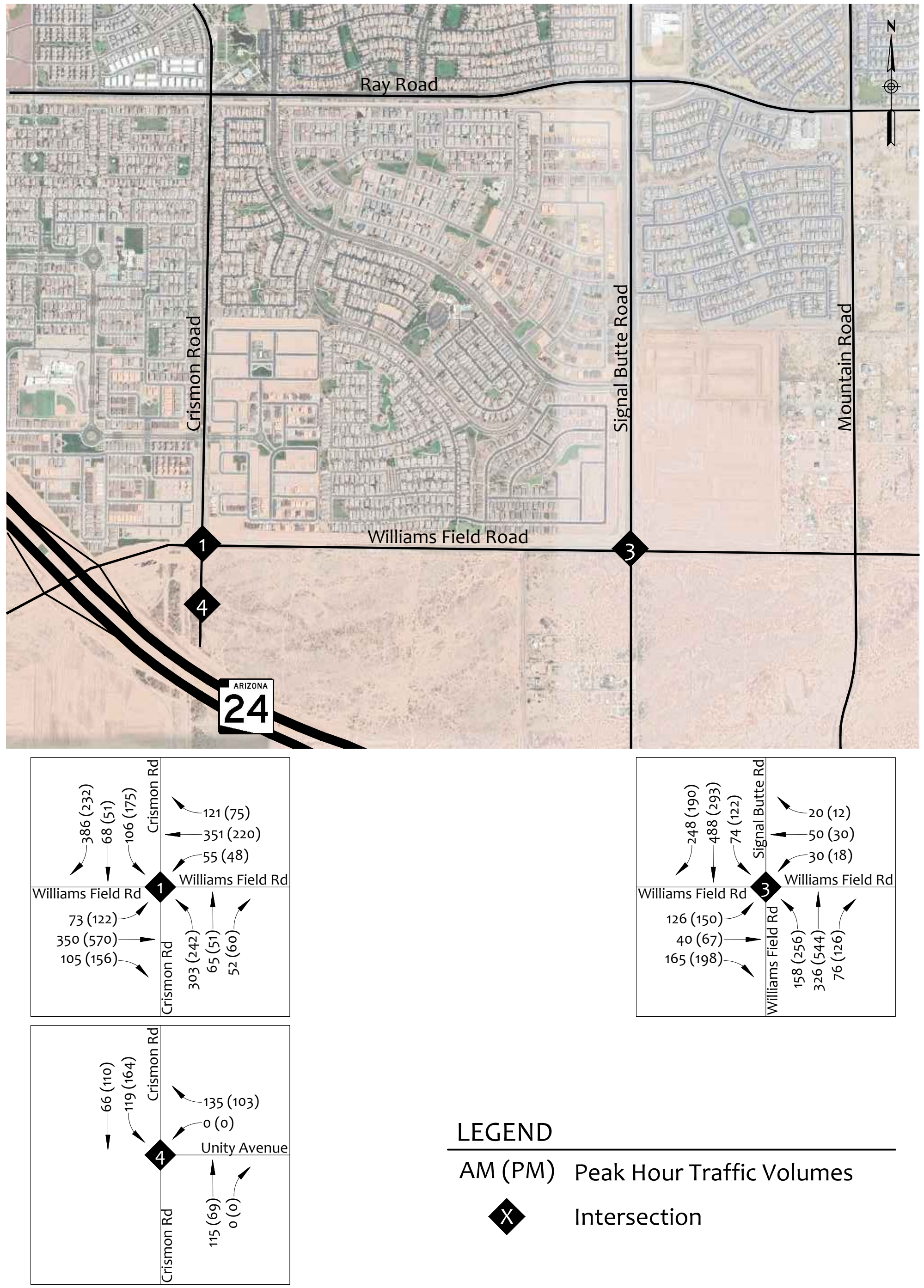
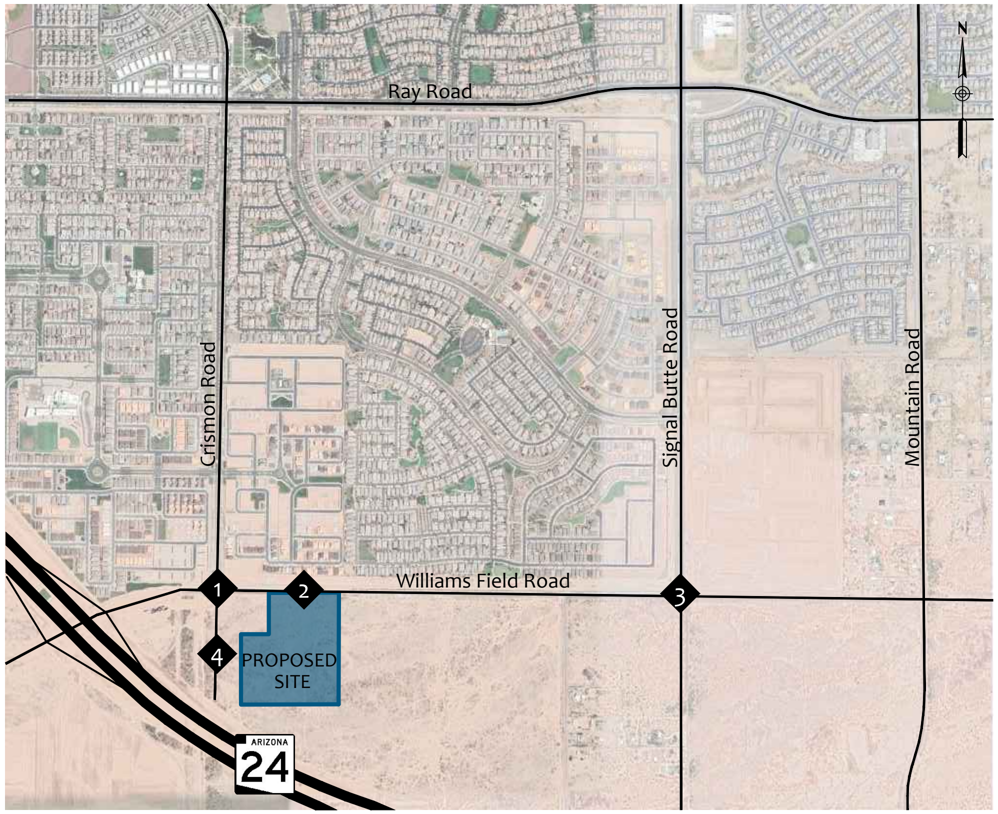
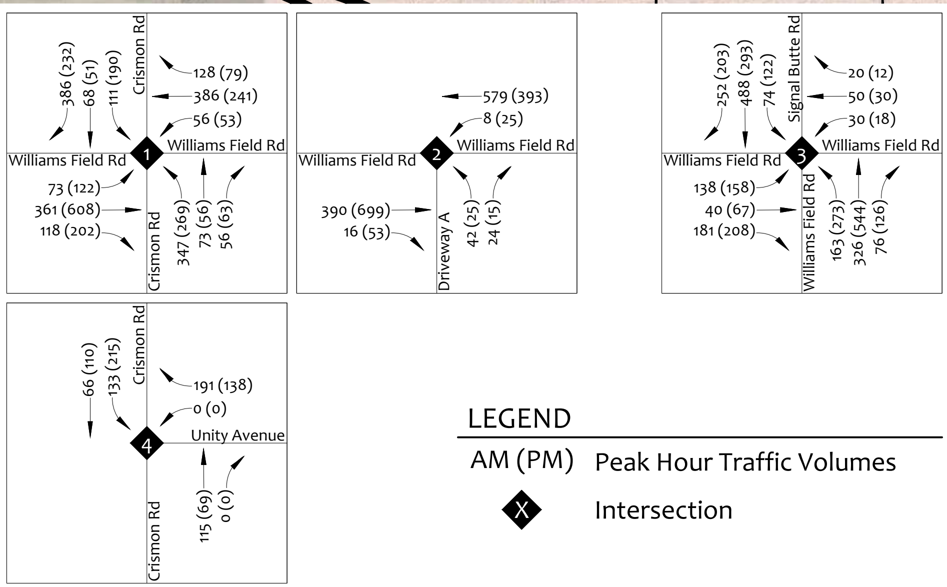


FIGURE 7 | YEAR 2030 BACKGROUND TRAFFIC VOLUMES





LEGEND

AM (PM) Peak Hour Traffic Volumes

X Intersection

FIGURE 8 | YEAR 2030 BUILD TRAFFIC VOLUMES

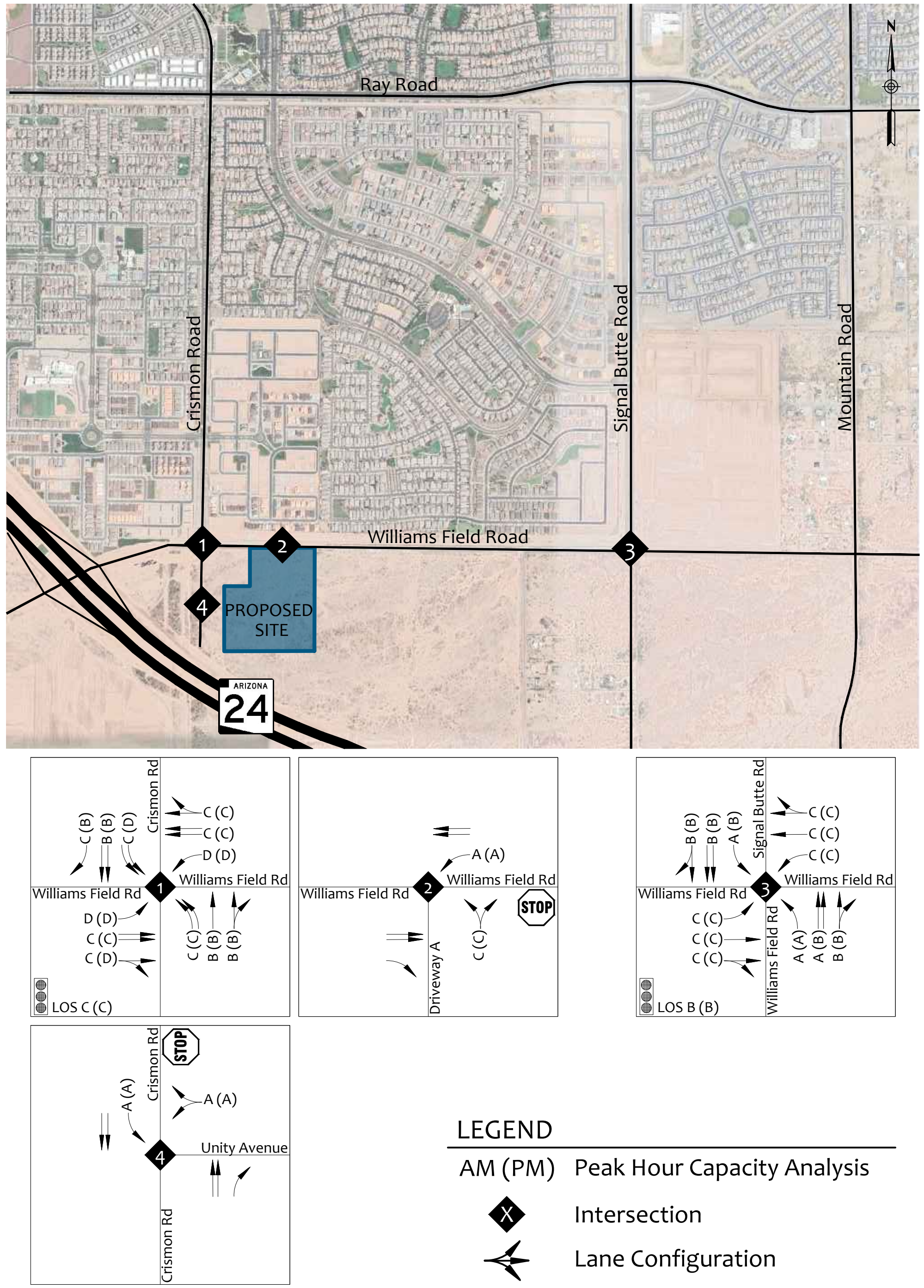


FIGURE 9 | YEAR 2030 BUILD CAPACITY ANALYSIS

7. RECOMMENDATIONS & CONCLUSIONS

The proposed Navona residential development is located along Williams Field Road approximately 650 feet east of Crismon Road in the City of Mesa, Arizona.

The proposed Navona residential development will be comprised of 400 residential units. Of which, there will be 200 one-bedroom, 168 two-bedroom, and 32 three-bedroom units.

The proposed development is anticipated to generate 2,639 weekday trips, with 147 trips occurring during the AM peak hour and 193 occurring during the PM peak hour.

In summary and as included in the discussion and analyses throughout this report, the following are the recommended improvements with the build out of the proposed Navona development:

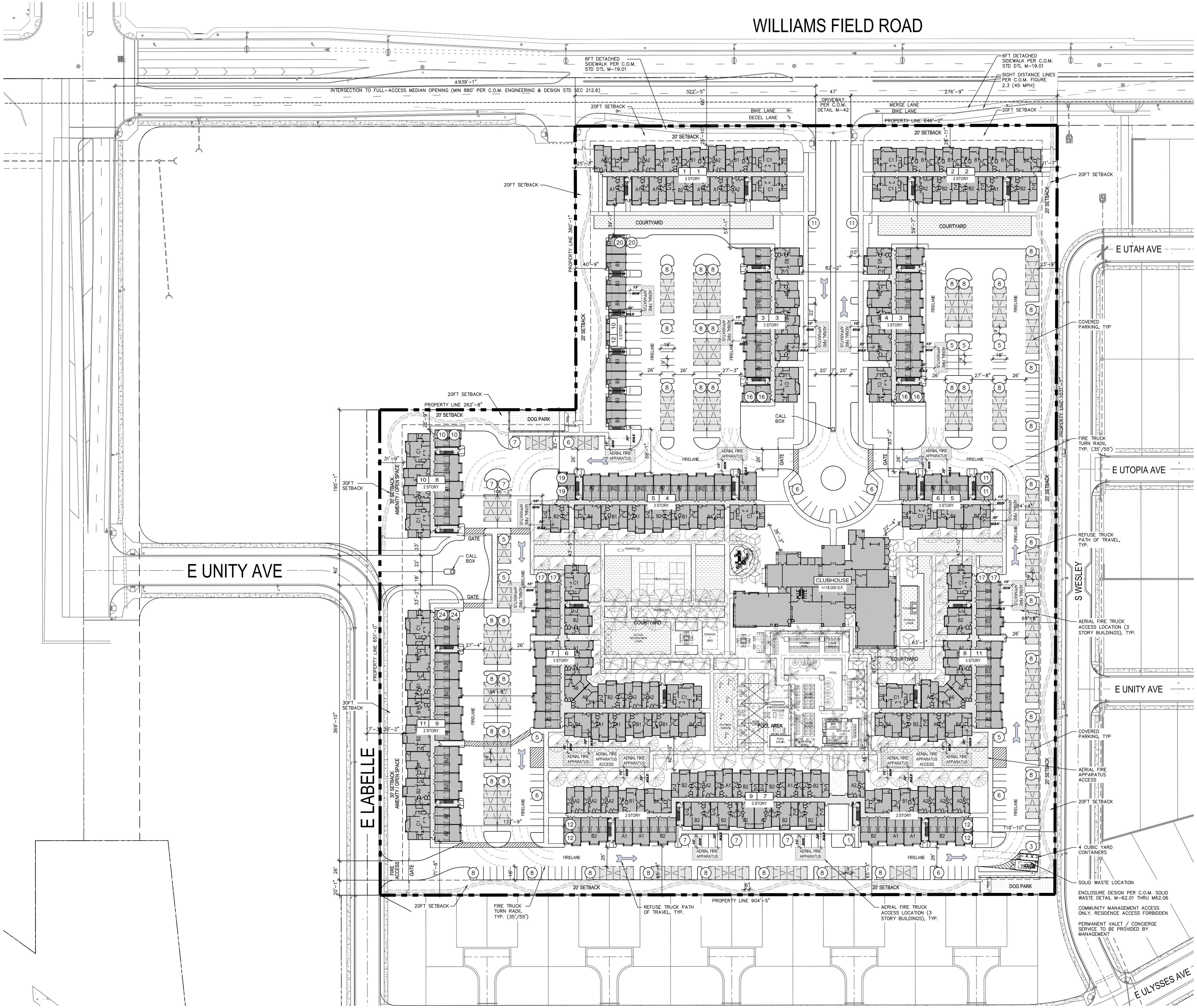
Recommendations

- **Half Street Improvements Adjacent to Project**
  - The developer will be responsible for the half street improvements adjacent to the project frontage along Williams Field Road

- **Williams Field Road and Driveway A (2)**
  - Buildout of a full access stop-controlled driveway
  - Installation of an eastbound right turn deceleration lane
  - Installation of a westbound left turn deceleration lane

Appendix A – Proposed Site Plan

A



PROJECT DATA

SITE DATA:

SITE AREA:	±20.24 GROSS ACRES / ±17.35 NET ACRES
ZONING:	EXISTING: PC PROPOSED: PAD (RM–4U)
APN NO'S.:	304–35–004N
PROPOSED USE:	MULTI–FAMILY
MAXIMUM DENSITY ALLOWED:	30 DU
PROPOSED DENSITY:	23 DU/NET AC
MAXIMUM BUILDING HEIGHT:	50 FEET
PROPOSED BUILDING HEIGHT:	2 & 3 STORY
PROPOSED BUILDING AREA:	±570,429 S.F.

ALL BUILDINGS TO BE EQUIPPED WITH FIRE SPRINKLERS

UNIT MIX:

ONE BEDROOM UNITS:	207	(52%)
TWO BEDROOM UNITS:	148	(37%)
THREE BEDROOM UNITS:	45	(11%)
TOTAL:	400	D.U.

UNIT TYPE		GROSS LIV. AREA	UNITS	TOTAL LIV. AREA
UNIT A1	1 BED/1 BA	799 S.F.	74	59,655 S.F.
UNIT A2	1 BED/1 BA	735 S.F.	73	53,655 S.F.
UNIT A6	1 BED/1 BA	755 S.F.	12	9,060 S.F.
UNIT B4	1 BED/1DEN/2 BA	1,067 S.F.	48	51,216 S.F.
UNIT B1	2 BED/2 BA	1,070 S.F.	40	42,800 S.F.
UNIT B2	2 BED/2 BA	1,157 S.F.	98	113,386 S.F.
UNIT B3	2 BED/2 BA	1,344 S.F.	10	13,440 S.F.
UNIT C1	3 BED/2 BA	1,407 S.F.	45	63,315 S.F.
TOTAL:			400 D.U.	405,998 S.F.
AVG. S.F.				1,015 S.F.

PARKING:

PROVIDED:	
GARAGE PARKING	174 P.S.
TANDEM PARKING	174 P.S.
COVERED PARKING	226 P.S.
OPEN PARKING	225 P.S.
CLUBHOUSE PARKING	12 P.S.
TOTAL PROVIDED:	811 P.S. 2.03 SPACE PER UNIT
REQUIRED:	
2.1 SPACES PER DWELLING UNIT (2.1 X 400 UNITS)	840 P.S.

ACCESSIBLE PARKING REQUIRED: 16 (2% OF PROVIDED PARKING STALLS)
ACCESSIBLE PARKING PROVIDED: 16 TOTAL (14 STANDARD AND 2 VAN)

PROJECT NARRATIVE

THE INTENT OF THIS PROJECT IS TO DEVELOP A MULTI–FAMILY CLASS "A" (LUXURY) APARTMENT COMMUNITY, WITH A TOTAL OF 400 APARTMENT HOMES. SPECIFICALLY, THE DEVELOPMENT'S CURRENT CONCEPT INCLUDES:

- 207 ONE–BEDROOM UNITS – RANGING FROM APPROXIMATELY 799 SQUARE FEET TO 1,067 SQUARE FEET;
- 148 TWO–BEDROOM UNITS – RANGING FROM APPROXIMATELY 1,070 SQUARE FEET TO 1,344 SQUARE FEET; AND
- 45 THREE–BEDROOM UNITS – 1,407 SQUARE FEET; AND

THERE WILL BE QUALITY AMENITIES PROVIDE ON–SITE AT THE PROJECT, INCLUDING COVERED AND GARAGE PARKING OPTIONS, A RESORT STYLE POOL AND AN AMENITIZED CLUBHOUSE.

AS CURRENTLY PLANNED THERE WILL BE ONE (1) PRIMARY ACCESS POINT FOR THE PROJECT LOCATED ALONG WILLIAMS FEILD ROAD NEAR THE INTERSECTION OF WILLIAMS FIELD ROAD AND CRISMON ROAD. THE PROJECT WILL PROVIDE 811 PARKING STALLS, GARAGE PARKING (174), TANDEM PARKING (174), COVERED PARKING (226), UNCOVERED (225), AND (12) CLUBHOUSE PARKING SPACES THAT WILL BE EVENLY DISTRIBUTED ACROSS THE PROJECT.

SYMBOL SCHEDULE

5 — # OF SPACES IN ROW — 9'X18' PARKING SPACE — 2'–6" OVERHANG

35' INSIDE TURNING RADIUS
55' OUTSIDE TURNING RADIUS
IN ACCORDANCE WITH FIRE DEPT STANDARDS

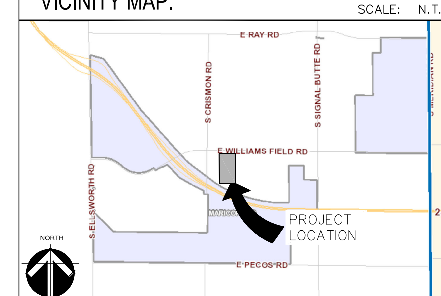
REFUSE TRUCK PATH

2 2 — BUILDING NUMBER — BUILDING TYPE

AERIAL FIRE APPARATUS — AERIAL FIRE TRUCK ACCESS LOCATION, TYP. 17' WIDE X 40' LONG (OUTRIGGERS EXTENDED)

VICINITY MAP

SCALE: N.T.S.



NORTH

SITE PLAN "H1"
SCALE: 1'–0" = 60'

biltform architecture

biltform architecture group, inc.
11460 north cave creek road . suite 11
phoenix . arizona 85020
Phone 602.285.9200 Fax 602.285.9229

PRELIMINARY NOT FOR CONSTRUCTION
EXPIRES 9/30/22

NAVONA
Apartment Homes
S.E.C. OF WILLIAMS FIELD ROAD AND CRISMON ROAD. MESA, ARIZONA

TOLL BROTHERS APARTMENT LIVING
8767 E. VIA DE VENTURA, SUITE 390, SCOTTSDALE, AZ. 85258

REVISIONS:
1 –
2 –
3 –
4 –

JOB NO:	21-080
DATE:	JUNE 09, 2021
SCALE:	
SHEET NO:	A1.0

Appendix B – Avalon Crossing Traffic Impact Study, dated April 23, 2021

ENGINEERING

PROVIDING VALUE FIRST

Avalon Crossing

SEC of Crismon Road and Williams Field Road

Traffic Impact Study

Mesa, Arizona

First Submittal: January 2021

Revised: April 2021

PREPARED FOR:

CVL Consultants, Inc.

PREPARED BY:

Y2K Engineering, LLC.

Project No. 20-081

1921 S. Alma School Rd, Ste 204, Mesa, AZ 85210

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Registered Professional Engineer (Civil)
CERTIFICATE NO.
67811
MICHELLE E.
BECKLEY
Date Signed 04/23/21
ARIZONA, U.S.A.

Michelle E. Beckley

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EXECUTIVE SUMMARY

DESCRIPTION OF PROPOSED DEVELOPMENT

The Avalon Crossing residential development is proposed near the southeast corner of Crismon Road and Williams Field Road in Mesa, Arizona. The development will consist of approximately 675 single-family homes.

TRIP GENERATION

- The Avalon Crossing residential development is anticipated to generate a total of 6,024 weekday daily trips (entering and exiting) with 484 trips during the AM peak hour and 635 trips during the PM peak hour.

ANALYSIS YEARS AND ROAD NETWORK ASSUMPTIONS

- The area surrounding the Avalon Crossing site is mostly undeveloped and is planned to experience significant growth over the next 20 years. The arterial network surrounding the site (Crismon Road, Williams Field Road, and Signal Butte Road) will be built as the area develops.
- State Route 24 (SR 24) is currently under construction to be extended to the east, from Ellsworth Road to Ironwood Road.
- Crismon Road is planned to extend to the south to Germann Road by 2040, with a grade-separated crossing at SR 24.

SITE ACCESS

- Three new access roadways are planned to provide access to the site, two on Williams Field Road and one on Crismon Road.
- Williams Field Road/Community Street #1 is proposed approximately 2,500 feet east of Crismon Road as a full access median opening.
- Williams Field Road/Community Street #2 is proposed approximately 1,125 feet east of Community Street #1 without a median opening (right-in, right-out only).
- Crismon Road/Community Street #3 is proposed approximately 660 feet south of Williams Field Road as a full access median opening.

TRAFFIC SIGNAL WARRANT ANALYSIS

- Crismon Road/Williams Field Road and Signal Butte Road/Williams Field Road are anticipated to meet signal warrants by 2030, with and without site traffic.
- Community Street #1/Williams Field Road and Crismon Road/Community Street #3 are anticipated to meet signal warrants by 2040 with site traffic.

LEVEL OF SERVICE ANALYSIS

- Level of service was analyzed based on planned capacity improvements noted by the City of Mesa, including the widening of Crismon Road, Williams Field Road, and Signal Butte Road, as well as the signalization of Crismon Road/Williams Field Road and Signal Butte Road/Williams Field Road.
- The 2030 analysis of total traffic conditions indicated that all intersections are anticipated to operate adequately, with the exception of the northbound left-turn movement at Community Street #1/Williams Field Road, which is anticipated to operate at LOS E during the PM peak hour.

- The City of Mesa indicated that the intersection of Community Street #1 and Williams Field Road is required for signalization with the opening of the development. With mitigation of a traffic signal, the overall intersection is anticipated to operate at LOS B during the AM and PM peak hours. The northbound left-turn movement is mitigated to LOS C during the AM and PM peak hours.
- The 2040 analysis of total traffic conditions indicated that all movements operated at or above LOS D, with the exception westbound approach at Crismon Road/Community Street #3, which is anticipated to experience significant delay and operate at LOS F during the AM and PM peak hours.
- Crismon Road/Community Street #3 is anticipated to meet traffic signal warrants by 2040, with the extension of Crismon Road across SR 24. With mitigation of a traffic signal, the overall intersection is anticipated to operate at LOS A during the AM and PM peak hours in 2040. The westbound approach is mitigated to a LOS C during the AM and PM peak hours.

AUXILIARY LANE ANALYSIS

- Eastbound right-turn lanes are warranted and recommended at Community Street #1 and Community Street #2 at the time of site opening.
- A northbound right-turn lane is warranted and recommended at Community Street #3 when Crismon Road is extended further south beyond Community Street #3.
- Left-turn lanes are warranted and recommended at Community Street #1 and Community Street #3 at the time of site opening.

RECOMMENDATIONS

A traffic signal at the intersection of Signal Butte Road and Williams Field Road is currently programmed as a CIP project. In addition, roadway improvements are planned along Crismon Road, Williams Field Road, and Signal Butte Road to accommodate growth in future traffic. Aside from these planned improvements, the following improvements are recommended to support the Avalon Crossing development:

- Install a traffic signal at Crismon Road/Williams Field Road by the opening year of the residential development.
  - → Note: Financial responsibility of improvements was not assessed within this study. Further coordination between involved parties is anticipated as site development continues.
- Install a traffic signal at Community Street #1/Williams Field Road by the opening year of the residential development.
- Install a STOP sign on the northbound approach of Community Street #2.
- During initial construction of Crismon Road/Community Street #3, box the signal equipment to support the future signalization of the intersection. Provide a STOP sign on the westbound approach until the intersection becomes signalized.
  - → Note: The intersection of Crismon Road/Community Street #3 is anticipated to meet warrants by 2040, but will likely meet warrants when the adjacent commercial/mixed use parcel is developed and Crismon Road extends across SR 24. As development in the area grows and the roadway network expands, it is recommended to monitor traffic volumes and signal needs to determine appropriate installation timing.

- Per Mesa requirements, half-street improvements are required on Crismon Road south to Community Street #3 and Williams Field Road along the commercial, mixed-use, and residential site frontage.
- Install an EB right-turn lane at Community Street #1 (storage length of 200’, taper length of 100’).
- Install a WB left-turn lane at Community Street #1 (storage length of 150’, taper length of 100’).
- Install an EB right-turn lane at Community Street #2 (storage length of 150’, taper length of 100’).
- Install a SB left-turn lane at Community Street #3 (storage length of 150’, taper length of 100’).
- Install a NB right-turn lane at Community Street #3 when Crismon Road is extended further south beyond Community Street #3 (storage length of 150’, taper length of 100’).

INTRODUCTION

The Avalon Crossing residential development is proposed near the southeast corner of Crismon Road and Williams Field Road in Mesa, Arizona. The development will consist of approximately 675 single-family homes. The site will be accessed by two collector streets; one on Crismon Road and one on Williams Field Road, as well as one local street accessing Williams Field Road. A traffic impact study was previously prepared for this parcel by Kimley-Horn and Associates in 2019; however, due to modifications in the site plan, an updated TIA was requested by the City of Mesa. Traffic impact studies are required by the City of Mesa during the development review process to assess the impacts of the proposed project on the surrounding transportation system. Y2K Engineering has been retained to prepare the traffic impact study.

STUDY OBJECTIVES

The objectives of the study are the following:

- Document existing conditions and planned regional roadway improvements.
- Estimate generated trips for the proposed development and distribute them to the surrounding street system.
- Add the new trips from the proposed development to the background traffic for the 2030 build-out and 2040 horizon years.
- Determine intersections that meet traffic signal warrant criteria in future traffic conditions.
- Determine future levels of service with and without the proposed project.
- Determine necessary turn lanes and queue storage to minimize disruption to traffic.
- Recommend roadway improvements to provide for a safe and efficient transportation system and to minimize impacts of the proposed development.

SCOPE OF STUDY

The City of Mesa is in the process of finalizing Traffic Impact Study requirements; a final draft was shared with Y2K Engineering for the development of this study. The proposed residential development is expected to generate approximately 640 new trips during the peak hour. Per the City of Mesa guidelines, a development that generates more than 500 but fewer than 1,000 new peak hour trips are classified as a Category II study. The study area for a Category II study includes all site access drives as well as all roadway segments, intersections, and major driveways within ½-mile from the site. Category II studies typically involve the analysis of existing conditions, background conditions, phasing of the proposed development, and a 10-year horizon beyond the full build-out of the development. Y2K conducted a pre-TIS scoping discussion with the City of Mesa Traffic Engineer to discuss traffic assumptions and the analysis scope. Due to the undeveloped nature of the surrounding area and the adjacent roadway network that has not yet been developed, it was confirmed that the collection of traffic counts are not required for this project. Two analysis scenarios will be evaluated in this project; full build-out in 2030 and the horizon year of 2040. Traffic projections in this project are based on the 2030 and 2040 Maricopa Association of Governments (MAG) Travel Demand Model, surrounding area traffic impact studies, and discussions with the City of Mesa. A vicinity map of the study area is shown in **Figure 1**, and an aerial of the existing site is provided in **Figure 2**. The existing roadway segments of the surrounding arterial network are shown in bold.

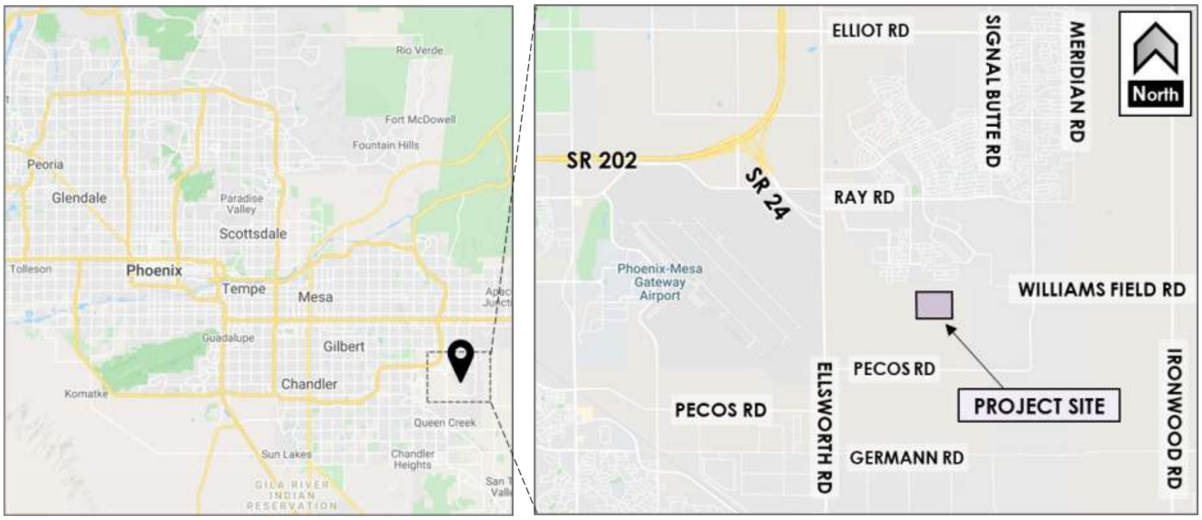


Figure 1: Vicinity Map

Figure 2: Project Site Aerial

STUDY AREA

The study area includes the following intersections, which are depicted in **Figure 3**:

1. Williams Field Road / Community Street #1
2. Williams Field Road / Community Street #2
3. Crismon Road / Community Street #3
4. Williams Field Road / Crismon Road
5. Williams Field Road / 222nd Street
6. Williams Field Road / Signal Butte Road

ANALYSIS TIME PERIODS AND HORIZON YEARS

The weekday AM and PM peak hour periods were analyzed for the future traffic scenarios of 2030 (full build-out) and 2040 (10-year horizon).

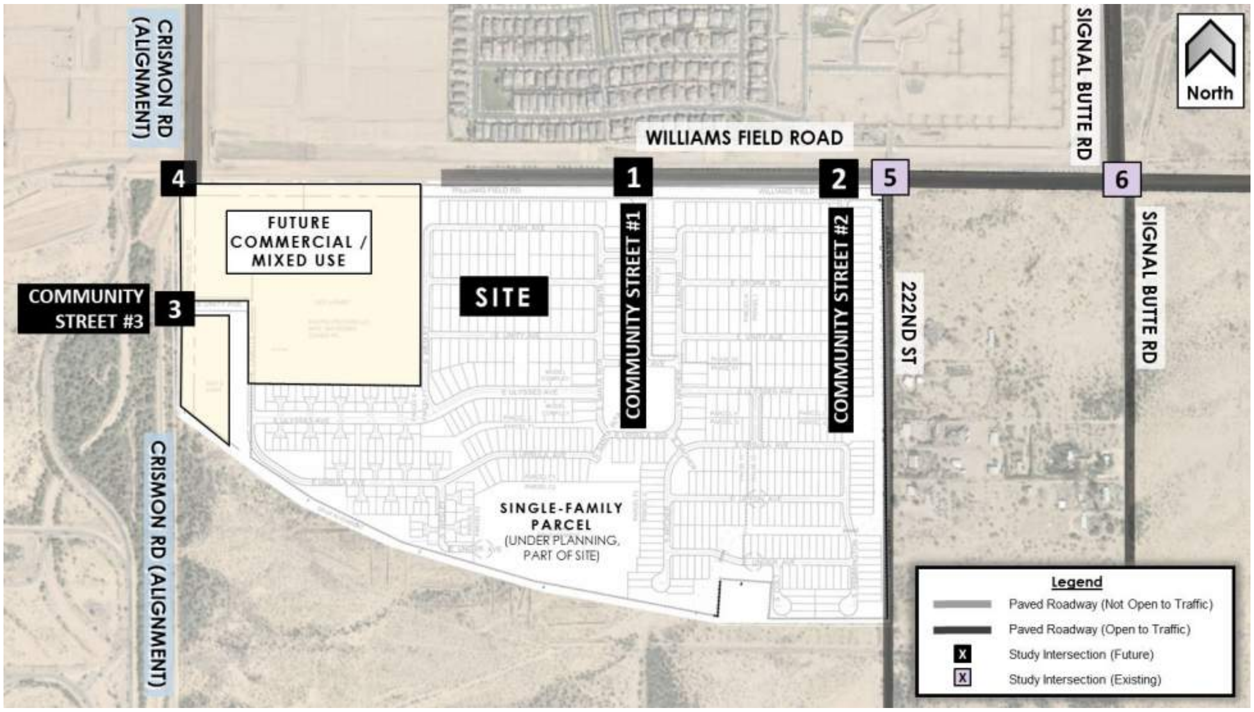


Figure 3: Study Area

EXISTING CONDITIONS

SURROUNDING AREA

The Avalon Crossing residential development is proposed near the southeast corner of Crismon Road and Williams Field Road in Mesa, Arizona. The site is located to the south of the existing Eastmark residential development, which is still being expanded. The site is located to the south and east of the Cadence residential development, which is the former site of the Pacific Proving Grounds North (PPGN), which is currently under construction. The Avalon Crossing site was recently annexed into the City of Mesa in June 2019. A mixed-use commercial site is planned on the southeast corner of Crismon Road and Williams Field Road in the future, adjacent to the Avalon Crossing residential development. This area is planned for significant growth over the next 20 years, as State Route 24 (SR 24) is extended approximately 4 miles to the east from its current terminus of Ellsworth Road to Ironwood Road. The surrounding land uses and developments are depicted in **Figure 4**. For context, the future extensions of SR 24 and Williams Field Road are shown using dashed lines.

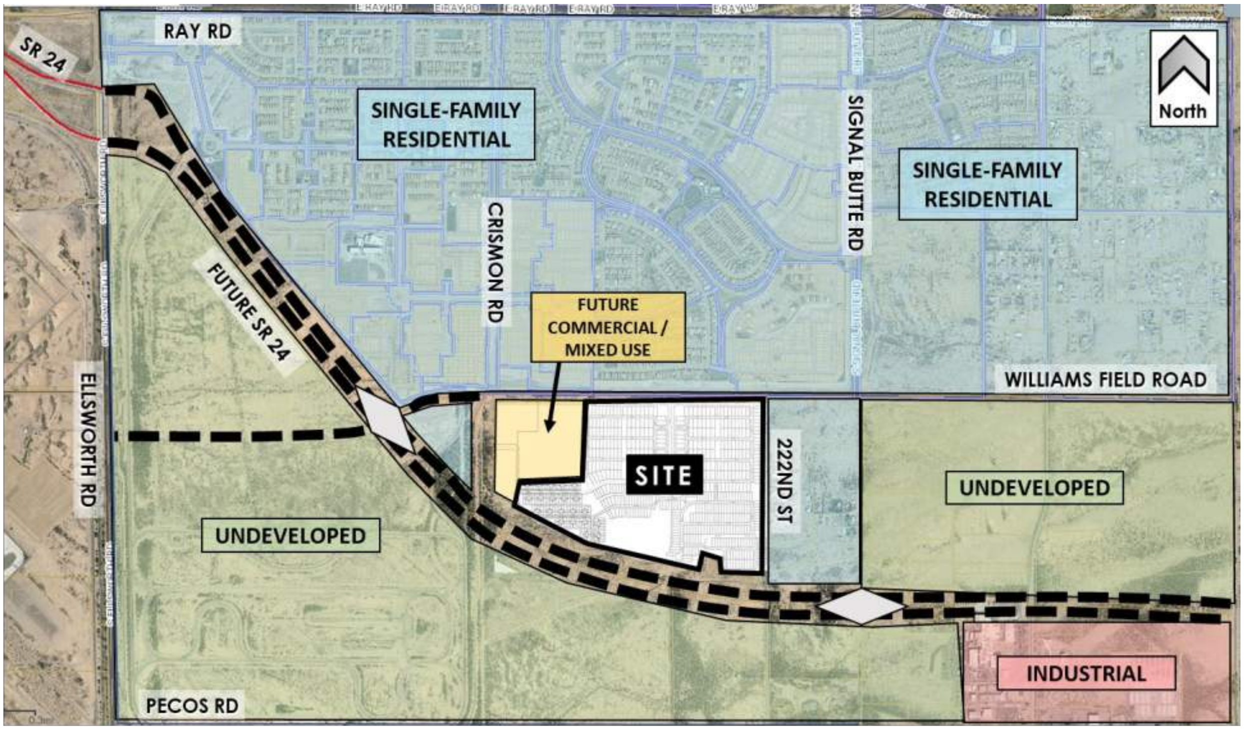


Figure 4: Surrounding Land Uses

DESCRIPTION OF EXISTING TRANSPORTATION SYSTEM

WILLIAMS FIELD ROAD

Williams Field Road is classified an Arterial in the 2019 Southeast Mesa Land Use and Transportation Plan (SE Mesa LUTP). In the vicinity of the project site, Williams Field Road is currently paved for a length of approximately 1.75 miles, from 0.25 miles east of the Crismon Road alignment to the Meridian Road alignment. Williams Field Road currently exists as a two-lane, east-west roadway. In general, paved shoulders, curb, gutter, and roadway lighting are not present along the roadway; however, half-street improvements have been made on the north side of Williams Field adjacent to the Eastmark development (0.25 miles east of Crismon Road to Signal Butte Road). The improvements on the north side of the roadway in this area include curb, gutter, sidewalk, landscaping, and roadway lighting. Pavement markings are not present west of 222nd Street, as the western portion of the roadway is not currently open to traffic. Williams Field Road currently terminates at 222nd Street, with an elbow intersection towards the south on 222nd Street. The posted speed limit on Williams Field Road is 45 mph.

CRISMON ROAD

Crismon Road exists within the study area between Ray Road and Williams Field Road, a length of approximately 1 mile. The existing section is classified as a Collector in the 2019 SE Mesa LUTP; however, the extension to Williams Field Road is classified as a future arterial. The existing section of Crismon Road is a north-south roadway with two lanes in each direction, separated by a raised median. The roadway is fully improved with curb, gutter, roadway lighting, and sidewalks. The posted speed limit on Crismon Road is 35 mph.

SIGNAL BUTTE ROAD

Signal Butte Road is a north-south roadway classified as an arterial in the 2019 SE Mesa LUTP. In the vicinity of the project site, Signal Butte Road exists from US Highway 60 to south of Williams Field Road. Between

Ray Road and Williams Field Road, Signal Butte Road is a two-lane roadway. Half-street improvements are currently under construction on the west side of the roadway, adjacent to the Eastmark development. The east side of Signal Butte Road is currently unimproved adjacent to the vacant land south of Galveston Street alignment; however, the east side is improved north of the Galveston Street alignment. The posted speed limit on Signal Butte Road north of Ray Road is 45 mph.

222ND STREET

222nd Street is classified as a two-lane, north-south local roadway. 222nd Street has a length of 1-mile, from Williams Field Road to Pecos Road, and exists just east of the proposed site. 222nd Street serves approximately 10 single-family homes south of Williams Field Road. Curb, gutter, sidewalks, and roadway lighting are not present along 222nd Street. The posted speed limit on 222nd Street is 35 mph.

STATE ROUTE 24

State Route 24 is classified as a Freeway in the ADOT Roadway Classification Map and the SE Mesa LUTP. SR 24 currently exists for a length of approximately 1.4 miles, from State Route 202 to Ellsworth Road. An extension is planned to the east to Ironwood Road in the future. SR 24 currently provides two lanes in each direction, separated by a raised concrete barrier median. At-grade signalized intersections currently exist at the SR 24 interchange at Ellsworth Road.

INTERSECTION OF SIGNAL BUTTE ROAD AND WILLIAMS FIELD ROAD

The intersection of Signal Butte Road and Williams Field Road is a four leg, minor-street stop-controlled intersection. The northbound and southbound approaches are offset by approximately 55 feet. Under existing conditions, a shared left/through/right lane exists on each roadway approach. Roadway lighting exists on the northwest corner only, with a luminaire over the southbound approach of Signal Butte Road and the eastbound approach of Williams Field Road.

The existing roadway geometry and intersection traffic control are depicted in **Figure 5**.

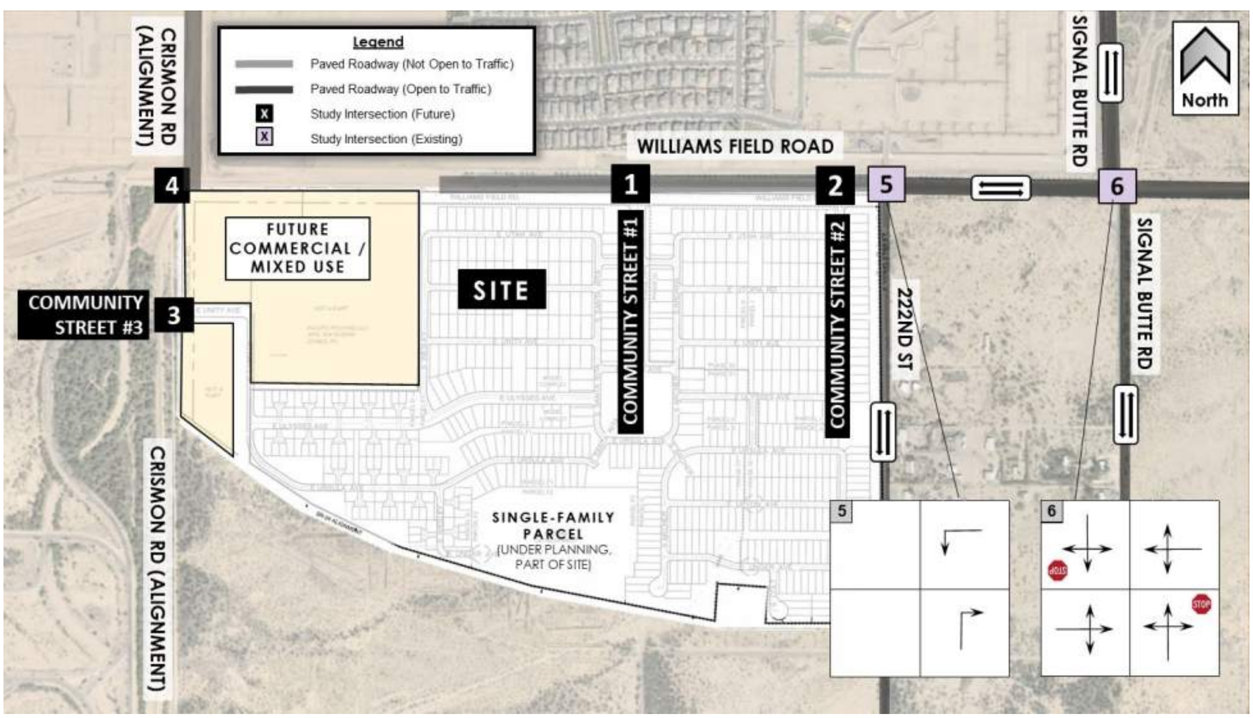


Figure 5: Existing Lane Configurations and Traffic Control

PLANNED ROADWAY IMPROVEMENTS

The Southeast Mesa Land Use and Transportation Plan was completed in 2019 to provide guidance on the roadway and intersection improvements planned in the area. The growth over the next 20 years in the immediate vicinity will be driven by the extension of SR 24 from Ellsworth Road to Ironwood Road. The ultimate build-out of SR 24 will provide three general purpose lanes in each direction, with grade-separated crossings at Ellsworth Road, Williams Field Road, Signal Butte Road, Meridian Road, and Ironwood Road. The ultimate build-out of SR 24 is anticipated to be complete by 2040. An interim design is planned for to be constructed and open to traffic by the end of 2022, which consists of two lanes in each direction and at-grade signalized intersections at the interchange.

Capacity improvements are planned on Ellsworth Road, Williams Field Road, Signal Butte Road, Meridian Road, and Ironwood Road to accommodate the future growth in traffic. Williams Field Road is planned to be built-out to 6 lanes from SR 24 to east of Crismon Road, where the ultimate cross-section will transition to a 4-lane section. Based on discussions with the City of Mesa, Crismon Road is not planned to connect across SR 24 (grade-separated) until after 2030, but is envisioned to connect south across the freeway to Germann Road by 2040. Crismon Road is anticipated to be widened to 4 lanes. Signal Butte Road is planned to be built out to 6 lanes from Ray Road to Germann Road by 2030. Future traffic signals are planned at the Williams Field Road intersections at Crismon Road and at Signal Butte Road. Assumptions for roadway connectivity in 2030 and 2040 are shown in Figure 6 and Figure 7, respectively.

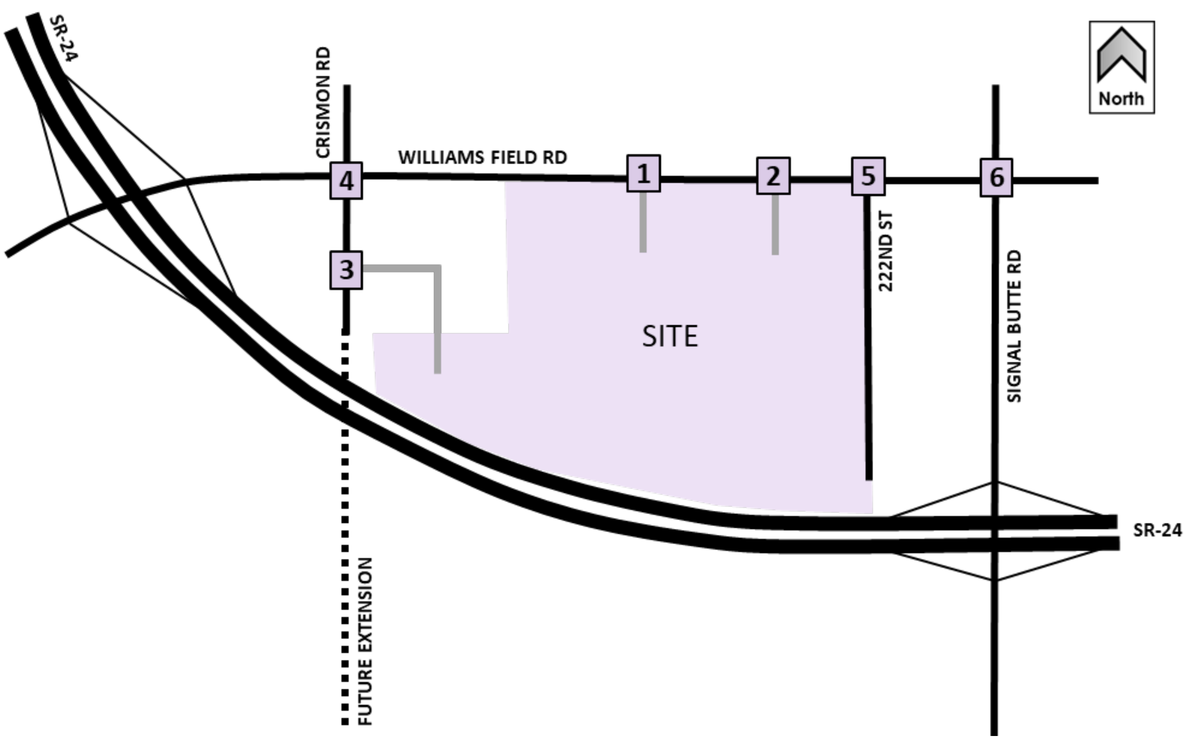


Figure 6: 2030 Planned Roadway Network

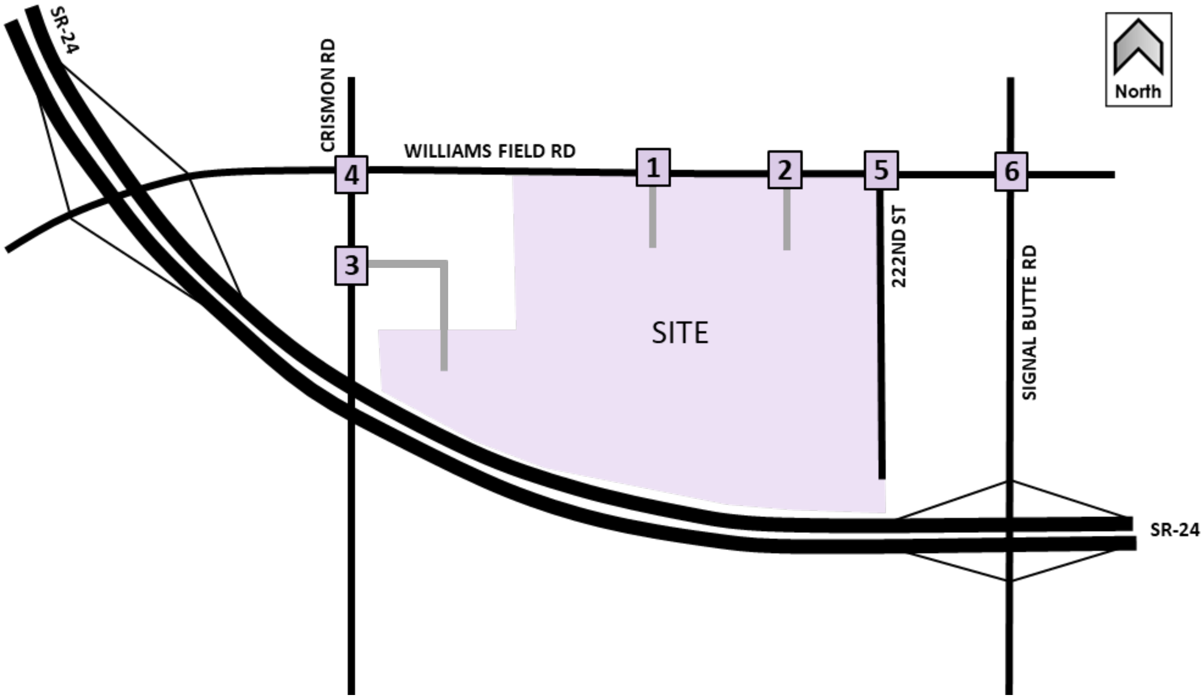


Figure 7: 2040 Planned Roadway Network

PROPOSED DEVELOPMENT

SITE LOCATION, LAND USE, AND ACCESS

The Avalon Crossing residential development is proposed on an undeveloped parcel near the southeast corner of Crismon Road and Williams Field Road. The residential development is planned to include 675 single-family homes. The total lot count includes 550 traditional single-family lots, 125 clustered single-family home lots, and 74 single-family homes (to be located within the southern parcel of the site which is still under planning and development). The site plan of the Avalon Crossing development is provided in **Figure 8**. The opening year for the residential development is anticipated to be 2023. The site will be accessed by two collector streets; one on Crismon Road and one on Williams Field Road, as well as one local street accessing Williams Field Road. The Crismon Road access (Community Street #3) will be shared between the residential development and the future commercial/mixed-use parcel on the southeast corner of Crismon Road and Williams Field Road. The site plan and the location of the proposed access points are shown in **Figure 8**. The complete site plan is provided in **Appendix B.**

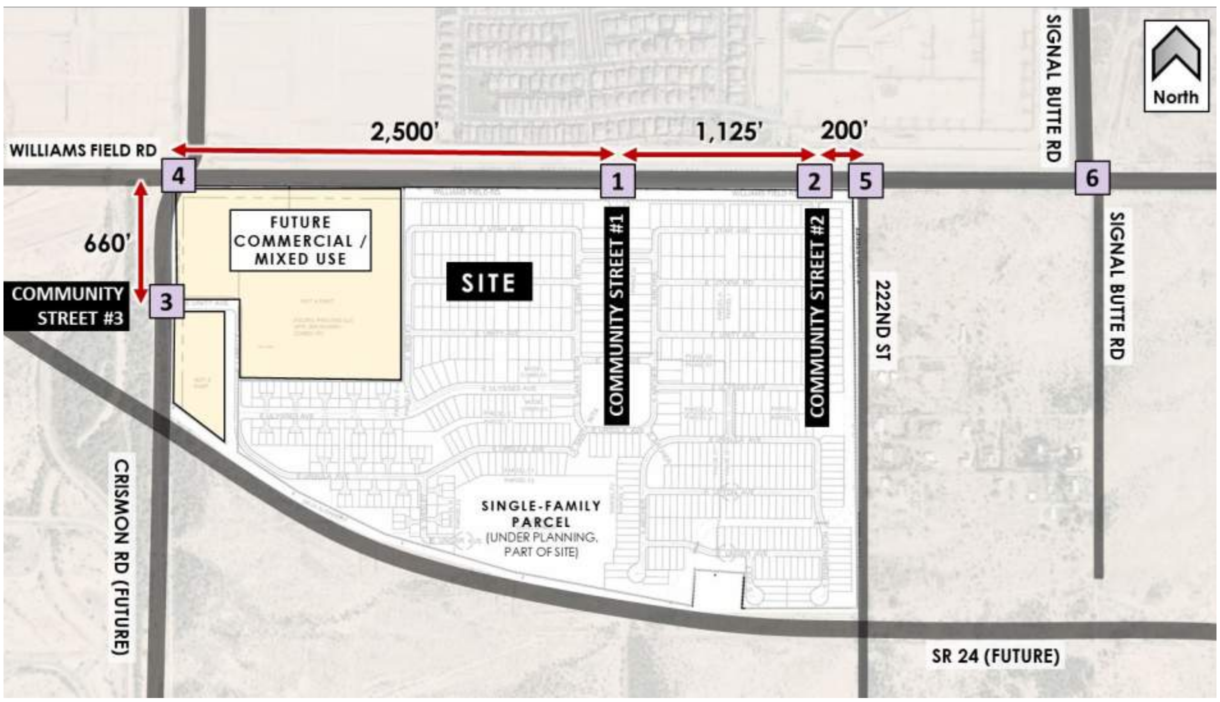


Figure 8: Site Plan and Access Spacing

WILLIAMS FIELD ROAD / COMMUNITY STREET #1

Community Street #1 is proposed on Williams Field Road approximately 2,500 feet east of Crismon Road. Community Street #1 will serve as the primary access point, connecting to the center of the development. A median break is planned to provide full access.

