

Draft Transportation Impact Analysis Southeast Policy Area

February 2014

RS12-3059

FEHR  PEERS

Table of Contents

1. INTRODUCTION	4
Study Area	5
Study Intersections	5
Study Freeway Facilities	7
Data Collection	8
Analysis Methodology	8
Intersections	8
Roadway Segments	10
Freeway Facilities	10
Travel Demand Forecasting	11
Analysis Evaluation Criteria	12
Intersections	12
Roadway Segments	12
Freeway Facilities	12
Bicycle/Pedestrian/Transit Facilities	13
Report Organization	13
2. EXISTING CONDITIONS	14
Existing Transportation System	14
Roadway System	14
Bicycle and Pedestrian Facilities	15
Transit Facilities	16
Traffic Operations Analysis	17
Intersection Operations	17
Fehr & Peers, 2014.Freeway Facility Operationsns	22
Freeway Facility Operationsns	23
3. PROPOSED PROJECT	27
Project Description	27
Planned Land Use	27
Trip Generation	28

Planned Circulation.....	32
4. EXISTING PLUS PROJECT CONDITIONS	40
Traffic Operations Analysis	40
Intersection Operations	40
Freeway Facility Operations	53
Bicycle and Pedestrian Facilities	59
Transit Facilities	59
5. CUMULATIVE CONDITIONS	60
Traffic Operations Analysis	60
Intersection Operations	60
Freeway Facility Operations	69
Bicycle and Pedestrian Facilities	73
Transit Facilities	73
6. SPORTS COMPLEX	74

List of Figures

Figure 1: Study Location.....	4
Figure 2: Study Area.....	6
Figure 3: Bicycle and Pedestrian Facilities.....	16
Figure 4: Elk Grove Transit System Map.....	17
Figure 5: Land Use.....	26
Figure 6: Onsite Intersection Traffic Control.....	36
Figure 7: Transit Development.....	38

List of Tables

Table 1: Intersection Level of Service Thresholds.....	9
Table 2: Level of Service Definitions for Study Roadways.....	10
Table 3: Freeway Level of Service Definitions.....	11
Table 4: Peak Hour Intersection Level of Service – Existing Conditions	18
Table 5: Freeway Analysis – Existing Conditions	23
Table 6: Planned Land Use.....	28
Table 8: Roadway Segment Level of Service – Onsite Roadways.....	33
Table 10: Peak Hour Intersection Level of Service – Existing Plus Project Conditions.....	42
Table 11: Freeway Analysis – Existing Plus Project Conditions.....	54
Table 12: Peak Hour Intersection Level of Service – Cumulative plus project Conditions	62
Table 13: Freeway Analysis – Cumulative Plus Project Conditions	70

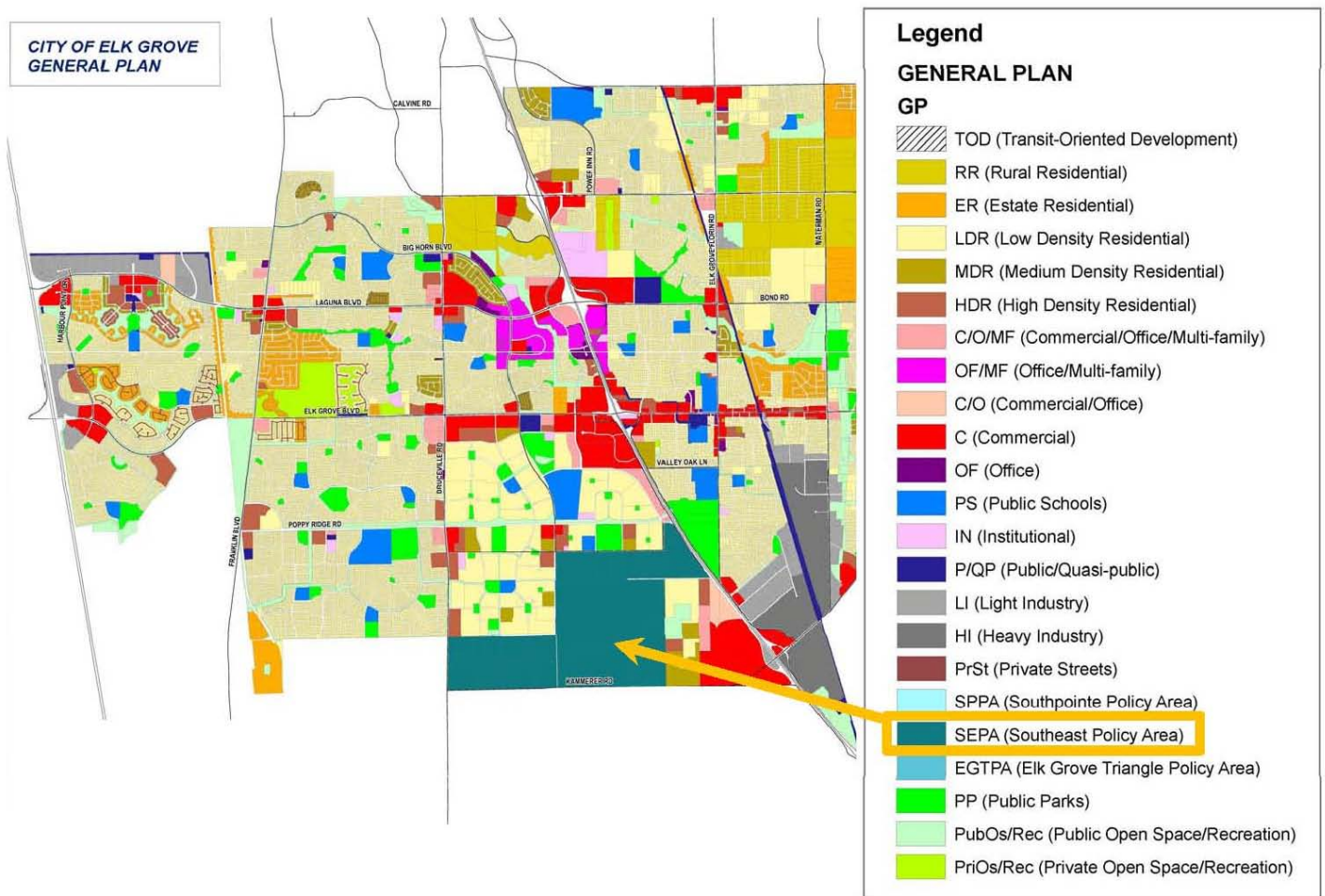
Appendices

- Appendix A: Existing Conditions
- Appendix B: Existing Plus Project
- Appendix C: Cumulative Conditions

1. INTRODUCTION

This study addresses the potential transportation impacts associated with implementation of the Southeast Policy Area (SEPA). The SEPA is located west of State Route 99 (SR 99), east of Big Horn Boulevard and Bruceville Road, south of Bilby Road and Poppy Ridge Road, and north of Kammerer Road. Figure 1 shows the project location.

Figure 1 – Study Location



The SEPA is bordered by the approved Laguna Ridge Specific Plan to the north and west and the southern border of the City coincides with the southern boundary of the project. The Sterling Meadows Project and the planned Elk Grove Promenade and Lent Ranch Marketplace are located between the project and SR 99 to the east. The proposed project could have an effect on



transportation. This impact analysis examines the transportation system serving the project under existing and cumulative conditions for the following scenarios:

- Existing Conditions
- Existing Plus Project Conditions
- Cumulative Conditions

STUDY AREA

The study area was selected based on the expected travel characteristics of the project (i.e., project location), as well as the nearby transportation facilities' susceptibility to project impacts. The study area is shown on Figure 2. The following 33 off-site intersections and 27 freeway facilities were selected for analysis:

STUDY INTERSECTIONS

1. Elk Grove Boulevard / Franklin Boulevard
2. Elk Grove Boulevard / Bruceville Road
3. Elk Grove Boulevard / Big Horn Boulevard
4. Elk Grove Boulevard / Laguna Springs Drive
5. Elk Grove Boulevard / Auto Center Drive
6. Elk Grove Boulevard / SR 99 SB Ramps
7. Elk Grove Boulevard / SR 99 NB On-Ramp
8. Elk Grove Boulevard / East Stockton Boulevard
9. East Stockton Boulevard / SR 99 NB Off-Ramp
10. Bruceville Road / Whitelock Parkway
11. Big Horn Boulevard / Whitelock Parkway
12. Whitelock Road / West Stockton Boulevard
13. Bruceville Road / Bilby Road
14. Hood Franklin Road / I-5 SB Ramps
15. Hood Franklin Road / I-5 NB Ramps
16. Hood Franklin Road / Franklin Boulevard
17. Bilby Road / Franklin Boulevard
18. Willard Parkway / Bilby Road (North)
19. Willard Parkway / Bilby Road (South)
20. Kammerer Road / Bruceville Road
21. Kammerer Road / Promenade Parkway
22. Kammerer Road / SR 99 SB Ramps
23. Grant Line Road / SR 99 NB Ramps
24. Grant Line Road / East Stockton Boulevard
25. Grant Line Road / Waterman Road
26. Kammerer Road / Hood Franklin Road
27. Kammerer Road / Franklin Boulevard
28. Kammerer Road / Willard Parkway
29. Kammerer Road / Collector 2
30. Kammerer Road / Big Horn Boulevard
31. Kammerer Road / Collector 1
32. Kammerer Road / Lotz Parkway
33. Kammerer Road / Sterling Meadows



Figure 2 Study Area



STUDY FREEWAY FACILITIES

1. NB SR 99 South of Grant Line Road
2. NB SR 99 Grant Line Road Off-Ramp
3. NB SR 99 Grant Line Road Loop On-Ramp
4. NB SR 99 Grant Line Road Slip On-Ramp
5. NB SR 99 South of Elk Grove Boulevard
6. NB SR 99 Elk Grove Boulevard Off-Ramp
7. NB SR 99 Elk Grove Boulevard Loop On-Ramp
8. NB SR 99 Elk Grove Boulevard Slip On-Ramp
9. NB SR 99 North of Elk Grove Boulevard
10. SB SR 99 North of Elk Grove Boulevard
11. SB SR 99 Elk Grove Boulevard Off-Ramp
12. SB SR 99 Elk Grove Boulevard Slip On-Ramp
13. SB SR 99 South of Elk Grove Boulevard
14. SB SR 99 Grant Line Road Off-Ramp
15. SB SR 99 Grant Line Road Loop On-Ramp
16. SB SR 99 Grant Line Road Slip On-Ramp
17. SB SR 99 South of Grant Line Road
18. NB I-5 South of Hood Franklin Road
19. NB I-5 Hood Franklin Road Off-Ramp
20. NB I-5 Hood Franklin Road Loop On-Ramp
21. NB I-5 Hood Franklin Road Slip On-Ramp
22. NB I-5 North of Hood Franklin Road
23. SB I-5 North of Hood Franklin Road
24. SB I-5 Hood Franklin Road Off-Ramp
25. SB I-5 Hood Franklin Road Loop On-Ramp
26. SB I-5 Hood Franklin Road Slip On-Ramp
27. SB I-5 South of Hood Franklin Road



DATA COLLECTION

To provide a baseline for the transportation analysis, traffic counts were collected at the existing study intersections on Tuesday, April 9, 2013 and Wednesday, April 10, 2013. The intersection turning movement counts were conducted during the AM (7:00 to 9:00) and PM (4:00 to 6:00) peak periods. During the counts, weather conditions were generally dry, no unusual traffic patterns were observed, and the Elk Grove Unified School District was in full session. Pedestrians were also counted at each of the study intersections.

Each intersection's peak hour within the peak period was used for the analysis. For the majority of study intersections, the counts indicate that the AM peak hour is between 7:00 AM and 8:00 AM and the PM peak hour is between 5:00 PM and 6:00 PM.

In addition to the intersection counts, the following additional data sources were used in the analysis of study facilities:

- Freeway traffic count data provided by Caltrans and available through the Caltrans Performance Measurement System (PeMS)
- Traffic signal timings provided by the City of Elk Grove

ANALYSIS METHODOLOGY

Analysis methods for roadways are described below.

INTERSECTIONS

All intersections were analyzed using procedures and methodologies contained in the Highway Capacity Manual (HCM), Transportation Research Board, 2000. These methodologies were applied using Synchro, a traffic operations analysis software package. HCM 2010 was not used for intersection operations analysis due to software errors that prevent the accurate analysis of some shared turn lane configurations present in the study area. Use of HCM 2000 methods for study intersections was approved by City of Elk Grove staff.

The HCM methodologies determine a level of service (LOS) for each study intersection. Level of service is a qualitative measure of traffic operating conditions whereby a letter grade, from A to F, is



assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. In general, LOS A represents free-flow conditions with no congestion, and LOS F represents severe congestion and delay under stop-and-go conditions. Table 1 presents the intersection LOS thresholds for signal and stop controlled intersections.

TABLE 1: INTERSECTION LEVEL OF SERVICE THRESHOLDS

Level of Service	Average Control Delay (Seconds/Vehicle) ¹	
	Signal Control	Stop Control
A	≤ 10.0	≤ 10.0
B	10.1 – 20.0	10.1 – 15.0
C	20.1 – 35.0	20.1 – 25.0
D	35.1 – 55.0	35.1 – 35.0
E	55.1 – 80.0	55.1 – 50.0
F	> 80.0	> 50.0

Notes:

¹Control delay includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay.

Source: *Highway Capacity Manual*, Transportation Research Board, 2000.

Detailed Assumptions and Methodologies

- Per HCM procedures, the level of service (LOS) for the study intersections was based on the average control delay for all vehicles.
- For the Existing and Existing Plus Project scenarios, peak hour factors (PHF) for study intersections were calculated based upon the April 2013 counts. Under Cumulative No Project and Cumulative Plus Project conditions, PHFs for study intersections were set at the existing PHF, or 0.92, whichever was higher.
- Intersection peak hour heavy vehicle¹ percentages were set at two percent based on data obtained during the April 2013 counts.
- Freeway mainline truck percentages were set at six percent with ramp percentages set at three percent.

¹ As defined by the *Highway Capacity Manual*, a heavy vehicle is any "vehicle with more than four wheels touching the pavement during normal operation."



ROADWAY SEGMENTS

Roadway segments were analyzed by comparing average peak hour daily traffic volumes to capacity thresholds presented in the City of Elk Grove’s Traffic Impact Analysis Guidelines (July 2000). Consistent with assumptions in the City’s General Plan background report, study segments were analyzed using thresholds for arterial roadways with moderate access control. Table 2 shows daily volume thresholds for each LOS category for two-, four-, six-, and eight-lane roadways with moderate access control.

TABLE 2: LEVEL OF SERVICE DEFINITIONS FOR STUDY ROADWAYS

Number of Lanes	Maximum Daily Volume ¹				
	LOS A	LOS B	LOS C	LOS D	LOS E
2	10,800	12,600	14,400	16,200	18,000
4	21,600	25,200	28,800	32,400	36,000
6	32,400	37,800	43,200	48,600	54,000
8	43,200	50,400	57,600	64,800	72,000

Notes: ¹ Thresholds apply to arterial roadways with moderate access control.

Source: City of Elk Grove’s *Traffic Impact Analysis Guidelines*, July 2000.

FREEWAY FACILITIES

Per Caltrans standards, the freeway ramps and mainline were analyzed using procedures from the Highway Capacity Manual, 2010

. This procedure determines the LOS based on the computed density, which is expressed in passenger cars per lane, per mile. Table 3 displays the density ranges associated with each LOS category for basic segments and ramp merge/diverge movements. Consistent with the methodology described in the *Highway Design Manual* (Caltrans, last updated July 1, 2008), the Leisch Method was used to analyze weaving areas.



TABLE 3: FREEWAY LEVEL OF SERVICE DEFINITIONS

Level of Service	Density (Passenger Cars per Mile per Lane) ¹	
	Basic Segments	Ramp Merge/Diverge
A	< 11	< 10
B	> 11 to 18	> 10 to 20
C	> 18 to 26	> 20 to 28
D	> 26 to 35	> 28 to 35
E	> 35 to 45	> 35
F	> 45 or any v/c ratio > 1.00 ¹	Demand exceeds capacity ²

Notes: ¹ V/C ratio = demand flow rate divided by the capacity of a given segment.

² Occurs when freeway demand exceeds upstream (diverge) or downstream (merge) freeway segment capacity, or if off-ramp demand exceeds off-ramp capacity.

Source: Exhibits 10-7 and 13-2 of 2010 HCM

As outlined below, SR 99 from just south of Elk Grove Boulevard through the city includes one high occupancy vehicle (HOV) lane and two general purpose lanes in each direction. Therefore, to account for HOV lane utilization, the freeway segment analysis is based on the traffic volume in the general purpose lanes, by removing vehicles using the HOV lanes from the analysis, based on measured HOV volumes documented in Caltrans' *District 3 High Occupancy Vehicle Lanes Status Report, Sacramento Metropolitan Area* (July 2011).

TRAVEL DEMAND FORECASTING

A modified version of SACOG's MTP/SCS travel demand forecasting (TDF) model was used to develop traffic volumes for the study facilities. The base year model is generally representative of 2008 conditions and the future year model has a 2035 forecast year. The TDF model was used to develop traffic volume forecasts for project conditions under existing and cumulative conditions. The TDF model was modified to reflect build out development levels in the City of Elk Grove, including build out of the Laguna Ridge Specific Plan, Sterling Meadows, the Elk Grove Promenade, and Lent Ranch Marketplace adjacent to the project. The traffic model trip generation was adjusted to match (i.e., equal to or greater) than trip generation based on Institute of Transportation Engineers' Trip Generation (9th Edition, 2012). Year 2035 levels of development are assumed outside the City of Elk Grove. All forecasts are adjusted using a growth increment method (i.e., the difference method) that adds the growth in forecasts travel demand to existing traffic counts. The base year TDF model transportation network (in the study area) was modified to account of changes to the



network that have occurred between 2008 and 2012 (i.e., when the traffic counts were collected). The 2035 transportation network is consistent with programmed improvements listed in the Final MTP/SCS project list.

ANALYSIS EVALUATION CRITERIA

Consistent with the City of Elk Grove's *Traffic Impact Analysis Guidelines* (July 2000), the following evaluation criteria were used to determine the significance of project impacts:

INTERSECTIONS

An impact to a roadway segment is considered significant, and mitigation measures must be identified when:

- The traffic generated by the project degrades the LOS from an acceptable LOS D or better (without the project) to an unacceptable LOS E or LOS F (with the project)
- The level of service (without project) is unacceptable and project generated traffic increases the average vehicle delay by more than five seconds

ROADWAY SEGMENTS

An impact to a roadway segment is considered significant, and mitigation measures must be identified when:

- The traffic generated by the project degrades the LOS from an acceptable LOS D or better (without the project) to an unacceptable LOS E or LOS F (with the project)
- The level of service (without project) is unacceptable and project generated traffic increases the volume-to-capacity (V/C) ratio by 0.05 or more

FREEWAY FACILITIES

An impact is considered significant on freeway facilities if the Project causes the facility to change from acceptable to unacceptable LOS.

For facilities, which are or will be (in the cumulative condition), operating at unacceptable LOS without the Project, an impact is considered significant if the project:



- Increases the V/C ratio on a freeway mainline segment or freeway ramp junction by 0.05
- Increase the number of peak hour vehicles on a freeway mainline segment or freeway ramp junction by more than five percent

According to the Guide for the Preparation of Traffic Impact Studies (Caltrans, June 2001), Caltrans strives to maintain a target LOS at the transition between LOS C and LOS D on State highway facilities; therefore, LOS D was selected as the minimum standard for all study freeway facilities.

BICYCLE/PEDESTRIAN/TRANSIT FACILITIES

An impact is considered significant if implementation of the project will disrupt or interfere with existing or planned bicycle, pedestrian, or transit facilities.

REPORT ORGANIZATION

The remainder of this report consists of the following chapters:

- Chapter 2 – Existing Conditions
- Chapter 3 – Existing Plus Project Conditions
- Chapter 4 – Cumulative Conditions



2. EXISTING CONDITIONS

This chapter describes the physical and operational characteristics of the transportation system within the study area.

EXISTING TRANSPORTATION SYSTEM

The City of Elk Grove is generally located in south Sacramento County about 15 miles south of the City of Sacramento. Regional freeway access to Elk Grove is provided State Route 99 (SR 99) by Interstate 5 (I-5). Grant Line Road provides access to regional destination north and south of Elk Grove like the City of Rancho Cordova, City of Folsom, and community of El Dorado Hills. Elk Grove is generally served by a network of arterial-level roadways on a one-mile grid with interchanges on SR 99. I-5 has two interchanges that provide direct access to the city.

ROADWAY SYSTEM

- **Big Horn Boulevard** is a four-lane arterial street extending from Franklin Boulevard to Whitelock Parkway. Big Horn Boulevard is constructed to its general plan designation.
- **Bruceville Road** is a north-south road extending from Valley Hi Drive near the Kaiser-Permanente complex in unincorporated Sacramento County to south of Kammerer Road. Bruceville Road is four lanes between Sheldon Road and Laguna Boulevard, six lanes between Laguna Boulevard and Elk Grove Boulevard, four lanes between Elk Grove Boulevard and Whitelock Parkway, and two lanes south of Whitelock Parkway. Bruceville Road is designated as a six-lane arterial in the general plan.
- **Elk Grove Boulevard** is an east-west road extending from I-5 to Grant Line Road. Elk Grove Boulevard is six lanes from I-5 to East Stockton Boulevard, four lanes to Elk Grove-Florin Road, and two lanes to Grant Line Road. Elk Grove Boulevard is constructed to its general plan designation between I-5 and Waterman Road. Elk Grove Boulevard is designated in the general plan as a four-lane arterial east of Waterman Road.
- **Whitelock Parkway** is an east-west road extending from West Stockton Boulevard to Bruceville Road. Whitelock Parkway is improved with four travel lanes between Bruceville Road and Big Horn Boulevard. East of Big Horn Boulevard, Whitelock Parkway is two lanes.



Whitelock Parkway is planned as a four lane arterial with a partial access interchange at SR 99 that will serve travel to/from the west only.

- **Grant Line Road** is traverses Elk Grove in a southwest to northeast direction. Grant Line Road extends from SR 99 through Elk Grove to White Rock Road in Rancho Cordova. Grant Line Road is six lanes between SR 99 and East Stockton Boulevard. East of East Stockton Boulevard, Grant Line Road is two lanes. Grant line Road is designated as an eight lane arterial between SR 99 and Bradshaw Road and as a six lane arterial east of Bradshaw Road. Grant Line Road between Calvine Road and just east of Equestrian Drive is subject to the Elk Grove Rural Road Improvement Policy. Grant Line Road is also part of the Capital SouthEast Connector project.
- **Kammerer Road** is an east-west road extending from Bruceville Road to West Stockton Boulevard. Kammerer Road is two lanes from just west of Lent Ranch Parkway to Bruceville Road. Kammerer Road is part of the Capital SouthEast Connector project and is designated in the General Plan as an eight lane arterial from SR 99 to Lent Ranch Parkway and as a six-lane arterial from Lent Ranch Parkway to Franklin Boulevard. The general plan includes the extension of Kammerer Road from Bruceville Road to Franklin Boulevard.
- **State Route 99 (SR 99)** is a north-south freeway that provides a connection between all of the major cities in the Central Valley, from Sacramento and Stockton in the north to the cities of Modesto, Merced, Fresno, and Bakersfield in the south. Access to SR 99 is provided through interchanges at Grant Line Road, Elk Grove Boulevard, Laguna Boulevard/Bond Road, and Sheldon Road. This section of SR 99 has two mainline travel lanes and one high occupancy vehicle (HOV) lane in either direction with a posted speed limit of 65 mph.
- **Interstate 5 (I-5)** is a north-south freeway that traverses California and is a major national freeway that connects between Mexico and Canada. Near the Hood Franklin Road interchange, I-5 is a four-lane freeway.

BICYCLE AND PEDESTRIAN FACILITIES

Bicycle and pedestrian trips account for approximately 2.8 percent of all work trips and 4.9 percent of all non-work trips made by residents and employees in suburban areas. This estimate is from the *Pre-Census Travel Behavior Report Analysis of the 2000 SACOG Household Travel Survey* (Sacramento Area Council of Governments, 2001).



The majority of the bike paths in the city limits are Class II lanes, which are located on existing streets or highways and are striped for one-way bicycle travel. Below are descriptions of bicycle paths and their classifications.

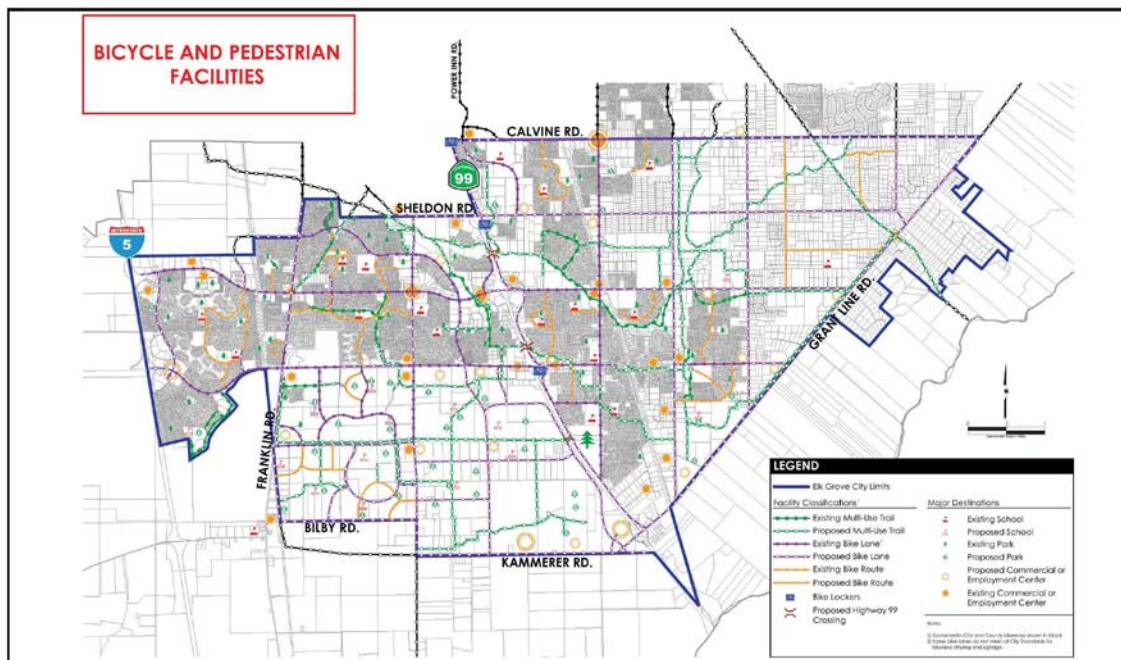
Class I Bike Paths provide a completely separated right-of-way for the exclusive use of bicycles and pedestrian with cross-flow minimized.

Class II Bike Lanes are striped lanes for one-way bike travel on a street or highway.

Class III Bike Routes provide for shared use with pedestrians or motor vehicle traffic.

The City adopted the City of Elk Grove Bicycle and Pedestrian Master Plan (BPMP) in July 2004. The BPMP identifies existing facilities opportunities, constraints, and destination points for bicycle users and pedestrians in the City of Elk Grove. Existing and proposed bicycle and pedestrian facilities documented in the BPMP are shown in the following graphic (Figure 2 of the BPMP).

Figure 3 – Bicycle and Pedestrian Facilities

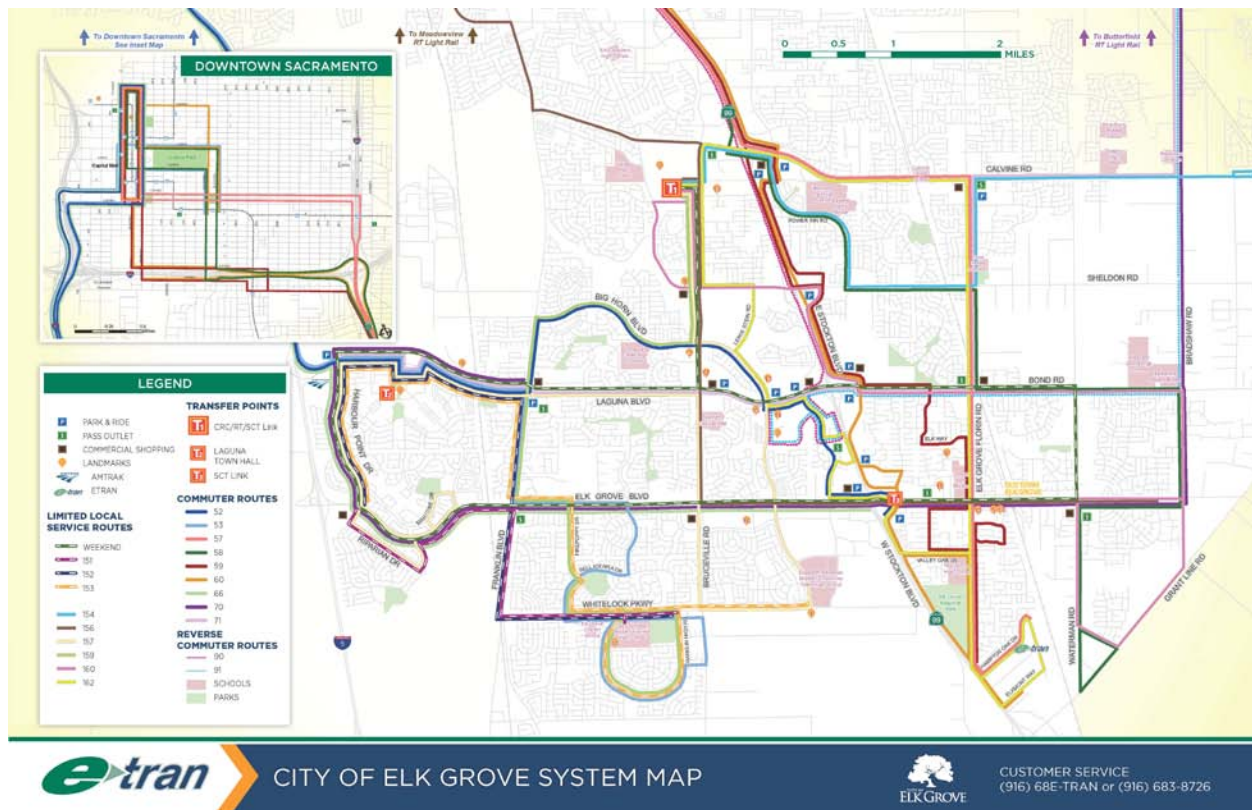


TRANSIT FACILITIES



The City of Elk Grove is served by its own transit system, e-Tran, including e-Tran neighborhood shuttle service (ez-tran), limited local transit service, and commuter routes. Local transit service is provided on weekdays (six routes) and weekends (three routes). e-Tran provides nine commuter routes that operate mid-week, including two reverse commuter routes. The current e-Tran system map is shown below.

Figure 4 – Elk Grove Transit System Map



TRAFFIC OPERATIONS ANALYSIS

This section describes the operations of the study intersections and freeway facilities under existing conditions.

INTERSECTION OPERATIONS

Appendix A includes existing AM and PM weekday peak hour intersection turning movement volumes, lane configurations, and traffic controls present at each of the study intersections. Table 4



summarizes the existing peak hour intersection operations at the study intersections (refer to separate Appendix A for detailed calculations). As shown, most study intersections currently operate acceptably at LOS D or better during both peak hours, except for the Bilby Road/Franklin Boulevard intersection. The all-way stop controlled intersection operates at LOS E during the AM peak hour.

During field observations, significant vehicle queuing was observed during the PM peak hour near the SR 99/Elk Grove Boulevard interchange. The Synchro intersection operations documented in Table 4 are based on the number of vehicles that are served during the PM peak hour and does not include the operational effects of these closely spaced intersections. Therefore, conditions experienced by motorists may be worse than reported.

TABLE 4: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
Existing Conditions					
1. Elk Grove Blvd / Franklin Blvd	Signal	40	D	37	D
2. Elk Grove Blvd / Bruceville Rd	Signal	38	D	40	D
3. Elk Grove Blvd / Big Horn Blvd	Signal	31	C	26	C
4. Elk Grove Blvd / Laguna Springs Dr	Signal	33	C ¹	24	C ¹
5. Elk Grove Blvd / Auto Center Dr	Signal	19	B ¹	25	C ¹
6. Elk Grove Blvd / SR 99 Southbound	Signal	26	C ¹	35	C ¹



TABLE 4: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
7. Elk Grove Blvd / SR 99 Northbound	Signal	13	B ¹	13	B ¹
8. Elk Grove Blvd / East Stockton Blvd	Signal	35	C ¹	39	D ¹
9. East Stockton Blvd / SR 99 Northbound Off-Ramp	Side-Street Stop	5 (20)	A (C)	5 (22)	A (C)
10. Bruceville Rd / Whitelock Pkwy	Signal	28	C	26	C
11. Big Horn Blvd / Whitelock Pkwy	Signal	40	D	16	B
12. Whitelock Pkwy / West Stockton Blvd	Side-Street Stop	6 (14)	A (B)	5 (12)	A (B)
13. Bruceville Rd / Bilby Rd	Signal	11	B	10	A
14. Hood Franklin Rd / I-5 SB Ramps	Side-Street Stop	4 (10)	A (B)	7 (11)	A (B)
15. Hood Franklin Rd / I-5 NB Ramps	Side-Street Stop	0 (14)	A (B)	2 (12)	A (B)



TABLE 4: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
16. Hood Franklin Rd / Franklin Blvd	All-Way Stop	22	C	13	B
17. Bilby Rd / Franklin Blvd	All-Way Stop	57	F	8	A
18. Willard Pkwy / Bilby Rd (North)	Signal	31	C	25	C
19. Willard Pkwy / Bilby Rd (South)	Signal	29	C	30	C
20. Kammerer Rd / Bruceville Rd	Side-Street Stop	9 (13)	A (B)	9 (12)	A (B)
21. Kammerer Rd / Promenade Pkwy	Signal	13	B	18	B
22. Kammerer Rd / SR 99 Southbound Ramps	Signal	6	A	6	A
23. Grant Line Rd / SR 99 Northbound Ramps	Signal	8	A	9	A
24. Grant Line Rd / East Stockton Blvd	Signal	27	C	29	C



TABLE 4: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
25. Grant Line Rd / Waterman Rd	Signal	19	B	20	B
26. Kammerer Rd / Hood Franklin Rd	--	--	--	--	--
27. Kammerer Rd / Franklin Blvd	--	--	--	--	--
28. Kammerer Rd / Willard Pkwy	--	--	--	--	--
29. Kammerer Rd / Collector 2	--	--	--	--	--
30. Kammerer Rd / Big Horn Blvd	--	--	--	--	--
31. Kammerer Rd / Collector 1	--	--	--	--	--
32. Kammerer Rd / Lotz Pkwy	--	--	--	--	--
33. Kammerer Rd / Sterling Meadows Ct	--	--	--	--	--



Fehr & Peers, 2014.

