Exhibit 16 - Master Traffic Impact Analysis

Hawes Crossing

Master Traffic Impact Anlaysis

Northwest of Loop 202 and
State Route 24 Interchange
Mesa, Arizona

November 2019
Project No. 17-1390

Prepared For:

Mesa-Casa Grande
Land Company, LLC
19965 East Elliot Road
Mesa, Arizona 85212

For Submittal to:
City of Mesa

Prepared By:

CivTech

10605 North Hayden Road
Suite 140
Scottsdale, Arizona 85260
480-659-4250

HAWES CROSSING
MASTER TRAFFIC IMPACT ANALYSIS

Northwest of Loop 202 and State Route 24 Interchange
Mesa, Arizona

Prepared for:

Mesa-Casa Grande Land Company, LLC
19965 E. Elliot Rd.
Mesa AZ, 85212

Prepared by:

CivTech
10605 North Hayden Road
Suite 140
Scottsdale, Arizona 85260
(480) 659-4250

November 2019
CivTech Project No. 17-1390

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

TECHNICAL APPENDIX

EXECUTIVE SUMMARY

This report documents a master traffic impact analysis performed for the Hawes Crossing project which is located northwest of the State Route 202 (SR-202) and State Route 24 (SR-24) system interchange in Mesa, Arizona. The Hawes Crossing master plan proposes a mixed land use development of approximately 1,132 acres. The development land uses include single family residential, multi-family residential, commercial, office and technology land uses.

The overall Hawes Crossing PAD is a cooperative effort by 6 dairy farming families, and the Arizona State Land Department ("State Land'). Hawes Crossing is the largest remaining assemblage of land adjacent to the City of Mesa to be developed.

The overall development stretches approximately 1¾-miles north-south at its longest point and approximately 1¾-miles east-west at its widest point. The site plan illustrates collector roadways throughout the site. The narrative describes an iconic/interesting north-south roadway parallel to Hawes Road approximately ¼-mile to the west. The current site plan depicts three (3) looped collector roads that service residential areas and one (1) looped collector that services the technology mixed use area. All collector connections to arterial roads are planned to have landscaped entrances. All single family residential zones are located away from arterial roadways whereas all land use types that include commercial, office or technology are located adjacent to the arterial roadways.

The following conclusions and recommendations have been documented in this study:

Existing Conditions

- All study intersections are evaluated to operate at a LOS C or better during peak hours.

General

- Per the request of the City, land use density and intensity values were determined by calculating 80% of the potential maximum zoning for the area. **Table 3** shows the calculated 80% densities and intensities used to generate trips for the study area. Detailed density/intensity calculations can be found in **Appendix D.**
- The site is anticipated to generate approximately 125,486 daily trips with 5,784 trips during the AM peak hour and 10,746 trips during the PM peak hour.
- It should be noted that with the proposed regional commercial land used proposed along the Elliot Road corridor near the Loop 202 interchange, pass-by trip reduction would greatly reduce the traffic volumes predicted herein and avoid over building road improvements. Pass-by trip reductions were not applied in this study. Therefore, it is recommended that pass-by trip reductions be considered in future studies for all proposed commercial parcels in and around the Elliot Road corridor.
- Community capture is results from a combination of multiple types of attractions within a large area or community. Trips are generated by productions and attractions within a community. If each individual land use inside of a community is collectively evaluated, the trips generated would be grossly overestimated. This phenomenon, known as community capture, has been well documented within several studies.

CivTech prepared one such white paper in 2012 based on data collected and evaluated within the Anthem community located north of Phoenix Arizona. In general, the findings indicated that depending on the mix of uses and the size of the development, trips traveling on roads external to the development area could be reduced by up to 59 percent. Although the concept of community capture could be applied to the Hawes Crossing development, reductions were not taken within this analysis. Therefore, the results of this analysis provide recommendations to satisfy a larger traffic impact than is anticipated in the future. A copy of the community capture white paper produced by CivTech has been included within **Appendix D**.

2040

- The recommended lane configurations and traffic controls based on the 2040 projected traffic volumes are presented in **Figure 19** through **Figure 23**.
- While most signalized intersections are anticipated to operate at overall LOS D or better, some individual movements are anticipated to experience heavy delays during the AM and/or PM peak hours. This is often due to the overall high traffic volumes entering the intersection compared to the intersection's capacity, particularly in turning movements. It is well known that methodology from the NCHRP Report 765 has a tendency to over represent turning movements and underrepresent through volumes when converting AADT to peak hour volumes. Study intersections will likely have reduced turning movement volumes than projected and may operate with lower delays and better LOS than projected.
- These recommendations are based on the projected 2040 total traffic volumes, which include site traffic volumes using the projected trip generation estimated from assuming 80 percent of the maximum entitlement density could be constructed. The site traffic was considered with background traffic volumes estimated from the Maricopa Association of Governments (MAG) 2040 average annual daily traffic (AADT's). Individualized traffic impact studies are recommended for each proposed parcel or phase during the platting stages.
- The intersection of ***Hawes Road and Warner Road*** is expected to experience heavy delays by study horizon year 2040. As shown in **Figure 20**, this intersection is planned for signalization. The proximity of the Loop 202 interchange to the south is expected to increase the east/west turning volumes on Warner Road, as well as the north/south through volumes along Hawes Road, increasing delays for these movements. It is recommended this intersection be monitored for future signal timing modification upon buildout of the area.
- The intersection of ***Hawes Road and Elliot Road*** is expected to experience heavy delays by study horizon year 2040 during the PM peak hour. Although this intersection is planned for signalization, the proximity of the Loop 202 interchange to the east is expected to increase the east/west turning volumes on Elliot Road, as well as the north/south movements onto Hawes Road, thus increasing delays for all movements. It is recommended this intersection be monitored for future signal timing modification upon buildout of the area.

- The ***Loop 202 and Elliot Traffic Interchange*** is expected to experience heavy delays upon buildout of the area by horizon year 2040 during the PM peak hour. This is due to the anticipated regional growth in area and the proposed commercial parcels east of the Loop 202 along Elliot Road which are expected to attract additional regional trips from the area. As the surrounding area develops it is recommended that the traffic interchange at the Loop 202 and Elliot Road be monitored for future signal timing modification and mitigation.

- The proposed signalized ***Intersection AA*** is expected to experience heavy delays in the PM peak hour due to the expected increase in regional traffic in the study area by horizon year 2040. Traffic volumes in this report reflect the highest potential demand and will reduce with the application of pass-by traffic in future traffic studies. It is recommended that this signal also be monitored for signal timing adjustments to promote progression along the corridor along with the Loop 202 and Elliot Road Traffic Interchange signals due to the proximity of Intersection AA. The exact location of intersection AA has not yet been established.

- Proposed ***Intersection B and Hawes Road*** and ***Intersection D and Elliot Road*** are expected to experience heavy delays in the PM peak hour along the minor approach. This is due to the large increase in regional traffic expected along all arterials by horizon year 2040. As the area develops it is recommended these two intersection locations be monitored for future signalization.

- ***Intersection N*** along Hawes Road has stop controlled east/west movement(s) that are anticipated to operate with heavy turning movement delays during the PM peak hour. As shown in **Figure 21**, while the spacing of this intersection could be acceptable for signalization, due to the location or proximity of other surrounding intersections, this location is not recommended to be signalized. It is recommended that the roadways internal to the site be designed, and driveways to individual parcels placed, to encourage the use of roadways leading to signalized intersections for improved traffic flow characteristics.

- Per the City of Mesa standards, dual left-turn lanes are required at all arterial to arterial intersections, however, many study intersections analyzed within this analysis only warrant single left-turn lanes. Therefore, it is recommended right-of-way be provided for future dual left-turn lanes at all arterial to arterial intersections with the interim conditions providing a single left-turn lane with the dual left-turn striped out for future use when needed. The following is a list of turn lane locations that warrant dual left-turns lane based on projected 2040 intersection delays:
  - Power Road & Elliot Road – eastbound, westbound
  - Sossaman Road & Elliot Road - southbound
  - Sossaman Road & Warner Road – northbound, southbound, eastbound, westbound
  - Hawes Road & Elliot Road – westbound, northbound
  - Hawes Road & Warner Road - northbound, southbound, eastbound, westbound
  - Hawes Road & Loop 202 EB Ramps - northbound
  - Hawes Road & Loop 202 WB Ramps – southbound

- Ellsworth Road & Elliot Road – northbound, southbound
- Ellsworth Road & Warner Road – northbound

- It should be noted that the city will not allow single left-turn lanes with opposing dual left-turns. The City recommends that either both opposing left-turn lanes remain single or be striped for dual lanes. Should the left-turn lane remain single, protected-permissive phasing with 3rd or 1st car detection is recommended. If dual turn lanes are constructed, left turn phasing must be protected.
- The following is a list of right-turn lanes that are predicted to improve intersection delays. City of Mesa Mesa Standard Detail M-46 requires right-turn lanes at all arterial to arterial intersections.
  - Hawes Road & Guadalupe Road – northbound
  - Power Road & Elliot Road – northbound, southbound, eastbound
  - Sossaman Road & Elliot Road – northbound, southbound, westbound
  - Hawes Road & Elliot Road – eastbound
  - Sossaman Road & Warner Road – northbound, southbound, eastbound
  - Hawes Road & Warner Road – northbound, southbound, eastbound, westbound
  - Hawes Road & Loop 202 WB Ramps – southbound, westbound
  - Ellsworth Road and Warner Road – southbound, eastbound, westbound
  - Intersection B – southbound and eastbound
  - Intersection D – northbound and eastbound
  - Intersection F - eastbound
  - Intersection K – eastbound
  - Intersection Q – eastbound
  - Intersection Z – southbound
  - Intersection AB – eastbound
  - Intersection AE – southbound, eastbound
  - Intersection AG – southbound, eastbound
  - Intersection AH – northbound
  - Intersection AI – southbound
  - Intersection AJ – eastbound
  - Intersection AK - southbound
- Free flow right-turn lanes are recommended for the locations listed below to improve intersection delay. It should be noted that the HCM 2016 does not analyze free flow right-turn lanes or tight diamond traffic interchanges, therefore HCM 2000 methodology was used to analyze all traffic interchanges within the study area. The right-turn lane needs of these intersections should be evaluated with future TIAs of individual phases of the development.
  - (Int.4) Guadalupe Road eastbound approaching Loop 202 southbound on ramp.
  - (Int.5) Guadalupe Road westbound approaching Loop 202 northbound off-ramp.
  - (Int.10) Elliot Road eastbound approaching Loop 202 southbound on-ramp.
  - (Int.11) Elliot Road westbound approaching Loop 202 northbound on-ramp.

- (Int.14) Hawes Road southbound approaching and Loop 202 on-ramp.

♦ Signalization is recommended at all arterial-arterial intersections as well as at the arterial-collector intersections listed below. The City's *Engineering and Design Standards* indicate that signalization of intersections less than 1/8-mile from an arterial (centerline to centerline) or between 1/6-mile and 1/3-mile is not acceptable. Intersections E, F and X are approximately 1/4-mile from Hawes Road and require a variance from the design standards to be signalized. Intersection Y, located on Warner Road approximately 1/8-mile east of Hawes Road, was requested by City staff to be shifted to at least 800 feet east of Hawes Road. Intersections AA and AB are planned future intersections from a different development. Intersection AK is located on Warner Road approximately 1/4-mile west of Ellsworth Road and requires a variance from the design standards to be signalized. Recommended signal locations and spacing are depicted in **Figure 24**.

- (Int.8) 80th Street and Elliot Road ~2,660 feet (1/2-mile) east of Sossaman Road
- Intersection E at Elliot Road ~1,320 feet (1/4-mile) west of Hawes Road
- Intersection F at Elliot Road ~1,285 feet (≤1/4-mile) east of Hawes Road and ~1,285 feet (≤1/4-mile) west of Loop 202 SB Ramps
- Intersection J at Hawes Road ~810 feet (≤1/6-mile) south of Elliot Road
- Intersection U at Hawes Road ~820 feet (≤1/6-mile) north of Warner Road
- Intersection X at Warner Road ~1,320 feet (1/4-mile) west of Hawes Road
- Intersection Y at Warner Road ~660 feet (1/8-mile) east of Hawes Road
- Intersection AA at Elliot Road ~709 feet (≥1/8-mile) east of Loop 202 NB Ramps
- Intersection AB at Elliot Road ~774 feet (≤1/6-mile) west of Ellsworth Road
- Intersection AE at Ellsworth Road ~1,300 feet (1/4-miles) south of Elliot Road

INTRODUCTION

The Hawes Crossing project is located north of State Route 202 (SR-202) and State Route 24 (SR-24) system interchange in Mesa, Arizona. A location map is illustrated in **Figure 1.** The development is a master planned community with a mix of land uses. CivTech Inc. has been retained by Mesa-Casa Grande Land Company, LLC, to prepare a Master Traffic Impact Analysis (MTIA). Hawes Crossing is anticipated to be fully buildout by 2040.

PURPOSE OF REPORT AND STUDY OBJECTIVES

The purpose of this study is to analyze the traffic impacts of the proposed Hawes Crossing project on the surrounding street system and to project general needs of the roadway network to support the project. This MTIA is intended to project overall transportation needs; individual traffic impact analyses are expected to be required as portions of the project are platted. The specific objectives of the study are:

- To determine whether the planned street system in the vicinity of the site is adequate to accommodate the increased traffic that results from the proposed development;
- To recommend additional street improvements or traffic control devices, where necessary, to mitigate the site-generated traffic;
- To evaluate the main site access driveways; and,
- Evaluate the internal site circulation and provide recommendations if necessary.

Study Area

The scope of this study was discussed with City of Mesa Traffic Engineering Staff. The scope of the study will include the following intersections:

- Sossaman Road and Guadalupe Road
- Farnsworth Drive/Bridlewood and Guadalupe Road
- Hawes Road and Guadalupe Road
- SR-202 SB Ramps and Guadalupe Road
- SR-202 NB Ramps and Guadalupe Road
- Power Road and Elliot Road
- Sossaman Road and Elliot Road
- 80th Street and Elliot Road
- Hawes Road and Elliot Road
- SR-202 SB Ramps and Elliot Road
- SR-202 NB Ramps and Elliot Road
- Hawes Road and SR-202 WB Ramps
- Hawes Road and SR-202 EB Ramps
- Ellsworth Road and Elliot Road
- Ellsworth Road and Warner Road

Analysis Years

Per discussion with the City of Mesa, this study will consider a horizon year of 2040.

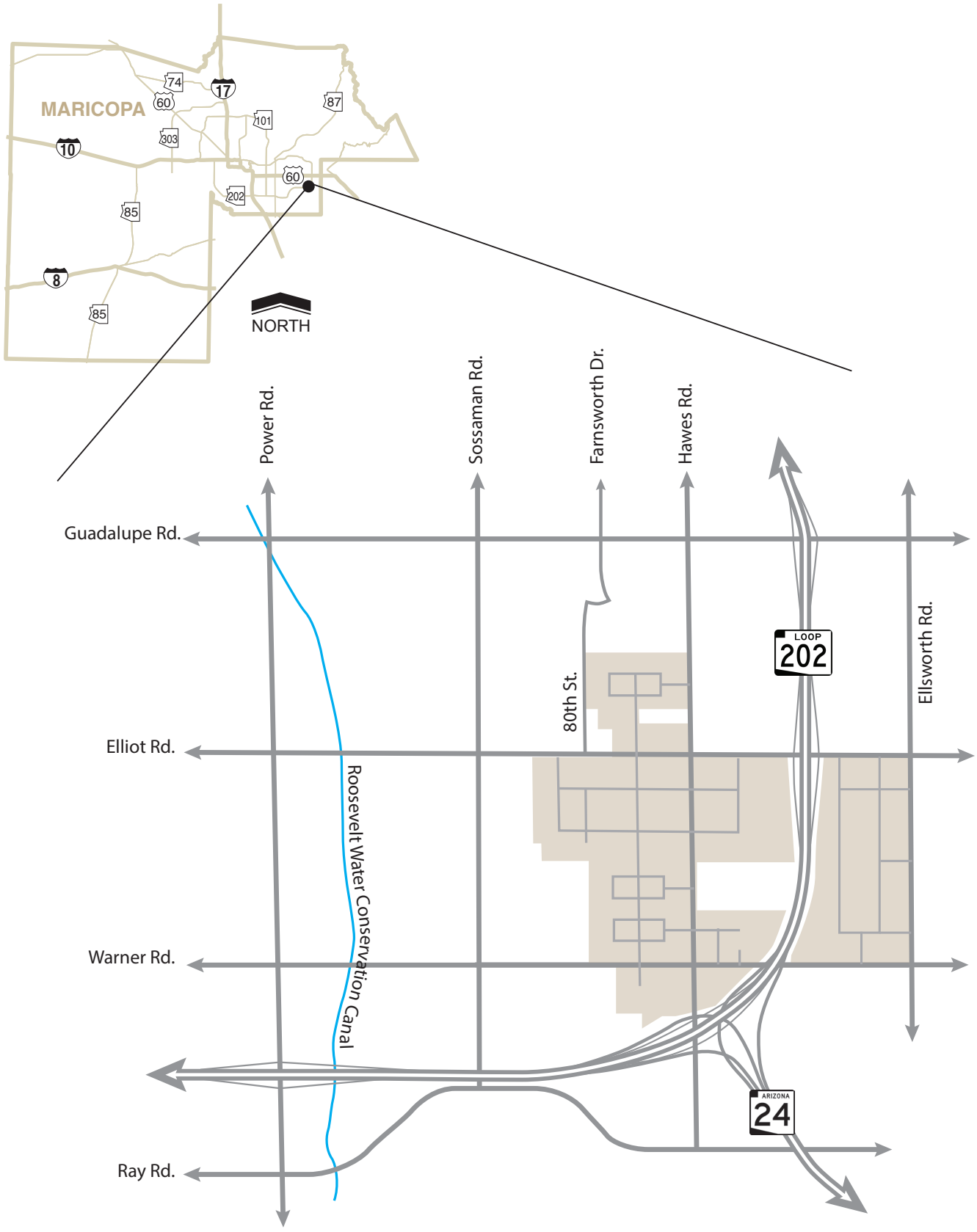


Figure 1: Vicinity Map

EXISTING CONDITIONS

EXISTING AND SURROUNDING LAND USE

The site consists of multiple parcels. Several of the parcels include dairy farms or are vacant desert land. The site also includes some existing single family homes, light industrial and agriculture land uses.

Land uses surrounding the site include residential housing, light industrial, and vacant parcels.

ROADWAY NETWORK

State Route 202 (SR-202) is located along portions of the development's southern and eastern border. SR-24 begins at SR-202 adjacent to the site. The roadway network within the study area includes Guadalupe Road, Elliot Road, Warner Road, Sossaman Road, Hawes Road, 80th Street, Farnsworth Drive/Bridlewood and Ellsworth Road.

Guadalupe Road is an east-west roadway classified as a principal arterial within Figure 2-2 of the *Mesa Gateway Strategic Development Plan, Transportation Analysis Memorandum*, dated January 23, 2009. Guadalupe Road traverses the East Phoenix Metropolitan Area, beginning west of the Meridian Road alignment in Mesa and continuing west through Tempe, until terminating at South Pointe Parkway in Phoenix. Guadalupe Road provides direct access to SR-202 (San Tan Freeway) and State Route 101 ("Loop 101" - Price Freeway). Within the vicinity of the site, Guadalupe Road has a posted speed limit of 45 mph and generally consists of three (3) through lanes and a bike lane in each direction, separated by a center two-way left-turn lane (CTWLTL).

Elliot Road is an east-west roadway classified as a principal arterial within the *Mesa Gateway Strategic Development Plan*. Elliot Road traverses the East Phoenix Metropolitan Area, beginning at Meridian Road in Mesa and continuing west through Tempe, becoming the Warner Elliot Loop in Phoenix. Elliot Road provides direct access to SR-202 (San Tan Freeway), State Route 101 (Price Freeway) and I-10. Within the study area, Elliot Road has a posted speed limit of 45 mph and consists of one (1) through lane in each direction.

Warner Road is an east-west roadway functionally classified as a collector west of Ellsworth Road and as principal arterial east of Ellsworth Road within the *Mesa Gateway Strategic Development Plan*. Warner Road traverses the East Phoenix Metropolitan Area, beginning at Meridian Road in Mesa and continuing west through Tempe, becoming the Warner Elliot Loop in Phoenix. Warner Road provides direct access to SR-202 (San Tan Freeway), Loop 101 (Price Freeway) and I-10. Warner Road has not been constructed between the Roosevelt Water Conservation Canal and Sossaman Road. Within the study area, Warner Road has a posted speed limit of 40 mph and consists of one (1) through lane in each direction.

Sossaman Road is a north-south roadway functionally classified as a principal arterial within the *Mesa Gateway Strategic Development Plan* north of Elliot Road, a collector between Elliot Road and Warner Road and a principal arterial south of Phoenix-Mesa Gateway Airport. Sossaman Road begins north of University Drive in Mesa and terminates south of Hunt Highway in Queen Creek. Sossaman Road provides direct access to US-60 (to/from the west only). Sossaman Road has not been constructed between Warner Road and the Phoenix-Mesa Gateway Airport. North of Guadalupe Road, Sossaman Road consists of one (1) northbound lane a two-way left turn lane and two (2) southbound lanes with bike lanes in both directions. Between Guadalupe Road and Peralta Avenue (1/2-mile street south Guadalupe Road), Sossaman Road has a fully constructed width for a 4-lane arterial, though the roadway transitions with striping to a 2-lane roadway south of Peralta Avenue. Sossaman Road has a posted speed limit of 45 mph north of Elliot Rad and 40 mph south of Elliot Road.

Hawes Road is a north-south roadway functionally classified as a principal arterial within the *Mesa Gateway Strategic Development Plan*. Hawes Road is a series of roadway segments, the northernmost in Mesa between Las Sendas Mountain Drive and McKellips Road and the southernmost in Queen Creek between Rittenhouse Road and south of Empire Boulevard. North of Guadalupe Road, Hawes Road has a posted speed limit of 40 mph and has width sufficient for a 4-lane arterial but is striped with three (3) northbound through lanes and one (1) southbound through lane, with a two-way left turn lane and bike lanes in both directions. Hawes Road narrows to the south. South of Guadalupe Road, Hawes Road has a posted speed limit of 35 mph and consists of one (1) through lane and bike lanes in both directions with a two-way left-turn lane until south of Peralta Avenue (1/2-mile street south Guadalupe Road), where Hawes Road is a two-lane road.

80th Street is a north-south 2-lane, unstriped roadway within the vicinity of the site that has a posted speed limit of 35 mph. The street is not depicted within the *Mesa Gateway Strategic Development Plan*, though this study considers the roadway to be a collector within the study area. The northern 80th Street segment within the study area begins at Portobello Avenue (approximately 1,500 feet south of Guadalupe Road) and terminates at Elliot Road. The southern 80th Street segment within the study area begins approximately 2,300 feet north of Warner Road and terminates at Warner Road.

Farnsworth Drive/Bridlewood is a north-south 2-lane roadway within the vicinity of the site. Neither street is depicted within the *Mesa Gateway Strategic Development Plan*, though this study considers the streets to be collectors within the study area. Farnsworth Drive is a residential collector with a posted speed limit of 35 mph and has a raised center median that begins at Baseline Road and terminates at Guadalupe Road. Bridlewood continues from Guadalupe Road at the Farnsworth Drive alignment as a residential collector, has speed limit of 20 mph and terminates at Portobello Avenue.

Ellsworth Road is a north-south roadway functionally classified as a principal arterial within the *Mesa Gateway Strategic Development Plan.* Ellsworth Road begins north at McDowell Road where it transitioning from Usery Pass Road and terminates south in Queen Creek where it transitions into Hunt Highway. Ellsworth Road provides access to SR-202 and US-60. Within the vicinity of the site, Ellsworth Road has a posted speed limit of 50 mph and consists of a 4-lane roadway divided by a center raised median.

INTERSECTION CONFIGURATIONS AND TRAFFIC CONTROLS

The intersection of ***Sossaman Road and Guadalupe Road*** is a four-legged signalized intersection. All left-turn movements operate with permitted phasing. The northbound approach consists of an exclusive left-turn lane, one (1) through lane, a bike lane and an exclusive right-turn lane. The southbound approach consists of an exclusive left-turn lane, two (2) through lanes, a bike lane and an exclusive right-turn lane. The eastbound approach consists of an exclusive left-turn lane, three (3) through lanes and a bike lane; right-turns are permitted from the outside through lane. The westbound approach consists of an exclusive left-turn lane, three (3) through lanes, a bike lane and an exclusive right-turn lane.

The intersection of ***Farnsworth Drive/Bridlewood and Guadalupe Road*** is a four-legged signalized intersection. All left-turn movements operate with permitted phasing. The northbound approach consists of an exclusive left-turn lane and a shared through/right-turn lane. The southbound approach consists of an exclusive left-turn lane, a shared through/right-turn lane and a bike lane. The eastbound approach consists of an exclusive left-turn lane, two (2) through lanes, a bike lane and a drop right-turn lane. The westbound approach consists of an exclusive left-turn lane, three (3) through lanes and a bike lane; right-turns are permitted from the outside through lane.

The intersection of ***Hawes Road and Guadalupe Road*** is a four-legged signalized intersection. All left-turn movements operate with permitted phasing. The northbound approach consists of an exclusive left-turn lane and a shared through/right-turn lane. The southbound approach consists of an exclusive left-turn lane, one (1) through lane, a bike lane and an exclusive right-turn lane. The eastbound approach consists of an exclusive left-turn lane, one (1) through lane and a drop right-turn lane. The westbound approach consists of an exclusive left-turn lane, three (3) through lanes, a bike lane and an exclusive right-turn lane.

The intersection of ***SR-202 SB Ramps and Guadalupe Road*** is a four-legged signalized intersection. The left-turn movement approaching the on ramp operates with lagging protected phasing. The south leg is a one-way on-ramp. The southbound approach consists of an exclusive left-turn lane, a shared left/right-turn lane and an exclusive right-turn lane. The eastbound approach consists of two (2) queueing lanes approaching the northbound on ramp, three (3) through lanes, a bike lane and an exclusive right-turn lane. The westbound approach consists of dual left-turn lanes, three (3) through lanes and a bike lane.

The intersection of ***SR-202 NB Ramps and Guadalupe Road*** is a four-legged signalized intersection. The left-turn movement approaching the on ramp operates with lagging protected phasing. The north leg is a one-way on-ramp. The northbound approach consists of an exclusive left-turn lane, a shared left/through/right-turn lane and an exclusive right-turn lane. The eastbound approach consists of dual left-turn lanes, three (3) through lanes and a bike lane. The westbound approach consists of two (2) queueing lanes approaching the southbound on ramp, three (3) through lanes, a bike lane and an exclusive right-turn lane.

The intersection of ***Power Road and Elliot Road*** is a four-legged signalized intersection. All left-turn movements operate with permitted phasing. The north- and southbound approaches consist of an exclusive left-turn lane and two (2) through lanes; right-turns are permitted from the outside through lane. The east- and westbound approaches consist of an exclusive left-turn lane and a shared through/right-turn lane.

The intersection of ***Sossaman Road and Elliot Road*** is a four-legged signalized intersection. All left-turn movements operate with permitted phasing. All approaches consist of an exclusive left-turn lane and a shared through/right-turn lane.

The intersection of ***80th Street and Elliot Road*** is a three-legged, one-way stop controlled intersection with the southbound approach stop controlled. All approaches provide a single approach lane.

The intersection of ***Hawes Road and Elliot Road*** is a four-legged, two-way stop controlled intersection with the north- and southbound approaches stop controlled. All approaches provide a single approach lane.

The intersection of ***SR-202 SB Ramps and Elliot Road*** is a four-legged signalized intersection. The left-turn movement approaching the on ramp operates with lagging protected phasing. The south leg is a one-way on-ramp. The southbound approach consists of an exclusive left-turn lane, a shared left/through/right-turn lane and an exclusive right-turn lane. The eastbound approach consists of two (2) queueing lanes approaching the northbound on ramp, two (2) through lanes and an exclusive right-turn lane. The westbound approach consists of dual left-turn lanes and two (2) through lanes.

The intersection of ***SR-202 NB Ramps and Elliot Road*** is a four-legged signalized intersection. The left-turn movement approaching the on ramp operates with lagging protected phasing. The north leg is a one-way on-ramp. The northbound approach consists of an exclusive left-turn lane, a shared left/through/right-turn lane and an exclusive right-turn lane. The eastbound approach consists of dual left-turn lanes and three (3) through lanes. The westbound approach consists of two (2) queueing lanes approaching the southbound on ramp, two (2) through lanes, and an exclusive right-turn lane. Current construction in the area closes several of the intersection's approach lanes.

The intersection of ***Hawes Road and SR-202 WB Ramps*** is a four-legged signalized intersection. The left-turn movement approaching the on ramp operates with protected phasing. The northbound approach consists of a single left-turn lane. The north leg is a barricaded dead end. The west leg is a one-way on-ramp. The westbound approach consists of an exclusive left-turn lane and a shared left-turn/through lane.

The intersection of ***Hawes Road and SR-202 EB Ramps*** is a four-legged signalized intersection. The left-turn movement approaching the on ramp operates with lagging protected phasing. The northbound approach consists of one (1) queueing lane approaching the westbound on ramp and an exclusive right-turn lane. The southbound approach consists of an exclusive left turn lane and two (2) through lanes. The eastbound approach consists of an exclusive left-turn lane, one (1) through lane and an exclusive right-turn lane. The east leg is a one-way on-ramp.

The intersection of ***Ellsworth Road and Elliot Road*** is a four-legged signalized intersection. All left-turn movements operate with protected-permitted phasing. The north and southbound approaches consists of an exclusive left-turn lane, two (2) through lanes, a bike lane and an exclusive right-turn lane. The east and westbound approaches consists of an exclusive left-turn lane, two (2) through lanes, and an exclusive drop right-turn lane.

The intersection of ***Ellsworth Road and Warner Road*** operates as three-legged, one-way stop controlled intersection with the eastbound stop controlled. The northbound approach consists of an exclusive left-turn lane, a through lane, a shared through-right-turn lane and a bike lane. The southbound approach consists of an exclusive left-turn lane (for future use), a through lane, a shared through/right-turn lane and a bike lane. The eastbound approach consists of a shared through/right-turn lane.

The existing lane configurations are illustrated in **Figure 2** and **Figure 3**.

TRAFFIC VOLUMES

Field Data Services of Arizona was retained to conduct AM and PM peak hour turning movement counts at the study intersections. The counts for most intersections were performed on Tuesday, October 3, 2017 from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. The counts for the intersections of Ellsworth Road/Elliot Road and Ellsworth Road/Warner Road were performed on Tuesday August 12, 2018 from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. **Figure 4** depicts the recorded peak hour turning movement volumes within the study area. Traffic volume summaries are provided in **Appendix B.**

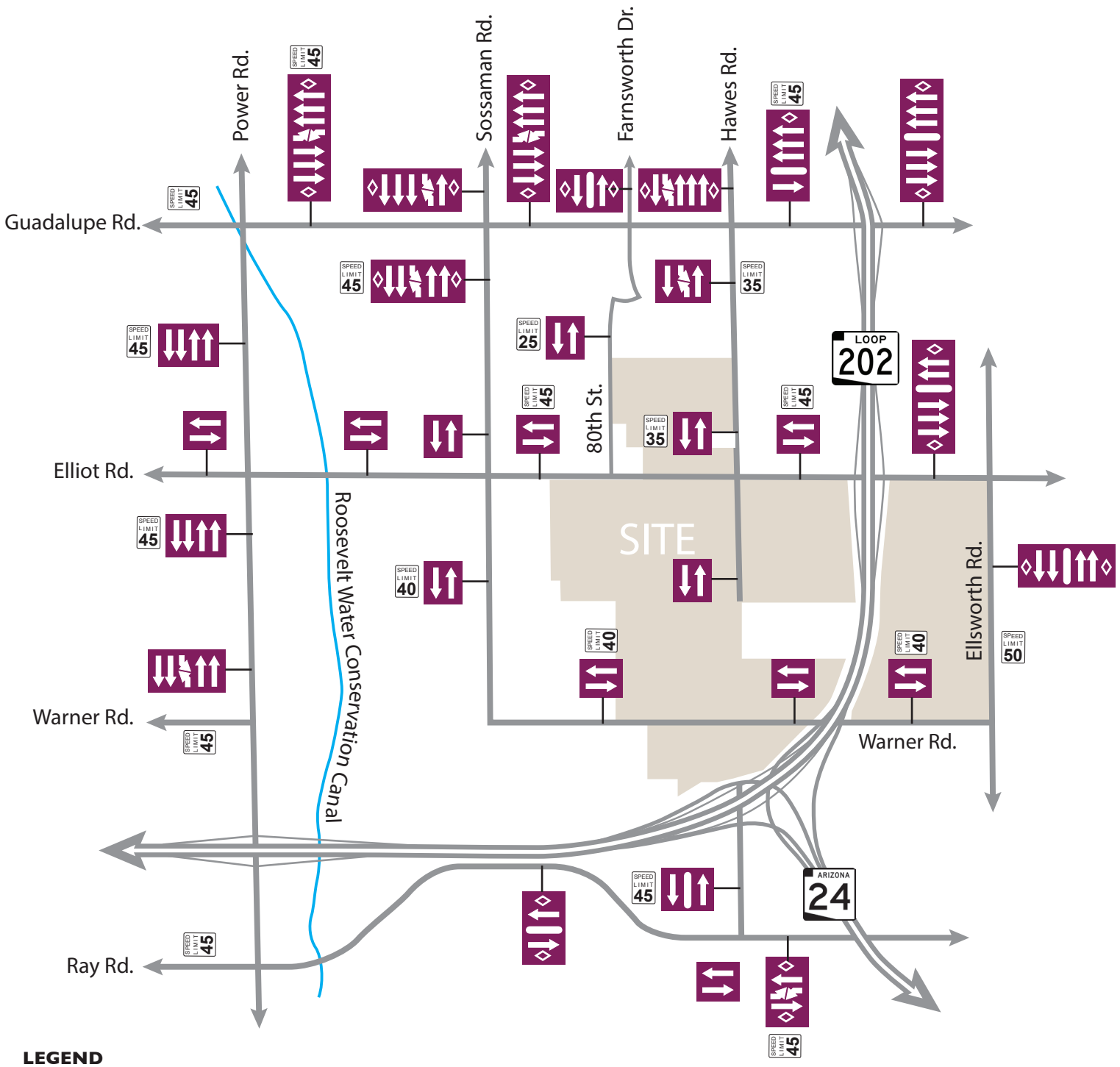


Figure 2: Existing Roadway Segment Configurations

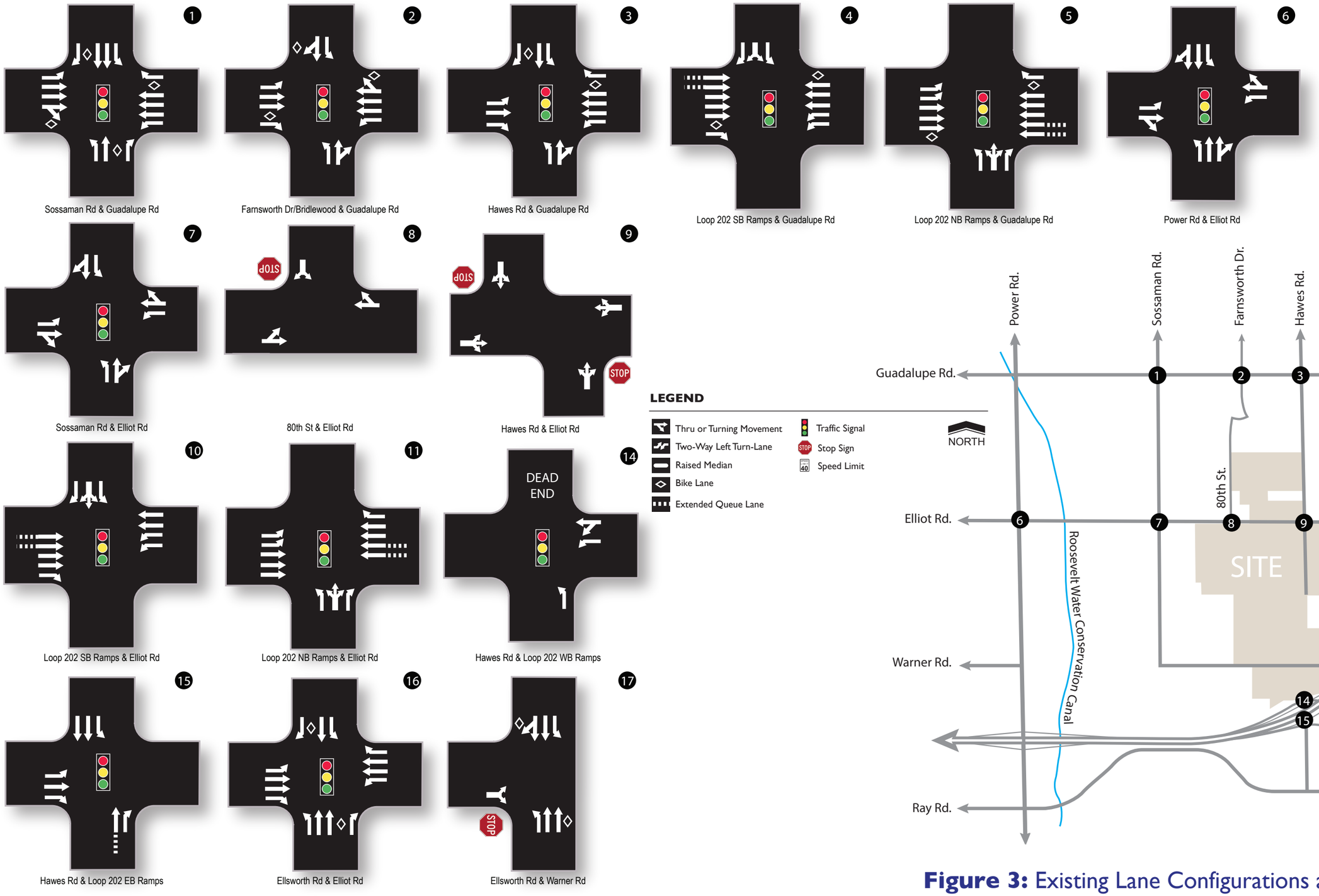
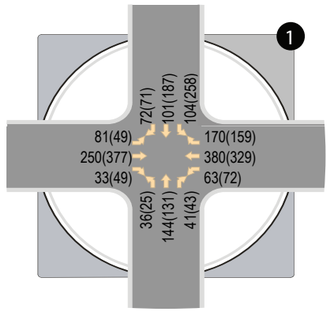
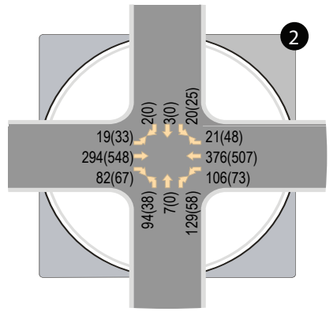


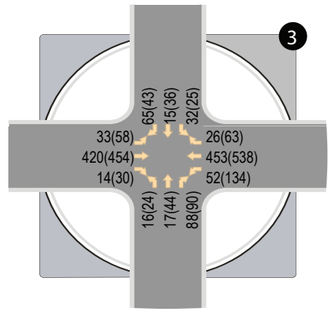
Figure 3: Existing Lane Configurations and Traffic Controls



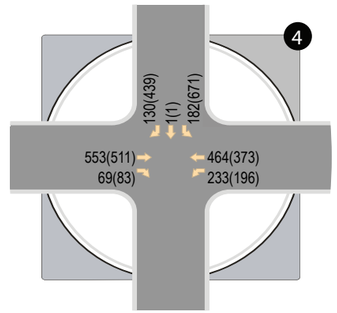
Sossaman Rd & Guadalupe Rd



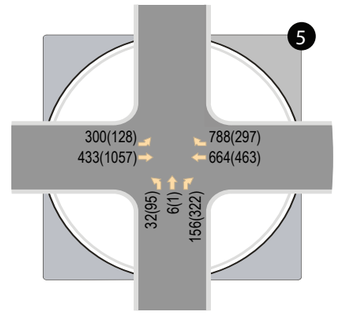
Farnsworth Dr/Bridlewood & Guadalupe Rd



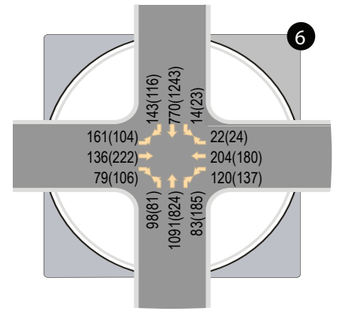
Hawes Rd & Guadalupe Rd



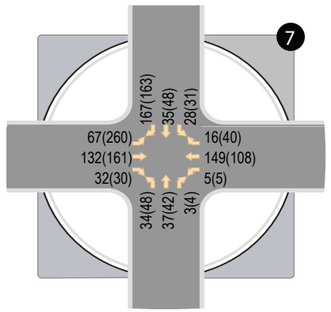
Loop 202 SB Ramps & Guadalupe Rd



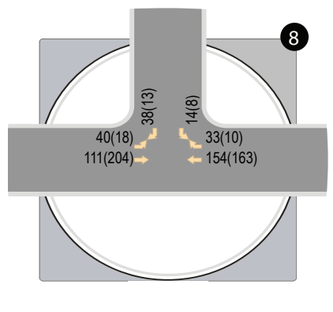
Loop 202 NB Ramps & Guadalupe Rd



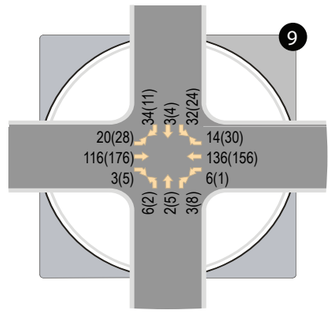
Power Rd & Elliot Rd



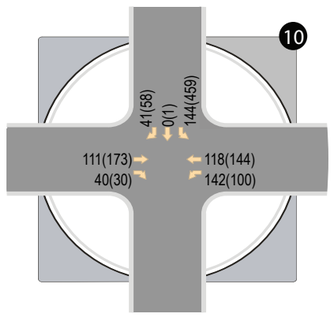
Sossaman Rd & Elliot Rd



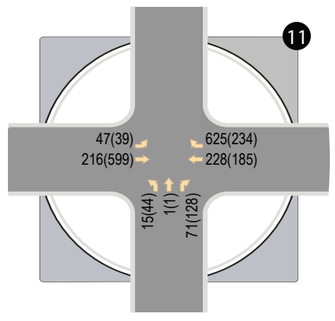
80th St & Elliot Rd



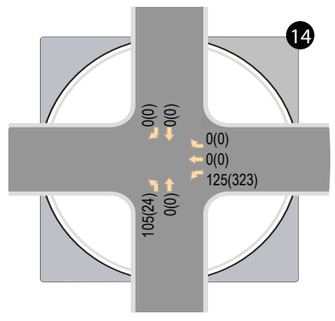
Hawes Rd & Elliot Rd



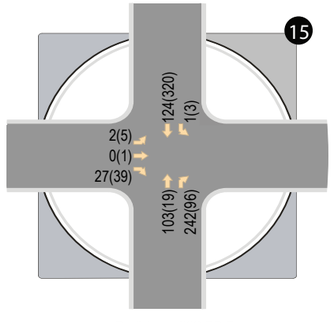
Loop 202 SB Ramps & Elliot Rd



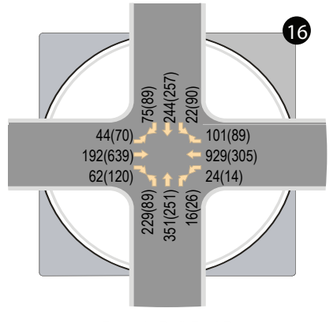
Loop 202 NB Ramps & Elliot Rd



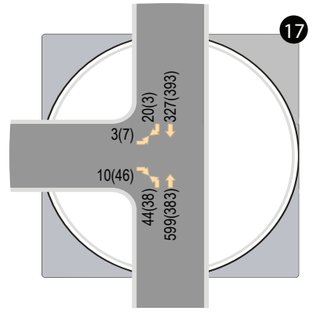
Hawes Rd & Loop 202 WB Ramps



Hawes Rd & Loop 202 EB Ramps



Ellsworth Rd & Elliot Rd



Ellsworth Rd & Warner Rd

LEGEND

XX(XX) - AM(PM) Peak Hour Traffic Volumes

XX Average Daily Traffic Volumes (in thousands)

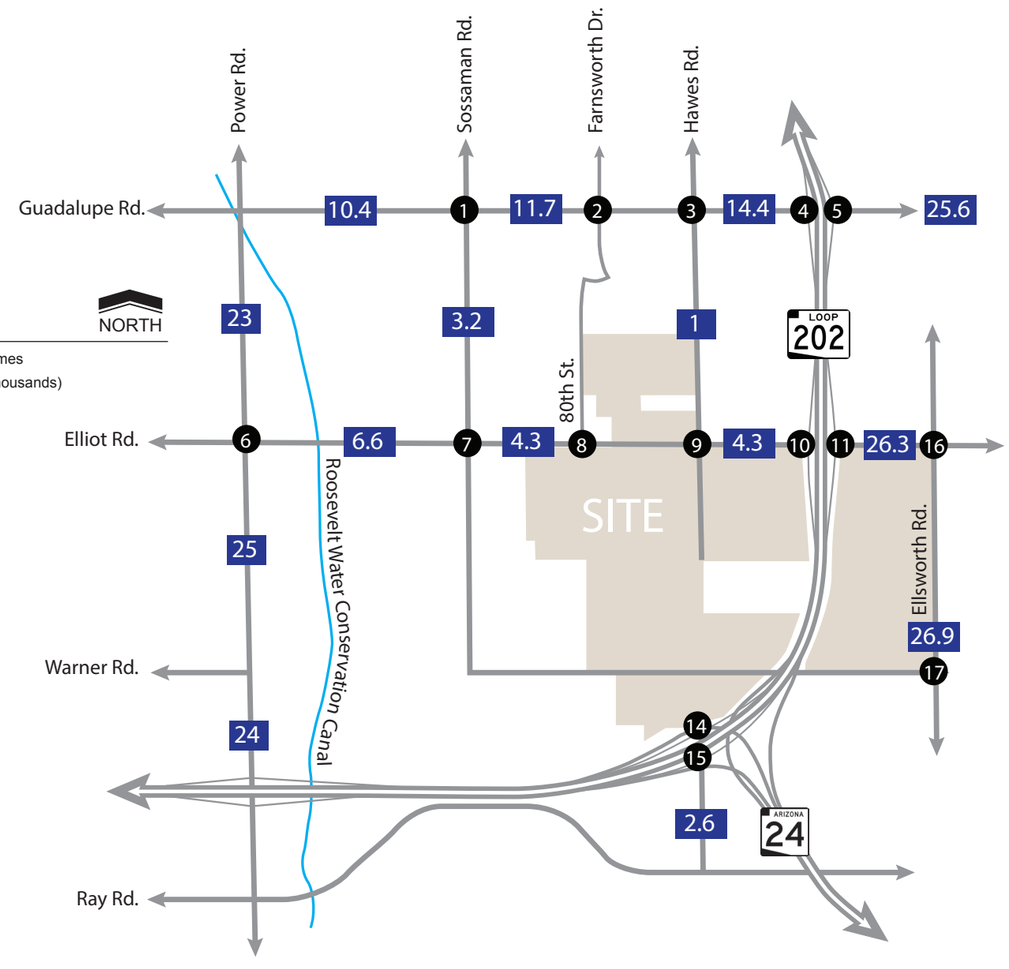


Figure 4: Existing Traffic Volumes

CAPACITY ANALYSIS

The concept of level of service (LOS) uses qualitative measures that characterize operational conditions within the traffic stream. The individual levels of service are described by factors that include speed, travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations A through F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions. Levels of service for intersections are defined within ranges of average control delay per vehicle, the number of seconds a vehicle can expect to wait due to the presence of a traffic control device. **Table 1** lists the level of service criteria for signalized and unsignalized intersections.

Table 1: Intersection Level of Service Criteria

Level of Service	Control Delay (sec/veh)	
	Signalized	Unsignalized
A	≤ 10	≤ 10
B	> 10-20	> 10-15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F*	> 80 (or v/c>1)	> 50 (or v/c>1)

Source: Exhibits 19-8, 20-2, 21-8, and 22-8, Highway Capacity Manual 2017

Synchro 10 software using the methodologies of the latest (6th) edition of the Highway Capacity Manual (HCM 6) were used to calculate average per–movement control delays, from which movement, approach, and overall intersection levels of service with the exception of the existing Loop 202 traffic interchange locations. Since HCM 6th edition cannot support clustered diamond interchanges HCM 2000 methodology was used to calculate LOS for each existing traffic interchange location. A 90-second cycle with Synchro optimized phasing and splits were used to analyze all study signalized intersections with the exception of the Loop 202 traffic interchanges which used a 120-second cycle length. The capacity analysis for the AM and PM peak hours under existing conditions are summarized in **Table 2**. Existing analysis worksheets have been included in **Appendix C.**

Table 2: 2018 Existing Peak Hour Levels-of-Service

ID	Intersection	Traffic Control	Movement	Existing Delay (LOS)	
				AM	PM
1	Sossaman Road & Guadalupe Road	Signal	NB	17.4 (B)	10.3 (B)
			SB	18.5 (B)	13.2 (B)
			EB	15.8 (B)	24.0 (C)
			WB	24.6 (C)	32.1 (C)
			Overall	20.2 (C)	21.9 (C)
2	Farnsworth Drive/Bridlewood & Guadalupe Road	Signal	NB	20.7 (C)	24.1 (C)
			SB	21.8 (C)	25.5 (C)
			EB	21.8 (C)	20.7 (C)
			WB	13.8 (B)	10.3 (B)
			Overall	18.1 (B)	16.4 (B)
3	Hawes Road & Guadalupe Road	Signal	NB	28.6 (C)	29.5 (C)
			SB	28.4 (C)	28.3 (C)
			EB	10.0 (A)	10.3 (B)
			WB	8.2 (A)	9.4 (A)
			Overall	12.7 (B)	13.1 (B)

Table 2 (Continued): 2018 Existing Peak Hour Levels-of-Service

ID	Intersection	Traffic Control	Movement	Existing Delay (LOS) AM	Existing Delay (LOS) PM
4	SR-202 SB Ramps & Guadalupe Road	Signal	SB	40.6 (D)	36.8 (D)
			EB	22.7 (C)	33.3 (C)
			WB	15.0 (B)	24.6 (C)
			Overall	22.8 (C)	32.8 (C)
5	SR-202 NB Ramps & Guadalupe Road	Signal	NB	48.6 (D)	27.4 (C)
			EB	27.0 (C)	32.5 (C)
			WB	30.0 (C)	31.8 (C)
			Overall	30.6 (C)	31.4 (C)
6	Power Road & Elliot Road	Signal	NB	16.4 (B)	15.2 (B)
			SB	13.4 (B)	17.2 (B)
			EB	32.2 (C)	35.5 (D)
			WB	29.6 (C)	48.9 (D)
			Overall	19.0 (B)	22.3 (C)
7	Sossaman Road & Elliot Road	Signal	NB	16.8 (B)	28.0 (C)
			SB	17.0 (B)	28.3 (C)
			EB	18.2 (B)	12.6 (B)
			WB	17.5 (B)	9.7 (A)
			Overall	17.5 (B)	17.7 (B)
8	80th Street & Elliot Road	1-way stop (SB)	SB left/right	9.9 (A)	9.9 (A)
			EB left/thru	7.7 (A)	7.6 (A)
9	Hawes Road & Elliot Road	2-way stop (NB/SB)	NB shared	10.9 (B)	10.9 (B)
			SB shared	10.7 (B)	12.0 (B)
			EB shared	1.1 (A)	1.0 (A)
			WB shared	0.3 (A)	0.0 (A)
10	SR-202 SB Ramps & Elliot Road	Signal	SB	42.1 (D)	25.8 (C)
			EB	12.5 (B)	28.3 (C)
			WB	24.9 (C)	21.3 (C)
			Overall	27.1 (C)	25.2 (C)
11	SR-202 NB Ramps & Elliot Road	Signal	NB	40.5 (C)	22.2 (C)
			EB	19.6 (B)	31.3 (C)
			WB	20.5 (C)	43.0 (D)
			Overall	21.7 (C)	34.0 (C)
14	Hawes Road & SR-202 WB Ramps	Signal	NB	18.3 (B)	24.2 (C)
			WB	20.3 (B)	15.1 (B)
			Overall	19.4 (B)	15.7 (B)
15	Hawes Road & SR-202 EB Ramps	Signal	NB	37.9 (D)	39.2 (D)
			SB	27.9 (C)	35.4 (D)
			EB	36.6 (D)	47.9 (D)
			Overall	35.3 (D)	37.5 (D)
16	Ellsworth Road & Elliot Road	Signal	NB	36.1 (D)	43.3 (D)
			SB	46.0 (D)	41.9 (D)
			EB	8.2 (A)	8.9 (A)
			WB	25.7 (C)	16.8 (B)
			Overall	29.2 (C)	23.7 (C)
17	Ellsworth Road & Warner Road	1-way Stop (EB)	NB Left	0.6 (A)	8.4 (A)
			EB Left	16.9 (C)	15.8 (C)
			EB Right	9.5 (A)	9.9 (A)

Under the existing conditions, all study intersections are evaluated to operate overall at LOS D or better during the peak hours.

PROPOSED DEVELOPMENT

The Hawes Crossing master plan proposes a mixed land use development of approximately 1,132 gross acres. The development land uses include single family residential, multi-family residential, commercial, office and technology land uses. The site plan indicates the following land use zones:

Single Family Residential (±156 gross acres) with a maximum density of 7.26 to 10.89 dwelling units (DU) per acre. This study analyzes 80% of the maximum density for single family homes.

Medium/High Density Residential (±280 gross acres) with a maximum density of 17.42 DU per acre. This study analyzes 80% of the maximum density for multi-family DU's.

Urban Density Residential (±57 gross acres) with a maximum density of 43.56 DU per acre. This study analyzes 80% of the maximum density for apartment DU's per acre.

Urban Mixed Use (±205 gross acres) with a maximum density of 25 DU per acre with commercial retail/restaurant on the ground floor. This study analyzes 80% of the maximum density (25 apartment DU's per acre) for the residential component and a floor-to-area ratio (FAR) of 0.4 to determine the square footage of the commercial uses.

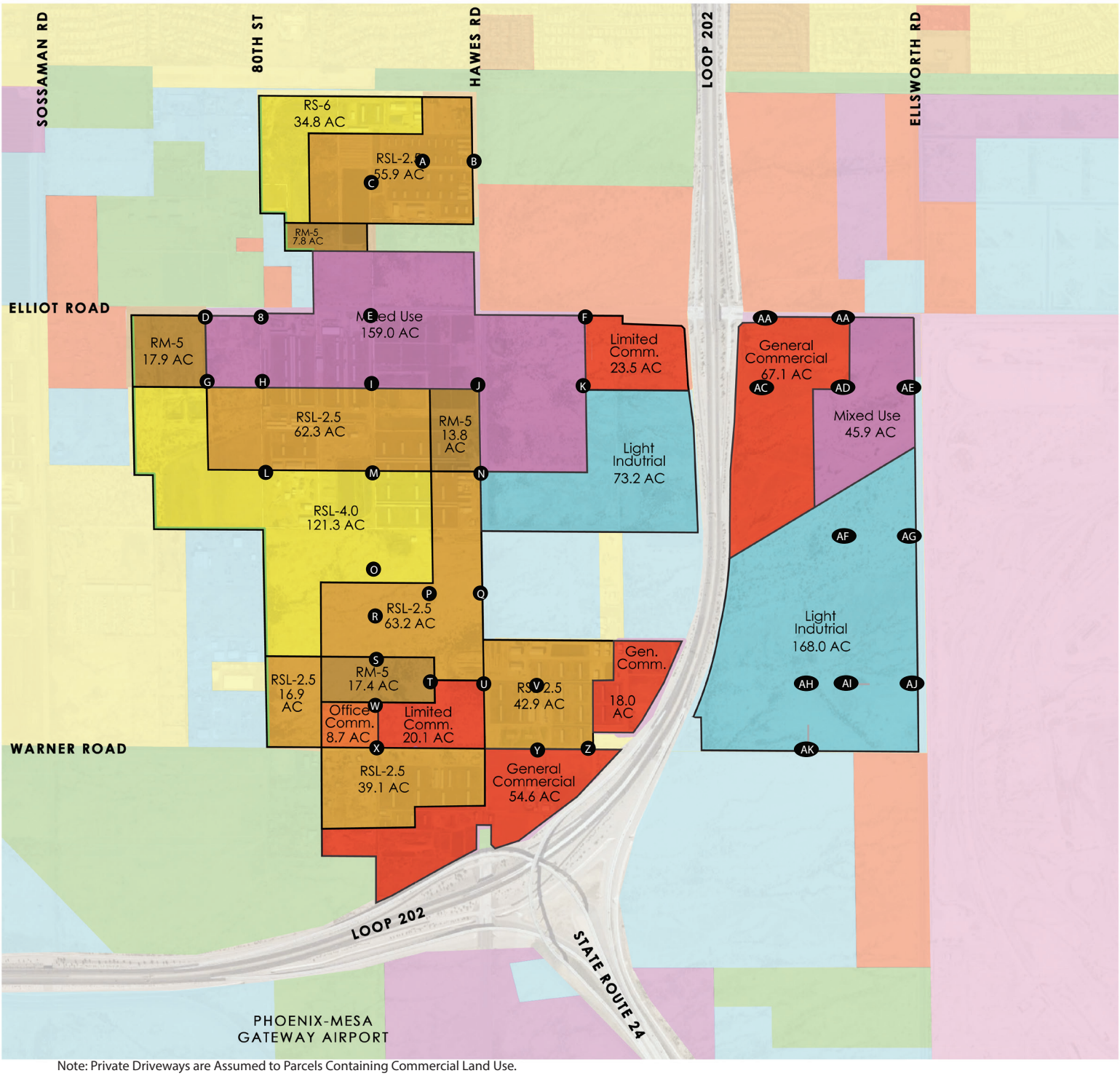
Light Industrial (±241 gross acres) is intended to focus on industrial uses. This study analyzes this land use as general light industrial as characterized by the Institute of Transportation Engineers' (ITE) land use code (LUC) 110. This study analyzes the target intensity FAR of 0.5 to determine the square footage of the industrial uses.

Commercial (±184 gross acres) - this study analyzes the square footage determined by a floor-to-area ratio (FAR) of 0.25.

Office (±9 gross acres) - this study analyzes the square footage determined by a floor-to-area ratio (FAR) of 0.35.

The listed gross acreages include parks, open space, future roadways and right-of-way. City of Mesa Staff requested a change to the collector road access (previously only one) to Elliot Road, west of Loop 202. The changes resulted in a second roadway and access and the land use on the southwest corner of Elliot Road and Ellsworth Road was changed from urban density residential to mixed-use.

The portion of the site located to the east of Loop 202 consists predominantly of mix-use/light industrial land use. The remainder of the land uses are located north/west of Loop 202. Urban mixed use, commercial, office and urban density residential parcels all have frontage along arterial roadways and Loop 202 whereas none of the single-family parcels are adjacent to arterial roadways or Loop 202. The planned layout of the site is illustrated in **Figure 5**.



Note: Private Driveways are Assumed to Parcels Containing Commercial Land Use.

Figure 5: Site Plan and Access

SITE ACCESS AND CIRCULATION

The overall development stretches approximately 1¾-miles north-south at its longest point and approximately 1½-miles east-west at its widest point and will provide a number of access points. The site plan illustrates collector roadways throughout the site. The site plan illustrates collector roadways throughout the site. The narrative describes an iconic/interesting north-south roadway parallel to Hawes Road approximately ¼-mile to the west. The current site plan depicts three (3) looped collector roads that service residential areas and one (1) looped collector that services the technology mixed-use area. All collector connections to arterial roads are planned to have landscaped entrances. All single family residential zones are located away from arterial roadways whereas all land use types that include commercial, office or technology are located adjacent to the arterial roadways.

Included within this study are 37 new, site related intersections generally labeled alphabetically west to east and north to south. Where commercial land uses are present, driveways are assumed, although these will not be analyzed for LOS at this planning stage.

LAND USE DENSITY AND INTENSITY

Zoning of the Hawes Crossing development will allow for maximum densities and intensities to be constructed to the City of Mesa standards. It is unlikely that the maximum density and intensity of each area will be realized. Therefore, this study evaluates each parcel at 80% of its maximum density/intensity. The mixed-use parcels do not have a city zoning requirement for the maximum density. In these cases, target densities were assumed for the commercial areas while 80 percent of the maximum allowable density for residential uses was considered. **Table 3** shows the calculated densities and intensities used to generate trips for the proposed study area. Detailed zoning calculations can be found in **Appendix D**.

Table 3: Density and Intensity Summary

Category	Gross Acreage	Max Density/FAR	80% Density	Total KSF
RS – 6	34.8	7.26 DU/acre	171	-
RSL – 4	121.3	10.89 DU/acre	898	-
RSL – 2.5	242.3	17.42 DU/acre	3,318	-
RM – 5	56.9	43.56 DU/acre	1,980	-
MX	204.9	25 DU/acre and 0.4 FAR	2,663	(1) 1,249.562
Commercial	183.6	0.25 FAR	-	2,624.185
Office	8.7	0.35 FAR	-	757.421
Light Industrial	241.3	0.5 FAR	-	5,255.514

(1) The estimated MX KSF is also included within the commercial and office values in the table 50% commercial and 50% office.

PROJECTED TRAFFIC VOLUMES

SITE TRIP GENERATION

The potential trip generation for the proposed development was estimated utilizing the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition* and *Trip Generation Handbook, 3rd Edition*. The ITE *Trip Generation Manual* contains data collected by various transportation professionals for a wide range of different land uses. The data are summarized in the report and average rates and equations have been established that correlate the relationship between an independent variable that describes the development size and generated trips for each categorized land use. The report provides information for daily and peak hour trips.

Internal Capture

According to data presented by ITE in the Trip Generation handbook, trips attracted to commercial and retail land uses are often shared. This means that a single trip (vehicle) to the proposed mixed-use parcels within the Hawes Crossing development may visit other generators within the same parcels during the same visit, a phenomenon known as "internal interaction." For example, residents within the areas designated as Urban Mixed Use may use the retail/restaurant land uses within the same parcel. The methodology published by ITE was used to calculate an appropriate internal reduction which was found to be approximately 10% for the multifamily land uses and 30% for the commercial land uses. This study applies the respective percentages to the AM peak hour, PM peak hour and the daily external trips.

Community Capture is caused by multiple types of attractions within a large area serving a community. Trips are generated by productions and attractions which provide a majority of all trip ends needed to serve to residents within the boundary of the large area being evaluated. If each individual land use inside of a community is collectively evaluated, the trips generated would be grossly overestimated. This phenomenon, resulting in overall trip reduction, is known as community capture which has been documented within several studies. CivTech prepared one such white paper in 2012 based on data collected and evaluated within the Anthem community located north of Phoenix Arizona. In general, the findings indicate that depending on the mix of uses and the size of the development, trips traveling on roads external to the development could be reduced by up to 59 percent. Although the concept of community capture could be applied to the Hawes Crossing development, community capture reductions were not taken within this analysis. This provides a very conservative estimate of traffic and likely impacts from the Hawes Crossing development. A copy of the Anthem whte paper is included in **Appendix D**.

Pass-by Trips A portion of the traffic entering and exiting the site may be estimated to come from traffic already on the street system by study horizon year 2040. The term 'pass-by' trips refers to traffic already traveling on a study roadway adjacent to the site from an external origin to an external destination outside of the study area that visits the proposed site (such as a commercial parcel) on the way to its destination. Although a portion of trips to/from the retail/restaurant portion of the site could be pass-by trips, to be conservative, this study does not include any reductions to account for expected pass-by trips. The consideration of pass-by reductions will reduce the traffic volumes predicted herein and avoid over building road improvements. Pass-by trip reductions were not applied in this study due to its regional framework. Therefore, it is recommended that pass-by trip reductions be considered in future studies for all the proposed commercial parcels in and around the Hawes Crossing development.

Table 4 summarizes the trip generation estimate of the development based on the land use types, densities and sizes. Detailed trip generation calculations are included in **Appendix D**.

Table 4: Trip Generation Summary

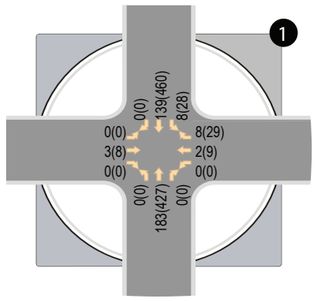
Land Use	ITE LUC	Size		Weekday Trips Generated						
				Daily	AM Peak Hour			PM Peak Hour		
				Total	Enter	Exit	Total	Enter	Exit	Total
Homes	210	1,128	DU	9,866	203	308	811	662	389	1,051
Apartments	221	7,963	DU	43,396	661	1,880	2,541	1,870	1,196	3,066
Commercial	820	2,623.165	KSF	78,660	1096	671	1767	3887	4211	8098
Office	710	756.547	KSF	7,764	680	110	790	131	684	815
Light Industrial	110	5,255.514	KSF	20,034	867	119	986	89	602	691
Totals (Prior to Adjustments)				159,720	3,507	3,388	6,895	6,639	7,082	13,721
Internal Capture				(34,234)	(682)	(429)	(1,111)	(1,385)	(1,590)	(2,975)
Totals				**125,486**	**2,825**	**2,659**	**5,784**	**5,254**	**5,492**	**10,746**

The site is anticipated to generate approximately 125,486 daily trips with 5,784 trips during the AM peak hour and 10,746 trips during the PM peak hour.

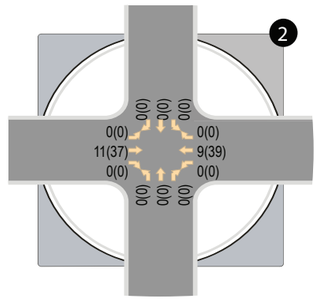
DIRECTIONAL DISTRIBUTION AND TRIP ASSIGNMENT

Three (3) distribution patterns were used for this study. It is expected that the majority of the trips generated during the peak hours by the residential components of the site would travel to/from places of employment external to the study area which estimated approximately 80% of the residential trips to travel to/from the Loop 202 freeway. Trips generated by the commercial would be to/from housing in the general vicinity, and office/industrial land uses would use major freeways and routes to travel to/from work from different residential areas not within the vicinity of the site. The directional distribution of population and employment in the general vicinity, based on projected socioeconomic data published by Maricopa Association of Governments, were used as a basis for evaluating likely travel directions of trips to/from the site. It is expected that drivers will use major routes and freeways where convenient. The trip distribution applied in this study is shown in **Table 4** and depicted in **Figure 6**.

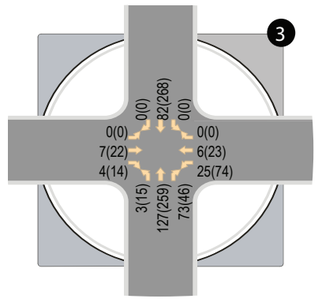
Trip distribution calculations are included in **Appendix E**. The percentages presented in **Table 4** were applied to the trips generated to determine the AM and PM peak hour site traffic at the intersections within the study area. **Figure 7**, **Figure 8**, **Figure 9** and **Figure 10** present the resulting site generated traffic volumes for intersections 1 through 15, A through N and O through Z, and 16 through 17 plus AA through AK, respectively.



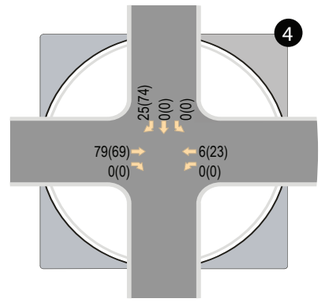
Sossaman Rd & Guadalupe Rd



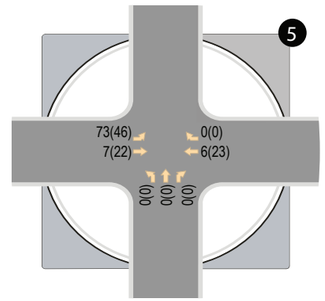
Farnsworth Dr/Bridlewood & Guadalupe Rd



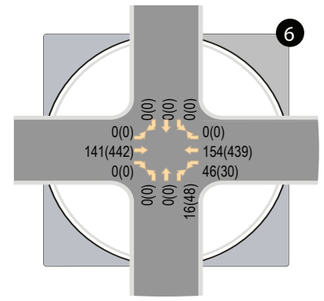
Hawes Rd & Guadalupe Rd



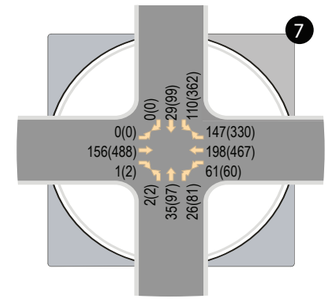
Loop 202 SB Ramps & Guadalupe Rd



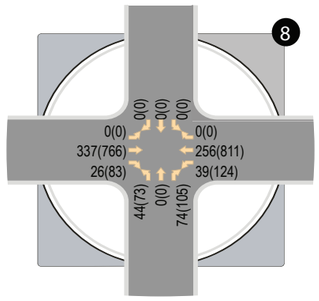
Loop 202 NB Ramps & Guadalupe Rd



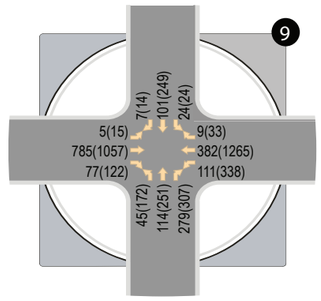
Power Rd & Elliot Rd



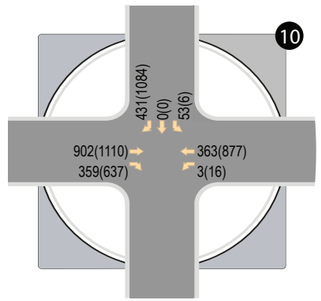
Sossaman Rd & Elliot Rd



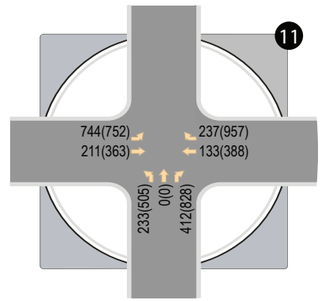
80th St & Elliot Rd



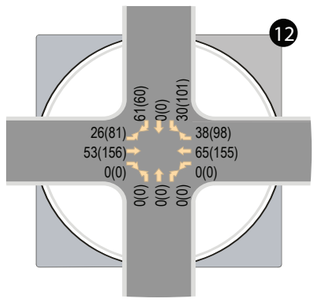
Hawes Rd & Elliot Rd



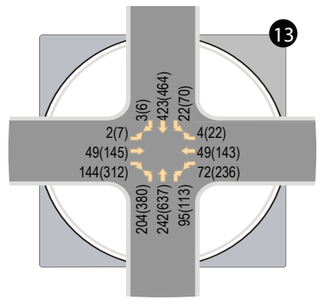
Loop 202 SB Ramps & Elliot Rd



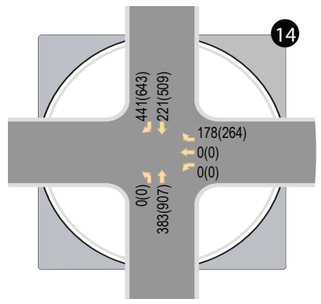
Loop 202 NB Ramps & Elliot Rd



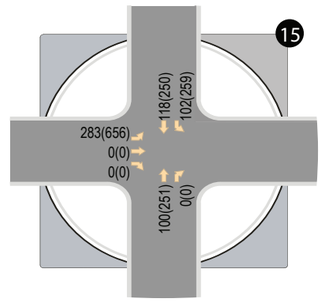
Sossaman Rd & Warner Rd



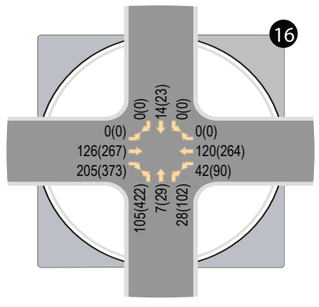
Hawes Rd & Warner Rd



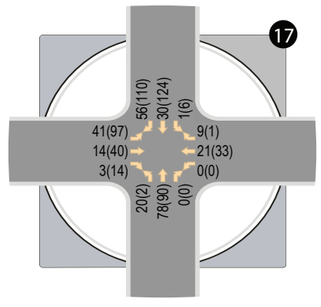
Hawes Rd & Loop 202 WB Ramps



Hawes Rd & Loop 202 EB Ramps



Ellsworth Road and Elliot Road



Ellsworth Road and Warner Road

LEGEND

NORTH

XX(XX) - AM(PM) Peak Hour Traffic Volumes

XX Average Daily Traffic Volumes (in thousands)

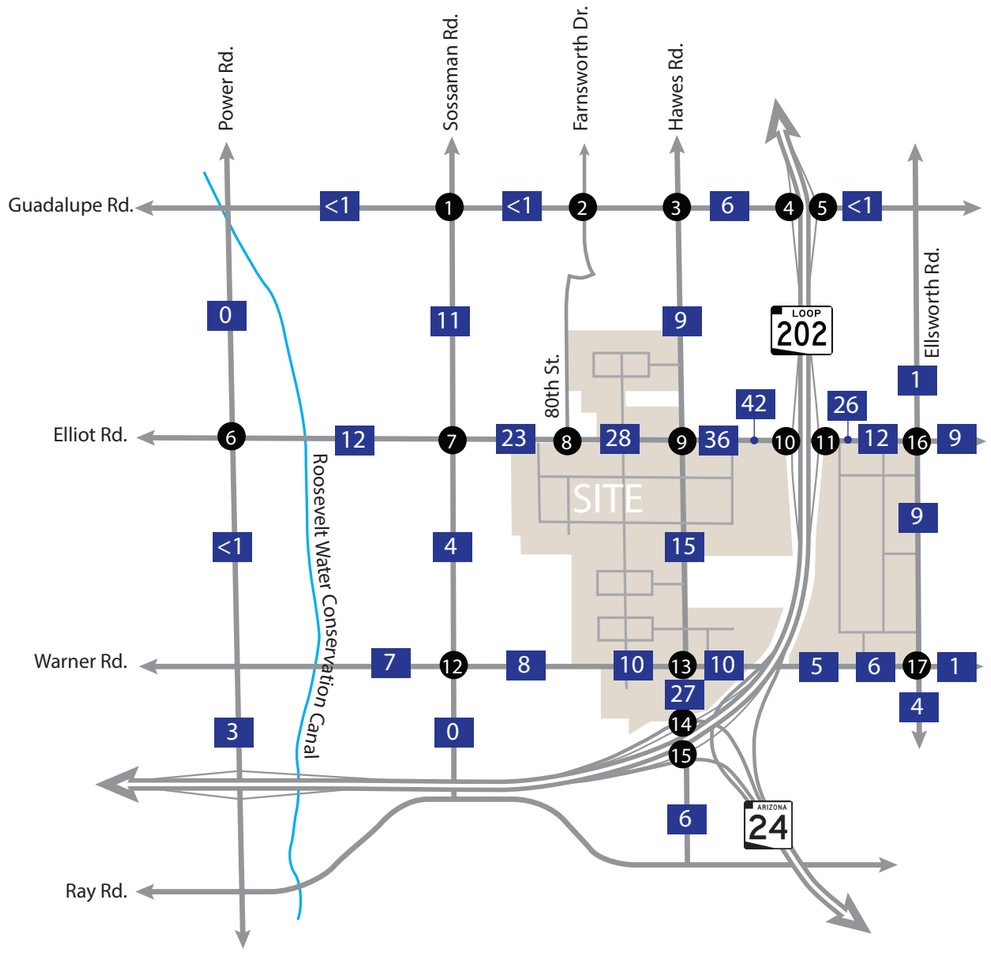


Figure 7: Site Generated Traffic Volumes A

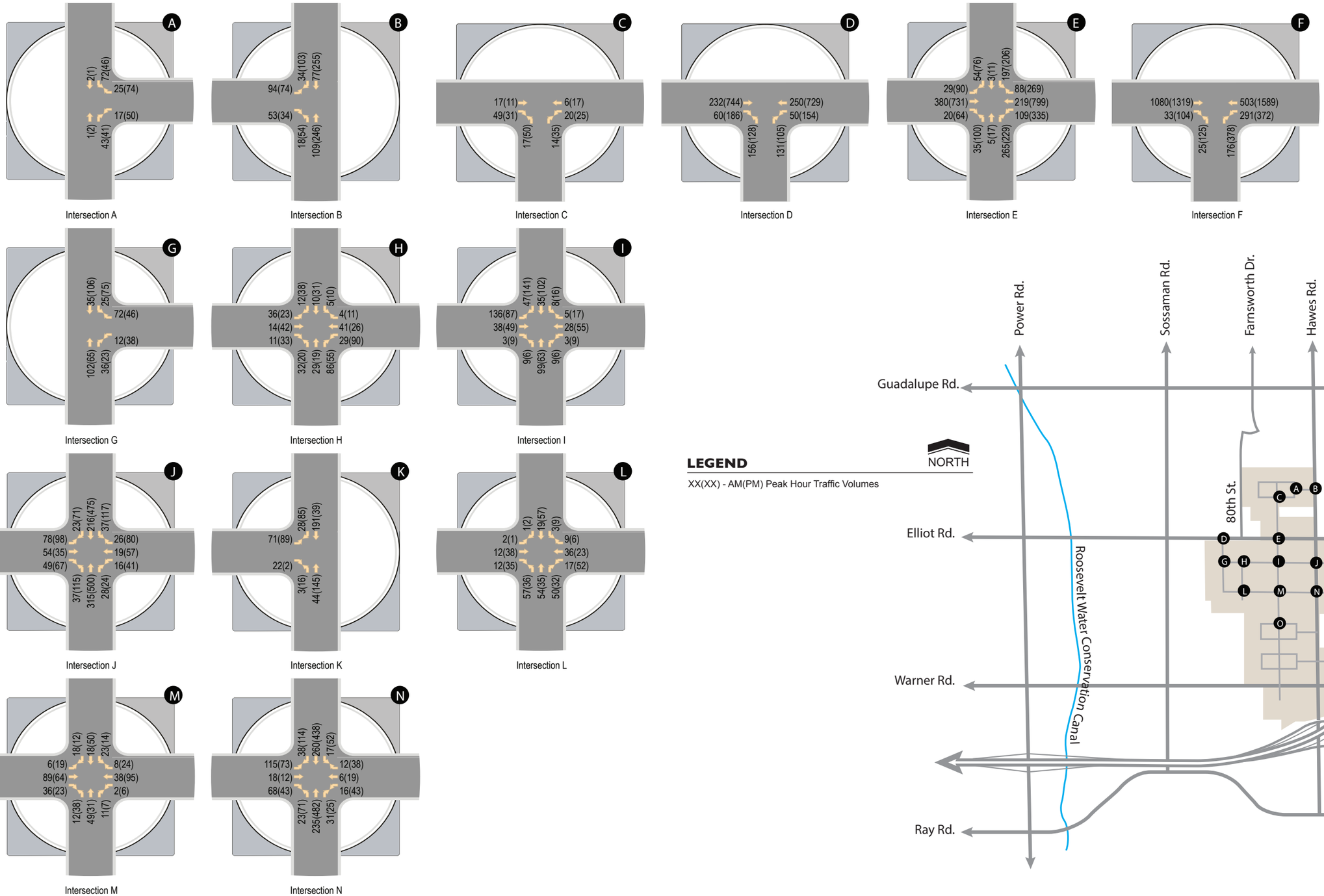
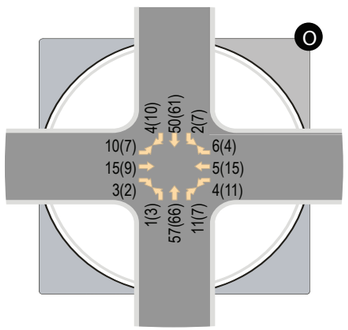
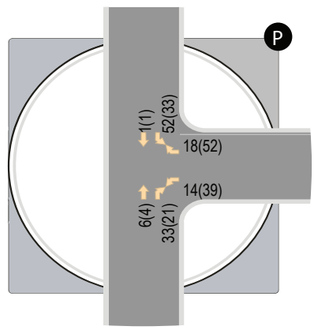


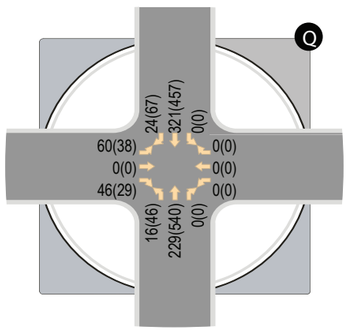
Figure 8: Site Generated Traffic Volumes B



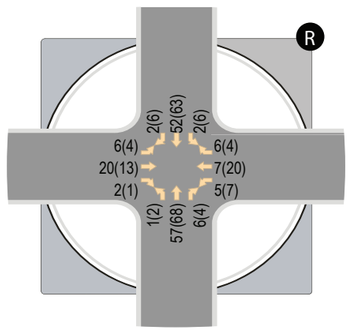
Intersection O



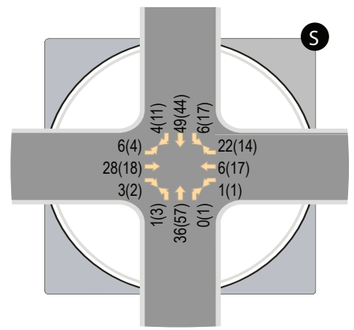
Intersection P



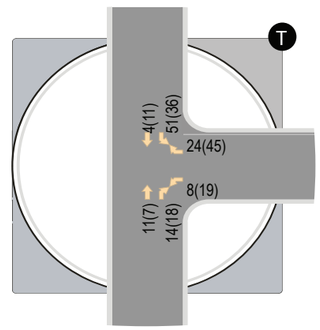
Intersection Q



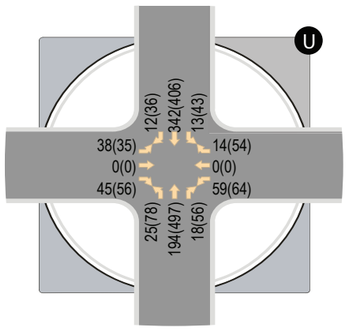
Intersection R



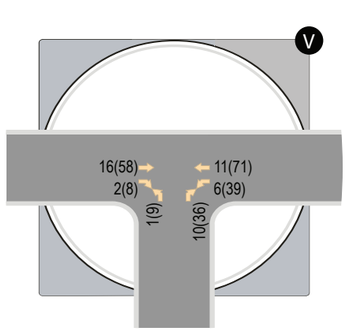
Intersection S



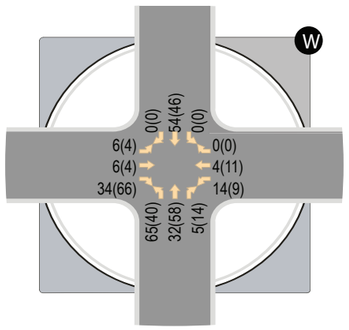
Intersection T



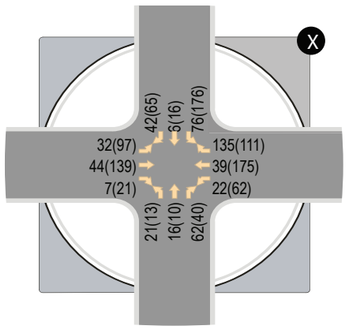
Intersection U



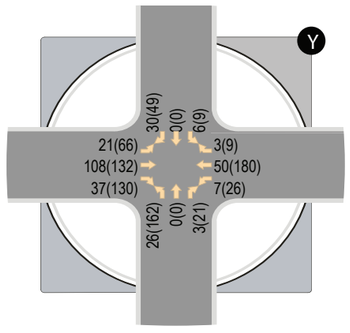
Intersection V



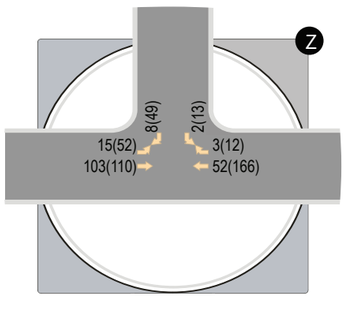
Intersection W



Intersection X



Intersection Y



Intersection Z

LEGEND

NORTH

XX(XX) - AM(PM) Peak Hour Traffic Volumes

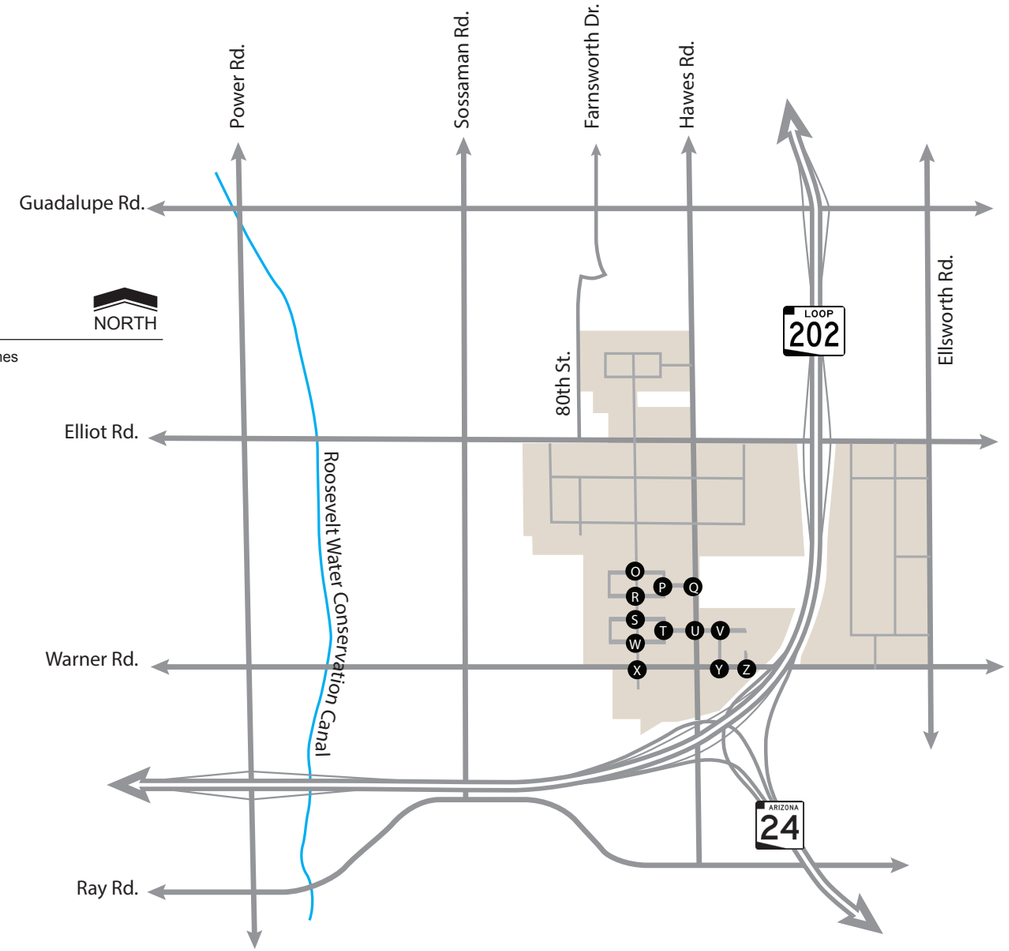
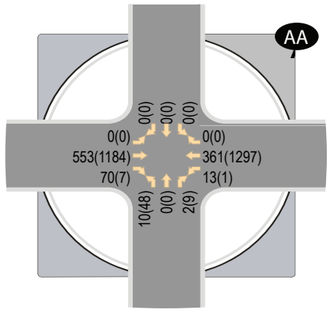
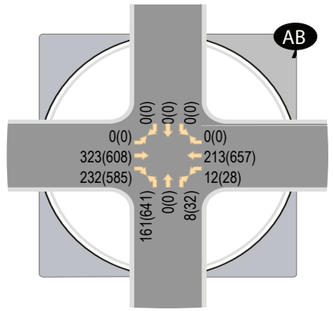


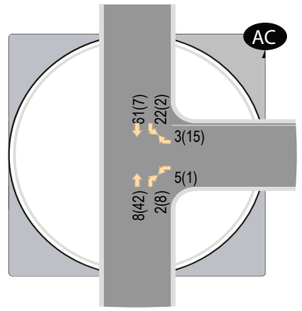
Figure 9: Site Generated Traffic Volumes C



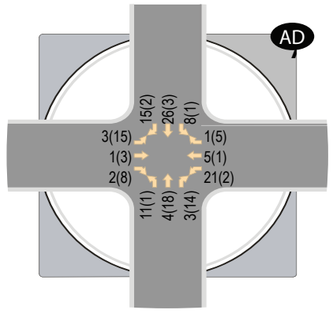
Intersection AA



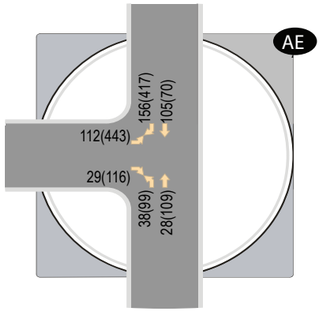
Intersection AB



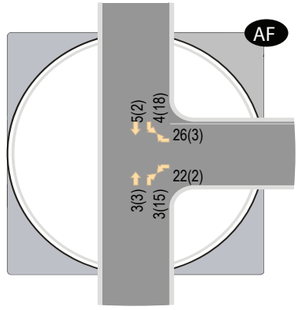
Intersection AC



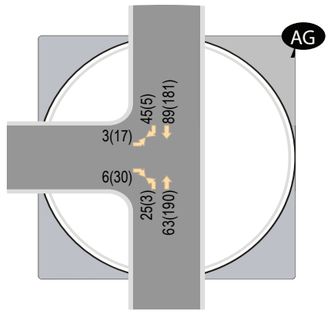
Intersection AD



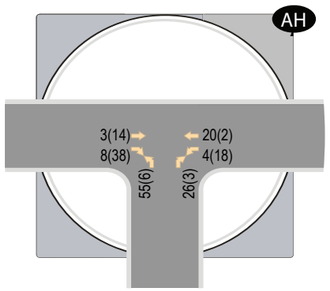
Intersection AE



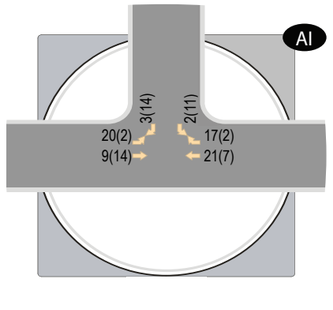
Intersection AF



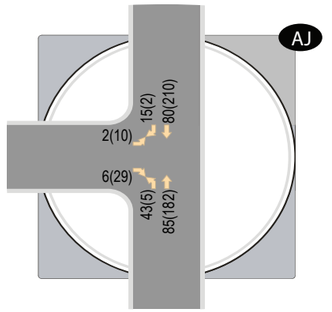
Intersection AG



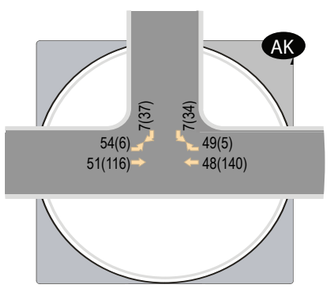
Intersection AH



Intersection AI



Intersection AJ



Intersection AK

LEGEND

XX(XX) - AM(PM) Peak Hour Traffic Volumes

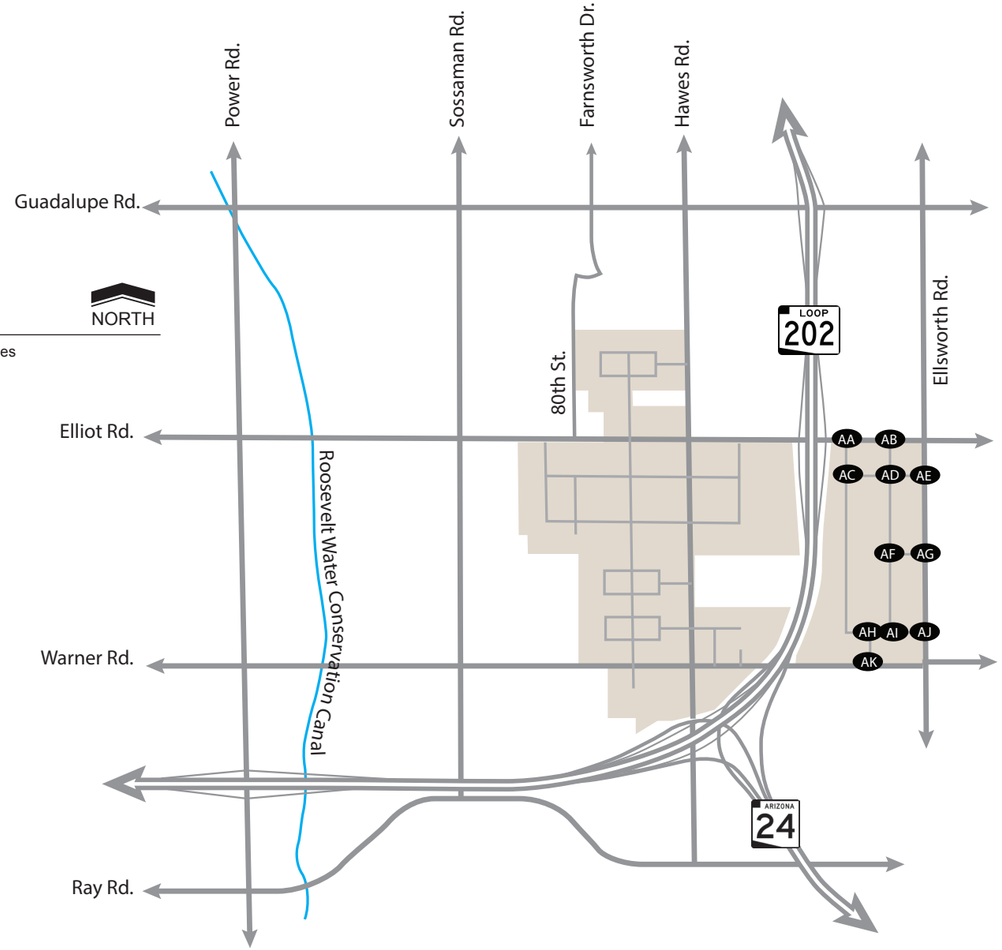
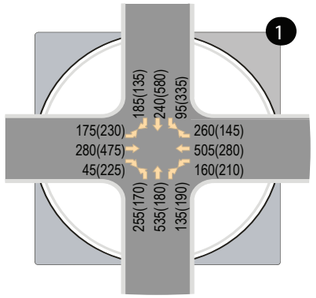
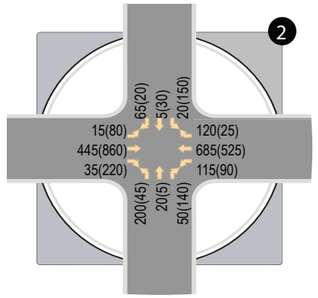


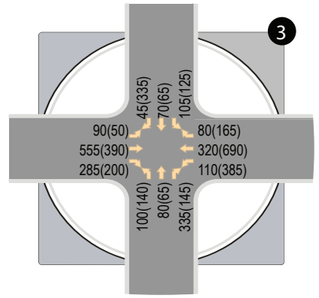
Figure 10: Site Generated Traffic Volumes D



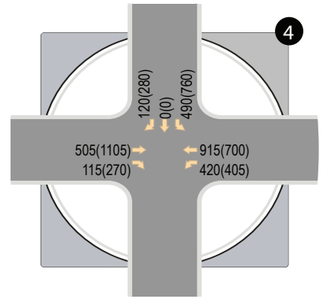
Sossaman Rd & Guadalupe Rd



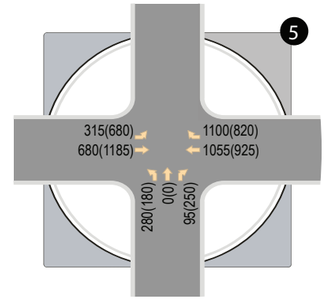
Farnsworth Dr/Bridlewood & Guadalupe Rd



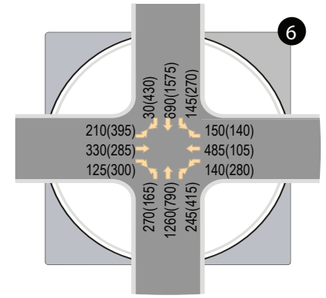
Hawes Rd & Guadalupe Rd



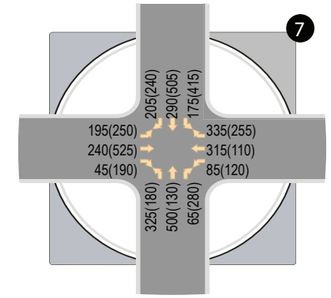
Loop 202 SB Ramps & Guadalupe Rd



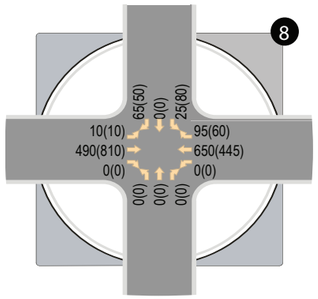
Loop 202 NB Ramps & Guadalupe Rd



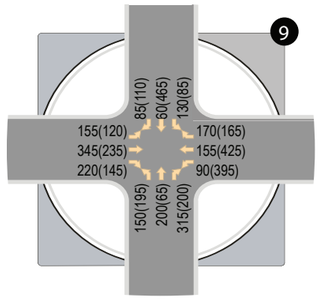
Power Rd & Elliot Rd



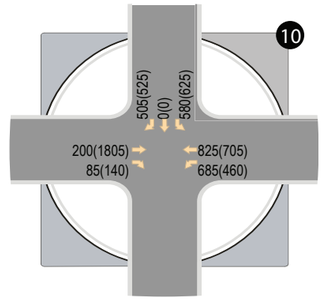
Sossaman Rd & Elliot Rd



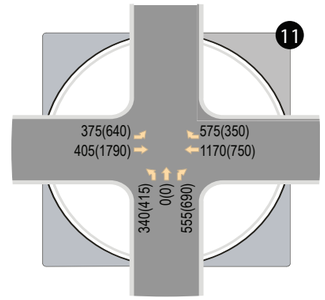
80th St & Elliot Rd



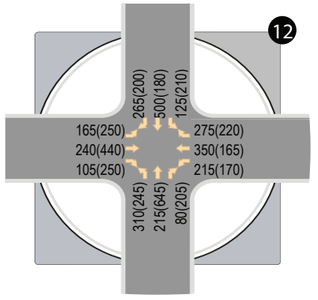
Hawes Rd & Elliot Rd



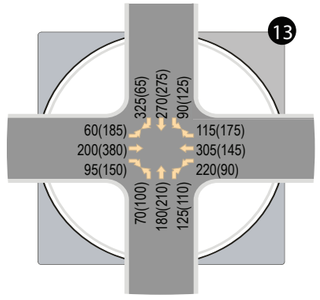
Loop 202 SB Ramps & Elliot Rd



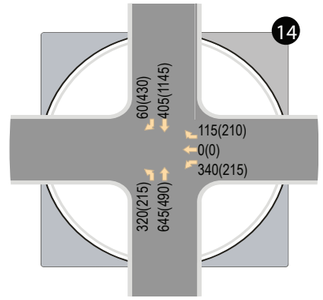
Loop 202 NB Ramps & Elliot Rd



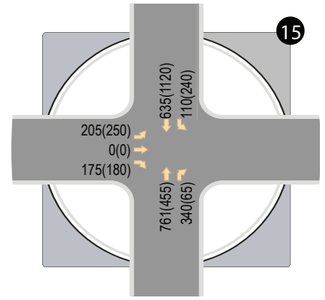
Sossaman Rd & Warner Rd



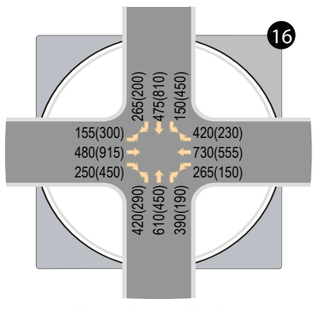
Hawes Rd & Warner Rd



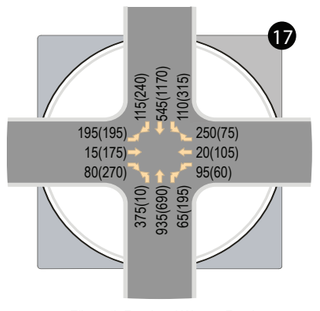
Hawes Rd & Loop 202 WB Ramps



Hawes Rd & Loop 202 EB Ramps



Ellsworth Road and Elliot Road



Ellsworth Road and Warner Road

LEGEND

NORTH

XX(XX) - AM(PM) Peak Hour Traffic Volumes

XX Average Daily Traffic Volumes (in thousands)

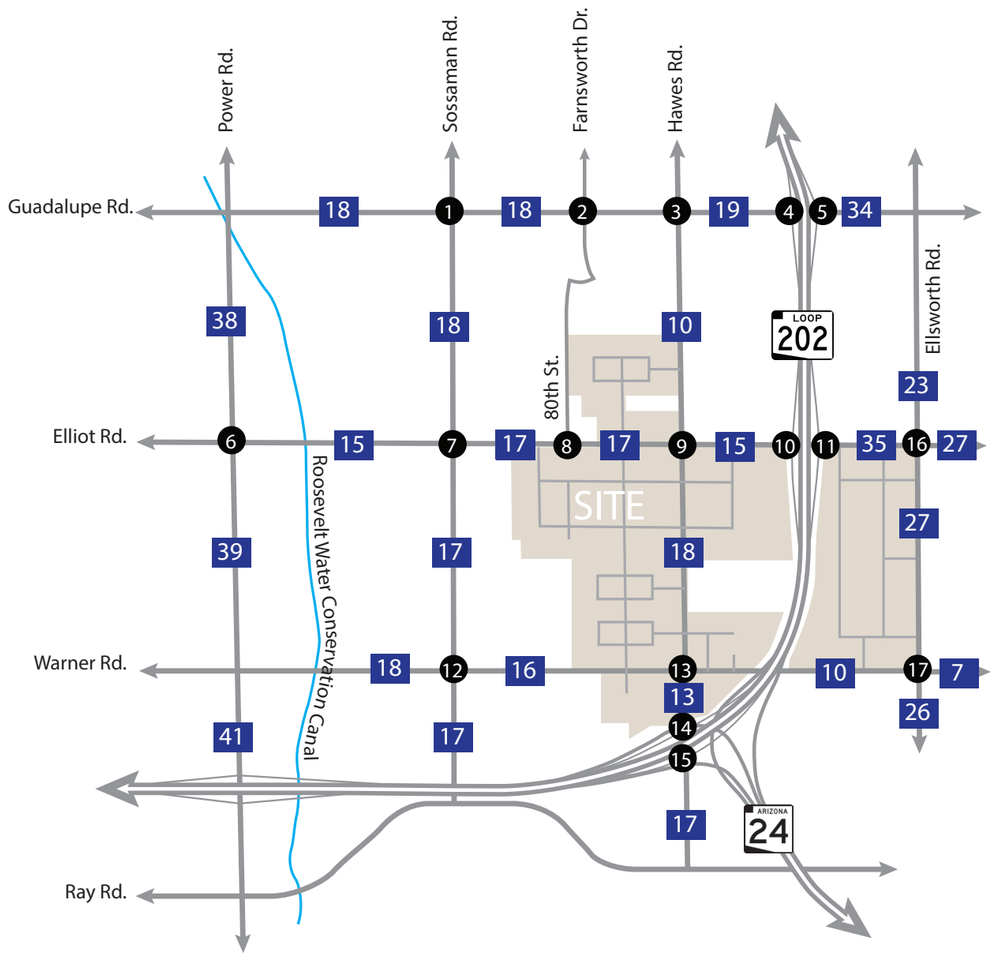


Figure 11: 2040 Background Traffic Volumes A

Table 5: Trip Distribution by Percentage

Roadway	To/From	Distribution by Land Use Type		
		Commercial	Residential	Office/Industrial
SR-202 and Ellsworth Road(1)	North	15%	40%	35%
SR-202	West	15%	25%	30%
SR-24, Ellsworth Road and Hawes Road(1)	Southeast/South	20%	15%	23%
Power Road, Sossaman Road and Hawes Road(1)	North	20%	10%	0%
Guadalupe Road, Elliot Road and Warner Road(1)	East	10%	5%	10%
Guadalupe Road, Elliot Road and Warner Road(1)	West	20%	5%	2%
TOTALS		**100%**	**100%**	**100%**

(1) Total distribution for both roads. Individual roadway distribution splits will differ based on location within the site.

FUTURE BACKGROUND TRAFFIC

Future 2040 background traffic volumes are based on the projected average daily traffic (ADT) volumes projected within the City of Mesa 2040 Transportation Plan. The future ADTs east of Loop 202 along Elliot Road and Warner Road were reduced by the projected site ADTs at the same locations. The 2040 ADTs were converted into peak hour intersection turning movement volumes predominantly using methodology described within the National Cooperative Highway Research Program (NCHRP) Report 765. Volumes approaching/departing another developments planned intersections on Elliot Road, between Loop 202 and Ellsworth Road, were estimated. **Figure 11**, **Figure 12**, **Figure 13,** and **Figure 14** present the projected 2040 background traffic volumes for intersections 1 through 15, A through N, O through Z, and 16 through 17 plus AA through AK, respectively. Calculation worksheets for background traffic volume conversions are included in **Appendix F**.

FUTURE TOTAL TRAFFIC

Anticipated total traffic volumes for the 2040 study year were computed by adding the site generated traffic to the background traffic volumes. **Figure 15**, **Figure 16**, **Figure 17** and **Figure 18** present the projected 2040 background traffic volumes for intersections 1 through 15, A through N, O through Z and 16 through 17 plus AA through AK, respectively.