WILLIAMS FIELD ROAD / COMMUNITY STREET #2

Community Street #2 is proposed on Williams Field Road approximately 1,125 feet east of Community Street #2 and 200 feet west of 222nd Street. Community Street #2 will operate as right-in, right out only. A median opening will not be provided at this location.

CRISMON ROAD / COMMUNITY STREET #3

Community Street #3 is proposed on Crismon Road, approximately 660 feet south of Williams Field Road. Community Street #3 will provide access to the residential site, as well as future commercial/mixed-use planned on the southeast corner of Crismon Road and Williams Field Road. A median break is planned to provide full access.

REVIEW OF ACCESS SPACING

The proposed median breaks were reviewed based on the City of Mesa Engineering and Design Standards (2019). Full median access may be provided at 880-feet spacings along arterials. Partial median access should be located at least 660 feet from arterial-to-arterial intersections.

Community Street #1 is proposed on Williams Field Road, approximately 2,500 feet east of Crismon Road and 1,125 feet west of Community Street #2. Community Street #1 meets the City of Mesa spacing criteria for full median access.

Community Street #2 is proposed on Williams Field Road, approximately 1,125 feet east of Community Street #1 and 200 feet west of 222nd Street. With the extension of SR 24, 222nd Street will terminate north of the freeway. Traffic on 222nd Street will be limited to the traffic associated with the 10 residential homes on 222nd Street. Due to the close spacing of the intersections, a median break is not recommended at both intersections due to the potential conflict between left-turning vehicles between the intersections. Community Street #2 is recommended to operate as right-in, right-out access to preserve full access operation at Williams Field Road and 222nd Street.

Community Street #3 is proposed on Crismon Road, approximately 660 feet south of Williams Field Road. At this time, no other intersections or driveways are planned between Crismon Road and the SR 24 grade separated crossing. Based on communication with the City of Mesa, Community Street #3 will be permitted to operate as a full access intersection.

INTERNAL SITE CIRCULATION

The Avalon Crossing development will be accessed two collector streets; one on Crismon Road and one on Williams Field Road, as well as one local street accessing Williams Field Road. The collector streets connect to the local road network within the site. The majority of the site consists of traditional single-family residential lots, with direct frontage to the internal roadway network within the community. The parcel near the southwest corner of the site consists of clustered homes, which are groups of 6 detached, single-family lots that share a hammerhead, without direct frontage to the local roadway network. Approximately 125 clustered single-family units are planned, representing 18.5% of overall lot count.

Adequate sight visibility should be provided at all intersections, including site access points and all internal site intersections. The intersections should be designed in accordance with the Policy on Geometric Design of Highways and Streets (AASHTO Green Book). The sight visibility triangles should be clear of fences, walls, shrubbery, trees, and other obstructions to vision between 2.5 feet and 8 feet above the sidewalk or to 14 feet above the roadway. The number of internal intersections should be balanced to manage the number of conflict points within the development.

TRIP GENERATION

The trip generation for the project was estimated using the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 10th Edition. ITE's Trip Generation Manual contains data collected by various transportation professionals for a wide range of different land uses. The data summarized in the manual include average rates and equations that have been established correlating the relationship between an independent variable that describes the development size and generated trips for each categorized land use. The manual provides information for daily and peak hour trips for the single-family residential development, as summarized in **Table 1.** The trips are estimated based on the weekday peak hour of the adjacent street network using regression equations.

Table 1: Trip Generation of Avalon Crossing – Weekday

DESCRIPTION OF LAND USE					VEHICLE GENERATED TRIPS						
					Daily	AM Peak Hour			PM Peak Hour		
ID	Land Use	ITE LUC	SIZE		Total	Enter	Exit	Total	Enter	Exit	Total
1	Single-Family Residential	210	675	DU	6,024	121	363	484	400	235	635
				Total	**6,024**	**121**	**363**	**484**	**400**	**235**	**635**

Note 1: Trip generation data was referenced from the ITE Trip Generation Manual, 10th Edition.

Note 2: Regression equations and directional distributions for each time period are provided below:

Weekday: Ln (T) = 0.92 Ln (X) + 2.71 — *In: 50%, Out: 50%*

Weekday AM Peak Period of Adjacent Street Traffic: T = 0.71 (X) + 4.80 — *In: 25%, Out: 75%*

Weekday PM Peak Period of Adjacent Street Traffic: Ln (T) = 0.96 Ln (X) + 0.20 — *In: 63%, Out: 37%*

TRIP DISTRIBUTION

The generated trips for the proposed development were distributed to the surrounding street system based on access to nearby freeways and planned activity centers. The Crismon Road extension across SR 24 is planned between 2030 and 2040; therefore, the traffic distribution was adjusted to match the roadway facilities available during each analysis year. The trip distribution developed for 2030 and 2040 are shown in **Figure 9** and **Figure 10**, respectively. The trip distributions were reviewed by City of Mesa staff to confirm reasonable assumptions based on future schools and commercial centers planned in the area.

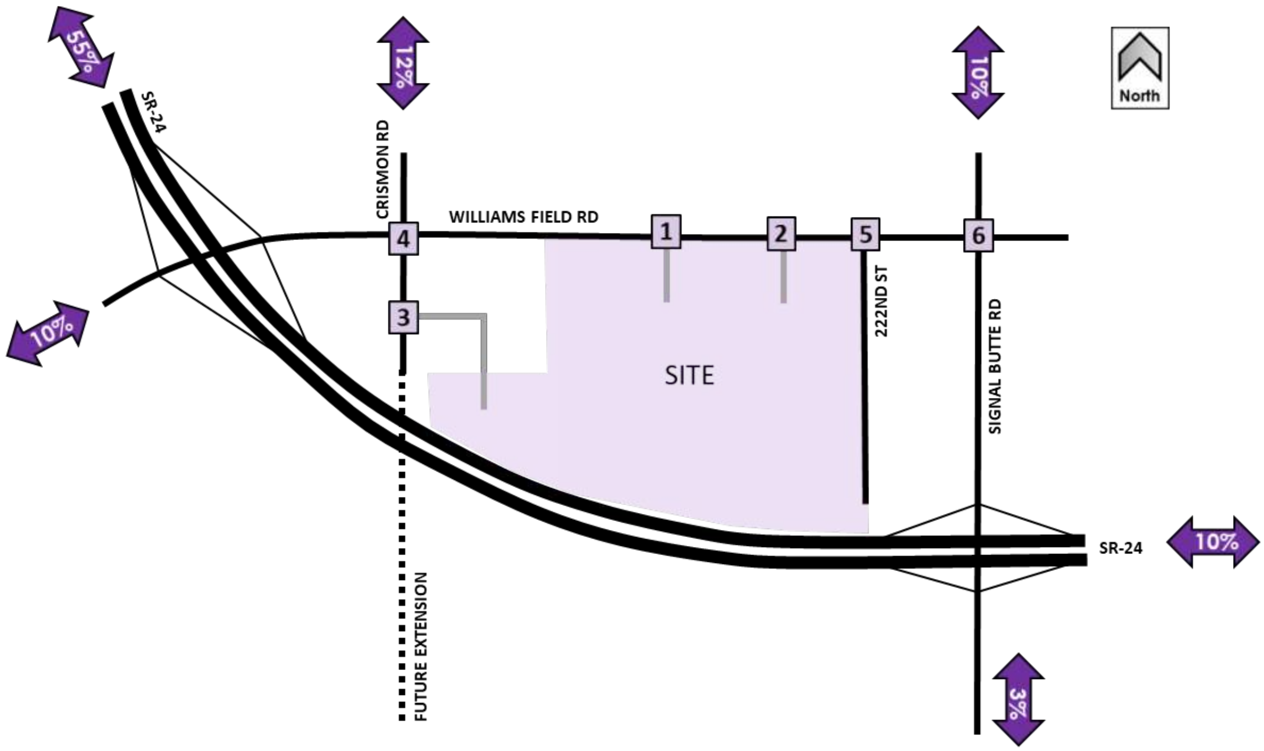


Figure 9: 2030 Trip Distribution

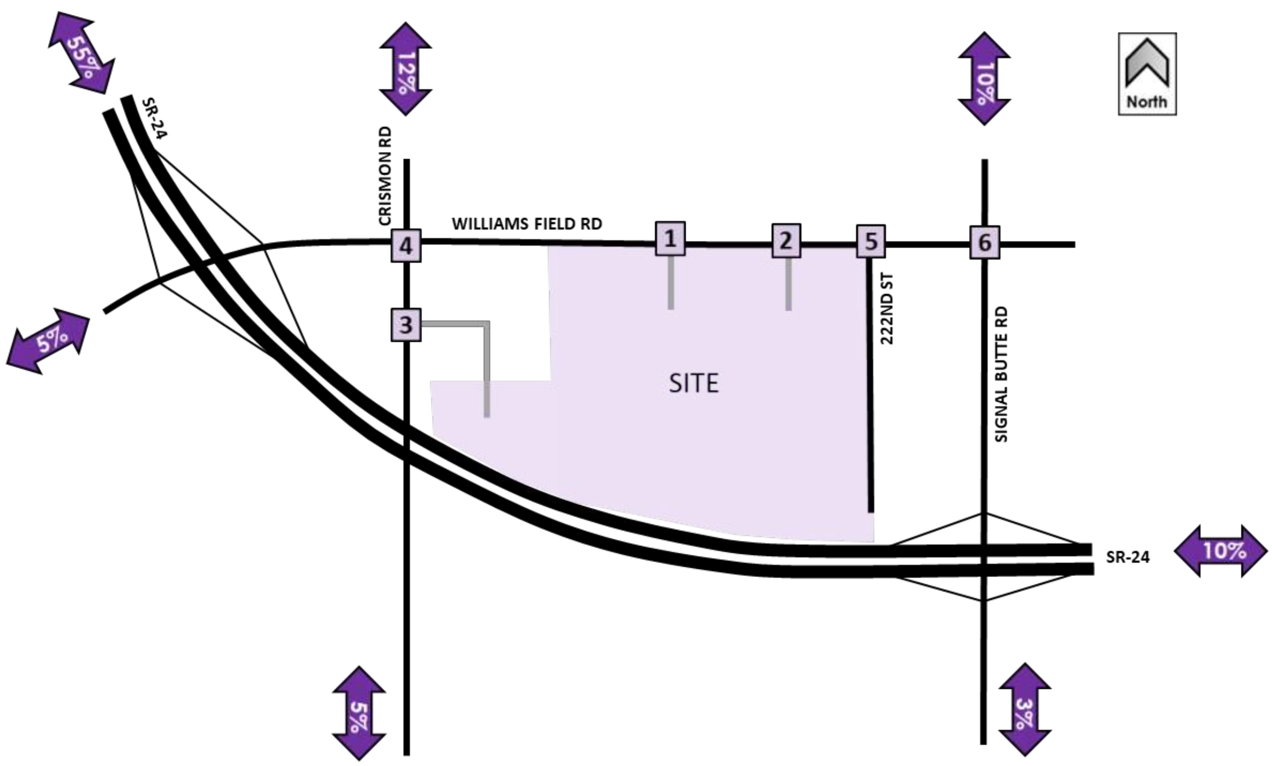


Figure 10: 2040 Trip Distribution

TRIP ASSIGNMENT

Site traffic was assigned to the roadway network based on the trip distribution, anticipated use of each access point, and any access conditions present at the driveways. Most residents will use the access point closest and easiest to access from their home. As previously discussed, the clustered residential area near southwest portion of the site represents about 20% of the total site traffic. The parcel of clustered homes is anticipated to primarily use Community Street #3, and the traditional homes are anticipated to primarily use Community Streets #1 and #2. Some trips may route through multiple residential parcels.

The traffic assignment percentages for the 2030 roadway network are shown in **Figure 11** and the traffic assignment percentages for the 2040 roadway network are shown in **Figure 12**. Peak hour trips were assigned to the roadway network based on the trip generation, distribution, and assignment described above. The peak hour volumes associated with the Avalon Crossing site for 2030 and 2040 are provided in **Figure 13** and **Figure 14**, respectively. The estimated daily traffic associated with the Avalon Crossing Site is depicted in **Figure 15** and **Figure 16**, which is based on the 6,024 total daily trips and the assumed trip assignment percentages in 2030 and 2040.

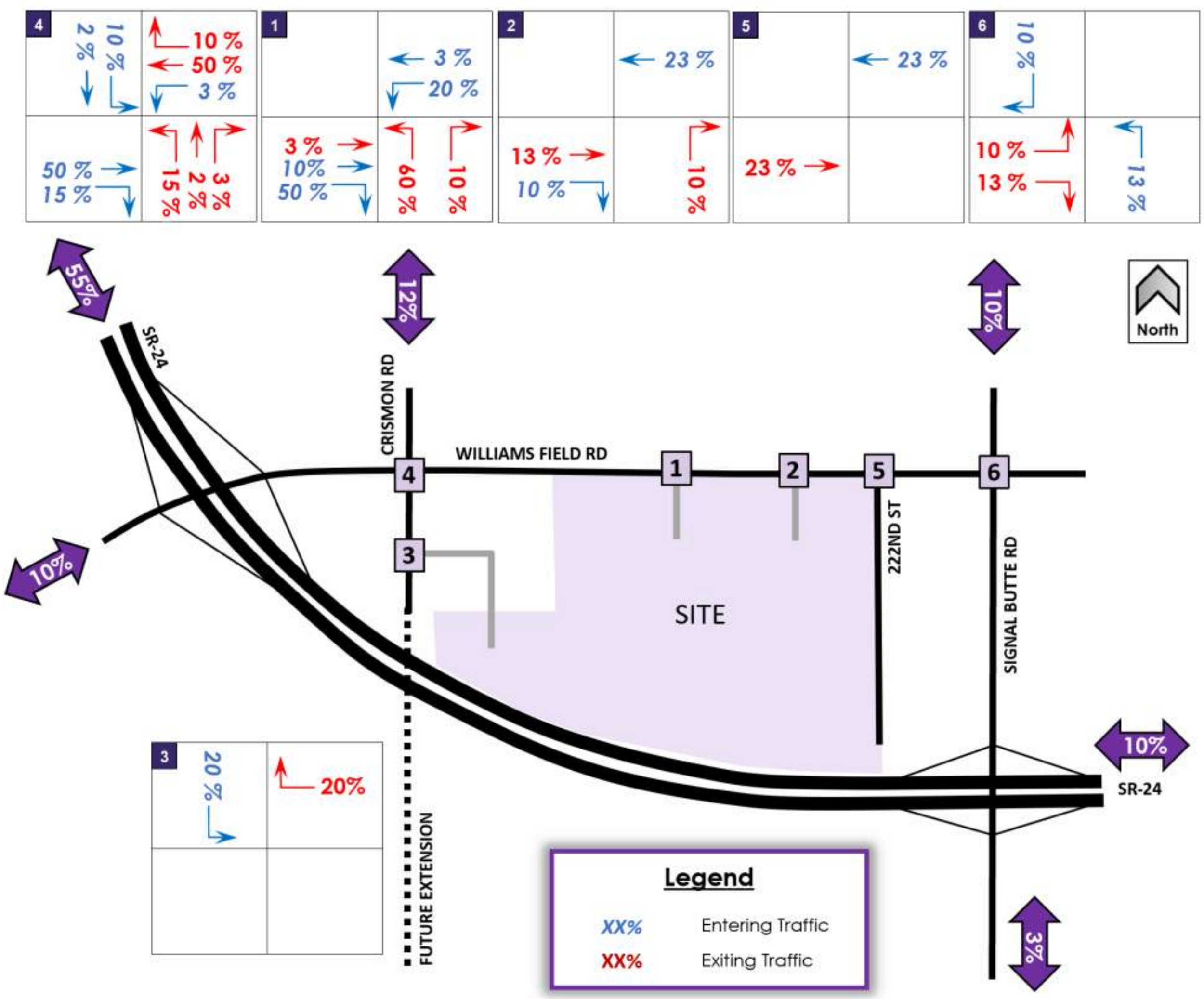


Figure 11: Trip Assignment, 2030 Roadway Network

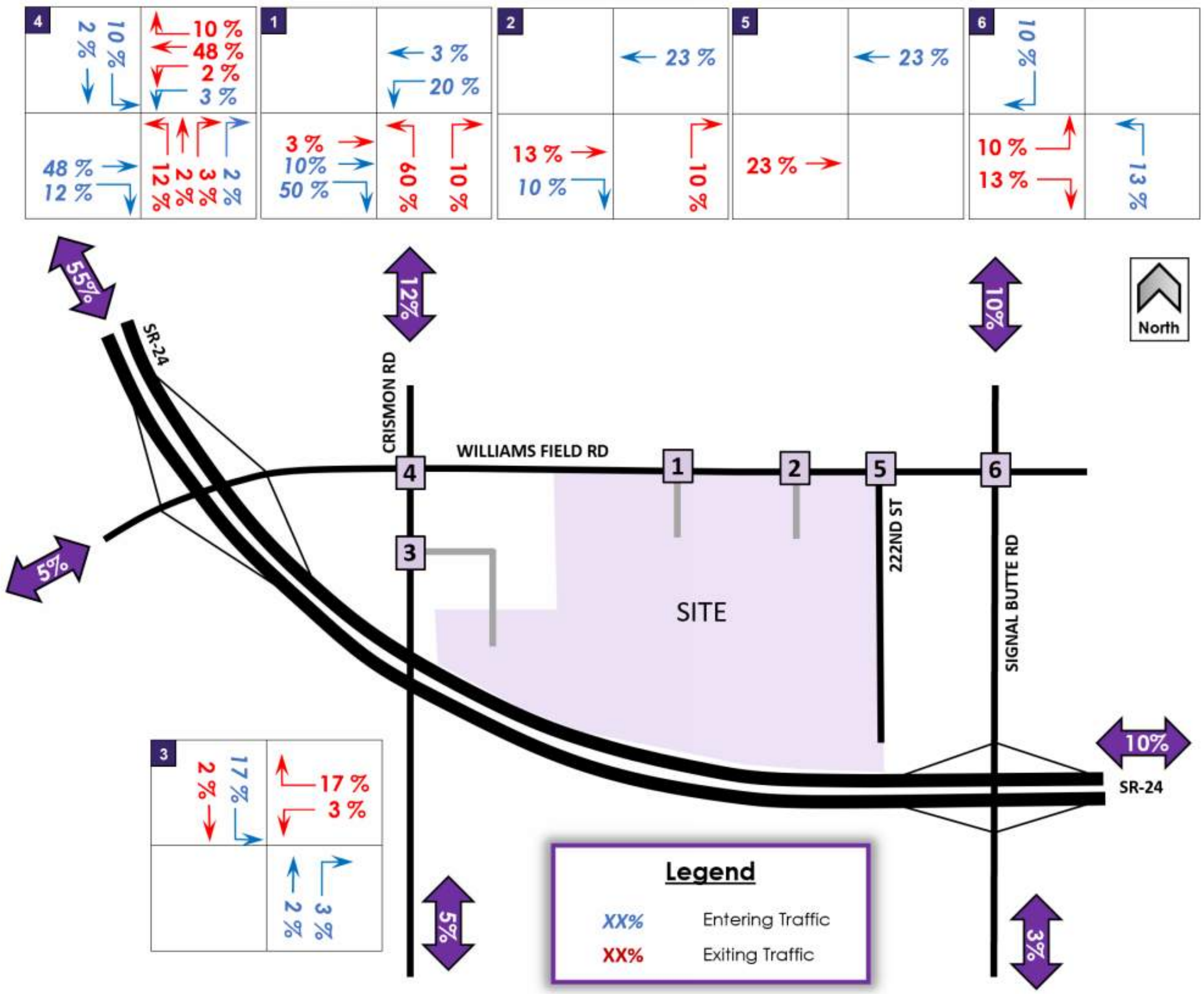


Figure 12: Trip Assignment, 2040 Roadway Network

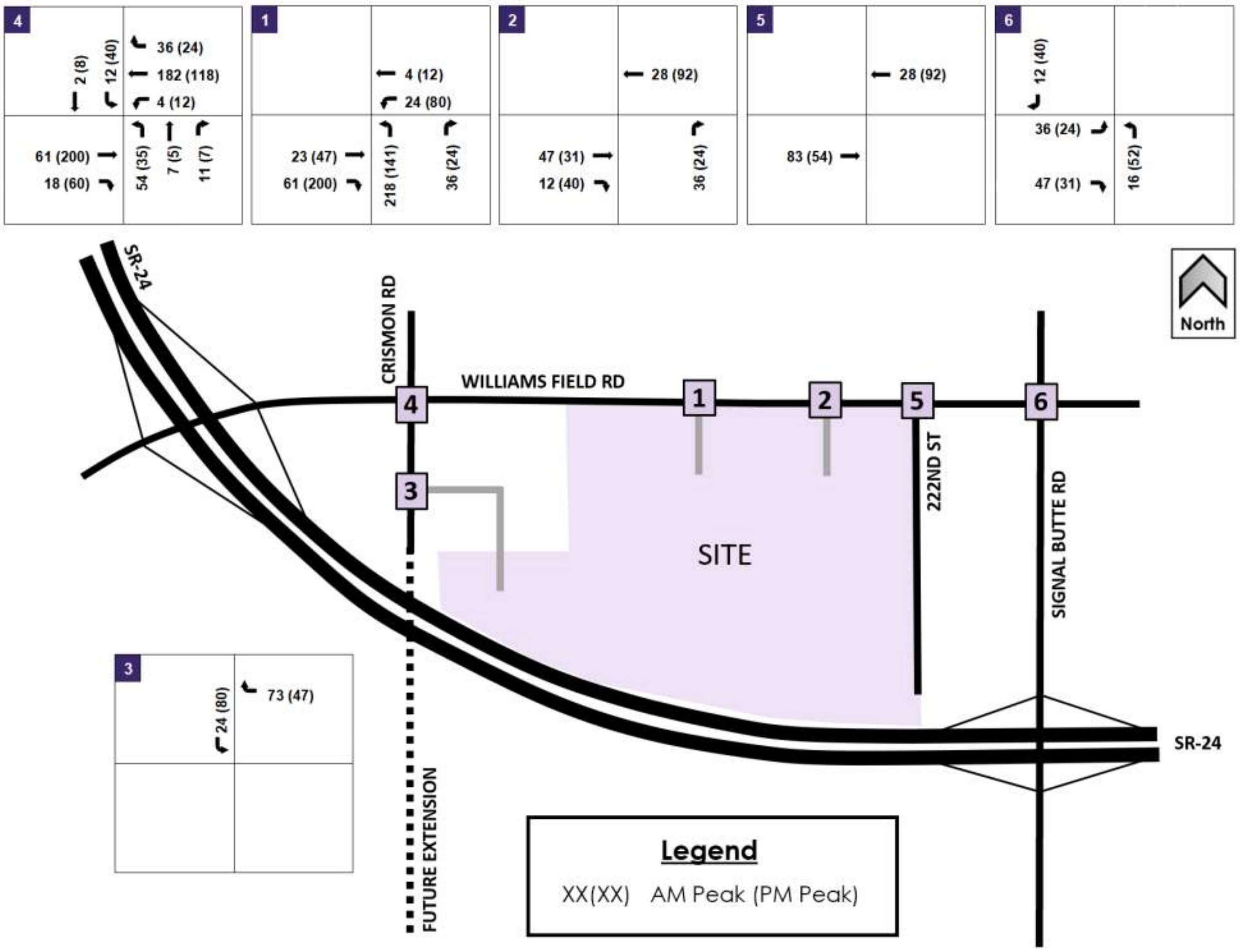


Figure 13: Peak Hour Site Traffic at Build Out, 2030 Roadway Network

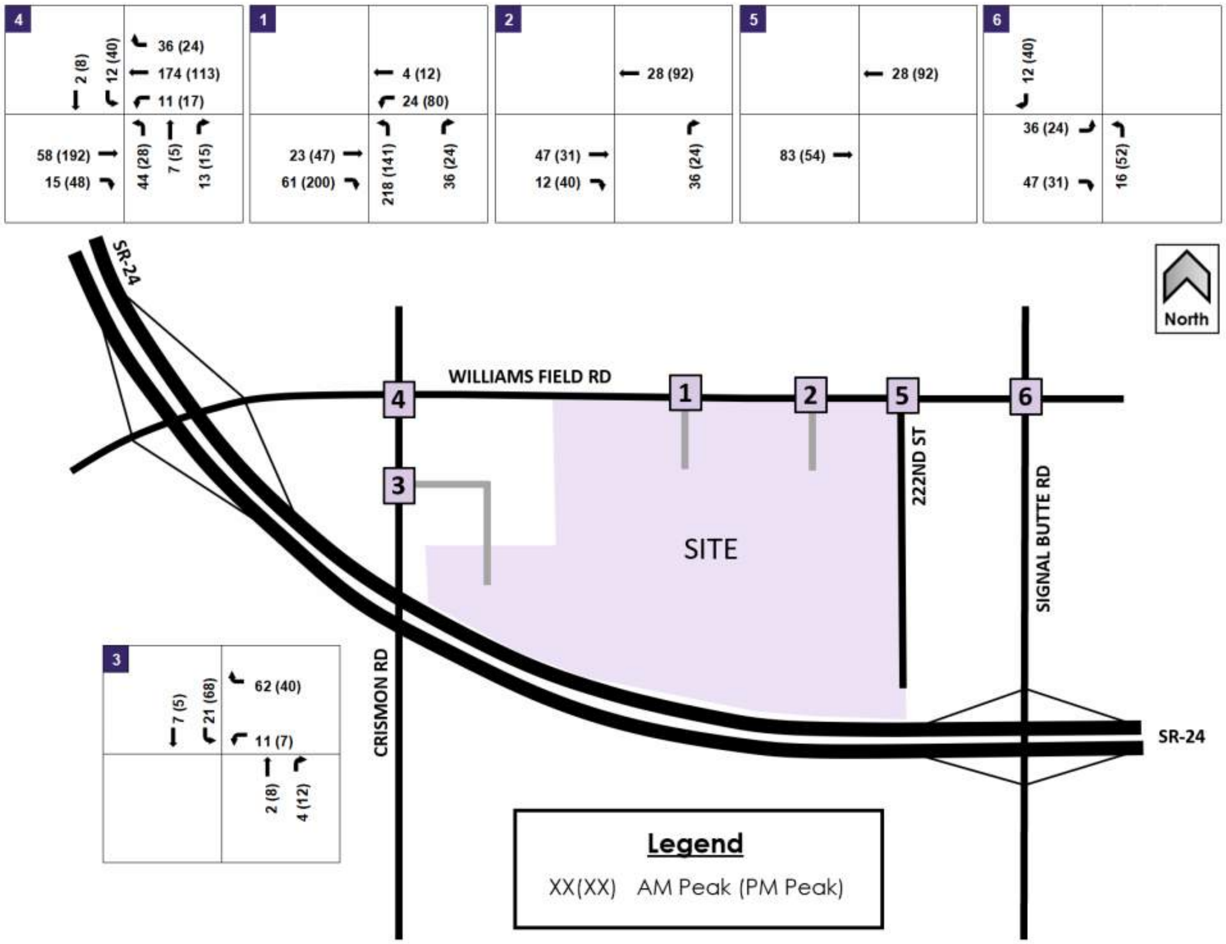


Figure 14: Peak Hour Site Traffic at Build Out, 2040 Roadway Network

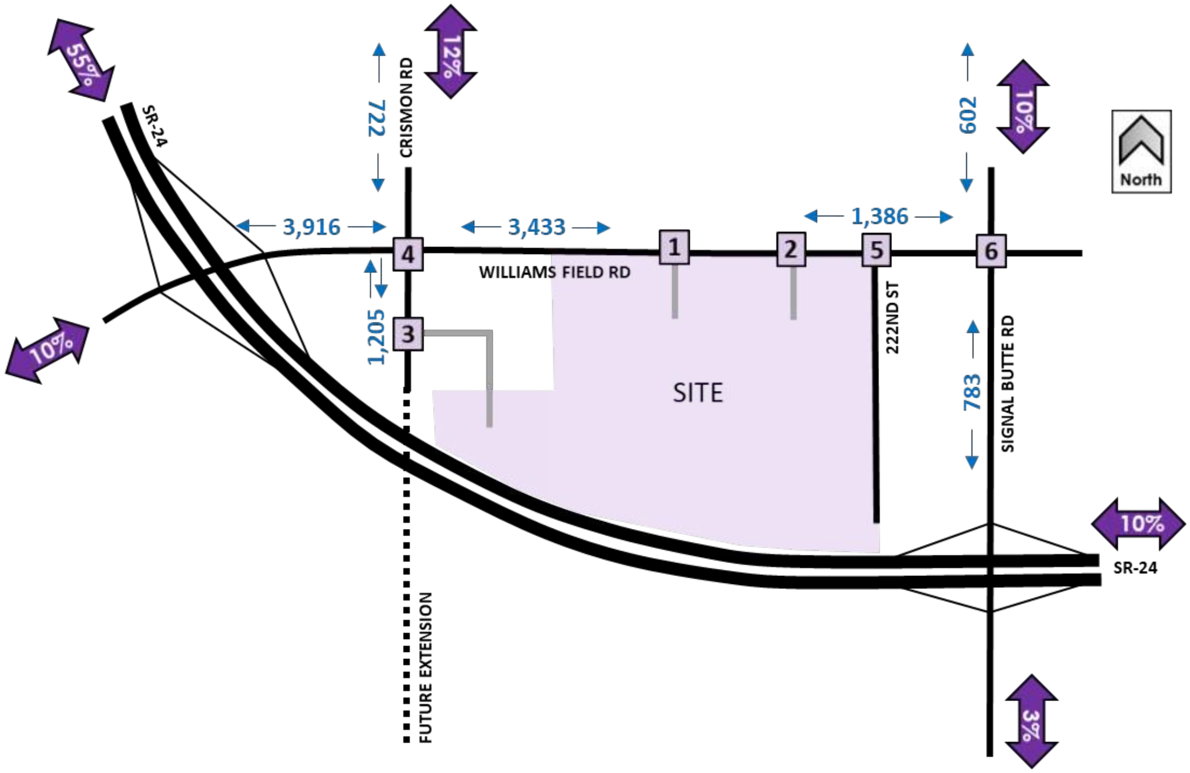


Figure 15: Site Daily Traffic at Full Build-Out, 2030 Roadway Network

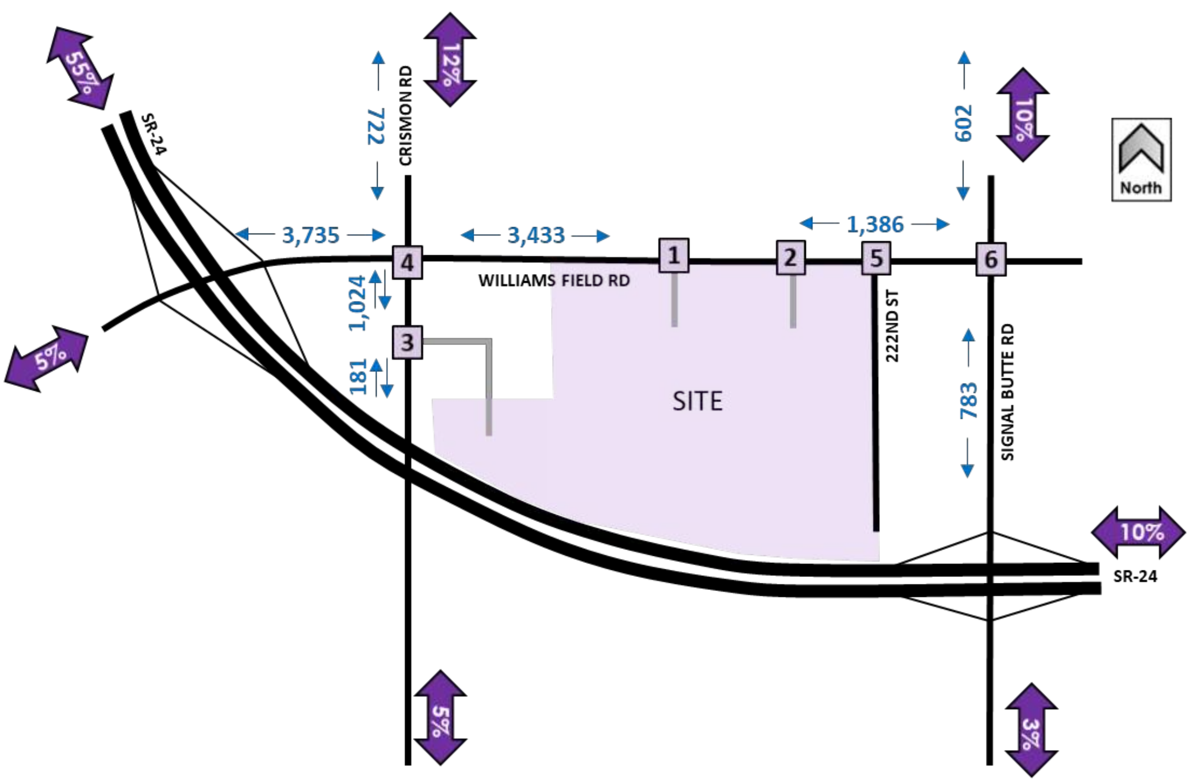


Figure 16: Site Daily Traffic at Full Build-Out, 2040 Roadway Network

FUTURE TRAFFIC PROJECTIONS

Traffic projections in this project are based on the 2030 and 2040 Maricopa Association of Governments (MAG) Travel Demand Model, the 2019 SE Mesa Land Use and Transportation Plan, the traffic volumes developed in the original Avalon Crossing TIA, anticipated roadway network connectivity, surrounding area traffic impact studies, and discussions with the City of Mesa. Following the review of past documents, it was determined that the future projections provided in the 2019 SE Mesa LUTP include traffic associated with the Avalon Crossing development. The background volumes in each analysis year were back-calculated based on the anticipated Avalon Crossing site traffic volumes. The peak hour turning movement projections for 2030 and 2040 scenarios were developed by estimation of the following:

i. 2030 and 2040 Total Daily Traffic Volumes
ii. 2030 and 2040 Background Daily Traffic Volumes
iii. Turning Movement Percentages at Intersections
iv. AM and PM Peak Hour Directional Assumptions

DAILY TOTAL TRAFFIC PROJECTIONS

The 2030 and 2040 total traffic projections, based on a review of recent planning documents, are provided in **Figure 17** and **Figure 18**, respectively.

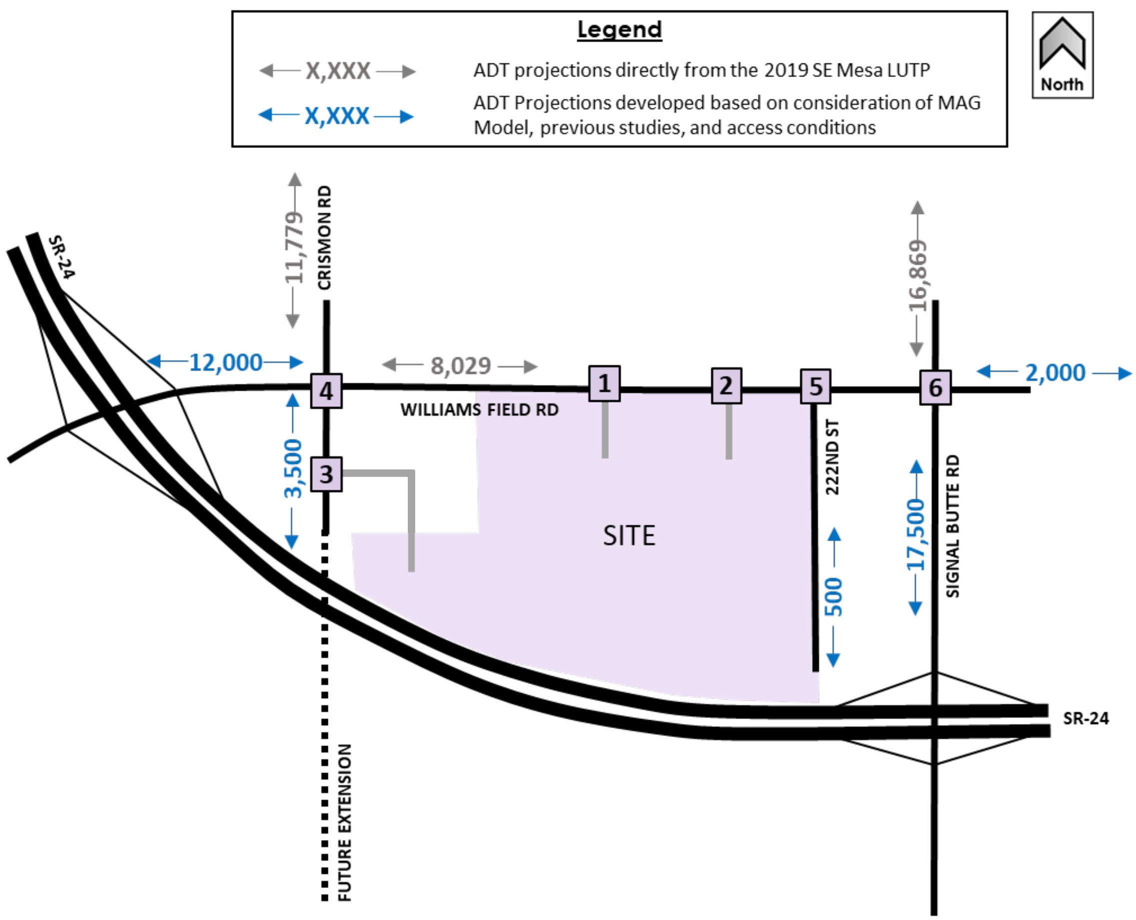


Figure 17: 2030 Total Daily Traffic Volumes

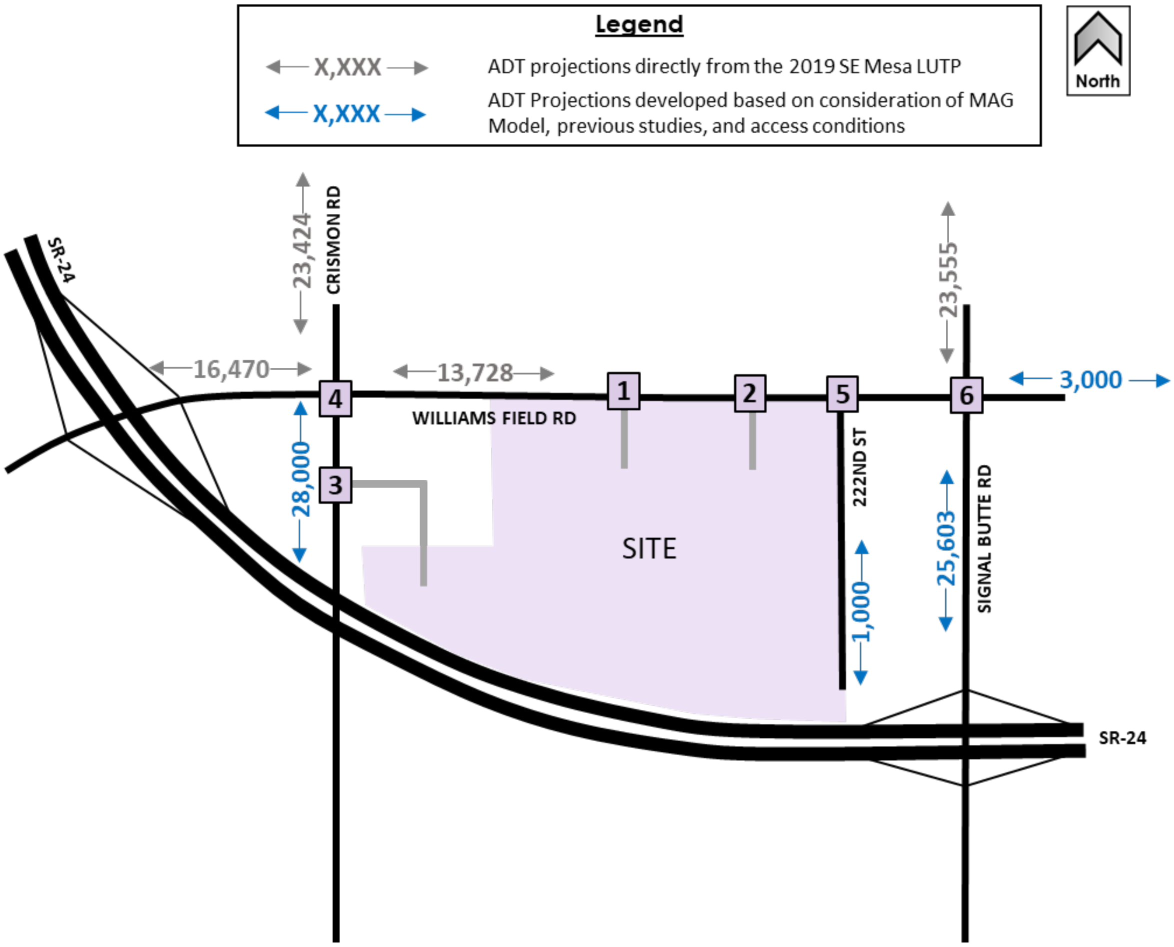


Figure 18: 2040 Total Daily Traffic Volumes

DAILY BACKGROUND TRAFFIC PROJECTIONS

The background traffic volumes were calculated using the difference between total traffic and site traffic from the Avalon Crossing development. The 2030 and 2040 background traffic volumes are provided in **Figure 19** and **Figure 20**, respectively.

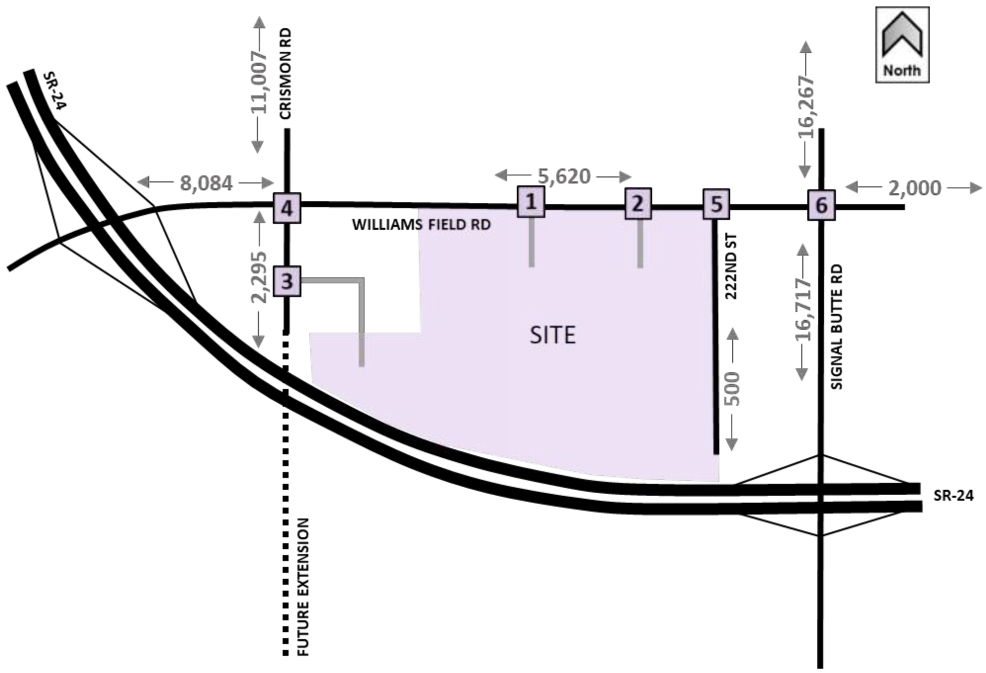


Figure 19: 2030 Background Daily Traffic Volumes

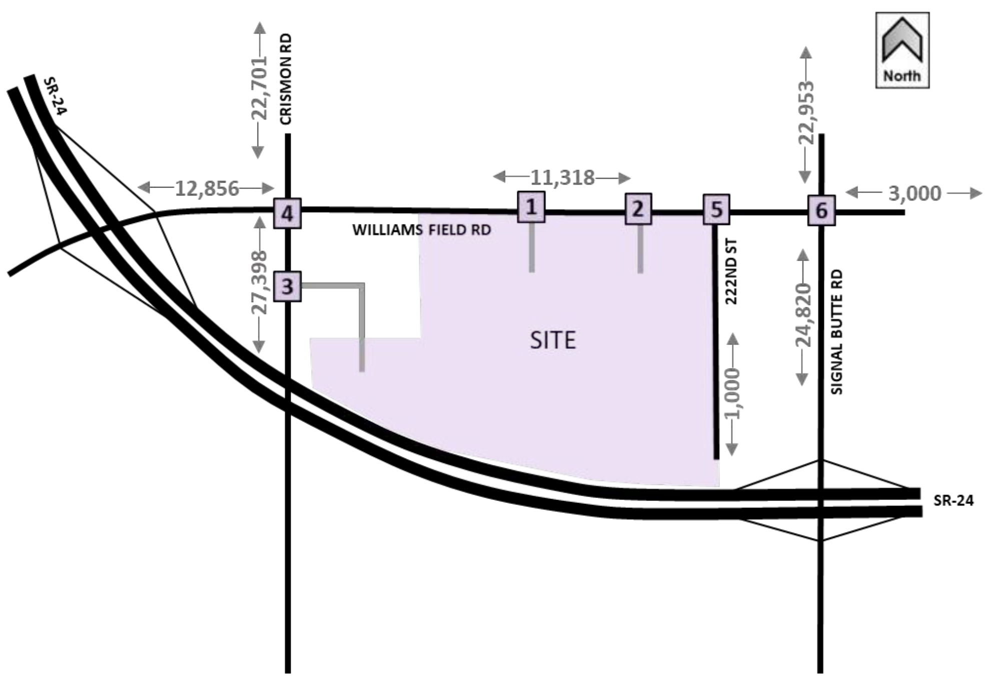


Figure 20: 2040 Background Daily Traffic Volumes

BACKGROUND TRAFFIC TURNING MOVEMENT ASSUMPTIONS

Turning movement assumptions of 2030 and 2040 background traffic were developed based access to the SR 24 freeway, proximity to nearby activity centers, and future development within the area. The turning movement assumptions for 2030 and 2040 are provided in **Figure 21** and **Figure 22**. A 50% directional distribution was applied to calculate the daily approach volumes.

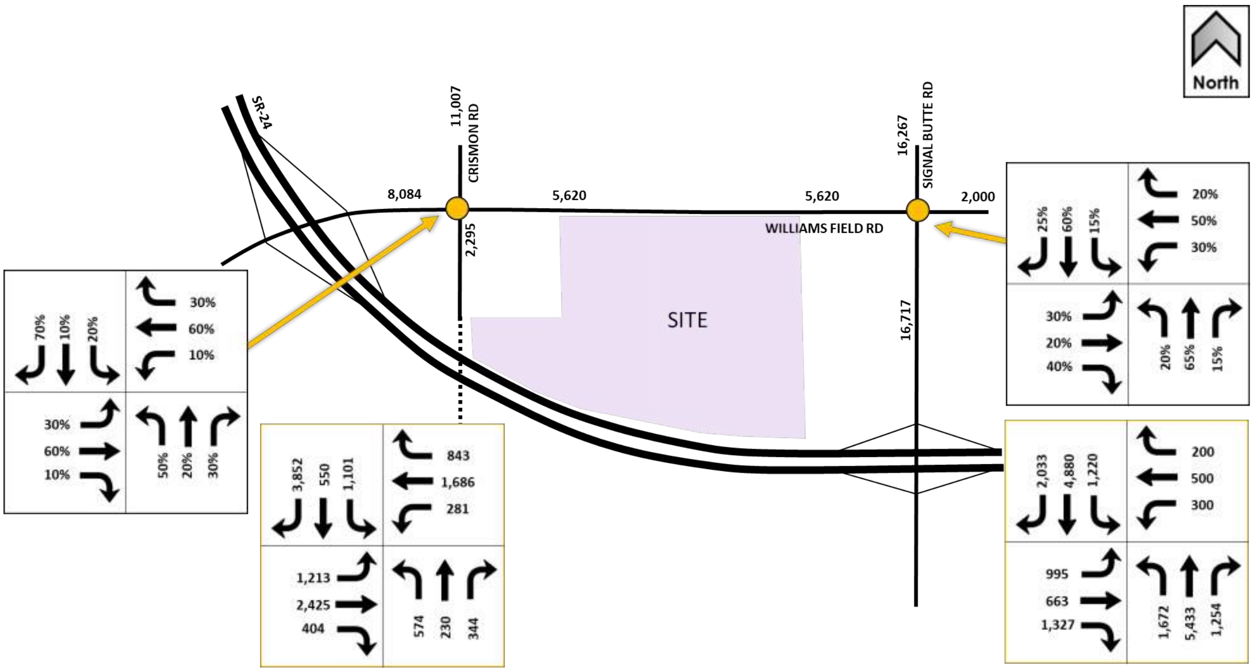


Figure 21: 2030 Background Turning Movement Assumptions

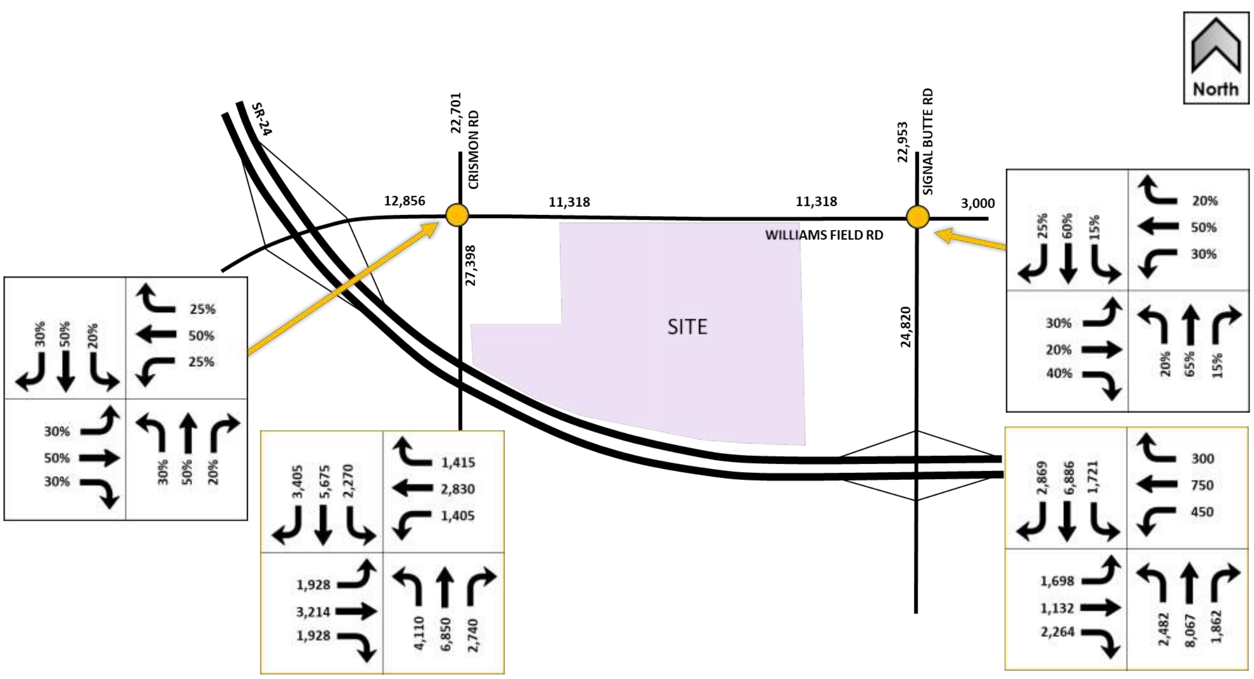


Figure 22: 2040 Background Turning Movement Assumptions

BACKGROUND PEAK HOUR DIRECTIONAL DISTRIBUTION ASSUMPTIONS

During the AM and PM peak hours, movements toward the peak direction of travel are assumed to be 10% of the total daily traffic for a particular movement. Peak hour movements away from the peak travel direction are assumed to be 6% of the total daily traffic. The peak hour directional distribution assumptions for both analysis years are depicted in **Figure 23**.

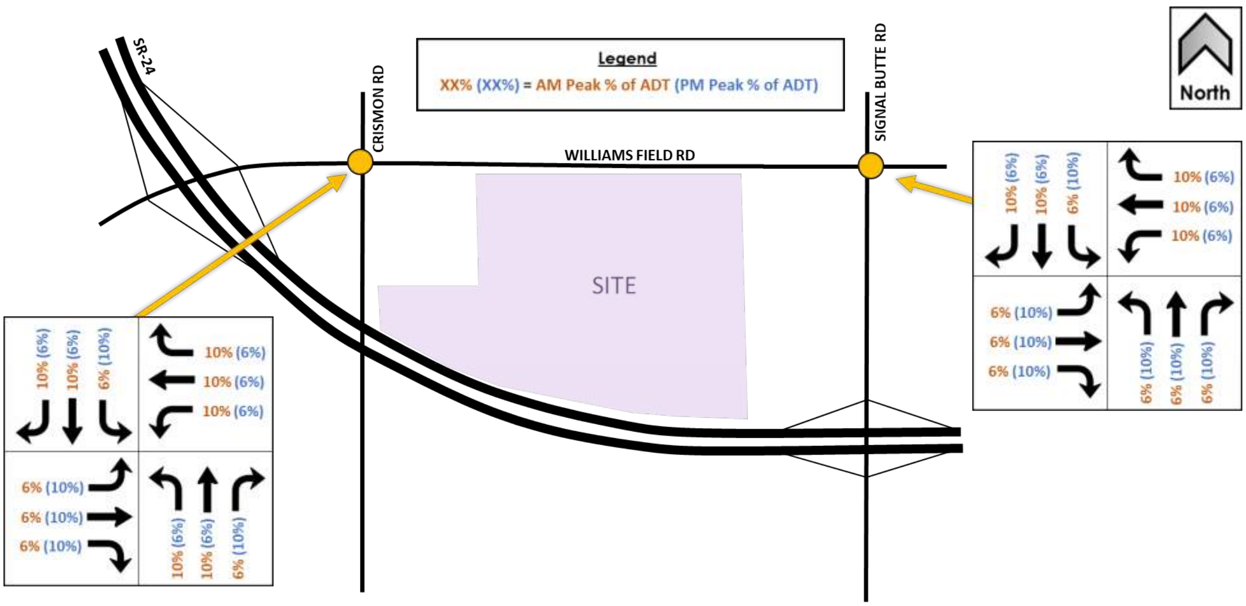


Figure 23: 2030 and 2040 Background Peak Hour Directional Distribution Assumptions

BACKGROUND PEAK HOUR TRAFFIC PROJECTIONS

The background peak hour traffic projections were estimated based on the projected average daily traffic volumes on each intersection approach, the assumed turning movement percentage, and peak hour directional distribution. The 2030 and 2040 peak hour background traffic projections are shown in **Figure 24** and **Figure 25**, respectively.