¹During field observations, significant vehicle queuing was observed during the PM peak hour near the SR 99/Elk Grove Boulevard interchange. The Synchro intersection operations are based on the number of vehicles that are served during the PM peak hour and does not include the operational effects of these closely spaced intersections. Therefore, conditions experienced by motorists may be worse than reported.



FREEWAY FACILITY OPERATIONS

Table 5 summarizes the existing AM and PM peak hour freeway operations on SR 99 and I-5 (refer to separate Appendix A for detailed calculations). As shown the freeway facilities operate acceptably at LOS D or better during both peak hours.

However, peak period operations on SR 99 may be worse than reported due to reoccurring bottlenecks. As documented in the *California Department of Transportation Mobility Performance Report, 2009*, several bottleneck locations exist on SR 99 that meter traffic northbound in the morning and southbound in the evening. These bottlenecks cause congested conditions (i.e., vehicle speed of 35 miles per hour or less) and vehicle queuing on northbound SR 99 during the AM peak period. Similarly, bottlenecks on southbound SR 99 in the evening meter traffic on SR 99 through Elk Grove.

TABLE 5: FREEWAY ANALYSIS – EXISTING CONDITIONS

Freeway Facility	Type	AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS
Existing Conditions					
1. NB SR 99 South of Grant Line Road	Basic Segment	20.9	C	20.4	C
2. NB SR 99 Grant Line Road Off-Ramp	Diverge	19.1	B	16.8	B
3. NB SR 99 Grant Line Road Loop On-Ramp	Basic Segment	11.9	B	10.9	A
4. NB SR 99 Grant Line Road Slip On-Ramp	Merge	16.6	B	16.3	B
5. NB SR 99 South of Elk Grove Boulevard	Basic Segment	17.6	B	17.8	B



TABLE 5: FREEWAY ANALYSIS – EXISTING CONDITIONS

Freeway Facility	Type	AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS
6. NB SR 99 Elk Grove Boulevard Off-Ramp	Diverge	18.0	B	17.9	B
7. NB SR 99 Elk Grove Boulevard Loop On-Ramp	Merge	-	-	-	-
8. NB SR 99 Elk Grove Boulevard Slip On-Ramp	Merge	22.2	C	20.7	C
9. NB SR 99 North of Elk Grove Boulevard	Basic Segment	18.4	C	17.7	B
10. SB SR 99 North of Elk Grove Boulevard	Basic Segment	16.7	B	20.3	C
11. SB SR 99 Elk Grove Boulevard Off-Ramp	Diverge	17.4	B	21.5	C
12. SB SR 99 Elk Grove Boulevard Slip On-Ramp	Merge	20.9	C	23.9	C
13. SB SR 99 South of Elk Grove Boulevard	Basic Segment	15.9	B	18.5	C
14. SB SR 99 Grant Line Road Off-Ramp	Diverge	12.3	B	15.0	B



TABLE 5: FREEWAY ANALYSIS – EXISTING CONDITIONS

Freeway Facility	Type	AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS
15. SB SR 99 Grant Line Road Loop On-Ramp	Basic Segment	12.7	B	14.8	B
16. SB SR 99 Grant Line Road Slip On-Ramp	Merge	16.5	B	18.6	B
17. SB SR 99 South of Grant Line Road	Basic Segment	12.0	B	14.4	B
18. NB I-5 South of Hood Franklin Road	Basic Segment	15.5	B	17.0	B
19. NB I-5 Hood Franklin Road Off-Ramp	Diverge	21.8	C	21.9	C
20. NB I-5 Hood Franklin Road Loop On-Ramp	Merge	19.8	B	19.3	B
21. NB I-5 Hood Franklin Road Slip On-Ramp	Merge	25.8	C	20.6	C
22. NB I-5 North of Hood Franklin Road	Basic Segment	20.8	C	17.1	B
23. SB I-5 North of Hood Franklin Road	Basic Segment	12.3	B	16.8	B



TABLE 5: FREEWAY ANALYSIS – EXISTING CONDITIONS

Freeway Facility	Type	AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS
24. SB I-5 Hood Franklin Road Off-Ramp	Diverge	20.8	C	24.0	C
25. SB I-5 Hood Franklin Road Loop On-Ramp	Merge	19.3	B	20.5	C
26. SB I-5 Hood Franklin Road Slip On-Ramp	Merge	19.8	B	20.9	C
27. SB I-5 South of Hood Franklin Road	Basic Segment	12.7	B	15.8	B

Fehr & Peers, 2014.



3. PROPOSED PROJECT

This chapter discusses the proposed project, including planned residential and employment land use and circulation system.

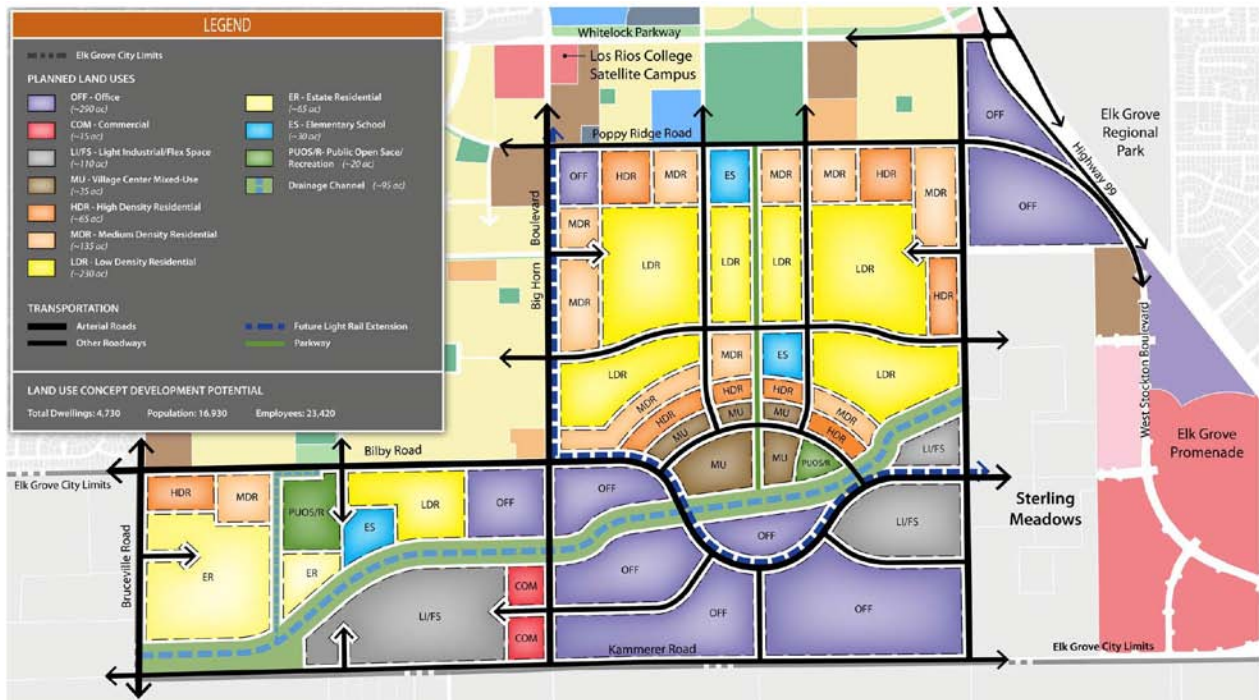
PROJECT DESCRIPTION

The SEPA planned land use and circulation system are discussed below.

PLANNED LAND USE

The primary objective of the SEPA is to plan for a range of job opportunities that are supported by a balance mix of residential densities and locally serving retail uses. As envisioned, the SEPA will be a regional employment and entertainment destination. The SEPA land use plan shown below covers about 1,200 acres.

Figure 5 – Land Use



As shown, most of the employment land use is located along Kammerer Road in the southern portion of the plan and in the northeast portion of the plan along West Stockton Boulevard, just south of Whitelock Parkway. Residential land use is located north of the drainage channel/public open space corridor between the employment land use and the Laguna Ridge Specific. The plan also includes a cluster of land use designated as Village Center Mixed-Use (MU) in the center of the plan north of Bilby and east of Big Horn Boulevard. Table 6 summarizes planned land use and acreages shown on the land use plan.

TABLE 6: PLANNED LAND USE

Land Use	Acreage (Approximate)
Residential	
Estate	65
Low Density	230
Medium Density	135
High Density	65
Mixed Use	
Village Center	35
Employment	
Commercial	15
Office	290
Light Industrial/Flex Space	110
Schools	30
Parks	20
Drainage Channel/Open Space	95
Major Right-of-Way and Drainage	105
Total	1,200 ¹

Notes:

Source: *Notice of Preparation – Environmental Impact Report for the Southeast Policy Area Strategic Plan*

TRIP GENERATION

Based on information contained in the Notice of Preparation and subsequent correspondence with City staff, Fehr & Peers prepared trip generation estimates for the project based on methodologies and trip rates presented in Trip Generation, 9th Edition (Institute of Transportation Engineers), with



adjustments to account for internal vehicle trips and walking trips given the mix of land use proposed and the location of the project relative to other services.

This traffic study determined that the combined effects of the Project's land use, location, and development scale would contribute to a reduction in off-site average weekday vehicle "trips" (e.g., one vehicle trip is when a person drives from their home to shopping or their job. Their return drive home is another trip). This reduction is due largely to the Project's mix of land use and proximity to commercial and retail services and connections between the project and these services.

Traditionally, traffic engineers and transportation planners have estimated internalization of project trips using one of two methods. First, they would estimate it based on their professional judgment. Alternatively, professionals relied on the Institute of Transportation Engineers' (ITE) internalization methodology presented in the ITE Trip Generation Handbook. Although this has been applied in thousands of studies in California, the methodology was limited as it was based on only six surveys in Florida. Additionally, the ITE internalization methodology only accounts for the land use types on the mixed-use site. Given the limited input information (land use amount and type) and the limited range of data (six surveys), the accuracy of the internalization estimates has recently been found to generally under-estimate internalization of trips from mixed-use projects.

Recognizing the limitations of the simplified methodology applied in the ITE handbook, the United States Environmental Protection Agency commissioned a study to develop a more substantial, statistically superior methodology. This methodology, identified as MXD (or mixed-use development trip generation), begins with ITE rates and developed trip internalization estimates based on a series of factors tied to numerous site attributes. It should also be noted that the MXD model has been developed in cooperation with the US Environmental Protection Agency (EPA) and ITE and that ITE is currently reviewing the model for potential inclusion in their updated recommended practice for evaluating MXD projects. The MXD methodology is described in greater detail below.

MXD Trip Internalization Methodology

The internal capture percentage reported is not an "assumed" number, but rather is a number that was derived using a best practices trip generation model designed specifically for mixed-use development (MXD) projects and estimates trip generation and internal capture by adjusting trip



generation rates to account for the influence of built environment variables. A variety of research studies have demonstrated that these variables influence vehicle trip generation.

The MXD model used was developed based on household travel survey data obtained from 239 existing mixed-use developments in six metropolitan regions throughout the U.S., including developments in Sacramento. The internal capture percentage calculated for the project is reflective of the land uses that would be developed as part of the Project and land use near the project, which would reduce the need to travel beyond the Project site or surrounding area. A set of 16 independent mixed use sites that were not included in the initial model were tested to help validate the model. Among the validation sites, use of the MXD model produced superior statistical performance when comparing the model results to observed data. Given the statistical robustness of the MXD model, it was deemed the most appropriate approach for estimating internalization of project trips.

MXD Model Inputs and Trip Generation Estimates

To determine the amount of trips that would be internal to the Project site, an MXD trip generation estimate was prepared. The MXD analysis first begins with gross trip rates identified in the Institute of Transportation Engineers' Trip Generation (9th Edition, 2012). It then incorporates the MXD methodology for "matching" trips to estimate the amount of internalization within the project site. Table 7 summarizes project land use, assumed trip rates, calculated trip generation totals, and MXD adjustments.

The entire project is projected to generate about 96,561 daily vehicle trips, 11,376 AM peak hour vehicle trips and 11,415 PM peak hour vehicle trips. The daily total includes a reduction of about 33,874 vehicle trips for internalization, which are vehicle trips made that remain within the project site, which includes internalization of school trips and local-serving retail trips. The reduction in schools trips is most notable in the AM peak hour.

As discussed under analysis methodology, a modified version of SACOG's MTP/SCS travel demand forecasting (TDF) model was used to develop traffic volume forecasts for project conditions under existing and cumulative conditions, since the TDF model accounts for the interaction of land uses in the project and in the region. The traffic model trip generation was adjusted to match (i.e., equal to or greater than) the trip generation summarized in Table 7



TABLE 7: TRIP GENERATION – SOUTHEAST POLICY AREA

Land Use	Quantity	ITE Code	Trip Rate			Trips		
			Daily	AM	PM	Daily	AM	PM
Multifamily Housing (Dwelling Units)	1,690	220	6.65	0.51	0.62	11,239	862	1,048
Single Family Detached Housing (Dwelling Units)	3,040	210	9.52	0.75	1.00	28,941	2,280	3,040
Commercial (1,000 Square Feet)	190	820	54.25	1.22	4.85	10,307	232	921
Office (1,000 Square Feet)	6,042	710	11.03	1.56	1.49	66,643	9,426	9,003
Industrial (1,000 Square Feet)	1,437	110	6.97	0.92	0.97	10,016	1,322	1,394
School (Students)	2,550	520	1.29	0.45	0.15	3,290	1,148	383
Gross Trips						130,435	15,269	15,788
Internal Capture						33,874	3,893	4,373
Net Trips Made by Motor Vehicle						96,561	11,376	11,415



PLANNED CIRCULATION

Primary access to the SEPA will be provided by Kammerer Road, Bilby Road, Kyler Road, Bruceville Road, Big Horn Boulevard, Lotz Parkway, and West Stockton Boulevard/Poppy Ridge Road. As an important part of the Capital SouthEast Connector project, Kammerer Road will serve both local and regional-level traffic. Consistent with the Connector and the City of Elk Grove conceptual circulation system for the Sterling Meadows (South Pointe) and Southeast Policy Areas, half-mile intersection spacing is preserved on Kammerer Road.

Roadways

Table 8 summarizes onsite roadway travel lanes and level of service based on the roadway segment capacities from Table 2.



TABLE 8: ROADWAY SEGMENT LEVEL OF SERVICE – ONSITE ROADWAYS

Roadway	Segment		Lanes	Volume	Capacity	Volume-to-Capacity	LOS
	From	To					
1. Bruceville Road	Bilby Road	Kammerer Road	4	8,000	36,000	0.22	A
2. Big Horn Boulevard	Poppy Ridge Road	Residential Collector 1	4	29,400	36,000	0.82	D
	Residential Collector 1	Bilby Road		27,100		.75	C
	Bilby Road	Kammerer Road		21,800		.61	B
3. Lotz Parkway	Whitelock Parkway	Poppy Ridge Road	4	32,150	36,000	0.89	D
	Poppy Ridge Road	Residential Collector 1		19,100		0.53	A



TABLE 8: ROADWAY SEGMENT LEVEL OF SERVICE – ONSITE ROADWAYS

Roadway	Segment		Lanes	Volume	Capacity	Volume-to-Capacity	LOS
	From	To					
	Residential Collector 1	Bilby Road		15,600		0.43	A
	Bilby Road	Kammerer Road		18,000		0.50	A
4. Residential Collector	South of Poppy Ridge Road			2,500	18,000	0.14	A
5. Residential Collector	South of Poppy Ridge Road			2,100	18,000	0.12	A
6. Poppy Ridge Road	Big Horn Boulevard	Lotz Parkway	2	8,100	18,000	0.45	A
7. West Stockton Boulevard	East of Lotz Parkway		4	20,700	36,000	0.58	A



TABLE 8: ROADWAY SEGMENT LEVEL OF SERVICE – ONSITE ROADWAYS

Roadway	Segment		Lanes	Volume	Capacity	Volume-to-Capacity	LOS
	From	To					
8. Residential Collector	Big Horn Boulevard	Lotz Parkway	2	10,200	18,000	0.57	A
	Easy of Lotz Parkway			8,100		0.45	A
9. Bilby Road	Bruceville Road	Connector 2	4	10,100	36,000	0.28	A
	Connector 2	Big Horn Boulevard		12,900		0.36	A
	Big Horn Boulevard	Connector 1		13,100		0.36	A
	Connector 1	Lotz Parkway		10,600		0.29	A



TABLE 8: ROADWAY SEGMENT LEVEL OF SERVICE – ONSITE ROADWAYS

Roadway	Segment		Lanes	Volume	Capacity	Volume-to-Capacity	LOS
	From	To					
	East of Lotz Parkway		2	4,200	18,000	0.23	A
10. Kammerer Road	Bruceville Road	Connector 2	4	28,400	36,000	0.79	C
	Connector 2	Big Horn Boulevard		26,400		0.73	C
	Big Horn Boulevard	Connector 1		26,600		0.74	C
	Connector 1	Lotz Parkway		31,400		0.87	D

Fehr & Peers, 2014.

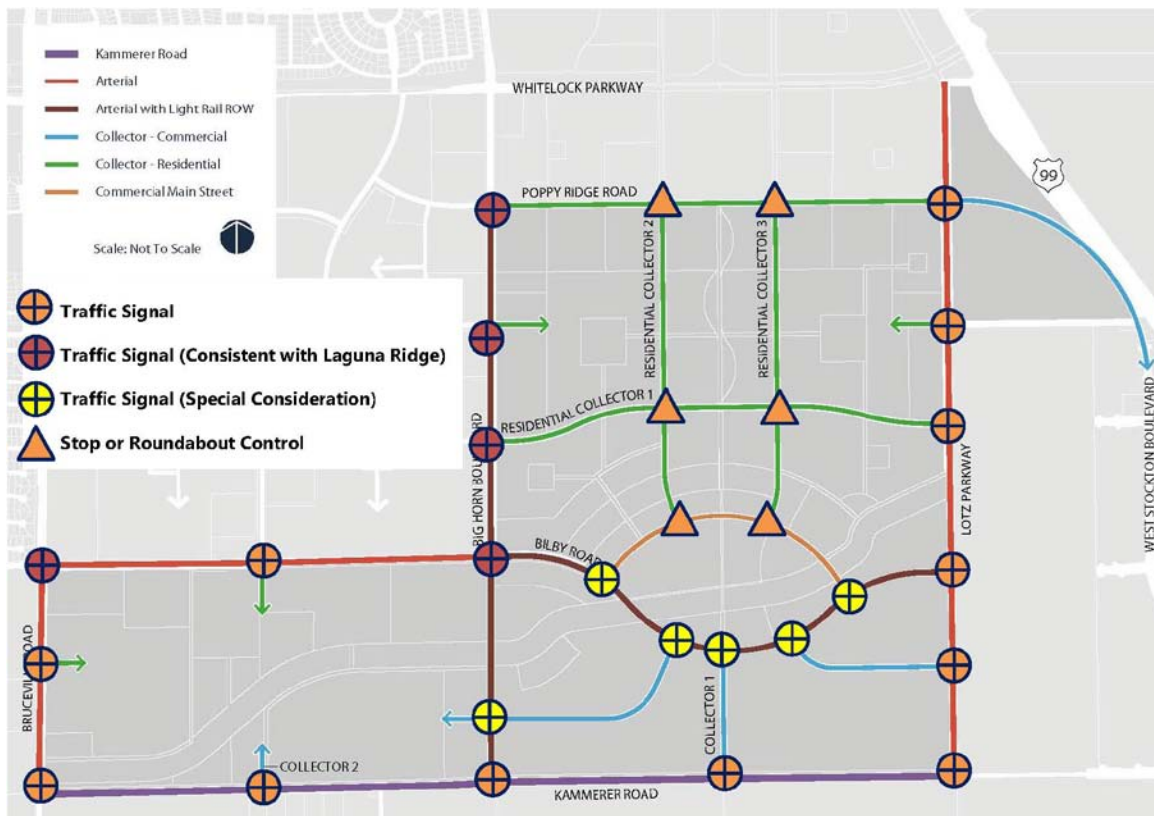


As shown in Table 8, all of the onsite roadways will operate at LOS D or better. Along the project frontage, Kammerer Road will operate acceptably with four lanes and half-mile intersection spacing, consistent with the Capital SouthEast Connector project. The highest volumes onsite occur on Big Horn Boulevard and Lotz parkway at the northern end of the project. The SEPA will also accommodate the planned (but not yet programmed) SR 99/Whitelock Parkway interchange, which would serve traffic generated by land uses to/from the west of SR 99. As envisioned, the SR 99/Whitelock Parkway interchange would not provide access to/from the east, due to constraints associated with Elk Grove Regional Park.

Intersections

Figure 6 shows recommended onsite intersection control. Each intersection was evaluated using the MUTCD peak hour volume warrant for traffic signal installation. As shown, all of the intersections on Big Horn Boulevard and the Bruceville Road/Bilby Road (partially constructed) intersection are consistent with planned signalized intersection in the Laguna Ridge Specific Plan.

Figure 6 – On-Site Intersection Traffic Control



Traffic signals designated by a yellow symbol are warranted based on forecasted traffic volume, but will require special consideration as more detailed development plans are available due to a combination of factors, such as intersection spacing and sight distance. The intersection on Big Horn Boulevard will likely be needed to serve the commercial parcel on the northwest corner of the Big Horn Boulevard/Kammerer Road intersection, given the access restrictions on Kammerer Road. This intersection should be located as far north of Kammerer road as possible to ensure adequate intersection operation. Similarly, the planned intersections on Bilby Road between Big Horn Boulevard and Lotz Parkway, satisfy the peak hour volume warrant for signalization; however, intersection spacing may be optimum, but signal control may be necessary due to the horizontal curves in this segment of Big Horn Boulevard, which may limit sight distance.

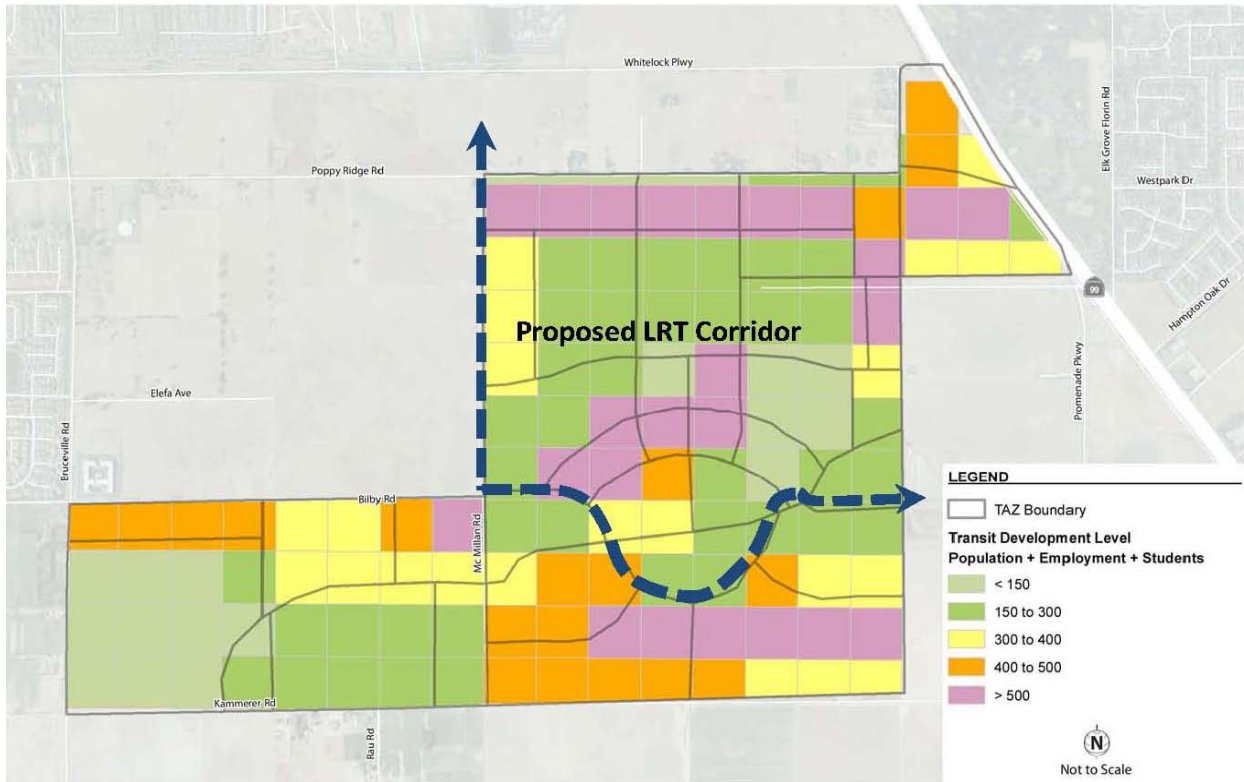
Other onsite intersections designated with a triangle symbol do not satisfy the peak hour volume warrant. At these intersections, stop or roundabout control should be considered.

Light Rail Transit (LRT)

The SEPA also identifies a preferred corridor for the future extension of Sacramento Regional Transit Light Rail Transit (LRT). The preferred LRT corridor would travel on Big Horn Boulevard to Bilby Road and continue east on Bilby Road through the plan area connecting to the Sterling Meadows and Elk Grove Promenade areas. On Bilby Road (between Big Horn Boulevard and Lots Parkway) The image below shows SEPA population, employment, and students by ¼ grid cells. This mapping was used to determine a suitable alignment for the LRT corridor between Big Horn Boulevard and the Elk Grove Promenade. As shown on Figure 7, the selected alignment will be within reasonable walking distance to significant residential and employment use in the plan area.



Figure 7 – Transit Development



4. EXISTING PLUS PROJECT CONDITIONS

This chapter discusses the conditions of the transportation system under Existing Plus Project conditions.

TRAFFIC OPERATIONS ANALYSIS

The operations of the study intersections and freeway facilities are presented below. This scenario assumes build out of the SEPA project added to existing development levels and traffic volumes at the time study area traffic counts were collected. Consequently, planned transportation improvements to adjacent facilities, including Kammerer Road, Big Horn Boulevard, Bruceville Road, and Lotz Parkway are not assumed. Under this analysis scenario, the project is assumed to develop immediately, although project development will occur over many years.

The analysis presented below assumes transportation improvements needed to support development in the plan area, including improvements to Kammerer Road and access intersection, consistent with typical City of Elk Grove expanded intersections. Other off-site improvements were not modified.

INTERSECTION OPERATIONS

Appendix B includes existing AM and PM weekday peak hour intersection turning movement volumes, lane configurations, and traffic controls present at each of the study intersections. Table 9 summarizes the existing peak hour intersection operations at the study intersections (refer to separate Appendix B for detailed calculations). As shown, most study intersections currently operate acceptably at LOS D or better during both peak hours. However, the addition of the proposed project would result in or exacerbate unacceptable LOS E or F operations at several study intersections.

- Elk Grove Boulevard/Laguna Springs Drive – LOS F during the AM peak hour
- Elk Grove Boulevard/SR 99 Southbound Ramps – LOS F during the AM peak hour and LOS E during the PM peak hour
- Whitelock Parkway/West Stockton Boulevard – LOS F during the AM peak hour



- Bruceville Road/Bilby Road – LOS E during the AM peak hour
- Bilby Road/Franklin Boulevard – LOS F during the AM peak hour
- Willard Parkway/Bilby Road (South) – LOS E during the AM peak hour
- Kammerer Road/Bruceville Road – LOS F during the AM and PM peak hour

As noted under existing conditions, during field observations, significant vehicle queuing was observed during the PM peak hour near the SR 99/Elk Grove Boulevard intersection. The Synchro intersection operations documented in Table 10 are based on the number of vehicles that are served during the PM peak hour, plus traffic added due to the addition of the proposed project. The analysis does not account for the operational effects of these closely spaced intersections. Therefore, conditions experienced by motorists may be worse than reported at the intersections on Elk Grove Boulevard between Laguna Springs Drive and East Stockton Boulevard during the AM and PM peak hours.



TABLE 10: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
		<i>Existing Conditions</i>				<i>Existing Plus Project Conditions</i>			
1. Elk Grove Blvd / Franklin Blvd	Signal	40	D	37	D	40	D	36	D
2. Elk Grove Blvd / Bruceville Rd	Signal	38	D	40	D	42	D	41	D
3. Elk Grove Blvd / Big Horn Blvd	Signal	31	C	26	C	45	D	33	C
4. Elk Grove Blvd / Laguna Springs Dr	Signal	33	C ¹	24	C ¹	185	F¹	54	D ¹
5. Elk Grove Blvd / Auto Center Dr	Signal	19	B ¹	25	C ¹	20	C ¹	31	C ¹
6. Elk Grove Blvd / SR 99 Southbound	Signal	26	C ¹	35	C ¹	89	F¹	72	E¹



TABLE 10: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
7. Elk Grove Blvd / SR 99 Northbound	Signal	13	B ¹	13	B ¹	12	B ¹	12	B ¹
8. Elk Grove Blvd / East Stockton Blvd	Signal	35	C ¹	39	D ¹	35	C ¹	40	D ¹
9. East Stockton Blvd / SR 99 Northbound Off-Ramp	Side-Street Stop	5 (20)	A (C)	5 (22)	A (C)	5 (21)	A (C)	5 (22)	A (C)
10. Bruceville Rd / Whitelock Pkwy	Signal	28	C	26	C	30	C	29	C
11. Big Horn Blvd / Whitelock Pkwy	Signal	40	D	16	B	32	C	28	C
12. Whitelock Pkwy / West Stockton Blvd	Side-Street Stop	6 (14)	A (B)	5 (12)	A (B)	60 (145)	F (F)	11 (33)	B (D)



TABLE 10: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
13. Bruceville Rd / Bilby Rd	Signal	11	B	10	A	58	E	31	C
14. Hood Franklin Rd / I-5 SB Ramps	Side-Street Stop	4 (10)	A (B)	7 (11)	A (B)	4 (11)	A (B)	7 (12)	A (B)
15. Hood Franklin Rd / I-5 NB Ramps	Side-Street Stop	0 (14)	A (B)	2 (12)	A (B)	0 (14)	A (B)	1 (13)	A (B)
16. Hood Franklin Rd / Franklin Blvd	All-Way Stop	22	C	13	B	28	D	16	C
17. Bilby Rd / Franklin Blvd	All-Way Stop	57	F	8	A	135	F	10	A
18. Willard Pkwy / Bilby Rd (North)	Signal	31	C	25	C	56	E	30	C



TABLE 10: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
19. Willard Pkwy / Bilby Rd (South)	Signal	29	C	30	C	32	C	33	C
20. Kammerer Rd / Bruceville Rd	Side-Street Stop	9 (13)	A (B)	9 (12)	A (B)	45 (172)	E (F)	48 (66)	E (F)
21. Kammerer Rd / Promenade Pkwy	Signal	13	B	18	B	17	B	21	C
22. Kammerer Rd / SR 99 Southbound Ramps	Signal	6	A	6	A	12	B	9	A
23. Grant Line Rd / SR 99 Northbound Ramps	Signal	8	A	9	A	15	B	13	B
24. Grant Line Rd / East Stockton Blvd	Signal	27	C	29	C	31	C	40	D



TABLE 10: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
25. Grant Line Rd / Waterman Rd	Signal	19	B	20	B	20	C	22	C
26. Kammerer Rd / Hood Franklin Rd	--	--	--	--	--	--	--	--	--
27. Kammerer Rd / Franklin Blvd	--	--	--	--	--	--	--	--	--
28. Kammerer Rd / Willard Pkwy	--	--	--	--	--	--	--	--	--
29. Kammerer Rd / Collector 2	--	--	--	--	--	9	A	12	B
30. Kammerer Rd / Big Horn Blvd	--	--	--	--	--	12	B	14	B



TABLE 10: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
31. Kammerer Rd / Collector 1	--	--	--	--	--	13	B	13	B
32. Kammerer Rd / Lotz Pkwy	--	--	--	--	--	9	A	5	A
33. Kammerer Rd / Sterling Meadows Ct	--	--	--	--	--	--	--	--	--

Fehr & Peers, 2014.

¹During field observations, significant vehicle queuing was observed during the PM peak hour near the SR 99/Elk Grove Boulevard interchange. The Synchro intersection operations are based on the number of vehicles that are served during the PM peak hour and does not include the operational effects of these closely spaced intersections. Therefore, conditions experienced by motorists may be worse than reported.