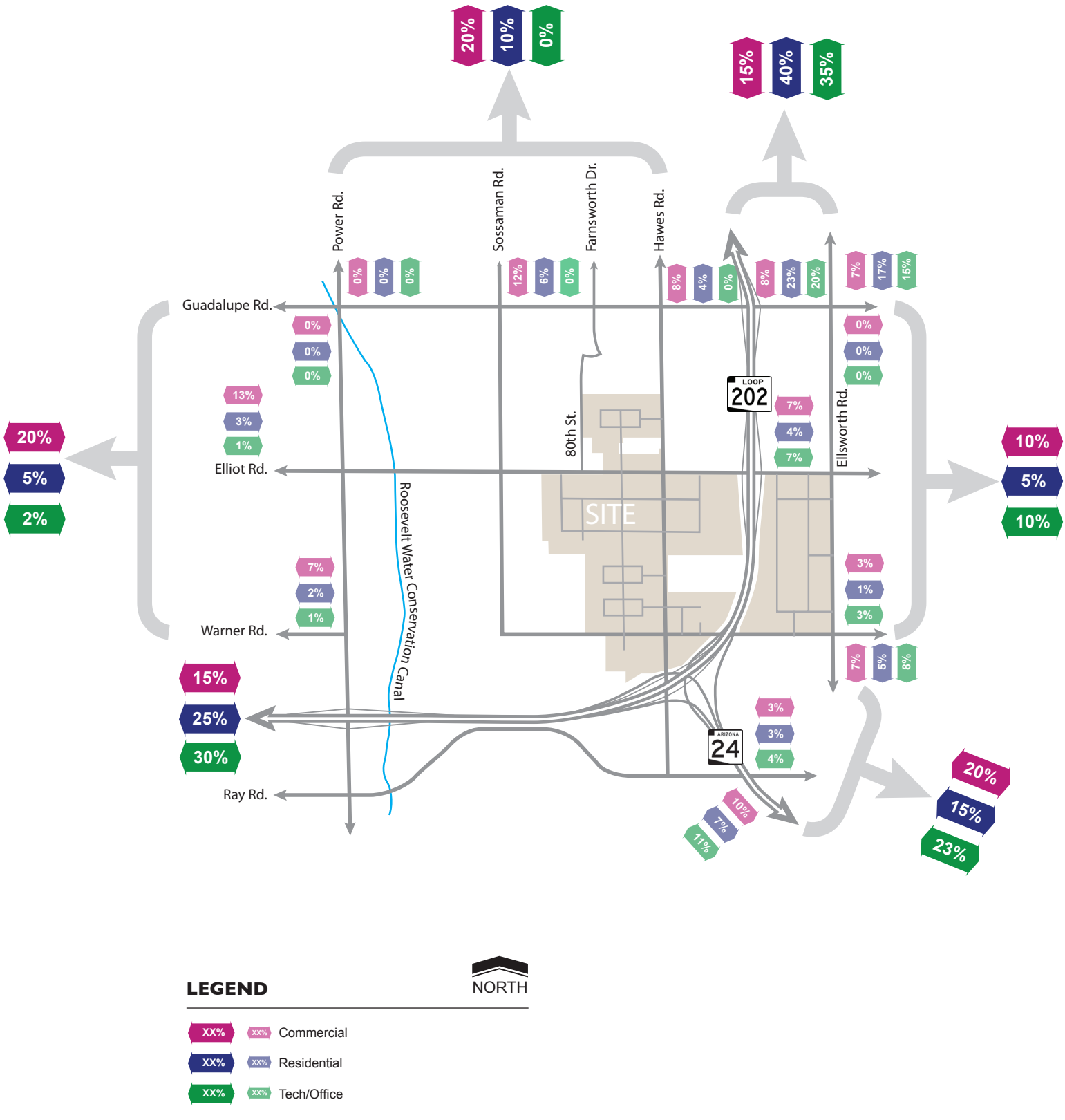
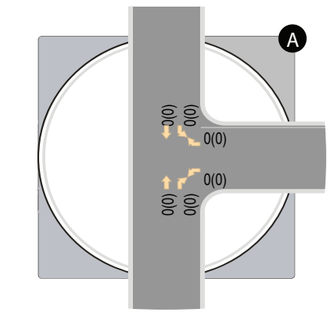
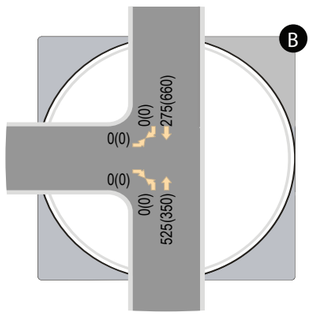


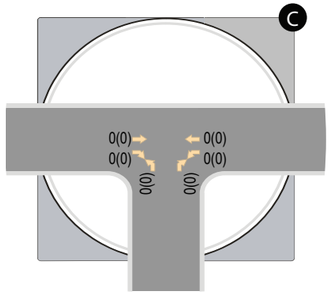
Figure 6: Trip Distribution



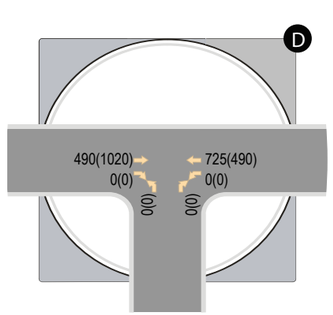
Intersection A



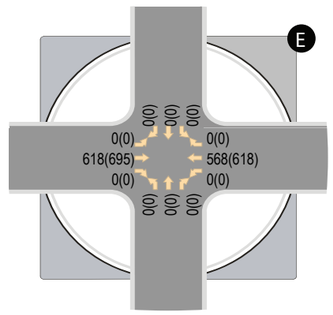
Intersection B



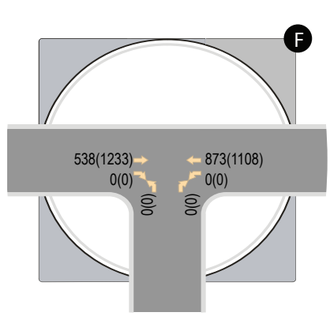
Intersection C



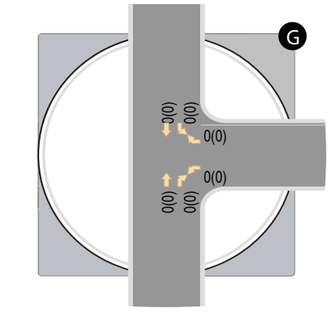
Intersection D



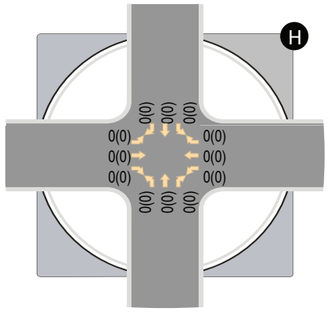
Intersection E



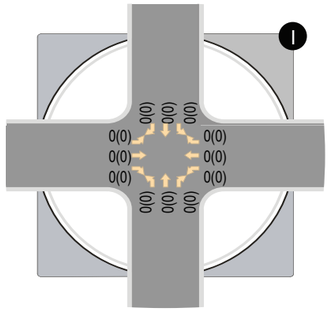
Intersection F



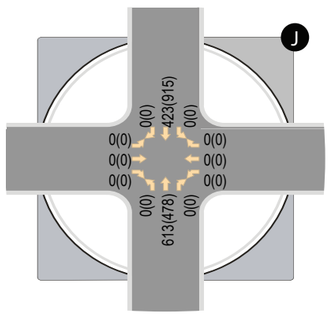
Intersection G



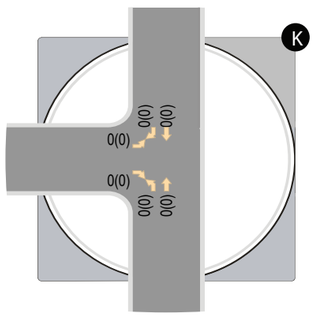
Intersection H



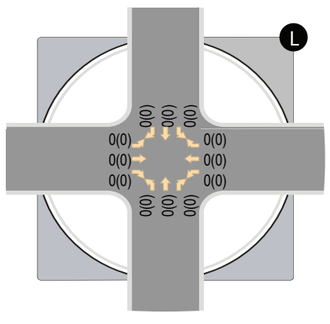
Intersection I



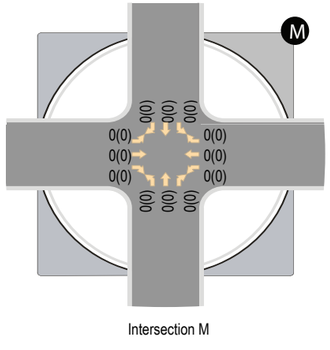
Intersection J



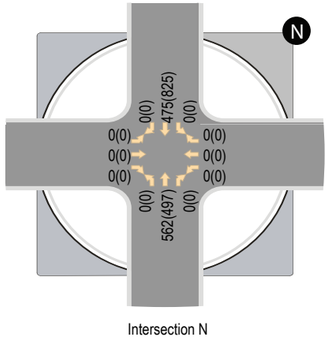
Intersection K



Intersection L



Intersection M



Intersection N

LEGEND

XX(XX) - AM(PM) Peak Hour Traffic Volumes

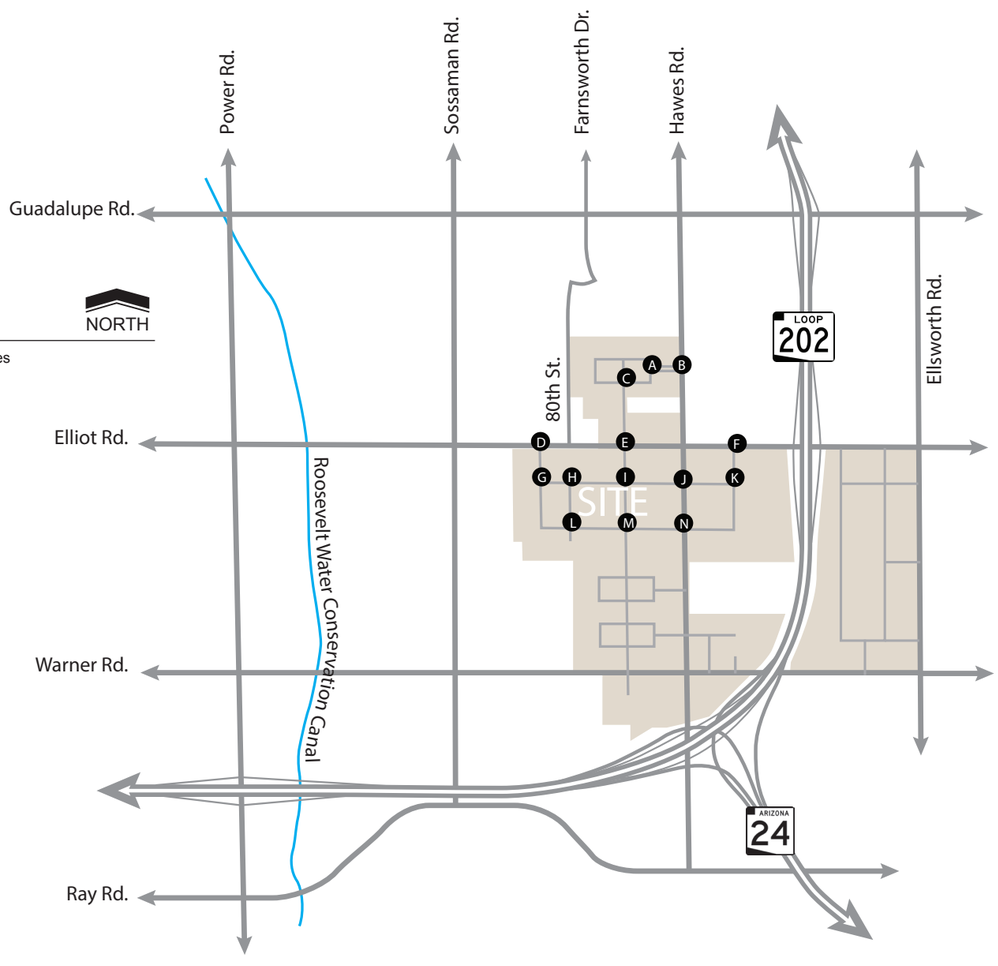
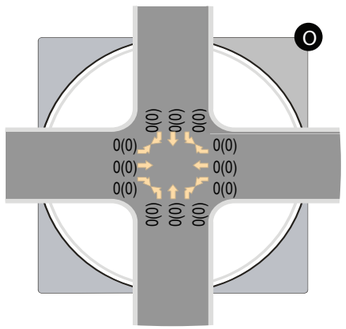
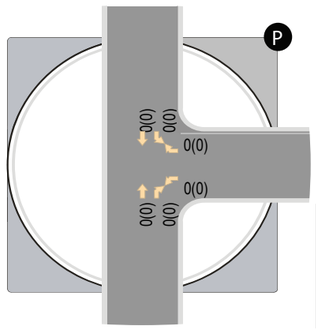


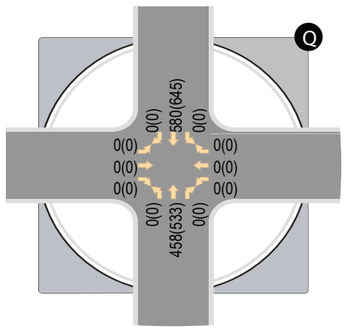
Figure 12: 2040 Background Traffic Volumes B



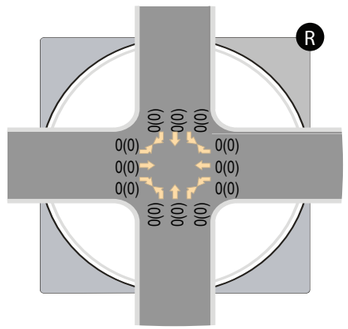
Intersection O



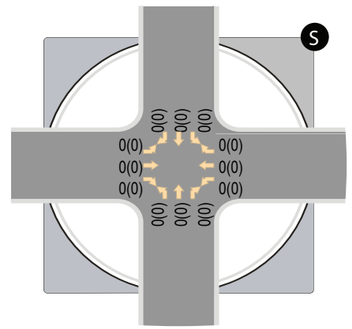
Intersection P



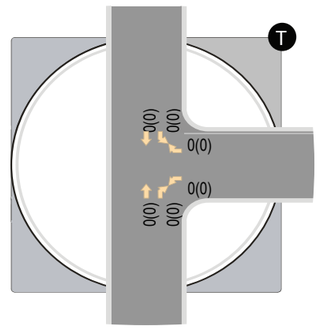
Intersection Q



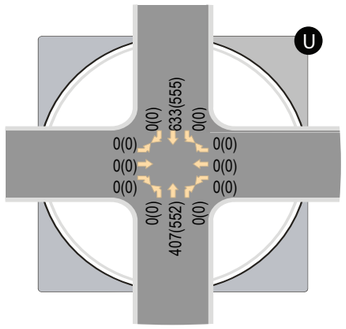
Intersection R



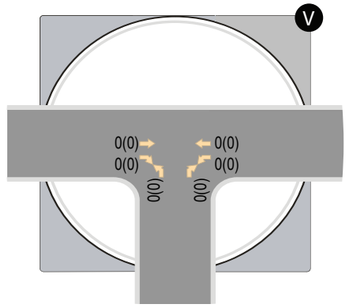
Intersection S



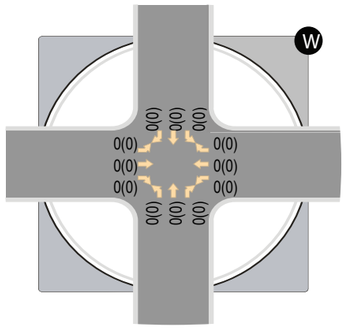
Intersection T



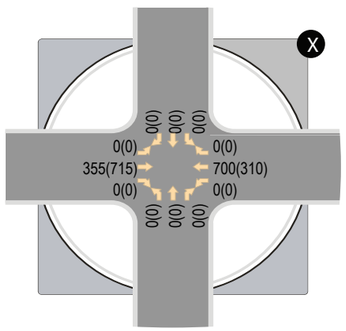
Intersection U



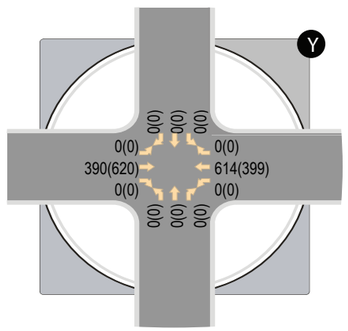
Intersection V



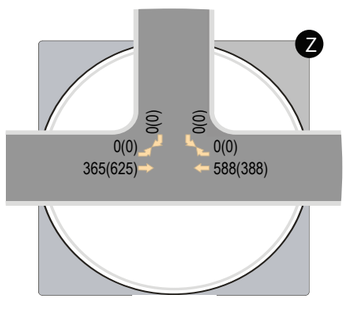
Intersection W



Intersection X



Intersection Y



Intersection Z

LEGEND

XX(XX) - AM(PM) Peak Hour Traffic Volumes

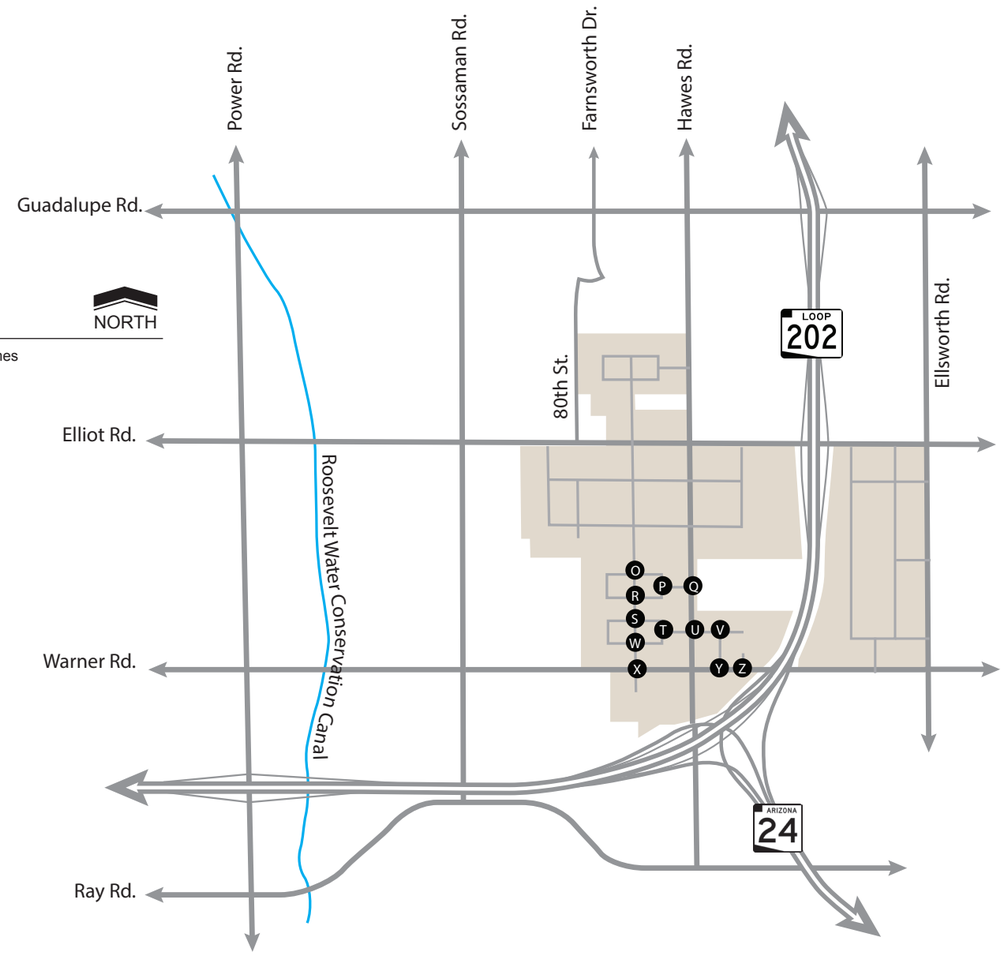
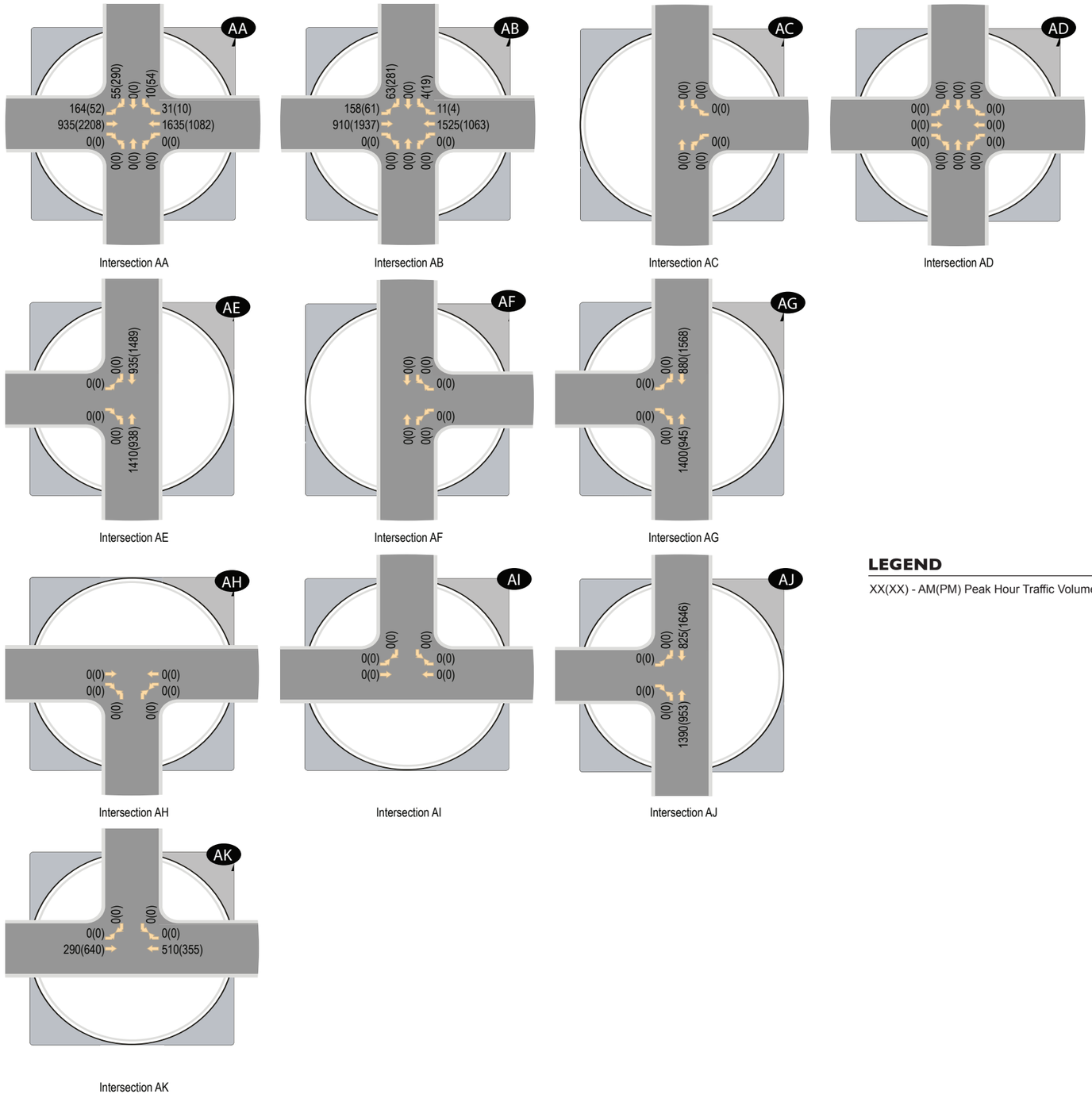


Figure 13: 2040 Background Traffic Volumes C



LEGEND

XX(XX) - AM(PM) Peak Hour Traffic Volumes

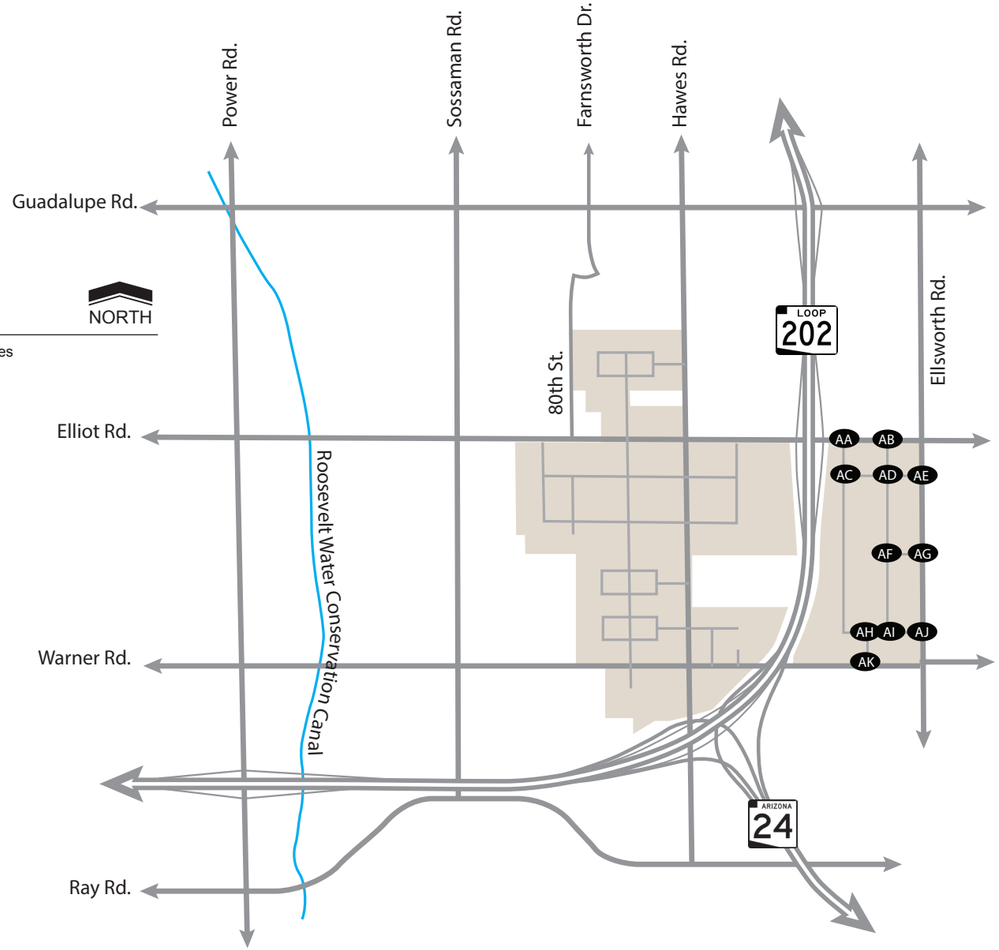
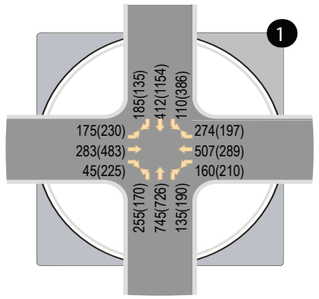
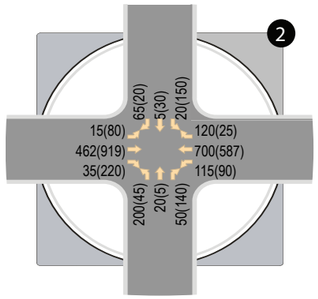


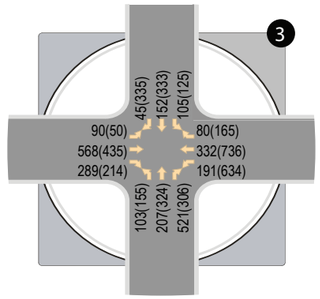
Figure 14: 2040 Background Traffic Volumes D



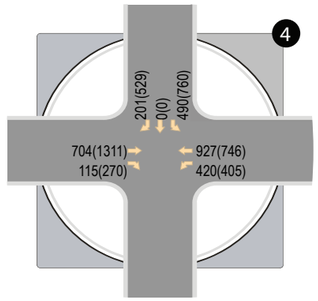
Sossaman Rd & Guadalupe Rd



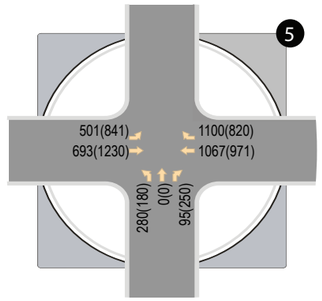
Farnsworth Dr/Bridlewood & Guadalupe Rd



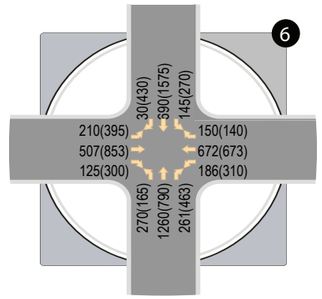
Hawes Rd & Guadalupe Rd



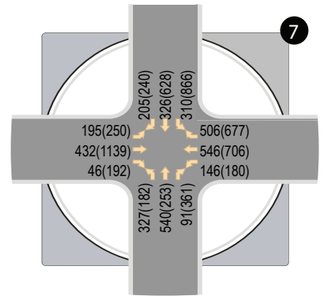
Loop 202 SB Ramps & Guadalupe Rd



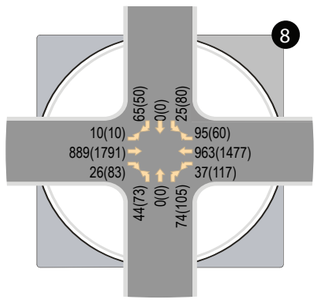
Loop 202 NB Ramps & Guadalupe Rd



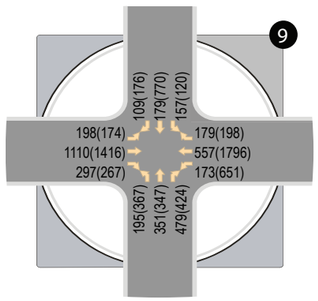
Power Rd & Elliot Rd



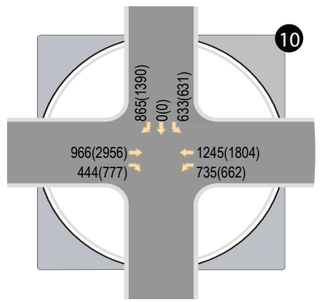
Sossaman Rd & Elliot Rd



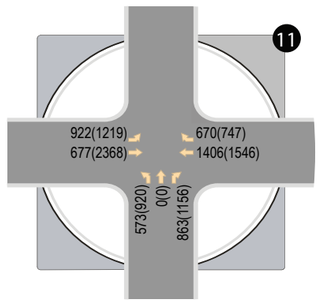
80th St & Elliot Rd



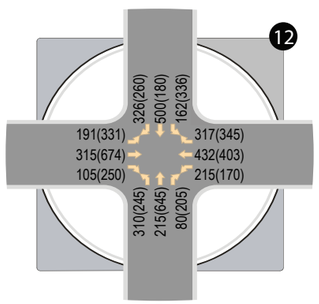
Hawes Rd & Elliot Rd



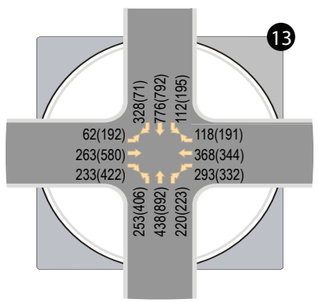
Loop 202 SB Ramps & Elliot Rd



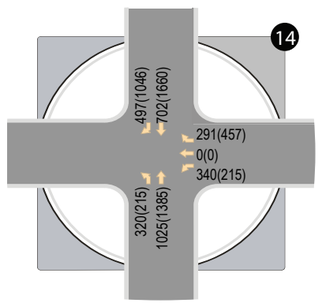
Loop 202 NB Ramps & Elliot Rd



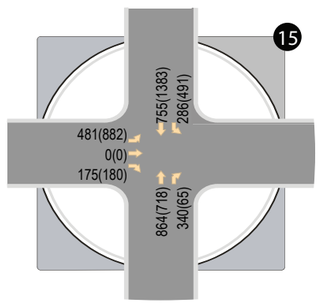
Sossaman Rd & Warner Rd



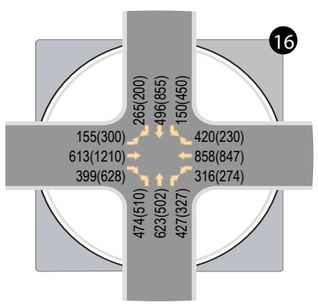
Hawes Rd & Warner Rd



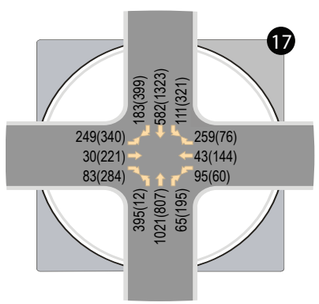
Hawes Rd & Loop 202 WB Ramps



Hawes Rd & Loop 202 EB Ramps



Ellsworth Road and Elliot Road



Ellsworth Road and Warner Road

LEGEND

NORTH

XX(XX) - AM(PM) Peak Hour Traffic Volumes

XX Average Daily Traffic Volumes (in thousands)

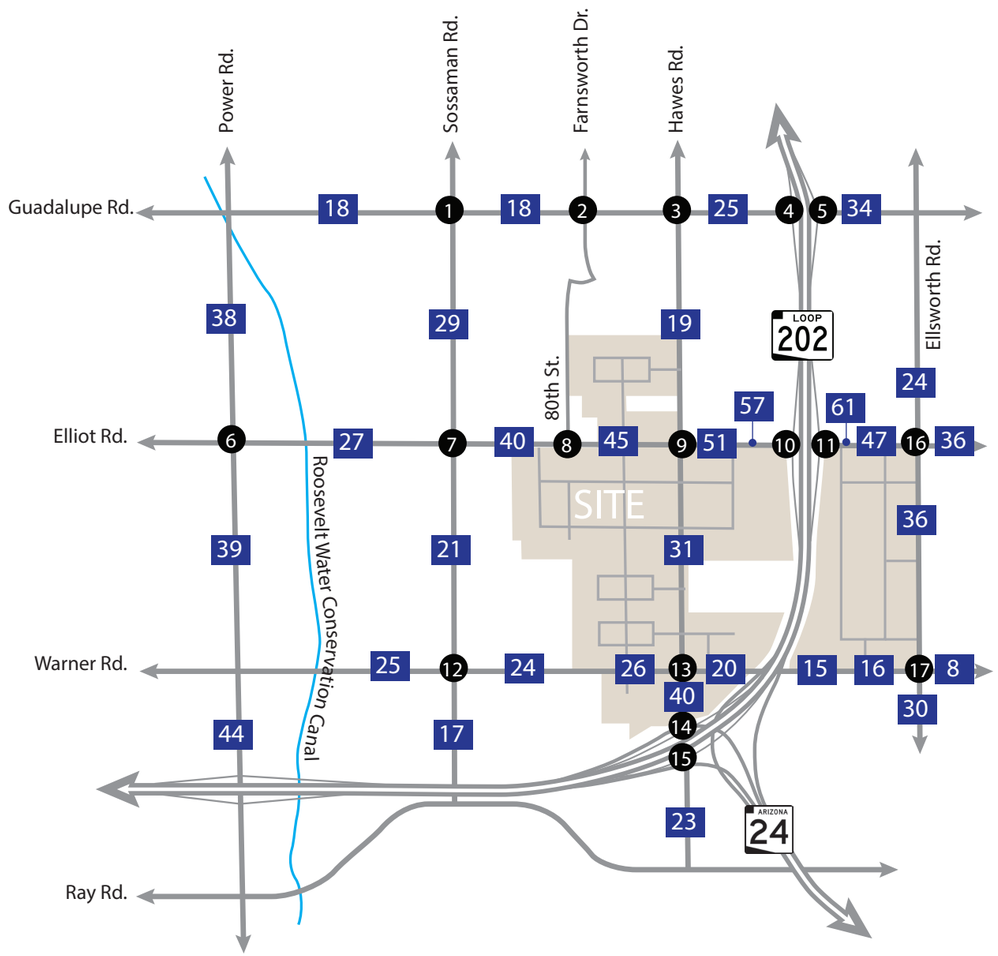
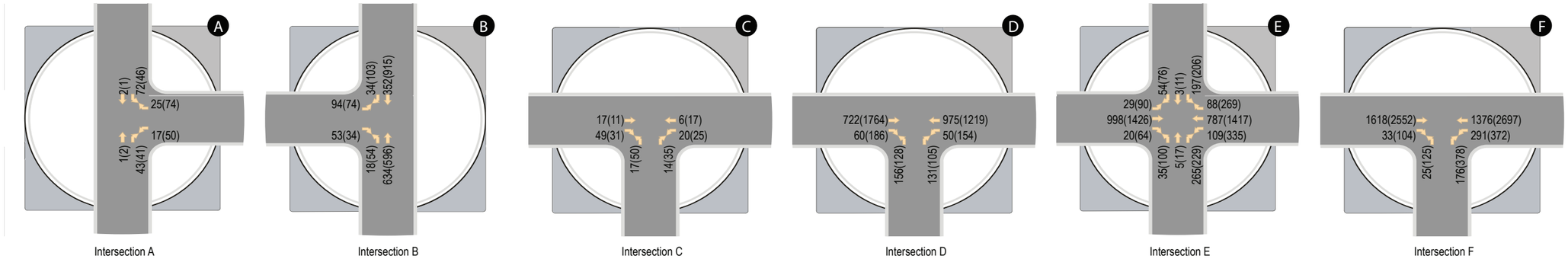


Figure 15: 2040 Total Traffic Volumes A



LEGEND

XX(XX) - AM(PM) Peak Hour Traffic Volumes

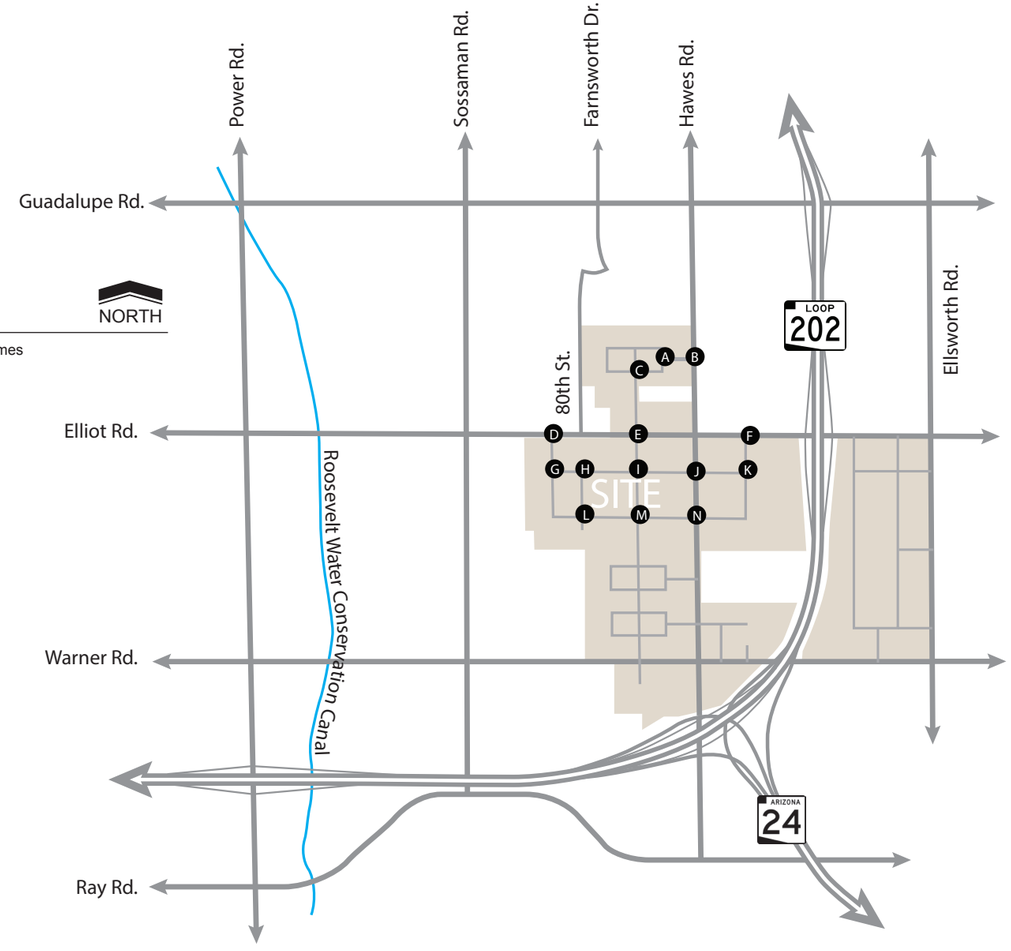
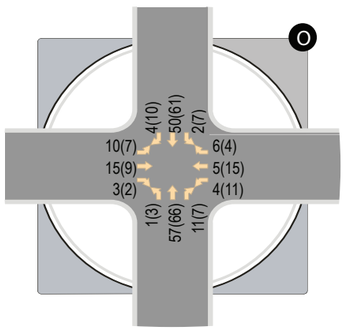
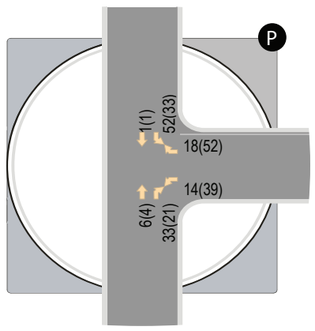


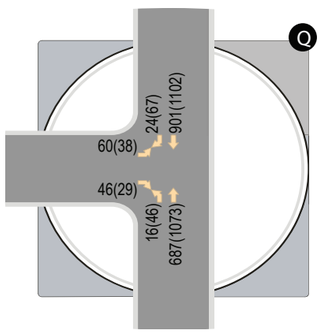
Figure 16: 2040 Total Traffic Volumes B



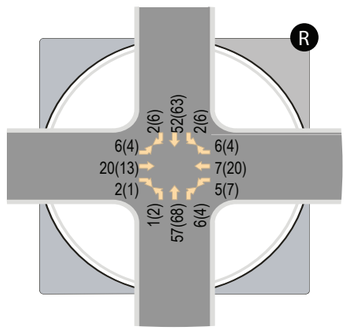
Intersection O



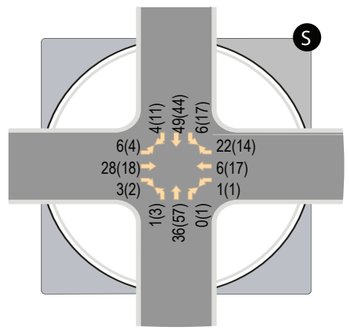
Intersection P



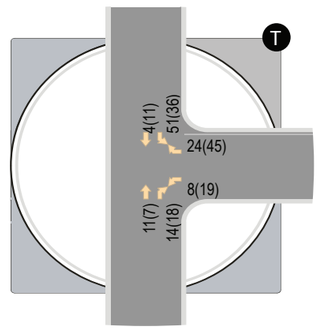
Intersection Q



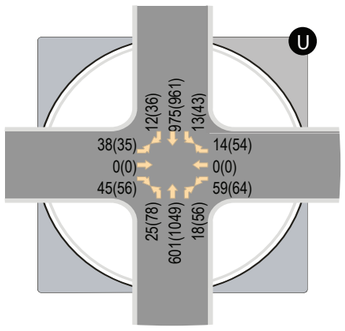
Intersection R



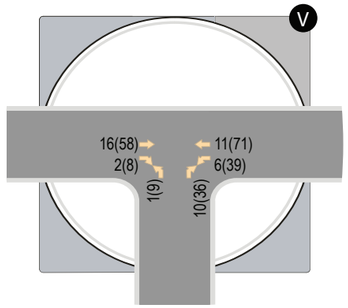
Intersection S



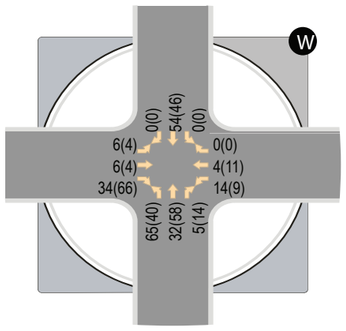
Intersection T



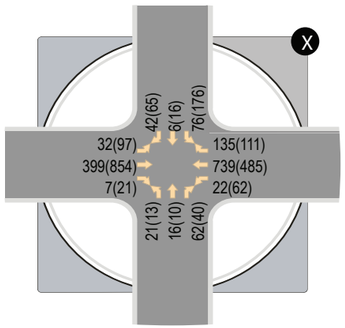
Intersection U



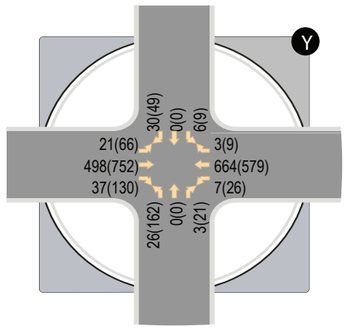
Intersection V



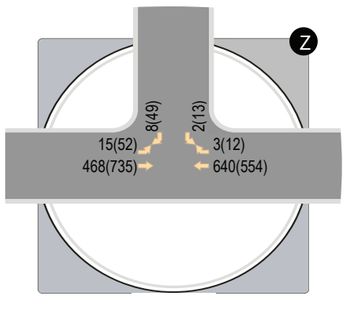
Intersection W



Intersection X



Intersection Y



Intersection Z

LEGEND

XX(XX) - AM(PM) Peak Hour Traffic Volumes

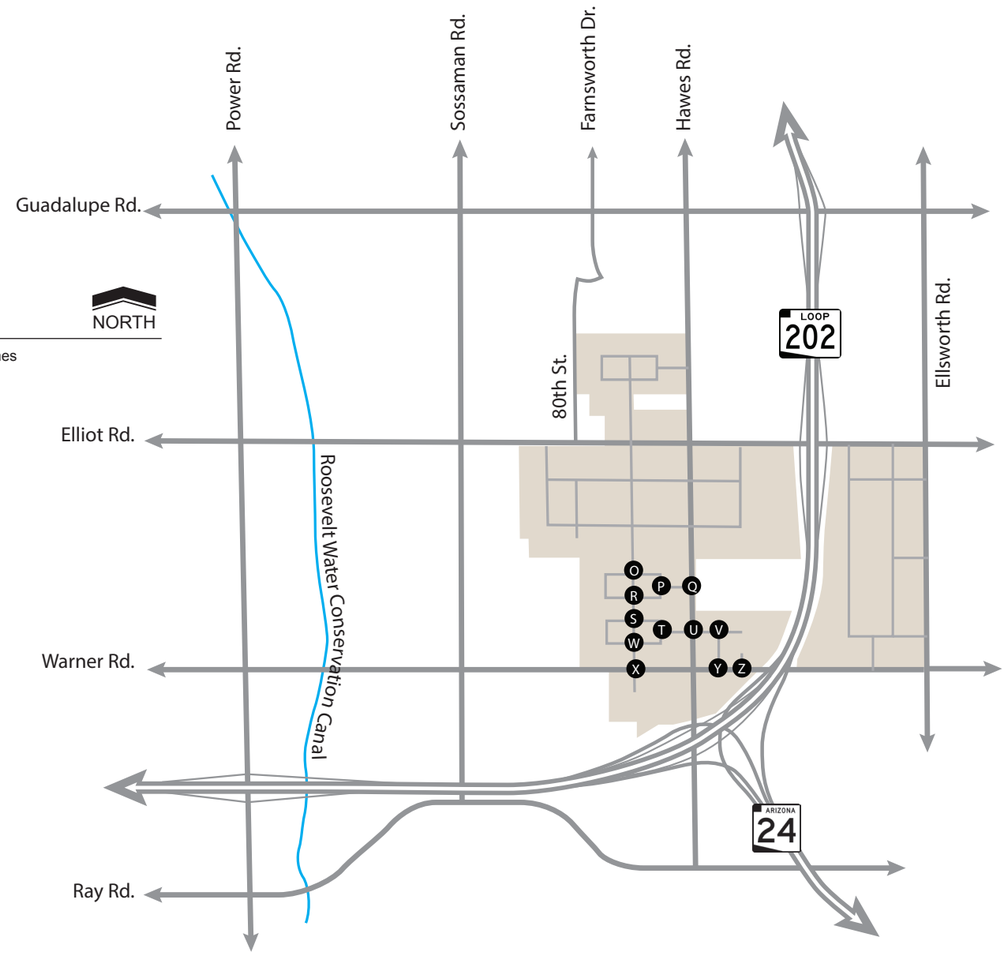


Figure 17: 2040 Total Traffic Volumes C

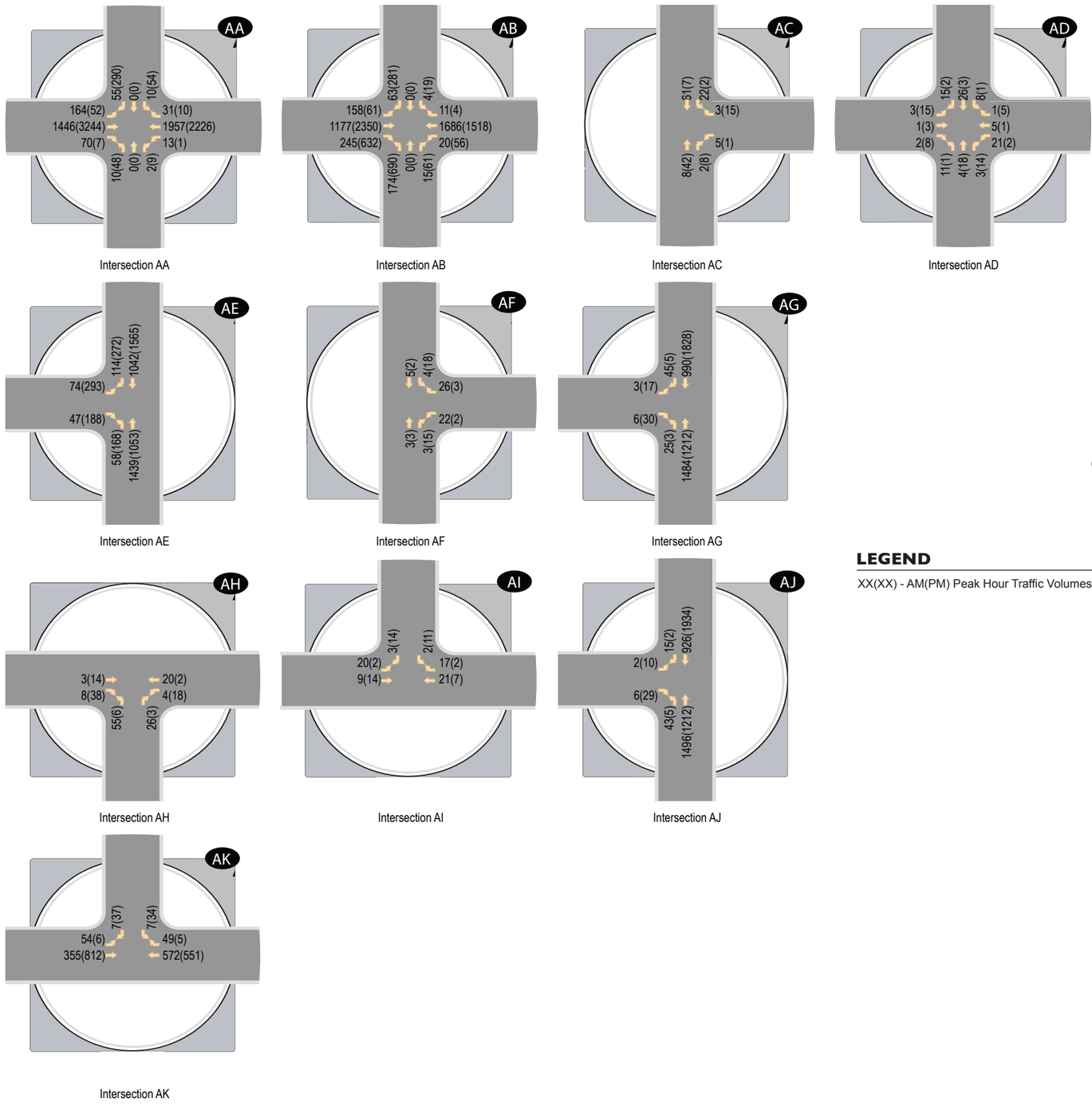


Figure 18: 2040 Total Traffic Volumes D

TRAFFIC AND IMPROVEMENT ANALYSIS

One of the purposes of this study is to project the roadway needs for 2040 given the proposed site traffic volumes as well as the projected background traffic volumes. The lane configurations and traffic controls presented in **Figure 19** through **Figure 23** are recommended based on the 2040 projected conditions.

Mesa's 2040 Transportation Plan indicates that all arterial roadways within the study area are planned to be either 4-lane arterials or 6-lane arterials. Power Road, Hawes Road, Ellsworth Road, Guadalupe Road and Elliot Road are planned to be 6-lane roads within the study area. Sossaman Road and Warner Road are planned to be 4-lane roads within the study area.

LEFT-TURN LANES

A left turn lane is recommended at all arterial intersections where the left turn movement is allowed. Dual left turn lanes were evaluated when the turn volume of the approach exceeded 300 vehicles per hour, the turn movement would otherwise operate poorly and dual left turn lanes would improve the delay, or where dual left turn lanes were recommended in the opposing approach. See section 6.1.6 of the *Maricopa County Department of Transportation Roadway Design Manual* ("MCDOT RDM") for additional conditions.

RIGHT-TURN LANES

The City of Mesa utilizes their Engineering and Design Standards (2019) and Mesa Standard Details (2019) to help inform future intersection lane configuration. Detail M-46 requires right-turn lanes on all approaches at arterial to arterial intersections. For analysis purposes, a right-turn lane was added to all arterial road approaches were the turn movements exceeded 300 vehicles per hour during at least one of the peak hours (see section 6.1.6 of the MCDOT RDM for additional conditions) or the turn movement would otherwise operate poorly. A right-turn lane was also considered on arterials approaching driveways when the right-turn volumes exceeded 30 vehicles in at least one peak hour. Right-turn lanes were also assumed at all collector approaches to arterial roads.

SIGNALIZATION

All arterial-arterial intersections were evaluated under signalized conditions, with protected phasing only for dual left turn lanes, no protected phase if corresponding turn movements operates acceptable and protected-permitted phasing in all other conditions. Right turn overlaps were avoided unless they were found to mitigate poor LOS (of the same or another movement by allowing adjustment of phase durations). Signalization is discussed further after the LOS table and in **Figure 24**.

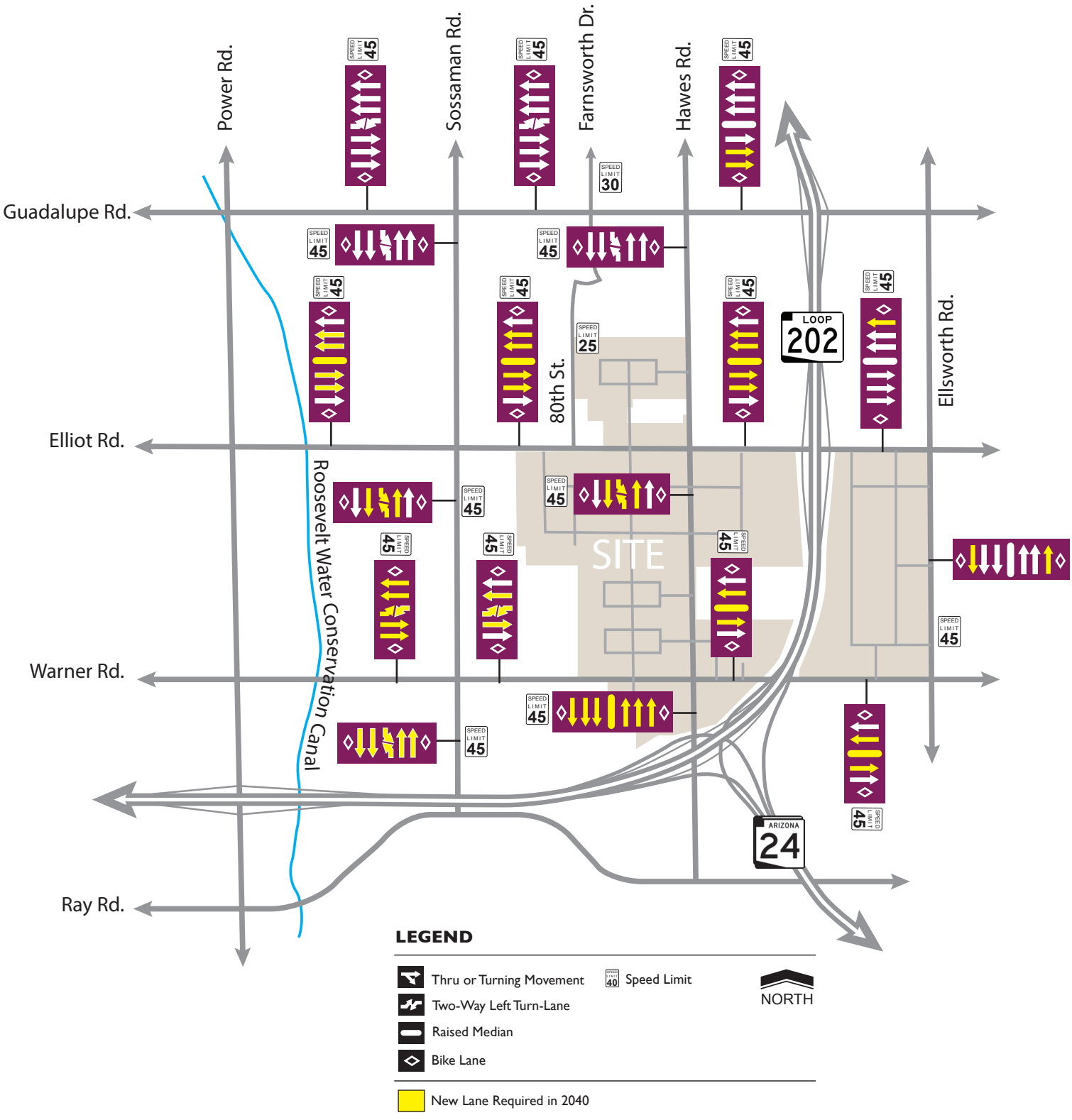
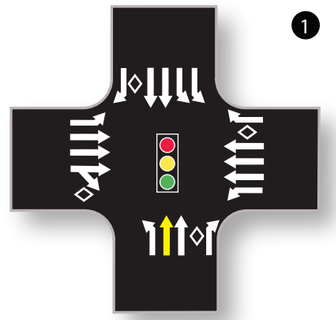
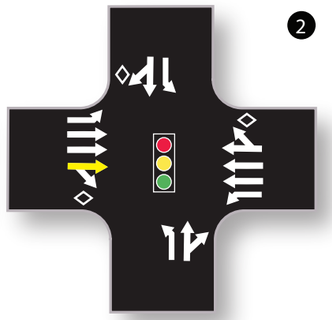


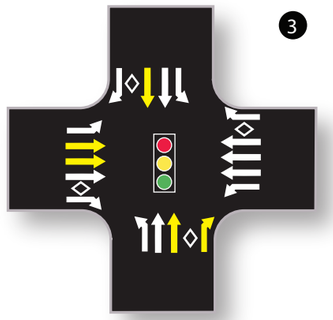
Figure 19: Proposed Roadway Segment Configurations



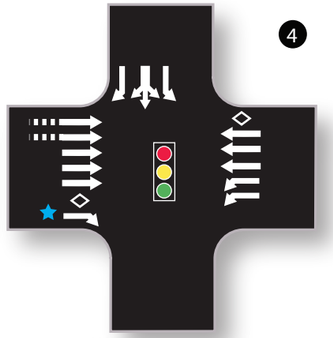
Sossaman Rd & Guadalupe Rd



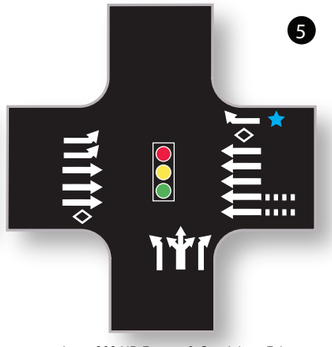
Farnsworth Dr/Bridlewood & Guadalupe Rd



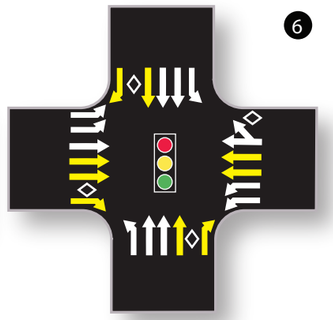
Hawes Rd & Guadalupe Rd



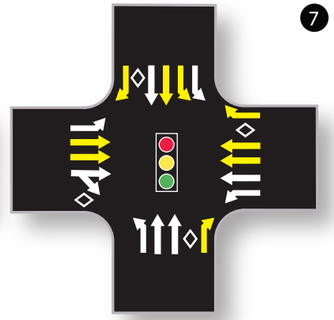
Loop 202 SB Ramps & Guadalupe Rd



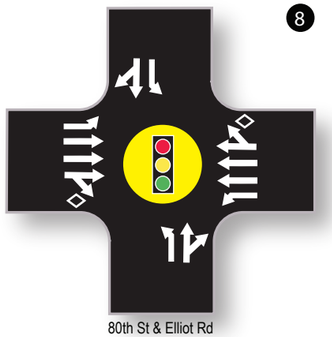
Loop 202 NB Ramps & Guadalupe Rd



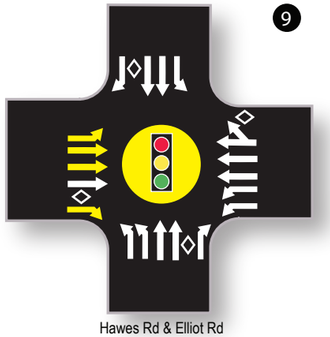
Power Rd & Elliot Rd



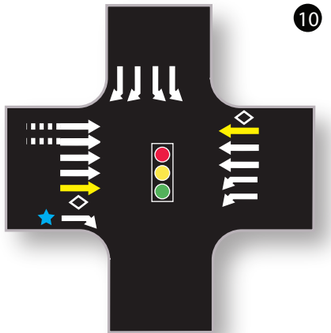
Sossaman Rd & Elliot Rd



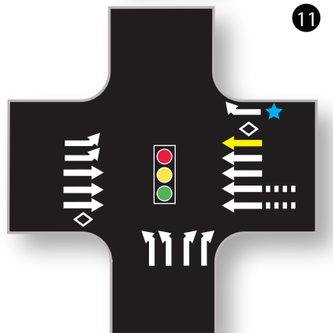
80th St & Elliot Rd



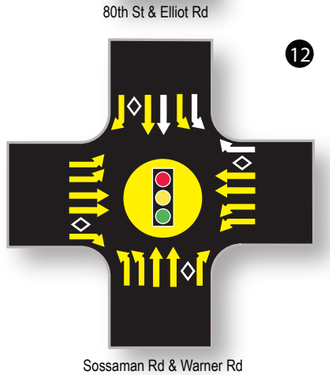
Hawes Rd & Elliot Rd



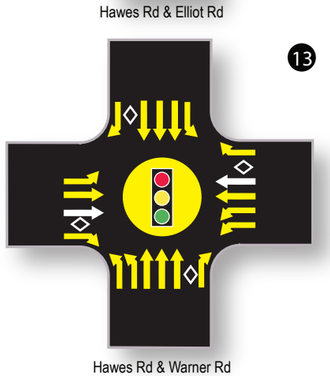
Loop 202 SB Ramps & Elliot Rd



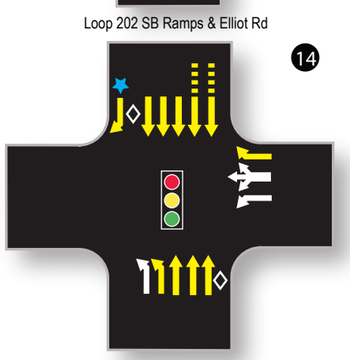
Loop 202 NB Ramps & Elliot Rd



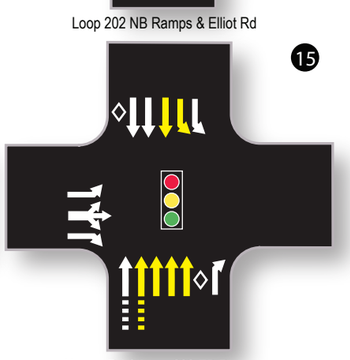
Sossaman Rd & Warner Rd



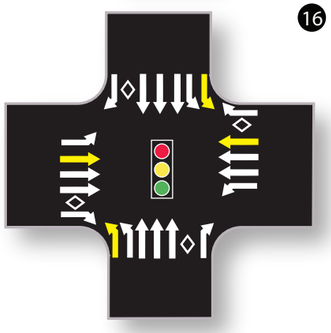
Hawes Rd & Warner Rd



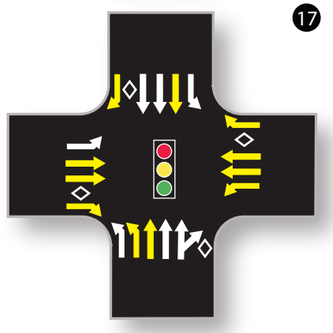
Hawes Rd & Loop 202 WB Ramps



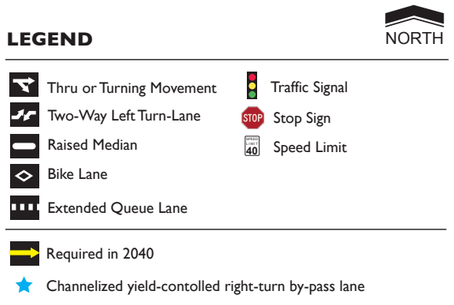
Hawes Rd & Loop 202 EB Ramps



Ellsworth Road and Elliot Road



Ellsworth Road and Warner Road



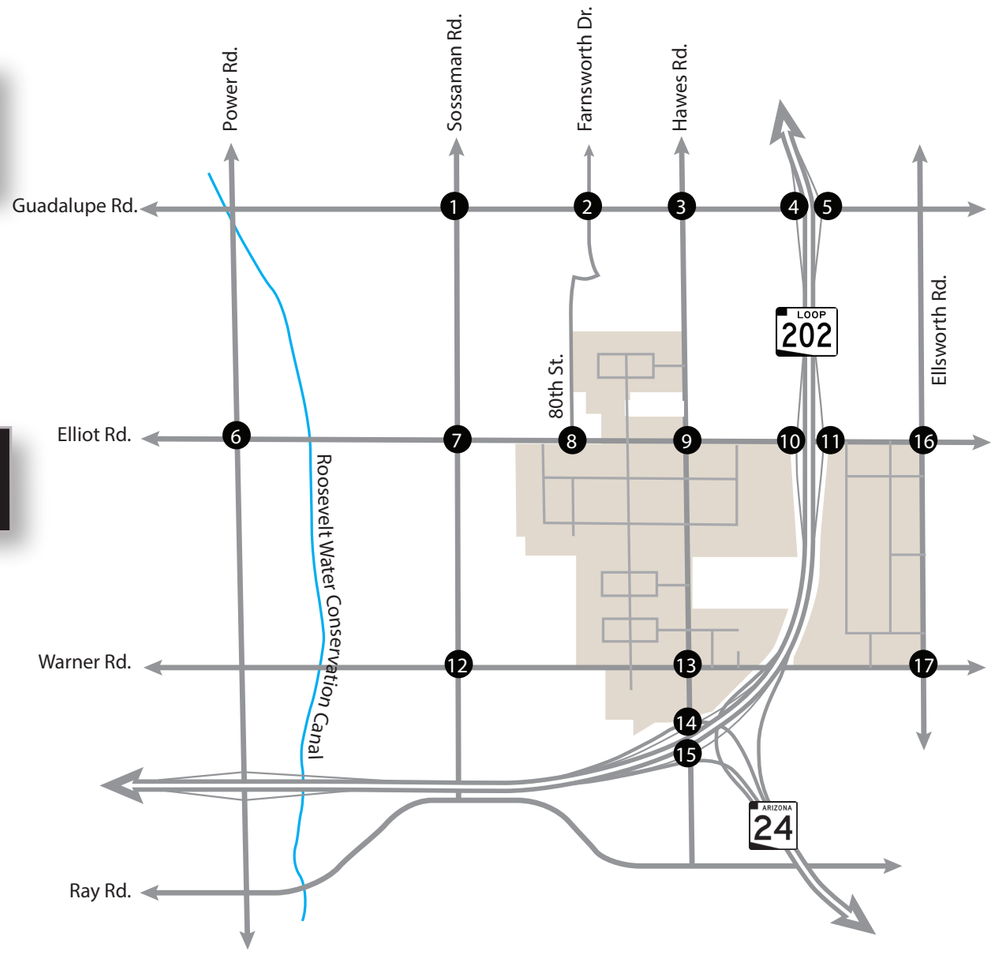
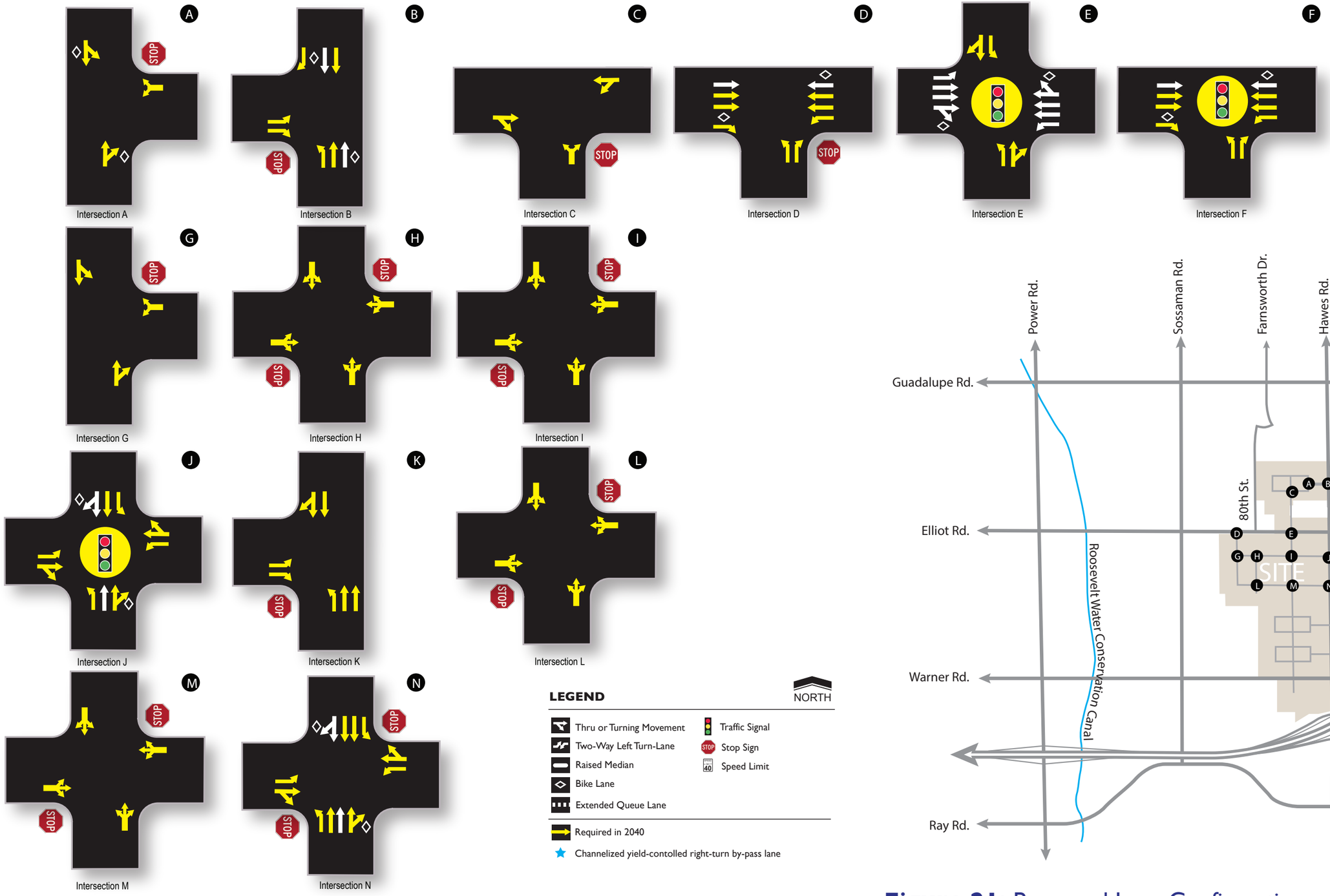


Figure 20: Proposed Lane Configurations and Traffic Controls A



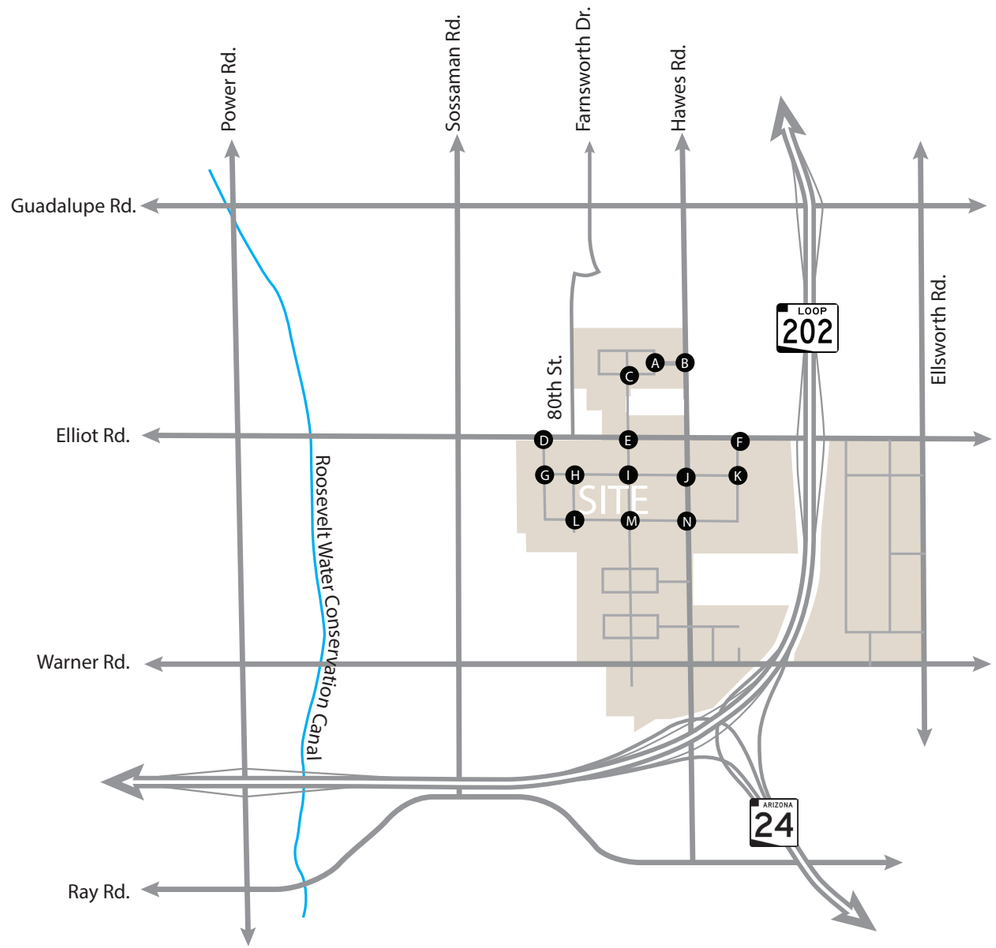
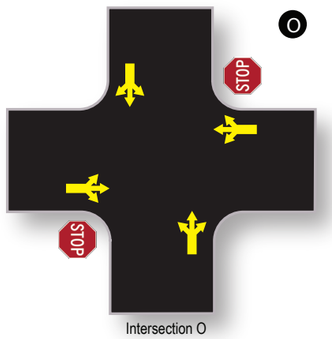
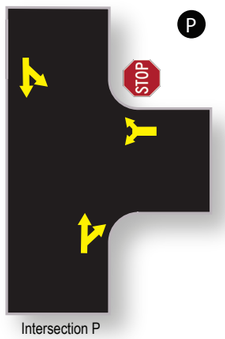


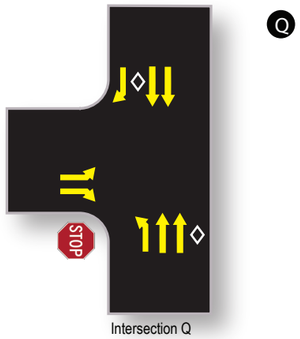
Figure 21: Proposed Lane Configurations and Traffic Controls B



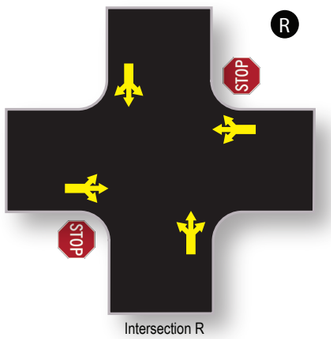
Intersection O



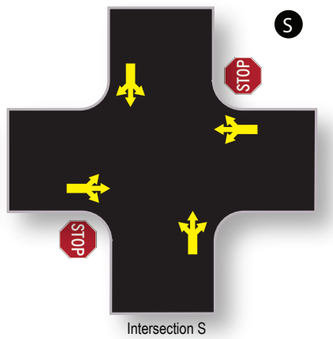
Intersection P



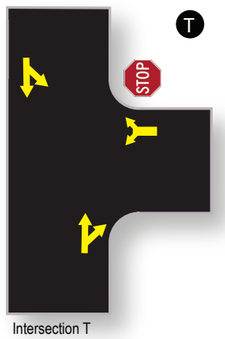
Intersection Q



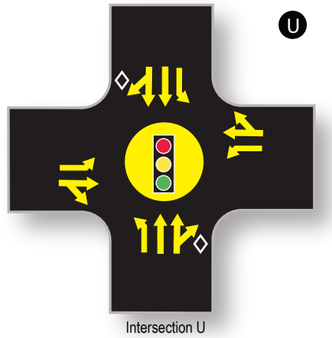
Intersection R



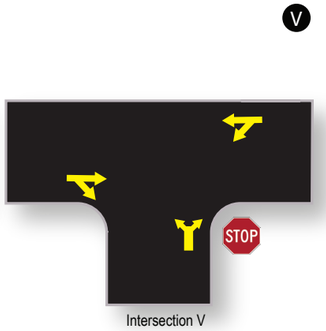
Intersection S



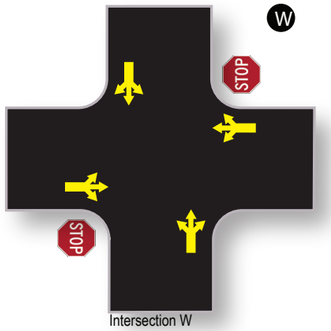
Intersection T



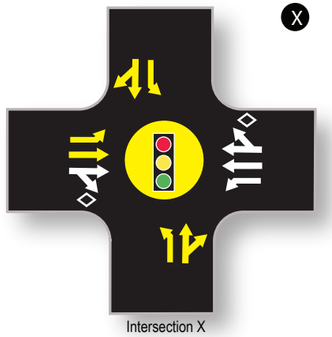
Intersection U



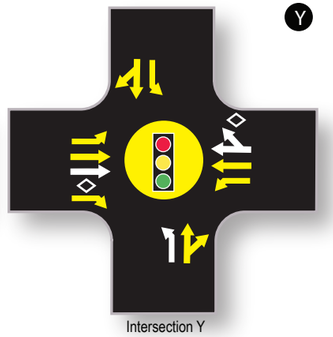
Intersection V



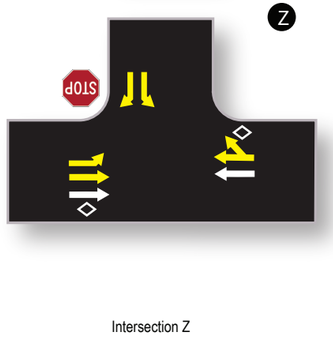
Intersection W



Intersection X



Intersection Y



Intersection Z

LEGEND

NORTH

- Thru or Turning Movement
- Two-Way Left Turn-Lane
- Raised Median
- Bike Lane
- Extended Queue Lane
- Traffic Signal
- Stop Sign
- Speed Limit
- Required in 2040
- Channelized yield-contolled right-turn by-pass lane

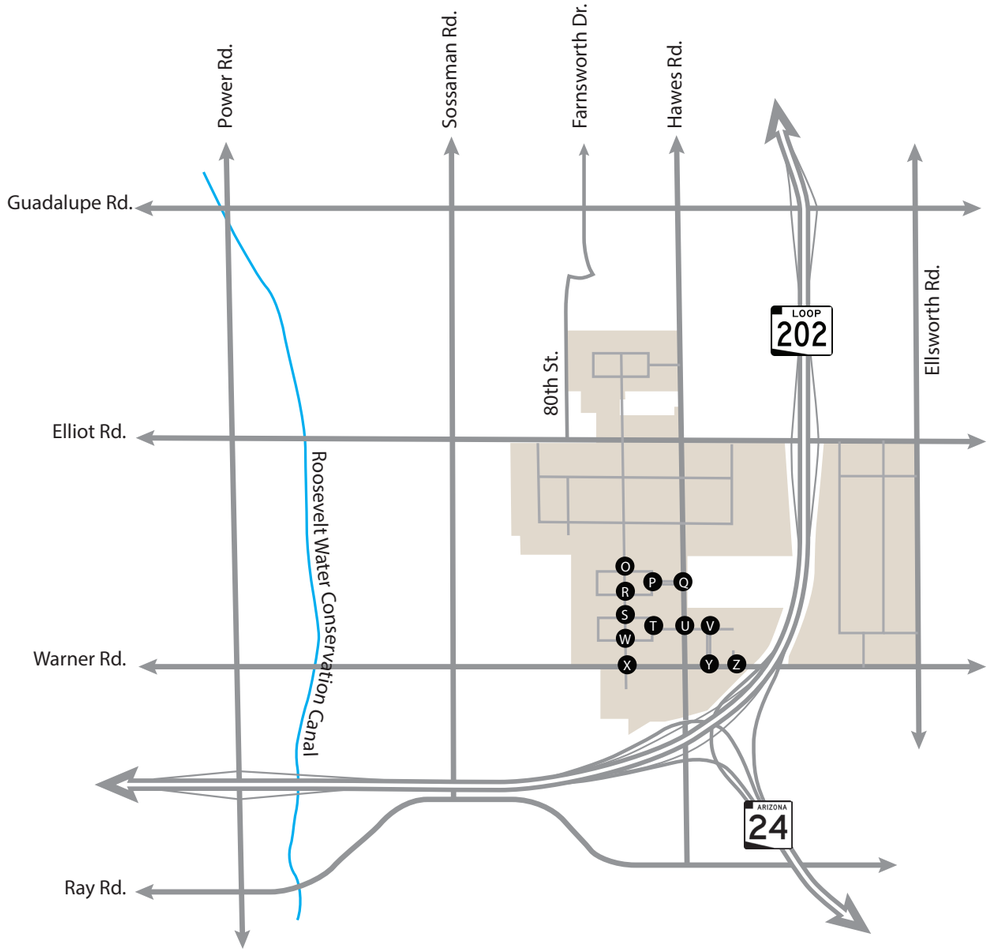
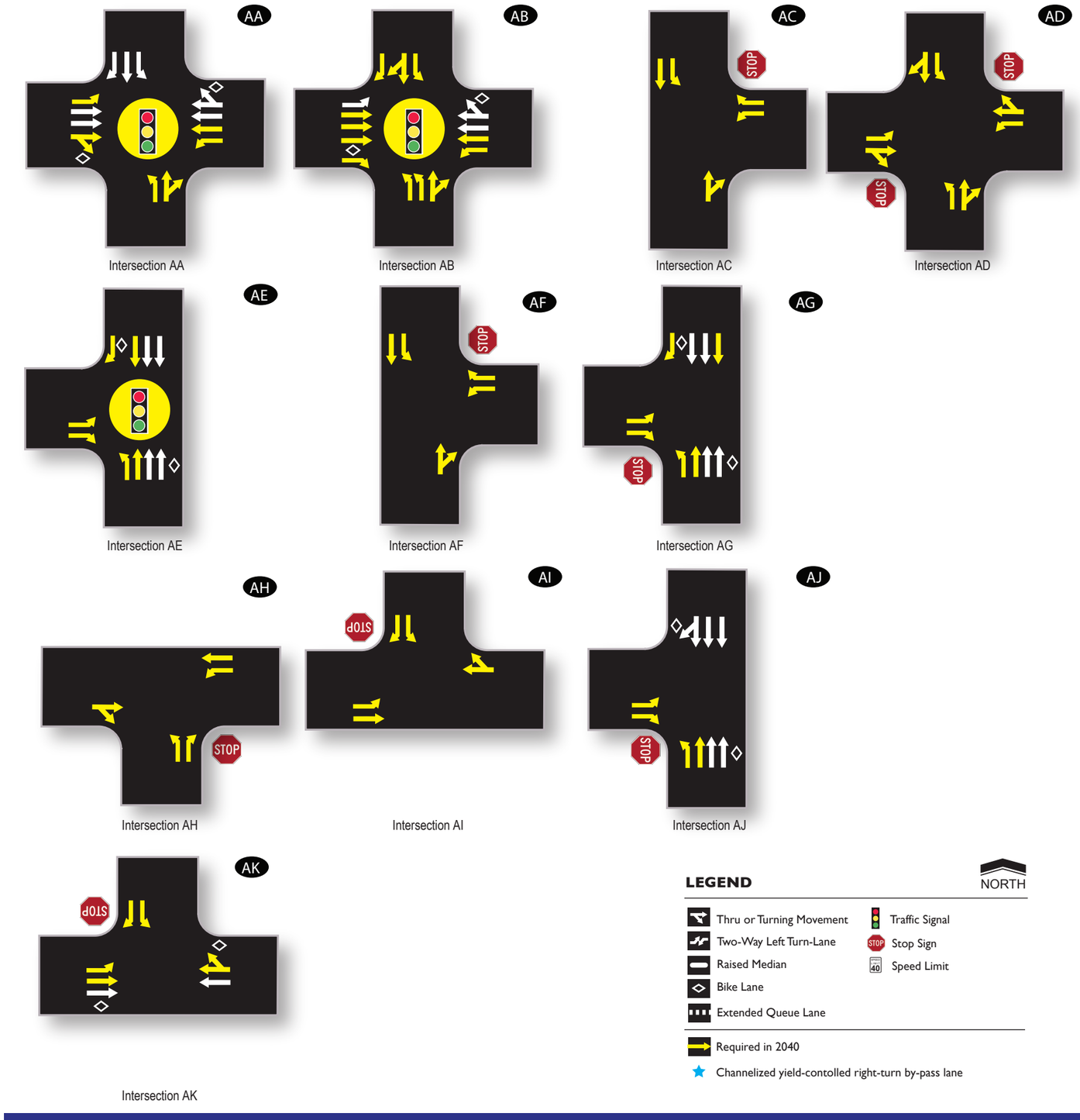


Figure 22: Proposed Lane Configurations and Traffic Controls C



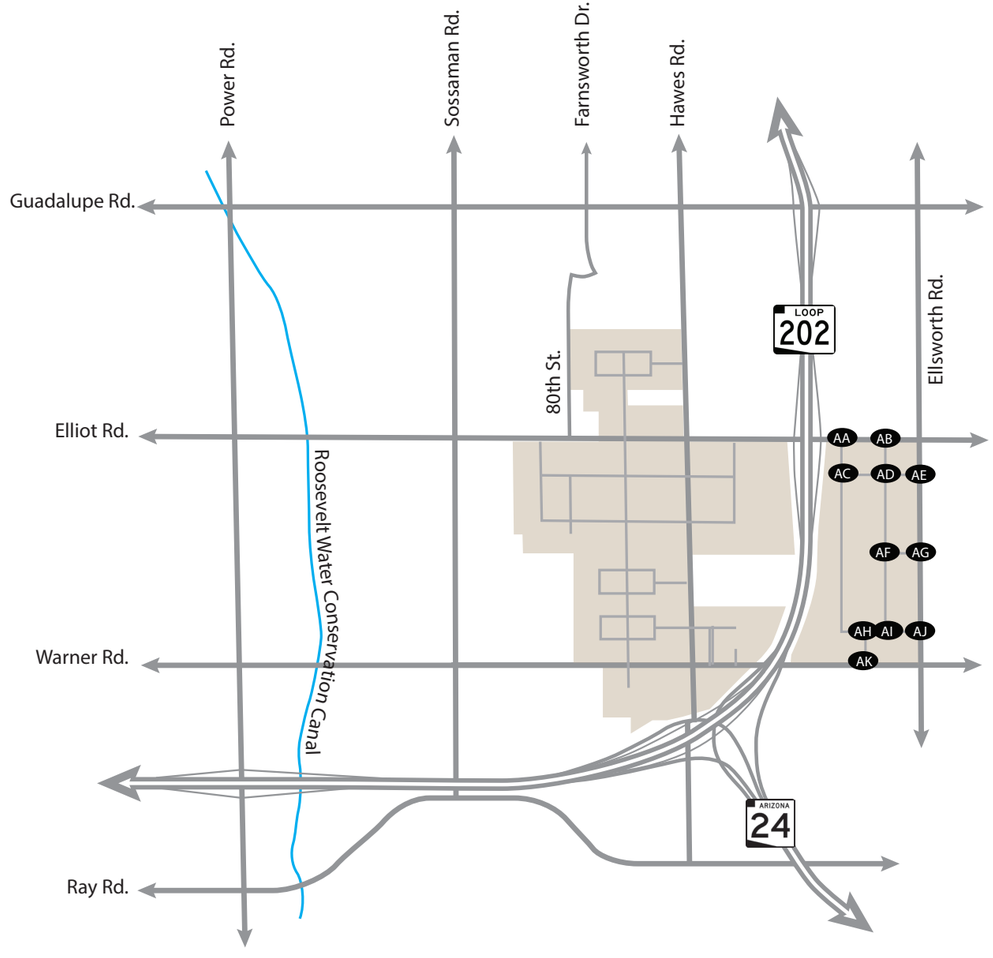


Figure 23: Proposed Lane Configurations and Traffic Controls D

PEAK HOUR CAPACITY ANALYSIS

Results of the intersection capacity analysis for the 2040 horizon year are displayed in **Table 6**. A cycle length of 90 seconds was used for all signalized intersections and included coordinated operations where applicable. The lane configurations and traffic controls presented in **Figure 20** through **Figure 23** were utilized for the 2040 intersection analyses. Analysis worksheets are included in **Appendix G**.

Table 6: 2040 Peak Hour Levels of Service

ID	Intersection	Traffic Control	Approach/ Movement	2040 Delay (LOS)	
				AM	PM
1	Sossaman Road & Guadalupe Road	Signal	NB	29.6 (C)	54.0 (D)
			SB	31.3 (C)	45.2 (D)
			EB	27.7 (C)	38.7 (D)
			WB	27.7 (C)	44.6 (D)
			Overall	29.2 (C)	45.9 (D)
2	Farnsworth Drive/Bridlewood & Guadalupe Road	Signal	NB	21.1 (C)	31.2 (C)
			SB	17.0 (B)	41.7 (D)
			EB	2.8 (A)	0.5 (A)
			WB	28.0 (C)	18.2 (B)
			Overall	19.2 (B)	12.0 (B)
3	Hawes Road & Guadalupe Road	Signal	NB	49.9 (D)	54.3 (D)
			SB	19.4 (B)	44.1 (D)
			EB	41.4 (D)	37.3 (D)
			WB	24.5 (C)	40.7 (D)
			Overall	37.8 (D)	43.6 (D)
4	SR-202 SB Ramps & Guadalupe Road	Signal	SB	37.8 (D)	47.3 (D)
			EB	25.7 (C)	30.3 (C)
			WB	34.3 (C)	38.2 (D)
			Overall	32.7 (C)	38.0 (D)
5	SR-202 NB Ramps & Guadalupe Road	Signal	NB	33.4 (C)	30.0 (C)
			EB	43.7 (D)	41.1 (D)
			WB	16.8 (B)	24.9 (C)
			Overall	27.1 (C)	33.2 (C)
6	Power Road & Elliot Road	Signal	NB	33.4 (C)	39.3 (D)
			SB	35.0 (C)	49.2 (D)
			EB	31.9 (C)	49.5 (D)
			WB	35.8 (D)	50.0 (D)
			Overall	33.9 (C)	47.2 (D)
7	Sossaman Road & Elliot Road	Signal	NB	29.7 (C)	53.0 (D)
			SB	39.2 (D)	50.2 (D)
			EB	28.0 (C)	46.0 (D)
			WB	38.0 (D)	48.0 (D)
			Overall	34.2 (C)	48.8 (D)
8	80th Street & Elliot Road	Signal	NB	25.7 (C)	30.6 (C)
			SB	25.8 (C)	34.0 (C)
			EB	10.0 (A)	11.1 (B)
			WB	0.7 (A)	6.9 (A)
			Overall	6.9 (A)	11.0 (B)
9	Hawes Road & Elliot Road	Signal	NB	53.3 (D)	47.3 (D)
			SB	45.4 (D)	53.5 (D)
			EB	35.6 (D)	49.9 (D)
			WB	8.1 (A)	**66.6 (E)**
			Overall	35.0 (C)	**56.6 (E)**

Table 6 (Continued): 2040 Peak Hour Levels of Service

ID	Intersection	Traffic Control	Approach/ Movement	2040 Delay (LOS) AM	2040 Delay (LOS) PM
10	SR-202 SB Ramps & Elliot Road	Signal	SB	52.8 (D)	**118.6(F)**
			EB	36.2 (D)	37.3 (D)
			WB	40.1 (D)	**136.9(F)**
			Overall	42.9 (D)	87.2 (F)
11	SR-202 NB Ramps & Elliot Road	Signal	NB	47.8 (D)	**176.2(F)**
			EB	53.8 (D)	**127.2(F)**
			WB	24.2 (C)	40.8 (D)
			Overall	40.1 (D)	**115.1(F)**
12	Sossaman Road & Warner Road	Signal	NB	22.4 (C)	34.8 (C)
			SB	32.3 (C)	31.4 (C)
			EB	36.0 (D)	41.7 (D)
			WB	32.7 (C)	34.1 (C)
			Overall	31.2 (C)	36.1 (D)
13	Hawes Road & Warner Road	Signal	NB	37.4 (D)	48.8 (D)
			SB	30.2 (C)	32.0 (C)
			EB	47.7 (D)	50.3 (D)
			WB	45.5 (D)	43.7 (D)
			Overall	38.4 (D)	44.4 (D)
14	Hawes Road & SR-202 WB Ramps	Signal	NB	23.0 (C)	35.2 (D)
			SB	40.5 (D)	43.8 (D)
			WB	42.0 (D)	30.8 (C)
			Overall	33.4 (C)	39.3 (D)
15	Hawes Road & SR-202 EB Ramps	Signal	NB	17.6 (B)	29.1 (C)
			SB	16.2 (B)	17.9 (B)
			EB	44.9 (D)	51.1 (D)
			Overall	23.3 (C)	29.7 (C)
16	Ellsworth Road & Elliot Road	Signal	NB	37.3 (D)	53.3 (D)
			SB	49.6 (D)	53.8 (D)
			EB	30.3 (C)	25.4 (C)
			WB	28.1 (C)	54.3 (D)
			Overall	35.1 (D)	44.2 (D)
17	Ellsworth Road & Warner Road	Signal	NB	35.6 (D)	39.8 (D)
			SB	27.1 (C)	37.2 (D)
			EB	31.4 (C)	43.2 (D)
			WB	50.4 (D)	54.6 (D)
			Overall	34.6 (C)	40.2 (D)
A	Intersection A	1-way Stop (WB)	SB Thru/Left	7.5 (A)	7.4 (A)
			WB Shared	9.3 (A)	9.7 (A)
B	Intersection B & Hawes Road	1-way Stop (EB)	NB Left	8.4 (A)	12.9 (B)
			EB Left	14.5 (B)	**40.2 (E)**
			EB Right	10.0 (B)	13.7 (B)
C	Intersection C	1-way Stop (NB)	NB Shared	9.0 (A)	9.3 (A)
			WB Thru/Left	7.4 (A)	7.3 (A)
D	Intersection D at Elliot Road	1-way Stop (NB)	NB Left	13.6 (B)	**--(--)**
			NB Right	11.1 (B)	**57.1 (F)**
			WB Left	9.5 (A)	**676.6(F)**
D	Intersection D at Elliot Road (with Pass-By Trip Reduction)	1-way Stop (NB)	NB Left	- (-)	**236 (F)**
			NB Right	- (-)	21.9 (C)
			WB Left	- (-)	**57.2 (F)**
E	Intersection E & Elliot Road	Signal	NB	52.1 (D)	31.4 (C)
			SB	31.2 (C)	54.4 (D)
			EB	27.6 (C)	52.6 (D)
			WB	7.4 (A)	36.5 (D)
			Overall	22.9 (C)	43.4 (D)

Table 6 (Continued): 2040 Peak Hour Levels of Service

ID	Intersection	Traffic Control	Approach/ Movement	2040 Delay (LOS)	
				AM	PM
F	Intersection F & Elliot Road	Signal	NB	44.6 (D)	46.6 (D)
			EB	0.4 (A)	36.4 (D)
			WB	2.0 (A)	29.5 (C)
			Overall	3.8 (A)	33.9 (C)
G	Intersection G	1-way Stop (WB)	SB Thru/Left	7.6 (A)	7.5 (A)
			WB Shared	9.5 (A)	10.4 (B)
H	Intersection H	2-way Stop (EB/WB)	NB Shared	7.3 (A)	7.4 (A)
			SB Shared	7.5 (A)	7.4 (A)
			EB Shared	10.5 (B)	10.4 (B)
			WB Shared	10.7 (B)	11.5 (B)
I	Intersection I	2-way Stop (EB/WB)	NB Shared	7.4 (A)	7.8 (A)
			SB Shared	7.5 (A)	7.4 (A)
			EB Shared	12.3 (B)	13.9 (B)
			WB Shared	10.6 (B)	12.1 (B)
J	Intersection J & Hawes Road	Signal	NB	4.7 (A)	10.5 (B)
			SB	4.2 (A)	9.2 (A)
			EB	40.3 (D)	36.7 (D)
			WB	37.8 (D)	34.4 (C)
			Overall	9.1 (A)	13.0 (B)
K	Intersection K	1-way Stop (EB)	NB Left	7.7 (A)	7.5 (A)
			EB Left	10.7 (B)	10.5 (B)
			EB Right	9.6 (A)	8.7 (A)
L	Intersection L	2-way Stop (NB/SB)	NB Shared	10.2 (B)	10.9 (B)
			SB Shared	9.9 (A)	11.3 (B)
			EB Shared	7.3 (A)	7.3 (A)
			WB Shared	7.3 (A)	7.5 (A)
M	Intersection M	2-way Stop (EB/WB)	NB Shared	7.3 (A)	7.4 (A)
			SB Shared	7.4 (A)	7.3 (A)
			EB Shared	10.7 (B)	11.4 (B)
			WB Shared	10.3 (B)	11.4 (B)
N	Intersection N & Hawes Road	2-way Stop (EB/WB)	NB Left	9.7 (A)	14.7 (B)
			SB Left	9.6 (A)	11.0 (B)
			EB Left	**249.2 (F)**	**--(--)**
			EB Thru/Right	27.6 (D)	**235.1(F)**
			WB Left	**64.3 (F)**	**4317.5(F)**
			WB Thru/Right	26.4 (D)	**511.5(F)**
O	Intersection O	2-way Stop (EB/WB)	NB Shared	7.3 (A)	7.4 (A)
			SB Shared	7.4 (A)	7.4 (A)
			EB Shared	9.7 (A)	9.9 (A)
			WB Shared	9.3 (A)	9.9 (A)
P	Intersection P	1-way Stop (WB)	SB Thru/Left	7.4 (A)	7.3 (A)
			WB Shared	9.0 (A)	9.1 (A)
Q	Intersection Q & Hawes Road	1-way Stop (EB)	NB Left	10.5 (B)	12.6 (B)
			EB Left	24.8 (C)	24.3 (C)
			EB Right	13.9 (B)	14.6 (B)
R	Intersection R	2-way Stop (EB/WB)	NB Shared	7.3 (A)	7.4 (A)
			SB Shared	7.3 (A)	7.4 (A)
			EB Shared	9.8 (A)	10.0 (B)
			WB Shared	9.4 (A)	10.0 (B)
S	Intersection S	2-way Stop (EB/WB)	NB Shared	7.3 (A)	7.3 (A)
			SB Shared	7.3 (A)	7.4 (A)
			EB Shared	9.8 (A)	10.0 (B)
			WB Shared	8.9 (A)	9.6 (A)
T	Intersection T	1-way Stop (WB)	SB Thru/Left	7.4 (A)	7.3 (A)
			WB Shared	8.8 (A)	8.9 (A)

Table 6 (Continued): 2040 Peak Hour Levels of Service

ID	Intersection	Traffic Control	Approach/ Movement	2040 Delay (LOS) AM	2040 Delay (LOS) PM
U	Intersection U & Hawes Road	2-way Stop (EB/WB)	NB	5.1 (A)	1.2 (A)
			SB	6.6 (A)	6.2 (A)
			EB	21.1 (C)	24.7 (C)
			WB	22.1 (C)	25.6 (C)
			Overall	7.3 (A)	5.3 (A)
V	Intersection V	1-way Stop (NB)	NB Shared	8.5 (A)	9.1 (A)
			WB Thru/Left	7.3 (A)	7.4 (A)
W	Intersection W	2-way Stop (EB/WB)	NB Shared	7.4 (A)	7.4 (A)
			SB Shared	0.0 (A)	0.0 (A)
			EB Shared	9.3 (A)	9.1 (A)
			WB Shared	10.9 (B)	10.7 (B)
X	Intersection X & Warner Road	Signal	NB	27.5 (C)	28.6 (C)
			SB	29.4 (C)	36.0 (D)
			EB	8.7 (A)	10.3 (B)
			WB	10.8 (B)	9.2 (A)
			Overall	12.7 (B)	13.5 (B)
Y	Intersection Y & Warner Road	Signal	NB	25.9 (C)	23.1 (C)
			SB	25.0 (C)	19.0 (B)
			EB	12.4 (B)	22.3 (C)
			WB	15.0 (B)	23.5 (C)
			Overall	14.4 (B)	22.7 (C)
Z	Intersection Z & Warner Road	1-way Stop (SB)	SB Left	14.0 (B)	14.2 (B)
			SB Right	10.8 (B)	11.0 (B)
			EB Left	9.2 (A)	9.3 (A)
AA	Intersection AA & Elliot Road	Signal	NB	46.7 (D)	41.8 (D)
			SB	21.7 (C)	53.6 (D)
			EB	16.7 (B)	**198.6 (F)**
			WB	42.4 (D)	5.9 (A)
			Overall	30.5 (C)	**116.1 (F)**
AA	Intersection AA & Elliot Road (with Pass-By Trip Reduction)	Signal	NB	- (-)	41.8 (D)
			SB	- (-)	53.6 (D)
			EB	- (-)	45.0 (D)
			WB	- (-)	1.2 (A)
			Overall	- (-)	29.7 (C)
AB	Intersection AB & Elliot Road	Signal	NB	43.9 (D)	36.6 (D)
			SB	38.6 (D)	54.6 (D)
			EB	14.6 (B)	53.1 (D)
			WB	42.1 (D)	9.1 (A)
			Overall	29.9 (C)	38.7 (D)
AC	Intersection AC & Elliot Road	1-way Stop (WB)	SB Left	7.3 (A)	7.3 (A)
			WB Left	9.2 (A)	8.8 (A)
			WB Right	8.4 (A)	8.6 (A)
AD	Intersection AD	2-way Stop (EB/WB)	NB Left	7.3 (A)	7.2 (A)
			SB Left	7.2 (A)	7.3 (A)
			EB Left	9.1 (A)	8.8 (A)
			EB Thru/Right	8.9 (A)	8.6 (A)
			WB Left	9.2 (A)	8.8 (A)
			WB Thru/Right	9.4 (A)	8.6 (A)
AE	Ellsworth Road & Intersection AE	Signal	NB	3.7 (A)	11.5 (B)
			SB	7.3 (A)	48.1 (D)
			EB Left	30.6 (C)	53.2 (D)
			Overall	6.4 (A)	36.2 (D)
AF	Intersection AF	1-way Stop (WB)	SB Left	7.2 (A)	7.3 (A)
			WB Left	8.7 (A)	8.8 (A)
			WB Right	8.4 (A)	8.4 (A)

Table 6 (Continued): 2040 Peak Hour Levels of Service

ID	Intersection	Traffic Control	Approach/ Movement	2040 Delay (LOS)	
				AM	PM
AG	Ellsworth Road & Intersection AG	1-way Stop (EB)	NB Left EB Left EB Right	9.7 (A) 12.1 (B) 10.2 (B)	10.7 (B) 13.5 (B) 12.7 (B)
AH	Intersection AH	1-way Stop (NB)	NB Left NB Right WB Left	9.0 (A) 8.4 (A) 7.2 (A)	9.0 (A) 8.5 (A) 7.4 (A)
AI	Intersection AI	1-way Stop (SB)	SB Left SB Right EB Left	9.0 (A) 8.5 (A) 7.3 (A)	8.7 (A) 8.4 (A) 7.2 (A)
AJ	Ellsworth Road & Intersection AJ	1-way Stop (EB)	NB Left EB Left EB Right	9.7 (A) 12.1 (B) 10.1 (B)	11.3 (B) 14.5 (B) 13.4 (B)
AK	Intersection AK & Warner Road	1-way Stop (SB)	SB Left SB Right EB Left	14.3 (B) 10.6 (B) 9.3 (A)	14.7 (B) 10.6 (B) 8.8 (A)

Additional traffic analysis has been provided for two intersections located adjacent to large commercial parcels within Hawes Crossing. The additional analysis considers likely traffic volumes and predicted levels of service if pass-by trip reductions are considered. This provides a more realistic evaluation of future delay near the large commercial parcels.

While most signalized intersections are anticipated to operate at overall LOS D or better, some individual movements are anticipated to experience heavy delays during the AM and/or PM peak hours. This is often due to the overall high traffic volumes entering the intersection compared to the intersection's capacity, particularly in turning movements. It is well known that methodology from the NCHRP Report 765 has a tendency to over represent turning movements and underrepresent through volumes when converting AADT to peak hour volumes. Study intersections will likely experience reduced turning movement volumes than these projected in this study and may operate with lower delays and better LOS than projected herein.

The recommended lane configurations and traffic controls based on the 2040 projected traffic volumes are presented in **Figure 19** through **Figure 23**.

These recommendations are based on the projected 2040 total traffic volumes, which include site traffic volumes using the projected trip generation estimated from assuming 80 percent of the maximum entitlement density could be constructed. The site traffic was considered with background traffic volumes estimated from the Maricopa Association of Governments (MAG) 2040 average annual daily traffic (AADT's). Individualized traffic impact studies are recommended for each proposed parcel or phase during the platting stages.

The intersection of ***Hawes Road and Warner Road*** is expected to experience heavy delays by study horizon year 2040. Although this intersection is planned for signalization by 2040 the proximity of the Loop 202 interchange to the south is expected to increase the east/west turning volumes on Warner Road, as well as the north/south through volumes along Hawes Road, increasing delays for these movements. It is recommended this intersection be monitored for future signal timing modification upon buildout of the area.

The intersection of ***Hawes Road and Elliot Road*** is expected to experience heavy delays by study horizon year 2040 during the PM peak hour. Although this intersection is planned for signalization, the proximity of the Loop 202 interchange to the east is expected to increase the east/west turning volumes on Elliot Road, as well as the north/south movements onto Hawes Road, thus increasing delays for all movements. It is recommended this intersection be monitored for future signal timing modification upon buildout of the area.

The ***Loop 202 and Elliot Traffic Interchange*** is expected to experience heavy delays upon buildout of the area by horizon year 2040 during the PM peak hour. This is due to the anticipated regional growth in area and the proposed commercial parcels east of the Loop 202 along Elliot Road which are expected to attract additional regional trips from the area. As the surrounding area develops it is recommended that the traffic interchange at the Loop 202 and Elliot Road be monitored for future signal timing modification and mitigation.

The proposed signalized ***Intersection AA*** is expected to experience heavy delays in the PM peak hour due to the expected increase in regional traffic in the study area by horizon year 2040. Traffic volumes in this report reflect the highest potential demand and will reduce with the application of pass-by traffic in future traffic studies. It is recommended that this signal also be monitored for signal timing adjustments to promote progression along the corridor along with the Loop 202 and Elliot Road Traffic Interchange signals due to the proximity of Intersection AA. The exact location of intersection AA has not yet been established.

Proposed ***Intersection B and Hawes Road*** and ***Intersection D and Elliot Road*** are expected to experience heavy delays in the PM peak hour along the minor approach. This is due to the large increase in regional traffic expected along all arterials by horizon year 2040. As the area develops it is recommended these two intersection locations be monitored for future signalization.

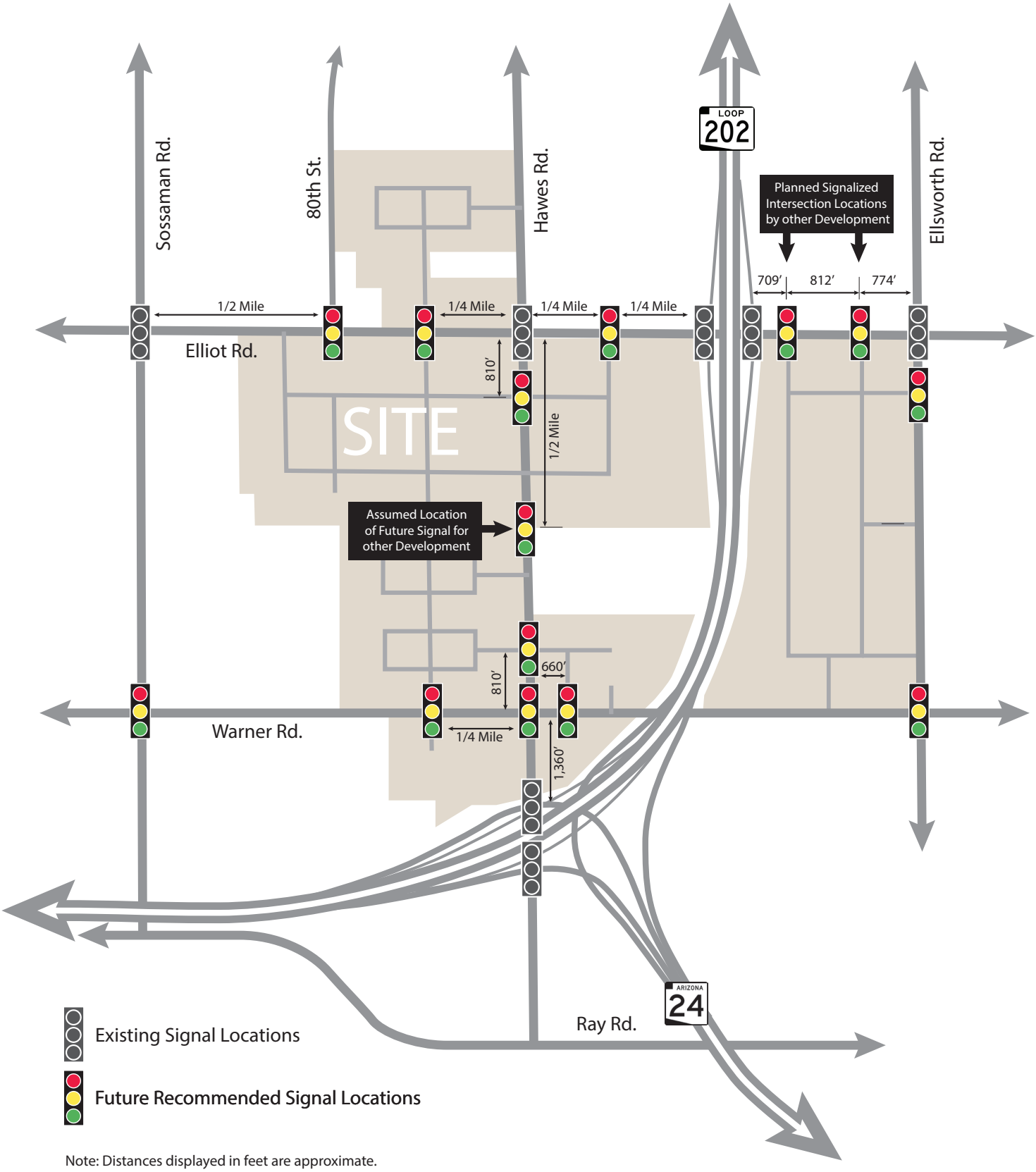
Intersection N along Hawes Road has stop controlled east/west movement(s) that are anticipated to operate with heavy turning movement delays during the PM peak hour. While the spacing of this intersection could be acceptable for signalization, due to the location or proximity of other surrounding intersections, this location is not recommended to be signalized. It is recommended that the roadways internal to the site be designed, and driveways to individual parcels placed, to encourage use of roadways leading to signalized intersections for improved traffic flow characteristics.

Free flow right-turn lanes are recommended for the locations listed below to improve intersection delay. It should be noted that the HCM 2016 does not analyze free flow right-turn lanes or clustered diamond traffic interchanges, therefore HCM 2000 methodology was used to analyze all traffic interchanges within the study area. The right-turn lane needs of these intersections should be evaluated with future TIAs of individual phases of the development.

- (Int.4) Guadalupe Road eastbound approaching Loop 202 southbound on ramp.
- (Int.5) Guadalupe Road westbound approaching Loop 202 northbound off-ramp.
- (Int.10) Elliot Road eastbound approaching Loop 202 southbound on-ramp.
- (Int.11) Elliot Road westbound approaching Loop 202 northbound on-ramp.
- (Int.14) Hawes Road southbound approaching and Loop 202 on-ramp.

Signalization is recommended at all arterial-arterial intersections as well as at the arterial-collector intersections listed below. The City's *Engineering and Design Standards* indicates that signalization of intersections less than 1/8-mile from an arterial (centerline to centerline) or between 1/6-mile and 1/3-mile is not acceptable. Intersections E, F and X are approximately 1/4-mile from Hawes Road and require a variance from the design standards to be signalized. Intersection Y, located on Warner Road approximately 1/8-mile east of Hawes Road, was requested by City staff to be shifted to at least 800 feet east of Hawes Road. Intersections AA and AB are planned future intersections from a different development. Intersection AK is located on Warner Road approximately 1/4-mile west of Ellsworth Road and requires a variance from the design standards to be signalized. Recommended signal locations and spacing are depicted in **Figure 24**.

- (Int.8) 80th Street and Elliot Road ~2,660 feet (1/2-mile) east of Sossaman Road
- Intersection E at Elliot Road ~1,320 feet (1/4-mile) west of Hawes Road
- Intersection F at Elliot Road ~1,285 feet ($\leq$1/4-mile) east of Hawes Road and ~1,285 feet ($\leq$1/4-mile) west of Loop 202 SB Ramps
- Intersection J at Hawes Road ~810 feet ($\leq$1/6-mile) south of Elliot Road
- Intersection U at Hawes Road ~820 feet ($\leq$1/6-mile) north of Warner Road
- Intersection X at Warner Road ~1,320 feet (1/4-mile) west of Hawes Road
- Intersection Y at Warner Road ~660 feet (1/8-mile) east of Hawes Road
- Intersection AA at Elliot Road ~709 feet ($\geq$1/8-mile) east of Loop 202 NB Ramps
- Intersection AB at Elliot Road ~774 feet ($\leq$1/6-mile) west of Ellsworth Road
- Intersection AE at Ellsworth Road ~1,300 feet (1/4-miles) south of Elliot Road



Note: Distances displayed in feet are approximate.

Intersection "Y" should be located at least 800′ east of Hawes Rd. (Currently depicted at 660′)

Figure 24: Proposed Signal Locations

QUEUE LENGTH ANALYSIS

Left Turn Lane Analysis

Adequate turn storage should be supplied on any approach where turn lanes are permitted and/or warranted. A queuing analysis was performed for all warranted/recommended and existing intersection turn lanes where site traffic is expected as well as left turn lanes adjacent to the site. According to the methodology documented in *A Policy on Geometric Design of Highways and Streets* (the AASHTO "Green Book"), the storage length for a turn lane is typically estimated as the length required to hold the average number of arriving vehicles per two minutes, where unsignalized, or per one-and-a half signal cycles, where signalized.[1] The formulas used for the calculations are shown below.

For signalized intersections, the storage length is determined by the following formula:

Storage Length = [1.5 x (veh/hr)/(cycles/hr)] x 25 feet

For unsignalized intersections, the storage length is determined by the following formula:

Storage Length = [(veh/hr)/(30 periods/hr)] x 25 feet

Using the traffic volumes and lane configurations projected for the 2040 horizon year, the resulting turn lane storage for turn movements affiliated with the site using AASHTO and ADOT guidelines were calculated with a 90-second cycle length for most signalized intersections and a 120-second cycle for SR on- and off-ramps are summarized in **Table 7**. Calculations for the queue storage length recommendations are provided in **Appendix H.**

[1] The American Association of Highway and Transportation Officials on pages 714-715 of its publication, *Geometric Design of Highways and Streets* ("AASHTO Green Book"), indicates that storage length for a turn lane, exclusive of taper, "should usually be based on one and one-half to two times the average number of vehicles that would store per cycle" at a signalized intersection.