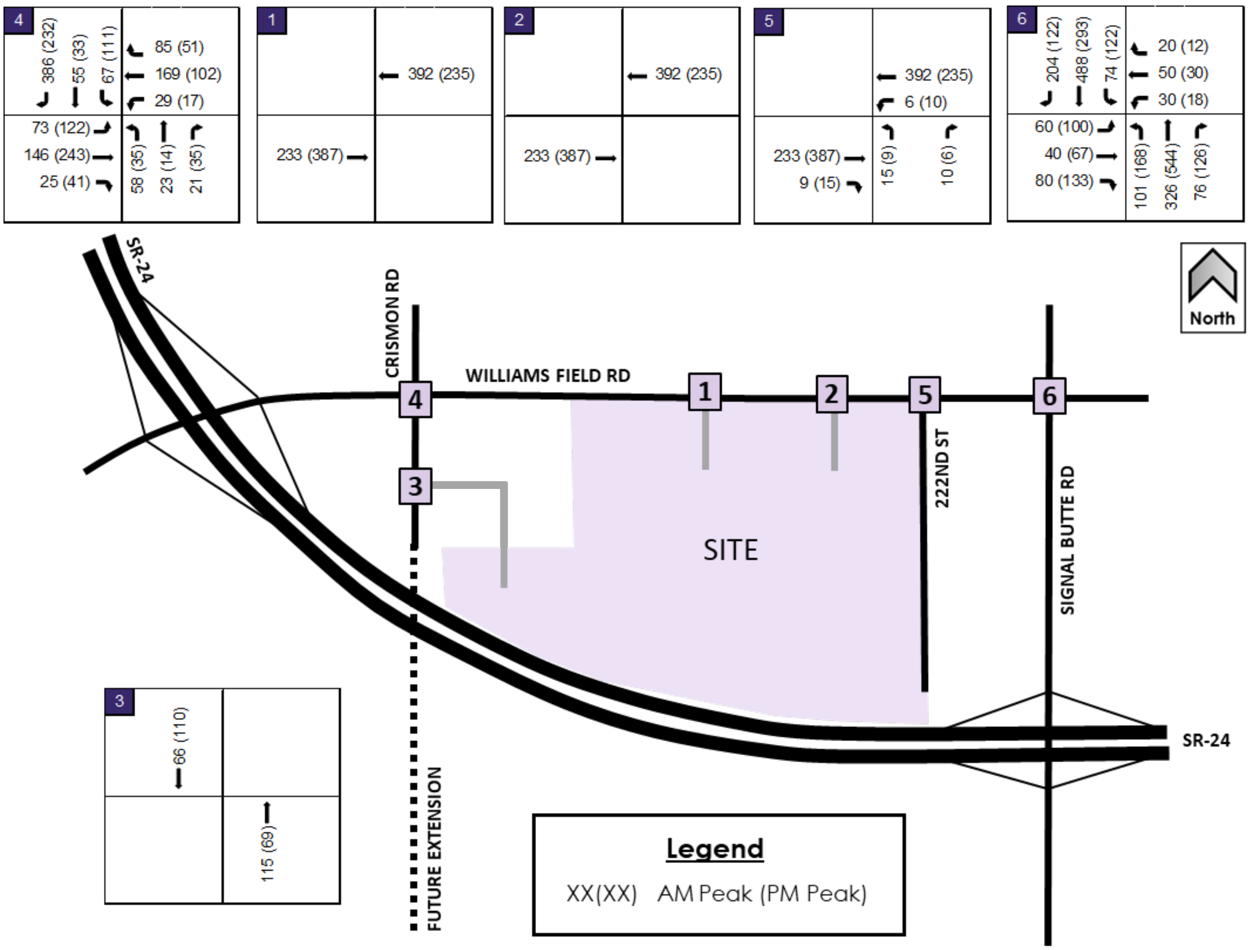


Figure 24: 2030 Background Peak Hour Projections

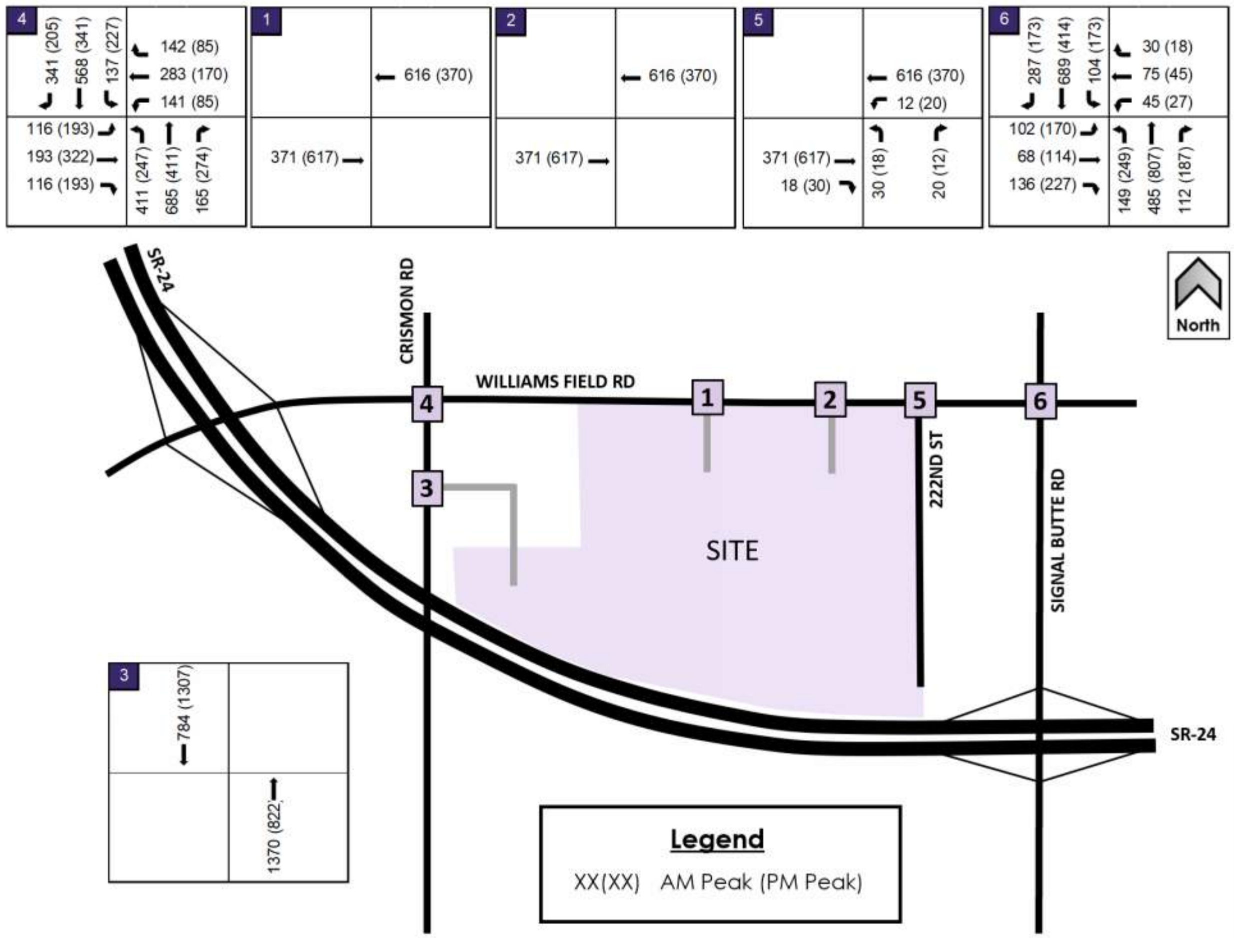


Figure 25: 2040 Background Peak Hour Projections

SURROUNDING DEVELOPMENT TRAFFIC

The area surrounding the proposed site is anticipated to develop with the extension of SR 24. The development will likely include single-family residential, multi-family residential, commercial, and retail land uses, among others. Due to the unknown land uses, densities and specific locations of development, the MAG Travel Demand Model Projections were used to estimate background traffic. The MAG models are regional planning estimates that account for planned growth and new/improved roadway facilities. The traffic associated with these future developments are included within MAG traffic projections.

The planned access point on Crismon Road (Community Street #3) will be shared between the residential site and a future commercial/mixed-use development on the southeast corner of Crismon Road and Williams Field Road. The commercial/mixed-use parcel was analyzed as a part of this study to identify the future traffic needs at the Crismon Road/Community Street #3 to accommodate traffic from both developments.

COMMERCIAL/MIXED-USE TRIP GENERATION

Trip generation estimates were prepared for the planned commercial-mixed use site located on the southeast corner of Crismon Road and Williams Field Road; however, as this site will share access at Crismon Road/Community Street #3. Based on discussions with the development team, the adjacent commercial/mixed-use site is anticipated to include:

- 20 acres of multi-family residential, with a maximum density of 10 dwelling units per acre
- 11 acres of general commercial/retail, with an estimated Floor Area Ratio (FAR) of 0.15

Trip generation estimates for the commercial/mixed use site are shown in Table 2.

Table 2: Trip Generation of Commercial/Mixed-Use Site - Weekday

DESCRIPTION OF LAND USE					VEHICLE GENERATED TRIPS						
					Daily	AM Peak Hour			PM Peak Hour		
ID	Land Use	ITE LUC	SIZE		Total	Enter	Exit	Total	Enter	Exit	Total
1	Multi-Family Residential	220	200	DU	1,471	21	71	92	69	40	109
2	Shopping Center	820	72	KSF	4,803	116	72	188	204	222	426
				Total	**6,274**	**137**	**143**	**280**	**273**	**262**	**535**

Note 1: Trip generation data was referenced from the ITE Trip Generation Manual, 10th Edition.

Note 2: Regression equations and directional distributions for each time period are provided below:

Multi-Family Residential (LUC 220)

Weekday: T = 7.56 (X) - 40.86	*In: 50%, Out: 50%*
Weekday AM Peak Period of Adjacent Street Traffic: T = Ln (T) = 0.95 Ln (X) - 0.51	*In: 23%, Out: 77%*
Weekday PM Peak Period of Adjacent Street Traffic: Ln (T) = 0.89 Ln (X) - 0.02	*In: 63%, Out: 37%*

Shopping Center (LUC 820)

Weekday: Ln (T) = 0.86 Ln (x) + 5.57	*In: 50%, Out: 50%*
Weekday AM Peak Period of Adjacent Street Traffic: T = 0.50 (X) + 151.78	*In: 62%, Out: 38%*
Weekday PM Peak Period of Adjacent Street Traffic: Ln (T) = 0.74 Ln (X) + 2.89	*In: 48%, Out: 52%*

COMMERCIAL/MIXED-USE TRIP ASSIGNMENT

Access characteristics of the future commercial/mixed-use parcel are not yet known, as preliminary planning has not yet begun. Access to the commercial-mixed use site will be provided, in part, through Crismon Road/Community Street #3. It is assumed that additional driveways will support the site on

Crismon Road and Williams Field Road. This study assumes that 50% of the SEC commercial/mixed-use development traffic will enter and exit the site through the shared access at Crismon Road/Community Street #3. The trip assignment at the intersection of Crismon Road/Community Street #3 in 2030 and 2040 is shown in **Figure 26**.

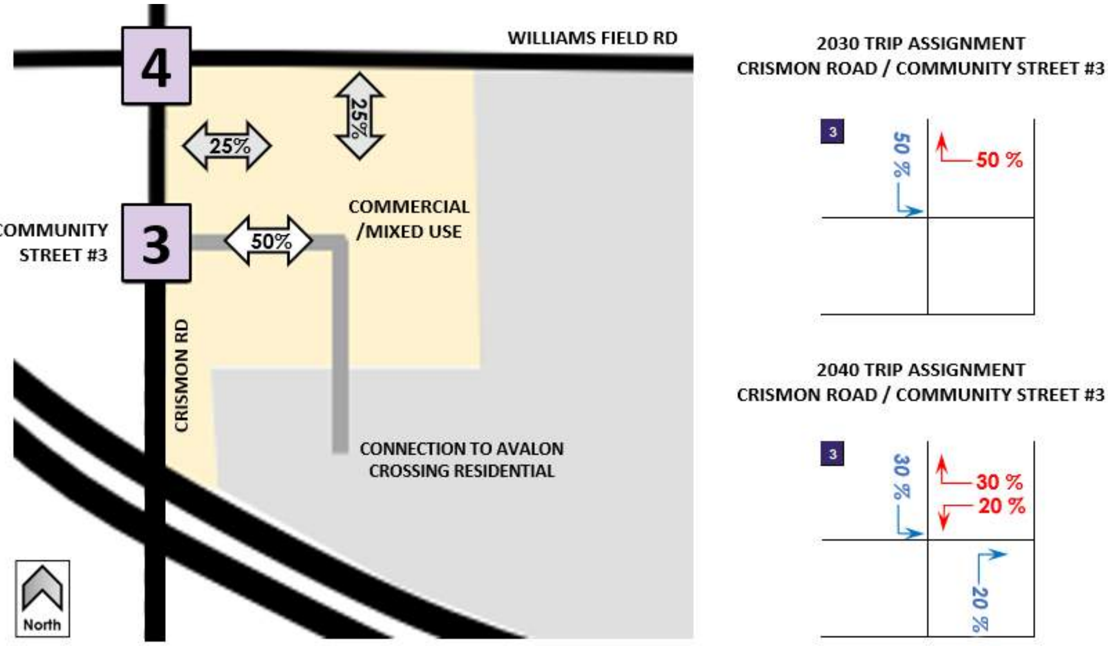


Figure 26: Trip Assignment of SEC Commercial/Mixed-Use Parcel

Volumes assigned to the intersection of Crismon Road/Community Street #3 are not carried through the network (as additional traffic at the other intersections) because it is assumed that the 2030 and 2040 background traffic projections at the other study intersections include the traffic associated with the commercial/mixed-use site.

COMMERCIAL/MIXED-USE PEAK HOUR VOLUMES

The peak hour volumes associated with the commercial/mixed-use site in 2030 and 2040 are shown in **Figure 27**.

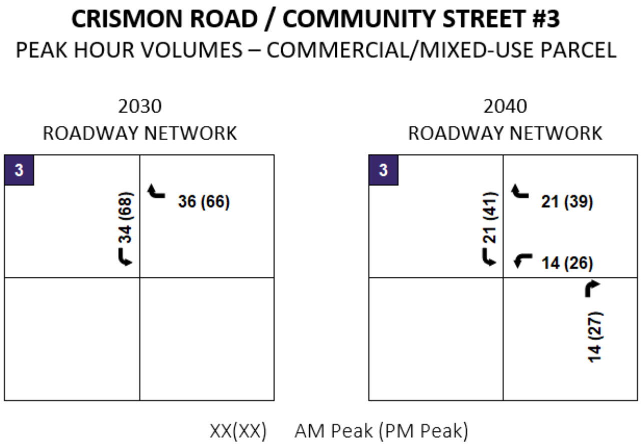


Figure 27: 2030 and 2040 Peak Hour Commercial/Mixed-Use Projections

TOTAL PEAK HOUR TRAFFIC PROJECTIONS

The total peak hour traffic projections are the sum of the background traffic, Avalon Crossing site traffic, and the adjacent commercial/mixed-use traffic for both analysis years. The 2030 and 2040 total peak hour traffic projections are provided in **Figure 28** and **Figure 29**.

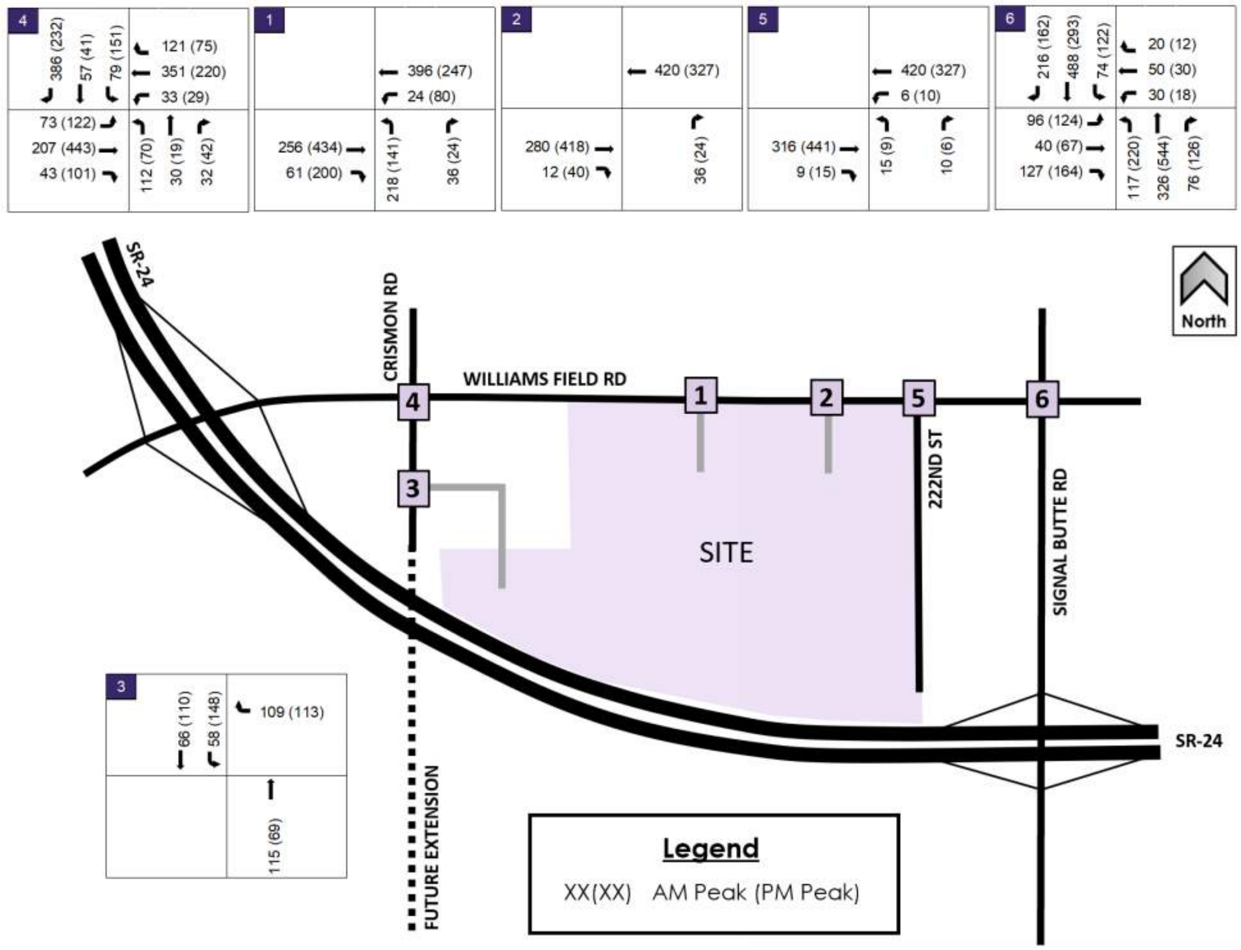


Figure 28: 2030 Total Peak Hour Projections

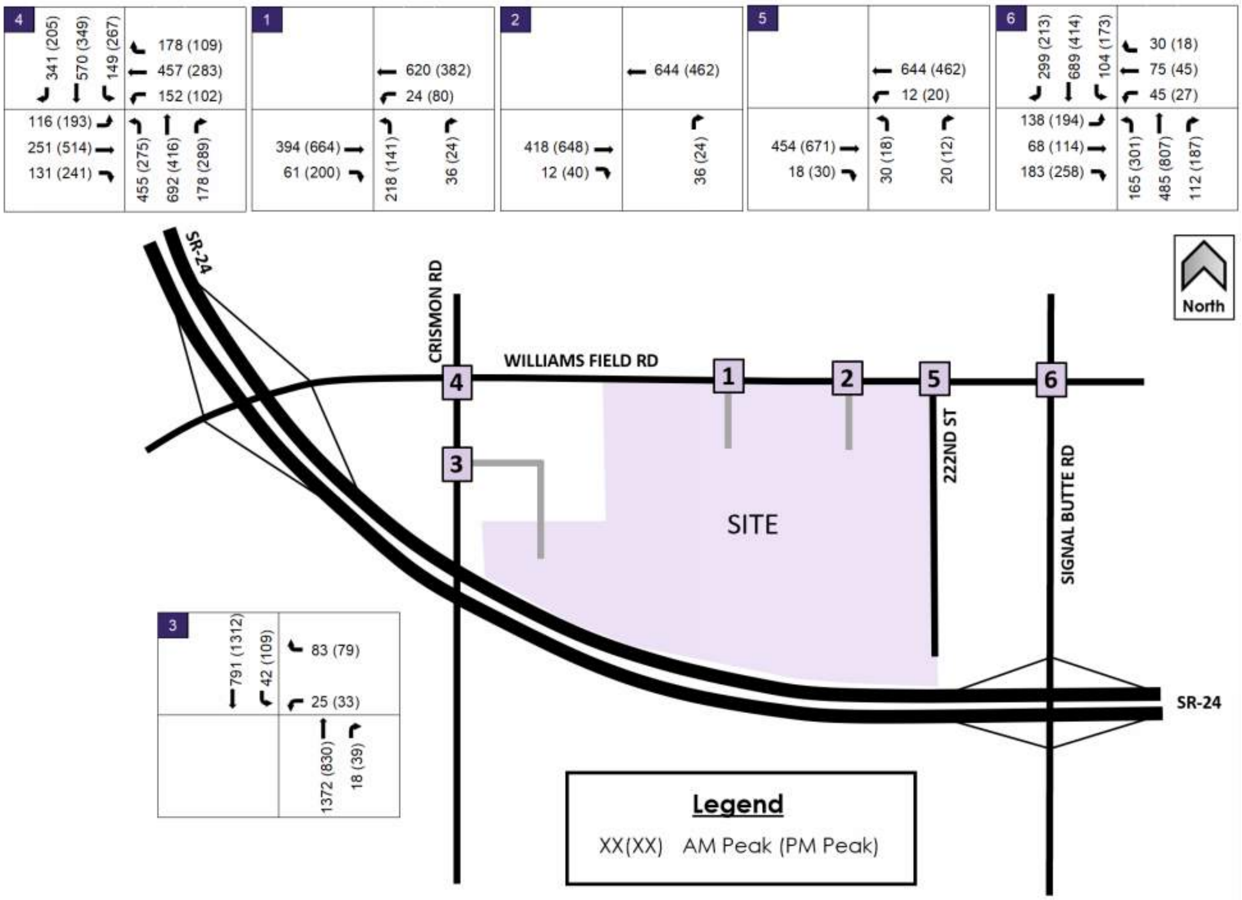


Figure 29: 2040 Total Peak Hour Projections

TRAFFIC SIGNAL WARRANT ANALYSES

METHODOLOGY

The *Manual on Uniform Traffic Control Devices (MUTCD), Federal Highway Administration (FHWA), 2009*, describes nine warrants that are used to determine if a traffic signal should be considered for installation at an intersection. A traffic signal is warranted if one or more of the warrants are satisfied. Warrant #1 (Eight Hour Volume) and Warrant #2 (Four Hour Vehicular Volume) were considered. Based on site conditions, the remaining warrants (#3, #4, #5, #6, #7, #8 and #9) are not applicable.

Warrant #1 (Eight Hour Volume) is satisfied when for at least eight (8) hours of an average day, specific traffic volume levels are met for both the major and minor streets (**Condition A – Minimum Vehicular Volume**). The MUTCD states these volumes depending on the vehicles per hour (vph) combined for both approaches of the major street, and for the highest volume approach on the minor street. The values vary depending on the number of approach lanes and speed limit.

Warrant #1 also applies to operating conditions where the major street traffic levels are sufficiently high that traffic entering or crossing from a minor street suffers excessive delay (**Condition B – Interruption of Continuous Traffic**). The warrant is satisfied when for each of any of the same eight (8) hours of an average day, specific traffic volume levels are met for both the major and minor streets.

Warrant #2 (Four Hour Volume) is met when, for any four hours of the average day on both the major and minor streets, the hourly approach volumes are above the plotted curve contained in the MUTCD (see **Appendix C**).

INTERSECTIONS AND ASSUMPTIONS

Signal warrant analyses were completed to determine if any traffic signal warrants are met based on the future traffic projections, with and without site traffic. The analysis evaluated total traffic conditions and includes both the Avalon Crossing site and the adjacent commercial/mixed-use parcel. Four intersections were evaluated:

- Crismon Road/Williams Field Road
- Crismon Road/Community Access #3
- Williams Field Road/Community Street #1
- Williams Field Road/Signal Butte Road

For the purposes of analysis, all intersections were assumed to provide 2 or more lanes per approach, and the posted speed limit on the arterial roadways is assumed to be 45 mph. The results of the traffic signal warrant analysis are provided in **Table 3**, and supporting analysis documentation is provided in **Appendix C**.

Table 3: Traffic Signal Warrant Analysis Summary

Intersection	2030 Background				2030 Total				2040 Background				2040 Total			
	Traffic Signal Warrant Satisfied	Warrant #1A	Warrant #1B	Warrant #2	Traffic Signal Warrant Satisfied	Warrant #1A	Warrant #1B	Warrant #2	Traffic Signal Warrant Satisfied	Warrant #1A	Warrant #1B	Warrant #2	Traffic Signal Warrant Satisfied	Warrant #1A	Warrant #1B	Warrant #2
Crismon Road & Williams Field Road	Yes	✓		✓	Yes	✓	✓	✓	Yes	✓	✓	✓	Yes	✓	✓	✓
Crismon Road & Community Street #3	N/A				No				N/A				Yes	✓	✓	✓
Community Street #1 & Williams Field Road	N/A				No				N/A				Yes		✓	✓
Signal Butte Road & Williams Field Road	Yes	✓	✓	✓	Yes	✓	✓	✓	Yes	✓	✓	✓	Yes	✓	✓	✓

CRISMON ROAD AND WILLIAMS FIELD ROAD

This intersection is anticipated to meet traffic signal warrants by 2030 without site traffic.

SIGNAL BUTTE ROAD AND WILLIAMS FIELD ROAD

This intersection is anticipated to meet traffic signal warrants by 2030 without site traffic.

COMMUNITY STREET #1 AND WILLIAMS FIELD ROAD

This intersection is anticipated to meet traffic signal warrants by 2040 with site traffic. The City of Mesa indicated that this intersection is required to be signalized and operational with the opening of the Avalon Crossing residential development, which is anticipated in 2023.

COMMUNITY STREET #3 AND CRISMON ROAD

This intersection is anticipated to meet traffic signal warrants by 2040 with site traffic. Signal warrants are anticipated to be met with the opening of commercial/mixed-use parcel and the Crismon Road extension across SR 24. As development in the area grows and the roadway network expands, traffic volumes and signal needs should be monitored to determine appropriate installation timing.

FUTURE TRAFFIC ANALYSES

A level of service (LOS) analysis was prepared for the weekday AM and PM peak hours for the study intersections utilizing Synchro 10 software. The level of service criteria, as stated in the *Highway Capacity Manual,* is provided in **Table 4.**

Table 4: Level of Service Criteria for Intersections

	Average Delay (seconds per vehicle)	
Level-of-Service	**Unsignalized**	**Signalized**
A	≤ 10	≤ 10
B	> 10 to 15	> 10 to 20
C	> 15 to 25	> 20 to 35
D	> 25 to 35	> 35 to 55
E	> 35 to 50	> 55 to 80
F	> 50	> 80

A level of service analysis was prepared for the following scenarios:

- 2030 Background and Total Traffic under Primitive Traffic Control Conditions
- 2030 Background and Total Traffic with Planned Study Area Improvements
- 2040 Background and Total Traffic with Planned Study Area Improvements

Additional mitigation is proposed within the analysis to support site operations.

2030 TRAFFIC ANALYSIS UNDER PRIMITIVE ROADWAY CONDITIONS

An initial analysis was completed to evaluate the potential impacts if all intersections within the study intersections remain under minor-street stop-control. The results of the analysis provide support for the traffic signal upgrades at Crismon Road/Williams Field Road and Signal Butte Road/Williams Field Road. The capacity analysis results are shown in **Table 5**, and the Synchro reports are provided in **Appendix D.**

Table 5: 2030 Level of Service Analysis, Primitive Traffic Control Conditions

	Intersection	Traffic Control	Movement/ Approach	2030 Background						2030 Background + Site					
				AM			PM			AM			PM		
				Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)
1	Williams Field Road / Community Street #1	Minor Street Stop Control	INTERSECTION	Intersection Does Not Exist In Background Conditions											
			WB Left							8.1	A	< 50	9.7	A	< 50
			NB Left							25.2	D	73	37.7	E	73
			NB Right							9.4	A	< 50	10.0	A	< 50
2	Williams Field Road / Community Street #2	Minor Street Stop Control	INTERSECTION	Intersection Does Not Exist In Background Conditions											
			NB Right							9.5	A	< 50	10.1	B	< 50
3	Crismon Road / Community Street #3	Minor Street Stop Control	INTERSECTION	Intersection Does Not Exist In Background Conditions											
			WB Right							9.2	A	< 50	9.1	A	< 50
			SB Left							7.6	A	< 50	7.7	A	< 50
4	Williams Field Road / Crismon Road	Minor Street Stop Control	INTERSECTION												
			EB Left	8.1	A	< 50	7.9	A	< 50	8.9	A	< 50	8.4	A	< 50
			WB Left	7.7	A	< 50	8.0	A	< 50	7.9	A	< 50	9.0	A	< 50
			NB Left	38.4	E	< 50	28.3	D	< 50	313.5	F	245	172.0	F	133
			NB Thru/Right	13.5	B	< 50	12.3	B	< 50	18.7	C	< 50	18.7	C	< 50
			SB Left	17.7	C	< 50	23.9	C	< 50	35.5	E	53	126.0	F	208
			SB Thru/Right	18.4	C	130	13.0	B	< 50	37.5	E	245	24.0	C	113
5	Williams Field Road / 222nd Street	Minor Street Stop Control	INTERSECTION												
			WB Left	7.8	A	< 50	8.4	A	< 50	8.1	A	< 50	8.5	A	< 50
			NB Left	12.8	B	< 50	14.0	B	< 50	14.3	B	< 50	15.7	C	< 50
			NB Right	9.2	A	< 50	9.8	A	< 50	9.5	A	< 50	10.0	A	< 50
6	Williams Field Road / Signal Butte Road	Minor Street Stop Control	INTERSECTION												
			EB Left	> 600	F	198	> 600	F	360	> 600	F	355	> 600	F	N/A
			EB Thru/Right	58.6	F	113	484.9	F	463	73.0	F	170	> 600	F	N/A
			WB Left	121.9	F	58	> 600	F	N/A	203.4	F	75	> 600	F	N/A
			WB Thru/Right	118.2	F	113	158.9	F	88	148.3	F	125	283.9	F	113
			NB Left	10.2	B	< 50	9.1	A	< 50	10.4	B	< 50	9.6	A	< 50
			SB Left	8.6	A	< 50	10.3	B	<50	8.6	A	< 50	10.3	B	< 50

2030 TRAFFIC ANALYSIS WITH PLANNED STUDY AREA IMPROVEMENTS

The 2030 projected traffic volumes were evaluated with the programmed intersection and roadway improvements within the study area, including:

- **Signalization at Crismon Road and Williams Field Road**
    - Northbound approach: Two left-turn lanes, one through lane, one through/right-turn lane
    - Southbound approach: Two left-turn lanes, two through lanes, one right-turn lane
    - Eastbound approach: One left-turn lane, two through lanes, one through/right lane
    - Westbound approach: One left-turn lane, two through lanes, one through/right lane
    - Protected-only left-turn phasing on all approaches
- **Signalization at Signal Butte Road and Williams Field Road**
    - Northbound approach: One left-turn lanes, two through lanes, one through/right-turn lane
    - Southbound approach: One left-turn lane, two through lanes, one through/right-turn lane
    - Eastbound approach: One left-turn lane, one through lane, one through/right lane
    - Westbound approach: One left-turn lane, one through lane, one through/right lane
    - Protected-permitted left-turn phasing on all approaches

The site access intersections and the intersection of 222nd Street/Williams Field Road remain under minor-street stop-control in this scenario. The resulting level of service analysis for 2030 background and total conditions are shown in **Table 6** and the Synchro reports are provided in **Appendix E**. In 2030 with site traffic, the signalized intersections are anticipated to operate at LOS B. All turning movements at Community Street #2/Williams Field Road, 222nd Street/Williams Field Road, and Community Street #3/Crismon Road are anticipated to operate at or above LOS C.

In 2030, the northbound left-turn movement at Community Street #1/Williams Field Road is anticipated to experience delay, with LOS D during the AM peak hour and LOS E during the PM peak hour. The City of Mesa indicated that this intersection is required to be signalized and operational with the opening of the Avalon Crossing residential development; therefore, this mitigation is evaluated in the subsequent section.

Table 6: 2030 Level of Service Analysis, Planned Study Area Improvements

Intersection	Traffic Control	Movement/ Approach	2030 Background						2030 Background + Site					
			AM			PM			AM			PM		
			Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)
1 Williams Field Road / Community Street #1	Minor Street Stop Control	INTERSECTION	Intersection Does Not Exist In Background Conditions											
		WB Left							8.1	A	< 50	9.7	A	< 50
		NB Left							25.2	D	95	37.7	E	93
		NB Right							9.4	A	< 50	10.0	A	< 50
2 Williams Field Road / Community Street #2	Minor Street Stop Control	INTERSECTION	Intersection Does Not Exist In Background Conditions											
		NB Right							9.5	A	< 50	10.1	B	< 50
3 Crismon Road / Community Street #3	Minor Street Stop Control	INTERSECTION	Intersection Does Not Exist In Background Conditions											
		WB Right							9.2	A	< 50	9.1	A	< 50
		SB Left							7.6	A	< 50	7.7	A	< 50
4 Williams Field Road / Crismon Road	Traffic Signal	INTERSECTION	12.8	B	-	13.1	B	-	15.6	B	-	15.6	B	-
		EB Approach	15.8	B	-	13.6	B	-	16.4	B	-	15.7	B	-
		EB Left	20.9	C	62	20.9	C	82	26.3	C	72	24.0	C	92
		EB Thru/Right	13.6	B	< 50	10.5	B	< 50	13.5	B	51	13.8	B	95
		WB Approach	14.1	B	-	15.5	B	-	17.0	B	-	16.9	B	-
		WB Left	22.1	C	< 50	21.9	C	< 50	26.7	C	< 50	24.8	C	< 50
		WB Thru/Right	13.2	B	< 50	14.8	B	< 50	16.3	B	90	16.1	B	53
		NB Approach	17.0	B	-	15.3	B	-	20.2	C	-	18.4	B	-
		NB Left	20.9	C	< 50	21.4	C	< 50	24.5	C	< 50	23.6	C	< 50
		NB Thru/Right	11.9	B	< 50	11.0	B	< 50	12.6	B	< 50	12.3	B	< 50
		SB Approach	9.9	A	-	11.1	B	-	12.3	B	-	13.4	B	-
		SB Left	20.6	C	< 50	20.5	C	51	25.1	C	< 50	22.7	C	56
		SB Thru	16.9	B	< 50	16.7	B	< 50	20.8	C	< 50	20.3	C	< 50
		SB Right	7.0	A	< 50	5.8	A	< 50	8.4	A	53	6.2	A	< 50
5 Williams Field Road / 222nd Street	Minor Street Stop Control	INTERSECTION												
		WB Left	7.8	A	< 50	8.4	A	< 50	8.1	A	< 50	8.5	A	< 50
		NB Left	12.8	B	< 50	14.0	B	< 50	14.3	B	< 50	15.7	C	< 50
		NB Right	9.2	A	< 50	9.8	A	< 50	9.5	A	< 50	10.0	A	< 50
6 Williams Field Road / Signal Butte Road	Traffic Signal	INTERSECTION	12.5	B	-	13.7	B	-	13.8	B	-	14.0		-
		EB Approach	12.5	B	-	11.2	B	-	11.3	B	-	11.2	B	-
		EB Left	16.7	C	< 50	17.3	C	68	17.7	C	68	18.1	C	81.0
		EB Thru/Right	10.4	B	< 50	8.2	A	< 50	8.4	A	< 50	7.5	A	< 50
		WB Approach	19.2	C	-	19.9	C	-	20.1	C	-	20.0	C	-
		WB Left	16.8	C	< 50	16.2	C	< 50	17.1	C	< 50	16.2	C	< 50
		WB Thru/Right	20.3	C	< 50	21.5	C	< 50	21.4	C	< 50	21.7	C	< 50
		NB Approach	10.6	B	-	14.3	B	-	11.8	B	-	14.5	B	-
		NB Left	8.2	A	< 50	9.9	A	69	9.8	A	< 50	11.2	B	89.0
		NB Thru/Right	11.2	B	58	15.4	C	115	12.4	B	58.0	15.6	C	115.0
		SB Approach	12.8	B	-	13.4	B	-	15.0	B	-	14.2	B	-
		SB Left	8.1	A	< 50	10.4	B	52	9.0	A	< 50	11.1	B	52.0
		SB Through/Right	13.3	B	110	14.2	B	66	15.6	C	114.0	15.1	C	72.0

2030 TRAFFIC ANALYSIS WITH PLANNED STUDY AREA IMPROVEMENTS AND MITIGATION #1

Community Street #1 and Williams Field Road is required to be signalized and operational with the opening of the Avalon Crossing residential development. The intersection of Community Street #1 and Williams Field Road is assumed to operate with a 90-second cycle length and protected-permitted left-turn phasing. With the installation of a traffic signal, all movements are anticipated to operate at or above LOS C. The intersection of Crismon Road/Community Street #3 was assumed to operate with a 90-second cycle length and protected-permitted left-turn phasing. With the installation of a traffic signal, all movements are anticipated to operate at or above LOS C. The mitigated level of service for the intersection in 2030 is shown in **Table 7** and the Synchro reports are provided in **Appendix F.**

Table 7: 2030 Level of Service Analysis, Planned Study Area Improvements + Mitigation #1

Intersection		Movement/ Approach	2030 Background + Site (Minor-Street Stop-Control)						2030 Background + Site (Signalized)					
			AM			PM			AM			PM		
			Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)
1	Williams Field Road / Community Street #1	INTERSECTION							15.7	B	-	14.0	B	-
		EB Thru	N/A Under Minor-Street Stop-Control						16.3	B	75.0	16.8	B	104.0
		EB Right	N/A Under Minor-Street Stop-Control						6.4	A	< 50	4.4	A	< 50
		WB Left	8.1	A	< 50	9.7	A	< 50	12.0	B	< 50	8.2	A	< 50
		WB Thru	N/A Under Minor-Street Stop-Control						14.6	B	82.0	7.5	A	< 50
		NB Left	25.2	D	95	37.7	E	93	20.8	C	138	34.0	C	136
		NB Right	9.4	A	< 50	10.0	A	< 50	10.4	B	< 50	11.9	B	< 50

2040 TRAFFIC ANALYSIS WITH PLANNED STUDY AREA IMPROVEMENTS

The 2040 projected traffic volumes were evaluated with the intersection improvements described in the previous sections, which include traffic signals at the following intersections:

- Crismon Road/Williams Field Road
- Community Street #1/Williams Field Road
- Signal Butte Road/Williams Field Road

The resulting level of service analysis for 2040 background and total conditions are shown in **Table 8** and the Synchro reports are provided in **Appendix G**. The signalized intersections are anticipated to operate at LOS C or above during the AM and PM peak hours. All intersection movements within the study area are anticipated to operate at LOS D or above, with the exception of the westbound left-turn movement at Crismon Road / Community Street #3, which is anticipated to operate at LOS F during the AM and PM peak hours with significant delay. As previously mentioned, the intersection of Crismon Road / Community Street #3 is anticipated to meet traffic signal warrants with the opening of commercial/mixed-use parcel and the Crismon Road extension across SR 24. Traffic signal mitigation at this intersection is evaluated in the subsequent section.

Table 8: 2040 Level of Service Analysis, Planned Study Area Improvements

Intersection	Traffic Control	Movement/ Approach	2040 Background						2040 Background + Site					
			AM			PM			AM			PM		
			Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)
1 Williams Field Road / Community Street #1	Traffic Signal	**INTERSECTION**	Intersection Does Not Exist In Background Conditions						**16.7**	**B**	-	**14.1**	**B**	-
		EB Approach							**15.8**	**B**	-	**13.1**	**B**	-
		EB Thru							17.3	B	111	16.0	B	104
		EB Right							6.0	A	< 50	3.2	A	< 50
		WB Approach							**14.1**	**B**	-	**7.0**	**A**	-
		WB Left							10.5	B	< 50	7.6	A	< 50
		WB Thru							14.2	B	131	6.9	A	< 50
		NB Approach							**25.3**	**C**	-	**39.1**	**D**	-
		NB Left							27.4	C	155	43.3	D	136
		NB Right							12.0	B	< 50	13.8	B	< 50
2 Williams Field Road / Community Street #2	Minor Street Stop Control	**INTERSECTION**	Intersection Does Not Exist In Background Conditions											
		NB Right							10.1	B	< 50	11.4	B	< 50
3 Crismon Road / Community Street #3	Minor Street Stop Control	**INTERSECTION**	Intersection Does Not Exist In Background Conditions											
		WB Left							285.8	F	75	263.3	F	90
		WB Right							20.8	C	< 50	13.3	B	< 50
		SB Left							15.5	C	< 50	11.6	B	< 50
4 Williams Field Road / Crismon Road	Traffic Signal	**INTERSECTION**	**27.5**	**C**	-	**25.6**	**C**	-	**32.7**	**C**	-	**29.6**	**C**	-
		EB Approach	**28.8**	**C**	-	**26.6**	**C**	-	**30.4**	**C**	-	**30.3**	**C**	-
		EB Left	46.8	D	130	41.0	D	181	54.2	D	140	47.3	D	188
		EB Thru/Right	22.0	C	62	21.1	C	103	23.2	C	81	26.0	C	175
		WB Approach	**29.2**	**C**	-	**26.4**	**C**	-	**33.3**	**C**	-	**29.6**	**C**	-
		WB Left	42.7	D	138	39.2	D	94	50.4	D	156	45.3	D	112
		WB Thru/Right	24.7	C	88	22.2	C	55	29.9	C	147	25.5	C	90
		NB Approach	**29.5**	**C**	-	**26.7**	**C**	-	**36.3**	**D**	-	**30.5**	**C**	-
		NB Left	35.8	D	165	34.4	C	108	43.6	D	195	39.0	D	123
		NB Thru/Right	26.4	C	290	23.8	C	210	32.4	C	323	27.2	C	221
		SB Approach	**23.6**	**C**	-	**23.1**	**C**	-	**28.9**	**C**	-	**27.6**	**C**	-
		SB Left	37.3	D	68	36.6	D	105	42.1	D	77	43.2	D	125
		SB Thru	29.6	C	213	24.7	C	129	34.9	C	230	28.2	C	138
		SB Right	8.0	A	73	5.9	A	< 50	12.9	B	116	6.2	A	< 50
5 Williams Field Road / 222nd Street	Minor Street Stop Control	**INTERSECTION**												
		WB Left	8.3	A	< 50	9.4	A	< 50	8.6	A	< 50	8.5	A	< 50
		NB Left	18.5	C	< 50	22.3	C	< 50	21.5	C	< 50	15.7	C	< 50
		NB Right	9.8	A	< 50	11.0	B	< 50	10.2	B	< 50	10.0	A	< 50
6 Williams Field Road / Signal Butte Road	Traffic Signal	**INTERSECTION**	**16.1**	**B**	-	**17.6**	**B**	-	**16.4**	**B**	-	**18.5**	**B**	-
		EB Approach	**15.8**	**C**	-	**15.7**	**C**	-	**16.0**	**C**	-	**16.1**	**C**	-
		EB Left	23.3	C	83	25.6	D	127	25.6	D	108	27.6	D	144
		EB Thru/Right	12.1	B	< 50	10.7	B	62	10.8	B	< 50	10.2	B	63
		WB Approach	**24.8**	**C**	-	**24.6**	**C**	-	**25.2**	**D**	-	**24.7**	**C**	-
		WB Left	22.6	C	< 50	21.3	C	< 50	23.1	C	< 50	21.4	C	< 50
		WB Thru/Right	25.7	D	< 50	26.0	D	< 50	26.1	D	< 50	26.1	D	< 50
		NB Approach	**12.2**	**B**	-	**18.3**	**C**	-	**12.4**	**B**	-	**19.0**	**C**	-
		NB Left	12.0	B	65	12.8	B	101	13.0	B	78	16.5	C	138
		NB Thru/Right	12.3	B	90	19.6	C	195	12.2	B	90	19.8	C	195
		SB Approach	**17.7**	**C**	-	**17.1**	**C**	-	**18.1**	**C**	-	**18.5**	**C**	-
		SB Left	9.6	A	< 50	17.0	C	82	9.7	A	< 50	17.7	C	85
		SB Through/Right	18.6	C	185	17.1	C	108	19.0	C	187	18.8	C	121

2040 TRAFFIC ANALYSIS WITH PLANNED STUDY AREA IMPROVEMENTS AND MITIGATION #2

The installation of a traffic signal is recommended to mitigate the heavy delay anticipated on the westbound approach of Crismon Road/Community Street #3. Based on the projected volumes, traffic signal warrants are anticipated to be met at this intersection by 2040. The intersection of Crismon Road/Community Street #3 was assumed to operate with a 90-second cycle length and permitted left-turn movements. With the installation of a traffic signal, all movements are anticipated to operate at or above LOS C. The mitigated level of service for the intersection in 2040 is shown in **Table 9**, and the Synchro reports are provided in **Appendix H.**

Table 9: 2040 Level of Service Analysis, Planned Study Area Improvements + Mitigation #2

Intersection		Movement/ Approach	2040 Background + Site (Minor-Street Stop-Control)						2040 Background + Site (Traffic Signal)					
			AM			PM			AM			PM		
			Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)	Average Delay (sec/veh)	LOS	95th %-ile Queue (ft)
3	Crismon Road / Community Street #3	INTERSECTION							5.2	A	-	4.4	A	-
		WB Left	285.8	F	75	263.3	F	90	29.1	C	< 50	29.9	C	< 50
		WB Right	20.8	C	< 50	13.3	B	< 50	21.7	C	61	11.4	B	< 50
		NB Thru	N/A Under Minor-Street Stop-Control						4.9	A	192	3.0	A	75
		NB Right	N/A Under Minor-Street Stop-Control						1.3	A	< 50	0.8	A	< 50
		SB Left	15.5	C	< 50	11.6	B	< 50	7.5	A	< 50	5.1	A	< 50
		SB Thru	N/A Under Minor-Street Stop-Control						3.3	A	86	4.2	A	147

DECELERATION LANES

The need for left-turn and right-turn lanes at the site access points were determined based on the 2019 City of Mesa Engineering & Design Standards and the 2020 MCDOT Roadway Design Manual. The City of Mesa indicates that right-turn lanes may be provided for residential access points that serve 100 or more dwelling units. Multiple access points are proposed to serve the site; therefore, the MCDOT criteria was also referenced. The MCDOT Roadway Design Manual recommends the use of a right-turn deceleration when either of the following is met:

1. The outside lane has an expected volume of 250 vph or greater and the right turn volume is 55 vph.
2. Any three of the below criteria are met:
    a. At least 5,000 vehicle per day are using or are expected to be using the adjacent street.
    b. The roadway's posted speed limit is greater than 35 mph.
    c. At least 1,000 vehicles per day are using or are expected to use the driveway.
    d. At least 30 vehicles are expected to make right-turns into the driveway within a one-hour period.

Based on the criteria above, right-turn lanes are warranted at Community Street #1, Community Street #2, and Community Street #3. The northbound right-turn lane at Community Street #3 is recommended to be constructed when Crismon Road extends south beyond Community Street #3. Left-turn deceleration lanes are recommended on arterials at intersections that permit left-turn movements; therefore, left-turn lanes are recommended at Community Street #1 and Community Street #3.

RECOMMENDED TURN LANE DIMENSIONS

Recommendations were developed for the turn lane dimensions (storage length and taper length) based on national best practices and City Standards. Queue length was evaluated based on the methodology in the AASHTO Green Book – A Policy on Geometric Design of Highways and Streets (Section 9.7 Auxiliary Lanes) and the City Standards documented in the City of Mesa Standard Details.

The AASHTO Green Book recommends that turn lanes at an unsignalized intersections provide enough the storage length to accommodate the number of vehicles likely to arrive in a 2-minute period. A vehicle length of 25 feet was assumed, and the queue lengths are rounded up to the nearest 25-foot increment.

The City of Mesa Engineering and Standards Details provide the following guidance for minimum turn lane dimensions:

- Left-turn lanes within a median: 150 feet of storage and 100 feet of reverse curve
- Right-turn lanes on an arterial: 150 feet of storage and 100 feet of taper

Recommendations for storage and taper lengths were made to meet both AASHTO and City of Mesa guidance and are summarized in **Table 10.**

Table 10: Queue Storage Analysis

	Intersection	Traffic Control	Movement	AM/PM Volume (vph)	Queue Storage (ft)		Recommended Dimensions (ft)		
					AASHTO	City Minimum	Taper	Storage	Total
1	Community Street #1 & Williams Field Road	Traffic Signal							
			WB Left	24 / 80	75	150	100	150	250
			EB Right	61/200	200	150	100	200	300
2	Community Street #2 & Williams Field Road	Minor Street Stop Control							
			EB Right	12 /40	50	150	100	150	250
3	Community Street #3 & Crismon Road	Traffic Signal							
			NB Right	18 / 39	50	150	100	150	250
			SB Left	42 / 109	125	150	100	150	250

All recommended deceleration lanes are recommended to have a taper length of 100 feet. All storage lengths are recommended to be 150 feet, with the exception of the eastbound right-turn lane at Community Street #1, which is recommended to be extended to 200 feet.

RECOMMENDED IMPROVEMENTS

The 2040 recommended lane configurations and traffic control are shown in **Figure 30**. By 2040, traffic signals are recommended at Williams Field Road/Crismon Road, Williams Field Road/Community Street #1, Williams Field Road/Signal Butte Road, and Crismon Road/Community Street #3.

WILLIAMS FIELD ROAD / COMMUNITY STREET #1

Williams Field Road and Community Street #1 will be signalized per Mesa requirements by the opening year of the residential development. An eastbound right-turn lane and westbound left-turn lane are recommended. The northbound approach exiting the development should consist of one left-turn lane and one right-turn lane.

WILLIAMS FIELD ROAD / COMMUNITY STREET #2

Williams Field Road and Community Street #2 will operate as a right-in, right-out access. An eastbound right-turn lane is recommended. Adequate levels of services are anticipated using one shared lane on the northbound approach for exiting vehicles. A STOP sign should be installed on the northbound approach.

CRISMON ROAD/COMMUNITY STREET #3

Crismon Road and Community Street #3 is recommended to be signalized by 2040, however, it is likely to meet warrants when the adjacent commercial/mixed use parcel is developed and Crismon Road extends across SR 24. As development in the area grows and the roadway network expands, traffic volumes and signal needs should be monitored to determine appropriate installation timing. A southbound left-turn lane is recommended to be constructed by the opening year of the development, and a northbound right-turn lane is recommended to be constructed when Crismon Road extends south beyond Community Street #3. The westbound approach exiting the development should consist of one left-turn lane and one right-turn lane. The intersection may include a west leg in the future to support traffic west of Crismon Road; the approach striping should be modified as needed in the future to accommodate through movements. Prior to signalization, a STOP sign should be installed on the westbound approach.

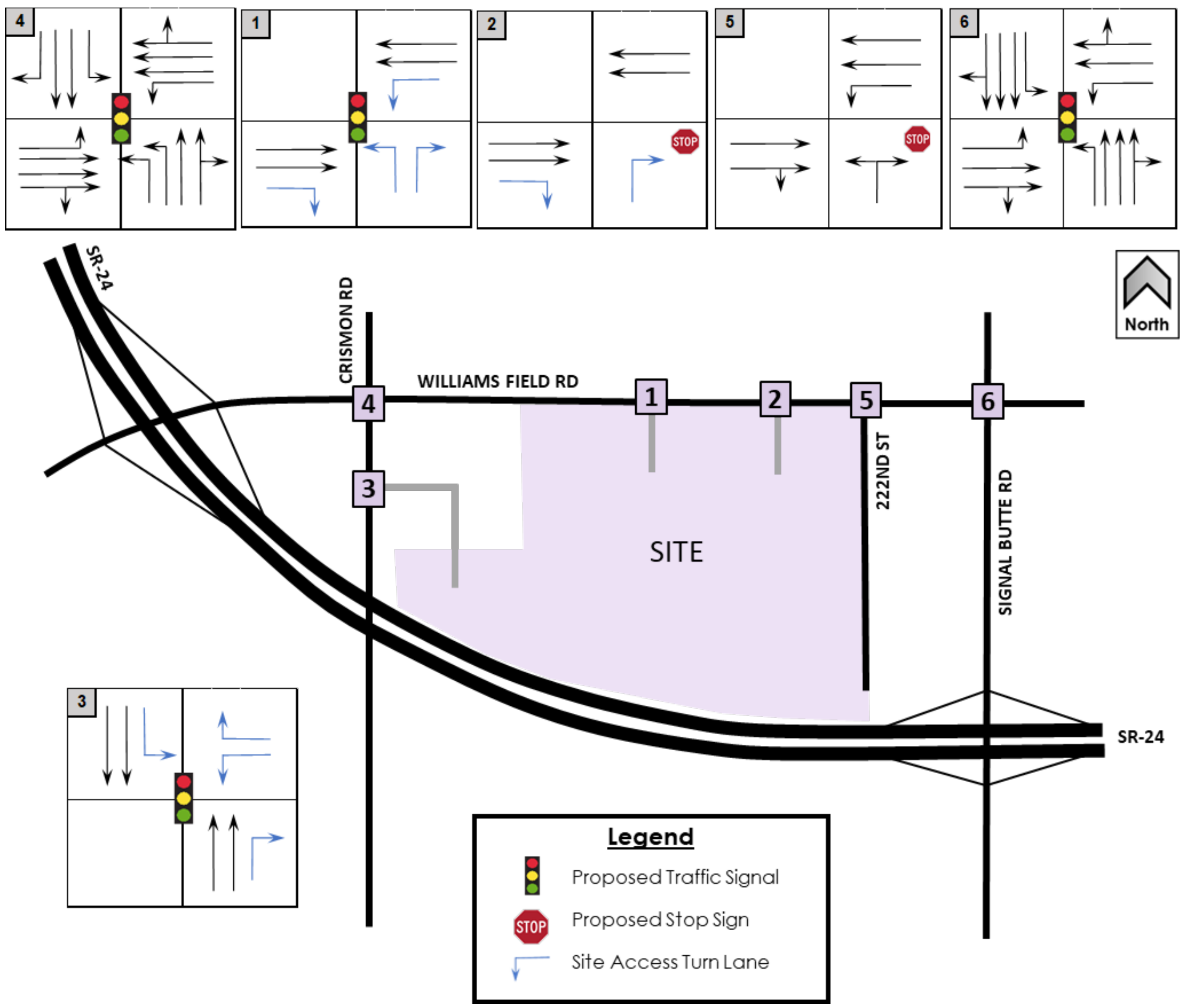


Figure 30: 2040 Recommended Lane Configurations and Traffic Control

PRINCIPAL FINDINGS

TRIP GENERATION

- The Avalon Crossing residential development is anticipated to generate a total of 6,024 weekday daily trips (entering and exiting) with 484 trips during the AM peak hour and 635 trips during the PM peak hour.

ANALYSIS YEARS AND ROAD NETWORK ASSUMPTIONS

- The area surrounding the Avalon Crossing site is mostly undeveloped and is planned to experience significant growth over the next 20 years. The arterial network surrounding the site (Crismon Road, Williams Field Road, and Signal Butte Road) will be built as the area develops.
- State Route 24 (SR 24) is currently under construction to be extended to the east, from Ellsworth Road to Ironwood Road.
- Crismon Road is planned to extend to the south to Germann Road by 2040, with a grade-separated crossing at SR 24.

SITE ACCESS

- Three new access roadways are planned to provide access to the site, two on Williams Field Road and one on Crismon Road.
- Williams Field Road/Community Street #1 is proposed approximately 2,500 feet east of Crismon Road as a full access median opening.
- Williams Field Road/Community Street #2 is proposed approximately 1,125 feet east of Community Street #1 without a median opening (right-in, right-out only).
- Crismon Road/Community Street #3 is proposed approximately 660 feet south of Williams Field Road as a full access median opening.

TRAFFIC SIGNAL WARRANT ANALYSIS

- Crismon Road/Williams Field Road and Signal Butte Road/Williams Field Road are anticipated to meet signal warrants by 2030, with and without site traffic.
- Community Street #1/Williams Field Road and Crismon Road/Community Street #3 are anticipated to meet signal warrants by 2040 with site traffic.

LEVEL OF SERVICE ANALYSIS

- Level of service was analyzed based on planned capacity improvements noted by the City of Mesa, including the widening of Crismon Road, Williams Field Road, and Signal Butte Road, as well as the signalization of Crismon Road/Williams Field Road and Signal Butte Road/Williams Field Road.
- The 2030 analysis of total traffic conditions indicated that all intersections are anticipated to operate adequately, with the exception of the northbound left-turn movement at Community Street #1/Williams Field Road, which is anticipated to operate at LOS E during the PM peak hour.
- The City of Mesa indicated that the intersection of Community Street #1 and Williams Field Road is required for signalization with the opening of the development. With mitigation of a traffic signal, the overall intersection is anticipated to operate at LOS B during the AM and PM peak hours. The northbound left-turn movement is mitigated to LOS C during the AM and PM peak hours.
- The 2040 analysis of total traffic conditions indicated that all movements operated at or above LOS D, with the exception westbound approach at Crismon Road/Community Street #3, which is anticipated to experience significant delay and operate at LOS F during the AM and PM peak hours.

- Crismon Road/Community Street #3 is anticipated to meet traffic signal warrants by 2040, with the extension of Crismon Road across SR 24. With mitigation of a traffic signal, the overall intersection is anticipated to operate at LOS A during the AM and PM peak hours in 2040. The westbound approach is mitigated to a LOS C during the AM and PM peak hours.