Implementation of the following improvements is recommended to improve peak hour intersection operations at the locations identified above:

Improvement 1 – Elk Grove Boulevard Corridor (Near SR 99/Elk Grove Boulevard Interchange)

Under existing conditions, the intersection operations were conducted using current traffic signal timings. The addition of traffic from the proposed project to the existing circulation system would alter travel in the study area, degrading the effectiveness of the current traffic signal timings along the Elk Grove corridor. The City routinely modifies traffic signal coordination in response to traffic growth. Optimization of traffic signal timings and coordination along Elk Grove Boulevard would reduce delay along the corridor. At the impacted locations identified above, traffic signal coordination would result in the following reduction in delay at the Laguna Springs Drive and SR 99 Southbound Ramps intersections.

Implementation of Traffic Signal Coordination

Intersection	AM Peak Hour ¹		PM Peak Hour ¹	
	Before	After	Before	After
Elk Grove Boulevard/ Laguna Springs Drive	F (185)	F (88)	-	-
Elk Grove Boulevard/ SR 99 Southbound Ramps	F (89)	E (68)	E (72)	E (56)

Notes:

¹Level of Service (Delay)

There is limited right-of-way for physical (i.e., capacity) improvements along the Elk Grove Boulevard corridor. The corridor is largely constructed to its general plan designation as a six-lane arterial. However, the City is nearing construction of the SR 99/Elk Grove Boulevard interchange Northbound Loop On-Ramp, which is the final phase of the interchange project. In addition, the SR 99/Whitelock Parkway that is planned between Elk Grove Boulevard and Grant Line Road, would provide an alternative to Elk Grove Boulevard and Grant Line Road for trips with an origin and destination west of SR 99 in the East Franklin Specific Plan, the Laguna Ridge Specific Plan, and the proposed project.



Implementation of the SR 99/Northbound Loop On-Ramp and the planned SR 99/Whitelock Parkway interchange would reduce delay at study intersections as identified below.

Implementation of Northbound Loop On-Ramp and Whitelock Parkway Interchange

Intersection	AM Peak Hour ¹		PM Peak Hour ¹	
	Before	After	Before	After
Elk Grove Boulevard/Laguna Springs Drive	F (185)	D (50)	D (54)	D (37)
Elk Grove Boulevard/SR 99 Southbound Ramps	F (89)	D (53)	E (72)	D (37)

Notes:

¹Level of Service (Delay)

The effect of these improvements diminishes as one travels west of Elk Grove Boulevard and Kammerer Road. Elk Grove Boulevard between Bruceville Road and East Stockton Boulevard is identified in the General Plan Background Report as operating worse than LOS D during the PM peak hour. Consistent with Policy CI-14, the City recognizes that level of service D may not be achieved on these roadway segments.

Implementation of the improvements outlined above would reduce delay at the Elk Grove Boulevard/Laguna Springs Drive and Elk Grove Boulevard/SR 99 Southbound Ramps intersections and result in acceptable LOS D conditions when considered independently. However, due to the closely spaced intersections, Elk Grove Boulevard is still expected to experience congested conditions due to poor vehicle progression through the corridor. Therefore, this impact would remain significant and unavoidable.

Improvement 2 – Whitelock Parkway/West Stockton Boulevard

The Whitelock Parkway/West Stockton Boulevard intersection will be abandoned and replaced with the extension of Lotz Parkway, south of its current at Auto City Drive. This improvement is part of the Laguna Ridge Specific Plan and will be constructed as conditions of approval associated with development in the Laguna Ridge Specific Plan. The timing of the Lotz Parkway is not certain, but is anticipated to occur well before development in the SEPA. The planned Lotz Parkway/Whitelock



Parkway intersection will operate acceptably at LOS D or better with traffic from the proposed project. However, due to the uncertain timing of the improvement, this impact would remain significant and unavoidable.

Implementation of Improvement 2

Intersection	AM Peak Hour ¹		PM Peak Hour ¹	
	Before	After	Before	After
Whitelock Parkway/West Stockton Boulevard	F (60)	-	F (145)	-

Notes:

¹Level of Service (Delay)

Improvement 3 – Bruceville Road/Bilby Road

The Bruceville Road/Bilby Road intersection is currently signalized and has been widened to accommodate its general plan designation along improved frontages. Completion of the intersection improvements to accommodate the typical City of Elk Grove expanded intersection for four-lane arterial would provide acceptable LOS C operations. The expanded intersection would include two left-turn lanes, two through lanes, and a right-turn lane on each approach. The SEPA includes Bilby Road as a four-lane arterial. Implementation of this improvement would require transition from four- to two through lanes on Bilby Road across Bruceville Road. Otherwise, westbound through travel lanes on Bilby Road could be terminated at the intersection (i.e., into left- and/or right-turn lanes) to minimize widening on Bilby Road west of Bruceville Road. With this improvement, this impact would be less than significant.

Implementation of Improvement 3

Intersection	AM Peak Hour ¹		PM Peak Hour ¹	
	Before	After	Before	After
Bruceville Road/Bilby Road	E (58)	C (23)	C (31)	-

Notes:

¹Level of Service (Delay)



Improvement 4 – Bilby Road/Franklin Boulevard

The Bilby Road/Franklin Boulevard intersection is currently all-way stop controlled. Addition of traffic from the proposed project would exacerbate unacceptable LOS F operations during the AM peak hour. Installation of traffic signal control and widening of the northbound and southbound approaches to the intersection to provide the following lane configuration would provide acceptable LOS D or better operation during the AM peak hour:

- A shared left/through turn lane and a separate right-turn lane on the northbound approach
- A separate left-turn lane and shared through/right-turn lane on the southbound approach
- A shared left/through/right-turn lane on the eastbound and westbound approach.

OR

Implement the planned Kammerer Road Extension project, which is currently being planned as part of a joint project between the City of Elk Grove and Sacramento County. The Kammerer Road Extension would provide an alternative to traveling through the Franklin community for trips from the proposed project with an origin/destination to/from I-5.

With either of these improvements, this impact would be less than significant.

Implementation of Improvement 4

Intersection	AM Peak Hour ¹		PM Peak Hour ¹	
	Before	After	Before	After
Bilby Road/Franklin Boulevard	F (135)	D (47)	A (10)	-

Notes:

¹Level of Service (Delay)



Improvement 5 – Willard Parkway/Bilby Road (North)

The Willard Parkway/Bilby Road (North) intersection is currently traffic signal controlled. Addition of traffic from the proposed project would result in unacceptable LOS E operations during the AM peak hour. Under existing conditions, the intersection operations were conducted using current traffic signal timings. The addition of traffic from the proposed project to the existing circulation system would alter travel in the study area, degrading the effectiveness of the current traffic signal at the Willard Parkway/Bilby Road (north) intersection. The City routinely modifies traffic signal coordination in response to traffic growth.

Optimization of traffic signal timings at this intersection would reduce delay and improve operations to acceptable LOS C conditions during the AM peak hour. Therefore, this impact would be less than significant.

Implementation of Improvement 5

Intersection	AM Peak Hour ¹		PM Peak Hour ¹	
	Before	After	Before	After
Willard Parkway/Bilby Road (North)	E (56)	D (38)	C (30)	-

Notes:

¹Level of Service (Delay)

Improvement 6 – Kammerer Road/Bruceville Road

The Kammerer Road/Bruceville Road intersection is currently side-street stop controlled with control on Kammerer Road. Addition of traffic from the proposed project would result in unacceptable LOS F. Installation of traffic signal control with the following lane configuration would provide acceptable LOS C or better operation during the AM peak hour:

- A shared through/right-turn lane on the northbound approach
- A shared left/through lane on the southbound approach
- A shared left/ right-turn lane on westbound approach.



Implementation of Improvement 6

Intersection	AM Peak Hour ¹		PM Peak Hour ¹	
	Before	After	Before	After
Kammerer Road/Bruceville Road	E (45)	C (23)	F (172)	C (27)

Notes:

¹Level of Service (Delay)**FREEWAY FACILITY OPERATIONS**

Table 11 summarizes the existing AM and PM peak hour freeway operations on SR 99 and I-5 (refer to separate Appendix B for detailed calculations). As shown, the study freeway facilities would operate acceptably at LOS D or better during both peak hours with the addition of project traffic.

However, as discussed above under existing conditions, peak period operations on SR 99 may be worse than reported due to reoccurring bottlenecks. As documented in the *California Department of Transportation Mobility Performance Report, 2009*, several bottleneck locations exist on SR 99 that meter traffic northbound in the morning and southbound in the evening cause congested conditions (i.e., vehicle speed of 35 miles per hour or less) and vehicle queuing on northbound SR 99 during the AM peak period. Similarly, bottlenecks on southbound SR 99 in the evening meter traffic on SR 99 through Elk Grove. Consequently, the addition of traffic from the proposed project would exacerbate congested conditions on SR 99 during the AM and PM peak hours.



TABLE 11: FREEWAY ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	Existing Conditions				Existing Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
1. NB SR 99 South of Grant Line Road	Basic Segment	20.9	C	20.4	C	23.1	C	21.2	C
2. NB SR 99 Grant Line Road Off-Ramp	Diverge	19.1	B	16.8	B	21.7	C	17.8	b
3. NB SR 99 Grant Line Road Loop On-Ramp	Basic Segment	11.9	B	10.9	A	11.8	B	13.4	B
4. NB SR 99 Grant Line Road Slip On-Ramp	Merge	16.6	B	16.3	B	16.6	B	18.7	B
5. NB SR 99 South of Elk Grove Boulevard	Basic Segment	17.6	B	17.8	B	17.5	B	21.8	C
6. NB SR 99 Elk Grove Boulevard Off-Ramp	Diverge	18.0	B	17.9	B	18.0	B	21.0	C



TABLE 11: FREEWAY ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	Existing Conditions				Existing Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
7. NB SR 99 Elk Grove Boulevard Loop On-Ramp	Merge	-	-	-	-	-	-	-	-
8. NB SR 99 Elk Grove Boulevard Slip On-Ramp	Merge	22.2	C	20.7	C	23.0	C	24.5	C
9. NB SR 99 North of Elk Grove Boulevard	Basic Segment	18.4	C	17.7	B	18.9	C	21.1	C
10. SB SR 99 North of Elk Grove Boulevard	Basic Segment	16.7	B	20.3	C	21.3	C	20.9	C
11. SB SR 99 Elk Grove Boulevard Off-Ramp	Diverge	17.4	B	21.5	C	22.4	C	22.2	C
12. SB SR 99 Elk Grove Boulevard Slip On-Ramp	Merge	20.9	C	23.9	C	24.2	C	23.0	C



TABLE 11: FREEWAY ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	Existing Conditions				Existing Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
13. SB SR 99 South of Elk Grove Boulevard	Basic Segment	15.9	B	18.5	C	18.9	C	17.7	B
14. SB SR 99 Grant Line Road Off-Ramp	Diverge	12.3	B	15.0	B	16.2	B	13.9	B
15. SB SR 99 Grant Line Road Loop On-Ramp	Basic Segment	12.7	B	14.8	B	12.2	B	13.2	B
16. SB SR 99 Grant Line Road Slip On-Ramp	Merge	16.5	B	18.6	B	17.6	B	20.7	C
17. SB SR 99 South of Grant Line Road	Basic Segment	12.0	B	14.4	B	12.5	B	15.1	B
18. NB I-5 South of Hood Franklin Road	Basic Segment	15.5	B	17.0	B	15.6	B	17.0	B



TABLE 11: FREEWAY ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	Existing Conditions				Existing Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
19. NB I-5 Hood Franklin Road Off-Ramp	Diverge	21.8	C	21.9	C	21.9	C	21.9	C
20. NB I-5 Hood Franklin Road Loop On-Ramp	Merge	19.8	B	19.3	B	15.2	B	19.7	B
21. NB I-5 Hood Franklin Road Slip On-Ramp	Merge	25.8	C	20.6	C	26.4	C	22.6	C
22. NB I-5 North of Hood Franklin Road	Basic Segment	20.8	C	17.1	B	21.4	C	19.2	C
23. SB I-5 North of Hood Franklin Road	Basic Segment	12.3	B	16.8	B	12.4	B	16.9	B
24. SB I-5 Hood Franklin Road Off-Ramp	Diverge	20.8	C	24.0	C	20.9	C	24.1	C



TABLE 11: FREEWAY ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	Existing Conditions				Existing Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
25. SB I-5 Hood Franklin Road Loop On-Ramp	Merge	19.3	B	20.5	C	19.4	B	20.5	C
26. SB I-5 Hood Franklin Road Slip On-Ramp	Merge	19.8	B	20.9	C	19.9	B	21.0	C
27. SB I-5 South of Hood Franklin Road	Basic Segment	12.7	B	15.8	B	12.8	B	15.9	B

Fehr & Peers, 2014.



General Policy CI-2 relates to coordination and participation with the City of Sacramento, Sacramento County, and Caltrans on roadway improvements that are shared by the jurisdictions in order to improve operations, including joint transportation planning efforts, roadway construction, and funding. Consistent with Policy CI-2, the City should continue to work with Caltrans and other affected agencies to address operational conditions on SR 99, which may include the extension of HOV lanes from their current terminus just south of Elk Grove Boulevard to south of Grant Line Road, which would ensure additional capacity on SR 99 through the City. However, this improvement would not address the impact of existing bottleneck locations that cause reoccurring congestion on SR 99. This commitment to improving operation on SR 99 in the City is also demonstrated with Policy CI-11, related to implementing improvements to I-5 and SR 99, and Policy CI-12, related to the Capital SouthEast Connector project. However, since SR 99 is under the jurisdiction of Caltrans, these facilities are outside the City's jurisdiction to implements improvements that would mitigate these impacts. Therefore, these impacts would be significant and unavoidable.

BICYCLE AND PEDESTRIAN FACILITIES

Implementation of the proposed project would not disrupt or interfere with existing bicycle or pedestrian facilities, and would not disrupt or interfere with the implementation of any planned bicycle or pedestrian facilities.

TRANSIT FACILITIES

Implementation of the proposed project would not disrupt or interfere with existing or planned transit operations or facilities.



5. CUMULATIVE CONDITIONS

This chapter discusses the conditions of the transportation system under cumulative conditions with the proposed project.

TRAFFIC OPERATIONS ANALYSIS

The operations of the study intersections and freeway facilities are presented below. The analysis presented below assumes transportation improvements within the project area and the following transportation improvements identified with reasonably foreseeable funding consistent with the regions Final Metropolitan Transportation Plan / Sustainable Communities Strategy Project List. Key transportation projects from the MTP/SCS in the project area follow:

- Bruceville Road – Widen from two to four lanes between Whitelock Parkway and Kammerer Road
- Grant Line Road (SouthEast Connector Segment) – Widen from two to four lanes between East Stockton Boulevard and Calvine Road
- Kammerer Road Extension (SouthEast Connector Segment) – Construct new four-lane Kammerer Road from Bruceville Road to I-5 at Hood Franklin Road
- Kammerer Road (SouthEast Connector Segment) – Widen from two to four then four to six lanes from west of SR 99 (unimproved portion) to Bruceville Road
- Willard Parkway – Extend Willard Parkway from current terminus to the new Kammerer Road extension as a four-lane roadway with a follow on project to complete widening of Willard Parkway to six lanes

INTERSECTION OPERATIONS

Appendix C includes existing AM and PM weekday peak hour intersection turning movement volumes, lane configurations, and traffic controls present at each of the study intersections under cumulative conditions. Table 12 summarizes the peak hour intersection operations at the study intersections (refer to separate Appendix C for detailed calculations) under cumulative conditions. As



shown, most study intersections would operate acceptably at LOS D or better during both peak hours. However, several intersections would operate unacceptable at LOS E or F.

- Elk Grove Boulevard/Bruceville Road – LOS E during the PM peak hour
- Elk Grove Boulevard/Big Horn Boulevard – LOS E during the AM peak hour and LOS F during the PM peak hour
- Elk Grove Boulevard/Laguna Springs Drive – LOS F during the AM peak hour and LOS E during the PM peak hour
- Elk Grove Boulevard/SR 99 Southbound Ramps – LOS E during the AM and PM peak hours
- Elk Grove Boulevard/East Stockton Boulevard – LOS E during the PM peak hour
- Hood Franklin Road/Franklin Boulevard – LOS E during the AM peak hour
- Kammerer Road/Promenade Parkway – LOS F during the PM peak hour
- Grant Line Road/East Stockton Boulevard – LOS F during the AM and PM peak hours

As noted under existing conditions, during field observations, significant vehicle queuing was observed during the PM peak hour near the SR 99/Elk Grove Boulevard intersection. The Synchro intersection operations documented in Table 11 are based on the number of vehicles that are served during the PM peak hour, plus traffic added due to the addition of the proposed project. The analysis does not account for the operational effects of these closely spaced intersections. Therefore, conditions experienced by motorists may be worse than reported at the intersections on Elk Grove Boulevard between Laguna Springs Drive and East Stockton Boulevard during the AM and PM peak hours.



TABLE 12: PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE PLUS PROJECT CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1. Elk Grove Blvd / Franklin Blvd	Signal	48	D	48	D
2. Elk Grove Blvd / Bruceville Rd	Signal	54	D	59	E
3. Elk Grove Blvd / Big Horn Blvd	Signal	80	E	81	F
4. Elk Grove Blvd / Laguna Springs Dr	Signal	107	F¹	61	E¹
5. Elk Grove Blvd / Auto Center Dr	Signal	21	C ¹	32	C ¹
6. Elk Grove Blvd / SR 99 Southbound	Signal	65	E¹	70	E¹
7. Elk Grove Blvd / SR 99 Northbound	--	--	--	--	--
8. Elk Grove Blvd / East Stockton Blvd	Signal	37	D ¹	69	E¹
9. East Stockton Blvd / SR 99 Northbound Off-Ramp	Signal	51	D	48	D
10. Bruceville Rd / Whitelock Pkwy	Signal	28	C	31	C



TABLE 12: PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE PLUS PROJECT CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
11. Big Horn Blvd / Whitelock Pkwy	Signal	32	C	30	C
12. Whitelock Pkwy / West Stockton Blvd	--	--	--	--	--
13. Bruceville Rd / Bilby Rd	Signal	24	C	23	C
14. Hood Franklin Rd / I-5 SB Ramps	Signal	20	B	21	C
15. Hood Franklin Rd / I-5 NB Ramps	Signal	18	B	23	C
16. Hood Franklin Rd / Franklin Blvd	All-Way Stop	40	E	13	B
17. Bilby Rd / Franklin Blvd	All-Way Stop	14	B	8	A
18. Willard Pkwy / Bilby Rd (North)	Signal	36	D	33	C
19. Willard Pkwy / Bilby Rd (South)	Signal	43	D	33	C



TABLE 12: PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE PLUS PROJECT CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
20. Kammerer Rd / Bruceville Rd	Signal	45	D	35	C
21. Kammerer Rd / Promenade Pkwy	Signal	44	D	98	F
22. Kammerer Rd / SR 99 Southbound Ramps	Signal	32	C	29	C
23. Grant Line Rd / SR 99 Northbound Ramps	Signal	23	C	20	C
24. Grant Line Rd / East Stockton Blvd	Signal	113	F	226	F
25. Grant Line Rd / Waterman Rd	Signal	30	C	43	D
26. Kammerer Rd / Hood Franklin Rd	Side-Street Stop	1 (19)	A (C)	1 (22)	A (C)
27. Kammerer Rd / Franklin Blvd	Signal	23	C	24	C
28. Kammerer Rd / Willard Pkwy	Signal	20	C	29	C



TABLE 12: PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE PLUS PROJECT CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
29. Kammerer Rd / Collector 2	Signal	11	B	14	B
30. Kammerer Rd / Big Horn Blvd	Signal	18	B	33	C
31. Kammerer Rd / Collector 1	Signal	14	B	27	C
32. Kammerer Rd / Lotz Pkwy	Signal	18	B	34	C
33. Kammerer Rd / Sterling Meadows Ct	Signal	14	B	15	B

Fehr & Peers, 2014.

¹During field observations, significant vehicle queuing was observed during the PM peak hour near the SR 99/Elk Grove Boulevard interchange. The Synchro intersection operations are based on the number of vehicles that are served during the PM peak hour and does not include the operational effects of these closely spaced intersections. Therefore, conditions experienced by motorists may be worse than reported.

Implementation of the following improvements is recommended to improve peak hour intersection operations at the locations identified above:

Improvement 8 – Elk Grove Boulevard and Kammerer Road Corridors (Near SR 99/Elk Grove Boulevard Interchange)

Intersections 2, 3, 4, 6, 8, 21



Under cumulative conditions, the intersection operations were conducted assuming modified traffic signal timings, consistent with the City's ongoing traffic signal coordination and maintenance in response to traffic growth.

There is limited right-of-way for physical (i.e., capacity) improvements along the Elk Grove Boulevard corridor. The corridor is largely constructed to its general plan designation as a six-lane arterial. However, the City is nearing construction of the SR 99/Elk Grove Boulevard interchange Northbound Loop On-Ramp, which is the final phase of the interchange project. In addition, the planned SR 99/Whitelock Parkway that is planned between Elk Grove Boulevard and Grant Line Road, would provide an alternative to Elk Grove Boulevard and Grant Line Road for trips with an origin/destination west of SR 99 in the East Franklin Specific Plan, the Laguna Ridge Specific Plan, and the proposed project. Implementation of the SR 99/Northbound Loop On-Ramp and the planned SR 99/Whitelock Parkway interchange would reduce delay at most of the study intersections as identified below.

Implementation of Northbound Loop On-Ramp and Whitelock Parkway Interchange

Intersection	AM Peak Hour ¹		PM Peak Hour ¹	
	Before	After	Before	After
Elk Grove Boulevard/Laguna Springs Drive	F (107)	E (72)	E (61)	E (57)
Elk Grove Boulevard/Auto Center Drive	C (21)	C (22)	C (32)	C (30)
Elk Grove Boulevard/SR 99 Southbound Ramps	E (65)	D (37)	E (70)	D (46)
Elk Grove Boulevard/East Stockton Boulevard	D (37)	C (35)	E (69)	D (43)
East Stockton Boulevard/Northbound Ramps	D (51)	C (32)	D (48)	D (41)
Kammerer Road/Promenade Parkway	D (44)	C (35)	F (98)	E (65)
Grant Line Road/SR 99 Southbound Ramps	C (32)	B (17)	C (29)	B (17)
Grant Line Road/SR 99 Northbound Ramps	C (23)	C (21)	C (20)	C (21)
Grant Line Road/East Stockton Boulevard	F (113)	C (31)	F (226)	D (51)

Notes:

¹Level of Service (Delay)



The effect of these improvements diminishes as one travels west of Elk Grove Boulevard and Kammerer Road. Consequently, operational improvements at the Elk Grove Boulevard/Bruceville Road and Elk Grove Boulevard/Big Horn Boulevard intersections would be negligible.

Elk Grove Boulevard between Bruceville Road and East Stockton Boulevard is identified in the General Plan Background Report as operating worse than LOS D during the PM peak hour. Consistent with Policy CI-14, the City recognizes that level of service D may not be achieved on these roadway segments.

Implementation of the improvements outlined above would reduce delay along the Elk Grove Boulevard and Kammerer Road corridors, including operations near the SR 99/Elk Grove Boulevard interchange, which experiences congested conditions due to closely spaced intersection that are characterized by long vehicle queues. However, implementation of these improvements would not result in acceptable LOS D or better operations. Therefore, this impact would remain significant and unavoidable.

Improvement 9 – Hood Franklin Road/Franklin Boulevard

The Hood Franklin Road/Franklin Boulevard intersection was analyzed with all-way stop control. Under cumulative conditions, the intersection is forecast to operate unacceptably at LOS E during the AM peak hour. Installation of traffic signal control and widening of the southbound and eastbound approaches to the intersection to provide the following lane configuration would provide acceptable LOS C or better operation during the AM peak hour:

- Separate left and right-turn lanes on the northbound approach
- Separate through and right-turn lane on the southbound approach
- Separate left and right-turn lanes on the eastbound approach

With this improvement, this impact would be less than significant.

Implementation of Improvement 9

Intersection	AM Peak Hour ¹		PM Peak Hour ¹	
	Before	After	Before	After



Hood Franklin/Franklin Boulevard	E (40)	C (33)	B (13)	-
----------------------------------	--------	--------	--------	---

Notes:

¹Level of Service (Delay)

Improvement 10 – Grant Line Road/East Stockton Boulevard

Under cumulative conditions, the intersection operations were conducted assuming modified traffic signal timings, consistent with the City’s ongoing traffic signal coordination and maintenance in response to traffic growth. The Grant Line Road/East Stockton Boulevard intersection would operate at LOS during the AM and PM peak hours.

There is limited right-of-way for physical (i.e., capacity) improvements along this segment of Grant Line Road. The General Plan designates this segment of Grant Line Road as an eight-lane arterial. Widening the intersection to provide the following improvements at the intersection would provide acceptable LOS D or better operations:

- Widen westbound Grant Line Road to provide four through lanes through the intersection that would transition to the SR 99 northbound slip on ramp
- Widen northbound Survey Road to provide two left turn lanes and a share through/right-turn lane
- Restripe the southbound East Stockton Boulevard approach to provide a separate left-turn lane, a shared through/right-turn lane, and a separate right-turn lane

Note, that these improvements would require modification to existing bicycle and pedestrian facilities constructed on the improved frontages at the intersections. With this improvement, this impact would be less than significant.

Implementation of Improvement 10

Intersection	AM Peak Hour ¹		PM Peak Hour ¹	
	Before	After	Before	After
Grant Line Road/East Stockton Boulevard	F (113)	C (31)	F (226)	D (49)



Notes:

¹Level of Service (Delay)

FREEWAY FACILITY OPERATIONS

Table 13 summarizes the cumulative AM and PM peak hour freeway operations on SR 99 and I-5 (refer to separate Appendix C for detailed calculations). As shown, the study freeway facilities would operate acceptably at LOS D or better during both peak hours with the addition of project traffic.

However, as discussed above under existing conditions, peak period operations on SR 99 may be worse than reported due to reoccurring bottlenecks. As documented in the *California Department of Transportation Mobility Performance Report, 2009*, several bottleneck locations exist on SR 99 that meter traffic northbound in the morning and southbound in the evening cause congested conditions (i.e., vehicle speed of 35 miles per hour or less) and vehicle queuing on northbound SR 99 during the AM peak period. Similarly, bottlenecks on southbound SR 99 in the evening meter traffic on SR 99 through Elk Grove. Consequently, the addition of traffic from the proposed project would exacerbate congested conditions on SR 99 during the AM and PM peak hours.



TABLE 13: FREEWAY ANALYSIS – CUMULATIVE PLUS PROJECT CONDITIONS

Freeway Facility	Type	AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS
1. NB SR 99 South of Grant Line Road	Basic Segment	20.4	C	19.7	C
2. NB SR 99 Grant Line Road Off-Ramp	Diverge	24.7	C	23.7	C
3. NB SR 99 Grant Line Road Loop On-Ramp	Basic Segment	13.3	B	15.7	B
4. NB SR 99 Grant Line Road Slip On-Ramp	Merge	17.9	B	21.2	C
5. NB SR 99 South of Elk Grove Boulevard	Basic Segment	23.1	C	29.9	D
6. NB SR 99 Elk Grove Boulevard Off-Ramp	Diverge	20.8	C	24.7	C
7. NB SR 99 Elk Grove Boulevard Loop On-Ramp	Merge	29.1	D	34.1	D
8. NB SR 99 Elk Grove Boulevard Slip On-Ramp	Merge	22.9	C	27.6	C
9. NB SR 99 North of Elk Grove Boulevard	Basic Segment	23.2	C	29.5	D



TABLE 13: FREEWAY ANALYSIS – CUMULATIVE PLUS PROJECT CONDITIONS

Freeway Facility	Type	AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS
10. SB SR 99 North of Elk Grove Boulevard	Basic Segment	27.6	D	23.9	C
11. SB SR 99 Elk Grove Boulevard Off-Ramp	Diverge	26.7	D	24.2	C
12. SB SR 99 Elk Grove Boulevard Slip On-Ramp	Merge	30.2	D	26.5	C
13. SB SR 99 South of Elk Grove Boulevard	Basic Segment	27.8	D	22.1	C
14. SB SR 99 Grant Line Road Off-Ramp	Diverge	21.1	C	17.0	B
15. SB SR 99 Grant Line Road Loop On-Ramp	Merge	13.5	B	12.6	B
16. SB SR 99 Grant Line Road Slip On-Ramp	Merge	20.5	C	20.3	C
17. SB SR 99 South of Grant Line Road	Basic Segment	16.9	B	15.9	B
28. NB I-5 South of Hood Franklin Road	Basic Segment	21.1	C	22.8	C



TABLE 13: FREEWAY ANALYSIS – CUMULATIVE PLUS PROJECT CONDITIONS

Freeway Facility	Type	AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS
29. NB I-5 Hood Franklin Road Off-Ramp	Diverge	26.6	C	28.2	D
30. NB I-5 Hood Franklin Road Loop On-Ramp	Merge	18.1	B	18.4	B
31. NB I-5 Hood Franklin Road Slip On-Ramp	Merge	24.8	C	25.4	C
32. NB I-5 North of Hood Franklin Road	Basic Segment	21.6	C	22.3	C
33. SB I-5 North of Hood Franklin Road	Basic Segment	20.0	C	25.4	C
34. SB I-5 Hood Franklin Road Off-Ramp	Diverge	26.8	C	32.7	D
35. SB I-5 Hood Franklin Road Loop On-Ramp	Merge	24.0	C	28.3	D
36. SB I-5 Hood Franklin Road Slip On-Ramp	Merge	24.8	C	29.1	D
37. SB I-5 South of Hood Franklin Road	Basic Segment	20.5	C	25.0	C



TABLE 13: FREEWAY ANALYSIS – CUMULATIVE PLUS PROJECT CONDITIONS

Freeway Facility	Type	AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS

Fehr & Peers, 2014.

General Policy CI-2 relates to coordination and participation with the City of Sacramento, Sacramento County, and Caltrans on roadway improvements that are shared by the jurisdictions in order to improve operations, including joint transportation planning efforts, roadway construction, and funding. Consistent with Policy CI-2, the City should continue to work with Caltrans and other affected agencies to address operational conditions on SR 99, which may include the extension of HOV lanes from their current terminus just south of Elk Grove Boulevard to south of Grant Line Road, which would ensure additional capacity on SR 99 through the City. However, this improvement would not address the impact of existing bottleneck locations that cause reoccurring congestion on SR 99. This commitment to improving operation on SR 99 in the City is also demonstrated with Policy CI-11, related to implementing improvements to I-5 and SR 99, and Policy CI-12, related to the Capital SouthEast Connector project. However, since SR 99 is under the jurisdiction of Caltrans, these facilities are outside the City’s jurisdiction to implements improvements that would mitigate these impacts. Therefore, these impacts would be significant and unavoidable.

BICYCLE AND PEDESTRIAN FACILITIES

Implementation of the proposed project would not disrupt or interfere with existing bicycle or pedestrian facilities, and would not disrupt or interfere with the implementation of any planned bicycle or pedestrian facilities.

TRANSIT FACILITIES

Implementation of the proposed project would not disrupt or interfere with existing or planned transit operations or facilities.



6. SPORTS COMPLEX

As outlined in the Vision Statement of the Southeast Policy Area (SEPA), the primary objective the SEPA is to plan for a range of job opportunities that are supported by a balanced mix of residential densities, and locally oriented retail uses. In particular, SEPA will be a regional destination for both employment activities and entertainment, such as sports and performing arts. A guiding principle is to provide space for a destination that can be both a local and regional draw, such as a large sports complex and supporting uses.

The concept for a sports complex is envision to potentially encompass about 125 acres that would support a variety of uses such local- and regional-serving sports facilities, including soccer, softball, baseball, football, and other active sport facilities, including facilities to support training and tournaments. In addition, local- and regional-serving uses the sport complex concept may also include a stadium for a professional sports franchise, like major league soccer, with up to 20,000 seats. However, details about the sports complex are unknown at this time, including its location within the SEPA, the type of local- and regional-serving uses, if it will include a stadium, and its operational characteristics. Consequently, detailed analysis would be speculative.

Since, the SEPA is being planned as a regional jobs center to support over 23,400 jobs, the infrastructure and proposed mitigation is being sized accordingly. Typically, local- and regional-serving sports facilities have their higher traffic flows during evenings and on weekends. If located in the areas of the SEPA designated for employment land use, the planned roadway infrastructure needed to support planned jobs would likely support typical weekday and weekend travel.

A stadium would require special traffic management that would depend on the details of the facility, like the size of the stadium, schedule of events, the location of the facility, available transit options, number of employees, and location of parking.