Table 7: Turn Lane Lengths

ID	Intersection	Intersection Control	Movement	Queue Storage			
				Existing[1]	AASHTO/ADOT[4]	Synchro[2]	Recommended
1	Sossaman Rd. & Guadalupe Rd.	Signal	NB Left	205’	325'	194’[3]	205’[3]
			SB Left	255’	450'	384’[3]	255’[3]
			EB Left	265’	300'	182’	265’[8]
			WB Left	250’	275'	224’	250’[8]
			NB Right	150’	250'	33’	250’
			SB Right	260’	250'	55’	260’[8]
			WB Right	220’	350'	104’	220’
2	Farnsworth Dr./ Bridlewood & Guadalupe Rd.	Signal	NB Left	85’	250'	149’	250’
			SB Left	80’	200'	151’	200’
			EB Left	175’	100'	17’	175’
			WB Left	150’	150'	102’	150’
3	Hawes Road & Guadalupe Road	Signal	NB Left	155’	200 '	133’	155’[8]
			SB Left	250’	175 '	104’	250’
			EB Left	175’	125 '	48’[3]	175’[3]
			WB Left	260’	575 '	576’[3]	260’[3][8]
			NB Right	-	500 ’	259’	350’[7]
			SB Right	250’	425 '	119’	350’[7]
			EB Right	260’	375 '	90’	350’[7]
			WB Right	260’	225 '	42’	260’
4	SR-202 SB Ramps & Guadalupe Road	Signal	SB Left	295’	475’/565’[3][4]	604’[3]	530’[3]
			WB Left	540’[3]	275’/365[3][4]	255’[3]	540’[3]
			SB Right	295’	225’/315[3][4]	80’[3]	295’[3]
			EB Right	270’	350’/440[4]	59’[6]	350’
5	SR-202 NB Ramps & Guadalupe Road	Signal	NB Left	295’	175’/265’[3][4]	168’[3]	295’[3]
			EB Left	545’[3]	450’/565’[3][4]	395’[3]	545’[3]
			NB Right	295’	175’/265’[3][4]	49’[3]	295’[3]
			WB Right	270’	1,350’/1,445’[4]	0’[6]	350’[7]
6	Power Road & Elliot Road	Signal	NB Left	160’	350’	231’	350’
			SB left	160’	350’	247’	350’
			EB Left	100’	500’[3]	223’[3]	350’[3][7]
			WB Left	110’	400’[3]	168’[3]	350’[3]
			NB Right	-	575’	256’	350’[7]
			SB Right	-	550’	212’	350’[7]
			EB Right	-	375’	141’	350’[7]
7	Sossaman Road & Elliot Road	Signal	NB Left	155’	425’	202’[3]	300’
			SB Left	155’	500’[3]	547’[3]	350’[3][7]
			EB Left	155’	325’	270’	325’
			WB Left	155’	225’	213’	200’
			NB Right	-	450’	139’	350’[7]
			SB Right	-	300’	547’	300’
			WB Right	-	725’	607’	350’[7]

(1) Measured from beginning of stop bar.
(2) HCM 95th percentile queue reported, value shown is the total queue for that movement.
(3) Dual left-turn lanes
(4) Calculated using ADOT minimum queue storage calculations
(5) Minimum requirement for a deceleration lane at a site driveway by City of Mesa is 150’.
(6) HCM 95th percentile queue not provided at channelized by-pass right-turn lanes or free flow right-turn lanes.
(7) AASHTO storage is longer than existing and longer than 350’. CivTech recommends 350’ or the Synchro 95th percentile queue, whichever is greater.
(8) Center two-way left-turn lane or large left-turn gap allows for additional storage

Table 7 (Continued): Turn Lane Lengths

ID	Intersection	Intersection Control	Movement	Queue Storage			
				Existing(1)	AASHTO/ADOT(4)	Synchro(2)	Recommended
8	80th Street & Elliot Road	Signal	NB Left	-	100'	80’	150’(5)
			SB Left	-	100'	86’	150’(5)
			EB Left	-	25'	9’	150’(5)
			WB Left	-	175'	159’	150’(5)
9	Hawes Road & Elliot Road	Signal	NB Left	-	450'(3)	274’(3)	275’(3)
			SB Left	-	200'	168’	200’
			EB Left	-	200'	279’	200’
			WB Left	-	450'(3)	463’(3)	350’(3)(7)
			NB Right	-	750’	397’	350’(7)
			SB Right	-	175’	57’	150’(5)
			EB Right	-	375'	80’	150’(5)
10	SR-202 SB Ramps & Elliot Road	Signal	SB Left	300’	400’/490’(3)(4)	395’(3)	350’(3)
			WB Left	535’(3)	425’/540’(3)(4)	413’(3)	535’(3)
			SB Right	300’	1,000’/1,115’(3)(4)	572’(3)(6)	350’(7)
			EB Right	275’	975’/1,065’(3)(4)	201’(3)(6)	350’(7)
11	SR-202 NB Ramps & Elliot Road	Signal	NB Left	355’	575’/665’(3)(4)	635’(3)	355’(3)
			EB Left	535’(3)	875’/965’(3)(4)	766’(3)	535’(3)
			NB Right	350’	950’/1,040’(3)(4)	636’(3)	350’(3)
			WB Right	380’	1,625’/915’(3)(4)	729’(3)(6)	380’(3)
12	Sossaman Road & Warner Road	Signal	NB Left	-	200'(3)	188’(3)	200’(3)
			SB Left	-	200'(3)	152’(3)	300’(3)
			EB Left	-	225'(3)	173’(3)	200’(3)
			WB Left	-	150'(3)	166’(3)	150’(3)
			NB Right	-	275'	96’	275’
			SB Right	-	400'	205’	350’(7)
			EB Right	-	325'	43’	325’
			WB Right	-	400'	110’	350’(7)
13	Hawes Road & Warner Road	Signal	NB Left	-	300'(3)	221’(3)	300’(3)
			SB Left	-	250'	127’(3)	250’
			EB Left	-	250'	123’(3)	250’
			WB Left	-	200'(3)	189’(3)	200’(3)
			NB Right	-	275’	195’	275’(7)
			SB Right	-	425’	172’	350’(7)
			EB Right	-	575’	295’(6)	350’(7)
			WB Right	-	250’	84’	250’
14	Hawes Road & SR-202 WB Ramps	Signal	NB Left	425’	200’/290’(3)(4)	189’(3)	425’(3)
			WB Left	430’	225’/315’(3)(4)	249’(3)	430’(3)
			SB Right	-	1,325’/1,440’(4)	754’	790’
			WB Right	-	300’/390’(4)	62’	440’
15	Hawes Road & SR-202 EB Ramps	Signal	SB Left	430’	325’/415’(3)(4)	302’(3)	350’(3)
			EB Left	330’	575’/665’(3)(4)	607’(3)	600’(3)
			NB Right	245’	425’/515’(4)	60’	515’
			EB Right	330’	125’/215’(4)	55’	330’

(1) Measured from beginning of stop bar.
(2) HCM 95th percentile queue reported, value shown is the total queue for that movement.
(3) Dual left-turn lanes
(4) Calculated using ADOT minimum queue storage calculations
(5) Minimum requirement for a deceleration lane at a site driveway by City of Mesa is 150’.
(6) HCM 95th percentile queue not provided at channelized by-pass right-turn lanes or free flow right-turn lanes.
(7) AASHTO storage is longer than existing and longer than 350’. CivTech recommends 350’ or the Synchro 95th percentile queue, whichever is greater.
(8) Center two-way left-turn lane or large left-turn gap allows for additional storage

Table 7 (Continued): Turn Lane Lengths

ID	Intersection	Intersection Control	Movement	Queue Storage			
				Existing[1]	AASHTO/ADOT[4]	Synchro[2]	Recommended
16	Ellsworth Road & Elliot Road	Signal	NB Left	250’	450'[3]	337’[3]	300’[3]
			SB Left	245’	300'[3]	246’[3]	300’[3]
			EB Left	260’	375'	186’[3]	300’
			WB Left	255’	400'	380’[3]	350’[7]
			NB Right	260’	525'	343’	350’[7]
			SB Right	180’	325'	122’	325’
			EB Right	205’	1025'	362’[6]	350’[7]
			WB Right	275’	525'	278’	350’[7]
17	Ellsworth Road & Warner Road	Signal	NB Left	250’	250'[3]	214’[3]	300’[3]
			SB Left	200’	400'	380’[3]	350’
			EB Left	-	375'	458’[3]	350’
			WB Left	-	125'	112’[3]	150’[5]
			SB Right	-	450'	224’[6]	350’[7]
			EB Right	-	350'	138’	350’[7]
			WB Right	-	325'	150’	350’[7]
B	Hawes Road and Intersection B	1-way stop (EB)	NB Left	-	125’	-	150’[5]
			EB Left	-	175’	-	150’[5]
			SB Right	-	175’	-	150’[5]
			EB Right	-	125’	-	150’[5]
D	Intersection D & Elliot Road	1-way stop (NB)	NB Left	-	225’	-	150’[5]
			WB Left	-	225’	-	150’[5]
			NB Right	-	200’	-	150’[5]
			EB Right	-	250’	-	150’[5]
E	Intersection E/Scenic Roadway & Elliot Road	Signal	NB Left	-	125'	143’	150’[5]
			SB Left	-	275'	232’	155’
			EB Left	-	125'	96’	150’[5]
			WB Left	-	425’	325’	250’
F	Intersection F and Elliot Road	Signal	NB Left	-	100’	165’	150’[5]
			WB Left	-	250’	263’	175’
			NB Right	-	250’	402’[3]	175’
J	Hawes Road & Intersection J	Signal	NB Left	-	150'	173’	150’[5]
			SB Left	-	150'	82’	150’[5]
			EB Left	-	125'	96’	150’[5]
			WB Left	-	75'	52’	150’[5]
K	Intersection K	1-wat stop (EB)	NB Left	-	100’	-	150’[5]
			EB Left	-	150’	-	150’[5]
			EB Right	-	100’	-	150’[5]
N	Hawes Road & Intersection N	2-way Stop (EB & WB)	NB Left	-	150'	-	150’[5]
			SB Left	-	125'	-	150’[5]
			EB Left	-	175'	-	150’[5]
			WB Left	-	125'	-	150’[5]

(1) Measured from beginning of stop bar.
(2) HCM 95th percentile queue reported, value shown is the total queue for that movement.
(3) Dual left-turn lanes
(4) Calculated using ADOT minimum queue storage calculations
(5) Minimum requirement for a deceleration lane at a site driveway by City of Mesa is 150’.
(6) HCM 95th percentile queue not provided at channelized by-pass right-turn lanes or free flow right-turn lanes.
(7) AASHTO storage is longer than existing and longer than 350’. CivTech recommends 350’ or the Synchro 95th percentile queue, whichever is greater.
(8) Center two-way left-turn lane or large left-turn gap allows for additional storage

Table 7 (Continued): Turn Lane Lengths

ID	Intersection	Intersection Control	Movement	Queue Storage			
				Existing[1]	AASHTO/ADOT[4]	Synchro[2]	Recommended
Q	Hawes Road & Intersection Q	1-way Stop (EB)	NB Left	-	125'	-	150'[5]
			EB Left	-	125'	-	150'
			SB Right	-	150'	-	150'
			EB Right	-	125'	-	150'[5]
U	Hawes Road & Intersection U	Signal	NB Left	-	100'	31'	150'[5]
			SB Left	-	75'	24'	150'[5]
			EB Left	-	50'	21'	150'[5]
			WB Left	-	100'	53'	150'[5]
X	Intersection X & Warner Road	Signal	NB Left	-	50'	29'	150'[5]
			SB Left	-	225'	175'	225'
			EB Left	-	125'	14'	150'[5]
			WB Left	-	100'	40'	150'[5]
Y	Warner Road & Intersection Y	Signal	NB Left	-	200'	125'	350'[7]
			SB Left	-	25'	14'	150'[5]
			EB Left	-	100'	43'	150'[5]
			WB Left	-	50'	22'	150'[5]
			EB Right	-	175'	50'	350'[7]
Z	Warner Road & Intersection Z	1-way Stop (SB)	SB Left	-	100'	-	150'[5]
			EB Left	-	125'	-	175'
			SB Right	-	125'	-	175'
AA	Intersection AA & Elliot Road	Signal	NB Left	-	75'	61'	150'[5]
			SB Left	-	75'	117'	150'[5]
			EB Left	-	225'	126'	150'[5]
			WB Left	-	25'	9'	150'[5]
			SB Right	-	375'	361'	350'[7]
AB	Intersection AB & Elliot Road	Signal	NB Left	-	800'	308'	150'[5]
			SB Left	-	25'	28'	150'[5]
			EB Left	-	200'	137'	150'[5]
			WB Left	-	50'	19'	150'[5]
			SB Right	-	725'	32'	200'
AC	Intersection AC	1-way Stop (WB)	SB Left	-	125'	-	150'[5]
			WB Left	-	100'	-	150'[5]
			WB Right	-	100'	-	150'[5]
AD	Intersection AD	All-way Stop	NB Left	-	100'	-	150'[5]
			SB Left	-	100'	-	150'[5]
			EB Left	-	100'	-	150'[5]
			WB Left	-	100'	-	150'[5]
AE	Ellsworth Road & Intersection AE	Signal	NB Left	-	175'	135'	150'[5]
			EB Left	-	450'	317'	150'[5]
			SB Right	-	425'	41'	150'[5]
			EB Right	-	175'	55'	150'[5]

(1) Measured from beginning of stop bar.
(2) HCM 95th percentile queue reported, value shown is the total queue for that movement.
(3) Dual left-turn lanes
(4) Calculated using ADOT minimum queue storage calculations
(5) Minimum requirement for a deceleration lane at a site driveway by City of Mesa is 150'.
(6) HCM 95th percentile queue not provided at channelized by-pass right-turn lanes or free flow right-turn lanes.
(7) AASHTO storage is longer than existing and longer than 350'. CivTech recommends 350' or the Synchro 95th percentile queue, whichever is greater.
(8) Center two-way left-turn lane or large left-turn gap allows for additional storage

Table 7 (Continued): Turn Lane Lengths

ID	Intersection	Intersection Control	Movement	Queue Storage			
				Existing[1]	AASHTO/ADOT[4]	Synchro[2]	Recommended
AF	Intersection AF	1-way Stop (WB)	SB Left	-	100’	-	150’[5]
			WB Left	-	100’	-	150’[5]
			WB Right	-	100’	-	150’[5]
AG	Ellsworth Road & Intersection AG	1-way Stop (EB)	NB Left	-	100’	-	150’[5]
			EB Left	-	100’	-	150’[5]
			SB Right	-	125’	-	150’[5]
			EB Right	-	100’	-	150’[5]
AH	Intersection AH	1-way Stop (NB)	NB Left	-	125’	-	175’
			WB Left	-	100’	-	150’[5]
			NB Right	-	100’	-	150’[5]
AI	Intersection AI	1-way Stop (SB)	SB Left	-	100’	-	150’[5]
			EB Left	-	100’	-	150’[5]
			SB Right	-	100’	-	150’[5]
AJ	Ellsworth Road & Intersection AJ	1-way Stop (EB)	NB Left	-	125’	-	150’
			EB Left	-	100’	-	175’
			SB Right	-	100’	-	150’[5]
			EB Right	-	100’	-	125’[5]
AK	Warner Road & Intersection AK	1-way Stop (SB)	SB Left	-	125’	-	150’[5]
			EB Left	-	125’	-	175’
			SB Right	-	125’	-	150’[5]

(1) Measured from beginning of stop bar.
(2) HCM 95th percentile queue reported, value shown is the total queue for that movement.
(3) Dual left-turn lanes
(4) Calculated using ADOT minimum queue storage calculations
(5) Minimum requirement for a turn-lane at a site driveway by City of Mesa is 150’.
(6) HCM 95th percentile queue not provided at channelized by-pass right-turn lanes or free flow right-turn lanes.
(7) AASHTO storage is longer than existing and longer than 350’. CivTech recommends 350’ or the Synchro 95th percentile queue, whichever is greater.
(8) Center two-way left-turn lane or large left-turn gap allows for additional storage

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations have been documented in this study:

Existing Conditions

- All study intersections are evaluated to operate at a LOS C or better during peak hours.

General

- Per the request of the City, land use density and intensity values were determined by calculating 80% of the potential maximum zoning for the area. **Table 3** shows the calculated 80% densities and intensities used to generate trips for the study area. Detailed density/intensity calculations can be found in **Appendix D.**
- The site is anticipated to generate approximately 125,486 daily trips with 5,784 trips during the AM peak hour and 10,746 trips during the PM peak hour.
- It should be noted that with the proposed regional commercial land used proposed along the Elliot Road corridor near the Loop 202 interchange, pass-by trip reduction would greatly reduce the traffic volumes predicted herein and avoid over building road improvements. Pass-by trip reductions were not applied in this study. Therefore, it is recommended that pass-by trip reductions be considered in future studies for all proposed commercial parcels in and around the Elliot Road corridor.
- Community capture is results from a combination of multiple types of attractions within a large area or community. Trips are generated by productions and attractions within a community. If each individual land use inside of a community is collectively evaluated, the trips generated would be grossly overestimated. This phenomenon, known as community capture, has been well documented within several studies. CivTech prepared one such white paper in 2012 based on data collected and evaluated within the Anthem community located north of Phoenix Arizona. In general, the findings indicated that depending on the mix of uses and the size of the development, trips traveling on roads external to the development area could be reduced by up to 59 percent. Although the concept of community capture could be applied to the Hawes Crossing development, reductions were not taken within this analysis. Therefore, the results of this analysis provide recommendations to satisfy a larger traffic impact than is anticipated in the future. A copy of the community capture white paper produced by CivTech has been included within **Appendix D**.

2040

- The recommended lane configurations and traffic controls based on the 2040 projected traffic volumes are presented in **Figure 19** through **Figure 23**.
- While most signalized intersections are anticipated to operate at overall LOS D or better, some individual movements are anticipated to experience heavy delays during the AM and/or PM peak hours. This is often due to the overall high traffic volumes entering the intersection compared to the intersection's capacity, particularly in turning movements. It is well known that methodology from the NCHRP Report 765 has a tendency to over represent turning movements and underrepresent through volumes when converting AADT to peak hour volumes. Study intersections will likely have

reduced turning movement volumes than projected and may operate with lower delays and better LOS than projected.

- These recommendations are based on the projected 2040 total traffic volumes, which include site traffic volumes using the projected trip generation estimated from assuming 80 percent of the maximum entitlement density could be constructed. The site traffic was considered with background traffic volumes estimated from the Maricopa Association of Governments (MAG) 2040 average annual daily traffic (AADT's). Individualized traffic impact studies are recommended for each proposed parcel or phase during the platting stages.
- The intersection of ***Hawes Road and Warner Road*** is expected to experience heavy delays by study horizon year 2040. As shown in **Figure 20**, this intersection is planned for signalization. The proximity of the Loop 202 interchange to the south is expected to increase the east/west turning volumes on Warner Road, as well as the north/south through volumes along Hawes Road, increasing delays for these movements. It is recommended this intersection be monitored for future signal timing modification upon buildout of the area.
- The intersection of ***Hawes Road and Elliot Road*** is expected to experience heavy delays by study horizon year 2040 during the PM peak hour. Although this intersection is planned for signalization, the proximity of the Loop 202 interchange to the east is expected to increase the east/west turning volumes on Elliot Road, as well as the north/south movements onto Hawes Road, thus increasing delays for all movements. It is recommended this intersection be monitored for future signal timing modification upon buildout of the area.
- The ***Loop 202 and Elliot Traffic Interchange*** is expected to experience heavy delays upon buildout of the area by horizon year 2040 during the PM peak hour. This is due to the anticipated regional growth in area and the proposed commercial parcels east of the Loop 202 along Elliot Road which are expected to attract additional regional trips from the area. As the surrounding area develops it is recommended that the traffic interchange at the Loop 202 and Elliot Road be monitored for future signal timing modification and mitigation.
- The proposed signalized ***Intersection AA*** is expected to experience heavy delays in the PM peak hour due to the expected increase in regional traffic in the study area by horizon year 2040. Traffic volumes in this report reflect the highest potential demand and will reduce with the application of pass-by traffic in future traffic studies. It is recommended that this signal also be monitored for signal timing adjustments to promote progression along the corridor along with the Loop 202 and Elliot Road Traffic Interchange signals due to the proximity of Intersection AA. The exact location of intersection AA has not yet been established.
- Proposed ***Intersection B and Hawes Road*** and ***Intersection D and Elliot Road*** are expected to experience heavy delays in the PM peak hour along the minor approach. This is due to the large increase in regional traffic expected along all arterials by horizon year 2040. As the area develops it is recommended these two intersection locations be monitored for future signalization.

- ***Intersection N*** along Hawes Road has stop controlled east/west movement(s) that are anticipated to operate with heavy turning movement delays during the PM peak hour. As shown in **Figure 21**, while the spacing of this intersection could be acceptable for signalization, due to the location or proximity of other surrounding intersections, this location is not recommended to be signalized. It is recommended that the roadways internal to the site be designed, and driveways to individual parcels placed, to encourage the use of roadways leading to signalized intersections for improved traffic flow characteristics.
- Per the City of Mesa standards, dual left-turn lanes are required at all arterial to arterial intersections, however, many study intersections analyzed within this analysis only warrant single left-turn lanes. Therefore, it is recommended right-of-way be provided for future dual left-turn lanes at all arterial to arterial intersections with the interim conditions providing a single left-turn lane with the dual left-turn striped out for future use when needed. The following is a list of turn lane locations that warrant dual left-turns lane based on projected 2040 intersection delays:
  - Power Road & Elliot Road – eastbound, westbound
  - Sossaman Road & Elliot Road - southbound
  - Sossaman Road & Warner Road – northbound, southbound, eastbound, westbound
  - Hawes Road & Elliot Road – westbound, northbound
  - Hawes Road & Warner Road - northbound, southbound, eastbound, westbound
  - Hawes Road & Loop 202 EB Ramps - northbound
  - Hawes Road & Loop 202 WB Ramps – southbound
  - Ellsworth Road & Elliot Road – northbound, southbound
  - Ellsworth Road & Warner Road – northbound
- It should be noted that the city will not allow single left-turn lanes with opposing dual left-turns. The City recommends that either both opposing left-turn lanes remain single or be striped for dual lanes. Should the left-turn lane remain single, protected-permissive phasing with 3rd or 1st car detection is recommended. If dual turn lanes are constructed, left turn phasing must be protected.
- The following is a list of right-turn lanes that are predicted to improve intersection delays. City of Mesa Mesa Standard Detail M-46 requires right-turn lanes at all arterial to arterial intersections.
  - Hawes Road & Guadalupe Road – northbound
  - Power Road & Elliot Road – northbound, southbound, eastbound
  - Sossaman Road & Elliot Road – northbound, southbound, westbound
  - Hawes Road & Elliot Road – eastbound
  - Sossaman Road & Warner Road – northbound, southbound, eastbound
  - Hawes Road & Warner Road – northbound, southbound, eastbound, westbound
  - Hawes Road & Loop 202 WB Ramps – southbound, westbound
  - Ellsworth Road and Warner Road – southbound, eastbound, westbound
  - Intersection B – southbound and eastbound

- Intersection D – northbound and eastbound
- Intersection F - eastbound
- Intersection K – eastbound
- Intersection Q – eastbound
- Intersection Z – southbound
- Intersection AB – eastbound
- Intersection AE – southbound, eastbound
- Intersection AG – southbound, eastbound
- Intersection AH – northbound
- Intersection AI – southbound
- Intersection AJ – eastbound
- Intersection AK - southbound

♦ Free flow right-turn lanes are recommended for the locations listed below to improve intersection delay. It should be noted that the HCM 2016 does not analyze free flow right-turn lanes or tight diamond traffic interchanges, therefore HCM 2000 methodology was used to analyze all traffic interchanges within the study area. The right-turn lane needs of these intersections should be evaluated with future TIAs of individual phases of the development.

- (Int.4) Guadalupe Road eastbound approaching Loop 202 southbound on ramp.
- (Int.5) Guadalupe Road westbound approaching Loop 202 northbound off-ramp.
- (Int.10) Elliot Road eastbound approaching Loop 202 southbound on-ramp.
- (Int.11) Elliot Road westbound approaching Loop 202 northbound on-ramp.
- (Int.14) Hawes Road southbound approaching and Loop 202 on-ramp.

♦ Signalization is recommended at all arterial-arterial intersections as well as at the arterial-collector intersections listed below. The City's *Engineering and Design Standards* indicate that signalization of intersections less than 1/8-mile from an arterial (centerline to centerline) or between 1/6-mile and 1/3-mile is not acceptable. Intersections E, F and X are approximately 1/4-mile from Hawes Road and require a variance from the design standards to be signalized. Intersection Y, located on Warner Road approximately 1/8-mile east of Hawes Road, was requested by City staff to be shifted to at least 800 feet east of Hawes Road. Intersections AA and AB are planned future intersections from a different development. Intersection AK is located on Warner Road approximately 1/4-mile west of Ellsworth Road and requires a variance from the design standards to be signalized. Recommended signal locations and spacing are depicted in **Figure 24**.

- (Int.8) 80th Street and Elliot Road ~2,660 feet (1/2-mile) east of Sossaman Road
- Intersection E at Elliot Road ~1,320 feet (1/4-mile) west of Hawes Road
- Intersection F at Elliot Road ~1,285 feet (≤1/4-mile) east of Hawes Road and ~1,285 feet (≤1/4-mile) west of Loop 202 SB Ramps
- Intersection J at Hawes Road ~810 feet (≤1/6-mile) south of Elliot Road
- Intersection U at Hawes Road ~820 feet (≤1/6-mile) north of Warner Road
- Intersection X at Warner Road ~1,320 feet (1/4-mile) west of Hawes Road

- Intersection Y at Warner Road ~660 feet (1/8-mile) east of Hawes Road
- Intersection AA at Elliot Road ~709 feet (≥1/8-mile) east of Loop 202 NB Ramps
- Intersection AB at Elliot Road ~774 feet (≤1/6-mile) west of Ellsworth Road
- Intersection AE at Ellsworth Road ~1,300 feet (1/4-miles) south of Elliot Road

LIST OF REFERENCES

A Policy on Geometric Design of Highways and Streets. American Association of State Highway and Transportation Officials, Washington, D.C., 2001.

Highway Capacity Manual. Transportation Research Board, Washington, D.C., 2010.

Manual on Uniform Traffic Control Devices. U.S. Department of Transportation, Federal Highways Administration, Washington, D.C., 2009.

NPTS Urban Travel Patterns Report: December 1999.

Trip Generation 10th Edition. Institute of Transportation Engineers, Washington, D.C, 2017.

Trip Generation Handbook, 3rd *Edition*, Institute of Transportation Engineers, Washington, D.C., 2014.

Gateway Strategic Development Plan Transportation Analysis. City of Mesa, Mesa, 23 January 2009.

City of Mesa 2040 Transportation Plan. City of Mesa, Mesa, Adopted 17 November 2014.

Roadway Design Manual. Maricopa County Department of Transportation, Arizona, Updated February 2017.

2019 Mesa Standard Details and Specifications, City of Mesa, 15 April, 2019.

2019 Engineering and Design Standards Manual, City of Mesa, 15 April, 2019.

TECHNICAL APPENDIX

APPENDIX A

REVIEW COMMENTS AND RESPONSES

3rd Submittal Comments and Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Sabine Ellis, City of Mesa**

Item	Location	Code	Review Comment	Response
1.	Cover Page	1	Submit TIA to ADOT for review. TIA will not be approved without approval letter from ADOT.	A copy of the Hawes Crossing TIA was submitted to Tony Abbo at ADOT on 7/15/2019. The revised version was submitted to ADOT on 11/12/2019.
2.	Page 1	1	2nd bullet point: These numbers will have to be updated based on most recent PAD document.	Numbers have been updated per the requested 80% of the potenial maximum zoning denstiy.
3.	Page 1	1	5th bullet point, 2nd senctence: Do not use max. densities. Use 80% of max instead.	Densities updated to 80% of potential max zoning density.
4.	Page 1	1	5th bullet point, 3rd sentence: Partial sentence, doesn't make sense. Also, project has hard zoning now, not conceptual.	Sentence removed and text updated.
5.	Page 2	1	2nd bullet point: We will not allow single LTs with opposing dual LTs. Either both single or both dual. If single, can go to protected-permissive phasing with 3rd or 1st car detection. If dual, left turn phasing has to be protected. Typical.	Agreed. Text updated to include.
6.	Page 3	1	1st bullet point, Free flow right-turn lanes: These proposed improvements are subject to review and approval by ADOT.	Refere to comment response #1
7.	Page 3	1	Last bullet point, Intersection AA @ Elliot Road: This signal location will have to be approved by ADOT being so close to the interchange.	Refere to comment response #1
8.	Page 16	1	2nd paragraph, Single Family Residential: These densities and gross acreages do not match the most current PAD. Need to be revised based on the proposed hard zoning. Use 80% of max density for the trip generation. Revise report accordingly. Meet with City staff to discuss the densities you are planning on using before revising the report.	Text, tables and volumes updated to reflect 80% of the potential maximum zoning densities for the study area.
9.	Figure 5	1	Land Use Table on figure: Does not match Exhibit F of the PAD. Revise.	Figure 5 updated.
10.	Table 3	1	Update	Table 3 updated.

Reviewed Date: 09/26/2019
CivTech Received Date: 09/30/2019
CivTech Entered Date: 10/02/2019
CivTech Response Date: 10/02/2019

3rd Submittal Comments and Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Sabine Ellis, City of Mesa**

Item	Location	Code	Review Comment	Response
11.	Page 34	1	Right-Turn Lanes: Reference latest standards, both 2019. Also, Mesa Std Details M-46 series requires dedicated right turn lanes at all arterial to arterial intersections as mentioned on page 2 of this report.	Text updated. Statement added to right-turn lane section of the TIA.
12.	Figure 19	1	Elliot Road is required to be built with a raised median, see Map 2.2.13 of the Mesa 2040 Transportation Plan.	Figure 19 Updated.
13.	Figure 19	1	Warner Road to be built with raised median from 80th Street to Ellsworth, see 2040 Transportation Plan.	Figure 19 Updated.
14.	Figure 19	1	Hawes to be built with raised median, see 2040 Transportation Plan.	Figure 19 Updated. Figure 2.2.13 shows raised median from Warner Road to Ray Road.

2nd Submittal Comments and Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Sabine Ellis, City of Mesa**

Item	Location	Code	Review Comment	Response
1.	Cover Page	4	TIA will not be approved without approval letter from ADOT.	
2.	Page iii	1	Add list of Appendices	A list of Appendices is included under the Technical Appendix on page 56.
3.	Page 2	1	Include reference to the figures that shows all these intersections. Also provide an overview map with all proposed signals and their distances.	Text updated to add in distances between proposed signals. Also Figure 24 was added in to illustrate proposed signal distances.
4.	Page 2	1	Please add something to the effect that "Per City of Mesa Standards, dedicated RTLs are required at all arterial to arterial intersections. The following is a list of right-turn lanes that will be needed to improve intersection delay." It should be assumed that we ask for dedicated RTL at all arterial to arterial intersections.	Inserted text as quoted in the comment.
5.	Page 2	1	I'm guessing that a "channelized by-pass right turn-lane" is a dedicated right turn lane?	Agreed.
6.	Page 4		Add a note about when full build-out is anticipated.	Added to end of introduction paragraph on page 3 (top of page 3).
7.	Page 7	1	Striped, not stripped	Text updated.
8.	Page 7	1	Remove advisory speed limit, that is for the speed cushions only. Instead, state that the speed limit is 25 mph.	Text updated.
9.	Figure 2	1	Hawes is 35 between Guadalupe Road and Elliot Road	Figure 2 updated.
10.	Figure 2	1	Add speed limit (Elliot)	Figure 2 updated.
11.	Figure 2	1	Add speed limit (Ellsworth)	Figure 2 updated.
12.	Page 14		Show delay in seconds as well. Typical.	
13.	Page 16	2	Use target density, not maximum density. Traffic numbers using max are very high and not realistic. Update all calcs accordingly. Note: Target density was provided by Doug Ostler in comment responses for the previous review, showing the legend of land uses.	Trip Generation and all site/total volumes have been updated to represent planned Target Density values.

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Sabine Ellis, City of Mesa**

Item	Location	Code	Review Comment	Response
14.	Figure 5	4	Need to consider access for the land-locked parcels.	This site plan only reflects the artieral and major collector netowrk other minor collectors and local collector roads will provide access to the land locked parcels and are not shown within this study/analysis.
15.	Figure 5	4	Intersection F does not comply with spacing requirements. Adjust as much as possible as discussed on 12/20.	Agreed. Plan will be updated during design to meet the recommendation in the report. Please stiputlate during MITA approval.
16.	Figure 5	4	ADOT will need to review and approve signal locations close to the 202 interchange (i.e., F and AA).	-
17.	Figure 5	1	This needs to be coordinated with development to the north. They already have two set driveway locations that may be signalized in the future which AA would be dependent on.	Coordination has occurred and there locations are set to align.
18.	Figure 5	1	Signals AD/AF/AI need to be coordinated with Eastmark as they already have proposed signal locations.	Coordination has occurred and there locations are set to align.
19.	Figure 5	1	Need to consider access for the land-locked parcels.	Coordination has occurred and there locations are set to align.
20.	Figure 5	1	Y is too close to Hawes. Move west to be approx. 880' as discussed on 12/20.	Coordination has occurred and there locations are set to align.
21.	Figure 5	1	AJ needs to be coordinated with potential property to the south.	Agreed.
22.	Figure 5	1	Add legend and make sure nomenclature matches previous page.	Figure 5 udpated.
23.	Page 19	1	Update numbers per comment on pg. 16. Typical.	Text udpated.
24.	Figure 6	1	Clarify trip distribution. 80% of residential traffic on freeways is high, there doesn't seem to be a justification for such a high number.	Do to the rural nature of the area and the planned employment areas to occur enternal to the study area it was assumed the majority of the proposed residential traffic that is not anticipated to interact internal to the site would tarvel to/from the freeway to external employment areas.
25.	Figure 6	1	Show Hawes Rd since it will be built w/the development. Typical.	Text udpated.
26.	Figure 7	1	Show Elliot & Ellsworth and Warner & Ellsworth in this figure so that all arterial/arterial intersection are included here.	Figure 7 updated to inlcude ADT volumes at all arterial/arterial intersections.

Reviewed Date: 01/04/2019
CivTech Received Date: 02/07/2019
CivTech Entered Date: 02/08/2019
CivTech Response Date: 02/12/2019

2nd Submittal Comments and Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Sabine Ellis, City of Mesa**

Item	Location	Code	Review Comment	Response
27.	Figure 7	1	SB in PM doesn't seem to add up looking at traffic coming from the north. Verify.	Figure 7 updated.
28.	Figure 7	1	Show Elliot & Ellsworth and Warner & Ellsworth in this figure so that all arterial/arterial intersection are included here.	ADT volumes included on Elliot & Ellsworth and Warner & Ellsworth.
29.	Figure 7	1	This seems low based on the TMCs on the left. Verify.	Volumes verified.
30.	Figure 7	1	Show volumes on Ellsworth.	Ellsworth ADT volumes inluced on Figure 7.
31.	Figure 9	1	No intersections/connections to Hawes in this area?	Figure 9 updated with Hawes Road cnonection to the south.
32.	Figure 10	1	Needs to be coordinated with development to the north.	Agreed.
33.	Page 34	1	All arterial to arterial intersections should be designed with dual left turns per Mesa Stds. If not warranted due to volumes, they will be striped as a single left turn until duals are needed.	Due to low projected future volumes a large portion of all arterial to aterial intersections do not all warrant dual left-turn lanes however, text will be updated that ROW be provided for future dual turn lanes at all arterial to arterial intersections.
34.	Page 34	1	Current version is 2017	
35.	Figure 19	1	Show 3rd thru lane in white since it will have to be built per 2040 plan, warranted or not.	Cross section that this comment refrerences was removed in the Jan 2019 TIA.
36.	Figure 19	1	Remove 4th thru lane in both directions. There will not be sufficient ROW to accomplish this. Typical.	Figure 19 has been updated.
37.	Figure 20	1	Why 3 EB thru lanes for 566 vph and rest of Warner is 2 lanes?	Figure 20 has been updated with new projected target volumes thus reducing mitgation.
38.	Figure 20	1	Remove 4th thru lane in EB/WB direction.	Figure 20 has been updated with new projected target volumes thus reducing much of the previously recommened mitigation.
39.	Page 40	3	In the analysis, a peak hour facor of 0.9 was used. That is typically acceptable but with as much congestion as we will have here, use 0.92 to see if that helps with delay. Using the target density vs. the max density as noted before might have already helped with this.	With the reduced target density values the 0.9 PHF was sufficent in both AM and PM peak 2040 synchro models.

2nd Submittal Comments and Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Sabine Ellis, City of Mesa**

Item	Location	Code	Review Comment	Response
40.	Page 40	1	Include delay in seconds in table.	Dealy has been added to all LOS tables.
41.	Page 46	1	Per previous comment, remove comment about 4th lane in each direction.	Comment removed.
42.	Page 47	1	Re-evaluate storage lengths with new traffic numbers and updated cycle lengths where applicable. Modifying storage lengths at intersections outside of the project limits, especially when already fully built out, will most likely not be feasible or cost prohibitive	Volumes and Queue storage table has been updated with the Target Density values.
43.	Appendix C	1	Cover Page : What are cycle lengths? Not all cycle lengths add up in analysis, verify. OK to modify if needed to accommodate demand	Appendix C has been updated to included Phaseing sheets which included cycle lengths. A 90-second CL was applied to all study signals with the exception of the Loop 202 TI's which used a 120-CL.
44.	Appendix D	1	Page 1 of 5: This is a confusing breakdown. There is supposed to be a total of 156 AC of single family residential with assumed 5 DU/AC. Which means LC 210 should be a total of 780 DUs (156 x 5). Shown here are only 676 DUs (592 + 84). Please show a better overview that shows the gross AC, target density, amount of DUs and LUC for all uses, but using the target density instead of the max density as noted on page 16.	Appendix D Trip Generaiton has been updated.

Hawes Crossing (Formerly Mesa Inner Loop) **CivTech, Inc.** **Review Comments & Responses**

1st Submittal Comments and Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Sabine Ellis, City of Mesa**

Item	Review Comment	(Code) & Response
1.	Page 1, 3rd Bullet - Include reference to the figures that shows all these intersections. Also provide an overview map with all proposed signals and their distances.	Requested text and figure are now provided.
2.	Page 1, 3rd Bullet - Why 80th St and Elliot? ["Signalization is recommended at…the intersection of 80th Street and Elliot Road"]	Growth in traffic volumes on 80th Street and construction of the project are projected to require signalization to operate acceptably (1/2-mile street). The south leg is also an analyzed driveway of the site.
3.	Page 1, 3rd Bullet - Signal spacing needs to comply with Engineering & Design Standards.	The developer proposes roads at the indicated locations, spacing. The site plan has been modified following a follow-up meeting with a City transportation staff member.
4.	Page 2, 1st Bullet - This needs to be coordinated with ADOT. Please submit TIA to ADOT for review.	(1) The TIA will be provided to ADOT.
5.	Page 2, 2nd Bullet - Hawes Rd is to be a 6-lane arterial within the project limits.	(1) The updated TIA recommends Hawes Road to be a 6-lane road.
6.	Page 2, 3rd Bullet - Why did you not use MAG's projected volumes?	(1) MAG's projected volumes, displayed within the Mesa 2040 Transportation Plan were indeed used. The NCHRP report cited includes strategy/guidelines of how to convert ADT to peak hour turning movement volumes.
7.	Page 3, Last Sentence - When is full build-out?	(1) Full build-out is anticipated in 20-25 years. The year 2040 will be assumed (22 years from 2018).
8.	Page 15, 3rd Paragraph - Use most current (10th edition)	(1) The updated TIA now uses the latest edition (10th) of Trip Generation Manual.
9.	Page 16/Figure 5 - What do colors mean? Provide legend. Also show arterial street names on map.	(1) The legend is now provided.
10.	Page 29, 2nd Paragraph - Hawes Rd to be 6 lanes within full project	(1) The updated TIA recommends Hawes Road to be a 6-lane road.
11.	Page 37, 2nd Paragraph - Spacing to comply with standards	(1) A follow up meeting was held with a city transportation staff member. The site plan has been revised. The developer proposes roads at the now indicated locations, spacing.
12.	Page 39, 1st Sentence - Duplicate. Delete.	(1) Duplicate sentence has been removed.
13.	Appendix F, First Page, Header - 225? [Referencing NCHRP Report]	(1) This should reference NCHRP 765, not 225. This has been revised.

Reviewed Date: 01/18/2018
CivTech Received Date: 12/17/2018
CivTech Entered Date: 12/17/2018
CivTech Response Date: 01/16/2019

1st Submittal Comments and Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Sabine Ellis, City of Mesa**

Item	Review Comment	(Code) & Response
14.	Appendix F, 2nd Page, Notes - Bethany and 303? [reference to model used]	(1) This should state "Mesa Transportation Plan 2040." This was revised and is now on the first page of the set.
15.	Appendix F, 5th Page, Table Header, Left Side - Riggs Road?	(1) This should have stated "Mesa Inner Loop" as does the other pages in Appendix F. This may be revised in a future submittal.

APPENDIX B

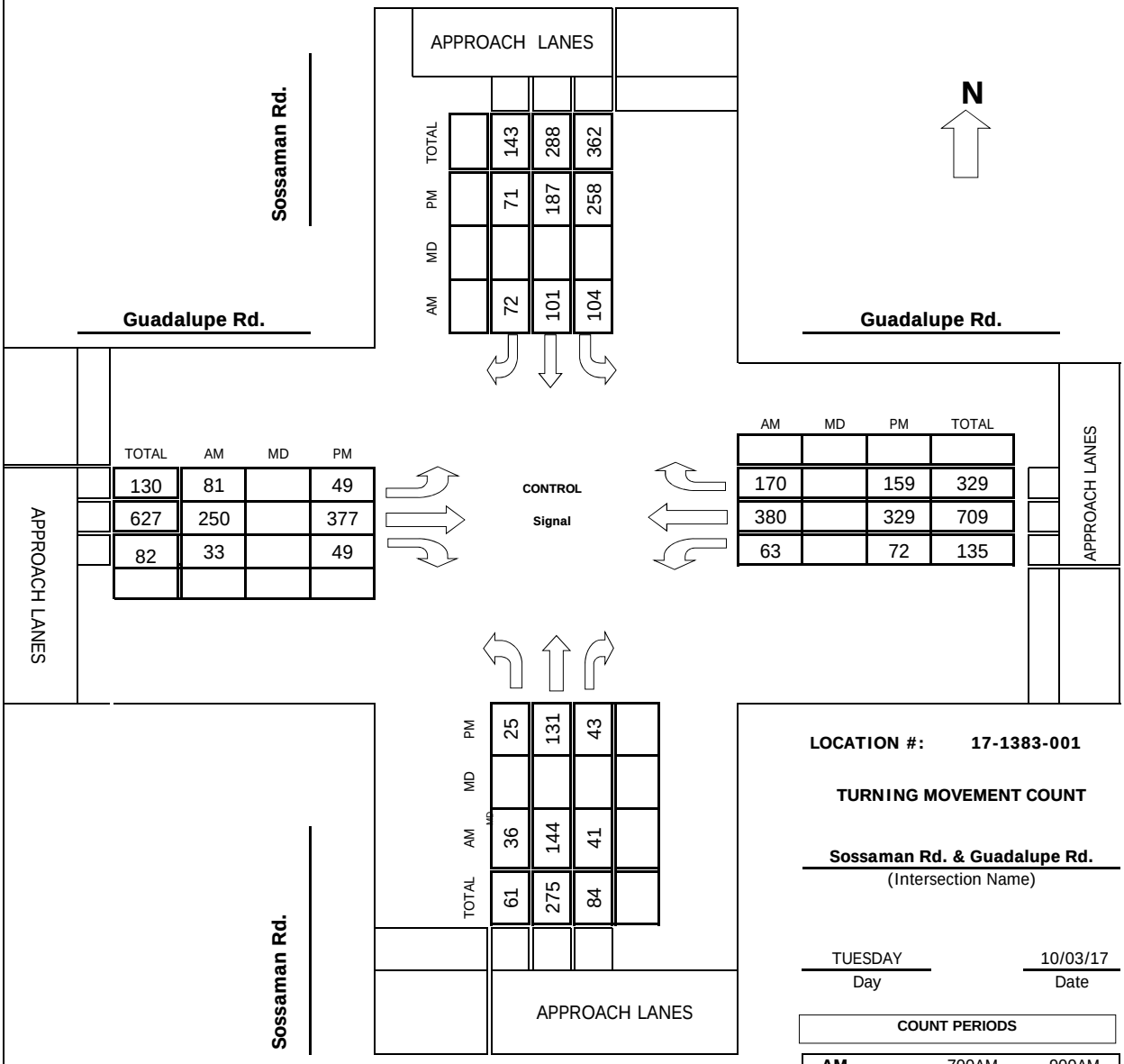
EXISTING TRAFFIC COUNTS

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-001

TMC SUMMARY OF Sossaman Rd. & Guadalupe Rd.



LOCATION #: 17-1383-001

TURNING MOVEMENT COUNT

Sossaman Rd. & Guadalupe Rd.
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 700 AM

NOON PEAK HOUR

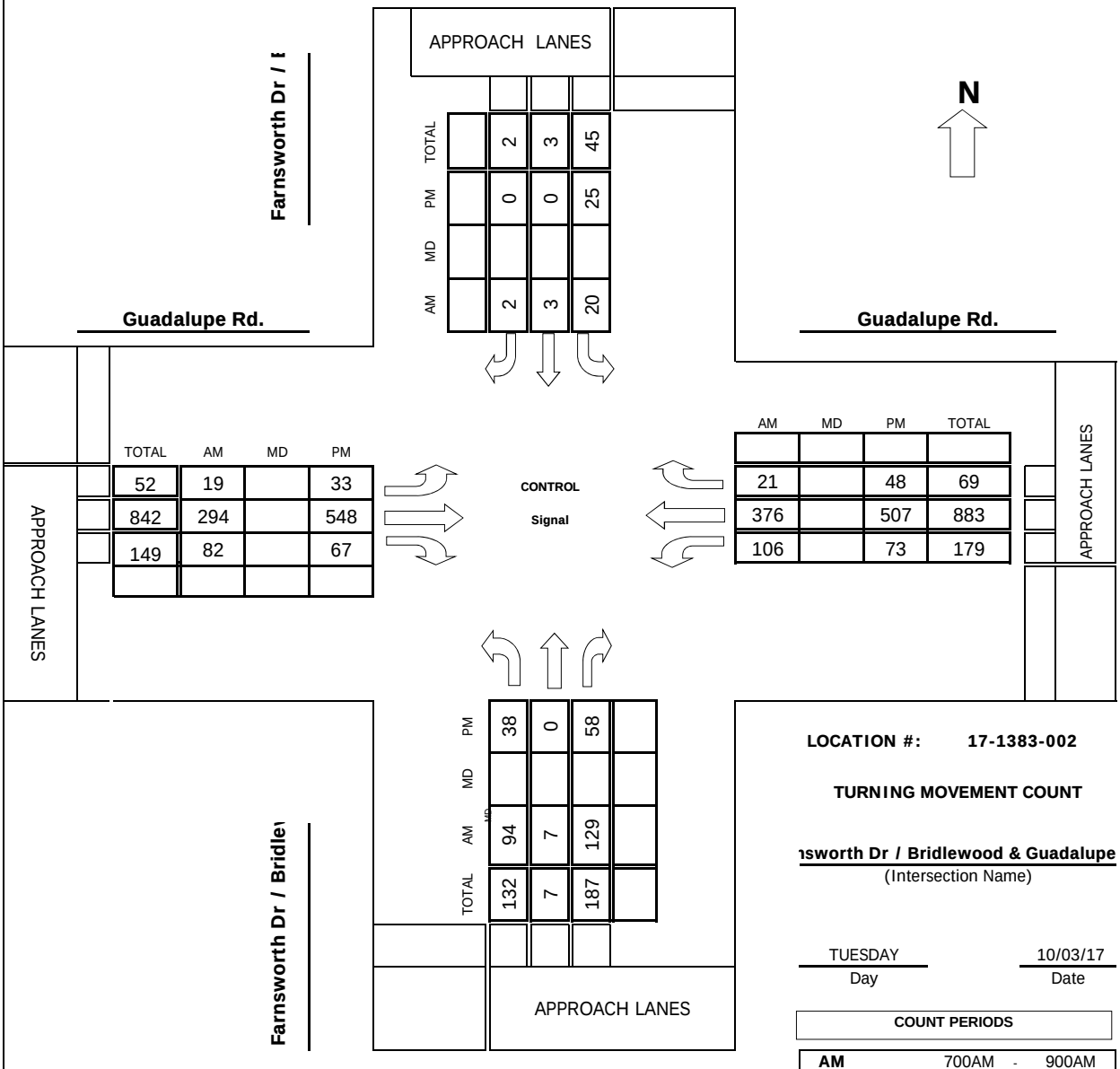
PM PEAK HOUR 400 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-002

TMC SUMMARY OF Farnsworth Dr / Bridlewood & Guadalupe Rd.



LOCATION #: 17-1383-002

TURNING MOVEMENT COUNT

nsworth Dr / Bridlewood & Guadalupe
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 730 AM

NOON PEAK HOUR

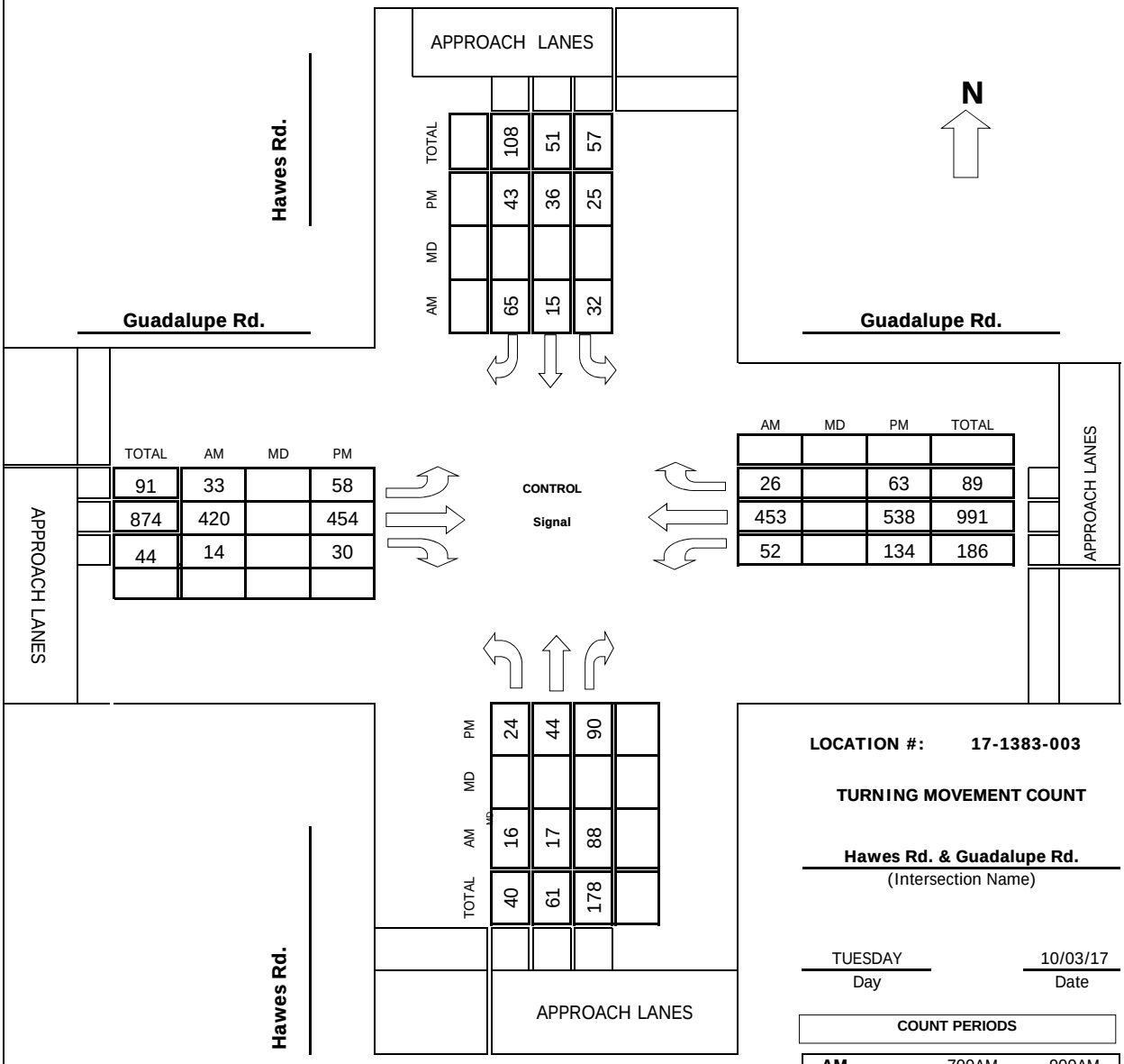
PM PEAK HOUR 400 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-003

TMC SUMMARY OF Hawes Rd. & Guadalupe Rd.



LOCATION #: 17-1383-003

TURNING MOVEMENT COUNT

Hawes Rd. & Guadalupe Rd.
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 700 AM

NOON PEAK HOUR

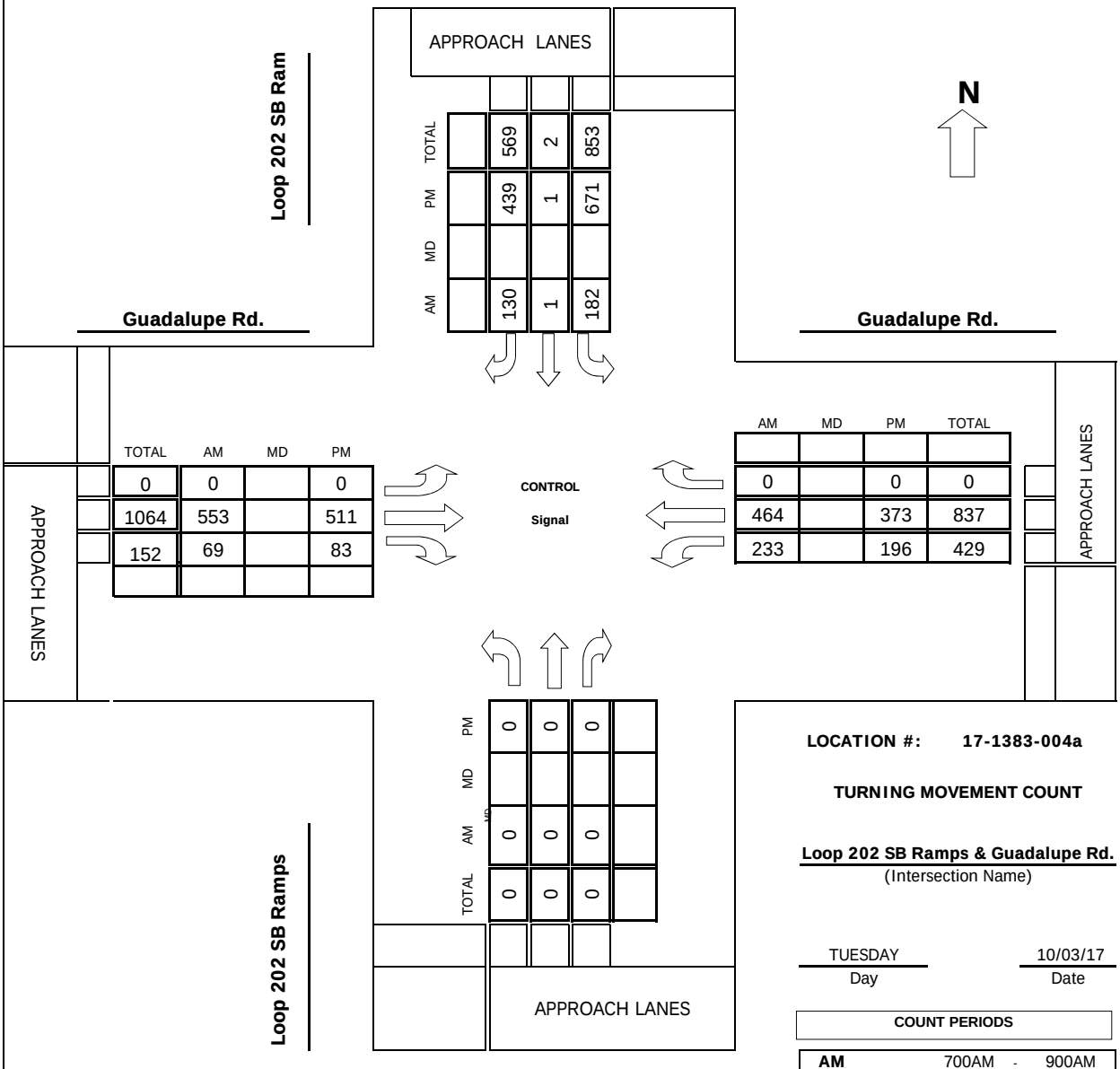
PM PEAK HOUR 500 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-004a

TMC SUMMARY OF Loop 202 SB Ramps & Guadalupe Rd.



LOCATION #: 17-1383-004a

TURNING MOVEMENT COUNT

Loop 202 SB Ramps & Guadalupe Rd.
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 700 AM

NOON PEAK HOUR

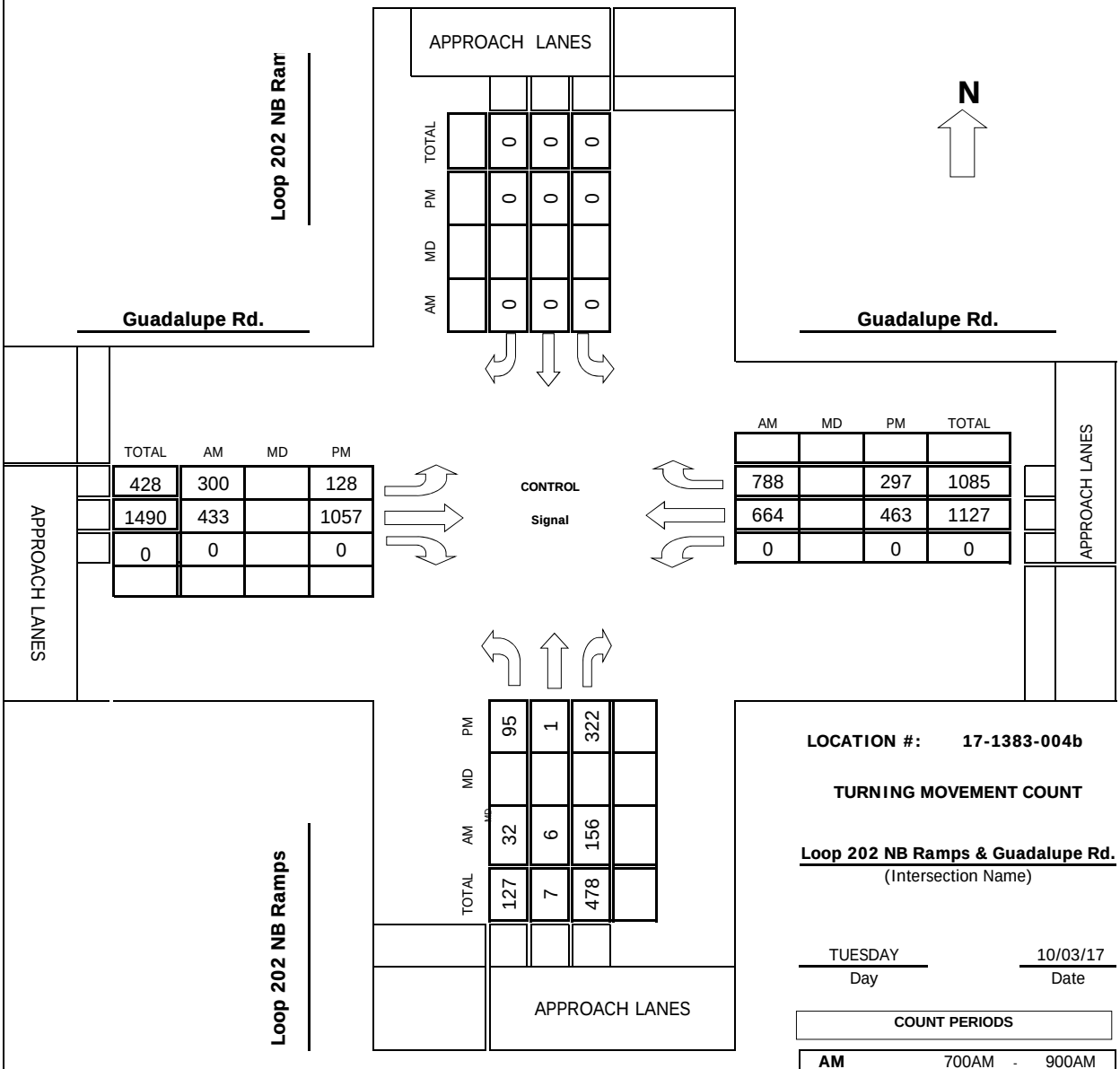
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-004b

TMC SUMMARY OF Loop 202 NB Ramps & Guadalupe Rd.



LOCATION #: 17-1383-004b

TURNING MOVEMENT COUNT

Loop 202 NB Ramps & Guadalupe Rd.
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 700 AM

NOON PEAK HOUR

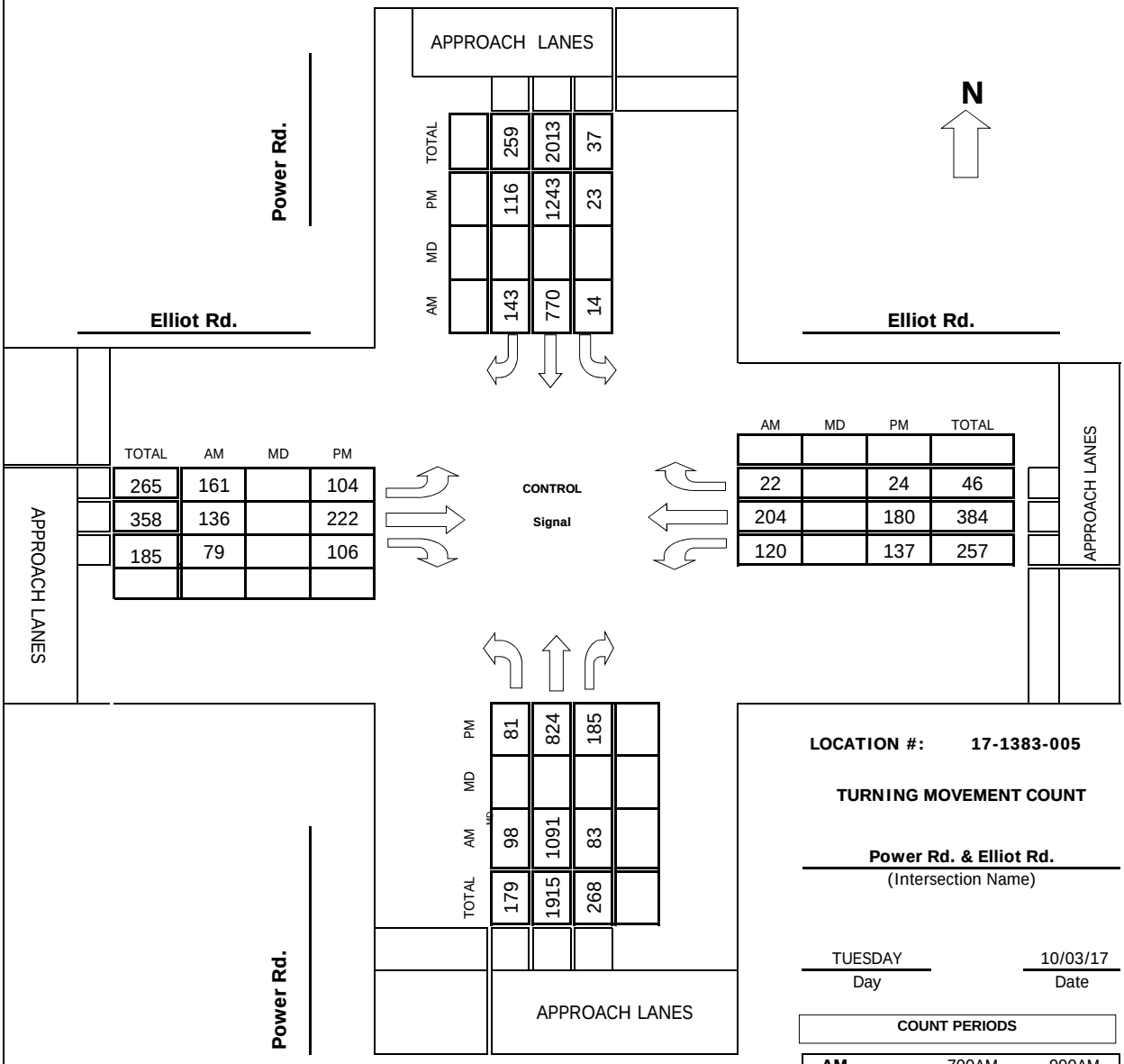
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-005

TMC SUMMARY OF Power Rd. & Elliot Rd.



LOCATION #: 17-1383-005

TURNING MOVEMENT COUNT

Power Rd. & Elliot Rd.
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 700 AM

NOON PEAK HOUR

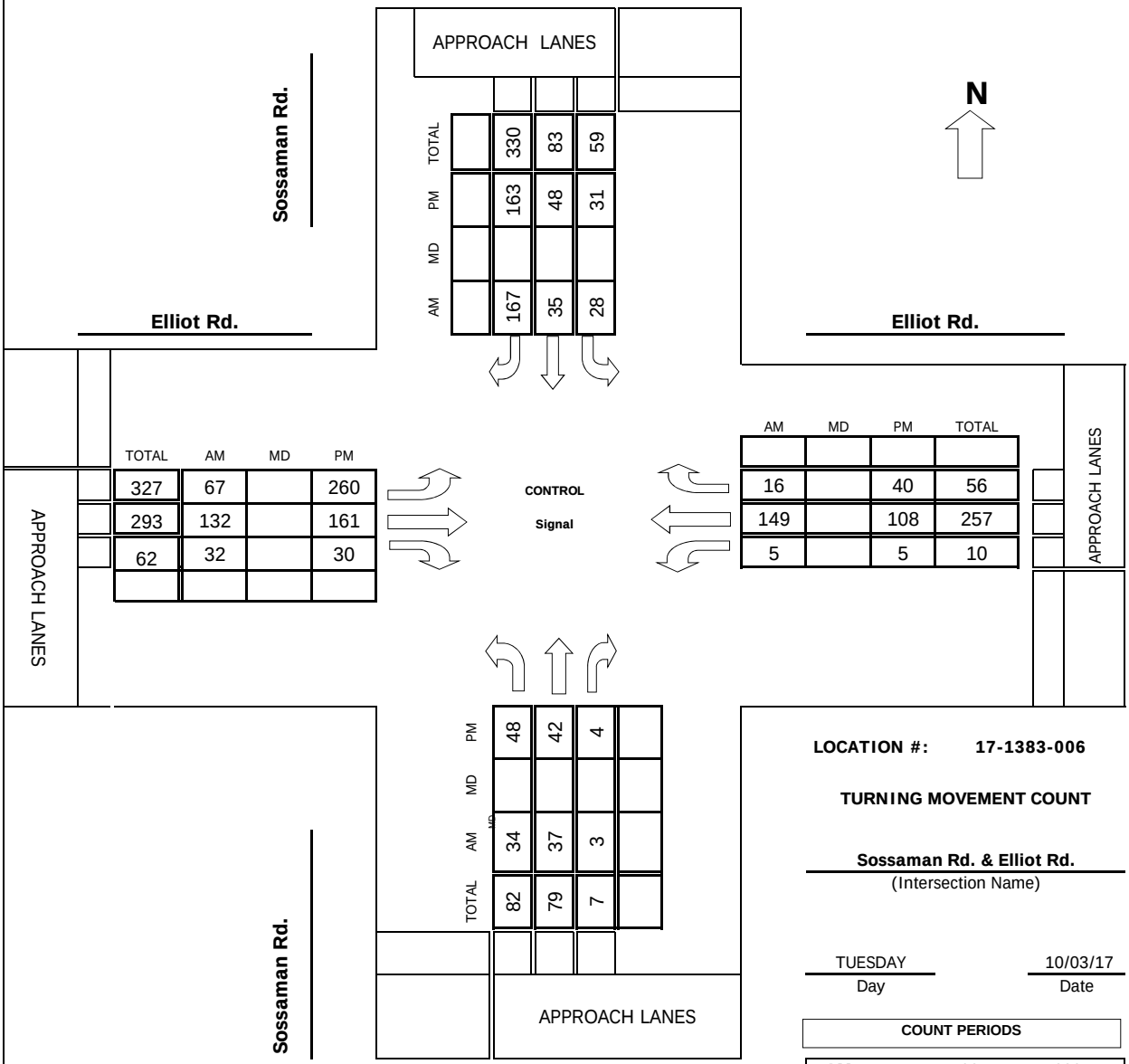
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-006

TMC SUMMARY OF Sossaman Rd. & Elliot Rd.



LOCATION #: 17-1383-006

TURNING MOVEMENT COUNT

Sossaman Rd. & Elliot Rd.
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 715 AM

NOON PEAK HOUR

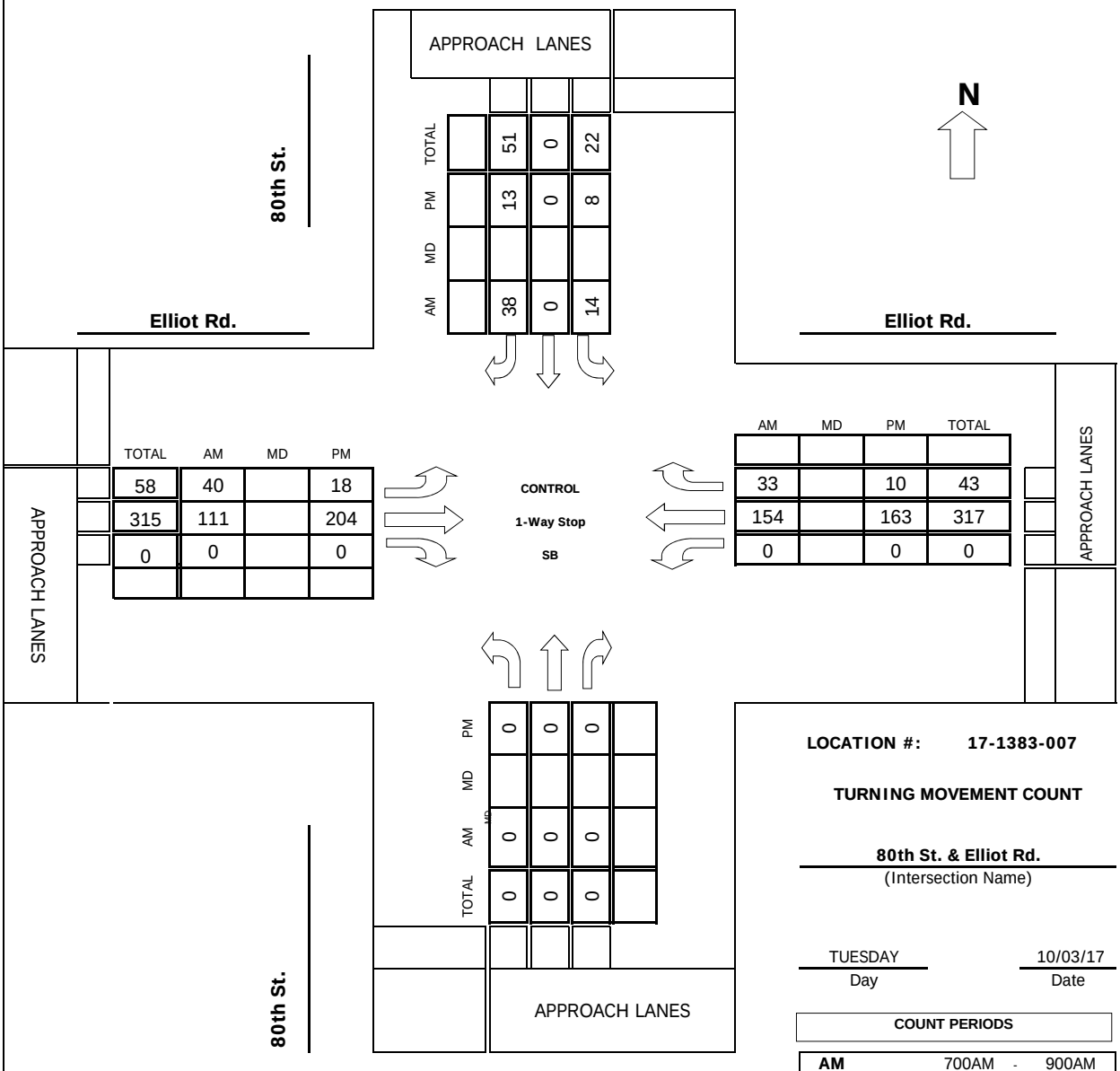
PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-007

TMC SUMMARY OF 80th St. & Elliot Rd.



LOCATION #: 17-1383-007

TURNING MOVEMENT COUNT

80th St. & Elliot Rd.
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 730 AM

NOON PEAK HOUR

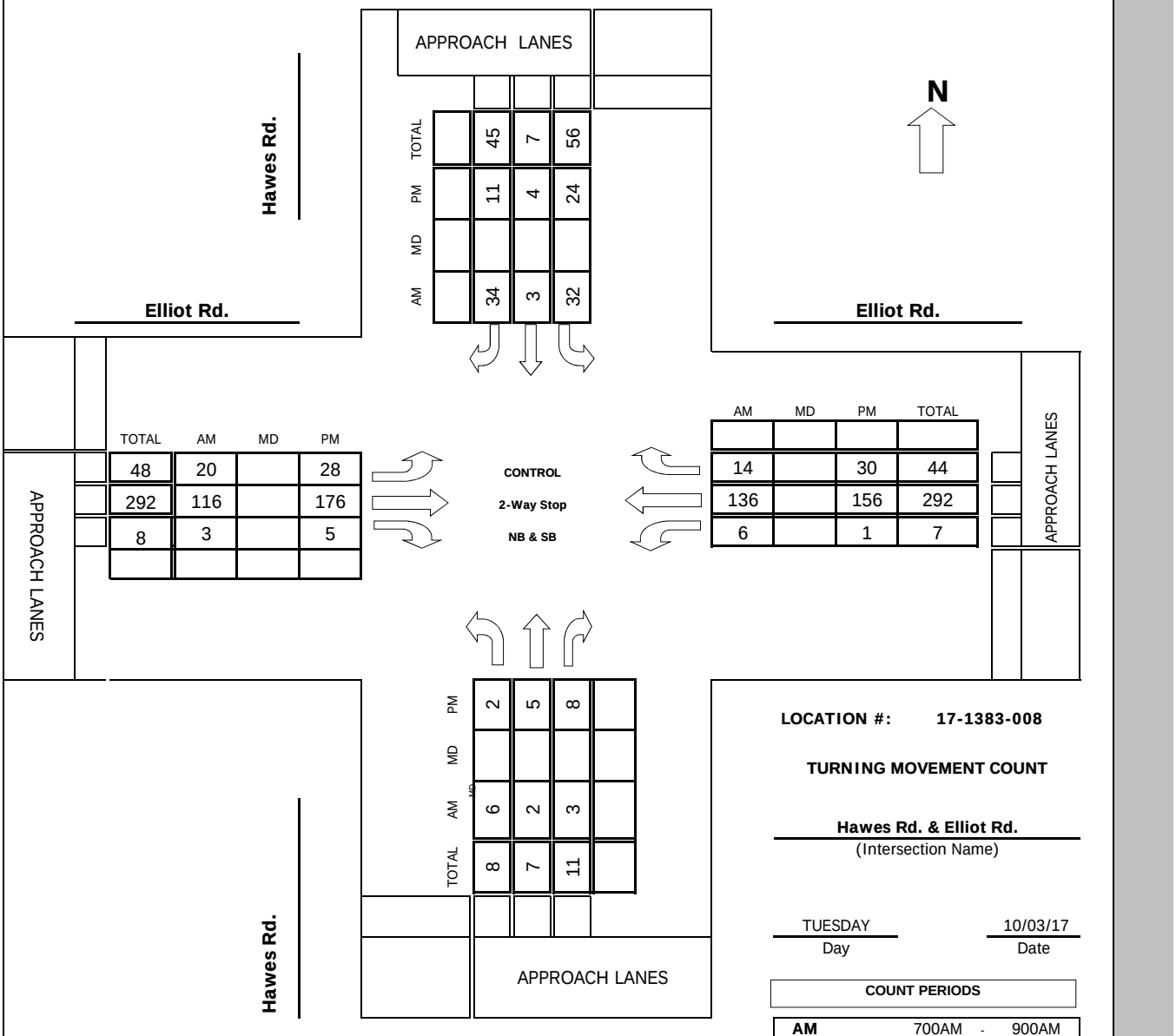
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-008

TMC SUMMARY OF Hawes Rd. & Elliot Rd.



LOCATION #: 17-1383-008

TURNING MOVEMENT COUNT

Hawes Rd. & Elliot Rd.
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 730 AM

NOON PEAK HOUR

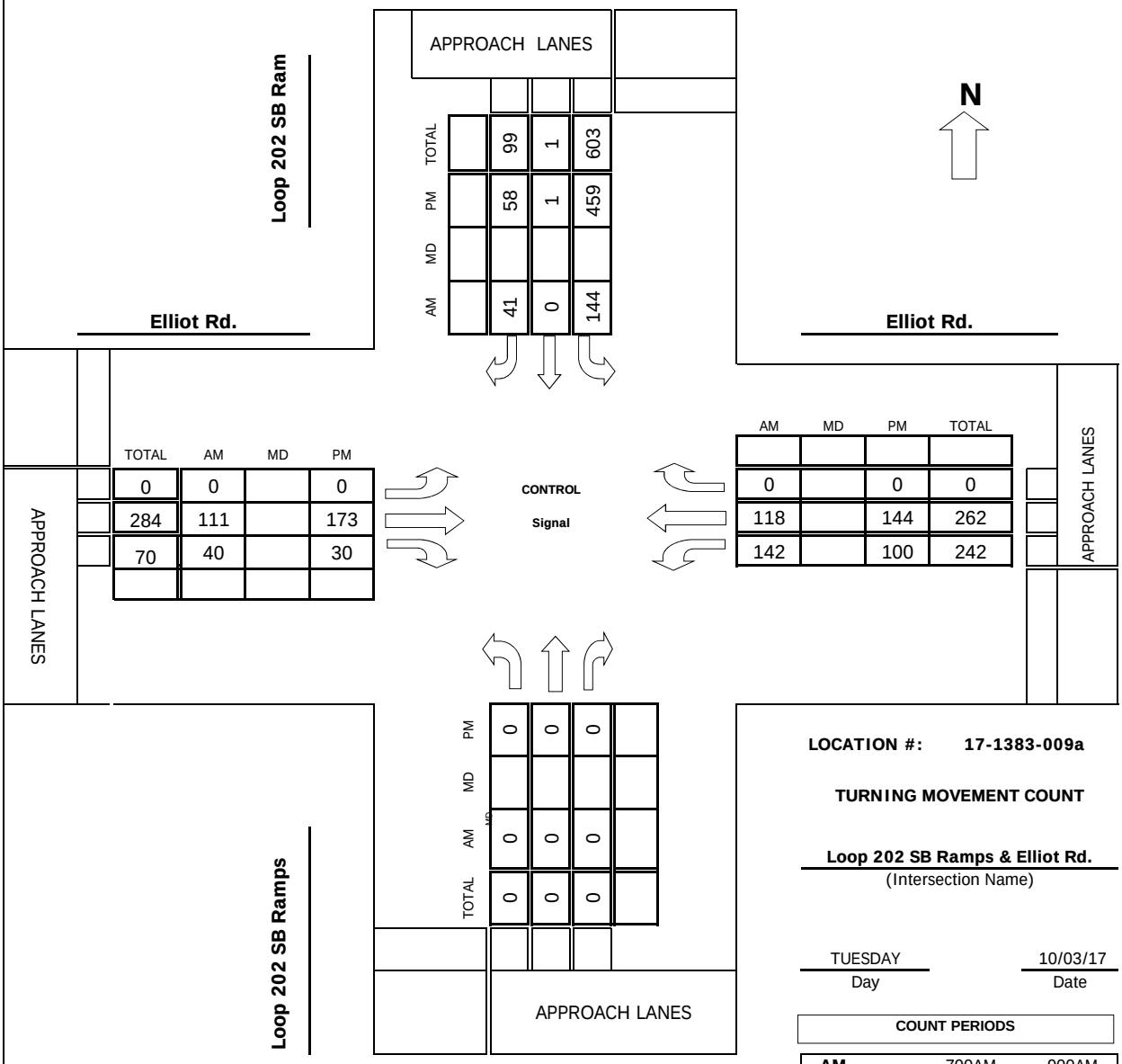
PM PEAK HOUR 500 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-009a

TMC SUMMARY OF Loop 202 SB Ramps & Elliot Rd.



LOCATION #: 17-1383-009a

TURNING MOVEMENT COUNT

Loop 202 SB Ramps & Elliot Rd.
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 715 AM

NOON PEAK HOUR

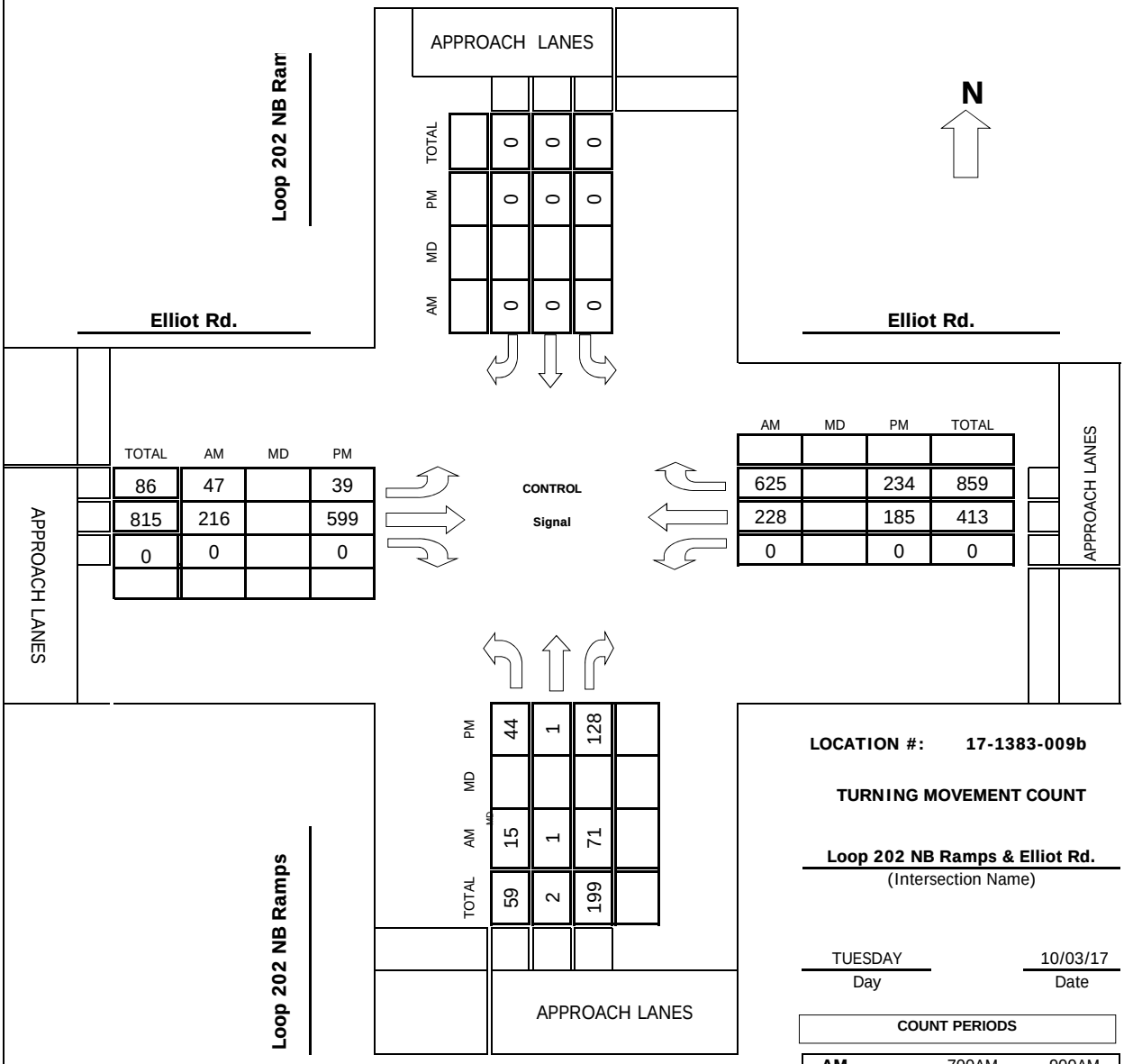
PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-009b

TMC SUMMARY OF Loop 202 NB Ramps & Elliot Rd.



LOCATION #: 17-1383-009b

TURNING MOVEMENT COUNT

Loop 202 NB Ramps & Elliot Rd.
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 700 AM

NOON PEAK HOUR

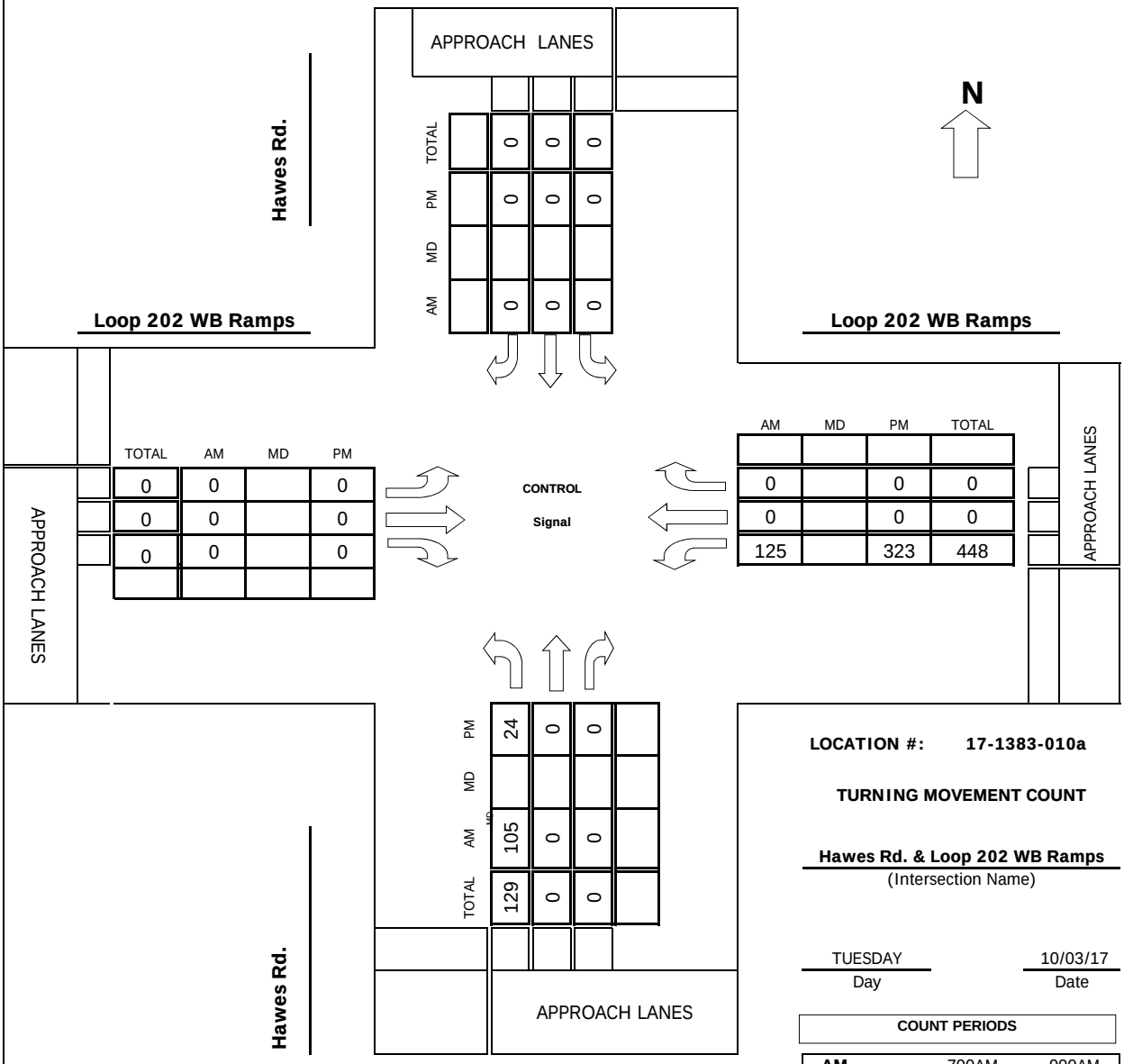
PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-010a

TMC SUMMARY OF Hawes Rd. & Loop 202 WB Ramps



LOCATION #: 17-1383-010a

TURNING MOVEMENT COUNT

Hawes Rd. & Loop 202 WB Ramps
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 700 AM

NOON PEAK HOUR

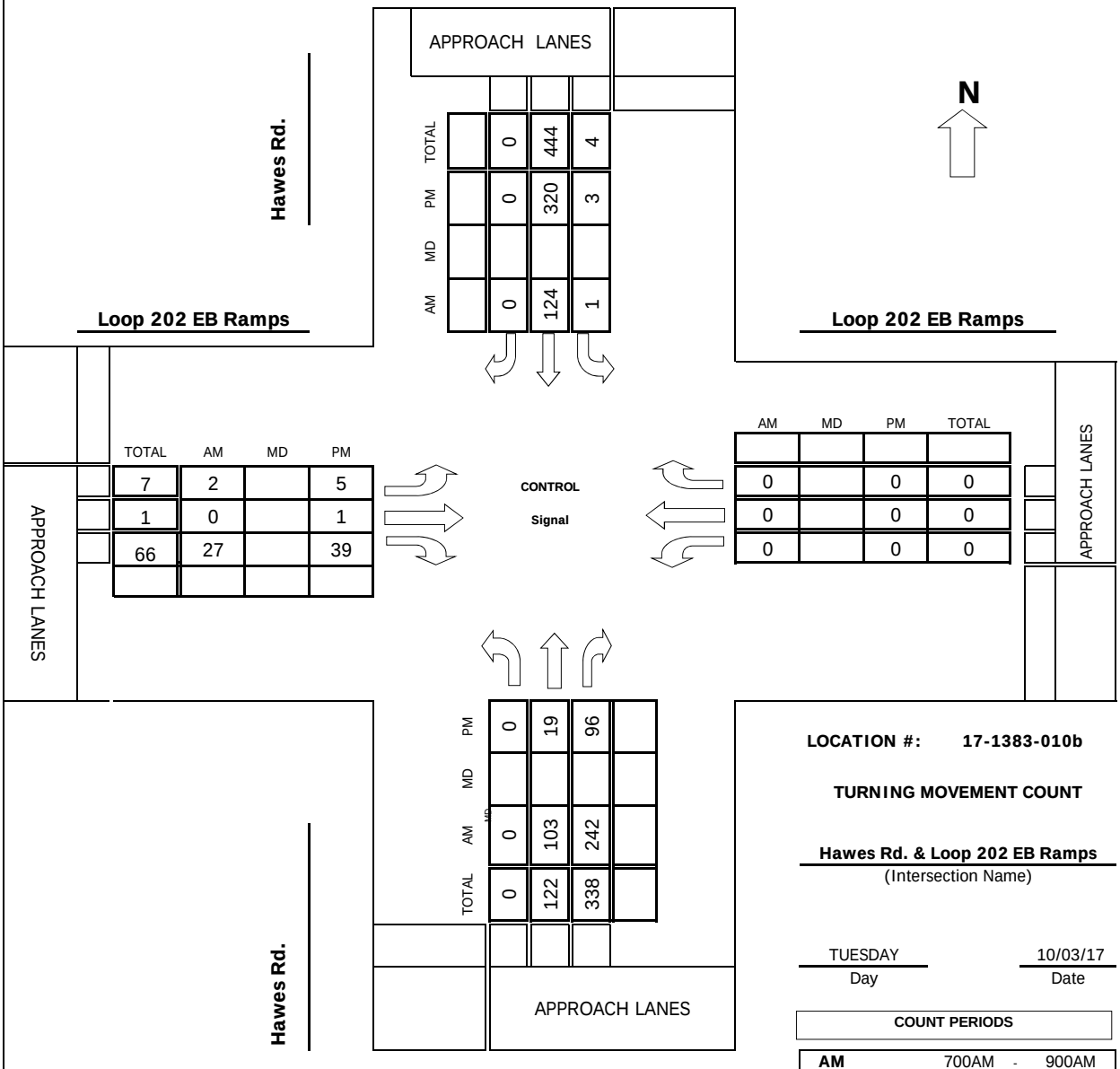
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 17-1383-010b

TMC SUMMARY OF Hawes Rd. & Loop 202 EB Ramps



LOCATION #: 17-1383-010b

TURNING MOVEMENT COUNT

Hawes Rd. & Loop 202 EB Ramps
(Intersection Name)

TUESDAY (Day) 10/03/17 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 700 AM

NOON PEAK HOUR

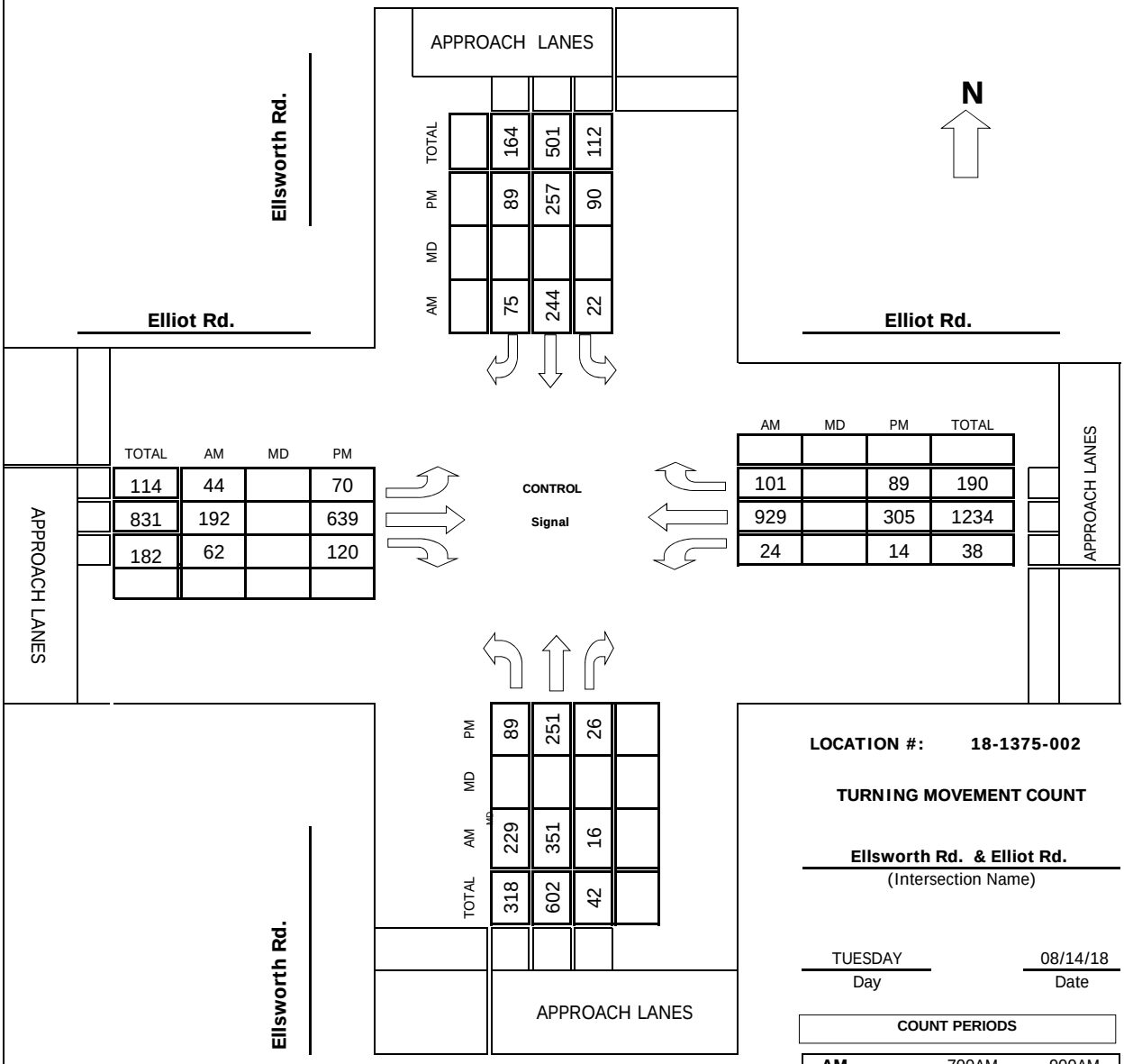
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1375-002

TMC SUMMARY OF Ellsworth Rd. & Elliot Rd.



LOCATION #: 18-1375-002

TURNING MOVEMENT COUNT

Ellsworth Rd. & Elliot Rd.
(Intersection Name)

TUESDAY (Day) 08/14/18 (Date)

COUNT PERIODS			
AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 715 AM

NOON PEAK HOUR

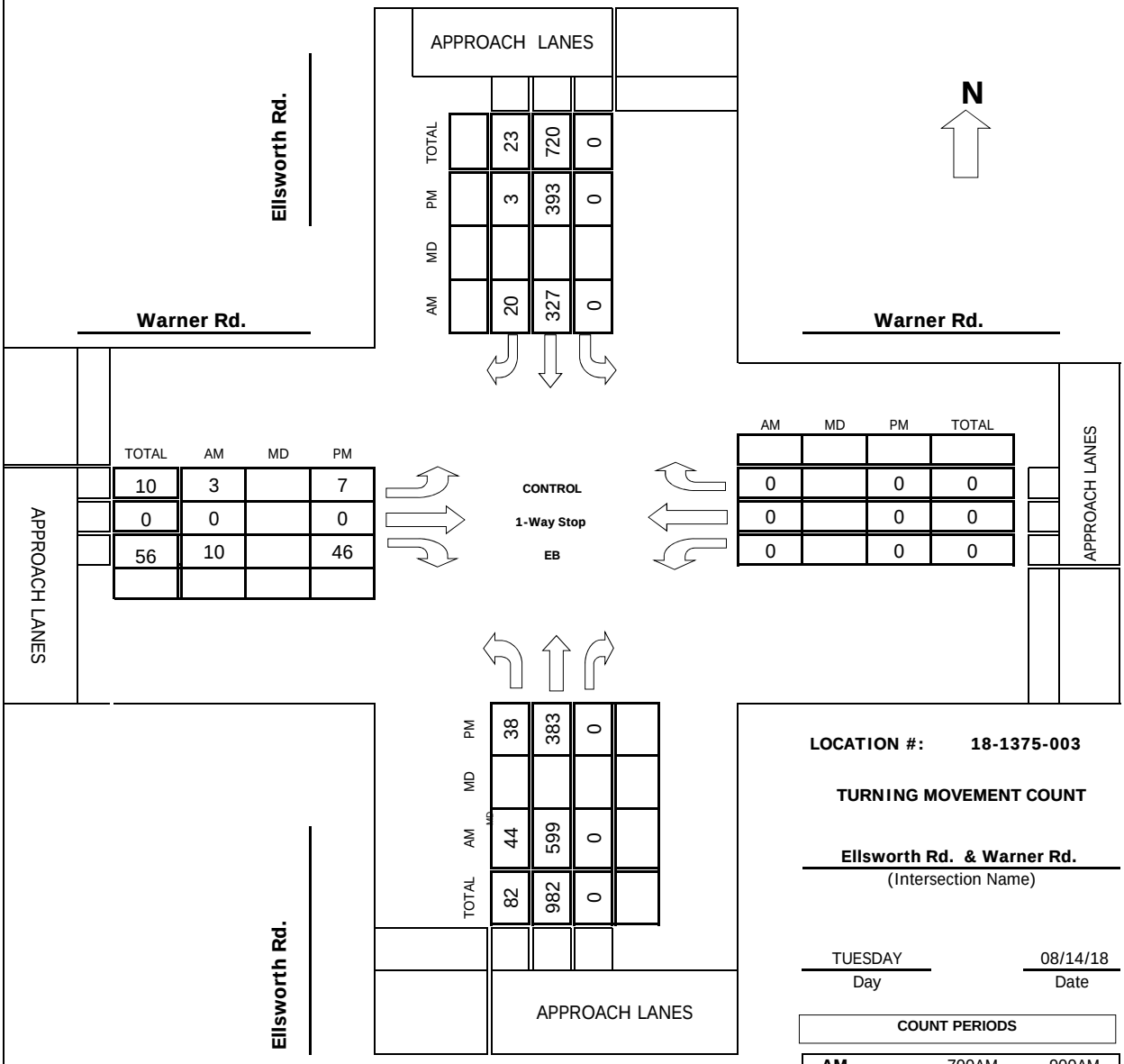
PM PEAK HOUR 500 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1375-003

TMC SUMMARY OF Ellsworth Rd. & Warner Rd.