AUXILIARY LANE ANALYSIS

- Eastbound right-turn lanes are warranted and recommended at Community Street #1 and Community Street #2 at the time of site opening.
- A northbound right-turn lane is warranted and recommended at Community Street #3 when Crismon Road is extended further south beyond Community Street #3.
- Left-turn lanes are warranted and recommended at Community Street #1 and Community Street #3 at the time of site opening.

RECOMMENDATIONS

A traffic signal at the intersection of Signal Butte Road and Williams Field Road is currently programmed as a CIP project. In addition, roadway improvements are planned along Crismon Road, Williams Field Road, and Signal Butte Road to accommodate growth in future traffic. Aside from these planned improvements, the following improvements are recommended to support the Avalon Crossing development:

- Install a traffic signal at Crismon Road/Williams Field Road by the opening year of the residential development.
  - → Note: Financial responsibility of improvements was not assessed within this study. Further coordination between involved parties is anticipated as site development continues.
- Install a traffic signal at Community Street #1/Williams Field Road by the opening year of the residential development.
- Install a STOP sign on the northbound approach of Community Street #2.
- During initial construction of Crismon Road/Community Street #3, box the signal equipment to support the future signalization of the intersection. Provide a STOP sign on the westbound approach until the intersection becomes signalized.
  - → Note: The intersection of Crismon Road/Community Street #3 is anticipated to meet warrants by 2040, but will likely meet warrants when the adjacent commercial/mixed use parcel is developed and Crismon Road extends across SR 24. As development in the area grows and the roadway network expands, it is recommended to monitor traffic volumes and signal needs to determine appropriate installation timing.
- Per Mesa requirements, half-street improvements are required on Crismon Road south to Community Street #3 and Williams Field Road along the commercial, mixed-use, and residential site frontage.
- Install an EB right-turn lane at Community Street #1 (storage length of 200’, taper length of 100’).
- Install a WB left-turn lane at Community Street #1 (storage length of 150’, taper length of 100’).
- Install an EB right-turn lane at Community Street #2 (storage length of 150’, taper length of 100’).
- Install a SB left-turn lane at Community Street #3 (storage length of 150’, taper length of 100’).
- Install a NB right-turn lane at Community Street #3 when Crismon Road is extended further south beyond Community Street #3 (storage length of 150’, taper length of 100’).

APPENDICES

APPENDIX A: REVIEW COMMENTS

April 23, 2021

RE: Avalon Crossing TIA – Response to Traffic Impact Analysis Review Comments, Submittal 2

Comments Received from: Peter Vargas, Peter.Vargas@MesaAZ.gov, Sabine Ellis, Sabine.Ellis@MesaAZ.gov

The following responses are based on TIA comments and direction provided by the City of Mesa on January 26, 2021 (RE Submittal #1) and on April 13, 2021 (RE Submittal #2). Comments pertaining to Submittal #2 were clarified by email with Mesa on April 21, 2021. The review comments are provided as an attachment following the comment response table. Revised naming convention for the access points was requested by the City of Mesa. The future access roadways to the site are referred to in the comments as described below:

- Williams Field Road/Community Street #1 (previously referred to as Access A in TIA)
- Williams Field Road/Community Street #2 (previously referred to as Access B in TIA)
- Crismon Road/Community Street #3 (previously referred to as Access C in TIA)

TIA Review Comments, Submittal #1:

Comment #	Page #	Comment	Response to Comment
1.	Cover	This TIS will have to be reviewed and approved by MCDOT and ADOT.	*Review by MCDOT and ADOT is acknowledged.*
2.	Page 5 of 195	The signal at [Williams Field Road/Community Street #1] will have to be installed with the first phase of the project (opening year), at the developer's cost.	*The TIA was updated to reflect signalization at Williams Field Road/Community Street #1 in the opening year.*
3.	Page 5 of 195	[Williams Field Road/Community Street #2] needs to be right-in/right-out only because there has to be an eastbound left turn lane at 222nd St to access the driveway to the north. [Regarding Crismon Road/Community Street #3] Figure 27 shows right in, right out, left in. Please clarify. What you are describing here would be full access. Which, at 880' from Williams Field, would be acceptable.	*The TIA was updated to reflect right-in, right-out access at Williams Field Road/Community Street #2.* *Crismon Road/Community Street #3 is intended to operate as a full access intersection. The limited movements described in 2030 are due to the assumed termination of Crismon Road at Community Street #3. By 2040, it is assumed that Crismon Road will be extended across SR 24, and all movements will be possible at Crismon Road / Community Street #3. The TIA has been updated to clarify access.*

			Based on communication the City of Mesa and the development team, the full access intersection of Crismon Road and Community Street #3 will be permitted at a distance of 660 feet south of Williams Field Road.
4.	Page 6 of 195	Per previous comment, [Williams Field Road/Community Street #1] will need to be signalized right away.	*The TIA was updated to reflect signalization at Williams Field Road/Community Street #1 in the opening year.*
5.	Page 7 of 195	What is the expected opening year?	*The opening year is anticipated to be 2023. This information was added to the TIA.*
6.	Page 9 of 195	Since this project will share [Crismon Road / Community Street #3] with the commercial/mixed use area, an estimated trip generation will have to be included with this TIS to verify the access needs (turn lanes, signalization, etc.) to avoid rework in the future.	*The TIA was updated to include assumptions for the commercial/mixed-use development on the SEC of Crismon Road and Williams Field Road.*
7.	Page 11 of 195	This project will have to build the half-street improvements for Crismon and Williams Field adjacent to the commercial parcel.	*The requirement to build half-street improvements adjacent to the commercial/mixed-use parcel was added to the the TIA in the Executive Summary and Recommendations.*
8.	Page 11 of 195	Provide an east-west connection. – See study for suggested location.	*A east-west connection with a greater cross-sectional width is provided in the updated site plan. The roadway will not provide direct residential frontage, but will provide a connection to the clustered single-family home cul-de-sacs.*
9.	Page 11 of 195	This site plan does not match what was shared on 1/5/2020.	*The revised site plan has been included in the TIA.*
10.	Page 13 of 195	With [Crismon Road / Community Street #3] being the major collector for the future commercial, I expect that this location be signalized in the future and should be boxed in with this project.	*The TIA was updated to include the commercial/mixed-use parcel on the SEC of Crismon Road and Williams Field Road. With the additional traffic, the intersection of Crismon Road/Community Street #3 is anticipated to meet signal warrants by 2040 with the commercial/mixed-use development. A recommendation to box the intersection at the time of initial construction was added to the report.*

11.	Page 19 of 195	[Regarding access at Williams Field Road / Community Access #2] Right-in/right-out.	*The TIA was updated to reflect right-in, right-out access at Williams Field Road/Community Street #2.*
12.	Page 20 of 195	Crismon will be built in 2040.	*Corrected Figure 13 to show extension.*
13.	Page 30 of 195	[Regarding Crismon Road / Community Street #3] This shows a full access.	*The TIA was updated to clarify full access at Crismon Road / Community Street #3.*
14.	Page 34 of 195	[Regarding 2030 capacity analysis at Williams Field Road / Community Street #1] Change to signalized.	*The TIA was updated to reflect signalization at Williams Field Road/Community Street #1 in the opening year.*
15.	Page 36 of 195	Also include a right turn deceleration lane at [Crismon Road and Community Street #3]. It will serve commercial in the future an traffic will be higher than shown in this study.	*The TIA has been updated to reflect the recommendation for a northbound right-turn lane at Crismon Road/Community Street #3 when Crismon Road extends south beyond Community Street #3.*
16.	Page 38 of 195	[Regarding Crismon Road / Community Street #3] NB dedicated right turn lane.	*The TIA has been updated to reflect the recommendation for a northbound right-turn lane at Crismon Road/Community Street #3 when Crismon Road extends south beyond Community Street #3.*

TIA Review Comments, Submittal #2:

Comment #	Page #	Comment	Response to Comment
1.	Page 6 and 47 of 200	The term "programmed" is confusing. Crismon & Williams Field needs to be built by this development whereas Signal Butte & Williams Field is a (programmed) CIP project. Keep this paragraph but move the Crismon & Williams Field intersection to the first bullet point below, with Community St 1 & Williams Field.	*The discussion was clarified that signal improvements at Crismon Road and Williams Field Road are to be built by the opening year of Avalon Crossing while the signal at Signal Butte Road and Williams is a programmed CIP improvement.*
2.	Page 38 of 200	We would do both, NB and SB duals and protected-only phasing.	*2030 and 2040 traffic analyses and report text were updated to provide dual left-turn lanes and protected-only phasing.*
3.	Page 41 of 200	This table is missing the location on the left.	*Table updated.*

APPENDIX B: SITE PLAN

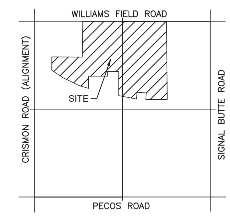
PRELIMINARY PLAT FOR AVALON CROSSING

A PORTION OF LAND LOCATED IN THE NORTH HALF OF SECTION 35, TOWNSHIP 1 SOUTH, RANGE 7 EAST, OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA

OWNER / DEVELOPER
PACIFIC PROVING, L.L.C.
2801 EAST CAMELBACK RD.
SUITE 450
PHOENIX, AZ 85016
PHONE: (602) 268-8181
CONTACT: ANDREW COHN

SUBDIVIDER
SHEA HOMES
8800 NORTH GAINEY CENTER DR.
SUITE 350
SCOTTSDALE, AZ 85258
PHONE: (602) 616-3257
CONTACT: MATT TELBAN

CVL DESIGN TEAM
COE AND VAN LOO L.L.C.
4550 N. 12TH STREET
PHOENIX, AZ 85014
PHONE: (602) 285-4708
CONTACT: CURT JOHNSON



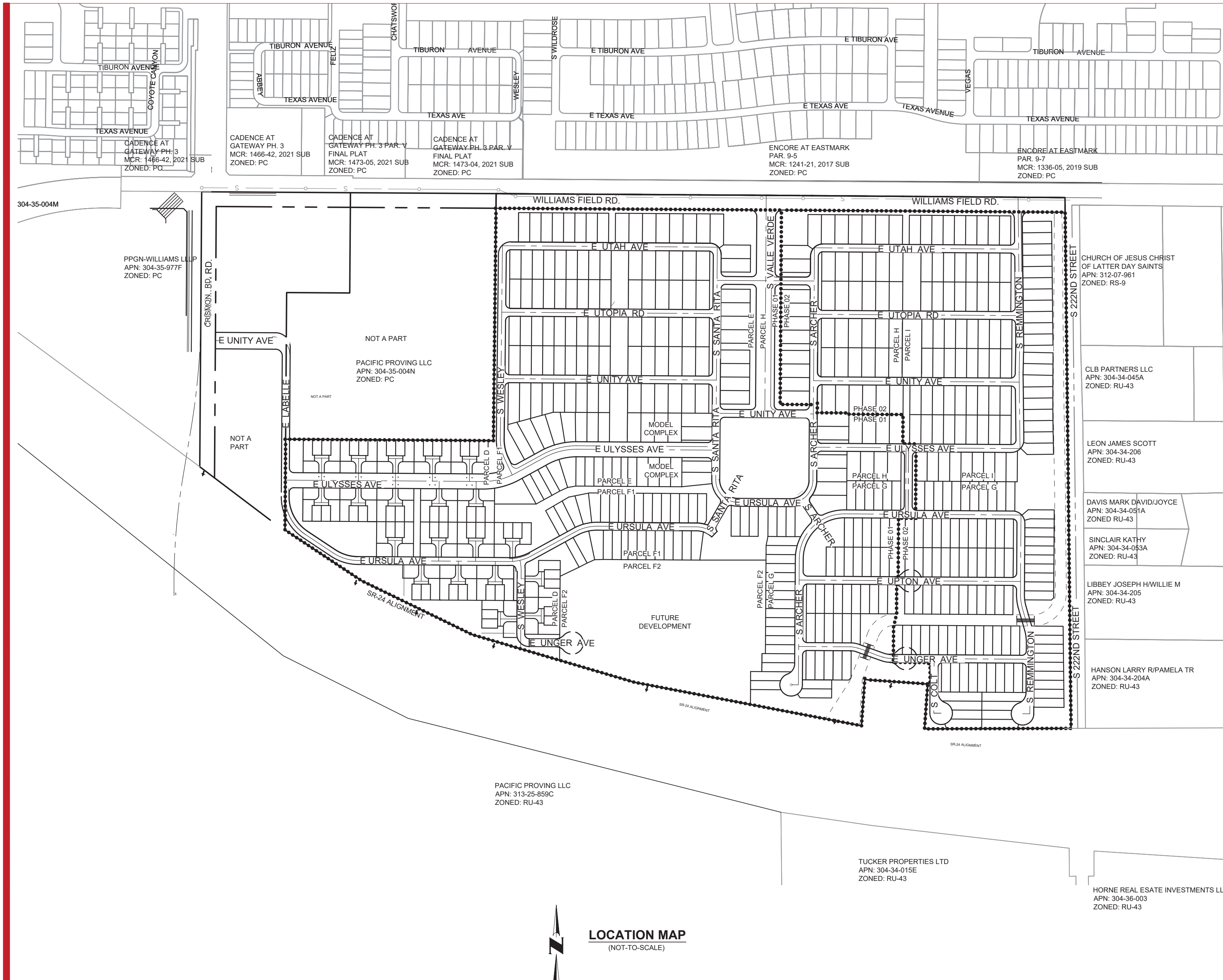
VICINITY MAP
(NOT-TO-SCALE)

LEGEND

	PROPOSED LOTS
	PROPOSED ROW
	PROPOSED CENTER LINE
	(S.V.T.) SIGHT VISIBILITY TRIANGLE
1' V.N.A.E.	(V.N.A.E.) INDICATES VEHICULAR NON-ACCESS EASEMENT
8' PUFE	(PUFE) INDICATES PUBLIC UTILITY AND FACILITIES EASEMENT
1	INDICATES 21' X 21' VISIBILITY TRIANGLE EASEMENT
	SEWER LINE
	WATER LINE
	FIRE HYDRANT

SHEET INDEX

SHEET 01 - COVER SHEET / GENERAL NOTES / KEY MAP / SITE DATA TABLE / DEVELOPMENT STANDARDS TABLE
SHEET 02 - LOCATION MAP
SHEET 03 - LOT AREA TABLE
SHEET 04 - TRACT TABLE/CENTERLINE TABLE/CENTERLINE/CURVE TABLE
SHEETS 05-20 - PRELIMINARY PLAT
SHEET 21 - TYPICAL LOT DETAILS/ROADWAY CROSS SECTION DETAILS
SHEET 22 - PARKING AND REFUSE EXHIBIT



LOCATION MAP
(NOT-TO-SCALE)

CVL CONSULTANTS

4550 N. 12th Street . Phoenix, AZ, 85014 . phone 602.264.6831 . fax 602.264.0928 . www.cvlci.com
Civil Engineering . Water Systems . Wastewater Treatment . Land Planning . Energy . Land Survey . Landscape Architecture . Construction Management

37325 RYAN WEED ARIZONA, U.S.A.

SHEET 02 OF 22

RECORD ID #

DATE: 4/5/2021

N:\0734\01\CADD\Preliminary\PS PRE PLAT.dwg

APPENDIX C: TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

RESULTS

FUTURE TRAFFIC SIGNAL WARRANT - 2030 Background

INFORMATION			
Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081	Date of Count:	
Condition:	2030 Background	N/A	
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Crismon Road	2 or more lanes	

TRAFFIC SIGNAL WARRANT	SATISFIED?
Warrant 1, Eight-Hour Vehicular Volume	YES
Warrant 2, Four-Hour Vehicular Volume	YES
Warrant 3, Peak Hour	NOT CONSIDERED
Warrant 4, Pedestrian Volume	NOT CONSIDERED
Warrant 5, School Crossing	NOT CONSIDERED
Warrant 6, Coordinated Signal System	NOT CONSIDERED
Warrant 7, Crash Experience	NOT CONSIDERED
Warrant 8, Roadway Network	NOT CONSIDERED

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. If a warrant or warrants are met, an engineering study and judgement decide if a traffic signal should be installed.

Warrant 1, Eight-Hour Vehicular Volume[1]

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	YES	NO	NO	
# Hours Met?	8	2	13	4
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Warrant 2, Four-Hour Vehicular Volume[3]

Condition Satisfied?	YES
# Hours Met?	9
Applicable Figure/Plot Line:	Figure 4C-2/2&2

3. **Warrant 2, Four-Hour Vehicular Volume** signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Background		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Crismon Road	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 1, Eight-Hour Vehicular Volume[1] Results

WARRANT 1 SATISFIED? YES

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	YES	NO	NO	
# Hours Met?	8	2	13	4
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Per MUTCD 2009: Warrant 1, Eight-Hour Vehicular Volume
Support:
01 The 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.

02 The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

03 It is intended that Warrant 1 be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

Standard:
04 The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or
B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and

In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

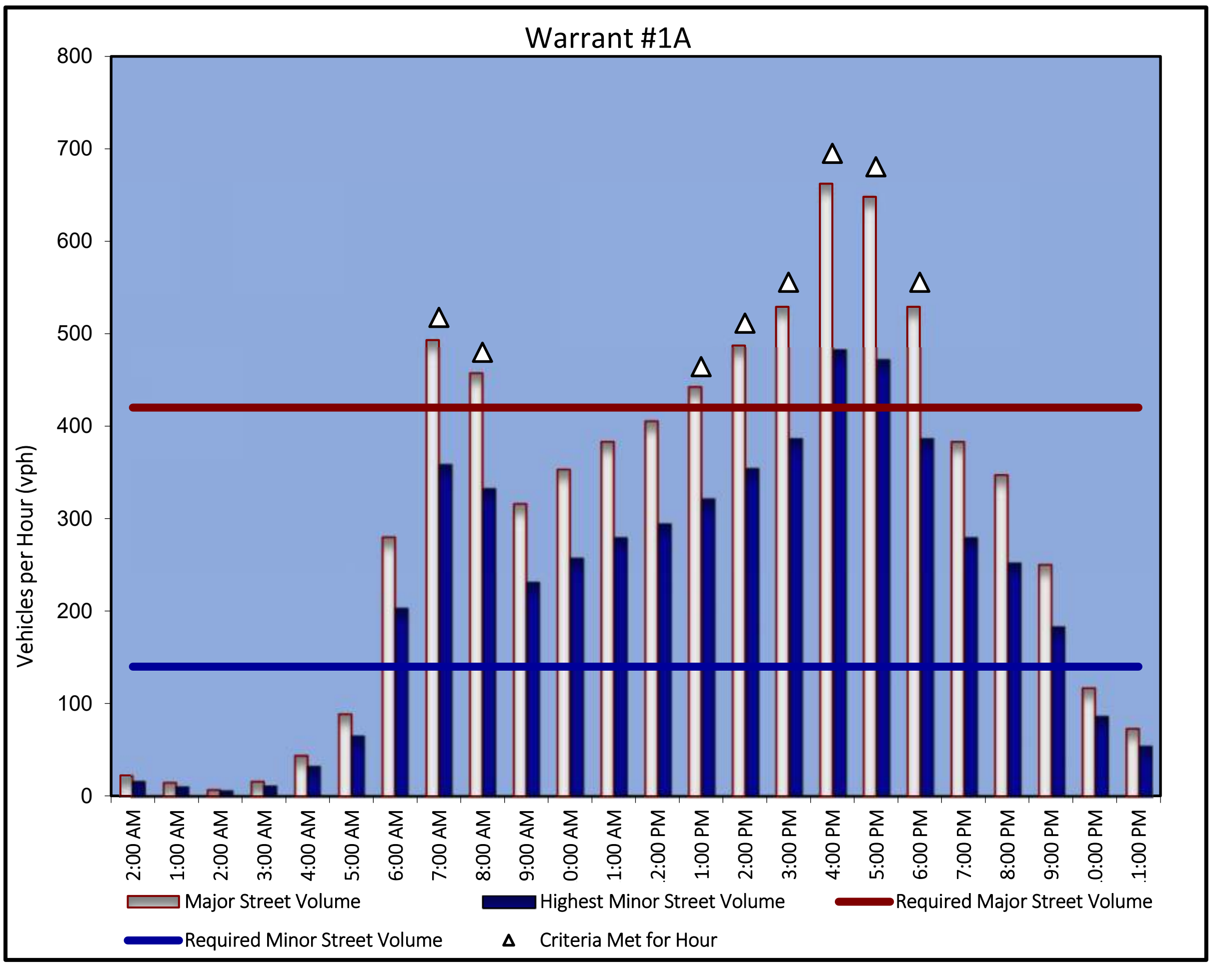
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Background		
Major Street:	Williams Field Road		2 or more lanes
Minor Street:	Crismon Road		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1A
Minimum Vehicular Volume

Required Volume for Major Street:	420
Required Volume for Minor Street:	140
Number of Hours Satifisfied:	8
Number of Hours satisfied by less than 10%:	2
Number of hours within 10% of being satisfied:	3
Warrant Met?:	**YES**

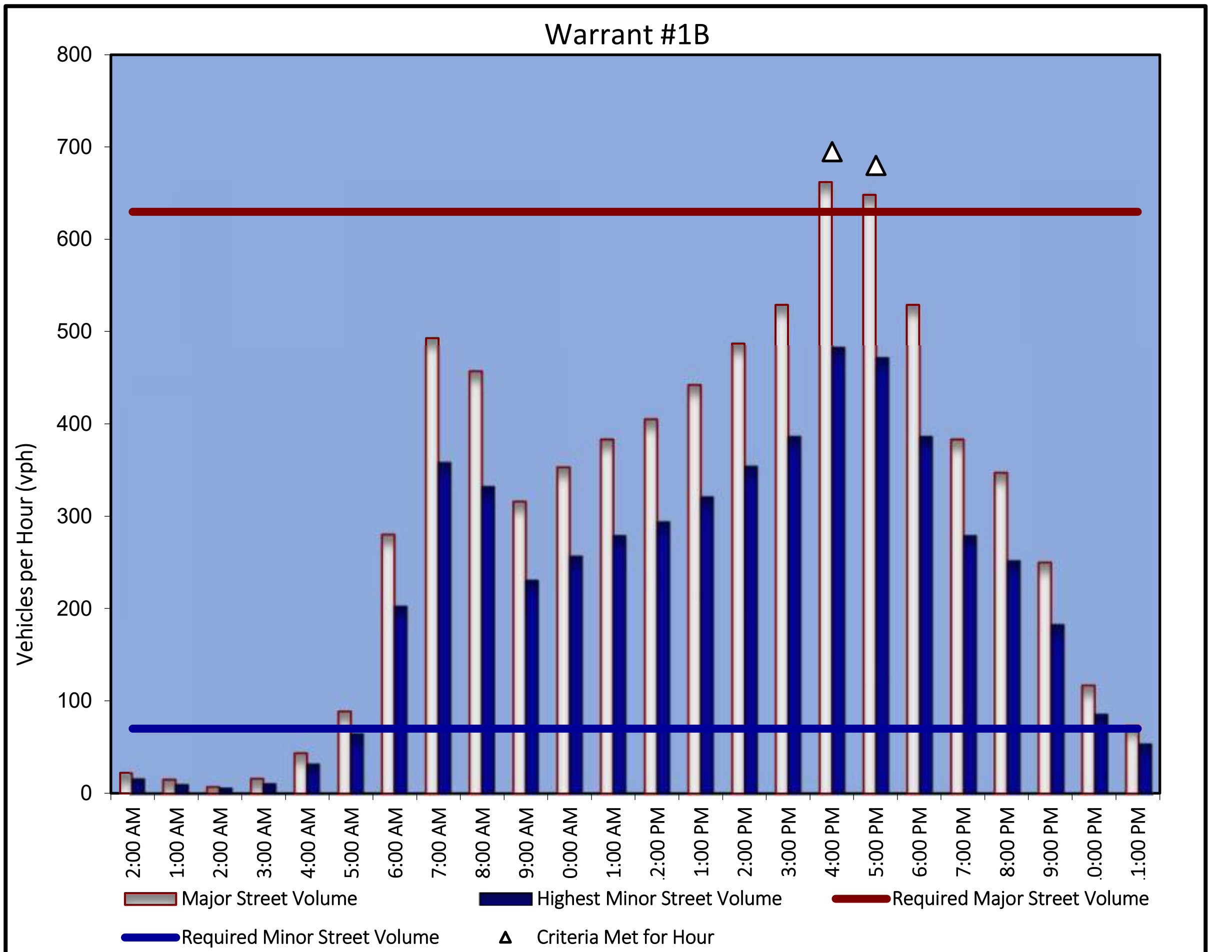


The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Background		
Major Street:	Williams Field Road		2 or more lanes
Minor Street:	Crismon Road		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1B Interruption of Continuous Traffic	
Required Volume for Major Street:	630
Required Volume for Minor Street:	70
Number of Hours Satifisfied:	2
Number of Hours satisfied by less than 10%:	2
Number of hours within 10% of being satisfied:	0
Warrant Met?:	**NO**



The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

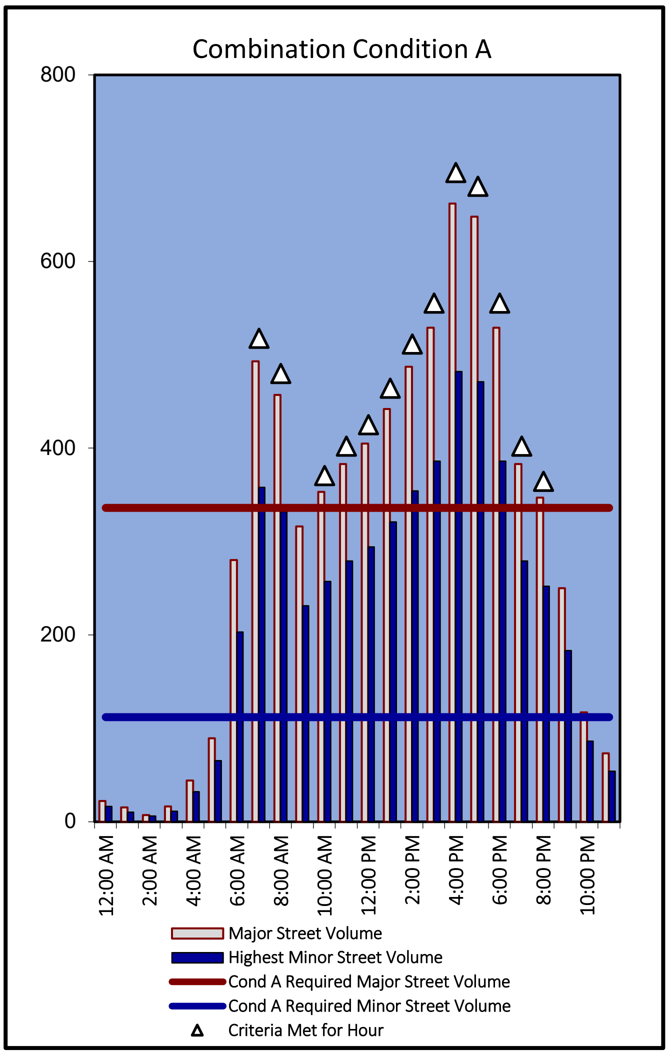
TRAFFIC SIGNAL WARRANT TOOL

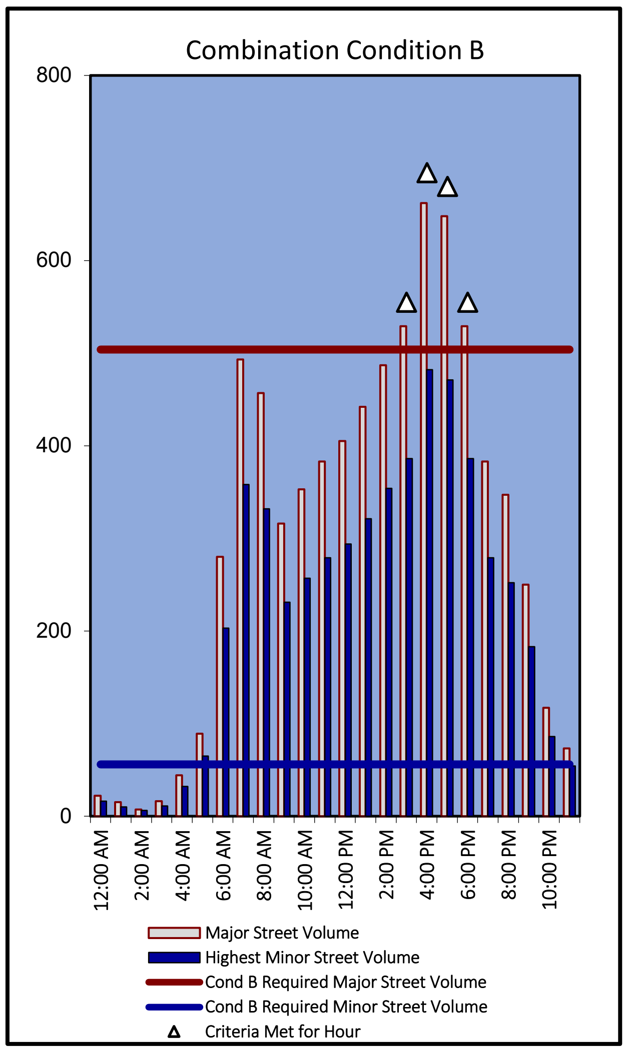
Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Background		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Crismon Road	2 or more lanes	
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1 COMBINATION OF CONDITIONS A & B

Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

	Condition A	Condition B
Required Volume for Major Street:	336	504
Required Volume for Minor Street:	112	56
Number of Hours Satifisfied:	13	4
Warrant Met?:	NO	





The satisfaction of a traffic signal warrant or warrants shall not in itself
require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Background		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Crismon Road	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume Results

WARRANT 2 SATISFIED? YES

Number of Hours Satisfied: 9

Applicable Figure/Plot Line: Figure 4C-2/2&2

Per MUTCD 2009: Warrant 2, Four-Hour Vehicular Volume

Support:

01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

02 The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the 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) all fall above the applicable curve in Figure 4C-1 for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

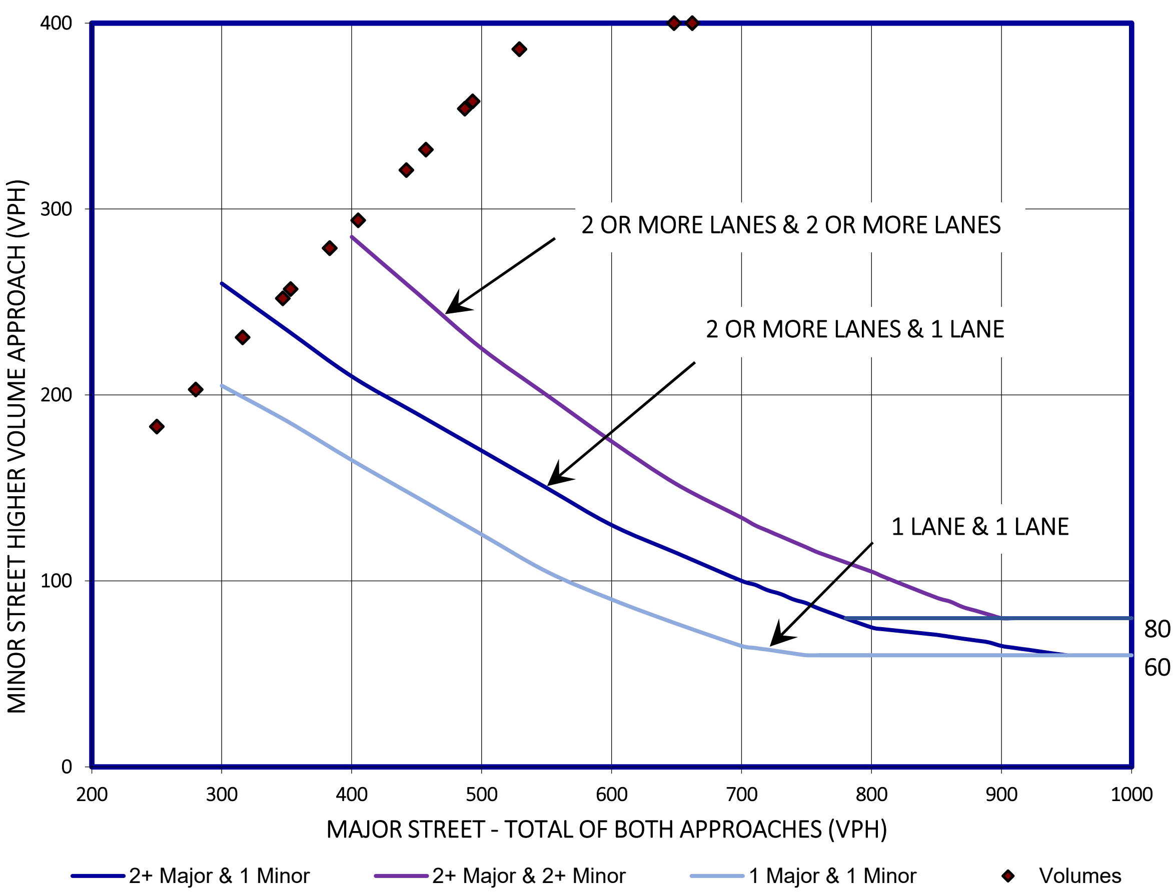
TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Background		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Crismon Road	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume
WARRANT 2 SATISFIED? YES
Number of Hours Satisfied: 9
Applicable Figure/Plot Line: **Figure 4C-2/2&2**

Figure 4C-2, Warrant 2, Four-Hour Vehicular Volume (70% Factor)

Community less than 10,000 population or above 40 mph on Major Street



Note: 80 vph applies as the lower threshold volume for a minor approach with two or more lanes, and 60 vph applies as the lower threshold volume for a minor approach with one lane. Major volumes greater than 1,000 vph are plotted on 1,000 axis.

RESULTS

FUTURE TRAFFIC SIGNAL WARRANT - 2030 Total

INFORMATION			
Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081	Date of Count:	
Condition:	2030 Total	N/A	
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Crismon Road	2 or more lanes	

TRAFFIC SIGNAL WARRANT	SATISFIED?
Warrant 1, Eight-Hour Vehicular Volume	YES
Warrant 2, Four-Hour Vehicular Volume	YES
Warrant 3, Peak Hour	NOT CONSIDERED
Warrant 4, Pedestrian Volume	NOT CONSIDERED
Warrant 5, School Crossing	NOT CONSIDERED
Warrant 6, Coordinated Signal System	NOT CONSIDERED
Warrant 7, Crash Experience	NOT CONSIDERED
Warrant 8, Roadway Network	NOT CONSIDERED

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. If a warrant or warrants are met, an engineering study and judgement decide if a traffic signal should be installed.

Warrant 1, Eight-Hour Vehicular Volume[1]

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	YES	YES	YES	
# Hours Met?	15	8	16	13
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Warrant 2, Four-Hour Vehicular Volume[3]

Condition Satisfied?	YES
# Hours Met?	13
Applicable Figure/Plot Line:	Figure 4C-2/2&2

3. **Warrant 2, Four-Hour Vehicular Volume** signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Crismon Road	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 1, Eight-Hour Vehicular Volume[1] Results

WARRANT 1 SATISFIED? YES

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	YES	YES	YES	
# Hours Met?	15	8	16	13
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Per MUTCD 2009: Warrant 1, Eight-Hour Vehicular Volume

Support:

01 The 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.

02 The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

03 It is intended that Warrant 1 be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

Standard:

04 The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or
B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and

In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

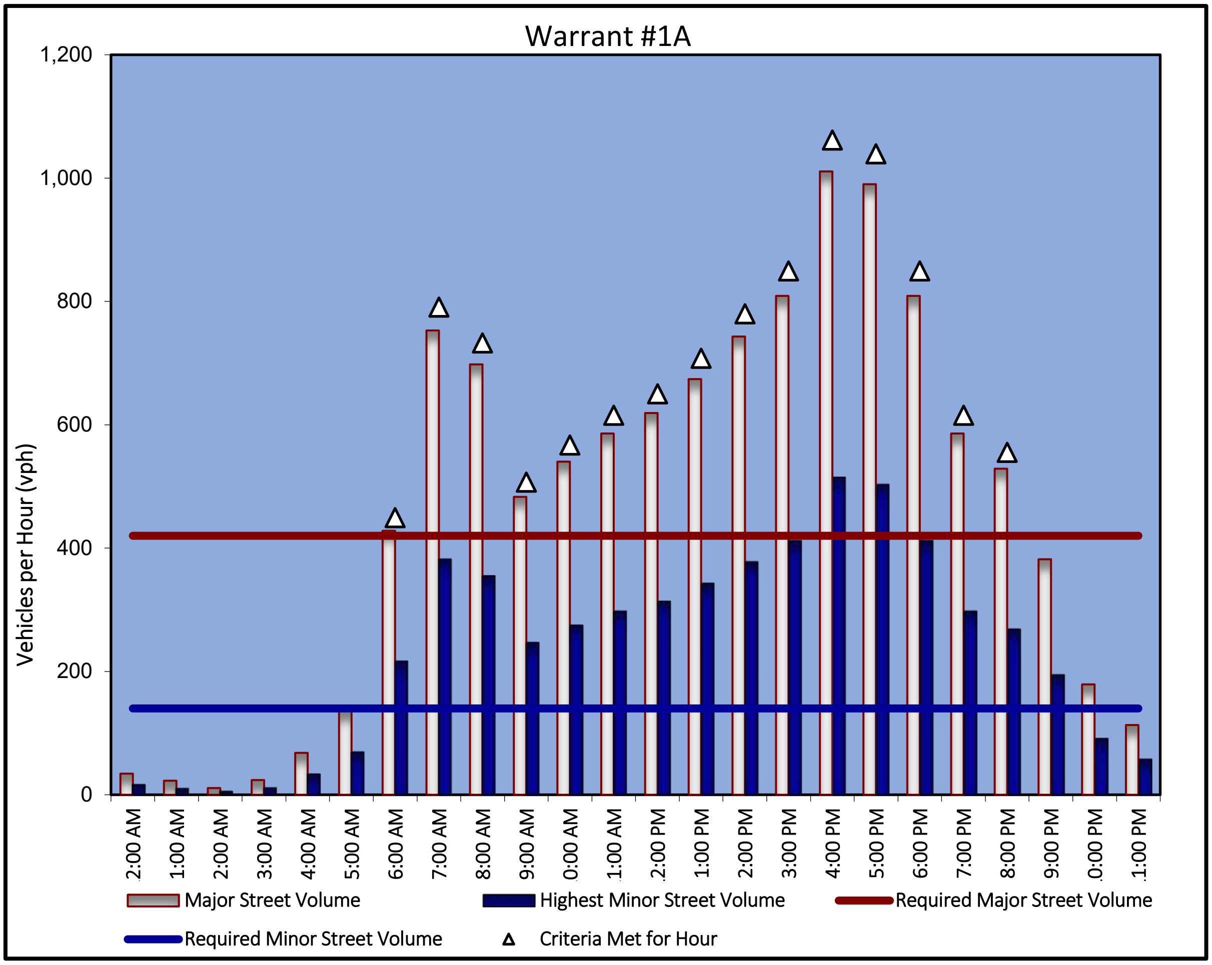
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Williams Field Road		2 or more lanes
Minor Street:	Crismon Road		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1A
Minimum Vehicular Volume

Required Volume for Major Street:	420
Required Volume for Minor Street:	140
Number of Hours Satifisfied:	15
Number of Hours satisfied by less than 10%:	1
Number of hours within 10% of being satisfied:	1
Warrant Met?:	**YES**



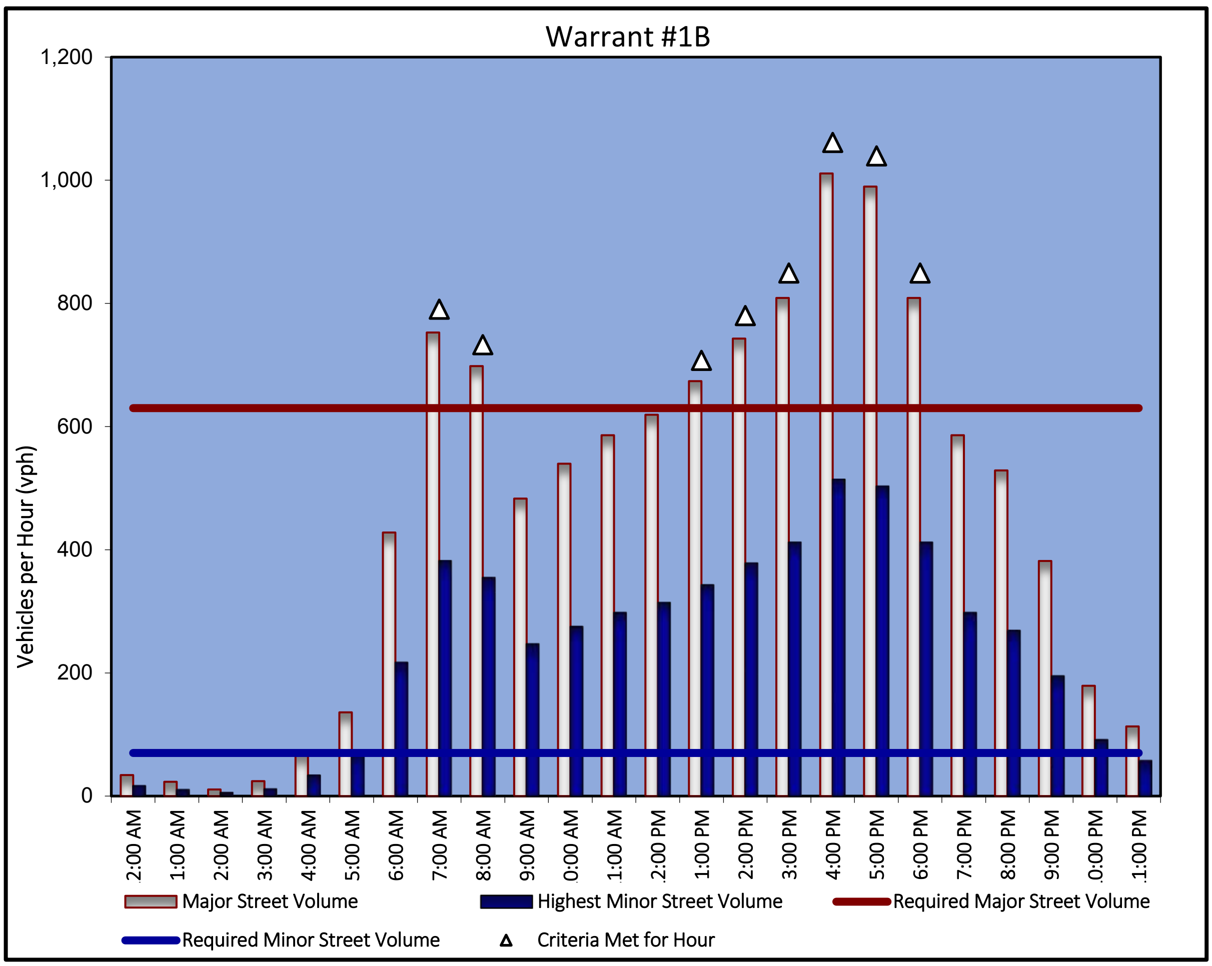
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Williams Field Road		2 or more lanes
Minor Street:	Crismon Road		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1B
Interruption of Continuous Traffic

Required Volume for Major Street:	630
Required Volume for Minor Street:	70
Number of Hours Satifisfied:	8
Number of Hours satisfied by less than 10%:	1
Number of hours within 10% of being satisfied:	3
Warrant Met?:	**YES**



The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

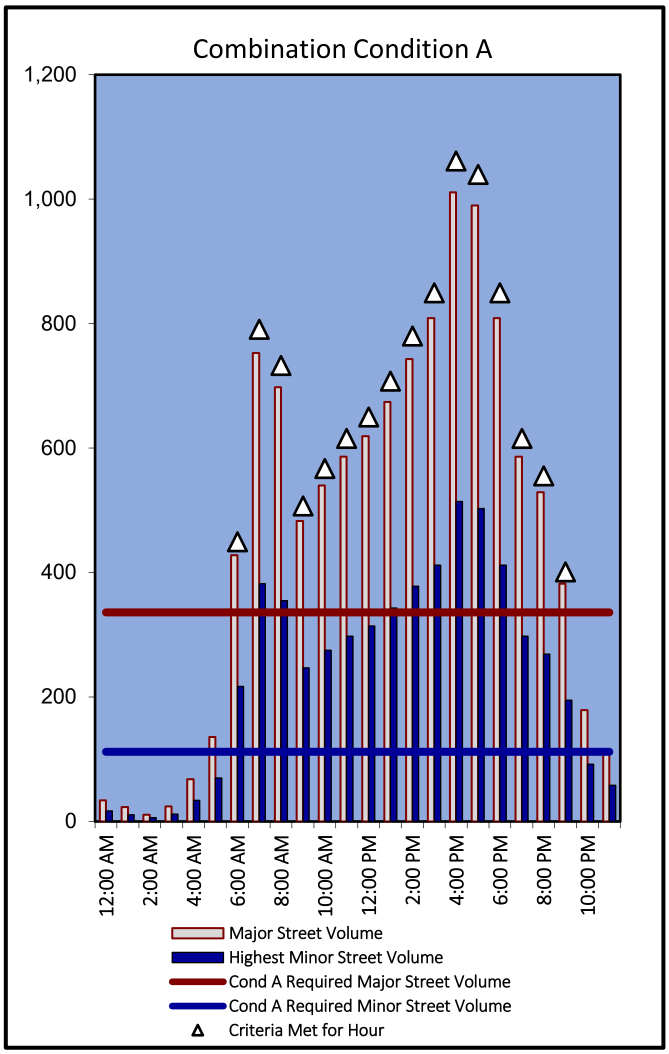
TRAFFIC SIGNAL WARRANT TOOL

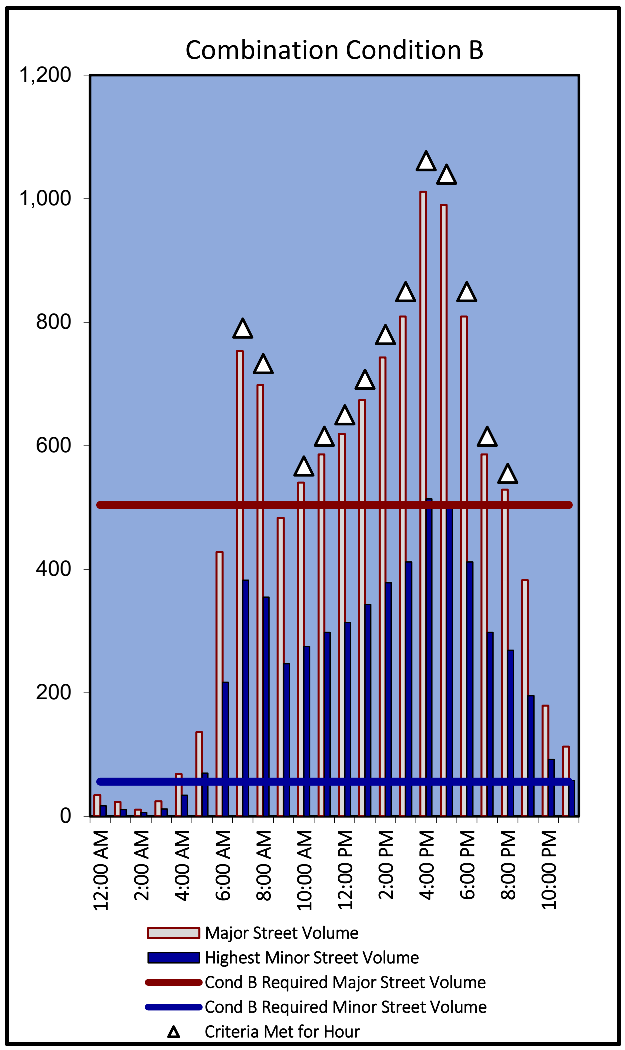
Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Crismon Road	2 or more lanes	
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1 COMBINATION OF CONDITIONS A & B

Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

	Condition A	Condition B
Required Volume for Major Street:	336	504
Required Volume for Minor Street:	112	56
Number of Hours Satifisfied:	16	13
Warrant Met?:	YES	





The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Crismon Road	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume Results
WARRANT 2 SATISFIED? YES
Number of Hours Satisfied: 13
Applicable Figure/Plot Line: Figure 4C-2/2&2

Per MUTCD 2009: Warrant 2, Four-Hour Vehicular Volume

Support:

01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

02 The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the 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) all fall above the applicable curve in Figure 4C-1 for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Crismon Road	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume

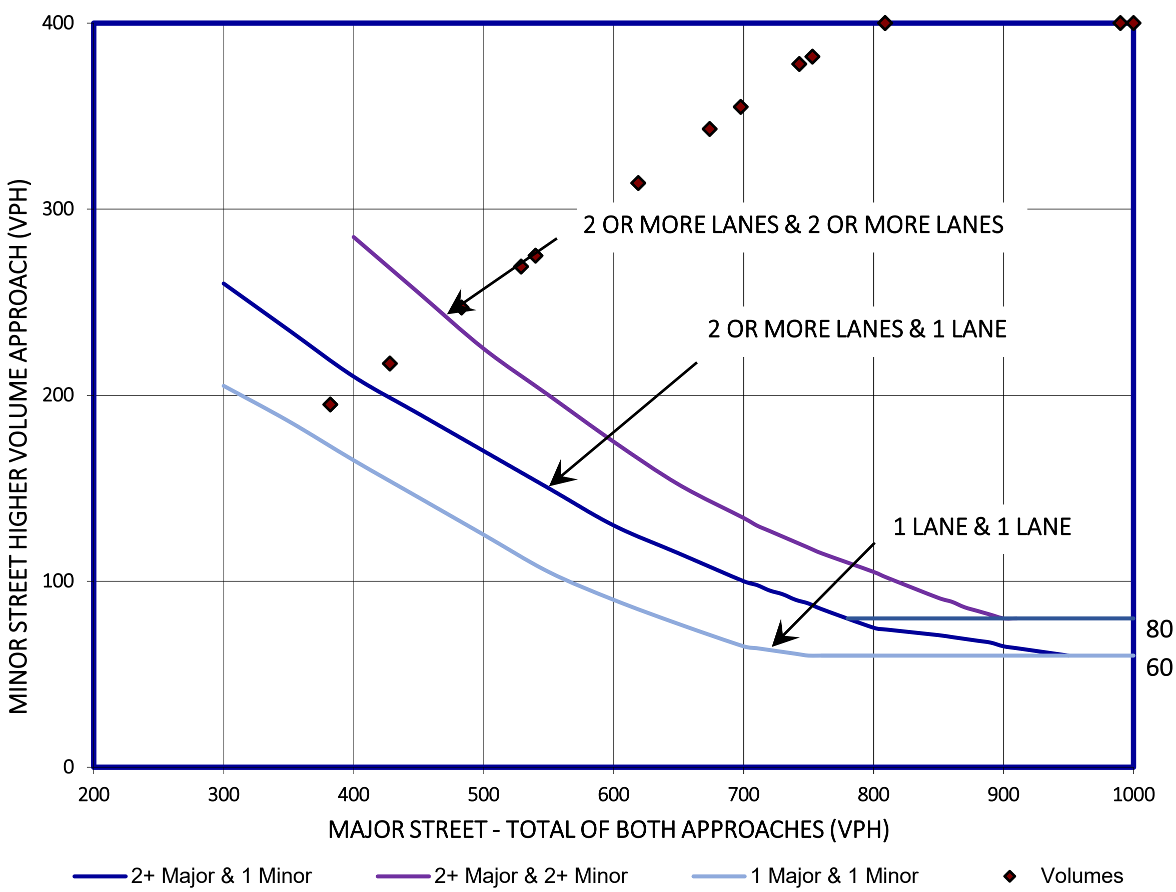
WARRANT 2 SATISFIED? YES

Number of Hours Satisfied: 13

Applicable Figure/Plot Line: **Figure 4C-2/2&2**

Figure 4C-2, Warrant 2, Four-Hour Vehicular Volume (70% Factor)

Community less than 10,000 population or above 40 mph on Major Street



Note: 80 vph applies as the lower threshold volume for a minor approach with two or more lanes, and 60 vph applies as the lower threshold volume for a minor approach with one lane. Major volumes greater than 1,000 vph are plotted on 1,000 axis.

RESULTS

FUTURE TRAFFIC SIGNAL WARRANT - 2030 Background

INFORMATION		
Intersection:	Signal Butte Road &	Williams Field Road
File Number:	20-081	Date of Count:
Condition:	2030 Background	N/A
Major Street:	Signal Butte Road	2 or more lanes
Minor Street:	Williams Field Road	2 or more lanes

TRAFFIC SIGNAL WARRANT	SATISFIED?
Warrant 1, Eight-Hour Vehicular Volume	YES
Warrant 2, Four-Hour Vehicular Volume	YES
Warrant 3, Peak Hour	NOT CONSIDERED
Warrant 4, Pedestrian Volume	NOT CONSIDERED
Warrant 5, School Crossing	NOT CONSIDERED
Warrant 6, Coordinated Signal System	NOT CONSIDERED
Warrant 7, Crash Experience	NOT CONSIDERED
Warrant 8, Roadway Network	NOT CONSIDERED

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. If a warrant or warrants are met, an engineering study and judgement decide if a traffic signal should be installed.