APPENDIX A: EXISTING CONDITIONS



APPENDIX B: EXISTING PLUS PROJECT

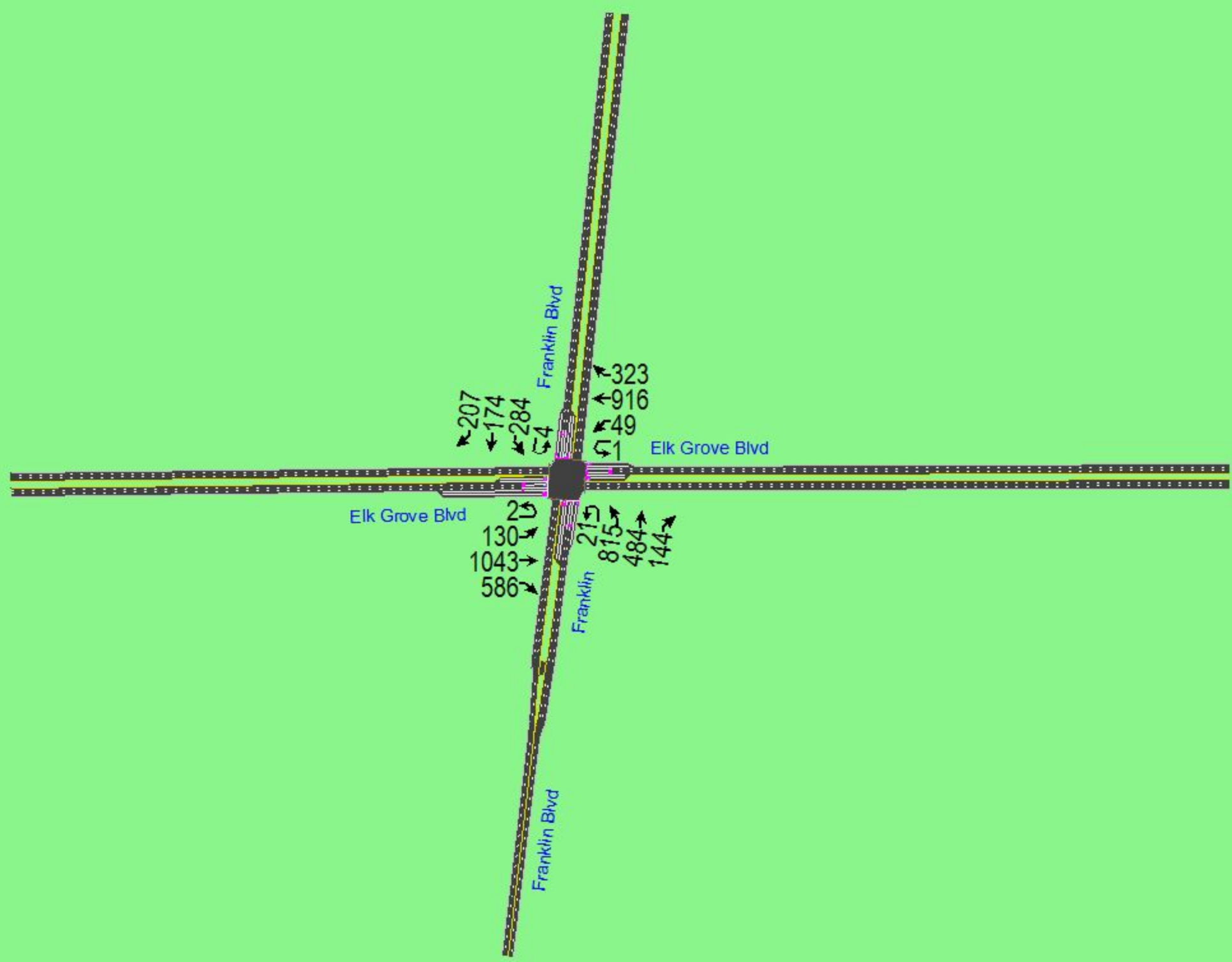


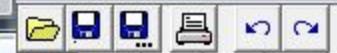
APPENDIX C: CUMULATIVE CONDITIONS



Existing Conditions

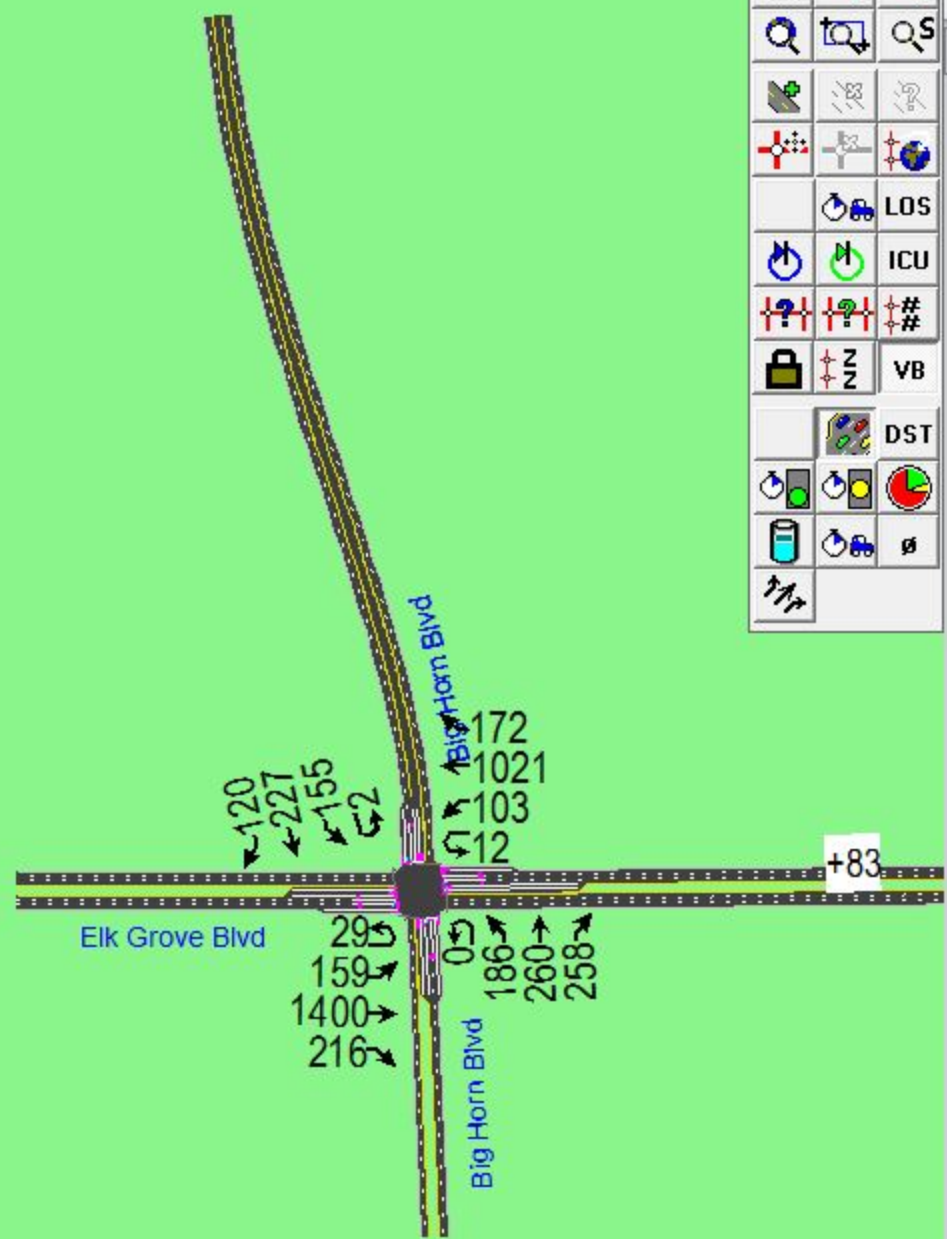
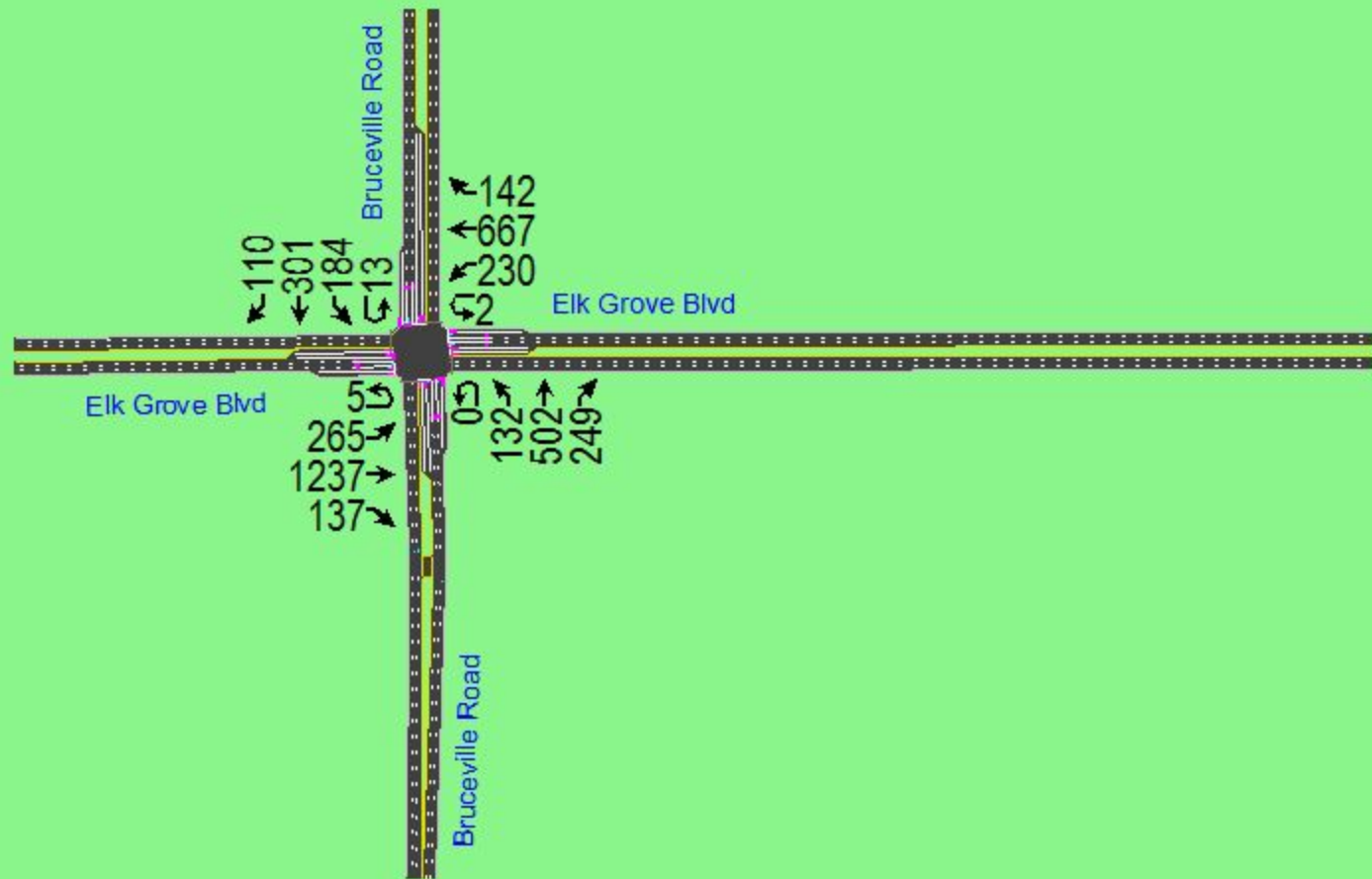
Tool palette containing icons for navigation (hand, zoom in, zoom out, pan, zoom reset), analysis (LOS, ICU, #, VB, DST), and other functions (lock, DST, refresh, print).

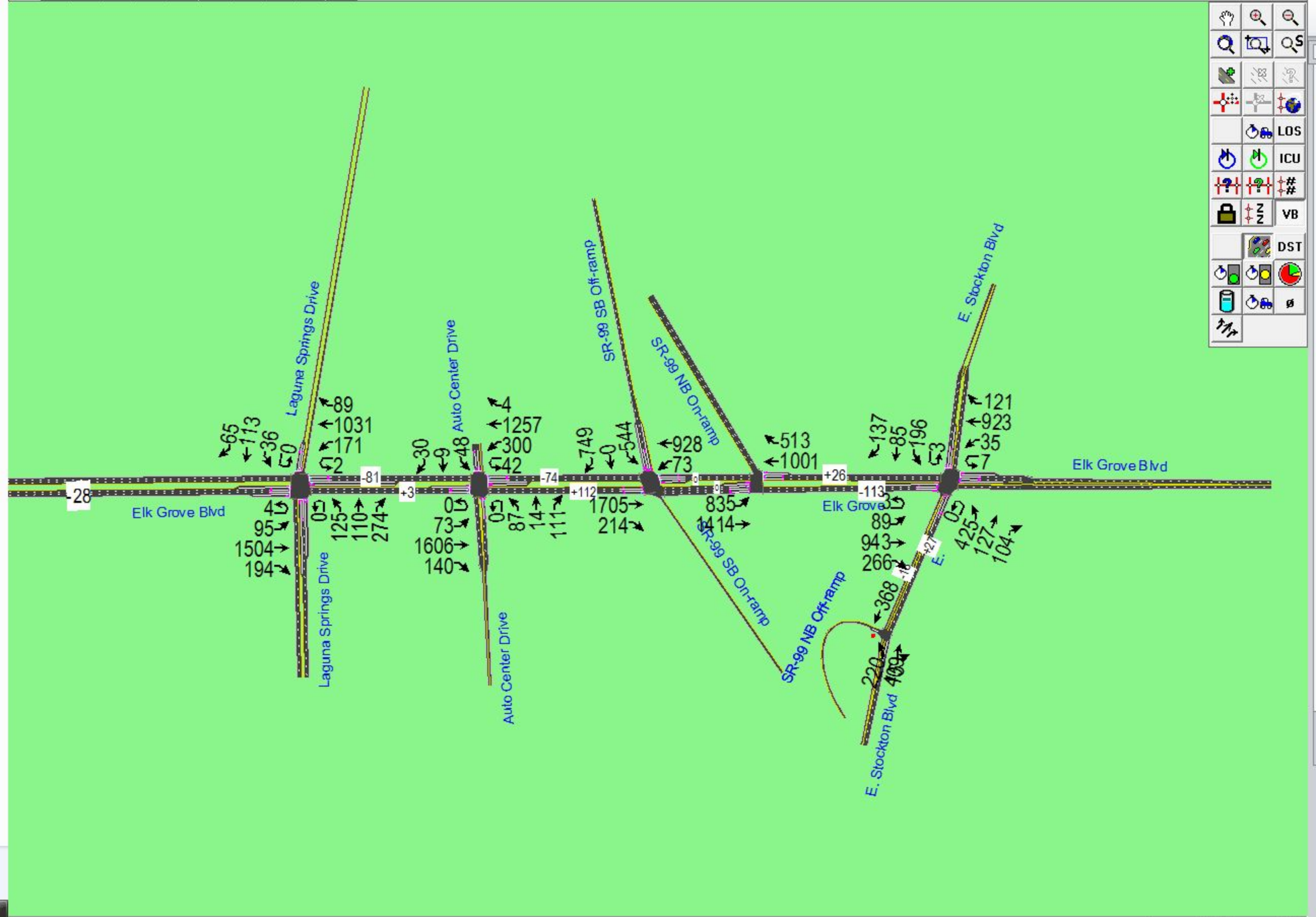


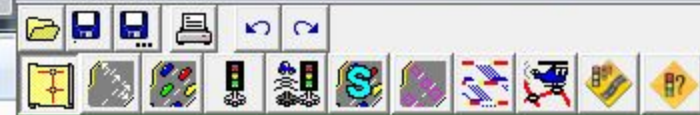


none

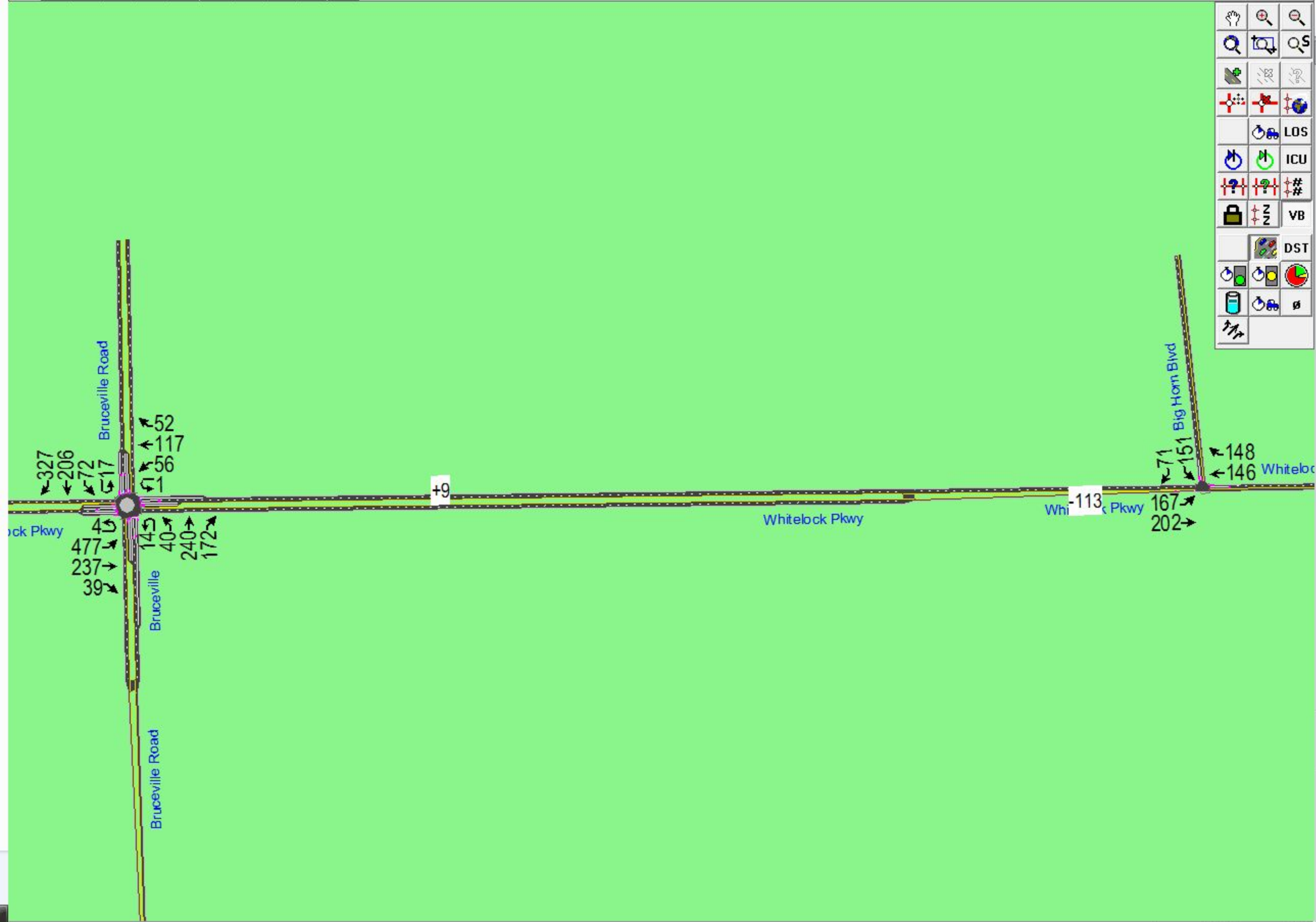
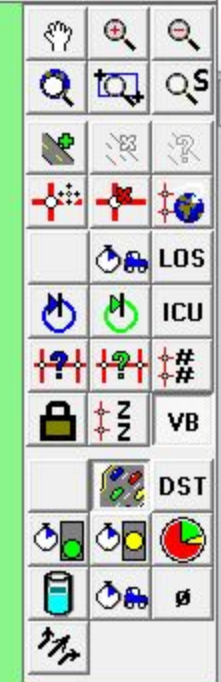
- Hand icon
- Zoom in icon
- Zoom out icon
- Search icon
- Simulation control icons (stop, play, refresh)
- LOS (Level of Service) icon
- ICU (Incident Clearance Unit) icon
- VB (Vehicle Buffer) icon
- DST (Dynamic Simulation Tool) icon
- Other simulation and analysis icons





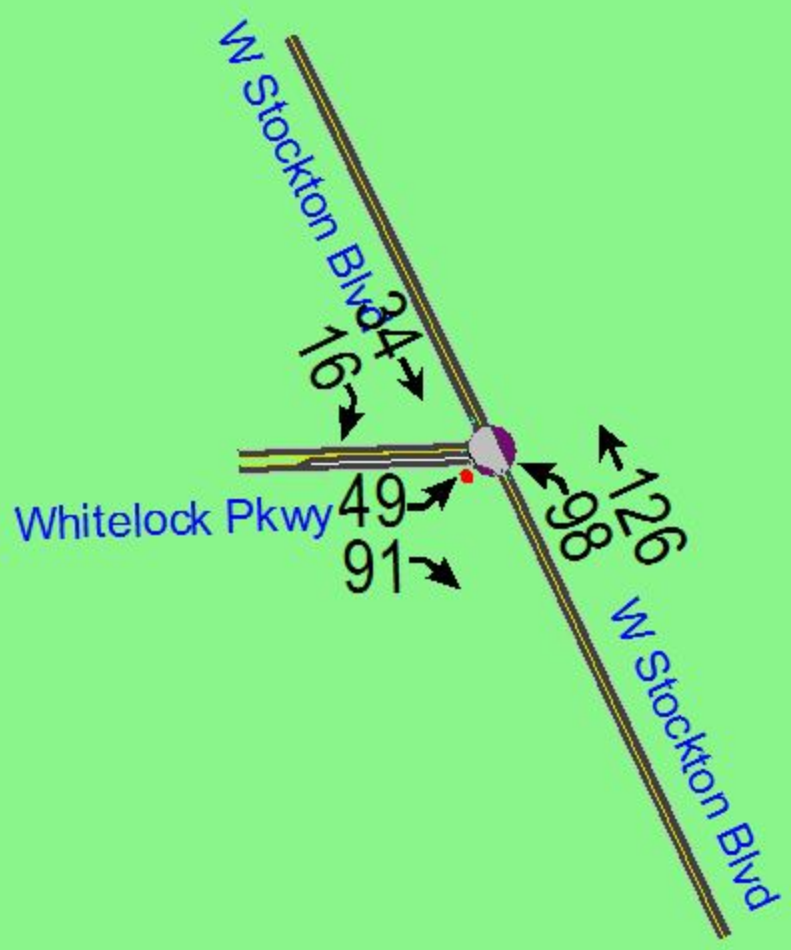


10 Whitelock Pkwy & Bruceville Road

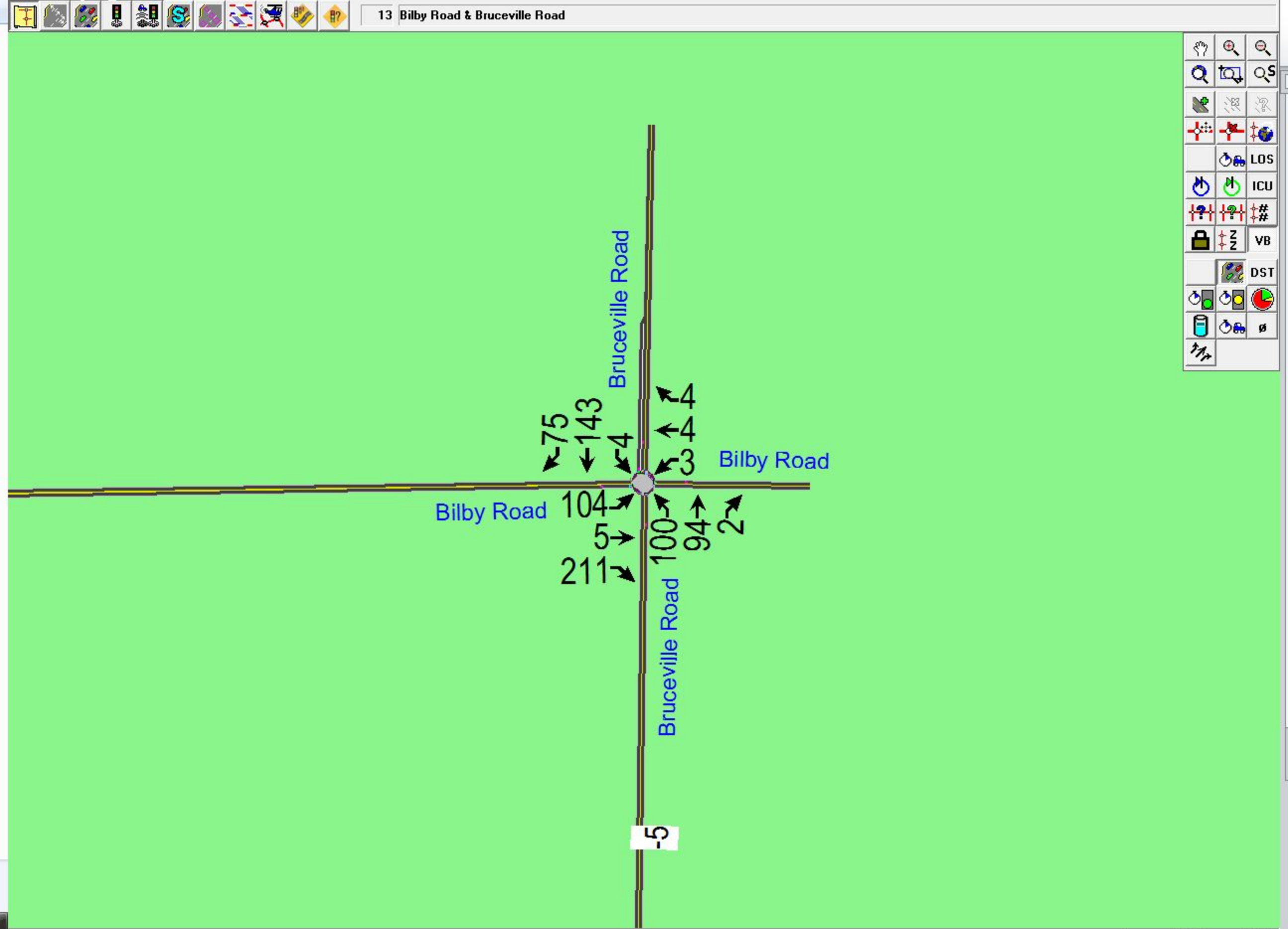




12 Whitelock Pkwy & W Stockton Blvd

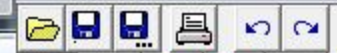


A vertical toolbar on the right side of the interface, containing various simulation and analysis tools such as LOS, ICU, #, VB, DST, and a pie chart icon.



Toolbox containing various simulation and analysis tools:

- Navigation: Hand, Zoom In, Zoom Out, Search, Find, Find Next, Find Previous.
- Simulation: Play, Pause, Stop, Step Forward, Step Backward, Step Through, Step Through (with delay), Step Through (with delay and lock), Step Through (with delay and lock and zoom).
- Analysis: LOS, ICU, #, #, VB, DST, #, #, #.
- Other: Lock, Unlock, Refresh, Refresh (with zoom), Refresh (with zoom and lock), Refresh (with zoom and lock and zoom).



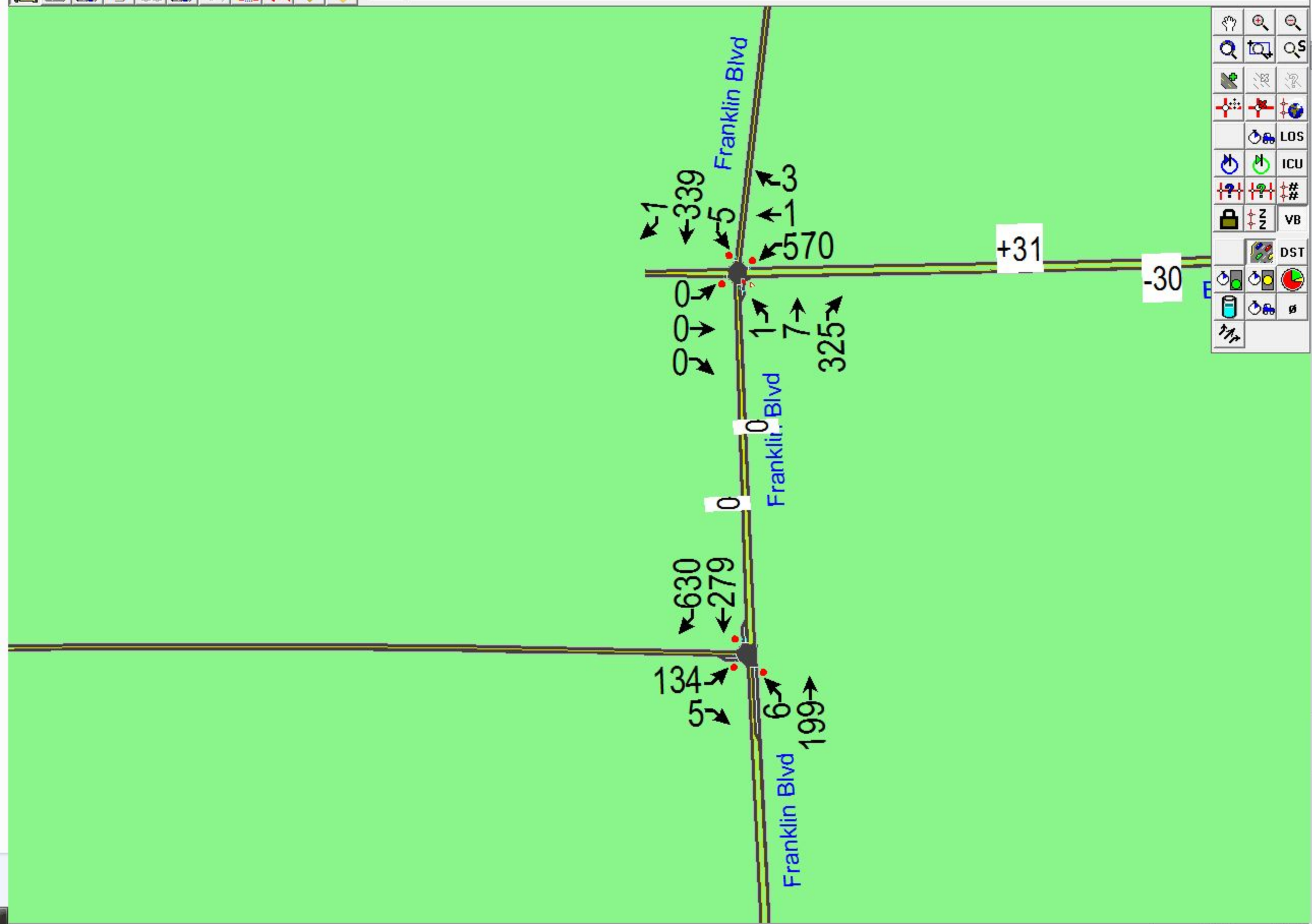
14 Hood Franklin Road & I-5 SB Off-ramp

- Hand icon
- Zoom in (+)
- Zoom out (-)
- Search (magnifying glass)
- Refresh (circular arrow)
- Layers (stack of squares)
- LOS (Level of Service) icon
- ICU (Incident Clearance Unit) icon
- VB (Vehicle Buffer) icon
- DST (Delay Study Tool) icon
- Other analysis and visualization icons





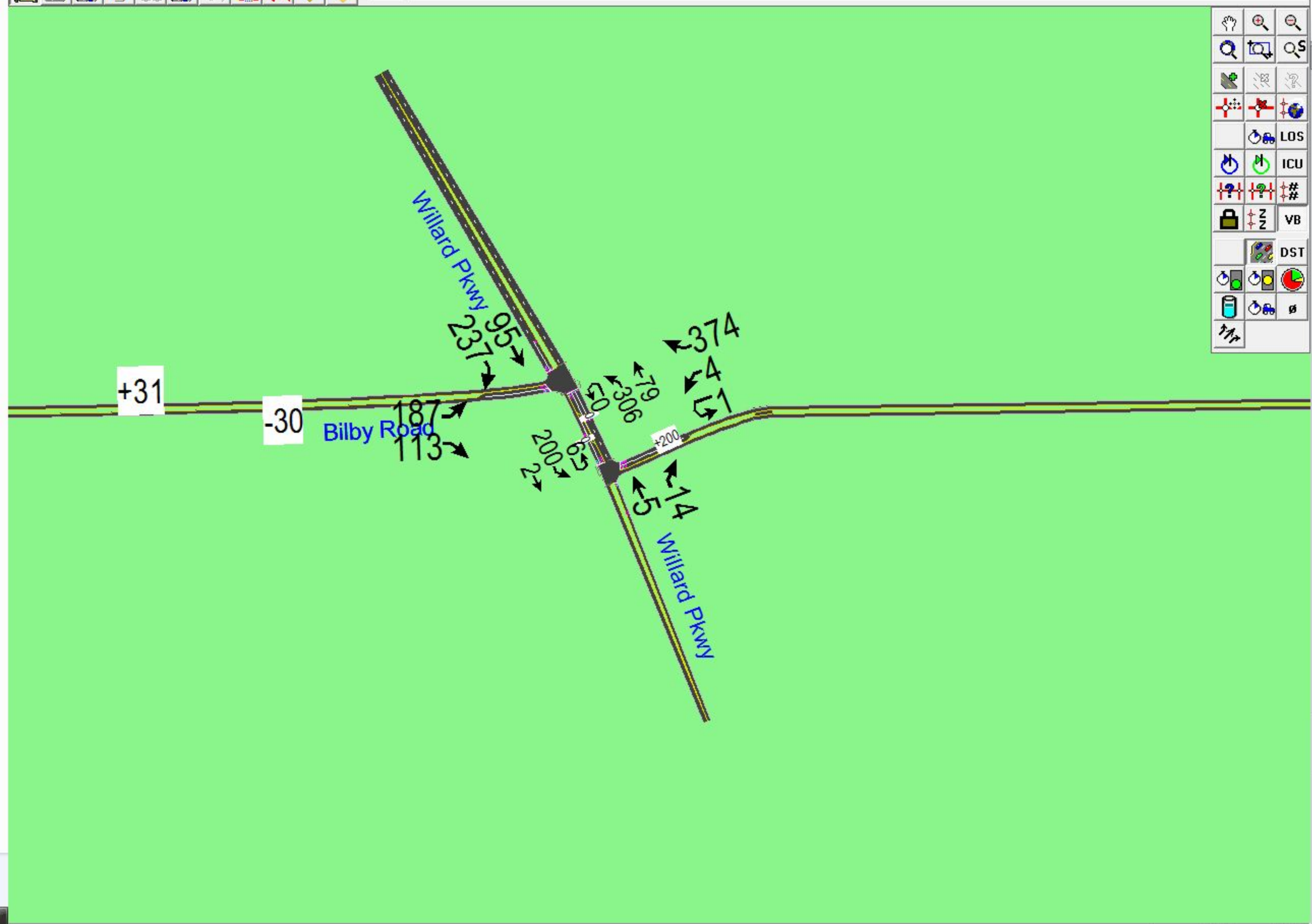
14 Hood Franklin Road & I-5 SB Off-ramp



A vertical toolbar on the right side of the interface contains various simulation and analysis tools. The tools include icons for zooming, panning, and simulation control. Specific tool labels include: LOS, ICU, #, VB, DST, and a pie chart icon.