LOCATION #: 18-1375-003

TURNING MOVEMENT COUNT

Ellsworth Rd. & Warner Rd.
(Intersection Name)

TUESDAY (Day) 08/14/18 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON		-	
PM	400PM	-	600PM

AM PEAK HOUR 715 AM

NOON PEAK HOUR

PM PEAK HOUR 500 PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Sossaman Rd. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: Guadalupe Rd. DAY: TUESDAY PROJECT# 17-1383-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 1	NR 1	SL 1	ST 2	SR 1	EL 1	ET 3	ER 0	WL 1	WT 3	WR 1	TOTAL
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	8	28	8	33	33	15	10	54	5	21	118	37	370
7:15 AM	8	37	17	18	22	17	18	68	5	20	88	42	360
7:30 AM	16	40	10	20	21	26	26	53	11	9	92	43	367
7:45 AM	4	39	6	33	25	14	27	75	12	13	82	48	378
8:00 AM	7	28	9	23	32	12	12	66	6	12	75	48	330
8:15 AM	2	38	9	30	29	19	12	47	4	9	87	51	337
8:30 AM	8	31	5	17	29	6	9	47	1	10	71	42	276
8:45 AM	2	31	4	22	21	8	8	41	2	6	56	45	246
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	55	272	68	196	212	117	122	451	46	100	669	356	2664
Approach %	13.92	68.86	17.22	37.33	40.38	22.29	19.71	72.86	7.43	8.89	59.47	31.64	
App/Depart	395	/	750	525	/	358	619	/	715	1125	/	841	

AM Peak Hr Begins at: 700 AM

PEAK													
Volumes	36	144	41	104	101	72	81	250	33	63	380	170	1475
Approach %	16.29	65.16	18.55	37.55	36.46	25.99	22.25	68.68	9.07	10.28	61.99	27.73	
PEAK HR. FACTOR:		0.837			0.855			0.798			0.871		0.976

CONTROL: Signal
COMMENT 1:
GPS: 33.364898, -111.670712

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Sossaman Rd. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: 0 Guadalupe Rd. DAY: TUESDAY PROJECT# 17-1383-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 1	NR 1	SL 1	ST 2	SR 1	EL 1	ET 3	ER 0	WL 1	WT 3	WR 1	TOTAL
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	35	12	67	44	19	13	103	10	12	89	39	446
4:15 PM	7	33	9	73	38	16	6	85	12	21	69	36	405
4:30 PM	10	31	7	61	54	18	17	108	12	13	98	43	472
4:45 PM	5	32	15	57	51	18	13	81	15	26	73	41	427
5:00 PM	6	28	8	78	61	23	14	63	5	10	73	42	411
5:15 PM	4	26	12	56	65	15	16	77	8	10	86	32	407
5:30 PM	6	26	11	74	55	18	10	73	15	25	97	40	450
5:45 PM	8	34	16	50	45	7	13	81	13	19	90	43	419
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	49	245	90	516	413	134	102	671	90	136	675	316	3437
Approach %	12.76	63.80	23.44	48.54	38.85	12.61	11.82	77.75	10.43	12.07	59.89	28.04	
App/Depart	384	/	663	1063	/	639	863	/	1277	1127	/	858	

PM Peak Hr Begins at: 400 PM

PEAK													
Volumes	25	131	43	258	187	71	49	377	49	72	329	159	1750
Approach %	12.56	65.83	21.61	50.00	36.24	13.76	10.32	79.37	10.32	12.86	58.75	28.39	
PEAK HR. FACTOR:		0.957			0.970			0.867			0.909		0.927

CONTROL: Signal
COMMENT 1: 0
GPS: 33.364898, -111.670712

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Farnsworth Dr / Bridlewood
DATE: 10/03/17
LOCATION: Mesa

E-W STREET: Guadalupe Rd.
DAY: TUESDAY
PROJECT#: 17-1383-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	1	1	3	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	9	0	29	2	1	0	1	112	2	9	140	0	305
7:15 AM	9	1	13	2	1	0	3	53	6	4	73	1	166
7:30 AM	14	0	21	5	0	0	4	77	13	25	100	5	264
7:45 AM	11	2	20	8	2	0	3	86	28	30	110	6	306
8:00 AM	31	3	53	4	1	0	6	64	30	35	92	3	322
8:15 AM	38	2	35	3	0	2	6	67	11	16	74	7	261
8:30 AM	11	0	18	4	1	0	2	53	6	10	95	5	205
8:45 AM	14	1	7	6	0	0	7	66	6	8	79	11	205
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	137	9	196	34	6	2	32	578	102	137	763	38	2034
Approach %	40.06	2.63	57.31	80.95	14.29	4.76	4.49	81.18	14.33	14.61	81.34	4.05	
App/Depart	342	/	79	42	/	245	712	/	808	938	/	902	

AM Peak Hr Begins at: 730 AM

PEAK													
Volumes	94	7	129	20	3	2	19	294	82	106	376	21	1153
Approach %	40.87	3.04	56.09	80.00	12.00	8.00	4.81	74.43	20.76	21.07	74.75	4.17	
PEAK HR. FACTOR:		0.661			0.625			0.844			0.861		0.895

CONTROL: Signal
COMMENT 1:
GPS: 33.364828, -111.660454

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Farnsworth Dr / Bridlewood
DATE: 10/03/17
LOCATION: Mesa

E-W STREET: 0 Guadalupe Rd.
DAY: TUESDAY
PROJECT#: 17-1383-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	1	1	3	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	11	0	24	4	0	0	9	150	23	21	134	12	388
4:15 PM	7	0	8	4	0	0	8	131	19	15	110	9	311
4:30 PM	11	0	16	15	0	0	9	143	14	17	139	13	377
4:45 PM	9	0	10	2	0	0	7	124	11	20	124	14	321
5:00 PM	9	2	8	3	0	0	9	139	18	20	118	4	330
5:15 PM	6	0	5	4	1	0	8	94	17	12	115	3	265
5:30 PM	4	0	20	2	0	0	9	108	19	14	142	9	327
5:45 PM	13	0	13	5	1	0	8	123	15	21	131	11	341
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	70	2	104	39	2	0	67	1012	136	140	1013	75	2660
Approach %	39.77	1.14	59.09	95.12	4.88	0.00	5.51	83.29	11.19	11.40	82.49	6.11	
App/Depart	176	/	144	41	/	278	1215	/	1155	1228	/	1083	

PM Peak Hr Begins at: 400 PM

PEAK													
Volumes	38	0	58	25	0	0	33	548	67	73	507	48	1397
Approach %	39.58	0.00	60.42	100.00	0.00	0.00	5.09	84.57	10.34	11.62	80.73	7.64	
PEAK HR. FACTOR:		0.686			0.417			0.890			0.929		0.900

CONTROL: Signal
COMMENT 1: 0
GPS: 33.364828, -111.660454

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Hawes Rd. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: Guadalupe Rd. DAY: TUESDAY PROJECT# 17-1383-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	1	1	1	1	1	3	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	5	6	25	9	4	15	6	141	3	3	121	5	343
7:15 AM	1	0	24	8	1	18	5	95	4	20	117	6	299
7:30 AM	4	4	18	10	5	18	12	92	0	15	103	5	286
7:45 AM	6	7	21	5	5	14	10	92	7	14	112	10	303
8:00 AM	5	4	20	11	4	21	17	95	1	13	102	3	296
8:15 AM	1	1	13	5	3	11	6	89	4	14	76	4	227
8:30 AM	4	3	11	6	0	9	6	64	1	18	99	8	229
8:45 AM	10	4	18	3	2	8	6	65	4	7	74	4	205
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	36	29	150	57	24	114	68	733	24	104	804	45	2188
Approach %	16.74	13.49	69.77	29.23	12.31	58.46	8.24	88.85	2.91	10.91	84.37	4.72	
App/Depart	215	/	142	195	/	152	825	/	940	953	/	954	

AM Peak Hr Begins at: 700 AM

PEAK													
Volumes	16	17	88	32	15	65	33	420	14	52	453	26	1231
Approach %	13.22	14.05	72.73	28.57	13.39	58.04	7.07	89.94	3.00	9.79	85.31	4.90	
PEAK HR. FACTOR:		0.840			0.848			0.778			0.928		0.897

CONTROL: Signal
COMMENT 1:
GPS: 33.364803, -111.653358

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Hawes Rd. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: 0 Guadalupe Rd. DAY: TUESDAY PROJECT# 17-1383-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	1	1	1	1	1	3	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	8	6	23	10	11	9	12	141	11	23	141	12	407
4:15 PM	9	11	31	3	9	6	8	115	8	31	104	14	349
4:30 PM	2	10	28	6	10	7	7	121	16	35	147	13	402
4:45 PM	10	12	24	3	9	11	20	102	6	32	122	10	361
5:00 PM	4	15	24	4	14	7	14	121	13	42	123	17	398
5:15 PM	5	11	19	1	6	10	12	96	1	26	123	17	327
5:30 PM	6	12	30	6	11	12	12	114	7	35	145	17	407
5:45 PM	9	6	17	14	5	14	20	123	9	31	147	12	407
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	53	83	196	47	75	76	105	933	71	255	1052	112	3058
Approach %	15.96	25.00	59.04	23.74	37.88	38.38	9.47	84.13	6.40	17.97	74.14	7.89	
App/Depart	332	/	300	198	/	401	1109	/	1176	1419	/	1181	

PM Peak Hr Begins at: 500 PM

PEAK													
Volumes	24	44	90	25	36	43	58	454	30	134	538	63	1539
Approach %	15.19	27.85	56.96	24.04	34.62	41.35	10.70	83.76	5.54	18.23	73.20	8.57	
PEAK HR. FACTOR:		0.823			0.788			0.891			0.933		0.945

CONTROL: Signal
COMMENT 1: 0
GPS: 33.364803, -111.653358

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Loop 202 SB Ramps
DATE: 10/03/17
LOCATION: Mesa
E-W STREET: Guadalupe Rd.
DAY: TUESDAY
PROJECT#: 17-1383-004a

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	0	5	1	2	3	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	0	45	0	39	0	155	21	54	118	0	432
7:15 AM	0	0	0	42	1	33	0	151	19	50	130	0	426
7:30 AM	0	0	0	41	0	30	0	131	16	66	123	0	407
7:45 AM	0	0	0	54	0	28	0	116	13	63	93	0	367
8:00 AM	0	0	0	64	1	38	0	110	21	64	107	0	405
8:15 AM	0	0	0	53	0	32	0	95	19	78	75	0	352
8:30 AM	0	0	0	49	0	19	0	84	17	65	90	0	324
8:45 AM	0	0	0	46	0	32	0	72	25	65	64	0	304
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	394	2	251	0	914	151	505	800	0	3017
Approach %	####	####	####	60.90	0.31	38.79	0.00	85.82	14.18	38.70	61.30	0.00	
App/Depart	0	/	0	647	/	658	1065	/	1308	1305	/	1051	

AM Peak Hr Begins at: 700 AM

PEAK													
Volumes	0	0	0	182	1	130	0	553	69	233	464	0	1632
Approach %	####	####	####	58.15	0.32	41.53	0.00	88.91	11.09	33.43	66.57	0.00	
PEAK HR. FACTOR:		0.000			0.932			0.884			0.922		0.944

CONTROL: Signal
COMMENT 1:
GPS: 33.364720, -111.644768

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Loop 202 SB Ramps
DATE: 10/03/17
LOCATION: Mesa
0
E-W STREET: Guadalupe Rd.
DAY: TUESDAY
PROJECT#: 17-1383-004a

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	0	5	1	2	3	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	0	0	145	0	88	0	111	19	57	79	0	499
4:15 PM	0	0	0	127	0	92	0	202	12	58	77	0	568
4:30 PM	0	0	0	173	0	96	0	125	26	45	85	0	550
4:45 PM	0	0	0	156	1	112	0	141	27	50	73	0	560
5:00 PM	0	0	0	169	0	103	0	150	22	39	105	0	588
5:15 PM	0	0	0	177	0	106	0	105	21	49	99	0	557
5:30 PM	0	0	0	169	0	118	0	115	13	58	96	0	569
5:45 PM	0	0	0	163	0	106	0	126	17	63	71	0	546
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	1279	1	821	0	1075	157	419	685	0	4437
Approach %	####	####	####	60.88	0.05	39.08	0.00	87.26	12.74	37.95	62.05	0.00	
App/Depart	0	/	0	2101	/	577	1232	/	2354	1104	/	1506	

PM Peak Hr Begins at: 445 PM

PEAK													
Volumes	0	0	0	671	1	439	0	511	83	196	373	0	2274
Approach %	####	####	####	60.40	0.09	39.51	0.00	86.03	13.97	34.45	65.55	0.00	
PEAK HR. FACTOR:		0.000			0.968			0.863			0.924		0.967

CONTROL: Signal
COMMENT 1: 0
GPS: 33.364720, -111.644768

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Loop 202 NB Ramps
E-W STREET: Guadalupe Rd.
DATE: 10/03/17
DAY: TUESDAY
LOCATION: Mesa
PROJECT#: 17-1383-004b

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.3	0.3	1.3	0	0	0	2	3	0	0	5	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	5	2	47	0	0	0	76	127	0	0	171	216	644
7:15 AM	9	2	35	0	0	0	66	129	0	0	170	201	612
7:30 AM	11	2	38	0	0	0	81	89	0	0	177	183	581
7:45 AM	7	0	36	0	0	0	77	88	0	0	146	188	542
8:00 AM	19	0	37	0	0	0	63	110	0	0	150	149	528
8:15 AM	7	2	34	0	0	0	53	94	0	0	145	169	504
8:30 AM	12	0	26	0	0	0	54	78	0	0	139	146	455
8:45 AM	10	1	26	0	0	0	43	75	0	0	120	113	388
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	80	9	279	0	0	0	513	790	0	0	1218	1365	4254
Approach %	21.74	2.45	75.82	####	####	####	39.37	60.63	0.00	0.00	47.15	52.85	
App/Depart	368	/	1887	0	/	0	1303	/	1069	2583	/	1298	

AM Peak Hr Begins at: 700 AM

PEAK													
Volumes	32	6	156	0	0	0	300	433	0	0	664	788	2379
Approach %	16.49	3.09	80.41	####	####	####	40.93	59.07	0.00	0.00	45.73	54.27	

PEAK HR. FACTOR:	0.898	0.000	0.903	0.938	0.924

CONTROL: Signal
COMMENT 1:
GPS: 33.364720, -111.644768

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Loop 202 NB Ramps
0
E-W STREET: Guadalupe Rd.
DATE: 10/03/17
DAY: TUESDAY
LOCATION: Mesa
PROJECT#: 17-1383-004b

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.3	0.3	1.3	0	0	0	2	3	0	0	5	1	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	18	0	68	0	0	0	31	220	0	0	119	68	524
4:15 PM	24	0	73	0	0	0	40	283	0	0	109	53	582
4:30 PM	19	0	72	0	0	0	42	253	0	0	109	71	566
4:45 PM	14	0	71	0	0	0	33	265	0	0	105	81	569
5:00 PM	26	0	69	0	0	0	30	291	0	0	114	81	611
5:15 PM	23	1	92	0	0	0	27	256	0	0	123	64	586
5:30 PM	32	0	90	0	0	0	38	245	0	0	121	71	597
5:45 PM	39	1	75	0	0	0	40	247	0	0	97	51	550
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	195	2	610	0	0	0	281	2060	0	0	897	540	4585
Approach %	24.16	0.25	75.59	####	####	####	12.00	88.00	0.00	0.00	62.42	37.58	
App/Depart	807	/	823	0	/	0	2341	/	2670	1437	/	1092	

PM Peak Hr Begins at: 445 PM

PEAK													
Volumes	95	1	322	0	0	0	128	1057	0	0	463	297	2363
Approach %	22.73	0.24	77.03	####	####	####	10.80	89.20	0.00	0.00	60.92	39.08	

PEAK HR. FACTOR:	0.857	0.000	0.923	0.974	0.967

CONTROL: Signal
COMMENT 1: 0
GPS: 33.364720, -111.644768

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Power Rd. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: Elliot Rd. DAY: TUESDAY PROJECT# 17-1383-005

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	29	280	20	6	179	35	37	30	10	24	42	6	698
7:15 AM	17	247	19	4	201	38	60	33	18	29	47	5	718
7:30 AM	30	296	22	2	202	35	32	38	22	32	71	6	788
7:45 AM	22	268	22	2	188	35	32	35	29	35	44	5	717
8:00 AM	32	238	12	2	156	31	19	33	16	29	47	4	619
8:15 AM	30	176	14	3	162	29	30	29	34	32	52	2	593
8:30 AM	13	197	16	2	178	16	33	28	23	24	32	9	571
8:45 AM	13	156	12	1	172	10	25	16	16	14	31	3	469
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	186	1858	137	22	1438	229	268	242	168	219	366	40	5173
Approach %	8.53	85.19	6.28	1.30	85.14	13.56	39.53	35.69	24.78	35.04	58.56	6.40	
App/Depart	2181	/	2166	1689	/	1825	678	/	401	625	/	781	

AM Peak Hr Begins at: 700 AM

PEAK													
Volumes	98	1091	83	14	770	143	161	136	79	120	204	22	2921
Approach %	7.70	85.77	6.53	1.51	83.06	15.43	42.82	36.17	21.01	34.68	58.96	6.36	
PEAK HR. FACTOR:		0.914			0.954			0.847			0.794		0.927

CONTROL: Signal
COMMENT 1:
GPS: 33.350564, -111.687434

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Power Rd. DATE: 10/03/17 LOCATION: Mesa

0

E-W STREET: Elliot Rd. DAY: TUESDAY PROJECT# 17-1383-005

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	25	221	31	7	297	35	29	44	19	27	45	3	783
4:15 PM	25	216	39	1	248	28	27	54	35	24	32	6	735
4:30 PM	21	203	49	2	302	27	31	49	30	24	42	6	786
4:45 PM	17	205	61	4	283	24	29	52	34	37	54	6	806
5:00 PM	19	218	22	9	350	25	24	55	25	34	38	3	822
5:15 PM	26	187	40	7	299	33	29	56	22	35	46	7	787
5:30 PM	19	214	62	3	311	34	22	59	25	31	42	8	830
5:45 PM	16	214	67	4	221	20	20	51	19	51	54	7	744
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	168	1678	371	37	2311	226	211	420	209	263	353	46	6293
Approach %	7.58	75.69	16.73	1.44	89.78	8.78	25.12	50.00	24.88	39.73	53.32	6.95	
App/Depart	2217	/	1935	2574	/	2783	840	/	828	662	/	747	

PM Peak Hr Begins at: 445 PM

PEAK													
Volumes	81	824	185	23	1243	116	104	222	106	137	180	24	3245
Approach %	7.43	75.60	16.97	1.66	89.94	8.39	24.07	51.39	24.54	40.18	52.79	7.04	
PEAK HR. FACTOR:		0.924			0.900			0.939			0.879		0.977

CONTROL: Signal
COMMENT 1: 0
GPS: 33.350564, -111.687434

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Sossaman Rd. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: Elliot Rd. DAY: TUESDAY PROJECT# 17-1383-006

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 1	NR 0	SL 1	ST 1	SR 0	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	8	7	1	3	7	42	11	29	8	1	30	2	149
7:15 AM	15	10	1	9	11	37	21	28	10	1	27	4	174
7:30 AM	11	11	1	1	3	50	23	33	8	2	45	4	192
7:45 AM	5	7	0	7	14	48	11	41	6	0	29	3	171
8:00 AM	3	9	1	11	7	32	12	30	8	2	48	5	168
8:15 AM	6	10	2	6	6	30	16	20	14	0	48	8	166
8:30 AM	11	13	0	6	7	23	18	29	2	1	30	9	149
8:45 AM	6	14	2	3	6	18	9	12	6	1	21	3	101
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	65	81	8	46	61	280	121	222	62	8	278	38	1270
Approach %	42.21	52.60	5.19	11.89	15.76	72.35	29.88	54.81	15.31	2.47	85.80	11.73	
App/Depart	154	/	240	387	/	131	405	/	276	324	/	623	

AM Peak Hr Begins at: 715 AM

PEAK													
Volumes	34	37	3	28	35	167	67	132	32	5	149	16	705
Approach %	45.95	50.00	4.05	12.17	15.22	72.61	29.00	57.14	13.85	2.94	87.65	9.41	
PEAK HR. FACTOR:	0.712			0.833			0.902			0.773			0.918

CONTROL: Signal
COMMENT 1:
GPS: 33.350435, -111.670626

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Sossaman Rd. DATE: 10/03/17 LOCATION: Mesa

0

E-W STREET: Elliot Rd. DAY: TUESDAY PROJECT# 17-1383-006

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 1	NR 0	SL 1	ST 1	SR 0	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	13	18	3	9	11	23	24	41	10	1	32	9	194
4:15 PM	6	6	1	3	8	26	28	56	6	1	25	3	169
4:30 PM	14	10	1	7	12	31	65	44	8	1	19	6	218
4:45 PM	14	12	0	8	14	35	109	33	16	3	29	21	294
5:00 PM	10	11	2	5	17	60	43	48	3	1	29	6	235
5:15 PM	10	9	1	11	5	37	43	36	3	0	31	7	193
5:30 PM	3	8	0	8	6	28	65	42	5	0	32	8	205
5:45 PM	6	9	2	19	10	70	68	45	15	0	30	11	285
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	76	83	10	70	83	310	445	345	66	7	227	71	1793
Approach %	44.97	49.11	5.92	15.12	17.93	66.95	51.99	40.30	7.71	2.30	74.43	23.28	
App/Depart	169	/	599	463	/	156	856	/	425	305	/	613	

PM Peak Hr Begins at: 430 PM

PEAK													
Volumes	48	42	4	31	48	163	260	161	30	5	108	40	940
Approach %	51.06	44.68	4.26	12.81	19.83	67.36	57.65	35.70	6.65	3.27	70.59	26.14	
PEAK HR. FACTOR:	0.904			0.738			0.714			0.722			0.799

CONTROL: Signal
COMMENT 1: 0
GPS: 33.350435, -111.670626

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: 80th St. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: Elliot Rd. DAY: TUESDAY PROJECT# 17-1383-007

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 0	NT 0	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	0	2	0	2	4	29	0	0	37	1	75
7:15 AM	0	0	0	5	0	3	5	27	0	0	31	4	75
7:30 AM	0	0	0	4	0	5	8	26	0	0	35	5	83
7:45 AM	0	0	0	2	0	7	7	36	0	0	37	4	93
8:00 AM	0	0	0	6	0	11	14	31	0	0	38	15	115
8:15 AM	0	0	0	2	0	15	11	18	0	0	44	9	99
8:30 AM	0	0	0	2	0	12	5	28	0	0	30	1	78
8:45 AM	0	0	0	1	0	3	0	22	0	0	27	3	56
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	24	0	58	54	217	0	0	279	42	674
Approach %	####	####	####	29.27	0.00	70.73	19.93	80.07	0.00	0.00	86.92	13.08	
App/Depart	0	/	96	82	/	0	271	/	241	321	/	337	

AM Peak Hr Begins at: 730 AM

PEAK													
Volumes	0	0	0	14	0	38	40	111	0	0	154	33	390
Approach %	####	####	####	26.92	0.00	73.08	26.49	73.51	0.00	0.00	82.35	17.65	
PEAK HR. FACTOR:	0.000			0.765			0.839			0.882			0.848

CONTROL: 1-Way Stop (SB)
COMMENT 1:
GPS: 33.350375, -111.661882

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: 80th St. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: Elliot Rd. 0 DAY: TUESDAY PROJECT# 17-1383-007

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 0	NT 0	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	0	0	3	0	16	3	50	0	0	32	2	106
4:15 PM	0	0	0	1	0	1	3	41	0	0	37	2	85
4:30 PM	0	0	0	5	0	2	8	46	0	0	35	3	99
4:45 PM	0	0	0	2	0	3	3	43	0	0	46	5	102
5:00 PM	0	0	0	1	0	3	3	62	0	0	33	2	104
5:15 PM	0	0	0	2	0	3	7	48	0	0	45	3	108
5:30 PM	0	0	0	3	0	4	5	51	0	0	39	0	102
5:45 PM	0	0	0	0	0	3	1	39	0	0	47	2	92
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	17	0	35	33	380	0	0	314	19	798
Approach %	####	####	####	32.69	0.00	67.31	7.99	92.01	0.00	0.00	94.29	5.71	
App/Depart	0	/	52	52	/	0	413	/	397	333	/	349	

PM Peak Hr Begins at: 445 PM

PEAK													
Volumes	0	0	0	8	0	13	18	204	0	0	163	10	416
Approach %	####	####	####	38.10	0.00	61.90	8.11	91.89	0.00	0.00	94.22	5.78	
PEAK HR. FACTOR:	0.000			0.750			0.854			0.848			0.963

CONTROL: 1-Way Stop (SB)
COMMENT 1: 0
GPS: 33.350375, -111.661882

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Hawes Rd. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: Elliot Rd. DAY: TUESDAY PROJECT# 17-1383-008

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	1	0	4	0	4	2	23	0	3	24	1	62
7:15 AM	1	0	1	6	0	5	2	31	0	0	27	1	74
7:30 AM	2	0	0	8	1	5	3	27	1	1	28	3	79
7:45 AM	2	1	0	10	0	11	3	28	0	1	37	3	96
8:00 AM	0	0	2	8	1	7	5	31	0	2	28	5	89
8:15 AM	2	1	1	6	1	11	9	30	2	2	43	3	111
8:30 AM	1	1	0	2	0	12	1	17	0	2	38	2	76
8:45 AM	0	0	0	4	0	4	3	28	0	1	28	2	70
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	8	4	4	48	3	59	28	215	3	12	253	20	657
Approach %	50.00	25.00	25.00	43.64	2.73	53.64	11.38	87.40	1.22	4.21	88.77	7.02	
App/Depart	16	/	52	110	/	18	246	/	267	285	/	320	

AM Peak Hr Begins at: 730 AM

PEAK													
Volumes	6	2	3	32	3	34	20	116	3	6	136	14	375
Approach %	54.55	18.18	27.27	46.38	4.35	49.28	14.39	83.45	2.16	3.85	87.18	8.97	

PEAK HR. FACTOR:	0.688	0.821	0.848	0.813	0.845

CONTROL: 2-Way Stop (NB & SB)
COMMENT 1:
GPS: 33.350291, -111.653070

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Hawes Rd. DATE: 10/03/17 LOCATION: Mesa

0

E-W STREET: Elliot Rd. DAY: TUESDAY PROJECT# 17-1383-008

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	1	1	6	1	4	7	46	4	1	44	1	119
4:15 PM	0	1	3	5	0	5	9	44	0	2	25	5	99
4:30 PM	0	1	0	8	2	4	4	36	2	1	35	7	100
4:45 PM	0	0	0	4	0	4	13	36	3	1	34	6	101
5:00 PM	0	0	4	7	2	1	1	41	0	0	44	11	111
5:15 PM	1	2	3	8	1	3	8	52	2	0	29	8	117
5:30 PM	1	2	1	6	0	4	10	38	3	1	44	5	115
5:45 PM	0	1	0	3	1	3	9	45	0	0	39	6	107
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	5	8	12	47	7	28	61	338	14	6	294	49	869
Approach %	20.00	32.00	48.00	57.32	8.54	34.15	14.77	81.84	3.39	1.72	84.24	14.04	
App/Depart	25	/	118	82	/	27	413	/	397	349	/	327	

PM Peak Hr Begins at: 500 PM

PEAK													
Volumes	2	5	8	24	4	11	28	176	5	1	156	30	450
Approach %	13.33	33.33	53.33	61.54	10.26	28.21	13.40	84.21	2.39	0.53	83.42	16.04	

PEAK HR. FACTOR:	0.625	0.813	0.843	0.850	0.962

CONTROL: 2-Way Stop (NB & SB)
COMMENT 1: 0
GPS: 33.350291, -111.653070

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Loop 202 SB Ramps | DATE: 10/03/17 | LOCATION: Mesa

E-W STREET: Elliot Rd. | DAY: TUESDAY | PROJECT# 17-1383-009a

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 0	NT 0	NR 0	SL 1.3	ST 0.3	SR 1.3	EL 0	ET 4	ER 1	WL 2	WT 2	WR 0	TOTAL
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	0	40	1	9	0	28	11	32	21	0	142
7:15 AM	0	0	0	44	0	7	0	25	10	28	22	0	136
7:30 AM	0	0	0	42	0	11	0	23	12	35	33	0	156
7:45 AM	0	0	0	26	0	8	0	39	7	44	24	0	148
8:00 AM	0	0	0	32	0	15	0	24	11	35	39	0	156
8:15 AM	0	0	0	26	0	6	0	18	3	15	33	0	101
8:30 AM	0	0	0	35	1	10	0	20	10	29	19	0	124
8:45 AM	0	0	0	28	2	8	0	19	4	23	20	0	104
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	273	4	74	0	196	68	241	211	0	1067
Approach %	####	####	####	77.78	1.14	21.08	0.00	74.24	25.76	53.32	46.68	0.00	
App/Depart	0	/	0	351	/	313	264	/	469	452	/	285	

AM Peak Hr Begins at: 715 AM

PEAK													
Volumes	0	0	0	144	0	41	0	111	40	142	118	0	596
Approach %	####	####	####	77.84	0.00	22.16	0.00	73.51	26.49	54.62	45.38	0.00	
PEAK HR. FACTOR:		0.000			0.873			0.821			0.878		0.955

CONTROL: Signal
COMMENT 1:
GPS: 33.350247, -111.644593

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Loop 202 SB Ramps | DATE: 10/03/17 | LOCATION: Mesa

0

E-W STREET: Elliot Rd. | DAY: TUESDAY | PROJECT# 17-1383-009a

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 0	NT 0	NR 0	SL 1.3	ST 0.3	SR 1.3	EL 0	ET 4	ER 1	WL 2	WT 2	WR 0	TOTAL
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	0	0	120	0	7	0	44	9	26	30	0	236
4:15 PM	0	0	0	101	0	8	0	44	5	19	33	0	210
4:30 PM	0	0	0	111	0	11	0	32	8	38	42	0	242
4:45 PM	0	0	0	114	0	25	0	47	6	16	37	0	245
5:00 PM	0	0	0	114	0	11	0	53	8	23	26	0	235
5:15 PM	0	0	0	120	1	11	0	41	8	23	39	0	243
5:30 PM	0	0	0	125	1	11	0	36	8	25	32	0	238
5:45 PM	0	0	0	100	0	14	0	40	2	18	37	0	211
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	905	2	98	0	337	54	188	276	0	1860
Approach %	####	####	####	90.05	0.20	9.75	0.00	86.19	13.81	40.52	59.48	0.00	
App/Depart	0	/	0	1005	/	244	391	/	1242	464	/	374	

PM Peak Hr Begins at: 430 PM

PEAK													
Volumes	0	0	0	459	1	58	0	173	30	100	144	0	965
Approach %	####	####	####	88.61	0.19	11.20	0.00	85.22	14.78	40.98	59.02	0.00	
PEAK HR. FACTOR:		0.000			0.932			0.832			0.763		0.985

CONTROL: Signal
COMMENT 1: 0
GPS: 33.350247, -111.644593

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Loop 202 NB Ramps
E-W STREET: Elliot Rd.
DATE: 10/03/17
DAY: TUESDAY
LOCATION: Mesa
PROJECT#: 17-1383-009b

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1.3	NT 0.3	NR 1.3	SL 0	ST 0	SR 0	EL 2	ET 3	ER 0	WL 0	WT 4	WR 1	TOTAL
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	3	0	23	0	0	0	10	55	0	0	51	163	305
7:15 AM	4	0	19	0	0	0	11	60	0	0	50	165	309
7:30 AM	7	1	16	0	0	0	12	56	0	0	71	150	313
7:45 AM	1	0	13	0	0	0	14	45	0	0	56	147	276
8:00 AM	4	0	16	0	0	0	4	52	0	0	65	148	289
8:15 AM	2	1	6	0	0	0	8	38	0	0	43	92	190
8:30 AM	6	0	3	0	0	0	9	46	0	0	44	95	203
8:45 AM	5	0	7	0	0	0	7	38	0	0	36	91	184
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	32	2	103	0	0	0	75	390	0	0	416	1051	2069
Approach %	23.36	1.46	75.18	####	####	####	16.13	83.87	0.00	0.00	28.36	71.64	
App/Depart	137	/	1128	0	/	0	465	/	493	1467	/	448	

AM Peak Hr Begins at: 700 AM

PEAK													
Volumes	15	1	71	0	0	0	47	216	0	0	228	625	1203
Approach %	17.24	1.15	81.61	####	####	####	17.87	82.13	0.00	0.00	26.73	73.27	
PEAK HR. FACTOR:		0.837			0.000			0.926			0.965		0.961

CONTROL: Signal
COMMENT 1:
GPS: 33.350227, -111.643239

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Loop 202 NB Ramps
0
E-W STREET: Elliot Rd.
DATE: 10/03/17
DAY: TUESDAY
LOCATION: Mesa
PROJECT#: 17-1383-009b

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1.3	NT 0.3	NR 1.3	SL 0	ST 0	SR 0	EL 2	ET 3	ER 0	WL 0	WT 4	WR 1	TOTAL
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	7	1	26	0	0	0	12	133	0	0	46	58	283
4:15 PM	7	0	33	0	0	0	6	142	0	0	42	57	287
4:30 PM	16	0	25	0	0	0	11	140	0	0	67	65	324
4:45 PM	5	0	30	0	0	0	13	155	0	0	30	58	291
5:00 PM	11	0	30	0	0	0	7	158	0	0	52	68	326
5:15 PM	12	1	43	0	0	0	8	146	0	0	36	43	289
5:30 PM	8	0	27	0	0	0	13	148	0	0	54	51	301
5:45 PM	6	0	20	0	0	0	7	127	0	0	40	43	243
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	72	2	234	0	0	0	77	1149	0	0	367	443	2344
Approach %	23.38	0.65	75.97	####	####	####	6.28	93.72	0.00	0.00	45.31	54.69	
App/Depart	308	/	522	0	/	0	1226	/	1383	810	/	439	

PM Peak Hr Begins at: 430 PM

PEAK													
Volumes	44	1	128	0	0	0	39	599	0	0	185	234	1230
Approach %	25.43	0.58	73.99	####	####	####	6.11	93.89	0.00	0.00	44.15	55.85	
PEAK HR. FACTOR:		0.772			0.000			0.949			0.794		0.943

CONTROL: Signal
COMMENT 1: 0
GPS: 33.350227, -111.643239

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Hawes Rd. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: Loop 202 WB Ramps DAY: TUESDAY PROJECT# 17-1383-010a

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	0	0	0	0	0	0	0	0	1.5	0.5	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	29	0	0	0	0	0	0	0	0	30	0	0	59
7:15 AM	33	0	0	0	0	0	0	0	0	27	0	0	60
7:30 AM	27	0	0	0	0	0	0	0	0	40	0	0	67
7:45 AM	16	0	0	0	0	0	0	0	0	28	0	0	44
8:00 AM	16	0	0	0	0	0	0	0	0	31	0	0	47
8:15 AM	17	0	0	0	0	0	0	0	0	22	0	0	39
8:30 AM	6	0	0	0	0	0	0	0	0	39	0	0	45
8:45 AM	4	0	0	0	0	0	0	0	0	26	0	0	30
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	148	0	0	0	0	0	0	0	0	243	0	0	391
Approach %	100.00	0.00	0.00	####	####	####	####	####	####	100.00	0.00	0.00	
App/Depart	148	/	0	0	/	243	0	/	0	243	/	148	

AM Peak Hr Begins at: 700 AM

PEAK													
Volumes	105	0	0	0	0	0	0	0	0	125	0	0	230
Approach %	100.00	0.00	0.00	####	####	####	####	####	####	100.00	0.00	0.00	
PEAK HR. FACTOR:		0.795			0.000			0.000			0.781		0.858

CONTROL: Signal
COMMENT 1:
GPS: 33.332126, -111.652970

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Hawes Rd. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: 0 Loop 202 WB Ramps DAY: TUESDAY PROJECT# 17-1383-010a

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	0	0	0	0	0	0	0	0	1.5	0.5	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	5	0	0	0	0	0	0	0	0	48	0	0	53
4:15 PM	3	0	0	0	0	0	0	0	0	51	0	0	54
4:30 PM	4	0	0	0	0	0	0	0	0	66	0	0	70
4:45 PM	9	0	0	0	0	0	0	0	0	74	0	0	83
5:00 PM	4	0	0	0	0	0	0	0	0	81	0	0	85
5:15 PM	5	0	0	0	0	0	0	0	0	74	0	0	79
5:30 PM	6	0	0	0	0	0	0	0	0	94	0	0	100
5:45 PM	3	0	0	0	0	0	0	0	0	63	0	0	66
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	39	0	0	0	0	0	0	0	0	551	0	0	590
Approach %	100.00	0.00	0.00	####	####	####	####	####	####	100.00	0.00	0.00	
App/Depart	39	/	0	0	/	551	0	/	0	551	/	39	

PM Peak Hr Begins at: 445 PM

PEAK													
Volumes	24	0	0	0	0	0	0	0	0	323	0	0	347
Approach %	100.00	0.00	0.00	####	####	####	####	####	####	100.00	0.00	0.00	
PEAK HR. FACTOR:		0.667			0.000			0.000			0.859		0.868

CONTROL: Signal
COMMENT 1: 0
GPS: 33.332126, -111.652970

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Hawes Rd. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: Loop 202 EB Ramps DAY: TUESDAY PROJECT# 17-1383-010b

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	1	1	2	0	1	1	1	0	0	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	29	75	0	30	0	0	0	10	0	0	0	144
7:15 AM	0	32	78	0	27	0	1	0	4	0	0	0	142
7:30 AM	0	26	43	1	39	0	1	0	6	0	0	0	116
7:45 AM	0	16	46	0	28	0	0	0	7	0	0	0	97
8:00 AM	0	15	39	0	31	0	1	0	3	0	0	0	89
8:15 AM	0	15	29	1	21	0	2	0	1	0	0	0	69
8:30 AM	0	5	12	0	39	0	1	0	1	0	0	0	58
8:45 AM	0	3	17	1	25	0	1	0	1	0	0	0	48
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	141	339	3	240	0	7	0	33	0	0	0	763
Approach %	0.00	29.38	70.63	1.23	98.77	0.00	17.50	0.00	82.50	####	####	####	
App/Depart	480	/	148	243	/	273	40	/	342	0	/	0	

AM Peak Hr Begins at: 700 AM

PEAK													
Volumes	0	103	242	1	124	0	2	0	27	0	0	0	499
Approach %	0.00	29.86	70.14	0.80	99.20	0.00	6.90	0.00	93.10	####	####	####	
PEAK HR. FACTOR:		0.784			0.781			0.725			0.000		0.866

CONTROL: Signal
COMMENT 1:
GPS: 33.330508, -111.652919

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Hawes Rd. DATE: 10/03/17 LOCATION: Mesa

E-W STREET: 0 Loop 202 EB Ramps DAY: TUESDAY PROJECT# 17-1383-010b

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	1	1	2	0	1	1	1	0	0	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	5	42	1	47	0	0	0	4	0	0	0	99
4:15 PM	0	3	28	0	51	0	0	0	8	0	0	0	90
4:30 PM	0	4	37	0	66	0	0	0	10	0	0	0	117
4:45 PM	0	7	20	1	73	0	2	0	15	0	0	0	118
5:00 PM	0	2	27	0	81	0	2	1	8	0	0	0	121
5:15 PM	0	5	21	0	74	0	0	0	8	0	0	0	108
5:30 PM	0	5	28	2	92	0	1	0	8	0	0	0	136
5:45 PM	0	3	28	0	63	0	0	0	10	0	0	0	104
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	34	231	4	547	0	5	1	71	0	0	0	893
Approach %	0.00	12.83	87.17	0.73	99.27	0.00	6.49	1.30	92.21	####	####	####	
App/Depart	265	/	39	551	/	618	77	/	236	0	/	0	

PM Peak Hr Begins at: 445 PM

PEAK													
Volumes	0	19	96	3	320	0	5	1	39	0	0	0	483
Approach %	0.00	16.52	83.48	0.93	99.07	0.00	11.11	2.22	86.67	####	####	####	
PEAK HR. FACTOR:		0.871			0.859			0.662			0.000		0.888

CONTROL: Signal
COMMENT 1: 0
GPS: 33.330508, -111.652919

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Ellsworth Rd. DATE: 08/14/18 LOCATION: Mesa

E-W STREET: Elliot Rd. DAY: TUESDAY PROJECT# 18-1375-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 1	ET 2	ER 1	WL 1	WT 2	WR 1	TOTAL
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	55	79	2	5	55	14	8	39	19	6	222	20	524
7:15 AM	50	99	5	8	50	21	9	43	16	5	239	29	574
7:30 AM	60	80	2	5	69	20	11	54	13	8	241	24	587
7:45 AM	65	87	6	3	60	16	10	50	18	4	245	28	592
8:00 AM	54	85	3	6	65	18	14	45	15	7	204	20	536
8:15 AM	41	89	2	9	54	14	8	43	17	10	154	16	457
8:30 AM	41	82	5	5	49	10	5	41	16	11	141	19	425
8:45 AM	43	87	4	8	50	11	9	21	13	9	145	21	421
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	409	688	29	49	452	124	74	336	127	60	1591	177	4116
Approach %	36.32	61.10	2.58	7.84	72.32	19.84	13.78	62.57	23.65	3.28	87.04	9.68	
App/Depart	1126	/	939	625	/	639	537	/	414	1828	/	2124	

AM Peak Hr Begins at: 715 AM

PEAK													
Volumes	229	351	16	22	244	75	44	192	62	24	929	101	2289
Approach %	38.42	58.89	2.68	6.45	71.55	21.99	14.77	64.43	20.81	2.28	88.14	9.58	
PEAK HR. FACTOR:		0.943			0.907			0.955			0.951		0.967

CONTROL: Signal
COMMENT 1:
GPS: 33.350165, -111.635728

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Ellsworth Rd. DATE: 08/14/18 LOCATION: Mesa

0

E-W STREET: Elliot Rd. DAY: TUESDAY PROJECT# 18-1375-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 1	ET 2	ER 1	WL 1	WT 2	WR 1	TOTAL
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	19	76	2	14	63	16	22	120	19	2	87	18	458
4:15 PM	22	59	5	21	66	14	20	133	18	2	101	19	480
4:30 PM	20	66	2	20	60	21	28	141	20	5	85	21	489
4:45 PM	24	60	8	19	54	24	24	147	24	2	86	24	496
5:00 PM	21	65	5	17	74	28	21	154	33	3	96	28	545
5:15 PM	28	58	9	21	59	20	14	161	30	6	60	20	486
5:30 PM	21	54	6	24	55	22	19	166	32	1	74	22	496
5:45 PM	19	74	6	28	69	19	16	158	25	4	75	19	512
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	174	512	43	164	500	164	164	1180	201	25	664	171	3962
Approach %	23.87	70.23	5.90	19.81	60.39	19.81	10.61	76.38	13.01	2.91	77.21	19.88	
App/Depart	729	/	847	828	/	726	1545	/	1387	860	/	1002	

PM Peak Hr Begins at: 500 PM

PEAK													
Volumes	89	251	26	90	257	89	70	639	120	14	305	89	2039
Approach %	24.32	68.58	7.10	20.64	58.94	20.41	8.44	77.08	14.48	3.43	74.75	21.81	
PEAK HR. FACTOR:		0.924			0.916			0.955			0.803		0.935

CONTROL: Signal
COMMENT 1: 0
GPS: 33.350165, -111.635728

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Ellsworth Rd. DATE: 08/14/18 LOCATION: Mesa

E-W STREET: Warner Rd. DAY: TUESDAY PROJECT# 18-1375-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	0	1	0	0	0	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	15	128	0	0	83	6	1	0	2	0	0	0	235
7:15 AM	10	152	0	0	77	2	1	0	3	0	0	0	245
7:30 AM	13	149	0	0	85	7	0	0	1	0	0	0	255
7:45 AM	12	155	0	0	76	8	2	0	4	0	0	0	257
8:00 AM	9	143	0	0	89	3	0	0	2	0	0	0	246
8:15 AM	14	139	0	0	76	6	1	0	0	0	0	0	236
8:30 AM	16	122	0	0	79	2	0	0	5	0	0	0	224
8:45 AM	7	136	0	0	69	5	2	0	1	0	0	0	220
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	96	1124	0	0	634	39	7	0	18	0	0	0	1918
Approach %	7.87	92.13	0.00	0.00	94.21	5.79	28.00	0.00	72.00	####	####	####	
App/Depart	1220	/	1131	673	/	652	25	/	0	0	/	135	

AM Peak Hr Begins at: 715 AM

PEAK													
Volumes	44	599	0	0	327	20	3	0	10	0	0	0	1003
Approach %	6.84	93.16	0.00	0.00	94.24	5.76	23.08	0.00	76.92	####	####	####	
PEAK HR. FACTOR:		0.963			0.943			0.542			0.000		0.976

CONTROL: 1-Way Stop (EB)
COMMENT 1:
GPS: 33.335683, -111.635604

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON				
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

N-S STREET: Ellsworth Rd. DATE: 08/14/18 LOCATION: Mesa

0

E-W STREET: Warner Rd. DAY: TUESDAY PROJECT# 18-1375-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	0	1	0	0	0	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	7	83	0	0	89	2	1	0	13	0	0	0	195
4:15 PM	9	88	0	0	87	1	5	0	11	0	0	0	201
4:30 PM	20	80	0	0	85	1	2	0	10	0	0	0	198
4:45 PM	8	96	0	0	96	0	1	0	15	0	0	0	216
5:00 PM	4	99	0	0	108	0	1	0	17	0	0	0	229
5:15 PM	15	98	0	0	96	1	1	0	9	0	0	0	220
5:30 PM	7	87	0	0	99	2	1	0	8	0	0	0	204
5:45 PM	12	99	0	0	90	0	4	0	12	0	0	0	217
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	82	730	0	0	750	7	16	0	95	0	0	0	1680
Approach %	10.10	89.90	0.00	0.00	99.08	0.92	14.41	0.00	85.59	####	####	####	
App/Depart	812	/	746	757	/	845	111	/	0	0	/	89	

PM Peak Hr Begins at: 500 PM

PEAK													
Volumes	38	383	0	0	393	3	7	0	46	0	0	0	870
Approach %	9.03	90.97	0.00	0.00	99.24	0.76	13.21	0.00	86.79	####	####	####	
PEAK HR. FACTOR:		0.931			0.917			0.736			0.000		0.950

CONTROL: 1-Way Stop (EB)
COMMENT 1: 0
GPS: 33.335683, -111.635604

HOURS:

	FROM:		TO:	
AM	700	AM	900	AM
NOON	0	0	0	0
PM	400	PM	600	PM

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Sossaman Rd.
E-W STREET: Guadalupe Rd.

Date: 10/03/17
Day: TUESDAY

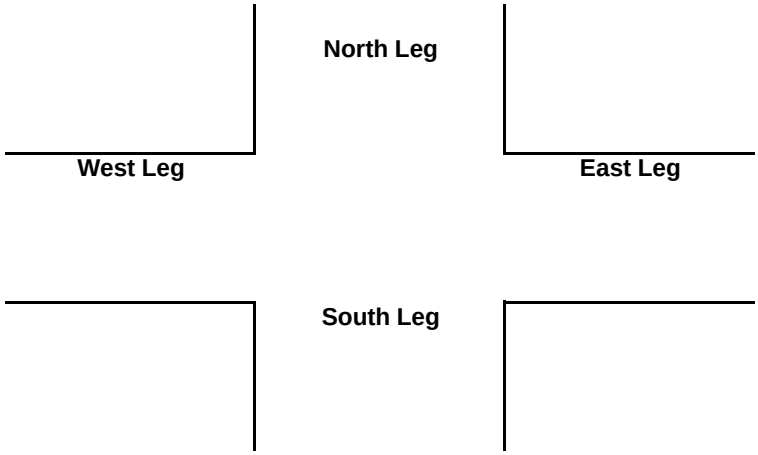
City: Mesa
Project #: 17-1383-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	1
7:15 AM	1	2	0	0
7:30 AM	0	0	0	1
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	2	1	2
8:30 AM	1	0	2	0
8:45 AM	0	0	0	0
TOTAL	**2**	**4**	**3**	**4**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	1	0	0	1
7:15 AM	0	1	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	1	0
8:00 AM	1	0	0	0
8:15 AM	1	1	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**3**	**2**	**1**	**1**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	1	0	0	2
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	1	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**2**	**0**	**0**	**2**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	1	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**1**	**0**	**0**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Farnsworth Dr / Bridlewood
E-W STREET: Guadalupe Rd.

Date: 10/03/17
Day: TUESDAY

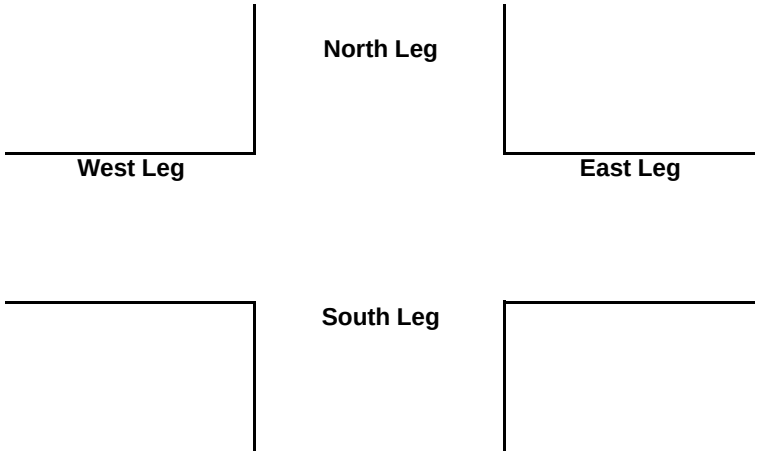
City: Mesa
Project #: 17-1383-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	1	0	0	0
7:15 AM	1	0	1	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	1	0
8:15 AM	0	0	0	0
8:30 AM	0	1	0	1
8:45 AM	1	0	0	0
TOTAL	**3**	**1**	**2**	**1**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	1	1	0	0
7:15 AM	1	0	0	0
7:30 AM	0	0	1	0
7:45 AM	1	1	0	0
8:00 AM	0	2	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**3**	**4**	**1**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	1	0	1	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	4	0	0
5:15 PM	0	3	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**1**	**7**	**1**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	1
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	1	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**1**	**0**	**1**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Hawes Rd.
E-W STREET: Guadalupe Rd.

Date: 10/03/17
Day: TUESDAY

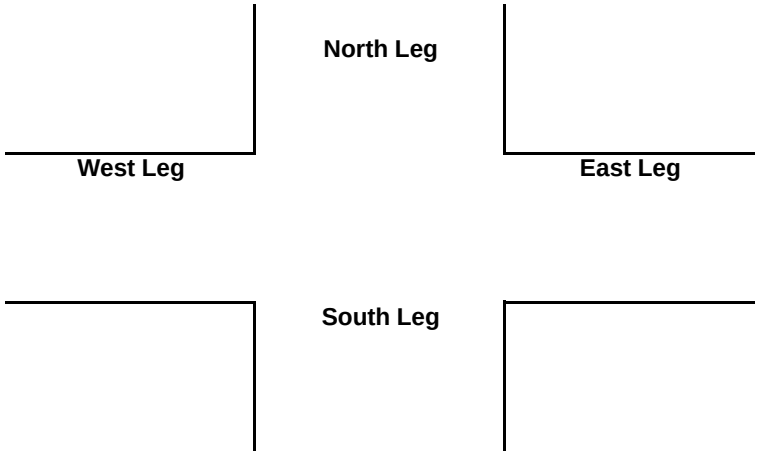
City: Mesa
Project #: 17-1383-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	2	0	1
7:15 AM	0	0	0	1
7:30 AM	0	0	0	0
7:45 AM	1	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**1**	**2**	**0**	**2**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	1	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**1**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	1	0
4:15 PM	0	0	0	0
4:30 PM	0	0	1	0
4:45 PM	1	1	1	0
5:00 PM	0	2	1	0
5:15 PM	2	0	0	3
5:30 PM	1	0	0	0
5:45 PM	0	0	0	0
TOTAL	**4**	**3**	**4**	**3**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	1
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**1**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Loop 202 SB Ramps
E-W STREET: Guadalupe Rd.

Date: 10/03/17
Day: TUESDAY

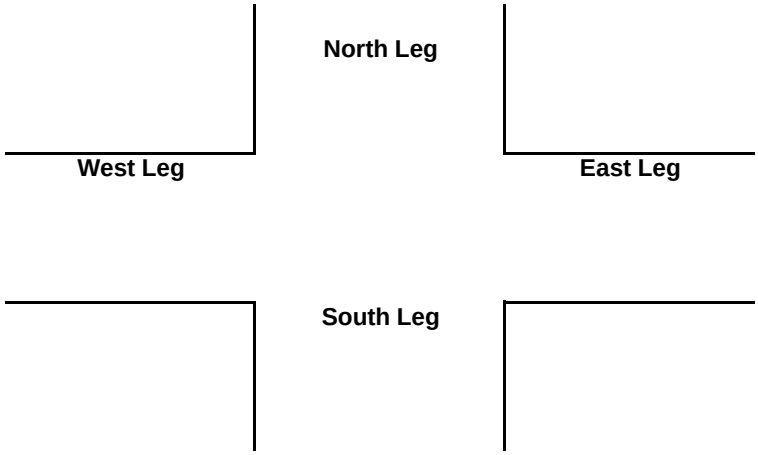
City: Mesa
Project #: 17-1383-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	2	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**2**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	1	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**1**	**0**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	1	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	1	0	0
5:30 PM	0	1	0	0
5:45 PM	0	1	0	0
TOTAL	**0**	**4**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	1	0	0	0
4:30 PM	0	0	0	0
4:45 PM	1	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**2**	**0**	**0**	**0**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Loop 202 NB Ramps
E-W STREET: Guadalupe Rd.

Date: 10/03/17
Day: TUESDAY

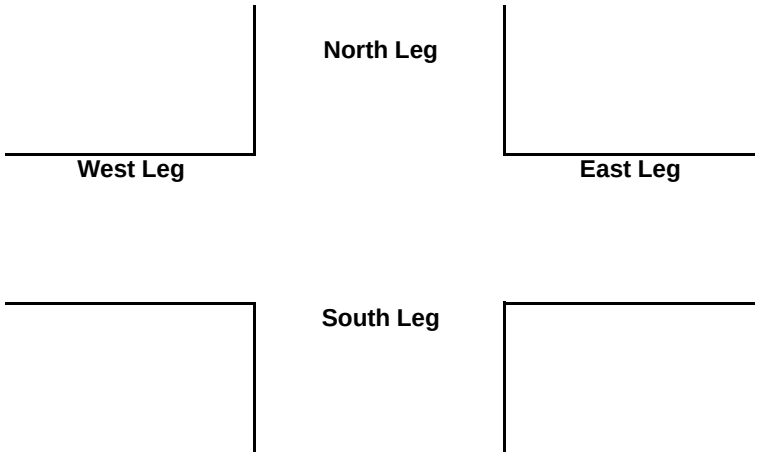
City: Mesa
Project #: 17-1383-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	2	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**2**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	1	0	0
7:15 AM	0	0	0	0
7:30 AM	0	1	0	0
7:45 AM	0	1	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**3**	**0**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	1	0	0
5:15 PM	0	0	0	0
5:30 PM	0	1	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**2**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Power Rd.
E-W STREET: Elliot Rd.

Date: 10/03/17
Day: TUESDAY

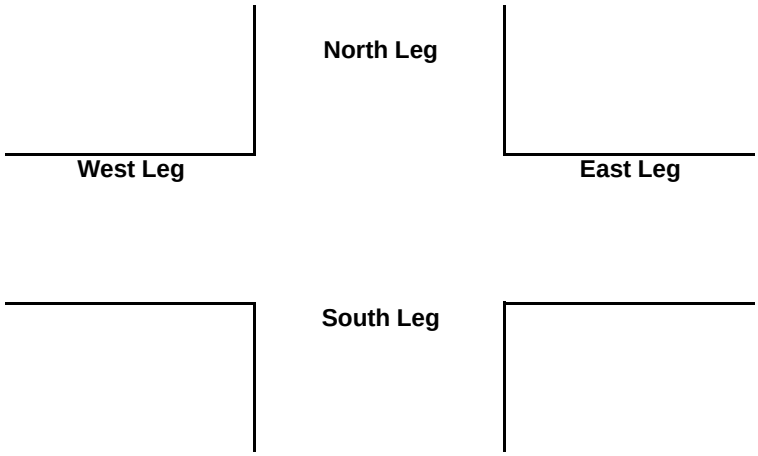
City: Mesa
Project #: 17-1383-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Sossaman Rd.
E-W STREET: Elliot Rd.

Date: 10/03/17
Day: TUESDAY

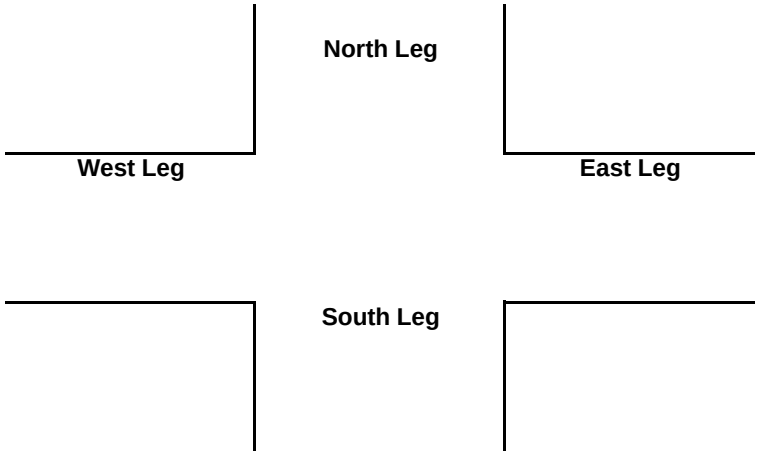
City: Mesa
Project #: 17-1383-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	1	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**1**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	1
TOTAL	**0**	**0**	**0**	**1**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: 80th St.
E-W STREET: Elliot Rd.

Date: 10/03/17
Day: TUESDAY

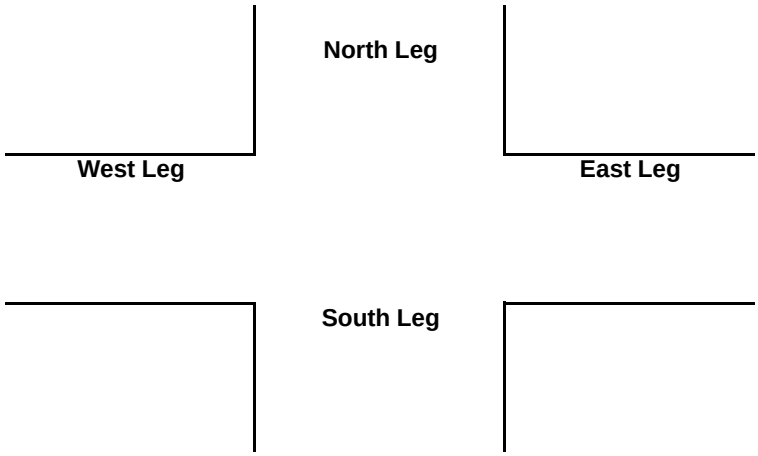
City: Mesa
Project #: 17-1383-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Hawes Rd.
E-W STREET: Elliot Rd.

Date: 10/03/17
Day: TUESDAY

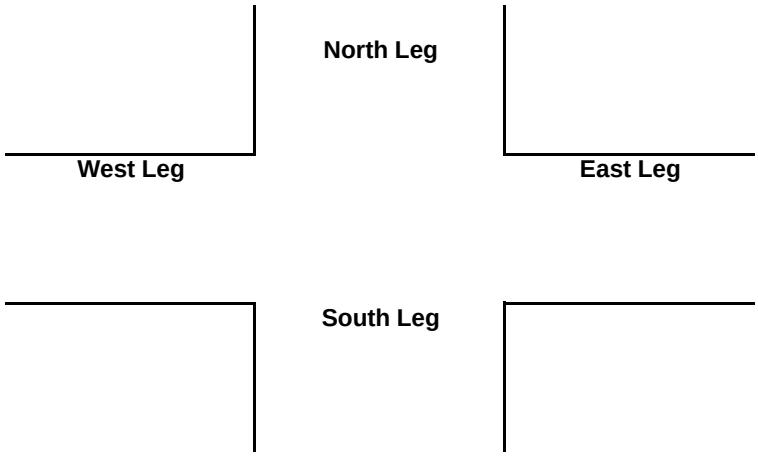
City: Mesa
Project #: 17-1383-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Loop 202 SB Ramps
E-W STREET: Elliot Rd.

Date: 10/03/17
Day: TUESDAY

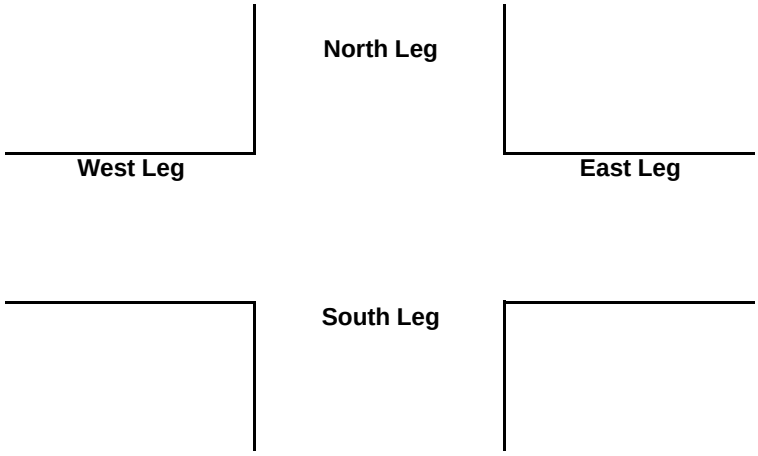
City: Mesa
Project #: 17-1383-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	1	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**1**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Loop 202 NB Ramps
E-W STREET: Elliot Rd.

Date: 10/03/17
Day: TUESDAY

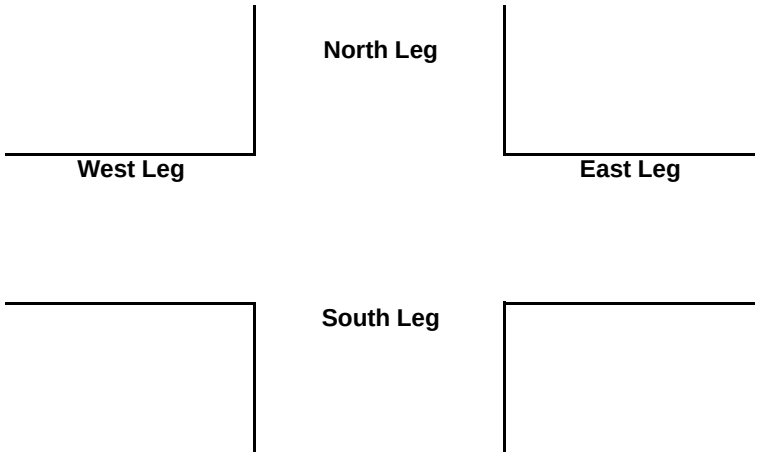
City: Mesa
Project #: 17-1383-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	1	0	0	0
7:15 AM	0	1	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**1**	**1**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Hawes Rd.
E-W STREET: Loop 202 WB Ramps

Date: 10/03/17
Day: TUESDAY

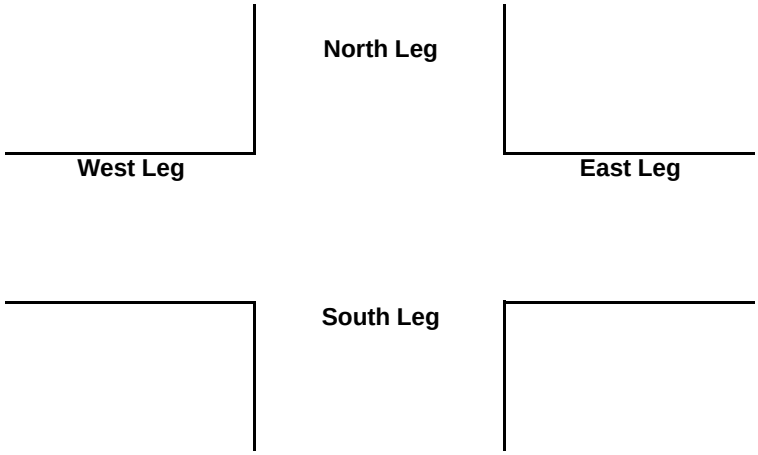
City: Mesa
Project #: 17-1383-01

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Hawes Rd.
E-W STREET: Loop 202 EB Ramps

Date: 10/03/17
Day: TUESDAY

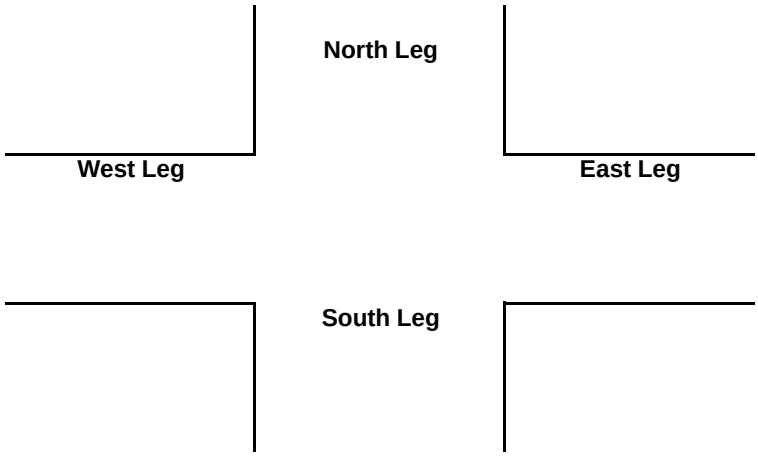
City: Mesa
Project #: 17-1383-01

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Ellsworth Rd.
E-W STREET: Elliot Rd.

Date: 08/14/18
Day: TUESDAY

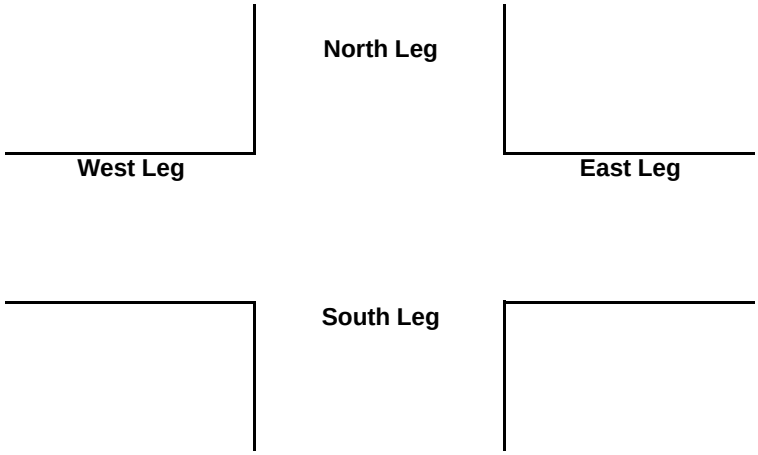
City: Mesa
Project #: 18-1375-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	2	0	0	0
5:00 PM	1	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**3**	**0**	**0**	**0**



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

veracitytrafficgroup

Pedestrian & Bicycle Study

N-S STREET: Ellsworth Rd.
E-W STREET: Warner Rd.

Date: 08/14/18
Day: TUESDAY

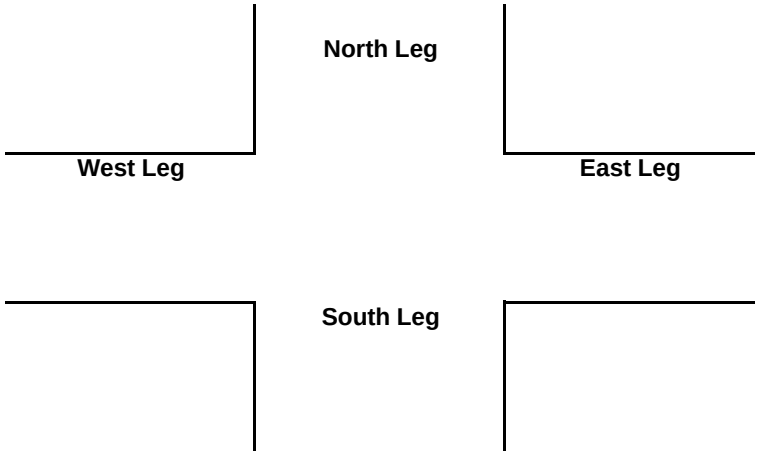
City: Mesa
Project #: 18-1375-00

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	PEDESTRIANS			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**

	BICYCLES			
	N-LEG	S-LEG	E-LEG	W-LEG
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**



APPENDIX C

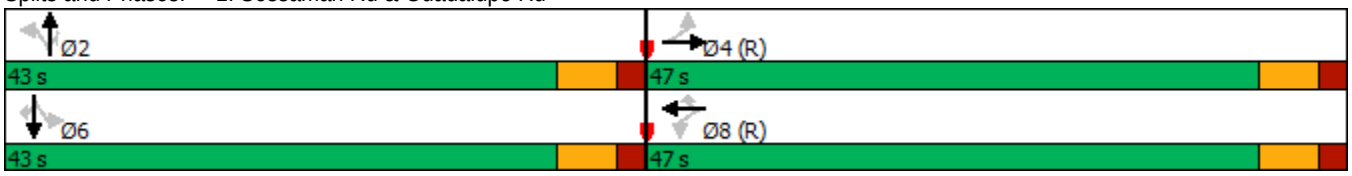
EXISTING PEAK HOUR CAPACITY ANALYSIS

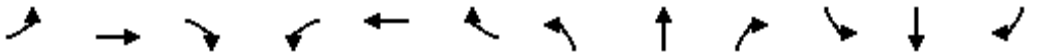
CivTech

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	Max	C-Max	Max	C-Max
Maximum Split (s)	43	47	43	47
Maximum Split (%)	47.8%	52.2%	47.8%	52.2%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	12	55	12	55
End Time (s)	55	12	55	12
Yield/Force Off (s)	49	6	49	6
Yield/Force Off 170(s)	38	85	38	85
Local Start Time (s)	47	0	47	0
Local Yield (s)	84	41	84	41
Local Yield 170(s)	73	30	73	30

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 55 (61%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 1: Sossaman Rd & Guadalupe Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	250	33	63	380	170	36	144	41	104	101	72
Future Volume (veh/h)	81	250	33	63	380	170	36	144	41	104	101	72
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	90	278	37	70	422	189	40	160	46	116	112	80
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	391	2084	270	526	2326	722	547	769	652	499	1461	652
Arrive On Green	0.46	0.46	0.46	0.15	0.15	0.15	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	810	4575	593	1065	5106	1585	1191	1870	1585	1176	3554	1585
Grp Volume(v), veh/h	90	205	110	70	422	189	40	160	46	116	112	80
Grp Sat Flow(s),veh/h/ln	810	1702	1764	1065	1702	1585	1191	1870	1585	1176	1777	1585
Q Serve(g_s), s	6.9	3.1	3.3	5.2	6.5	9.5	1.9	5.0	1.6	6.3	1.7	2.8
Cycle Q Clear(g_c), s	13.4	3.1	3.3	8.5	6.5	9.5	3.6	5.0	1.6	11.3	1.7	2.8
Prop In Lane	1.00		0.34	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	391	1551	803	526	2326	722	547	769	652	499	1461	652
V/C Ratio(X)	0.23	0.13	0.14	0.13	0.18	0.26	0.07	0.21	0.07	0.23	0.08	0.12
Avail Cap(c_a), veh/h	391	1551	803	526	2326	722	547	769	652	499	1461	652
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	14.2	14.2	25.9	23.6	24.8	17.2	17.1	16.1	20.7	16.1	16.4
Incr Delay (d2), s/veh	1.4	0.2	0.4	0.5	0.2	0.9	0.3	0.6	0.2	1.1	0.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.2	1.3	1.5	2.7	4.1	0.5	2.2	0.6	1.9	0.7	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.6	14.4	14.6	26.4	23.7	25.7	17.5	17.7	16.3	21.8	16.2	16.8
LnGrp LOS	C	B	B	C	C	C	B	B	B	C	B	B
Approach Vol, veh/h		405			681			246			308	
Approach Delay, s/veh		15.8			24.6			17.4			18.5	
Approach LOS		B			C			B			B	

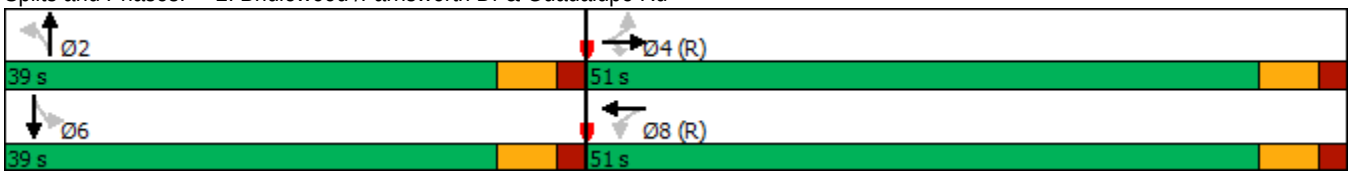
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.0		47.0		43.0		47.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		37.0		41.0		37.0		41.0				
Max Q Clear Time (g_c+I1), s		7.0		15.4		13.3		11.5				
Green Ext Time (p_c), s		1.2		2.6		1.4		4.1				

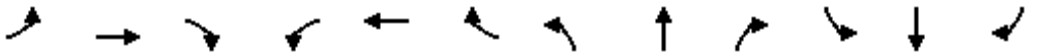
Intersection Summary												
HCM 6th Ctrl Delay			20.2									
HCM 6th LOS			C									

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	Max	C-Max	Max	C-Max
Maximum Split (s)	39	51	39	51
Maximum Split (%)	43.3%	56.7%	43.3%	56.7%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	35	74	35	74
End Time (s)	74	35	74	35
Yield/Force Off (s)	68	29	68	29
Yield/Force Off 170(s)	57	18	57	18
Local Start Time (s)	51	0	51	0
Local Yield (s)	84	45	84	45
Local Yield 170(s)	73	34	73	34

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 74 (82%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 2: Bridlewood /Farnsworth Dr & Guadalupe Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	294	82	106	376	21	94	7	129	20	3	2
Future Volume (veh/h)	19	294	82	106	376	21	94	7	129	20	3	2
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	21	327	91	118	418	23	104	8	143	22	3	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	510	1777	793	488	2478	135	595	31	555	452	384	256
Arrive On Green	0.17	0.17	0.17	0.50	0.50	0.50	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	948	3554	1585	969	4955	270	1411	85	1513	1236	1047	698
Grp Volume(v), veh/h	21	327	91	118	286	155	104	0	151	22	0	5
Grp Sat Flow(s),veh/h/ln	948	1777	1585	969	1702	1822	1411	0	1598	1236	0	1745
Q Serve(g_s), s	1.7	7.1	4.4	7.2	4.1	4.2	4.5	0.0	5.9	1.1	0.0	0.2
Cycle Q Clear(g_c), s	5.9	7.1	4.4	14.4	4.1	4.2	4.7	0.0	5.9	7.1	0.0	0.2
Prop In Lane	1.00		1.00	1.00		0.15	1.00		0.95	1.00		0.40
Lane Grp Cap(c), veh/h	510	1777	793	488	1702	911	595	0	586	452	0	640
V/C Ratio(X)	0.04	0.18	0.11	0.24	0.17	0.17	0.17	0.00	0.26	0.05	0.00	0.01
Avail Cap(c_a), veh/h	510	1777	793	488	1702	911	595	0	586	452	0	640
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.0	21.8	20.6	17.2	12.3	12.3	19.6	0.0	19.9	22.4	0.0	18.1
Incr Delay (d2), s/veh	0.1	0.2	0.3	1.2	0.2	0.4	0.6	0.0	1.1	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	3.2	1.7	1.7	1.5	1.7	1.6	0.0	2.3	0.4	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.2	22.0	20.9	18.4	12.5	12.7	20.2	0.0	21.0	22.6	0.0	18.1
LnGrp LOS	C	C	C	B	B	B	C	A	C	C	A	B
Approach Vol, veh/h		439			559			255			27	
Approach Delay, s/veh		21.8			13.8			20.7			21.8	
Approach LOS		C			B			C			C	

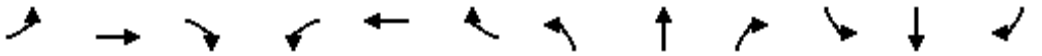
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		51.0		39.0		51.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		33.0		45.0		33.0		45.0				
Max Q Clear Time (g_c+I1), s		7.9		9.1		9.1		16.4				
Green Ext Time (p_c), s		1.2		2.7		0.1		3.6				

Intersection Summary												
HCM 6th Ctrl Delay			18.1									
HCM 6th LOS			B									

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	Max	C-Max	Max	C-Max
Maximum Split (s)	29	61	29	61
Maximum Split (%)	32.2%	67.8%	32.2%	67.8%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	85	24	85	24
End Time (s)	24	85	24	85
Yield/Force Off (s)	18	79	18	79
Yield/Force Off 170(s)	7	68	7	68
Local Start Time (s)	61	0	61	0
Local Yield (s)	84	55	84	55
Local Yield 170(s)	73	44	73	44

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 24 (27%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 3: Hawes Rd & Guadalupe Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	420	14	52	453	26	16	17	88	32	15	65
Future Volume (veh/h)	33	420	14	52	453	26	16	17	88	32	15	65
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	37	467	16	58	503	29	18	19	98	36	17	72
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	576	1143	969	519	3120	969	358	67	348	332	80	338
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	872	1870	1585	912	5106	1585	1308	264	1361	1275	312	1321
Grp Volume(v), veh/h	37	467	16	58	503	29	18	0	117	36	0	89
Grp Sat Flow(s),veh/h/ln	872	1870	1585	912	1702	1585	1308	0	1625	1275	0	1633
Q Serve(g_s), s	1.7	11.6	0.4	3.2	3.8	0.7	1.0	0.0	5.2	2.1	0.0	3.9
Cycle Q Clear(g_c), s	5.5	11.6	0.4	14.8	3.8	0.7	4.9	0.0	5.2	7.3	0.0	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.84	1.00		0.81
Lane Grp Cap(c), veh/h	576	1143	969	519	3120	969	358	0	415	332	0	417
V/C Ratio(X)	0.06	0.41	0.02	0.11	0.16	0.03	0.05	0.00	0.28	0.11	0.00	0.21
Avail Cap(c_a), veh/h	576	1143	969	519	3120	969	358	0	415	332	0	417
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	0.99	0.99	0.99	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.7	9.1	6.9	12.9	7.5	6.9	28.3	0.0	26.9	29.8	0.0	26.4
Incr Delay (d2), s/veh	0.2	1.1	0.0	0.4	0.1	0.1	0.3	0.0	1.7	0.7	0.0	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	0.3	4.6	0.1	0.7	1.3	0.2	0.3	0.0	2.2	0.7	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	10.2	6.9	13.3	7.7	7.0	28.6	0.0	28.6	30.5	0.0	27.5
LnGrp LOS	A	B	A	B	A	A	C	A	C	C	A	C
Approach Vol, veh/h		520			590			135			125	
Approach Delay, s/veh		10.0			8.2			28.6			28.4	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		29.0		61.0		29.0		61.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		23.0		55.0		23.0		55.0				
Max Q Clear Time (g_c+I1), s		7.2		13.6		9.3		16.8				
Green Ext Time (p_c), s		0.6		3.6		0.4		4.3				

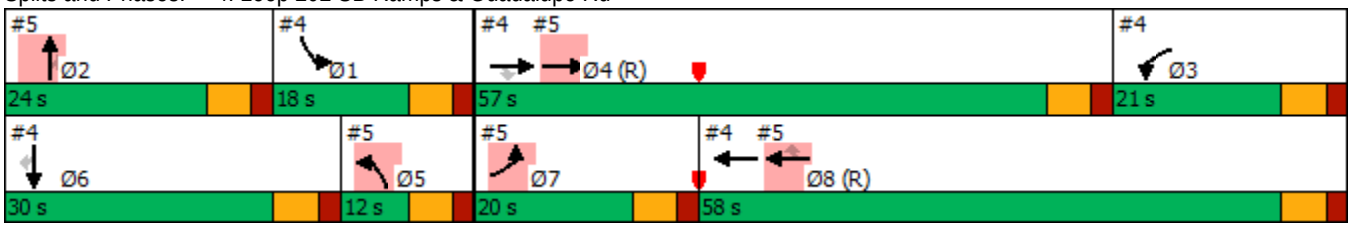
Intersection Summary												
HCM 6th Ctrl Delay			12.7									
HCM 6th LOS			B									

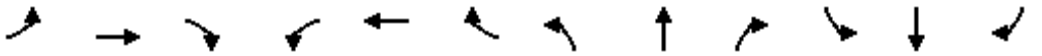
Phase Number	1	2	3	4	5	6	7	8
Node Number	4	5	4	4	5	4	5	4
Movement	SBL	NBT	WBL	EBT	NBL	SBT	EBL	WBT
Lead/Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	18	24	21	57	12	30	20	58
Maximum Split (%)	15.0%	20.0%	17.5%	47.5%	10.0%	25.0%	16.7%	48.3%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	82	58	37	100	88	58	100	0
End Time (s)	100	82	58	37	100	88	0	58
Yield/Force Off (s)	94	76	52	31	94	82	114	52
Yield/Force Off 170(s)	94	65	52	20	94	71	114	41
Local Start Time (s)	82	58	37	100	88	58	100	0
Local Yield (s)	94	76	52	31	94	82	114	52
Local Yield 170(s)	94	65	52	20	94	71	114	41

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	80

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 4: Loop 202 SB Ramps & Guadalupe Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	553	69	233	464	0	0	0	0	182	0	130
Future Volume (vph)	0	553	69	233	464	0	0	0	0	182	0	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0	6.0	6.0
Lane Util. Factor		0.81	1.00	0.97	0.91					0.95	0.91	0.95
Frt		1.00	0.85	1.00	1.00					1.00	0.96	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		7544	1583	3433	5085					1681	1565	1504
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		7544	1583	3433	5085					1681	1565	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	614	77	259	516	0	0	0	0	202	0	144
RTOR Reduction (vph)	0	0	45	0	0	0	0	0	0	0	81	83
Lane Group Flow (vph)	0	614	32	259	516	0	0	0	0	119	37	26
Turn Type		NA	Perm	Prot	NA					Prot	NA	Perm
Protected Phases		4		3	8					1	6	
Permitted Phases			4									6
Actuated Green, G (s)		49.2	49.2	15.0	50.4					13.8	37.8	28.2
Effective Green, g (s)		49.2	49.2	15.0	50.4					13.8	37.8	28.2
Actuated g/C Ratio		0.41	0.41	0.12	0.42					0.12	0.31	0.23
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		3093	649	429	2135					193	492	353
v/s Ratio Prot		c0.08		c0.08	c0.10					c0.07	c0.01	
v/s Ratio Perm			0.02								0.02	0.02
v/c Ratio		0.20	0.05	0.60	0.24					0.62	0.08	0.07
Uniform Delay, d1		22.7	21.3	49.7	22.5					50.6	28.8	35.7
Progression Factor		1.00	1.00	0.61	0.26					1.00	1.00	1.00
Incremental Delay, d2		0.1	0.1	2.4	0.3					5.7	0.1	0.4
Delay (s)		22.9	21.5	32.6	6.2					56.3	28.9	36.1
Level of Service		C	C	C	A					E	C	D
Approach Delay (s)		22.7			15.0			0.0			40.6	
Approach LOS		C			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

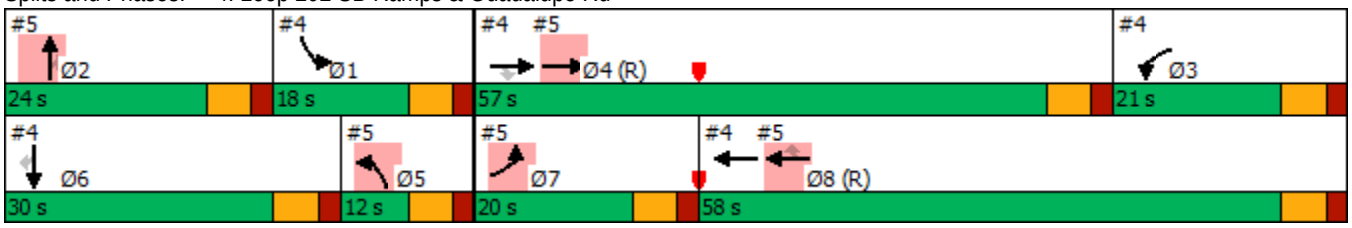
c Critical Lane Group

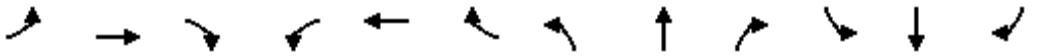
Phase Number	1	2	3	4	5	6	7	8
Node Number	4	5	4	4	5	4	5	4
Movement	SBL	NBT	WBL	EBT	NBL	SBT	EBL	WBT
Lead/Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	18	24	21	57	12	30	20	58
Maximum Split (%)	15.0%	20.0%	17.5%	47.5%	10.0%	25.0%	16.7%	48.3%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	82	58	37	100	88	58	100	0
End Time (s)	100	82	58	37	100	88	0	58
Yield/Force Off (s)	94	76	52	31	94	82	114	52
Yield/Force Off 170(s)	94	65	52	20	94	71	114	41
Local Start Time (s)	82	58	37	100	88	58	100	0
Local Yield (s)	94	76	52	31	94	82	114	52
Local Yield 170(s)	94	65	52	20	94	71	114	41

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	80

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 4: Loop 202 SB Ramps & Guadalupe Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	300	433	0	0	664	788	32	6	156	0	0	0
Future Volume (vph)	300	433	0	0	664	788	32	6	156	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.87	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	3433	5085			7544	1583	1681	1468	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	3433	5085			7544	1583	1681	1468	1504			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	333	481	0	0	738	876	36	7	173	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	388	0	66	78	0	0	0
Lane Group Flow (vph)	333	481	0	0	738	488	32	26	14	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Perm			
Protected Phases	7	4			8		5	2				
Permitted Phases						8			2			
Actuated Green, G (s)	13.8	49.2			50.4	50.4	3.6	21.6	18.0			
Effective Green, g (s)	13.8	49.2			50.4	50.4	3.6	21.6	18.0			
Actuated g/C Ratio	0.12	0.41			0.42	0.42	0.03	0.18	0.15			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	394	2084			3168	664	50	264	225			
v/s Ratio Prot	c0.10	0.09			0.10		c0.02	c0.00				
v/s Ratio Perm						c0.31		0.01	0.01			
v/c Ratio	0.85	0.23			0.23	0.73	0.64	0.10	0.06			
Uniform Delay, d1	52.1	23.1			22.4	29.2	57.6	41.1	43.8			
Progression Factor	0.78	0.30			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	14.9	0.3			0.2	7.1	24.7	0.2	0.5			
Delay (s)	55.6	7.3			22.5	36.3	82.2	41.2	44.3			
Level of Service	E	A			C	D	F	D	D			
Approach Delay (s)		27.0			30.0			48.6			0.0	
Approach LOS		C			C			D			A	

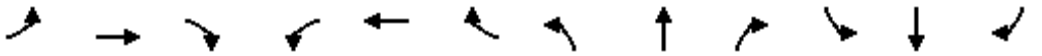
Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	None	C-Max	None
Maximum Split (s)	56	34	56	34
Maximum Split (%)	62.2%	37.8%	62.2%	37.8%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	4	60	4	60
End Time (s)	60	4	60	4
Yield/Force Off (s)	54	88	54	88
Yield/Force Off 170(s)	43	77	43	77
Local Start Time (s)	0	56	0	56
Local Yield (s)	50	84	50	84
Local Yield 170(s)	39	73	39	73

Intersection Summary		
Cycle Length	90	
Control Type	Actuated-Coordinated	
Natural Cycle	60	
Offset: 4 (4%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		

Splits and Phases: 6: Power Rd & Elliot Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	161	136	79	120	204	22	98	1091	83	14	770	143
Future Volume (veh/h)	161	136	79	120	204	22	98	1091	83	14	770	143
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	179	151	88	133	227	24	109	1212	92	16	856	159
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	325	189	288	488	52	303	1919	145	220	1715	319
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.57	0.57	0.57	0.57	0.57	0.57
Sat Flow, veh/h	1129	1108	646	1141	1663	176	555	3348	254	422	2992	556
Grp Volume(v), veh/h	179	0	239	133	0	251	109	642	662	16	508	507
Grp Sat Flow(s),veh/h/ln	1129	0	1754	1141	0	1839	555	1777	1825	422	1777	1770
Q Serve(g_s), s	13.9	0.0	10.0	9.7	0.0	10.1	13.1	21.7	21.8	2.4	15.4	15.4
Cycle Q Clear(g_c), s	23.9	0.0	10.0	19.7	0.0	10.1	28.5	21.7	21.8	24.2	15.4	15.4
Prop In Lane	1.00		0.37	1.00		0.10	1.00		0.14	1.00		0.31
Lane Grp Cap(c), veh/h	285	0	515	288	0	539	303	1019	1046	220	1019	1015
V/C Ratio(X)	0.63	0.00	0.46	0.46	0.00	0.47	0.36	0.63	0.63	0.07	0.50	0.50
Avail Cap(c_a), veh/h	305	0	546	308	0	572	303	1019	1046	220	1019	1015
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.99	0.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.8	0.0	26.0	34.1	0.0	26.0	20.0	12.8	12.9	21.0	11.5	11.5
Incr Delay (d2), s/veh	3.7	0.0	0.7	1.1	0.0	0.6	3.3	3.0	2.9	0.6	1.7	1.8
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	4.0	0.0	4.2	2.7	0.0	4.4	1.9	8.7	8.9	0.3	6.0	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.5	0.0	26.7	35.2	0.0	26.6	23.3	15.8	15.8	21.6	13.2	13.2
LnGrp LOS	D	A	C	D	A	C	C	B	B	C	B	B
Approach Vol, veh/h		418			384			1413			1031	
Approach Delay, s/veh		32.2			29.6			16.4			13.4	
Approach LOS		C			C			B			B	

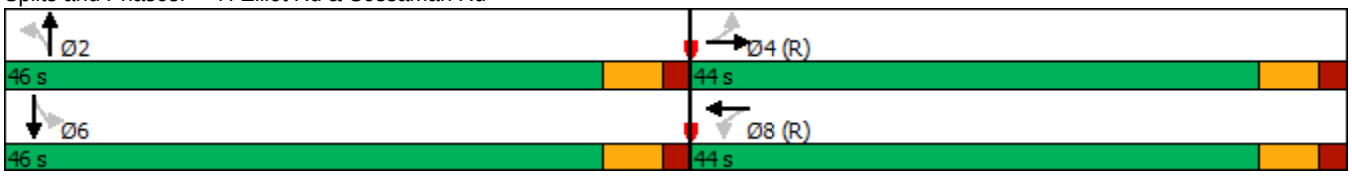
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		57.6		32.4		57.6		32.4				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		50.0		28.0		50.0		28.0				
Max Q Clear Time (g_c+I1), s		30.5		25.9		26.2		21.7				
Green Ext Time (p_c), s		10.3		0.5		7.7		1.0				

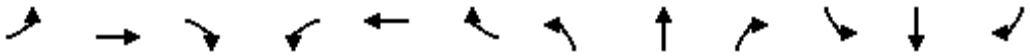
Intersection Summary												
HCM 6th Ctrl Delay			19.0									
HCM 6th LOS			B									

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	Max	C-Max	Max	C-Max
Maximum Split (s)	46	44	46	44
Maximum Split (%)	51.1%	48.9%	51.1%	48.9%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	53	9	53	9
End Time (s)	9	53	9	53
Yield/Force Off (s)	3	47	3	47
Yield/Force Off 170(s)	82	36	82	36
Local Start Time (s)	44	0	44	0
Local Yield (s)	84	38	84	38
Local Yield 170(s)	73	27	73	27

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 9 (10%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 7: Elliot Rd & Sossaman Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	132	32	5	149	16	34	37	3	28	35	167
Future Volume (veh/h)	67	132	32	5	149	16	34	37	3	28	35	167
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	74	147	36	6	166	18	38	41	3	31	39	186
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	509	613	150	509	700	76	491	765	56	667	125	598
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	1200	1451	355	1201	1658	180	1156	1722	126	1362	282	1346
Grp Volume(v), veh/h	74	0	183	6	0	184	38	0	44	31	0	225
Grp Sat Flow(s),veh/h/ln	1200	0	1806	1201	0	1838	1156	0	1848	1362	0	1628
Q Serve(g_s), s	3.8	0.0	5.9	0.3	0.0	5.8	2.0	0.0	1.2	1.2	0.0	8.0
Cycle Q Clear(g_c), s	9.6	0.0	5.9	6.2	0.0	5.8	10.0	0.0	1.2	2.4	0.0	8.0
Prop In Lane	1.00		0.20	1.00		0.10	1.00		0.07	1.00		0.83
Lane Grp Cap(c), veh/h	509	0	763	509	0	776	491	0	821	667	0	724
V/C Ratio(X)	0.15	0.00	0.24	0.01	0.00	0.24	0.08	0.00	0.05	0.05	0.00	0.31
Avail Cap(c_a), veh/h	509	0	763	509	0	776	491	0	821	667	0	724
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)	0.85	0.00	0.85	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.8	0.0	16.7	18.7	0.0	16.7	19.3	0.0	14.2	14.9	0.0	16.1
Incr Delay (d2), s/veh	0.5	0.0	0.6	0.0	0.0	0.7	0.3	0.0	0.1	0.1	0.0	1.1
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	1.1	0.0	2.5	0.1	0.0	2.5	0.6	0.0	0.5	0.4	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	0.0	17.3	18.7	0.0	17.4	19.6	0.0	14.4	15.0	0.0	17.2
LnGrp LOS	C	A	B	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		257			190			82			256	
Approach Delay, s/veh		18.2			17.5			16.8			17.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		46.0		44.0		46.0		44.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		40.0		38.0		40.0		38.0				
Max Q Clear Time (g_c+I1), s		12.0		11.6		10.0		8.2				
Green Ext Time (p_c), s		0.3		1.3		1.6		1.1				

Intersection Summary												
HCM 6th Ctrl Delay			17.5									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	111	154	33	14	38
Future Vol, veh/h	40	111	154	33	14	38
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	123	171	37	16	42

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	208	0	-	0	401	190
Stage 1	-	-	-	-	190	-
Stage 2	-	-	-	-	211	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1363	-	-	-	629	852
Stage 1	-	-	-	-	842	-
Stage 2	-	-	-	-	849	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1363	-	-	-	607	852
Mov Cap-2 Maneuver	-	-	-	-	656	-
Stage 1	-	-	-	-	813	-
Stage 2	-	-	-	-	849	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1363	-	-	-	789
HCM Lane V/C Ratio	0.033	-	-	-	0.073
HCM Control Delay (s)	7.7	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	116	3	6	136	14	6	2	3	32	3	34
Future Vol, veh/h	20	116	3	6	136	14	6	2	3	32	3	34
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	129	3	7	151	16	7	2	3	36	3	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	132	0	0	369	356	131	350	349	159
Stage 1	-	-	-	-	-	-	175	175	-	173	173	-
Stage 2	-	-	-	-	-	-	194	181	-	177	176	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1411	-	-	1453	-	-	588	570	919	605	575	886
Stage 1	-	-	-	-	-	-	827	754	-	829	756	-
Stage 2	-	-	-	-	-	-	808	750	-	825	753	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1411	-	-	1453	-	-	551	557	919	591	562	886
Mov Cap-2 Maneuver	-	-	-	-	-	-	551	557	-	591	562	-
Stage 1	-	-	-	-	-	-	813	741	-	815	752	-
Stage 2	-	-	-	-	-	-	766	746	-	806	740	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.3	10.9	10.7
HCM LOS			B	B

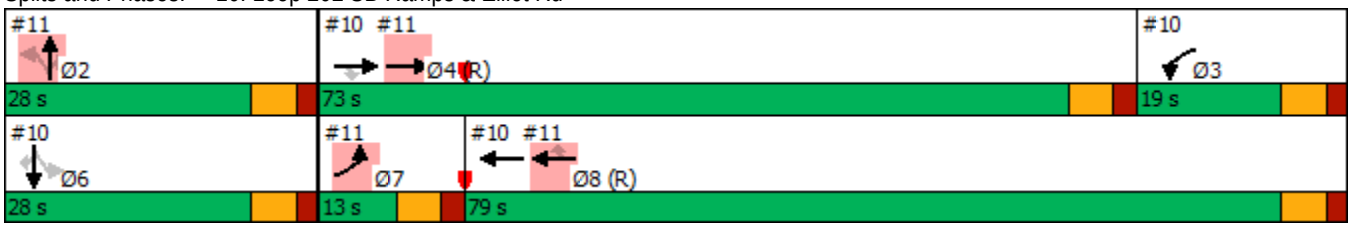
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	620	1411	-	-	1453	-	-	705
HCM Lane V/C Ratio	0.02	0.016	-	-	0.005	-	-	0.109
HCM Control Delay (s)	10.9	7.6	0	-	7.5	0	-	10.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

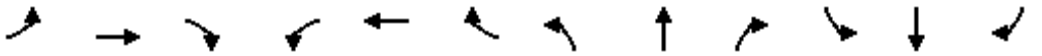
Phase Number	2	3	4	6	7	8
Node Number	11	10	10	10	11	10
Movement	NBTL	WBL	EBT	SBTL	EBL	WBT
Lead/Lag		Lag	Lead		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	28	19	73	28	13	79
Maximum Split (%)	23.3%	15.8%	60.8%	23.3%	10.8%	65.8%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	79	60	107	79	107	0
End Time (s)	107	79	60	107	0	79
Yield/Force Off (s)	101	73	54	101	114	73
Yield/Force Off 170(s)	90	73	43	90	114	62
Local Start Time (s)	79	60	107	79	107	0
Local Yield (s)	101	73	54	101	114	73
Local Yield 170(s)	90	73	43	90	114	62

Intersection Summary		
Cycle Length		120
Control Type	Actuated-Coordinated	
Natural Cycle		60

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 10: Loop 202 SB Ramps & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	111	40	142	118	0	0	0	0	144	0	41
Future Volume (vph)	0	111	40	142	118	0	0	0	0	144	0	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0	6.0	6.0
Lane Util. Factor		0.86	1.00	0.97	0.95					0.95	0.91	0.95
Frt		1.00	0.85	1.00	1.00					1.00	0.99	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		6408	1583	3433	3539					1681	1604	1504
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		6408	1583	3433	3539					1681	1604	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	123	44	158	131	0	0	0	0	160	0	46
RTOR Reduction (vph)	0	0	20	0	0	0	0	0	0	0	67	33
Lane Group Flow (vph)	0	123	24	158	131	0	0	0	0	83	15	8
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		4		3	8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		65.8	65.8	14.2	74.5					22.0	22.0	22.0
Effective Green, g (s)		65.8	65.8	14.2	74.5					22.0	22.0	22.0
Actuated g/C Ratio		0.55	0.55	0.12	0.62					0.18	0.18	0.18
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		3513	868	406	2197					308	294	275
v/s Ratio Prot		c0.02		c0.05	c0.04							
v/s Ratio Perm			0.02							c0.05	0.01	0.00
v/c Ratio		0.04	0.03	0.39	0.06					0.27	0.05	0.03
Uniform Delay, d1		12.5	12.4	48.9	9.0					42.1	40.4	40.2
Progression Factor		1.00	1.00	0.84	0.52					1.00	1.00	1.00
Incremental Delay, d2		0.0	0.1	0.6	0.1					2.1	0.3	0.2
Delay (s)		12.5	12.5	41.6	4.8					44.2	40.7	40.4
Level of Service		B	B	D	A					D	D	D
Approach Delay (s)		12.5			24.9			0.0			42.1	
Approach LOS		B			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

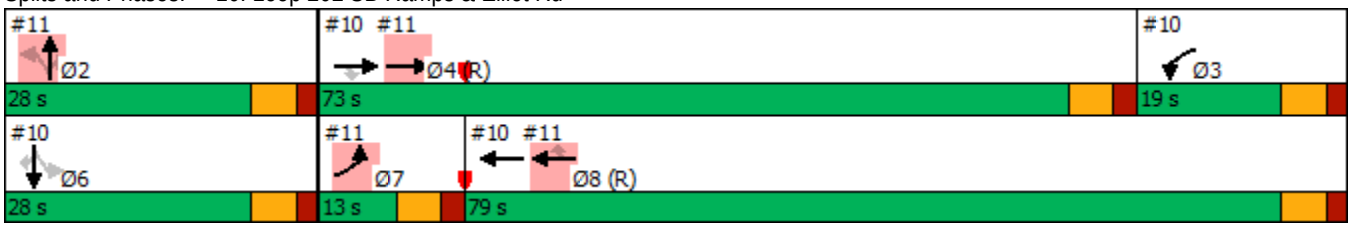
c Critical Lane Group

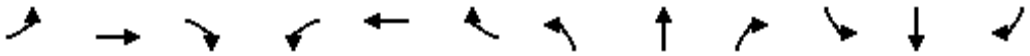
Phase Number	2	3	4	6	7	8
Node Number	11	10	10	10	11	10
Movement	NBTL	WBL	EBT	SBTL	EBL	WBT
Lead/Lag		Lag	Lead		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	28	19	73	28	13	79
Maximum Split (%)	23.3%	15.8%	60.8%	23.3%	10.8%	65.8%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	79	60	107	79	107	0
End Time (s)	107	79	60	107	0	79
Yield/Force Off (s)	101	73	54	101	114	73
Yield/Force Off 170(s)	90	73	43	90	114	62
Local Start Time (s)	79	60	107	79	107	0
Local Yield (s)	101	73	54	101	114	73
Local Yield 170(s)	90	73	43	90	114	62

Intersection Summary		
Cycle Length		120
Control Type	Actuated-Coordinated	
Natural Cycle		60

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 10: Loop 202 SB Ramps & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	216	0	0	228	625	15	1	71	0	0	0
Future Volume (vph)	47	216	0	0	228	625	15	1	71	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Lane Util. Factor	0.97	0.91			0.86	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	3433	5085			6408	1583	1681	1456	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	3433	5085			6408	1583	1681	1456	1504			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	52	240	0	0	253	694	17	1	79	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	263	0	31	33	0	0	0
Lane Group Flow (vph)	52	240	0	0	253	431	15	10	8	0	0	0
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Actuated Green, G (s)	5.5	65.8			74.5	74.5	22.0	22.0	22.0			
Effective Green, g (s)	5.5	65.8			74.5	74.5	22.0	22.0	22.0			
Actuated g/C Ratio	0.05	0.55			0.62	0.62	0.18	0.18	0.18			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	157	2788			3978	982	308	266	275			
v/s Ratio Prot	c0.02	0.05			0.04							
v/s Ratio Perm						c0.27	c0.01	0.01	0.00			
v/c Ratio	0.33	0.09			0.06	0.44	0.05	0.04	0.03			
Uniform Delay, d1	55.5	12.8			9.0	11.9	40.4	40.3	40.2			
Progression Factor	1.10	0.80			0.25	2.19	1.00	1.00	1.00			
Incremental Delay, d2	1.2	0.1			0.0	1.1	0.3	0.3	0.2			
Delay (s)	62.5	10.3			2.3	27.1	40.7	40.6	40.4			
Level of Service	E	B			A	C	D	D	D			
Approach Delay (s)		19.6			20.5			40.5			0.0	
Approach LOS		B			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

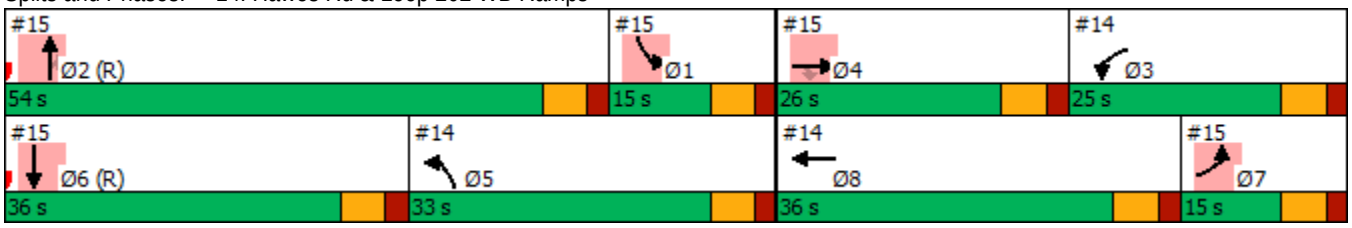
c Critical Lane Group

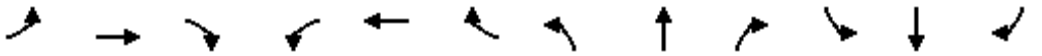
Phase Number	1	2	3	4	5	6	7	8
Node Number	15	15	14	15	14	15	15	14
Movement	SBL	NBT	WBL	EBT	NBL	SBT	EBL	WBT
Lead/Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	Ped	None	C-Min	None	None
Maximum Split (s)	15	54	25	26	33	36	15	36
Maximum Split (%)	12.5%	45.0%	20.8%	21.7%	27.5%	30.0%	12.5%	30.0%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	15	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	54	0	95	69	36	0	105	69
End Time (s)	69	54	0	95	69	36	0	105
Yield/Force Off (s)	63	48	114	89	63	30	114	99
Yield/Force Off 170(s)	63	37	114	78	63	19	114	88
Local Start Time (s)	54	0	95	69	36	0	105	69
Local Yield (s)	63	48	114	89	63	30	114	99
Local Yield 170(s)	63	37	114	78	63	19	114	88

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	70

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

Splits and Phases: 14: Hawes Rd & Loop 202 WB Ramps





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	125	0	0	105	0	0	0	0	0
Future Volume (vph)	0	0	0	125	0	0	105	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0		6.0					
Lane Util. Factor				0.95	0.95		1.00					
Frt				1.00	1.00		1.00					
Flt Protected				0.95	0.95		0.95					
Satd. Flow (prot)				1681	1681		1770					
Flt Permitted				0.95	0.95		0.95					
Satd. Flow (perm)				1681	1681		1770					
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	139	0	0	117	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	69	70	0	117	0	0	0	0	0
Turn Type				Prot	NA		Prot					
Protected Phases				3	8		5					
Permitted Phases												
Actuated Green, G (s)				36.6	71.3		18.0					
Effective Green, g (s)				36.6	71.3		18.0					
Actuated g/C Ratio				0.31	0.59		0.15					
Clearance Time (s)				6.0	6.0		6.0					
Vehicle Extension (s)				3.0	3.0		3.0					
Lane Grp Cap (vph)				512	998		265					
v/s Ratio Prot				c0.04	c0.02		c0.07					
v/s Ratio Perm					0.02							
v/c Ratio				0.13	0.07		0.44					
Uniform Delay, d1				30.2	10.3		46.4					
Progression Factor				1.00	1.00		0.37					
Incremental Delay, d2				0.1	0.0		1.2					
Delay (s)				30.3	10.3		18.3					
Level of Service				C	B		B					
Approach Delay (s)		0.0			20.3			18.3			0.0	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

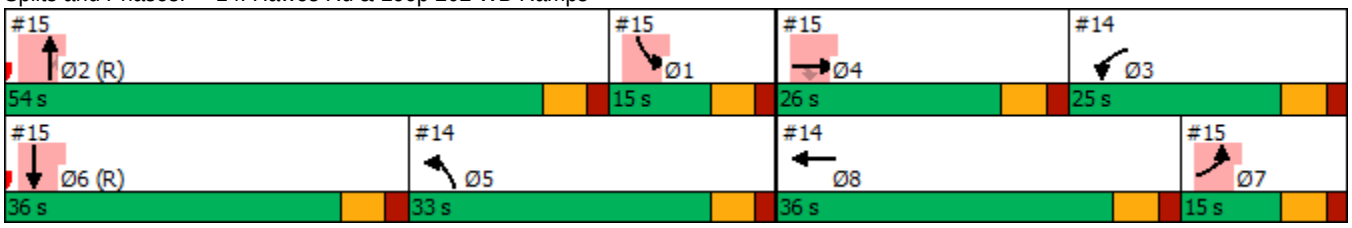
c Critical Lane Group

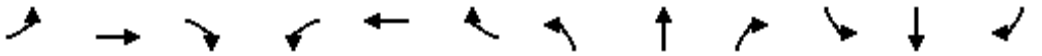
Phase Number	1	2	3	4	5	6	7	8
Node Number	15	15	14	15	14	15	15	14
Movement	SBL	NBT	WBL	EBT	NBL	SBT	EBL	WBT
Lead/Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	Ped	None	C-Min	None	None
Maximum Split (s)	15	54	25	26	33	36	15	36
Maximum Split (%)	12.5%	45.0%	20.8%	21.7%	27.5%	30.0%	12.5%	30.0%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	15	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	54	0	95	69	36	0	105	69
End Time (s)	69	54	0	95	69	36	0	105
Yield/Force Off (s)	63	48	114	89	63	30	114	99
Yield/Force Off 170(s)	63	37	114	78	63	19	114	88
Local Start Time (s)	54	0	95	69	36	0	105	69
Local Yield (s)	63	48	114	89	63	30	114	99
Local Yield 170(s)	63	37	114	78	63	19	114	88

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	70

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

Splits and Phases: 14: Hawes Rd & Loop 202 WB Ramps





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	27	0	0	0	0	103	242	1	124	0
Future Volume (vph)	2	0	27	0	0	0	0	103	242	1	124	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00					1.00	1.00	1.00	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770		1583					1863	1583	1770	3539	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770		1583					1863	1583	1770	3539	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	0	30	0	0	0	0	114	269	1	138	0
RTOR Reduction (vph)	0	0	23	0	0	0	0	0	206	0	0	0
Lane Group Flow (vph)	2	0	7	0	0	0	0	114	63	1	138	0
Turn Type	Prot		Perm					NA	Perm	Prot	NA	
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	1.2		28.7					28.2	28.2	2.5	12.7	
Effective Green, g (s)	1.2		28.7					28.2	28.2	2.5	12.7	
Actuated g/C Ratio	0.01		0.24					0.23	0.23	0.02	0.11	
Clearance Time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	17		378					437	372	36	374	
v/s Ratio Prot	c0.00							c0.06		c0.00	c0.04	
v/s Ratio Perm			c0.00						0.04			
v/c Ratio	0.12		0.02					0.26	0.17	0.03	0.37	
Uniform Delay, d1	58.9		34.9					37.4	36.6	57.6	49.9	
Progression Factor	1.00		1.00					1.00	1.00	0.98	0.50	
Incremental Delay, d2	3.1		0.0					1.4	1.0	0.3	2.8	
Delay (s)	62.0		34.9					38.9	37.6	57.0	27.6	
Level of Service	E		C					D	D	E	C	
Approach Delay (s)		36.6			0.0			37.9			27.9	
Approach LOS		D			A			D			C	

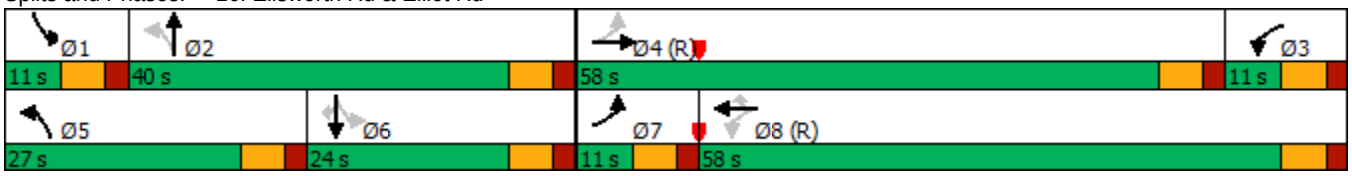
Intersection Summary			
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

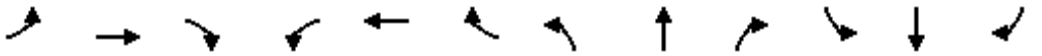
c Critical Lane Group

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	11	40	11	58	27	24	11	58
Maximum Split (%)	9.2%	33.3%	9.2%	48.3%	22.5%	20.0%	9.2%	48.3%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	6	17	115	57	6	33	57	68
End Time (s)	17	57	6	115	33	57	68	6
Yield/Force Off (s)	11	51	0	109	27	51	62	0
Yield/Force Off 170(s)	11	40	0	98	27	40	62	109
Local Start Time (s)	58	69	47	109	58	85	109	0
Local Yield (s)	63	103	52	41	79	103	114	52
Local Yield 170(s)	63	92	52	30	79	92	114	41

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	75
Offset: 68 (57%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 16: Ellsworth Rd & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	192	62	24	929	101	229	351	16	22	244	75
Future Volume (veh/h)	44	192	62	24	929	101	229	351	16	22	244	75
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	49	213	69	27	1032	112	254	390	18	24	271	83
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	1152	363	533	1635	729	404	980	45	271	619	276
Arrive On Green	0.07	0.87	0.87	0.06	0.46	0.46	0.13	0.28	0.28	0.02	0.17	0.17
Sat Flow, veh/h	1781	2659	838	1781	3554	1585	1781	3459	159	1781	3554	1585
Grp Volume(v), veh/h	49	140	142	27	1032	112	254	200	208	24	271	83
Grp Sat Flow(s),veh/h/ln	1781	1777	1720	1781	1777	1585	1781	1777	1842	1781	1777	1585
Q Serve(g_s), s	2.0	1.5	1.6	0.0	26.5	4.9	13.5	10.9	11.0	1.3	8.2	5.5
Cycle Q Clear(g_c), s	2.0	1.5	1.6	0.0	26.5	4.9	13.5	10.9	11.0	1.3	8.2	5.5
Prop In Lane	1.00		0.49	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	183	770	745	533	1635	729	404	503	522	271	619	276
V/C Ratio(X)	0.27	0.18	0.19	0.05	0.63	0.15	0.63	0.40	0.40	0.09	0.44	0.30
Avail Cap(c_a), veh/h	198	770	745	533	1635	729	480	503	522	304	619	276
HCM Platoon Ratio	2.00	2.00	2.00	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	25.1	4.6	4.6	22.6	24.6	18.8	32.7	34.7	34.7	39.2	44.3	43.2
Incr Delay (d2), s/veh	0.8	0.5	0.6	0.0	1.9	0.4	1.9	2.3	2.3	0.1	2.2	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.6	0.7	0.5	11.4	1.9	6.0	5.0	5.3	0.6	3.8	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.8	5.2	5.2	22.7	26.5	19.3	34.6	37.1	37.0	39.4	46.6	46.0
LnGrp LOS	C	A	A	C	C	B	C	D	D	D	D	D
Approach Vol, veh/h		331			1171			662			378	
Approach Delay, s/veh		8.2			25.7			36.1			46.0	
Approach LOS		A			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	40.0	13.2	58.0	21.9	26.9	10.0	61.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	34.0	5.0	52.0	21.0	18.0	5.0	52.0
Max Q Clear Time (g_c+I1), s	3.3	13.0	2.0	3.6	15.5	10.2	4.0	28.5
Green Ext Time (p_c), s	0.0	2.3	0.0	1.8	0.4	1.2	0.0	8.6

Intersection Summary	
HCM 6th Ctrl Delay	29.2
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	10	44	599	327	20
Future Vol, veh/h	3	10	44	599	327	20
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	11	49	666	363	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	805	193	385	0	-	0
Stage 1	374	-	-	-	-	-
Stage 2	431	-	-	-	-	-
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	320	816	1170	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	307	816	1170	-	-	-
Mov Cap-2 Maneuver	307	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	623	-	-	-	-	-

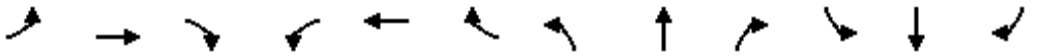
Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1170	-	307	816	-	-
HCM Lane V/C Ratio	0.042	-	0.011	0.014	-	-
HCM Control Delay (s)	8.2	-	16.9	9.5	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0	0	-	-

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	Max	C-Max	Max	C-Max
Maximum Split (s)	55	35	55	35
Maximum Split (%)	61.1%	38.9%	61.1%	38.9%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	26	81	26	81
End Time (s)	81	26	81	26
Yield/Force Off (s)	75	20	75	20
Yield/Force Off 170(s)	64	9	64	9
Local Start Time (s)	35	0	35	0
Local Yield (s)	84	29	84	29
Local Yield 170(s)	73	18	73	18

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 81 (90%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 1: Sossaman Rd & Guadalupe Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	377	49	72	329	159	25	131	43	258	187	71
Future Volume (veh/h)	49	377	49	72	329	159	25	131	43	258	187	71
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	54	419	54	80	366	177	28	146	48	287	208	79
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	1479	187	313	1645	511	644	1018	863	681	1935	863
Arrive On Green	0.32	0.32	0.32	0.11	0.11	0.11	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	863	4590	580	921	5106	1585	1092	1870	1585	1189	3554	1585
Grp Volume(v), veh/h	54	309	164	80	366	177	28	146	48	287	208	79
Grp Sat Flow(s),veh/h/ln	863	1702	1766	921	1702	1585	1092	1870	1585	1189	1777	1585
Q Serve(g_s), s	4.5	6.1	6.3	7.4	5.9	9.3	1.1	3.5	1.3	14.2	2.5	2.2
Cycle Q Clear(g_c), s	10.4	6.1	6.3	13.6	5.9	9.3	3.7	3.5	1.3	17.6	2.5	2.2
Prop In Lane	1.00		0.33	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	301	1097	569	313	1645	511	644	1018	863	681	1935	863
V/C Ratio(X)	0.18	0.28	0.29	0.26	0.22	0.35	0.04	0.14	0.06	0.42	0.11	0.09
Avail Cap(c_a), veh/h	301	1097	569	313	1645	511	644	1018	863	681	1935	863
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	22.7	22.8	36.3	29.9	31.4	10.8	10.1	9.6	14.5	9.9	9.8
Incr Delay (d2), s/veh	1.3	0.6	1.3	1.9	0.3	1.8	0.1	0.3	0.1	1.9	0.1	0.2
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	1.0	2.5	2.7	2.0	2.5	4.1	0.3	1.4	0.4	3.9	1.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.8	23.4	24.1	38.3	30.2	33.3	10.9	10.4	9.7	16.4	10.0	10.0
LnGrp LOS	C	C	C	D	C	C	B	B	A	B	B	B
Approach Vol, veh/h		527			623			222			574	
Approach Delay, s/veh		24.0			32.1			10.3			13.2	
Approach LOS		C			C			B			B	

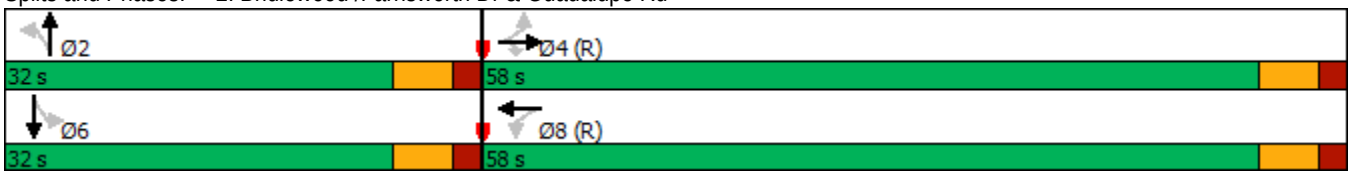
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		55.0		35.0		55.0		35.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		49.0		29.0		49.0		29.0				
Max Q Clear Time (g_c+I1), s		5.7		12.4		19.6		15.6				
Green Ext Time (p_c), s		1.2		3.0		2.8		2.9				

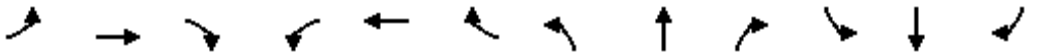
Intersection Summary												
HCM 6th Ctrl Delay			21.9									
HCM 6th LOS			C									

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	Max	C-Max	Max	C-Max
Maximum Split (s)	32	58	32	58
Maximum Split (%)	35.6%	64.4%	35.6%	64.4%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	36	68	36	68
End Time (s)	68	36	68	36
Yield/Force Off (s)	62	30	62	30
Yield/Force Off 170(s)	51	19	51	19
Local Start Time (s)	58	0	58	0
Local Yield (s)	84	52	84	52
Local Yield 170(s)	73	41	73	41

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 68 (76%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 2: Bridlewood /Farnsworth Dr & Guadalupe Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	548	67	73	507	48	38	0	58	25	0	0
Future Volume (veh/h)	33	548	67	73	507	48	38	0	58	25	0	0
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	37	609	74	81	563	53	42	0	64	28	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	500	2053	916	407	2746	256	490	0	458	426	540	0
Arrive On Green	0.19	0.19	0.19	0.58	0.58	0.58	0.29	0.00	0.29	0.29	0.00	0.00
Sat Flow, veh/h	807	3554	1585	758	4752	443	1418	0	1585	1338	1870	0
Grp Volume(v), veh/h	37	609	74	81	402	214	42	0	64	28	0	0
Grp Sat Flow(s),veh/h/ln	807	1777	1585	758	1702	1791	1418	0	1585	1338	1870	0
Q Serve(g_s), s	3.5	13.2	3.5	6.1	5.1	5.2	2.0	0.0	2.7	1.4	0.0	0.0
Cycle Q Clear(g_c), s	8.6	13.2	3.5	19.4	5.1	5.2	2.0	0.0	2.7	4.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	500	2053	916	407	1967	1035	490	0	458	426	540	0
V/C Ratio(X)	0.07	0.30	0.08	0.20	0.20	0.21	0.09	0.00	0.14	0.07	0.00	0.00
Avail Cap(c_a), veh/h	500	2053	916	407	1967	1035	490	0	458	426	540	0
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.0	20.7	16.8	16.3	9.1	9.1	23.5	0.0	23.7	25.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.4	0.2	1.1	0.2	0.5	0.3	0.0	0.6	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	6.3	1.2	1.2	1.8	2.0	0.7	0.0	1.1	0.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.3	21.1	16.9	17.4	9.3	9.6	23.8	0.0	24.4	25.5	0.0	0.0
LnGrp LOS	C	C	B	B	A	A	C	A	C	C	A	A
Approach Vol, veh/h		720			697			106			28	
Approach Delay, s/veh		20.7			10.3			24.1			25.5	
Approach LOS		C			B			C			C	

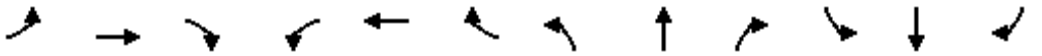
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		32.0		58.0		32.0		58.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		26.0		52.0		26.0		52.0				
Max Q Clear Time (g_c+I1), s		4.7		15.2		6.1		21.4				
Green Ext Time (p_c), s		0.4		5.3		0.0		5.1				

Intersection Summary												
HCM 6th Ctrl Delay			16.4									
HCM 6th LOS			B									

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	Max	C-Max	Max	C-Max
Maximum Split (s)	29	61	29	61
Maximum Split (%)	32.2%	67.8%	32.2%	67.8%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	85	24	85	24
End Time (s)	24	85	24	85
Yield/Force Off (s)	18	79	18	79
Yield/Force Off 170(s)	7	68	7	68
Local Start Time (s)	61	0	61	0
Local Yield (s)	84	55	84	55
Local Yield 170(s)	73	44	73	44

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 24 (27%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 3: Hawes Rd & Guadalupe Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	454	30	134	538	63	24	44	90	25	36	43
Future Volume (veh/h)	58	454	30	134	538	63	24	44	90	25	36	43
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	64	504	33	149	598	70	27	49	100	28	40	48
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	510	1143	969	486	3120	969	361	140	286	306	198	237
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	769	1870	1585	868	5106	1585	1309	549	1120	1239	774	929
Grp Volume(v), veh/h	64	504	33	149	598	70	27	0	149	28	0	88
Grp Sat Flow(s),veh/h/ln	769	1870	1585	868	1702	1585	1309	0	1669	1239	0	1703
Q Serve(g_s), s	3.6	12.9	0.7	9.9	4.6	1.6	1.5	0.0	6.6	1.7	0.0	3.7
Cycle Q Clear(g_c), s	8.2	12.9	0.7	22.8	4.6	1.6	5.1	0.0	6.6	8.3	0.0	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.67	1.00		0.55
Lane Grp Cap(c), veh/h	510	1143	969	486	3120	969	361	0	426	306	0	435
V/C Ratio(X)	0.13	0.44	0.03	0.31	0.19	0.07	0.07	0.00	0.35	0.09	0.00	0.20
Avail Cap(c_a), veh/h	510	1143	969	486	3120	969	361	0	426	306	0	435
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	0.95	0.95	0.95	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.5	9.3	7.0	15.4	7.7	7.1	28.3	0.0	27.4	30.8	0.0	26.3
Incr Delay (d2), s/veh	0.5	1.2	0.1	1.5	0.1	0.1	0.4	0.0	2.2	0.6	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	5.1	0.2	2.1	1.6	0.5	0.5	0.0	2.8	0.6	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.0	10.6	7.0	16.9	7.8	7.3	28.7	0.0	29.6	31.4	0.0	27.3
LnGrp LOS	B	B	A	B	A	A	C	A	C	C	A	C
Approach Vol, veh/h		601			817			176			116	
Approach Delay, s/veh		10.3			9.4			29.5			28.3	
Approach LOS		B			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		29.0		61.0		29.0		61.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		23.0		55.0		23.0		55.0				
Max Q Clear Time (g_c+I1), s		8.6		14.9		10.3		24.8				
Green Ext Time (p_c), s		0.7		4.3		0.4		5.9				

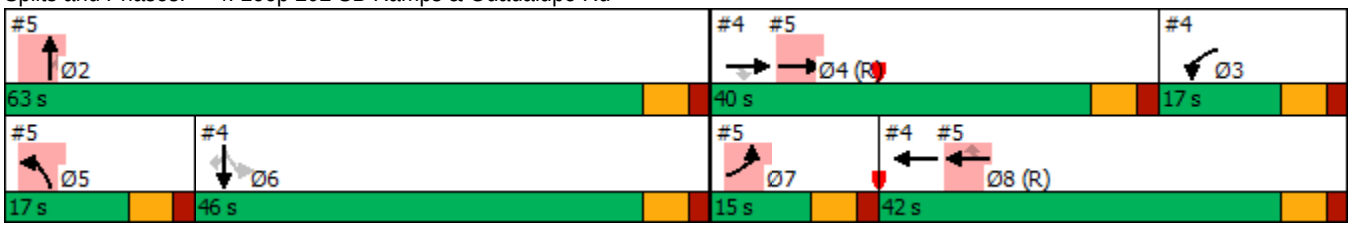
Intersection Summary												
HCM 6th Ctrl Delay			13.1									
HCM 6th LOS			B									