Warrant 1, Eight-Hour Vehicular Volume[1]

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	YES	YES	YES	
# Hours Met?	13	14	15	16
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Warrant 2, Four-Hour Vehicular Volume[3]

Condition Satisfied?	YES
# Hours Met?	13
Applicable Figure/Plot Line:	Figure 4C-2/2&2

3. **Warrant 2, Four-Hour Vehicular Volume** signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Background		
Major Street:	Signal Butte Road	2 or more lanes	
Minor Street:	Williams Field Road	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 1, Eight-Hour Vehicular Volume[1] Results

WARRANT 1 SATISFIED? YES

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	YES	YES	YES	
# Hours Met?	13	14	15	16
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Per MUTCD 2009: Warrant 1, Eight-Hour Vehicular Volume

Support:

01 The 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.

02 The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

03 It is intended that Warrant 1 be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

Standard:

04 The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and

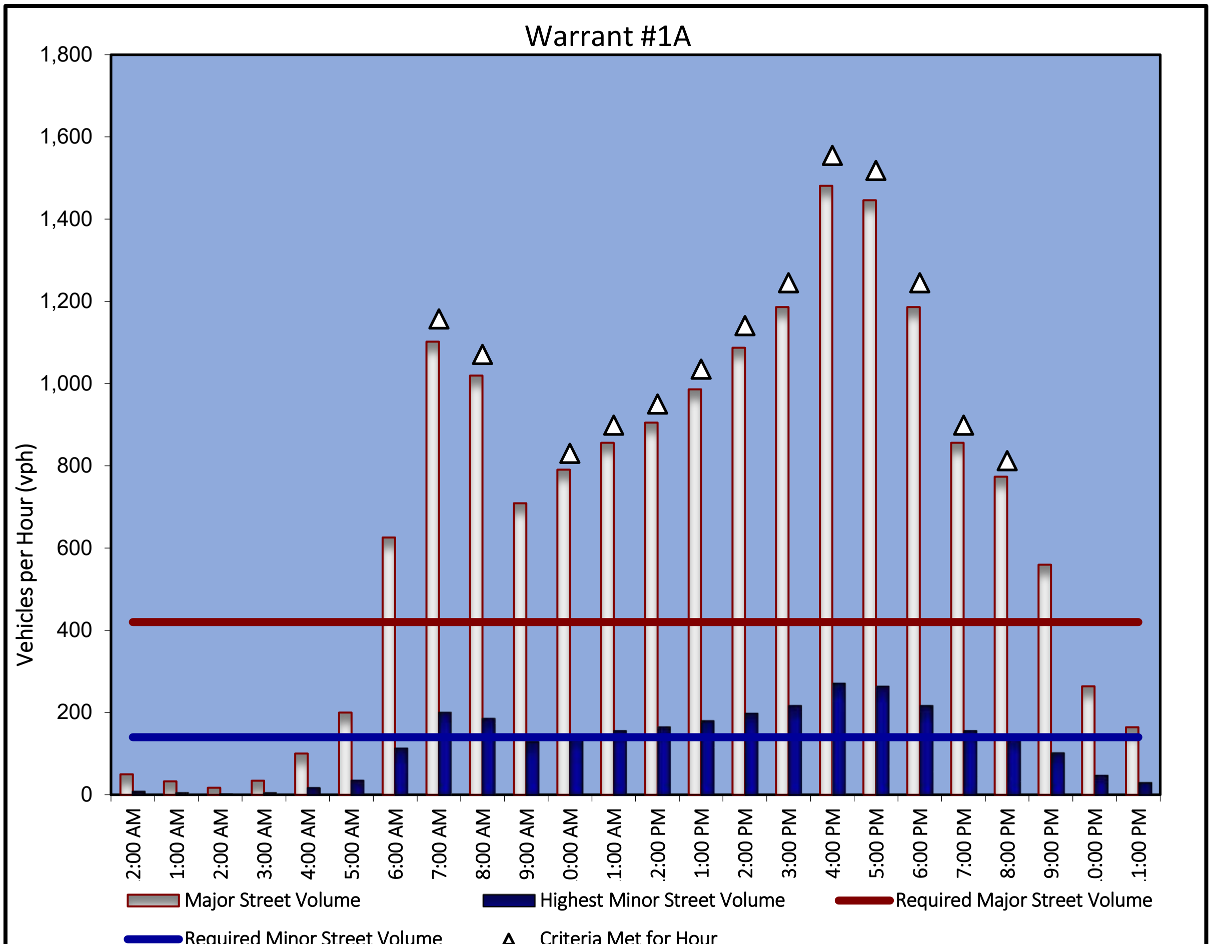
In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Background		
Major Street:	Signal Butte Road		2 or more lanes
Minor Street:	Williams Field Road		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1A Minimum Vehicular Volume	
Required Volume for Major Street:	420
Required Volume for Minor Street:	140
Number of Hours Satifisfied:	13
Number of Hours satisfied by less than 10%:	2
Number of hours within 10% of being satisfied:	1
Warrant Met?:	**YES**



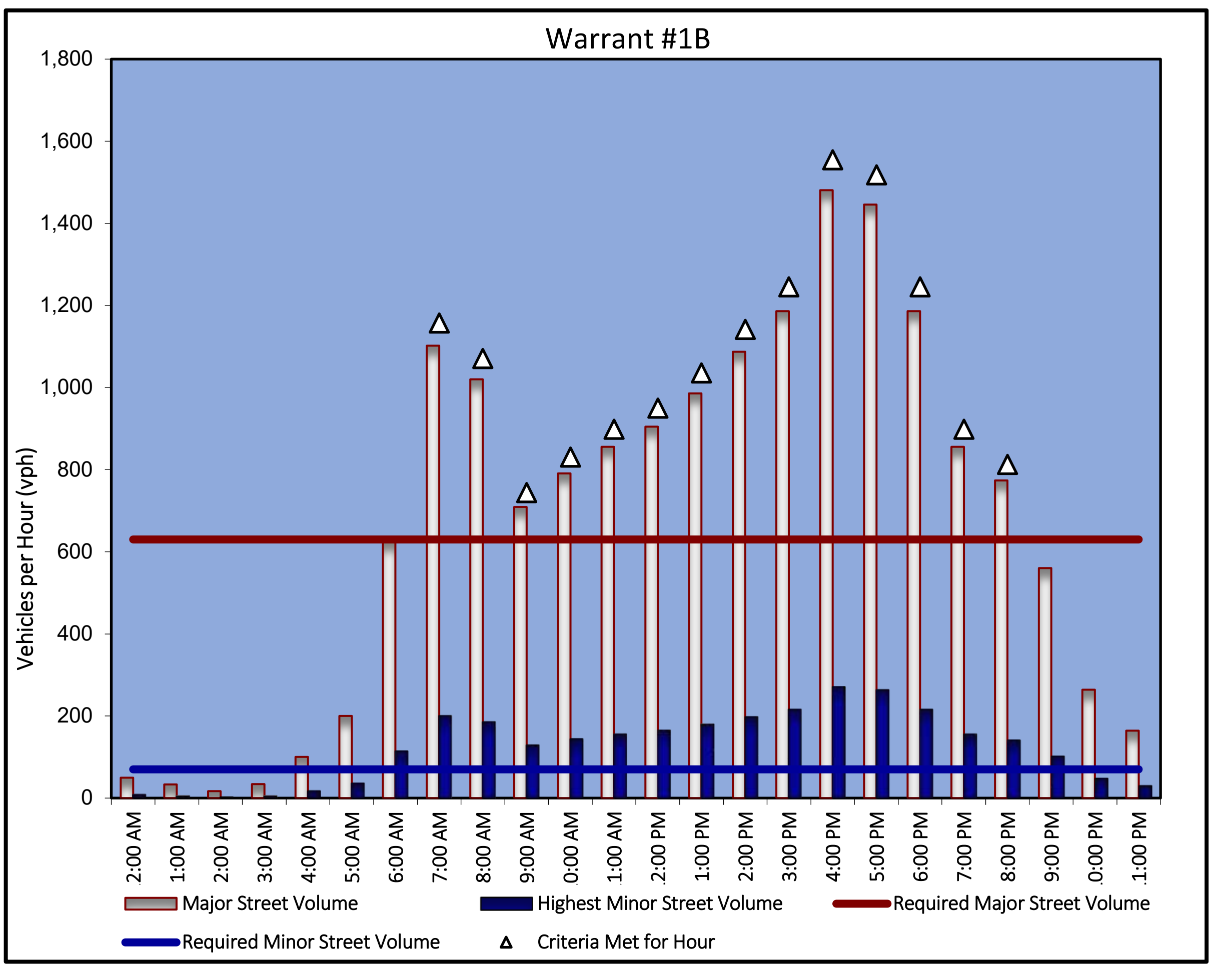
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Background		
Major Street:	Signal Butte Road		2 or more lanes
Minor Street:	Williams Field Road		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1B
Interruption of Continuous Traffic

Required Volume for Major Street:	630
Required Volume for Minor Street:	70
Number of Hours Satifisfied:	14
Number of Hours satisfied by less than 10%:	0
Number of hours within 10% of being satisfied:	1
Warrant Met?:	**YES**



The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

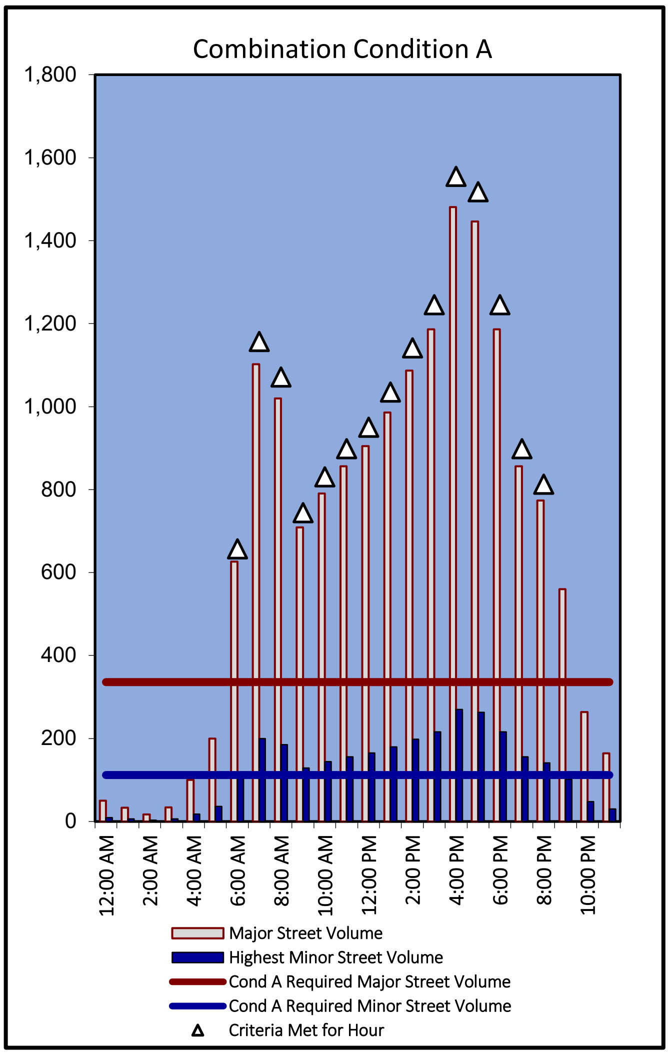
TRAFFIC SIGNAL WARRANT TOOL

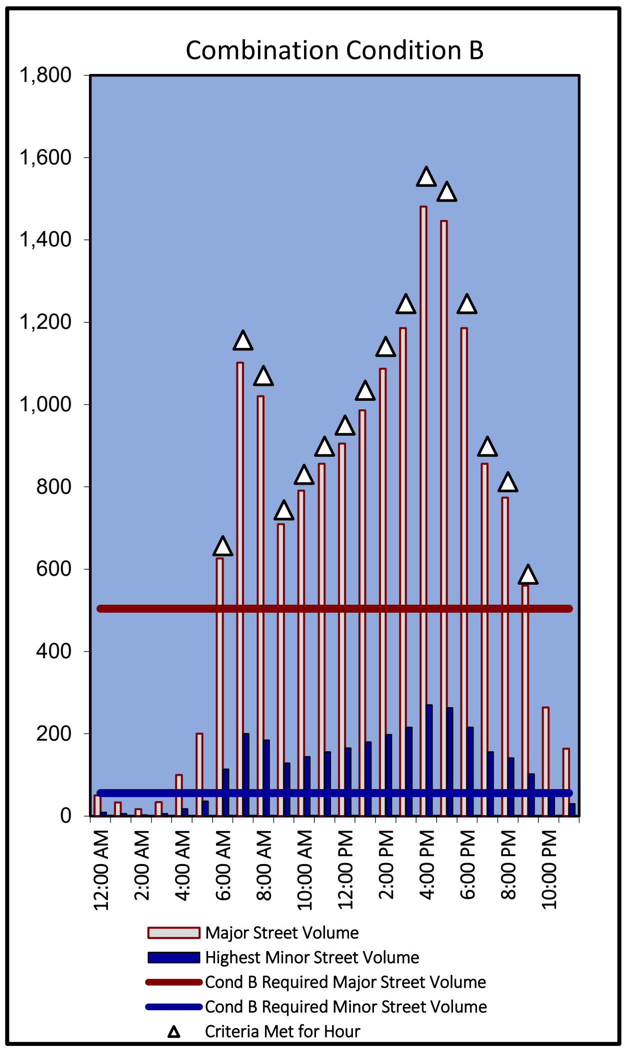
Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Background		
Major Street:	Signal Butte Road		2 or more lanes
Minor Street:	Williams Field Road		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1 COMBINATION OF CONDITIONS A & B

Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

	Condition A	Condition B
Required Volume for Major Street:	336	504
Required Volume for Minor Street:	112	56
Number of Hours Satifisfied:	15	16
Warrant Met?:	YES	





The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Background		
Major Street:	Signal Butte Road	2 or more lanes	
Minor Street:	Williams Field Road	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume Results	
WARRANT 2 SATISFIED? YES	
Number of Hours Satisfied:	13
Applicable Figure/Plot Line:	Figure 4C-2/2&2

Per MUTCD 2009: Warrant 2, Four-Hour Vehicular Volume

Support:

01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

02 The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the 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) all fall above the applicable curve in **Figure 4C-1** for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, **Figure 4C-2** may be used in place of **Figure 4C-1**.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

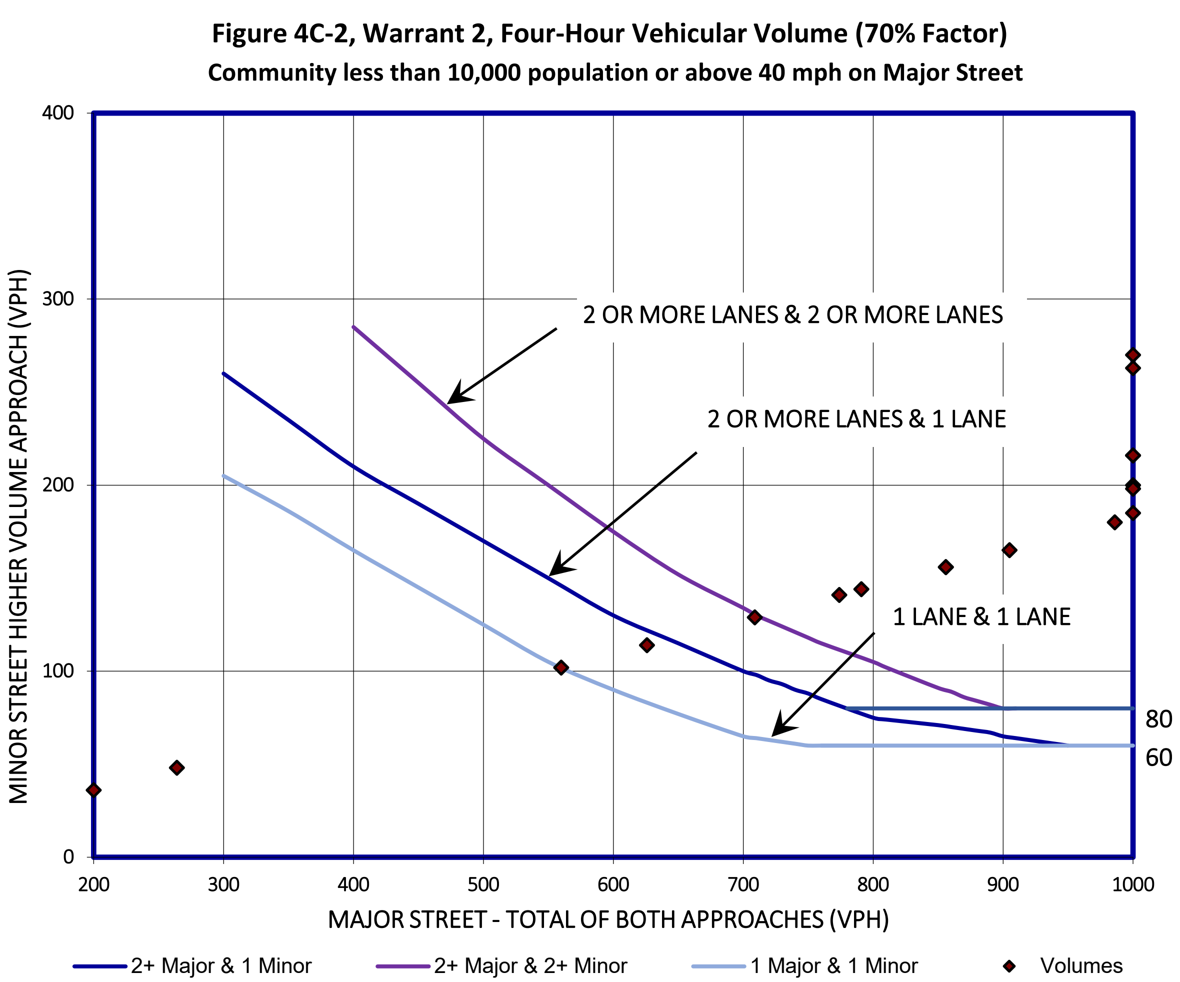
Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Background		
Major Street:	Signal Butte Road	2 or more lanes	
Minor Street:	Williams Field Road	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume

WARRANT 2 SATISFIED? YES

Number of Hours Satisfied: 13

Applicable Figure/Plot Line: **Figure 4C-2/2&2**



Note: 80 vph applies as the lower threshold volume for a minor approach with two or more lanes, and 60 vph applies as the lower threshold volume for a minor approach with one lane. Major volumes greater than 1,000 vph are plotted on 1,000 axis.

RESULTS

FUTURE TRAFFIC SIGNAL WARRANT - 2030 Total

INFORMATION			
Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081	Date of Count:	
Condition:	2030 Total	N/A	
Major Street:	Signal Butte Road	2 or more lanes	
Minor Street:	Williams Field Road	2 or more lanes	

TRAFFIC SIGNAL WARRANT	SATISFIED?
Warrant 1, Eight-Hour Vehicular Volume	YES
Warrant 2, Four-Hour Vehicular Volume	YES
Warrant 3, Peak Hour	NOT CONSIDERED
Warrant 4, Pedestrian Volume	NOT CONSIDERED
Warrant 5, School Crossing	NOT CONSIDERED
Warrant 6, Coordinated Signal System	NOT CONSIDERED
Warrant 7, Crash Experience	NOT CONSIDERED
Warrant 8, Roadway Network	NOT CONSIDERED

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. If a warrant or warrants are met, an engineering study and judgement decide if a traffic signal should be installed.

Warrant 1, Eight-Hour Vehicular Volume[1]				
	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	YES	YES	YES	
# Hours Met?	15	15	16	16
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Warrant 2, Four-Hour Vehicular Volume[3]	
Condition Satisfied?	YES
# Hours Met?	14
Applicable Figure/Plot Line:	Figure 4C-2/2&2

3. **Warrant 2, Four-Hour Vehicular Volume** signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Signal Butte Road	2 or more lanes	
Minor Street:	Williams Field Road	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 1, Eight-Hour Vehicular Volume[1] Results

WARRANT 1 SATISFIED? YES

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	YES	YES	YES	
# Hours Met?	15	15	16	16
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Per MUTCD 2009: Warrant 1, Eight-Hour Vehicular Volume

Support:

01 The 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.

02 The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

03 It is intended that Warrant 1 be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

Standard:

04 The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and

In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

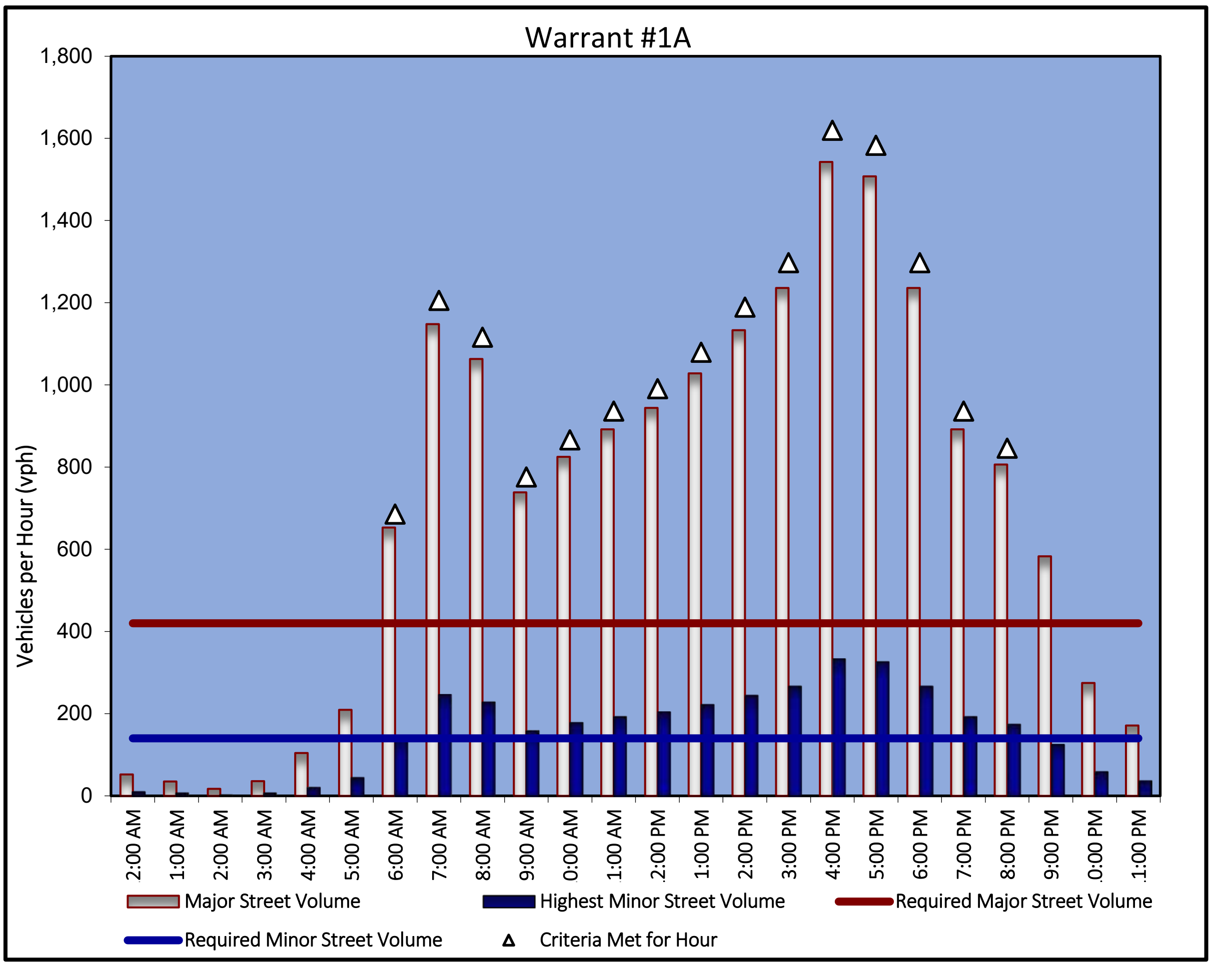
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Signal Butte Road		2 or more lanes
Minor Street:	Williams Field Road		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1A
Minimum Vehicular Volume

Required Volume for Major Street:	420
Required Volume for Minor Street:	140
Number of Hours Satifified:	15
Number of Hours satisfied by less than 10%:	1
Number of hours within 10% of being satisfied:	0
Warrant Met?:	**YES**



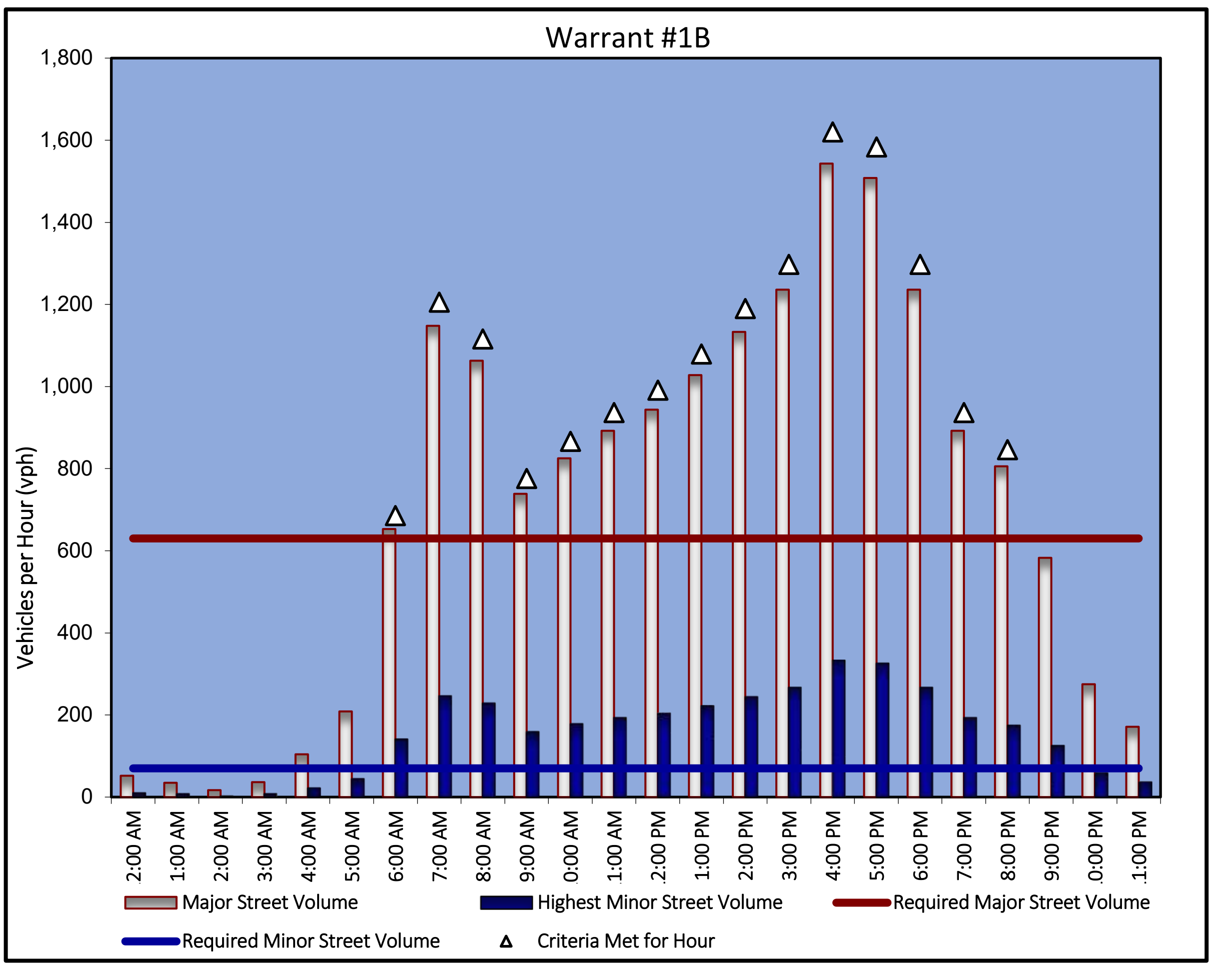
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Signal Butte Road		2 or more lanes
Minor Street:	Williams Field Road		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1B
Interruption of Continuous Traffic

Required Volume for Major Street:	630
Required Volume for Minor Street:	70
Number of Hours Satifified:	15
Number of Hours satisfied by less than 10%:	1
Number of hours within 10% of being satisfied:	1
Warrant Met?:	**YES**



The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

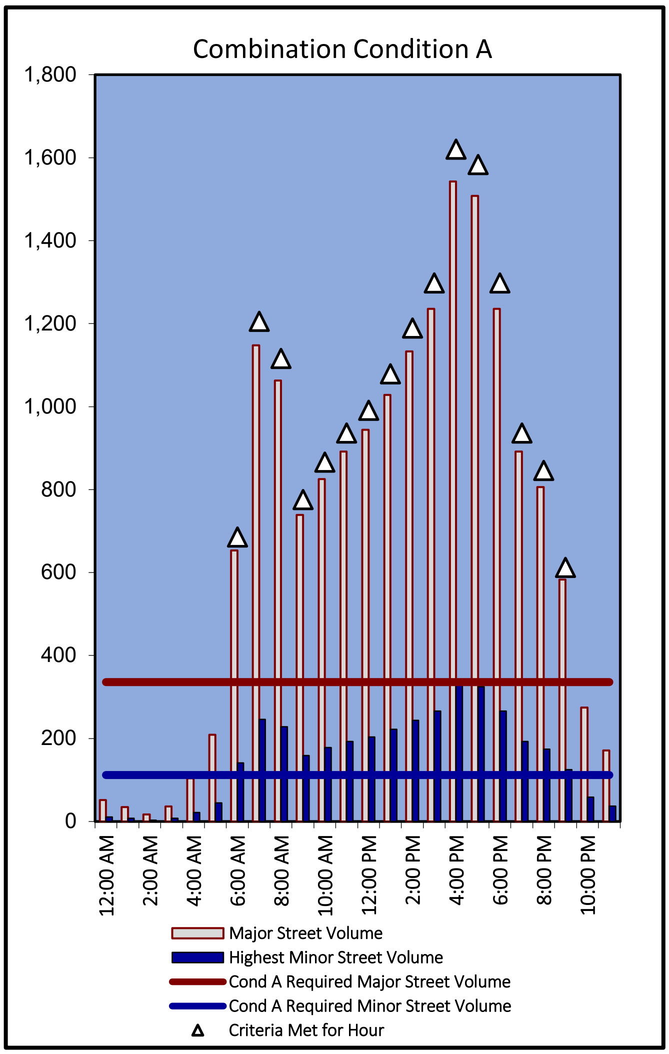
TRAFFIC SIGNAL WARRANT TOOL

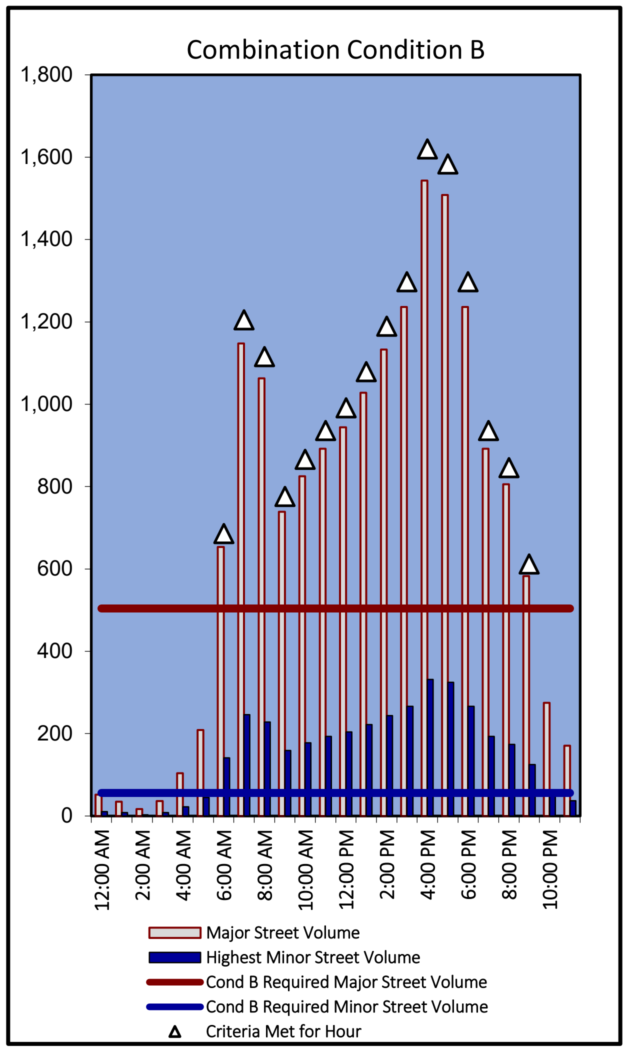
Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Signal Butte Road	2 or more lanes	
Minor Street:	Williams Field Road	2 or more lanes	
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1 COMBINATION OF CONDITIONS A & B

Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

	Condition A	Condition B
Required Volume for Major Street:	336	504
Required Volume for Minor Street:	112	56
Number of Hours Satisfied:	16	16
Warrant Met?:	YES	





The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Signal Butte Road	2 or more lanes	
Minor Street:	Williams Field Road	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume Results
WARRANT 2 SATISFIED? YES
Number of Hours Satisfied: 14
Applicable Figure/Plot Line: Figure 4C-2/2&2

Per MUTCD 2009: Warrant 2, Four-Hour Vehicular Volume

Support:

01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

02 The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the 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) all fall above the applicable curve in **Figure 4C-1** for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, **Figure 4C-2** may be used in place of **Figure 4C-1**.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Signal Butte Road	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Signal Butte Road	2 or more lanes	
Minor Street:	Williams Field Road	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume

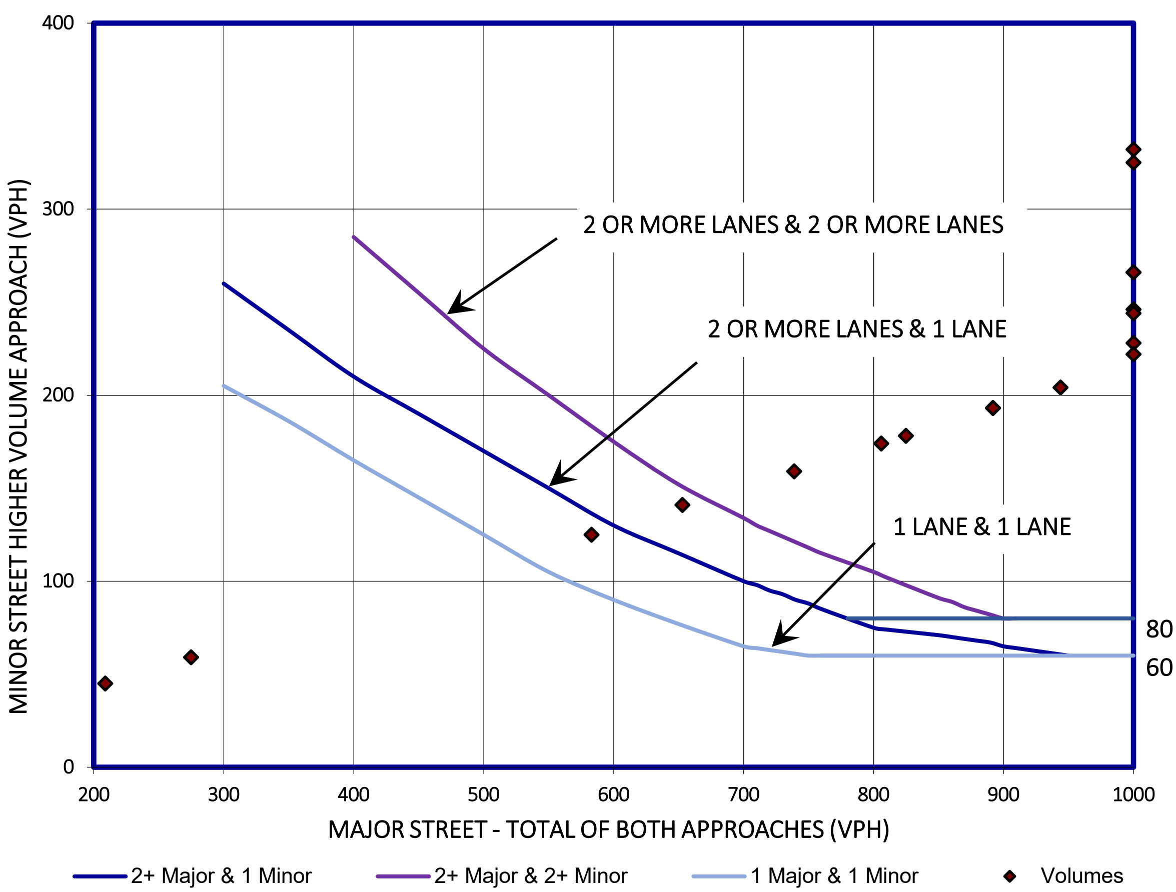
WARRANT 2 SATISFIED? YES

Number of Hours Satisfied: 14

Applicable Figure/Plot Line: **Figure 4C-2/2&2**

Figure 4C-2, Warrant 2, Four-Hour Vehicular Volume (70% Factor)

Community less than 10,000 population or above 40 mph on Major Street



Note: 80 vph applies as the lower threshold volume for a minor approach with two or more lanes, and 60 vph applies as the lower threshold volume for a minor approach with one lane. Major volumes greater than 1,000 vph are plotted on 1,000 axis.

RESULTS

FUTURE TRAFFIC SIGNAL WARRANT - 2030 Total

INFORMATION			
Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081	Date of Count:	
Condition:	2030 Total	N/A	
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Community Street #1	2 or more lanes	

TRAFFIC SIGNAL WARRANT	SATISFIED?
Warrant 1, Eight-Hour Vehicular Volume	NO
Warrant 2, Four-Hour Vehicular Volume	NO
Warrant 3, Peak Hour	NOT CONSIDERED
Warrant 4, Pedestrian Volume	NOT CONSIDERED
Warrant 5, School Crossing	NOT CONSIDERED
Warrant 6, Coordinated Signal System	NOT CONSIDERED
Warrant 7, Crash Experience	NOT CONSIDERED
Warrant 8, Roadway Network	NOT CONSIDERED

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. If a warrant or warrants are met, an engineering study and judgement decide if a traffic signal should be installed.

Warrant 1, Eight-Hour Vehicular Volume[1]

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	NO	NO	NO	
# Hours Met?	2	6	7	9
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Warrant 2, Four-Hour Vehicular Volume[3]

Condition Satisfied?	NO
# Hours Met?	2
Applicable Figure/Plot Line:	Figure 4C-2/2&2

3. **Warrant 2, Four-Hour Vehicular Volume** signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Community Street #1	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 1, Eight-Hour Vehicular Volume[1] Results

WARRANT 1 SATISFIED? NO

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	NO	NO	NO	
# Hours Met?	2	6	7	9
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Per MUTCD 2009: Warrant 1, Eight-Hour Vehicular Volume

Support:

01 The 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.

02 The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

03 It is intended that Warrant 1 be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

Standard:

04 The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and

In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

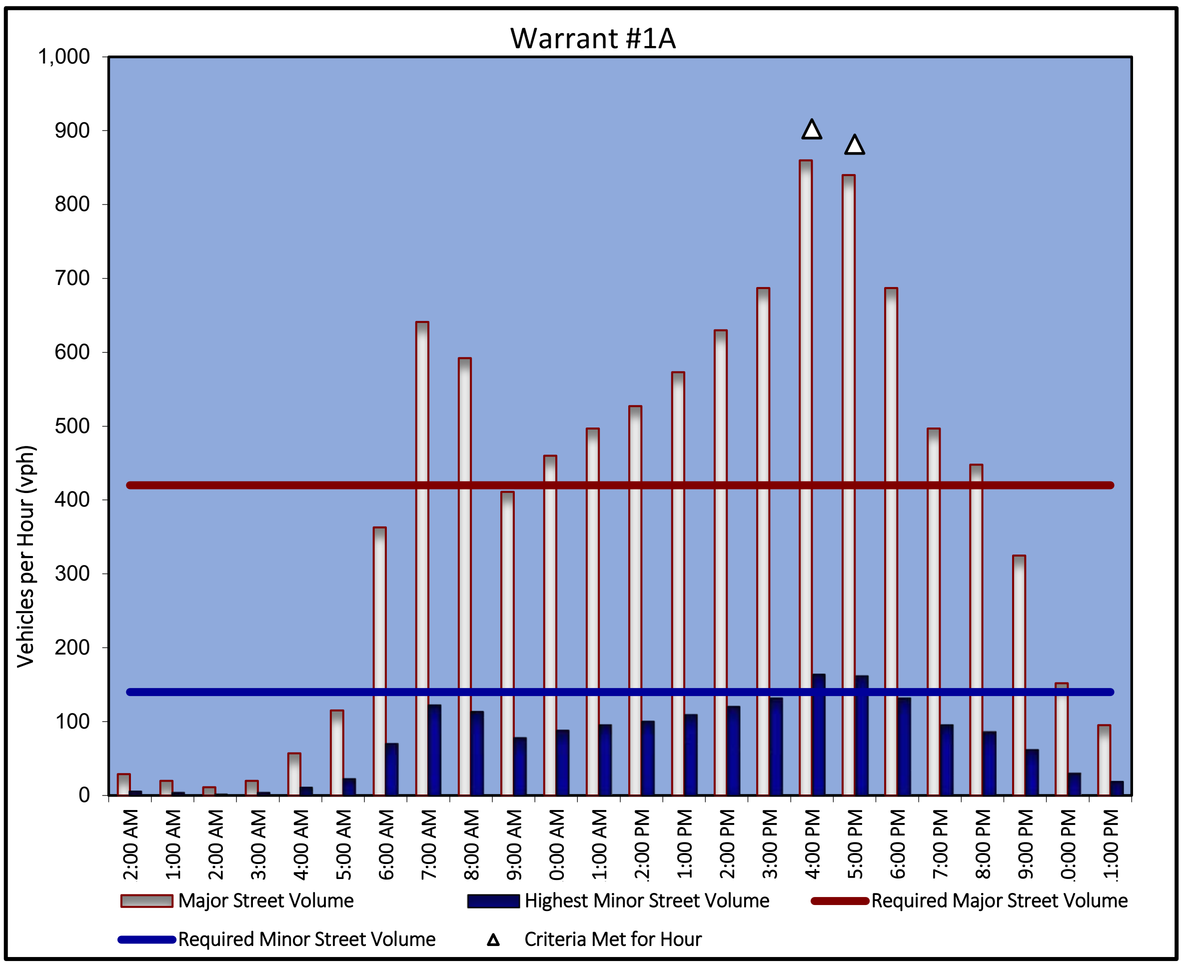
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Williams Field Road		2 or more lanes
Minor Street:	Community Street #1		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1A
Minimum Vehicular Volume

Required Volume for Major Street:	420
Required Volume for Minor Street:	140
Number of Hours Satifisfied:	2
Number of Hours satisfied by less than 10%:	0
Number of hours within 10% of being satisfied:	2
Warrant Met?:	**NO**

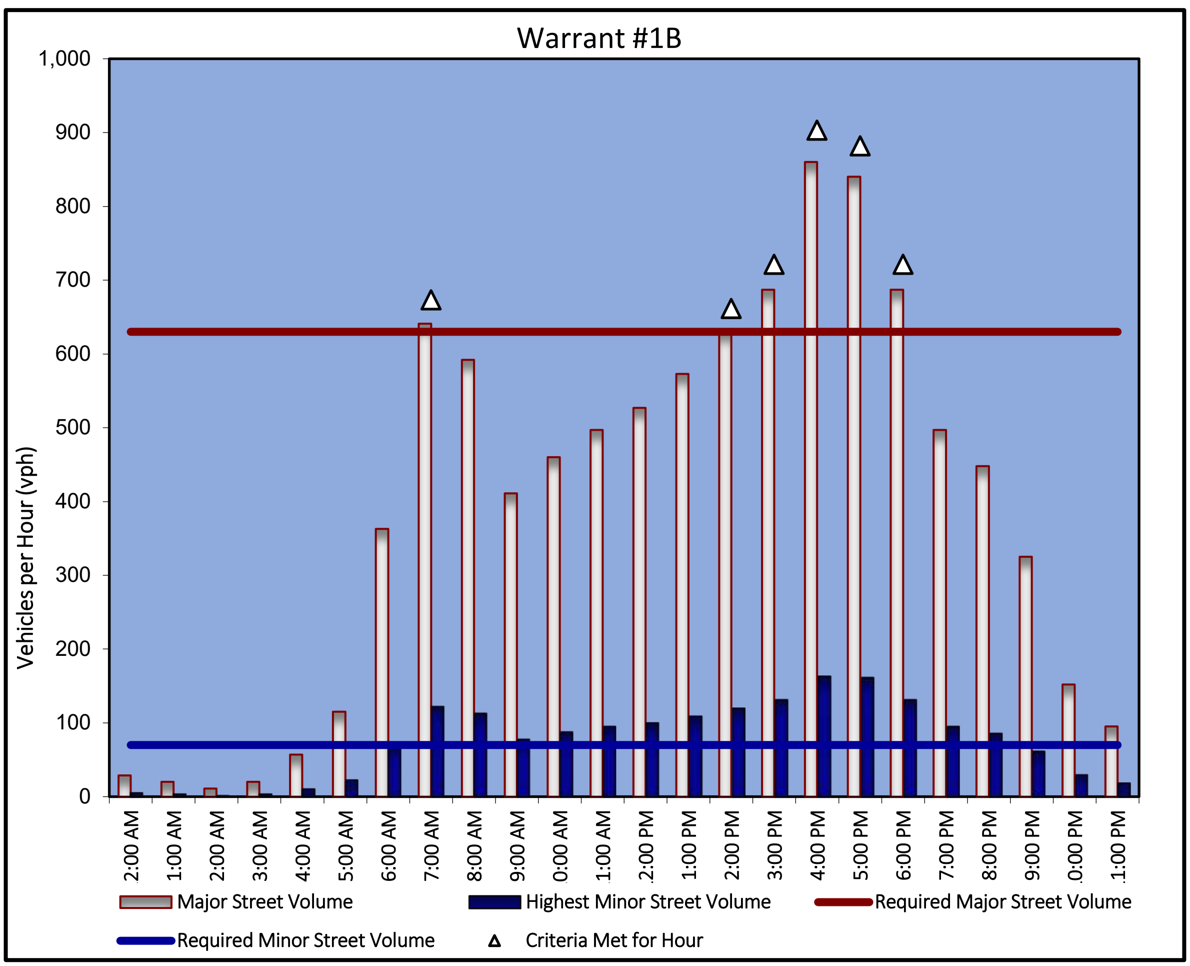


The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Williams Field Road		2 or more lanes
Minor Street:	Community Street #1		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1B Interruption of Continuous Traffic	
Required Volume for Major Street:	630
Required Volume for Minor Street:	70
Number of Hours Satifisfied:	6
Number of Hours satisfied by less than 10%:	4
Number of hours within 10% of being satisfied:	2
Warrant Met?:	**NO**



The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

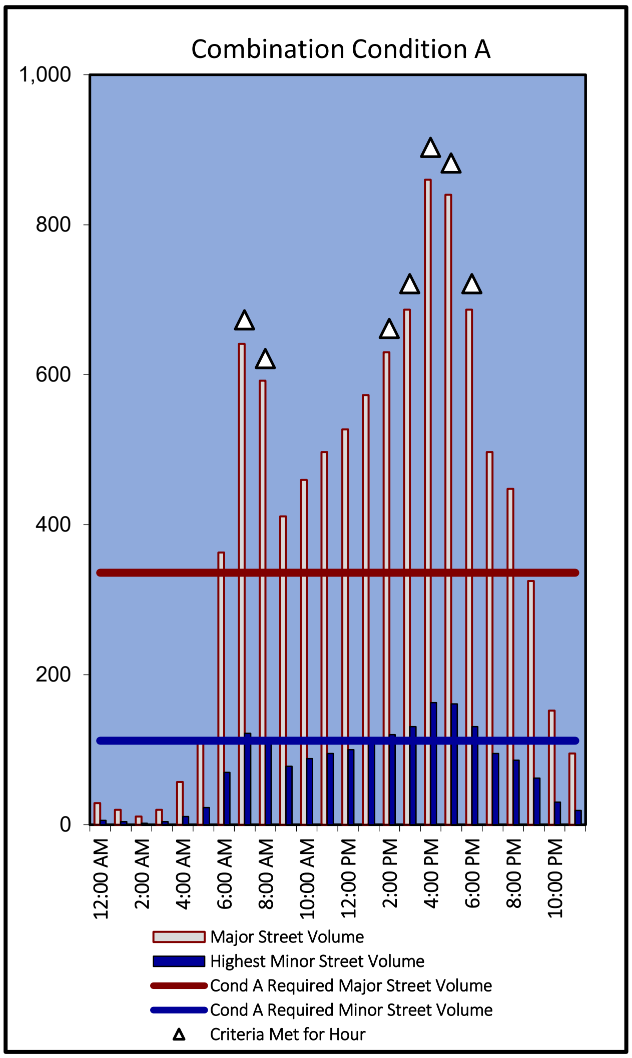
TRAFFIC SIGNAL WARRANT TOOL

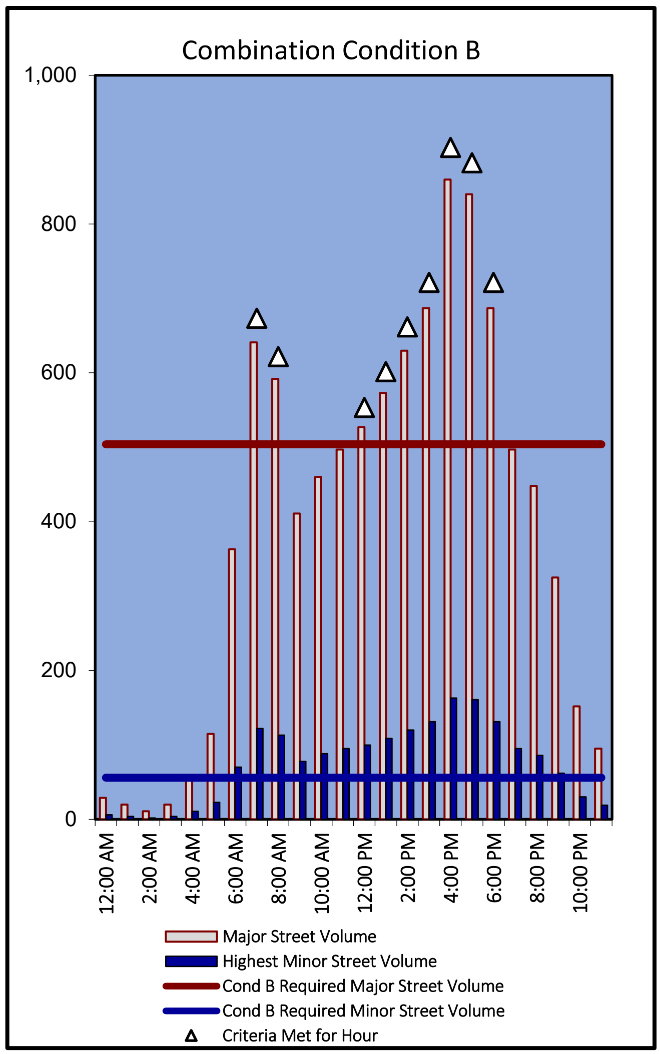
Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Community Street #1	2 or more lanes	
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1 COMBINATION OF CONDITIONS A & B

Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

	Condition A	Condition B
Required Volume for Major Street:	336	504
Required Volume for Minor Street:	112	56
Number of Hours Satifisfied:	7	9
Warrant Met?:	NO	





The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Community Street #1	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume Results	
WARRANT 2 SATISFIED?	**NO**
Number of Hours Satisfied:	2
Applicable Figure/Plot Line:	Figure 4C-2/2&2

Per MUTCD 2009: Warrant 2, Four-Hour Vehicular Volume

Support:

01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

02 The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the 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) all fall above the applicable curve in Figure 4C-1 for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Williams Field Road		2 or more lanes
Minor Street:	Community Street #1		2 or more lanes
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume

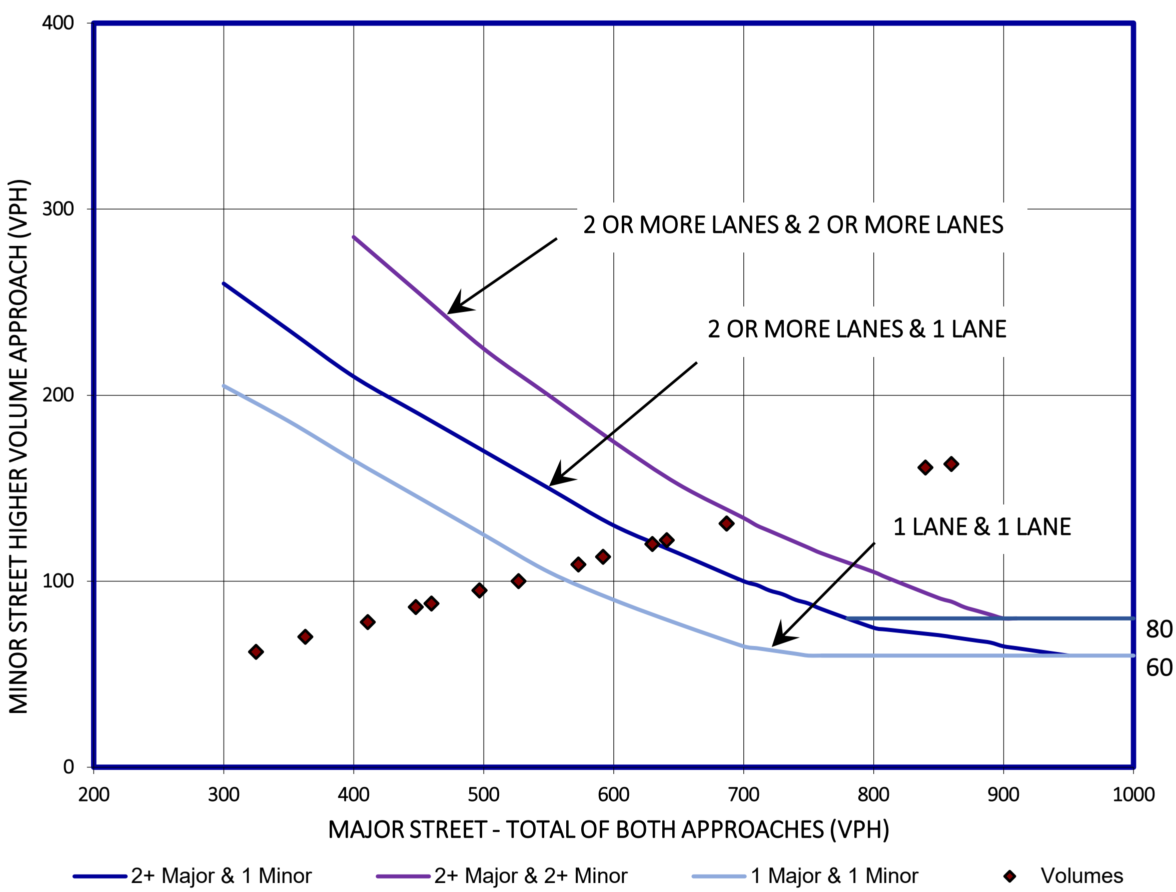
WARRANT 2 SATISFIED? NO

Number of Hours Satisfied: 2

Applicable Figure/Plot Line: **Figure 4C-2/2&2**

Figure 4C-2, Warrant 2, Four-Hour Vehicular Volume (70% Factor)

Community less than 10,000 population or above 40 mph on Major Street



Note: 80 vph applies as the lower threshold volume for a minor approach with two or more lanes, and 60 vph applies as the lower threshold volume for a minor approach with one lane. Major volumes greater than 1,000 vph are plotted on 1,000 axis.

RESULTS

FUTURE TRAFFIC SIGNAL WARRANT - 2040 Total

INFORMATION

Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081	Date of Count:	
Condition:	2040 Total	N/A	
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Community Street #1	2 or more lanes	

TRAFFIC SIGNAL WARRANT	SATISFIED?
Warrant 1, Eight-Hour Vehicular Volume	YES
Warrant 2, Four-Hour Vehicular Volume	YES
Warrant 3, Peak Hour	NOT CONSIDERED
Warrant 4, Pedestrian Volume	NOT CONSIDERED
Warrant 5, School Crossing	NOT CONSIDERED
Warrant 6, Coordinated Signal System	NOT CONSIDERED
Warrant 7, Crash Experience	NOT CONSIDERED
Warrant 8, Roadway Network	NOT CONSIDERED

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. If a warrant or warrants are met, an engineering study and judgement decide if a traffic signal should be installed.