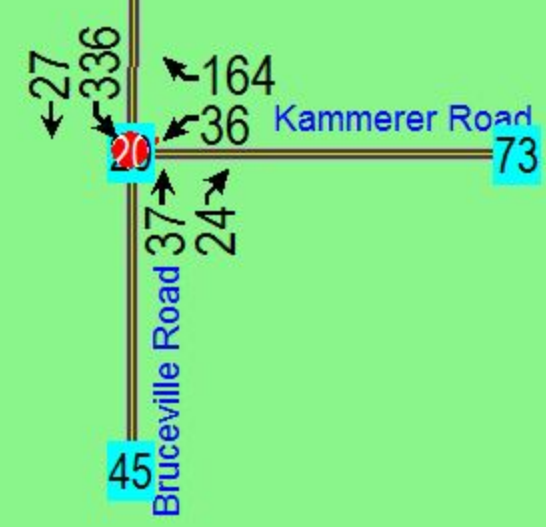


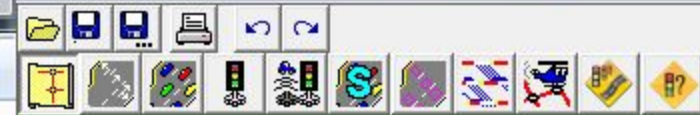
14 Hood Franklin Road & I-5 SB Off-ramp



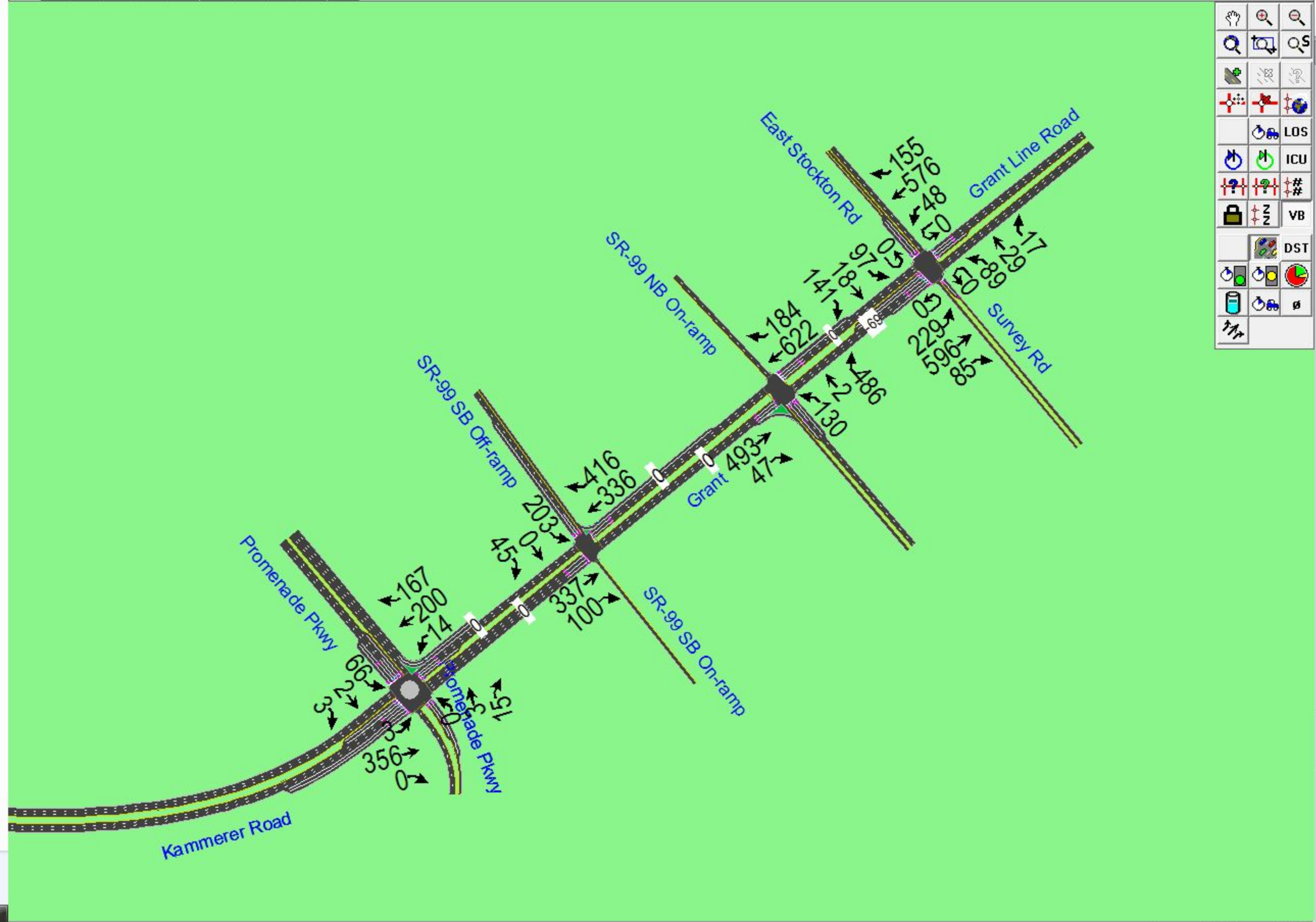


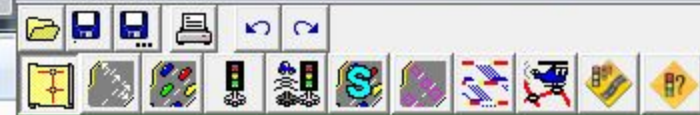
20 Kammerer Road & Bruceville Road





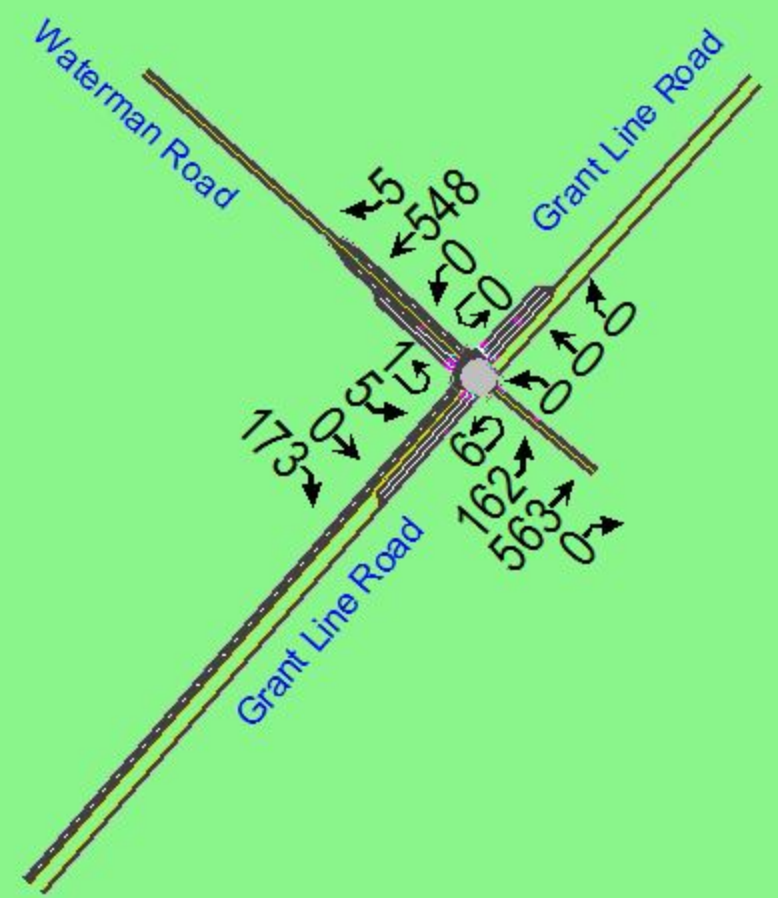
21 Kammerer Road & Promenade Pkwy





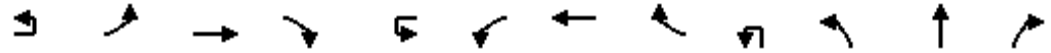
25 Grant Line Road & Waterman Road

		LOS
		ICU
		#
# icon"/>	# icon"/>	#
		VB
		DST



HCM Signalized Intersection Capacity Analysis
1: Elk Grove Blvd & Franklin Blvd

Existing Conditions
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↘↘	↑↑↑	↗↗		↘↘	↑↑↑	↗		↘↘	↑↑↑	↗
Volume (vph)	2	130	1043	586	1	49	916	323	21	815	484	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.8	6.8		5.6	7.2	7.2		5.6	7.2	7.2
Lane Util. Factor		0.97	0.91	0.88		0.97	0.91	1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00	1.00	0.99		1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (prot)		3433	5085	2752		3433	5085	1583		3433	5085	1561
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	2752		3433	5085	1583		3433	5085	1561
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	144	1159	651	1	54	1018	359	23	906	538	160
RTOR Reduction (vph)	0	0	0	399	0	0	0	190	0	0	0	122
Lane Group Flow (vph)	0	146	1159	252	0	55	1018	169	0	929	538	38
Confl. Bikes (#/hr)				1								2
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot	Prot		Perm
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases				6				2				8
Actuated Green, G (s)		9.5	46.5	46.5		5.4	42.0	42.0		34.4	28.3	28.3
Effective Green, g (s)		9.5	46.5	46.5		5.4	42.0	42.0		34.4	28.3	28.3
Actuated g/C Ratio		0.08	0.39	0.39		0.05	0.35	0.35		0.29	0.24	0.24
Clearance Time (s)		5.6	6.8	6.8		5.6	7.2	7.2		5.6	7.2	7.2
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		272	1970	1066		154	1780	554		984	1199	368
v/s Ratio Prot		c0.04	c0.23			0.02	0.20			c0.27	c0.11	
v/s Ratio Perm				0.09				0.11				0.02
v/c Ratio		0.54	0.59	0.24		0.36	0.57	0.30		0.94	0.45	0.10
Uniform Delay, d1		53.1	29.2	24.8		55.6	31.7	28.4		41.9	39.2	35.9
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.0	1.3	0.5		0.5	1.3	1.4		16.6	0.1	0.0
Delay (s)		54.2	30.5	25.3		56.1	33.0	29.8		58.5	39.3	35.9
Level of Service		D	C	C		E	C	C		E	D	D
Approach Delay (s)			30.5				33.1				49.9	
Approach LOS			C				C				D	

Intersection Summary		
HCM Average Control Delay	39.8	HCM Level of Service D
HCM Volume to Capacity ratio	0.68	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 18.0
Intersection Capacity Utilization	79.1%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 1: Elk Grove Blvd & Franklin Blvd

Existing Conditions
 AM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		↔↔	↑↑↑	↗
Volume (vph)	4	284	174	207
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		5.6	6.3	6.3
Lane Util. Factor		0.97	0.91	1.00
Frbp, ped/bikes		1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	5085	1583
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	316	193	230
RTOR Reduction (vph)	0	0	0	212
Lane Group Flow (vph)	0	320	193	18
Confl. Bikes (#/hr)				
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		14.6	9.4	9.4
Effective Green, g (s)		14.6	9.4	9.4
Actuated g/C Ratio		0.12	0.08	0.08
Clearance Time (s)		5.6	6.3	6.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		418	398	124
v/s Ratio Prot		0.09	0.04	
v/s Ratio Perm				0.01
v/c Ratio		0.77	0.48	0.15
Uniform Delay, d1		51.0	53.0	51.6
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		7.4	0.3	0.2
Delay (s)		58.4	53.3	51.8
Level of Service		E	D	D
Approach Delay (s)			55.0	
Approach LOS			E	
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

2: Elk Grove Blvd & Bruceville Road

Existing Conditions
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↘ ↙	↑ ↑ ↑	↗		↘ ↙	↑ ↑ ↑	↗	↘ ↙	↑ ↑ ↑	↗	
Volume (vph)	5	265	1237	137	2	230	667	142	132	502	249	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.0	6.0		5.6	6.0	6.0	5.6	5.7	5.7	
Lane Util. Factor		0.97	0.91	1.00		0.97	0.91	1.00	0.97	0.91	1.00	
Frbp, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98	
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)		3433	5085	1583		3433	5085	1583	3433	5085	1558	
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)		3433	5085	1583		3433	5085	1583	3433	5085	1558	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	6	312	1455	161	2	271	785	167	155	591	293	15
RTOR Reduction (vph)	0	0	0	62	0	0	0	97	0	0	237	0
Lane Group Flow (vph)	0	318	1455	99	0	273	785	70	155	591	56	0
Confl. Bikes (#/hr)												3
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot		Perm	Prot
Protected Phases	1	1	6		5	5	2		3	8		7
Permitted Phases				6				2			8	
Actuated Green, G (s)		14.6	51.1	51.1		13.6	50.1	50.1	9.8	20.0	20.0	
Effective Green, g (s)		14.6	51.1	51.1		13.6	50.1	50.1	9.8	20.0	20.0	
Actuated g/C Ratio		0.12	0.43	0.43		0.11	0.42	0.42	0.08	0.17	0.17	
Clearance Time (s)		5.6	6.0	6.0		5.6	6.0	6.0	5.6	5.7	5.7	
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)		418	2165	674		389	2123	661	280	848	260	
v/s Ratio Prot		c0.09	c0.29			0.08	0.15		0.05	c0.12		
v/s Ratio Perm				0.06				0.04			0.04	
v/c Ratio		0.76	0.67	0.15		0.70	0.37	0.11	0.55	0.70	0.22	
Uniform Delay, d1		51.0	27.7	21.1		51.2	24.1	21.3	53.0	47.1	43.2	
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		7.2	1.7	0.5		4.6	0.5	0.3	1.3	2.0	0.2	
Delay (s)		58.2	29.4	21.6		55.9	24.6	21.6	54.3	49.2	43.4	
Level of Service		E	C	C		E	C	C	D	D	D	
Approach Delay (s)			33.5				31.1			48.3		
Approach LOS			C				C			D		

Intersection Summary

HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.6
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Elk Grove Blvd & Bruceville Road

Existing Conditions
AM Peak Hour

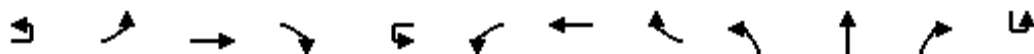


Movement	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↔	↔
Volume (vph)	184	301	110
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7
Lane Util. Factor	0.97	0.86	0.86
Frbp, ped/bikes	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	0.99	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3433	4764	1362
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3433	4764	1362
Peak-hour factor, PHF	0.85	0.85	0.85
Adj. Flow (vph)	216	354	129
RTOR Reduction (vph)	0	6	87
Lane Group Flow (vph)	231	370	20
Confl. Bikes (#/hr)			
Turn Type	Prot		Perm
Protected Phases	7	4	
Permitted Phases			4
Actuated Green, G (s)	12.4	22.6	22.6
Effective Green, g (s)	12.4	22.6	22.6
Actuated g/C Ratio	0.10	0.19	0.19
Clearance Time (s)	5.6	5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	355	897	257
v/s Ratio Prot	c0.07	c0.08	
v/s Ratio Perm			0.01
v/c Ratio	0.65	0.41	0.08
Uniform Delay, d1	51.7	42.9	40.1
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	3.2	0.1	0.0
Delay (s)	55.0	43.0	40.2
Level of Service	D	D	D
Approach Delay (s)		46.4	
Approach LOS		D	
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

3: Elk Grove Blvd & Big Horn Blvd

Existing Conditions
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔↔	↑↑↑	↗		↔↔	↑↑↑	↗	↔↔	↑↑	↗	
Volume (vph)	29	159	1400	216	12	103	1021	172	186	260	258	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	5.7	5.7		6.7	5.7	5.7	6.3	5.3	5.3	
Lane Util. Factor		0.97	0.91	1.00		0.97	0.91	1.00	0.97	0.95	1.00	
Frbp, ped/bikes		1.00	1.00	1.00		1.00	1.00	0.99	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)		3433	5085	1583		3433	5085	1564	3433	3539	1583	
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)		3433	5085	1583		3433	5085	1564	3433	3539	1583	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	36	199	1750	270	15	129	1276	215	232	325	322	2
RTOR Reduction (vph)	0	0	0	75	0	0	0	82	0	0	210	0
Lane Group Flow (vph)	0	235	1750	195	0	144	1276	133	232	325	112	0
Confl. Bikes (#/hr)								1				
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot		Perm	Prot
Protected Phases	1	1	6		5	5	2		3	8		7
Permitted Phases				6				2			8	
Actuated Green, G (s)		12.3	57.9	57.9		9.4	55.0	55.0	12.4	17.5	17.5	
Effective Green, g (s)		12.3	57.9	57.9		9.4	55.0	55.0	12.4	17.5	17.5	
Actuated g/C Ratio		0.10	0.48	0.48		0.08	0.46	0.46	0.10	0.15	0.15	
Clearance Time (s)		6.7	5.7	5.7		6.7	5.7	5.7	6.3	5.3	5.3	
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)		352	2454	764		269	2331	717	355	516	231	
v/s Ratio Prot		c0.07	c0.34			0.04	0.25		c0.07	c0.09		
v/s Ratio Perm				0.12				0.08			0.07	
v/c Ratio		0.67	0.71	0.26		0.54	0.55	0.19	0.65	0.63	0.48	
Uniform Delay, d1		51.9	24.5	18.3		53.2	23.5	19.2	51.7	48.2	47.1	
Progression Factor		1.00	1.00	1.00		1.41	0.48	0.10	1.00	1.00	1.00	
Incremental Delay, d2		3.7	1.8	0.8		0.9	0.8	0.5	3.3	1.7	0.6	
Delay (s)		55.6	26.3	19.1		76.0	12.1	2.4	55.0	49.9	47.7	
Level of Service		E	C	B		E	B	A	E	D	D	
Approach Delay (s)			28.5				16.4			50.5		
Approach LOS			C				B			D		

Intersection Summary

HCM Average Control Delay	31.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: Elk Grove Blvd & Big Horn Blvd

Existing Conditions
 AM Peak Hour



Movement	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔
Volume (vph)	155	227	120
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1538
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1538
Peak-hour factor, PHF	0.80	0.80	0.80
Adj. Flow (vph)	194	284	150
RTOR Reduction (vph)	0	0	130
Lane Group Flow (vph)	196	284	20
Confl. Bikes (#/hr)			10
Turn Type	Prot		Perm
Protected Phases	7	4	
Permitted Phases			4
Actuated Green, G (s)	11.2	16.3	16.3
Effective Green, g (s)	11.2	16.3	16.3
Actuated g/C Ratio	0.09	0.14	0.14
Clearance Time (s)	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	320	481	209
v/s Ratio Prot	0.06	0.08	
v/s Ratio Perm			0.01
v/c Ratio	0.61	0.59	0.10
Uniform Delay, d1	52.3	48.7	45.4
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	2.4	1.3	0.1
Delay (s)	54.8	50.0	45.5
Level of Service	D	D	D
Approach Delay (s)		50.4	
Approach LOS		D	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
4: Elk Grove Blvd & Laguna Springs Drive

Existing Conditions
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		3	↑↑↑	↑		3↑	↑↑↑		3	↑	↑↑	3
Volume (vph)	4	95	1504	194	2	171	1031	89	125	110	274	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7	5.7		5.6	5.7		5.6	5.3	5.3	5.6
Lane Util. Factor		1.00	0.91	1.00		0.97	0.91		1.00	1.00	0.88	1.00
Frbp, ped/bikes		1.00	1.00	0.99		1.00	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	0.99		1.00	1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00		0.95	1.00	1.00	0.95
Satd. Flow (prot)		1770	5085	1564		3433	5016		1770	1863	2787	1770
Flt Permitted		0.95	1.00	1.00		0.95	1.00		0.95	1.00	1.00	0.95
Satd. Flow (perm)		1770	5085	1564		3433	5016		1770	1863	2787	1770
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	5	116	1834	237	2	209	1257	109	152	134	334	44
RTOR Reduction (vph)	0	0	0	64	0	0	6	0	0	0	278	0
Lane Group Flow (vph)	0	121	1834	173	0	211	1360	0	152	134	56	44
Confl. Bikes (#/hr)				1				1				
Turn Type	Prot	Prot		Perm	Prot	Prot			Prot		Perm	Prot
Protected Phases	1	1	6		5	5	2		3	8		7
Permitted Phases				6							8	
Actuated Green, G (s)		12.3	59.5	59.5		11.7	58.9		14.7	20.0	20.0	6.6
Effective Green, g (s)		12.3	59.5	59.5		11.7	58.9		14.7	20.0	20.0	6.6
Actuated g/C Ratio		0.10	0.50	0.50		0.10	0.49		0.12	0.17	0.17	0.05
Clearance Time (s)		5.6	5.7	5.7		5.6	5.7		5.6	5.3	5.3	5.6
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		181	2521	775		335	2462		217	311	465	97
v/s Ratio Prot		c0.07	c0.36			0.06	0.27		c0.09	c0.07		0.02
v/s Ratio Perm				0.11							0.02	
v/c Ratio		0.67	0.73	0.22		0.63	0.55		0.70	0.43	0.12	0.45
Uniform Delay, d1		51.9	23.9	17.2		52.1	21.3		50.5	44.9	42.5	55.0
Progression Factor		0.66	1.48	1.87		1.42	0.40		1.00	1.00	1.00	1.00
Incremental Delay, d2		5.3	1.4	0.5		2.5	0.8		8.1	0.4	0.0	1.2
Delay (s)		39.4	36.8	32.5		76.4	9.3		58.6	45.2	42.6	56.2
Level of Service		D	D	C		E	A		E	D	D	E
Approach Delay (s)			36.5				18.3			47.1		
Approach LOS			D				B			D		

Intersection Summary

HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.2
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 4: Elk Grove Blvd & Laguna Springs Drive

Existing Conditions
 AM Peak Hour



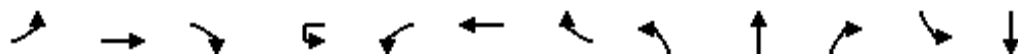
Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	113	65
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.3	
Lane Util. Factor	0.95	
Frbp, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.95	
Flt Protected	1.00	
Satd. Flow (prot)	3320	
Flt Permitted	1.00	
Satd. Flow (perm)	3320	
Peak-hour factor, PHF	0.82	0.82
Adj. Flow (vph)	138	79
RTOR Reduction (vph)	71	0
Lane Group Flow (vph)	146	0
Confl. Bikes (#/hr)		4
Turn Type		
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	11.9	
Effective Green, g (s)	11.9	
Actuated g/C Ratio	0.10	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	329	
v/s Ratio Prot	0.04	
v/s Ratio Perm		
v/c Ratio	0.44	
Uniform Delay, d1	50.9	
Progression Factor	1.00	
Incremental Delay, d2	0.3	
Delay (s)	51.3	
Level of Service	D	
Approach Delay (s)	52.1	
Approach LOS	D	

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Elk Grove Blvd & Auto Center Drive

Existing Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↑↑↑			↔	↑↑↑		↔	↑		↔	↑
Volume (vph)	73	1606	140	42	300	1257	4	87	14	111	48	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7			5.6	5.7		5.6	4.6		5.9	4.9
Lane Util. Factor	1.00	0.91			0.97	0.91		1.00	1.00		0.97	1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	0.99			1.00	1.00		1.00	0.87		1.00	0.89
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	5024			3433	5083		1770	1615		3433	1650
Flt Permitted	0.95	1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	5024			3433	5083		1770	1615		3433	1650
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	78	1709	149	45	319	1337	4	93	15	118	51	10
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	111	0	0	30
Lane Group Flow (vph)	78	1852	0	0	364	1341	0	93	22	0	51	12
Confl. Bikes (#/hr)							2					
Turn Type	Prot			Prot	Prot			Prot			Prot	
Protected Phases	1	6		5	5	2		7	4		3	8
Permitted Phases												
Actuated Green, G (s)	8.6	61.9			16.6	69.9		10.6	7.5		12.2	9.1
Effective Green, g (s)	8.6	61.9			16.6	69.9		10.6	7.5		12.2	9.1
Actuated g/C Ratio	0.07	0.52			0.14	0.58		0.09	0.06		0.10	0.08
Clearance Time (s)	5.6	5.7			5.6	5.7		5.6	4.6		5.9	4.9
Vehicle Extension (s)	2.0	2.0			2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	127	2592			475	2961		156	101		349	125
v/s Ratio Prot	0.04	c0.37			c0.11	0.26		c0.05	0.01		c0.01	0.01
v/s Ratio Perm												
v/c Ratio	0.61	0.71			0.77	0.45		0.60	0.22		0.15	0.10
Uniform Delay, d1	54.1	22.3			49.8	14.2		52.6	53.5		49.2	51.6
Progression Factor	1.20	0.36			1.15	0.62		1.00	1.00		1.00	1.00
Incremental Delay, d2	4.6	1.3			5.5	0.4		4.0	0.4		0.1	0.1
Delay (s)	69.4	9.4			62.7	9.2		56.7	53.9		49.2	51.8
Level of Service	E	A			E	A		E	D		D	D
Approach Delay (s)		11.8				20.6			55.0			50.4
Approach LOS		B				C			E			D

Intersection Summary

HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.8
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	30
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	32
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Existing Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↖	↑↑↑					↖	↖	↖↖
Volume (vph)	0	1705	214	73	928	0	0	0	0	544	0	749
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.98		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4988		1770	5085					1681	1681	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4988		1770	5085					1681	1681	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1853	233	79	1009	0	0	0	0	591	0	814
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	166
Lane Group Flow (vph)	0	2075	0	79	1009	0	0	0	0	295	296	648
Confl. Bikes (#/hr)			2			2						
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		62.4		8.6	76.9					30.7	30.7	30.7
Effective Green, g (s)		62.4		8.6	76.9					30.7	30.7	30.7
Actuated g/C Ratio		0.52		0.07	0.64					0.26	0.26	0.26
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2594		127	3259					430	430	713
v/s Ratio Prot		c0.42		c0.04	0.20					0.18	0.18	
v/s Ratio Perm												c0.23
v/c Ratio		0.80		0.62	0.31					0.69	0.69	0.91
Uniform Delay, d1		23.7		54.1	9.7					40.3	40.3	43.3
Progression Factor		0.39		0.48	2.02					1.00	1.00	1.00
Incremental Delay, d2		2.2		6.1	0.2					3.6	3.6	15.1
Delay (s)		11.4		32.2	19.8					43.9	44.0	58.4
Level of Service		B		C	B					D	D	E
Approach Delay (s)		11.4			20.7			0.0			52.3	
Approach LOS		B			C			A			D	

Intersection Summary

HCM Average Control Delay	26.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

Existing Conditions
AM Peak Hour

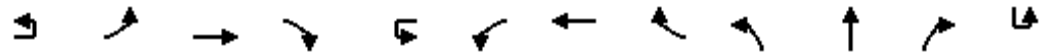


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↗	↑↑↑	↑↑↑	↖		
Volume (vph)	835	1414	1001	513	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	5085	5085	1583		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	5085	5085	1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	908	1537	1088	558	0	0
RTOR Reduction (vph)	0	0	0	29	0	0
Lane Group Flow (vph)	908	1537	1088	529	0	0
Turn Type	Prot		Perm			
Protected Phases	1	6	2			
Permitted Phases				2		
Actuated Green, G (s)	49.4	120.0	59.3	59.3		
Effective Green, g (s)	49.4	120.0	59.3	59.3		
Actuated g/C Ratio	0.41	1.00	0.49	0.49		
Clearance Time (s)	5.6	6.0	5.7	5.7		
Vehicle Extension (s)	2.0	3.0	2.0	2.0		
Lane Grp Cap (vph)	1413	5085	2513	782		
v/s Ratio Prot	c0.26	0.30	0.21			
v/s Ratio Perm				c0.33		
v/c Ratio	0.64	0.30	0.43	0.68		
Uniform Delay, d1	28.2	0.0	19.5	23.1		
Progression Factor	0.67	1.00	0.93	0.91		
Incremental Delay, d2	0.5	0.1	0.5	4.1		
Delay (s)	19.3	0.1	18.7	25.0		
Level of Service	B	A	B	C		
Approach Delay (s)		7.2	20.8		0.0	
Approach LOS		A	C		A	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.3
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

Existing Conditions
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		
Volume (vph)	3	89	943	266	7	35	923	121	425	127	104	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7	5.7		5.6	5.7	5.7	5.6	5.6		
Lane Util. Factor		1.00	0.95	1.00		1.00	0.91	1.00	0.91	0.91		
Frbp, ped/bikes		1.00	1.00	0.98		1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.96		
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.98		
Satd. Flow (prot)		1770	3539	1550		1770	5085	1583	1610	3194		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.98		
Satd. Flow (perm)		1770	3539	1550		1770	5085	1583	1610	3194		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	97	1025	289	8	38	1003	132	462	138	113	3
RTOR Reduction (vph)	0	0	0	136	0	0	0	69	0	25	0	0
Lane Group Flow (vph)	0	100	1025	153	0	46	1003	63	240	449	0	0
Confl. Bikes (#/hr)				1								
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Split			Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				6				2				
Actuated Green, G (s)		10.9	54.4	54.4		6.7	50.2	50.2	22.0	22.0		
Effective Green, g (s)		10.9	54.4	54.4		6.7	50.2	50.2	22.0	22.0		
Actuated g/C Ratio		0.09	0.45	0.45		0.06	0.42	0.42	0.18	0.18		
Clearance Time (s)		5.6	5.7	5.7		5.6	5.7	5.7	5.6	5.6		
Vehicle Extension (s)		2.0	3.9	3.9		2.0	3.9	3.9	2.0	2.0		
Lane Grp Cap (vph)		161	1604	703		99	2127	662	295	586		
v/s Ratio Prot		c0.06	c0.29			0.03	0.20		c0.15	0.14		
v/s Ratio Perm				0.10				0.04				
v/c Ratio		0.62	0.64	0.22		0.46	0.47	0.10	0.81	0.77		
Uniform Delay, d1		52.6	25.2	19.9		54.9	25.3	21.1	47.0	46.5		
Progression Factor		0.87	0.78	1.45		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		5.1	1.9	0.7		1.3	0.8	0.3	14.9	5.3		
Delay (s)		50.6	21.6	29.5		56.2	26.0	21.4	61.9	51.9		
Level of Service		D	C	C		E	C	C	E	D		
Approach Delay (s)			25.2				26.7			55.3		
Approach LOS			C				C			E		

Intersection Summary

HCM Average Control Delay	34.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

Existing Conditions
AM Peak Hour



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	196	85	137
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6
Lane Util. Factor	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00
Satd. Flow (prot)	1681	1734	1562
Flt Permitted	0.95	0.98	1.00
Satd. Flow (perm)	1681	1734	1562
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	213	92	149
RTOR Reduction (vph)	0	0	130
Lane Group Flow (vph)	152	156	19
Confl. Bikes (#/hr)			1
Turn Type	Split		Perm
Protected Phases	4	4	
Permitted Phases			4
Actuated Green, G (s)	15.4	15.4	15.4
Effective Green, g (s)	15.4	15.4	15.4
Actuated g/C Ratio	0.13	0.13	0.13
Clearance Time (s)	4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	216	223	200
v/s Ratio Prot	c0.09	0.09	
v/s Ratio Perm			0.01
v/c Ratio	0.70	0.70	0.10
Uniform Delay, d1	50.1	50.1	46.2
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	8.2	7.5	0.1
Delay (s)	58.3	57.6	46.2
Level of Service	E	E	D
Approach Delay (s)		54.1	
Approach LOS		D	
Intersection Summary			

HCM Unsignalized Intersection Capacity Analysis
 9: SR-99 NB Off-ramp & E. Stockton Blvd






















Existing Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	220	15	0	409	368	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	289	20	0	538	484	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		1				
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)					808	
pX, platoon unblocked						
vC, conflicting volume	753	484	484			
vC1, stage 1 conf vol	484					
vC2, stage 2 conf vol	269					
vCu, unblocked vol	753	484	484			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	45	96	100			
cM capacity (veh/h)	529	529	1075			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	309	269	269	484		
Volume Left	289	0	0	0		
Volume Right	20	0	0	0		
cSH	541	1700	1700	1700		
Volume to Capacity	0.57	0.16	0.16	0.28		
Queue Length 95th (ft)	89	0	0	0		
Control Delay (s)	20.1	0.0	0.0	0.0		
Lane LOS	C					
Approach Delay (s)	20.1	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			4.7			
Intersection Capacity Utilization			38.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
10: Whitelock Pkwy & Bruceville Road

Existing Conditions
AM Peak Hour

												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	4	477	237	39	1	56	117	52	14	40	240	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	4.9	4.9		5.6	4.9	4.9		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00		0.97	0.95	1.00		0.97	0.95	1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1583		3433	3539	1583		3433	3539	1583
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1583		3433	3539	1583		3433	3539	1583
Peak-hour factor, PHF	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Adj. Flow (vph)	5	628	312	51	1	74	154	68	18	53	316	226
RTOR Reduction (vph)	0	0	0	30	0	0	0	57	0	0	0	185
Lane Group Flow (vph)	0	633	312	21	0	75	154	11	0	71	316	41
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot	Prot		Perm
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8				4				6
Actuated Green, G (s)		26.5	34.3	34.3		5.4	13.2	13.2		5.4	15.6	15.6
Effective Green, g (s)		26.5	34.3	34.3		5.4	13.2	13.2		5.4	15.6	15.6
Actuated g/C Ratio		0.31	0.40	0.40		0.06	0.16	0.16		0.06	0.18	0.18
Clearance Time (s)		5.6	4.9	4.9		5.6	4.9	4.9		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		1069	1426	638		218	549	246		218	649	290
v/s Ratio Prot		c0.18	0.09			0.02	c0.04			0.02	c0.09	
v/s Ratio Perm				0.01				0.01				0.03
v/c Ratio		0.59	0.22	0.03		0.34	0.28	0.04		0.33	0.49	0.14
Uniform Delay, d1		24.7	16.6	15.4		38.2	31.8	30.6		38.1	31.2	29.1
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.6	0.0	0.0		0.3	0.1	0.0		0.3	0.2	0.1
Delay (s)		25.3	16.7	15.4		38.5	31.9	30.6		38.4	31.4	29.2
Level of Service		C	B	B		D	C	C		D	C	C
Approach Delay (s)			22.1				33.2				31.4	
Approach LOS			C				C				C	
Intersection Summary												
HCM Average Control Delay			27.7			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			85.1			Sum of lost time (s)			22.1			
Intersection Capacity Utilization			61.0%			ICU Level of Service			B			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 10: Whitelock Pkwy & Bruceville Road