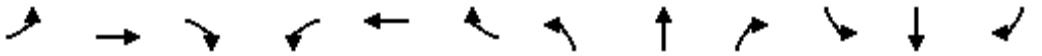
Phase Number	2	3	4	5	6	7	8
Node Number	5	4	4	5	4	5	4
Movement	NBT	WBL	EBT	NBL	SBTL	EBL	WBT
Lead/Lag		Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	63	17	40	17	46	15	42
Maximum Split (%)	52.5%	14.2%	33.3%	14.2%	38.3%	12.5%	35.0%
Minimum Split (s)	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0
Walk Time (s)	7		7		7		7
Flash Dont Walk (s)	11		11		11		11
Dual Entry	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	42	25	105	42	59	105	0
End Time (s)	105	42	25	59	105	0	42
Yield/Force Off (s)	99	36	19	53	99	114	36
Yield/Force Off 170(s)	88	36	8	53	88	114	25
Local Start Time (s)	42	25	105	42	59	105	0
Local Yield (s)	99	36	19	53	99	114	36
Local Yield 170(s)	88	36	8	53	88	114	25

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	80

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 4: Loop 202 SB Ramps & Guadalupe Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	511	83	196	373	0	0	0	0	671	0	439
Future Volume (vph)	0	511	83	196	373	0	0	0	0	671	0	439
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0	6.0	6.0
Lane Util. Factor		0.81	1.00	0.97	0.91					0.95	0.91	0.95
Frt		1.00	0.85	1.00	1.00					1.00	0.96	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		7544	1583	3433	5085					1681	1574	1504
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		7544	1583	3433	5085					1681	1574	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	568	92	218	414	0	0	0	0	746	0	488
RTOR Reduction (vph)	0	0	66	0	0	0	0	0	0	0	126	255
Lane Group Flow (vph)	0	568	26	218	414	0	0	0	0	425	297	131
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		4		3	8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		34.0	34.0	11.0	36.3					40.8	40.8	40.8
Effective Green, g (s)		34.0	34.0	11.0	36.3					40.8	40.8	40.8
Actuated g/C Ratio		0.28	0.28	0.09	0.30					0.34	0.34	0.34
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		2137	448	314	1538					571	535	511
v/s Ratio Prot		c0.08		c0.06	c0.08							
v/s Ratio Perm			0.02							c0.25	0.19	0.09
v/c Ratio		0.27	0.06	0.69	0.27					0.74	0.56	0.26
Uniform Delay, d1		33.3	31.3	52.9	31.8					35.0	32.2	28.6
Progression Factor		1.00	1.00	0.64	0.50					1.00	1.00	1.00
Incremental Delay, d2		0.3	0.2	6.3	0.4					8.5	4.1	1.2
Delay (s)		33.6	31.6	40.1	16.4					43.5	36.3	29.8
Level of Service		C	C	D	B					D	D	C
Approach Delay (s)		33.3			24.6			0.0			36.8	
Approach LOS		C			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

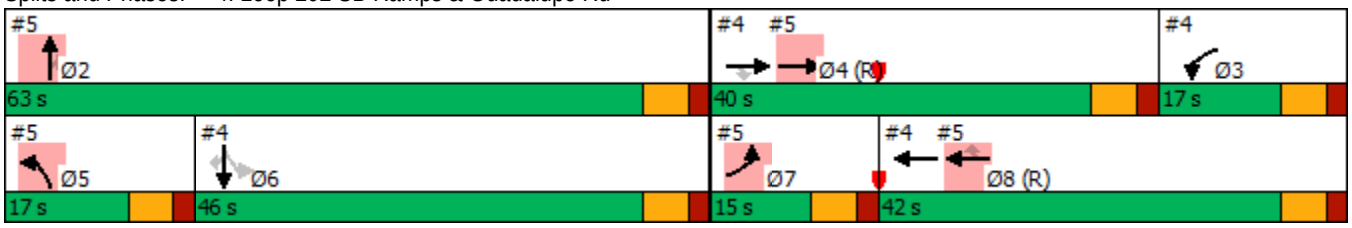
c Critical Lane Group

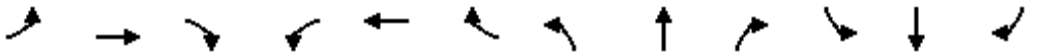
Phase Number	2	3	4	5	6	7	8
Node Number	5	4	4	5	4	5	4
Movement	NBT	WBL	EBT	NBL	SBTL	EBL	WBT
Lead/Lag		Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	63	17	40	17	46	15	42
Maximum Split (%)	52.5%	14.2%	33.3%	14.2%	38.3%	12.5%	35.0%
Minimum Split (s)	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0
Walk Time (s)	7		7		7		7
Flash Dont Walk (s)	11		11		11		11
Dual Entry	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	42	25	105	42	59	105	0
End Time (s)	105	42	25	59	105	0	42
Yield/Force Off (s)	99	36	19	53	99	114	36
Yield/Force Off 170(s)	88	36	8	53	88	114	25
Local Start Time (s)	42	25	105	42	59	105	0
Local Yield (s)	99	36	19	53	99	114	36
Local Yield 170(s)	88	36	8	53	88	114	25

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	80

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 4: Loop 202 SB Ramps & Guadalupe Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	1057	0	0	463	297	95	0	322	0	0	0
Future Volume (vph)	128	1057	0	0	463	297	95	0	322	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	3433	5085			7544	1583	1681	1452	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	3433	5085			7544	1583	1681	1452	1504			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	142	1174	0	0	514	330	106	0	358	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	230	0	98	96	0	0	0
Lane Group Flow (vph)	142	1174	0	0	514	100	95	88	87	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Perm			
Protected Phases	7	4			8		5	2				
Permitted Phases						8			2			
Actuated Green, G (s)	8.7	34.0			36.3	36.3	10.2	57.0	57.0			
Effective Green, g (s)	8.7	34.0			36.3	36.3	10.2	57.0	57.0			
Actuated g/C Ratio	0.07	0.28			0.30	0.30	0.08	0.48	0.48			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	248	1440			2282	478	142	689	714			
v/s Ratio Prot	0.04	c0.23			c0.07		c0.06	c0.01				
v/s Ratio Perm						0.06		0.05	0.06			
v/c Ratio	0.57	0.82			0.23	0.21	0.67	0.13	0.12			
Uniform Delay, d1	53.9	40.1			31.3	31.2	53.3	17.6	17.6			
Progression Factor	1.16	0.60			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	2.8	4.6			0.2	1.0	11.3	0.1	0.3			
Delay (s)	65.2	28.5			31.6	32.2	64.6	17.7	17.9			
Level of Service	E	C			C	C	E	B	B			
Approach Delay (s)		32.5			31.8			27.4			0.0	
Approach LOS		C			C			C			A	

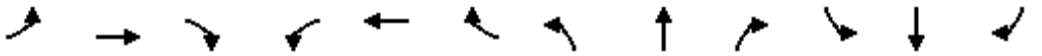
Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	None	C-Max	None
Maximum Split (s)	59	31	59	31
Maximum Split (%)	65.6%	34.4%	65.6%	34.4%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	6	65	6	65
End Time (s)	65	6	65	6
Yield/Force Off (s)	59	0	59	0
Yield/Force Off 170(s)	48	79	48	79
Local Start Time (s)	0	59	0	59
Local Yield (s)	53	84	53	84
Local Yield 170(s)	42	73	42	73

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	65
Offset: 6 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	

Splits and Phases: 6: Power Rd & Elliot Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	222	106	137	180	24	81	824	185	23	1243	116
Future Volume (veh/h)	104	222	106	137	180	24	81	824	185	23	1243	116
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	116	247	118	152	200	27	90	916	206	26	1381	129
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	332	159	171	448	61	180	1698	381	279	1935	180
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	1154	1196	571	1017	1613	218	347	2883	648	502	3287	306
Grp Volume(v), veh/h	116	0	365	152	0	227	90	564	558	26	744	766
Grp Sat Flow(s),veh/h/ln	1154	0	1768	1017	0	1831	347	1777	1754	502	1777	1815
Q Serve(g_s), s	8.3	0.0	16.9	8.1	0.0	9.2	22.5	17.2	17.3	3.0	26.6	27.0
Cycle Q Clear(g_c), s	17.5	0.0	16.9	25.0	0.0	9.2	49.5	17.2	17.3	20.2	26.6	27.0
Prop In Lane	1.00		0.32	1.00		0.12	1.00		0.37	1.00		0.17
Lane Grp Cap(c), veh/h	283	0	491	171	0	509	180	1046	1033	279	1046	1069
V/C Ratio(X)	0.41	0.00	0.74	0.89	0.00	0.45	0.50	0.54	0.54	0.09	0.71	0.72
Avail Cap(c_a), veh/h	283	0	491	171	0	509	180	1046	1033	279	1046	1069
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.99	0.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	0.0	29.6	42.6	0.0	26.8	30.8	11.1	11.2	17.2	13.1	13.2
Incr Delay (d2), s/veh	1.0	0.0	6.0	38.3	0.0	0.6	9.6	2.0	2.0	0.7	4.1	4.1
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	2.4	0.0	7.8	5.2	0.0	4.0	2.3	6.7	6.6	0.4	10.6	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.0	0.0	35.6	80.9	0.0	27.4	40.4	13.1	13.2	17.9	17.2	17.3
LnGrp LOS	C	A	D	F	A	C	D	B	B	B	B	B
Approach Vol, veh/h		481			379			1212			1536	
Approach Delay, s/veh		35.5			48.9			15.2			17.2	
Approach LOS		D			D			B			B	

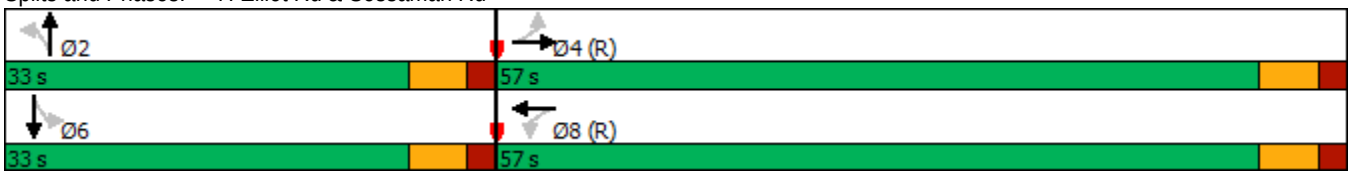
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		59.0		31.0		59.0		31.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		53.0		25.0		53.0		25.0				
Max Q Clear Time (g_c+I1), s		51.5		19.5		29.0		27.0				
Green Ext Time (p_c), s		1.1		1.3		12.8		0.0				

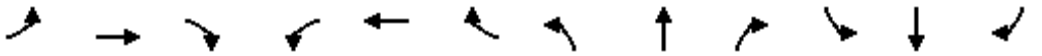
Intersection Summary												
HCM 6th Ctrl Delay			22.3									
HCM 6th LOS			C									

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	Max	C-Max	Max	C-Max
Maximum Split (s)	33	57	33	57
Maximum Split (%)	36.7%	63.3%	36.7%	63.3%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	53	86	53	86
End Time (s)	86	53	86	53
Yield/Force Off (s)	80	47	80	47
Yield/Force Off 170(s)	69	36	69	36
Local Start Time (s)	57	0	57	0
Local Yield (s)	84	51	84	51
Local Yield 170(s)	73	40	73	40

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 86 (96%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 7: Elliot Rd & Sossaman Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	161	30	5	108	40	48	42	4	31	48	163
Future Volume (veh/h)	260	161	30	5	108	40	48	42	4	31	48	163
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	289	179	33	6	120	44	53	47	4	34	53	181
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	719	871	160	676	740	271	291	510	43	459	112	381
Arrive On Green	0.57	0.57	0.57	0.57	0.57	0.57	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1222	1536	283	1170	1306	479	1146	1700	145	1354	372	1270
Grp Volume(v), veh/h	289	0	212	6	0	164	53	0	51	34	0	234
Grp Sat Flow(s),veh/h/ln	1222	0	1819	1170	0	1784	1146	0	1844	1354	0	1642
Q Serve(g_s), s	13.3	0.0	5.1	0.2	0.0	3.9	3.6	0.0	1.8	1.7	0.0	10.5
Cycle Q Clear(g_c), s	17.3	0.0	5.1	5.4	0.0	3.9	14.0	0.0	1.8	3.5	0.0	10.5
Prop In Lane	1.00		0.16	1.00		0.27	1.00		0.08	1.00		0.77
Lane Grp Cap(c), veh/h	719	0	1031	676	0	1011	291	0	553	459	0	493
V/C Ratio(X)	0.40	0.00	0.21	0.01	0.00	0.16	0.18	0.00	0.09	0.07	0.00	0.48
Avail Cap(c_a), veh/h	719	0	1031	676	0	1011	291	0	553	459	0	493
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)	0.66	0.00	0.66	1.00	0.00	1.00	1.00	0.00	1.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	13.4	0.0	9.6	10.9	0.0	9.3	31.4	0.0	22.7	23.9	0.0	25.7
Incr Delay (d2), s/veh	1.1	0.0	0.3	0.0	0.0	0.3	1.4	0.0	0.3	0.3	0.0	3.2
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	3.6	0.0	2.0	0.1	0.0	1.5	1.1	0.0	0.8	0.6	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.5	0.0	9.9	10.9	0.0	9.6	32.8	0.0	23.0	24.2	0.0	28.9
LnGrp LOS	B	A	A	B	A	A	C	A	C	C	A	C
Approach Vol, veh/h		501			170			104			268	
Approach Delay, s/veh		12.6			9.7			28.0			28.3	
Approach LOS		B			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		33.0		57.0		33.0		57.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		27.0		51.0		27.0		51.0				
Max Q Clear Time (g_c+I1), s		16.0		19.3		12.5		7.4				
Green Ext Time (p_c), s		0.3		2.4		1.3		1.1				

Intersection Summary												
HCM 6th Ctrl Delay			17.7									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	204	163	10	8	13
Future Vol, veh/h	18	204	163	10	8	13
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	227	181	11	9	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	192	0	-	0	454	187
Stage 1	-	-	-	-	187	-
Stage 2	-	-	-	-	267	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1381	-	-	-	606	855
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	821	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1381	-	-	-	596	855
Mov Cap-2 Maneuver	-	-	-	-	649	-
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	821	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1381	-	-	-	763
HCM Lane V/C Ratio	0.014	-	-	-	0.031
HCM Control Delay (s)	7.6	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	28	176	5	1	156	30	2	5	8	24	4	11
Future Vol, veh/h	28	176	5	1	156	30	2	5	8	24	4	11
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	196	6	1	173	33	2	6	9	27	4	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	206	0	0	202	0	0	461	469	199	461	456	190
Stage 1	-	-	-	-	-	-	261	261	-	192	192	-
Stage 2	-	-	-	-	-	-	200	208	-	269	264	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1365	-	-	1370	-	-	511	492	842	511	501	852
Stage 1	-	-	-	-	-	-	744	692	-	810	742	-
Stage 2	-	-	-	-	-	-	802	730	-	737	690	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1365	-	-	1370	-	-	490	479	842	491	487	852
Mov Cap-2 Maneuver	-	-	-	-	-	-	490	479	-	491	487	-
Stage 1	-	-	-	-	-	-	725	674	-	789	741	-
Stage 2	-	-	-	-	-	-	785	729	-	704	672	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0	10.9	12
HCM LOS			B	B

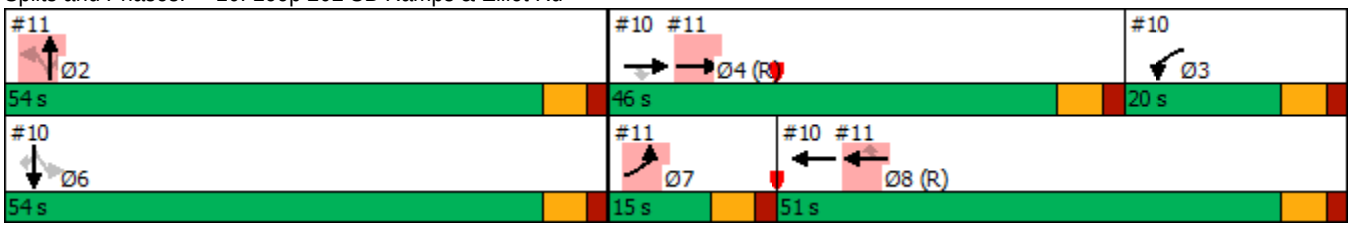
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	624	1365	-	-	1370	-	-	557
HCM Lane V/C Ratio	0.027	0.023	-	-	0.001	-	-	0.078
HCM Control Delay (s)	10.9	7.7	0	-	7.6	0	-	12
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.3

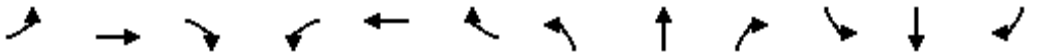
Phase Number	2	3	4	6	7	8
Node Number	11	10	10	10	11	10
Movement	NBTL	WBL	EBT	SBTL	EBL	WBT
Lead/Lag		Lag	Lead		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	54	20	46	54	15	51
Maximum Split (%)	45.0%	16.7%	38.3%	45.0%	12.5%	42.5%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	77	57	11	77	11	26
End Time (s)	11	77	57	11	26	77
Yield/Force Off (s)	5	71	51	5	20	71
Yield/Force Off 170(s)	114	71	40	114	20	60
Local Start Time (s)	51	31	105	51	105	0
Local Yield (s)	99	45	25	99	114	45
Local Yield 170(s)	88	45	14	88	114	34

Intersection Summary		
Cycle Length		120
Control Type	Actuated-Coordinated	
Natural Cycle		60

Offset: 26 (22%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 10: Loop 202 SB Ramps & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	173	30	100	144	0	0	0	0	459	0	58
Future Volume (vph)	0	173	30	100	144	0	0	0	0	459	0	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0	6.0	6.0
Lane Util. Factor		0.86	1.00	0.97	0.95					0.95	0.91	0.95
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		6408	1583	3433	3539					1681	1611	1504
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		6408	1583	3433	3539					1681	1611	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	192	33	111	160	0	0	0	0	510	0	64
RTOR Reduction (vph)	0	0	22	0	0	0	0	0	0	0	82	35
Lane Group Flow (vph)	0	192	11	111	160	0	0	0	0	260	174	23
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		4		3	8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		38.8	38.8	15.2	48.1					48.0	48.0	48.0
Effective Green, g (s)		38.8	38.8	15.2	48.1					48.0	48.0	48.0
Actuated g/C Ratio		0.32	0.32	0.13	0.40					0.40	0.40	0.40
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		2071	511	434	1418					672	644	601
v/s Ratio Prot		c0.03		c0.03	c0.05							
v/s Ratio Perm			0.01							c0.15	0.11	0.02
v/c Ratio		0.09	0.02	0.26	0.11					0.39	0.27	0.04
Uniform Delay, d1		28.3	27.7	47.3	22.6					25.6	24.2	21.9
Progression Factor		1.00	1.00	0.72	0.53					1.00	1.00	1.00
Incremental Delay, d2		0.1	0.1	0.3	0.2					1.7	1.0	0.1
Delay (s)		28.4	27.7	34.5	12.0					27.2	25.3	22.1
Level of Service		C	C	C	B					C	C	C
Approach Delay (s)		28.3			21.3			0.0			25.8	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

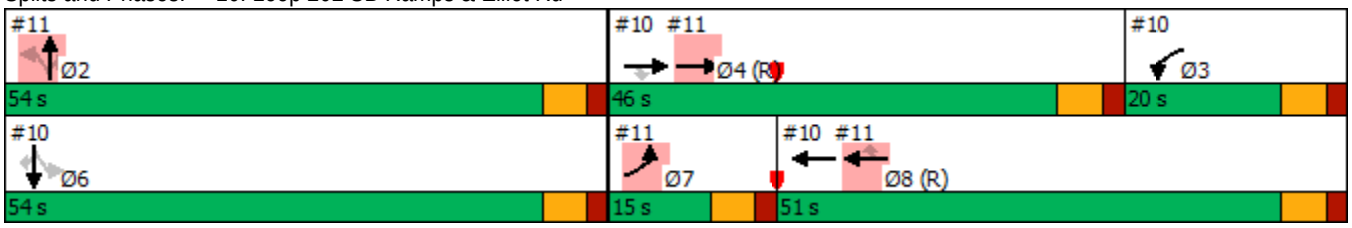
c Critical Lane Group

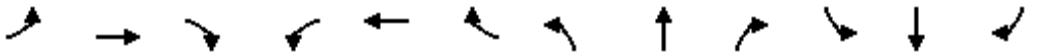
Phase Number	2	3	4	6	7	8
Node Number	11	10	10	10	11	10
Movement	NBTL	WBL	EBT	SBTL	EBL	WBT
Lead/Lag		Lag	Lead		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	54	20	46	54	15	51
Maximum Split (%)	45.0%	16.7%	38.3%	45.0%	12.5%	42.5%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	77	57	11	77	11	26
End Time (s)	11	77	57	11	26	77
Yield/Force Off (s)	5	71	51	5	20	71
Yield/Force Off 170(s)	114	71	40	114	20	60
Local Start Time (s)	51	31	105	51	105	0
Local Yield (s)	99	45	25	99	114	45
Local Yield 170(s)	88	45	14	88	114	34

Intersection Summary		
Cycle Length		120
Control Type	Actuated-Coordinated	
Natural Cycle		60

Offset: 26 (22%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 10: Loop 202 SB Ramps & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	599	0	0	185	234	44	0	128	0	0	0
Future Volume (vph)	39	599	0	0	185	234	44	0	128	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Lane Util. Factor	0.97	0.91			0.86	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.86	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	3433	5085			6408	1583	1681	1453	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	3433	5085			6408	1583	1681	1453	1504			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	43	666	0	0	206	260	49	0	142	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	156	0	44	44	0	0	0
Lane Group Flow (vph)	43	666	0	0	206	104	44	29	30	0	0	0
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Actuated Green, G (s)	5.9	38.8			48.1	48.1	48.0	48.0	48.0			
Effective Green, g (s)	5.9	38.8			48.1	48.1	48.0	48.0	48.0			
Actuated g/C Ratio	0.05	0.32			0.40	0.40	0.40	0.40	0.40			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	168	1644			2568	634	672	581	601			
v/s Ratio Prot	0.01	c0.13			0.03							
v/s Ratio Perm						c0.07	c0.03	0.02	0.02			
v/c Ratio	0.26	0.41			0.08	0.16	0.07	0.05	0.05			
Uniform Delay, d1	54.9	31.6			22.3	23.1	22.2	22.0	22.0			
Progression Factor	1.05	0.91			0.74	2.75	1.00	1.00	1.00			
Incremental Delay, d2	0.8	0.7			0.1	0.6	0.2	0.2	0.2			
Delay (s)	58.2	29.5			16.5	64.0	22.4	22.2	22.2			
Level of Service	E	C			B	E	C	C	C			
Approach Delay (s)		31.3			43.0			22.2			0.0	
Approach LOS		C			D			C			A	

Intersection Summary			
HCM 2000 Control Delay	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

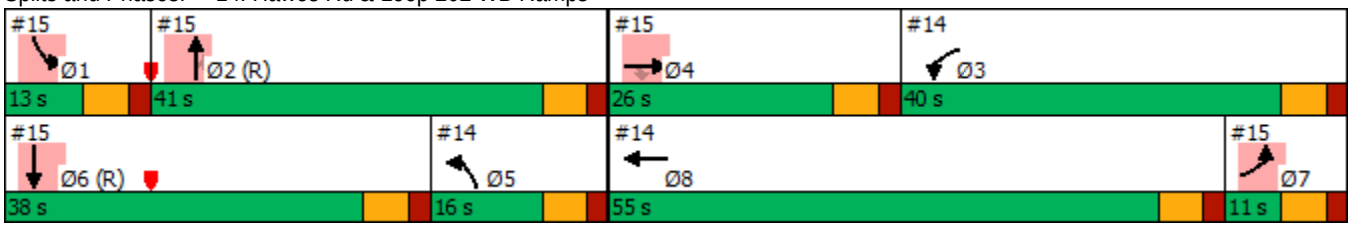
c Critical Lane Group

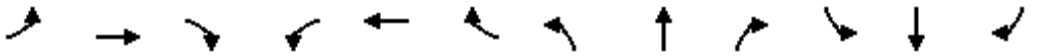
Phase Number	1	2	3	4	5	6	7	8
Node Number	15	15	14	15	14	15	15	14
Movement	SBL	NBT	WBL	EBT	NBL	SBT	EBL	WBT
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	Ped	None	C-Min	None	None
Maximum Split (s)	13	41	40	26	16	38	11	55
Maximum Split (%)	10.8%	34.2%	33.3%	21.7%	13.3%	31.7%	9.2%	45.8%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	15	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	107	0	67	41	25	107	96	41
End Time (s)	0	41	107	67	41	25	107	96
Yield/Force Off (s)	114	35	101	61	35	19	101	90
Yield/Force Off 170(s)	114	24	101	50	35	8	101	79
Local Start Time (s)	107	0	67	41	25	107	96	41
Local Yield (s)	114	35	101	61	35	19	101	90
Local Yield 170(s)	114	24	101	50	35	8	101	79

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	70

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

Splits and Phases: 14: Hawes Rd & Loop 202 WB Ramps





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	323	0	0	24	0	0	0	0	0
Future Volume (vph)	0	0	0	323	0	0	24	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0		6.0					
Lane Util. Factor				0.95	0.95		1.00					
Frt				1.00	1.00		1.00					
Flt Protected				0.95	0.95		0.95					
Satd. Flow (prot)				1681	1681		1770					
Flt Permitted				0.95	0.95		0.95					
Satd. Flow (perm)				1681	1681		1770					
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	359	0	0	27	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	179	180	0	27	0	0	0	0	0
Turn Type				Prot	NA		Prot					
Protected Phases				3	8		5					
Permitted Phases												
Actuated Green, G (s)				52.6	76.6		7.4					
Effective Green, g (s)				52.6	76.6		7.4					
Actuated g/C Ratio				0.44	0.64		0.06					
Clearance Time (s)				6.0	6.0		6.0					
Vehicle Extension (s)				3.0	3.0		3.0					
Lane Grp Cap (vph)				736	1073		109					
v/s Ratio Prot				c0.11	c0.07		c0.02					
v/s Ratio Perm					0.03							
v/c Ratio				0.24	0.17		0.25					
Uniform Delay, d1				21.2	8.8		53.6					
Progression Factor				1.00	1.00		0.43					
Incremental Delay, d2				0.2	0.1		1.2					
Delay (s)				21.4	8.9		24.2					
Level of Service				C	A		C					
Approach Delay (s)		0.0			15.1			24.2			0.0	
Approach LOS		A			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

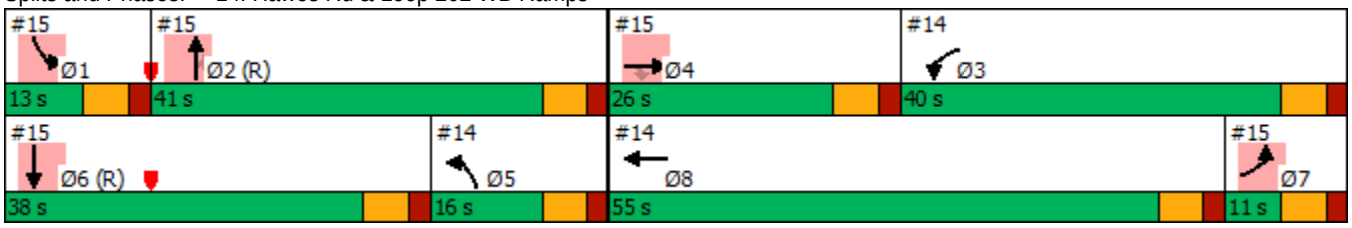
c Critical Lane Group

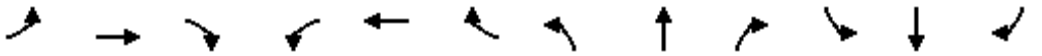
Phase Number	1	2	3	4	5	6	7	8
Node Number	15	15	14	15	14	15	15	14
Movement	SBL	NBT	WBL	EBT	NBL	SBT	EBL	WBT
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	Ped	None	C-Min	None	None
Maximum Split (s)	13	41	40	26	16	38	11	55
Maximum Split (%)	10.8%	34.2%	33.3%	21.7%	13.3%	31.7%	9.2%	45.8%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	15	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	107	0	67	41	25	107	96	41
End Time (s)	0	41	107	67	41	25	107	96
Yield/Force Off (s)	114	35	101	61	35	19	101	90
Yield/Force Off 170(s)	114	24	101	50	35	8	101	79
Local Start Time (s)	107	0	67	41	25	107	96	41
Local Yield (s)	114	35	101	61	35	19	101	90
Local Yield 170(s)	114	24	101	50	35	8	101	79

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	70

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

Splits and Phases: 14: Hawes Rd & Loop 202 WB Ramps





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	39	0	0	0	0	19	96	3	320	0
Future Volume (vph)	5	0	39	0	0	0	0	19	96	3	320	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00		1.00					1.00	1.00	1.00	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770		1583					1863	1583	1770	3539	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770		1583					1863	1583	1770	3539	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	0	43	0	0	0	0	21	107	3	356	0
RTOR Reduction (vph)	0	0	37	0	0	0	0	0	86	0	0	0
Lane Group Flow (vph)	6	0	6	0	0	0	0	21	21	3	356	0
Turn Type	Prot		Perm					NA	Perm	Prot	NA	
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	1.0		18.0					24.1	24.1	1.3	18.0	
Effective Green, g (s)	1.0		18.0					24.1	24.1	1.3	18.0	
Actuated g/C Ratio	0.01		0.15					0.20	0.20	0.01	0.15	
Clearance Time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	14		237					374	317	19	530	
v/s Ratio Prot	c0.00							0.01		0.00	c0.10	
v/s Ratio Perm			c0.00						c0.01			
v/c Ratio	0.43		0.03					0.06	0.07	0.16	0.67	
Uniform Delay, d1	59.2		43.5					38.8	38.8	58.8	48.2	
Progression Factor	1.00		1.00					1.00	1.00	0.50	0.60	
Incremental Delay, d2	19.7		0.0					0.3	0.4	3.8	6.5	
Delay (s)	78.9		43.6					39.0	39.3	32.9	35.5	
Level of Service	E		D					D	D	C	D	
Approach Delay (s)		47.9			0.0			39.2			35.4	
Approach LOS		D			A			D			D	

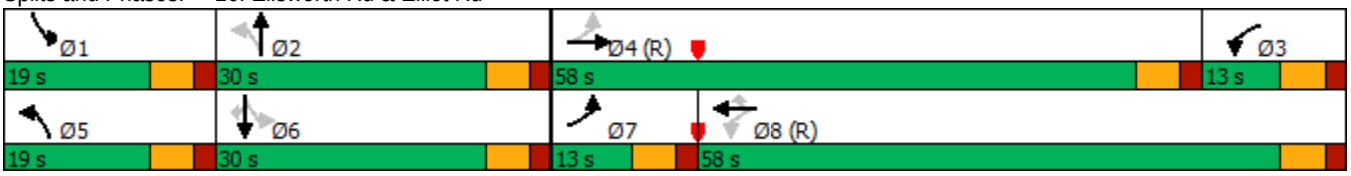
Intersection Summary			
HCM 2000 Control Delay	37.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.14		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

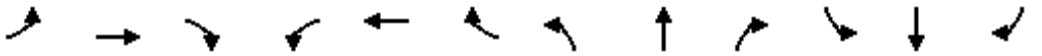
c Critical Lane Group

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	19	30	13	58	19	30	13	58
Maximum Split (%)	15.8%	25.0%	10.8%	48.3%	15.8%	25.0%	10.8%	48.3%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	6	25	113	55	6	25	55	68
End Time (s)	25	55	6	113	25	55	68	6
Yield/Force Off (s)	19	49	0	107	19	49	62	0
Yield/Force Off 170(s)	19	38	0	96	19	38	62	109
Local Start Time (s)	58	77	45	107	58	77	107	0
Local Yield (s)	71	101	52	39	71	101	114	52
Local Yield 170(s)	71	90	52	28	71	90	114	41

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 68 (57%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 16: Ellsworth Rd & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	639	120	14	305	89	89	251	26	90	257	89
Future Volume (veh/h)	70	639	120	14	305	89	89	251	26	90	257	89
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	78	710	133	16	339	99	99	279	29	100	286	99
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	408	1294	242	464	1775	792	295	650	67	299	713	318
Arrive On Green	0.08	0.87	0.87	0.11	0.50	0.50	0.06	0.20	0.20	0.06	0.20	0.20
Sat Flow, veh/h	1781	2987	559	1781	3554	1585	1781	3252	335	1781	3554	1585
Grp Volume(v), veh/h	78	422	421	16	339	99	99	151	157	100	286	99
Grp Sat Flow(s),veh/h/ln	1781	1777	1770	1781	1777	1585	1781	1777	1810	1781	1777	1585
Q Serve(g_s), s	3.3	7.2	7.3	0.0	6.3	4.0	5.2	8.9	9.1	5.3	8.4	6.4
Cycle Q Clear(g_c), s	3.3	7.2	7.3	0.0	6.3	4.0	5.2	8.9	9.1	5.3	8.4	6.4
Prop In Lane	1.00		0.32	1.00		1.00	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	408	770	767	464	1775	792	295	355	362	299	713	318
V/C Ratio(X)	0.19	0.55	0.55	0.03	0.19	0.13	0.34	0.43	0.43	0.33	0.40	0.31
Avail Cap(c_a), veh/h	439	770	767	464	1775	792	383	355	362	386	713	318
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.9	5.0	5.0	19.8	16.6	16.0	35.2	42.0	42.0	35.3	41.7	40.9
Incr Delay (d2), s/veh	0.2	2.6	2.6	0.0	0.2	0.3	0.7	3.7	3.7	0.7	1.7	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.2	2.2	0.3	2.6	1.5	2.3	4.3	4.5	2.4	3.9	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.1	7.6	7.7	19.8	16.8	16.4	35.9	45.7	45.8	35.9	43.4	43.4
LnGrp LOS	C	A	A	B	B	B	D	D	D	D	D	D
Approach Vol, veh/h		921			454			407			485	
Approach Delay, s/veh		8.9			16.8			43.3			41.9	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	30.0	18.9	58.0	13.1	30.1	10.9	65.9
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	13.0	24.0	7.0	52.0	13.0	24.0	7.0	52.0
Max Q Clear Time (g_c+I1), s	7.3	11.1	2.0	9.3	7.2	10.4	5.3	8.3
Green Ext Time (p_c), s	0.1	1.4	0.0	6.5	0.1	1.8	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	23.7
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	46	38	383	393	3
Future Vol, veh/h	7	46	38	383	393	3
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	51	42	426	437	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	736	220	440	0	-	0
Stage 1	439	-	-	-	-	-
Stage 2	297	-	-	-	-	-
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	354	784	1116	-	-	-
Stage 1	617	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	341	784	1116	-	-	-
Mov Cap-2 Maneuver	341	-	-	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	728	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1116	-	341	784	-	-
HCM Lane V/C Ratio	0.038	-	0.023	0.065	-	-
HCM Control Delay (s)	8.4	-	15.8	9.9	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0.2	-	-

APPENDIX D

TRIP GENERATION

SOSSAMAN RD

80TH ST

HAWES RD

LOOP 202

ELLSWORTH RD

ELLIOT ROAD

RS-6
34.8 AC

RSL-2.5
55.9 AC

RM-5
7.8 AC

Mixed Use
159.0 AC

RM-5
17.9 AC

Limited
Comm.
23.5 AC

General
Commercial
67.1 AC

Mixed Use
45.9 AC

RSL-2.5
62.3 AC

RM-5
13.8
AC

Light
Indutrial
73.2 AC

RSL-4.0
121.3 AC

RSL-2.5
63.2 AC

Light
Indutrial
168.0 AC

Gen.
Comm.
18.0
AC

RSL-2.5
16.9
AC

RM-5
17.4 AC

Office
Comm.
8.7 AC

Limited
Comm.
20.1 AC

RSL-2.5
42.9 AC

WARNER ROAD

RSL-2.5
39.1 AC

General
Commercial
54.6 AC

LOOP 202

STATE ROUTE 24

PHOENIX-MESA
GATEWAY AIRPORT

AUGUST 8, 2019

GREEY|PICKETT

HAWES CROSSING

EXHIBIT F: PROPOSED ZONING

0' 400' 800' 1200'

SCALE: 1" = 400'

80% of Maximum Densities

Map No.	Category	Gross Acreage	Acreage Adjustment Factor	Adjusted Acreage	Max Units/Acre	Net Units	Unit Adjustment	Adjusted Units	Adjusted Units (rounded down)
1	RS-6	34.8	0.85	29.58	7.26	214.75	0.8	171.80	171
2	RSL - 4	121.3	0.85	103.105	10.89	1,122.81	0.8	898.25	898
3	RSL -2.5	55.9	0.85	47.515	17.42	827.71	0.8	662.17	662
4	RSL -2.5	62.3	0.85	52.955	17.42	922.48	0.8	737.98	737
4A	RSL -2.5	63.2	0.85	53.72	17.42	935.80	0.8	748.64	748
5	RSL -2.5	42.9	0.85	36.465	17.42	635.22	0.8	508.18	508
6	RSL -2.5	16.9	0.85	14.365	17.42	250.24	0.8	200.19	200
7	RSL -2.5	39.1	0.85	33.235	17.42	578.95	0.8	463.16	463
8	RM - 5	7.8	1	7.8	43.56	339.77	0.8	271.81	271
9	RM - 5	17.9	1	17.9	43.56	779.72	0.8	623.78	623
10	RM - 5	13.8	1	13.8	43.56	601.13	0.8	480.90	480
11	RM - 5	17.4	1	17.4	43.56	757.94	0.8	606.36	606
								Total Residential Max Density @ 80%	**6,367**

Map No.	Category	Gross Acreage	65% Res. (PUD)	Res. Acreage	Acreage Adjustment Factor	Adjusted Acreage	Max Units/Acre	MAX Units	Unit Adjustment	Adjusted Units	Adjusted Units (rounded down)
12	MX	159	0.65	103.35	1	103.35	25	2583.75	0.8	2,067.00	2,067
13	MX	45.9	0.65	29.835	1	29.835	25	745.875	0.8	596.70	596
									Total Mix-Use Density @ 80%		**2,663**

Density NOTES:

1. 85% acreage adjustment for SF zones
2. PUD allows 65% residential
3. All units adjusted to 80%

TOTAL 80% Max DU	**9,030**

Target Intensities

Land Use	Gross Acreage	FAR	Target kSF	Total KSF
Commercial	183.6	0.25	1,999.404	2,624.185
MX Comm	35.9	0.4	624.781	
Office	8.7	0.35	132.640	757.421
MX Office	35.9	0.4	624.781	
Light Industrial	241.3	0.5	5,255.514	5,255.514

Methodology Overview

This form facilitates trip generation estimation using data within the Institute of Transportation Engineer's (ITE) *Trip Generation Manual* , 10th Edition and methodology described within ITE's *Trip Generation Handbook* , 3rd Edition. These references will be referred to as *Manual and Handbook* , respectively. The *Manual* contains data collected by various transportation professionals for a wide range of different land uses, with each land use category represented by a land use code (LUC). Average rates and equations have been established that correlate the relationship between an independent variable that describes the development size and generated trips for each categorized LUC in various settings and time periods. The *Handbook* indicates an established methodology for how to use data contained within the Manual when to use the fitted curve instead of the average rate and when to adjustments to the volume of trips are appropriate and how to do so. The methodology steps are represented visually in boxes in Figure 3.1. This worksheet applies calculations for each box if applicable.

Box 1 - Define Study Site Land Use Type & Site Characteristics

The analyst is to pick an appropriate LUC(s) based on the subject's zoning/land use(s)/future land use(s). The size of the land use(s) is described in reference to an independent variable(s) specific to (each) the land use (example: 1,000 square feet of building area is relatively common).

Land Use Types and Size

Proposed Use	Amount	Units	ITE LUC	ITE Land Use Name
Homes, Hawes & Elliot	1,055	Dwelling Units	210	Single-Family Detached Housing
Homes, Hawes & Warner	74	Dwelling Units	210	Single-Family Detached Housing
Multifamily, Hawes & Elliot	4,844	Dwelling Units	221	Multifamily Housing (Mid-Rise)
Multifamily, Hawes & Warner	2,526	Dwelling Units	221	Multifamily Housing (Mid-Rise)
Multifamily, E. of Loop 202	593	Dwelling Units	221	Multifamily Housing (Mid-Rise)
Commercial, Hawes & Elliot	740.738	1,000 square feet	820	Shopping Center
Commercial, Hawes & Warner	1,009.503	1,000 square feet	820	Shopping Center
Commercial, E. of Loop 202	872.924	1,000 square feet	820	Shopping Center
Office, Hawes & Elliot	484.823	1,000 square feet	710	General Office Building
Office, Hawes & Warner	132.640	1,000 square feet	710	General Office Building
Office, E. of Loop 202	139.084	1,000 square feet	710	General Office Building
Light Ind., Hawes & Elliot	1,594.296	1,000 square feet	110	General Light Industrial
Light Ind., E. of Loop 202	3,661.218	1,000 square feet	110	General Light Industrial

Box 2 - Define Site Context

Context assessment is to "simply determine whether the study sites is in a multimodal setting" and "could have persons accessing the site by walking, bicycling, or riding transit." This assessment is used in Box 4. The *Manual* separates data into 4 setting categories - **Rural, General Urban/Suburban**, **Dense Multi-Urban Use** and **Center City Core**. This worksheet uses the following abbreviations, respectively: ***R*** , ***G*** , ***D*** , and ***C*** . The *Manual* does not have data for all settings of all land use codes. See the table on the next page titled "Site Context and Time Periods" - if this table is not provided, the "General Urban/Suburban" setting is used by default.

Box 3 - Define Analysis Objectives Types of Trips & Time Period

This tool will focus on vehicular trips for a 24-hour period on a typical weekday as well as its AM peak hour and PM peak hour. Other time period(s) may be of interest.

Box 4 - Is Study Site Multimodal?

Per the Handbook, "if the objective is to establish a local trip generation rate for a particular land use or study site, the simplified approach (Box 9) may be acceptable but the *Box 5 through 8* approach is required if the study site is located in an infill setting, contains a mix of uses on-site, or is near significant transit service."

Box 5/Box 9 - Estimate Baseline Trips/Estimate Vehicular Trips (Determine Equation)

Vehicle trips are estimated using rates/equations applicable to each LUC. When the appropriate graph has a fitted curve, the *Handbook* has a process (Figure 4.2) to determine when to use it versus using the weighted average rate or collecting local data. The methodology requires for engineering judgement in some circumstances and permits engineering judgement to override or make adjustments when appropriate to best project (example 1: study site is expected to operate differently than data in the applicable land use code - such as restaurant that is closed in the morning or in the evening; example 2: LUC data in a localized area fails to be represented by the typically selected fitted curve/weighted average rate - a small shop/LUC 820, AM peak hour is skewed by the high y-intercept).

Equation Type: Equation Used [Equated Rate] (Type Abbreviations: Weighted Average Rate ("WA"), Fitted Curve ("FC"), or Custom ("C"))

Proposed Use	ADT	AM Peak Hour	PM Peak Hour	(not used)
Homes, Hawes & Elliot	FC: LN(T)=0.92*LN(X)+2.71 [8.61]	FC: T=0.71*X+4.8 [0.71]	FC: LN(T)=0.96*LN(X)+0.2 [0.92]	
Homes, Hawes & Warner	FC: LN(T)=0.92*LN(X)+2.71 [10.66]	FC: T=0.71*X+4.8 [0.78]	FC: LN(T)=0.96*LN(X)+0.2 [1.03]	
Multifamily, Hawes & Elliot	FC: T=5.45*X-1.75 [5.45]	FC: LN(T)=0.98*LN(X)-0.98 [0.32]	FC: LN(T)=0.96*LN(X)-0.63 [0.38]	
Multifamily, Hawes & Warner	FC: T=5.45*X-1.75 [5.45]	FC: LN(T)=0.98*LN(X)-0.98 [0.32]	FC: LN(T)=0.96*LN(X)-0.63 [0.39]	
Multifamily, E. of Loop 202	FC: T=5.45*X-1.75 [5.45]	FC: LN(T)=0.98*LN(X)-0.98 [0.33]	FC: LN(T)=0.96*LN(X)-0.63 [0.41]	
Commercial, Hawes & Elliot	FC: LN(T)=0.68*LN(X)+5.57 [31.68]	FC: T=0.5*X+151.78 [0.70]	FC: LN(T)=0.74*LN(X)+2.89 [3.23]	
Commercial, Hawes & Warner	FC: LN(T)=0.68*LN(X)+5.57 [28.69]	FC: T=0.5*X+151.78 [0.65]	FC: LN(T)=0.74*LN(X)+2.89 [2.98]	
Commercial, E. of Loop 202	FC: LN(T)=0.68*LN(X)+5.57 [30.05]	FC: T=0.5*X+151.78 [0.67]	FC: LN(T)=0.74*LN(X)+2.89 [3.09]	
Office, Hawes & Elliot	FC: LN(T)=0.97*LN(X)+2.5 [10.12]	FC: T=0.94*X+26.49 [0.99]	FC: LN(T)=0.95*LN(X)+0.36 [1.05]	
Office, Hawes & Warner	FC: LN(T)=0.97*LN(X)+2.5 [10.52]	FC: T=0.94*X+26.49 [1.14]	FC: LN(T)=0.95*LN(X)+0.36 [1.12]	
Office, E. of Loop 202	FC: LN(T)=0.97*LN(X)+2.5 [10.51]	FC: T=0.94*X+26.49 [1.13]	FC: LN(T)=0.95*LN(X)+0.36 [1.12]	
Light Ind., Hawes & Elliot	FC: T=3.79*X+57.96 [3.83]	FC: LN(T)=0.74*LN(X)+0.39 [0.22]	FC: LN(T)=0.69*LN(X)+0.43 [0.16]	
Light Ind., E. of Loop 202	FC: T=3.79*X+57.96 [3.81]	FC: LN(T)=0.74*LN(X)+0.39 [0.17]	FC: LN(T)=0.69*LN(X)+0.43 [0.12]	

Box 5/Box 9 - Estimate Baseline Trips/Estimate Vehicular Trips (Apply Equations and in/out Distributions)

Baseline Vehicular Trips

Proposed Use	ADT				AM Peak Hour				PM Peak Hour				(not used)
	% In	In	Out	Total	% In	In	Out	Total	% In	In	Out	Total	
Homes, Hawes & Elliot	50%	4,541	4,541	9,082	25%	189	565	754	63%	614	361	975	
Homes, Hawes & Warner	50%	392	392	784	25%	14	43	57	63%	48	28	76	
Multifamily, Hawes & Elliot	50%	13,199	13,199	26,398	26%	399	1,135	1,534	61%	1,121	716	1,837	
Multifamily, Hawes & Warner	50%	6,884	6,884	13,768	26%	211	600	811	61%	600	384	984	
Multifamily, E. of Loop 202	50%	1,615	1,615	3,230	26%	51	145	196	61%	149	96	245	
Commercial, Hawes & Elliot	50%	11,732	11,732	23,464	62%	324	198	522	48%	1,148	1,243	2,391	
Commercial, Hawes & Warner	50%	14,480	14,480	28,960	62%	407	250	657	48%	1,443	1,564	3,007	
Commercial, E. of Loop 202	50%	13,118	13,118	26,236	62%	365	223	588	48%	1,296	1,404	2,700	
Office, Hawes & Elliot	50%	2,453	2,453	4,906	86%	415	67	482	16%	82	428	510	
Office, Hawes & Warner	50%	698	698	1,396	86%	130	21	151	16%	24	125	149	
Office, E. of Loop 202	50%	731	731	1,462	86%	135	22	157	16%	25	131	156	
Light Ind., Hawes & Elliot	50%	3,050	3,050	6,100	88%	304	42	346	13%	32	217	249	
Light Ind., E. of Loop 202	50%	6,967	6,967	13,934	88%	563	77	640	13%	57	385	442	
Totals		**79,860**	**79,860**	**159,720**		**3,507**	**3,388**	**6,895**		**6,639**	**7,082**	**13,721**	

If vehicle trip reductions are not applied for internal capture and alternative mode, vehicle trips may be separtated into vehicle trip subsets (pass-by trips, diverted trips, truck trips, new passenger vehicle trips) as part of Box 10. If vehicle trip reductions are to be applied, continue to Box 6.

Box 6 - Convert Baseline Vehicle Trips to Person Trips

If no vehicle trip reductions are to be applied, this portion may be ignored. The *Handbook* states "There are not enough samples to derive precise percentages by mode...however, for all but one, ...the motor vehicle percentage of total person trips is at least 96 percent." and "[vehicle occupancy for] many of the most commonly analyzed land use codes are not [available]." This form assumes that the total baseline vehicle trips for all land use codes accounts for 90% of total person trips. Unless otherwise specified, this form later reverses the conversion in Box 8.

Box 7 - Estimate Internal Person Trips, External Walk/Bike Trips, Transit Person Trips, External Person Trips (Internal Capture)

Internal capture occurs for mixed-use developments when a portion of the trips generated by the site are expected to have the both the origin and destination within the site. Internal capture is not dependent on mode choice. The table below presents the internal capure percentages and trips in units of vehicle trips. CivTech can provide trips in units of persons if requested.

Adjustments for Internal Trips

Proposed Use	ADT Percent	ADT In	ADT Out	ADT Total	AM Peak Hour Percent	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour Percent	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	(not used)
Homes, Hawes & Elliot	0%	0	0	0	0%	0	0	0	0%	0	0	0	
Homes, Hawes & Warner	0%	0	0	0	0%	0	0	0	0%	0	0	0	
Multifamily, Hawes & Elliot	10%	1,320	1,320	2,640	10%	40	113	153	10%	112	72	184	
Multifamily, Hawes & Warner	10%	688	688	1,376	10%	21	60	81	10%	60	38	98	
Multifamily, E. of Loop 202	10%	162	162	324	10%	5	15	20	10%	15	10	25	
Commercial, Hawes & Elliot	30%	3,520	3,520	7,040	30%	97	60	157	30%	344	373	717	
Commercial, Hawes & Warner	30%	4,344	4,344	8,688	30%	122	75	197	30%	433	469	902	
Commercial, E. of Loop 202	30%	3,935	3,935	7,870	30%	110	66	176	30%	389	421	810	
Office, Hawes & Elliot	0%	0	0	0	0%	0	0	0	0%	0	0	0	
Office, Hawes & Warner	10%	70	70	140	10%	13	2	15	10%	2	13	15	
Office, E. of Loop 202	10%	73	73	146	10%	14	2	16	10%	3	13	16	
Light Ind., Hawes & Elliot	30%	915	915	1,830	30%	91	13	104	30%	10	65	75	
Light Ind., E. of Loop 202	30%	2,090	2,090	4,180	30%	169	23	192	30%	17	116	133	
Totals		**17,117**	**17,117**	**34,234**		**682**	**429**	**1,111**		**1,385**	**1,590**	**2,975**	
Average	21%				16%				22%				

Box 8 - Convert Person Trips to Final Vehicle Trips

The vehicle occupancy and baseline alternate mode are now factored out from the external trips in vehicles, after any adjustments for internal capture and additional alternate mode from Box 7.
In Box 6, vehicle trips were considered to account for 90% of total person trips. Alternate mode trips in addition to the baseline, if any, are accounted for in Box 7. It is estimated that vehilcle trips
should be reduced by an additional 0% due to carpooling. The final external trips in vehicles is multiplied by 90% - 0% = 90% to produce the external vehicle trips.

External Vehicular Trips

Proposed Use	ADT In	ADT Out	ADT Total	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	(not used)
Homes, Hawes & Elliot	4,541	4,541	9,082	189	565	754	614	361	975	
Homes, Hawes & Warner	392	392	784	14	43	57	48	28	76	
Multifamily, Hawes & Elliot	11,879	11,879	23,758	359	1,022	1,381	1,009	644	1,653	
Multifamily, Hawes & Warner	6,196	6,196	12,392	190	540	730	540	346	886	
Multifamily, E. of Loop 202	1,453	1,453	2,906	46	130	176	134	86	220	
Commercial, Hawes & Elliot	8,212	8,212	16,424	227	138	365	804	870	1,674	
Commercial, Hawes & Warner	10,136	10,136	20,272	285	175	460	1,010	1,095	2,105	
Commercial, E. of Loop 202	9,183	9,183	18,366	255	157	412	907	983	1,890	
Office, Hawes & Elliot	2,453	2,453	4,906	415	67	482	82	428	510	
Office, Hawes & Warner	628	628	1,256	117	19	136	22	112	134	
Office, E. of Loop 202	658	658	1,316	121	20	141	22	118	140	
Light Ind., Hawes & Elliot	2,135	2,135	4,270	213	29	242	22	152	174	
Light Ind., E. of Loop 202	4,877	4,877	9,754	394	54	448	40	269	309	
Totals	**62,743**	**62,743**	**125,486**	**2,825**	**2,959**	**5,784**	**5,254**	**5,492**	**10,746**	

CivTech

August 1, 2012

Mr. Gregory Stanley
Pinal County Public Works Director
31 North Pinal Street, Building F
Florence, Arizona 85132

RE: Community Capture Rate for Anthem, AZ

Community Capture has been used to describe the unique trip internalization of new communities, separated from existing urban areas. Several agencies, such as the Florida Department of Transportation, have begun to develop methodologies for analyzing the external traffic impacts of self-contained new communities. The Transportation Research Board (TRB) commissioned an evaluation of Community Capture in 2003 which is documented in TRB Record 1780, Paper No. 01-3524, *Internalizing Travel by Mixing Land Uses, Study of Master Planned Communities in South Florida*. Kittleson and Associates authored a paper titled "Community Capture Issue Paper" dated November of 2008 which was adopted by the Florida Department of Transportation (DOT) as well as several Florida municipalities. In general, the findings of these studies indicate that depending on the mix of uses and the size of the development, trips traveling on roads external to the development were reduced by up to 58 percent.

While the *Streets Capital Improvements Plan for New Development and Development Fee Study* (Development Fee Study), amended February 10, 2010, reflects a reduction in trips for some commercial uses due to internal capture, it does not account for the effect of large scale developments within the County. Many times these large scale developments operate like small cities providing nearly all community-related activity within the boundaries of the development. These large scale master-planned communities are already required to build the internal infrastructure and adjacent streets to support the County's RSRSM and to provide the right-of-way required for long term sustainability as shown in the County's Comprehensive Plan (the "Comp Plan").

The models completed for this analysis confirm that the principal of community capture should apply to the Property by showing the efficiencies gained from developing a large master-planned community on Property. The analysis shows that this occurs for developments of a sufficient size which contain several arterial streets within their borders. The models indicate that development of the Property will have fewer impacts on regional roadway systems than other traditional development due to the nature of the mixed-use project and increased utilization of its internal (non-CIP) roadways. While Pinal County provides credits for the construction of CIP roadways, the County must also adjust the burden on projects that will have a lower demand for those regional roadways due to this principal of community capture.

We recognize that no data on community capture has been published for developments within the State of Arizona. To address this issue, in addition to the TransCAD modeling, we have performed an evaluation of the Anthem (Maricopa County) community, which is consistent with the findings of our TransCAD models.

RED RIVER COMMUNITY CAPTURE – CALCULATION METHODOLOGY

The purpose of this section is to document the methodology and procedures conducted to develop the traffic forecasts within the Red River Study Area. As outlined above, CivTech utilized a TransCAD model based on the City of Maricopa TransCAD model for the horizon year 2030, which updated the previous RSRSM TransCAD model for roadway network and land use within the City's planning area, to analyze the internal capture of the Property. Measurement of Community Capture requires that all of the internal (on-site) development is constructed; therefore, Red River was assumed at a full buildout condition by horizon year 2030 for this evaluation, which is consistent with the horizon year evaluated within the RSRSM/City of Maricopa TransCAD model. Any trips which both originate and terminate within the boundary of the Red River site would be considered captured and would have an effective trip length of 0-miles outside of the project boundary. This has the effect of lowering the average trip length when considering all Red River traffic, both internal and external.

Evaluation of Community Capture requires several steps when working within the TransCAD platform. First, trips are generated according to the same methodology originated by the model and the roadway network is updated to reflect the Red River development within the model. Trips are then distributed to the external stations through use of the TransCAD software.

The Red River Plan was utilized to calculate the actual impact of the development of the Property on the surrounding roadway network, including County arterial roads and State highways. Specific land uses were chosen to represent the mix of uses, and input into the TransCAD model. The approximate square footage for development of each parcel within Red River was estimated using the floor area ratios shown from the Institute of Transportation Engineers (ITE) Land Use Categories (LUC) as shown in **Table 2**.

Table 2: Land Use Density and Intensity Assumptions

Land Use	Density/Intensity	
Industrial Park =	25%	FAR
Single Family =	4	DU/ac
Apartments =	20	DU/ac
General Office =	40%	FAR
Business Park =	40%	FAR
Commercial =	25%	FAR
Elementary School =	25%	FAR

While the TransCAD model does not allow trip generation as an input parameter to determine traffic generation, the model utilizes population, employment and students (persons) to calculate trip generation on County roadways. Several studies produced in this region contain assumptions for converting square footage to persons. The number of employees was taken from the General Government Development Fee Study, City of Surprise, November 27, 2006 (prepared by MAG) which can be found in **Table 4**. The number of anticipated Red River dwelling units for each parcel was then expanded by the person/household ratio using the conversation factors from the *General Government Development Fee Study, City of Surprise, November 27, 2006* to account for the number of residents. The estimated Red River "persons" assumed for each employment land use type was estimated using the rates shown in **Table 3** below.

Table 3: Employee and Student Square Footage Conversion Factors

Land Use	Employees per 1,000 S.F.
Industrial Park	* 2.31
General Office	* 3.16
Business Park	* 3.16
Shopping Center	* 2.75

**Source: General Government Development Fee Study, City of Surprise, November 27, 2006.*

In order to accurately represent the Red River development within the TransCAD model, all trips were converted into productions and attractions. Production and attraction percentages are based on the calculated ingress and egress of each land use within each zone/TAZ. Productions are trips that are generated by a TAZ and sent out to the surrounding roadway network. For example, a residential land use would produce a trip that would leave the TAZ in search of commercial, retail, employment and schools (attractions). Since every trip produced must be attracted to another zone within the TransCAD model in order for the model to balance, the model is termed "gravity based". The percentage of productions and attractions are unique to each land use and its relative location. The percentages applied to Red River are based on relative values gathered from the original TransCAD RSRSM/City of Maricopa model so that assumptions remained consistent for all new developments within the model. **Table 4** shows the trip rates and production/attraction percentages utilized within the RSRSM/City of Maricopa RTP Update TransCAD model which were also applied to the Red River TAZ's within the revised model:

Table 4: Pinal County Trip Rates

			Productions			Attractions		
Land Use	**Units**	***Rate**	**HBWP**	**HBOP**	**NHBP**	**HBWA**	**HBOA**	**NHBA**
Residential	DU	5.5	27%	53%	20%	0%	0%	0%
Retail	Employees	20	0%	0%	0%	18%	59%	23%
Office	Employees	9	0%	0%	0%	20%	58%	22%
Business Park	Employees	9	0%	0%	0%	20%	58%	22%
Industrial	Employees	3	0%	0%	0%	70%	15%	15%

**As utilized within the RSRSM/City of Maricopa TransCAD Model Update.*
HBW = Home Base Work
HBO = Home Base Other
NHB = Non-Home Base

The distribution of the trips within the model occurs utilizing the gravity method, the most widely used trip distribution method in TransCAD. This gravity method determines flows between zones based on each zone's productions and attractions.

Anthem Community Capture

To confirm the community capture for the proposed Red River development, CivTech evaluated the existing traffic patterns on a similar development – the community of Anthem located in the north valley of Maricopa County, Arizona. Like the Property, Anthem is located along a highway (Interstate 17), and its arterial access is similarly constrained. According to the 2010 Census, Anthem has an estimated population of 19,828 with approximately 8,762 dwelling units, of which only 6,616 were occupied in 2010. Building square footage and land use data was collected for each parcel using data from the Maricopa County Assessor's office. **Table 2** illustrates Anthem's trip generation based on the data collected from the Maricopa County Assessor and the 2010 Census Bureau.

Trip generation calculations for Anthem were based on the trip rates within the RSRM/Maricopa TransCAD model presented in **Table 4** of this report. These rates were adopted by Pinal County and implemented in the RSRM/Maricopa TransCAD model.

Table 9: Anthem Trip Generation

Land Use	DU	Building S.F.	Employees	Students	Trip Generation
Industrial Park	-	351,239	811	-	2,434
Single Family Homes	6,616	-	-	-	36,388
Apartments	435	-	-	-	2,393
Business Park	-	257,471	814	-	7,322
Commercial	-	1,075,292	2,957	-	59,141
Elementary School	-	693,419	-	6,726	6,726
TOTAL	**7,051**	**2,377,421**	**4,582**	**6,726**	**114,404**

Based on **Table 9** above, and using the same trip generation rates shown within the RSRSM/City of Maricopa TransCAD model, Anthem produces a total of 114,404 vehicle trips. Existing average daily traffic (ADT) count data was collected on June 20, 2012 on all roadways leading in and out of Anthem. The existing count data approximated 48,943 total average daily external trips traveling in and out of Anthem. Based on the calculated trip generation and existing ADOT data for Interstate 17, a total community capture of **57%** was computed for the community of Anthem. It should be noted that the community capture rate was based on the percent of occupied dwelling units in the year 2010 and does not reflect the increase of homes sales and occupancy over the past 2 years, which we believe would actually increase the total calculated community capture. The analysis includes the Anthem trips located on the ADOT Highway, therefore the community capture presented for the Anthem development exceeds the community capture predicted for the Project.

CONCLUSIONS

- Red River development is anticipated to generate a total of 136,243 external site trips outside of the cut line analysis. With a total of 263,373 daily trips generated by the Red River development it is anticipated that approximately, 47% will stay within or immediately adjacent to the study area.

- According to the modeling prepared for this analysis the proposed site trips along SR 347 to/from Red River reduce the external trips on County Roads from Red River by a total of 27,864 vehicles. This reduction of site trips computes to approximately 10.6 percent of the external trips utilizing SR 347, an ADOT Highway, instead of using one of the CIP roadways within the County's jurisdiction. Since these trips will not impact the County roadway network, they were also considered a reduction to the impact created by Red River. Red River's location is unique in that direct access will be provided to the development from SR 347. Therefore, the total traffic adjustment on the County's external street network is anticipated to reach 57.6 percent.

Should you wish to discuss this information further, please contact me at (480) 659-4250.

Sincerely,

CivTech Inc.

Dawn Cartier, P.E., PTOE
Project Manager

Attachments

ABBREVIATIONS

ADOT – Arizona Department of Transportation

BPR - Bureau of Public Roads

CCIP – Community Capture Issue Paper

Comp Plan - County's Comprehensive Plan

DOT - Florida Department of Transportation

DU – Dwelling Unit

EMP - Employees

FAR – Floor Area Ratio

HBO - Home Base Other

HBW - Home Base Work

I-10 – Interstate 10

I-8 – Interstate 8

IFA – Impact Fee Areas

ITE – Institute of Transportation Engineering

ITML – Internalizing Travel by Mixing Land Uses

LUC - Land Use Categories

MTG - Model Trip Generation

NHB - Non-Home Base

RRIC - Red River Internal Capture

RSRSM - Regionally Significant Routes for Safety and Mobility

RTP – City of Maricopa Regional Transportation Plan 2008

S.F. – Square Feet

SR-347 – State Route 347

SUE - Stochastic User Equilibrium

TAZ - Traffic Analysis Zone

TET - Total External Trips

TIC - TAZ Internal Capture volumes

TRB - Transportation Research Board

TTTG - Total TAZ Trip Generation

VMT – Vehicle Miles Traveled

Anthem

Community Capture Calculations

CivTech

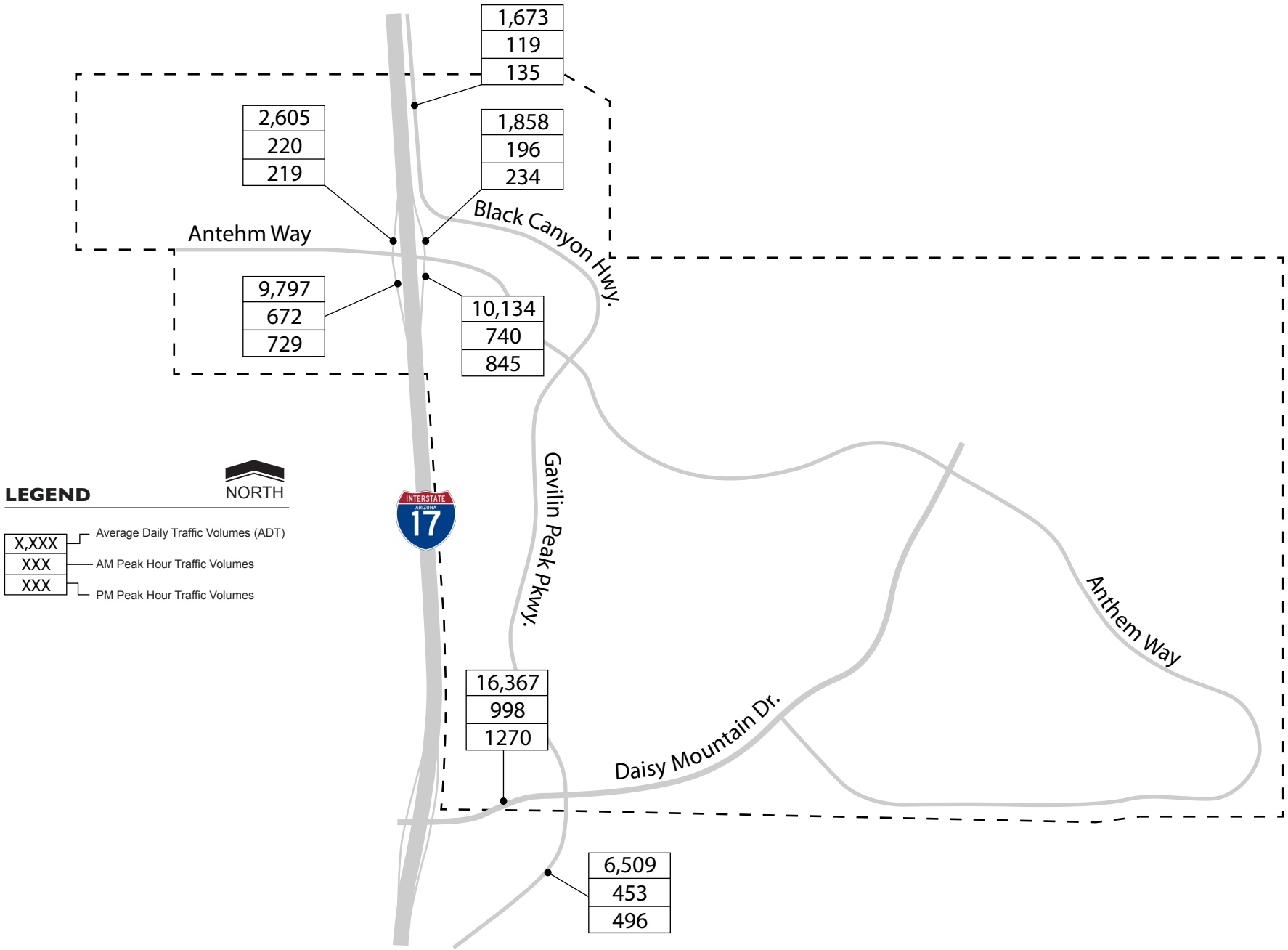


Exhibit A: Existing Traffic Volumes

Red River Trip Generation Assumptions

ITE LUC	Land Use	Intensity/Density		Employees/KSF	Students/KSF
130	Industrial Park	20%	FAR	**2.31**	
210	Single Family	4	DU/ac		
220	Multi Family	20	DU/ac		
770	Business Park	20%	FAR	**3.16**	
820	Commercial	20%	FAR	**2.75**	
520	Schools	20%	FAR		**9.70**

Anthem Trip Generation

		Building S.F		DU		Employees				Trip Generation	
ITE LUC	Land Use	Occupied	Full Occupancy	Occupied	Full Occupancy	Occupied	Full Occupancy	Students	Trip Rate	Occupied	Full Occupancy
130	Industrial Park	351,239	429,159	-	-	811	991	-	3	**2,434**	**2,974**
210	Single Family	-	-	6,616	8,762	-	-	-	5.5	**36,388**	**48,191**
220	Multi Family	-	-	435	435	-	-	-	5.5	**2,393**	**2,393**
770	Business Park	257,471	460,275	-	-	814	1,454	-	9.0	**7,322**	**13,090**
820	Commercial	1,075,292	1,136,258	-	-	2,957	3,125	-	20	**59,141**	**62,494**
520	Schools	693,419	693,419	-	-	-	-	6,726	1	**6,726**	**6,726**
TOTAL		**2,377,421**	**2,719,112**	**7,051**	**9,197**	**4,582**	**5,571**	**6,726**		**114,404**	**135,868**

2010 Census	
Total population	*19,828*
Total number of Students Enrolled	*6,726*
Total number of DU	*8,762*
Total vacant DU	*2,146*
Total Employment	*13,878*

Existing Count Locations	ADT	AM	PM
I-17 NB Off Ramp & Anthem Way	10,134	740	845
I-17 NB On Ramp & Anthem Way	1,858	196	234
I-17 SB Off Ramp & Anthem Way	2,605	220	219
I-17 SB On Ramp & Anthem Way	9,797	672	729
Blacck Canyon Frontage Road south of Teresa Lane	1,673	119	135
Daisy Mountain Drive east of I-17	16,367	998	1,270
Gavilan Peak Parkway south of Daisy Mountain Drive	6,509	453	496
TOTAL	**48,943**	**3,398**	**3,928**

Anthem Internal Caputre %

Occupied	Full Occupancy
57%	**64%**

West of I-17

Parcel #	Land Use	Zoning	ITE LUC	Lot Size (S.F.)	Building S.F
202-22-018K	Canyon Springs Elementary School	R1-6	520	653,537	79,802
203-04-001R	Wal-Mart	C-2	820	962,110	208,719
203-04-011Q	Chase Bank	C-2	820	46,894	4,219
203-04-001P	EMPTY/Drainage	C-2		72,886	
203-03-036C	Retail	C-2	820	54,794	7,128
203-03-036B	Mini-Lub Garage	C-2	820	18,737	2,793
203-03-036A	EMPTY LOT	C-2	130	34,114	6,823
203-03-037	Industrial Flex Building	CP/GCP	130	109,860	37,155
203-03-038	EMPTY LOT	CP/GCP	130	178,154	35,631
203-03-039	UH Storage - Mini Storage	CP/GCP	130	226,265	46,286
203-03-040A	Warehouse	CP/GCP	130	57,226	18,113
203-03-040B	Warehouse	CP/GCP	130	57,076	9,704
203-03-715	Industrial Flex Building	CP/GCP	130	124,566	***11,545***
203-03-716	Warehouse	CP/GCP	130		***9,757***
203-03-717	Warehouse	CP/GCP	130		***9,094***
203-03-718	Industrial Flex Building	CP/GCP	130		***8,260***
203-04-464	Industrial Flex Building	CP/GCP	130	102,270	***3,141***
203-04-465	Industrial Flex Building	CP/GCP	130		***3,156***
203-04-466	Industrial Flex Building	CP/GCP	130		***4,145***
203-04-467	Industrial Flex Building	CP/GCP	130		***4,028***
203-04-468	Industrial Flex Building	CP/GCP	130		***4,145***
203-04-469	Industrial Flex Building	CP/GCP	130		***3,156***
203-04-470	Day Car Center	CP/GCP	520		***3,141***
203-04-542	Charter Elementray School	CP/GCP	520	84,716	26,080
203-03-974A	Church/Secondary School	CP/GCP	520	103,439	14,912
203-03-978	Buisness/Warehouse	CP/GCP	130	26,659	8,258
203-03-979	EMPTY LOT	CP/GCP	130	28,093	5,619
203-03-585	Car Sales, Auto Repair, Warehouse	CP/GCP	820	188,096	25,239
203-03-014	Automotive Repair	CP/GCP	130	81,581	26,544
203-03-013	Retail Shopping Center	C-2	820	197,770	44,055
203-03-012	Retail Shopping Center	C-2	820	197,788	53,242
203-03-011	Mini-Storage	C-2	820	108,919	59,400
203-03-018	Industrial Flex Building	CP/GCP	130	69,002	21,965
203-03-019	Automotive Repair	CP/GCP	130	76,431	14,823
203-03-020A	Business Office	CP/GCP	770	43,563	5,734
203-04-515	Business Office	CP/GCP	770	119,500	***1,913***
203-04-516	Business Office	CP/GCP	770		***1,961***
203-04-517	Business Office	CP/GCP	770		***1,961***
203-04-518	Business Office	CP/GCP	770		***1,937***
203-04-519	Business Office	CP/GCP	770		***1,661***
203-04-520	Business Office	CP/GCP	770		***1,697***
203-04-521	Business Office	CP/GCP	770		***1,697***
203-04-522	Business Office	CP/GCP	770		***1,661***
203-04-523	Business Office	CP/GCP	770		***1,661***
203-04-524	Business Office	CP/GCP	770		***1,697***
203-04-525	Business Office	CP/GCP	770		***1,697***
203-04-526	Business Office	CP/GCP	770		***1,661***
203-04-527	Business Office	CP/GCP	770		***1,697***
203-04-528	Business Office	CP/GCP	770		***1,661***
203-04-529	Business Office	CP/GCP	770		***1,661***
203-04-530	Business Office	CP/GCP	770		***1,697***
203-03-022	EMPTY LOT	CP/GCP	130	53,165	10,633
203-03-023	EMPTY LOT	CP/GCP	130	50,206	10,041
203-03-024	Warehouse Show Room Store	C-2	820	47,525	16,164
203-03-025	Auto Parts and Services	CP/GCP	130	46,645	6,340
203-03-026	Warehouse Storage	CP/GCP	130	44,868	15,116
203-03-982	Business Office	CP/GCP	770	43,633	***2,728***
203-03-983	Industrial Flex Building	CP/GCP	130		***2,800***
203-03-984	Industrial Flex Building	CP/GCP	130		***2,800***
203-03-985	Industrial Flex Building	CP/GCP	130		***2,800***
203-03-986	Industrial Flex Building	CP/GCP	130		***2,800***
203-03-028	Industrial Flex Building	CP/GCP	130	45,256	11,880
203-03-029	EMPTY LOT	CP/GCP	130	45,869	9,174
203-03-030	Business, Industrial, Light Manufacturing	CP/GCP	130	43,034	12,696
203-03-031	Auto Parts and Services	CP/GCP	130	43,687	9,376
203-03-032	Industrial Flex Building	CP/GCP	130	49,821	11,155
203-03-033	Retail, Strip Store, Auto Repair	C-2	130	110,724	30,201
203-03-034	EMPTY LOT	PC	820	58,922	11,784
203-03-035	EMPTY LOT	C-2	820	51,719	10,344
203-03-003	EMPTY LOT	C-2	820	104,131	20,826
203-03-002	Hotel	C-2	820	94,680	44,502
203-03-988	Site Down Restaurant	C-2	820	52,074	3,893
203-03-989	Fast Food Restaurant	C-2	820	36,782	2,171
203-03-004	Discount Store	C-2	820	74,149	20,203
203-03-005A	Auto Parts and Services	C-2	820	41,072	5,011
203-03-005B	EMPTY LOT	C-2	820	23,777	4,755
203-03-006	Retail Shopping Center	C-2	820	103,938	25,600
203-03-007A	Retail - Strip Store	C-2	820	21,300	4,084
203-03-007B	Auto Parts and Services	C-2	820	75,583	7,739
203-03-007C	Automotive Repair	C-2	820	22,378	4,061
203-03-008A	Retail - Strip Store	C-2	820	12,163	4,270
203-03-008B	Retail - Strip Store	C-2	820	53,549	9,550
203-03-009	Gas Station (16 pumps) w/Convenience Market & Car Wash	C-2	820	66,230	4,229

TOTAL **1,193,458**

East of I-17

Parcel #	Land Use	Zoning	ITE LUC	Lot Size (S.F.)	Building S.F
203-10-973	Boulder Creek High School	R-2	520	2,613,574	298,645
203-02-001W	Anthem Elementary School	R1-7	520	615,710	84,515
203-06-001G	Gavilan Peak Elementary School	R1-7	520	702,492	86,142
203-06-001U	Diamond Canyon Elementary School	R1-6	520	652,800	88,592
203-03-298C	Day Care Center	C-2	520	77,454	11,590
203-03-298A	Retail - Strip Store	C-2	820	232,151	31,077
203-03-638	WASH - EMPTY	C-2		302,615	
203-03-635A	Medical Dental Clinc	C-2	770	178,495	32,729
203-03-637B	Retail - Strip Store	C-2	820	23,438	1,600
203-03-636B	Retail Store	C-2	820	46,221	3,980
203-03-303	Medical Dental Clinc	C-2	770	72,140	16,473
203-03-302	Drugstore	C-2	820	112,847	16,789
203-03-305	Circle K (20 Gas Pumps_w/Convenience Market/Car Wash)	C-2	820	88,064	5,089
203-04-532	Automotive Repair	C-2	820	18,072	4,877
203-04-535	Warehouse Discount, Retail-Strip Store	C-2	820	291,141	37,489
203-04-533	Deer Valley Credit Union - Bank	C-2	820	18,297	3,436
203-04-534	Fast Food Restaurant	C-2	820	16,680	2,440
203-03-542A	Business Office, Retail Store	C-2	770	227,074	69,802
203-03-544	Business Office	C-2	770		
203-03-545	Business Office	C-2	770		
203-03-546	Business Office	C-2	770		
203-03-547	Business Office	C-2	770		6,839
203-03-548	Business Office	C-2	770		
203-03-549	Business Office	C-2	770		
203-03-550	Business Office	C-2	770		
203-03-551	Business Office	C-2	770		
203-03-552	Business Office	C-2	770		
203-03-553	Business Office	C-2	770		
203-03-554	Business Office	C-2	770		
203-03-555	Business Office	C-2	770		12,071
203-03-556	Business Office	C-2	770		
203-03-557	Business Office	C-2	770		
203-03-558	Business Office	C-2	770		
203-03-559	Business Office	C-2	770		
203-03-560	Business Office	C-2	770		
203-03-586A	Business Office	C-2	770		
203-03-586B	Business Office	C-2	770		
203-03-587	Business Office	C-2	770	64,777	
203-03-588	Business Office	C-2	770		9,532
203-03-589	Business Office	C-2	770		
203-03-590	Business Office	C-2	770		
203-03-591	Business Office	C-2	770		
203-03-592	Business Office	C-2	770		
203-03-569	Business Office	C-2	770		
203-03-570	Business Office	C-2	770		
203-03-571	Business Office	C-2	770		
203-03-572	Business Office	C-2	770		13,274
203-03-573	Business Office	C-2	770		
203-03-574	Business Office	C-2	770		
203-03-575	Business Office	C-2	770		
203-03-576	Business Office	C-2	770		
203-03-577	Business Office	C-2	770		
203-03-578	Business Office	C-2	770		
203-03-579	Business Office	C-2	770		6,250
203-03-580	Business Office	C-2	770		
203-03-581	Business Office	C-2	770		
203-03-582	Business Office	C-2	770		
203-03-540C	EMPTY LOT	C-O	770	289,787	57,957
203-03-540D	EMPTY LOT	C-2	770	20,938	4,188
203-03-707	EMPTY LOT - Drainage	C-2		908,584	
203-03-540H	Business Office	C-2	770	43,715	11,986
203-04-536	Business Office	C-2	770		8,820
203-04-537	Medical Dental Clinc	C-2	770		6,724
203-04-538	Business Office	C-2	770	321,848	7,299
203-04-539	Medical Dental Clinc	C-2	770		5,581
203-04-540	Business Office	C-2	770		13,709
203-03-306A	WASH - EMPTY	C-2		135,247	
203-03-307A	WASH - EMPTY	C-2		257,543	
203-04-479	EMPTY LOT	C-O	770	186,128	37,226
203-04-480	EMPTY LOT	C-O	770	92,530	18,506
203-04-481	EMPTY LOT	C-O	770	59,721	11,944
203-03-321	Fast Food Restaurant	C-2	820	17,982	2,404
203-03-320	Shopping Center, Day Care, Supermarket	C-2	820	530,457	113,519
203-03-322	Fast Food Restaurant	C-2	820	24,759	4,390
203-03-325	EMPTY LOT	C-2	820	36,057	7,211
203-03-323	Bank	C-2	820	44,803	7,315
203-03-290	Midfirst Bank	C-2	820	75,295	3,250
203-02-987B	Clubhouse	C-2	820	630,786	35,503
203-06-859	Drugstore	C-2	820	94,609	14,606
203-06-860	Fast Food Restaurant	C-2	820	37,153	3,269
203-06-861	Retail - Strip Store	C-2	820	72,478	10,630
203-06-878	Day Care Center	C-2	820	60,872	10,032
203-06-879	Retail - Strip Store	C-2	820	55,256	9,301
203-06-880	M&I Bank	C-2	820	66,922	3,606
211-22-013	Health Club, Clubhouse	C-2	820	639,283	34,117
203-10-935	EMPTY LOT	C-O	770	38,361	7,672
203-10-936	EMPTY LOT	C-O	770	326,557	65,311
203-10-818	Circle K (20 Gas Pumps_w/Convenience Market)	C-2	820	70,714	4,551
203-10-819	Wells Fargo Bank	C-2	820	69,941	5,085
203-10-720A	Fast Food Restaurant	C-2	820	38,253	2,638
203-10-720B	Bank of America	C-2	820	57,922	2,620
203-10-720C	Drugstore	C-2	820	99,898	13,092
203-05-990	Shopping Center	C-2	820	117,415	21,040
203-05-989	Super Market (Smiths Food & Drug Store)	C-2	820	319,768	81,933
203-05-987	Shopping Center	C-2	820	106,000	24,842
203-05-986	EMPTY LOT	C-2	820	30,224	6,045
203-05-988	Bank	C-2	820	35,385	4,500

TOTAL **1,525,654**

APPENDIX E

TRIP DISTRIBUTION CALCULATIONS

CivTech

	2020				2030			
Quadrant	**Population**	**Percent**			**Population**	**Percent**		
North Northwest	34,667	17.1%			37,988	16.3%		
North Northeast	33,800	16.7%			37,264	16.0%		
North	68,467	33.8%			75,252	**32.3%**		
East Northeast	17,129	8.5%			21,198	9.1%		
East Southeast	14,311	7.1%			18,048	7.8%		
East	31,440	15.6%			39,246	**16.9%**		
South Southeast	14,054	6.9%			17,895	7.7%		
South Southwest	26,169	12.9%			30,810	13.3%		
South	40,224	19.8%			48,705	**21.0%**		
West Southwest	31,123	15.4%			35,303	15.2%		
West Northwest	31,184	15.4%			33,930	14.6%		
West	62,307	30.8%			69,233	**29.8%**		
Totals	202,438	100.0%			232,436	100.0%		

Radius

Population radius: 5 miles

Select Analysis Year (2020, 2030, 2040,2050)

2020

5-mile radius

RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted	RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted
NNW							**NNE**						
299	ME	44,740	48,330	40%	17,896	19,332	300	ME	48,079	52,090	55%	26,443	28,650
300	ME	48,079	52,090	10%	4,808	5,209	321	ME	25,938	29,312	20%	5,188	5,862
312	GI	31,767	34,443	5%	1,588	1,722	322	ME	43,369	55,039	5%	2,168	2,752
321	ME	25,938	29,312	40%	10,375	11,725			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From NNW					**34,667**	**37,988**	**From NNE**					**33,800**	**37,264**
From North												**68,467**	**75,252**

5-mile radius

RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted	RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted
ENE							**ESE**						
300	ME	48,079	52,090	5%	2,404	2,605	321	ME	25,938	29,312	5%	1,297	1,466
321	ME	25,938	29,312	5%	1,297	1,466	322	ME	43,369	55,039	30%	13,011	16,512
322	ME	43,369	55,039	30%	13,011	16,512	430	AJ	74	1,420	5%	4	71
350	AJ	8,345	12,315	5%	417	616			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From ENE					**17,129**	**21,198**	**From ESE**					**14,311**	**18,048**
From East												**31,440**	**39,246**

5-mile radius

RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted	RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted
SSE							SSW						
320	ME	3,948	4,690	40%	1,579	1,876	319	GI	71,323	80,930	25%	17,831	20,233
321	ME	25,938	29,312	5%	1,297	1,466	320	ME	3,948	4,690	60%	2,369	2,814
322	ME	43,369	55,039	20%	8,674	11,008	321	ME	25,938	29,312	5%	1,297	1,466
339	QC	50,090	70,914	5%	2,505	3,546	322	ME	43,369	55,039	5%	2,168	2,752
		-	-		-	-	339	QC	50,090	70,914	5%	2,505	3,546
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From SSE					14,054	17,895	From SSW					26,169	30,810
From South												40,224	48,705

Trip Distribution - Population from South

CivTech

5-mile radius

RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted	RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted
WSW							WNW						
319	GI	71,323	80,930	40%	28,529	32,372	312	GI	31,767	34,443	90%	28,590	30,999
321	ME	25,938	29,312	10%	2,594	2,931	321	ME	25,938	29,312	10%	2,594	2,931
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From WSW					31,123	35,303	From WNW					31,184	33,930
From West												62,307	69,233

Trip Distribution - Population from West

CivTech

	2040				2050			
Quadrant	**Population**	**Percent**	**Employment**	**Percent**	**Population**	**Percent**	**Employment**	**Percent**
North Northwest	172,890	12.9%	82,302	15.2%	176,312	12.5%	94,506	15.2%
North Northeast	104,216	7.8%	23,956	4.4%	106,844	7.6%	31,380	5.1%
North	277,106	20.7%	106,258	19.7%	283,156	20.1%	125,886	20.3%
East Northeast	90,874	6.8%	31,073	5.8%	110,713	7.8%	41,717	6.7%
East Southeast	61,493	4.6%	19,518	3.6%	86,819	6.1%	26,900	4.3%
East	152,367	11.4%	50,591	9.4%	197,532	13.9%	68,617	11.0%
South Southeast	120,623	9.0%	32,353	6.0%	131,132	9.3%	42,260	6.8%
South Southwest	164,565	12.3%	39,897	7.4%	169,014	11.9%	47,201	7.6%
South	285,188	21.4%	72,250	13.4%	300,146	21.2%	89,460	14.4%
West Southwest	257,578	19.3%	147,415	27.3%	267,460	18.9%	161,936	26.1%
West Northwest	363,326	27.2%	163,910	30.3%	366,381	25.9%	174,200	28.1%
West	620,904	46.5%	311,325	57.6%	633,841	44.8%	336,136	54.2%
Totals	1,335,564	100.0%	540,425	100.0%	1,414,675	100.0%	620,098	99.9%

Radii

Population radius: 12 miles
Employment radius: 12 miles

Select Analysis Year (2020, 2030, 2040,2050)

2040

12-mile radius

RAZ	MPA	2040 Population	2050 Population	% of TAZ	2040 Adjusted	2050 Adjusted	RAZ	MPA	2040 Population	2050 Population	% of TAZ	2040 Adjusted	### Adj
NNW							NNE						
291	ME	54,460	55,172	80%	43,568	44,138	292	ME	28,233	28,651	5%	1,412	##
292	ME	28,233	28,651	95%	26,821	27,218	294	ME	13,557	14,146	95%	12,879	##
293	ME	33,192	33,345	100%	33,192	33,345	295	ME	25,011	25,049	100%	25,011	##
294	ME	13,557	14,146	5%	678	707	300	ME	54,261	54,489	80%	43,409	##
298	ME	59,961	60,213	5%	2,998	3,011	321	ME	31,448	33,939	20%	6,290	##
299	ME	50,522	51,891	90%	45,470	46,702	322	ME	73,252	88,522	5%	3,663	##
300	ME	54,261	54,489	10%	5,426	5,449	352	AJ	14,016	14,723	80%	11,213	##
315	CH	43,157	43,336	5%	2,158	2,167	375	AJ	340	340	100%	340	##
321	ME	31,448	33,939	40%	12,579	13,576			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From NNW					172,890	176,312	From NNE					104,216	##
From North												277,106	##

12-mile radius

RAZ	MPA	2040 Population	2050 Population	% of TAZ	2040 Adjusted	2050 Adjusted	RAZ	MPA	2040 Population	2050 Population	% of TAZ	2040 Adjusted	### Adj
ENE							ESE						
321	ME	31,448	33,939	5%	1,572	1,697	321	ME	31,448	33,939	5%	1,572	##
322	ME	73,252	88,522	30%	21,976	26,557	322	ME	73,252	88,522	35%	25,638	##
350	AJ	19,502	30,122	100%	19,502	30,122	407	PC	43,048	60,158	25%	10,762	##
351	AJ	27,365	28,118	100%	27,365	28,118	424	QC	12,157	15,376	60%	7,294	##
352	AJ	14,016	14,723	20%	2,803	2,945	430	AJ	18,029	33,194	90%	16,226	##
353	AJ	16,687	18,900	95%	15,853	17,955	431	QC	-	-	100%	-	-
430	AJ	18,029	33,194	10%	1,803	3,319			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From ENE					90,874	110,713	From ESE					61,493	##
From East												152,367	##

12-mile radius

RAZ	MPA	2040 Population	2050 Population	% of TAZ	2040 Adjusted	2050 Adjusted	RAZ	MPA	2040 Population	2050 Population	% of TAZ	2040 Adjusted	### Adj
SSE							SSW						
320	ME	5,389	5,990	5%	269	300	319	GI	85,710	87,826	50%	42,855	##
321	ME	31,448	33,939	40%	12,579	13,576	320	ME	5,389	5,990	60%	3,233	##
322	ME	73,252	88,522	25%	18,313	22,131	321	ME	31,448	33,939	5%	1,572	##
339	QC	76,313	77,291	70%	53,419	54,104	322	ME	73,252	88,522	5%	3,663	##
396	FL	63,862	77,745	20%	12,772	15,549	328	CH	55,632	55,986	35%	19,471	##
411	PC	33,424	34,270	50%	16,712	17,135	329	GI	45,414	46,140	75%	34,061	##
422	QC	166	166	30%	50	50	339	QC	76,313	77,291	75%	57,235	##
423	QC	4,112	5,346	40%	1,645	2,138	422	QC	166	166	5%	8	8
424	QC	12,157	15,376	40%	4,863	6,150	423	QC	4,112	5,346	60%	2,467	##
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From SSE					120,623	131,132	From SSW					164,565	##
From South												285,188	##

12-mile radius

RAZ	MPA	2040 Population	2050 Population	% of TAZ	2040 Adjusted	2050 Adjusted	RAZ	MPA	2040 Population	2050 Population	% of TAZ	2040 Adjusted	### Adj
WSW							WNW						
310	CH	66,675	69,497	35%	23,336	24,324	289	ME	75,242	75,286	25%	18,811	##
316	CH	43,204	44,223	50%	21,602	22,112	290	ME	108,298	109,139	90%	97,468	##
317	CH	36,230	38,478	100%	36,230	38,478	291	ME	54,460	55,172	20%	10,892	##
318	GI	52,178	53,097	100%	52,178	53,097	298	ME	59,961	60,213	95%	56,963	##
319	GI	85,710	87,826	50%	42,855	43,913	299	ME	50,522	51,891	10%	5,052	##
321	ME	31,448	33,939	10%	3,145	3,394	309	ME	48,390	48,507	75%	36,293	##
325	CH	51,210	52,162	20%	10,242	10,432	310	CH	66,675	69,497	30%	20,003	##
327	CH	31,602	34,982	100%	31,602	34,982	311	GI	81,134	81,315	100%	81,134	##
328	CH	55,632	55,986	45%	25,034	25,194	312	GI	35,333	35,758	95%	33,566	##
329	GI	45,414	46,140	25%	11,354	11,535	321	ME	31,448	33,939	10%	3,145	##
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From WSW					257,578	267,460	From WNW					363,326	##
From West												620,904	##

12-mile radius

RAZ	MPA	2040 Employment	2050 Employment	% of TAZ	2040 Adjusted	2050 Adjusted	RAZ	MPA	2040 Employment	2050 Employment	% of TAZ	2040 Adjusted	### Adj
NNW							NNE						
291	ME	17,093	19,196	80%	13,674	15,357	292	ME	14,451	16,381	5%	723	##
292	ME	14,451	16,381	95%	13,728	15,562	294	ME	1,266	1,507	95%	1,203	##
293	ME	11,895	12,476	100%	11,895	12,476	295	ME	3,391	3,662	100%	3,391	##
294	ME	1,266	1,507	5%	63	75	300	ME	11,960	14,125	80%	9,568	##
298	ME	15,821	16,536	5%	791	827	321	ME	15,710	30,051	20%	3,142	##
299	ME	35,954	38,258	90%	32,359	34,432	322	ME	38,717	46,515	5%	1,936	##
300	ME	11,960	14,125	10%	1,196	1,413	352	AJ	4,971	7,265	80%	3,977	##
315	CH	46,227	46,878	5%	2,311	2,344	375	AJ	17	19	100%	17	19
321	ME	15,710	30,051	40%	6,284	12,020			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From NNW					82,302	94,506	From NNE					23,956	##
From North												106,258	##

12-mile radius

RAZ	MPA	2040 Employment	2050 Employment	% of TAZ	2040 Adjusted	2050 Adjusted	RAZ	MPA	2040 Employment	2050 Employment	% of TAZ	2040 Adjusted	### Adj
ENE							ESE						
321	ME	15,710	30,051	5%	786	1,503	321	ME	15,710	30,051	5%	786	##
322	ME	38,717	46,515	30%	11,615	13,955	322	ME	38,717	46,515	35%	13,551	##
350	AJ	5,431	7,873	100%	5,431	7,873	407	PC	2,558	4,004	25%	640	##
351	AJ	8,217	11,048	100%	8,217	11,048	424	QC	1,477	1,915	60%	886	##
352	AJ	4,971	7,265	20%	994	1,453	430	AJ	4,062	7,741	90%	3,656	##
353	AJ	3,815	5,381	95%	3,624	5,112	431	QC	-	-	100%	-	-
430	AJ	4,062	7,741	10%	406	774			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From ENE					31,073	41,717	From ESE					19,518	##
From East												50,591	##

12-mile radius

RAZ	MPA	2040 Employment	2050 Employment	% of TAZ	2040 Adjusted	2050 Adjusted	RAZ	MPA	2040 Employment	2050 Employment	% of TAZ	2040 Adjusted	### Adj
SSE							SSW						
320	ME	7,011	8,560	5%	351	428	319	GI	19,456	25,367	50%	9,728	##
321	ME	15,710	30,051	40%	6,284	12,020	320	ME	7,011	8,560	60%	4,207	##
322	ME	38,717	46,515	25%	9,679	11,629	321	ME	15,710	30,051	5%	786	##
339	QC	18,905	20,386	70%	13,234	14,270	322	ME	38,717	46,515	5%	1,936	##
396	FL	5,668	8,234	20%	1,134	1,647	328	CH	9,561	10,557	35%	3,346	##
411	PC	1,962	2,682	50%	981	1,341	329	GI	7,422	8,443	75%	5,567	##
422	QC	2	4	30%	1	1	339	QC	18,905	20,386	75%	14,179	##
423	QC	249	393	40%	100	157	422	QC	2	4	5%	0	0
424	QC	1,477	1,915	40%	591	766	423	QC	249	393	60%	149	##
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From SSE					32,353	42,260	From SSW					39,897	##
From South												72,250	##

12-mile radius

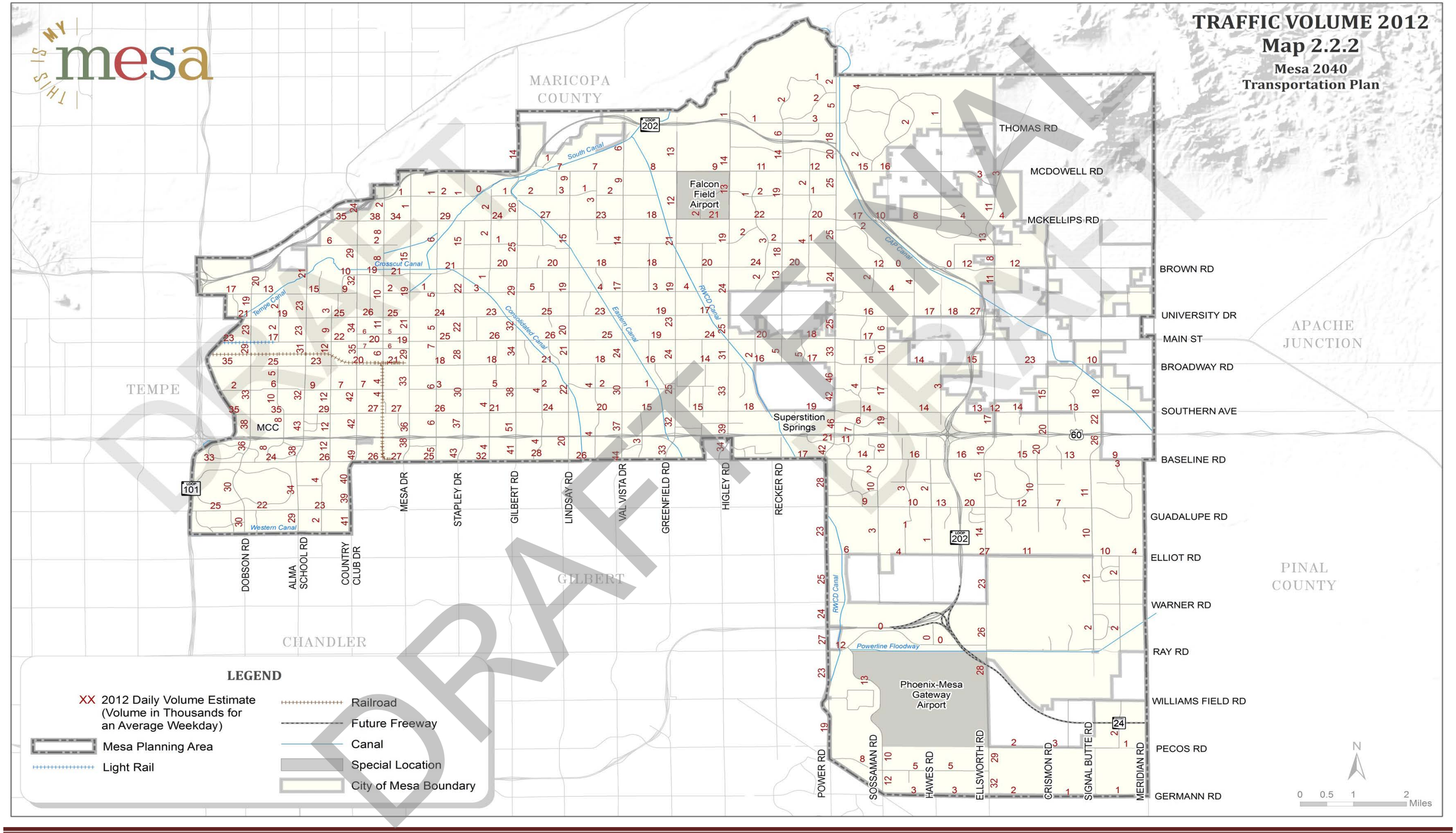
RAZ	MPA	2040 Employment	2050 Employment	% of TAZ	2040 Adjusted	2050 Adjusted	RAZ	MPA	2040 Employment	2050 Employment	% of TAZ	2040 Adjusted	### Adj
WSW							WNW						
310	CH	24,401	24,988	35%	8,540	8,746	289	ME	26,806	27,942	25%	6,702	##
316	CH	31,065	31,981	50%	15,533	15,991	290	ME	36,618	38,299	90%	32,956	##
317	CH	11,192	11,940	100%	11,192	11,940	291	ME	17,093	19,196	20%	3,419	##
318	GI	55,500	57,761	100%	55,500	57,761	298	ME	15,821	16,536	95%	15,030	##
319	GI	19,456	25,367	50%	9,728	12,684	299	ME	35,954	38,258	10%	3,595	##
321	ME	15,710	30,051	10%	1,571	3,005	309	ME	43,338	44,729	75%	32,504	##
325	CH	40,041	41,602	20%	8,008	8,320	310	CH	24,401	24,988	30%	7,320	##
327	CH	31,185	36,628	100%	31,185	36,628	311	GI	48,330	50,125	100%	48,330	##
328	CH	9,561	10,557	45%	4,302	4,751	312	GI	13,141	15,998	95%	12,484	##
329	GI	7,422	8,443	25%	1,856	2,111	321	ME	15,710	30,051	10%	1,571	##
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From WSW					147,415	161,936	From WNW					163,910	##
From West												311,325	##

APPENDIX F

BACKGROUND VOLUME CALCULATIONS

CivTech

MESA 2040 Transportation Plan



TRAFFIC VOLUME 2040
Map 2.2.5
Mesa 2040 Transportation Plan

MARICOPA COUNTY

TEMPE

MESA

GILBERT

CHANDLER

APACHE JUNCTION

PINAL COUNTY

Falcon Field Airport

Superstition Springs

Phoenix-Mesa Gateway Airport

MCC

THOMAS RD
MCDOWELL RD
MCKELLIPS RD
BROWN RD
UNIVERSITY DR
MAIN ST
BROADWAY RD
SOUTHERN AVE
BASELINE RD
GUADALUPE RD
ELLIOT RD
WARNER RD
RAY RD
WILLIAMS FIELD RD
PECOS RD
GERMANN RD

DOBSON RD
ALMA SCHOOL RD
COUNTRY CLUB DR
MESA DR
STAPLEY DR
GILBERT RD
LINDSAY RD
VAL VISTA DR
GREENFIELD RD
HIGLEY RD
RECKER RD
POWER RD
SOSSAMAN RD
HAWES RD
ELLSWORTH RD
CRISMON RD
SIGNAL BUTTE RD
MERIDIAN RD

South Canal
Tempe Canal
Crosscut Canal
Consolidated Canal
Eastern Canal
RWCD Canal
CAP Canal
Western Canal
Powerline Floodway

LOOP 101
LOOP 202
60
24

LEGEND

XX 2040 Daily Volume Estimate (Volume in Thousands for an Average Weekday)

Mesa Planning Area

Light Rail

Railroad

Canal

Special Location

City of Mesa Boundary

N

0 0.5 1 2 Miles

The City of Mesa makes no claims concerning the accuracy of this map nor assumes any liability resulting from the use of the information herein.
COPYRIGHT 1988, 2014
CITY OF MESA, ARIZONA

M:\Mesa Transportation Plan Update\GIS\Transportation Master Plan\2-2-5 Traffic Volume 2040.mxd 6/2/2014 3:00:50 PM MSowers

Background Calculations

Source: NCHRP Report 785

Hawes Crossing	Total Volumes											
	West of Intersection Eastbound			East of Intersection Westbound			South of Intersection Northbound			North of Intersection Southbound		
Intersection	Approach	Departure	Total	Approach	Departure	Total	Approach	Departure	Total	Approach	Departure	Total
Sossaman Rd. / Guadalupe Rd.	9,000	9,000	18,000	9,000	9,000	18,000	9,000	9,000	18,000	8,000	8,000	16,000
Farnsworth Dr. / Guadalupe Rd.	9,000	9,000	18,000	9,000	9,000	18,000	2,650	2,650	5,300	1,500	1,500	3,000
Hawes Rd. / Guadalupe Rd.	9,000	9,000	18,000	9,500	9,500	19,000	5,000	5,000	10,000	4,000	4,000	8,000
Loop 202 SB Ramps / Guadalupe Rd.	9,500	9,500	19,000	15,000	15,000	30,000	0	10,000	10,000	10,000	0	10,000
Loop 202 NB Ramps / Guadalupe Rd.	15,000	15,000	30,000	17,000	17,000	34,000	5,000	0	5,000	0	20,000	20,000
Power Rd. / Elliot Rd.	7,500	7,500	15,000	7,500	7,500	15,000	19,500	19,500	39,000	19,000	19,000	38,000
Sossaman Rd. / Elliot Rd.	7,500	7,500	15,000	7,000	7,000	14,000	8,500	8,500	17,000	9,000	9,000	18,000
80th St. / Elliot Rd.	7,000	7,000	14,000	7,000	7,000	14,000	0	0	0	1,000	1,000	2,000
Hawes Rd. / Elliot Rd.	7,000	7,000	14,000	7,500	7,500	15,000	6,500	6,500	13,000	5,000	5,000	10,000
Loop 202 SB Ramps / Elliot Rd.	7,500	7,500	15,000	18,600	18,600	37,200	0	6,000	6,000	22,000	0	22,000
Loop 202 NB Ramps / Elliot Rd.	18,600	18,600	37,200	17,500	17,500	35,000	11,000	0	11,000	0	12,000	12,000
Sossaman Rd. / Warner Rd.	9,000	9,000	18,000	8,000	8,000	16,000	8,500	8,500	17,000	8,500	8,500	17,000
Hawes Rd. / Warner Rd.	8,000	8,000	16,000	6,000	6,000	12,000	6,500	6,500	13,000	6,500	6,500	13,000
Hawes Rd. / Loop 202 WB Ramps	0	4,500	4,500	6,000	0	6,000	12,650	12,650	25,300	10,000	10,000	20,000
Hawes Rd. / Loop 202 EB Ramps	4,500	0	4,500	0	6,000	6,000	10,000	10,000	20,000	12,650	12,650	25,300
Ellsworth Road / Elliot Road	17,500	17,500	35,000	13,500	13,500	27,000	13,500	13,500	27,000	11,500	11,500	23,000
Ellsworth Road / Warner Road	5,000	5,000	10,000	3,500	3,500	7,000	13,000	13,000	26,000	13,500	13,500	27,000

Z:\Civtech\Projects\17-1390 Mesa Inner Loop\Analysis - Traffic\Analysis v3_1\[NCHRP Report 765 ADT to Peak Hour Traffic.xlsm]

Notes:

2040 ADT retrieved from Map 2.2.5 "TRAFFIC VOLUME 2040" of *Mesa 2040 Transportation Plan*

Where 2040 ADT were not provided in map referenced above, values were estimated (for example, at interchange ramps)

2040 ADT on Elliot Road, west of Loop 202, and on Warner Road, west of Loop 202, were reduced by the projected ADT generated by the site.