Warrant 1, Eight-Hour Vehicular Volume[1]

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	NO	YES	NO	
# Hours Met?	2	14	7	16
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Warrant 2, Four-Hour Vehicular Volume[3]

Condition Satisfied?	YES
# Hours Met?	8
Applicable Figure/Plot Line:	Figure 4C-2/2&2

3. **Warrant 2, Four-Hour Vehicular Volume** signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081		
Condition:	2040 Total		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Community Street #1	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 1, Eight-Hour Vehicular Volume[1] Results

WARRANT 1 SATISFIED? YES

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	NO	YES	NO	
# Hours Met?	2	14	7	16
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Per MUTCD 2009: Warrant 1, Eight-Hour Vehicular Volume

Support:

01 The 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.

02 The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

03 It is intended that Warrant 1 be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

Standard:

04 The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and

In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

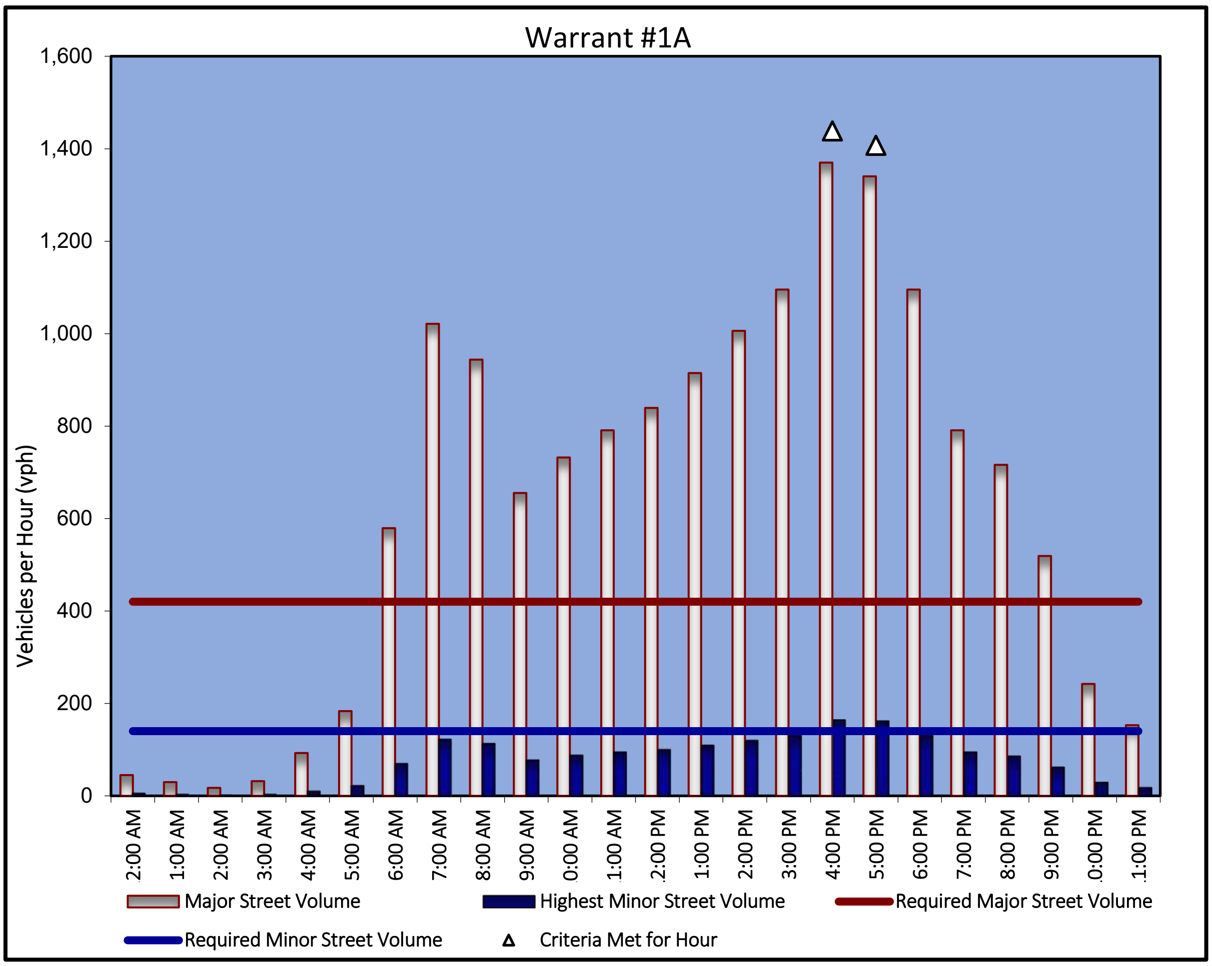
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081		
Condition:	2040 Total		
Major Street:	Williams Field Road		2 or more lanes
Minor Street:	Community Street #1		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1A
Minimum Vehicular Volume

Required Volume for Major Street:	420
Required Volume for Minor Street:	140
Number of Hours Satifisfied:	2
Number of Hours satisfied by less than 10%:	0
Number of hours within 10% of being satisfied:	2
Warrant Met?:	**NO**

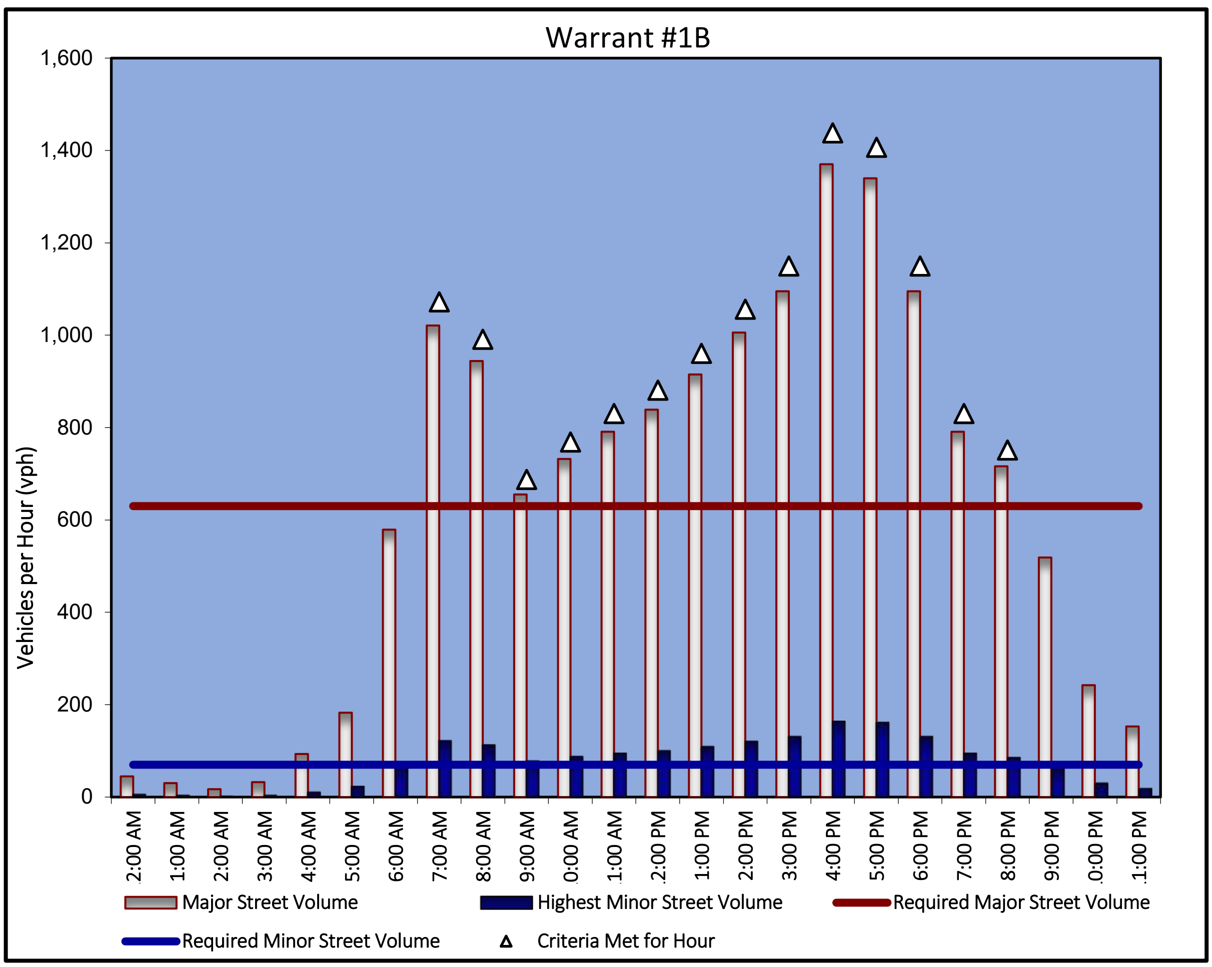


The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081		
Condition:	2040 Total		
Major Street:	Williams Field Road		2 or more lanes
Minor Street:	Community Street #1		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1B Interruption of Continuous Traffic	
Required Volume for Major Street:	630
Required Volume for Minor Street:	70
Number of Hours Satifisfied:	14
Number of Hours satisfied by less than 10%:	1
Number of hours within 10% of being satisfied:	1
Warrant Met?:	**YES**



The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

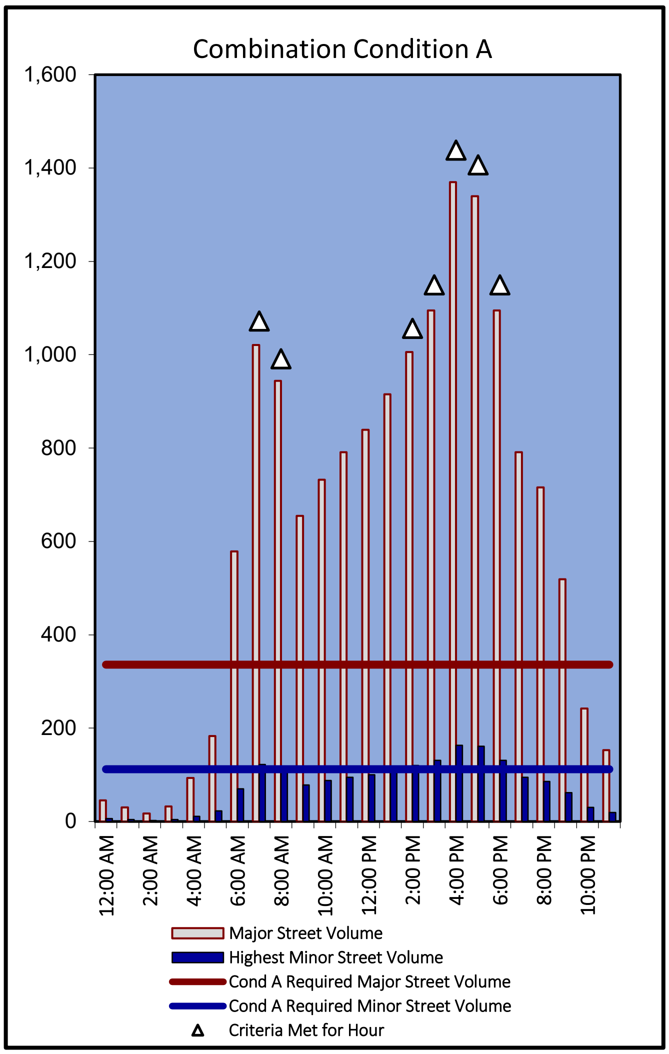
TRAFFIC SIGNAL WARRANT TOOL

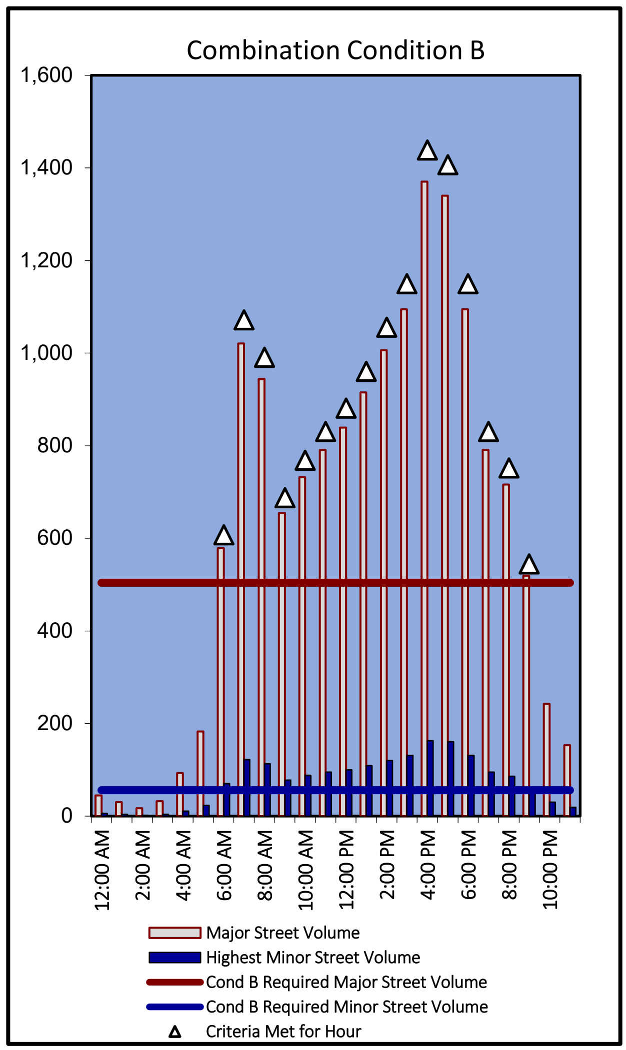
Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081		
Condition:	2040 Total		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Community Street #1	2 or more lanes	
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1 COMBINATION OF CONDITIONS A & B

Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

	Condition A	Condition B
Required Volume for Major Street:	336	504
Required Volume for Minor Street:	112	56
Number of Hours Satififsied:	7	16
Warrant Met?:	NO	





The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081		
Condition:	2040 Total		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Community Street #1	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume Results	
WARRANT 2 SATISFIED? YES	
Number of Hours Satisfied:	8
Applicable Figure/Plot Line:	Figure 4C-2/2&2

Per MUTCD 2009: Warrant 2, Four-Hour Vehicular Volume

Support:

01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

02 The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the 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) all fall above the applicable curve in Figure 4C-1 for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

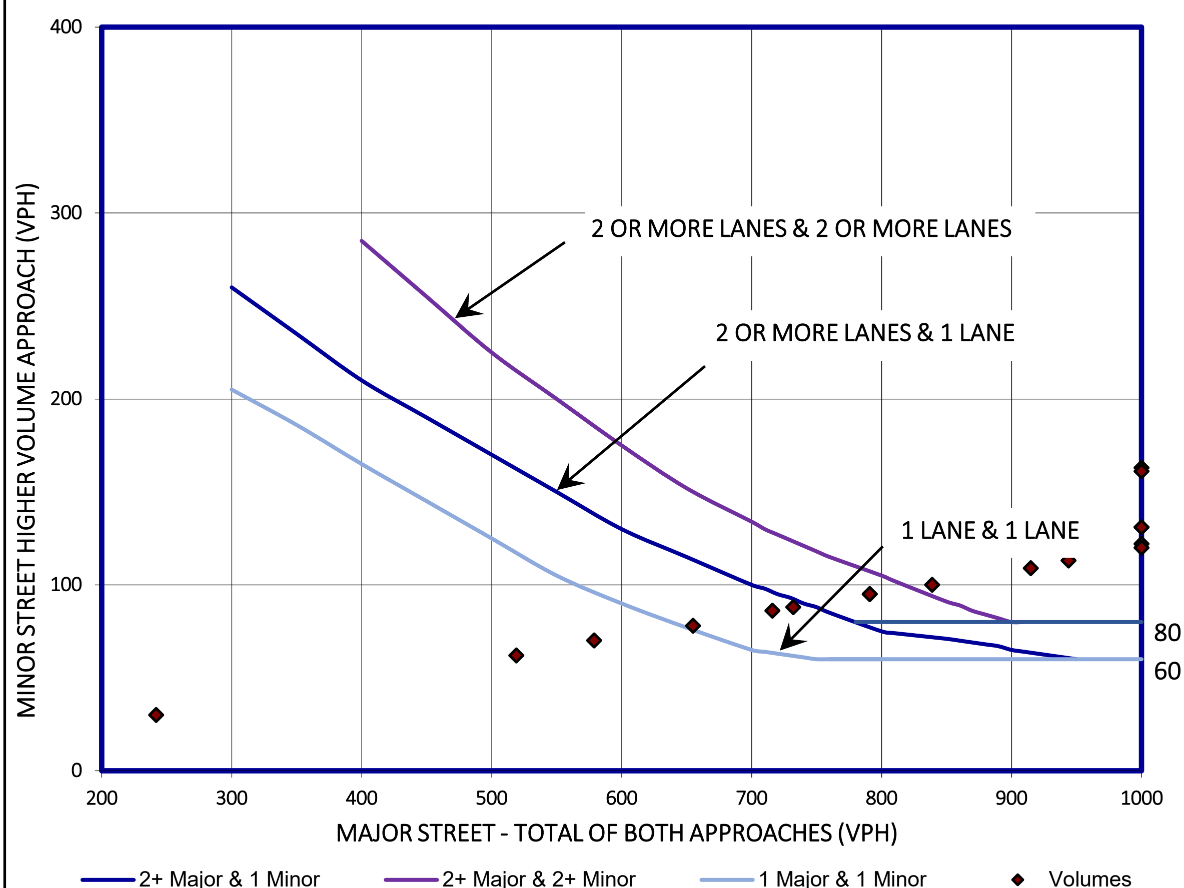
TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Community Street #1	&	Williams Field Road
File Number:	20-081		
Condition:	2040 Total		
Major Street:	Williams Field Road	2 or more lanes	
Minor Street:	Community Street #1	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume	
WARRANT 2 SATISFIED? YES	
Number of Hours Satisfied:	8
Applicable Figure/Plot Line:	**Figure 4C-2/2&2**

Figure 4C-2, Warrant 2, Four-Hour Vehicular Volume (70% Factor)

Community less than 10,000 population or above 40 mph on Major Street



Note: 80 vph applies as the lower threshold volume for a minor approach with two or more lanes, and 60 vph applies as the lower threshold volume for a minor approach with one lane. Major volumes greater than 1,000 vph are plotted on 1,000 axis.

RESULTS

FUTURE TRAFFIC SIGNAL WARRANT - 2030 Total

ENGINEERING

INFORMATION			
Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081	Date of Count:	
Condition:	2030 Total	N/A	
Major Street:	Crismon Road	2 or more lanes	
Minor Street:	Community Street #3	2 or more lanes	

TRAFFIC SIGNAL WARRANT	SATISFIED?
Warrant 1, Eight-Hour Vehicular Volume	NO
Warrant 2, Four-Hour Vehicular Volume	NO
Warrant 3, Peak Hour	NOT CONSIDERED
Warrant 4, Pedestrian Volume	NOT CONSIDERED
Warrant 5, School Crossing	NOT CONSIDERED
Warrant 6, Coordinated Signal System	NOT CONSIDERED
Warrant 7, Crash Experience	NOT CONSIDERED
Warrant 8, Roadway Network	NOT CONSIDERED

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. If a warrant or warrants are met, an engineering study and judgement decide if a traffic signal should be installed.

Warrant 1, Eight-Hour Vehicular Volume[1]

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	NO	NO	NO	
# Hours Met?	0	0	3	0
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Warrant 2, Four-Hour Vehicular Volume[3]

Condition Satisfied?	NO
# Hours Met?	0
Applicable Figure/Plot Line:	Figure 4C-2/2&2

3. **Warrant 2, Four-Hour Vehicular Volume** signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Crismon Road	2 or more lanes	
Minor Street:	Community Street #3	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 1, Eight-Hour Vehicular Volume[1] Results

WARRANT 1 SATISFIED? NO

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	NO	NO	NO	
# Hours Met?	0	0	3	0
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Per MUTCD 2009: Warrant 1, Eight-Hour Vehicular Volume

Support:

01 The 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.

02 The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

03 It is intended that Warrant 1 be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

Standard:

04 The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and

In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

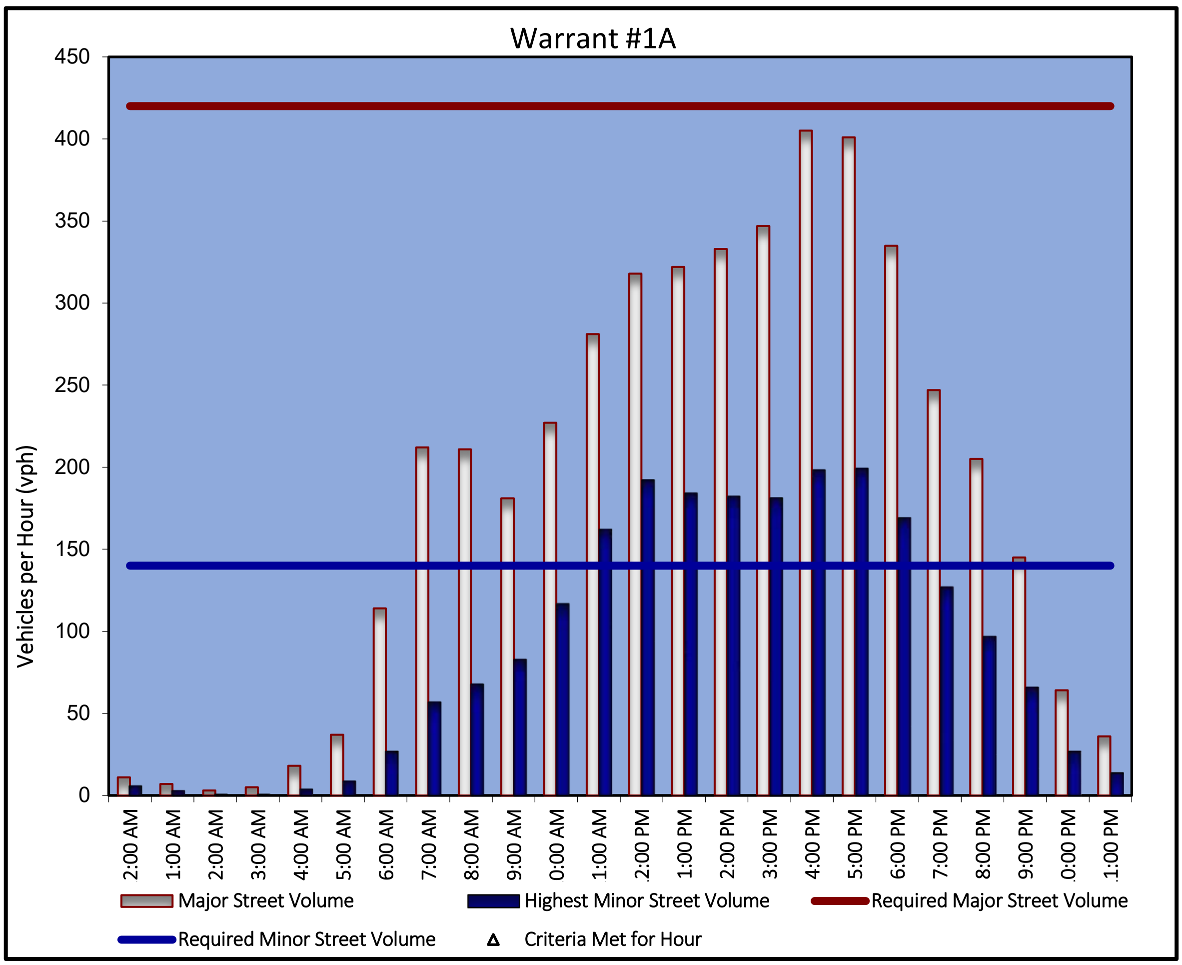
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Crismon Road		2 or more lanes
Minor Street:	Community Street #3		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1A
Minimum Vehicular Volume

Required Volume for Major Street:	420
Required Volume for Minor Street:	140
Number of Hours Satifisfied:	0
Number of Hours satisfied by less than 10%:	0
Number of hours within 10% of being satisfied:	2
Warrant Met?:	**NO**

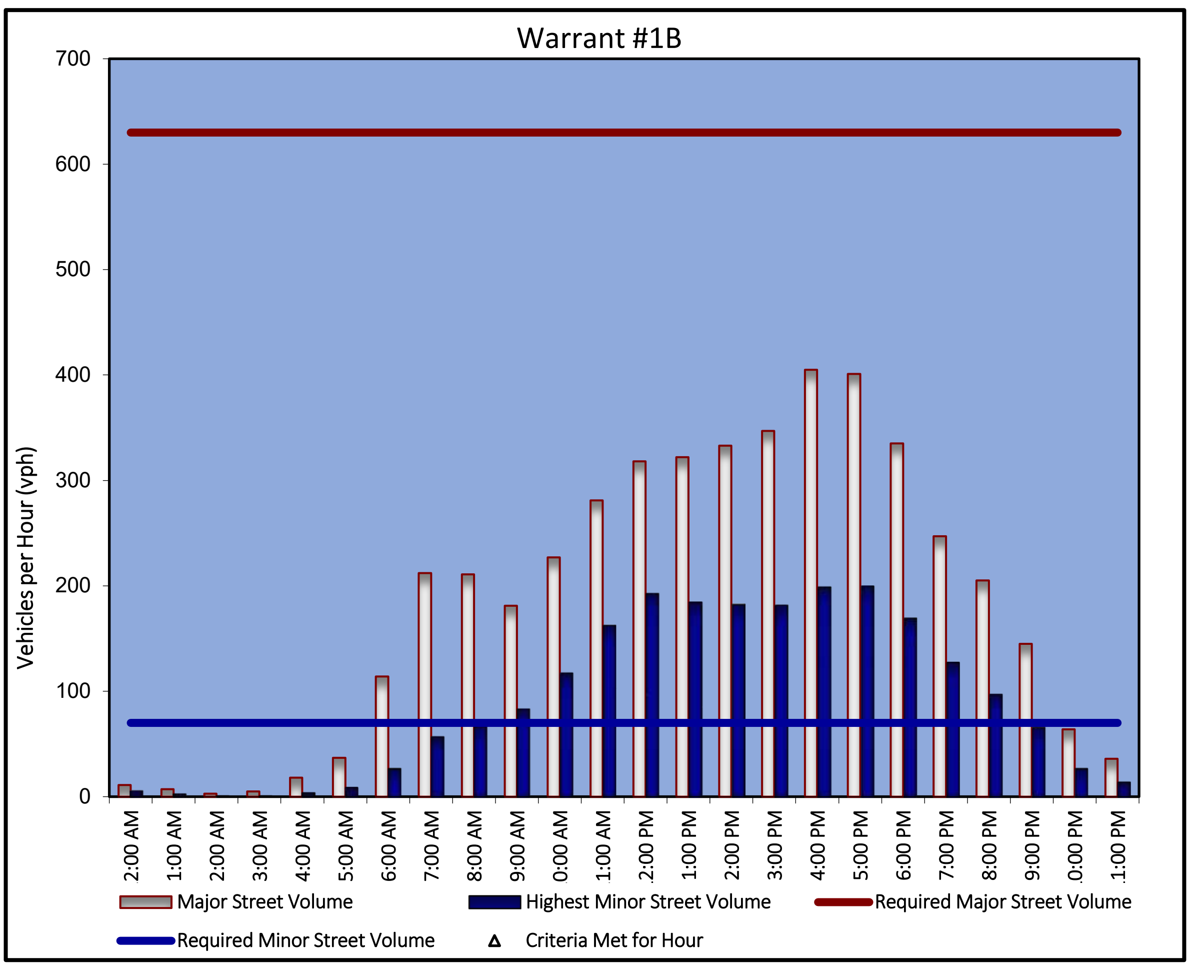


The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Crismon Road		2 or more lanes
Minor Street:	Community Street #3		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1B Interruption of Continuous Traffic	
Required Volume for Major Street:	630
Required Volume for Minor Street:	70
Number of Hours Satififsied:	0
Number of Hours satisfied by less than 10%:	0
Number of hours within 10% of being satisfied:	0
Warrant Met?:	**NO**



The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

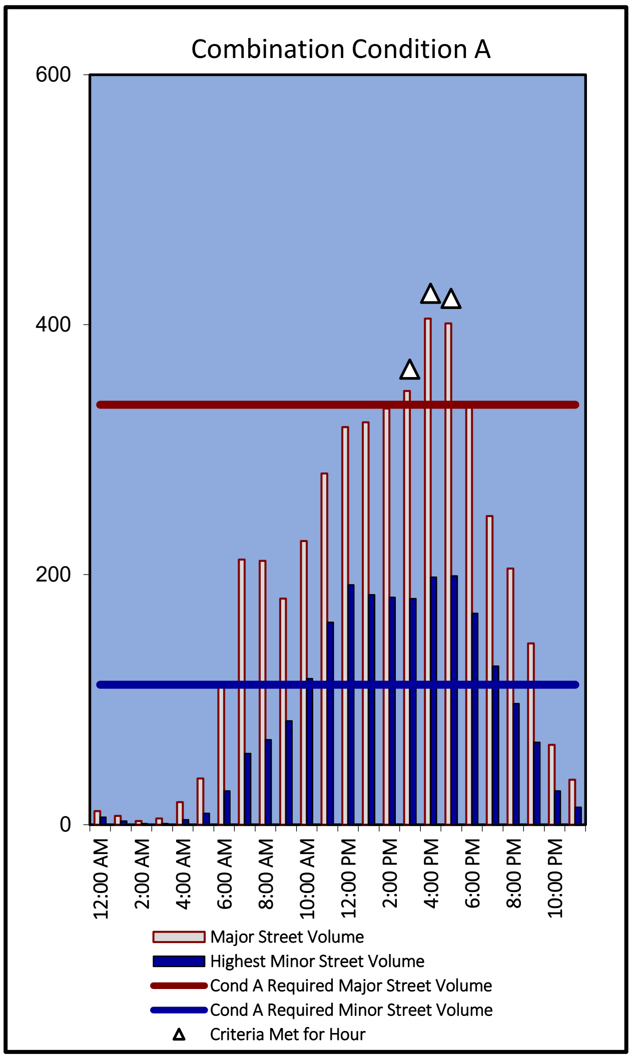
TRAFFIC SIGNAL WARRANT TOOL

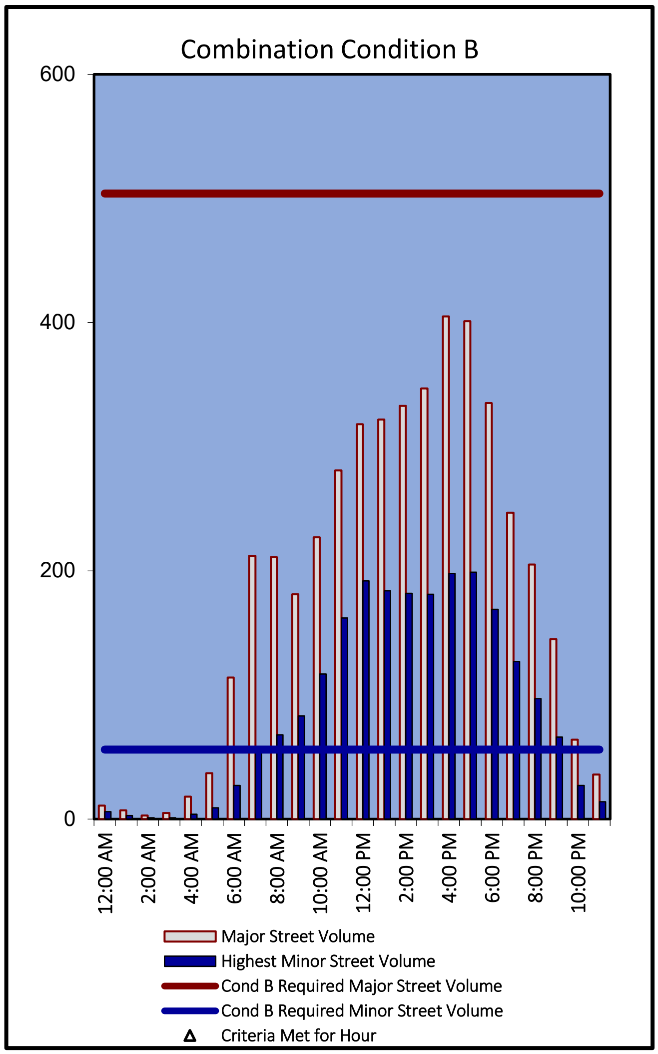
Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Crismon Road	2 or more lanes	
Minor Street:	Community Street #3	2 or more lanes	
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1 COMBINATION OF CONDITIONS A & B

Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

	Condition A	Condition B
Required Volume for Major Street:	336	504
Required Volume for Minor Street:	112	56
Number of Hours Satifisfied:	3	0
Warrant Met?:	NO	





The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Crismon Road	2 or more lanes	
Minor Street:	Community Street #3	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume Results	
WARRANT 2 SATISFIED?	**NO**
Number of Hours Satisfied:	0
Applicable Figure/Plot Line:	Figure 4C-2/2&2

Per MUTCD 2009: Warrant 2, Four-Hour Vehicular Volume

Support:

01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

02 The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the 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) all fall above the applicable curve in Figure 4C-1 for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081		
Condition:	2030 Total		
Major Street:	Crismon Road	2 or more lanes	
Minor Street:	Community Street #3	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume

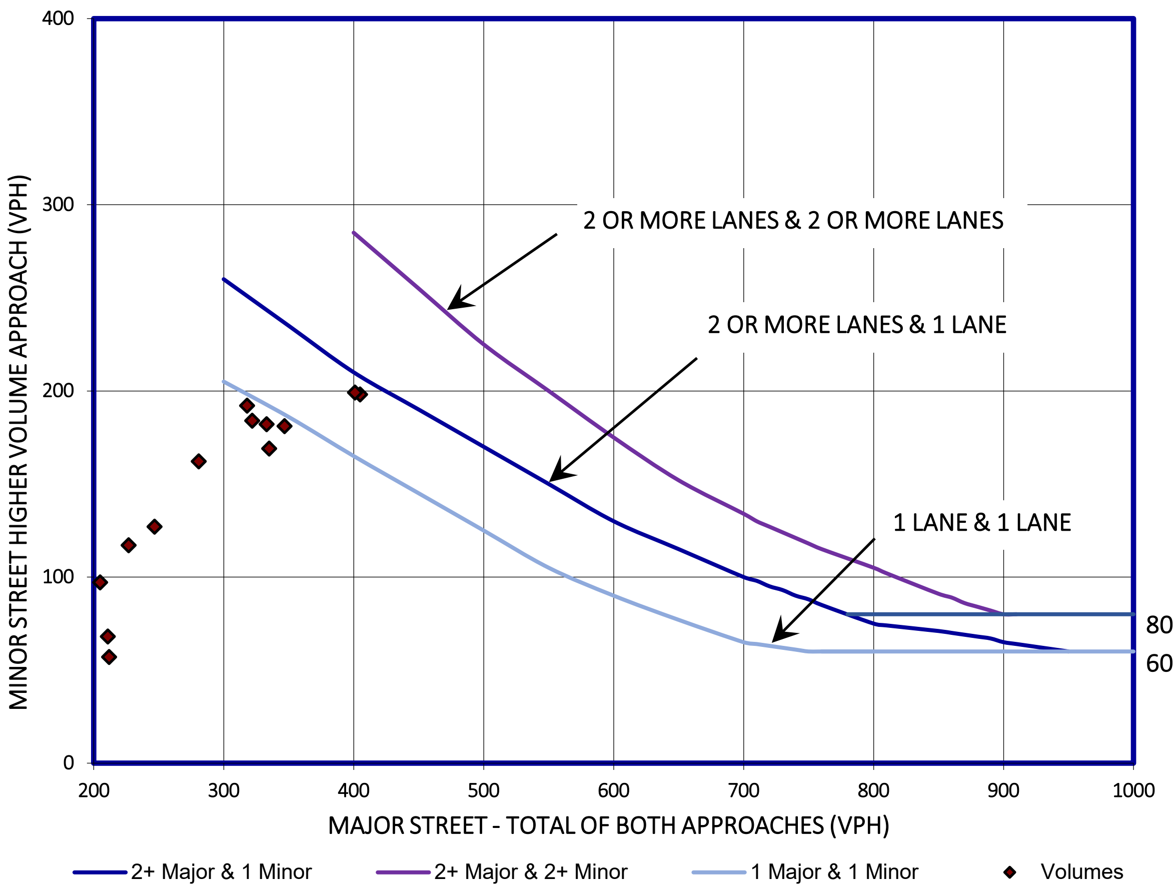
WARRANT 2 SATISFIED? NO

Number of Hours Satisfied: 0

Applicable Figure/Plot Line: **Figure 4C-2/2&2**

Figure 4C-2, Warrant 2, Four-Hour Vehicular Volume (70% Factor)

Community less than 10,000 population or above 40 mph on Major Street



Note: 80 vph applies as the lower threshold volume for a minor approach with two or more lanes, and 60 vph applies as the lower threshold volume for a minor approach with one lane. Major volumes greater than 1,000 vph are plotted on 1,000 axis.

RESULTS

FUTURE TRAFFIC SIGNAL WARRANT - 2040 Total

INFORMATION			
Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081	Date of Count:	
Condition:	2040 Total	N/A	
Major Street:	Crismon Road	2 or more lanes	
Minor Street:	Community Street #3	2 or more lanes	

TRAFFIC SIGNAL WARRANT	SATISFIED?
Warrant 1, Eight-Hour Vehicular Volume	YES
Warrant 2, Four-Hour Vehicular Volume	YES
Warrant 3, Peak Hour	NOT CONSIDERED
Warrant 4, Pedestrian Volume	NOT CONSIDERED
Warrant 5, School Crossing	NOT CONSIDERED
Warrant 6, Coordinated Signal System	NOT CONSIDERED
Warrant 7, Crash Experience	NOT CONSIDERED
Warrant 8, Roadway Network	NOT CONSIDERED

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. If a warrant or warrants are met, an engineering study and judgement decide if a traffic signal should be installed.

Warrant 1, Eight-Hour Vehicular Volume[1]

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	YES	YES	YES	
# Hours Met?	8	12	10	15
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.
2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Warrant 2, Four-Hour Vehicular Volume[3]

Condition Satisfied?	YES
# Hours Met?	12
Applicable Figure/Plot Line:	Figure 4C-2/2&2

3. **Warrant 2, Four-Hour Vehicular Volume** signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081		
Condition:	2040 Total		
Major Street:	Crismon Road	2 or more lanes	
Minor Street:	Community Street #3	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 1, Eight-Hour Vehicular Volume[1] Results

WARRANT 1 SATISFIED? YES

	Condition A Minimum Vehicular Volume	Condition B Interruption of Continuous Traffic	Combination of Conditions A & B[2]	
Condition Satisfied?	YES	YES	YES	
# Hours Met?	8	12	10	15
Criteria - Major (vph)	420	630	336	504
Criteria - Minor (vph)	140	70	112	56

1. It is intended that **Warrant 1, Eight-Hour Vehicular Volume** be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

2. Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

Per MUTCD 2009: Warrant 1, Eight-Hour Vehicular Volume

Support:

01 The 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.

02 The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

03 It is intended that Warrant 1 be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

Standard:

04 The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and

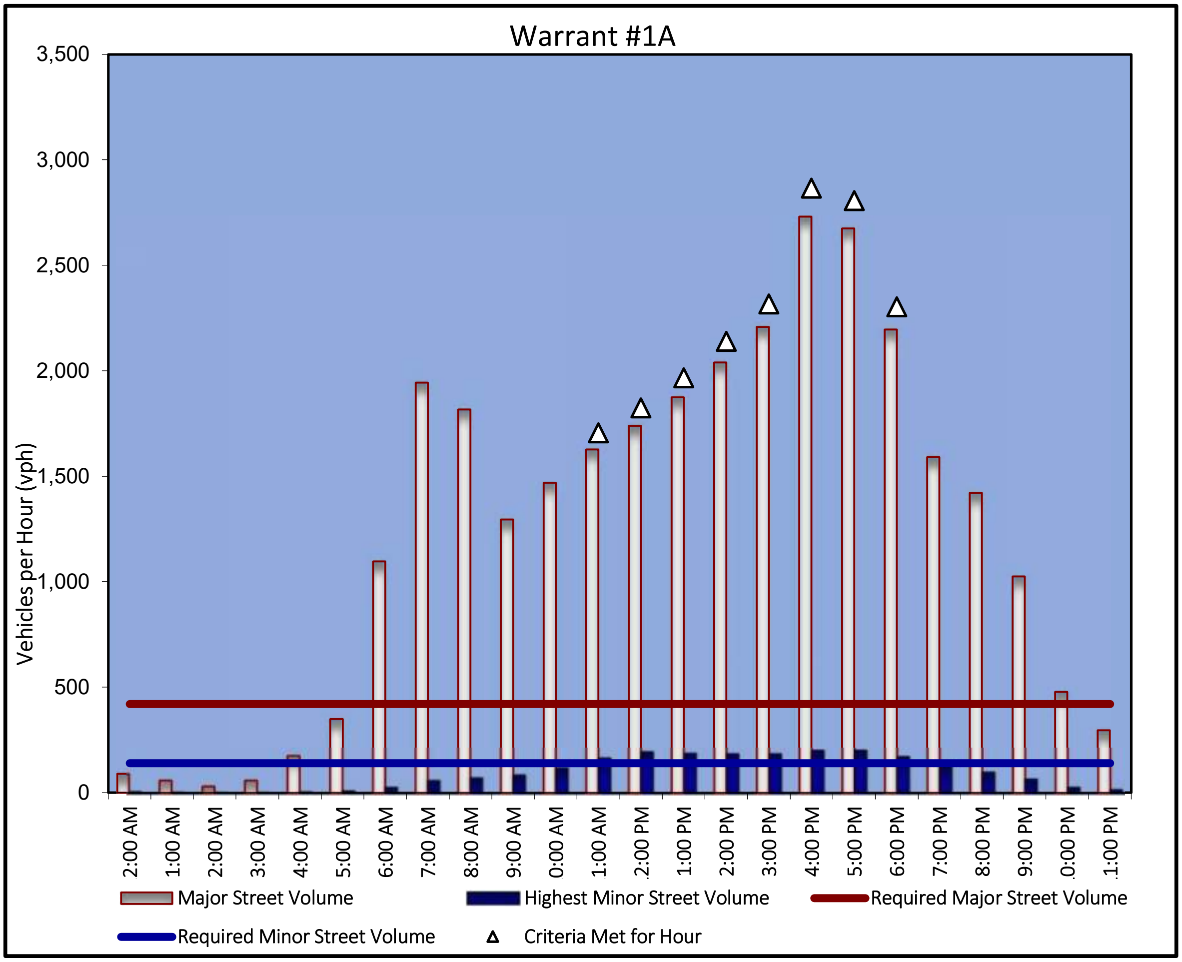
In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081		
Condition:	2040 Total		
Major Street:	Crismon Road		2 or more lanes
Minor Street:	Community Street #3		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1A Minimum Vehicular Volume	
Required Volume for Major Street:	420
Required Volume for Minor Street:	140
Number of Hours Satifisfied:	8
Number of Hours satisfied by less than 10%:	0
Number of hours within 10% of being satisfied:	1
Warrant Met?:	YES

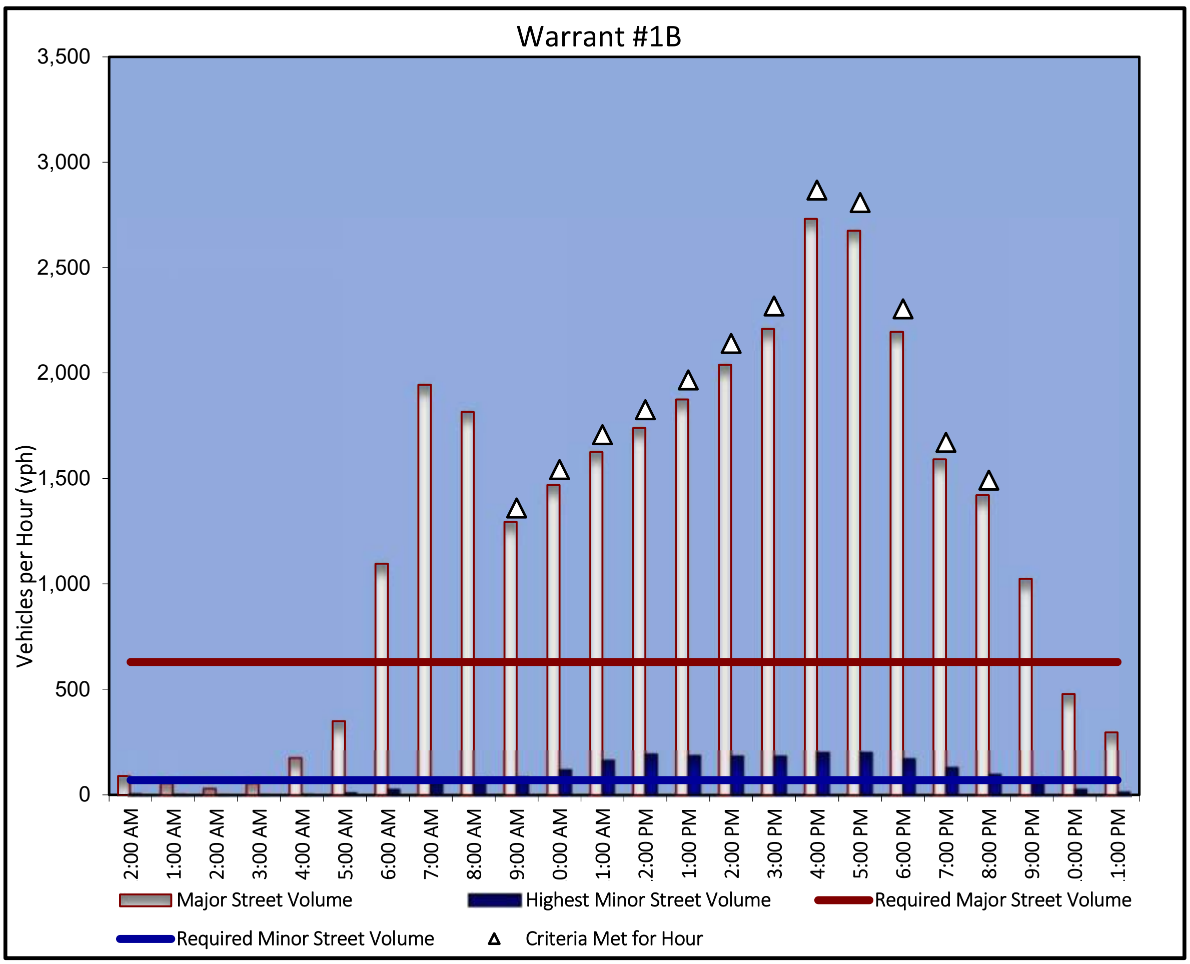


The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081		
Condition:	2040 Total		
Major Street:	Crismon Road		2 or more lanes
Minor Street:	Community Street #3		2 or more lanes
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1B Interruption of Continuous Traffic	
Required Volume for Major Street:	630
Required Volume for Minor Street:	70
Number of Hours Satifisfied:	12
Number of Hours satisfied by less than 10%:	0
Number of hours within 10% of being satisfied:	2
Warrant Met?:	YES



The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

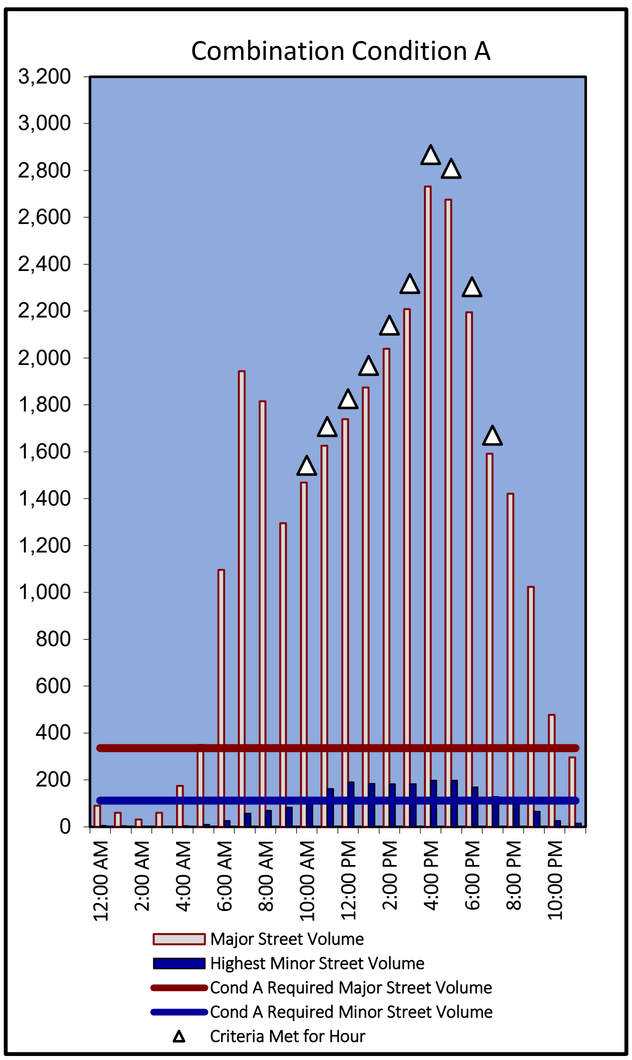
TRAFFIC SIGNAL WARRANT TOOL

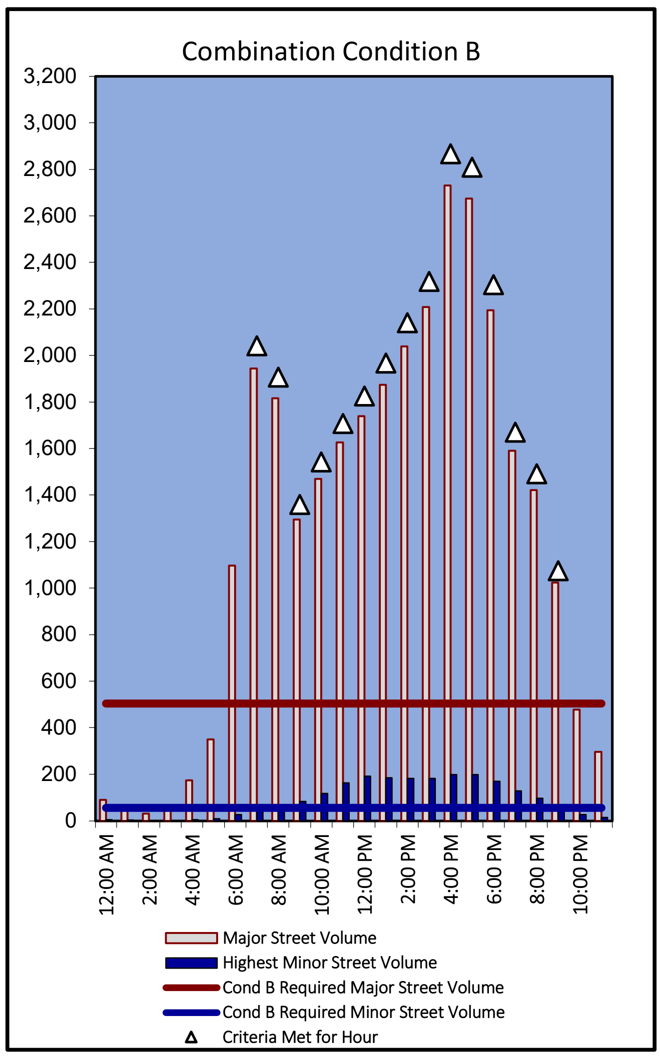
Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081		
Condition:	2040 Total		
Major Street:	Crismon Road	2 or more lanes	
Minor Street:	Community Street #3	2 or more lanes	
	Major-street speed >40 mph or isolated community with population <10,000?		Yes

MUTCD WARRANT #1 COMBINATION OF CONDITIONS A & B

Combination of Conditions A & B should be applied only after adequate trial of other remedial measures.

	Condition A	Condition B
Required Volume for Major Street:	336	504
Required Volume for Minor Street:	112	56
Number of Hours Satifisfied:	10	15
Warrant Met?:	YES	





The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081		
Condition:	2040 Total		
Major Street:	Crismon Road	2 or more lanes	
Minor Street:	Community Street #3	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume Results
WARRANT 2 SATISFIED? YES
Number of Hours Satisfied: 12
Applicable Figure/Plot Line: Figure 4C-2/2&2

Per MUTCD 2009: Warrant 2, Four-Hour Vehicular Volume

Support:

01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

02 The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the 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) all fall above the applicable curve in Figure 4C-1 for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

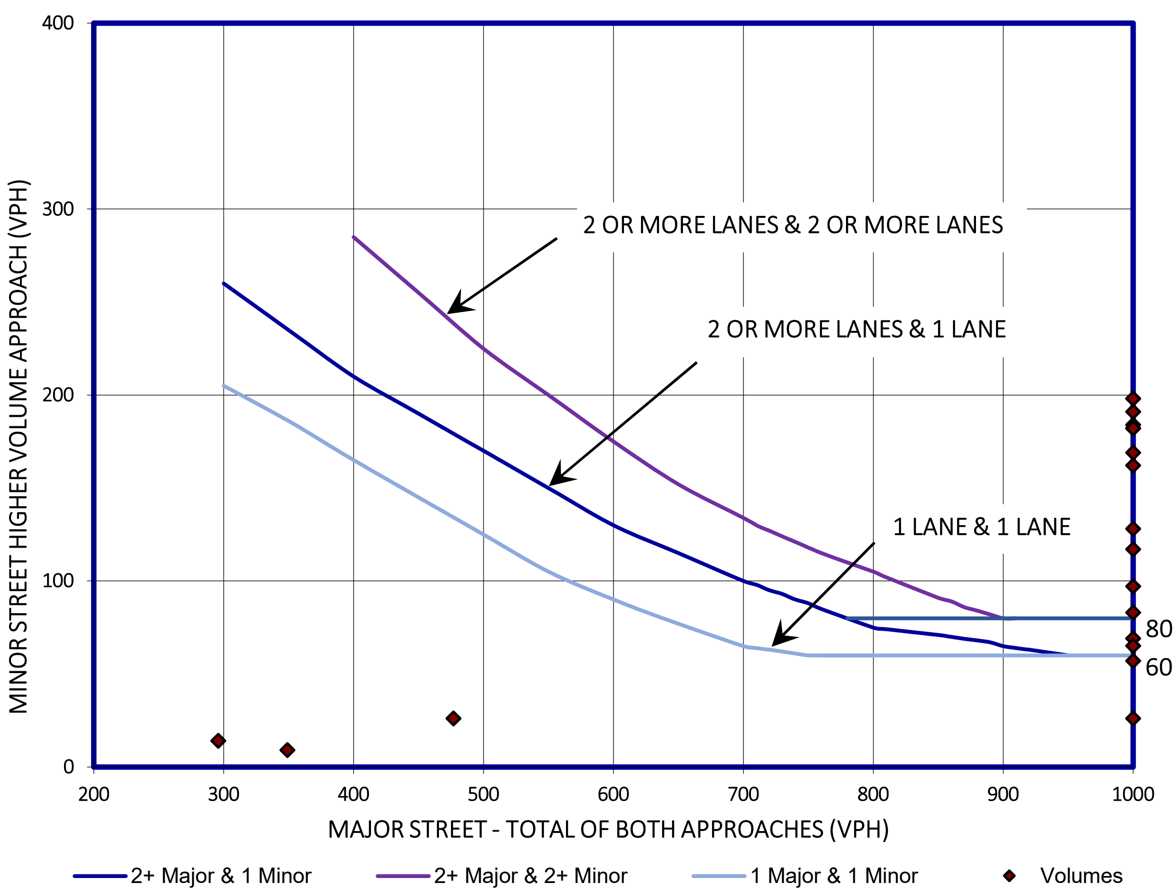
TRAFFIC SIGNAL WARRANT TOOL

Intersection:	Crismon Road	&	Community Street #3
File Number:	20-081		
Condition:	2040 Total		
Major Street:	Crismon Road	2 or more lanes	
Minor Street:	Community Street #3	2 or more lanes	
Major-street speed >40 mph or isolated community with population <10,000?			Yes

Warrant 2, Four-Hour Vehicular Volume	
WARRANT 2 SATISFIED? YES	
Number of Hours Satisfied:	12
Applicable Figure/Plot Line:	**Figure 4C-2/2&2**

Figure 4C-2, Warrant 2, Four-Hour Vehicular Volume (70% Factor)

Community less than 10,000 population or above 40 mph on Major Street



Note: 80 vph applies as the lower threshold volume for a minor approach with two or more lanes, and 60 vph applies as the lower threshold volume for a minor approach with one lane. Major volumes greater than 1,000 vph are plotted on 1,000 axis.