Existing Conditions
 AM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	LT	RT
Volume (vph)	17	72	206	327
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1583
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1583
Peak-hour factor, PHF	0.76	0.76	0.76	0.76
Adj. Flow (vph)	22	95	271	430
RTOR Reduction (vph)	0	0	0	340
Lane Group Flow (vph)	0	117	271	90
Turn Type	Prot	Prot		Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		7.7	17.9	17.9
Effective Green, g (s)		7.7	17.9	17.9
Actuated g/C Ratio		0.09	0.21	0.21
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		311	744	333
v/s Ratio Prot		0.03	0.08	
v/s Ratio Perm				0.06
v/c Ratio		0.38	0.36	0.27
Uniform Delay, d1		36.4	28.7	28.1
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		0.3	0.1	0.2
Delay (s)		36.7	28.8	28.3
Level of Service		D	C	C
Approach Delay (s)			29.7	
Approach LOS			C	

Intersection Summary

HCM Signalized Intersection Capacity Analysis

11: Whitelock Pkwy & Big Horn Blvd

Existing Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	↕
Volume (vph)	167	202	146	148	151	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	4.6	4.6	5.3	5.3
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		0.98	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1822	1863	1583	1770	1583
Flt Permitted		0.98	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1822	1863	1583	1770	1583
Peak-hour factor, PHF	0.53	0.53	0.53	0.53	0.53	0.53
Adj. Flow (vph)	315	381	275	279	285	134
RTOR Reduction (vph)	0	0	0	226	0	106
Lane Group Flow (vph)	0	696	275	53	285	28
Turn Type	Split			Perm		Perm
Protected Phases	3	3	4		2	
Permitted Phases				4		2
Actuated Green, G (s)		50.7	21.1	21.1	22.8	22.8
Effective Green, g (s)		50.7	21.1	21.1	22.8	22.8
Actuated g/C Ratio		0.46	0.19	0.19	0.21	0.21
Clearance Time (s)		5.6	4.6	4.6	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		839	357	303	367	328
v/s Ratio Prot		c0.38	c0.15		c0.16	
v/s Ratio Perm				0.03		0.02
v/c Ratio		0.83	0.77	0.18	0.78	0.08
Uniform Delay, d1		25.9	42.2	37.2	41.2	35.2
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		6.5	9.0	0.1	9.1	0.0
Delay (s)		32.4	51.2	37.3	50.3	35.3
Level of Service		C	D	D	D	D
Approach Delay (s)		32.4	44.2		45.5	
Approach LOS		C	D		D	

Intersection Summary

HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	110.1	Sum of lost time (s)	15.5
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 12: Whitelock Pkwy & W Stockton Blvd

Existing Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	49	91	98	126	34	16
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	66	123	132	170	46	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	492	57	68			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	492	57	68			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	86	88	91			
cM capacity (veh/h)	490	1010	1534			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	66	123	303	68
Volume Left	66	0	132	0
Volume Right	0	123	0	22
cSH	490	1010	1534	1700
Volume to Capacity	0.14	0.12	0.09	0.04
Queue Length 95th (ft)	12	10	7	0
Control Delay (s)	13.5	9.1	3.7	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.6		3.7	0.0
Approach LOS	B			

Intersection Summary			
Average Delay		5.6	
Intersection Capacity Utilization	28.7%		ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis

13: Bilby Road & Bruceville Road

Existing Conditions
AM Peak Hour



















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↑	↗
Volume (vph)	104	5	211	3	4	4	100	94	2	4	143	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			7.0			6.5			6.5	6.5
Lane Util. Factor		1.00			1.00			1.00			1.00	1.00
Frt		0.91			0.95			1.00			1.00	0.85
Flt Protected		0.98			0.99			0.98			1.00	1.00
Satd. Flow (prot)		1670			1747			1814			1860	1583
Flt Permitted		0.89			0.85			0.75			0.99	1.00
Satd. Flow (perm)		1506			1501			1405			1843	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	117	6	237	3	4	4	112	106	2	4	161	84
RTOR Reduction (vph)	0	84	0	0	3	0	0	1	0	0	0	54
Lane Group Flow (vph)	0	276	0	0	8	0	0	219	0	0	165	30
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)		11.8			11.3			13.5			13.5	13.5
Effective Green, g (s)		11.8			11.3			13.5			13.5	13.5
Actuated g/C Ratio		0.31			0.30			0.35			0.35	0.35
Clearance Time (s)		6.5			7.0			6.5			6.5	6.5
Vehicle Extension (s)		2.0			2.0			4.5			4.5	4.5
Lane Grp Cap (vph)		464			443			495			650	558
v/s Ratio Prot												
v/s Ratio Perm		c0.18			0.01			c0.16			0.09	0.02
v/c Ratio		0.59			0.02			0.44			0.25	0.05
Uniform Delay, d1		11.2			9.6			9.5			8.8	8.2
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		1.4			0.0			1.1			0.4	0.1
Delay (s)		12.6			9.6			10.6			9.2	8.3
Level of Service		B			A			B			A	A
Approach Delay (s)		12.6			9.6			10.6			8.9	
Approach LOS		B			A			B			A	

Intersection Summary

HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	38.3	Sum of lost time (s)	13.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

















HCM Unsignalized Intersection Capacity Analysis
 14: Hood Franklin Road & I-5 SB Off-ramp

Existing Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	59	7	0	56	71	0	0	0	96	0	26
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	0	73	9	0	69	88	0	0	0	119	0	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												12
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	69			73			206	146	77	190	186	113
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	69			73			206	146	77	190	186	113
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	85	100	97
cM capacity (veh/h)	1532			1527			726	745	984	770	709	940
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	81	157	151									
Volume Left	0	0	119									
Volume Right	9	88	32									
cSH	1700	1700	978									
Volume to Capacity	0.05	0.09	0.15									
Queue Length 95th (ft)	0	0	14									
Control Delay (s)	0.0	0.0	10.2									
Lane LOS			B									
Approach Delay (s)	0.0	0.0	10.2									
Approach LOS			B									
Intersection Summary												
Average Delay			3.9									
Intersection Capacity Utilization			19.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 15: Hood Franklin Road & I-5 NB On-ramp

Existing Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	124	31	0	114	531	13	0	15	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	136	34	0	125	584	14	0	16	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	125			136			570	279	153	587	553	417
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	125			136			570	279	153	587	553	417
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	100	98	100	100	100
cM capacity (veh/h)	1461			1448			432	629	893	413	441	636
Direction, Lane #	EB 1	WB 1	NB 1	NB 2								
Volume Total	170	709	14	16								
Volume Left	0	0	14	0								
Volume Right	34	584	0	16								
cSH	1700	1700	432	893								
Volume to Capacity	0.10	0.42	0.03	0.02								
Queue Length 95th (ft)	0	0	3	1								
Control Delay (s)	0.0	0.0	13.6	9.1								
Lane LOS			B	A								
Approach Delay (s)	0.0	0.0	11.2									
Approach LOS			B									
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			48.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd


















Existing Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	134	5	6	199	279	630
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	146	5	7	216	303	685
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	146	5	7	216	303	685
Volume Left (vph)	146	0	7	0	0	0
Volume Right (vph)	0	5	0	0	0	685
Hadj (s)	0.53	-0.67	0.53	0.03	0.03	-0.67
Departure Headway (s)	7.5	6.3	6.7	6.2	5.4	4.7
Degree Utilization, x	0.30	0.01	0.01	0.37	0.46	0.90
Capacity (veh/h)	462	542	519	561	650	756
Control Delay (s)	12.5	8.1	8.6	11.6	11.7	32.5
Approach Delay (s)	12.3		11.5		26.1	
Approach LOS	B		B		D	
Intersection Summary						
Delay			22.2			
HCM Level of Service			C			
Intersection Capacity Utilization			49.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 17: Bilby Road & Franklin Blvd

Existing Conditions
 AM Peak Hour

															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Sign Control		Stop			Stop			Stop			Stop				
Volume (vph)	0	0	0	570	1	3	1	7	325	5	339	1			
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77			
Hourly flow rate (vph)	0	0	0	740	1	4	1	9	422	6	440	1			
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1										
Volume Total (vph)	0	745	10	422	448										
Volume Left (vph)	0	740	1	0	6										
Volume Right (vph)	0	4	0	422	1										
Hadj (s)	0.00	0.23	0.06	-0.57	0.04										
Departure Headway (s)	6.4	5.6	6.7	3.2	5.8										
Degree Utilization, x	0.00	1.15	0.02	0.38	0.73										
Capacity (veh/h)	536	645	516	1114	607										
Control Delay (s)	9.4	105.6	9.9	8.1	22.7										
Approach Delay (s)	0.0	105.6	8.2		22.7										
Approach LOS	A	F	A		C										
Intersection Summary															
Delay			56.8												
HCM Level of Service			F												
Intersection Capacity Utilization			60.4%					ICU Level of Service			B				
Analysis Period (min)			15												

HCM Signalized Intersection Capacity Analysis
 18: Bilby Road & Willard Pkwy

Existing Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	187	113	306	79	95	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	1863	1583
Peak-hour factor, PHF	0.74	0.74	0.74	0.74	0.74	0.74
Adj. Flow (vph)	253	153	414	107	128	320
RTOR Reduction (vph)	0	116	0	0	0	269
Lane Group Flow (vph)	253	37	414	107	128	51
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	20.8	20.8	26.2	25.8	13.6	13.6
Effective Green, g (s)	20.8	20.8	26.2	20.1	13.6	13.6
Actuated g/C Ratio	0.24	0.24	0.30	0.23	0.16	0.16
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	428	383	539	827	295	250
v/s Ratio Prot	c0.14		c0.23	c0.03	c0.07	
v/s Ratio Perm		0.02				0.03
v/c Ratio	0.59	0.10	0.77	0.13	0.43	0.20
Uniform Delay, d1	28.8	25.3	27.1	26.0	32.7	31.5
Progression Factor	1.00	1.00	1.00	1.16	1.00	1.00
Incremental Delay, d2	1.5	0.0	5.3	0.0	0.4	0.1
Delay (s)	30.3	25.3	32.5	30.2	33.1	31.6
Level of Service	C	C	C	C	C	C
Approach Delay (s)	28.4			32.0	32.0	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	31.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	26.1
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Bilby Road & Willard Pkwy

Existing Conditions
 AM Peak Hour



Movement	WBU	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations								
Volume (vph)	1	4	374	5	14	6	200	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	5.7			5.6	5.7
Lane Util. Factor		1.00	1.00	1.00			1.00	1.00
Fr _t		1.00	0.85	0.90			1.00	1.00
Fl _t Protected		0.95	1.00	1.00			0.95	1.00
Satd. Flow (prot)		1770	1583	1680			1770	1863
Fl _t Permitted		0.95	1.00	1.00			0.95	1.00
Satd. Flow (perm)		1770	1583	1680			1770	1863
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	1	5	440	6	16	7	235	2
RTOR Reduction (vph)	0	0	324	13	0	0	0	0
Lane Group Flow (vph)	0	6	116	9	0	0	242	2
Turn Type	Split		Perm			Prot	Prot	
Protected Phases	2	2		4		3	3	8 1
Permitted Phases			2					
Actuated Green, G (s)		22.6	22.6	16.2			23.6	20.0
Effective Green, g (s)		22.6	22.6	16.2			23.6	20.0
Actuated g/C Ratio		0.26	0.26	0.19			0.27	0.23
Clearance Time (s)		7.0	7.0	5.7			5.6	
Vehicle Extension (s)		2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)		465	416	316			486	433
v/s Ratio Prot		0.00		c0.01			c0.14	c0.00
v/s Ratio Perm			c0.07					
v/c Ratio		0.01	0.28	0.03			0.50	0.00
Uniform Delay, d ₁		23.4	25.2	28.5			26.2	25.4
Progression Factor		1.00	1.00	1.00			1.32	0.74
Incremental Delay, d ₂		0.0	0.1	0.0			0.3	0.0
Delay (s)		23.5	25.3	28.5			34.8	18.8
Level of Service		C	C	C			C	B
Approach Delay (s)		25.3		28.5				34.7
Approach LOS		C		C				C

Intersection Summary

HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 20: Kammerer Road & Bruceville Road

Existing Conditions
 AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	36	164	37	24	336	27
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	40	182	41	27	373	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	831	54			68	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	831	54			68	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	82			76	
cM capacity (veh/h)	257	1013			1534	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	222	68	403
Volume Left	40	0	373
Volume Right	182	27	0
cSH	662	1700	1534
Volume to Capacity	0.34	0.04	0.24
Queue Length 95th (ft)	37	0	24
Control Delay (s)	13.2	0.0	7.6
Lane LOS	B		A
Approach Delay (s)	13.2	0.0	7.6
Approach LOS	B		

Intersection Summary			
Average Delay		8.7	
Intersection Capacity Utilization		45.5%	ICU Level of Service
Analysis Period (min)		15	A

HCM Signalized Intersection Capacity Analysis
21: Kammerer Road & Promenade Pkwy

Existing Conditions
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	356	0	14	200	167	0	3	15	66	2	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7		6.7	6.7	6.7		5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86		1.00	0.91	0.88		1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408		1770	5085	2787		1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408		1770	5085	2787		1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	400	0	16	225	188	0	3	17	74	2	3
RTOR Reduction (vph)	0	0	0	0	0	105	0	0	16	0	0	2
Lane Group Flow (vph)	3	400	0	16	225	83	0	3	1	74	2	1
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	0.5	18.7		6.7	24.9	24.9		2.5	2.5	3.1	11.4	11.4
Effective Green, g (s)	0.5	18.7		6.7	24.9	24.9		2.5	2.5	3.1	11.4	11.4
Actuated g/C Ratio	0.01	0.33		0.12	0.44	0.44		0.04	0.04	0.05	0.20	0.20
Clearance Time (s)	6.7	6.7		6.7	6.7	6.7		5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	30	2121		210	2241	1228		82	70	274	714	319
v/s Ratio Prot	0.00	c0.06		c0.01	c0.04			c0.00		c0.01	0.00	
v/s Ratio Perm						0.03			0.00			0.00
v/c Ratio	0.10	0.19		0.08	0.10	0.07		0.04	0.01	0.27	0.00	0.00
Uniform Delay, d1	27.8	13.5		22.1	9.2	9.1		25.8	25.8	25.6	18.0	18.0
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0		0.1	0.0	0.0		0.1	0.0	0.2	0.0	0.0
Delay (s)	28.3	13.5		22.2	9.3	9.1		25.9	25.8	25.8	18.0	18.0
Level of Service	C	B		C	A	A		C	C	C	B	B
Approach Delay (s)		13.6			9.7			25.9			25.3	
Approach LOS		B			A			C			C	

Intersection Summary

HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	32.2
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: Grant Line Road & SR-99 SB Off-ramp

Existing Conditions
AM Peak Hour















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↘	↕	↗
Volume (vph)	0	337	100	0	336	416	0	0	0	203	0	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.99	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1607	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1607	1504
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	359	106	0	357	443	0	0	0	216	0	48
RTOR Reduction (vph)	0	0	62	0	0	0	0	0	0	0	1	31
Lane Group Flow (vph)	0	359	44	0	357	443	0	0	0	110	110	12
Turn Type		Perm			Free					Perm		Perm
Protected Phases		6			2					8		8
Permitted Phases		6			Free					8		8
Actuated Green, G (s)		16.5	16.5		16.5	39.9				11.1	11.1	11.1
Effective Green, g (s)		16.5	16.5		16.5	39.9				11.1	11.1	11.1
Actuated g/C Ratio		0.41	0.41		0.41	1.00				0.28	0.28	0.28
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2103	655		2103	1583				468	447	418
v/s Ratio Prot		0.07			0.07							
v/s Ratio Perm			0.03			c0.28				0.07	0.07	0.01
v/c Ratio		0.17	0.07		0.17	0.28				0.24	0.25	0.03
Uniform Delay, d1		7.4	7.1		7.4	0.0				11.1	11.2	10.5
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.1		0.1	0.4				0.1	0.1	0.0
Delay (s)		7.4	7.1		7.4	0.4				11.2	11.3	10.5
Level of Service		A	A		A	A				B	B	B
Approach Delay (s)		7.4			3.6			0.0		11.1		
Approach LOS		A			A			A		B		

Intersection Summary

HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	39.9	Sum of lost time (s)	0.0
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

























HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↗	↖	↖			
Volume (vph)	0	493	47	0	622	184	130	2	486	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1688	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1688	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	548	52	0	691	204	144	2	540	0	0	0
RTOR Reduction (vph)	0	0	29	0	0	110	0	0	388	0	0	0
Lane Group Flow (vph)	0	548	23	0	691	94	73	73	152	0	0	0
Turn Type		Perm			Perm		Split		Perm			
Protected Phases		6			2		4		4			
Permitted Phases		6			2				4			
Actuated Green, G (s)		18.1	18.1		18.6	18.6	11.3	11.3	11.3			
Effective Green, g (s)		18.1	18.1		18.6	18.6	11.3	11.3	11.3			
Actuated g/C Ratio		0.45	0.45		0.46	0.46	0.28	0.28	0.28			
Clearance Time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2290	713		2353	732	473	474	783			
v/s Ratio Prot		0.11			c0.14		0.04	0.04				
v/s Ratio Perm			0.01			0.06			c0.05			
v/c Ratio		0.24	0.03		0.29	0.13	0.15	0.15	0.19			
Uniform Delay, d1		6.8	6.2		6.7	6.2	10.9	10.9	11.0			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.1	0.0		0.1	0.1	0.1	0.1	0.0			
Delay (s)		6.9	6.2		6.8	6.3	10.9	10.9	11.0			
Level of Service		A	A		A	A	B	B	B			
Approach Delay (s)		6.8			6.7			11.0			0.0	
Approach LOS		A			A			B			A	
Intersection Summary												
HCM Average Control Delay		8.1			HCM Level of Service				A			
HCM Volume to Capacity ratio		0.26										
Actuated Cycle Length (s)		40.2			Sum of lost time (s)				10.3			
Intersection Capacity Utilization		35.5%			ICU Level of Service				A			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & East Stockton Rd

Existing Conditions
AM Peak Hour

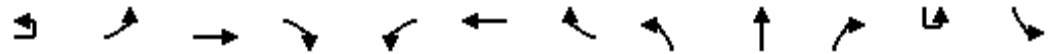
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	596	85	48	576	155	89	29	17	97	18	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	4923		1770	1760		1681	1710	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	5085	1583	1770	4923		1770	1760		1681	1710	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	246	641	91	52	619	167	96	31	18	104	19	152
RTOR Reduction (vph)	0	0	59	0	30	0	0	11	0	0	0	132
Lane Group Flow (vph)	246	641	32	52	756	0	96	38	0	61	62	20
Turn Type	Prot		Perm	Prot			Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6									3
Actuated Green, G (s)	12.1	30.5	30.5	6.5	24.9		13.7	13.7		11.4	11.4	11.4
Effective Green, g (s)	12.1	30.5	30.5	6.5	24.9		13.7	13.7		11.4	11.4	11.4
Actuated g/C Ratio	0.14	0.36	0.36	0.08	0.29		0.16	0.16		0.13	0.13	0.13
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	485	1812	564	134	1432		283	282		224	228	211
v/s Ratio Prot	c0.07	c0.13		0.03	c0.15		c0.05	0.02		c0.04	0.04	
v/s Ratio Perm			0.02									0.01
v/c Ratio	0.51	0.35	0.06	0.39	0.53		0.34	0.14		0.27	0.27	0.10
Uniform Delay, d1	34.0	20.3	18.1	37.7	25.4		31.9	30.9		33.4	33.4	32.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	0.0	0.7	0.4		0.7	0.2		0.2	0.2	0.1
Delay (s)	34.3	20.4	18.1	38.3	25.8		32.6	31.1		33.6	33.6	32.6
Level of Service	C	C	B	D	C		C	C		C	C	C
Approach Delay (s)		23.7			26.6			32.1			33.1	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	26.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	85.6	Sum of lost time (s)	29.2
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 25: Grant Line Road & Waterman Road

Existing Conditions
 AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations		⇌	⇌		⇌	⇌	⇌		⇌			
Volume (vph)	6	162	563	0	0	548	5	0	0	0	1	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.5			6.5	6.5					
Lane Util. Factor		0.97	1.00			0.95	1.00					
Frbp, ped/bikes		1.00	1.00			1.00	0.98					
Flpb, ped/bikes		1.00	1.00			1.00	1.00					
Frt		1.00	1.00			1.00	0.85					
Flt Protected		0.95	1.00			1.00	1.00					
Satd. Flow (prot)		3433	1863			3539	1559					
Flt Permitted		0.95	1.00			1.00	1.00					
Satd. Flow (perm)		3433	1863			3539	1559					
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	6	169	586	0	0	571	5	0	0	0	1	5
RTOR Reduction (vph)	0	0	0	0	0	0	4	0	0	0	0	0
Lane Group Flow (vph)	0	175	586	0	0	571	1	0	0	0	0	0
Confl. Bikes (#/hr)				2			4					
Turn Type	Prot	Prot			Prot		Perm	Split			Split	Split
Protected Phases	1	1	6		5	2		4	4		3	3
Permitted Phases							2					
Actuated Green, G (s)		9.1	31.1			16.4	16.4					
Effective Green, g (s)		9.1	31.1			16.4	16.4					
Actuated g/C Ratio		0.14	0.49			0.26	0.26					
Clearance Time (s)		5.6	6.5			6.5	6.5					
Vehicle Extension (s)		2.0	2.0			2.0	2.0					
Lane Grp Cap (vph)		497	921			923	406					
v/s Ratio Prot		0.05	c0.31			0.16						
v/s Ratio Perm							0.00					
v/c Ratio		0.35	0.64			0.62	0.00					
Uniform Delay, d1		24.2	11.7			20.5	17.2					
Progression Factor		1.00	1.00			1.00	1.00					
Incremental Delay, d2		0.2	1.1			0.9	0.0					
Delay (s)		24.4	12.8			21.4	17.2					
Level of Service		C	B			C	B					
Approach Delay (s)			15.5			21.3		0.0				
Approach LOS			B			C		A				

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	23.7
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

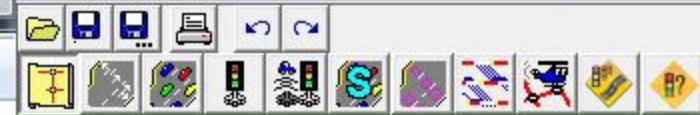
HCM Signalized Intersection Capacity Analysis
 25: Grant Line Road & Waterman Road

Existing Conditions
 AM Peak Hour



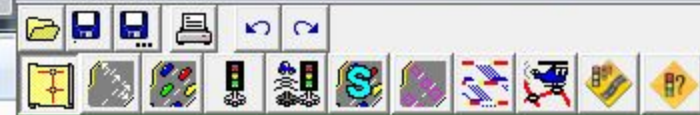
Movement	SBT	SBR
Lane Configurations	↕	↗↘
Volume (vph)	0	173
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	7.0	7.0
Lane Util. Factor	1.00	0.88
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.95	1.00
Satd. Flow (prot)	1770	2787
Flt Permitted	0.95	1.00
Satd. Flow (perm)	1770	2787
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	0	180
RTOR Reduction (vph)	0	157
Lane Group Flow (vph)	6	23
Confl. Bikes (#/hr)		
Turn Type		Perm
Protected Phases	3	
Permitted Phases		3
Actuated Green, G (s)	8.1	8.1
Effective Green, g (s)	8.1	8.1
Actuated g/C Ratio	0.13	0.13
Clearance Time (s)	7.0	7.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	228	359
v/s Ratio Prot	0.00	
v/s Ratio Perm		c0.01
v/c Ratio	0.03	0.06
Uniform Delay, d1	24.0	24.1
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.0
Delay (s)	24.0	24.1
Level of Service	C	C
Approach Delay (s)	24.1	
Approach LOS	C	

Intersection Summary

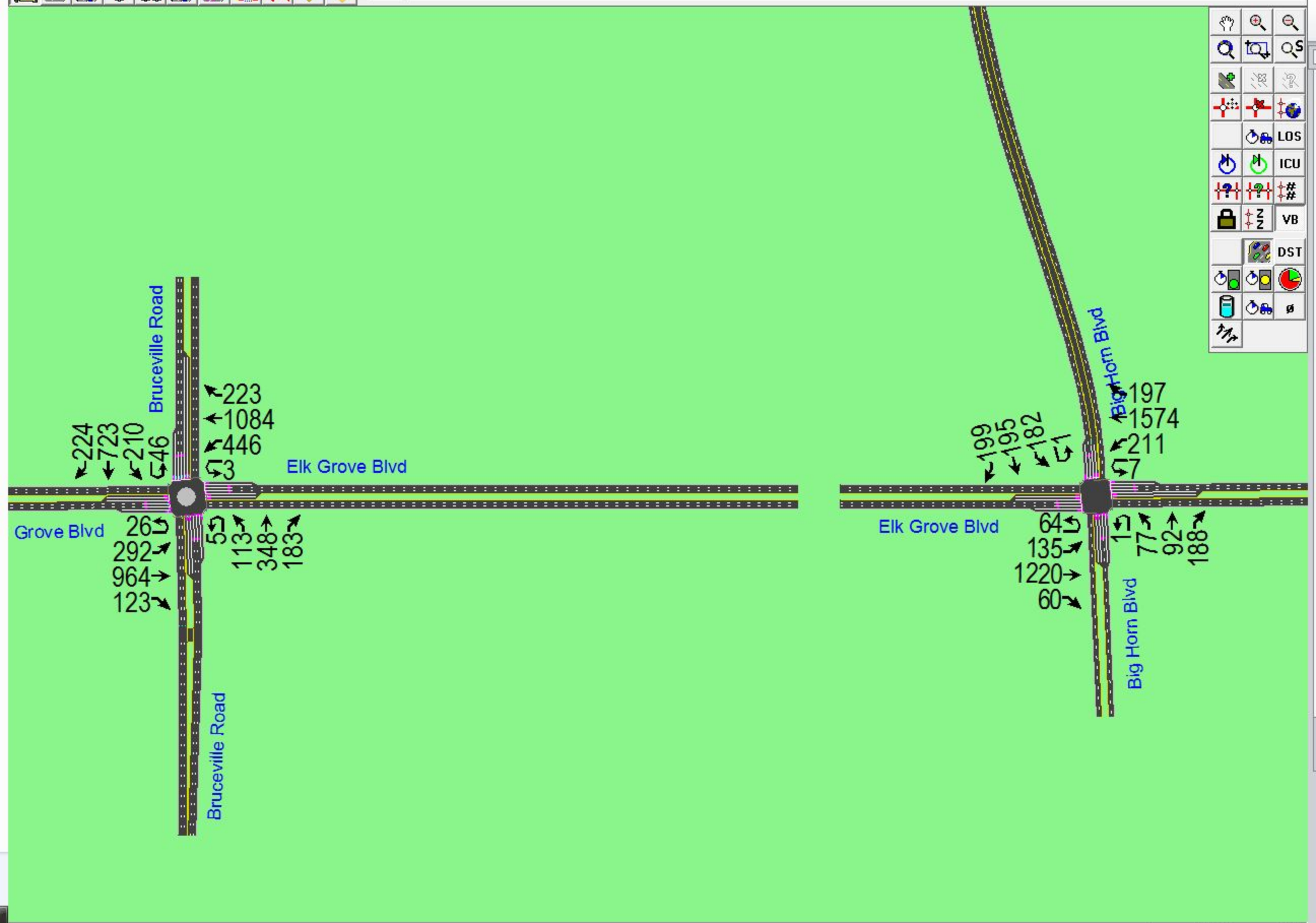


1 Elk Grove Blvd & Franklin Blvd



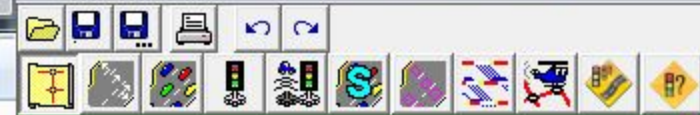


2 Elk Grove Blvd & Bruceville Road

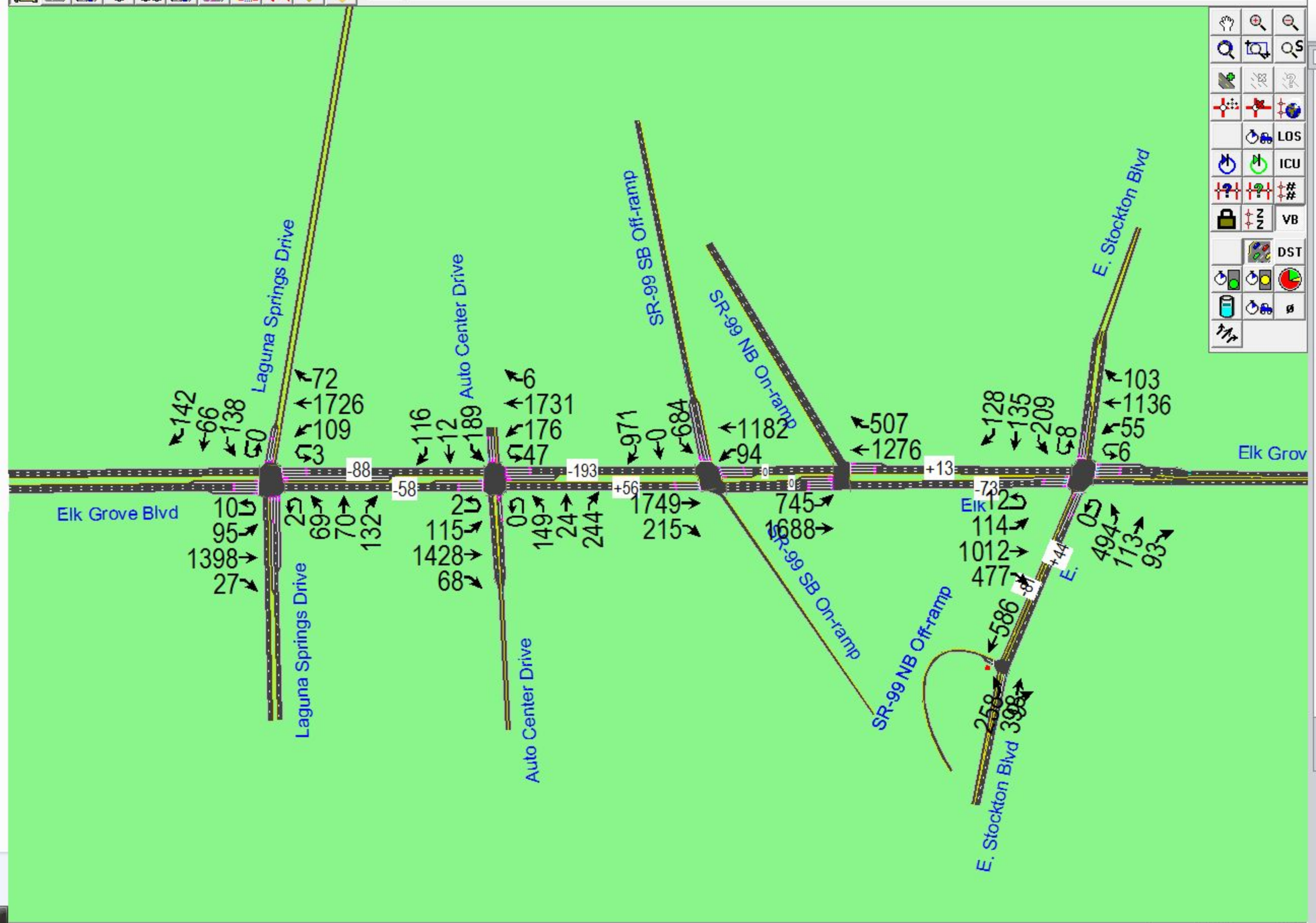


Vertical toolbar containing various simulation and analysis tools:

- Hand icon
- Zoom in (+) and Zoom out (-) icons
- Search (magnifying glass) icon
- Simulation control icons (stop, play, refresh)
- LOS (Level of Service) icon
- ICU (Incident Clearance Unit) icon
- Queue length (#) icon
- Vehicle buffer (VB) icon
- DST (Data Storage Table) icon
- Other simulation parameters icons