Background Calculations

Source: NCHRP Report 765

Hawes Crossing Averaged Volumes	2040 Volumes											
	West of Intersection Eastbound			East of Intersection Westbound			South of Intersection Northbound			North of Intersection Southbound		
Intersection	Approach	Departure	Total	Approach	Departure	Total	Approach	Departure	Total	Approach	Departure	Total
Sossaman Rd. / Guadalupe Rd.	9,000	9,000	18,000	9,000	9,000	18,000	9,000	9,000	18,000	8,000	8,000	16,000
Farnsworth Dr. / Guadalupe Rd.	9,000	9,000	18,000	9,000	9,000	18,000	2,650	2,650	5,300	1,500	1,500	3,000
Hawes Rd. / Guadalupe Rd.	9,000	9,000	18,000	9,500	9,500	19,000	5,000	5,000	10,000	4,000	4,000	8,000
Loop 202 SB Ramps / Guadalupe Rd.	9,500	9,500	19,000	15,000	15,000	30,000	5,000	5,000	10,000	5,000	5,000	10,000
Loop 202 NB Ramps / Guadalupe Rd.	15,000	15,000	30,000	17,000	17,000	34,000	2,500	2,500	5,000	10,000	10,000	20,000
Power Rd. / Elliot Rd.	7,500	7,500	15,000	7,500	7,500	15,000	19,500	19,500	39,000	19,000	19,000	38,000
Sossaman Rd. / Elliot Rd.	7,500	7,500	15,000	7,000	7,000	14,000	8,500	8,500	17,000	9,000	9,000	18,000
80th St. / Elliot Rd.	7,000	7,000	14,000	7,000	7,000	14,000	0	0	0	1,000	1,000	2,000
Hawes Rd. / Elliot Rd.	7,000	7,000	14,000	7,500	7,500	15,000	6,500	6,500	13,000	5,000	5,000	10,000
Loop 202 SB Ramps / Elliot Rd.	7,500	7,500	15,000	18,600	18,600	37,200	3,000	3,000	6,000	11,000	11,000	22,000
Loop 202 NB Ramps / Elliot Rd.	18,600	18,600	37,200	17,500	17,500	35,000	5,500	5,500	11,000	6,000	6,000	12,000
Sossaman Rd. / Warner Rd.	9,000	9,000	18,000	8,000	8,000	16,000	8,500	8,500	17,000	8,500	8,500	17,000
Hawes Rd. / Warner Rd.	8,000	8,000	16,000	6,000	6,000	12,000	6,500	6,500	13,000	6,500	6,500	13,000
Hawes Rd. / Loop 202 WB Ramps	2,250	2,250	4,500	3,000	3,000	6,000	12,650	12,650	25,300	10,000	10,000	20,000
Hawes Rd. / Loop 202 EB Ramps	2,250	2,250	4,500	3,000	3,000	6,000	10,000	10,000	20,000	12,650	12,650	25,300
Ellsworth Road / Elliot Road	17,500	17,500	35,000	13,500	13,500	27,000	13,500	13,500	27,000	11,500	11,500	23,000
Ellsworth Road / Warner Road	5,000	5,000	10,000	3,500	3,500	7,000	13,000	13,000	26,000	13,500	13,500	27,000

Background Calculations

Source: NCHRP Report 785

Hawes Crossing AM Peak Hour		2040 Volumes - AM Approach & Departure Volumes											
		West of Intersection Eastbound			East of Intersection Westbound			South of Intersection Northbound			North of Intersection Southbound		
Intersection	Group	Approach	Departure	Total	Approach	Departure	Total	Approach	Departure	Total	Approach	Departure	Total
Sossaman Rd. / Guadalupe Rd.	NW	505	935	1,440	935	505	1,440	935	505	1,440	450	830	1,280
Farnsworth Dr. / Guadalupe Rd.	NW	505	935	1,440	935	505	1,440	275	150	425	85	155	240
Hawes Rd. / Guadalupe Rd.	NE	935	505	1,440	530	990	1,520	520	280	800	225	415	640
Loop 202 SB Ramps / Guadalupe Rd.	202 N/S	530	990	1,520	1,560	840	2,400	0	800	800	800	0	800
Loop 202 NB Ramps / Guadalupe Rd.	202 N/S	840	1,560	2,400	1,770	950	2,720	400	0	400	0	1,600	1,600
Power Rd. / Elliot Rd.	NW	420	780	1,200	780	420	1,200	2,030	1,090	3,120	1,065	1,975	3,040
Sossaman Rd. / Elliot Rd.	NW	420	780	1,200	730	390	1,120	885	475	1,360	505	935	1,440
80th St. / Elliot Rd.	NW	390	730	1,120	730	390	1,120	0	0	0	55	105	160
Hawes Rd. / Elliot Rd.	NE	730	390	1,120	420	780	1,200	675	365	1,040	280	520	800
Loop 202 SB Ramps / Elliot Rd.	202 N/S	420	780	1,200	1,935	1,040	2,975	0	480	480	1,760	0	1,760
Loop 202 NB Ramps / Elliot Rd.	202 N/S	1,040	1,935	2,975	1,820	980	2,800	880	0	880	0	960	960
Sossaman Rd. / Warner Rd.	S	505	935	1,440	830	450	1,280	475	885	1,360	885	475	1,360
Hawes Rd. / Warner Rd.	S	450	830	1,280	625	335	960	365	675	1,040	675	365	1,040
Hawes Rd. / Loop 202 WB Ramps	202 E/W	0	360	360	480	0	480	1,315	710	2,025	560	1,040	1,600
Hawes Rd. / Loop 202 EB Ramps	202 E/W	360	0	360	0	480	480	1,040	560	1,600	710	1,315	2,025
Ellsworth Road / Elliot Road		980	1,820	2,800	1,405	755	2,160	1,405	755	2,160	645	1,195	1,840
Ellsworth Road / Warner Road		280	520	800	365	195	560	1,350	730	2,080	755	1,405	2,160

		NW	NE	S	202 N/S	202 E/W
Peak hour factor		**8.0%**	**8.0%**	**8.0%**	**8.0%**	**8.0%**
Directional factor		**65%**	**65%**	**65%**	**65%**	**65%**
predominant E/W travel		**WB**	**EB**	**WB**	**WB**	
predominant N/S travel		**NB**	**NB**	**SB**		**NB**
Rounding factor		**5**	**5**	**5**	**5**	**5**

Background Calculations

Source: NCHRP Report 785

Hawes Crossing AM Peak Hour	2040 Volumes - AM Balanced Approach & Departure Volumes											
	West of Intersection Eastbound			East of Intersection Westbound			South of Intersection Northbound			North of Intersection Southbound		
Intersection	Approach	Departure	Total	Approach	Departure	Total	Approach	Departure	Total	Approach	Departure	Total
Sossaman Rd. / Guadalupe Rd.	500	945	1,445	925	510	1,435	925	510	1,435	445	835	1,280
Farnsworth Dr. / Guadalupe Rd.	495	950	1,445	920	515	1,435	270	150	420	85	155	240
Hawes Rd. / Guadalupe Rd.	930	505	1,435	530	995	1,525	515	280	795	225	420	645
Loop 202 SB Ramps / Guadalupe Rd.	505	1,035	1,540	1,490	880	2,370	0	840	840	760	0	760
Loop 202 NB Ramps / Guadalupe Rd.	995	1,275	2,270	2,095	775	2,870	375	0	375	0	1,415	1,415
Power Rd. / Elliot Rd.	420	785	1,205	775	420	1,195	2,025	1,095	3,120	1,060	1,980	3,040
Sossaman Rd. / Elliot Rd.	425	775	1,200	735	385	1,120	890	470	1,360	510	930	1,440
80th St. / Elliot Rd.	400	715	1,115	745	380	1,125	0	0	0	55	105	160
Hawes Rd. / Elliot Rd.	720	395	1,115	415	790	1,205	665	370	1,035	275	525	800
Loop 202 SB Ramps / Elliot Rd.	325	950	1,275	1,510	1,270	2,780	0	785	785	1,170	0	1,170
Loop 202 NB Ramps / Elliot Rd.	1,060	1,900	2,960	1,855	960	2,815	895	0	895	0	950	950
Sossaman Rd. / Warner Rd.	510	925	1,435	840	445	1,285	480	880	1,360	890	470	1,360
Hawes Rd. / Warner Rd.	460	810	1,270	640	330	970	375	665	1,040	685	355	1,040
Hawes Rd. / Loop 202 WB Ramps	0	380	380	455	0	455	1,240	745	1,985	530	1,100	1,630
Hawes Rd. / Loop 202 EB Ramps	380	0	380	0	450	450	1,095	525	1,620	745	1,245	1,990
Ellsworth Road / Elliot Road	990	1,800	2,790	1,420	745	2,165	1,420	745	2,165	650	1,185	1,835
Ellsworth Road / Warner Road	285	510	795	370	190	560	1,375	715	2,090	770	1,380	2,150

Rounding factor	5

Background Calculations

Source: NCHRP Report 785

Hawes Crossing AM Peak Hour Intersection	2023 Volumes - AM Peak Hour Turning Movements											
	West of Intersection Eastbound			East of Intersection Westbound			South of Intersection Northbound			North of Intersection Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Sossaman Rd. / Guadalupe Rd.	175	280	45	160	505	260	255	535	135	95	240	185
Farnsworth Dr. / Guadalupe Rd.	15	445	35	115	685	120	200	20	50	20	5	65
Hawes Rd. / Guadalupe Rd.	90	555	285	110	320	80	100	80	335	105	70	45
Loop 202 SB Ramps / Guadalupe Rd.	0	390	115	420	915	0	0	0	0	490	0	120
Loop 202 NB Ramps / Guadalupe Rd.	315	680	0	0	995	1,100	280	0	95	0	0	0
Power Rd. / Elliot Rd.	210	330	125	140	485	150	270	1,260	245	145	690	30
Sossaman Rd. / Elliot Rd.	195	240	45	85	315	335	325	500	65	175	290	205
80th St. / Elliot Rd.	10	490	0	0	650	95	0	0	0	25	0	65
Hawes Rd. / Elliot Rd.	155	345	220	90	155	170	150	200	315	130	60	85
Loop 202 SB Ramps / Elliot Rd.	0	240	85	685	825	0	0	0	0	580	0	505
Loop 202 NB Ramps / Elliot Rd.	375	405	0	0	1,280	575	340	0	555	0	0	0
Sossaman Rd. / Warner Rd.	165	240	105	215	350	275	310	215	80	125	500	265
Hawes Rd. / Warner Rd.	60	200	95	220	305	115	70	180	125	90	270	325
Hawes Rd. / Loop 202 WB Ramps	0	0	0	340	0	115	320	645	0	0	470	60
Hawes Rd. / Loop 202 EB Ramps	205	0	175	0	0	0	0	420	340	110	635	0
Ellsworth Road / Elliot Road	155	480	250	265	730	420	420	610	390	150	475	265
Ellsworth Road / Warner Road	195	15	80	95	20	250	375	935	65	110	545	115

Rounding factor	5

Background Calculations

Source: NCHRP Report 785

Hawes Crossing PM Peak Hour	2040 Volumes - PM Approach & Departure Volumes													
		West of Intersection Eastbound			East of Intersection Westbound			South of Intersection Northbound			North of Intersection Southbound			
Intersection	Group	Approach	Departure	Total	Approach	Departure	Total	Approach	Departure	Total	Approach	Departure	Total	
Sossaman Rd. / Guadalupe Rd.	NW	1,170	630	1,800	630	1,170	1,800	630	1,170	1,800	1,040	560	1,600	
Farnsworth Dr. / Guadalupe Rd.	NW	1,170	630	1,800	630	1,170	1,800	185	345	530	195	105	300	
Hawes Rd. / Guadalupe Rd.	NE	630	1,170	1,800	1,235	665	1,900	350	650	1,000	520	280	800	
Loop 202 SB Ramps / Guadalupe Rd.	202 N/S	1,235	665	1,900	1,050	1,950	3,000	0	1,000	1,000	1,000	0	1,000	
Loop 202 NB Ramps / Guadalupe Rd.	202 N/S	1,950	1,050	3,000	1,190	2,210	3,400	500	0	500	0	2,000	2,000	
Power Rd. / Elliot Rd.	NW	975	525	1,500	525	975	1,500	1,365	2,535	3,900	2,470	1,330	3,800	
Sossaman Rd. / Elliot Rd.	NW	975	525	1,500	490	910	1,400	595	1,105	1,700	1,170	630	1,800	
80th St. / Elliot Rd.	NW	910	490	1,400	490	910	1,400	0	0	0	130	70	200	
Hawes Rd. / Elliot Rd.	NE	490	910	1,400	975	525	1,500	455	845	1,300	650	350	1,000	
Loop 202 SB Ramps / Elliot Rd.	202 N/S	975	525	1,500	1,300	2,420	3,720	0	600	600	2,200	0	2,200	
Loop 202 NB Ramps / Elliot Rd.	202 N/S	2,420	1,300	3,720	1,225	2,275	3,500	1,100	0	1,100	0	1,200	1,200	
Sossaman Rd. / Warner Rd.	S	1,170	630	1,800	560	1,040	1,600	1,105	595	1,700	595	1,105	1,700	
Hawes Rd. / Warner Rd.	S	1,040	560	1,600	420	780	1,200	845	455	1,300	455	845	1,300	
Hawes Rd. / Loop 202 WB Ramps	202 E/W	0	450	450	600	0	600	885	1,645	2,530	1,300	700	2,000	
Hawes Rd. / Loop 202 EB Ramps	202 E/W	450	0	450	0	600	600	700	1,300	2,000	1,645	885	2,530	
Ellsworth Road / Elliot Road		2,275	1,225	3,500	945	1,755	2,700	945	1,755	2,700	1,495	805	2,300	
Ellsworth Road / Warner Road		650	350	1,000	245	455	700	910	1,690	2,600	1,755	945	2,700	

		NW	NE	S	202 N/S	202 E/W
Peak hour factor		**10.0%**	**10.0%**	**10.0%**	**10.0%**	**10.0%**
Directional factor		**65%**	**65%**	**65%**	**65%**	**65%**
predominant E/W travel		**EB**	**WB**	**EB**	**EB**	
predominant N/S travel		**SB**	**SB**	**NB**		**SB**
Rounding factor		**5**	**5**	**5**	**5**	**5**

Background Calculations

Source: NCHRP Report 785

Hawes Crossing PM Peak Hour	2040 Volumes - PM Balanced Approach & Departure Volumes											
	West of Intersection Eastbound			East of Intersection Westbound			South of Intersection Northbound			North of Intersection Southbound		
Intersection	Approach	Departure	Total	Approach	Departure	Total	Approach	Departure	Total	Approach	Departure	Total
Sossaman Rd. / Guadalupe Rd.	1,180	625	1,805	635	1,160	1,795	635	1,160	1,795	1,050	555	1,605
Farnsworth Dr. / Guadalupe Rd.	1,190	620	1,810	640	1,150	1,790	190	340	530	200	105	305
Hawes Rd. / Guadalupe Rd.	635	1,165	1,800	1,240	660	1,900	350	645	995	525	280	805
Loop 202 SB Ramps / Guadalupe Rd.	1,295	630	1,925	1,105	1,850	2,955	0	960	960	1,040	0	1,040
Loop 202 NB Ramps / Guadalupe Rd.	2,385	815	3,200	1,455	1,720	3,175	430	0	430	0	1,735	1,735
Power Rd. / Elliot Rd.	980	525	1,505	525	970	1,495	1,370	2,530	3,900	2,475	1,325	3,800
Sossaman Rd. / Elliot Rd.	965	530	1,495	485	920	1,405	590	1,115	1,705	1,160	635	1,795
80th St. / Elliot Rd.	890	500	1,390	480	930	1,410	0	0	0	130	70	200
Hawes Rd. / Elliot Rd.	495	900	1,395	985	520	1,505	460	835	1,295	660	345	1,005
Loop 202 SB Ramps / Elliot Rd.	875	580	1,455	1,165	2,670	3,835	0	710	710	1,920	0	1,920
Loop 202 NB Ramps / Elliot Rd.	2,430	1,295	3,725	1,230	2,270	3,500	1,105	0	1,105	0	1,200	1,200
Sossaman Rd. / Warner Rd.	1,160	635	1,795	555	1,050	1,605	1,095	600	1,695	590	1,115	1,705
Hawes Rd. / Warner Rd.	1,015	570	1,585	410	795	1,205	825	465	1,290	445	865	1,310
Hawes Rd. / Loop 202 WB Ramps	0	450	450	600	0	600	885	1,640	2,525	1,300	700	2,000
Hawes Rd. / Loop 202 EB Ramps	450	0	450	0	600	600	700	1,300	2,000	1,640	885	2,525
Ellsworth Road / Elliot Road	2,250	1,240	3,490	935	1,775	2,710	935	1,775	2,710	1,480	815	2,295
Ellsworth Road / Warner Road	640	355	995	240	465	705	895	1,720	2,615	1,725	960	2,685

Rounding factor	**5**

Background Calculations

Source: NCHRP Report 785

Hawes Crossing PM Peak Hour Intersection	2023 Volumes - PM Peak Hour Turning Movements											
	West of Intersection Eastbound			East of Intersection Westbound			South of Intersection Northbound			North of Intersection Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Sossaman Rd. / Guadalupe Rd.	230	475	225	210	280	145	170	180	190	335	580	135
Farnsworth Dr. / Guadalupe Rd.	80	860	220	90	525	25	45	5	140	150	30	20
Hawes Rd. / Guadalupe Rd.	50	390	200	385	690	165	140	65	145	125	65	335
Loop 202 SB Ramps / Guadalupe Rd.	0	1,025	270	405	700	0	0	0	0	760	0	280
Loop 202 NB Ramps / Guadalupe Rd.	680	1,185	0	0	635	820	180	0	250	0	0	0
Power Rd. / Elliot Rd.	395	285	300	280	105	140	165	790	415	270	1,575	430
Sossaman Rd. / Elliot Rd.	250	525	190	120	110	255	180	130	280	415	505	240
80th St. / Elliot Rd.	10	810	0	0	445	60	0	0	0	80	0	50
Hawes Rd. / Elliot Rd.	120	235	145	395	425	165	195	65	200	85	465	110
Loop 202 SB Ramps / Elliot Rd.	0	835	140	460	705	0	0	0	0	625	0	525
Loop 202 NB Ramps / Elliot Rd.	640	1,790	0	0	880	350	415	0	690	0	0	0
Sossaman Rd. / Warner Rd.	250	440	250	170	165	220	245	645	205	210	180	200
Hawes Rd. / Warner Rd.	185	380	150	90	145	175	100	210	110	125	275	65
Hawes Rd. / Loop 202 WB Ramps	0	0	0	215	0	210	215	490	0	0	870	430
Hawes Rd. / Loop 202 EB Ramps	250	0	180	0	0	0	0	635	65	240	1,120	0
Ellsworth Road / Elliot Road	300	915	450	150	555	230	290	450	190	450	810	200
Ellsworth Road / Warner Road	195	175	270	60	105	75	10	690	195	315	1,170	240

Rounding factor	**5**

APPENDIX G

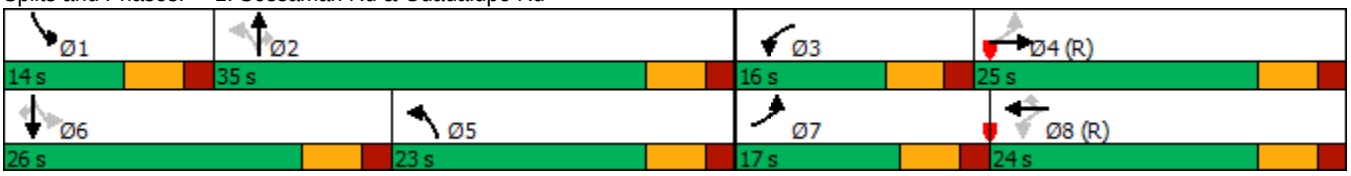
2040 TOTAL PEAK HOUR ANALYSES

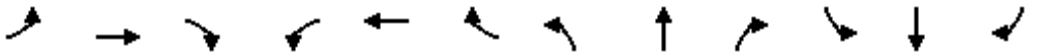
CivTech

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	14	35	16	25	23	26	17	24
Maximum Split (%)	15.6%	38.9%	17.8%	27.8%	25.6%	28.9%	18.9%	26.7%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	4	18	53	69	30	4	53	70
End Time (s)	18	53	69	4	53	30	70	4
Yield/Force Off (s)	12	47	63	88	47	24	64	88
Yield/Force Off 170(s)	12	36	63	77	47	13	64	77
Local Start Time (s)	24	38	73	89	50	24	73	0
Local Yield (s)	32	67	83	18	67	44	84	18
Local Yield 170(s)	32	56	83	7	67	33	84	7

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 70 (78%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 1: Sossaman Rd & Guadalupe Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	283	45	160	507	274	255	745	135	110	412	185
Future Volume (veh/h)	175	283	45	160	507	274	255	745	135	110	412	185
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	194	314	50	178	563	304	283	828	150	122	458	206
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	362	1049	162	431	1165	362	441	1145	511	221	790	352
Arrive On Green	0.10	0.24	0.24	0.19	0.46	0.46	0.18	0.32	0.32	0.08	0.22	0.22
Sat Flow, veh/h	1781	4460	690	1781	5106	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	194	237	127	178	563	304	283	828	150	122	458	206
Grp Sat Flow(s),veh/h/ln	1781	1702	1746	1781	1702	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	7.3	5.2	5.4	6.8	6.9	15.2	6.6	18.5	6.4	5.4	10.4	7.3
Cycle Q Clear(g_c), s	7.3	5.2	5.4	6.8	6.9	15.2	6.6	18.5	6.4	5.4	10.4	7.3
Prop In Lane	1.00		0.40	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	362	801	411	431	1165	362	441	1145	511	221	790	352
V/C Ratio(X)	0.54	0.30	0.31	0.41	0.48	0.84	0.64	0.72	0.29	0.55	0.58	0.58
Avail Cap(c_a), veh/h	394	801	411	457	1165	362	458	1145	511	238	790	352
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	0.64	0.64	0.64	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.9	28.3	28.4	20.5	20.8	23.0	31.3	27.0	22.8	33.1	31.2	15.1
Incr Delay (d2), s/veh	1.2	0.9	1.9	0.6	1.3	19.0	1.9	2.6	0.9	2.3	3.1	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.4	3.8	4.2	4.3	4.3	9.6	8.4	11.3	4.2	4.3	8.0	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.1	29.2	30.3	21.0	22.1	42.0	33.1	29.5	23.8	35.4	34.3	22.1
LnGrp LOS	C	C	C	C	C	D	C	C	C	D	C	C
Approach Vol, veh/h		558			1045			1261			786	
Approach Delay, s/veh		27.7			27.7			29.6			31.3	
Approach LOS		C			C			C			C	

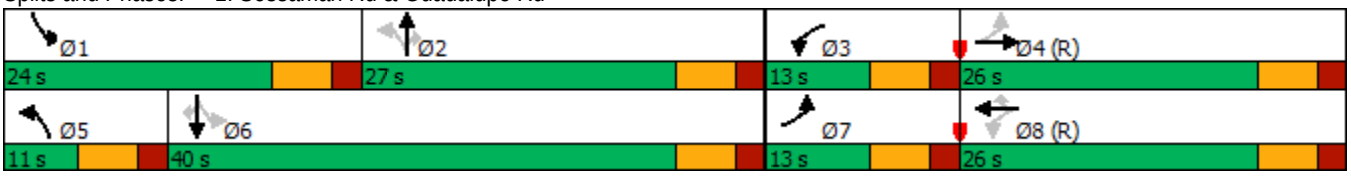
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	35.0	14.7	27.2	22.1	26.0	15.4	26.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	8.0	29.0	10.0	19.0	17.0	20.0	11.0	18.0
Max Q Clear Time (g_c+I1), s	7.4	20.5	8.8	7.4	8.6	12.4	9.3	17.2
Green Ext Time (p_c), s	0.0	3.6	0.1	1.5	0.5	2.1	0.1	0.4

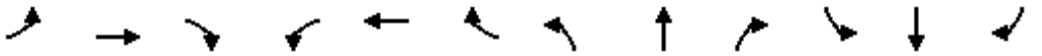
Intersection Summary	
HCM 6th Ctrl Delay	29.2
HCM 6th LOS	C

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	24	27	13	26	11	40	13	26
Maximum Split (%)	26.7%	30.0%	14.4%	28.9%	12.2%	44.4%	14.4%	28.9%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	26	50	77	0	26	37	77	0
End Time (s)	50	77	0	26	37	77	0	26
Yield/Force Off (s)	44	71	84	20	31	71	84	20
Yield/Force Off 170(s)	44	60	84	9	31	60	84	9
Local Start Time (s)	26	50	77	0	26	37	77	0
Local Yield (s)	44	71	84	20	31	71	84	20
Local Yield 170(s)	44	60	84	9	31	60	84	9

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 1: Sossaman Rd & Guadalupe Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	483	225	210	289	197	170	726	190	386	1154	135
Future Volume (veh/h)	230	483	225	210	289	197	170	726	190	386	1154	135
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	256	537	250	233	321	219	189	807	211	429	1282	150
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	359	765	345	269	1135	352	189	829	370	441	1343	599
Arrive On Green	0.08	0.22	0.22	0.03	0.07	0.07	0.06	0.23	0.23	0.20	0.38	0.38
Sat Flow, veh/h	1781	3443	1552	1781	5106	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	256	531	256	233	321	219	189	807	211	429	1282	150
Grp Sat Flow(s),veh/h/ln	1781	1702	1591	1781	1702	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	7.0	12.9	13.4	7.0	5.4	12.1	5.0	20.3	10.6	17.2	31.6	5.9
Cycle Q Clear(g_c), s	7.0	12.9	13.4	7.0	5.4	12.1	5.0	20.3	10.6	17.2	31.6	5.9
Prop In Lane	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	359	756	354	269	1135	352	189	829	370	441	1343	599
V/C Ratio(X)	0.71	0.70	0.72	0.87	0.28	0.62	1.00	0.97	0.57	0.97	0.95	0.25
Avail Cap(c_a), veh/h	359	756	354	269	1135	352	189	829	370	441	1343	599
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	0.58	0.58	0.58	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	32.3	32.4	31.5	34.9	38.0	32.6	34.2	30.5	24.3	27.3	19.2
Incr Delay (d2), s/veh	6.5	5.4	12.2	24.3	0.6	7.9	50.0	18.2	3.7	35.8	15.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.7	9.4	10.1	5.9	4.1	9.6	6.8	14.2	6.7	16.3	21.3	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.9	37.6	44.6	55.9	35.5	46.0	82.6	52.4	34.2	60.2	43.2	20.2
LnGrp LOS	C	D	D	E	D	D	F	D	C	E	D	C
Approach Vol, veh/h		1043			773			1207			1861	
Approach Delay, s/veh		38.7			44.6			54.0			45.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	27.0	13.0	26.0	11.0	40.0	13.0	26.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	18.0	21.0	7.0	20.0	5.0	34.0	7.0	20.0
Max Q Clear Time (g_c+I1), s	19.2	22.3	9.0	15.4	7.0	33.6	9.0	14.1
Green Ext Time (p_c), s	0.0	0.0	0.0	1.9	0.0	0.3	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	45.9
HCM 6th LOS	D

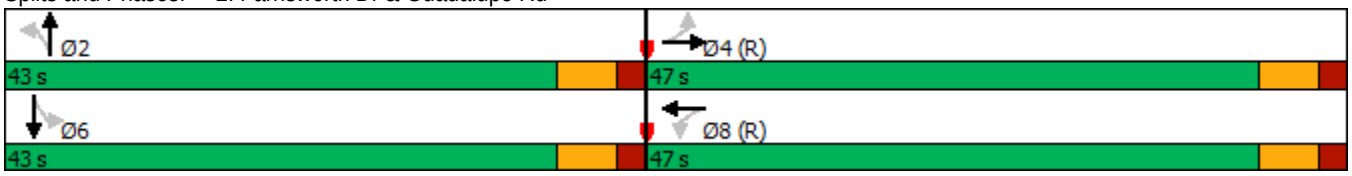
Notes

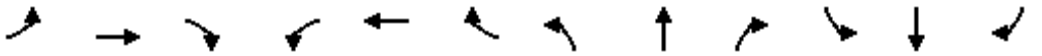
User approved pedestrian interval to be less than phase max green.

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	Max	C-Max	Max	C-Max
Maximum Split (s)	43	47	43	47
Maximum Split (%)	47.8%	52.2%	47.8%	52.2%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	68	21	68	21
End Time (s)	21	68	21	68
Yield/Force Off (s)	15	62	15	62
Yield/Force Off 170(s)	4	51	4	51
Local Start Time (s)	47	0	47	0
Local Yield (s)	84	41	84	41
Local Yield 170(s)	73	30	73	30

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 21 (23%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 2: Farnsworth Dr & Guadalupe Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	462	35	115	700	120	200	20	50	20	5	65
Future Volume (veh/h)	15	462	35	115	700	120	200	20	50	20	5	65
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	17	513	39	128	778	133	222	22	56	22	6	72
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	260	2207	166	460	2002	340	583	192	489	585	51	609
Arrive On Green	0.91	0.91	0.91	0.15	0.15	0.15	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	613	4844	365	856	4395	745	1321	467	1189	1321	123	1480
Grp Volume(v), veh/h	17	359	193	128	601	310	222	0	78	22	0	78
Grp Sat Flow(s),veh/h/ln	613	1702	1805	856	1702	1736	1321	0	1656	1321	0	1604
Q Serve(g_s), s	1.1	1.1	1.1	12.1	14.3	14.5	11.3	0.0	2.6	0.9	0.0	2.7
Cycle Q Clear(g_c), s	15.6	1.1	1.1	13.2	14.3	14.5	14.0	0.0	2.6	3.6	0.0	2.7
Prop In Lane	1.00		0.20	1.00		0.43	1.00		0.72	1.00		0.92
Lane Grp Cap(c), veh/h	260	1551	822	460	1551	791	583	0	681	585	0	659
V/C Ratio(X)	0.07	0.23	0.23	0.28	0.39	0.39	0.38	0.00	0.11	0.04	0.00	0.12
Avail Cap(c_a), veh/h	260	1551	822	460	1551	791	583	0	681	585	0	659
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	0.99	0.99	0.99	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.0	2.2	2.2	26.9	26.9	27.0	20.7	0.0	16.4	17.5	0.0	16.4
Incr Delay (d2), s/veh	0.5	0.3	0.6	1.5	0.7	1.4	1.9	0.0	0.3	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.7	0.8	5.2	10.7	11.2	6.6	0.0	1.9	0.5	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.5	2.6	2.9	28.4	27.6	28.4	22.6	0.0	16.7	17.6	0.0	16.8
LnGrp LOS	A	A	A	C	C	C	C	A	B	B	A	B
Approach Vol, veh/h		569			1039			300			100	
Approach Delay, s/veh		2.8			28.0			21.1			17.0	
Approach LOS		A			C			C			B	

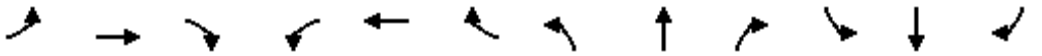
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.0		47.0		43.0		47.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		37.0		41.0		37.0		41.0				
Max Q Clear Time (g_c+I1), s		16.0		17.6		5.6		16.5				
Green Ext Time (p_c), s		1.1		3.4		0.4		6.8				

Intersection Summary												
HCM 6th Ctrl Delay			19.2									
HCM 6th LOS			B									

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	Max	C-Max	Max	C-Max
Maximum Split (s)	28	62	28	62
Maximum Split (%)	31.1%	68.9%	31.1%	68.9%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	7	35	7	35
End Time (s)	35	7	35	7
Yield/Force Off (s)	29	1	29	1
Yield/Force Off 170(s)	18	80	18	80
Local Start Time (s)	62	0	62	0
Local Yield (s)	84	56	84	56
Local Yield 170(s)	73	45	73	45

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	60
Offset: 35 (39%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 2: Farnsworth Dr & Guadalupe Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	919	220	90	587	25	45	5	140	150	30	20
Future Volume (veh/h)	80	919	220	90	587	25	45	5	140	150	30	20
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	89	1021	244	100	652	28	50	6	156	167	33	22
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	471	2561	611	353	3124	134	377	14	375	275	256	171
Arrive On Green	1.00	1.00	1.00	0.21	0.21	0.21	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	760	4115	982	438	5021	215	1349	59	1535	1224	1047	698
Grp Volume(v), veh/h	89	844	421	100	441	239	50	0	162	167	0	55
Grp Sat Flow(s),veh/h/ln	760	1702	1694	438	1702	1832	1349	0	1594	1224	0	1745
Q Serve(g_s), s	2.3	0.0	0.0	17.6	9.7	9.7	2.7	0.0	7.7	12.0	0.0	2.2
Cycle Q Clear(g_c), s	12.0	0.0	0.0	17.6	9.7	9.7	4.9	0.0	7.7	19.7	0.0	2.2
Prop In Lane	1.00		0.58	1.00		0.12	1.00		0.96	1.00		0.40
Lane Grp Cap(c), veh/h	471	2118	1054	353	2118	1140	377	0	390	275	0	426
V/C Ratio(X)	0.19	0.40	0.40	0.28	0.21	0.21	0.13	0.00	0.42	0.61	0.00	0.13
Avail Cap(c_a), veh/h	471	2118	1054	353	2118	1140	377	0	390	275	0	426
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.62	0.62	0.85	0.85	0.85	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	1.0	0.0	0.0	20.5	17.4	17.4	28.4	0.0	28.6	36.9	0.0	26.5
Incr Delay (d2), s/veh	0.6	0.3	0.7	1.7	0.2	0.4	0.7	0.0	3.2	9.6	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	0.2	0.4	3.9	6.8	7.3	1.7	0.0	5.8	7.4	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.6	0.3	0.7	22.2	17.5	17.7	29.2	0.0	31.8	46.5	0.0	27.1
LnGrp LOS	A	A	A	C	B	B	C	A	C	D	A	C
Approach Vol, veh/h		1354			780			212			222	
Approach Delay, s/veh		0.5			18.2			31.2			41.7	
Approach LOS		A			B			C			D	

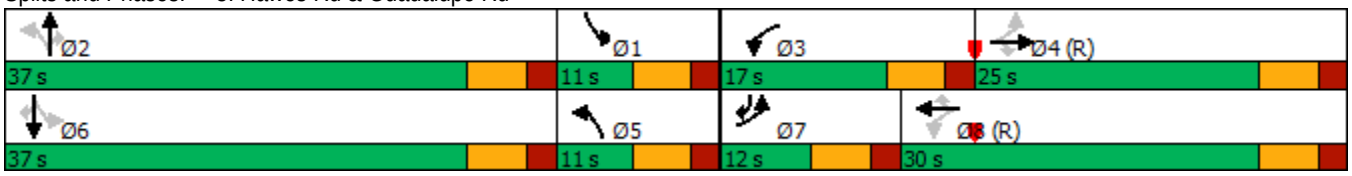
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		28.0		62.0		28.0		62.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		22.0		56.0		22.0		56.0				
Max Q Clear Time (g_c+I1), s		9.7		14.0		21.7		19.6				
Green Ext Time (p_c), s		0.8		11.3		0.0		6.3				

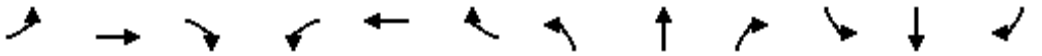
Intersection Summary												
HCM 6th Ctrl Delay			12.0									
HCM 6th LOS			B									

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	11	37	17	25	11	37	12	30
Maximum Split (%)	12.2%	41.1%	18.9%	27.8%	12.2%	41.1%	13.3%	33.3%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	38	1	49	66	38	1	49	61
End Time (s)	49	38	66	1	49	38	61	1
Yield/Force Off (s)	43	32	60	85	43	32	55	85
Yield/Force Off 170(s)	43	21	60	74	43	21	55	74
Local Start Time (s)	62	25	73	0	62	25	73	85
Local Yield (s)	67	56	84	19	67	56	79	19
Local Yield 170(s)	67	45	84	8	67	45	79	8

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 66 (73%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 3: Hawes Rd & Guadalupe Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	568	289	191	332	80	103	207	521	105	152	45
Future Volume (veh/h)	90	568	289	191	332	80	103	207	521	105	152	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	100	631	321	212	369	89	114	230	579	117	169	50
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	1150	357	340	1413	439	536	1224	546	375	1224	640
Arrive On Green	0.02	0.07	0.07	0.11	0.28	0.28	0.05	0.34	0.34	0.05	0.34	0.34
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	100	631	321	212	369	89	114	230	579	117	169	50
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.8	10.7	13.7	8.0	5.1	2.9	0.0	4.1	19.4	0.0	2.9	1.0
Cycle Q Clear(g_c), s	3.8	10.7	13.7	8.0	5.1	2.9	0.0	4.1	19.4	0.0	2.9	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	392	1150	357	340	1413	439	536	1224	546	375	1224	640
V/C Ratio(X)	0.26	0.55	0.90	0.62	0.26	0.20	0.21	0.19	1.06	0.31	0.14	0.08
Avail Cap(c_a), veh/h	405	1150	357	360	1413	439	541	1224	546	381	1224	640
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.4	37.2	23.5	23.1	25.4	13.8	20.2	20.7	11.6	22.9	20.3	6.1
Incr Delay (d2), s/veh	0.3	1.8	27.4	3.0	0.4	1.0	0.2	0.3	55.6	0.5	0.2	0.2
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(95%),veh/ln	2.9	8.4	13.1	6.1	3.6	2.6	2.9	2.9	20.9	3.3	2.1	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.8	39.1	50.9	26.2	25.8	14.8	20.4	21.0	67.2	23.4	20.5	6.4
LnGrp LOS	C	D	D	C	C	B	C	C	F	C	C	A
Approach Vol, veh/h		1052			670			923			336	
Approach Delay, s/veh		41.4			24.5			49.9			19.4	
Approach LOS		D			C			D			B	

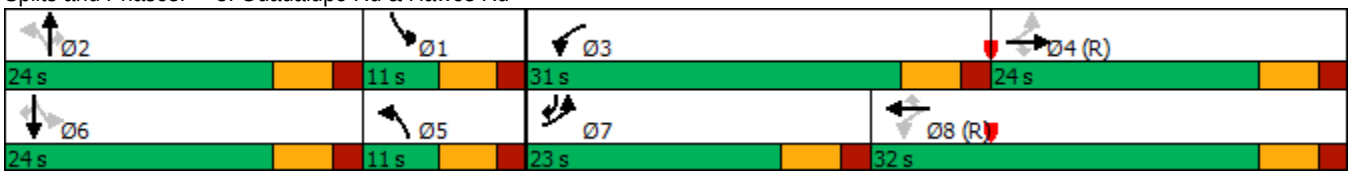
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	37.0	16.0	26.3	10.7	37.0	11.4	30.9
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	31.0	11.0	19.0	5.0	31.0	6.0	24.0
Max Q Clear Time (g_c+I1), s	2.0	21.4	10.0	15.7	2.0	4.9	5.8	7.1
Green Ext Time (p_c), s	0.1	2.6	0.1	1.6	0.1	1.1	0.0	2.3

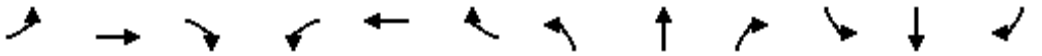
Intersection Summary	
HCM 6th Ctrl Delay	37.8
HCM 6th LOS	D

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	11	24	31	24	11	24	23	32
Maximum Split (%)	12.2%	26.7%	34.4%	26.7%	12.2%	26.7%	25.6%	35.6%
Minimum Split (s)	11	24	11	24	10	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	4	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	41	17	52	83	41	17	52	75
End Time (s)	52	41	83	17	52	41	75	17
Yield/Force Off (s)	46	35	77	11	46	35	69	11
Yield/Force Off 170(s)	46	24	77	0	46	24	69	0
Local Start Time (s)	48	24	59	0	48	24	59	82
Local Yield (s)	53	42	84	18	53	42	76	18
Local Yield 170(s)	53	31	84	7	53	31	76	7

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 83 (92%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 3: Guadalupe Rd & Hawes Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	435	214	634	736	165	155	324	306	125	333	335
Future Volume (veh/h)	50	435	214	634	736	165	155	324	306	125	333	335
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	56	483	238	704	818	183	172	360	340	139	370	372
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	268	1030	320	656	2235	694	253	711	317	258	711	383
Arrive On Green	0.01	0.07	0.07	0.28	0.44	0.44	0.05	0.20	0.20	0.05	0.20	0.20
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	56	483	238	704	818	183	172	360	340	139	370	372
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.2	8.2	10.2	25.0	9.7	4.4	0.3	8.1	8.8	0.0	8.4	13.9
Cycle Q Clear(g_c), s	2.2	8.2	10.2	25.0	9.7	4.4	0.3	8.1	8.8	0.0	8.4	13.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	268	1030	320	656	2235	694	253	711	317	258	711	383
V/C Ratio(X)	0.21	0.47	0.74	1.07	0.37	0.26	0.68	0.51	1.07	0.54	0.52	0.97
Avail Cap(c_a), veh/h	530	1030	320	656	2235	694	256	711	317	261	711	383
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	37.4	23.3	19.7	16.9	7.2	38.1	32.0	8.5	37.4	32.1	15.8
Incr Delay (d2), s/veh	0.3	1.4	13.4	56.6	0.5	0.9	7.0	2.6	71.2	2.2	2.7	39.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	6.5	8.7	28.0	6.3	4.0	7.1	6.4	18.3	5.3	6.6	13.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.7	38.8	36.6	76.3	17.4	8.1	45.2	34.6	79.7	39.5	34.9	54.9
LnGrp LOS	C	D	D	F	B	A	D	C	F	D	C	D
Approach Vol, veh/h		777			1705			872			881	
Approach Delay, s/veh		37.3			40.7			54.3			44.1	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	24.0	31.0	24.2	10.8	24.0	9.8	45.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	18.0	25.0	18.0	5.0	18.0	17.0	26.0
Max Q Clear Time (g_c+I1), s	2.0	10.8	27.0	12.2	2.3	15.9	4.2	11.7
Green Ext Time (p_c), s	0.1	2.0	0.0	1.9	0.1	0.8	0.1	5.0

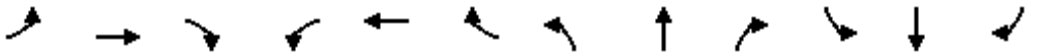
Intersection Summary	
HCM 6th Ctrl Delay	43.6
HCM 6th LOS	D

Phase Number	2	3	4	6	7	8
Node Number	5	4	4	4	5	4
Movement	NBTL	WBL	EBT	SBTL	EBL	WBT
Lead/Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	41	32	47	41	36	43
Maximum Split (%)	34.2%	26.7%	39.2%	34.2%	30.0%	35.8%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	43	84	116	43	84	0
End Time (s)	84	116	43	84	0	43
Yield/Force Off (s)	78	110	37	78	114	37
Yield/Force Off 170(s)	67	110	26	67	114	26
Local Start Time (s)	43	84	116	43	84	0
Local Yield (s)	78	110	37	78	114	37
Local Yield 170(s)	67	110	26	67	114	26

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	65

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 4: Loop 202 SB Ramps & Guadalupe Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	704	115	420	927	0	0	0	0	490	0	201
Future Volume (vph)	0	704	115	420	927	0	0	0	0	490	0	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0	6.0	6.0
Lane Util. Factor		0.81	1.00	0.97	0.91					0.95	0.91	0.95
Frt		1.00	0.85	1.00	1.00					1.00	0.99	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		7544	1583	3433	5085					1681	1601	1504
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (perm)		7544	1583	3433	5085					1681	1601	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	782	128	467	1030	0	0	0	0	544	0	223
RTOR Reduction (vph)	0	0	79	0	0	0	0	0	0	0	58	142
Lane Group Flow (vph)	0	782	49	467	1030	0	0	0	0	283	225	59
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		4		3	8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		45.6	45.6	21.4	42.4					35.0	35.0	35.0
Effective Green, g (s)		45.6	45.6	21.4	42.4					35.0	35.0	35.0
Actuated g/C Ratio		0.38	0.38	0.18	0.35					0.29	0.29	0.29
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		2866	601	612	1796					490	466	438
v/s Ratio Prot		c0.10		c0.14	c0.20							
v/s Ratio Perm			0.03							c0.17	0.14	0.04
v/c Ratio		0.27	0.08	0.76	0.57					0.58	0.48	0.13
Uniform Delay, d1		25.7	23.8	46.9	31.5					36.2	35.0	31.3
Progression Factor		1.00	1.00	1.52	0.44					1.00	1.00	1.00
Incremental Delay, d2		0.2	0.3	5.2	1.2					4.9	3.5	0.6
Delay (s)		26.0	24.1	76.3	15.2					41.1	38.6	32.0
Level of Service		C	C	E	B					D	D	C
Approach Delay (s)		25.7			34.3			0.0			37.8	
Approach LOS		C			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

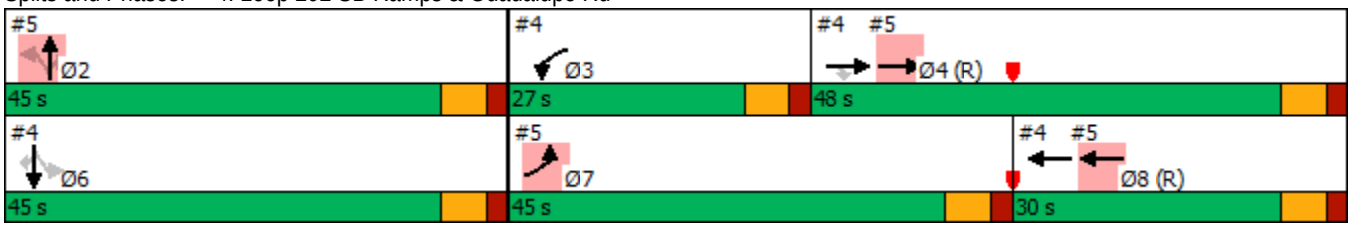
c Critical Lane Group

Phase Number	2	3	4	6	7	8
Node Number	5	4	4	4	5	4
Movement	NBTL	WBL	EBT	SBTL	EBL	WBT
Lead/Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	45	27	48	45	45	30
Maximum Split (%)	37.5%	22.5%	40.0%	37.5%	37.5%	25.0%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	86	11	38	86	11	56
End Time (s)	11	38	86	11	56	86
Yield/Force Off (s)	5	32	80	5	50	80
Yield/Force Off 170(s)	114	32	69	114	50	69
Local Start Time (s)	30	75	102	30	75	0
Local Yield (s)	69	96	24	69	114	24
Local Yield 170(s)	58	96	13	58	114	13

Intersection Summary		
Cycle Length		120
Control Type	Actuated-Coordinated	
Natural Cycle		90

Offset: 56 (47%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 4: Loop 202 SB Ramps & Guadalupe Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1311	270	405	746	0	0	0	0	760	0	529
Future Volume (vph)	0	1311	270	405	746	0	0	0	0	760	0	529
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0	6.0	6.0
Lane Util. Factor		0.81	1.00	0.97	0.91					0.95	0.91	0.95
Frt		1.00	0.85	1.00	1.00					1.00	0.96	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		7544	1583	3433	5085					1681	1566	1504
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		7544	1583	3433	5085					1681	1566	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1457	300	450	829	0	0	0	0	844	0	588
RTOR Reduction (vph)	0	0	191	0	0	0	0	0	0	0	92	302
Lane Group Flow (vph)	0	1457	109	450	829	0	0	0	0	498	395	145
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		4		3	8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		43.5	43.5	19.5	26.4					39.0	39.0	39.0
Effective Green, g (s)		43.5	43.5	19.5	26.4					39.0	39.0	39.0
Actuated g/C Ratio		0.36	0.36	0.16	0.22					0.32	0.32	0.32
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		2734	573	557	1118					546	508	488
v/s Ratio Prot		c0.19		c0.13	c0.16							
v/s Ratio Perm			0.07							c0.30	0.25	0.10
v/c Ratio		0.53	0.19	0.81	0.74					0.91	0.78	0.30
Uniform Delay, d1		30.2	26.2	48.4	43.6					38.9	36.6	30.3
Progression Factor		1.00	1.00	1.34	0.37					1.00	1.00	1.00
Incremental Delay, d2		0.7	0.7	6.9	3.6					22.0	11.2	1.6
Delay (s)		31.0	26.9	72.0	19.9					60.8	47.8	31.8
Level of Service		C	C	E	B					E	D	C
Approach Delay (s)		30.3			38.2			0.0			47.3	
Approach LOS		C			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	38.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Phase Number	2	3	4	6	7	8
Node Number	5	4	4	4	5	4
Movement	NBTL	WBL	EBT	SBTL	EBL	WBT
Lead/Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	41	32	47	41	36	43
Maximum Split (%)	34.2%	26.7%	39.2%	34.2%	30.0%	35.8%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	43	84	116	43	84	0
End Time (s)	84	116	43	84	0	43
Yield/Force Off (s)	78	110	37	78	114	37
Yield/Force Off 170(s)	67	110	26	67	114	26
Local Start Time (s)	43	84	116	43	84	0
Local Yield (s)	78	110	37	78	114	37
Local Yield 170(s)	67	110	26	67	114	26

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	65

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 4: Loop 202 SB Ramps & Guadalupe Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	501	693	0	0	1067	1100	280	0	95	0	0	0
Future Volume (vph)	501	693	0	0	1067	1100	280	0	95	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	4.0	6.0	6.0	6.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.99	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)	3433	5085			7544	1583	1681	1603	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)	3433	5085			7544	1583	1681	1603	1504			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	557	770	0	0	1186	1222	311	0	106	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	58	67	0	0	0
Lane Group Flow (vph)	557	770	0	0	1186	1222	162	102	28	0	0	0
Turn Type	Prot	NA			NA	Free	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						Free	2		2			
Actuated Green, G (s)	24.6	45.6			42.4	120.0	35.0	35.0	35.0			
Effective Green, g (s)	24.6	45.6			42.4	120.0	35.0	35.0	35.0			
Actuated g/C Ratio	0.21	0.38			0.35	1.00	0.29	0.29	0.29			
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0	6.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	703	1932			2665	1583	490	467	438			
v/s Ratio Prot	0.16	0.15			0.16							
v/s Ratio Perm						c0.77	0.10	0.06	0.02			
v/c Ratio	0.79	0.40			0.45	0.77	0.33	0.22	0.06			
Uniform Delay, d1	45.3	27.2			29.8	0.0	33.3	32.2	30.7			
Progression Factor	1.44	0.86			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	5.7	0.6			0.5	3.7	1.8	1.1	0.3			
Delay (s)	71.0	24.1			30.3	3.7	35.1	33.2	30.9			
Level of Service	E	C			C	A	D	C	C			
Approach Delay (s)		43.7			16.8			33.4			0.0	
Approach LOS		D			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

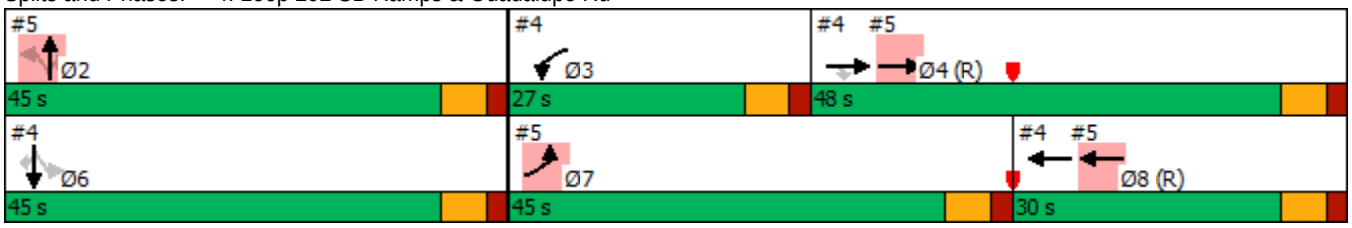
c Critical Lane Group

Phase Number	2	3	4	6	7	8
Node Number	5	4	4	4	5	4
Movement	NBTL	WBL	EBT	SBTL	EBL	WBT
Lead/Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	45	27	48	45	45	30
Maximum Split (%)	37.5%	22.5%	40.0%	37.5%	37.5%	25.0%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	86	11	38	86	11	56
End Time (s)	11	38	86	11	56	86
Yield/Force Off (s)	5	32	80	5	50	80
Yield/Force Off 170(s)	114	32	69	114	50	69
Local Start Time (s)	30	75	102	30	75	0
Local Yield (s)	69	96	24	69	114	24
Local Yield 170(s)	58	96	13	58	114	13

Intersection Summary		
Cycle Length		120
Control Type	Actuated-Coordinated	
Natural Cycle		90

Offset: 56 (47%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 4: Loop 202 SB Ramps & Guadalupe Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	841	1230	0	0	971	820	180	0	250	0	0	0
Future Volume (vph)	841	1230	0	0	971	820	180	0	250	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	4.0	6.0	6.0	6.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.88	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)	3433	5085			7544	1583	1681	1478	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)	3433	5085			7544	1583	1681	1478	1504			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	934	1367	0	0	1079	911	200	0	278	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	92	103	0	0	0
Lane Group Flow (vph)	934	1367	0	0	1079	911	168	65	50	0	0	0
Turn Type	Prot	NA			NA	Free	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						Free	2		2			
Actuated Green, G (s)	36.6	43.5			26.4	120.0	39.0	39.0	39.0			
Effective Green, g (s)	36.6	43.5			26.4	120.0	39.0	39.0	39.0			
Actuated g/C Ratio	0.31	0.36			0.22	1.00	0.32	0.32	0.32			
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0	6.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	1047	1843			1659	1583	546	480	488			
v/s Ratio Prot	c0.27	c0.27			0.14							
v/s Ratio Perm						c0.58	0.10	0.04	0.03			
v/c Ratio	0.89	0.74			0.65	0.58	0.31	0.14	0.10			
Uniform Delay, d1	39.8	33.4			42.6	0.0	30.4	28.6	28.3			
Progression Factor	1.39	0.72			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	7.6	2.1			2.0	1.5	1.5	0.6	0.4			
Delay (s)	63.1	26.0			44.6	1.5	31.8	29.2	28.7			
Level of Service	E	C			D	A	C	C	C			
Approach Delay (s)		41.1			24.9			30.0			0.0	
Approach LOS		D			C			C			A	

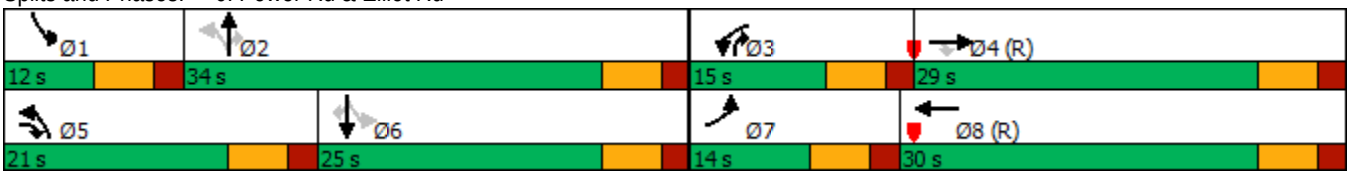
Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		

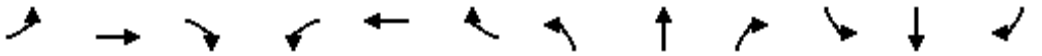
c Critical Lane Group

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBT	NBL	SBTL	EBL	WBT
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	12	34	15	29	21	25	14	30
Maximum Split (%)	13.3%	37.8%	16.7%	32.2%	23.3%	27.8%	15.6%	33.3%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	83	5	39	54	83	14	39	53
End Time (s)	5	39	54	83	14	39	53	83
Yield/Force Off (s)	89	33	48	77	8	33	47	77
Yield/Force Off 170(s)	89	22	48	66	8	22	47	66
Local Start Time (s)	29	41	75	0	29	50	75	89
Local Yield (s)	35	69	84	23	44	69	83	23
Local Yield 170(s)	35	58	84	12	44	58	83	12

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	75
Offset: 54 (60%), Referenced to phase 4:EBT and 8:WBT, Start of Green	

Splits and Phases: 6: Power Rd & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	507	125	186	672	150	270	1260	261	145	690	30
Future Volume (veh/h)	210	507	125	186	672	150	270	1260	261	145	690	30
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	233	563	139	207	747	167	300	1400	290	161	767	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	304	1399	665	282	1119	248	405	1589	622	214	1185	368
Arrive On Green	0.09	0.27	0.27	0.08	0.27	0.27	0.15	0.31	0.31	0.07	0.23	0.23
Sat Flow, veh/h	3456	5106	1585	3456	4182	926	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	233	563	139	207	607	307	300	1400	290	161	767	33
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1704	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	5.9	8.1	5.0	5.3	14.3	14.5	10.9	23.4	12.2	6.0	12.2	1.5
Cycle Q Clear(g_c), s	5.9	8.1	5.0	5.3	14.3	14.5	10.9	23.4	12.2	6.0	12.2	1.5
Prop In Lane	1.00		1.00	1.00		0.54	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	304	1399	665	282	911	456	405	1589	622	214	1185	368
V/C Ratio(X)	0.77	0.40	0.21	0.73	0.67	0.67	0.74	0.88	0.47	0.75	0.65	0.09
Avail Cap(c_a), veh/h	307	1399	665	346	911	456	442	1589	622	214	1185	368
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	0.81	0.81	0.81	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	26.7	16.6	40.4	29.4	29.5	21.4	29.4	20.3	27.2	31.2	27.1
Incr Delay (d2), s/veh	10.9	0.9	0.7	5.1	3.1	6.3	6.0	7.4	2.5	14.1	2.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.2	5.7	3.2	4.2	9.4	10.1	8.4	15.0	8.1	5.9	8.7	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.1	27.5	17.3	45.5	32.5	35.8	27.4	36.8	22.8	41.2	34.0	27.6
LnGrp LOS	D	C	B	D	C	D	C	D	C	D	C	C
Approach Vol, veh/h		935			1121			1990			961	
Approach Delay, s/veh		31.9			35.8			33.4			35.0	
Approach LOS		C			D			C			C	

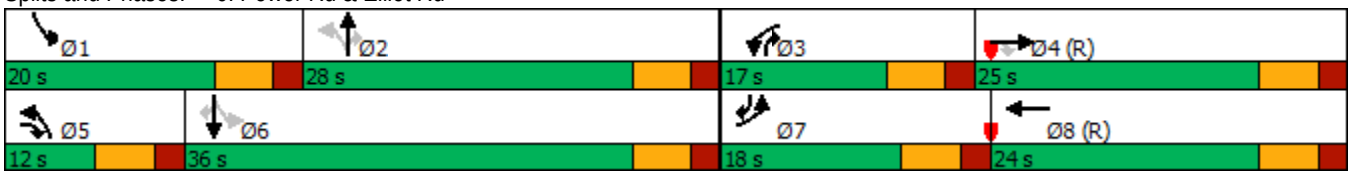
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	34.0	13.3	30.7	19.1	26.9	13.9	30.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	28.0	9.0	23.0	15.0	19.0	8.0	24.0
Max Q Clear Time (g_c+I1), s	8.0	25.4	7.3	10.1	12.9	14.2	7.9	16.5
Green Ext Time (p_c), s	0.0	2.0	0.1	3.2	0.2	2.1	0.0	3.2

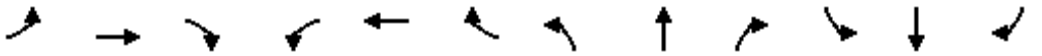
Intersection Summary	
HCM 6th Ctrl Delay	33.9
HCM 6th LOS	C

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBT	NBL	SBTL	EBL	WBT
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	20	28	17	25	12	36	18	24
Maximum Split (%)	22.2%	31.1%	18.9%	27.8%	13.3%	40.0%	20.0%	26.7%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	71	1	29	46	71	83	29	47
End Time (s)	1	29	46	71	83	29	47	71
Yield/Force Off (s)	85	23	40	65	77	23	41	65
Yield/Force Off 170(s)	85	12	40	54	77	12	41	54
Local Start Time (s)	24	44	72	89	24	36	72	0
Local Yield (s)	38	66	83	18	30	66	84	18
Local Yield 170(s)	38	55	83	7	30	55	84	7

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 47 (52%), Referenced to phase 4:EBT and 8:WBT, Start of Green	

Splits and Phases: 6: Power Rd & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	395	853	300	310	673	140	165	790	463	270	1575	430
Future Volume (veh/h)	395	853	300	310	673	140	165	790	463	270	1575	430
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	439	948	333	344	748	156	183	878	514	300	1750	478
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	461	1090	444	414	848	175	199	1324	601	372	1702	740
Arrive On Green	0.13	0.21	0.21	0.12	0.20	0.20	0.07	0.26	0.26	0.14	0.33	0.33
Sat Flow, veh/h	3456	5106	1585	3456	4241	876	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	439	948	333	344	599	305	183	878	514	300	1750	478
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1713	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	11.4	16.1	17.2	8.8	15.4	15.6	6.0	13.8	23.3	10.5	30.0	20.7
Cycle Q Clear(g_c), s	11.4	16.1	17.2	8.8	15.4	15.6	6.0	13.8	23.3	10.5	30.0	20.7
Prop In Lane	1.00		1.00	1.00		0.51	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	461	1090	444	414	681	343	199	1324	601	372	1702	740
V/C Ratio(X)	0.95	0.87	0.75	0.83	0.88	0.89	0.92	0.66	0.86	0.81	1.03	0.65
Avail Cap(c_a), veh/h	461	1090	444	422	681	343	199	1324	601	398	1702	740
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	0.76	0.76	0.76	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.7	34.2	29.5	38.7	34.9	35.0	27.9	29.8	25.7	21.0	30.0	18.3
Incr Delay (d2), s/veh	30.2	9.5	11.1	10.1	12.0	22.4	42.2	2.6	14.5	11.0	29.4	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.7	11.6	11.9	7.0	10.9	12.3	8.7	9.5	17.1	8.7	22.7	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.9	43.7	40.6	48.8	47.0	57.4	70.1	32.5	40.2	32.0	59.4	22.7
LnGrp LOS	E	D	D	D	D	E	E	C	D	C	F	C
Approach Vol, veh/h		1720			1248			1575			2528	
Approach Delay, s/veh		49.5			50.0			39.3			49.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.7	29.3	16.8	25.2	12.0	36.0	18.0	24.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	14.0	22.0	11.0	19.0	6.0	30.0	12.0	18.0
Max Q Clear Time (g_c+I1), s	12.5	25.3	10.8	19.2	8.0	32.0	13.4	17.6
Green Ext Time (p_c), s	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	47.2
HCM 6th LOS	D

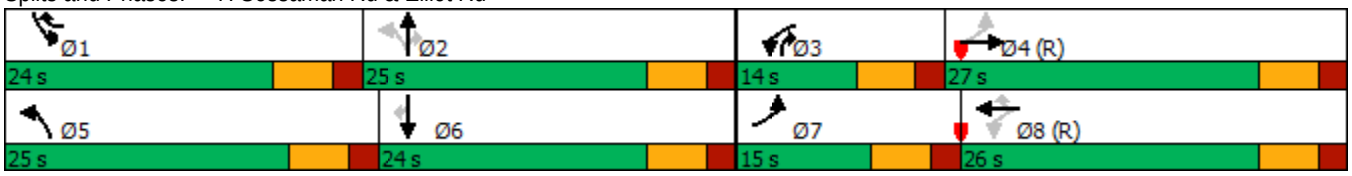
Notes

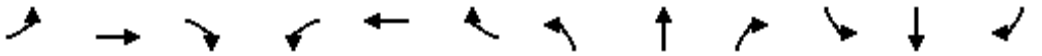
User approved pedestrian interval to be less than phase max green.

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBT	EBL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	24	25	14	27	25	24	15	26
Maximum Split (%)	26.7%	27.8%	15.6%	30.0%	27.8%	26.7%	16.7%	28.9%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	63	87	22	36	63	88	22	37
End Time (s)	87	22	36	63	88	22	37	63
Yield/Force Off (s)	81	16	30	57	82	16	31	57
Yield/Force Off 170(s)	81	5	30	46	82	5	31	46
Local Start Time (s)	26	50	75	89	26	51	75	0
Local Yield (s)	44	69	83	20	45	69	84	20
Local Yield 170(s)	44	58	83	9	45	58	84	9

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 37 (41%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 7: Sossaman Rd & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	432	46	146	546	506	327	540	91	310	326	205
Future Volume (veh/h)	195	432	46	146	546	506	327	540	91	310	326	205
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	217	480	51	162	607	562	363	600	101	344	362	228
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	331	1243	130	392	1285	600	494	906	542	437	711	317
Arrive On Green	0.10	0.26	0.26	0.09	0.25	0.25	0.18	0.26	0.26	0.13	0.20	0.20
Sat Flow, veh/h	1781	4694	492	1781	5106	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	217	346	185	162	607	562	363	600	101	344	362	228
Grp Sat Flow(s),veh/h/ln	1781	1702	1782	1781	1702	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	8.1	7.5	7.7	6.0	9.1	22.7	14.0	13.6	4.0	8.7	8.2	12.1
Cycle Q Clear(g_c), s	8.1	7.5	7.7	6.0	9.1	22.7	14.0	13.6	4.0	8.7	8.2	12.1
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	331	902	472	392	1285	600	494	906	542	437	711	317
V/C Ratio(X)	0.66	0.38	0.39	0.41	0.47	0.94	0.74	0.66	0.19	0.79	0.51	0.72
Avail Cap(c_a), veh/h	331	902	472	395	1285	600	546	906	542	691	711	317
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)	0.88	0.88	0.88	1.00	1.00	1.00	0.90	0.90	0.90	0.82	0.82	0.82
Uniform Delay (d), s/veh	22.4	27.1	27.1	21.9	28.6	27.0	21.7	30.0	20.8	38.1	32.1	33.6
Incr Delay (d2), s/veh	4.1	1.1	2.1	0.7	1.2	24.2	4.2	3.4	0.7	2.6	2.1	11.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.3	5.4	6.0	4.3	6.5	20.7	9.6	9.6	2.7	6.5	6.3	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	28.2	29.3	22.6	29.8	51.1	25.9	33.5	21.5	40.7	34.2	44.6
LnGrp LOS	C	C	C	C	C	D	C	C	C	D	C	D
Approach Vol, veh/h		748			1331			1064			934	
Approach Delay, s/veh		28.0			38.0			29.7			39.2	
Approach LOS		C			D			C			D	

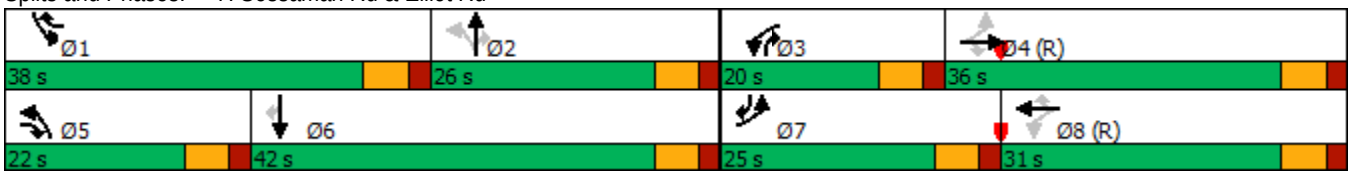
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.4	29.0	13.8	29.8	22.3	24.0	15.0	28.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	18.0	19.0	8.0	21.0	19.0	18.0	9.0	20.0
Max Q Clear Time (g_c+I1), s	10.7	15.6	8.0	9.7	16.0	14.1	10.1	24.7
Green Ext Time (p_c), s	0.7	1.3	0.0	2.3	0.3	1.1	0.0	0.0

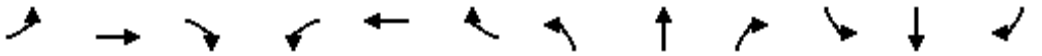
Intersection Summary	
HCM 6th Ctrl Delay	34.2
HCM 6th LOS	C

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBT	EBL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	38	26	20	36	22	42	25	31
Maximum Split (%)	31.7%	21.7%	16.7%	30.0%	18.3%	35.0%	20.8%	25.8%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	31	69	95	115	31	53	95	0
End Time (s)	69	95	115	31	53	95	0	31
Yield/Force Off (s)	63	89	109	25	47	89	114	25
Yield/Force Off 170(s)	63	78	109	14	47	78	114	14
Local Start Time (s)	31	69	95	115	31	53	95	0
Local Yield (s)	63	89	109	25	47	89	114	25
Local Yield 170(s)	63	78	109	14	47	78	114	14

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	100
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 7: Sossaman Rd & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	1139	192	180	706	677	182	253	361	866	628	240
Future Volume (veh/h)	250	1139	192	180	706	677	182	253	361	866	628	240
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	278	1266	213	200	784	752	202	281	401	962	698	267
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	333	1353	595	249	1180	789	348	592	425	922	1148	727
Arrive On Green	0.14	0.26	0.26	0.10	0.23	0.23	0.11	0.17	0.17	0.27	0.32	0.32
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	278	1266	213	200	784	752	202	281	401	962	698	267
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	14.0	29.1	11.6	10.1	16.7	27.7	11.1	8.6	20.0	32.0	19.9	13.2
Cycle Q Clear(g_c), s	14.0	29.1	11.6	10.1	16.7	27.7	11.1	8.6	20.0	32.0	19.9	13.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	333	1353	595	249	1180	789	348	592	425	922	1148	727
V/C Ratio(X)	0.84	0.94	0.36	0.80	0.66	0.95	0.58	0.47	0.94	1.04	0.61	0.37
Avail Cap(c_a), veh/h	373	1353	595	276	1180	789	389	592	425	922	1148	727
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)	0.49	0.49	0.49	1.00	1.00	1.00	0.61	0.61	0.61	0.16	0.16	0.16
Uniform Delay (d), s/veh	31.1	43.1	27.1	33.2	41.9	28.8	35.4	45.2	43.0	44.0	34.2	21.1
Incr Delay (d2), s/veh	7.4	7.5	0.8	14.3	3.0	22.5	1.1	1.7	22.6	25.5	0.4	0.2
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(95%),veh/ln	9.4	16.8	6.8	8.9	11.5	31.8	7.6	6.3	18.6	19.6	10.2	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	50.7	27.9	47.6	44.9	51.3	36.5	46.9	65.6	69.5	34.6	21.4
LnGrp LOS	D	D	C	D	D	D	D	D	E	F	C	C
Approach Vol, veh/h		1757			1736			884			1927	
Approach Delay, s/veh		46.0			48.0			53.0			50.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	38.0	26.0	18.2	37.8	19.2	44.8	22.3	33.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	32.0	20.0	14.0	30.0	16.0	36.0	19.0	25.0
Max Q Clear Time (g_c+I1), s	34.0	22.0	12.1	31.1	13.1	21.9	16.0	29.7
Green Ext Time (p_c), s	0.0	0.0	0.1	0.0	0.1	4.5	0.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	48.8
HCM 6th LOS	D

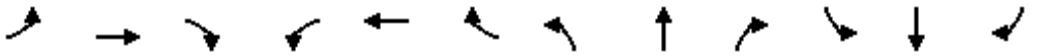
Notes

User approved pedestrian interval to be less than phase max green.

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	None	C-Max	Max	C-Max
Maximum Split (s)	31	59	31	59
Maximum Split (%)	34.4%	65.6%	34.4%	65.6%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	49	80	49	80
End Time (s)	80	49	80	49
Yield/Force Off (s)	74	43	74	43
Yield/Force Off 170(s)	63	32	63	32
Local Start Time (s)	59	0	59	0
Local Yield (s)	84	53	84	53
Local Yield 170(s)	73	42	73	42

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 80 (89%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 8: Elliot Rd & 80th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	889	26	37	963	95	44	0	74	25	0	65
Future Volume (veh/h)	10	889	26	37	963	95	44	0	74	25	0	65
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	11	988	29	41	1070	106	49	0	82	28	0	72
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	361	3002	88	352	2781	275	403	0	440	394	0	440
Arrive On Green	0.59	0.59	0.59	1.00	1.00	1.00	0.28	0.00	0.28	0.28	0.00	0.28
Sat Flow, veh/h	477	5098	150	554	4723	467	1328	0	1585	1316	0	1585
Grp Volume(v), veh/h	11	659	358	41	771	405	49	0	82	28	0	72
Grp Sat Flow(s),veh/h/ln	477	1702	1843	554	1702	1786	1328	0	1585	1316	0	1585
Q Serve(g_s), s	0.9	8.9	8.9	1.3	0.0	0.0	2.6	0.0	3.5	1.5	0.0	3.1
Cycle Q Clear(g_c), s	0.9	8.9	8.9	10.2	0.0	0.0	5.7	0.0	3.5	5.0	0.0	3.1
Prop In Lane	1.00		0.08	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	361	2005	1086	352	2005	1052	403	0	440	394	0	440
V/C Ratio(X)	0.03	0.33	0.33	0.12	0.38	0.39	0.12	0.00	0.19	0.07	0.00	0.16
Avail Cap(c_a), veh/h	361	2005	1086	352	2005	1052	403	0	440	394	0	440
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.8	9.4	9.4	0.9	0.0	0.0	26.7	0.0	24.8	26.7	0.0	24.6
Incr Delay (d2), s/veh	0.2	0.4	0.8	0.6	0.5	1.0	0.1	0.0	0.2	0.3	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	5.1	5.8	0.1	0.3	0.5	1.5	0.0	2.4	0.9	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.9	9.9	10.2	1.5	0.5	1.0	26.9	0.0	25.0	27.0	0.0	25.4
LnGrp LOS	A	A	B	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		1028			1217			131			100	
Approach Delay, s/veh		10.0			0.7			25.7			25.8	
Approach LOS		A			A			C			C	

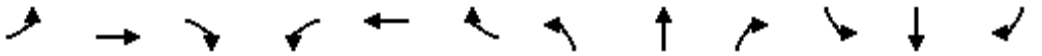
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.0		59.0		31.0		59.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		25.0		53.0		25.0		53.0				
Max Q Clear Time (g_c+I1), s		7.7		10.9		7.0		12.2				
Green Ext Time (p_c), s		0.5		7.5		0.4		9.7				

Intersection Summary												
HCM 6th Ctrl Delay			6.9									
HCM 6th LOS			A									

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	None	C-Max	Max	C-Max
Maximum Split (s)	26	64	26	64
Maximum Split (%)	28.9%	71.1%	28.9%	71.1%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	44	70	44	70
End Time (s)	70	44	70	44
Yield/Force Off (s)	64	38	64	38
Yield/Force Off 170(s)	53	27	53	27
Local Start Time (s)	64	0	64	0
Local Yield (s)	84	58	84	58
Local Yield 170(s)	73	47	73	47

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	55
Offset: 70 (78%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 8: Elliot Rd & 80th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1791	83	117	1477	60	73	0	105	80	0	50
Future Volume (veh/h)	10	1791	83	117	1477	60	73	0	105	80	0	50
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	11	1990	92	130	1641	67	81	0	117	89	0	56
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	3224	149	161	3243	132	341	0	352	284	0	352
Arrive On Green	0.64	0.64	0.64	0.86	0.86	0.86	0.22	0.00	0.22	0.22	0.00	0.22
Sat Flow, veh/h	286	5002	231	199	5032	205	1348	0	1585	1275	0	1585
Grp Volume(v), veh/h	11	1352	730	130	1110	598	81	0	117	89	0	56
Grp Sat Flow(s),veh/h/ln	286	1702	1829	199	1702	1833	1348	0	1585	1275	0	1585
Q Serve(g_s), s	1.6	21.1	21.2	36.8	7.4	7.4	4.6	0.0	5.6	5.7	0.0	2.6
Cycle Q Clear(g_c), s	9.0	21.1	21.2	58.0	7.4	7.4	7.2	0.0	5.6	11.2	0.0	2.6
Prop In Lane	1.00		0.13	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	241	2194	1179	161	2194	1182	341	0	352	284	0	352
V/C Ratio(X)	0.05	0.62	0.62	0.81	0.51	0.51	0.24	0.00	0.33	0.31	0.00	0.16
Avail Cap(c_a), veh/h	241	2194	1179	161	2194	1182	341	0	352	284	0	352
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.72	0.72	0.72	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.0	9.4	9.5	24.0	2.8	2.8	31.1	0.0	29.4	34.1	0.0	28.2
Incr Delay (d2), s/veh	0.4	1.3	2.4	25.9	0.6	1.1	0.4	0.0	0.5	2.9	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	10.5	11.7	6.5	2.8	3.3	2.7	0.0	3.9	3.5	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.3	10.7	11.9	49.8	3.4	3.9	31.5	0.0	29.9	37.0	0.0	29.2
LnGrp LOS	A	B	B	D	A	A	C	A	C	D	A	C
Approach Vol, veh/h		2093			1838			198			145	
Approach Delay, s/veh		11.1			6.9			30.6			34.0	
Approach LOS		B			A			C			C	

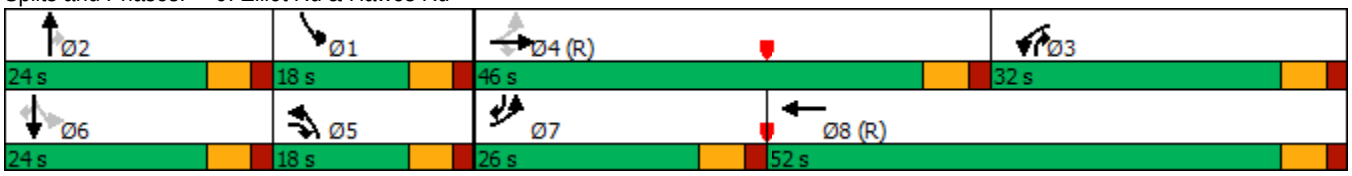
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		26.0		64.0		26.0		64.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		20.0		58.0		20.0		58.0				
Max Q Clear Time (g_c+I1), s		9.2		23.2		13.2		60.0				
Green Ext Time (p_c), s		0.6		20.1		0.3		0.0				

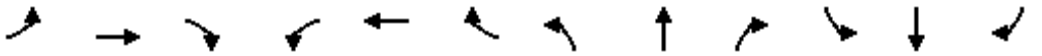
Intersection Summary												
HCM 6th Ctrl Delay			11.0									
HCM 6th LOS			B									

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBT	WBL	EBTL	NBL	SBTL	EBL	WBT
Lead/Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	18	24	32	46	18	24	26	52
Maximum Split (%)	15.0%	20.0%	26.7%	38.3%	15.0%	20.0%	21.7%	43.3%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	76	52	20	94	76	52	94	0
End Time (s)	94	76	52	20	94	76	0	52
Yield/Force Off (s)	88	70	46	14	88	70	114	46
Yield/Force Off 170(s)	88	59	46	3	88	59	114	35
Local Start Time (s)	76	52	20	94	76	52	94	0
Local Yield (s)	88	70	46	14	88	70	114	46
Local Yield 170(s)	88	59	46	3	88	59	114	35

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	

Splits and Phases: 9: Elliot Rd & Hawes Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	198	1110	297	173	557	179	195	351	479	157	179	109
Future Volume (veh/h)	198	1110	297	173	557	179	195	351	479	157	179	109
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	1969	1870	1870	1870	1870
Adj Flow Rate, veh/h	220	1233	330	192	619	199	217	390	532	174	199	121
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	365	1702	655	819	1740	548	275	561	613	233	533	424
Arrive On Green	0.12	0.33	0.33	0.47	0.91	0.91	0.08	0.15	0.15	0.08	0.15	0.15
Sat Flow, veh/h	1781	5106	1585	3456	3845	1211	3456	3741	1585	1781	3554	1585
Grp Volume(v), veh/h	220	1233	330	192	547	271	217	390	532	174	199	121
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1652	1728	1870	1585	1781	1777	1585
Q Serve(g_s), s	11.8	25.5	9.0	3.9	2.7	2.8	7.4	11.9	8.7	5.2	6.1	5.0
Cycle Q Clear(g_c), s	11.8	25.5	9.0	3.9	2.7	2.8	7.4	11.9	8.7	5.2	6.1	5.0
Prop In Lane	1.00		1.00	1.00		0.73	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	365	1702	655	819	1541	748	275	561	613	233	533	424
V/C Ratio(X)	0.60	0.72	0.50	0.23	0.35	0.36	0.79	0.70	0.87	0.75	0.37	0.29
Avail Cap(c_a), veh/h	452	1702	655	819	1541	748	346	561	613	269	533	424
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	0.93	0.93	0.93	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.7	35.2	26.1	25.1	3.2	3.2	54.2	48.4	33.9	51.3	45.9	17.5
Incr Delay (d2), s/veh	1.4	2.4	2.4	0.1	0.6	1.3	8.6	6.5	14.4	9.4	2.0	1.7
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(95%),veh/ln	8.6	15.4	11.2	2.7	1.5	1.8	6.2	9.7	22.3	9.4	5.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	37.6	28.5	25.3	3.8	4.5	62.9	54.9	48.3	60.7	47.9	19.2
LnGrp LOS	D	D	C	C	A	A	E	D	D	E	D	B
Approach Vol, veh/h		1783			1010			1139			494	
Approach Delay, s/veh		35.6			8.1			53.3			45.4	
Approach LOS		D			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	24.0	34.4	46.0	15.6	24.0	20.1	60.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	18.0	26.0	40.0	12.0	18.0	20.0	46.0
Max Q Clear Time (g_c+I1), s	7.2	13.9	5.9	27.5	9.4	8.1	13.8	4.8
Green Ext Time (p_c), s	0.2	1.7	0.6	7.1	0.2	1.0	0.3	5.7

Intersection Summary	
HCM 6th Ctrl Delay	35.0
HCM 6th LOS	C

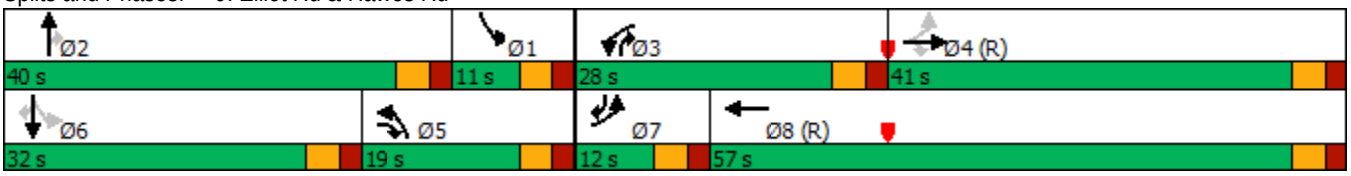
Notes

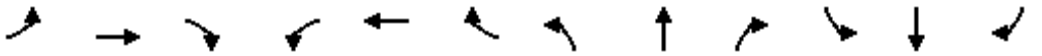
User approved pedestrian interval to be less than phase max green.

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBT	WBL	EBTL	NBL	SBTL	EBL	WBT
Lead/Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	11	40	28	41	19	32	12	57
Maximum Split (%)	9.2%	33.3%	23.3%	34.2%	15.8%	26.7%	10.0%	47.5%
Minimum Split (s)	11	21	11	21	11	21	11	21
Yellow Time (s)	3	3	3	3	3	3	3	3
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		5		5		5		5
Flash Dont Walk (s)		10		10		10		10
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	81	41	92	0	73	41	92	104
End Time (s)	92	81	0	41	92	73	104	41
Yield/Force Off (s)	87	76	115	36	87	68	99	36
Yield/Force Off 170(s)	87	66	115	26	87	58	99	26
Local Start Time (s)	81	41	92	0	73	41	92	104
Local Yield (s)	87	76	115	36	87	68	99	36
Local Yield 170(s)	87	66	115	26	87	58	99	26

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	100
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	

Splits and Phases: 9: Elliot Rd & Hawes Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	174	1416	267	651	1796	198	367	347	424	120	770	176
Future Volume (veh/h)	174	1416	267	651	1796	198	367	347	424	120	770	176
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	2166	1870	1870	2166	1870	1870	2166	1870	1870	2166	1870
Adj Flow Rate, veh/h	193	1573	297	723	1996	220	408	386	471	133	856	196
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	1774	660	662	2344	256	403	1200	766	247	926	449
Arrive On Green	0.06	0.30	0.30	0.06	0.14	0.14	0.12	0.29	0.29	0.05	0.22	0.22
Sat Flow, veh/h	1781	5912	1585	3456	5410	591	3456	4115	1585	1781	4115	1585
Grp Volume(v), veh/h	193	1573	297	723	1449	767	408	386	471	133	856	196
Grp Sat Flow(s),veh/h/ln	1781	1971	1585	1728	1971	2059	1728	2057	1585	1781	2057	1585
Q Serve(g_s), s	7.0	30.5	6.5	23.0	43.0	43.7	14.0	8.8	17.3	0.0	24.4	8.0
Cycle Q Clear(g_c), s	7.0	30.5	6.5	23.0	43.0	43.7	14.0	8.8	17.3	0.0	24.4	8.0
Prop In Lane	1.00		1.00	1.00		0.29	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	176	1774	660	662	1708	892	403	1200	766	247	926	449
V/C Ratio(X)	1.10	0.89	0.45	1.09	0.85	0.86	1.01	0.32	0.61	0.54	0.92	0.44
Avail Cap(c_a), veh/h	176	1774	660	662	1708	892	403	1200	766	247	926	449
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.57	0.57	0.57	0.90	0.90	0.90	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.4	40.1	9.3	56.2	47.6	47.9	53.0	33.2	10.7	47.5	45.5	17.2
Incr Delay (d2), s/veh	96.1	7.0	2.2	55.0	3.2	6.4	45.6	0.6	3.3	2.3	16.1	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.9	21.7	5.0	21.6	29.3	31.8	13.0	7.6	9.7	7.0	20.3	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	132.5	47.1	11.5	111.2	50.8	54.2	98.6	33.9	14.0	49.8	61.7	20.2
LnGrp LOS	F	D	B	F	D	D	F	C	B	D	E	C
Approach Vol, veh/h		2063			2939			1265			1185	
Approach Delay, s/veh		49.9			66.6			47.3			53.5	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	40.0	28.0	41.0	19.0	32.0	12.0	57.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	6.0	35.0	23.0	36.0	14.0	27.0	7.0	52.0
Max Q Clear Time (g_c+I1), s	2.0	19.3	25.0	32.5	16.0	26.4	9.0	45.7
Green Ext Time (p_c), s	0.1	3.6	0.0	2.9	0.0	0.4	0.0	5.5

Intersection Summary	
HCM 6th Ctrl Delay	56.6
HCM 6th LOS	E

Notes

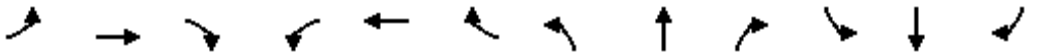
User approved pedestrian interval to be less than phase max green.

Phase Number	2	3	4	6	7	8
Node Number	11	10	10	10	11	10
Movement	NBL	WBL	EBT	SBL	EBL	WBT
Lead/Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	32	44	44	32	44	44
Maximum Split (%)	26.7%	36.7%	36.7%	26.7%	36.7%	36.7%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	44	76	0	44	76	0
End Time (s)	76	0	44	76	0	44
Yield/Force Off (s)	70	114	38	70	114	38
Yield/Force Off 170(s)	59	114	27	59	114	27
Local Start Time (s)	44	76	0	44	76	0
Local Yield (s)	70	114	38	70	114	38
Local Yield 170(s)	59	114	27	59	114	27

Intersection Summary		
Cycle Length	120	
Control Type	Actuated-Coordinated	
Natural Cycle	90	

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 10: Loop 202 SB Ramps & Elliot Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	966	444	735	1245	0	0	0	0	633	0	865
Future Volume (vph)	0	966	444	735	1245	0	0	0	0	633	0	865
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Lane Util. Factor		0.81	1.00	0.97	0.91					0.97		0.88
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		7544	1583	3433	5085					3433		2787
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		7544	1583	3433	5085					3433		2787
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1073	493	817	1383	0	0	0	0	703	0	961
RTOR Reduction (vph)	0	0	299	0	0	0	0	0	0	0	0	753
Lane Group Flow (vph)	0	1073	194	817	1383	0	0	0	0	703	0	208
Turn Type		NA	Perm	Prot	NA					Perm		Perm
Protected Phases		4		3	8							
Permitted Phases			4							6		6
Actuated Green, G (s)		42.5	42.5	33.5	38.4					26.0		26.0
Effective Green, g (s)		42.5	42.5	33.5	38.4					26.0		26.0
Actuated g/C Ratio		0.35	0.35	0.28	0.32					0.22		0.22
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		2671	560	958	1627					743		603
v/s Ratio Prot		c0.14		c0.24	c0.27							
v/s Ratio Perm			0.12							c0.20		0.07
v/c Ratio		0.40	0.35	0.85	0.85					0.95		0.35
Uniform Delay, d1		29.2	28.5	40.9	38.1					46.3		39.8
Progression Factor		0.91	1.92	1.46	0.56					1.00		1.00
Incremental Delay, d2		0.4	1.4	5.3	4.1					22.2		1.6
Delay (s)		27.0	56.1	64.9	25.5					68.5		41.4
Level of Service		C	E	E	C					E		D
Approach Delay (s)		36.2			40.1			0.0			52.8	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

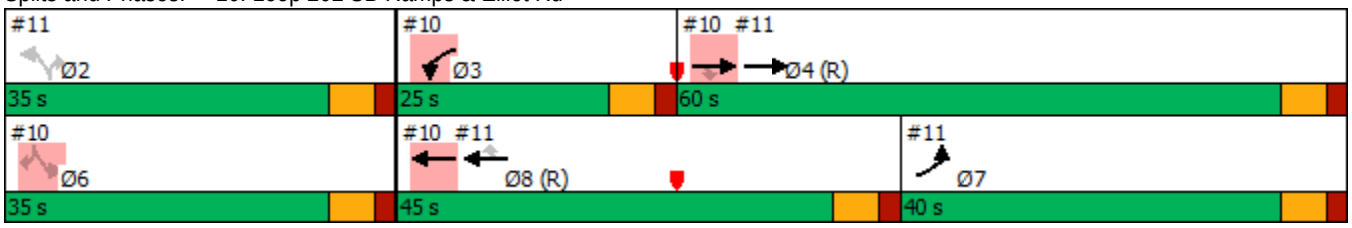
c Critical Lane Group

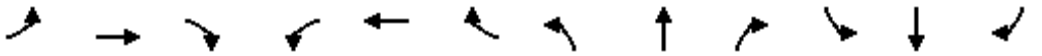
Phase Number	2	3	4	6	7	8
Node Number	11	10	10	10	11	10
Movement	NBL	WBL	EBT	SBL	EBL	WBT
Lead/Lag		Lead	Lag		Lag	Lead
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	35	25	60	35	40	45
Maximum Split (%)	29.2%	20.8%	50.0%	29.2%	33.3%	37.5%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	60	95	0	60	20	95
End Time (s)	95	0	60	95	60	20
Yield/Force Off (s)	89	114	54	89	54	14
Yield/Force Off 170(s)	78	114	43	78	54	3
Local Start Time (s)	60	95	0	60	20	95
Local Yield (s)	89	114	54	89	54	14
Local Yield 170(s)	78	114	43	78	54	3

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	150

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 10: Loop 202 SB Ramps & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2956	777	662	1804	0	0	0	0	631	0	1390
Future Volume (vph)	0	2956	777	662	1804	0	0	0	0	631	0	1390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Lane Util. Factor		0.81	1.00	0.97	0.91					0.97		0.88
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		7544	1583	3433	5085					3433		2787
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		7544	1583	3433	5085					3433		2787
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	3284	863	736	2004	0	0	0	0	701	0	1544
RTOR Reduction (vph)	0	0	351	0	0	0	0	0	0	0	0	739
Lane Group Flow (vph)	0	3284	512	736	2004	0	0	0	0	701	0	805
Turn Type		NA	Perm	Prot	NA					Perm		Perm
Protected Phases		4		3	8							
Permitted Phases			4							6		6
Actuated Green, G (s)		54.0	54.0	19.0	39.0					29.0		29.0
Effective Green, g (s)		54.0	54.0	19.0	39.0					29.0		29.0
Actuated g/C Ratio		0.45	0.45	0.16	0.32					0.24		0.24
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0		6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		3394	712	543	1652					829		673
v/s Ratio Prot		c0.44		0.21	c0.39							
v/s Ratio Perm			0.32							0.20		c0.29
v/c Ratio		0.97	0.72	1.36	1.21					0.85		1.20
Uniform Delay, d1		32.1	26.8	50.5	40.5					43.4		45.5
Progression Factor		0.97	1.27	0.82	0.32					1.00		1.00
Incremental Delay, d2		6.1	3.4	165.1	98.4					10.3		102.6
Delay (s)		37.3	37.6	206.5	111.4					53.7		148.1
Level of Service		D	D	F	F					D		F
Approach Delay (s)		37.3			136.9			0.0			118.6	
Approach LOS		D			F			A			F	

Intersection Summary			
HCM 2000 Control Delay	87.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	193.6%	ICU Level of Service	H
Analysis Period (min)	15		

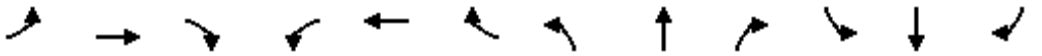
c Critical Lane Group

Phase Number	2	3	4	6	7	8
Node Number	11	10	10	10	11	10
Movement	NBL	WBL	EBT	SBL	EBL	WBT
Lead/Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	32	44	44	32	44	44
Maximum Split (%)	26.7%	36.7%	36.7%	26.7%	36.7%	36.7%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	44	76	0	44	76	0
End Time (s)	76	0	44	76	0	44
Yield/Force Off (s)	70	114	38	70	114	38
Yield/Force Off 170(s)	59	114	27	59	114	27
Local Start Time (s)	44	76	0	44	76	0
Local Yield (s)	70	114	38	70	114	38
Local Yield 170(s)	59	114	27	59	114	27

Intersection Summary		
Cycle Length	120	
Control Type	Actuated-Coordinated	
Natural Cycle	90	

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 10: Loop 202 SB Ramps & Elliot Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	922	677	0	0	1406	670	573	0	863	0	0	0
Future Volume (vph)	922	677	0	0	1406	670	573	0	863	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0		6.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.97		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	3433		2787			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	3433		2787			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1024	752	0	0	1562	744	637	0	959	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	307	0	0	751	0	0	0
Lane Group Flow (vph)	1024	752	0	0	1562	437	637	0	208	0	0	0
Turn Type	Prot	NA			NA	Perm	Perm		Perm			
Protected Phases	7	4			8							
Permitted Phases						8	2		2			
Actuated Green, G (s)	37.6	42.5			38.4	38.4	26.0		26.0			
Effective Green, g (s)	37.6	42.5			38.4	38.4	26.0		26.0			
Actuated g/C Ratio	0.31	0.35			0.32	0.32	0.22		0.22			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0		6.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)	1075	1800			2414	506	743		603			
v/s Ratio Prot	c0.30	c0.15			0.21							
v/s Ratio Perm						c0.28	c0.19		0.07			
v/c Ratio	0.95	0.42			0.65	0.86	0.86		0.34			
Uniform Delay, d1	40.3	29.4			35.0	38.4	45.2		39.8			
Progression Factor	1.43	0.96			0.31	1.02	1.00		1.00			
Incremental Delay, d2	14.5	0.6			0.8	11.6	12.2		1.6			
Delay (s)	72.2	28.7			11.7	50.5	57.4		41.3			
Level of Service	E	C			B	D	E		D			
Approach Delay (s)		53.8			24.2			47.8			0.0	
Approach LOS		D			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

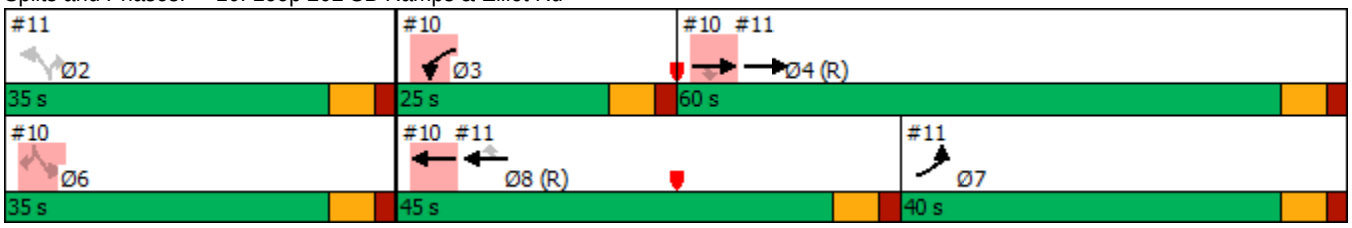
c Critical Lane Group

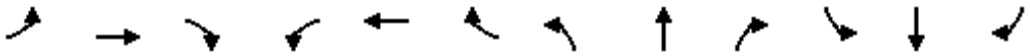
Phase Number	2	3	4	6	7	8
Node Number	11	10	10	10	11	10
Movement	NBL	WBL	EBT	SBL	EBL	WBT
Lead/Lag		Lead	Lag		Lag	Lead
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	35	25	60	35	40	45
Maximum Split (%)	29.2%	20.8%	50.0%	29.2%	33.3%	37.5%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	60	95	0	60	20	95
End Time (s)	95	0	60	95	60	20
Yield/Force Off (s)	89	114	54	89	54	14
Yield/Force Off 170(s)	78	114	43	78	54	3
Local Start Time (s)	60	95	0	60	20	95
Local Yield (s)	89	114	54	89	54	14
Local Yield 170(s)	78	114	43	78	54	3

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	150

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Splits and Phases: 10: Loop 202 SB Ramps & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1219	2368	0	0	1546	747	920	0	1156	0	0	0
Future Volume (vph)	1219	2368	0	0	1546	747	920	0	1156	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0	6.0		6.0			
Lane Util. Factor	0.97	0.91			0.81	1.00	0.97		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	5085			7544	1583	3433		2787			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	5085			7544	1583	3433		2787			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1354	2631	0	0	1718	830	1022	0	1284	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	340	0	0	413	0	0	0
Lane Group Flow (vph)	1354	2631	0	0	1718	490	1022	0	871	0	0	0
Turn Type	Prot	NA			NA	Perm	Perm		Perm			
Protected Phases	7	4			8							
Permitted Phases						8	2		2			
Actuated Green, G (s)	34.0	54.0			39.0	39.0	29.0		29.0			
Effective Green, g (s)	34.0	54.0			39.0	39.0	29.0		29.0			
Actuated g/C Ratio	0.28	0.45			0.32	0.32	0.24		0.24			
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0		6.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)	972	2288			2451	514	829		673			
v/s Ratio Prot	c0.39	c0.52			0.23							
v/s Ratio Perm						c0.31	0.30		c0.31			
v/c Ratio	1.39	1.15			0.70	0.95	1.23		1.29			
Uniform Delay, d1	43.0	33.0			35.4	39.6	45.5		45.5			
Progression Factor	0.63	0.52			0.77	1.60	1.00		1.00			
Incremental Delay, d2	179.0	69.4			0.2	5.2	115.2		143.1			
Delay (s)	206.1	86.5			27.3	68.8	160.7		188.6			
Level of Service	F	F			C	E	F		F			
Approach Delay (s)		127.2			40.8			176.2			0.0	
Approach LOS		F			D			F			A	

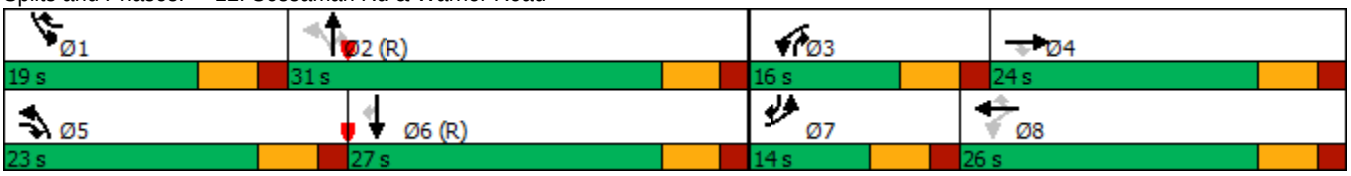
Intersection Summary			
HCM 2000 Control Delay	115.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	193.6%	ICU Level of Service	H
Analysis Period (min)	15		

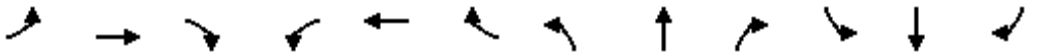
c Critical Lane Group

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBT	NBL	SBT	EBL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize								
Recall Mode	None	C-Max	None	None	None	C-Max	None	None
Maximum Split (s)	19	31	16	24	23	27	14	26
Maximum Split (%)	21.1%	34.4%	17.8%	26.7%	25.6%	30.0%	15.6%	28.9%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	61	80	21	37	61	84	21	35
End Time (s)	80	21	37	61	84	21	35	61
Yield/Force Off (s)	74	15	31	55	78	15	29	55
Yield/Force Off 170(s)	74	4	31	44	78	4	29	44
Local Start Time (s)	67	86	27	43	67	0	27	41
Local Yield (s)	80	21	37	61	84	21	35	61
Local Yield 170(s)	80	10	37	50	84	10	35	50

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	75
Offset: 84 (93%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	

Splits and Phases: 12: Sossaman Rd & Warner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	315	105	215	432	317	310	215	80	162	500	326
Future Volume (veh/h)	191	315	105	215	432	317	310	215	80	162	500	326
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	212	350	117	239	480	352	344	239	89	180	556	362
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	687	556	375	790	471	443	1257	737	260	964	560
Arrive On Green	0.08	0.19	0.19	0.11	0.22	0.22	0.16	0.35	0.35	0.08	0.27	0.27
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	212	350	117	239	480	352	344	239	89	180	556	362
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	5.4	7.9	4.7	9.7	10.9	18.1	11.8	4.2	2.9	4.6	12.2	17.2
Cycle Q Clear(g_c), s	5.4	7.9	4.7	9.7	10.9	18.1	11.8	4.2	2.9	4.6	12.2	17.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	284	687	556	375	790	471	443	1257	737	260	964	560
V/C Ratio(X)	0.75	0.51	0.21	0.64	0.61	0.75	0.78	0.19	0.12	0.69	0.58	0.65
Avail Cap(c_a), veh/h	307	711	567	375	790	471	499	1257	737	499	964	560
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	0.88	0.88	0.88
Uniform Delay (d), s/veh	40.4	32.5	20.5	25.6	31.5	28.6	19.2	20.2	13.7	40.6	28.3	24.4
Incr Delay (d2), s/veh	8.9	0.6	0.2	3.5	1.4	6.4	6.7	0.3	0.3	2.9	2.2	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.6	5.9	2.9	7.5	8.0	11.6	9.3	3.2	1.8	3.5	8.6	10.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.2	33.1	20.7	29.2	32.8	35.0	25.9	20.5	14.0	43.5	30.5	29.4
LnGrp LOS	D	C	C	C	C	C	C	C	B	D	C	C
Approach Vol, veh/h		679			1071			672			1098	
Approach Delay, s/veh		36.0			32.7			22.4			32.3	
Approach LOS		D			C			C			C	

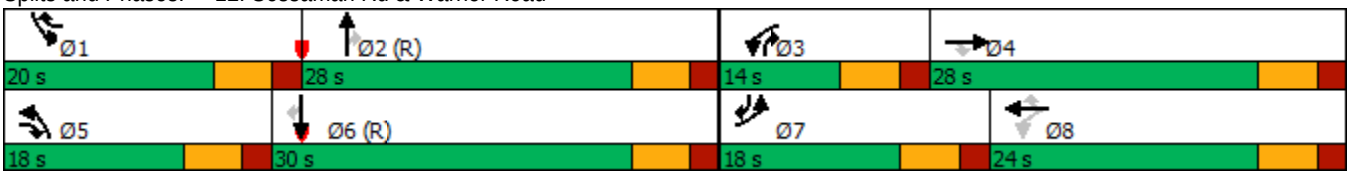
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	37.8	16.0	23.4	20.2	30.4	13.4	26.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	13.0	25.0	10.0	18.0	17.0	21.0	8.0	20.0
Max Q Clear Time (g_c+I1), s	6.6	6.2	11.7	9.9	13.8	19.2	7.4	20.1
Green Ext Time (p_c), s	0.3	1.7	0.0	1.5	0.4	0.9	0.0	0.0

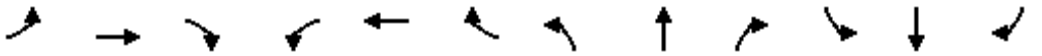
Intersection Summary	
HCM 6th Ctrl Delay	31.2
HCM 6th LOS	C

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBT	WBL	EBT	NBL	SBT	EBL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize								
Recall Mode	None	C-Max	None	None	None	C-Max	None	None
Maximum Split (s)	20	28	14	28	18	30	18	24
Maximum Split (%)	22.2%	31.1%	15.6%	31.1%	20.0%	33.3%	20.0%	26.7%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	60	80	18	32	60	78	18	36
End Time (s)	80	18	32	60	78	18	36	60
Yield/Force Off (s)	74	12	26	54	72	12	30	54
Yield/Force Off 170(s)	74	1	26	43	72	1	30	43
Local Start Time (s)	70	0	28	42	70	88	28	46
Local Yield (s)	84	22	36	64	82	22	40	64
Local Yield 170(s)	84	11	36	53	82	11	40	53

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	80
Offset: 80 (89%), Referenced to phase 2:NBT and 6:SBT, Start of Green	

Splits and Phases: 12: Sossaman Rd & Warner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	331	674	250	170	403	345	245	645	205	336	180	260
Future Volume (veh/h)	331	674	250	170	403	345	245	645	205	336	180	260
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	368	749	278	189	448	383	272	717	228	373	200	289
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	440	847	540	258	711	525	352	977	576	453	1081	684
Arrive On Green	0.13	0.24	0.24	0.09	0.20	0.20	0.10	0.27	0.27	0.13	0.30	0.30
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	368	749	278	189	448	383	272	717	228	373	200	289
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	9.4	18.3	12.6	7.6	10.4	18.0	6.9	16.5	9.6	9.5	3.7	11.4
Cycle Q Clear(g_c), s	9.4	18.3	12.6	7.6	10.4	18.0	6.9	16.5	9.6	9.5	3.7	11.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	440	847	540	258	711	525	352	977	576	453	1081	684
V/C Ratio(X)	0.84	0.88	0.52	0.73	0.63	0.73	0.77	0.73	0.40	0.82	0.19	0.42
Avail Cap(c_a), veh/h	461	869	549	258	711	525	461	977	576	538	1081	684
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	0.79	0.79	0.79
Uniform Delay (d), s/veh	38.4	33.1	23.7	27.1	33.0	26.5	39.4	29.6	21.3	38.1	23.1	17.8
Incr Delay (d2), s/veh	12.3	10.6	0.8	10.3	1.8	5.1	5.8	4.9	2.0	7.0	0.3	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.0	13.4	8.0	6.7	7.8	11.8	5.7	12.0	6.5	7.2	2.7	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.6	43.6	24.5	37.4	34.8	31.7	45.2	34.5	23.3	45.0	23.4	19.3
LnGrp LOS	D	D	C	D	C	C	D	C	C	D	C	B
Approach Vol, veh/h		1395			1020			1217			862	
Approach Delay, s/veh		41.7			34.1			34.8			31.4	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.8	30.7	14.0	27.5	15.2	33.4	17.5	24.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	14.0	22.0	8.0	22.0	12.0	24.0	12.0	18.0
Max Q Clear Time (g_c+I1), s	11.5	18.5	9.6	20.3	8.9	13.4	11.4	20.0
Green Ext Time (p_c), s	0.4	1.8	0.0	1.0	0.3	1.6	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	36.1
HCM 6th LOS	D

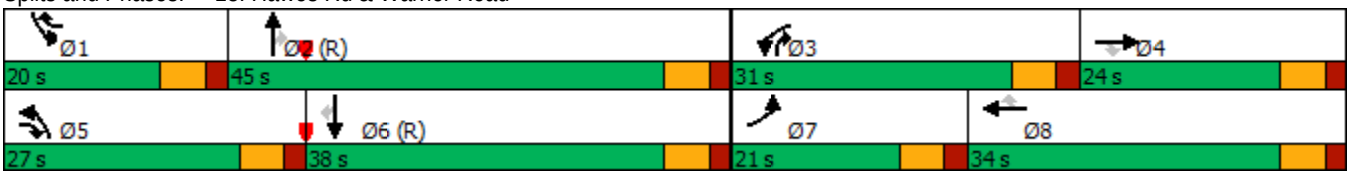
Notes

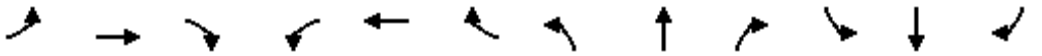
User approved pedestrian interval to be less than phase max green.