APPENDIX D: 2030 LEVEL OF SERVICE ANALYSES UNDER PRIMITIVE ROADWAY CONDITIONS

Intersection	
Int Delay, s/veh	11.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	146	25	29	169	85	58	23	21	67	55	386
Future Vol, veh/h	73	146	25	29	169	85	58	23	21	67	55	386
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	300	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	86	172	29	34	199	100	68	27	25	79	65	454

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	299	0	0	201	0	0	544	711	86	539	640	100
Stage 1	-	-	-	-	-	-	344	344	-	267	267	-
Stage 2	-	-	-	-	-	-	200	367	-	272	373	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1259	-	-	1368	-	-	422	357	956	426	392	936
Stage 1	-	-	-	-	-	-	645	635	-	715	687	-
Stage 2	-	-	-	-	-	-	783	621	-	711	617	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1259	-	-	1368	-	-	174	325	956	362	356	936
Mov Cap-2 Maneuver	-	-	-	-	-	-	174	325	-	362	356	-
Stage 1	-	-	-	-	-	-	601	592	-	666	670	-
Stage 2	-	-	-	-	-	-	355	605	-	616	575	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	0.8	27.7	18.3
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	174	474	1259	-	-	1368	-	-	362	778
HCM Lane V/C Ratio	0.392	0.109	0.068	-	-	0.025	-	-	0.218	0.667
HCM Control Delay (s)	38.4	13.5	8.1	-	-	7.7	-	-	17.7	18.4
HCM Lane LOS	E	B	A	-	-	A	-	-	C	C
HCM 95th %tile Q(veh)	1.7	0.4	0.2	-	-	0.1	-	-	0.8	5.2

Intersection						
Int Delay, s/veh	0.5					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	233	9	6	392	15	10
Future Vol, veh/h	233	9	6	392	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	274	11	7	461	18	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	285	0	525	143
Stage 1	-	-	-	-	280	-
Stage 2	-	-	-	-	245	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1274	-	482	879
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	773	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1274	-	480	879
Mov Cap-2 Maneuver	-	-	-	-	480	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	773	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	480	879	-	-	1274	-
HCM Lane V/C Ratio	0.037	0.013	-	-	0.006	-
HCM Control Delay (s)	12.8	9.2	-	-	7.8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Intersection												
Int Delay, s/veh	42.4											
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations												
Traffic Vol, veh/h	60	40	80	30	50	20	101	326	76	74	488	204
Future Vol, veh/h	60	40	80	30	50	20	101	326	76	74	488	204
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	71	47	94	35	59	24	119	384	89	87	574	240

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1328	1579	407	1152	1655	237	814	0	0	473	0	0
Stage 1	868	868	-	667	667	-	-	-	-	-	-	-
Stage 2	460	711	-	485	988	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	113	108	593	153	97	764	809	-	-	1085	-	-
Stage 1	314	368	-	414	455	-	-	-	-	-	-	-
Stage 2	551	434	-	532	323	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 34	85	593	62	76	764	809	-	-	1085	-	-
Mov Cap-2 Maneuver	~ 34	85	-	62	76	-	-	-	-	-	-	-
Stage 1	268	339	-	353	388	-	-	-	-	-	-	-
Stage 2	386	370	-	355	297	-	-	-	-	-	-	-
Approach	**EB**			**WB**			**NB**			**SB**		
HCM Control Delay, s	289			119.3			2.1			0.8		
HCM LOS	F			F								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	809	-	-	34	198	62	102	1085	-	-
HCM Lane V/C Ratio	0.147	-	-	2.076	0.713	0.569	0.807	0.08	-	-
HCM Control Delay (s)	10.2	-	-	$ 749.9	58.6	121.9	118.2	8.6	-	-
HCM Lane LOS	B	-	-	F	F	F	F	A	-	-
HCM 95th %tile Q(veh)	0.5	-	-	7.9	4.5	2.3	4.5	0.3	-	-

Notes

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

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	122	243	41	17	102	51	35	14	35	111	33	232
Future Vol, veh/h	122	243	41	17	102	51	35	14	35	111	33	232
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	300	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	144	286	48	20	120	60	41	16	41	131	39	273

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	180	0	0	334	0	0	694	794	143	599	782	60
Stage 1	-	-	-	-	-	-	574	574	-	160	160	-
Stage 2	-	-	-	-	-	-	120	220	-	439	622	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1393	-	-	1222	-	-	329	319	879	385	324	993
Stage 1	-	-	-	-	-	-	471	501	-	826	764	-
Stage 2	-	-	-	-	-	-	872	720	-	567	477	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1393	-	-	1222	-	-	195	282	879	319	286	993
Mov Cap-2 Maneuver	-	-	-	-	-	-	195	282	-	319	286	-
Stage 1	-	-	-	-	-	-	422	449	-	741	752	-
Stage 2	-	-	-	-	-	-	590	708	-	467	428	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	0.8	19	16.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	195	548	1393	-	-	1222	-	-	319	759
HCM Lane V/C Ratio	0.211	0.105	0.103	-	-	0.016	-	-	0.409	0.411
HCM Control Delay (s)	28.3	12.3	7.9	-	-	8	-	-	23.9	13
HCM Lane LOS	D	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.8	0.4	0.3	-	-	0.1	-	-	1.9	2

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	387	15	10	235	9	6
Future Vol, veh/h	387	15	10	235	9	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	455	18	12	276	11	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	473	0	626	237
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	162	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1085	-	416	764
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	850	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1085	-	411	764
Mov Cap-2 Maneuver	-	-	-	-	411	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	850	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	411	764	-	-	1085	-
HCM Lane V/C Ratio	0.026	0.009	-	-	0.011	-
HCM Control Delay (s)	14	9.8	-	-	8.4	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Intersection	
Int Delay, s/veh	157

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	67	133	18	30	12	168	544	126	122	293	122
Future Vol, veh/h	100	67	133	18	30	12	168	544	126	122	293	122
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	118	79	156	21	35	14	198	640	148	144	345	144

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1439	1889	245	1610	1887	394	489	0	0	788	0	0
Stage 1	705	705	-	1110	1110	-	-	-	-	-	-	-
Stage 2	734	1184	-	500	777	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 94	~ 70	755	70	70	605	1070	-	-	827	-	-
Stage 1	393	437	-	223	283	-	-	-	-	-	-	-
Stage 2	378	261	-	521	405	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 28	~ 47	755	-	47	605	1070	-	-	827	-	-
Mov Cap-2 Maneuver	~ 28	~ 47	-	-	47	-	-	-	-	-	-	-
Stage 1	320	361	-	182	231	-	-	-	-	-	-	-
Stage 2	255	213	-	267	335	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 898.9		1.8	2.3
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1070	-	-	28	125	-	64	827	-	-
HCM Lane V/C Ratio	0.185	-	-	4.202	1.882	-	0.772	0.174	-	-
HCM Control Delay (s)	9.1	-		$ 1726.9	$ 484.9	-	158.9	10.3	-	-
HCM Lane LOS	A	-	-	F	F	-	F	B	-	-
HCM 95th %tile Q(veh)	0.7	-	-	14.3	18.5	-	3.5	0.6	-	-

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

Intersection	
Int Delay, s/veh	6.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	256	61	24	396	218	36
Future Vol, veh/h	256	61	24	396	218	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	301	72	28	466	256	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	373	0	590	151
Stage 1	-	-	-	-	301	-
Stage 2	-	-	-	-	289	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1182	-	439	868
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	735	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1182	-	428	868
Mov Cap-2 Maneuver	-	-	-	-	428	-
Stage 1	-	-	-	-	708	-
Stage 2	-	-	-	-	735	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	23
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	428	868	-	-	1182	-
HCM Lane V/C Ratio	0.599	0.049	-	-	0.024	-
HCM Control Delay (s)	25.2	9.4	-	-	8.1	-
HCM Lane LOS	D	A	-	-	A	-
HCM 95th %tile Q(veh)	3.8	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	280	12	0	420	0	36
Future Vol, veh/h	280	12	0	420	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	329	14	0	494	0	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	583	172
Stage 1	-	-	-	-	336	-
Stage 2	-	-	-	-	247	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	443	842
Stage 1	-	-	0	-	696	-
Stage 2	-	-	0	-	771	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	443	842
Mov Cap-2 Maneuver	-	-	-	-	443	-
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	842	-	-	-
HCM Lane V/C Ratio	0.05	-	-	-
HCM Control Delay (s)	9.5	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	109	115	0	58	66
Future Vol, veh/h	0	109	115	0	58	66
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	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	128	135	0	68	78

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	349	68	0	0	135	0
Stage 1	135	-	-	-	-	-
Stage 2	214	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	635	982	-	-	1448	-
Stage 1	878	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	605	982	-	-	1448	-
Mov Cap-2 Maneuver	605	-	-	-	-	-
Stage 1	837	-	-	-	-	-
Stage 2	821	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	3.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	982	1448	-
HCM Lane V/C Ratio	-	-	0.131	0.047	-
HCM Control Delay (s)	-	-	9.2	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	37.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	207	43	33	351	121	112	30	32	79	57	386
Future Vol, veh/h	73	207	43	33	351	121	112	30	32	79	57	386
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	300	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	86	244	51	39	413	142	132	35	38	93	67	454

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	555	0	0	295	0	0	734	1049	122	803	958	207
Stage 1	-	-	-	-	-	-	416	416	-	491	491	-
Stage 2	-	-	-	-	-	-	318	633	-	312	467	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1011	-	-	1263	-	-	308	226	906	275	256	799
Stage 1	-	-	-	-	-	-	585	590	-	528	546	-
Stage 2	-	-	-	-	-	-	668	472	-	673	560	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1011	-	-	1263	-	-	~ 94	200	906	209	227	799
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 94	200	-	209	227	-
Stage 1	-	-	-	-	-	-	535	540	-	483	529	-
Stage 2	-	-	-	-	-	-	244	457	-	552	512	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.5	208.5	37.2
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	94	335	1011	-	-	1263	-	-	209	603
HCM Lane V/C Ratio	1.402	0.218	0.085	-	-	0.031	-	-	0.445	0.864
HCM Control Delay (s)	$ 313.5	18.7	8.9	-	-	7.9	-	-	35.3	37.5
HCM Lane LOS	F	C	A	-	-	A	-	-	E	E
HCM 95th %tile Q(veh)	9.8	0.8	0.3	-	-	0.1	-	-	2.1	9.8

Notes

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	316	9	6	420	15	10
Future Vol, veh/h	316	9	6	420	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	372	11	7	494	18	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	383	0	639	192
Stage 1	-	-	-	-	378	-
Stage 2	-	-	-	-	261	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1172	-	408	817
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	759	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1172	-	406	817
Mov Cap-2 Maneuver	-	-	-	-	406	-
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	759	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	406	817	-	-	1172	-
HCM Lane V/C Ratio	0.043	0.014	-	-	0.006	-
HCM Control Delay (s)	14.3	9.5	-	-	8.1	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Intersection	
Int Delay, s/veh	139.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	96	40	127	30	50	20	117	326	76	74	488	216
Future Vol, veh/h	96	40	127	30	50	20	117	326	76	74	488	216
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	113	47	149	35	59	24	138	384	89	87	574	254

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1373	1624	414	1190	1707	237	828	0	0	473	0	0
Stage 1	875	875	-	705	705	-	-	-	-	-	-	-
Stage 2	498	749	-	485	1002	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 105	102	587	143	90	764	799	-	-	1085	-	-
Stage 1	310	365	-	393	437	-	-	-	-	-	-	-
Stage 2	523	417	-	532	318	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 23	78	587	46	68	764	799	-	-	1085	-	-
Mov Cap-2 Maneuver	~ 23	78	-	46	68	-	-	-	-	-	-	-
Stage 1	256	336	-	325	361	-	-	-	-	-	-	-
Stage 2	351	345	-	314	293	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 812.8	164.8	2.4	0.8
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	799	-	-	23	229	46	92	1085	-	-
HCM Lane V/C Ratio	0.172	-	-	4.91	0.858	0.767	0.895	0.08	-	-
HCM Control Delay (s)	10.4	-		$ 2099.7	73	203.4	148.3	8.6	-	-
HCM Lane LOS	B	-	-	F	F	F	F	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	14.2	6.8	3	5	0.3	-	-

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

Intersection						
Int Delay, s/veh	5.6					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	434	200	80	247	141	24
Future Vol, veh/h	434	200	80	247	141	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	511	235	94	291	166	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	746	0	845	256
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	334	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	858	-	302	743
Stage 1	-	-	-	-	567	-
Stage 2	-	-	-	-	697	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	858	-	269	743
Mov Cap-2 Maneuver	-	-	-	-	269	-
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	697	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	33.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	269	743	-	-	858	-
HCM Lane V/C Ratio	0.617	0.038	-	-	0.11	-
HCM Control Delay (s)	37.7	10	-	-	9.7	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	3.7	0.1	-	-	0.4	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	418	40	0	327	0	24
Future Vol, veh/h	418	40	0	327	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	492	47	0	385	0	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	709	270
Stage 1	-	-	-	-	516	-
Stage 2	-	-	-	-	193	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	369	728
Stage 1	-	-	0	-	564	-
Stage 2	-	-	0	-	821	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	369	728
Mov Cap-2 Maneuver	-	-	-	-	369	-
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	821	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	728	-	-	-
HCM Lane V/C Ratio	0.039	-	-	-
HCM Control Delay (s)	10.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Int Delay, s/veh	4.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	113	69	0	148	110
Future Vol, veh/h	0	113	69	0	148	110
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	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	133	81	0	174	129

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	558	41	0	0	81	0
Stage 1	81	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	475	1021	-	-	1516	-
Stage 1	933	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	420	1021	-	-	1516	-
Mov Cap-2 Maneuver	420	-	-	-	-	-
Stage 1	826	-	-	-	-	-
Stage 2	623	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	4.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1021	1516	-
HCM Lane V/C Ratio	-	-	0.13	0.115	-
HCM Control Delay (s)	-	-	9.1	7.7	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.4	-

Intersection	
Int Delay, s/veh	25.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	122	443	101	29	220	75	70	19	42	151	41	232
Future Vol, veh/h	122	443	101	29	220	75	70	19	42	151	41	232
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	300	300	-	300	300	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	144	521	119	34	259	88	82	22	49	178	48	273

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	347	0	0	640	0	0	1031	1224	261	887	1255	130
Stage 1	-	-	-	-	-	-	809	809	-	327	327	-
Stage 2	-	-	-	-	-	-	222	415	-	560	928	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1209	-	-	940	-	-	187	178	738	239	170	896
Stage 1	-	-	-	-	-	-	340	392	-	660	646	-
Stage 2	-	-	-	-	-	-	760	591	-	480	345	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1209	-	-	940	-	-	86	151	738	~ 175	144	896
Mov Cap-2 Maneuver	-	-	-	-	-	-	86	151	-	~ 175	144	-
Stage 1	-	-	-	-	-	-	300	345	-	581	623	-
Stage 2	-	-	-	-	-	-	470	570	-	369	304	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.8	100.6	60.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	86	334	1209	-	-	940	-	-	175	502
HCM Lane V/C Ratio	0.958	0.215	0.119	-	-	0.036	-	-	1.015	0.64
HCM Control Delay (s)	172	18.7	8.4	-	-	9	-	-	126	24
HCM Lane LOS	F	C	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	5.3	0.8	0.4	-	-	0.1	-	-	8.3	4.5

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

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	441	15	10	327	9	6
Future Vol, veh/h	441	15	10	327	9	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	519	18	12	385	11	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	537	0	745	269
Stage 1	-	-	-	-	528	-
Stage 2	-	-	-	-	217	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1027	-	350	729
Stage 1	-	-	-	-	556	-
Stage 2	-	-	-	-	798	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1027	-	346	729
Mov Cap-2 Maneuver	-	-	-	-	346	-
Stage 1	-	-	-	-	549	-
Stage 2	-	-	-	-	798	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	346	729	-	-	1027	-
HCM Lane V/C Ratio	0.031	0.01	-	-	0.011	-
HCM Control Delay (s)	15.7	10	-	-	8.5	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	124	67	164	18	30	12	220	544	126	122	293	162
Future Vol, veh/h	124	67	164	18	30	12	220	544	126	122	293	162
Conflicting Peds, #/hr	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
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	146	79	193	21	35	14	259	640	148	144	345	191

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1585	2035	268	1732	2056	394	536	0	0	788	0	0
Stage 1	729	729	-	1232	1232	-	-	-	-	-	-	-
Stage 2	856	1306	-	500	824	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 73	~ 56	730	56	55	605	1028	-	-	827	-	-
Stage 1	380	426	-	188	248	-	-	-	-	-	-	-
Stage 2	319	228	-	521	385	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 35	730	-	~ 34	605	1028	-	-	827	-	-
Mov Cap-2 Maneuver	-	~ 35	-	-	~ 34	-	-	-	-	-	-	-
Stage 1	284	352	-	141	186	-	-	-	-	-	-	-
Stage 2	189	171	-	246	318	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			2.4	2.2
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1028	-	-	-	108	-	47	827	-	-
HCM Lane V/C Ratio	0.252	-	-	-	2.516	-	1.051	0.174	-	-
HCM Control Delay (s)	9.7	-	-	-	$ 772.1	-	283.9	10.3	-	-
HCM Lane LOS	A	-	-	-	F	-	F	B	-	-
HCM 95th %tile Q(veh)	1	-	-	-	24.6	-	4.5	0.6	-	-

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

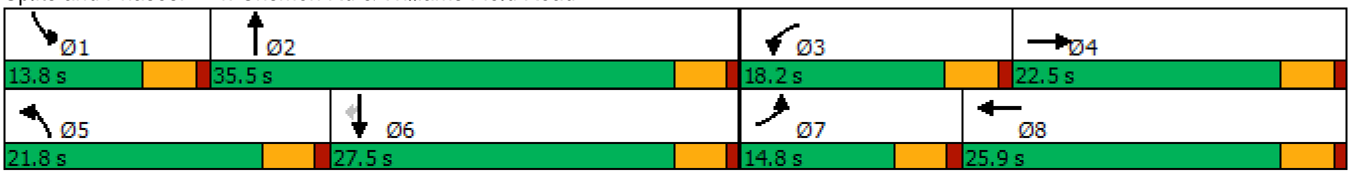
APPENDIX E: 2030 LEVEL OF SERVICE ANALYSES WITH PLANNED STUDY AREA IMPROVEMENTS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	146	25	29	169	85	58	23	21	67	55	386
Future Volume (vph)	73	146	25	29	169	85	58	23	21	67	55	386
Satd. Flow (prot)	1770	4973	0	1770	4831	0	3433	3284	0	3433	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4973	0	1770	4831	0	3433	3284	0	3433	3539	1583
Satd. Flow (RTOR)		29			100			25				454
Lane Group Flow (vph)	86	201	0	34	299	0	68	52	0	79	65	454
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	22.5
Total Split (s)	14.8	22.5		18.2	25.9		21.8	35.5		13.8	27.5	27.5
Total Split (%)	16.4%	25.0%		20.2%	28.8%		24.2%	39.4%		15.3%	30.6%	30.6%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min		None	Min	Min
Act Effct Green (s)	8.9	11.3		7.7	8.7		7.7	9.3		7.8	9.3	9.3
Actuated g/C Ratio	0.22	0.28		0.19	0.21		0.19	0.23		0.19	0.23	0.23
v/c Ratio	0.22	0.14		0.10	0.27		0.10	0.07		0.12	0.08	0.64
Control Delay	20.9	13.6		22.1	13.2		20.9	11.9		20.6	16.9	7.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	20.9	13.6		22.1	13.2		20.9	11.9		20.6	16.9	7.0
LOS	C	B		C	B		C	B		C	B	A
Approach Delay		15.8			14.1			17.0			9.9	
Approach LOS		B			B			B			A	
Queue Length 50th (ft)	21	9		8	17		8	3		9	7	0
Queue Length 95th (ft)	62	35		32	43		26	14		29	21	49
Internal Link Dist (ft)		1732			2369			1031			2756	
Turn Bay Length (ft)	300			300			300			300		300
Base Capacity (vph)	555	2775		739	3129		1810	2472		973	2337	1199
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.15	0.07		0.05	0.10		0.04	0.02		0.08	0.03	0.38

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 40.6
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.64

Intersection Signal Delay: 12.8	Intersection LOS: B
Intersection Capacity Utilization 44.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Crismon Rd & Williams Field Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	40	80	30	50	20	101	326	76	74	488	204
Future Volume (vph)	60	40	80	30	50	20	101	326	76	74	488	204
Satd. Flow (prot)	1770	3185	0	1770	3387	0	1770	4943	0	1770	4862	0
Flt Permitted	0.486			0.678			0.277			0.471		
Satd. Flow (perm)	905	3185	0	1263	3387	0	516	4943	0	877	4862	0
Satd. Flow (RTOR)		94			24			72			124	
Lane Group Flow (vph)	71	141	0	35	83	0	119	473	0	87	814	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	14.2	27.2		9.6	22.6		19.6	41.2		12.0	33.6	
Total Split (%)	15.8%	30.2%		10.7%	25.1%		21.8%	45.8%		13.3%	37.3%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	13.5	10.5		9.4	7.1		29.2	24.2		26.4	22.8	
Actuated g/C Ratio	0.26	0.21		0.18	0.14		0.57	0.47		0.52	0.45	
v/c Ratio	0.19	0.19		0.12	0.17		0.23	0.20		0.15	0.36	
Control Delay	16.7	10.4		16.8	20.3		8.2	11.2		8.1	13.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	16.7	10.4		16.8	20.3		8.2	11.2		8.1	13.3	
LOS	B	B		B	C		A	B		A	B	
Approach Delay		12.5			19.2			10.6			12.8	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	16	5		8	9		19	36		14	69	
Queue Length 95th (ft)	46	28		27	29		42	58		33	110	
Internal Link Dist (ft)		1234			2613			2508			2752	
Turn Bay Length (ft)	200			200			200			200		
Base Capacity (vph)	467	1629		290	1356		729	3672		607	3097	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.15	0.09		0.12	0.06		0.16	0.13		0.14	0.26	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 51

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.36

Intersection Signal Delay: 12.5	Intersection LOS: B
Intersection Capacity Utilization 40.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Signal Butte Road & Williams Field Road

Intersection						
Int Delay, s/veh	0.5					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	233	9	6	392	15	10
Future Vol, veh/h	233	9	6	392	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	274	11	7	461	18	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	285	0	525	143
Stage 1	-	-	-	-	280	-
Stage 2	-	-	-	-	245	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1274	-	482	879
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	773	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1274	-	480	879
Mov Cap-2 Maneuver	-	-	-	-	480	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	773	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	480	879	-	-	1274	-
HCM Lane V/C Ratio	0.037	0.013	-	-	0.006	-
HCM Control Delay (s)	12.8	9.2	-	-	7.8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	243	41	17	102	51	35	14	35	111	33	232
Future Volume (vph)	122	243	41	17	102	51	35	14	35	111	33	232
Satd. Flow (prot)	1770	4973	0	1770	4831	0	3433	3157	0	3433	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4973	0	1770	4831	0	3433	3157	0	3433	3539	1583
Satd. Flow (RTOR)		35			60			41				273
Lane Group Flow (vph)	144	334	0	20	180	0	41	57	0	131	39	273
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	22.5
Total Split (s)	21.0	26.9		16.6	22.5		18.8	30.5		16.0	27.7	27.7
Total Split (%)	23.3%	29.9%		18.4%	25.0%		20.9%	33.9%		17.8%	30.8%	30.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min		None	Min	Min
Act Effct Green (s)	10.0	16.4		6.9	7.7		6.8	7.2		8.0	12.2	12.2
Actuated g/C Ratio	0.23	0.37		0.16	0.17		0.15	0.16		0.18	0.27	0.27
v/c Ratio	0.36	0.18		0.07	0.20		0.08	0.10		0.21	0.04	0.43
Control Delay	20.9	10.5		21.9	14.8		21.4	11.0		20.5	16.7	5.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	20.9	10.5		21.9	14.8		21.4	11.0		20.5	16.7	5.8
LOS	C	B		C	B		C	B		C	B	A
Approach Delay		13.6			15.5			15.3			11.1	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	35	16		5	10		5	2		16	3	0
Queue Length 95th (ft)	82	48		22	28		18	14		40	15	43
Internal Link Dist (ft)		1732			2369			1031			2756	
Turn Bay Length (ft)	300			300			300			300		300
Base Capacity (vph)	751	2805		551	2270		1263	1970		1016	2031	1025
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.19	0.12		0.04	0.08		0.03	0.03		0.13	0.02	0.27

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 44.4

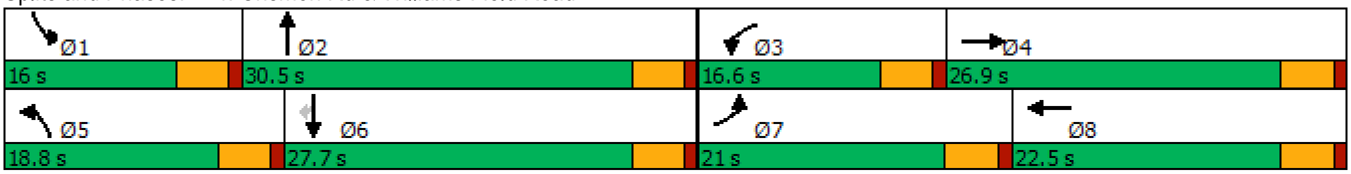
Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 13.1	Intersection LOS: B
Intersection Capacity Utilization 33.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Crismon Rd & Williams Field Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	67	133	18	30	12	168	544	126	122	293	122
Future Volume (vph)	100	67	133	18	30	12	168	544	126	122	293	122
Satd. Flow (prot)	1770	3185	0	1770	3387	0	1770	4943	0	1770	4862	0
Flt Permitted	0.433			0.605			0.368			0.342		
Satd. Flow (perm)	807	3185	0	1127	3387	0	685	4943	0	637	4862	0
Satd. Flow (RTOR)		156			14			62			109	
Lane Group Flow (vph)	118	235	0	21	49	0	198	788	0	144	489	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.0	28.9		9.6	22.5		26.0	33.5		18.0	25.5	
Total Split (%)	17.8%	32.1%		10.7%	25.0%		28.9%	37.2%		20.0%	28.3%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	14.7	13.1		9.0	6.6		26.1	18.5		21.5	13.4	
Actuated g/C Ratio	0.28	0.25		0.17	0.13		0.50	0.35		0.41	0.26	
v/c Ratio	0.30	0.26		0.08	0.11		0.36	0.44		0.33	0.37	
Control Delay	17.3	8.2		16.2	21.5		9.9	15.4		10.4	14.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.3	8.2		16.2	21.5		9.9	15.4		10.4	14.2	
LOS	B	A		B	C		A	B		B	B	
Approach Delay		11.2			19.9			14.3			13.4	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	28	9		5	5		36	76		25	38	
Queue Length 95th (ft)	68	38		19	21		69	115		52	66	
Internal Link Dist (ft)		1234			2613			2508			2752	
Turn Bay Length (ft)	200			200			200			200		
Base Capacity (vph)	499	1687		260	1271		864	2993		644	2176	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.24	0.14		0.08	0.04		0.23	0.26		0.22	0.22	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 52.5
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.44

Intersection Signal Delay: 13.7	Intersection LOS: B
Intersection Capacity Utilization 45.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Signal Butte Road & Williams Field Road

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	387	15	10	235	9	6
Future Vol, veh/h	387	15	10	235	9	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	455	18	12	276	11	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	473	0	626	237
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	162	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1085	-	416	764
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	850	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1085	-	411	764
Mov Cap-2 Maneuver	-	-	-	-	411	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	850	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	12.3
HCM LOS			B

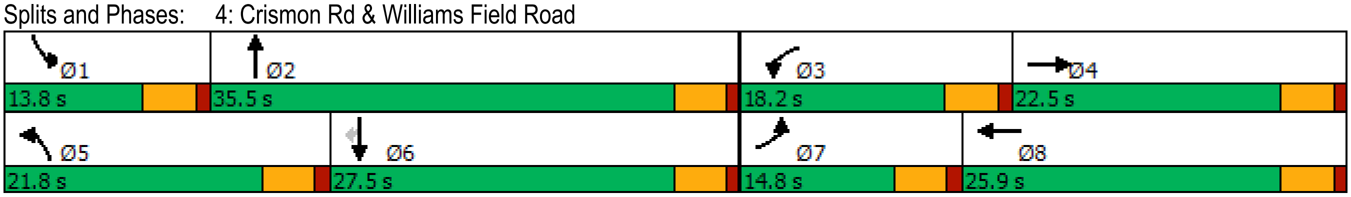
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	411	764	-	-	1085	-
HCM Lane V/C Ratio	0.026	0.009	-	-	0.011	-
HCM Control Delay (s)	14	9.8	-	-	8.4	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	207	43	33	351	121	112	30	32	79	57	386
Future Volume (vph)	73	207	43	33	351	121	112	30	32	79	57	386
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		300	300		300	300		300	300		300
Storage Lanes	1		0	1		0	2		0	2		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1770	4953	0	1770	4892	0	3433	3263	0	3433	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4953	0	1770	4892	0	3433	3263	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			91			38				454
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1812			2449			1111			2836	
Travel Time (s)		41.2			55.7			25.3			64.5	
Lane Group Flow (vph)	86	295	0	39	555	0	132	73	0	93	67	454
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	22.5
Total Split (s)	14.8	22.5		18.2	25.9		21.8	35.5		13.8	27.5	27.5
Total Split (%)	16.4%	25.0%		20.2%	28.8%		24.2%	39.4%		15.3%	30.6%	30.6%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min		None	Min	Min
Act Effct Green (s)	8.8	15.5		7.8	12.6		8.6	10.1		8.0	9.6	9.6
Actuated g/C Ratio	0.18	0.32		0.16	0.26		0.18	0.21		0.16	0.20	0.20
v/c Ratio	0.27	0.19		0.14	0.42		0.22	0.10		0.17	0.10	0.67
Control Delay	26.3	13.5		26.7	16.3		24.5	12.6		25.1	20.8	8.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	26.3	13.5		26.7	16.3		24.5	12.6		25.1	20.8	8.4
LOS	C	B		C	B		C	B		C	C	A
Approach Delay		16.4			17.0			20.2			12.3	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	24	15		11	45		19	4		13	9	0
Queue Length 95th (ft)	72	51		41	90		49	19		38	25	53
Internal Link Dist (ft)		1732			2369			1031			2756	
Turn Bay Length (ft)	300			300			300			300		300
Base Capacity (vph)	448	2330		595	2615		1459	2213		784	1954	1077
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.19	0.13		0.07	0.21		0.09	0.03		0.12	0.03	0.42

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 49	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 15.6	Intersection LOS: B
Intersection Capacity Utilization 48.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Crismon Rd & Williams Field Road

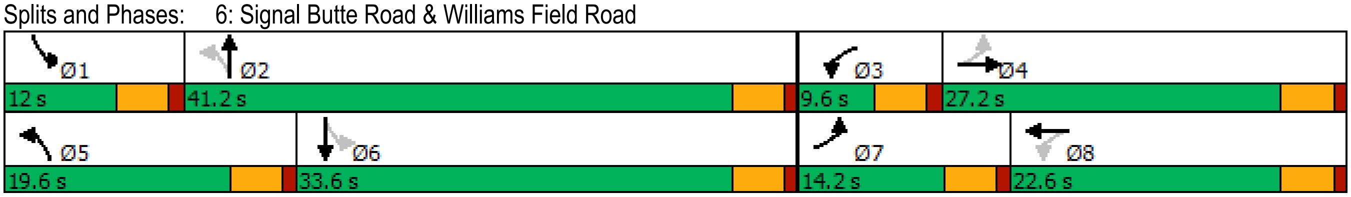


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	40	127	30	50	20	117	326	76	74	488	216
Future Volume (vph)	96	40	127	30	50	20	117	326	76	74	488	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200	200		0	200		0	200		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1770	3136	0	1770	3387	0	1770	4943	0	1770	4851	0
Flt Permitted	0.465			0.629			0.234			0.471		
Satd. Flow (perm)	866	3136	0	1172	3387	0	436	4943	0	877	4851	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		149			24			72			132	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1314			2693			2588			2832	
Travel Time (s)		29.9			61.2			58.8			64.4	
Lane Group Flow (vph)	113	196	0	35	83	0	138	473	0	87	828	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	14.2	27.2		9.6	22.6		19.6	41.2		12.0	33.6	
Total Split (%)	15.8%	30.2%		10.7%	25.1%		21.8%	45.8%		13.3%	37.3%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	17.0	13.7		10.8	7.1		26.7	19.8		23.0	17.9	
Actuated g/C Ratio	0.31	0.25		0.20	0.13		0.49	0.36		0.42	0.33	
v/c Ratio	0.27	0.22		0.12	0.18		0.31	0.26		0.18	0.50	
Control Delay	17.7	8.4		17.1	21.4		9.8	12.4		9.0	15.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.7	8.4		17.1	21.4		9.8	12.4		9.0	15.6	
LOS	B	A		B	C		A	B		A	B	
Approach Delay		11.8			20.1			11.8			15.0	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	27	5		8	10		24	38		15	75	
Queue Length 95th (ft)	68	31		28	30		48	58		33	114	
Internal Link Dist (ft)		1234			2613			2508			2752	
Turn Bay Length (ft)	200			200			200			200		
Base Capacity (vph)	468	1522		291	1256		635	3390		507	2876	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.24	0.13		0.12	0.07		0.22	0.14		0.17	0.29	

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 55	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 13.8	Intersection LOS: B
Intersection Capacity Utilization 45.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Signal Butte Road & Williams Field Road



Intersection	
Int Delay, s/veh	6.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	256	61	24	396	218	36
Future Vol, veh/h	256	61	24	396	218	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	301	72	28	466	256	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	373	0	590	151
Stage 1	-	-	-	-	301	-
Stage 2	-	-	-	-	289	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1182	-	439	868
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	735	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1182	-	428	868
Mov Cap-2 Maneuver	-	-	-	-	428	-
Stage 1	-	-	-	-	708	-
Stage 2	-	-	-	-	735	-

Approach	EB		WB		NB
HCM Control Delay, s	0		0.5		23
HCM LOS					C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	428	868	-	-	1182	-
HCM Lane V/C Ratio	0.599	0.049	-	-	0.024	-
HCM Control Delay (s)	25.2	9.4	-	-	8.1	-
HCM Lane LOS	D	A	-	-	A	-
HCM 95th %tile Q(veh)	3.8	0.2	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.5					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	280	12	0	420	0	36
Future Vol, veh/h	280	12	0	420	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	329	14	0	494	0	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	583	172
Stage 1	-	-	-	-	336	-
Stage 2	-	-	-	-	247	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	443	842
Stage 1	-	-	0	-	696	-
Stage 2	-	-	0	-	771	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	443	842
Mov Cap-2 Maneuver	-	-	-	-	443	-
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	842	-	-	-
HCM Lane V/C Ratio	0.05	-	-	-
HCM Control Delay (s)	9.5	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection						
Int Delay, s/veh	4.2					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	109	115	0	58	66
Future Vol, veh/h	0	109	115	0	58	66
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	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	128	135	0	68	78

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	310	68	0	0	135	0
Stage 1	135	-	-	-	-	-
Stage 2	175	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	658	981	-	-	1447	-
Stage 1	877	-	-	-	-	-
Stage 2	838	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	627	981	-	-	1447	-
Mov Cap-2 Maneuver	627	-	-	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	838	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	3.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	981	1447	-
HCM Lane V/C Ratio	-	-	-	0.131	0.047	-
HCM Control Delay (s)	-	-	0	9.2	7.6	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	316	9	6	420	15	10
Future Vol, veh/h	316	9	6	420	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	372	11	7	494	18	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	383	0	639	192
Stage 1	-	-	-	-	378	-
Stage 2	-	-	-	-	261	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1172	-	408	817
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	759	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1172	-	406	817
Mov Cap-2 Maneuver	-	-	-	-	406	-
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	759	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.4
HCM LOS			B

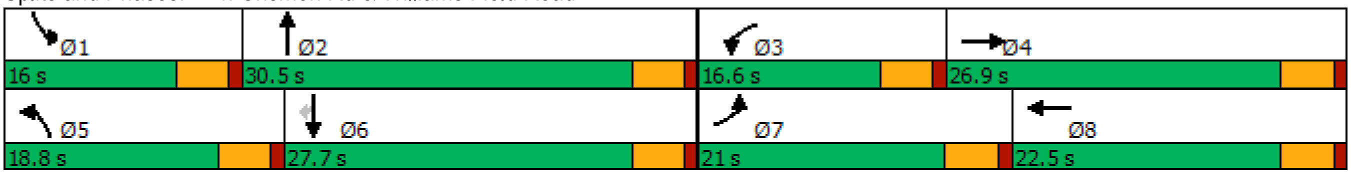
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	406	817	-	-	1172	-
HCM Lane V/C Ratio	0.043	0.014	-	-	0.006	-
HCM Control Delay (s)	14.3	9.5	-	-	8.1	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	443	101	29	220	75	70	19	42	151	41	232
Future Volume (vph)	122	443	101	29	220	75	70	19	42	151	41	232
Satd. Flow (prot)	1770	4943	0	1770	4892	0	3433	3171	0	3433	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4943	0	1770	4892	0	3433	3171	0	3433	3539	1583
Satd. Flow (RTOR)		55			86			49				273
Lane Group Flow (vph)	144	640	0	34	347	0	82	71	0	178	48	273
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	22.5
Total Split (s)	21.0	26.9		16.6	22.5		18.8	30.5		16.0	27.7	27.7
Total Split (%)	23.3%	29.9%		18.4%	25.0%		20.9%	33.9%		17.8%	30.8%	30.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min		None	Min	Min
Act Effct Green (s)	10.0	16.8		6.9	9.5		7.0	6.8		8.5	13.7	13.7
Actuated g/C Ratio	0.20	0.33		0.14	0.19		0.14	0.13		0.17	0.27	0.27
v/c Ratio	0.41	0.38		0.14	0.35		0.17	0.15		0.31	0.05	0.43
Control Delay	24.0	13.8		24.8	16.1		23.6	12.3		22.7	20.3	6.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	24.0	13.8		24.8	16.1		23.6	12.3		22.7	20.3	6.2
LOS	C	B		C	B		C	B		C	C	A
Approach Delay		15.7			16.9			18.4			13.4	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	37	36		9	24		11	3		24	6	0
Queue Length 95th (ft)	92	95		34	53		31	18		56	20	46
Internal Link Dist (ft)		1732			2369			1031			2756	
Turn Bay Length (ft)	300			300			300			300		300
Base Capacity (vph)	611	2345		448	1896		1027	1747		826	1718	909
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.24	0.27		0.08	0.18		0.08	0.04		0.22	0.03	0.30

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 50.4
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.43

Intersection Signal Delay: 15.6 Intersection LOS: B
Intersection Capacity Utilization 37.2% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 4: Crismon Rd & Williams Field Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	67	164	18	30	12	220	544	126	122	293	162
Future Volume (vph)	124	67	164	18	30	12	220	544	126	122	293	162
Satd. Flow (prot)	1770	3164	0	1770	3387	0	1770	4943	0	1770	4816	0
Flt Permitted	0.433			0.597			0.313			0.342		
Satd. Flow (perm)	807	3164	0	1112	3387	0	583	4943	0	637	4816	0
Satd. Flow (RTOR)		193			14			62			144	
Lane Group Flow (vph)	146	272	0	21	49	0	259	788	0	144	536	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.0	28.9		9.6	22.5		26.0	33.5		18.0	25.5	
Total Split (%)	17.8%	32.1%		10.7%	25.0%		28.9%	37.2%		20.0%	28.3%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	15.3	13.5		9.0	6.6		27.6	18.8		20.5	12.4	
Actuated g/C Ratio	0.29	0.25		0.17	0.12		0.52	0.35		0.38	0.23	
v/c Ratio	0.36	0.29		0.08	0.11		0.47	0.44		0.34	0.44	
Control Delay	18.1	7.5		16.2	21.7		11.2	15.6		11.1	15.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.1	7.5		16.2	21.7		11.2	15.6		11.1	15.1	
LOS	B	A		B	C		B	B		B	B	
Approach Delay		11.2			20.0			14.5			14.2	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	35	9		5	6		51	79		26	43	
Queue Length 95th (ft)	81	40		19	21		89	115		52	72	
Internal Link Dist (ft)		1234			2613			2508			2752	
Turn Bay Length (ft)	200			200			200			200		
Base Capacity (vph)	494	1664		255	1246		838	2935		626	2135	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.30	0.16		0.08	0.04		0.31	0.27		0.23	0.25	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 53.3
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.47

Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 47.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Signal Butte Road & Williams Field Road

Intersection	
Int Delay, s/veh	5.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	434	200	80	247	141	24
Future Vol, veh/h	434	200	80	247	141	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	511	235	94	291	166	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	746	0	845	256
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	334	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	858	-	302	743
Stage 1	-	-	-	-	567	-
Stage 2	-	-	-	-	697	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	858	-	269	743
Mov Cap-2 Maneuver	-	-	-	-	269	-
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	697	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	33.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	269	743	-	-	858	-
HCM Lane V/C Ratio	0.617	0.038	-	-	0.11	-
HCM Control Delay (s)	37.7	10	-	-	9.7	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	3.7	0.1	-	-	0.4	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	418	40	0	327	0	24
Future Vol, veh/h	418	40	0	327	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	492	47	0	385	0	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	709	270
Stage 1	-	-	-	-	516	-
Stage 2	-	-	-	-	193	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	369	728
Stage 1	-	-	0	-	564	-
Stage 2	-	-	0	-	821	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	369	728
Mov Cap-2 Maneuver	-	-	-	-	369	-
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	821	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	728	-	-	-
HCM Lane V/C Ratio	0.039	-	-	-
HCM Control Delay (s)	10.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Int Delay, s/veh	4.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	113	69	0	148	110
Future Vol, veh/h	0	113	69	0	148	110
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	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	133	81	0	174	129

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	494	41	0	0	81	0
Stage 1	81	-	-	-	-	-
Stage 2	413	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	504	1021	-	-	1515	-
Stage 1	933	-	-	-	-	-
Stage 2	636	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	446	1021	-	-	1515	-
Mov Cap-2 Maneuver	446	-	-	-	-	-
Stage 1	826	-	-	-	-	-
Stage 2	636	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	4.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	1021	1515	-
HCM Lane V/C Ratio	-	-	-	0.13	0.115	-
HCM Control Delay (s)	-	-	0	9.1	7.7	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0.4	0.4	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	441	15	10	327	9	6
Future Vol, veh/h	441	15	10	327	9	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	519	18	12	385	11	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	537	0	745	269
Stage 1	-	-	-	-	528	-
Stage 2	-	-	-	-	217	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1027	-	350	729
Stage 1	-	-	-	-	556	-
Stage 2	-	-	-	-	798	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1027	-	346	729
Mov Cap-2 Maneuver	-	-	-	-	346	-
Stage 1	-	-	-	-	549	-
Stage 2	-	-	-	-	798	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	346	729	-	-	1027	-
HCM Lane V/C Ratio	0.031	0.01	-	-	0.011	-
HCM Control Delay (s)	15.7	10	-	-	8.5	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

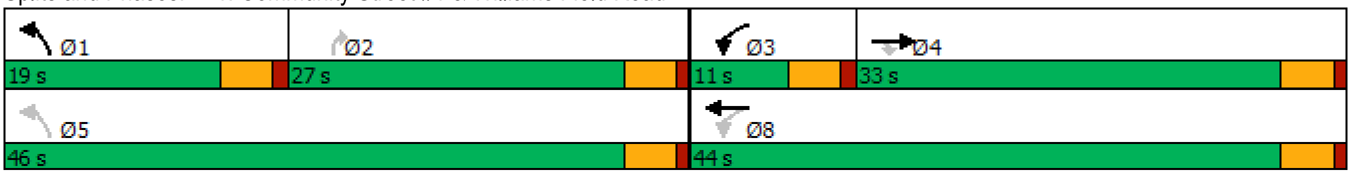
APPENDIX F: 2030 LEVEL OF SERVICE ANALYSES WITH PLANNED STUDY AREA IMPROVEMENTS AND MITIGATION #1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø5
Lane Configurations							
Traffic Volume (vph)	256	61	24	396	218	36	
Future Volume (vph)	256	61	24	396	218	36	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583	
Flt Permitted			0.404		0.950		
Satd. Flow (perm)	3539	1583	753	3539	1770	1583	
Satd. Flow (RTOR)		72				42	
Lane Group Flow (vph)	301	72	28	466	256	42	
Turn Type	NA	Perm	pm+pt	NA	pm+pt	Perm	
Protected Phases	4		3	8	1		5
Permitted Phases		4	8		5	2	
Detector Phase	4	4	3	8	1	2	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	22.5	9.5
Total Split (s)	33.0	33.0	11.0	44.0	19.0	27.0	46.0
Total Split (%)	36.7%	36.7%	12.2%	48.9%	21.1%	30.0%	51%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lag	Lag	Lead		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	Min	None
Act Effct Green (s)	11.1	11.1	12.7	12.7	11.6	6.1	
Actuated g/C Ratio	0.25	0.25	0.29	0.29	0.26	0.14	
v/c Ratio	0.34	0.16	0.08	0.46	0.56	0.17	
Control Delay	16.3	6.4	12.0	14.6	20.8	10.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.3	6.4	12.0	14.6	20.8	10.4	
LOS	B	A	B	B	C	B	
Approach Delay	14.4			14.4	19.4		
Approach LOS	B			B	B		
Queue Length 50th (ft)	29	0	5	47	50	0	
Queue Length 95th (ft)	75	24	17	82	138	22	
Internal Link Dist (ft)	2369			1100	642		
Turn Bay Length (ft)		200	200				
Base Capacity (vph)	2352	1076	369	3151	598	850	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.13	0.07	0.08	0.15	0.43	0.05	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 44.4
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56

Intersection Signal Delay: 15.7 Intersection LOS: B
Intersection Capacity Utilization 34.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Community Street #1 & Williams Field Road



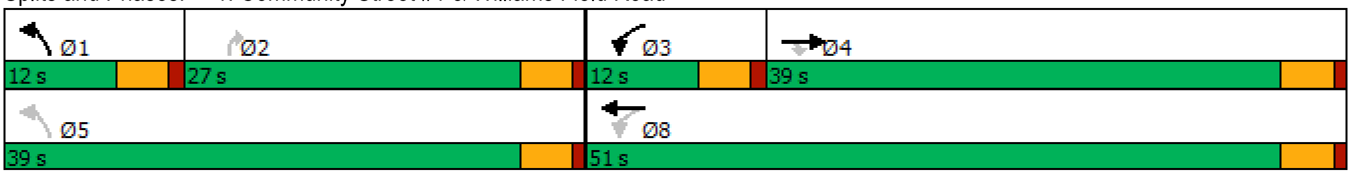
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø5
Lane Configurations							
Traffic Volume (vph)	434	200	80	247	141	24	
Future Volume (vph)	434	200	80	247	141	24	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583	
Flt Permitted			0.316		0.950		
Satd. Flow (perm)	3539	1583	589	3539	1770	1583	
Satd. Flow (RTOR)		235				28	
Lane Group Flow (vph)	511	235	94	291	166	28	
Turn Type	NA	Perm	pm+pt	NA	pm+pt	Perm	
Protected Phases	4		3	8	1		5
Permitted Phases		4	8		5	2	
Detector Phase	4	4	3	8	1	2	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	22.5	9.5
Total Split (s)	39.0	39.0	12.0	51.0	12.0	27.0	39.0
Total Split (%)	43.3%	43.3%	13.3%	56.7%	13.3%	30.0%	43%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lag	Lag	Lead		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	Min	None
Act Effct Green (s)	14.7	14.7	23.0	23.0	8.1	6.6	
Actuated g/C Ratio	0.30	0.30	0.48	0.48	0.17	0.14	
v/c Ratio	0.47	0.36	0.20	0.17	0.56	0.12	
Control Delay	16.8	4.4	8.2	7.5	34.0	11.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.8	4.4	8.2	7.5	34.0	11.9	
LOS	B	A	A	A	C	B	
Approach Delay	12.9			7.6	30.8		
Approach LOS	B			A	C		
Queue Length 50th (ft)	69	0	14	23	49	0	
Queue Length 95th (ft)	104	34	32	40	#136	18	
Internal Link Dist (ft)	2369			1100	642		
Turn Bay Length (ft)		200	200				
Base Capacity (vph)	2506	1189	487	3131	311	848	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.20	0.20	0.19	0.09	0.53	0.03	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 48.3
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56

Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 35.5%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 1: Community Street #1 & Williams Field Road



APPENDIX G: 2040 LEVEL OF SERVICE ANALYSES WITH PLANNED STUDY AREA IMPROVEMENTS

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø5
Lane Configurations							
Traffic Volume (vph)	371	0	0	616	0	0	
Future Volume (vph)	371	0	0	616	0	0	
Satd. Flow (prot)	3539	1863	1863	3539	1863	1863	
Flt Permitted							
Satd. Flow (perm)	3539	1863	1863	3539	1863	1863	
Satd. Flow (RTOR)							
Lane Group Flow (vph)	436	0	0	725	0	0	
Turn Type	NA	Perm	pm+pt	NA	pm+pt	Perm	
Protected Phases	4		3	8	1		5
Permitted Phases		4	8		5	2	
Detector Phase	4	4	3	8	1	2	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	22.5	9.5
Total Split (s)	33.0	33.0	11.0	44.0	19.0	27.0	46.0
Total Split (%)	36.7%	36.7%	12.2%	48.9%	21.1%	30.0%	51%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lag	Lag	Lead		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	Min	None
Act Effct Green (s)	12.2			12.2			
Actuated g/C Ratio	0.46			0.46			
v/c Ratio	0.27			0.45			
Control Delay	4.9			5.9			
Queue Delay	0.0			0.0			
Total Delay	4.9			5.9			
LOS	A			A			
Approach Delay	4.9			5.9			
Approach LOS	A			A			
Queue Length 50th (ft)	15			28			
Queue Length 95th (ft)	24			41			
Internal Link Dist (ft)	2369			1100	642		
Turn Bay Length (ft)							
Base Capacity (vph)	3501			3539			
Starvation Cap Reductn	0			0			
Spillback Cap Reductn	0			0			
Storage Cap Reductn	0			0			
Reduced v/c Ratio	0.12			0.20			

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 26.8

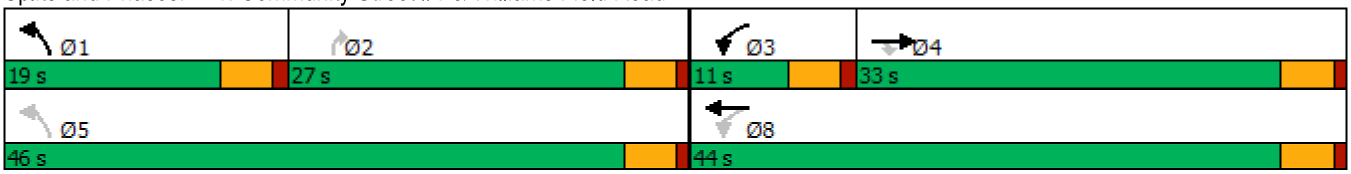
Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 5.5 Intersection LOS: A
Intersection Capacity Utilization 20.8% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Community Street #1 & Williams Field Road



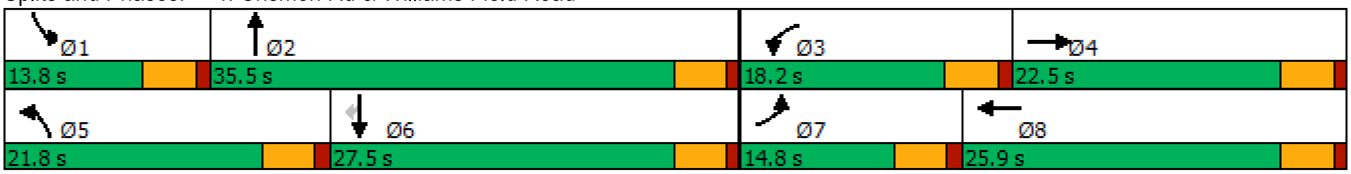
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	193	116	141	283	142	411	685	165	137	568	341
Future Volume (vph)	116	193	116	141	283	142	411	685	165	137	568	341
Satd. Flow (prot)	1770	4801	0	1770	4831	0	3433	3437	0	3433	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4801	0	1770	4831	0	3433	3437	0	3433	3539	1583
Satd. Flow (RTOR)		136			133			36				361
Lane Group Flow (vph)	136	363	0	166	500	0	484	1000	0	161	668	401
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	22.5
Total Split (s)	14.8	22.5		18.2	25.9		21.8	35.5		13.8	27.5	27.5
Total Split (%)	16.4%	25.0%		20.2%	28.8%		24.2%	39.4%		15.3%	30.6%	30.6%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min		None	Min	Min
Act Effct Green (s)	9.6	10.1		11.5	12.0		15.1	27.7		8.4	21.0	21.0
Actuated g/C Ratio	0.13	0.13		0.15	0.16		0.20	0.36		0.11	0.28	0.28
v/c Ratio	0.61	0.48		0.62	0.57		0.71	0.79		0.42	0.68	0.57
Control Delay	46.8	22.0		42.7	24.7		35.8	26.4		37.3	29.6	8.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	46.8	22.0		42.7	24.7		35.8	26.4		37.3	29.6	8.0
LOS	D	C		D	C		D	C		D	C	A
Approach Delay		28.8			29.2			29.5			23.6	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	66	39		79	63		118	217		39	154	15
Queue Length 95th (ft)	#130	62		138	88		165	290		68	213	73
Internal Link Dist (ft)		1732			2369			1031			2756	
Turn Bay Length (ft)	300			300			300			300		300
Base Capacity (vph)	244	1259		324	1478		794	1447		427	1095	739
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.56	0.29		0.51	0.34		0.61	0.69		0.38	0.61	0.54

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 76.1
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.79

Intersection Signal Delay: 27.5 Intersection LOS: C
Intersection Capacity Utilization 58.4% ICU Level of Service B
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Crismon Rd & Williams Field Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	68	136	45	75	30	149	485	112	104	689	287
Future Volume (vph)	102	68	136	45	75	30	149	485	112	104	689	287
Satd. Flow (prot)	1770	3185	0	1770	3387	0	1770	4943	0	1770	4862	0
Flt Permitted	0.451			0.603			0.136			0.373		
Satd. Flow (perm)	840	3185	0	1123	3387	0	253	4943	0	695	4862	0
Satd. Flow (RTOR)		160			35			71			123	
Lane Group Flow (vph)	120	240	0	53	123	0	175	703	0	122	1149	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	14.2	27.2		9.6	22.6		19.6	41.2		12.0	33.6	
Total Split (%)	15.8%	30.2%		10.7%	25.1%		21.8%	45.8%		13.3%	37.3%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	17.9	12.7		11.3	7.5		38.3	30.4		30.7	23.4	
Actuated g/C Ratio	0.27	0.19		0.17	0.11		0.58	0.46		0.46	0.35	
v/c Ratio	0.34	0.33		0.22	0.30		0.44	0.31		0.28	0.64	
Control Delay	23.3	12.1		22.6	25.7		12.0	12.3		9.6	18.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.3	12.1		22.6	25.7		12.0	12.3		9.6	18.6	
LOS	C	B		C	C		B	B		A	B	
Approach Delay		15.8			24.8			12.2			17.7	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	38	15		16	18		33	67		22	133	
Queue Length 95th (ft)	83	44		43	43		65	90		44	185	
Internal Link Dist (ft)		1234			2613			2508			2752	
Turn Bay Length (ft)	200			200			200			200		
Base Capacity (vph)	386	1263		243	1009		516	2944		458	2339	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.31	0.19		0.22	0.12		0.34	0.24		0.27	0.49	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 66.4
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.64

Intersection Signal Delay: 16.1 Intersection LOS: B
Intersection Capacity Utilization 53.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Signal Butte Road & Williams Field Road

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	371	18	12	616	30	20
Future Vol, veh/h	371	18	12	616	30	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	436	21	14	725	35	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	457	0	838	229
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	391	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1100	-	305	774
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	653	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1100	-	301	774
Mov Cap-2 Maneuver	-	-	-	-	301	-
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	653	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15
HCM LOS			C

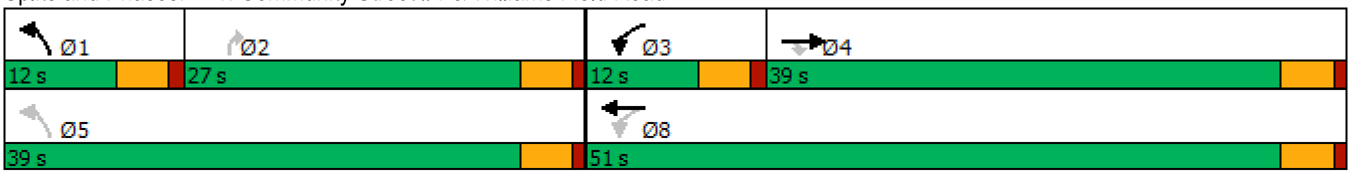
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	301	774	-	-	1100	-
HCM Lane V/C Ratio	0.117	0.03	-	-	0.013	-
HCM Control Delay (s)	18.5	9.8	-	-	8.3	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø5
Lane Configurations							
Traffic Volume (vph)	617	0	0	370	0	0	
Future Volume (vph)	617	0	0	370	0	0	
Satd. Flow (prot)	3539	1863	1863	3539	1863	1863	
Flt Permitted							
Satd. Flow (perm)	3539	1863	1863	3539	1863	1863	
Satd. Flow (RTOR)							
Lane Group Flow (vph)	726	0	0	435	0	0	
Turn Type	NA	Perm	pm+pt	NA	pm+pt	Perm	
Protected Phases	4		3	8	1		5
Permitted Phases		4	8		5	2	
Detector Phase	4	4	3	8	1	2	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	22.5	9.5
Total Split (s)	39.0	39.0	12.0	51.0	12.0	27.0	39.0
Total Split (%)	43.3%	43.3%	13.3%	56.7%	13.3%	30.0%	43%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lag	Lag	Lead		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	Min	None
Act Effct Green (s)	12.2			12.2			
Actuated g/C Ratio	0.46			0.46			
v/c Ratio	0.45			0.27			
Control Delay	5.9			4.9			
Queue Delay	0.0			0.0			
Total Delay	5.9			4.9			
LOS	A			A			
Approach Delay	5.9			4.9			
Approach LOS	A			A			
Queue Length 50th (ft)	28			15			
Queue Length 95th (ft)	42			24			
Internal Link Dist (ft)	2369			1100	642		
Turn Bay Length (ft)							
Base Capacity (vph)	3539			3539			
Starvation Cap Reductn	0			0			
Spillback Cap Reductn	0			0			
Storage Cap Reductn	0			0			
Reduced v/c Ratio	0.21			0.12			

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 26.8
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.45

Intersection Signal Delay: 5.5	Intersection LOS: A
Intersection Capacity Utilization 20.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Community Street #1 & Williams Field Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	322	193	85	170	85	247	411	274	227	341	205
Future Volume (vph)	193	322	193	85	170	85	247	411	274	227	341	205
Satd. Flow (prot)	1770	4801	0	1770	4831	0	3433	3327	0	3433	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4801	0	1770	4831	0	3433	3327	0	3433	3539	1583
Satd. Flow (RTOR)		161			100			178				241
Lane Group Flow (vph)	227	606	0	100	300	0	291	806	0	267	401	241
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	22.5
Total Split (s)	21.0	26.9		16.6	22.5		18.8	30.5		16.0	27.7	27.7
Total Split (%)	23.3%	29.9%		18.4%	25.0%		20.9%	33.9%		17.8%	30.8%	30.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min		None	Min	Min
Act Effct Green (s)	13.9	17.0		9.4	9.6		11.5	20.9		10.4	19.8	19.8
Actuated g/C Ratio	0.19	0.23		0.13	0.13		0.16	0.28		0.14	0.27	0.27
v/c Ratio	0.68	0.49		0.44	0.42		0.54	0.75		0.55	0.42	0.40
Control Delay	41.0	21.1		39.2	22.2		34.4	23.8		36.3	24.7	5.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	41.0	21.1		39.2	22.2		34.4	23.8		36.3	24.7	5.9
LOS	D	C		D	C		C	C		D	C	A
Approach Delay		26.6			26.4			26.7			23.1	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	99	69		45	32		66	138		60	79	0
Queue Length 95th (ft)	181	103		94	55		108	210		105	129	45
Internal Link Dist (ft)		1732			2369			1031			2756	
Turn Bay Length (ft)	300			300			300			300		300
Base Capacity (vph)	410	1620		300	1296		689	1327		554	1159	680
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.55	0.37		0.33	0.23		0.42	0.61		0.48	0.35	0.35