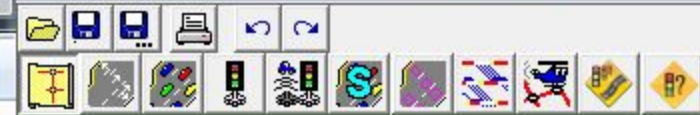


2 Elk Grove Blvd & Bruceville Road



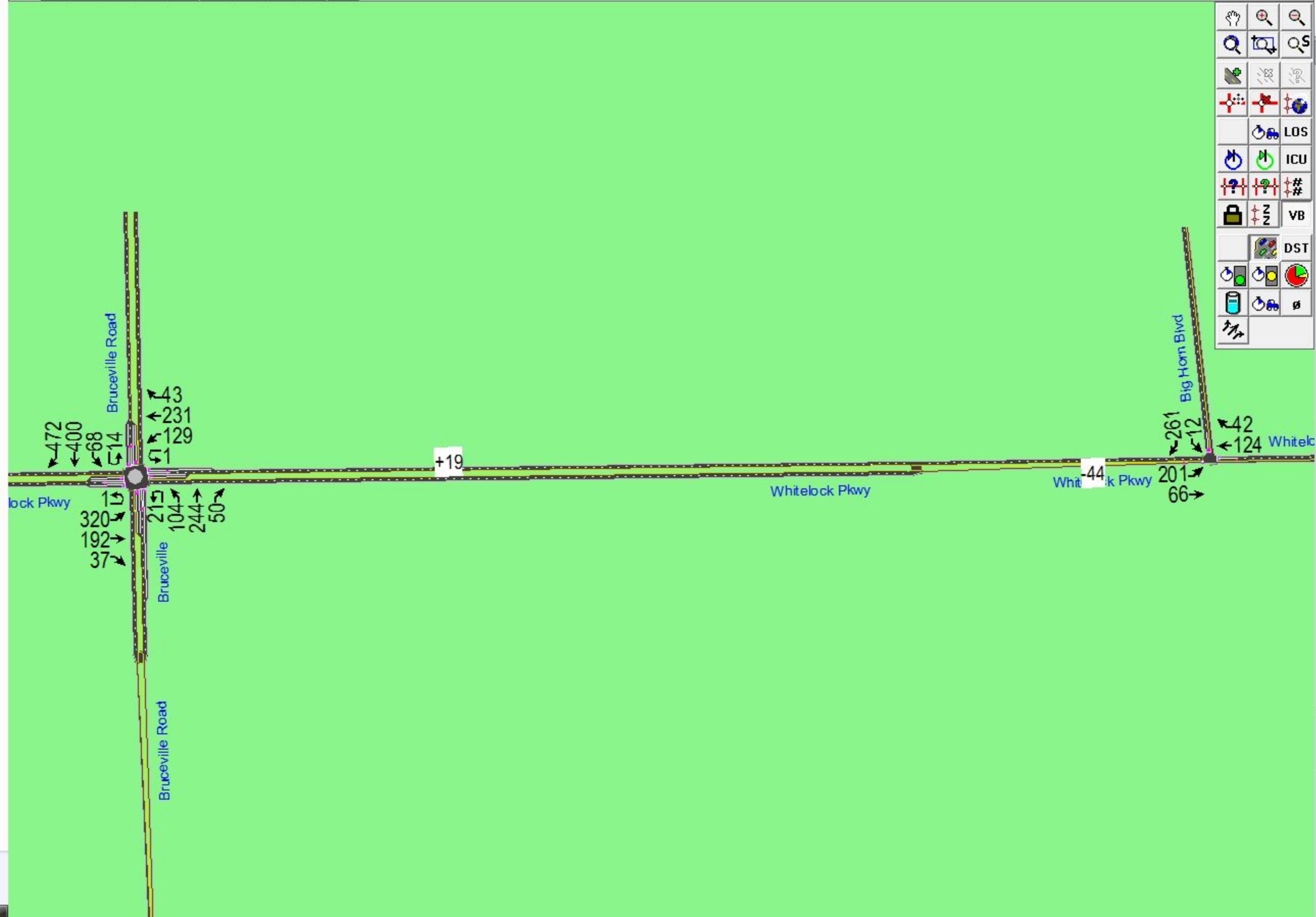
Vertical toolbar containing various simulation and analysis tools:

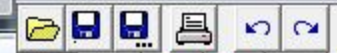
- Hand icon (pan)
- Zoom in/out icons
- Simulation control icons (start, stop, reset)
- Analysis tool icons (LOS, ICU, #, #, VB, DST)
- Other utility icons



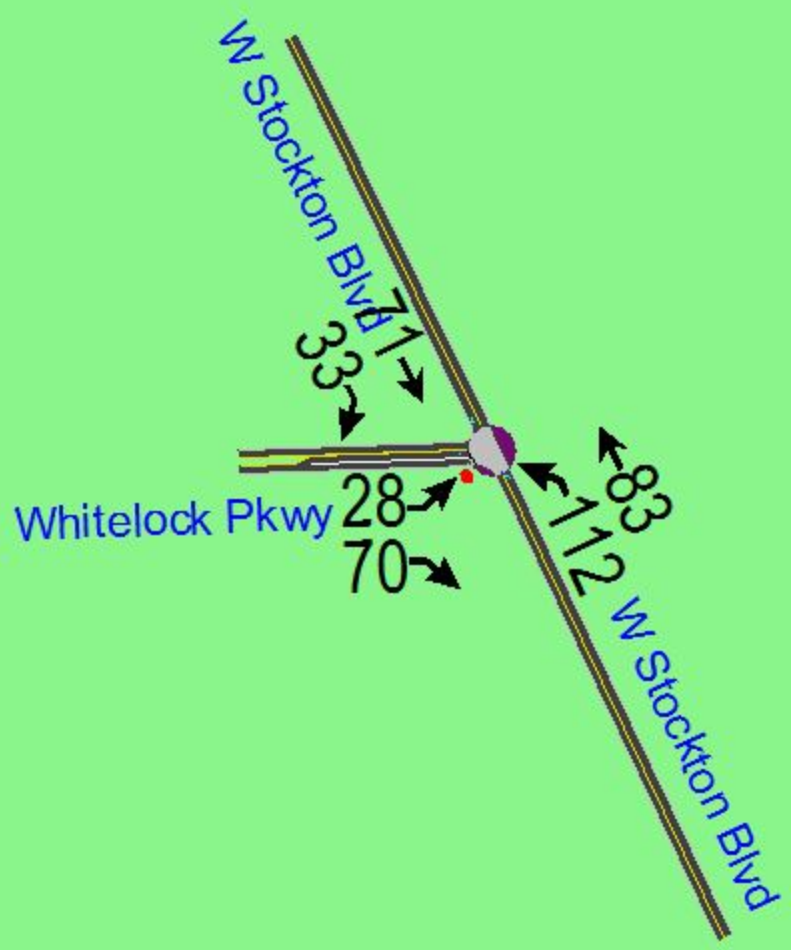
10 Whitelock Pkwy & Bruceville Road

- Hand icon
- Zoom in icon
- Zoom out icon
- Search icon
- Simulation control icons
- LOS (Level of Service) icon
- ICU (Incident Clearance Unit) icon
- VB (Vehicle Buffer) icon
- DST (Driver Safety Time) icon
- Other simulation parameters icons





12 Whitelock Pkwy & W Stockton Blvd



LOS

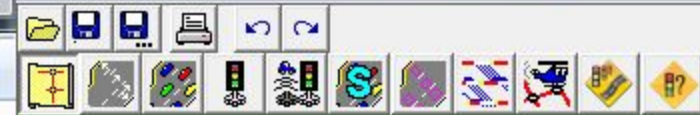
ICU

#

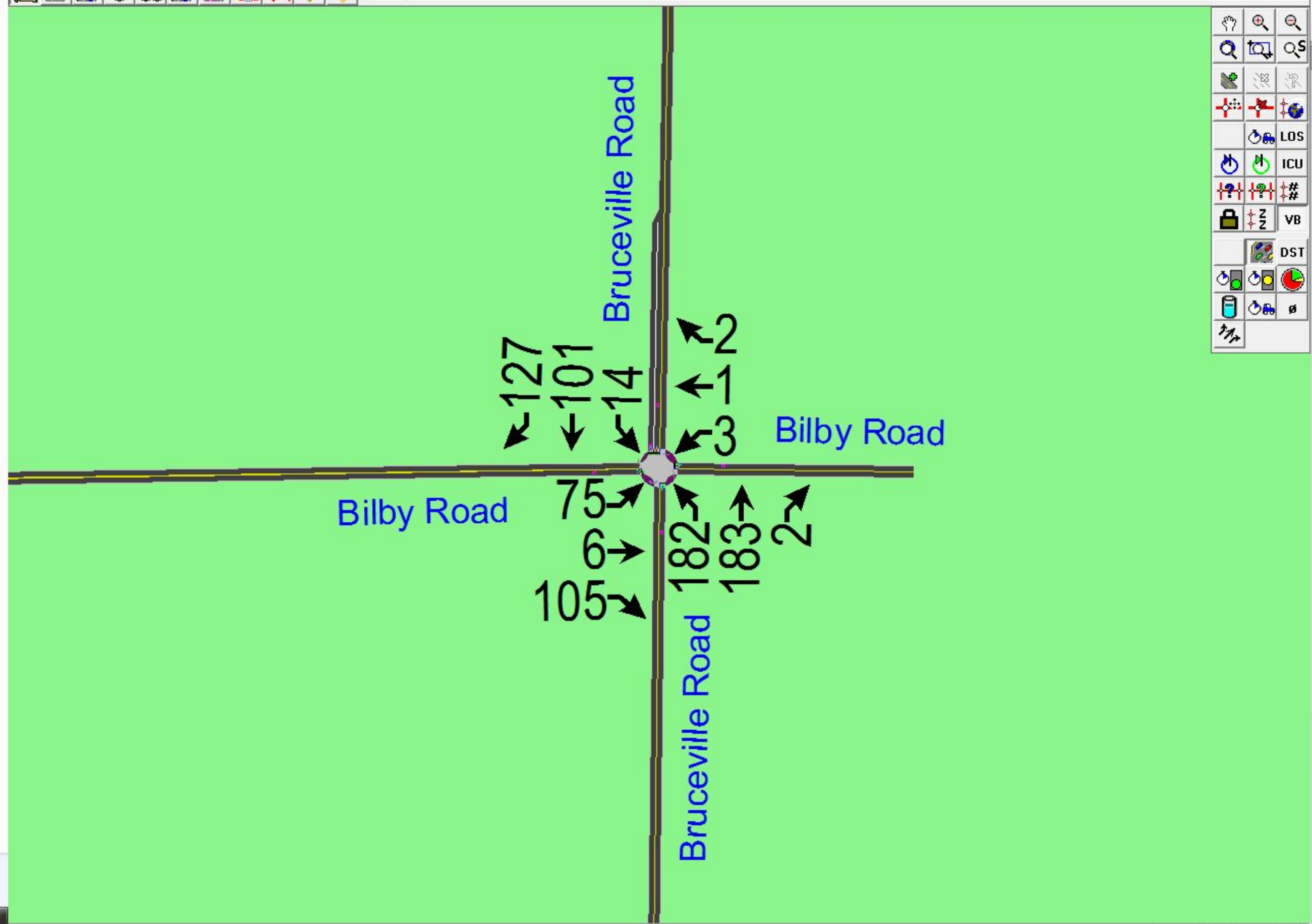
#

VB

DST

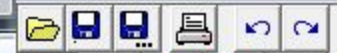


13 Bilby Road & Bruceville Road

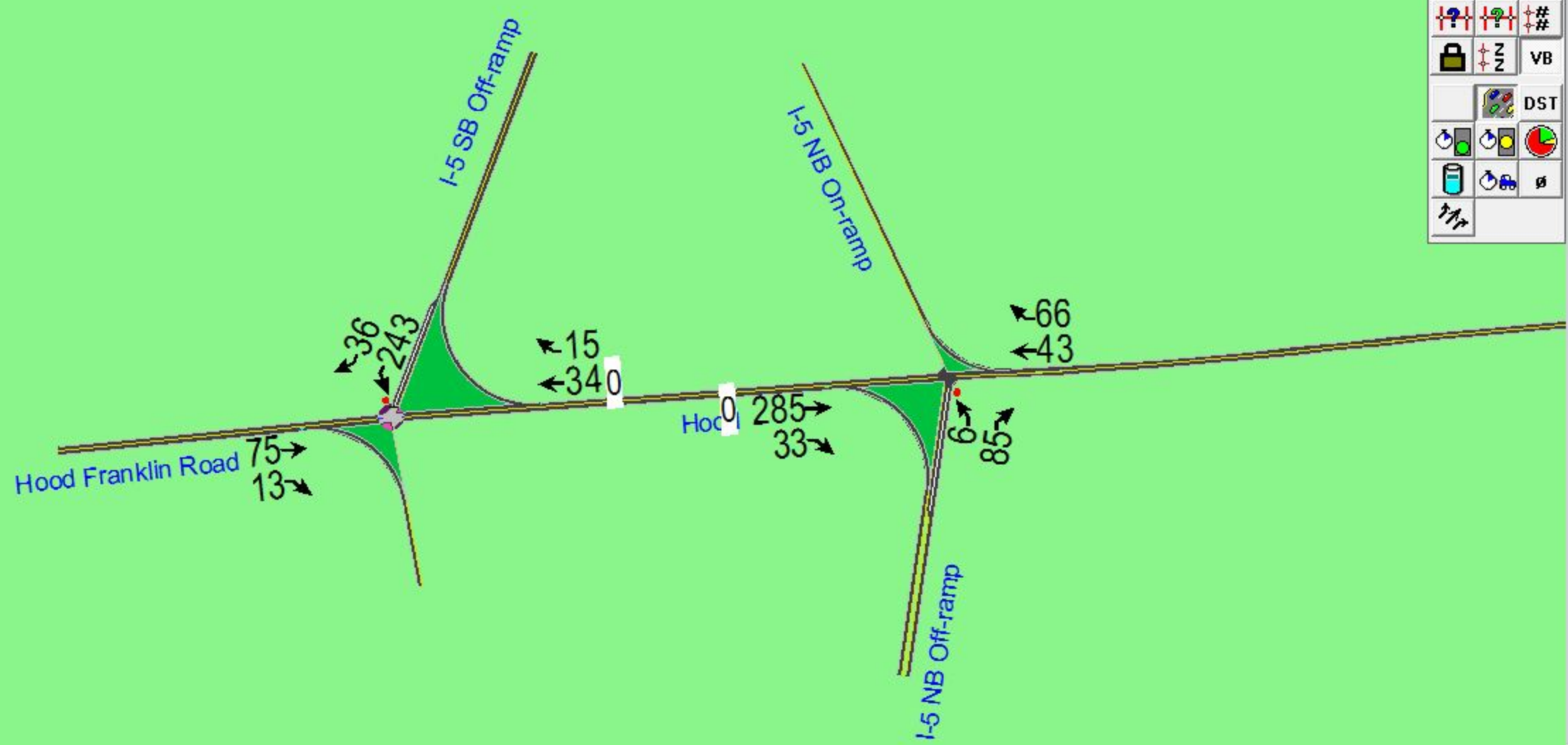


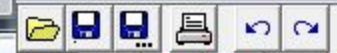
Vertical toolbar on the right side of the software interface. It contains various icons for simulation and analysis tools, including:

- Hand icon (pan)
- Zoom in and zoom out icons
- Simulation control icons (play, stop, reset)
- Analysis icons (LOS, ICU, #, #, VB, DST)
- Other simulation settings icons

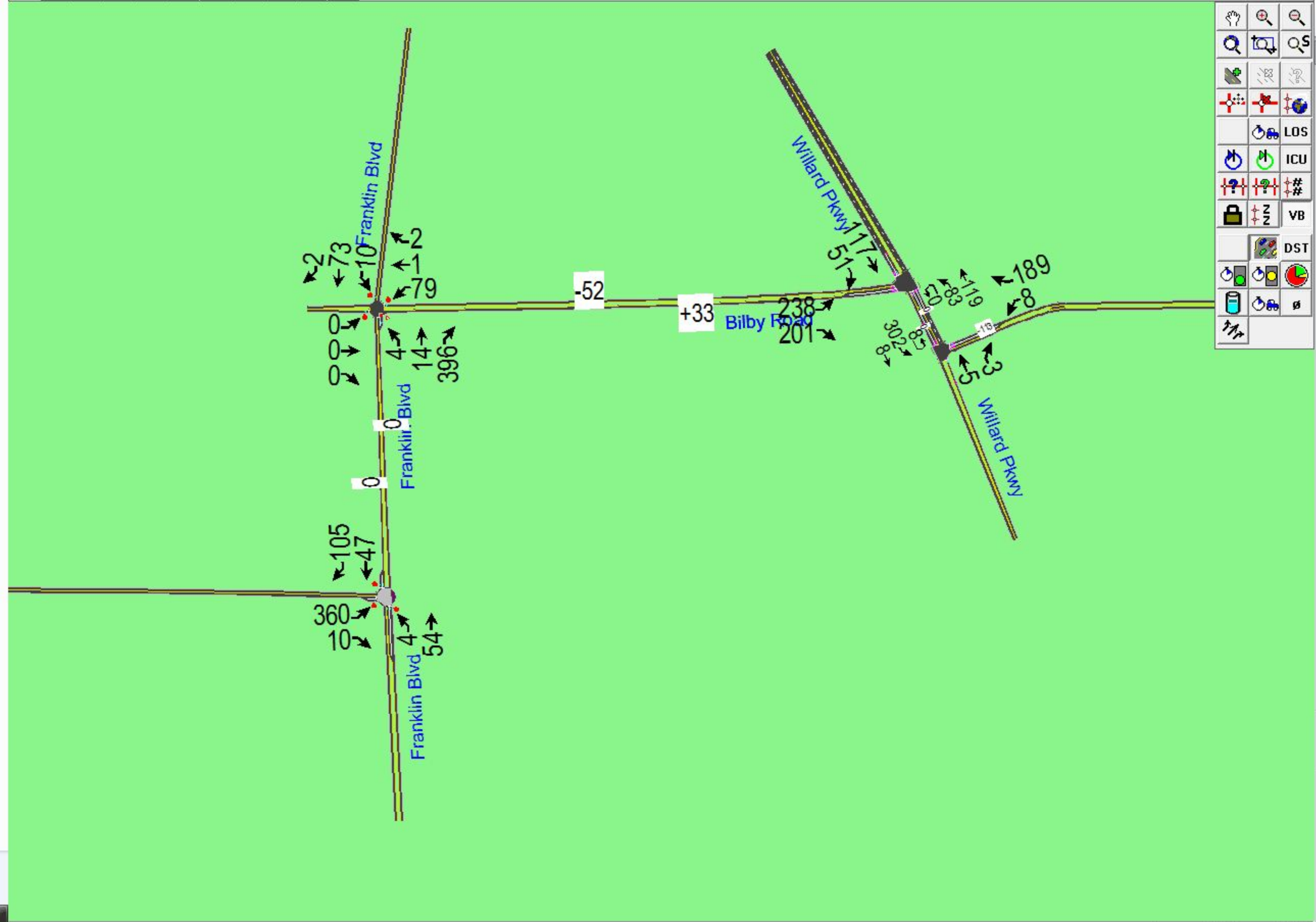


14 Hood Franklin Road & I-5 SB Off-ramp





16 Hood Franklin Road & Franklin Blvd

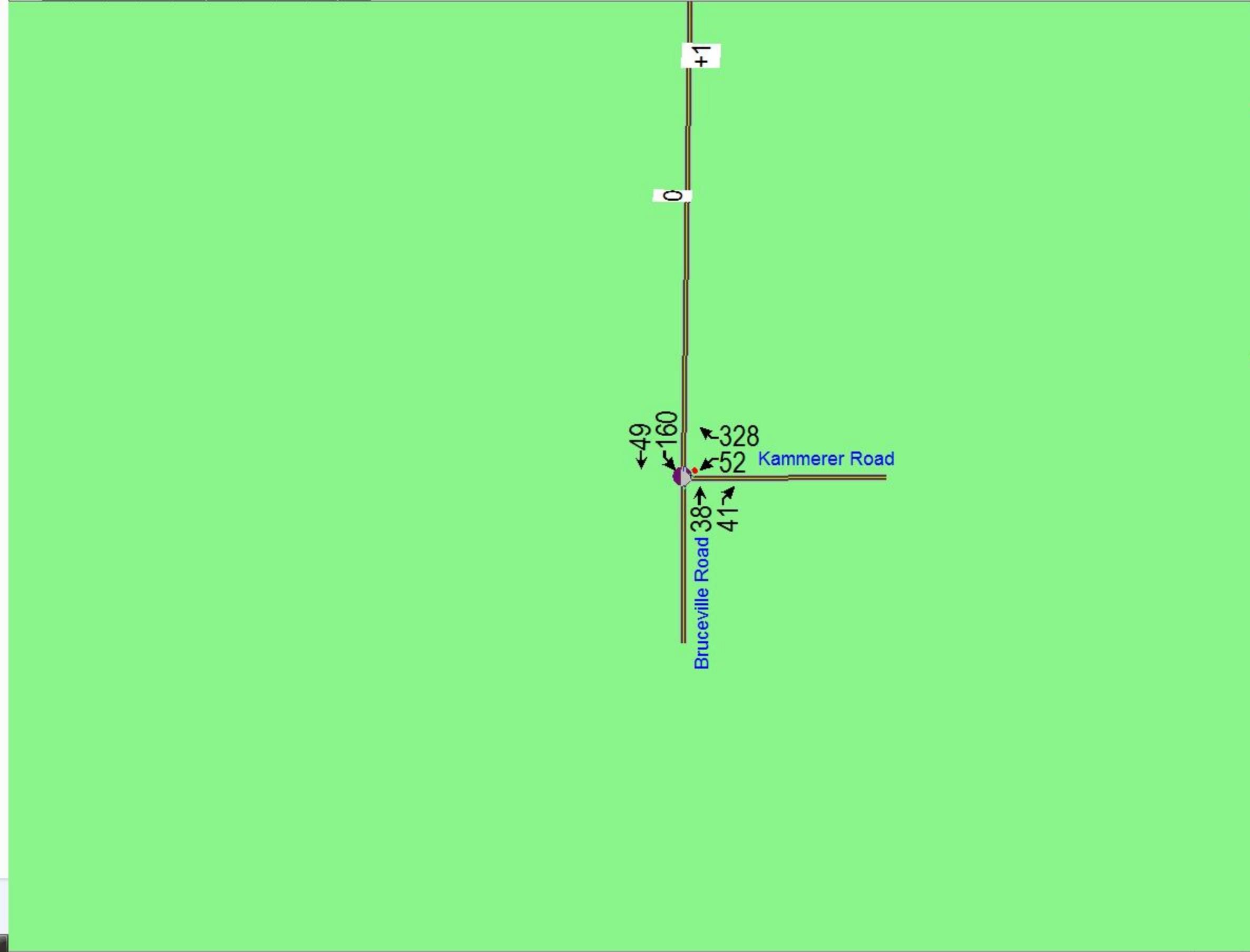


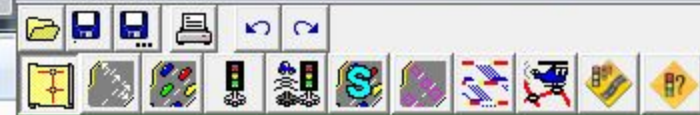
Vertical toolbar containing icons for simulation and control settings:

- Hand icon (pan)
- Zoom in/out icons
- Search icon
- Simulation control icons (stop, play, refresh)
- LOS (Level of Service) icon
- ICU (Intersection Control) icon
- # (Number of lanes) icon
- VB (Vehicle Buffer) icon
- DST (Distributed Traffic) icon
- Other simulation and control icons



20 Kammerer Road & Bruceville Road



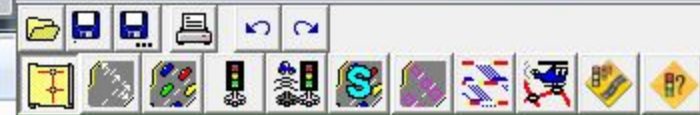


21 Kammerer Road & Promenade Pkwy

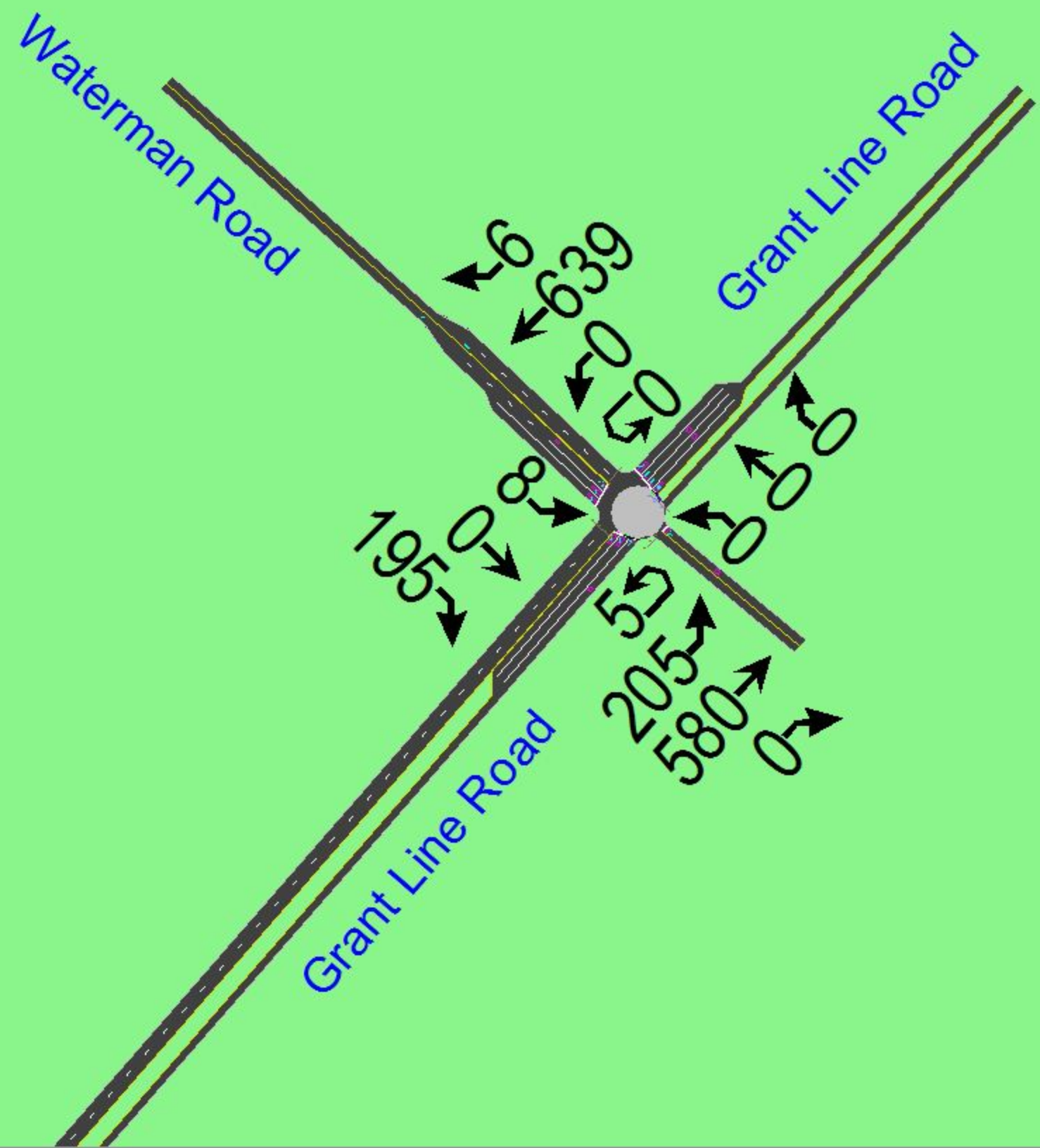


Vertical toolbar containing various simulation and analysis tools:

- Hand icon (pan)
- Zoom in/Zoom out icons
- Simulation control icons (start, stop, pause, reset)
- Analysis tool icons (LOS, ICU, #, VB, DST)
- Other simulation parameters icons

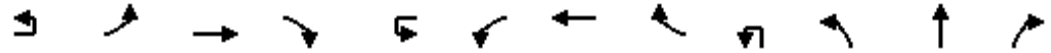


25 Grant Line Road & Waterman Road



HCM Signalized Intersection Capacity Analysis
1: Elk Grove Blvd & Franklin Blvd

Existing Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↘↗	↑↑↑	↗↘		↘↗	↑↑↑	↗		↘↗	↑↑↑	↗
Volume (vph)	3	184	1320	537	1	76	751	273	122	345	257	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.8	6.8		5.6	7.2	7.2		5.6	7.2	7.2
Lane Util. Factor		0.97	0.91	0.88		0.97	0.91	1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00	1.00	0.99		1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (prot)		3433	5085	2750		3433	5085	1583		3433	5085	1583
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	2750		3433	5085	1583		3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	200	1435	584	1	83	816	297	133	375	279	92
RTOR Reduction (vph)	0	0	0	330	0	0	0	182	0	0	0	76
Lane Group Flow (vph)	0	203	1435	254	0	84	816	115	0	508	279	16
Confl. Bikes (#/hr)				2								
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot	Prot		Perm
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases				6				2				8
Actuated Green, G (s)		11.5	52.2	52.2		6.3	46.6	46.6		22.1	20.7	20.7
Effective Green, g (s)		11.5	52.2	52.2		6.3	46.6	46.6		22.1	20.7	20.7
Actuated g/C Ratio		0.10	0.44	0.44		0.05	0.39	0.39		0.18	0.17	0.17
Clearance Time (s)		5.6	6.8	6.8		5.6	7.2	7.2		5.6	7.2	7.2
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		329	2212	1196		180	1975	615		632	877	273
v/s Ratio Prot		c0.06	c0.28			0.02	0.16			c0.15	0.05	
v/s Ratio Perm				0.09				0.07				0.01
v/c Ratio		0.62	0.65	0.21		0.47	0.41	0.19		0.80	0.32	0.06
Uniform Delay, d1		52.1	26.7	21.1		55.2	26.7	24.2		46.9	43.5	41.5
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		2.4	1.5	0.4		0.7	0.6	0.7		6.9	0.1	0.0
Delay (s)		54.6	28.2	21.5		55.9	27.4	24.9		53.8	43.5	41.5
Level of Service		D	C	C		E	C	C		D	D	D
Approach Delay (s)			28.8				28.8				49.3	
Approach LOS			C				C				D	

Intersection Summary		
HCM Average Control Delay	37.3	HCM Level of Service D
HCM Volume to Capacity ratio	0.70	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 24.3
Intersection Capacity Utilization	70.6%	ICU Level of Service C
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 1: Elk Grove Blvd & Franklin Blvd

Existing Conditions
 PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		←↑	↑↑↑	↑
Volume (vph)	2	345	379	242
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		5.6	6.3	6.3
Lane Util. Factor		0.97	0.91	1.00
Frbp, ped/bikes		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	5085	1556
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1556
Peak-hour factor, PHF	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	375	412	263
RTOR Reduction (vph)	0	0	0	230
Lane Group Flow (vph)	0	377	412	33
Confl. Bikes (#/hr)				3
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		15.6	15.1	15.1
Effective Green, g (s)		15.6	15.1	15.1
Actuated g/C Ratio		0.13	0.13	0.13
Clearance Time (s)		5.6	6.3	6.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		446	640	196
v/s Ratio Prot		0.11	c0.08	
v/s Ratio Perm				0.02
v/c Ratio		0.85	0.64	0.17
Uniform Delay, d1		51.0	49.9	46.8
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		13.2	1.7	0.1
Delay (s)		64.2	51.6	47.0
Level of Service		E	D	D
Approach Delay (s)			55.0	
Approach LOS			D	

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: Elk Grove Blvd & Bruceville Road

Existing Conditions
PM Peak Hour

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	26	292	964	123	3	446	1084	223	5	113	348	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.0	6.0		5.6	6.0	6.0		5.6	5.7	5.7
Lane Util. Factor		0.97	0.91	1.00		0.97	0.91	1.00		0.97	0.91	1.00
Fr _t		1.00	1.00	0.85		1.00	1.00	0.85		1.00	1.00	0.85
Fl _t Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (prot)		3433	5085	1583		3433	5085	1583		3433	5085	1583
Fl _t Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1583		3433	5085	1583		3433	5085	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	304	1004	128	3	465	1129	232	5	118	362	191
RTOR Reduction (vph)	0	0	0	72	0	0	0	111	0	0	0	160
Lane Group Flow (vph)	0	331	1004	56	0	468	1129	121	0	123	362	31
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot	Prot		Perm
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases				6				2				8
Actuated Green, G (s)		15.9	44.3	44.3		20.7	49.1	49.1		8.7	19.3	19.3
Effective Green, g (s)		15.9	44.3	44.3		20.7	49.1	49.1		8.7	19.3	19.3
Actuated g/C Ratio		0.13	0.37	0.37		0.17	0.41	0.41		0.07	0.16	0.16
Clearance Time (s)		5.6	6.0	6.0		5.6	6.0	6.0		5.6	5.7	5.7
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		455	1877	584		592	2081	648		249	818	255
v/s Ratio Prot		0.10	0.20			c0.14	c0.22			0.04	0.07	
v/s Ratio Perm				0.04				0.08				0.02
v/c Ratio		0.73	0.53	0.10		0.79	0.54	0.19		0.49	0.44	0.12
Uniform Delay, d ₁		50.0	29.8	24.8		47.6	26.9	22.7		53.5	45.5	43.1
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d ₂		4.9	1.1	0.3		6.6	1.0	0.6		0.6	0.1	0.1
Delay (s)		54.8	30.8	25.1		54.2	27.9	23.3		54.1	45.6	43.2
Level of Service		D	C	C		D	C	C		D	D	D
Approach Delay (s)			35.8				34.1				46.5	
Approach LOS			D				C				D	
Intersection Summary												
HCM Average Control Delay			40.3				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			22.9		
Intersection Capacity Utilization			70.3%				ICU Level of Service			C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
2: Elk Grove Blvd & Bruceville Road