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBT	WBL	EBT	NBL	SBT	EBL	WBT
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize								
Recall Mode	None	C-Max	None	None	None	C-Max	None	None
Maximum Split (s)	20	45	31	24	27	38	21	34
Maximum Split (%)	16.7%	37.5%	25.8%	20.0%	22.5%	31.7%	17.5%	28.3%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	8	28	73	104	8	35	73	94
End Time (s)	28	73	104	8	35	73	94	8
Yield/Force Off (s)	22	67	98	2	29	67	88	2
Yield/Force Off 170(s)	22	56	98	111	29	56	88	111
Local Start Time (s)	93	113	38	69	93	0	38	59
Local Yield (s)	107	32	63	87	114	32	53	87
Local Yield 170(s)	107	21	63	76	114	21	53	76

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	80
Offset: 35 (29%), Referenced to phase 2:NBT and 6:SBT, Start of Green	

Splits and Phases: 13: Hawes Rd & Warner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	263	233	293	368	118	253	438	220	112	776	328
Future Volume (veh/h)	62	263	233	293	368	118	253	438	220	112	776	328
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	69	292	259	326	409	131	281	487	244	124	862	364
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	533	400	401	812	445	355	1711	947	182	1533	684
Arrive On Green	0.04	0.15	0.15	0.12	0.23	0.23	0.03	0.16	0.16	0.05	0.43	0.43
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	69	292	259	326	409	131	281	487	244	124	862	364
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	2.4	9.1	17.5	11.1	12.0	7.8	9.7	14.5	12.7	4.2	21.8	20.3
Cycle Q Clear(g_c), s	2.4	9.1	17.5	11.1	12.0	7.8	9.7	14.5	12.7	4.2	21.8	20.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	130	533	400	401	812	445	355	1711	947	182	1533	684
V/C Ratio(X)	0.53	0.55	0.65	0.81	0.50	0.29	0.79	0.28	0.26	0.68	0.56	0.53
Avail Cap(c_a), veh/h	432	533	400	720	829	453	605	1711	947	403	1533	684
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.89	0.89	0.91	0.91	0.91
Uniform Delay (d), s/veh	56.7	47.2	40.1	51.8	40.4	33.8	56.7	32.3	19.9	55.9	25.6	25.2
Incr Delay (d2), s/veh	3.4	1.2	3.6	4.1	0.5	0.4	3.6	0.4	0.6	4.1	1.4	2.7
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(95%),veh/ln	1.9	7.2	11.4	8.5	8.9	5.3	7.8	11.0	8.9	3.4	13.8	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.1	48.4	43.7	55.8	40.9	34.2	60.3	32.6	20.5	59.9	27.0	27.9
LnGrp LOS	E	D	D	E	D	C	E	C	C	E	C	C
Approach Vol, veh/h		620			866			1012			1350	
Approach Delay, s/veh		47.7			45.5			37.4			30.2	
Approach LOS		D			D			D			C	

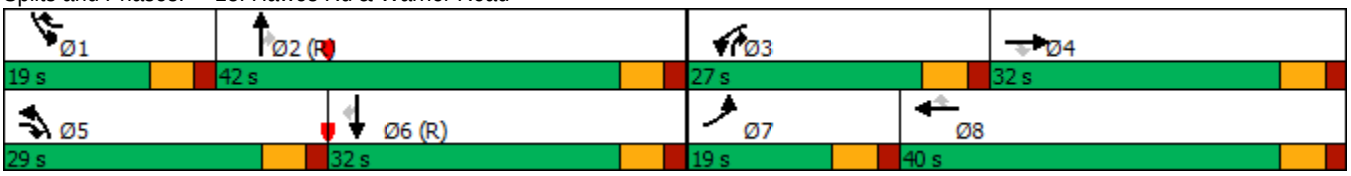
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	63.8	19.9	24.0	18.3	57.8	10.5	33.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	14.0	39.0	25.0	18.0	21.0	32.0	15.0	28.0
Max Q Clear Time (g_c+I1), s	6.2	16.5	13.1	19.5	11.7	23.8	4.4	14.0
Green Ext Time (p_c), s	0.2	3.8	0.9	0.0	0.6	4.1	0.1	2.4

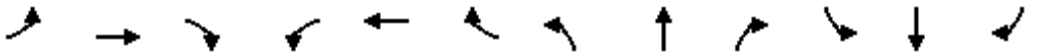
Intersection Summary	
HCM 6th Ctrl Delay	38.4
HCM 6th LOS	D

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBT	WBL	EBT	NBL	SBT	EBL	WBT
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize								
Recall Mode	None	C-Max	None	None	None	C-Max	None	None
Maximum Split (s)	19	42	27	32	29	32	19	40
Maximum Split (%)	15.8%	35.0%	22.5%	26.7%	24.2%	26.7%	15.8%	33.3%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	100	119	41	68	100	9	41	60
End Time (s)	119	41	68	100	9	41	60	100
Yield/Force Off (s)	113	35	62	94	3	35	54	94
Yield/Force Off 170(s)	113	24	62	83	3	24	54	83
Local Start Time (s)	91	110	32	59	91	0	32	51
Local Yield (s)	104	26	53	85	114	26	45	85
Local Yield 170(s)	104	15	53	74	114	15	45	74

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 9 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green	

Splits and Phases: 13: Hawes Rd & Warner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	580	422	332	344	191	406	892	223	195	792	71
Future Volume (veh/h)	192	580	422	332	344	191	406	892	223	195	792	71
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	213	644	469	369	382	212	451	991	248	217	880	79
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	273	770	586	439	940	545	528	1341	799	273	1078	481
Arrive On Green	0.08	0.22	0.22	0.13	0.26	0.26	0.05	0.12	0.12	0.16	0.61	0.61
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	213	644	469	369	382	212	451	991	248	217	880	79
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	7.3	20.8	26.0	12.5	10.6	12.2	15.5	32.3	13.8	7.3	23.1	2.6
Cycle Q Clear(g_c), s	7.3	20.8	26.0	12.5	10.6	12.2	15.5	32.3	13.8	7.3	23.1	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	273	770	586	439	940	545	528	1341	799	273	1078	481
V/C Ratio(X)	0.78	0.84	0.80	0.84	0.41	0.39	0.85	0.74	0.31	0.79	0.82	0.16
Avail Cap(c_a), veh/h	374	770	586	605	1007	574	662	1341	799	374	1078	481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.58	0.58	0.58	0.90	0.90	0.90
Uniform Delay (d), s/veh	54.2	45.0	33.9	51.2	36.4	29.8	55.6	46.8	25.5	49.6	21.0	16.9
Incr Delay (d2), s/veh	7.1	8.0	7.8	7.6	0.3	0.5	5.3	2.2	0.6	7.3	6.2	0.7
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(95%),veh/ln	6.0	14.8	18.8	9.7	8.0	8.0	11.0	20.7	8.9	5.6	10.6	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	53.0	41.7	58.8	36.6	30.3	61.0	49.0	26.1	56.8	27.2	17.6
LnGrp LOS	E	D	D	E	D	C	E	D	C	E	C	B
Approach Vol, veh/h		1326			963			1690			1176	
Approach Delay, s/veh		50.3			43.7			48.8			32.0	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.5	51.3	21.2	32.0	24.4	42.4	15.5	37.8
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	13.0	36.0	21.0	26.0	23.0	26.0	13.0	34.0
Max Q Clear Time (g_c+I1), s	9.3	34.3	14.5	28.0	17.5	25.1	9.3	14.2
Green Ext Time (p_c), s	0.2	1.2	0.7	0.0	0.8	0.5	0.2	2.8

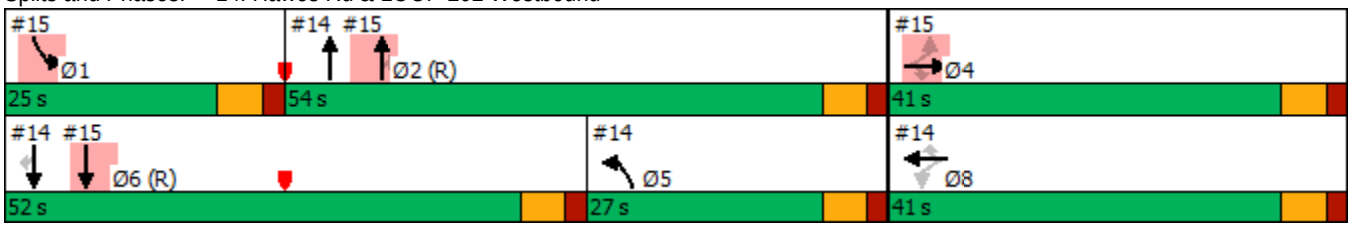
Intersection Summary	
HCM 6th Ctrl Delay	44.4
HCM 6th LOS	D

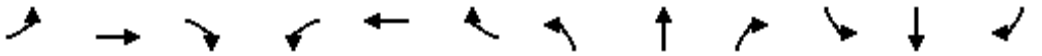
Phase Number	1	2	4	5	6	8
Node Number	15	14	15	14	14	14
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lag	Lead	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	Ped	None	C-Max	None
Maximum Split (s)	25	54	41	27	52	41
Maximum Split (%)	20.8%	45.0%	34.2%	22.5%	43.3%	34.2%
Minimum Split (s)	11	24	24	11	24	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	15	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7	7		7	7
Flash Dont Walk (s)		11	11		11	11
Dual Entry	No	Yes	Yes	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	76	101	35	8	76	35
End Time (s)	101	35	76	35	8	76
Yield/Force Off (s)	95	29	70	29	2	70
Yield/Force Off 170(s)	95	18	59	29	111	59
Local Start Time (s)	95	0	54	27	95	54
Local Yield (s)	114	48	89	48	21	89
Local Yield 170(s)	114	37	78	48	10	78

Intersection Summary		
Cycle Length	120	
Control Type	Actuated-Coordinated	
Natural Cycle	60	

Offset: 101 (84%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Splits and Phases: 14: Hawes Rd & LOOP 202 Westbound





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	340	0	291	320	1025	0	0	702	497
Future Volume (vph)	0	0	0	340	0	291	320	1025	0	0	702	497
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.91	0.95	0.97	0.91			0.81	1.00
Frt				1.00	0.94	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.97	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1681	1543	1504	3433	5085			7544	1583
Flt Permitted				0.95	0.97	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1681	1543	1504	3433	5085			7544	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	378	0	323	356	1139	0	0	780	552
RTOR Reduction (vph)	0	0	0	0	106	174	0	0	0	0	0	300
Lane Group Flow (vph)	0	0	0	242	130	49	356	1139	0	0	780	252
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				26.3	26.3	26.3	21.0	59.7			54.7	54.7
Effective Green, g (s)				26.3	26.3	26.3	21.0	59.7			54.7	54.7
Actuated g/C Ratio				0.22	0.22	0.22	0.18	0.50			0.46	0.46
Clearance Time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				368	338	329	600	2529			3438	721
v/s Ratio Prot							c0.10	c0.22			0.10	
v/s Ratio Perm				c0.14	0.08	0.03						c0.16
v/c Ratio				0.66	0.38	0.15	0.59	0.45			0.23	0.35
Uniform Delay, d1				42.7	39.9	37.8	45.6	19.5			19.8	21.1
Progression Factor				1.00	1.00	1.00	0.94	0.81			0.73	3.60
Incremental Delay, d2				4.2	0.7	0.2	1.5	0.6			0.1	1.1
Delay (s)				46.9	40.7	38.0	44.3	16.3			14.6	77.1
Level of Service				D	D	D	D	B			B	E
Approach Delay (s)		0.0			42.0			23.0			40.5	
Approach LOS		A			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	33.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

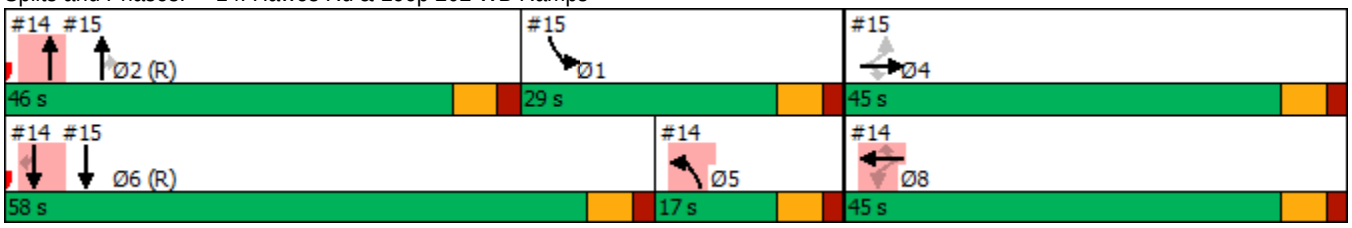
c Critical Lane Group

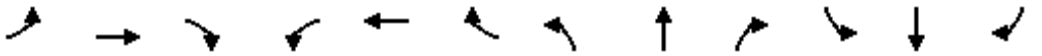
Phase Number	1	2	4	5	6	8
Node Number	15	14	15	14	14	14
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lag	Lead		Lag	Lead	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	Ped	None	C-Max	None
Maximum Split (s)	29	46	45	17	58	45
Maximum Split (%)	24.2%	38.3%	37.5%	14.2%	48.3%	37.5%
Minimum Split (s)	11	24	24	11	24	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	15	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7	7		7	7
Flash Dont Walk (s)		11	11		11	11
Dual Entry	No	Yes	Yes	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	100	54	9	112	54	9
End Time (s)	9	100	54	9	112	54
Yield/Force Off (s)	3	94	48	3	106	48
Yield/Force Off 170(s)	3	83	37	3	95	37
Local Start Time (s)	46	0	75	58	0	75
Local Yield (s)	69	40	114	69	52	114
Local Yield 170(s)	69	29	103	69	41	103

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	90

Offset: 54 (45%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Splits and Phases: 14: Hawes Rd & Loop 202 WB Ramps





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	215	0	457	215	1385	0	0	1660	1046
Future Volume (vph)	0	0	0	215	0	457	215	1385	0	0	1660	1046
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.91	0.95	0.97	0.91			0.81	1.00
Frt				1.00	0.86	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1681	1457	1504	3433	5085			7544	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1681	1457	1504	3433	5085			7544	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	239	0	508	239	1539	0	0	1844	1162
RTOR Reduction (vph)	0	0	0	0	167	180	0	0	0	0	0	478
Lane Group Flow (vph)	0	0	0	215	101	84	239	1539	0	0	1844	684
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				38.1	38.1	38.1	10.8	41.1			53.1	53.1
Effective Green, g (s)				38.1	38.1	38.1	10.8	41.1			53.1	53.1
Actuated g/C Ratio				0.32	0.32	0.32	0.09	0.34			0.44	0.44
Clearance Time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				533	462	477	308	1741			3338	700
v/s Ratio Prot							c0.07	0.30			0.24	
v/s Ratio Perm				c0.13	0.07	0.06						c0.43
v/c Ratio				0.40	0.22	0.18	0.78	0.88			0.55	0.98
Uniform Delay, d1				32.1	30.0	29.6	53.4	37.2			24.7	32.8
Progression Factor				1.00	1.00	1.00	1.17	0.64			0.91	1.50
Incremental Delay, d2				0.5	0.2	0.2	9.3	5.6			0.6	27.3
Delay (s)				32.6	30.3	29.8	71.9	29.5			23.1	76.7
Level of Service				C	C	C	E	C			C	E
Approach Delay (s)		0.0			30.8			35.2			43.8	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		

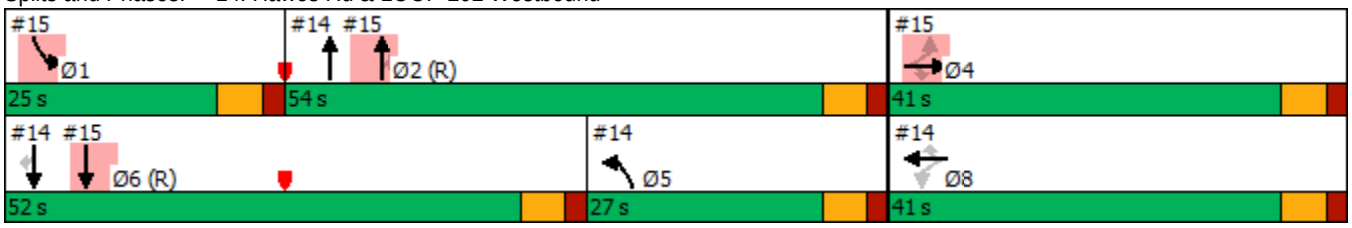
c Critical Lane Group

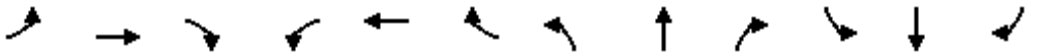
Phase Number	1	2	4	5	6	8
Node Number	15	14	15	14	14	14
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lag	Lead	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	Ped	None	C-Max	None
Maximum Split (s)	25	54	41	27	52	41
Maximum Split (%)	20.8%	45.0%	34.2%	22.5%	43.3%	34.2%
Minimum Split (s)	11	24	24	11	24	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	15	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7	7		7	7
Flash Dont Walk (s)		11	11		11	11
Dual Entry	No	Yes	Yes	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	76	101	35	8	76	35
End Time (s)	101	35	76	35	8	76
Yield/Force Off (s)	95	29	70	29	2	70
Yield/Force Off 170(s)	95	18	59	29	111	59
Local Start Time (s)	95	0	54	27	95	54
Local Yield (s)	114	48	89	48	21	89
Local Yield 170(s)	114	37	78	48	10	78

Intersection Summary		
Cycle Length	120	
Control Type	Actuated-Coordinated	
Natural Cycle	60	

Offset: 101 (84%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Splits and Phases: 14: Hawes Rd & LOOP 202 Westbound





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	481	0	175	0	0	0	0	864	340	286	755	0
Future Volume (vph)	481	0	175	0	0	0	0	864	340	286	755	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.81	1.00	0.97	0.91	
Frt	1.00	0.99	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1603	1504					7544	1583	3433	5085	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1603	1504					7544	1583	3433	5085	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	534	0	194	0	0	0	0	960	378	318	839	0
RTOR Reduction (vph)	0	106	137	0	0	0	0	0	190	0	0	0
Lane Group Flow (vph)	278	169	38	0	0	0	0	960	188	318	839	0
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	26.3	26.3	26.3					59.7	59.7	16.0	54.7	
Effective Green, g (s)	26.3	26.3	26.3					59.7	59.7	16.0	54.7	
Actuated g/C Ratio	0.22	0.22	0.22					0.50	0.50	0.13	0.46	
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	368	351	329					3753	787	457	2317	
v/s Ratio Prot								c0.13		c0.09	c0.16	
v/s Ratio Perm	c0.17	0.11	0.03						0.12			
v/c Ratio	0.76	0.48	0.12					0.26	0.24	0.70	0.36	
Uniform Delay, d1	43.8	40.9	37.5					17.4	17.2	49.7	21.3	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.66	0.36	
Incremental Delay, d2	8.6	1.0	0.2					0.2	0.7	4.4	0.4	
Delay (s)	52.4	41.9	37.7					17.5	17.9	37.3	8.2	
Level of Service	D	D	D					B	B	D	A	
Approach Delay (s)		44.9			0.0			17.6			16.2	
Approach LOS		D			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

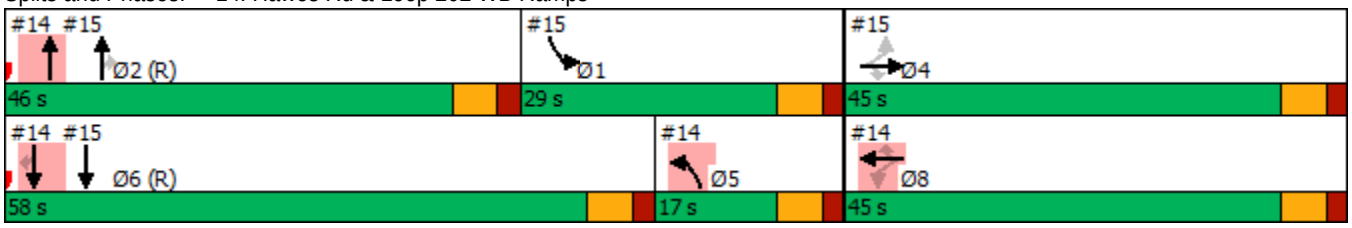
c Critical Lane Group

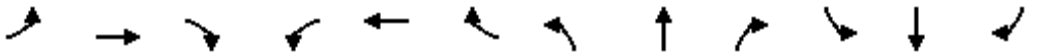
Phase Number	1	2	4	5	6	8
Node Number	15	14	15	14	14	14
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lag	Lead		Lag	Lead	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	Ped	None	C-Max	None
Maximum Split (s)	29	46	45	17	58	45
Maximum Split (%)	24.2%	38.3%	37.5%	14.2%	48.3%	37.5%
Minimum Split (s)	11	24	24	11	24	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	15	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7	7		7	7
Flash Dont Walk (s)		11	11		11	11
Dual Entry	No	Yes	Yes	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	100	54	9	112	54	9
End Time (s)	9	100	54	9	112	54
Yield/Force Off (s)	3	94	48	3	106	48
Yield/Force Off 170(s)	3	83	37	3	95	37
Local Start Time (s)	46	0	75	58	0	75
Local Yield (s)	69	40	114	69	52	114
Local Yield 170(s)	69	29	103	69	41	103

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	90

Offset: 54 (45%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Splits and Phases: 14: Hawes Rd & Loop 202 WB Ramps





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	882	0	180	0	0	0	0	718	65	491	1383	0
Future Volume (vph)	882	0	180	0	0	0	0	718	65	491	1383	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.81	1.00	0.97	0.91	
Frt	1.00	0.99	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1608	1504					7544	1583	3433	5085	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1681	1608	1504					7544	1583	3433	5085	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	980	0	200	0	0	0	0	798	72	546	1537	0
RTOR Reduction (vph)	0	93	123	0	0	0	0	0	47	0	0	0
Lane Group Flow (vph)	500	407	57	0	0	0	0	798	25	546	1537	0
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	38.1	38.1	38.1					41.1	41.1	22.8	53.1	
Effective Green, g (s)	38.1	38.1	38.1					41.1	41.1	22.8	53.1	
Actuated g/C Ratio	0.32	0.32	0.32					0.34	0.34	0.19	0.44	
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	533	510	477					2583	542	652	2250	
v/s Ratio Prot								0.11		c0.16	c0.30	
v/s Ratio Perm	c0.30	0.25	0.04						0.02			
v/c Ratio	0.94	0.80	0.12					0.31	0.05	0.84	0.68	
Uniform Delay, d1	39.8	37.4	29.1					29.0	26.3	46.8	26.7	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.77	0.27	
Incremental Delay, d2	24.3	8.5	0.1					0.3	0.2	8.0	1.5	
Delay (s)	64.1	45.9	29.2					29.3	26.5	43.9	8.7	
Level of Service	E	D	C					C	C	D	A	
Approach Delay (s)		51.1			0.0			29.1			17.9	
Approach LOS		D			A			C			B	

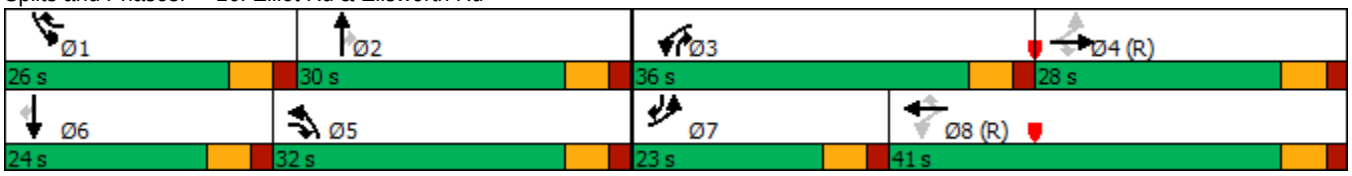
Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		

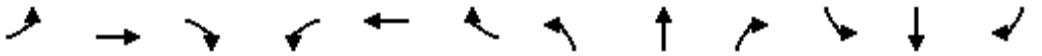
c Critical Lane Group

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBT	WBL	EBTL	NBL	SBT	EBL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	26	30	36	28	32	24	23	41
Maximum Split (%)	21.7%	25.0%	30.0%	23.3%	26.7%	20.0%	19.2%	34.2%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	76	102	12	48	100	76	12	35
End Time (s)	102	12	48	76	12	100	35	76
Yield/Force Off (s)	96	6	42	70	6	94	29	70
Yield/Force Off 170(s)	96	115	42	59	6	83	29	59
Local Start Time (s)	28	54	84	0	52	28	84	107
Local Yield (s)	48	78	114	22	78	46	101	22
Local Yield 170(s)	48	67	114	11	78	35	101	11

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 48 (40%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 16: Elliot Rd & Ellsworth Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	613	399	316	858	420	474	623	427	150	496	265
Future Volume (veh/h)	155	613	399	316	858	420	474	623	427	150	496	265
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			Yes	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	172	681	443	351	953	467	527	692	474	167	551	294
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	302	1688	796	426	2030	736	594	1301	638	231	766	366
Arrive On Green	0.03	0.11	0.11	0.15	0.40	0.40	0.29	0.43	0.43	0.07	0.15	0.15
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	172	681	443	351	953	467	527	692	474	167	551	294
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	7.5	14.9	9.7	14.9	16.6	26.8	17.5	12.1	30.6	5.7	12.3	12.2
Cycle Q Clear(g_c), s	7.5	14.9	9.7	14.9	16.6	26.8	17.5	12.1	30.6	5.7	12.3	12.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	302	1688	796	426	2030	736	594	1301	638	231	766	366
V/C Ratio(X)	0.57	0.40	0.56	0.82	0.47	0.63	0.89	0.53	0.74	0.72	0.72	0.80
Avail Cap(c_a), veh/h	410	1688	796	609	2030	736	749	1301	638	576	766	366
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.0	42.4	9.5	22.7	26.8	24.4	41.7	29.1	24.1	54.9	48.6	18.4
Incr Delay (d2), s/veh	1.6	0.7	2.6	6.1	0.8	4.1	10.0	1.5	7.1	4.2	5.8	17.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.1	11.0	6.3	10.7	10.8	15.6	11.3	7.7	15.2	4.6	9.3	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	43.1	12.1	28.8	27.5	28.5	51.7	30.6	31.2	59.1	54.4	35.4
LnGrp LOS	C	D	B	C	C	C	D	C	C	E	D	D
Approach Vol, veh/h		1296			1771			1693			1012	
Approach Delay, s/veh		30.3			28.1			37.3			49.6	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	36.6	23.7	45.7	26.6	24.0	15.7	53.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	20.0	24.0	30.0	22.0	26.0	18.0	17.0	35.0
Max Q Clear Time (g_c+I1), s	7.7	32.6	16.9	16.9	19.5	14.3	9.5	28.8
Green Ext Time (p_c), s	0.4	0.0	0.8	2.6	1.1	1.6	0.2	3.8

Intersection Summary	
HCM 6th Ctrl Delay	35.1
HCM 6th LOS	D

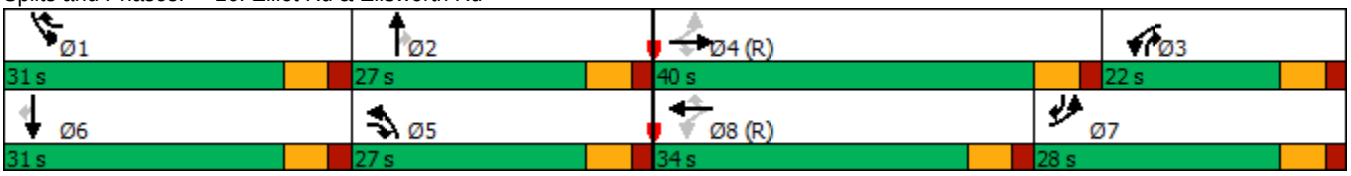
Notes

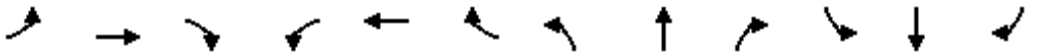
User approved pedestrian interval to be less than phase max green.

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBT	WBL	EBTL	NBL	SBT	EBL	WBTL
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	31	27	22	40	27	31	28	34
Maximum Split (%)	25.8%	22.5%	18.3%	33.3%	22.5%	25.8%	23.3%	28.3%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	2	33	100	60	33	2	94	60
End Time (s)	33	60	2	100	60	33	2	94
Yield/Force Off (s)	27	54	116	94	54	27	116	88
Yield/Force Off 170(s)	27	43	116	83	54	16	116	77
Local Start Time (s)	62	93	40	0	93	62	34	0
Local Yield (s)	87	114	56	34	114	87	56	28
Local Yield 170(s)	87	103	56	23	114	76	56	17

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 60 (50%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 16: Elliot Rd & Ellsworth Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	300	1210	628	274	847	230	510	502	327	450	855	200
Future Volume (veh/h)	300	1210	628	274	847	230	510	502	327	450	855	200
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	333	1344	698	304	941	256	567	558	363	500	950	222
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	407	1447	726	298	1191	633	605	1110	556	574	1064	621
Arrive On Green	0.37	0.57	0.57	0.13	0.23	0.23	0.06	0.07	0.07	0.17	0.21	0.21
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	333	1344	698	304	941	256	567	558	363	500	950	222
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	14.1	28.9	15.9	16.0	20.8	6.2	19.6	12.6	7.6	16.9	21.7	0.0
Cycle Q Clear(g_c), s	14.1	28.9	15.9	16.0	20.8	6.2	19.6	12.6	7.6	16.9	21.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	407	1447	726	298	1191	633	605	1110	556	574	1064	621
V/C Ratio(X)	0.82	0.93	0.96	1.02	0.79	0.40	0.94	0.50	0.65	0.87	0.89	0.36
Avail Cap(c_a), veh/h	407	1447	726	298	1191	633	605	1110	556	720	1064	621
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	0.90	0.90	0.90	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	24.9	14.7	50.4	43.2	9.0	55.9	49.5	15.2	48.8	46.2	25.8
Incr Delay (d2), s/veh	1.3	1.4	4.4	57.9	5.4	1.9	20.8	1.5	5.3	9.5	11.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.7	8.4	10.7	19.1	14.0	5.1	15.9	9.6	8.9	12.4	15.2	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.9	26.3	19.1	108.3	48.6	10.9	76.7	50.9	20.5	58.3	57.6	27.4
LnGrp LOS	C	C	B	F	D	B	E	D	C	E	E	C
Approach Vol, veh/h		2375			1501			1488			1672	
Approach Delay, s/veh		25.4			54.3			53.3			53.8	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.9	32.1	22.0	40.0	27.0	31.0	28.0	34.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	25.0	21.0	16.0	34.0	21.0	25.0	22.0	28.0
Max Q Clear Time (g_c+I1), s	18.9	14.6	18.0	30.9	21.6	23.7	16.1	22.8
Green Ext Time (p_c), s	1.0	2.6	0.0	2.6	0.0	0.8	0.5	3.0

Intersection Summary	
HCM 6th Ctrl Delay	44.2
HCM 6th LOS	D

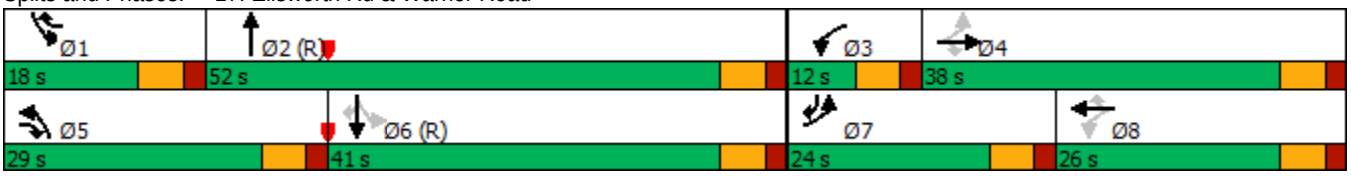
Notes

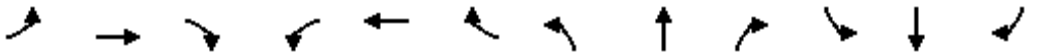
User approved pedestrian interval to be less than phase max green.

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBT	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	None	C-Max	None	None
Maximum Split (s)	18	52	12	38	29	41	24	26
Maximum Split (%)	15.0%	43.3%	10.0%	31.7%	24.2%	34.2%	20.0%	21.7%
Minimum Split (s)	11	24	11	24	11	24	24	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7	7	7
Flash Dont Walk (s)		11		11		11	11	11
Dual Entry	No	Yes	No	Yes	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	6	24	76	88	6	35	76	100
End Time (s)	24	76	88	6	35	76	100	6
Yield/Force Off (s)	18	70	82	0	29	70	94	0
Yield/Force Off 170(s)	18	59	82	109	29	59	83	109
Local Start Time (s)	91	109	41	53	91	0	41	65
Local Yield (s)	103	35	47	85	114	35	59	85
Local Yield 170(s)	103	24	47	74	114	24	48	74

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	85
Offset: 35 (29%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Splits and Phases: 17: Ellsworth Rd & Warner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	249	30	83	95	43	259	395	1021	65	111	582	183
Future Volume (veh/h)	249	30	83	95	43	259	395	1021	65	111	582	183
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	277	33	92	106	48	288	439	1134	72	123	647	203
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	475	918	644	360	592	360	511	2114	134	288	1756	770
Arrive On Green	0.14	0.26	0.26	0.05	0.17	0.17	0.15	0.43	0.43	0.06	0.34	0.34
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	4907	311	1781	5106	1585
Grp Volume(v), veh/h	277	33	92	106	48	288	439	786	420	123	647	203
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1702	1814	1781	1702	1585
Q Serve(g_s), s	14.9	0.8	4.4	5.9	1.4	20.0	14.9	20.5	20.5	5.3	11.4	9.1
Cycle Q Clear(g_c), s	14.9	0.8	4.4	5.9	1.4	20.0	14.9	20.5	20.5	5.3	11.4	9.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	475	918	644	360	592	360	511	1467	782	288	1756	770
V/C Ratio(X)	0.58	0.04	0.14	0.29	0.08	0.80	0.86	0.54	0.54	0.43	0.37	0.26
Avail Cap(c_a), veh/h	489	948	657	360	592	360	662	1467	782	359	1756	770
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	32.4	33.3	22.5	39.1	42.2	43.8	49.9	25.3	25.3	23.4	29.6	18.2
Incr Delay (d2), s/veh	1.7	0.0	0.1	0.5	0.1	12.0	8.9	1.4	2.6	1.0	0.6	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.6	0.6	2.9	4.6	1.1	13.9	11.2	12.8	13.9	4.0	8.1	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.1	33.3	22.6	39.6	42.3	55.8	58.8	26.7	27.9	24.4	30.2	19.0
LnGrp LOS	C	C	C	D	D	E	E	C	C	C	C	B
Approach Vol, veh/h		402			442			1645			973	
Approach Delay, s/veh		31.4			50.4			35.6			27.1	
Approach LOS		C			D			D			C	

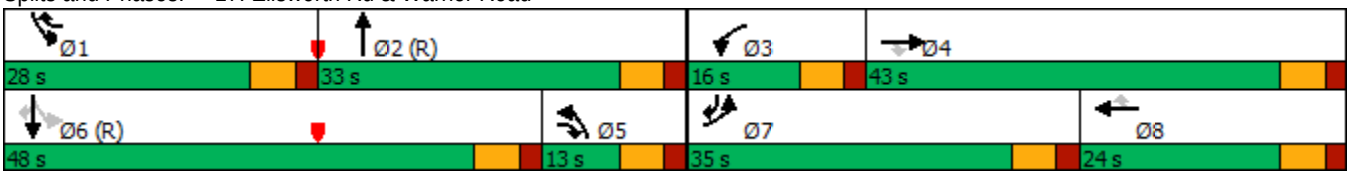
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.3	57.7	12.0	37.0	23.7	47.3	23.0	26.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	46.0	6.0	32.0	23.0	35.0	18.0	20.0
Max Q Clear Time (g_c+I1), s	7.3	22.5	7.9	6.4	16.9	13.4	16.9	22.0
Green Ext Time (p_c), s	0.1	8.0	0.0	0.4	0.8	4.7	0.1	0.0

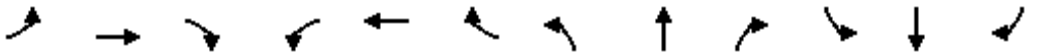
Intersection Summary	
HCM 6th Ctrl Delay	34.6
HCM 6th LOS	C

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBT	WBL	EBT	NBL	SBTL	EBL	WBT
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	None	C-Max	None	None
Maximum Split (s)	28	33	16	43	13	48	35	24
Maximum Split (%)	23.3%	27.5%	13.3%	35.8%	10.8%	40.0%	29.2%	20.0%
Minimum Split (s)	11	24	11	24	11	24	24	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7	7	7
Flash Dont Walk (s)		11		11		11	11	11
Dual Entry	No	Yes	No	Yes	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	28	56	89	105	76	28	89	4
End Time (s)	56	89	105	28	89	76	4	28
Yield/Force Off (s)	50	83	99	22	83	70	118	22
Yield/Force Off 170(s)	50	72	99	11	83	59	107	11
Local Start Time (s)	92	0	33	49	20	92	33	68
Local Yield (s)	114	27	43	86	27	14	62	86
Local Yield 170(s)	114	16	43	75	27	3	51	75

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	95
Offset: 56 (47%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Splits and Phases: 17: Ellsworth Rd & Warner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	221	284	60	144	76	12	807	195	321	1323	399
Future Volume (veh/h)	340	221	284	60	144	76	12	807	195	321	1323	399
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	378	246	316	67	160	84	13	897	217	357	1470	443
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	404	874	637	86	239	397	538	1324	319	387	1787	915
Arrive On Green	0.23	0.25	0.25	0.05	0.07	0.07	0.16	0.32	0.32	0.18	0.35	0.35
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	4107	989	1781	5106	1585
Grp Volume(v), veh/h	378	246	316	67	160	84	13	743	371	357	1470	443
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1702	1692	1781	1702	1585
Q Serve(g_s), s	25.0	6.7	2.9	4.5	5.3	5.0	0.4	22.7	22.8	20.6	31.5	5.5
Cycle Q Clear(g_c), s	25.0	6.7	2.9	4.5	5.3	5.0	0.4	22.7	22.8	20.6	31.5	5.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.58	1.00		1.00
Lane Grp Cap(c), veh/h	404	874	637	86	239	397	538	1098	546	387	1787	915
V/C Ratio(X)	0.93	0.28	0.50	0.78	0.67	0.21	0.02	0.68	0.68	0.92	0.82	0.48
Avail Cap(c_a), veh/h	430	1096	736	148	533	528	538	1098	546	387	1787	915
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	45.5	36.7	12.7	56.5	54.7	35.6	42.9	35.2	35.3	36.1	35.6	4.7
Incr Delay (d2), s/veh	26.9	0.2	0.6	13.9	3.2	0.3	0.0	3.4	6.7	27.5	4.4	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	19.7	5.2	7.1	4.1	4.3	3.5	0.3	14.6	15.3	17.1	19.1	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.4	36.8	13.3	70.4	57.9	35.9	42.9	38.6	42.0	63.6	40.0	6.5
LnGrp LOS	E	D	B	E	E	D	D	D	D	E	D	A
Approach Vol, veh/h		940			311			1127			2270	
Approach Delay, s/veh		43.2			54.6			39.8			37.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.0	44.7	11.8	35.5	24.7	48.0	33.2	14.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	22.0	27.0	10.0	37.0	7.0	42.0	29.0	18.0
Max Q Clear Time (g_c+I1), s	22.6	24.8	6.5	8.7	2.4	33.5	27.0	7.3
Green Ext Time (p_c), s	0.0	1.4	0.0	2.5	0.0	6.2	0.3	0.8

Intersection Summary	
HCM 6th Ctrl Delay	40.2
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	5.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	27	1	51	78	2
Future Vol, veh/h	21	27	1	51	78	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	30	1	57	87	2

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	206	30	0	0	58	0
Stage 1	30	-	-	-	-	-
Stage 2	176	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	782	1044	-	-	1546	-
Stage 1	993	-	-	-	-	-
Stage 2	855	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	738	1044	-	-	1546	-
Mov Cap-2 Maneuver	738	-	-	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	807	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	884	1546	-
HCM Lane V/C Ratio	-	-	0.06	0.056	-
HCM Control Delay (s)	-	-	9.3	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection	
Int Delay, s/veh	7.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	80	2	54	50	1
Future Vol, veh/h	65	80	2	54	50	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	89	2	60	56	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	145	32	0	0	62	0
Stage 1	32	-	-	-	-	-
Stage 2	113	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	847	1042	-	-	1541	-
Stage 1	991	-	-	-	-	-
Stage 2	912	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	817	1042	-	-	1541	-
Mov Cap-2 Maneuver	817	-	-	-	-	-
Stage 1	991	-	-	-	-	-
Stage 2	879	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	927	1541	-
HCM Lane V/C Ratio	-	-	0.174	0.036	-
HCM Control Delay (s)	-	-	9.7	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	115	53	18	726	398	44
Future Vol, veh/h	115	53	18	726	398	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	100
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	128	59	20	807	442	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	886	221	491	0	-	0
Stage 1	442	-	-	-	-	-
Stage 2	444	-	-	-	-	-
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	*284	783	1069	-	-	-
Stage 1	*615	-	-	-	-	-
Stage 2	*752	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	*279	783	1069	-	-	-
Mov Cap-2 Maneuver	*505	-	-	-	-	-
Stage 1	*603	-	-	-	-	-
Stage 2	*752	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1069	-	505	783	-	-
HCM Lane V/C Ratio	0.019	-	0.253	0.075	-	-
HCM Control Delay (s)	8.4	-	14.5	10	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1	0.2	-	-

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

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	95	34	54	689	1061	131
Future Vol, veh/h	95	34	54	689	1061	131
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	100
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	106	38	60	766	1179	146

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1682	590	1325	0	-	0
Stage 1	1179	-	-	-	-	-
Stage 2	503	-	-	-	-	-
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	~ 85	451	517	-	-	-
Stage 1	254	-	-	-	-	-
Stage 2	573	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 75	451	517	-	-	-
Mov Cap-2 Maneuver	204	-	-	-	-	-
Stage 1	225	-	-	-	-	-
Stage 2	573	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.2	0.9	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	517	-	204	451	-	-
HCM Lane V/C Ratio	0.116	-	0.517	0.084	-	-
HCM Control Delay (s)	12.9	-	40.2	13.7	-	-
HCM Lane LOS	B	-	E	B	-	-
HCM 95th %tile Q(veh)	0.4	-	2.6	0.3	-	-

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

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	17	49	20	6	17	14
Future Vol, veh/h	17	49	20	6	17	14
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	54	22	7	19	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	73	0	97	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	51	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1527	-	902	1023
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	971	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1527	-	889	1023
Mov Cap-2 Maneuver	-	-	-	-	889	-
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	957	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.7	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	945	-	-	1527	-
HCM Lane V/C Ratio	0.036	-	-	0.015	-
HCM Control Delay (s)	9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	5.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	11	31	25	17	50	35
Future Vol, veh/h	11	31	25	17	50	35
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	34	28	19	56	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	46	0	104	29
Stage 1	-	-	-	-	29	-
Stage 2	-	-	-	-	75	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1562	-	894	1046
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1562	-	878	1046
Mov Cap-2 Maneuver	-	-	-	-	878	-
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	931	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.4	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	940	-	-	1562	-
HCM Lane V/C Ratio	0.1	-	-	0.018	-
HCM Control Delay (s)	9.3	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	783	60	50	1032	156	131
Future Vol, veh/h	783	60	50	1032	156	131
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	150	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	870	67	56	1147	173	146

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	937	0	1441	435
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	571	-
Critical Hdwy	-	-	5.34	-	5.74	7.14
Critical Hdwy Stg 1	-	-	-	-	6.64	-
Critical Hdwy Stg 2	-	-	-	-	6.04	-
Follow-up Hdwy	-	-	3.12	-	3.82	3.92
Pot Cap-1 Maneuver	-	-	858	-	*515	*738
Stage 1	-	-	-	-	*758	-
Stage 2	-	-	-	-	*699	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	858	-	*482	*738
Mov Cap-2 Maneuver	-	-	-	-	*589	-
Stage 1	-	-	-	-	*758	-
Stage 2	-	-	-	-	*653	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	589	738	-	-	858	-
HCM Lane V/C Ratio	0.294	0.197	-	-	0.065	-
HCM Control Delay (s)	13.6	11.1	-	-	9.5	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	1.2	0.7	-	-	0.2	-

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

Intersection	
Int Delay, s/veh	26.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1979	186	154	1441	128	105
Future Vol, veh/h	1979	186	154	1441	128	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	150	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2199	207	171	1601	142	117

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2406	0	3181	1100
Stage 1	-	-	-	-	2199	-
Stage 2	-	-	-	-	982	-
Critical Hdwy	-	-	5.34	-	5.74	7.14
Critical Hdwy Stg 1	-	-	-	-	6.64	-
Critical Hdwy Stg 2	-	-	-	-	6.04	-
Follow-up Hdwy	-	-	3.12	-	3.82	3.92
Pot Cap-1 Maneuver	-	-	~ 77	-	~ 21	178
Stage 1	-	-	-	-	~ 42	-
Stage 2	-	-	-	-	292	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	~ 77	-	0	178
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	~ 42	-
Stage 2	-	-	-	-	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	65.3	
HCM LOS			-

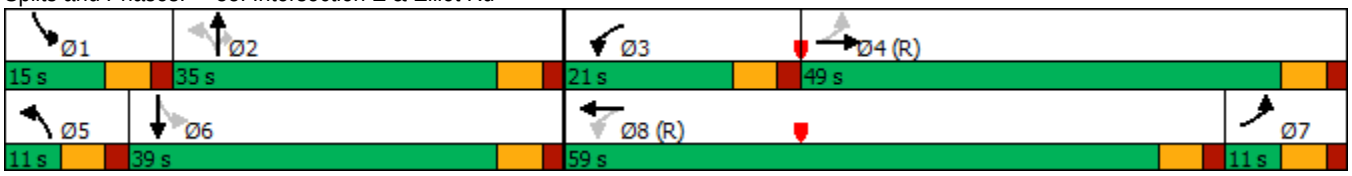
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	178	-	-	~ 77	-
HCM Lane V/C Ratio	-	0.655	-	-	2.222	-
HCM Control Delay (s)	-	57.1	-	-	$ 676.6	-
HCM Lane LOS	-	F	-	-	F	-
HCM 95th %tile Q(veh)	-	3.8	-	-	15.8	-

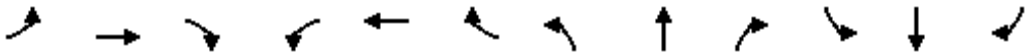
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	15	35	21	49	11	39	11	59
Maximum Split (%)	12.5%	29.2%	17.5%	40.8%	9.2%	32.5%	9.2%	49.2%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	49	64	99	0	49	60	38	99
End Time (s)	64	99	0	49	60	99	49	38
Yield/Force Off (s)	58	93	114	43	54	93	43	32
Yield/Force Off 170(s)	58	82	114	32	54	82	43	21
Local Start Time (s)	49	64	99	0	49	60	38	99
Local Yield (s)	58	93	114	43	54	93	43	32
Local Yield 170(s)	58	82	114	32	54	82	43	21

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 35: Intersection E & Elliot Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	1059	20	109	840	74	35	5	260	163	3	54
Future Volume (veh/h)	29	1059	20	109	840	74	35	5	260	163	3	54
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	32	1177	22	121	933	82	39	6	289	181	3	60
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	309	2183	41	243	2111	185	438	452	383	453	22	435
Arrive On Green	0.04	0.42	0.42	0.12	0.88	0.88	0.03	0.24	0.24	0.08	0.29	0.29
Sat Flow, veh/h	1781	5161	96	1781	4780	419	1781	1870	1585	1781	76	1521
Grp Volume(v), veh/h	32	776	423	121	664	351	39	6	289	181	0	63
Grp Sat Flow(s),veh/h/ln	1781	1702	1853	1781	1702	1795	1781	1870	1585	1781	0	1597
Q Serve(g_s), s	0.0	20.5	20.5	5.2	4.5	4.5	2.0	0.3	20.3	9.0	0.0	3.5
Cycle Q Clear(g_c), s	0.0	20.5	20.5	5.2	4.5	4.5	2.0	0.3	20.3	9.0	0.0	3.5
Prop In Lane	1.00		0.05	1.00		0.23	1.00		1.00	1.00		0.95
Lane Grp Cap(c), veh/h	309	1440	784	243	1503	793	438	452	383	453	0	457
V/C Ratio(X)	0.10	0.54	0.54	0.50	0.44	0.44	0.09	0.01	0.75	0.40	0.00	0.14
Avail Cap(c_a), veh/h	309	1440	784	358	1503	793	458	452	383	453	0	457
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.4	25.9	25.9	23.7	4.2	4.2	32.5	34.6	42.2	30.2	0.0	31.8
Incr Delay (d2), s/veh	0.1	1.4	2.5	1.4	0.9	1.6	0.1	0.1	12.9	0.6	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	12.7	13.9	3.7	2.3	2.7	1.6	0.3	14.0	7.2	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	27.3	28.4	25.1	5.0	5.8	32.6	34.7	55.1	30.8	0.0	32.4
LnGrp LOS	C	C	C	C	A	A	C	C	E	C	A	C
Approach Vol, veh/h		1231			1136			334			244	
Approach Delay, s/veh		27.6			7.4			52.1			31.2	
Approach LOS		C			A			D			C	

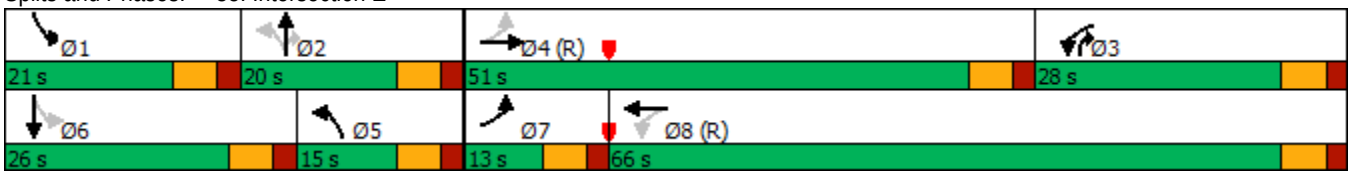
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	35.0	13.2	56.8	9.6	40.4	11.0	59.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	9.0	29.0	15.0	43.0	5.0	33.0	5.0	53.0
Max Q Clear Time (g_c+I1), s	11.0	22.3	7.2	22.5	4.0	5.5	2.0	6.5
Green Ext Time (p_c), s	0.0	0.6	0.2	7.5	0.0	0.3	0.0	7.4

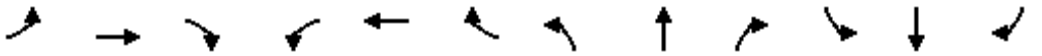
Intersection Summary	
HCM 6th Ctrl Delay	22.9
HCM 6th LOS	C

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	Max	None	C-Max
Maximum Split (s)	21	20	28	51	15	26	13	66
Maximum Split (%)	17.5%	16.7%	23.3%	42.5%	12.5%	21.7%	10.8%	55.0%
Minimum Split (s)	11	22	11	22	11	22	11	22
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		5		5		5		5
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	66	87	38	107	92	66	107	0
End Time (s)	87	107	66	38	107	92	0	66
Yield/Force Off (s)	81	101	60	32	101	86	114	60
Yield/Force Off 170(s)	81	90	60	21	101	75	114	49
Local Start Time (s)	66	87	38	107	92	66	107	0
Local Yield (s)	81	101	60	32	101	86	114	60
Local Yield 170(s)	81	90	60	21	101	75	114	49

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	100
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 35: Intersection E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1634	64	335	1625	225	100	17	226	174	11	76
Future Volume (veh/h)	90	1634	64	335	1625	225	100	17	226	174	11	76
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	100	1816	71	372	1806	250	111	19	251	193	12	84
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	1891	74	393	2303	316	188	218	480	277	34	236
Arrive On Green	0.05	0.38	0.38	0.19	0.51	0.51	0.07	0.12	0.12	0.12	0.17	0.17
Sat Flow, veh/h	1781	5042	197	1781	4539	624	1781	1870	1585	1781	202	1414
Grp Volume(v), veh/h	100	1225	662	372	1351	705	111	19	251	193	0	96
Grp Sat Flow(s),veh/h/ln	1781	1702	1835	1781	1702	1758	1781	1870	1585	1781	0	1616
Q Serve(g_s), s	4.7	42.2	42.3	20.5	38.9	39.6	3.1	1.1	3.9	12.6	0.0	6.3
Cycle Q Clear(g_c), s	4.7	42.2	42.3	20.5	38.9	39.6	3.1	1.1	3.9	12.6	0.0	6.3
Prop In Lane	1.00		0.11	1.00		0.35	1.00		1.00	1.00		0.88
Lane Grp Cap(c), veh/h	156	1277	688	393	1728	892	188	218	480	277	0	269
V/C Ratio(X)	0.64	0.96	0.96	0.95	0.78	0.79	0.59	0.09	0.52	0.70	0.00	0.36
Avail Cap(c_a), veh/h	164	1277	688	393	1728	892	194	218	480	283	0	269
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)	0.74	0.74	0.74	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.5	36.6	36.7	46.4	24.1	24.3	52.3	47.3	15.0	50.6	0.0	44.3
Incr Delay (d2), s/veh	5.7	14.1	21.5	31.7	3.6	7.1	4.4	0.8	4.0	7.1	0.0	3.7
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(95%),veh/ln	3.9	25.1	28.6	20.1	21.7	23.6	6.2	1.0	6.7	10.2	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	50.7	58.2	78.1	27.7	31.4	56.7	48.1	19.0	57.7	0.0	48.0
LnGrp LOS	D	D	E	E	C	C	E	D	B	E	A	D
Approach Vol, veh/h		1987			2428			381			289	
Approach Delay, s/veh		52.6			36.5			31.4			54.4	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.6	20.0	28.4	51.0	14.6	26.0	12.5	66.9
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	14.0	22.0	45.0	9.0	20.0	7.0	60.0
Max Q Clear Time (g_c+I1), s	14.6	5.9	22.5	44.3	5.1	8.3	6.7	41.6
Green Ext Time (p_c), s	0.0	0.6	0.0	0.6	0.1	0.3	0.0	12.9

Intersection Summary	
HCM 6th Ctrl Delay	43.4
HCM 6th LOS	D

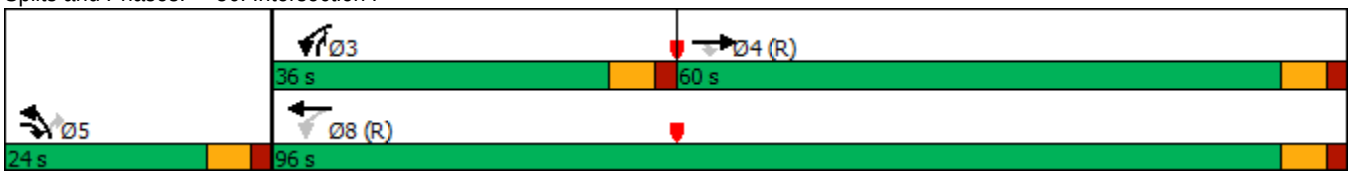
Notes

User approved pedestrian interval to be less than phase max green.

Phase Number	3	4	5	8
Movement	WBL	EBT	NBL	WBTL
Lead/Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes		
Recall Mode	None	C-Max	Max	C-Max
Maximum Split (s)	36	60	24	96
Maximum Split (%)	30.0%	50.0%	20.0%	80.0%
Minimum Split (s)	11	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7		7
Flash Dont Walk (s)		11		11
Dual Entry	No	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	84	0	60	84
End Time (s)	0	60	84	60
Yield/Force Off (s)	114	54	78	54
Yield/Force Off 170(s)	114	43	78	43
Local Start Time (s)	84	0	60	84
Local Yield (s)	114	54	78	54
Local Yield 170(s)	114	43	78	43

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green	

Splits and Phases: 36: Intersection F



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1482	36	291	1362	25	176
Future Volume (veh/h)	1482	36	291	1362	25	176
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1647	40	323	1513	28	196
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3118	1206	398	3830	267	380
Arrive On Green	1.00	1.00	0.12	1.00	0.15	0.15
Sat Flow, veh/h	5274	1585	1781	5274	1781	1585
Grp Volume(v), veh/h	1647	40	323	1513	28	196
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1781	1585
Q Serve(g_s), s	0.0	0.0	7.9	0.1	1.6	12.9
Cycle Q Clear(g_c), s	0.0	0.0	7.9	0.1	1.6	12.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	3118	1206	398	3830	267	380
V/C Ratio(X)	0.53	0.03	0.81	0.40	0.10	0.52
Avail Cap(c_a), veh/h	3118	1206	684	3830	267	380
HCM Platoon Ratio	2.00	2.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	0.63	0.63	0.51	0.51	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	8.3	0.0	44.0	39.6
Incr Delay (d2), s/veh	0.4	0.0	2.1	0.2	0.8	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.0	4.3	0.1	1.4	9.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.4	0.0	10.5	0.2	44.8	44.6
LnGrp LOS	A	A	B	A	D	D
Approach Vol, veh/h	1687			1836	224	
Approach Delay, s/veh	0.4			2.0	44.6	
Approach LOS	A			A	D	

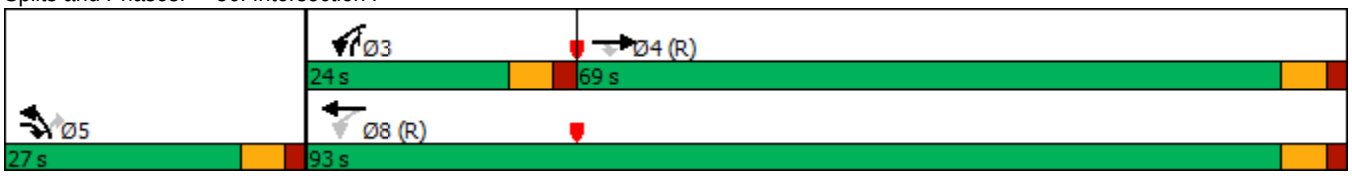
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		24.0	16.7	79.3		96.0
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s		18.0	30.0	54.0		90.0
Max Q Clear Time (g_c+I1), s		14.9	9.9	2.0		2.1
Green Ext Time (p_c), s		0.2	0.9	17.5		15.7

Intersection Summary	
HCM 6th Ctrl Delay	3.8
HCM 6th LOS	A

Phase Number	3	4	5	8
Movement	WBL	EBT	NBL	WBTL
Lead/Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max
Maximum Split (s)	24	69	27	93
Maximum Split (%)	20.0%	57.5%	22.5%	77.5%
Minimum Split (s)	24	24	11	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7		7
Flash Dont Walk (s)		11		11
Dual Entry	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	96	0	69	96
End Time (s)	0	69	96	69
Yield/Force Off (s)	114	63	90	63
Yield/Force Off 170(s)	114	52	90	52
Local Start Time (s)	96	0	69	96
Local Yield (s)	114	63	90	63
Local Yield 170(s)	114	52	90	52

Intersection Summary		
Cycle Length	120	
Control Type	Actuated-Coordinated	
Natural Cycle	110	
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green		

Splits and Phases: 36: Intersection F



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2594	115	372	2699	125	378
Future Volume (veh/h)	2594	115	372	2699	125	378
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2882	128	413	2999	139	420
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2681	1110	327	3702	312	515
Arrive On Green	1.00	1.00	0.15	0.73	0.17	0.17
Sat Flow, veh/h	5274	1585	1781	5274	1781	1585
Grp Volume(v), veh/h	2882	128	413	2999	139	420
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1781	1585
Q Serve(g_s), s	63.0	0.0	18.0	47.0	8.4	21.0
Cycle Q Clear(g_c), s	63.0	0.0	18.0	47.0	8.4	21.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2681	1110	327	3702	312	515
V/C Ratio(X)	1.08	0.12	1.26	0.81	0.45	0.82
Avail Cap(c_a), veh/h	2681	1110	327	3702	312	515
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.50	0.50	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	42.6	11.0	44.3	37.2
Incr Delay (d2), s/veh	38.1	0.1	120.3	0.2	1.0	9.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.7	0.1	25.1	15.5	6.8	18.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.1	0.1	162.9	11.2	45.3	47.0
LnGrp LOS	F	A	F	B	D	D
Approach Vol, veh/h	3010			3412	559	
Approach Delay, s/veh	36.4			29.5	46.6	
Approach LOS	D			C	D	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		27.0	24.0	69.0		93.0
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s		21.0	18.0	63.0		87.0
Max Q Clear Time (g_c+I1), s		23.0	20.0	65.0		49.0
Green Ext Time (p_c), s		0.0	0.0	0.0		33.2

Intersection Summary	
HCM 6th Ctrl Delay	33.9
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	72	102	36	25	35
Future Vol, veh/h	12	72	102	36	25	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	80	113	40	28	39

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	228	133	0	0	153	0
Stage 1	133	-	-	-	-	-
Stage 2	95	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	760	916	-	-	1428	-
Stage 1	893	-	-	-	-	-
Stage 2	929	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	745	916	-	-	1428	-
Mov Cap-2 Maneuver	745	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	910	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	3.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	887	1428	-
HCM Lane V/C Ratio	-	-	0.105	0.019	-
HCM Control Delay (s)	-	-	9.5	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	46	65	23	75	106
Future Vol, veh/h	38	46	65	23	75	106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	51	72	26	83	118

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	369	85	0	0	98	0
Stage 1	85	-	-	-	-	-
Stage 2	284	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	631	974	-	-	1495	-
Stage 1	938	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	594	974	-	-	1495	-
Mov Cap-2 Maneuver	594	-	-	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	719	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	3.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	755	1495	-
HCM Lane V/C Ratio	-	-	0.124	0.056	-
HCM Control Delay (s)	-	-	10.4	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.2	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	36	14	11	29	41	4	32	29	86	5	10	12
Future Vol, veh/h	36	14	11	29	41	4	32	29	86	5	10	12
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	16	12	32	46	4	36	32	96	6	11	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	207	230	18	196	188	80	24	0	0	128	0	0
Stage 1	30	30	-	152	152	-	-	-	-	-	-	-
Stage 2	177	200	-	44	36	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	751	670	1061	763	707	980	1591	-	-	1458	-	-
Stage 1	987	870	-	850	772	-	-	-	-	-	-	-
Stage 2	825	736	-	970	865	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	694	651	1061	724	686	980	1591	-	-	1458	-	-
Mov Cap-2 Maneuver	694	651	-	724	686	-	-	-	-	-	-	-
Stage 1	962	867	-	829	753	-	-	-	-	-	-	-
Stage 2	752	718	-	938	862	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	10.7	1.6	1.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1591	-	-	728	712	1458	-	-
HCM Lane V/C Ratio	0.022	-	-	0.093	0.115	0.004	-	-
HCM Control Delay (s)	7.3	0	-	10.5	10.7	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.4	0	-	-

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	23	42	33	90	26	11	20	19	55	10	31	38
Future Vol, veh/h	23	42	33	90	26	11	20	19	55	10	31	38
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	47	37	100	29	12	22	21	61	11	34	42

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	193	203	55	215	194	52	76	0	0	82	0	0
Stage 1	77	77	-	96	96	-	-	-	-	-	-	-
Stage 2	116	126	-	119	98	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	767	693	1012	742	701	1016	1523	-	-	1515	-	-
Stage 1	932	831	-	911	815	-	-	-	-	-	-	-
Stage 2	889	792	-	885	814	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	721	677	1012	666	685	1016	1523	-	-	1515	-	-
Mov Cap-2 Maneuver	721	677	-	666	685	-	-	-	-	-	-	-
Stage 1	918	824	-	897	803	-	-	-	-	-	-	-
Stage 2	834	780	-	798	807	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	11.5	1.6	0.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1523	-	-	774	691	1515	-	-
HCM Lane V/C Ratio	0.015	-	-	0.141	0.204	0.007	-	-
HCM Control Delay (s)	7.4	0	-	10.4	11.5	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.8	0	-	-

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	136	38	3	3	28	5	9	93	9	8	35	47
Future Vol, veh/h	136	38	3	3	28	5	9	93	9	8	35	47
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	151	42	3	3	31	6	10	103	10	9	39	52

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	230	216	65	234	237	108	91	0	0	113	0	0
Stage 1	83	83	-	128	128	-	-	-	-	-	-	-
Stage 2	147	133	-	106	109	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	725	682	999	721	664	946	1504	-	-	1476	-	-
Stage 1	925	826	-	876	790	-	-	-	-	-	-	-
Stage 2	856	786	-	900	805	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	688	673	999	678	655	946	1504	-	-	1476	-	-
Mov Cap-2 Maneuver	688	673	-	678	655	-	-	-	-	-	-	-
Stage 1	919	821	-	870	784	-	-	-	-	-	-	-
Stage 2	811	780	-	846	800	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.3	10.6	0.6	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1504	-	-	688	686	1476	-	-
HCM Lane V/C Ratio	0.007	-	-	0.286	0.058	0.006	-	-
HCM Control Delay (s)	7.4	0	-	12.3	10.6	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	87	49	9	9	55	17	6	59	6	16	102	141
Future Vol, veh/h	87	49	9	9	55	17	6	59	6	16	102	141
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	54	10	10	61	19	7	66	7	18	113	157

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	352	315	192	344	390	70	270	0	0	73	0	0
Stage 1	228	228	-	84	84	-	-	-	-	-	-	-
Stage 2	124	87	-	260	306	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	603	601	850	610	545	993	1293	-	-	1527	-	-
Stage 1	775	715	-	924	825	-	-	-	-	-	-	-
Stage 2	880	823	-	745	662	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	532	589	850	552	534	993	1293	-	-	1527	-	-
Mov Cap-2 Maneuver	532	589	-	552	534	-	-	-	-	-	-	-
Stage 1	770	705	-	918	820	-	-	-	-	-	-	-
Stage 2	794	818	-	670	653	-	-	-	-	-	-	-

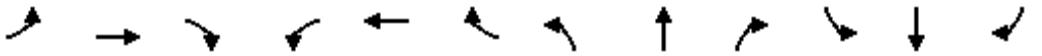
Approach	EB	WB	NB	SB
HCM Control Delay, s	13.9	12.1	0.7	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1293	-	-	564	594	1527	-	-
HCM Lane V/C Ratio	0.005	-	-	0.286	0.152	0.012	-	-
HCM Control Delay (s)	7.8	0	-	13.9	12.1	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.2	0.5	0	-	-

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	None	C-Max	None
Maximum Split (s)	60	30	60	30
Maximum Split (%)	66.7%	33.3%	66.7%	33.3%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	83	53	83	53
End Time (s)	53	83	53	83
Yield/Force Off (s)	47	77	47	77
Yield/Force Off 170(s)	36	66	36	66
Local Start Time (s)	0	60	0	60
Local Yield (s)	54	84	54	84
Local Yield 170(s)	43	73	43	73

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 83 (92%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	

Splits and Phases: 40: Intersection J



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	54	49	16	19	26	37	849	28	40	623	23
Future Volume (veh/h)	78	54	49	16	19	26	37	849	28	40	623	23
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	87	60	54	18	21	29	41	943	31	44	692	26
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	108	97	152	85	117	583	2625	86	458	2611	98
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.75	0.75	0.75	0.75	0.75	0.75
Sat Flow, veh/h	1355	907	816	1279	711	982	734	3511	115	577	3492	131
Grp Volume(v), veh/h	87	0	114	18	0	50	41	477	497	44	352	366
Grp Sat Flow(s),veh/h/ln	1355	0	1723	1279	0	1694	734	1777	1850	577	1777	1847
Q Serve(g_s), s	5.6	0.0	5.6	1.2	0.0	2.4	1.7	8.3	8.3	2.6	5.6	5.6
Cycle Q Clear(g_c), s	8.0	0.0	5.6	6.8	0.0	2.4	7.3	8.3	8.3	10.9	5.6	5.6
Prop In Lane	1.00		0.47	1.00		0.58	1.00		0.06	1.00		0.07
Lane Grp Cap(c), veh/h	205	0	205	152	0	201	583	1329	1383	458	1329	1381
V/C Ratio(X)	0.42	0.00	0.56	0.12	0.00	0.25	0.07	0.36	0.36	0.10	0.26	0.27
Avail Cap(c_a), veh/h	405	0	460	341	0	452	583	1329	1383	458	1329	1381
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Uniform Delay (d), s/veh	39.6	0.0	37.4	40.6	0.0	36.0	4.7	3.9	3.9	5.8	3.6	3.6
Incr Delay (d2), s/veh	1.4	0.0	2.4	0.3	0.0	0.6	0.2	0.8	0.7	0.4	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.5	0.0	4.4	0.7	0.0	1.8	0.4	3.7	3.9	0.5	2.5	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.0	0.0	39.8	41.0	0.0	36.6	5.0	4.7	4.6	6.2	4.0	4.0
LnGrp LOS	D	A	D	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		201			68			1015			762	
Approach Delay, s/veh		40.3			37.8			4.7			4.2	
Approach LOS		D			D			A			A	

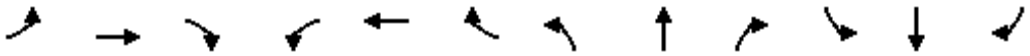
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		73.3		16.7		73.3		16.7				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		54.0		24.0		54.0		24.0				
Max Q Clear Time (g_c+I1), s		10.3		10.0		12.9		8.8				
Green Ext Time (p_c), s		7.1		0.7		5.0		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			9.1									
HCM 6th LOS			A									

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	None	C-Max	None
Maximum Split (s)	66	24	66	24
Maximum Split (%)	73.3%	26.7%	73.3%	26.7%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	62	38	62	38
End Time (s)	38	62	38	62
Yield/Force Off (s)	32	56	32	56
Yield/Force Off 170(s)	21	45	21	45
Local Start Time (s)	0	66	0	66
Local Yield (s)	60	84	60	84
Local Yield 170(s)	49	73	49	73

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 62 (69%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	

Splits and Phases: 40: Intersection J



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	35	67	41	57	80	115	923	24	128	1345	71
Future Volume (veh/h)	94	35	67	41	57	80	115	923	24	128	1345	71
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	104	39	74	46	63	89	128	1026	27	142	1494	79
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	211	108	204	243	131	184	221	2407	63	375	2337	123
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	1235	577	1096	1280	701	991	326	3537	93	536	3434	181
Grp Volume(v), veh/h	104	0	113	46	0	152	128	515	538	142	771	802
Grp Sat Flow(s),veh/h/ln	1235	0	1673	1280	0	1692	326	1777	1854	536	1777	1838
Q Serve(g_s), s	7.4	0.0	5.3	2.9	0.0	7.2	33.0	11.7	11.7	14.6	22.0	22.3
Cycle Q Clear(g_c), s	14.6	0.0	5.3	8.2	0.0	7.2	55.3	11.7	11.7	26.4	22.0	22.3
Prop In Lane	1.00		0.65	1.00		0.59	1.00		0.05	1.00		0.10
Lane Grp Cap(c), veh/h	211	0	311	243	0	315	221	1209	1261	375	1209	1251
V/C Ratio(X)	0.49	0.00	0.36	0.19	0.00	0.48	0.58	0.43	0.43	0.38	0.64	0.64
Avail Cap(c_a), veh/h	228	0	335	261	0	338	221	1209	1261	375	1209	1251
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.29	0.29	0.29
Uniform Delay (d), s/veh	39.3	0.0	32.0	35.6	0.0	32.7	23.8	6.5	6.5	12.4	8.1	8.2
Incr Delay (d2), s/veh	1.8	0.0	0.7	0.4	0.0	1.1	10.6	1.1	1.1	0.8	0.8	0.7
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(95%),veh/ln	4.2	0.0	3.9	1.7	0.0	5.4	5.2	6.5	6.7	2.7	8.5	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.1	0.0	32.7	35.9	0.0	33.9	34.4	7.6	7.5	13.2	8.9	8.9
LnGrp LOS	D	A	C	D	A	C	C	A	A	B	A	A
Approach Vol, veh/h		217			198			1181			1715	
Approach Delay, s/veh		36.7			34.4			10.5			9.2	
Approach LOS		D			C			B			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		67.2		22.8		67.2		22.8				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		60.0		18.0		60.0		18.0				
Max Q Clear Time (g_c+I1), s		57.3		16.6		28.4		10.2				
Green Ext Time (p_c), s		1.9		0.1		15.7		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			13.0									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	74	22	3	44	191	28
Future Vol, veh/h	74	22	3	44	191	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	24	3	49	212	31

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	259	228	243	0	-	0
Stage 1	228	-	-	-	-	-
Stage 2	31	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	719	811	1322	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	988	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	718	811	1322	-	-	-
Mov Cap-2 Maneuver	716	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	988	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1322	-	716	811	-	-
HCM Lane V/C Ratio	0.003	-	0.115	0.03	-	-
HCM Control Delay (s)	7.7	-	10.7	9.6	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	100	2	16	145	39	85
Future Vol, veh/h	100	2	16	145	39	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	2	18	161	43	94

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	207	90	137	0	-	0
Stage 1	90	-	-	-	-	-
Stage 2	117	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	772	967	1446	-	-	-
Stage 1	933	-	-	-	-	-
Stage 2	896	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	763	967	1446	-	-	-
Mov Cap-2 Maneuver	763	-	-	-	-	-
Stage 1	922	-	-	-	-	-
Stage 2	896	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1446	-	763	967	-	-
HCM Lane V/C Ratio	0.012	-	0.146	0.002	-	-
HCM Control Delay (s)	7.5	-	10.5	8.7	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.5	0	-	-

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	2	12	12	17	36	9	57	54	50	3	19	1
Future Vol, veh/h	2	12	12	17	36	9	57	54	50	3	19	1
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	13	13	19	40	10	63	60	56	3	21	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	50	0	0	26	0	0	118	112	20	165	113	45
Stage 1	-	-	-	-	-	-	24	24	-	83	83	-
Stage 2	-	-	-	-	-	-	94	88	-	82	30	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1557	-	-	1588	-	-	858	778	1058	800	777	1025
Stage 1	-	-	-	-	-	-	994	875	-	925	826	-
Stage 2	-	-	-	-	-	-	913	822	-	926	870	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1557	-	-	1588	-	-	831	768	1058	706	767	1025
Mov Cap-2 Maneuver	-	-	-	-	-	-	831	768	-	706	767	-
Stage 1	-	-	-	-	-	-	993	874	-	924	816	-
Stage 2	-	-	-	-	-	-	878	812	-	816	869	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	2	10.2	9.9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	865	1557	-	-	1588	-	-	767
HCM Lane V/C Ratio	0.207	0.001	-	-	0.012	-	-	0.033
HCM Control Delay (s)	10.2	7.3	0	-	7.3	0	-	9.9
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	38	35	52	23	6	36	35	32	9	57	2
Future Vol, veh/h	1	38	35	52	23	6	36	35	32	9	57	2
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	42	39	58	26	7	40	39	36	10	63	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	33	0	0	81	0	0	242	213	62	247	229	30
Stage 1	-	-	-	-	-	-	64	64	-	146	146	-
Stage 2	-	-	-	-	-	-	178	149	-	101	83	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1579	-	-	1517	-	-	712	684	1003	707	671	1044
Stage 1	-	-	-	-	-	-	947	842	-	857	776	-
Stage 2	-	-	-	-	-	-	824	774	-	905	826	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1579	-	-	1517	-	-	637	657	1003	631	644	1044
Mov Cap-2 Maneuver	-	-	-	-	-	-	637	657	-	631	644	-
Stage 1	-	-	-	-	-	-	946	841	-	856	746	-
Stage 2	-	-	-	-	-	-	723	744	-	832	825	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	4.8	10.9	11.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	727	1579	-	-	1517	-	-	650
HCM Lane V/C Ratio	0.157	0.001	-	-	0.038	-	-	0.116
HCM Control Delay (s)	10.9	7.3	0	-	7.5	0	-	11.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0.4

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	89	36	2	38	8	12	44	11	23	18	18
Future Vol, veh/h	6	89	36	2	38	8	12	44	11	23	18	18
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	99	40	2	42	9	13	49	12	26	20	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	189	169	30	233	173	55	40	0	0	61	0	0
Stage 1	82	82	-	81	81	-	-	-	-	-	-	-
Stage 2	107	87	-	152	92	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	771	724	1044	722	720	1012	1570	-	-	1542	-	-
Stage 1	926	827	-	927	828	-	-	-	-	-	-	-
Stage 2	898	823	-	850	819	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	715	705	1044	608	701	1012	1570	-	-	1542	-	-
Mov Cap-2 Maneuver	715	705	-	608	701	-	-	-	-	-	-	-
Stage 1	918	813	-	919	821	-	-	-	-	-	-	-
Stage 2	837	816	-	706	805	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	10.3	1.3	2.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1570	-	-	775	734	1542	-	-
HCM Lane V/C Ratio	0.008	-	-	0.188	0.073	0.017	-	-
HCM Control Delay (s)	7.3	0	-	10.7	10.3	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	19	64	23	6	95	24	38	28	7	14	50	12
Future Vol, veh/h	19	64	23	6	95	24	38	28	7	14	50	12
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	71	26	7	106	27	42	31	8	16	56	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	281	218	63	262	220	35	69	0	0	39	0	0
Stage 1	95	95	-	119	119	-	-	-	-	-	-	-
Stage 2	186	123	-	143	101	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	671	680	1002	691	678	1038	1532	-	-	1571	-	-
Stage 1	912	816	-	885	797	-	-	-	-	-	-	-
Stage 2	816	794	-	860	811	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	556	653	1002	599	652	1038	1532	-	-	1571	-	-
Mov Cap-2 Maneuver	556	653	-	599	652	-	-	-	-	-	-	-
Stage 1	886	807	-	860	775	-	-	-	-	-	-	-
Stage 2	668	772	-	756	802	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.4	11.4	3.9	1.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1532	-	-	683	699	1571	-	-
HCM Lane V/C Ratio	0.028	-	-	0.172	0.199	0.01	-	-
HCM Control Delay (s)	7.4	0	-	11.4	11.4	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.7	0	-	-

Intersection	
Int Delay, s/veh	18.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	115	18	68	16	6	12	23	718	31	17	720	38
Future Vol, veh/h	115	18	68	16	6	12	23	718	31	17	720	38
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	250	-	-	250	-	-	250	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	128	20	76	18	7	13	26	798	34	19	800	42

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1314	1743	421	1315	1747	416	842	0	0	832	0	0
Stage 1	859	859	-	867	867	-	-	-	-	-	-	-
Stage 2	455	884	-	448	880	-	-	-	-	-	-	-
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	~ 116	86	581	116	85	585	789	-	-	796	-	-
Stage 1	317	371	-	314	368	-	-	-	-	-	-	-
Stage 2	554	362	-	560	363	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 102	81	581	78	80	585	789	-	-	796	-	-
Mov Cap-2 Maneuver	~ 102	81	-	78	80	-	-	-	-	-	-	-
Stage 1	307	362	-	304	356	-	-	-	-	-	-	-
Stage 2	514	350	-	449	354	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	154.4	44.2	0.3	0.2
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	789	-	-	102	253	78	188	796	-	-
HCM Lane V/C Ratio	0.032	-	-	1.253	0.378	0.228	0.106	0.024	-	-
HCM Control Delay (s)	9.7	-	-	249.2	27.6	64.3	26.4	9.6	-	-
HCM Lane LOS	A	-	-	F	D	F	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	8.7	1.7	0.8	0.4	0.1	-	-

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

Intersection	
Int Delay, s/veh	82.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	12	43	43	19	38	71	924	25	52	1218	114
Future Vol, veh/h	73	12	43	43	19	38	71	924	25	52	1218	114
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	150	-	-	150	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	81	13	48	48	21	42	79	1027	28	58	1353	127

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2215	2746	740	1998	2795	528	1480	0	0	1055	0	0
Stage 1	1533	1533	-	1199	1199	-	-	-	-	-	-	-
Stage 2	682	1213	-	799	1596	-	-	-	-	-	-	-
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	~ 24	20	359	~ 35	~ 18	495	451	-	-	656	-	-
Stage 1	122	177	-	197	257	-	-	-	-	-	-	-
Stage 2	406	253	-	345	165	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	15	359	~ 6	~ 14	495	451	-	-	656	-	-
Mov Cap-2 Maneuver	-	15	-	~ 6	~ 14	-	-	-	-	-	-	-
Stage 1	101	161	-	163	212	-	-	-	-	-	-	-
Stage 2	276	209	-	250	150	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s		$ 2148.1	1	0.4
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	451	-	-	-	60	6	40	656	-	-
HCM Lane V/C Ratio	0.175	-	-	-	1.019	7.963	1.583	0.088	-	-
HCM Control Delay (s)	14.7	-	-	-	235.1	$ 4317.5	$ 511.5	11	-	-
HCM Lane LOS	B	-	-	-	F	F	F	B	-	-
HCM 95th %tile Q(veh)	0.6	-	-	-	4.9	7.6	6.5	0.3	-	-

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

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	15	3	4	5	6	1	51	11	2	50	4
Future Vol, veh/h	10	15	3	4	5	6	1	51	11	2	50	4
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	17	3	4	6	7	1	57	12	2	56	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	134	133	58	137	129	63	60	0	0	69	0	0
Stage 1	62	62	-	65	65	-	-	-	-	-	-	-
Stage 2	72	71	-	72	64	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	838	758	1008	834	762	1002	1544	-	-	1532	-	-
Stage 1	949	843	-	946	841	-	-	-	-	-	-	-
Stage 2	938	836	-	938	842	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	826	756	1008	816	760	1002	1544	-	-	1532	-	-
Mov Cap-2 Maneuver	826	756	-	816	760	-	-	-	-	-	-	-
Stage 1	948	842	-	945	840	-	-	-	-	-	-	-
Stage 2	925	835	-	915	841	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.3	0.1	0.3
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1544	-	-	802	859	1532	-	-
HCM Lane V/C Ratio	0.001	-	-	0.039	0.019	0.001	-	-
HCM Control Delay (s)	7.3	0	-	9.7	9.3	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	9	2	11	15	4	3	62	7	7	61	10
Future Vol, veh/h	7	9	2	11	15	4	3	62	7	7	61	10
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	10	2	12	17	4	3	69	8	8	68	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	180	173	74	175	174	73	79	0	0	77	0	0
Stage 1	90	90	-	79	79	-	-	-	-	-	-	-
Stage 2	90	83	-	96	95	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	782	720	988	788	719	989	1519	-	-	1522	-	-
Stage 1	917	820	-	930	829	-	-	-	-	-	-	-
Stage 2	917	826	-	911	816	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	760	714	988	773	713	989	1519	-	-	1522	-	-
Mov Cap-2 Maneuver	760	714	-	773	713	-	-	-	-	-	-	-
Stage 1	915	815	-	928	827	-	-	-	-	-	-	-
Stage 2	893	824	-	892	811	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9.9	0.3	0.7
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1519	-	-	755	763	1522	-	-
HCM Lane V/C Ratio	0.002	-	-	0.026	0.044	0.005	-	-
HCM Control Delay (s)	7.4	0	-	9.9	9.9	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	18	6	33	52	1
Future Vol, veh/h	14	18	6	33	52	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	20	7	37	58	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	143	26	0	0	44	0
Stage 1	26	-	-	-	-	-
Stage 2	117	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	850	1050	-	-	1564	-
Stage 1	997	-	-	-	-	-
Stage 2	908	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	819	1050	-	-	1564	-
Mov Cap-2 Maneuver	819	-	-	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	874	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	935	1564	-
HCM Lane V/C Ratio	-	-	0.038	0.037	-
HCM Control Delay (s)	-	-	9	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	7.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	52	4	21	33	1
Future Vol, veh/h	39	52	4	21	33	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	58	4	23	37	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	91	16	0	0	27	0
Stage 1	16	-	-	-	-	-
Stage 2	75	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	909	1063	-	-	1587	-
Stage 1	1007	-	-	-	-	-
Stage 2	948	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	888	1063	-	-	1587	-
Mov Cap-2 Maneuver	888	-	-	-	-	-
Stage 1	1007	-	-	-	-	-
Stage 2	926	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	7.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	980	1587	-
HCM Lane V/C Ratio	-	-	0.103	0.023	-
HCM Control Delay (s)	-	-	9.1	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	96	26	658	895	14
Future Vol, veh/h	10	96	26	658	895	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	107	29	731	994	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1426	505	1010	0	-	0
Stage 1	1002	-	-	-	-	-
Stage 2	424	-	-	-	-	-
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	*201	512	682	-	-	-
Stage 1	*316	-	-	-	-	-
Stage 2	*779	-	-	-	-	-
Platoon blocked, %	1			-	-	-
Mov Cap-1 Maneuver	*193	512	682	-	-	-
Mov Cap-2 Maneuver	*193	-	-	-	-	-
Stage 1	*302	-	-	-	-	-
Stage 2	*779	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.9	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	682	-	193	512	-	-
HCM Lane V/C Ratio	0.042	-	0.058	0.208	-	-
HCM Control Delay (s)	10.5	-	24.8	13.9	-	-
HCM Lane LOS	B	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	0.8	-	-

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

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	60	74	1049	1085	40
Future Vol, veh/h	7	60	74	1049	1085	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	-	250
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	67	82	1166	1206	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1953	603	1250	0	-	0
Stage 1	1206	-	-	-	-	-
Stage 2	747	-	-	-	-	-
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	*94	442	553	-	-	-
Stage 1	*246	-	-	-	-	-
Stage 2	*627	-	-	-	-	-
Platoon blocked, %	1			-	-	-
Mov Cap-1 Maneuver	*81	442	553	-	-	-
Mov Cap-2 Maneuver	*194	-	-	-	-	-
Stage 1	*210	-	-	-	-	-
Stage 2	*627	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.6	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	553	-	194	442	-	-
HCM Lane V/C Ratio	0.149	-	0.04	0.151	-	-
HCM Control Delay (s)	12.6	-	24.3	14.6	-	-
HCM Lane LOS	B	-	C	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.1	0.5	-	-

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

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	20	2	5	7	6	1	51	6	2	52	2
Future Vol, veh/h	6	20	2	5	7	6	1	51	6	2	52	2
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	22	2	6	8	7	1	57	7	2	58	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	133	129	59	138	127	61	60	0	0	64	0	0
Stage 1	63	63	-	63	63	-	-	-	-	-	-	-
Stage 2	70	66	-	75	64	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	839	762	1007	833	764	1004	1544	-	-	1538	-	-
Stage 1	948	842	-	948	842	-	-	-	-	-	-	-
Stage 2	940	840	-	934	842	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	826	760	1007	811	762	1004	1544	-	-	1538	-	-
Mov Cap-2 Maneuver	826	760	-	811	762	-	-	-	-	-	-	-
Stage 1	947	841	-	947	841	-	-	-	-	-	-	-
Stage 2	924	839	-	906	841	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	9.4	0.1	0.3
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1544	-	-	787	844	1538	-	-
HCM Lane V/C Ratio	0.001	-	-	0.04	0.024	0.001	-	-
HCM Control Delay (s)	7.3	0	-	9.8	9.4	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	4	13	1	7	20	4	2	65	4	6	63	6
Future Vol, veh/h	4	13	1	7	20	4	2	65	4	6	63	6
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	14	1	8	22	4	2	72	4	7	70	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	179	168	74	173	169	74	77	0	0	76	0	0
Stage 1	88	88	-	78	78	-	-	-	-	-	-	-
Stage 2	91	80	-	95	91	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	783	725	988	790	724	988	1522	-	-	1523	-	-
Stage 1	920	822	-	931	830	-	-	-	-	-	-	-
Stage 2	916	828	-	912	820	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	758	721	988	773	720	988	1522	-	-	1523	-	-
Mov Cap-2 Maneuver	758	721	-	773	720	-	-	-	-	-	-	-
Stage 1	919	818	-	930	829	-	-	-	-	-	-	-
Stage 2	887	827	-	890	816	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	10	0.2	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1522	-	-	740	758	1523	-	-
HCM Lane V/C Ratio	0.001	-	-	0.027	0.045	0.004	-	-
HCM Control Delay (s)	7.4	0	-	10	10	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	28	3	1	6	22	1	30	6	6	49	4
Future Vol, veh/h	6	28	3	1	6	22	1	30	6	6	49	4
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	31	3	1	7	24	1	33	7	7	54	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	124	112	56	126	111	37	58	0	0	40	0	0
Stage 1	70	70	-	39	39	-	-	-	-	-	-	-
Stage 2	54	42	-	87	72	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	850	778	1011	848	779	1035	1546	-	-	1570	-	-
Stage 1	940	837	-	976	862	-	-	-	-	-	-	-
Stage 2	958	860	-	921	835	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	821	773	1011	816	774	1035	1546	-	-	1570	-	-
Mov Cap-2 Maneuver	821	773	-	816	774	-	-	-	-	-	-	-
Stage 1	939	833	-	975	861	-	-	-	-	-	-	-
Stage 2	927	859	-	879	831	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	8.9	0.2	0.7
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1546	-	-	796	959	1570	-	-
HCM Lane V/C Ratio	0.001	-	-	0.052	0.034	0.004	-	-
HCM Control Delay (s)	7.3	0	-	9.8	8.9	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	18	2	1	17	14	3	53	5	17	44	11
Future Vol, veh/h	4	18	2	1	17	14	3	53	5	17	44	11
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	20	2	1	19	16	3	59	6	19	49	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	179	164	55	172	167	62	61	0	0	65	0	0
Stage 1	93	93	-	68	68	-	-	-	-	-	-	-
Stage 2	86	71	-	104	99	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	783	729	1012	791	726	1003	1542	-	-	1537	-	-
Stage 1	914	818	-	942	838	-	-	-	-	-	-	-
Stage 2	922	836	-	902	813	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	747	718	1012	763	715	1003	1542	-	-	1537	-	-
Mov Cap-2 Maneuver	747	718	-	763	715	-	-	-	-	-	-	-
Stage 1	912	807	-	940	836	-	-	-	-	-	-	-
Stage 2	885	834	-	866	802	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	9.6	0.4	1.7
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1542	-	-	741	820	1537	-	-
HCM Lane V/C Ratio	0.002	-	-	0.036	0.043	0.012	-	-
HCM Control Delay (s)	7.3	0	-	10	9.6	7.4	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	24	11	14	56	4
Future Vol, veh/h	8	24	11	14	56	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	27	12	16	62	4

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	148	20	0	0	28	0
Stage 1	20	-	-	-	-	-
Stage 2	128	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	844	1058	-	-	1585	-
Stage 1	1003	-	-	-	-	-
Stage 2	898	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	811	1058	-	-	1585	-
Mov Cap-2 Maneuver	811	-	-	-	-	-
Stage 1	1003	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	6.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	983	1585	-
HCM Lane V/C Ratio	-	-	0.036	0.039	-
HCM Control Delay (s)	-	-	8.8	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	6.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	45	7	18	40	11
Future Vol, veh/h	19	45	7	18	40	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	50	8	20	44	12

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	118	18	0	0	28	0
Stage 1	18	-	-	-	-	-
Stage 2	100	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	878	1061	-	-	1585	-
Stage 1	1005	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	853	1061	-	-	1585	-
Mov Cap-2 Maneuver	853	-	-	-	-	-
Stage 1	1005	-	-	-	-	-
Stage 2	898	-	-	-	-	-

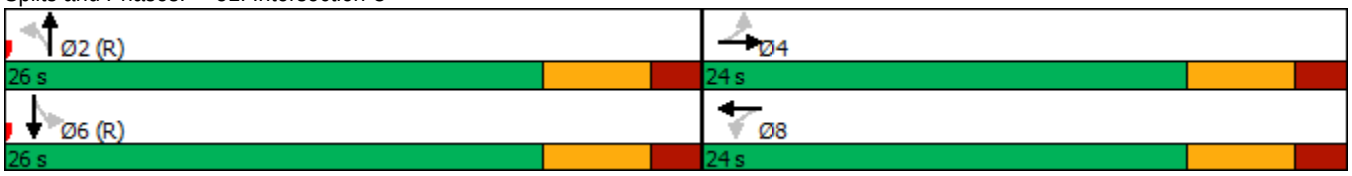
Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	5.8
HCM LOS	A		

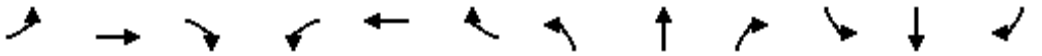
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	989	1585	-
HCM Lane V/C Ratio	-	-	0.072	0.028	-
HCM Control Delay (s)	-	-	8.9	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	None	C-Max	None
Maximum Split (s)	26	24	26	24
Maximum Split (%)	52.0%	48.0%	52.0%	48.0%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	0	26	0	26
End Time (s)	26	0	26	0
Yield/Force Off (s)	20	44	20	44
Yield/Force Off 170(s)	9	33	9	33
Local Start Time (s)	0	26	0	26
Local Yield (s)	20	44	20	44
Local Yield 170(s)	9	33	9	33

Intersection Summary	
Cycle Length	50
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	

Splits and Phases: 51: Intersection U





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	0	78	59	0	14	30	610	18	13	1025	6
Future Volume (veh/h)	10	0	78	59	0	14	30	610	18	13	1025	6
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	11	0	87	66	0	16	33	678	20	14	1139	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	314	0	207	249	0	207	369	2219	65	549	2279	14
Arrive On Green	0.13	0.00	0.13	0.13	0.00	0.13	0.63	0.63	0.63	0.63	0.63	0.63
Sat Flow, veh/h	1397	0	1585	1310	0	1585	491	3525	104	748	3621	22
Grp Volume(v), veh/h	11	0	87	66	0	16	33	342	356	14	559	587
Grp Sat Flow(s),veh/h/ln	1397	0	1585	1310	0	1585	491	1777	1852	748	1777	1866
Q Serve(g_s), s	0.3	0.0	2.5	2.4	0.0	0.4	1.9	4.4	4.4	0.4	8.5	8.5
Cycle Q Clear(g_c), s	0.8	0.0	2.5	5.0	0.0	0.4	10.5	4.4	4.4	4.9	8.5	8.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.01
Lane Grp Cap(c), veh/h	314	0	207	249	0	207	369	1118	1166	549	1118	1175
V/C Ratio(X)	0.04	0.00	0.42	0.27	0.00	0.08	0.09	0.31	0.31	0.03	0.50	0.50
Avail Cap(c_a), veh/h	635	0	571	550	0	571	369	1118	1166	549	1118	1175
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	20.0	22.3	0.0	19.1	7.8	4.2	4.3	5.4	5.0	5.0
Incr Delay (d2), s/veh	0.0	0.0	1.4	0.6	0.0	0.2	0.5	0.7	0.7	0.1	1.6	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.0	1.7	1.3	0.0	0.3	0.3	1.6	1.6	0.1	3.2	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.5	0.0	21.4	22.8	0.0	19.2	8.3	4.9	4.9	5.4	6.6	6.5
LnGrp LOS	B	A	C	C	A	B	A	A	A	A	A	A
Approach Vol, veh/h		98			82			731			1160	
Approach Delay, s/veh		21.1			22.1			5.1			6.6	
Approach LOS		C			C			A			A	

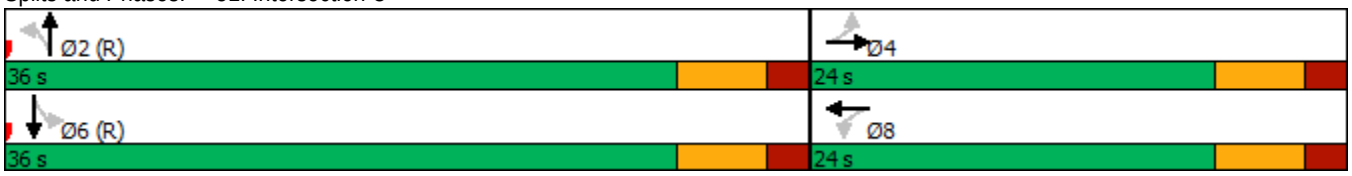
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.5		12.5		37.5		12.5				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		20.0		18.0		20.0		18.0				
Max Q Clear Time (g_c+I1), s		12.5		4.5		10.5		7.0				
Green Ext Time (p_c), s		2.5		0.3		4.7		0.1				

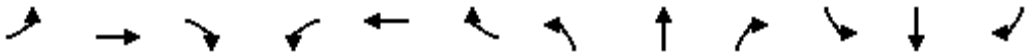
Intersection Summary												
HCM 6th Ctrl Delay			7.3									
HCM 6th LOS			A									

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	None	C-Max	None
Maximum Split (s)	36	24	36	24
Maximum Split (%)	60.0%	40.0%	60.0%	40.0%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	11	47	11	47
End Time (s)	47	11	47	11
Yield/Force Off (s)	41	5	41	5
Yield/Force Off 170(s)	30	54	30	54
Local Start Time (s)	0	36	0	36
Local Yield (s)	30	54	30	54
Local Yield 170(s)	19	43	19	43

Intersection Summary		
Cycle Length	60	
Control Type	Actuated-Coordinated	
Natural Cycle	60	
Offset: 11 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		

Splits and Phases: 51: Intersection U





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	0	77	64	0	54	94	1071	56	43	993	19
Future Volume (veh/h)	17	0	77	64	0	54	94	1071	56	43	993	19
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	19	0	86	71	0	60	104	1190	62	48	1103	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	259	0	218	235	0	218	376	2276	119	414	2363	45
Arrive On Green	0.14	0.00	0.14	0.14	0.00	0.14	1.00	1.00	1.00	0.66	0.66	0.66
Sat Flow, veh/h	1343	0	1585	1311	0	1585	501	3436	179	444	3567	68
Grp Volume(v), veh/h	19	0	86	71	0	60	104	615	637	48	549	575
Grp Sat Flow(s),veh/h/ln	1343	0	1585	1311	0	1585	501	1777	1838	444	1777	1858
Q Serve(g_s), s	0.8	0.0	3.0	3.1	0.0	2.0	4.1	0.0	0.0	2.5	9.1	9.1
Cycle Q Clear(g_c), s	2.8	0.0	3.0	6.1	0.0	2.0	13.2	0.0	0.0	2.5	9.1	9.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.04
Lane Grp Cap(c), veh/h	259	0	218	235	0	218	376	1177	1218	414	1177	1231
V/C Ratio(X)	0.07	0.00	0.39	0.30	0.00	0.28	0.28	0.52	0.52	0.12	0.47	0.47
Avail Cap(c_a), veh/h	477	0	476	449	0	476	376	1177	1218	414	1177	1231
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.63	0.63	0.63	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	0.0	23.6	26.4	0.0	23.2	1.5	0.0	0.0	3.8	4.9	4.9
Incr Delay (d2), s/veh	0.1	0.0	1.2	0.7	0.0	0.7	1.1	1.0	1.0	0.6	1.3	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(95%),veh/ln	0.4	0.0	2.0	1.7	0.0	1.4	0.2	0.6	0.6	0.3	3.7	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.6	0.0	24.8	27.1	0.0	23.9	2.7	1.0	1.0	4.4	6.3	6.2
LnGrp LOS	C	A	C	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		105			131			1356			1172	
Approach Delay, s/veh		24.7			25.6			1.2			6.2	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.7		14.3		45.7		14.3				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		30.0		18.0		30.0		18.0				
Max Q Clear Time (g_c+I1), s		15.2		5.0		11.1		8.1				
Green Ext Time (p_c), s		7.7		0.4		7.3		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			5.3									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	16	2	6	11	1	10
Future Vol, veh/h	16	2	6	11	1	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	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	2	7	12	1	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	20	0	45	19
Stage 1	-	-	-	-	19	-
Stage 2	-	-	-	-	26	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1596	-	965	1059
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	997	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1596	-	961	1059
Mov Cap-2 Maneuver	-	-	-	-	961	-
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	993	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1049	-	-	1596	-
HCM Lane V/C Ratio	0.012	-	-	0.004	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	58	8	39	71	9	36
Future Vol, veh/h	58	8	39	71	9	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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	9	43	79	10	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	73	0	234	69
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	165	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1527	-	754	994
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	864	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1527	-	732	994
Mov Cap-2 Maneuver	-	-	-	-	732	-
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	839	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	928	-	-	1527	-
HCM Lane V/C Ratio	0.054	-	-	0.028	-
HCM Control Delay (s)	9.1	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	6	6	34	14	4	0	65	32	5	0	54	0
Future Vol, veh/h	6	6	34	14	4	0	65	32	5	0	54	0
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	7	38	16	4	0	72	36	6	0	60	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	245	246	60	266	243	39	60	0	0	42	0	0
Stage 1	60	60	-	183	183	-	-	-	-	-	-	-
Stage 2	185	186	-	83	60	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	709	656	1005	687	659	1033	1544	-	-	1567	-	-
Stage 1	951	845	-	819	748	-	-	-	-	-	-	-
Stage 2	817	746	-	925	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	679	625	1005	632	627	1033	1544	-	-	1567	-	-
Mov Cap-2 Maneuver	679	625	-	632	627	-	-	-	-	-	-	-
Stage 1	905	845	-	780	712	-	-	-	-	-	-	-
Stage 2	773	710	-	883	845	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	10.9	4.7	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1544	-	-	880	631	1567	-	-
HCM Lane V/C Ratio	0.047	-	-	0.058	0.032	-	-	-
HCM Control Delay (s)	7.4	0	-	9.3	10.9	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	4	66	9	11	0	40	58	14	0	46	0
Future Vol, veh/h	4	4	66	9	11	0	40	58	14	0	46	0
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	73	10	12	0	44	64	16	0	51	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	217	219	51	250	211	72	51	0	0	80	0	0
Stage 1	51	51	-	160	160	-	-	-	-	-	-	-
Stage 2	166	168	-	90	51	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	739	679	1017	703	686	990	1555	-	-	1518	-	-
Stage 1	962	852	-	842	766	-	-	-	-	-	-	-
Stage 2	836	759	-	917	852	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	712	659	1017	634	665	990	1555	-	-	1518	-	-
Mov Cap-2 Maneuver	712	659	-	634	665	-	-	-	-	-	-	-
Stage 1	933	852	-	817	743	-	-	-	-	-	-	-
Stage 2	798	736	-	846	852	-	-	-	-	-	-	-

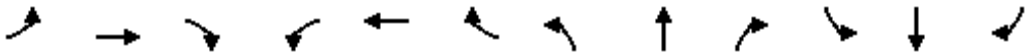
Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	10.7	2.6	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1555	-	-	966	651	1518	-	-
HCM Lane V/C Ratio	0.029	-	-	0.085	0.034	-	-	-
HCM Control Delay (s)	7.4	0	-	9.1	10.7	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.1	0	-	-

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	Max	C-Max	Max	C-Max
Maximum Split (s)	29	61	29	61
Maximum Split (%)	32.2%	67.8%	32.2%	67.8%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	40	69	40	69
End Time (s)	69	40	69	40
Yield/Force Off (s)	63	34	63	34
Yield/Force Off 170(s)	52	23	52	23
Local Start Time (s)	61	0	61	0
Local Yield (s)	84	55	84	55
Local Yield 170(s)	73	44	73	44

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	50
Offset: 69 (77%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 54: Intersection X



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	428	7	22	761	135	21	16	62	76	6	42
Future Volume (veh/h)	32	428	7	22	761	135	21	16	62	76	6	42
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	36	476	8	24	846	150	23	18	69	84	7	47
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	340	2186	37	583	1843	327	390	87	332	360	54	360
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	565	3576	60	911	3016	535	1350	339	1298	1310	210	1407
Grp Volume(v), veh/h	36	236	248	24	498	498	23	0	87	84	0	54
Grp Sat Flow(s),veh/h/ln	565	1777	1860	911	1777	1774	1350	0	1637	1310	0	1617
Q Serve(g_s), s	3.3	5.4	5.4	1.1	13.6	13.6	1.2	0.0	3.8	4.8	0.0	2.3
Cycle Q Clear(g_c), s	17.0	5.4	5.4	6.5	13.6	13.6	3.5	0.0	3.8	8.6	0.0	2.3
Prop In Lane	1.00		0.03	1.00		0.30	1.00		0.79	1.00		0.87
Lane Grp Cap(c), veh/h	340	1086	1136	583	1086	1084	390	0	418	360	0	413
V/C Ratio(X)	0.11	0.22	0.22	0.04	0.46	0.46	0.06	0.00	0.21	0.23	0.00	0.13
Avail Cap(c_a), veh/h	340	1086	1136	583	1086	1084	390	0	418	360	0	413
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	7.8	7.9	9.3	9.5	9.5	27.2	0.0	26.3	29.7	0.0	25.8
Incr Delay (d2), s/veh	0.6	0.5	0.4	0.1	1.4	1.4	0.3	0.0	1.1	1.5	0.0	0.7
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(95%),veh/ln	0.8	3.3	3.4	0.4	8.2	8.2	0.7	0.0	2.8	3.0	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.7	8.3	8.3	9.4	10.9	10.9	27.4	0.0	27.5	31.2	0.0	26.5
LnGrp LOS	B	A	A	A	B	B	C	A	C	C	A	C
Approach Vol, veh/h		520			1020			110			138	
Approach Delay, s/veh		8.7			10.8			27.5			29.4	
Approach LOS		A			B			C			C	

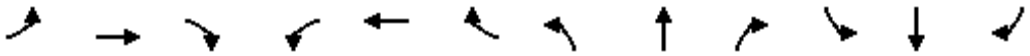
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		29.0		61.0		29.0		61.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		23.0		55.0		23.0		55.0				
Max Q Clear Time (g_c+I1), s		5.8		19.0		10.6		15.6				
Green Ext Time (p_c), s		0.4		3.1		0.4		7.1				

Intersection Summary												
HCM 6th Ctrl Delay			12.7									
HCM 6th LOS			B									

Phase Number	2	4	6	8
Movement	NBTL	EBTL	SBTL	WBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	Max	C-Max	Max	C-Max
Maximum Split (s)	27	63	27	63
Maximum Split (%)	30.0%	70.0%	30.0%	70.0%
Minimum Split (s)	24	24	24	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	48	75	48	75
End Time (s)	75	48	75	48
Yield/Force Off (s)	69	42	69	42
Yield/Force Off 170(s)	58	31	58	31
Local Start Time (s)	63	0	63	0
Local Yield (s)	84	57	84	57
Local Yield 170(s)	73	46	73	46

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	55
Offset: 75 (83%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 54: Intersection X



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	957	21	62	595	111	13	10	40	176	16	65
Future Volume (veh/h)	97	957	21	62	595	111	13	10	40	176	16	65
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	108	1063	23	69	661	123	14	11	44	196	18	72
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	445	2252	49	328	1894	352	327	76	305	359	76	305
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	690	3556	77	519	2991	556	1307	327	1308	1349	327	1308
Grp Volume(v), veh/h	108	531	555	69	392	392	14	0	55	196	0	90
Grp Sat Flow(s),veh/h/ln	690	1777	1857	519	1777	1770	1307	0	1635	1349	0	1635
Q Serve(g_s), s	7.9	14.1	14.1	7.2	9.4	9.4	0.8	0.0	2.4	12.1	0.0	4.0
Cycle Q Clear(g_c), s	17.2	14.1	14.1	21.3	9.4	9.4	4.8	0.0	2.4	14.5	0.0	4.0
Prop In Lane	1.00		0.04	1.00		0.31	1.00		0.80	1.00		0.80
Lane Grp Cap(c), veh/h	445	1125	1176	328	1125	1121	327	0	381	359	0	381
V/C Ratio(X)	0.24	0.47	0.47	0.21	0.35	0.35	0.04	0.00	0.14	0.55	0.00	0.24
Avail Cap(c_a), veh/h	445	1125	1176	328	1125	1121	327	0	381	359	0	381
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.8	8.6	8.6	14.2	7.8	7.8	29.9	0.0	27.4	33.1	0.0	28.0
Incr Delay (d2), s/veh	1.3	1.4	1.4	1.5	0.9	0.9	0.2	0.0	0.8	5.9	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	8.2	8.5	1.6	5.6	5.5	0.5	0.0	1.8	7.9	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	10.1	10.0	15.7	8.6	8.6	30.2	0.0	28.2	39.0	0.0	29.4
LnGrp LOS	B	B	A	B	A	A	C	A	C	D	A	C
Approach Vol, veh/h		1194			853			69			286	
Approach Delay, s/veh		10.3			9.2			28.6			36.0	
Approach LOS		B			A			C			D	

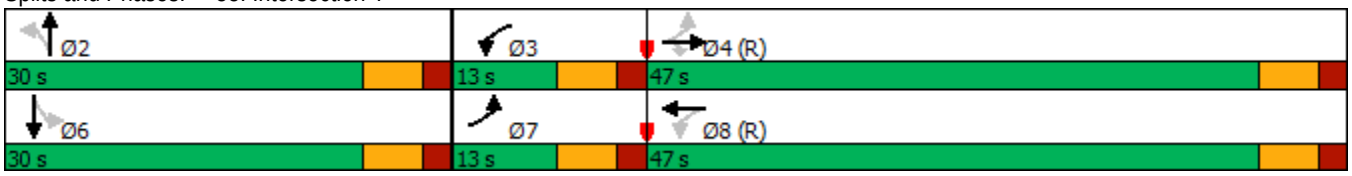
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		27.0		63.0		27.0		63.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		21.0		57.0		21.0		57.0				
Max Q Clear Time (g_c+I1), s		6.8		19.2		16.5		23.3				
Green Ext Time (p_c), s		0.2		9.0		0.5		6.0				

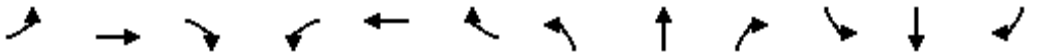
Intersection Summary												
HCM 6th Ctrl Delay			13.5									
HCM 6th LOS			B									

Phase Number	2	3	4	6	7	8
Movement	NBTL	WBL	EBTL	SBTL	EBL	WBTL
Lead/Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	30	13	47	30	13	47
Maximum Split (%)	33.3%	14.4%	52.2%	33.3%	14.4%	52.2%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	47	77	0	47	77	0
End Time (s)	77	0	47	77	0	47
Yield/Force Off (s)	71	84	41	71	84	41
Yield/Force Off 170(s)	60	84	30	60	84	30
Local Start Time (s)	47	77	0	47	77	0
Local Yield (s)	71	84	41	71	84	41
Local Yield 170(s)	60	84	30	60	84	30

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	60
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 55: Intersection Y





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	513	37	7	679	3	25	0	3	6	0	30
Future Volume (veh/h)	21	513	37	7	679	3	25	0	3	6	0	30
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	23	570	41	8	754	3	28	0	3	7	0	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	1860	829	448	1848	7	425	0	423	455	0	423
Arrive On Green	0.02	0.52	0.52	0.01	0.51	0.51	0.27	0.00	0.27	0.27	0.00	0.27
Sat Flow, veh/h	1781	3554	1585	1781	3630	14	1376	0	1585	1414	0	1585
Grp Volume(v), veh/h	23	570	41	8	369	388	28	0	3	7	0	33
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1868	1376	0	1585	1414	0	1585
Q Serve(g_s), s	0.5	8.2	1.1	0.2	11.6	11.6	1.4	0.0	0.1	0.3	0.0	1.4
Cycle Q Clear(g_c), s	0.5	8.2	1.1	0.2	11.6	11.6	2.8	0.0	0.1	0.5	0.0	1.4
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	392	1860	829	448	904	951	425	0	423	455	0	423
V/C Ratio(X)	0.06	0.31	0.05	0.02	0.41	0.41	0.07	0.00	0.01	0.02	0.00	0.08
Avail Cap(c_a), veh/h	488	1860	829	569	904	951	425	0	423	455	0	423
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.7	12.2	10.5	10.7	13.7	13.7	25.8	0.0	24.2	24.4	0.0	24.7
Incr Delay (d2), s/veh	0.1	0.4	0.1	0.0	1.4	1.3	0.3	0.0	0.0	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	5.3	0.7	0.1	7.8	8.1	0.9	0.0	0.1	0.2	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.8	12.6	10.6	10.7	15.1	15.0	26.1	0.0	24.3	24.5	0.0	25.1
LnGrp LOS	B	B	B	B	B	B	C	A	C	C	A	C
Approach Vol, veh/h		634			765			31			40	
Approach Delay, s/veh		12.4			15.0			25.9			25.0	
Approach LOS		B			B			C			C	

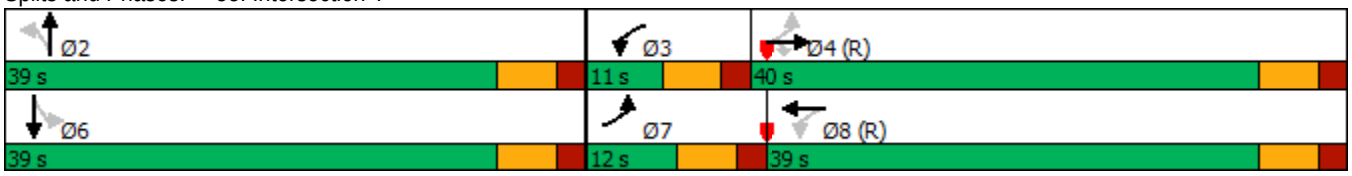
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		30.0	6.9	53.1		30.0	8.2	51.8				
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		24.0	7.0	41.0		24.0	7.0	41.0				
Max Q Clear Time (g_c+I1), s		4.8	2.2	10.2		3.4	2.5	13.6				
Green Ext Time (p_c), s		0.0	0.0	3.9		0.1	0.0	4.5				

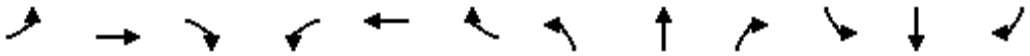
Intersection Summary												
HCM 6th Ctrl Delay			14.4									
HCM 6th LOS			B									

Phase Number	2	3	4	6	7	8
Movement	NBTL	WBL	EBTL	SBTL	EBL	WBTL
Lead/Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize		Yes	Yes		Yes	Yes
Recall Mode	Max	None	C-Max	Max	None	C-Max
Maximum Split (s)	39	11	40	39	12	39
Maximum Split (%)	43.3%	12.2%	44.4%	43.3%	13.3%	43.3%
Minimum Split (s)	24	11	24	24	11	24
Yellow Time (s)	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)	7		7	7		7
Flash Dont Walk (s)	11		11	11		11
Dual Entry	Yes	No	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	39	78	89	39	78	0
End Time (s)	78	89	39	78	0	39
Yield/Force Off (s)	72	83	33	72	84	33
Yield/Force Off 170(s)	61	83	22	61	84	22
Local Start Time (s)	39	78	89	39	78	0
Local Yield (s)	72	83	33	72	84	33
Local Yield 170(s)	61	83	22	61	84	22

Intersection Summary	
Cycle Length	90
Control Type	Actuated-Coordinated
Natural Cycle	60
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 55: Intersection Y





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	807	130	26	640	9	156	0	21	9	0	49
Future Volume (veh/h)	66	807	130	26	640	9	156	0	21	9	0	49
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	73	897	144	29	711	10	173	0	23	10	0	54
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	335	1438	641	241	1387	20	545	0	581	576	0	581
Arrive On Green	0.05	0.40	0.40	0.03	0.39	0.39	0.37	0.00	0.37	0.37	0.00	0.37
Sat Flow, veh/h	1781	3554	1585	1781	3588	50	1350	0	1585	1388	0	1585
Grp Volume(v), veh/h	73	897	144	29	352	369	173	0	23	10	0	54
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1861	1350	0	1585	1388	0	1585
Q Serve(g_s), s	2.2	18.1	5.4	0.9	13.6	13.6	8.7	0.0	0.8	0.4	0.0	2.0
Cycle Q Clear(g_c), s	2.2	18.1	5.4	0.9	13.6	13.6	10.7	0.0	0.8	1.3	0.0	2.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	335	1438	641	241	687	720	545	0	581	576	0	581
V/C Ratio(X)	0.22	0.62	0.22	0.12	0.51	0.51	0.32	0.00	0.04	0.02	0.00	0.09
Avail Cap(c_a), veh/h	371	1438	641	289	687	720	545	0	581	576	0	581
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.2	21.3	17.5	17.2	21.1	21.1	22.2	0.0	18.3	18.7	0.0	18.7
Incr Delay (d2), s/veh	0.3	2.0	0.8	0.2	2.7	2.6	1.5	0.0	0.1	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	11.6	3.5	0.6	9.6	9.9	5.2	0.0	0.6	0.3	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.5	23.4	18.4	17.4	23.8	23.7	23.7	0.0	18.4	18.8	0.0	19.0
LnGrp LOS	B	C	B	B	C	C	C	A	B	B	A	B
Approach Vol, veh/h		1114			750			196			64	
Approach Delay, s/veh		22.3			23.5			23.1			19.0	
Approach LOS		C			C			C			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		39.0	8.6	42.4		39.0	10.2	40.8				
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		33.0	5.0	34.0		33.0	6.0	33.0				
Max Q Clear Time (g_c+I1), s		12.7	2.9	20.1		4.0	4.2	15.6				
Green Ext Time (p_c), s		0.6	0.0	5.3		0.3	0.0	3.7				

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	482	655	3	2	8
Future Vol, veh/h	15	482	655	3	2	8
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	-	-	-	-	250
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	536	728	3	2	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	731	0	-	0	1032	366
Stage 1	-	-	-	-	730	-
Stage 2	-	-	-	-	302	-
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	869	-	-	-	*337	631
Stage 1	-	-	-	-	*438	-
Stage 2	-	-	-	-	*855	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	869	-	-	-	*330	631
Mov Cap-2 Maneuver	-	-	-	-	*404	-
Stage 1	-	-	-	-	*429	-
Stage 2	-	-	-	-	*855	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	869	-	-	-	404	631
HCM Lane V/C Ratio	0.019	-	-	-	0.006	0.014
HCM Control Delay (s)	9.2	-	-	-	14	10.8
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0	0

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

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	52	790	609	12	13	49
Future Vol, veh/h	52	790	609	12	13	49
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	-	-	-	-	250
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	58	878	677	13	14	54

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	690	0	-	0	1239	345
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	555	-
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	900	-	-	-	*344	651
Stage 1	-	-	-	-	*462	-
Stage 2	-	-	-	-	*727	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	900	-	-	-	*322	651
Mov Cap-2 Maneuver	-	-	-	-	*404	-
Stage 1	-	-	-	-	*432	-
Stage 2	-	-	-	-	*727	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	11.7
HCM LOS			B

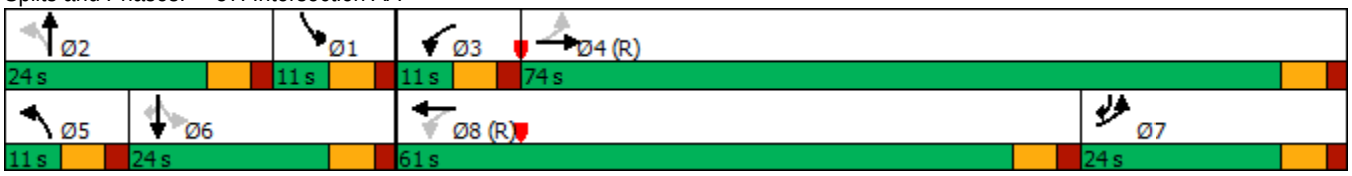
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	900	-	-	-	404	651
HCM Lane V/C Ratio	0.064	-	-	-	0.036	0.084
HCM Control Delay (s)	9.3	-	-	-	14.2	11
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1	0.3

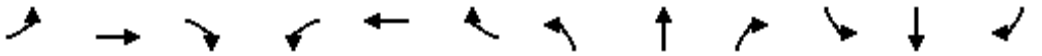
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	None	None	C-Max
Maximum Split (s)	11	24	11	74	11	24	24	61
Maximum Split (%)	9.2%	20.0%	9.2%	61.7%	9.2%	20.0%	20.0%	50.8%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	71	47	82	93	47	58	23	82
End Time (s)	82	71	93	47	58	82	47	23
Yield/Force Off (s)	76	65	87	41	52	76	41	17
Yield/Force Off 170(s)	76	54	87	30	52	65	41	6
Local Start Time (s)	98	74	109	0	74	85	50	109
Local Yield (s)	103	92	114	68	79	103	68	44
Local Yield 170(s)	103	81	114	57	79	92	68	33

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 93 (78%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 57: Intersection AA





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	1446	70	13	1957	31	10	0	2	10	0	55
Future Volume (veh/h)	164	1446	70	13	1957	31	10	0	2	10	0	55
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	182	1607	78	14	2174	34	11	0	2	11	0	61
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	387	3101	150	150	2374	37	200	0	238	183	281	521
Arrive On Green	0.18	0.62	0.62	0.02	0.46	0.46	0.01	0.00	0.15	0.01	0.00	0.15
Sat Flow, veh/h	1781	4989	242	1781	5179	81	1781	0	1585	1781	1870	1585
Grp Volume(v), veh/h	182	1096	589	14	1428	780	11	0	2	11	0	61
Grp Sat Flow(s),veh/h/ln	1781	1702	1827	1781	1702	1856	1781	0	1585	1781	1870	1585
Q Serve(g_s), s	6.1	21.6	21.6	0.5	47.0	47.1	0.7	0.0	0.1	0.0	0.0	0.3
Cycle Q Clear(g_c), s	6.1	21.6	21.6	0.5	47.0	47.1	0.7	0.0	0.1	0.0	0.0	0.3
Prop In Lane	1.00		0.13	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	387	2116	1136	150	1560	851	200	0	238	183	281	521
V/C Ratio(X)	0.47	0.52	0.52	0.09	0.92	0.92	0.06	0.00	0.01	0.06	0.00	0.12
Avail Cap(c_a), veh/h	387	2116	1136	197	1560	851	251	0	238	234	281	521
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.7	12.7	12.7	22.4	30.3	30.4	47.1	0.0	43.4	50.8	0.0	16.4
Incr Delay (d2), s/veh	0.9	0.9	1.7	0.3	9.9	16.3	0.1	0.0	0.1	0.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.4	12.8	13.9	0.4	27.3	31.3	0.5	0.0	0.1	0.6	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.6	13.6	14.4	22.7	40.2	46.7	47.2	0.0	43.5	50.9	0.0	16.5
LnGrp LOS	D	B	B	C	D	D	D	A	D	D	A	B
Approach Vol, veh/h		1867			2222			13			72	
Approach Delay, s/veh		16.7			42.4			46.7			21.7	
Approach LOS		B			D			D			C	

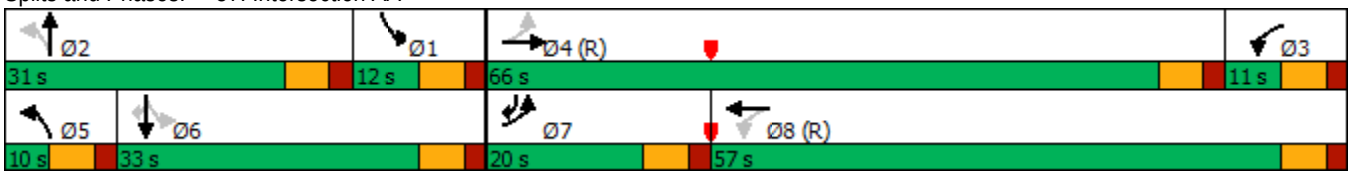
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	24.0	7.9	80.6	7.5	24.0	27.5	61.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	18.0	5.0	68.0	5.0	18.0	18.0	55.0
Max Q Clear Time (g_c+I1), s	2.0	2.1	2.5	23.6	2.7	2.3	8.1	49.1
Green Ext Time (p_c), s	0.0	0.0	0.0	18.4	0.0	0.1	0.3	5.1

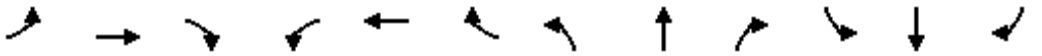
Intersection Summary	
HCM 6th Ctrl Delay	30.5
HCM 6th LOS	C

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	None	None	C-Max
Maximum Split (s)	12	31	11	66	10	33	20	57
Maximum Split (%)	10.0%	25.8%	9.2%	55.0%	8.3%	27.5%	16.7%	47.5%
Minimum Split (s)	11	24	11	24	9	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	3	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	12	101	90	24	101	111	24	44
End Time (s)	24	12	101	90	111	24	44	101
Yield/Force Off (s)	18	6	95	84	105	18	38	95
Yield/Force Off 170(s)	18	115	95	73	105	7	38	84
Local Start Time (s)	88	57	46	100	57	67	100	0
Local Yield (s)	94	82	51	40	61	94	114	51
Local Yield 170(s)	94	71	51	29	61	83	114	40

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	150
Offset: 44 (37%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 57: Intersection AA





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	3244	7	1	2226	10	48	0	9	54	0	290
Future Volume (veh/h)	52	3244	7	1	2226	10	48	0	9	54	0	290
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	58	3604	8	1	2473	11	53	0	10	60	0	322
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	179	2630	6	159	2728	12	252	0	330	276	395	391
Arrive On Green	0.04	0.50	0.50	0.11	1.00	1.00	0.03	0.00	0.21	0.04	0.00	0.21
Sat Flow, veh/h	1781	5261	12	1781	5247	23	1781	0	1585	1781	1870	1585
Grp Volume(v), veh/h	58	2331	1281	1	1604	880	53	0	10	60	0	322
Grp Sat Flow(s),veh/h/ln	1781	1702	1868	1781	1702	1866	1781	0	1585	1781	1870	1585
Q Serve(g_s), s	2.2	60.0	60.0	0.0	0.0	0.0	3.0	0.0	0.6	0.0	0.0	23.0
Cycle Q Clear(g_c), s	2.2	60.0	60.0	0.0	0.0	0.0	3.0	0.0	0.6	0.0	0.0	23.0
Prop In Lane	1.00		0.01	1.00		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	179	1702	934	159	1770	970	252	0	330	276	395	391
V/C Ratio(X)	0.32	1.37	1.37	0.01	0.91	0.91	0.21	0.00	0.03	0.22	0.00	0.82
Avail Cap(c_a), veh/h	323	1702	934	159	1770	970	252	0	330	301	421	413
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.53	0.53	0.53	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.7	30.0	30.0	50.4	0.0	0.0	42.1	0.0	37.8	45.9	0.0	42.7
Incr Delay (d2), s/veh	1.0	170.2	173.9	0.0	4.7	8.0	0.4	0.0	0.2	0.4	0.0	12.2
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(95%),veh/ln	1.7	94.6	104.6	0.0	2.1	3.9	2.5	0.0	0.5	2.9	0.0	15.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.7	200.2	203.9	50.4	4.7	8.0	42.5	0.0	38.0	46.3	0.0	54.9
LnGrp LOS	B	F	F	D	A	A	D	A	D	D	A	D
Approach Vol, veh/h		3670			2485			63			382	
Approach Delay, s/veh		198.6			5.9			41.8			53.6	
Approach LOS		F			A			D			D	

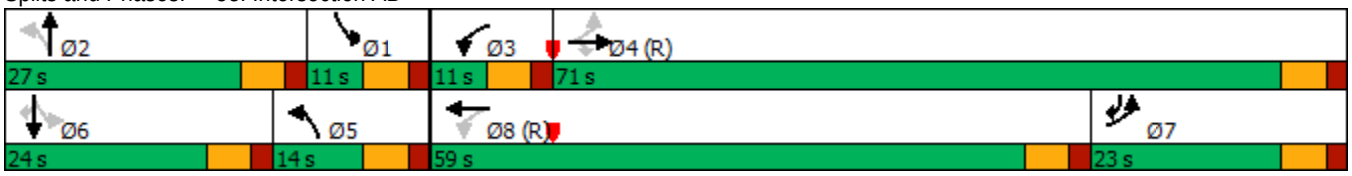
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	31.0	12.7	66.0	10.0	31.3	10.3	68.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	25.0	5.0	60.0	4.0	27.0	14.0	51.0
Max Q Clear Time (g_c+I1), s	2.0	2.6	2.0	62.0	5.0	25.0	4.2	2.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.2	0.1	31.1

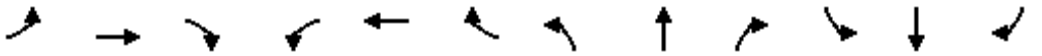
Intersection Summary		
HCM 6th Ctrl Delay		116.1
HCM 6th LOS		F

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	None	None	C-Max
Maximum Split (s)	11	27	11	71	14	24	23	59
Maximum Split (%)	9.2%	22.5%	9.2%	59.2%	11.7%	20.0%	19.2%	49.2%
Minimum Split (s)	11	24	11	24	11	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	86	59	97	108	83	59	36	97
End Time (s)	97	86	108	59	97	83	59	36
Yield/Force Off (s)	91	80	102	53	91	77	53	30
Yield/Force Off 170(s)	91	69	102	42	91	66	53	19
Local Start Time (s)	98	71	109	0	95	71	48	109
Local Yield (s)	103	92	114	65	103	89	65	42
Local Yield 170(s)	103	81	114	54	103	78	65	31

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	80
Offset: 108 (90%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 58: Intersection AB





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	1177	245	20	1686	11	174	0	15	4	0	63
Future Volume (veh/h)	158	1177	245	20	1686	11	174	0	15	4	0	63
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	176	1308	272	22	1873	12	193	0	17	4	0	70
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	3054	948	174	2312	15	665	0	277	112	0	690
Arrive On Green	0.18	0.60	0.60	0.01	0.30	0.30	0.14	0.00	0.17	0.01	0.00	0.04
Sat Flow, veh/h	1781	5106	1585	1781	5235	34	3456	0	1585	1781	0	3170
Grp Volume(v), veh/h	176	1308	272	22	1218	667	193	0	17	4	0	70
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1864	1728	0	1585	1781	0	1585
Q Serve(g_s), s	4.6	16.6	4.0	0.9	39.8	39.8	0.0	0.0	1.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.6	16.6	4.0	0.9	39.8	39.8	0.0	0.0	1.1	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	400	3054	948	174	1503	823	665	0	277	112	0	690
V/C Ratio(X)	0.44	0.43	0.29	0.13	0.81	0.81	0.29	0.00	0.06	0.04	0.00	0.10
Avail Cap(c_a), veh/h	400	3054	948	209	1503	823	665	0	277	177	0	1040
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.76	0.76	0.76	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.6	13.0	1.9	23.0	37.6	37.6	43.9	0.0	41.3	55.9	0.0	37.5
Incr Delay (d2), s/veh	0.8	0.4	0.8	0.2	3.7	6.6	0.2	0.0	0.4	0.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.9	9.9	5.4	0.7	23.7	26.4	4.5	0.0	0.8	0.2	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.4	13.5	2.6	23.2	41.3	44.2	44.1	0.0	41.7	56.1	0.0	37.6
LnGrp LOS	D	B	A	C	D	D	D	A	D	E	A	D
Approach Vol, veh/h		1756			1907			210			74	
Approach Delay, s/veh		14.6			42.1			43.9			38.6	
Approach LOS		B			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	27.0	8.6	77.8	22.9	10.8	27.4	59.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	21.0	5.0	65.0	8.0	18.0	17.0	53.0
Max Q Clear Time (g_c+I1), s	2.0	3.1	2.9	18.6	2.0	2.0	6.6	41.8
Green Ext Time (p_c), s	0.0	0.0	0.0	13.3	0.3	0.2	0.3	8.1

Intersection Summary			
HCM 6th Ctrl Delay		29.9	
HCM 6th LOS		C	

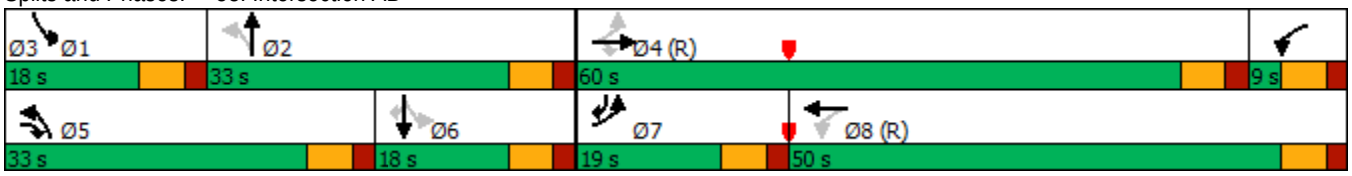
Notes

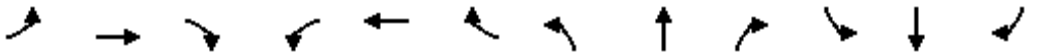
User approved volume balancing among the lanes for turning movement.