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 73.4

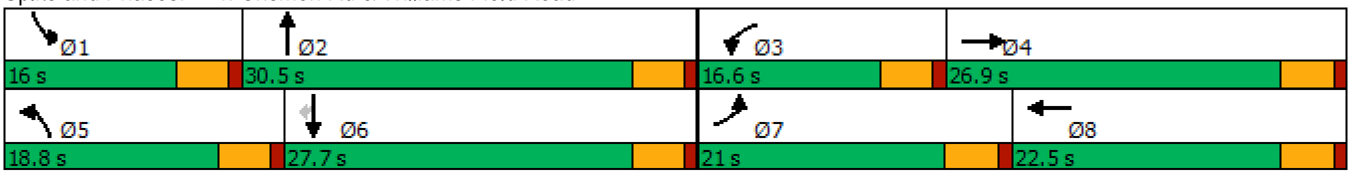
Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 25.6	Intersection LOS: C
Intersection Capacity Utilization 57.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: Crismon Rd & Williams Field Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	114	227	27	45	18	249	807	187	173	414	173
Future Volume (vph)	170	114	227	27	45	18	249	807	187	173	414	173
Satd. Flow (prot)	1770	3185	0	1770	3387	0	1770	4943	0	1770	4862	0
Flt Permitted	0.428			0.580			0.283			0.186		
Satd. Flow (perm)	797	3185	0	1080	3387	0	527	4943	0	346	4862	0
Satd. Flow (RTOR)		267			21			62			110	
Lane Group Flow (vph)	200	401	0	32	74	0	293	1169	0	204	691	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.0	28.9		9.6	22.5		26.0	33.5		18.0	25.5	
Total Split (%)	17.8%	32.1%		10.7%	25.0%		28.9%	37.2%		20.0%	28.3%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	19.3	16.0		10.5	6.9		36.6	24.2		31.1	21.4	
Actuated g/C Ratio	0.29	0.24		0.16	0.10		0.54	0.36		0.46	0.32	
v/c Ratio	0.52	0.42		0.14	0.20		0.57	0.65		0.56	0.43	
Control Delay	25.6	10.7		21.3	26.0		12.9	19.6		16.9	16.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	25.6	10.7		21.3	26.0		12.9	19.6		16.9	16.9	
LOS	C	B		C	C		B	B		B	B	
Approach Delay		15.7			24.6			18.3			16.9	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	67	22		10	11		62	145		41	71	
Queue Length 95th (ft)	127	62		29	31		101	195		81	106	
Internal Link Dist (ft)		1234			2613			2508			2752	
Turn Bay Length (ft)	200			200			200			200		
Base Capacity (vph)	418	1380		223	968		719	2276		481	1806	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.48	0.29		0.14	0.08		0.41	0.51		0.42	0.38	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 67.4
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.65

Intersection Signal Delay: 17.6	Intersection LOS: B
Intersection Capacity Utilization 59.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Signal Butte Road & Williams Field Road

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	617	30	20	370	18	12
Future Vol, veh/h	617	30	20	370	18	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	726	35	24	435	21	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	761	0	1010	381
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	266	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	847	-	236	617
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	754	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	847	-	229	617
Mov Cap-2 Maneuver	-	-	-	-	229	-
Stage 1	-	-	-	-	419	-
Stage 2	-	-	-	-	754	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	17.8
HCM LOS			C

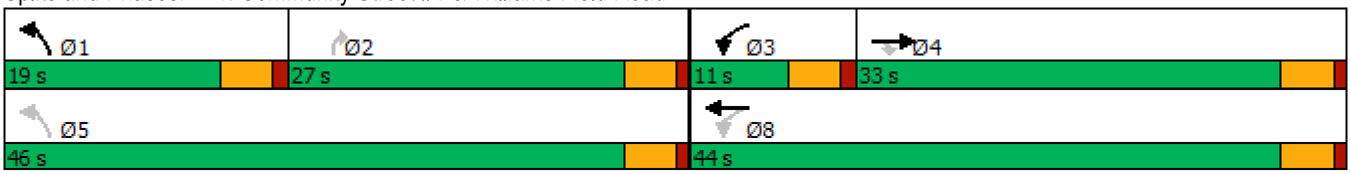
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	229	617	-	-	847	-
HCM Lane V/C Ratio	0.092	0.023	-	-	0.028	-
HCM Control Delay (s)	22.3	11	-	-	9.4	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø5
Lane Configurations							
Traffic Volume (vph)	394	61	24	620	218	36	
Future Volume (vph)	394	61	24	620	218	36	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583	
Flt Permitted			0.341		0.950		
Satd. Flow (perm)	3539	1583	635	3539	1770	1583	
Satd. Flow (RTOR)		72				42	
Lane Group Flow (vph)	464	72	28	729	256	42	
Turn Type	NA	Perm	pm+pt	NA	pm+pt	Perm	
Protected Phases	4		3	8	1		5
Permitted Phases		4	8		5	2	
Detector Phase	4	4	3	8	1	2	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	22.5	9.5
Total Split (s)	33.0	33.0	11.0	44.0	19.0	27.0	46.0
Total Split (%)	36.7%	36.7%	12.2%	48.9%	21.1%	30.0%	51%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lag	Lag	Lead		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	Min	None
Act Effct Green (s)	15.8	15.8	19.4	19.4	12.2	6.2	
Actuated g/C Ratio	0.31	0.31	0.37	0.37	0.24	0.12	
v/c Ratio	0.43	0.14	0.08	0.55	0.62	0.19	
Control Delay	17.3	6.0	10.5	14.2	27.4	12.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.3	6.0	10.5	14.2	27.4	12.0	
LOS	B	A	B	B	C	B	
Approach Delay	15.8			14.1	25.3		
Approach LOS	B			B	C		
Queue Length 50th (ft)	50	0	5	86	62	0	
Queue Length 95th (ft)	111	23	17	131	155	23	
Internal Link Dist (ft)	2369			1100	642		
Turn Bay Length (ft)		200	200				
Base Capacity (vph)	2024	936	385	2795	515	738	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.23	0.08	0.07	0.26	0.50	0.06	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 51.8
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62

Intersection Signal Delay: 16.7	Intersection LOS: B
Intersection Capacity Utilization 38.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Community Street #1 & Williams Field Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	251	131	152	457	178	455	692	178	149	570	341
Future Volume (vph)	116	251	131	152	457	178	455	692	178	149	570	341
Satd. Flow (prot)	1770	4826	0	1770	4872	0	3433	3429	0	3433	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4826	0	1770	4872	0	3433	3429	0	3433	3539	1583
Satd. Flow (RTOR)		131			103			39				304
Lane Group Flow (vph)	136	449	0	179	747	0	535	1023	0	175	671	401
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	22.5
Total Split (s)	14.8	22.5		18.2	25.9		21.8	35.5		13.8	27.5	27.5
Total Split (%)	16.4%	25.0%		20.2%	28.8%		24.2%	39.4%		15.3%	30.6%	30.6%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min		None	Min	Min
Act Effct Green (s)	9.7	15.5		12.2	17.9		16.2	29.0		8.7	21.4	21.4
Actuated g/C Ratio	0.12	0.19		0.15	0.21		0.19	0.35		0.10	0.26	0.26
v/c Ratio	0.66	0.45		0.69	0.66		0.80	0.84		0.49	0.74	0.64
Control Delay	54.2	23.2		50.4	29.2		43.6	32.4		42.1	34.9	12.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	54.2	23.2		50.4	29.2		43.6	32.4		42.1	34.9	12.9
LOS	D	C		D	C		D	C		D	C	B
Approach Delay		30.4			33.3			36.3			28.9	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	73	57		93	119		144	256		47	176	42
Queue Length 95th (ft)	#140	81		#156	147		#195	323		77	230	116
Internal Link Dist (ft)		1732			2369			1031			2756	
Turn Bay Length (ft)	300			300			300			300		300
Base Capacity (vph)	221	1156		294	1341		720	1314		387	987	660
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.62	0.39		0.61	0.56		0.74	0.78		0.45	0.68	0.61

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 83.5

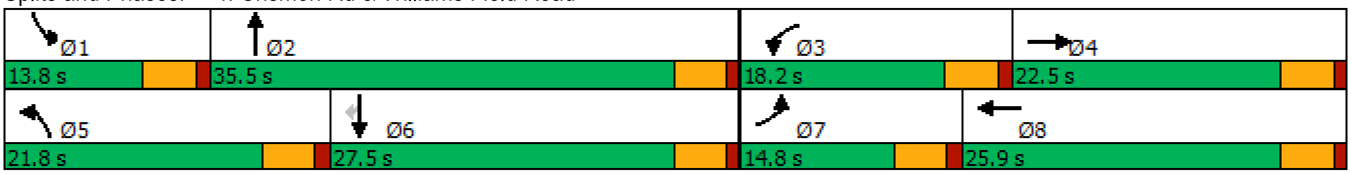
Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 32.7 Intersection LOS: C
Intersection Capacity Utilization 63.3% ICU Level of Service B
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Crismon Rd & Williams Field Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	68	183	45	75	30	165	485	112	104	689	299
Future Volume (vph)	138	68	183	45	75	30	165	485	112	104	689	299
Satd. Flow (prot)	1770	3153	0	1770	3387	0	1770	4943	0	1770	4856	0
Flt Permitted	0.444			0.572			0.135			0.373		
Satd. Flow (perm)	827	3153	0	1065	3387	0	251	4943	0	695	4856	0
Satd. Flow (RTOR)		215			35			71			128	
Lane Group Flow (vph)	162	295	0	53	123	0	194	703	0	122	1163	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	14.2	27.2		9.6	22.6		19.6	41.2		12.0	33.6	
Total Split (%)	15.8%	30.2%		10.7%	25.1%		21.8%	45.8%		13.3%	37.3%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	18.4	12.9		11.3	7.5		39.5	31.3		31.0	23.7	
Actuated g/C Ratio	0.27	0.19		0.17	0.11		0.59	0.46		0.46	0.35	
v/c Ratio	0.46	0.38		0.23	0.30		0.48	0.30		0.28	0.65	
Control Delay	25.6	10.8		23.1	26.1		13.0	12.2		9.7	19.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	25.6	10.8		23.1	26.1		13.0	12.2		9.7	19.0	
LOS	C	B		C	C		B	B		A	B	
Approach Delay		16.0			25.2			12.4			18.1	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	55	16		17	19		37	67		22	138	
Queue Length 95th (ft)	108	46		43	43		78	90		44	187	
Internal Link Dist (ft)		1234			2613			2508			2752	
Turn Bay Length (ft)	200			200			200			200		
Base Capacity (vph)	381	1268		234	993		511	2894		453	2301	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.43	0.23		0.23	0.12		0.38	0.24		0.27	0.51	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 67.5
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.65

Intersection Signal Delay: 16.4	Intersection LOS: B
Intersection Capacity Utilization 56.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Signal Butte Road & Williams Field Road

Intersection						
Int Delay, s/veh	0.3					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	418	12	0	644	0	36
Future Vol, veh/h	418	12	0	644	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	492	14	0	758	0	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	878	253
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	379	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	287	746
Stage 1	-	-	0	-	575	-
Stage 2	-	-	0	-	662	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	287	746
Mov Cap-2 Maneuver	-	-	-	-	287	-
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	662	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	746	-	-	-
HCM Lane V/C Ratio	0.057	-	-	-
HCM Control Delay (s)	10.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection						
Int Delay, s/veh	4.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	83	1372	18	42	791
Future Vol, veh/h	25	83	1372	18	42	791
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	0	-	200	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	98	1614	21	49	931

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2178	807	0	0	1635	0
Stage 1	1614	-	-	-	-	-
Stage 2	564	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	39	324	-	-	393	-
Stage 1	148	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	34	324	-	-	393	-
Mov Cap-2 Maneuver	34	-	-	-	-	-
Stage 1	130	-	-	-	-	-
Stage 2	533	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	82.1	0	0.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	34	324	393	-
HCM Lane V/C Ratio	-	-	0.865	0.301	0.126	-
HCM Control Delay (s)	-	-	285.8	20.8	15.5	-
HCM Lane LOS	-	-	F	C	C	-
HCM 95th %tile Q(veh)	-	-	3	1.2	0.4	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	454	18	12	644	30	20
Future Vol, veh/h	454	18	12	644	30	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	534	21	14	758	35	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	555	0	952	278
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	407	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1011	-	257	719
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	641	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1011	-	253	719
Mov Cap-2 Maneuver	-	-	-	-	253	-
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	641	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	17
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	253	719	-	-	1011	-
HCM Lane V/C Ratio	0.14	0.033	-	-	0.014	-
HCM Control Delay (s)	21.5	10.2	-	-	8.6	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-

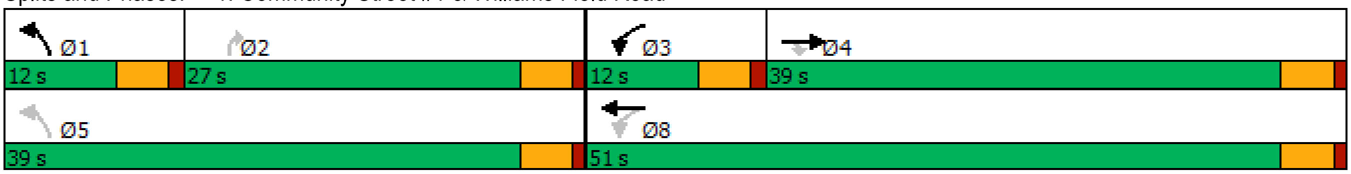
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø5
Lane Configurations							
Traffic Volume (vph)	664	200	80	382	141	24	
Future Volume (vph)	664	200	80	382	141	24	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583	
Flt Permitted			0.218		0.950		
Satd. Flow (perm)	3539	1583	406	3539	1770	1583	
Satd. Flow (RTOR)		235				28	
Lane Group Flow (vph)	781	235	94	449	166	28	
Turn Type	NA	Perm	pm+pt	NA	pm+pt	Perm	
Protected Phases	4		3	8	1		5
Permitted Phases		4	8		5	2	
Detector Phase	4	4	3	8	1	2	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	22.5	9.5
Total Split (s)	39.0	39.0	12.0	51.0	12.0	27.0	39.0
Total Split (%)	43.3%	43.3%	13.3%	56.7%	13.3%	30.0%	43%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lag	Lag	Lead		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	Min	None
Act Effct Green (s)	22.2	22.2	30.5	30.5	8.2	6.6	
Actuated g/C Ratio	0.40	0.40	0.55	0.55	0.15	0.12	
v/c Ratio	0.55	0.30	0.23	0.23	0.64	0.13	
Control Delay	16.0	3.2	7.6	6.9	43.4	13.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.0	3.2	7.6	6.9	43.4	13.8	
LOS	B	A	A	A	D	B	
Approach Delay	13.1			7.0	39.1		
Approach LOS	B			A	D		
Queue Length 50th (ft)	116	0	14	38	59	0	
Queue Length 95th (ft)	161	30	31	58	#167	21	
Internal Link Dist (ft)	2369			1100	642		
Turn Bay Length (ft)		200	200				
Base Capacity (vph)	2274	1101	428	2820	267	733	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.34	0.21	0.22	0.16	0.62	0.04	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 55.8
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.64

Intersection Signal Delay: 14.1	Intersection LOS: B
Intersection Capacity Utilization 41.8%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 1: Community Street #1 & Williams Field Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	514	241	102	283	109	275	416	289	267	349	205
Future Volume (vph)	193	514	241	102	283	109	275	416	289	267	349	205
Satd. Flow (prot)	1770	4841	0	1770	4872	0	3433	3320	0	3433	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4841	0	1770	4872	0	3433	3320	0	3433	3539	1583
Satd. Flow (RTOR)		125			97			197				241
Lane Group Flow (vph)	227	889	0	120	461	0	324	829	0	314	411	241
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	22.5
Total Split (s)	21.0	26.9		16.6	22.5		18.8	30.5		16.0	27.7	27.7
Total Split (%)	23.3%	29.9%		18.4%	25.0%		20.9%	33.9%		17.8%	30.8%	30.8%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min		None	Min	Min
Act Effct Green (s)	14.3	21.9		10.1	14.6		12.3	21.9		11.0	20.6	20.6
Actuated g/C Ratio	0.18	0.27		0.13	0.18		0.15	0.27		0.14	0.26	0.26
v/c Ratio	0.72	0.63		0.54	0.48		0.62	0.79		0.67	0.45	0.41
Control Delay	47.3	26.0		45.3	25.5		39.0	27.2		43.2	28.2	6.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	47.3	26.0		45.3	25.5		39.0	27.2		43.2	28.2	6.2
LOS	D	C		D	C		D	C		D	C	A
Approach Delay		30.3			29.6			30.5			27.6	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	117	139		63	65		87	167		86	99	0
Queue Length 95th (ft)	#188	175		112	90		123	221		125	138	46
Internal Link Dist (ft)		1732			2369			1031			2756	
Turn Bay Length (ft)	300			300			300			300		300
Base Capacity (vph)	374	1478		274	1198		628	1237		505	1051	639
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.61	0.60		0.44	0.38		0.52	0.67		0.62	0.39	0.38

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 80.4

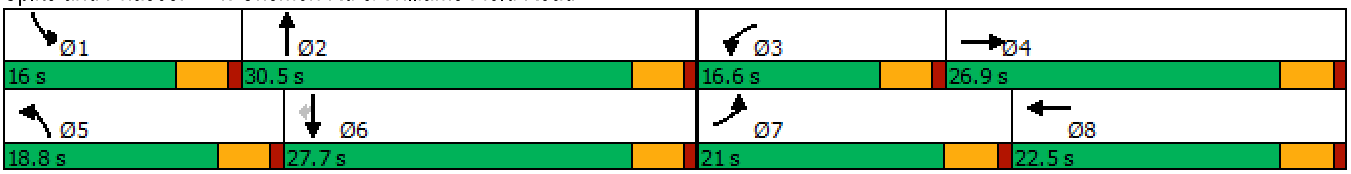
Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 29.6 Intersection LOS: C
Intersection Capacity Utilization 64.4% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Crismon Rd & Williams Field Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	114	258	27	45	18	301	807	187	173	414	213
Future Volume (vph)	194	114	258	27	45	18	301	807	187	173	414	213
Satd. Flow (prot)	1770	3171	0	1770	3387	0	1770	4943	0	1770	4826	0
Flt Permitted	0.428			0.580			0.224			0.207		
Satd. Flow (perm)	797	3171	0	1080	3387	0	417	4943	0	386	4826	0
Satd. Flow (RTOR)		304			21			62			135	
Lane Group Flow (vph)	228	438	0	32	74	0	354	1169	0	204	738	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.0	28.9		9.6	22.5		26.0	33.5		18.0	25.5	
Total Split (%)	17.8%	32.1%		10.7%	25.0%		28.9%	37.2%		20.0%	28.3%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	19.5	16.2		10.5	6.9		38.0	24.2		29.1	19.3	
Actuated g/C Ratio	0.29	0.24		0.16	0.10		0.56	0.36		0.43	0.29	
v/c Ratio	0.59	0.44		0.14	0.20		0.67	0.65		0.56	0.50	
Control Delay	27.6	10.2		21.4	26.1		16.5	19.8		17.7	18.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.6	10.2		21.4	26.1		16.5	19.8		17.7	18.8	
LOS	C	B		C	C		B	B		B	B	
Approach Delay		16.1			24.7			19.0			18.5	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)	78	22		10	11		79	145		41	78	
Queue Length 95th (ft)	144	63		29	31		138	195		85	121	
Internal Link Dist (ft)		1234			2613			2508			2752	
Turn Bay Length (ft)	200			200			200			200		
Base Capacity (vph)	415	1390		222	961		690	2259		480	1690	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.55	0.32		0.14	0.08		0.51	0.52		0.42	0.44	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 67.7
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.67

Intersection Signal Delay: 18.5 Intersection LOS: B
Intersection Capacity Utilization 60.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: Signal Butte Road & Williams Field Road

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	648	40	0	462	0	24
Future Vol, veh/h	648	40	0	462	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	762	47	0	544	0	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1058	405
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	272	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	220	595
Stage 1	-	-	0	-	410	-
Stage 2	-	-	0	-	749	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	220	595
Mov Cap-2 Maneuver	-	-	-	-	220	-
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	749	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	595	-	-	-
HCM Lane V/C Ratio	0.047	-	-	-
HCM Control Delay (s)	11.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	79	830	39	109	1312
Future Vol, veh/h	33	79	830	39	109	1312
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	0	-	200	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	93	976	46	128	1544

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2004	488	0	0	1022	0
Stage 1	976	-	-	-	-	-
Stage 2	1028	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	52	526	-	-	675	-
Stage 1	326	-	-	-	-	-
Stage 2	306	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	42	526	-	-	675	-
Mov Cap-2 Maneuver	42	-	-	-	-	-
Stage 1	264	-	-	-	-	-
Stage 2	306	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	87	0	0.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	42	526	675	-
HCM Lane V/C Ratio	-	-	0.924	0.177	0.19	-
HCM Control Delay (s)	-	-	263.3	13.3	11.6	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	3.6	0.6	0.7	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	671	30	20	462	18	12
Future Vol, veh/h	671	30	20	462	18	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	789	35	24	544	21	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	824	0	1127	412
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	320	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	802	-	198	589
Stage 1	-	-	-	-	399	-
Stage 2	-	-	-	-	709	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	802	-	192	589
Mov Cap-2 Maneuver	-	-	-	-	192	-
Stage 1	-	-	-	-	387	-
Stage 2	-	-	-	-	709	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	20.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	192	589	-	-	802	-
HCM Lane V/C Ratio	0.11	0.024	-	-	0.029	-
HCM Control Delay (s)	26.1	11.3	-	-	9.6	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.1	-

APPENDIX H: 2040 LEVEL OF SERVICE ANALYSES WITH PLANNED STUDY AREA IMPROVEMENTS AND MITIGATION #2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	25	83	1372	18	42	791
Future Volume (vph)	25	83	1372	18	42	791
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.125	
Satd. Flow (perm)	1770	1583	3539	1583	233	3539
Satd. Flow (RTOR)		49		21		
Lane Group Flow (vph)	29	98	1614	21	49	931
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	67.5	67.5	67.5	67.5
Total Split (%)	25.0%	25.0%	75.0%	75.0%	75.0%	75.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	Min
Act Effct Green (s)	8.1	8.1	49.1	49.1	49.1	49.1
Actuated g/C Ratio	0.13	0.13	0.79	0.79	0.79	0.79
v/c Ratio	0.12	0.39	0.58	0.02	0.27	0.33
Control Delay	29.1	21.7	4.9	1.3	7.5	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	21.7	4.9	1.3	7.5	3.3
LOS	C	C	A	A	A	A
Approach Delay	23.4		4.9			3.5
Approach LOS	C		A			A
Queue Length 50th (ft)	10	17	115	0	5	48
Queue Length 95th (ft)	34	61	192	4	21	86
Internal Link Dist (ft)	708		2097			1031
Turn Bay Length (ft)				200		
Base Capacity (vph)	548	524	3326	1489	219	3326
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.19	0.49	0.01	0.22	0.28

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 62.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.58

Intersection Signal Delay: 5.2 Intersection LOS: A
Intersection Capacity Utilization 50.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: Community Street #3 & Crismon Rd

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	33	79	830	39	109	1312
Future Volume (vph)	33	79	830	39	109	1312
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.285	
Satd. Flow (perm)	1770	1583	3539	1583	531	3539
Satd. Flow (RTOR)		93		46		
Lane Group Flow (vph)	39	93	976	46	128	1544
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	23.0	23.0	67.0	67.0	67.0	67.0
Total Split (%)	25.6%	25.6%	74.4%	74.4%	74.4%	74.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	Min
Act Effct Green (s)	7.3	7.3	47.7	47.7	47.7	47.7
Actuated g/C Ratio	0.12	0.12	0.80	0.80	0.80	0.80
v/c Ratio	0.18	0.34	0.35	0.04	0.30	0.55
Control Delay	29.9	11.4	3.0	0.8	5.1	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	11.4	3.0	0.8	5.1	4.2
LOS	C	B	A	A	A	A
Approach Delay	16.9		2.9			4.3
Approach LOS	B		A			A
Queue Length 50th (ft)	13	0	48	0	12	99
Queue Length 95th (ft)	43	36	75	5	32	147
Internal Link Dist (ft)	708		2097			1031
Turn Bay Length (ft)				200		
Base Capacity (vph)	580	581	3377	1513	506	3377
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.16	0.29	0.03	0.25	0.46

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 59.9
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.55

Intersection Signal Delay: 4.4 Intersection LOS: A
Intersection Capacity Utilization 47.9% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: Community Street #3 & Crismon Rd

Appendix C – Parcel Information

304-35-004N

Agriculture Parcel

This is a Agriculture parcel located at . The current owner is PACIFIC PROVING LLC. Its current current year year full cash value is $804.

MAPS | PICTOMETRY | VIEW/PAY TAX BILL | DEED
OWNER | VALUATIONS | MAP FERRET | SIMILAR PARCELS
REGISTER RENTAL | PRINT DETAILS

PROPERTY INFORMATION

MCR #	
Description	THT POR NW4 SEC 35 LY W/IN CITY OF MESA ANNEX PER ORDINANCE NO. 5113 P/F 12-0838771 EX ANY PT LY W/IN P/F 2012-0932138.
Lat/Long	33.305338 | -111.615704
Lot Size	875,706 sq ft.
Zoning	PC
Lot #	
High School District	QUEEN CREEK UNIFIED #95
Elementary School District	QUEEN CREEK UNIFIED SCHOOL DISTRICT
Local Jurisdiction	MESA
S/T/R	34 1S 7E
Market Area/Neighborhood	28/003
Subdivision (0 Parcels)	

OWNER INFORMATION

PACIFIC PROVING LLC

Mailing Address	2801 E. CAMELBACK ROAD STE 450, PHOENIX, AZ 85016 USA

Deed Number	040748707
Last Deed Date	06/30/2004
Sale Date	n/a
Sale Price	n/a

VALUATION INFORMATION

We provide valuation information for the past 5 years. For mobile display, we only show 1 year of valuation information. Should you need more data, please look at our data sales.

The Valuation Information displayed below may not reflect the taxable value used on the tax bill due to any special valuation relief program. CLICK HERE TO PAY YOUR TAXES OR VIEW YOUR TAX BILL

Tax Year	2023	2022	2021	2020	2019
Full Cash Value	$804	$804	$804	$804	$804
Limited Value	$804	$804	$804	$804	$804
Legal Class	2.R	2.R	2.R	2.R	2.R
Description	AG / VACANT LAND / NON-PROFIT R/P	AG / VACANT LAND / NON-PROFIT R/P	AG / VACANT LAND / NON-PROFIT R/P	AG / VACANT LAND / NON-PROFIT R/P	AG / VACANT LAND / NON-PROFIT R/P
Assessment Ratio	15.0%	15.0%	15.0%	15.0%	15.0%
Assessed LPV	$121	$121	$121	$121	$121
Property Use Code	4710	4710	4710	4710	4710
PU Description	AGRICULTURAL	AGRICULTURAL	AGRICULTURAL	AGRICULTURAL	AGRICULTURAL
Tax Area Code	951006	951006	951006	951006	951006
Valuation Source	Notice	SBOE	Notice	Notice	Notice

MAP FERRET MAPS

Mapferret maps, also known as MapId maps, pdf maps, or output maps are now available here without having to search.

- **Parcel Maps (1)**
- **Book/Map Maps (21)**

CAUTION! USERS SHOULD INDEPENDENTLY RESEARCH AND VERIFY INFORMATION ON THIS WEBSITE BEFORE RELYING ON IT.

The Assessor's Office has compiled information on this website that it uses to identify, classify, and value real and personal property. Please contact the Maricopa County S.T.A.R. Center at (602) 506-3406 if you believe any information is incomplete, out of date, or incorrect so that appropriate corrections can be addressed. Please note that a statutory process is also available to correct errors pursuant to Arizona Revised Statutes 42-16254.

The Assessor does not guarantee that any information provided on this website is accurate, complete, or current. In many instances, the Assessor has gathered information from independent sources and made it available on this site, and the original information may have contained errors and omissions. Errors and omissions may also have occurred in the process of gathering, interpreting, and reporting the information. Information on the website is not updated in "real time". In addition, users are cautioned that the process used on this site to illustrate the boundaries of the adjacent parcels is not always consistent with the recorded documents for such parcels. The parcel boundaries depicted on this site are for illustrative purposes only, and the exact relationship of adjacent parcels should be independently researched and verified. The information provided on this site is not the equivalent of a title report or a real estate survey. Users should independently research, investigate and verify all information before relying on it or in the preparation of legal documents.

By using this website, you acknowledge having read the above and waive any right you may have to claim against Maricopa County, its officers, employees, and contractors arising out of my reliance on or the use of the information provided on this website.

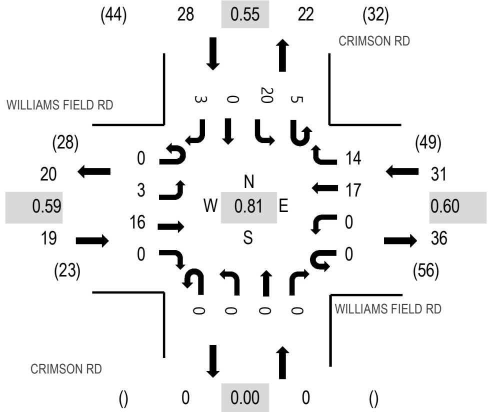
Appendix D – Traffic Count Data

D

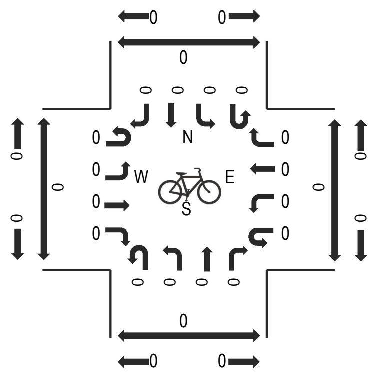
(303) 216-2439
www.alltrafficdata.net

Location: 2 CRIMSON RD & WILLIAMS FIELD RD AM
Date: Tuesday, December 14, 2021
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:00 AM - 07:15 AM

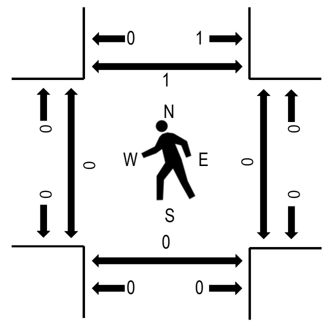
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	WILLIAMS FIELD RD Eastbound U-Turn	Left	Thru	Right	WILLIAMS FIELD RD Westbound U-Turn	Left	Thru	Right	CRIMSON RD Northbound U-Turn	Left	Thru	Right	CRIMSON RD Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour	Pedestrian Crossings West	East	South	North
7:00 AM	0	0	8	0	0	0	9	4	0	0	0	0	1	2	0	0	24	78	0	0	0	1
7:15 AM	0	1	3	0	0	0	2	3	0	0	0	0	0	3	0	2	14	63	0	0	0	0
7:30 AM	0	2	3	0	0	0	5	5	0	0	0	0	2	3	0	1	21	60	0	0	0	0
7:45 AM	0	0	2	0	0	0	1	2	0	0	0	0	2	12	0	0	19	46	0	0	0	0
8:00 AM	0	0	0	0	1	0	1	3	0	0	0	0	0	4	0	0	9	38	0	0	0	0
8:15 AM	0	0	2	0	0	0	0	2	0	0	0	0	0	7	0	0	11		0	0	0	1
8:30 AM	0	0	0	0	0	0	0	4	0	0	0	0	0	2	0	1	7		0	0	0	0
8:45 AM	0	0	2	0	0	0	6	1	0	0	0	0	0	2	0	0	11		0	0	0	0
Count Total	0	3	20	0	1	0	24	24	0	0	0	0	5	35	0	4	116		0	0	0	2
Peak Hour	0	3	16	0	0	0	17	14	0	0	0	0	5	20	0	3	78		0	0	0	1

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(303) 216-2439
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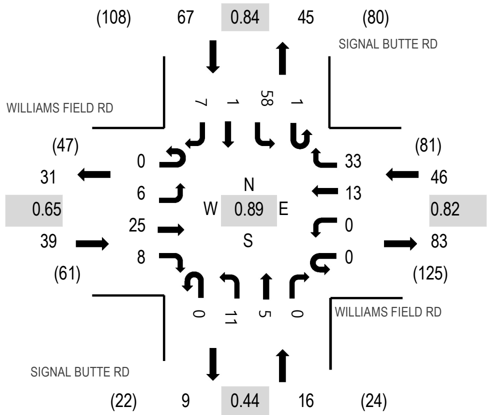
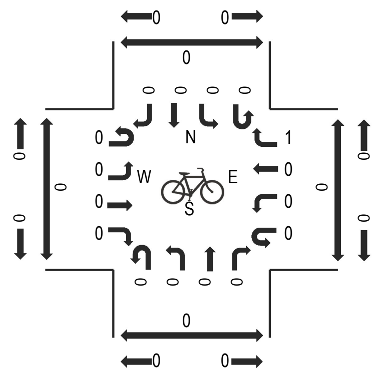
Location: 3 SIGNAL BUTTE RD & WILLIAMS FIELD RD AM
Date: Tuesday, December 14, 2021
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:00 AM - 07:15 AM

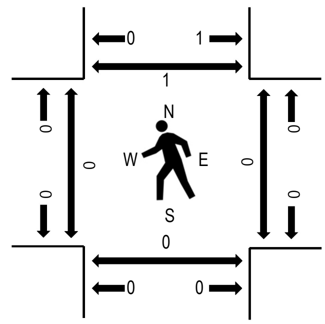
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

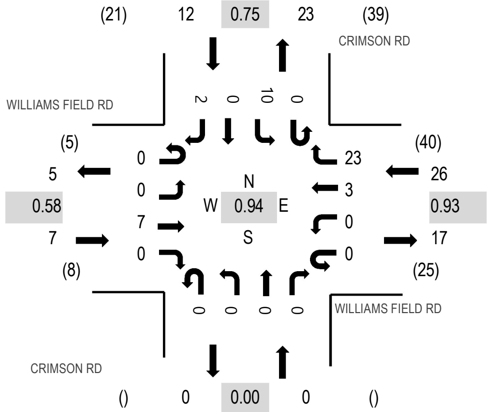
Traffic Counts - Motorized Vehicles

Interval Start Time	WILLIAMS FIELD RD Eastbound				WILLIAMS FIELD RD Westbound				SIGNAL BUTTE RD Northbound				SIGNAL BUTTE RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	6	2	0	0	5	9	0	5	4	0	1	14	0	1	47	168	0	0	0	0
7:15 AM	0	3	6	2	0	0	2	6	0	2	0	0	0	17	0	3	41	147	0	0	0	1
7:30 AM	0	0	3	2	0	0	4	9	0	4	1	0	0	13	0	1	37	127	0	0	0	0
7:45 AM	0	3	10	2	0	0	2	9	0	0	0	0	0	14	1	2	43	117	0	0	0	0
8:00 AM	0	2	4	0	0	0	0	5	0	1	1	0	1	11	0	1	26	106	0	0	0	1
8:15 AM	0	2	4	0	0	1	1	4	0	0	0	1	1	4	3	0	21		0	0	0	0
8:30 AM	0	2	2	1	0	1	5	6	0	0	0	1	0	7	2	0	27		0	0	0	1
8:45 AM	0	3	1	1	0	1	5	6	0	2	1	1	1	6	3	1	32		0	0	0	0
Count Total	0	15	36	10	0	3	24	54	0	14	7	3	4	86	9	9	274		0	0	0	3
Peak Hour	0	6	25	8	0	0	13	33	0	11	5	0	1	58	1	7	168		0	0	0	1

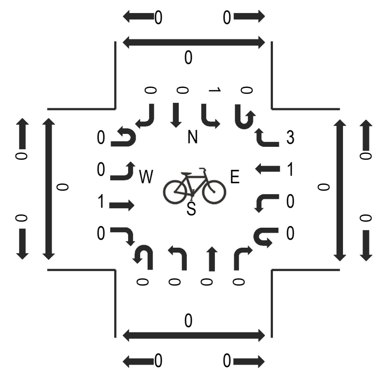
(303) 216-2439
www.alltrafficdata.net

Location: 2 CRIMSON RD & WILLIAMS FIELD RD PM
Date: Tuesday, December 14, 2021
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:30 PM - 04:30 PM

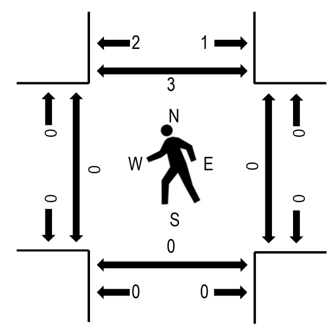
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	WILLIAMS FIELD RD Eastbound				WILLIAMS FIELD RD Westbound				CRIMSON RD Northbound				CRIMSON RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	1	0	0	4	0	0	0	0	0	2	0	0	7	41	0	0	0	0
4:15 PM	0	0	1	0	0	0	0	7	0	0	0	0	0	3	0	1	12	45	0	0	0	2
4:30 PM	0	0	3	0	0	0	1	6	0	0	0	0	0	0	0	0	10	35	0	0	0	0
4:45 PM	0	0	1	0	0	0	2	5	0	0	0	0	0	4	0	0	12	29	0	0	0	0
5:00 PM	0	0	2	0	0	0	0	5	0	0	0	0	0	3	0	1	11	28	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	3	0	0	0	0	0	1	0	0	4		0	0	0	0
5:45 PM	0	1	0	0	0	0	0	4	0	0	0	0	2	4	0	0	11		0	0	0	0
Count Total	0	1	7	0	1	0	3	36	0	0	0	0	2	17	0	2	69		0	0	0	3
Peak Hour	0	0	7	0	0	0	3	23	0	0	0	0	0	10	0	2	45		0	0	0	3

ALL TRAFFIC DATA SERVICES
(303) 216-2439
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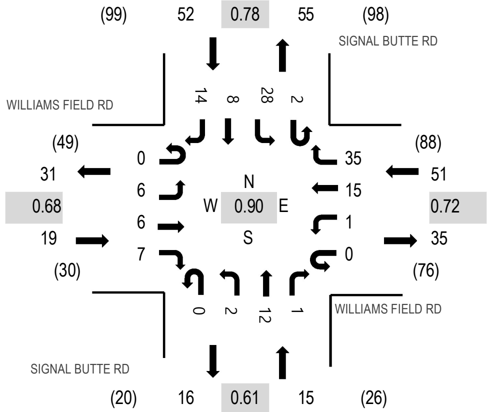
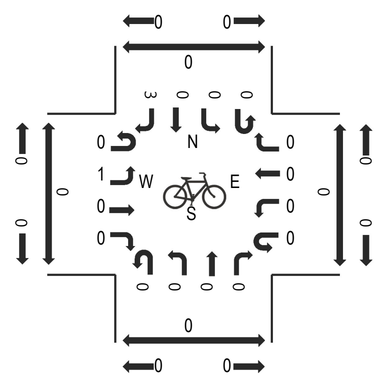
Location: 3 SIGNAL BUTTE RD & WILLIAMS FIELD RD PM
Date: Tuesday, December 14, 2021
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

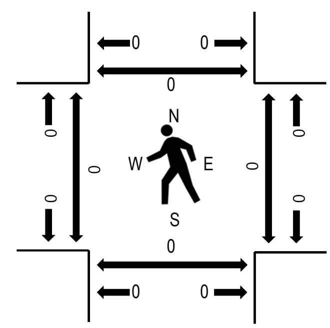
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	WILLIAMS FIELD RD Eastbound				WILLIAMS FIELD RD Westbound				SIGNAL BUTTE RD Northbound				SIGNAL BUTTE RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	2	1	0	0	0	2	10	0	0	3	0	1	9	0	3	31	134	0	0	0	0
4:15 PM	0	1	1	1	0	1	5	12	0	0	1	1	0	5	1	2	31	137	0	0	0	0
4:30 PM	0	0	0	4	0	0	4	6	0	0	2	0	1	12	1	4	34	130	0	0	0	0
4:45 PM	0	3	3	1	0	0	3	9	0	2	5	0	0	6	1	5	38	117	0	0	0	0
5:00 PM	0	2	2	1	0	0	3	8	0	0	4	0	1	5	5	3	34	109	0	0	0	0
5:15 PM	0	1	1	0	0	0	2	4	0	1	2	1	0	9	1	2	24		0	0	0	0
5:30 PM	0	1	0	0	0	0	2	7	0	0	2	0	0	8	0	1	21		0	0	0	0
5:45 PM	0	1	3	1	0	0	2	8	0	0	1	1	0	8	2	3	30		0	0	0	0
Count Total	0	11	11	8	0	1	23	64	0	3	20	3	3	62	11	23	243		0	0	0	0
Peak Hour	0	6	6	7	0	1	15	35	0	2	12	1	2	28	8	14	137		0	0	0	0

Appendix E – Trip Generation

Avalon Crossing

Trip Generation Calculations

Completed: TG 10/26/2021

Checked: GT 1/31/2022

220	Multifamily Housing (Low-Rise) (One to Three Levels)																					
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Multifamily Housing (Low-Rise)	220	400	Dwelling Units	6.74	50%	50%	0.40	24%	76%	0.51	63%	37%	2,696	1,348	1,348	160	38	122	204	129	75	Average
Multifamily Housing (Low-Rise)	220	400	Dwelling Units	2.46	50%	50%	0.13	24%	76%	0.08	63%	37%	984	492	492	52	12	40	32	20	12	Minimum
Multifamily Housing (Low-Rise)	220	400	Dwelling Units	12.50	50%	50%	0.73	24%	76%	1.04	63%	37%	5,000	2,500	2,500	292	70	222	416	262	154	Maximum
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Multifamily Housing (Low-Rise)	**220**	**400**	**Dwelling Units**	**T=6.41(X)+75.31**	**50%**	**50%**	**T=0.31(X)+22.85**	**24%**	**76%**	**T=0.43(X)+20.55**	**63%**	**37%**	**2,639**	**1,320**	**1,319**	**147**	**35**	**112**	**193**	**122**	**71**	**Equation**

Multifamily Housing (Low-Rise)	Standard Deviation	1.79		0.12		0.15
	Number of Studies	22		49		59
	Average Size	229		249		241
	R^2	0.86		0.79		0.84

Avalon Crossing

Completed: TG 10/26/2021
Checked: GT 1/31/2022

Trip Generation Calculations

[redacted]

Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Fast-Food Restaurant with Drive-Through Window	934	12.658	1000 SF GFA	467.48	50%	50%	44.61	51%	49%	33.03	52%	48%	5,917	2,959	2,958	565	288	277	418	217	201	**Average**
Fast-Food Restaurant with Drive-Through Window	934	12.658	1000 SF GFA	98.89	50%	50%	1.05	51%	49%	8.77	52%	48%	1,252	626	626	13	7	6	111	58	53	Minimum
Fast-Food Restaurant with Drive-Through Window	934	12.658	1000 SF GFA	1,137.66	50%	50%	164.25	51%	49%	117.22	52%	48%	14,401	7,201	7,200	2,079	1,060	1,019	1,484	772	712	Maximum
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Fast-Food Restaurant with Drive-Through Window	934	12.658	1000 SF GFA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Equation

Land Use	Statistic	Weekday	AM Peak Hour	PM Peak Hour
Fast-Food Restaurant with Drive-Through Window	Standard Deviation	238.62	27.14	17.59
	Number of Studies	71	96	190
	Average Size	3	4	3
	R^2	N/A	N/A	N/A

[redacted]

Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Strip Retail Plaza (<40k)	822	19.071	1000 SF GLA	54.45	50%	50%	2.36	60%	40%	6.59	50%	50%	1,038	520	518	45	28	17	126	63	63	**Average**
Strip Retail Plaza (<40k)	822	19.071	1000 SF GLA	47.86	50%	50%	1.60	60%	40%	2.81	50%	50%	913	457	456	31	19	12	54	27	27	Minimum
Strip Retail Plaza (<40k)	822	19.071	1000 SF GLA	65.07	50%	50%	3.73	60%	40%	15.20	50%	50%	1,241	621	620	71	43	28	290	145	145	Maximum
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Strip Retail Plaza (<40k)	822	19.071	1000 SF GLA	T=42.20(X)+229.68	50%	50%	Ln(T)=0.66Ln(X)+1.84	60%	40%	Ln(T)=0.71Ln(X)+2.72	50%	50%	1,035	518	517	45	27	18	124	62	62	Equation

Land Use	Statistic	Weekday	AM Peak Hour	PM Peak Hour
Strip Retail Plaza (<40k)	Standard Deviation	7.81	0.94	2.94
	Number of Studies	4	5	25
	Average Size	19	18	21
	R^2	0.96	0.57	0.56

Appendix F – Year 2030 Build Capacity Analysis

F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	361	118	56	386	128	347	73	56	111	68	386
Future Volume (veh/h)	73	361	118	56	386	128	347	73	56	111	68	386
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	79	392	128	61	420	139	377	79	61	121	74	420
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	102	693	217	89	661	210	502	889	626	225	1300	580
Arrive On Green	0.06	0.18	0.18	0.05	0.17	0.17	0.15	0.45	0.45	0.07	0.37	0.37
Sat Flow, veh/h	1781	3853	1205	1781	3836	1219	3456	1992	1403	3456	3554	1585
Grp Volume(v), veh/h	79	344	176	61	371	188	377	70	70	121	74	420
Grp Sat Flow(s),veh/h/ln	1781	1702	1654	1781	1702	1651	1728	1777	1618	1728	1777	1585
Q Serve(g_s), s	3.0	6.4	6.8	2.3	7.0	7.4	7.3	1.6	1.7	2.4	0.9	15.9
Cycle Q Clear(g_c), s	3.0	6.4	6.8	2.3	7.0	7.4	7.3	1.6	1.7	2.4	0.9	15.9
Prop In Lane	1.00		0.73	1.00		0.74	1.00		0.87	1.00		1.00
Lane Grp Cap(c), veh/h	102	612	297	89	586	284	502	793	722	225	1300	580
V/C Ratio(X)	0.77	0.56	0.59	0.69	0.63	0.66	0.75	0.09	0.10	0.54	0.06	0.72
Avail Cap(c_a), veh/h	264	882	428	359	1049	509	861	793	722	463	1300	580
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.3	26.0	26.1	32.5	26.7	26.9	28.5	11.1	11.1	31.5	14.3	19.0
Incr Delay (d2), s/veh	11.6	0.8	1.9	9.1	1.1	2.6	2.3	0.2	0.3	2.0	0.1	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.4	2.6	1.2	2.7	2.8	2.9	0.6	0.6	1.0	0.3	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.9	26.8	28.0	41.5	27.8	29.5	30.8	11.3	11.4	33.5	14.3	26.7
LnGrp LOS	D	C	C	D	C	C	C	B	B	C	B	C
Approach Vol, veh/h		599			620			517			615	
Approach Delay, s/veh		29.4			29.7			25.5			26.5	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	35.5	8.0	17.0	14.6	29.9	8.5	16.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.3	31.0	14.0	18.0	17.3	23.0	10.3	21.4
Max Q Clear Time (g_c+I1), s	4.4	3.7	4.3	8.8	9.3	17.9	5.0	9.4
Green Ext Time (p_c), s	0.1	0.7	0.1	2.0	0.8	0.9	0.1	2.6

Intersection Summary			
HCM 6th Ctrl Delay			27.9
HCM 6th LOS			C

Intersection						
Int Delay, s/veh	1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	390	16	8	579	42	24
Future Vol, veh/h	390	16	8	579	42	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	424	17	9	629	46	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	441	0	757	212
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	333	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1115	-	344	793
Stage 1	-	-	-	-	628	-
Stage 2	-	-	-	-	698	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1115	-	341	793
Mov Cap-2 Maneuver	-	-	-	-	341	-
Stage 1	-	-	-	-	628	-
Stage 2	-	-	-	-	692	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	430	-	-	1115	-
HCM Lane V/C Ratio	0.167	-	-	0.008	-
HCM Control Delay (s)	15	-	-	8.3	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	138	40	181	30	50	20	163	326	76	74	488	252
Future Volume (veh/h)	138	40	181	30	50	20	163	326	76	74	488	252
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	150	43	197	33	54	22	177	354	83	80	530	274
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	371	284	254	205	246	95	490	2100	474	631	1639	763
Arrive On Green	0.10	0.16	0.16	0.03	0.10	0.10	0.08	0.50	0.50	0.06	0.48	0.48
Sat Flow, veh/h	1781	1777	1585	1781	2509	965	1781	4164	941	1781	3404	1585
Grp Volume(v), veh/h	150	43	197	33	37	39	177	287	150	80	530	274
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1697	1781	1702	1701	1781	1702	1585
Q Serve(g_s), s	5.2	1.5	8.7	1.2	1.4	1.5	3.5	3.3	3.5	1.6	7.0	7.9
Cycle Q Clear(g_c), s	5.2	1.5	8.7	1.2	1.4	1.5	3.5	3.3	3.5	1.6	7.0	7.9
Prop In Lane	1.00		1.00	1.00		0.57	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	371	284	254	205	174	166	490	1716	858	631	1639	763
V/C Ratio(X)	0.40	0.15	0.78	0.16	0.21	0.23	0.36	0.17	0.17	0.13	0.32	0.36
Avail Cap(c_a), veh/h	438	554	494	270	442	422	721	1716	858	717	1639	763
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	26.3	29.3	28.1	30.2	30.3	8.4	9.8	9.8	8.2	11.6	11.8
Incr Delay (d2), s/veh	0.7	0.2	5.1	0.4	0.6	0.7	0.4	0.2	0.4	0.1	0.5	1.3
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	2.1	0.6	3.4	0.5	0.6	0.6	1.1	1.1	1.2	0.5	2.3	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.9	26.6	34.4	28.5	30.9	31.0	8.9	10.0	10.3	8.3	12.1	13.2
LnGrp LOS	C	C	C	C	C	C	A	A	B	A	B	B
Approach Vol, veh/h		390			109			614			884	
Approach Delay, s/veh		29.9			30.2			9.7			12.1	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	41.2	6.9	16.1	10.2	39.5	11.4	11.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	36.7	5.1	22.7	15.1	29.1	9.7	18.1
Max Q Clear Time (g_c+I1), s	3.6	5.5	3.2	10.7	5.5	9.9	7.2	3.5
Green Ext Time (p_c), s	0.0	2.6	0.0	1.0	0.3	4.8	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	15.8
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	5.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	191	115	0	133	66
Future Vol, veh/h	0	191	115	0	133	66
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	-	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	208	125	0	145	72

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	451	63	0	0	125	0
Stage 1	125	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	537	988	-	-	1459	-
Stage 1	887	-	-	-	-	-
Stage 2	704	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	484	988	-	-	1459	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	634	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	5.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	988	1459	-
HCM Lane V/C Ratio	-	-	0.21	0.099	-
HCM Control Delay (s)	-	-	9.6	7.7	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	608	202	53	241	79	269	56	63	190	51	232
Future Volume (veh/h)	122	608	202	53	241	79	269	56	63	190	51	232
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	133	661	220	58	262	86	292	61	68	207	55	252
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	168	824	270	83	653	202	403	731	653	297	1354	604
Arrive On Green	0.09	0.22	0.22	0.05	0.17	0.17	0.12	0.41	0.41	0.09	0.38	0.38
Sat Flow, veh/h	1781	3805	1245	1781	3865	1194	3456	1777	1585	3456	3554	1585
Grp Volume(v), veh/h	133	590	291	58	229	119	292	61	68	207	55	252
Grp Sat Flow(s),veh/h/ln	1781	1702	1646	1781	1702	1655	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	5.5	12.4	12.7	2.4	4.5	4.9	6.1	1.6	2.0	4.4	0.7	8.8
Cycle Q Clear(g_c), s	5.5	12.4	12.7	2.4	4.5	4.9	6.1	1.6	2.0	4.4	0.7	8.8
Prop In Lane	1.00		0.76	1.00		0.72	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	168	738	357	83	575	280	403	731	653	297	1354	604
V/C Ratio(X)	0.79	0.80	0.82	0.70	0.40	0.43	0.73	0.08	0.10	0.70	0.04	0.42
Avail Cap(c_a), veh/h	244	814	394	331	967	470	794	731	653	427	1354	604
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.4	27.9	28.1	35.4	27.9	28.0	32.1	13.5	13.6	33.5	14.6	17.1
Incr Delay (d2), s/veh	10.5	5.3	11.6	10.1	0.4	1.0	2.5	0.2	0.3	2.9	0.1	2.1
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	2.7	5.1	5.7	1.2	1.7	1.9	2.5	0.6	0.7	1.8	0.3	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.9	33.2	39.6	45.4	28.3	29.1	34.6	13.7	13.9	36.4	14.7	19.3
LnGrp LOS	D	C	D	D	C	C	C	B	B	D	B	B
Approach Vol, veh/h		1014			406			421			514	
Approach Delay, s/veh		36.4			31.0			28.2			25.7	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	35.5	8.0	20.8	13.3	33.2	11.6	17.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.3	31.0	14.0	18.0	17.3	23.0	10.3	21.4
Max Q Clear Time (g_c+I1), s	6.4	4.0	4.4	14.7	8.1	10.8	7.5	6.9
Green Ext Time (p_c), s	0.2	0.6	0.1	1.7	0.7	0.9	0.1	1.6

Intersection Summary	
HCM 6th Ctrl Delay	31.7
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	699	53	25	393	25	15
Future Vol, veh/h	699	53	25	393	25	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	760	58	27	427	27	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	818	0	1028	380
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	268	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	806	-	230	618
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	753	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	806	-	222	618
Mov Cap-2 Maneuver	-	-	-	-	222	-
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	728	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	19.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	292	-	-	806	-
HCM Lane V/C Ratio	0.149	-	-	0.034	-
HCM Control Delay (s)	19.5	-	-	9.6	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	67	208	18	30	12	273	544	126	122	293	203
Future Volume (veh/h)	158	67	208	18	30	12	273	544	126	122	293	203
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	172	73	226	20	33	13	297	591	137	133	318	221
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	399	318	284	183	240	89	608	2050	466	506	1494	695
Arrive On Green	0.11	0.18	0.18	0.02	0.09	0.09	0.12	0.49	0.49	0.06	0.44	0.44
Sat Flow, veh/h	1781	1777	1585	1781	2536	942	1781	4158	946	1781	3404	1585
Grp Volume(v), veh/h	172	73	226	20	23	23	297	482	246	133	318	221
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1701	1781	1702	1700	1781	1702	1585
Q Serve(g_s), s	6.1	2.6	10.2	0.7	0.9	0.9	6.3	6.2	6.4	3.0	4.3	6.8
Cycle Q Clear(g_c), s	6.1	2.6	10.2	0.7	0.9	0.9	6.3	6.2	6.4	3.0	4.3	6.8
Prop In Lane	1.00		1.00	1.00		0.55	1.00		0.56	1.00		1.00
Lane Grp Cap(c), veh/h	399	318	284	183	168	161	608	1678	838	506	1494	695
V/C Ratio(X)	0.43	0.23	0.80	0.11	0.13	0.15	0.49	0.29	0.29	0.26	0.21	0.32
Avail Cap(c_a), veh/h	440	542	483	265	432	413	759	1678	838	572	1494	695
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	26.2	29.3	29.4	30.9	30.9	8.7	11.2	11.2	10.0	12.9	13.6
Incr Delay (d2), s/veh	0.7	0.4	5.1	0.3	0.4	0.4	0.6	0.4	0.9	0.3	0.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	1.1	3.9	0.3	0.4	0.4	1.9	2.0	2.2	1.0	1.5	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.3	26.5	34.3	29.7	31.3	31.3	9.3	11.6	12.1	10.3	13.3	14.8
LnGrp LOS	C	C	C	C	C	C	A	B	B	B	B	B
Approach Vol, veh/h		471			66			1025			672	
Approach Delay, s/veh		29.8			30.8			11.0			13.2	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	41.2	6.2	17.8	13.3	37.2	12.5	11.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	36.7	5.1	22.7	15.1	29.1	9.7	18.1
Max Q Clear Time (g_c+I1), s	5.0	8.4	2.7	12.2	8.3	8.8	8.1	2.9
Green Ext Time (p_c), s	0.1	4.6	0.0	1.2	0.5	3.1	0.1	0.1

Intersection Summary	
HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	138	69	0	215	110
Future Vol, veh/h	0	138	69	0	215	110
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	-	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	150	75	0	234	120

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	603	38	0	0	75	0
Stage 1	75	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	430	1026	-	-	1522	-
Stage 1	939	-	-	-	-	-
Stage 2	556	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	364	1026	-	-	1522	-
Mov Cap-2 Maneuver	364	-	-	-	-	-
Stage 1	939	-	-	-	-	-
Stage 2	470	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	5.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1026	1522	-
HCM Lane V/C Ratio	-	-	0.146	0.154	-
HCM Control Delay (s)	-	-	9.1	7.8	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.5	-