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	Max	None	None	C-Max
Maximum Split (s)	18	33	9	60	33	18	19	50
Maximum Split (%)	15.0%	27.5%	7.5%	50.0%	27.5%	15.0%	15.8%	41.7%
Minimum Split (s)	11	24	9	24	24	11	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	3	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		5		5				5
Flash Dont Walk (s)		11		11				11
Dual Entry	No	Yes	No	Yes	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	104	2	95	35	104	17	35	54
End Time (s)	2	35	104	95	17	35	54	104
Yield/Force Off (s)	116	29	98	89	11	29	48	98
Yield/Force Off 170(s)	116	18	98	78	11	29	48	87
Local Start Time (s)	50	68	41	101	50	83	101	0
Local Yield (s)	62	95	44	35	77	95	114	44
Local Yield 170(s)	62	84	44	24	77	95	114	33

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	100
Offset: 54 (45%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 58: Intersection AB





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	2350	632	56	1518	4	690	0	61	19	0	281
Future Volume (veh/h)	61	2350	632	56	1518	4	690	0	61	19	0	281
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	68	2611	702	62	1687	4	767	0	68	21	0	312
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	2298	1070	105	2302	5	1105	0	482	231	0	435
Arrive On Green	0.07	0.90	0.90	0.05	0.88	0.88	0.22	0.00	0.30	0.02	0.00	0.10
Sat Flow, veh/h	1781	5106	1585	1781	5260	12	3456	0	1585	1781	0	3170
Grp Volume(v), veh/h	68	2611	702	62	1092	599	767	0	68	21	0	312
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1868	1728	0	1585	1781	0	1585
Q Serve(g_s), s	2.8	54.0	12.7	0.0	13.4	13.4	22.5	0.0	3.7	1.3	0.0	11.3
Cycle Q Clear(g_c), s	2.8	54.0	12.7	0.0	13.4	13.4	22.5	0.0	3.7	1.3	0.0	11.3
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	200	2298	1070	105	1490	818	1105	0	482	231	0	435
V/C Ratio(X)	0.34	1.14	0.66	0.59	0.73	0.73	0.69	0.00	0.14	0.09	0.00	0.72
Avail Cap(c_a), veh/h	326	2298	1070	105	1490	818	1105	0	482	371	0	435
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.53	0.53	0.53	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.6	6.0	0.5	55.6	5.0	5.0	33.4	0.0	30.4	46.9	0.0	49.5
Incr Delay (d2), s/veh	0.1	61.9	0.3	4.7	1.7	3.1	3.6	0.0	0.6	0.2	0.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	19.3	1.1	3.4	4.2	4.9	15.1	0.0	2.7	1.0	0.0	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.7	67.9	0.8	60.3	6.8	8.2	37.1	0.0	31.0	47.1	0.0	55.1
LnGrp LOS	C	F	A	E	A	A	D	A	C	D	A	E
Approach Vol, veh/h		3381			1753			835			333	
Approach Delay, s/veh		53.1			9.1			36.6			54.6	
Approach LOS		D			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	42.5	9.0	60.0	33.0	18.0	10.5	58.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	27.0	3.0	54.0	27.0	12.0	13.0	44.0
Max Q Clear Time (g_c+I1), s	3.3	5.7	2.0	56.0	24.5	13.3	4.8	15.4
Green Ext Time (p_c), s	0.0	0.3	0.0	0.0	0.9	0.0	0.1	13.4

Intersection Summary	
HCM 6th Ctrl Delay	38.7
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	3	8	2	22	61
Future Vol, veh/h	5	3	8	2	22	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	3	9	2	24	68

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	126	10	0	0	11	0
Stage 1	10	-	-	-	-	-
Stage 2	116	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	869	1071	-	-	1608	-
Stage 1	1013	-	-	-	-	-
Stage 2	909	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	856	1071	-	-	1608	-
Mov Cap-2 Maneuver	856	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	895	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	1.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	856	1071	1608	-
HCM Lane V/C Ratio	-	-	0.006	0.003	0.015	-
HCM Control Delay (s)	-	-	9.2	8.4	7.3	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	0	-

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	15	42	8	2	7
Future Vol, veh/h	1	15	42	8	2	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	17	47	9	2	8

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	64	52	0	0	56	0
Stage 1	52	-	-	-	-	-
Stage 2	12	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	942	1016	-	-	1549	-
Stage 1	970	-	-	-	-	-
Stage 2	1011	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	941	1016	-	-	1549	-
Mov Cap-2 Maneuver	941	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	1010	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	1.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	941	1016	1549	-
HCM Lane V/C Ratio	-	-	0.001	0.016	0.001	-
HCM Control Delay (s)	-	-	8.8	8.6	7.3	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0.1	0	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1	2	21	5	1	11	4	3	8	26	15
Future Vol, veh/h	3	1	2	21	5	1	11	4	3	8	26	15
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	150	-	-	150	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1	2	23	6	1	12	4	3	9	29	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	89	87	38	87	94	6	46	0	0	7	0	0
Stage 1	56	56	-	30	30	-	-	-	-	-	-	-
Stage 2	33	31	-	57	64	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	896	803	1034	899	796	1077	1562	-	-	1614	-	-
Stage 1	956	848	-	987	870	-	-	-	-	-	-	-
Stage 2	983	869	-	955	842	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	882	792	1034	887	785	1077	1562	-	-	1614	-	-
Mov Cap-2 Maneuver	882	792	-	887	785	-	-	-	-	-	-	-
Stage 1	948	843	-	979	863	-	-	-	-	-	-	-
Stage 2	968	862	-	946	837	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	9.2	4.5	1.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1562	-	-	882	938	887	822	1614	-	-
HCM Lane V/C Ratio	0.008	-	-	0.004	0.004	0.026	0.008	0.006	-	-
HCM Control Delay (s)	7.3	-	-	9.1	8.9	9.2	9.4	7.2	-	-
HCM Lane LOS	A	-	-	A	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	3	8	2	1	5	1	18	14	1	3	2
Future Vol, veh/h	15	3	8	2	1	5	1	18	14	1	3	2
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	150	-	-	150	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	3	9	2	1	6	1	20	16	1	3	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	40	44	4	42	37	28	5	0	0	36	0	0
Stage 1	6	6	-	30	30	-	-	-	-	-	-	-
Stage 2	34	38	-	12	7	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	964	848	1080	961	855	1047	1616	-	-	1575	-	-
Stage 1	1016	891	-	987	870	-	-	-	-	-	-	-
Stage 2	982	863	-	1009	890	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	957	846	1080	949	853	1047	1616	-	-	1575	-	-
Mov Cap-2 Maneuver	957	846	-	949	853	-	-	-	-	-	-	-
Stage 1	1015	890	-	986	869	-	-	-	-	-	-	-
Stage 2	975	862	-	996	889	-	-	-	-	-	-	-

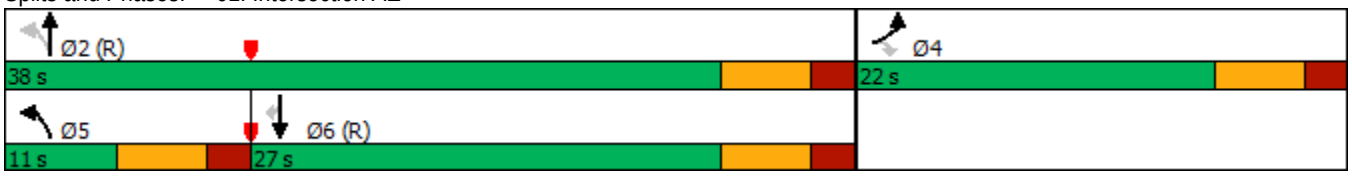
Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	8.6	0.2	1.2
HCM LOS	A	A		

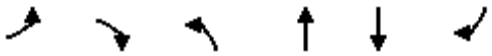
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1616	-	-	957	1004	949	1009	1575	-	-
HCM Lane V/C Ratio	0.001	-	-	0.017	0.012	0.002	0.007	0.001	-	-
HCM Control Delay (s)	7.2	-	-	8.8	8.6	8.8	8.6	7.3	-	-
HCM Lane LOS	A	-	-	A	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	0	0	-	-

Phase Number	2	4	5	6
Movement	NBTL	EBL	NBL	SBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize			Yes	Yes
Recall Mode	C-Max	None	None	C-Max
Maximum Split (s)	38	22	11	27
Maximum Split (%)	63.3%	36.7%	18.3%	45.0%
Minimum Split (s)	11	22	11	22
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		5		5
Flash Dont Walk (s)		11		11
Dual Entry	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	19	57	19	30
End Time (s)	57	19	30	57
Yield/Force Off (s)	51	13	24	51
Yield/Force Off 170(s)	51	2	24	40
Local Start Time (s)	49	27	49	0
Local Yield (s)	21	43	54	21
Local Yield 170(s)	21	32	54	10

Intersection Summary	
Cycle Length	60
Control Type	Actuated-Coordinated
Natural Cycle	55
Offset: 30 (50%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	

Splits and Phases: 61: Intersection AE





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	74	47	58	1439	1042	114
Future Volume (veh/h)	74	47	58	1439	1042	114
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	52	64	1599	1158	127
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	133	118	409	3705	2915	905
Arrive On Green	0.07	0.07	0.05	0.73	0.57	0.57
Sat Flow, veh/h	1781	1585	1781	5274	5274	1585
Grp Volume(v), veh/h	82	52	64	1599	1158	127
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1585
Q Serve(g_s), s	2.7	1.9	0.8	7.5	7.6	2.2
Cycle Q Clear(g_c), s	2.7	1.9	0.8	7.5	7.6	2.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	133	118	409	3705	2915	905
V/C Ratio(X)	0.62	0.44	0.16	0.43	0.40	0.14
Avail Cap(c_a), veh/h	475	423	460	3705	2915	905
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.68	0.68
Uniform Delay (d), s/veh	26.9	26.6	4.5	3.3	7.1	6.0
Incr Delay (d2), s/veh	4.6	2.6	0.2	0.4	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	3.2	0.3	1.6	3.4	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	31.6	29.1	4.7	3.7	7.4	6.2
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	134			1663	1285	
Approach Delay, s/veh	30.6			3.7	7.3	
Approach LOS	C			A	A	

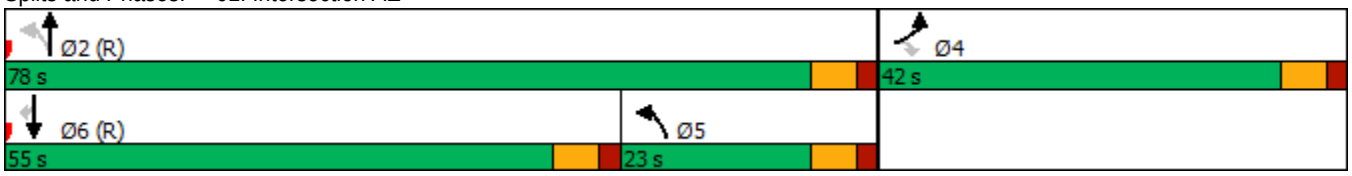
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.5		10.5	9.3	40.3
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		32.0		16.0	5.0	21.0
Max Q Clear Time (g_c+I1), s		9.5		4.7	2.8	9.6
Green Ext Time (p_c), s		11.7		0.2	0.0	5.9

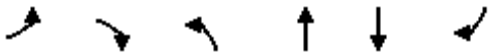
Intersection Summary	
HCM 6th Ctrl Delay	6.4
HCM 6th LOS	A

Phase Number	2	4	5	6
Movement	NBTL	EBL	NBL	SBT
Lead/Lag			Lag	Lead
Lead-Lag Optimize			Yes	Yes
Recall Mode	C-Max	None	None	C-Max
Maximum Split (s)	78	42	23	55
Maximum Split (%)	65.0%	35.0%	19.2%	45.8%
Minimum Split (s)	24	24	11	24
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2	2	2	2
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7		7
Flash Dont Walk (s)	11	11		11
Dual Entry	Yes	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	115	73	50	115
End Time (s)	73	115	73	50
Yield/Force Off (s)	67	109	67	44
Yield/Force Off 170(s)	56	98	67	33
Local Start Time (s)	0	78	55	0
Local Yield (s)	72	114	72	49
Local Yield 170(s)	61	103	72	38

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	60
Offset: 115 (96%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	

Splits and Phases: 61: Intersection AE





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	293	188	168	1053	1565	272
Future Volume (veh/h)	293	188	168	1053	1565	272
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	326	209	187	1170	1739	302
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	368	328	491	3540	2085	647
Arrive On Green	0.21	0.21	0.23	0.69	0.13	0.13
Sat Flow, veh/h	1781	1585	1781	5274	5274	1585
Grp Volume(v), veh/h	326	209	187	1170	1739	302
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1585
Q Serve(g_s), s	21.3	14.5	5.3	10.9	39.8	21.1
Cycle Q Clear(g_c), s	21.3	14.5	5.3	10.9	39.8	21.1
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	368	328	491	3540	2085	647
V/C Ratio(X)	0.89	0.64	0.38	0.33	0.83	0.47
Avail Cap(c_a), veh/h	534	476	491	3540	2085	647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.33	0.33
Uniform Delay (d), s/veh	46.2	43.5	35.9	7.3	48.0	39.8
Incr Delay (d2), s/veh	11.9	2.1	0.5	0.3	1.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	16.0	18.5	7.8	6.2	22.4	11.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.2	45.6	36.4	7.6	49.4	40.6
LnGrp LOS	E	D	D	A	D	D
Approach Vol, veh/h	535			1357	2041	
Approach Delay, s/veh	53.2			11.5	48.1	
Approach LOS	D			B	D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		89.2		30.8	34.2	55.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		72.0		36.0	17.0	49.0
Max Q Clear Time (g_c+I1), s		12.9		23.3	7.3	41.8
Green Ext Time (p_c), s		10.0		1.5	0.3	5.7

Intersection Summary		
HCM 6th Ctrl Delay		36.2
HCM 6th LOS		D

Intersection	
Int Delay, s/veh	6.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	22	26	3	3	4	5
Future Vol, veh/h	22	26	3	3	4	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	29	3	3	4	6

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	19	5	0	0	6	0
Stage 1	5	-	-	-	-	-
Stage 2	14	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	998	1078	-	-	1615	-
Stage 1	1018	-	-	-	-	-
Stage 2	1009	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	996	1078	-	-	1615	-
Mov Cap-2 Maneuver	996	-	-	-	-	-
Stage 1	1018	-	-	-	-	-
Stage 2	1007	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	3.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	996	1078	1615	-
HCM Lane V/C Ratio	-	-	0.025	0.027	0.003	-
HCM Control Delay (s)	-	-	8.7	8.4	7.2	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	0	-

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	3	3	15	18	2
Future Vol, veh/h	2	3	3	15	18	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	3	3	17	20	2

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	54	12	0	0	20	0
Stage 1	12	-	-	-	-	-
Stage 2	42	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	954	1069	-	-	1596	-
Stage 1	1011	-	-	-	-	-
Stage 2	980	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	942	1069	-	-	1596	-
Mov Cap-2 Maneuver	942	-	-	-	-	-
Stage 1	1011	-	-	-	-	-
Stage 2	967	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	6.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	942	1069	1596	-
HCM Lane V/C Ratio	-	-	0.002	0.003	0.013	-
HCM Control Delay (s)	-	-	8.8	8.4	7.3	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	6	25	1484	990	45
Future Vol, veh/h	3	6	25	1484	990	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	250	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	7	28	1649	1100	50

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1841	575	1150	0	-	0
Stage 1	1125	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Critical Hdwy	5.74	7.14	5.34	-	-	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	*410	*697	798	-	-	-
Stage 1	*664	-	-	-	-	-
Stage 2	*582	-	-	-	-	-
Platoon blocked, %	1	1	1	-	-	-
Mov Cap-1 Maneuver	*396	*697	798	-	-	-
Mov Cap-2 Maneuver	*509	-	-	-	-	-
Stage 1	*641	-	-	-	-	-
Stage 2	*582	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	798	-	509	697	-	-
HCM Lane V/C Ratio	0.035	-	0.007	0.01	-	-
HCM Control Delay (s)	9.7	-	12.1	10.2	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0	0	-	-

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	30	3	1212	1828	5
Future Vol, veh/h	17	30	3	1212	1828	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	250	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	33	3	1347	2031	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2579	1019	2037	0	-	0
Stage 1	2034	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Critical Hdwy	5.74	7.14	5.34	-	-	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	*257	*502	631	-	-	-
Stage 1	*515	-	-	-	-	-
Stage 2	*670	-	-	-	-	-
Platoon blocked, %	1	1	1	-	-	-
Mov Cap-1 Maneuver	*256	*502	631	-	-	-
Mov Cap-2 Maneuver	*440	-	-	-	-	-
Stage 1	*513	-	-	-	-	-
Stage 2	*670	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	631	-	440	502	-	-
HCM Lane V/C Ratio	0.005	-	0.043	0.066	-	-
HCM Control Delay (s)	10.7	-	13.5	12.7	-	-
HCM Lane LOS	B	-	B	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.2	-	-

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

Intersection	
Int Delay, s/veh	6.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	3	8	4	20	55	26
Future Vol, veh/h	3	8	4	20	55	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	250	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	9	4	22	61	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	12	0	38	8
Stage 1	-	-	-	-	8	-
Stage 2	-	-	-	-	30	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1607	-	974	1074
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	993	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1607	-	972	1074
Mov Cap-2 Maneuver	-	-	-	-	972	-
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	991	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	972	1074	-	-	1607	-
HCM Lane V/C Ratio	0.063	0.027	-	-	0.003	-
HCM Control Delay (s)	9	8.4	-	-	7.2	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	14	38	18	2	6	3
Future Vol, veh/h	14	38	18	2	6	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	-	250
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	42	20	2	7	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	58	0	79	37
Stage 1	-	-	-	-	37	-
Stage 2	-	-	-	-	42	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1546	-	924	1035
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	980	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1546	-	912	1035
Mov Cap-2 Maneuver	-	-	-	-	912	-
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	967	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.6	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	912	1035	-	-	1546	-
HCM Lane V/C Ratio	0.007	0.003	-	-	0.013	-
HCM Control Delay (s)	9	8.5	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	9	21	17	2	3
Future Vol, veh/h	20	9	21	17	2	3
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	10	23	19	2	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	42	0	-	0	87	33
Stage 1	-	-	-	-	33	-
Stage 2	-	-	-	-	54	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1567	-	-	-	914	1041
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	969	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1567	-	-	-	901	1041
Mov Cap-2 Maneuver	-	-	-	-	901	-
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	969	-

Approach	EB	WB	SB
HCM Control Delay, s	5.1	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1567	-	-	-	901	1041
HCM Lane V/C Ratio	0.014	-	-	-	0.002	0.003
HCM Control Delay (s)	7.3	-	-	-	9	8.5
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0	0

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	14	7	2	11	14
Future Vol, veh/h	2	14	7	2	11	14
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	-	-	-	0	250
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	16	8	2	12	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	10	0	-	0	29	9
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	20	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1610	-	-	-	986	1073
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1003	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1610	-	-	-	985	1073
Mov Cap-2 Maneuver	-	-	-	-	985	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	1003	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1610	-	-	-	985	1073
HCM Lane V/C Ratio	0.001	-	-	-	0.012	0.014
HCM Control Delay (s)	7.2	-	-	-	8.7	8.4
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0	0

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	6	43	1496	926	15
Future Vol, veh/h	2	6	43	1496	926	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	250	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	7	48	1662	1029	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1799	523	1046	0	-	0
Stage 1	1038	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Critical Hdwy	5.74	7.14	5.34	-	-	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	*434	*718	822	-	-	-
Stage 1	*664	-	-	-	-	-
Stage 2	*582	-	-	-	-	-
Platoon blocked, %	1	1	1	-	-	-
Mov Cap-1 Maneuver	*408	*718	822	-	-	-
Mov Cap-2 Maneuver	*509	-	-	-	-	-
Stage 1	*626	-	-	-	-	-
Stage 2	*582	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	822	-	509	718	-	-
HCM Lane V/C Ratio	0.058	-	0.004	0.009	-	-
HCM Control Delay (s)	9.7	-	12.1	10.1	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0	0	-	-

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	29	5	1212	1934	2
Future Vol, veh/h	10	29	5	1212	1934	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	250	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	32	6	1347	2149	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2701	1076	2151	0	-	0
Stage 1	2150	-	-	-	-	-
Stage 2	551	-	-	-	-	-
Critical Hdwy	5.74	7.14	5.34	-	-	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	*168	*459	*577	-	-	-
Stage 1	*471	-	-	-	-	-
Stage 2	*670	-	-	-	-	-
Platoon blocked, %	1	1	1	-	-	-
Mov Cap-1 Maneuver	*167	*459	*577	-	-	-
Mov Cap-2 Maneuver	*391	-	-	-	-	-
Stage 1	*466	-	-	-	-	-
Stage 2	*670	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	* 577	-	391	459	-	-
HCM Lane V/C Ratio	0.01	-	0.028	0.07	-	-
HCM Control Delay (s)	11.3	-	14.5	13.4	-	-
HCM Lane LOS	B	-	B	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.2	-	-

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	54	355	572	49	7	7
Future Vol, veh/h	54	355	572	49	7	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	250	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	394	636	54	8	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	690	0	-	0	980	345
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	317	-
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	900	-	-	-	247	651
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	711	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	900	-	-	-	230	651
Mov Cap-2 Maneuver	-	-	-	-	396	-
Stage 1	-	-	-	-	442	-
Stage 2	-	-	-	-	711	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	900	-	-	-	396	651
HCM Lane V/C Ratio	0.067	-	-	-	0.02	0.012
HCM Control Delay (s)	9.3	-	-	-	14.3	10.6
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1	0

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	812	551	5	34	37
Future Vol, veh/h	6	812	551	5	34	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	250	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	902	612	6	38	41

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	618	0	-	0	1080	309
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	465	-
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	958	-	-	-	213	687
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	599	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	958	-	-	-	212	687
Mov Cap-2 Maneuver	-	-	-	-	408	-
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	599	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	958	-	-	-	408	687
HCM Lane V/C Ratio	0.007	-	-	-	0.093	0.06
HCM Control Delay (s)	8.8	-	-	-	14.7	10.6
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0.2

Intersection	
Int Delay, s/veh	10.4

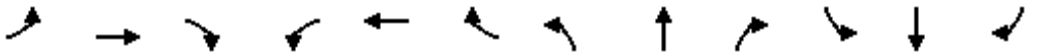
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1385	130	108	1009	90	74
Future Vol, veh/h	1385	130	108	1009	90	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	150	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1539	144	120	1121	100	82

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1683	0	2227	770
Stage 1	-	-	-	-	1539	-
Stage 2	-	-	-	-	688	-
Critical Hdwy	-	-	5.34	-	5.74	7.14
Critical Hdwy Stg 1	-	-	-	-	6.64	-
Critical Hdwy Stg 2	-	-	-	-	6.04	-
Follow-up Hdwy	-	-	3.12	-	3.82	3.92
Pot Cap-1 Maneuver	-	-	181	-	~ 71	295
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	419	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	181	-	~ 24	295
Mov Cap-2 Maneuver	-	-	-	-	~ 86	-
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	141	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.5	139.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	86	295	-	-	181	-
HCM Lane V/C Ratio	1.163	0.279	-	-	0.663	-
HCM Control Delay (s)	236	21.9	-	-	57.2	-
HCM Lane LOS	F	C	-	-	F	-
HCM 95th %tile Q(veh)	7.1	1.1	-	-	3.9	-

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	2271	7	1	1558	10	48	0	9	54	0	290
Future Volume (veh/h)	52	2271	7	1	1558	10	48	0	9	54	0	290
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	58	2523	8	1	1731	11	53	0	10	60	0	322
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	238	2627	8	162	2722	17	252	0	330	276	395	391
Arrive On Green	0.04	0.50	0.50	0.11	1.00	1.00	0.03	0.00	0.21	0.04	0.00	0.21
Sat Flow, veh/h	1781	5255	17	1781	5235	33	1781	0	1585	1781	1870	1585
Grp Volume(v), veh/h	58	1634	897	1	1125	617	53	0	10	60	0	322
Grp Sat Flow(s),veh/h/ln	1781	1702	1867	1781	1702	1864	1781	0	1585	1781	1870	1585
Q Serve(g_s), s	2.2	55.4	55.5	0.0	0.0	0.0	3.0	0.0	0.6	0.0	0.0	23.0
Cycle Q Clear(g_c), s	2.2	55.4	55.5	0.0	0.0	0.0	3.0	0.0	0.6	0.0	0.0	23.0
Prop In Lane	1.00		0.01	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	238	1702	934	162	1770	969	252	0	330	276	395	391
V/C Ratio(X)	0.24	0.96	0.96	0.01	0.64	0.64	0.21	0.00	0.03	0.22	0.00	0.82
Avail Cap(c_a), veh/h	383	1702	934	162	1770	969	252	0	330	301	421	413
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.53	0.53	0.53	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.7	28.8	28.9	48.5	0.0	0.0	42.1	0.0	37.8	45.9	0.0	42.7
Incr Delay (d2), s/veh	0.5	14.2	21.4	0.0	0.9	1.7	0.4	0.0	0.2	0.4	0.0	12.2
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(95%),veh/ln	1.7	33.2	38.2	0.0	0.4	0.8	2.5	0.0	0.5	2.9	0.0	15.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.2	43.0	50.2	48.5	0.9	1.7	42.5	0.0	38.0	46.3	0.0	54.9
LnGrp LOS	B	D	D	D	A	A	D	A	D	D	A	D
Approach Vol, veh/h		2589			1743			63			382	
Approach Delay, s/veh		45.0			1.2			41.8			53.6	
Approach LOS		D			A			D			D	

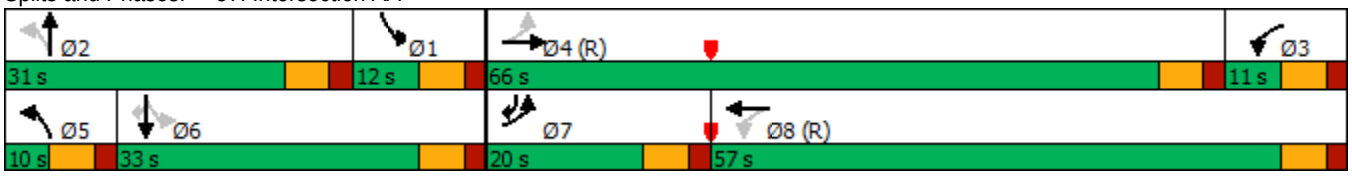
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	31.0	12.7	66.0	10.0	31.3	10.3	68.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	25.0	5.0	60.0	4.0	27.0	14.0	51.0
Max Q Clear Time (g_c+I1), s	2.0	2.6	2.0	57.5	5.0	25.0	4.2	2.0
Green Ext Time (p_c), s	0.0	0.0	0.0	2.4	0.0	0.2	0.1	17.1

Intersection Summary	
HCM 6th Ctrl Delay	29.7
HCM 6th LOS	C

Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	WBL	EBTL	NBL	SBTL	EBL	WBTL
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	C-Max	None	None	None	C-Max
Maximum Split (s)	12	31	11	66	10	33	20	57
Maximum Split (%)	10.0%	25.8%	9.2%	55.0%	8.3%	27.5%	16.7%	47.5%
Minimum Split (s)	11	24	11	24	9	24	11	24
Yellow Time (s)	4	4	4	4	4	4	4	4
All-Red Time (s)	2	2	2	2	2	2	2	2
Minimum Initial (s)	5	5	5	5	3	5	5	5
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		11		11		11		11
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	12	101	90	24	101	111	24	44
End Time (s)	24	12	101	90	111	24	44	101
Yield/Force Off (s)	18	6	95	84	105	18	38	95
Yield/Force Off 170(s)	18	115	95	73	105	7	38	84
Local Start Time (s)	88	57	46	100	57	67	100	0
Local Yield (s)	94	82	51	40	61	94	114	51
Local Yield 170(s)	94	71	51	29	61	83	114	40

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	100
Offset: 44 (37%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	

Splits and Phases: 57: Intersection AA



APPENDIX H

TURN LANE LENGTH ANALYSES

CivTech

Signalized Intersection

2040

		Length (ft)	Veh. Type		
Average Vehicle Length (ft):	26	25	Passenger	Cycles:	1.5
Intersection Cycle Length (sec):	120	75	Truck		

Equation Used: storage length = 1.5 x (vehicles/hour)/(cycles/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	PM Peak (veh/hr)	Max vehs per 1.5 cycles	Turn Lanes	Storage Length
Sossaman Rd & Guadalupe Rd	NB Left	255	170	13	1	325'
	SB Left	103	363	18	1	450'
	EB Left	175	230	12	1	300'
	WB Left	160	210	11	1	275'
	NB Right	135	190	10	1	250'
	SB Right	185	135	10	1	250'
	EB Right	45	225	12	0	-
	WB Right	268	174	14	1	350'
Farnsworth Dr/Bridlewood & Guadalupe Rd	NB Left	200	45	10	1	250'
	SB Left	20	150	8	1	200'
	EB Left	15	80	4	1	100'
	WB Left	115	90	6	1	150'
	NB Right	50	140	7	0	-
	SB Right	65	20	4	0	-
	EB Right	35	220	11	0	-
	WB Right	120	25	6	0	-
Hawes Rd & Guadalupe Rd	NB Left	103	155	8	1	200'
	SB Left	105	125	7	1	175'
	EB Left	90	50	5	1	125'
	WB Left	135	459	23	1	575'
	NB Right	408	191	20	1	500'
	SB Right	45	335	17	1	425'
	EB Right	289	214	15	1	375'
	WB Right	80	165	9	1	225'
Loop 202 SB Ramps & Guadalupe Rd	NB Left	0	0	0	0	-
	SB Left	490	760	38	2	475'
	EB Left	0	0	0	0	-
	WB Left	420	405	21	2	275'
	NB Right	0	0	0	0	-
	SB Right	145	354	18	2	225'
	EB Right	115	270	14	1	350'
	WB Right	0	0	0	0	-
Loop 202 NB Ramps & Guadalupe Rd	NB Left	280	180	14	2	175'
	SB Left	0	0	0	0	-
	EB Left	388	726	36	2	450'
	WB Left	0	0	0	0	-
	NB Right	95	250	13	2	175'
	SB Right	0	0	0	0	-
	EB Right	0	0	0	0	-
	WB Right	1,100	820	54	1	1350'
Power Rd & Elliot Rd	NB Left	270	165	14	1	350'
	SB Left	145	270	14	1	350'
	EB Left	210	395	20	1	500'
	WB Left	186	310	16	1	400'
	NB Right	261	463	23	1	575'
	SB Right	30	430	22	1	550'
	EB Right	125	300	15	1	375'
	WB Right	150	140	8	0	-

Signalized Intersection

2040

		Length (ft)	Veh. Type		
Average Vehicle Length (ft):	26	25	Passenger	Cycles:	1.5
Intersection Cycle Length (sec):	120	75	Truck		

Equation Used: storage length = 1.5 x (vehicles/hour)/(cycles/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	PM Peak (veh/hr)	Max vehs per 1.5 cycles	Turn Lanes	Storage Length
Sossaman Rd & Elliot Rd	NB Left	327	182	17	1	425'
	SB Left	285	777	39	2	500'
	EB Left	195	250	13	1	325'
	WB Left	146	180	9	1	225'
	NB Right	91	361	18	1	450'
	SB Right	205	240	12	1	300'
	EB Right	46	192	10	0	-
	WB Right	482	585	29	1	725'
80th St & Elliot Rd	NB Left	44	73	4	1	100'
	SB Left	25	80	4	1	100'
	EB Left	10	10	1	1	25'
	WB Left	39	124	7	1	175'
	NB Right	74	105	6	0	-
	SB Right	65	50	4	0	-
	EB Right	26	83	5	0	-
	WB Right	95	60	5	0	-
Hawes Rd & Elliot Rd	NB Left	195	367	18	1	450'
	SB Left	154	109	8	1	200'
	EB Left	160	135	8	1	200'
	WB Left	201	733	36	2	450'
	NB Right	594	507	30	1	750'
	SB Right	92	124	7	1	175'
	EB Right	297	267	15	1	375'
	WB Right	179	198	10	0	-
Loop 202 SB Ramps & Elliot Rd	NB Left	0	0	0	0	-
	SB Left	633	631	32	2	400'
	EB Left	0	0	0	0	-
	WB Left	688	476	34	2	425'
	NB Right	0	0	0	0	-
	SB Right	936	1,609	79	2	1000'
	EB Right	444	777	39	1	975'
	WB Right	0	0	0	0	-
Loop 202 NB Ramps & Elliot Rd	NB Left	573	920	46	2	575'
	SB Left	0	0	0	0	-
	EB Left	1,119	1,392	69	2	875'
	WB Left	0	0	0	0	-
	NB Right	967	1,518	75	2	950'
	SB Right	0	0	0	0	-
	EB Right	0	0	0	0	-
	WB Right	812	1,307	65	1	1625'
Sossaman Rd & Warner Rd	NB Left	310	245	16	2	200'
	SB Left	155	311	16	2	200'
	EB Left	191	331	17	2	225'
	WB Left	215	170	11	2	150'
	NB Right	80	205	11	1	275'
	SB Right	326	260	16	1	400'
	EB Right	105	250	13	1	325'
	WB Right	313	318	16	1	400'

Signalized Intersection

2040

		Length (ft)	Veh. Type		
Average Vehicle Length (ft):	26	25	Passenger	Cycles:	1.5
Intersection Cycle Length (sec):	120	75	Truck		

Equation Used: storage length = 1.5 x (vehicles/hour)/(cycles/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	PM Peak (veh/hr)	Max vehs per 1.5 cycles	Turn Lanes	Storage Length
Hawes Rd & Warner Rd	NB Left	274	480	24	2	300'
	SB Left	112	195	10	1	250'
	EB Left	62	192	10	1	250'
	WB Left	292	326	16	2	200'
	NB Right	220	223	11	1	275'
	SB Right	328	71	17	1	425'
	EB Right	239	462	23	1	575'
	WB Right	119	197	10	1	250'
Hawes Rd & Loop 202 WB Ramps	NB Left	320	215	16	2	200'
	SB Left	0	0	0	0	-
	EB Left	0	0	0	0	-
	WB Left	340	215	17	2	225'
	NB Right	0	0	0	0	-
	SB Right	501	1,073	53	1	1325'
	EB Right	0	0	0	0	-
	WB Right	293	474	24	2	300'
Hawes Rd & Loop 202 EB Ramps	NB Left	0	0	0	0	-
	SB Left	212	499	25	2	325'
	EB Left	488	906	45	2	575'
	WB Left	0	0	0	0	-
	NB Right	340	65	17	1	425'
	SB Right	0	0	0	0	-
	EB Right	175	180	9	2	125'
	WB Right	0	0	0	0	-
Ellsworth Road and Elliot Road	NB Left	525	712	35	2	450'
	SB Left	150	450	23	2	300'
	EB Left	155	300	15	1	375'
	WB Left	307	240	16	1	400'
	NB Right	418	292	21	1	525'
	SB Right	265	200	13	1	325'
	EB Right	455	823	41	1	1025'
	WB Right	420	230	21	1	525'
Ellsworth Road and Warner Road	NB Left	395	12	20	2	250'
	SB Left	111	321	16	1	400'
	EB Left	236	292	15	1	375'
	WB Left	95	60	5	1	125'
	NB Right	65	195	10	0	-
	SB Right	171	350	18	1	450'
	EB Right	83	284	14	1	350'
	WB Right	259	76	13	1	325'
Intersection E	NB Left	35	100	5	1	125'
	SB Left	197	206	11	1	275'
	EB Left	29	90	5	1	125'
	WB Left	109	335	17	1	425'
	NB Right	265	229	13	0	-
	SB Right	54	76	4	0	-
	EB Right	20	64	4	0	-
	WB Right	88	269	14	0	-

Signalized Intersection

2040

		Length (ft)	Veh. Type		
Average Vehicle Length (ft):	26	25	Passenger	Cycles:	1.5
Intersection Cycle Length (sec):	120	75	Truck		

Equation Used: storage length = 1.5 x (vehicles/hour)/(cycles/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	PM Peak (veh/hr)	Max vehs per 1.5 cycles	Turn Lanes	Storage Length
Intersection F	NB Left	25	125	7	2	100'
	SB Left	0	0	0	0	-
	EB Left	0	0	0	0	-
	WB Left	291	372	19	2	250'
	NB Right	176	378	19	2	250'
	SB Right	0	0	0	0	-
	EB Right	33	104	6	0	-
	WB Right	0	0	0	0	-
Intersection J	NB Left	37	115	6	1	150'
	SB Left	37	117	6	1	150'
	EB Left	78	98	5	1	125'
	WB Left	16	41	3	1	75'
	NB Right	28	24	2	0	-
	SB Right	23	71	4	0	-
	EB Right	49	67	4	0	-
	WB Right	26	80	4	0	-
Intersection U	NB Left	25	78	4	1	100'
	SB Left	13	43	3	1	75'
	EB Left	38	35	2	1	50'
	WB Left	59	64	4	1	100'
	NB Right	18	56	3	0	-
	SB Right	12	36	2	0	-
	EB Right	45	56	3	0	-
	WB Right	14	54	3	0	-
Intersection X	NB Left	21	13	2	1	50'
	SB Left	76	176	9	1	225'
	EB Left	32	97	5	1	125'
	WB Left	22	62	4	1	100'
	NB Right	62	40	4	0	-
	SB Right	42	65	4	0	-
	EB Right	7	21	2	0	-
	WB Right	135	111	7	0	-
Intersection Y	NB Left	26	162	8	1	200'
	SB Left	6	9	1	1	25'
	EB Left	21	66	4	1	100'
	WB Left	7	26	2	1	50'
	NB Right	3	21	2	0	-
	SB Right	30	49	3	0	-
	EB Right	37	130	7	1	175'
	WB Right	3	9	1	0	-

Signalized Intersection

2040

		Length (ft)	Veh. Type		
Average Vehicle Length (ft):	26	25	Passenger	Cycles:	1.5
Intersection Cycle Length (sec):	120	75	Truck		

Equation Used: storage length = 1.5 x (vehicles/hour)/(cycles/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	PM Peak (veh/hr)	Max vehs per 1.5 cycles	Turn Lanes	Storage Length
Intersection AA	NB Left	10	48	3	1	75'
	SB Left	10	54	3	1	75'
	EB Left	164	52	9	1	225'
	WB Left	13	1	1	1	25'
	NB Right	2	9	1	0	-
	SB Right	55	290	15	1	375'
	EB Right	70	7	4	0	-
	WB Right	31	10	2	0	-
Intersection AB	NB Left	161	641	32	1	800'
	SB Left	4	19	1	1	25'
	EB Left	158	61	8	1	200'
	WB Left	12	28	2	1	50'
	NB Right	8	32	2	0	-
	SB Right	63	281	14	0	-
	EB Right	232	585	29	1	725'
	WB Right	11	4	1	0	-

Unsignalized Intersection

2040

	Length (ft)	% Vehicles	Veh. Type
Average Vehicle Length (ft):	25	98%	Passenger
	75	2%	Truck

Equation Used: storage length = 2 x (vehicles/hour)/(60 minutes/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	PM Peak (veh/hr)	Veh per 2 minutes	Trucks per 2 minutes	Turn Lanes	Storage Length
Intersection A	NB Left	0	0	0	0	0	-
	SB Left	72	46	3	1	0	-
	EB Left	0	0	0	0	0	-
	WB Left	17	50	2	1	0	-
	NB Right	43	41	2	1	0	-
	SB Right	0	0	0	0	0	-
	EB Right	0	0	0	0	0	-
	WB Right	25	74	3	1	0	-
Intersection B	NB Left	18	54	2	1	1	125'
	SB Left	0	0	0	0	0	-
	EB Left	94	74	4	1	1	175'
	WB Left	0	0	0	0	0	-
	NB Right	0	0	0	0	0	-
	SB Right	34	103	4	1	1	175'
	EB Right	53	34	2	1	1	125'
	WB Right	0	0	0	0	0	-
Intersection C	NB Left	17	50	2	1	0	-
	SB Left	0	0	0	0	0	-
	EB Left	0	0	0	0	0	-
	WB Left	20	25	1	1	0	-
	NB Right	14	35	2	1	0	-
	SB Right	0	0	0	0	0	-
	EB Right	49	31	2	1	0	-
	WB Right	0	0	0	0	0	-
Intersection D	NB Left	156	128	6	1	1	225'
	SB Left	0	0	0	0	0	-
	EB Left	0	0	0	0	0	-
	WB Left	50	154	6	1	1	225'
	NB Right	131	105	5	1	1	200'
	SB Right	0	0	0	0	0	-
	EB Right	60	186	7	1	1	250'
	WB Right	0	0	0	0	0	-
Intersection G	NB Left	0	0	0	0	0	-
	SB Left	25	75	3	1	0	-
	EB Left	0	0	0	0	0	-
	WB Left	12	38	2	1	0	-
	NB Right	36	23	2	1	0	-
	SB Right	0	0	0	0	0	-
	EB Right	0	0	0	0	0	-
	WB Right	72	46	3	1	0	-
Intersection H	NB Left	32	20	2	1	0	-
	SB Left	5	10	1	1	0	-
	EB Left	36	23	2	1	0	-
	WB Left	29	90	3	1	0	-
	NB Right	86	55	3	1	0	-
	SB Right	12	38	2	1	0	-
	EB Right	11	33	2	1	0	-
	WB Right	4	11	1	1	0	-

Unsignalized Intersection

2040

	Length (ft)	% Vehicles	Veh. Type
Average Vehicle Length (ft):	25	98%	Passenger
	75	2%	Truck

Equation Used: storage length = 2 x (vehicles/hour)/(60 minutes/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	PM Peak (veh/hr)	Veh per 2 minutes	Trucks per 2 minutes	Turn Lanes	Storage Length
Intersection I	NB Left	9	6	1	1	0	-
	SB Left	8	16	1	1	0	-
	EB Left	136	87	5	1	0	-
	WB Left	3	9	1	1	0	-
	NB Right	9	6	1	1	0	-
	SB Right	47	141	5	1	0	-
	EB Right	3	9	1	1	0	-
	WB Right	5	17	1	1	0	-
Intersection K	NB Left	3	16	1	1	1	100'
	SB Left	0	0	0	0	0	-
	EB Left	71	89	3	1	1	150'
	WB Left	0	0	0	0	0	-
	NB Right	0	0	0	0	0	-
	SB Right	28	85	3	1	0	-
	EB Right	22	2	1	1	1	100'
	WB Right	0	0	0	0	0	-
Intersection L	NB Left	57	36	2	1	0	-
	SB Left	3	9	1	1	0	-
	EB Left	2	1	1	1	0	-
	WB Left	17	52	2	1	0	-
	NB Right	50	32	2	1	0	-
	SB Right	1	2	1	1	0	-
	EB Right	12	35	2	1	0	-
	WB Right	9	6	1	1	0	-
Intersection M	NB Left	12	38	2	1	0	-
	SB Left	23	14	1	1	0	-
	EB Left	6	19	1	1	0	-
	WB Left	2	6	1	1	0	-
	NB Right	11	7	1	1	0	-
	SB Right	18	12	1	1	0	-
	EB Right	36	23	2	1	0	-
	WB Right	8	24	1	1	0	-
Intersection N	NB Left	23	71	3	1	1	150'
	SB Left	17	52	2	1	1	125'
	EB Left	115	73	4	1	1	175'
	WB Left	16	43	2	1	1	125'
	NB Right	31	25	2	1	0	-
	SB Right	38	114	4	1	0	-
	EB Right	68	43	3	1	0	-
	WB Right	12	38	2	1	0	-

Unsignalized Intersection

2040

	Length (ft)	% Vehicles	Veh. Type
Average Vehicle Length (ft):	25	98%	Passenger
	75	2%	Truck

Equation Used: storage length = 2 x (vehicles/hour)/(60 minutes/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	PM Peak (veh/hr)	Veh per 2 minutes	Trucks per 2 minutes	Turn Lanes	Storage Length
Intersection O	NB Left	1	3	1	1	0	-
	SB Left	2	7	1	1	0	-
	EB Left	10	7	1	1	0	-
	WB Left	4	11	1	1	0	-
	NB Right	11	7	1	1	0	-
	SB Right	4	10	1	1	0	-
	EB Right	3	2	1	1	0	-
	WB Right	6	4	1	1	0	-
Intersection P	NB Left	0	0	0	0	0	-
	SB Left	52	33	2	1	0	-
	EB Left	0	0	0	0	0	-
	WB Left	14	39	2	1	0	-
	NB Right	33	21	2	1	0	-
	SB Right	0	0	0	0	0	-
	EB Right	0	0	0	0	0	-
	WB Right	18	52	2	1	0	-
Intersection Q	NB Left	16	46	2	1	1	125'
	SB Left	0	0	0	0	0	-
	EB Left	60	38	2	1	1	125'
	WB Left	0	0	0	0	0	-
	NB Right	0	0	0	0	0	-
	SB Right	24	67	3	1	1	150'
	EB Right	46	29	2	1	1	125'
	WB Right	0	0	0	0	0	-
Intersection R	NB Left	1	2	1	1	0	-
	SB Left	2	6	1	1	0	-
	EB Left	6	4	1	1	0	-
	WB Left	5	7	1	1	0	-
	NB Right	6	4	1	1	0	-
	SB Right	2	6	1	1	0	-
	EB Right	2	1	1	1	0	-
	WB Right	6	4	1	1	0	-
Intersection S	NB Left	1	3	1	1	0	-
	SB Left	6	17	1	1	0	-
	EB Left	6	4	1	1	0	-
	WB Left	1	1	1	1	0	-
	NB Right	0	1	1	1	0	-
	SB Right	4	11	1	1	0	-
	EB Right	3	2	1	1	0	-
	WB Right	22	14	1	1	0	-

Unsignalized Intersection

2040

	Length (ft)	% Vehicles	Veh. Type
Average Vehicle Length (ft):	25	98%	Passenger
	75	2%	Truck

Equation Used: storage length = 2 x (vehicles/hour)/(60 minutes/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	PM Peak (veh/hr)	Veh per 2 minutes	Trucks per 2 minutes	Turn Lanes	Storage Length
Intersection T	NB Left	0	0	0	0	0	-
	SB Left	51	36	2	1	0	-
	EB Left	0	0	0	0	0	-
	WB Left	8	19	1	1	0	-
	NB Right	14	18	1	1	0	-
	SB Right	0	0	0	0	0	-
	EB Right	0	0	0	0	0	-
	WB Right	24	45	2	1	0	-
Intersection V	NB Left	1	9	1	1	0	-
	SB Left	0	0	0	0	0	-
	EB Left	0	0	0	0	0	-
	WB Left	6	39	2	1	0	-
	NB Right	10	36	2	1	0	-
	SB Right	0	0	0	0	0	-
	EB Right	2	8	1	1	0	-
	WB Right	0	0	0	0	0	-
Intersection W	NB Left	65	40	3	1	0	-
	SB Left	0	0	0	0	0	-
	EB Left	6	4	1	1	0	-
	WB Left	14	9	1	1	0	-
	NB Right	5	14	1	1	0	-
	SB Right	0	0	0	0	0	-
	EB Right	34	66	3	1	0	-
	WB Right	0	0	0	0	0	-
Intersection Z	NB Left	0	0	0	0	0	-
	SB Left	2	13	1	1	1	100'
	EB Left	15	52	2	1	1	125'
	WB Left	0	0	0	0	0	-
	NB Right	0	0	0	0	0	-
	SB Right	8	49	2	1	1	125'
	EB Right	0	0	0	0	0	-
	WB Right	3	12	1	1	0	-
Intersection AC	NB Left	0	0	0	0	0	-
	SB Left	22	2	1	1	1	100'
	EB Left	0	0	0	0	0	-
	WB Left	5	1	1	1	1	100'
	NB Right	2	8	1	1	0	-
	SB Right	0	0	0	0	0	-
	EB Right	0	0	0	0	0	-
	WB Right	3	15	1	1	1	100'

Unsignalized Intersection

2040

	Length (ft)	% Vehicles	Veh. Type
Average Vehicle Length (ft):	25	98%	Passenger
	75	2%	Truck

Equation Used: storage length = 2 x (vehicles/hour)/(60 minutes/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	PM Peak (veh/hr)	Veh per 2 minutes	Trucks per 2 minutes	Turn Lanes	Storage Length
Intersection AD	NB Left	11	1	1	1	1	100'
	SB Left	8	1	1	1	1	100'
	EB Left	3	15	1	1	1	100'
	WB Left	21	2	1	1	1	100'
	NB Right	3	14	1	1	0	-
	SB Right	15	2	1	1	0	-
	EB Right	2	8	1	1	0	-
	WB Right	1	5	1	1	0	-
Intersection AE	NB Left	38	99	4	1	1	175'
	SB Left	0	0	0	0	0	-
	EB Left	112	443	15	1	1	450'
	WB Left	0	0	0	0	0	-
	NB Right	0	0	0	0	0	-
	SB Right	156	417	14	1	1	425'
	EB Right	29	116	4	1	1	175'
	WB Right	0	0	0	0	0	-
Intersection AF	NB Left	0	0	0	0	0	-
	SB Left	4	18	1	1	1	100'
	EB Left	0	0	0	0	0	-
	WB Left	22	2	1	1	1	100'
	NB Right	3	15	1	1	0	-
	SB Right	0	0	0	0	0	-
	EB Right	0	0	0	0	0	-
	WB Right	26	3	1	1	1	100'
Intersection AG	NB Left	25	3	1	1	1	100'
	SB Left	0	0	0	0	0	-
	EB Left	3	17	1	1	1	100'
	WB Left	0	0	0	0	0	-
	NB Right	0	0	0	0	0	-
	SB Right	45	5	2	1	1	125'
	EB Right	6	30	1	1	1	100'
	WB Right	0	0	0	0	0	-
Intersection AH	NB Left	55	6	2	1	1	125'
	SB Left	0	0	0	0	0	-
	EB Left	0	0	0	0	0	-
	WB Left	4	18	1	1	1	100'
	NB Right	26	3	1	1	1	100'
	SB Right	0	0	0	0	0	-
	EB Right	8	38	2	1	0	-
	WB Right	0	0	0	0	0	-

Unsignalized Intersection

2040

	Length (ft)	% Vehicles	Veh. Type
Average Vehicle Length (ft):	25	98%	Passenger
	75	2%	Truck

Equation Used: storage length = 2 x (vehicles/hour)/(60 minutes/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	PM Peak (veh/hr)	Veh per 2 minutes	Trucks per 2 minutes	Turn Lanes	Storage Length
Intersection AI	NB Left	0	0	0	0	0	-
	SB Left	2	11	1	1	1	100'
	EB Left	20	2	1	1	1	100'
	WB Left	0	0	0	0	0	-
	NB Right	0	0	0	0	0	-
	SB Right	3	14	1	1	1	100'
	EB Right	0	0	0	0	0	-
	WB Right	17	2	1	1	0	-
Intersection AJ	NB Left	43	5	2	1	1	125'
	SB Left	0	0	0	0	0	-
	EB Left	2	10	1	1	1	100'
	WB Left	0	0	0	0	0	-
	NB Right	0	0	0	0	0	-
	SB Right	15	2	1	1	1	100'
	EB Right	6	29	1	1	1	100'
	WB Right	0	0	0	0	0	-
Intersection AK	NB Left	0	0	0	0	0	-
	SB Left	7	34	2	1	1	125'
	EB Left	54	6	2	1	1	125'
	WB Left	0	0	0	0	0	-
	NB Right	0	0	0	0	0	-
	SB Right	7	37	2	1	1	125'
	EB Right	0	0	0	0	0	-
	WB Right	49	5	2	1	0	-

Unsignalized Intersection

Total Traffic: ADOT Minimum and Desirable Queue Storage Calculations

2040

					Left-Turn Lane Only!	
Average Vehicle Length (ft):	25	Lane Width, W =	12	Taper Length, T =	One Side	Symmetrical
Cycle Length (sec):	120	osted Speed, S =	50	Speed >= 45	600'	300'
Cycles per Hour:	30	Trucks > 10%?	Y	Speed < 45 mph		
				Taper Length, RTL = GAP		

Queue Storage Equations:

Queue Length = 1.5 x (vehicles/hour)/(cycles/hour) x average vehicle length*

Storage Length = Queue Length + Minimum Braking Distance

Turn Lane Length = Storage Length – [Gap – 2/3 Gap]

Design Speed (mph)	Gap (ft)	2/3 Gap (ft)	Calculated Gap (ft)
< 40mph	60	40	20
40-50mph	90	60	30
> 50mph	140	95	45

* Queue length: minimum queue length is 2 vehicles (2 cars or 1 car+1 truck), which can be reduced by 20 feet for a free right turn movement.

	Minimum			Desired	
Design Speed (mph)	Entering Speed (mph)	Braking Speed (mph)	Braking Distance (ft)	Braking Speed (mph)	Braking Distance (ft)
30	20	20	20	29	80
35	25	25	40	34	115
40	30	29	50	38	150
45	35	34	85	43	200
50	40	38	120	47	245
55	45	42	145	52	300
60	50	47	200	56	360
65	55	52	265	60	415
70	60	56	315	64	490
75	65	61	400	70	585

Intersection	Approach	Free-Flow Right?	AM Peak (veh/hr)	PM Peak (veh/hr)	Lanes	Veh per 2 minutes	Queue Length (ft)*	Minimum Storage Length (ft)	Minimum **Turn Lane Length (ft)**	Desired Storage Length (ft)	Desired **Turn Lane Length (ft)**
Loop 202 SB Ramps & Guadalupe Rd	NB Left		0	0	0	-	-	-	-	-	-
	SB Left		490	760	2	19	475	595	**565**	720	690
	EB Left		0	0	0	-	-	-	-	-	-
	WB Left		420	405	2	11	275	395	**365**	520	490
	NB Right	N	0	0	0	-	-	-	-	-	-
	SB Right	N	145	354	2	9	225	345	**315**	470	440
	EB Right	N	115	270	1	14	350	470	**440**	595	565
	WB Right	N	0	0	0	-	-	-	-	-	-
Loop 202 NB Ramps & Guadalupe Rd	NB Left		280	180	2	7	175	295	**265**	420	390
	SB Left		0	0	0	-	-	-	-	-	-
	EB Left		388	726	2	19	475	595	**565**	720	690
	WB Left		0	0	0	-	-	-	-	-	-
	NB Right	N	95	250	2	7	175	295	**265**	420	390
	SB Right	N	0	0	0	-	-	-	-	-	-
	EB Right	N	0	0	0	-	-	-	-	-	-
	WB Right	Y	1,100	820	1	55	1355	1475	**1445**	1600	1570

Unsignalized Intersection

Total Traffic: ADOT Minimum and Desirable Queue Storage Calculations

2040

					Left-Turn Lane Only!	
Average Vehicle Length (ft):	25	Lane Width, W =	12	Taper Length, T =	One Side	Symmetrical
Cycle Length (sec):	120	osted Speed, S =	50	Speed >= 45	600'	300'
Cycles per Hour:	30	Trucks > 10%?	Y	Speed < 45 mph		
				Taper Length, RTL = GAP		

Queue Storage Equations:

Queue Length = 1.5 x (vehicles/hour)/(cycles/hour) x average vehicle length*

Storage Length = Queue Length + Minimum Braking Distance

Turn Lane Length = Storage Length – [Gap – 2/3 Gap]

Design Speed (mph)	Gap (ft)	2/3 Gap (ft)	Calculated Gap (ft)
< 40mph	60	40	20
40-50mph	90	60	30
> 50mph	140	95	45

* Queue length: minimum queue length is 2 vehicles (2 cars or 1 car+1 truck), which can be reduced by 20 feet for a free right turn movement.

	Minimum			Desired	
Design Speed (mph)	Entering Speed (mph)	Braking Speed (mph)	Braking Distance (ft)	Braking Speed (mph)	Braking Distance (ft)
30	20	20	20	29	80
35	25	25	40	34	115
40	30	29	50	38	150
45	35	34	85	43	200
50	40	38	120	47	245
55	45	42	145	52	300
60	50	47	200	56	360
65	55	52	265	60	415
70	60	56	315	64	490
75	65	61	400	70	585

Intersection	Approach	Free-Flow Right?	AM Peak (veh/hr)	PM Peak (veh/hr)	Lanes	Veh per 2 minutes	Queue Length (ft)*	Minimum Storage Length (ft)	Minimum **Turn Lane Length (ft)**	Desired Storage Length (ft)	Desired **Turn Lane Length (ft)**
Loop 202 SB Ramps & Elliot Rd	NB Left		0	0	0	-	-	-	-	-	-
	SB Left		633	631	2	16	400	520	**490**	645	615
	EB Left		0	0	0	-	-	-	-	-	-
	WB Left		688	476	2	18	450	570	**540**	695	665
	NB Right	N	0	0	0	-	-	-	-	-	-
	SB Right	N	936	1,609	2	41	1025	1145	**1115**	1270	1240
	EB Right	N	444	777	1	39	975	1095	**1065**	1220	1190
	WB Right	N	0	0	0	-	-	-	-	-	-
Loop 202 NB Ramps & Elliot Rd	NB Left		573	920	2	23	575	695	**665**	820	790
	SB Left		0	0	0	-	-	-	-	-	-
	EB Left		1,119	1,392	2	35	875	995	**965**	1120	1090
	WB Left		0	0	0	-	-	-	-	-	-
	NB Right	N	967	1,518	2	38	950	1070	**1040**	1195	1165
	SB Right	N	0	0	0	-	-	-	-	-	-
	EB Right	N	0	0	0	-	-	-	-	-	-
	WB Right	N	812	1,307	2	33	825	945	**915**	1070	1040

Unsignalized Intersection

Total Traffic: ADOT Minimum and Desirable Queue Storage Calculations

2040

					Left-Turn Lane Only!	
Average Vehicle Length (ft):	25	Lane Width, W =	12	Taper Length, T =	One Side	Symmetrical
Cycle Length (sec):	120	osted Speed, S =	50	Speed >= 45	600'	300'
Cycles per Hour:	30	Trucks > 10%?	Y	Speed < 45 mph		
				Taper Length, RTL = GAP		

Queue Storage Equations:

Queue Length = 1.5 x (vehicles/hour)/(cycles/hour) x average vehicle length*

Storage Length = Queue Length + Minimum Braking Distance

Turn Lane Length = Storage Length – [Gap – 2/3 Gap]

Design Speed (mph)	Gap (ft)	2/3 Gap (ft)	Calculated Gap (ft)
< 40mph	60	40	20
40-50mph	90	60	30
> 50mph	140	95	45

* Queue length: minimum queue length is 2 vehicles (2 cars or 1 car+1 truck), which can be reduced by 20 feet for a free right turn movement.

	Minimum			Desired	
Design Speed (mph)	Entering Speed (mph)	Braking Speed (mph)	Braking Distance (ft)	Braking Speed (mph)	Braking Distance (ft)
30	20	20	20	29	80
35	25	25	40	34	115
40	30	29	50	38	150
45	35	34	85	43	200
50	40	38	120	47	245
55	45	42	145	52	300
60	50	47	200	56	360
65	55	52	265	60	415
70	60	56	315	64	490
75	65	61	400	70	585

Intersection	Approach	Free-Flow Right?	AM Peak (veh/hr)	PM Peak (veh/hr)	Lanes	Veh per 2 minutes	Queue Length (ft)*	Minimum Storage Length (ft)	Minimum **Turn Lane Length (ft)**	Desired Storage Length (ft)	Desired **Turn Lane Length (ft)**
Hawes Rd & Loop 202 WB Ramps	NB Left		320	215	2	8	200	320	**290**	445	415
	SB Left		0	0	0	-	-	-	**-**	-	-
	EB Left		0	0	0	-	-	-	**-**	-	-
	WB Left		340	215	2	9	225	345	**315**	470	440
	NB Right	**N**	0	0	0	-	-	-	**-**	-	-
	SB Right	**N**	501	1,073	1	54	1350	1470	**1440**	1595	1565
	EB Right	**N**	0	0	0	-	-	-	**-**	-	-
	WB Right	**N**	293	474	2	12	300	420	**390**	545	515
Hawes Rd & Loop 202 EB Ramps	NB Left		0	0	0	-	-	-	**-**	-	-
	SB Left		212	499	2	13	325	445	**415**	570	540
	EB Left		488	906	2	23	575	695	**665**	820	790
	WB Left		0	0	0	-	-	-	**-**	-	-
	NB Right	**N**	340	65	1	17	425	545	**515**	670	640
	SB Right	**N**	0	0	0	-	-	-	**-**	-	-
	EB Right	**N**	175	180	2	5	125	245	**215**	370	340
	WB Right	**N**	0	0	0	-	-	-	**-**	-	-

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	194	364	178	563	304	283	828	150	122	458	206
v/c Ratio	0.57	0.33	0.46	0.53	0.53	0.62	0.72	0.24	0.52	0.58	0.40
Control Delay	26.4	28.3	14.7	20.3	4.2	30.2	26.8	5.3	37.9	34.8	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	28.3	14.7	20.3	4.2	30.2	26.8	5.3	37.9	34.8	7.0
Queue Length 50th (ft)	74	58	38	50	4	118	182	10	58	123	0
Queue Length 95th (ft)	126	86	66	78	14	m194	275	m31	108	173	55
Internal Link Dist (ft)		420		3050			5200			420	
Turn Bay Length (ft)	250		250		250	250		250	250		250
Base Capacity (vph)	353	1100	400	1055	569	458	1150	637	238	786	512
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.33	0.45	0.53	0.53	0.62	0.72	0.24	0.51	0.58	0.40

Intersection Summary

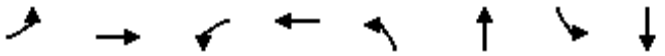
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	256	787	233	321	219	189	807	211	429	1282	150
v/c Ratio	0.70	0.67	1.03	0.28	0.40	1.05	0.98	0.37	0.98	0.96	0.21
Control Delay	35.5	30.2	98.6	15.8	5.4	104.6	62.1	4.0	64.3	45.1	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.5	30.2	98.6	15.8	5.4	104.6	62.1	4.0	64.3	45.1	2.5
Queue Length 50th (ft)	106	127	~77	43	45	~66	241	0	191	367	0
Queue Length 95th (ft)	#182	171	#224	68	104	#193	#364	33	#384	#516	24
Internal Link Dist (ft)		420		3050			5200			420	
Turn Bay Length (ft)	250		250		250	250		250	250		250
Base Capacity (vph)	365	1169	227	1130	550	180	825	564	436	1336	711
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.67	1.03	0.28	0.40	1.05	0.98	0.37	0.98	0.96	0.21

Intersection Summary

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

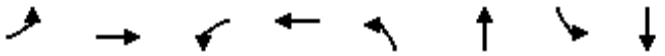
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	17	552	128	911	222	78	22	78
v/c Ratio	0.08	0.24	0.35	0.40	0.41	0.11	0.04	0.11
Control Delay	8.0	6.3	19.4	16.4	21.7	7.3	16.3	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	6.3	19.4	16.4	21.7	7.3	16.3	5.3
Queue Length 50th (ft)	2	20	54	136	87	7	7	2
Queue Length 95th (ft)	m7	35	102	172	149	34	22	28
Internal Link Dist (ft)		3050		2090		1306		659
Turn Bay Length (ft)	250		100		250		250	
Base Capacity (vph)	223	2300	367	2292	540	716	540	702
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	0.08	0.24	0.35	0.40	0.41	0.11	0.04	0.11

Intersection Summary

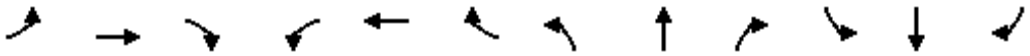
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	89	1265	100	680	50	162	167	55
v/c Ratio	0.20	0.41	0.47	0.22	0.15	0.33	0.58	0.12
Control Delay	5.0	4.0	25.1	13.0	28.2	10.6	39.2	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	4.0	25.1	13.0	28.2	10.6	39.2	18.9
Queue Length 50th (ft)	10	43	42	93	22	16	84	15
Queue Length 95th (ft)	m17	m57	m101	119	53	66	151	44
Internal Link Dist (ft)		3050		2090		1306		659
Turn Bay Length (ft)	250		100		250		250	
Base Capacity (vph)	443	3117	215	3150	328	484	288	444
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	0.20	0.41	0.47	0.22	0.15	0.33	0.58	0.12

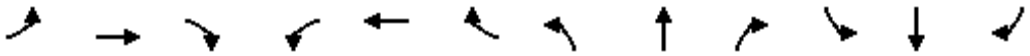
Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	100	631	321	212	369	89	114	230	579	117	169	50
v/c Ratio	0.28	0.51	0.51	0.62	0.23	0.14	0.22	0.19	0.76	0.24	0.14	0.07
Control Delay	18.5	27.8	6.3	26.5	24.9	0.5	15.8	21.2	18.0	16.1	20.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	27.8	6.3	26.5	24.9	0.5	15.8	21.2	18.0	16.1	20.7	0.2
Queue Length 50th (ft)	26	123	0	80	60	0	36	47	119	37	34	0
Queue Length 95th (ft)	48	165	90	134	86	0	67	75	259	68	57	1
Internal Link Dist (ft)		2090			1860			3261			506	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	354	1232	627	353	1616	627	512	1218	765	488	1218	734
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.51	0.51	0.60	0.23	0.14	0.22	0.19	0.76	0.24	0.14	0.07

Intersection Summary



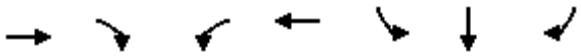
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	56	483	238	704	818	183	172	360	340	139	370	372
v/c Ratio	0.20	0.47	0.46	1.09	0.42	0.25	0.65	0.51	0.58	0.51	0.52	0.63
Control Delay	13.5	30.5	6.2	81.7	21.3	4.2	39.9	35.0	8.1	33.3	35.3	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	30.5	6.2	81.7	21.3	4.2	39.9	35.0	8.1	33.3	35.3	13.3
Queue Length 50th (ft)	14	81	6	~358	121	0	73	96	0	58	100	61
Queue Length 95th (ft)	m28	113	26	#576	165	42	#133	140	71	104	144	119
Internal Link Dist (ft)		2090			1710			3261			506	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	457	1017	520	647	1962	723	266	707	588	270	707	726
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.47	0.46	1.09	0.42	0.25	0.65	0.51	0.58	0.51	0.52	0.51

Intersection Summary

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

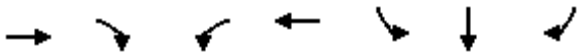
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	782	128	467	1030	283	283	201
v/c Ratio	0.27	0.19	0.76	0.57	0.58	0.54	0.35
Control Delay	26.5	5.3	78.8	15.5	41.8	29.3	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.5	5.3	78.8	15.6	41.8	29.3	6.1
Queue Length 50th (ft)	102	0	200	72	196	142	0
Queue Length 95th (ft)	133	42	255	85	295	242	58
Internal Link Dist (ft)	610			311		791	
Turn Bay Length (ft)		250					
Base Capacity (vph)	2869	681	743	1798	490	525	581
Starvation Cap Reductn	0	0	0	40	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.19	0.63	0.59	0.58	0.54	0.35

Intersection Summary



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1457	300	450	829	498	487	447
v/c Ratio	0.53	0.39	0.81	0.74	0.91	0.81	0.57
Control Delay	31.3	4.7	74.9	20.3	61.6	38.4	5.8
Queue Delay	0.1	0.0	0.0	0.0	42.2	10.4	0.0
Total Delay	31.4	4.7	74.9	20.3	103.9	48.8	5.8
Queue Length 50th (ft)	222	0	193	49	388	282	0
Queue Length 95th (ft)	255	59	247	78	#604	#476	80
Internal Link Dist (ft)	760			311		791	
Turn Bay Length (ft)		250					
Base Capacity (vph)	2735	765	600	1118	546	601	790
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	220	0	0	0	88	93	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.39	0.75	0.74	1.09	0.96	0.57

Intersection Summary

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	557	770	1186	1222	162	160	95
v/c Ratio	0.79	0.40	0.44	0.77	0.33	0.30	0.19
Control Delay	73.2	24.6	30.9	3.7	35.7	17.9	7.2
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.4	24.6	30.9	3.7	35.7	17.9	7.2
Queue Length 50th (ft)	238	98	172	0	103	49	0
Queue Length 95th (ft)	296	119	216	0	168	113	42
Internal Link Dist (ft)		311	480			791	
Turn Bay Length (ft)				250			
Base Capacity (vph)	858	1934	2668	1583	490	525	505
Starvation Cap Reductn	45	0	0	0	0	0	0
Spillback Cap Reductn	0	0	25	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.40	0.45	0.77	0.33	0.30	0.19

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	934	1367	1079	911	168	157	153
v/c Ratio	0.89	0.74	0.65	0.58	0.31	0.27	0.26
Control Delay	64.3	26.4	45.2	1.5	32.3	8.1	5.7
Queue Delay	30.3	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay	94.6	26.6	45.2	1.5	32.3	8.1	5.7
Queue Length 50th (ft)	336	222	193	0	102	12	0
Queue Length 95th (ft)	m395	m322	228	0	166	65	49
Internal Link Dist (ft)		311	700			791	
Turn Bay Length (ft)				250			
Base Capacity (vph)	1115	1844	1659	1583	546	572	592
Starvation Cap Reductn	228	75	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.77	0.65	0.58	0.31	0.27	0.26

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	233	563	139	207	914	300	1400	290	161	767	33
v/c Ratio	0.76	0.43	0.17	0.62	0.67	0.81	0.88	0.36	0.81	0.68	0.06
Control Delay	57.6	29.1	4.5	41.8	26.7	37.1	37.7	10.4	50.1	36.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.6	29.1	4.5	41.8	26.7	37.1	37.7	10.4	50.1	36.1	0.2
Queue Length 50th (ft)	68	98	9	63	133	111	275	58	54	149	0
Queue Length 95th (ft)	#123	132	38	98	218	#231	#344	114	#146	193	0
Internal Link Dist (ft)		495			5070		925			562	
Turn Bay Length (ft)	250		250	250		250		250	250		250
Base Capacity (vph)	305	1314	833	343	1359	385	1582	813	200	1123	548
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.43	0.17	0.60	0.67	0.78	0.88	0.36	0.81	0.68	0.06

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	439	948	333	344	904	183	878	514	300	1750	478
v/c Ratio	0.96	0.88	0.50	0.82	0.88	0.91	0.69	0.65	0.85	1.03	0.53
Control Delay	73.7	45.6	13.1	56.1	44.6	66.6	34.1	16.9	42.0	61.4	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.7	45.6	13.1	56.1	44.6	66.6	34.1	16.9	42.0	61.4	12.9
Queue Length 50th (ft)	129	192	62	100	175	60	167	143	110	~395	126
Queue Length 95th (ft)	#223	#264	141	#168	#247	#176	212	256	#247	#490	212
Internal Link Dist (ft)		495			5070		925			562	
Turn Bay Length (ft)	250		250	250		250		250	250		250
Base Capacity (vph)	457	1074	664	419	1026	201	1269	796	362	1695	895
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.88	0.50	0.82	0.88	0.91	0.69	0.65	0.83	1.03	0.53

Intersection Summary

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

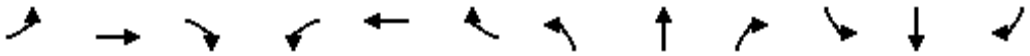
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	217	531	162	607	562	363	600	101	344	362	228
v/c Ratio	0.69	0.45	0.50	0.54	0.72	0.69	0.69	0.15	0.60	0.45	0.42
Control Delay	33.9	19.4	19.0	22.7	12.2	23.9	32.3	4.0	49.0	18.4	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	19.4	19.0	22.7	12.2	23.9	32.3	4.0	49.0	18.4	4.2
Queue Length 50th (ft)	67	53	38	58	35	144	143	1	99	59	7
Queue Length 95th (ft)	m#141	m72	65	77	333	202	#220	m25	140	110	17
Internal Link Dist (ft)		5070		1840			5200			5200	
Turn Bay Length (ft)	250		250		250	250		250	250		250
Base Capacity (vph)	314	1191	330	1130	829	571	866	699	686	807	537
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.45	0.49	0.54	0.68	0.64	0.69	0.14	0.50	0.45	0.42

Intersection Summary

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

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

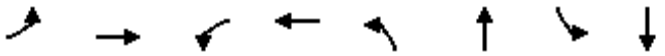


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	278	1266	213	200	784	752	202	281	401	962	698	267
v/c Ratio	0.83	0.96	0.29	0.79	0.70	0.82	0.65	0.48	0.66	1.05	0.61	0.30
Control Delay	47.5	62.0	9.4	51.1	47.2	27.6	31.8	48.4	28.2	86.9	37.4	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	62.0	9.4	51.1	47.2	27.6	31.8	48.4	28.2	86.9	37.4	9.8
Queue Length 50th (ft)	147	360	36	102	209	400	89	104	175	~419	239	57
Queue Length 95th (ft)	#270	#467	86	#213	258	607	139	150	289	#547	315	116
Internal Link Dist (ft)		5070			930			5200			5200	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	358	1312	775	268	1126	918	355	589	618	915	1146	898
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.96	0.27	0.75	0.70	0.82	0.57	0.48	0.65	1.05	0.61	0.30

Intersection Summary

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

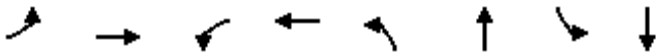
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	1017	41	1176	49	82	28	72
v/c Ratio	0.05	0.34	0.15	0.40	0.13	0.16	0.08	0.14
Control Delay	3.0	2.7	4.7	5.4	25.7	2.7	24.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	2.7	4.7	5.4	25.7	2.7	24.8	3.6
Queue Length 50th (ft)	1	22	2	145	21	0	12	0
Queue Length 95th (ft)	m2	33	11	137	49	16	33	19
Internal Link Dist (ft)		1130		760		308		936
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	223	2986	275	2965	367	525	364	510
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	0.05	0.34	0.15	0.40	0.13	0.16	0.08	0.14

Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	2082	130	1708	81	117	89	56
v/c Ratio	0.09	0.64	1.57	0.52	0.27	0.31	0.32	0.15
Control Delay	8.1	10.7	318.6	9.5	31.9	22.9	33.0	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	10.7	318.6	9.5	31.9	22.9	33.0	15.3
Queue Length 50th (ft)	2	232	~104	253	38	38	43	9
Queue Length 95th (ft)	9	278	m#159	302	80	86	86	40
Internal Link Dist (ft)		550		760		238		936
Turn Bay Length (ft)	250		250					
Base Capacity (vph)	126	3259	83	3262	298	379	282	379
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	0.09	0.64	1.57	0.52	0.27	0.31	0.32	0.15

Intersection Summary

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

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	220	1233	330	192	818	217	390	532	174	199	121
v/c Ratio	0.73	0.72	0.36	0.26	0.39	0.67	0.70	0.72	0.68	0.38	0.22
Control Delay	45.4	37.6	4.6	53.9	36.1	63.1	55.9	27.8	57.0	48.3	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	37.6	4.6	53.9	36.1	63.1	55.9	27.8	57.0	48.3	3.2
Queue Length 50th (ft)	129	306	19	65	173	84	152	257	105	74	0
Queue Length 95th (ft)	202	361	71	103	225	126	207	397	168	112	23
Internal Link Dist (ft)		1250			1230		740			1859	
Turn Bay Length (ft)	250		250	250		250		250	200		200
Base Capacity (vph)	347	1723	892	743	2103	343	558	738	265	530	594
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.72	0.37	0.26	0.39	0.63	0.70	0.72	0.66	0.38	0.20

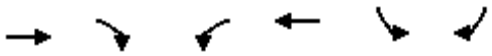
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	193	1573	297	723	2216	408	386	471	133	856	196
v/c Ratio	1.17	0.89	0.41	1.10	0.88	1.02	0.32	0.59	0.51	0.93	0.35
Control Delay	151.6	47.6	9.4	114.9	33.3	102.4	34.2	15.2	36.8	62.5	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	151.6	47.6	9.4	114.9	33.3	102.4	34.2	15.2	36.8	62.5	7.0
Queue Length 50th (ft)	~124	426	46	~322	307	~169	123	157	68	344	16
Queue Length 95th (ft)	#279	489	80	#463	360	#274	167	236	114	#464	57
Internal Link Dist (ft)		580			1230		740			970	
Turn Bay Length (ft)	250		250	250		250		250	200		200
Base Capacity (vph)	165	1766	723	657	2524	400	1195	798	260	922	559
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.17	0.89	0.41	1.10	0.88	1.02	0.32	0.59	0.51	0.93	0.35

Intersection Summary

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

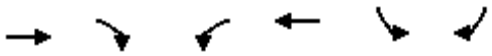
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1073	493	817	1383	703	961
v/c Ratio	0.40	0.57	0.85	0.85	0.95	0.71
Control Delay	27.7	9.9	66.0	25.8	68.8	5.8
Queue Delay	0.0	0.0	26.5	0.3	45.6	0.0
Total Delay	27.7	9.9	92.5	26.1	114.5	5.8
Queue Length 50th (ft)	86	14	351	129	278	0
Queue Length 95th (ft)	162	201	m413	144	#395	56
Internal Link Dist (ft)	1240			311		
Turn Bay Length (ft)		250				
Base Capacity (vph)	2670	859	1087	1628	743	1356
Starvation Cap Reductn	0	0	299	33	0	0
Spillback Cap Reductn	20	0	0	0	250	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.57	1.04	0.87	1.43	0.71

Intersection Summary

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



Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	3284	863	736	2004	701	1544
v/c Ratio	0.97	0.81	1.36	1.21	0.85	1.09
Control Delay	37.5	13.0	199.2	115.9	54.1	70.3
Queue Delay	43.2	0.0	0.0	0.0	0.0	0.0
Total Delay	80.8	13.0	199.2	115.9	54.1	70.3
Queue Length 50th (ft)	478	150	~370	~718	268	~419
Queue Length 95th (ft)	m426	m150	m#407	m#664	#358	#572
Internal Link Dist (ft)	1240			311		
Turn Bay Length (ft)		250				
Base Capacity (vph)	3394	1063	543	1652	829	1412
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	580	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.17	0.81	1.36	1.21	0.85	1.09

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1024	752	1562	744	637	959
v/c Ratio	0.95	0.42	0.65	0.92	0.86	0.71
Control Delay	72.5	29.6	11.7	27.4	57.8	5.7
Queue Delay	45.6	0.0	0.1	28.0	50.0	0.0
Total Delay	118.2	29.6	11.8	55.3	107.8	5.7
Queue Length 50th (ft)	440	109	161	503	246	0
Queue Length 95th (ft)	m#515	m122	212	#729	#337	56
Internal Link Dist (ft)		311	310			
Turn Bay Length (ft)				200		
Base Capacity (vph)	1087	1800	2414	813	743	1355
Starvation Cap Reductn	366	0	0	106	0	0
Spillback Cap Reductn	0	0	131	0	197	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.42	0.42	0.68	1.05	1.17	0.71

Intersection Summary

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

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

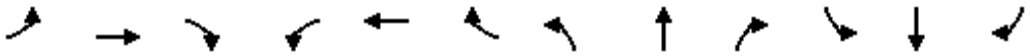
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	1354	2631	1718	830	1022	1284
v/c Ratio	1.39	1.15	0.70	0.97	1.23	1.18
Control Delay	205.1	89.2	27.5	28.9	154.3	115.7
Queue Delay	0.3	1.4	1.5	18.0	0.0	0.5
Total Delay	205.4	90.6	28.9	46.9	154.3	116.3
Queue Length 50th (ft)	~709	~857	345	511	~504	~485
Queue Length 95th (ft)	m#766	m#919	m331	m491	#635	#636
Internal Link Dist (ft)		311	320			
Turn Bay Length (ft)				250		
Base Capacity (vph)	972	2288	2451	854	829	1086
Starvation Cap Reductn	60	19	0	57	0	0
Spillback Cap Reductn	0	869	502	0	0	119
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.48	1.85	0.88	1.04	1.23	1.33

Intersection Summary

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

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

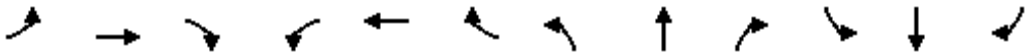
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	212	350	117	239	480	352	344	239	89	180	556	362
v/c Ratio	0.70	0.59	0.17	0.71	0.71	0.47	0.73	0.20	0.10	0.47	0.55	0.47
Control Delay	52.9	38.4	4.1	33.3	34.6	3.5	23.6	22.8	2.3	51.4	25.7	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	38.4	4.1	33.3	34.6	3.5	23.6	22.8	2.3	51.4	25.7	12.7
Queue Length 50th (ft)	61	97	3	79	89	10	111	50	0	54	150	116
Queue Length 95th (ft)	#107	137	31	137	123	22	#188	86	18	86	215	205
Internal Link Dist (ft)		420			1970			420			5200	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	305	707	734	337	786	798	505	1211	875	495	1017	769
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.50	0.16	0.71	0.61	0.44	0.68	0.20	0.10	0.36	0.55	0.47

Intersection Summary

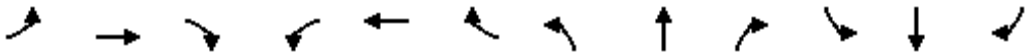
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	368	749	278	189	448	383	272	717	228	373	200	289
v/c Ratio	0.81	0.89	0.33	0.79	0.65	0.54	0.64	0.78	0.32	0.74	0.20	0.35
Control Delay	53.7	47.2	3.1	49.7	36.5	13.1	44.6	38.7	10.8	46.2	25.9	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.7	47.2	3.1	49.7	36.5	13.1	44.6	38.7	10.8	46.2	25.9	10.6
Queue Length 50th (ft)	106	215	0	77	97	63	76	203	43	104	46	59
Queue Length 95th (ft)	#173	#313	43	#166	146	110	116	#291	96	152	74	117
Internal Link Dist (ft)		420			2090			420			5200	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	457	865	850	239	707	724	457	917	720	534	997	818
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.87	0.33	0.79	0.63	0.53	0.60	0.78	0.32	0.70	0.20	0.35

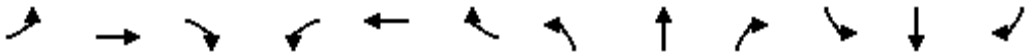
Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	69	292	259	326	409	131	281	487	244	124	862	364
v/c Ratio	0.31	0.65	0.45	0.68	0.52	0.20	0.65	0.30	0.23	0.45	0.60	0.46
Control Delay	56.7	56.9	16.9	56.1	43.8	4.3	37.5	17.0	10.2	57.4	32.0	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.7	56.9	16.9	56.1	43.8	4.3	37.5	17.0	10.2	57.4	32.0	11.9
Queue Length 50th (ft)	26	115	73	125	152	0	72	162	109	47	270	58
Queue Length 95th (ft)	50	156	134	166	190	35	88	227	192	78	409	172
Internal Link Dist (ft)		690			370			1200			660	
Turn Bay Length (ft)	250		250	250		250	250		250	250		100
Base Capacity (vph)	429	537	643	715	852	696	600	1603	1174	400	1439	789
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.54	0.40	0.46	0.48	0.19	0.47	0.30	0.21	0.31	0.60	0.46

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	213	644	469	369	382	212	451	991	248	217	880	79
v/c Ratio	0.63	0.85	0.61	0.73	0.41	0.29	0.76	0.83	0.28	0.64	0.93	0.13
Control Delay	60.5	57.2	21.2	57.4	37.6	9.0	30.1	44.3	23.0	57.2	56.9	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.5	57.2	21.2	57.4	37.6	9.0	30.1	44.3	23.0	57.2	56.9	0.7
Queue Length 50th (ft)	82	247	184	141	126	34	180	422	152	84	~394	0
Queue Length 95th (ft)	123	#341	295	189	171	84	m221	#526	m195	127	#544	5
Internal Link Dist (ft)		690			370			1200			660	
Turn Bay Length (ft)	250		250	250		250	250		250	250		100
Base Capacity (vph)	371	784	794	600	1002	745	657	1200	929	371	943	601
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.82	0.59	0.61	0.38	0.28	0.69	0.83	0.27	0.58	0.93	0.13

Intersection Summary

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

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

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

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	242	236	223	356	1139	780	552
v/c Ratio	0.66	0.53	0.44	0.59	0.45	0.23	0.54
Control Delay	50.6	20.6	7.2	47.2	17.6	15.2	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.6	20.6	7.2	47.2	17.6	15.2	9.5
Queue Length 50th (ft)	182	71	0	138	127	93	157
Queue Length 95th (ft)	249	147	61	189	152	118	305
Internal Link Dist (ft)		1105			501	1200	
Turn Bay Length (ft)							300
Base Capacity (vph)	490	546	596	600	2528	3436	1021
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.43	0.37	0.59	0.45	0.23	0.54

Intersection Summary

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	215	268	264	239	1539	1844	1162
v/c Ratio	0.40	0.43	0.40	0.77	0.88	0.55	0.99
Control Delay	34.5	7.3	5.4	76.3	30.2	23.4	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	7.3	5.4	76.3	30.2	23.4	35.1
Queue Length 50th (ft)	134	14	0	102	446	283	598
Queue Length 95th (ft)	210	84	62	m130	m#504	m320	m#754
Internal Link Dist (ft)		1105			501	1200	
Turn Bay Length (ft)							300
Base Capacity (vph)	546	638	667	314	1742	3338	1179
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.42	0.40	0.76	0.88	0.55	0.99

Intersection Summary

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

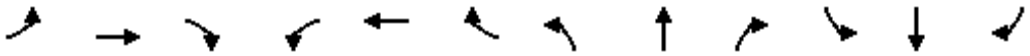
Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	278	275	175	960	378	318	839
v/c Ratio	0.75	0.60	0.38	0.26	0.39	0.70	0.36
Control Delay	56.3	25.4	7.2	18.8	3.5	40.9	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	25.4	7.2	18.8	3.5	40.9	8.6
Queue Length 50th (ft)	214	105	0	102	0	79	86
Queue Length 95th (ft)	288	186	55	148	60	101	96
Internal Link Dist (ft)		988		772			501
Turn Bay Length (ft)					300		
Base Capacity (vph)	490	564	562	3750	977	543	2316
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.49	0.31	0.26	0.39	0.59	0.36

Intersection Summary

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	500	500	180	798	72	546	1537
v/c Ratio	0.94	0.83	0.30	0.31	0.11	0.84	0.68
Control Delay	66.6	40.3	5.6	29.7	0.4	47.0	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	40.3	5.6	29.7	0.4	47.0	8.8
Queue Length 50th (ft)	390	293	0	113	0	232	76
Queue Length 95th (ft)	#607	#490	52	137	0	#302	84
Internal Link Dist (ft)		988		772			501
Turn Bay Length (ft)					300		
Base Capacity (vph)	546	614	610	2583	631	657	2250
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.81	0.30	0.31	0.11	0.83	0.68

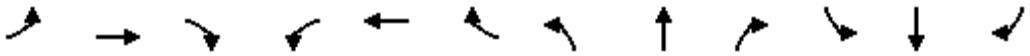
Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	172	681	443	351	953	467	527	692	474	167	551	294
v/c Ratio	0.58	0.55	0.55	0.77	0.57	0.56	0.71	0.50	0.54	0.52	0.72	0.59
Control Delay	23.8	27.6	13.3	33.0	35.2	18.0	38.7	28.0	12.7	57.0	54.8	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	27.6	13.3	33.0	35.2	18.0	38.7	28.0	12.7	57.0	54.8	15.3
Queue Length 50th (ft)	53	162	81	170	220	171	204	135	237	64	150	56
Queue Length 95th (ft)	132	239	362	262	283	278	225	153	343	97	193	95
Internal Link Dist (ft)		695			820			1216			700	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	368	1237	805	539	1682	933	743	1383	964	572	762	558
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.55	0.55	0.65	0.57	0.50	0.71	0.50	0.49	0.29	0.72	0.53

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	333	1344	698	304	941	256	567	558	363	500	950	222
v/c Ratio	0.82	0.93	0.83	1.02	0.79	0.36	0.94	0.55	0.63	0.79	0.90	0.30
Control Delay	26.1	20.9	11.1	102.1	49.1	9.2	68.4	40.5	19.5	56.0	58.3	14.4
Queue Delay	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	20.9	11.4	102.1	49.1	9.2	68.4	40.5	19.5	56.0	58.3	14.4
Queue Length 50th (ft)	208	264	67	~198	252	39	231	153	127	189	264	65
Queue Length 95th (ft)	m186	m216	m40	#380	305	66	#337	201	219	246	#339	122
Internal Link Dist (ft)		695			820			1216			700	
Turn Bay Length (ft)	250		250	250		250	250		250	250		250
Base Capacity (vph)	406	1440	845	298	1186	744	600	1008	579	715	1059	744
Starvation Cap Reductn	0	0	12	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.93	0.84	1.02	0.79	0.34	0.94	0.55	0.63	0.70	0.90	0.30

Intersection Summary

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

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	277	33	92	106	48	288	439	1206	123	647	203
v/c Ratio	0.88	0.08	0.17	0.43	0.23	0.67	0.75	0.45	0.39	0.29	0.19
Control Delay	70.5	43.8	5.0	45.3	56.1	23.0	55.6	18.9	13.7	13.8	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.5	43.8	5.0	45.3	56.1	23.0	55.6	18.9	13.7	13.8	0.7
Queue Length 50th (ft)	189	11	0	65	18	66	168	206	35	69	4
Queue Length 95th (ft)	#297	26	31	112	39	150	214	284	47	52	5
Internal Link Dist (ft)		640			820			760		1240	
Turn Bay Length (ft)	250		250	250		250	250		250		250
Base Capacity (vph)	321	943	575	244	589	463	670	2690	362	2251	1090
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.03	0.16	0.43	0.08	0.62	0.66	0.45	0.34	0.29	0.19

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	378	246	316	67	160	84	13	1114	357	1470	443
v/c Ratio	0.92	0.26	0.51	0.52	0.50	0.12	0.07	0.81	0.83	0.69	0.38
Control Delay	73.3	35.7	16.9	67.2	57.3	0.4	54.2	45.9	67.0	38.2	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.3	35.7	16.9	67.2	57.3	0.4	54.2	45.9	67.0	38.2	3.2
Queue Length 50th (ft)	284	81	79	50	63	0	5	297	247	261	3
Queue Length 95th (ft)	#458	114	138	99	97	0	15	#405	#380	401	224
Internal Link Dist (ft)		560			820			760		1240	
Turn Bay Length (ft)	250		250	250		250	250		250		250
Base Capacity (vph)	427	1094	623	147	530	680	200	1372	438	2131	1190
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.22	0.51	0.46	0.30	0.12	0.07	0.81	0.82	0.69	0.37

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	32	1199	121	1015	39	6	289	181	63
v/c Ratio	0.13	0.59	0.55	0.42	0.10	0.01	0.48	0.39	0.12
Control Delay	26.7	30.3	38.5	17.0	25.8	34.8	7.1	30.1	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.7	30.3	38.5	17.0	25.8	34.8	7.1	30.1	9.5
Queue Length 50th (ft)	15	264	56	147	19	4	0	98	2
Queue Length 95th (ft)	38	329	m121	226	44	15	70	156	36
Internal Link Dist (ft)		760		1250		317			1590
Turn Bay Length (ft)	100		100		150			150	
Base Capacity (vph)	252	2017	284	2411	396	450	601	464	538
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	0.13	0.59	0.43	0.42	0.10	0.01	0.48	0.39	0.12

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	100	1887	372	2056	111	19	251	193	96
v/c Ratio	0.61	0.99	0.96	0.82	0.57	0.08	0.43	0.71	0.28
Control Delay	41.5	56.8	52.2	9.2	62.9	48.5	10.9	62.1	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.5	56.8	52.2	9.2	62.9	48.5	10.9	62.1	14.1
Queue Length 50th (ft)	51	526	243	126	82	13	44	141	8
Queue Length 95th (ft)	#96	#650	m#325	m184	143	37	93	#232	56
Internal Link Dist (ft)		760		590		317			1590
Turn Bay Length (ft)	100		100		150			150	
Base Capacity (vph)	165	1898	386	2514	195	228	579	275	339
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	0.99	0.96	0.82	0.57	0.08	0.43	0.70	0.28

Intersection Summary

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

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1647	40	323	1513	28	196
v/c Ratio	0.62	0.03	0.80	0.40	0.11	0.32
Control Delay	14.9	0.3	44.5	3.3	45.3	25.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	0.3	44.5	3.3	45.3	25.6
Queue Length 50th (ft)	262	0	192	50	19	102
Queue Length 95th (ft)	509	m0	m263	116	47	144
Internal Link Dist (ft)	1230			1240	740	
Turn Bay Length (ft)		250	150		150	
Base Capacity (vph)	2637	1148	516	3813	265	716
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	0.62	0.03	0.63	0.40	0.11	0.27

Intersection Summary

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

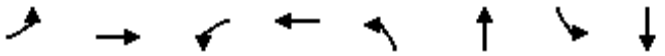
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	2882	128	413	2999	139	420
v/c Ratio	1.08	0.11	0.98	0.76	0.64	0.71
Control Delay	60.5	0.5	61.8	5.5	63.3	40.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.5	0.5	61.8	5.5	63.3	40.6
Queue Length 50th (ft)	~923	1	283	129	104	278
Queue Length 95th (ft)	#1017	m2	m#255	m152	165	402
Internal Link Dist (ft)	1230			1240	740	
Turn Bay Length (ft)		250	150		150	
Base Capacity (vph)	2669	1201	421	3955	309	593
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	1.08	0.11	0.98	0.76	0.45	0.71

Intersection Summary

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

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

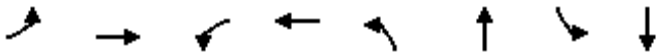
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	114	18	50	41	974	44	718
v/c Ratio	0.52	0.45	0.11	0.21	0.08	0.37	0.11	0.27
Control Delay	46.7	26.0	34.4	20.3	4.4	4.9	4.9	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	26.0	34.4	20.3	4.4	4.9	4.9	4.4
Queue Length 50th (ft)	47	34	9	11	5	83	6	55
Queue Length 95th (ft)	m88	m78	28	41	17	140	20	96
Internal Link Dist (ft)		1250		1230		446		740
Turn Bay Length (ft)	100		250		100		100	
Base Capacity (vph)	359	497	339	474	522	2617	387	2618
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	0.23	0.05	0.11	0.08	0.37	0.11	0.27

Intersection Summary

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

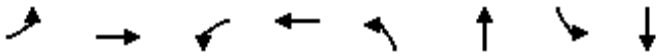


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	113	46	152	128	1053	142	1573
v/c Ratio	0.65	0.40	0.25	0.50	0.78	0.41	0.42	0.62
Control Delay	52.7	21.5	36.3	24.5	45.5	5.9	10.7	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.7	21.5	36.3	24.5	45.5	5.9	10.7	8.1
Queue Length 50th (ft)	57	30	24	42	39	104	27	197
Queue Length 95th (ft)	m96	m67	m52	m95	#173	169	82	316
Internal Link Dist (ft)		1250		1230		446		740
Turn Bay Length (ft)	100		250		100		100	
Base Capacity (vph)	225	379	254	396	165	2553	338	2544
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	0.46	0.30	0.18	0.38	0.78	0.41	0.42	0.62

Intersection Summary

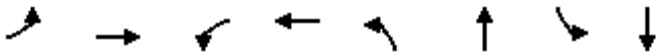
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	87	66	16	33	698	14	1146
v/c Ratio	0.05	0.29	0.31	0.05	0.11	0.27	0.03	0.44
Control Delay	16.8	10.2	21.6	0.2	6.4	4.6	5.3	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	10.2	21.6	0.2	6.4	4.6	5.3	5.8
Queue Length 50th (ft)	3	6	17	0	3	43	1	86
Queue Length 95th (ft)	12	32	42	0	16	81	8	155
Internal Link Dist (ft)		225		580		660		1030
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	500	611	478	644	313	2621	534	2628
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	0.02	0.14	0.14	0.02	0.11	0.27	0.03	0.44

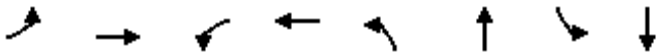
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	19	86	71	60	104	1252	48	1124
v/c Ratio	0.10	0.31	0.38	0.22	0.34	0.50	0.19	0.45
Control Delay	21.8	13.4	28.0	9.7	6.0	4.2	7.4	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	13.4	28.0	9.7	6.0	4.2	7.4	5.9
Queue Length 50th (ft)	6	9	24	2	17	111	6	87
Queue Length 95th (ft)	21	40	53	27	m31	170	24	154
Internal Link Dist (ft)		225		580		660		1030
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	401	514	391	513	306	2509	256	2517
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	0.05	0.17	0.18	0.12	0.34	0.50	0.19	0.45

Intersection Summary

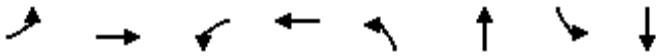
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	36	484	24	996	23	87	84	54
v/c Ratio	0.13	0.22	0.04	0.47	0.07	0.19	0.25	0.12
Control Delay	6.5	4.3	7.3	10.0	26.2	10.5	29.2	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.5	4.3	7.3	10.0	26.2	10.5	29.2	10.3
Queue Length 50th (ft)	1	8	5	141	10	8	38	3
Queue Length 95th (ft)	m13	53	15	184	29	44	78	31
Internal Link Dist (ft)		1840		480		160		410
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	278	2159	542	2129	343	470	333	448
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	0.13	0.22	0.04	0.47	0.07	0.19	0.25	0.12

Intersection Summary

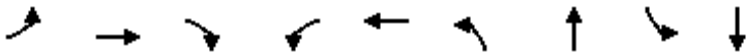
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	108	1086	69	784	14	55	196	90
v/c Ratio	0.28	0.49	0.27	0.36	0.05	0.13	0.63	0.21
Control Delay	3.9	3.0	10.6	7.8	27.4	12.2	41.1	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	3.0	10.6	7.8	27.4	12.2	41.1	11.0
Queue Length 50th (ft)	7	37	16	93	6	5	100	8
Queue Length 95th (ft)	m14	m66	40	125	22	34	175	46
Internal Link Dist (ft)		1720		480		160		410
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	390	2236	259	2204	303	416	313	437
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	0.28	0.49	0.27	0.36	0.05	0.13	0.63	0.21

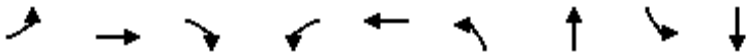
Intersection Summary

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



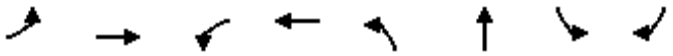
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	23	570	41	8	757	28	3	7	33
v/c Ratio	0.06	0.28	0.04	0.02	0.39	0.08	0.00	0.02	0.05
Control Delay	7.7	11.0	0.1	7.6	13.7	25.6	0.0	24.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	11.0	0.1	7.6	13.7	25.6	0.0	24.7	0.2
Queue Length 50th (ft)	5	74	0	2	105	12	0	3	0
Queue Length 95th (ft)	14	143	0	7	200	33	0	14	0
Internal Link Dist (ft)		130			590		160		278
Turn Bay Length (ft)	100		100	100		100			
Base Capacity (vph)	425	2028	953	532	1925	365	672	375	615
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	0.05	0.28	0.04	0.02	0.39	0.08	0.00	0.02	0.05

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	73	897	144	29	721	173	23	10	54
v/c Ratio	0.23	0.56	0.19	0.11	0.52	0.35	0.03	0.02	0.08
Control Delay	13.8	21.0	6.5	12.8	23.2	23.3	0.1	18.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	21.0	6.5	12.8	23.2	23.3	0.1	18.4	0.2
Queue Length 50th (ft)	21	171	10	8	168	70	0	4	0
Queue Length 95th (ft)	43	286	50	22	224	125	0	14	0
Internal Link Dist (ft)		130			590		160		278
Turn Bay Length (ft)	100		100	100		100			
Base Capacity (vph)	315	1596	774	257	1390	493	695	506	716
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	0.23	0.56	0.19	0.11	0.52	0.35	0.03	0.02	0.08

Intersection Summary

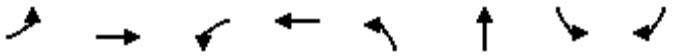


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	182	1685	14	2208	11	2	11	61
v/c Ratio	0.53	0.48	0.09	0.82	0.05	0.01	0.05	0.10
Control Delay	28.4	8.9	15.8	15.2	39.9	0.0	46.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	8.9	15.8	15.2	39.9	0.0	46.1	0.4
Queue Length 50th (ft)	37	123	2	131	7	0	7	0
Queue Length 95th (ft)	m126	237	m9	#392	22	0	29	0
Internal Link Dist (ft)		240		290		1216		
Turn Bay Length (ft)	150		150		150		150	
Base Capacity (vph)	343	3503	152	2699	206	399	243	584
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	21	0	0	0	27
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.48	0.09	0.82	0.05	0.01	0.05	0.11

Intersection Summary

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

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



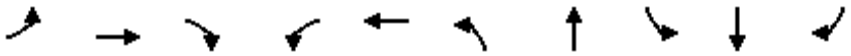
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	58	3612	1	2484	53	10	60	322
v/c Ratio	0.22	1.20	0.01	1.07	0.12	0.02	0.69	0.90
Control Delay	7.0	108.7	28.0	66.4	30.7	0.1	93.7	58.1
Queue Delay	0.0	0.2	0.0	1.0	0.1	0.0	0.0	0.7
Total Delay	7.0	108.9	28.0	67.4	30.8	0.1	93.7	58.8
Queue Length 50th (ft)	7	~1257	0	~809	29	0	47	~174
Queue Length 95th (ft)	m9	m#1098	m0	#908	61	0	#117	#361
Internal Link Dist (ft)		230		715		1216		
Turn Bay Length (ft)	150		150		150		150	
Base Capacity (vph)	280	3017	138	2331	448	481	88	379
Starvation Cap Reductn	0	301	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	5	56	0	0	5
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	1.33	0.01	1.07	0.14	0.02	0.68	0.86

Intersection Summary

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

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

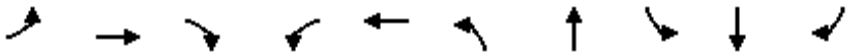
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	176	1308	272	22	1885	193	17	4	35	35
v/c Ratio	0.54	0.40	0.24	0.11	0.72	0.31	0.04	0.03	0.10	0.09
Control Delay	23.6	2.5	0.9	21.2	30.9	42.8	0.2	35.0	0.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	2.5	0.9	21.2	30.9	42.8	0.2	35.0	0.6	0.4
Queue Length 50th (ft)	52	131	26	11	371	68	0	2	0	0
Queue Length 95th (ft)	137	16	0	m19	600	91	0	12	0	0
Internal Link Dist (ft)		345			695		1232		572	
Turn Bay Length (ft)	250		250	250		250		250		250
Base Capacity (vph)	324	3289	1120	197	2616	618	435	125	475	408
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.40	0.24	0.11	0.72	0.31	0.04	0.03	0.07	0.09

Intersection Summary

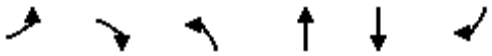
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	68	2611	702	62	1691	767	68	21	156	156
v/c Ratio	0.36	1.10	0.53	0.56	0.82	0.80	0.10	0.09	0.42	0.33
Control Delay	18.8	67.8	1.7	27.8	10.9	37.8	0.3	27.6	3.5	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	67.8	1.7	27.8	10.9	37.8	0.3	27.6	3.5	4.3
Queue Length 50th (ft)	15	~852	39	7	130	243	0	10	0	0
Queue Length 95th (ft)	m6	m146	m4	m10	m254	308	0	28	0	32
Internal Link Dist (ft)		715			695		1232		572	
Turn Bay Length (ft)	250		250	250		250		250		250
Base Capacity (vph)	253	2364	1318	110	2071	954	678	309	370	530
Starvation Cap Reductn	0	0	10	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	1.10	0.54	0.56	0.82	0.80	0.10	0.07	0.42	0.29

Intersection Summary

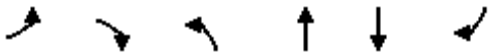
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	82	52	64	1599	1158	127
v/c Ratio	0.34	0.20	0.17	0.44	0.38	0.13
Control Delay	27.4	8.0	2.9	3.1	5.6	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.4	8.0	2.9	3.1	5.6	1.1
Queue Length 50th (ft)	28	1	5	60	91	4
Queue Length 95th (ft)	49	17	m11	65	112	m9
Internal Link Dist (ft)	490			1240	1216	
Turn Bay Length (ft)	150		250			150
Base Capacity (vph)	472	460	382	3673	3022	992
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	0.17	0.11	0.17	0.44	0.38	0.13

Intersection Summary

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



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	326	209	187	1170	1739	302
v/c Ratio	0.80	0.40	0.59	0.34	0.71	0.36
Control Delay	58.6	6.7	30.8	1.0	14.9	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.6	6.7	30.8	1.0	14.9	4.3
Queue Length 50th (ft)	240	0	91	10	209	24
Queue Length 95th (ft)	317	55	m135	m15	m311	m41
Internal Link Dist (ft)	490			1240	1216	
Turn Bay Length (ft)			150			150
Base Capacity (vph)	531	621	319	3413	2438	846
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	0.61	0.34	0.59	0.34	0.71	0.36

Intersection Summary

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