Existing Conditions
PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	46	210	723	224
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7	5.7
Lane Util. Factor		0.97	0.86	0.86
Fr _t		1.00	1.00	0.85
Fl _t Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	4785	1362
Fl _t Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	4785	1362
Peak-hour factor, PHF	0.96	0.96	0.96	0.96
Adj. Flow (vph)	48	219	753	233
RTOR Reduction (vph)	0	0	2	169
Lane Group Flow (vph)	0	267	774	41
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		12.8	23.4	23.4
Effective Green, g (s)		12.8	23.4	23.4
Actuated g/C Ratio		0.11	0.19	0.19
Clearance Time (s)		5.6	5.7	5.7
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		366	933	266
v/s Ratio Prot		c0.08	c0.16	
v/s Ratio Perm				0.03
v/c Ratio		0.73	0.83	0.15
Uniform Delay, d ₁		51.9	46.4	40.1
Progression Factor		1.00	1.00	1.00
Incremental Delay, d ₂		6.1	5.9	0.1
Delay (s)		58.0	52.3	40.2
Level of Service		E	D	D
Approach Delay (s)			51.5	
Approach LOS			D	

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Elk Grove Blvd & Big Horn Blvd

Existing Conditions
PM Peak Hour

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	64	135	1220	60	7	211	1574	197	1	77	92	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	5.7	5.7		6.7	5.7	5.7		6.3	5.3	5.3
Lane Util. Factor		0.97	0.91	1.00		0.97	0.91	1.00		0.97	0.95	1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (prot)		3433	5085	1583		3433	5085	1583		3433	3539	1583
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1583		3433	5085	1583		3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	67	141	1271	62	7	220	1640	205	1	80	96	196
RTOR Reduction (vph)	0	0	0	23	0	0	0	56	0	0	0	176
Lane Group Flow (vph)	0	208	1271	39	0	227	1640	149	0	81	96	20
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot	Prot		Perm
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases				6				2				8
Actuated Green, G (s)		11.6	60.4	60.4		12.1	60.9	60.9		6.2	12.5	12.5
Effective Green, g (s)		11.6	60.4	60.4		12.1	60.9	60.9		6.2	12.5	12.5
Actuated g/C Ratio		0.10	0.50	0.50		0.10	0.51	0.51		0.05	0.10	0.10
Clearance Time (s)		6.7	5.7	5.7		6.7	5.7	5.7		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		332	2559	797		346	2581	803		177	369	165
v/s Ratio Prot		0.06	0.25			c0.07	c0.32			0.02	0.03	
v/s Ratio Perm				0.02				0.09				0.01
v/c Ratio		0.63	0.50	0.05		0.66	0.64	0.19		0.46	0.26	0.12
Uniform Delay, d1		52.1	19.7	15.2		51.9	21.5	16.1		55.3	49.5	48.8
Progression Factor		1.00	1.00	1.00		1.52	0.36	0.10		1.00	1.00	1.00
Incremental Delay, d2		2.7	0.7	0.1		2.6	0.9	0.4		0.7	0.1	0.1
Delay (s)		54.8	20.4	15.3		81.6	8.7	2.0		56.0	49.6	48.9
Level of Service		D	C	B		F	A	A		E	D	D
Approach Delay (s)			24.9				16.0				50.6	
Approach LOS			C				B				D	
Intersection Summary												
HCM Average Control Delay			26.1				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			18.3		
Intersection Capacity Utilization			71.7%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
3: Elk Grove Blvd & Big Horn Blvd

Existing Conditions
PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		↘ ↙	↑ ↑	↗
Volume (vph)	1	182	195	199
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00
Fr _t		1.00	1.00	0.85
Fl _t Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1583
Fl _t Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1	190	203	207
RTOR Reduction (vph)	0	0	0	177
Lane Group Flow (vph)	0	191	203	30
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		11.0	17.3	17.3
Effective Green, g (s)		11.0	17.3	17.3
Actuated g/C Ratio		0.09	0.14	0.14
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		315	510	228
v/s Ratio Prot		c0.06	c0.06	
v/s Ratio Perm				0.02
v/c Ratio		0.61	0.40	0.13
Uniform Delay, d ₁		52.4	46.6	44.8
Progression Factor		1.00	1.00	1.00
Incremental Delay, d ₂		2.3	0.2	0.1
Delay (s)		54.7	46.8	44.9
Level of Service		D	D	D
Approach Delay (s)			48.6	
Approach LOS			D	
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

4: Elk Grove Blvd & Laguna Springs Drive

Existing Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔	↑↑↑	↗		↙	↑↑↑			↔	↑	↗↗
Volume (vph)	10	95	1398	27	3	109	1726	72	2	69	70	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7	5.7		5.6	5.7			5.6	5.3	5.3
Lane Util. Factor		1.00	0.91	1.00		0.97	0.91			1.00	1.00	0.88
Frt		1.00	1.00	0.85		1.00	0.99			1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)		1770	5085	1583		3433	5055			1770	1863	2787
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	5085	1583		3433	5055			1770	1863	2787
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	98	1441	28	3	112	1779	74	2	71	72	136
RTOR Reduction (vph)	0	0	0	9	0	0	2	0	0	0	0	123
Lane Group Flow (vph)	0	108	1441	19	0	115	1851	0	0	73	72	13
Turn Type	Prot	Prot		Perm	Prot	Prot			Prot	Prot		Perm
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases				6								8
Actuated Green, G (s)		11.7	63.9	63.9		8.4	60.6			8.3	11.5	11.5
Effective Green, g (s)		11.7	63.9	63.9		8.4	60.6			8.3	11.5	11.5
Actuated g/C Ratio		0.10	0.53	0.53		0.07	0.51			0.07	0.10	0.10
Clearance Time (s)		5.6	5.7	5.7		5.6	5.7			5.6	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0			2.0	2.0	2.0
Lane Grp Cap (vph)		173	2708	843		240	2553			122	179	267
v/s Ratio Prot		c0.06	c0.28			0.03	c0.37			0.04	c0.04	
v/s Ratio Perm				0.01								0.00
v/c Ratio		0.62	0.53	0.02		0.48	0.72			0.60	0.40	0.05
Uniform Delay, d1		52.0	18.3	13.3		53.7	23.2			54.2	51.0	49.3
Progression Factor		0.77	1.22	1.04		1.46	0.38			1.00	1.00	1.00
Incremental Delay, d2		4.5	0.7	0.0		0.4	1.3			5.2	0.5	0.0
Delay (s)		44.6	23.0	13.8		78.8	10.0			59.4	51.6	49.3
Level of Service		D	C	B		E	B			E	D	D
Approach Delay (s)			24.3				14.1				52.5	
Approach LOS			C				B				D	

Intersection Summary

HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.9
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 4: Elk Grove Blvd & Laguna Springs Drive

Existing Conditions
 PM Peak Hour

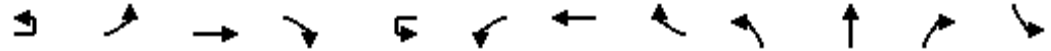


Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	138	66	142
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	5.6	5.3	
Lane Util. Factor	1.00	0.95	
Frt	1.00	0.90	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1770	3177	
Flt Permitted	0.95	1.00	
Satd. Flow (perm)	1770	3177	
Peak-hour factor, PHF	0.97	0.97	0.97
Adj. Flow (vph)	142	68	146
RTOR Reduction (vph)	0	125	0
Lane Group Flow (vph)	142	89	0
Turn Type	Prot		
Protected Phases	7	4	
Permitted Phases			
Actuated Green, G (s)	14.0	17.2	
Effective Green, g (s)	14.0	17.2	
Actuated g/C Ratio	0.12	0.14	
Clearance Time (s)	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	207	455	
v/s Ratio Prot	c0.08	0.03	
v/s Ratio Perm			
v/c Ratio	0.69	0.20	
Uniform Delay, d1	50.9	45.3	
Progression Factor	1.00	1.00	
Incremental Delay, d2	7.3	0.1	
Delay (s)	58.2	45.4	
Level of Service	E	D	
Approach Delay (s)		50.5	
Approach LOS		D	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
5: Elk Grove Blvd & Auto Center Drive

Existing Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑			↔	↑↑↑		↔	↑		↔
Volume (vph)	2	115	1428	68	47	176	1731	6	149	24	244	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7			5.6	5.7		5.6	4.6		5.9
Lane Util. Factor		1.00	0.91			0.97	0.91		1.00	1.00		0.97
Frt		1.00	0.99			1.00	1.00		1.00	0.86		1.00
Flt Protected		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		1770	5051			3433	5083		1770	1608		3433
Flt Permitted		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (perm)		1770	5051			3433	5083		1770	1608		3433
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	2	120	1488	71	49	183	1803	6	155	25	254	197
RTOR Reduction (vph)	0	0	3	0	0	0	0	0	0	236	0	0
Lane Group Flow (vph)	0	122	1556	0	0	232	1809	0	155	43	0	197
Turn Type	Prot	Prot			Prot	Prot			Prot			Prot
Protected Phases	1	1	6		5	5	2		7	4		3
Permitted Phases												
Actuated Green, G (s)		12.6	59.5			12.5	59.4		14.8	8.7		17.5
Effective Green, g (s)		12.6	59.5			12.5	59.4		14.8	8.7		17.5
Actuated g/C Ratio		0.10	0.50			0.10	0.49		0.12	0.07		0.15
Clearance Time (s)		5.6	5.7			5.6	5.7		5.6	4.6		5.9
Vehicle Extension (s)		2.0	2.0			2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)		186	2504			358	2516		218	117		501
v/s Ratio Prot		c0.07	0.31			0.07	c0.36		c0.09	0.03		c0.06
v/s Ratio Perm												
v/c Ratio		0.66	0.62			0.65	0.72		0.71	0.37		0.39
Uniform Delay, d1		51.6	22.0			51.6	23.8		50.5	53.0		46.4
Progression Factor		1.11	0.77			1.18	0.48		1.00	1.00		1.00
Incremental Delay, d2		5.5	1.0			2.2	1.3		8.8	0.7		0.2
Delay (s)		62.9	18.1			63.3	12.7		59.3	53.8		46.6
Level of Service		E	B			E	B		E	D		D
Approach Delay (s)			21.3				18.5			55.7		
Approach LOS			C				B			E		

Intersection Summary		
HCM Average Control Delay	25.3	HCM Level of Service C
HCM Volume to Capacity ratio	0.65	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 16.9
Intersection Capacity Utilization	80.0%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 5: Elk Grove Blvd & Auto Center Drive

Existing Conditions
 PM Peak Hour



Movement	SBT	SBR
Lane Configurations	P	
Volume (vph)	12	116
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1609	
Flt Permitted	1.00	
Satd. Flow (perm)	1609	
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	12	121
RTOR Reduction (vph)	110	0
Lane Group Flow (vph)	23	0
Turn Type		
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	11.4	
Effective Green, g (s)	11.4	
Actuated g/C Ratio	0.10	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	153	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.15	
Uniform Delay, d1	49.9	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	50.0	
Level of Service	D	
Approach Delay (s)	48.0	
Approach LOS	D	
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Existing Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	1749	215	94	1182	0	0	0	0	684	0	971
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Fr _t		0.98		1.00	1.00					1.00	1.00	0.85
Fl _t Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5002		1770	5085					1681	1681	2787
Fl _t Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5002		1770	5085					1681	1681	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1785	219	96	1206	0	0	0	0	698	0	991
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	80
Lane Group Flow (vph)	0	1993	0	96	1206	0	0	0	0	349	349	911
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		52.5		10.9	69.3					38.3	38.3	38.3
Effective Green, g (s)		52.5		10.9	69.3					38.3	38.3	38.3
Actuated g/C Ratio		0.44		0.09	0.58					0.32	0.32	0.32
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2188		161	2937					537	537	890
v/s Ratio Prot		c0.40		c0.05	0.24					0.21	0.21	
v/s Ratio Perm												c0.33
v/c Ratio		0.91		0.60	0.41					0.65	0.65	1.02
Uniform Delay, d ₁		31.6		52.4	14.0					35.1	35.1	40.9
Progression Factor		0.51		0.41	1.41					1.00	1.00	1.00
Incremental Delay, d ₂		6.0		2.9	0.3					2.0	2.0	36.2
Delay (s)		22.2		24.2	20.1					37.1	37.1	77.0
Level of Service		C		C	C					D	D	E
Approach Delay (s)		22.2		20.4			0.0				60.5	
Approach LOS		C		C			A				E	

Intersection Summary

HCM Average Control Delay	34.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

Existing Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	745	1688	1276	507	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	5085	5085	1583		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	5085	5085	1583		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	801	1815	1372	545	0	0
RTOR Reduction (vph)	0	0	0	76	0	0
Lane Group Flow (vph)	801	1815	1372	469	0	0
Turn Type	Prot		Perm			
Protected Phases	1	6	2			
Permitted Phases				2		
Actuated Green, G (s)	59.4	120.0	49.3	49.3		
Effective Green, g (s)	59.4	120.0	49.3	49.3		
Actuated g/C Ratio	0.49	1.00	0.41	0.41		
Clearance Time (s)	5.6	6.0	5.7	5.7		
Vehicle Extension (s)	2.0	3.0	2.0	2.0		
Lane Grp Cap (vph)	1699	5085	2089	650		
v/s Ratio Prot	c0.23	0.36	0.27			
v/s Ratio Perm				c0.30		
v/c Ratio	0.47	0.36	0.66	0.72		
Uniform Delay, d1	20.0	0.0	28.5	29.6		
Progression Factor	0.72	1.00	0.80	0.73		
Incremental Delay, d2	0.0	0.1	1.3	5.5		
Delay (s)	14.4	0.1	24.0	27.1		
Level of Service	B	A	C	C		
Approach Delay (s)		4.5	24.9		0.0	
Approach LOS		A	C		A	

Intersection Summary

HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.3
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

Existing Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		
Volume (vph)	12	114	1012	477	6	55	1136	103	494	113	93	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7	5.7		5.6	5.7	5.7	5.6	5.6		
Lane Util. Factor		1.00	0.95	1.00		1.00	0.91	1.00	0.91	0.91		
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.97		
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.97		
Satd. Flow (prot)		1770	3539	1583		1770	5085	1583	1610	3199		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.97		
Satd. Flow (perm)		1770	3539	1583		1770	5085	1583	1610	3199		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	13	120	1065	502	6	58	1196	108	520	119	98	8
RTOR Reduction (vph)	0	0	0	237	0	0	0	50	0	19	0	0
Lane Group Flow (vph)	0	133	1065	265	0	64	1196	58	260	458	0	0
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Split			Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				6				2				
Actuated Green, G (s)		12.3	51.0	51.0		7.7	46.4	46.4	22.1	22.1		
Effective Green, g (s)		12.3	51.0	51.0		7.7	46.4	46.4	22.1	22.1		
Actuated g/C Ratio		0.10	0.42	0.42		0.06	0.39	0.39	0.18	0.18		
Clearance Time (s)		5.6	5.7	5.7		5.6	5.7	5.7	5.6	5.6		
Vehicle Extension (s)		2.0	3.9	3.9		2.0	3.9	3.9	2.0	2.0		
Lane Grp Cap (vph)		181	1504	673		114	1966	612	297	589		
v/s Ratio Prot		c0.08	c0.30			0.04	0.24		c0.16	0.14		
v/s Ratio Perm				0.17				0.04				
v/c Ratio		0.73	0.71	0.39		0.56	0.61	0.10	0.88	0.78		
Uniform Delay, d1		52.3	28.4	23.8		54.5	29.5	23.4	47.6	46.6		
Progression Factor		0.85	0.76	1.60		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		11.9	2.7	1.6		3.7	1.4	0.3	23.1	5.9		
Delay (s)		56.4	24.2	39.7		58.2	30.9	23.7	70.7	52.5		
Level of Service		E	C	D		E	C	C	E	D		
Approach Delay (s)			31.3				31.6			58.9		
Approach LOS			C				C			E		

Intersection Summary

HCM Average Control Delay	38.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 8: Elk Grove Blvd & E. Stockton Blvd

Existing Conditions
 PM Peak Hour



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	209	135	128
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6
Lane Util. Factor	0.95	0.95	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00
Satd. Flow (prot)	1681	1748	1583
Flt Permitted	0.95	0.99	1.00
Satd. Flow (perm)	1681	1748	1583
Peak-hour factor, PHF	0.95	0.95	0.95
Adj. Flow (vph)	220	142	135
RTOR Reduction (vph)	0	0	115
Lane Group Flow (vph)	182	188	20
Turn Type	Split		Perm
Protected Phases	4	4	
Permitted Phases			4
Actuated Green, G (s)	17.7	17.7	17.7
Effective Green, g (s)	17.7	17.7	17.7
Actuated g/C Ratio	0.15	0.15	0.15
Clearance Time (s)	4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	248	258	233
v/s Ratio Prot	c0.11	0.11	
v/s Ratio Perm			0.01
v/c Ratio	0.73	0.73	0.09
Uniform Delay, d1	48.9	48.9	44.2
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	9.3	8.4	0.1
Delay (s)	58.2	57.3	44.2
Level of Service	E	E	D
Approach Delay (s)		54.1	
Approach LOS		D	

Intersection Summary

HCM Unsignalized Intersection Capacity Analysis
 9: SR-99 NB Off-ramp & E. Stockton Blvd

Existing Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↶	↷		↶↷	↶	
Volume (veh/h)	258	9	0	398	586	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	266	9	0	410	604	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		1				
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)					808	
pX, platoon unblocked	0.97	0.97	0.97			
vC, conflicting volume	809	604	604			
vC1, stage 1 conf vol	604					
vC2, stage 2 conf vol	205					
vCu, unblocked vol	785	573	573			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	44	98	100			
cM capacity (veh/h)	479	447	962			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	275	205	205	604
Volume Left	266	0	0	0
Volume Right	9	0	0	0
cSH	484	1700	1700	1700
Volume to Capacity	0.57	0.12	0.12	0.36
Queue Length 95th (ft)	87	0	0	0
Control Delay (s)	21.8	0.0	0.0	0.0
Lane LOS	C			
Approach Delay (s)	21.8	0.0		0.0
Approach LOS	C			

Intersection Summary			
Average Delay		4.7	
Intersection Capacity Utilization		51.8%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
10: Whitelock Pkwy & Bruceville Road

Existing Conditions
PM Peak Hour

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	1	320	192	37	1	129	231	43	21	104	244	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	4.9	4.9		5.6	4.9	4.9		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00		0.97	0.95	1.00		0.97	0.95	1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1583		3433	3539	1583		3433	3539	1583
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1583		3433	3539	1583		3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1	344	206	40	1	139	248	46	23	112	262	54
RTOR Reduction (vph)	0	0	0	30	0	0	0	38	0	0	0	38
Lane Group Flow (vph)	0	345	206	10	0	140	248	8	0	135	262	16
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot	Prot		Perm
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8				4				6
Actuated Green, G (s)		13.6	19.0	19.0		8.6	14.0	14.0		8.5	22.6	22.6
Effective Green, g (s)		13.6	19.0	19.0		8.6	14.0	14.0		8.5	22.6	22.6
Actuated g/C Ratio		0.17	0.24	0.24		0.11	0.18	0.18		0.11	0.29	0.29
Clearance Time (s)		5.6	4.9	4.9		5.6	4.9	4.9		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		599	862	386		379	635	284		374	1025	459
v/s Ratio Prot		c0.10	c0.06			0.04	c0.07			c0.04	c0.07	
v/s Ratio Perm				0.01				0.01				0.01
v/c Ratio		0.58	0.24	0.03		0.37	0.39	0.03		0.36	0.26	0.03
Uniform Delay, d1		29.6	23.7	22.5		32.2	28.2	26.4		32.2	21.2	19.9
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.8	0.1	0.0		0.2	0.1	0.0		0.2	0.0	0.0
Delay (s)		30.4	23.7	22.5		32.4	28.4	26.4		32.4	21.3	19.9
Level of Service		C	C	C		C	C	C		C	C	B
Approach Delay (s)			27.5				29.5				24.5	
Approach LOS			C				C				C	
Intersection Summary												
HCM Average Control Delay			26.4				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			78.0				Sum of lost time (s)			32.3		
Intersection Capacity Utilization			67.6%				ICU Level of Service			C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 10: Whitelock Pkwy & Bruceville Road

Existing Conditions
 PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		↘ ↙	↑ ↑	↗
Volume (vph)	14	68	400	472
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1583
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93
Adj. Flow (vph)	15	73	430	508
RTOR Reduction (vph)	0	0	0	379
Lane Group Flow (vph)	0	88	430	129
Turn Type	Prot	Prot		Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		5.7	19.8	19.8
Effective Green, g (s)		5.7	19.8	19.8
Actuated g/C Ratio		0.07	0.25	0.25
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		251	898	402
v/s Ratio Prot		0.03	0.12	
v/s Ratio Perm				0.08
v/c Ratio		0.35	0.48	0.32
Uniform Delay, d1		34.4	24.7	23.6
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		0.3	0.1	0.2
Delay (s)		34.7	24.9	23.8
Level of Service		C	C	C
Approach Delay (s)			25.2	
Approach LOS			C	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 11: Whitelock Pkwy & Big Horn Blvd

Existing Conditions
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↗	↖	↗
Volume (vph)	201	66	124	42	12	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	4.6	4.6	5.3	5.3
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		0.96	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1795	1863	1583	1770	1583
Flt Permitted		0.96	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1795	1863	1583	1770	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	216	71	133	45	13	281
RTOR Reduction (vph)	0	0	0	36	0	228
Lane Group Flow (vph)	0	287	133	9	13	53
Turn Type	Split			Perm		Perm
Protected Phases	3	3	4		2	
Permitted Phases				4		2
Actuated Green, G (s)		13.4	9.6	9.6	9.0	9.0
Effective Green, g (s)		13.4	9.6	9.6	9.0	9.0
Actuated g/C Ratio		0.28	0.20	0.20	0.19	0.19
Clearance Time (s)		5.6	4.6	4.6	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		506	377	320	335	300
v/s Ratio Prot		c0.16	c0.07		0.01	
v/s Ratio Perm				0.01		c0.03
v/c Ratio		0.57	0.35	0.03	0.04	0.18
Uniform Delay, d1		14.6	16.3	15.2	15.7	16.1
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.9	0.2	0.0	0.0	0.1
Delay (s)		15.4	16.5	15.2	15.7	16.2
Level of Service		B	B	B	B	B
Approach Delay (s)		15.4	16.2		16.2	
Approach LOS		B	B		B	

Intersection Summary

HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	15.5
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 12: Whitelock Pkwy & W Stockton Blvd

Existing Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	28	70	112	83	71	33
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	29	74	118	87	75	35
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	415	92	109			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	415	92	109			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	92	92			
cM capacity (veh/h)	546	965	1481			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	29	74	205	109
Volume Left	29	0	118	0
Volume Right	0	74	0	35
cSH	546	965	1481	1700
Volume to Capacity	0.05	0.08	0.08	0.06
Queue Length 95th (ft)	4	6	6	0
Control Delay (s)	12.0	9.0	4.7	0.0
Lane LOS	B	A	A	
Approach Delay (s)	9.9		4.7	0.0
Approach LOS	A			

Intersection Summary				
Average Delay			4.7	
Intersection Capacity Utilization		27.2%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis
 13: Bilby Road & Bruceville Road

Existing Conditions
 PM Peak Hour



















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↑	↗
Volume (vph)	75	6	105	3	1	2	182	183	2	14	101	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			7.0			6.5			6.5	6.5
Lane Util. Factor		1.00			1.00			1.00			1.00	1.00
Frt		0.92			0.95			1.00			1.00	0.85
Flt Protected		0.98			0.98			0.98			0.99	1.00
Satd. Flow (prot)		1687			1736			1816			1852	1583
Flt Permitted		0.87			0.78			0.78			0.94	1.00
Satd. Flow (perm)		1489			1382			1452			1743	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	81	6	113	3	1	2	196	197	2	15	109	137
RTOR Reduction (vph)	0	64	0	0	2	0	0	0	0	0	0	71
Lane Group Flow (vph)	0	136	0	0	4	0	0	395	0	0	124	66
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)		9.7			9.2			21.3			21.3	21.3
Effective Green, g (s)		9.7			9.2			21.3			21.3	21.3
Actuated g/C Ratio		0.22			0.21			0.48			0.48	0.48
Clearance Time (s)		6.5			7.0			6.5			6.5	6.5
Vehicle Extension (s)		2.0			2.0			4.5			4.5	4.5
Lane Grp Cap (vph)		328			289			703			844	766
v/s Ratio Prot												
v/s Ratio Perm		c0.09			0.00			c0.27			0.07	0.04
v/c Ratio		0.41			0.02			0.56			0.15	0.09
Uniform Delay, d1		14.7			13.8			8.0			6.3	6.1
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.3			0.0			1.5			0.1	0.1
Delay (s)		15.0			13.8			9.5			6.4	6.2
Level of Service		B			B			A			A	A
Approach Delay (s)		15.0			13.8			9.5			6.3	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	44.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

















HCM Unsignalized Intersection Capacity Analysis
 14: Hood Franklin Road & I-5 SB Off-ramp

Existing Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	75	13	0	34	15	0	0	0	243	0	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	82	14	0	37	16	0	0	0	264	0	39
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												12
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	37			82			153	126	89	134	127	45
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	37			82			153	126	89	134	127	45
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	68	100	96
cM capacity (veh/h)	1574			1516			783	765	970	838	764	1025
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	96	53	303									
Volume Left	0	0	264									
Volume Right	14	16	39									
cSH	1700	1700	962									
Volume to Capacity	0.06	0.03	0.32									
Queue Length 95th (ft)	0	0	34									
Control Delay (s)	0.0	0.0	10.9									
Lane LOS			B									
Approach Delay (s)	0.0	0.0	10.9									
Approach LOS			B									
Intersection Summary												
Average Delay			7.3									
Intersection Capacity Utilization			24.9%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 15: Hood Franklin Road & I-5 NB On-ramp

Existing Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	285	33	0	43	66	6	0	85	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	300	35	0	45	69	6	0	89	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	45			300			397	363	317	487	380	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	45			300			397	363	317	487	380	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	88	100	100	100
cM capacity (veh/h)	1563			1261			563	565	723	430	552	980
Direction, Lane #	EB 1	WB 1	NB 1	NB 2								
Volume Total	335	115	6	89								
Volume Left	0	0	6	0								
Volume Right	35	69	0	89								
cSH	1700	1700	563	723								
Volume to Capacity	0.20	0.07	0.01	0.12								
Queue Length 95th (ft)	0	0	1	11								
Control Delay (s)	0.0	0.0	11.5	10.7								
Lane LOS			B	B								
Approach Delay (s)	0.0	0.0	10.7									
Approach LOS			B									
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization			28.9%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd


















Existing Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	360	10	4	54	47	105
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	391	11	4	59	51	114
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	391	11	4	59	51	114
Volume Left (vph)	391	0	4	0	0	0
Volume Right (vph)	0	11	0	0	0	114
Hadj (s)	0.53	-0.67	0.53	0.03	0.03	-0.67
Departure Headway (s)	5.6	4.4	6.5	6.0	5.8	5.1
Degree Utilization, x	0.61	0.01	0.01	0.10	0.08	0.16
Capacity (veh/h)	623	779	516	559	575	655
Control Delay (s)	15.9	6.3	8.3	8.4	8.2	7.9
Approach Delay (s)	15.6		8.4		8.0	
Approach LOS	C		A		A	
Intersection Summary						
Delay			12.9			
HCM Level of Service			B			
Intersection Capacity Utilization			29.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 17: Bilby Road & Franklin Blvd

Existing Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	0	0	79	1	2	4	14	396	10	73	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
Hourly flow rate (vph)	0	0	0	88	1	2	4	16	440	11	81	2
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total (vph)	0	91	20	440	94							
Volume Left (vph)	0	88	4	0	11							
Volume Right (vph)	0	2	0	440	2							
Hadj (s)	0.00	0.21	0.08	-0.57	0.04							
Departure Headway (s)	4.2	4.4	4.3	3.2	4.2							
Degree Utilization, x	0.00	0.11	0.02	0.39	0.11							
Capacity (veh/h)	824	802	808	1114	834							
Control Delay (s)	7.2	7.9	7.4	8.2	7.7							
Approach Delay (s)	0.0	7.9	8.2		7.7							
Approach LOS	A	A	A		A							
Intersection Summary												
Delay			8.1									
HCM Level of Service			A									
Intersection Capacity Utilization			35.7%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 18: Bilby Road & Willard Pkwy

Existing Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	238	201	83	119	117	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	264	223	92	132	130	57
RTOR Reduction (vph)	0	160	0	0	0	42
Lane Group Flow (vph)	264	63	92	132	130	15
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	21.8	21.8	8.9	19.9	20.1	20.1
Effective Green, g (s)	21.8	21.8	8.9	14.2	20.1	20.1
Actuated g/C Ratio	0.28	0.28	0.11	0.18	0.26	0.26
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	497	445	203	648	483	410
v/s Ratio Prot	c0.15		c0.05	c0.04	c0.07	
v/s Ratio Perm		0.04				0.01
v/c Ratio	0.53	0.14	0.45	0.20	0.27	0.04
Uniform Delay, d1	23.6	20.9	32.1	26.9	22.9	21.5
Progression Factor	1.00	1.00	0.98	1.16	1.00	1.00
Incremental Delay, d2	0.5	0.1	0.6	0.1	0.1	0.0
Delay (s)	24.1	20.9	31.9	31.3	23.0	21.5
Level of Service	C	C	C	C	C	C
Approach Delay (s)	22.7			31.5	22.6	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	77.6	Sum of lost time (s)	21.5
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Bilby Road & Willard Pkwy

Existing Conditions
 PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Volume (vph)	8	189	5	3	8	302	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	5.7			5.6	5.7
Lane Util. Factor	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.85	0.95			1.00	1.00
Flt Protected	0.95	1.00	1.00			0.95	1.00
Satd. Flow (prot)	1770	1583	1768			1770	1863
Flt Permitted	0.95	1.00	1.00			0.95	1.00
Satd. Flow (perm)	1770	1583	1768			1770	1863
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	9	203	5	3	9	325	9
RTOR Reduction (vph)	0	137	3	0	0	0	0
Lane Group Flow (vph)	9	66	5	0	0	334	9
Turn Type		Perm			Prot	Prot	
Protected Phases	2		4		3	3	8 1
Permitted Phases		2					
Actuated Green, G (s)	25.1	25.1	8.9			20.1	26.4
Effective Green, g (s)	25.1	25.1	8.9			20.1	26.4
Actuated g/C Ratio	0.32	0.32	0.11			0.26	0.34
Clearance Time (s)	7.0	7.0	5.7			5.6	
Vehicle Extension (s)	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)	573	512	203			458	634
v/s Ratio Prot	0.01		c0.00			c0.19	c0.00
v/s Ratio Perm		c0.04					
v/c Ratio	0.02	0.13	0.03			0.73	0.01
Uniform Delay, d1	17.9	18.5	30.5			26.3	17.0
Progression Factor	1.00	1.00	1.00			1.26	0.86
Incremental Delay, d2	0.0	0.0	0.0			4.8	0.0
Delay (s)	17.9	18.6	30.5			37.8	14.7
Level of Service	B	B	C			D	B
Approach Delay (s)	18.5		30.5				37.2
Approach LOS	B		C				D

Intersection Summary			
HCM Average Control Delay		30.1	HCM Level of Service C
HCM Volume to Capacity ratio		0.31	
Actuated Cycle Length (s)		77.6	Sum of lost time (s) 18.3
Intersection Capacity Utilization		46.1%	ICU Level of Service A
Analysis Period (min)		15	
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 20: Kammerer Road & Bruceville Road

Existing Conditions
 PM Peak Hour




































Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	52	328	38	41	160	49
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	55	345	40	43	168	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	450	62			83	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	450	62			83	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	66			89	
cM capacity (veh/h)	504	1003			1514	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	400	83	220
Volume Left	55	0	168
Volume Right	345	43	0
cSH	884	1700	1514
Volume to Capacity	0.45	0.05	0.11
Queue Length 95th (ft)	60	0	9
Control Delay (s)	12.4	0.0	6.1
Lane LOS	B		A
Approach Delay (s)	12.4	0.0	6.1
Approach LOS	B		

Intersection Summary			
Average Delay		9.0	
Intersection Capacity Utilization		47.9%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
21: Kammerer Road & Promenade Pkwy

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  	 				  	 	
Volume (vph)	1	238	0	17	368	135	0	1	23	166	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7		6.7	6.7	6.7		5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86		1.00	0.91	0.88		1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408		1770	5085	2787		1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408		1770	5085	2787		1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1	253	0	18	391	144	0	1	24	177	1	3
RTOR Reduction (vph)	0	0	0	0	0	99	0	0	23	0	0	2
Lane Group Flow (vph)	1	253	0	18	391	45	0	1	1	177	1	1
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	0.4	16.1		0.6	16.3	16.3		2.3	2.3	7.7	15.8	15.8
Effective Green, g (s)	0.4	16.1		0.6	16.3	16.3		2.3	2.3	7.7	15.8	15.8
Actuated g/C Ratio	0.01	0.31		0.01	0.31	0.31		0.04	0.04	0.15	0.30	0.30
Clearance Time (s)	6.7	6.7		6.7	6.7	6.7		5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	26	1976		20	1588	870		82	70	736	1071	479
v/s Ratio Prot	0.00	0.04		c0.01	c0.08			0.00		c0.04	0.00	
v/s Ratio Perm						0.02			c0.00			0.00
v/c Ratio	0.04	0.13		0.90	0.25	0.05		0.01	0.02	0.24	0.00	0.00
Uniform Delay, d1	25.7	13.0		25.8	13.4	12.5		23.9	23.9	19.7	12.7	12.7
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.0		151.8	0.0	0.0		0.0	0.0	0.1	0.0	0.0
Delay (s)	25.9	13.0		177.6	13.4	12.6		23.9	23.9	19.7	12.7	12.7
Level of Service	C	B		F	B	B		C	C	B	B	B
Approach Delay (s)		13.1			18.5			23.9			19.6	
Approach LOS		B			B			C			B	

Intersection Summary		
HCM Average Control Delay	17.5	HCM Level of Service B
HCM Volume to Capacity ratio	0.19	
Actuated Cycle Length (s)	52.2	Sum of lost time (s) 18.8
Intersection Capacity Utilization	34.8%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis

22: Grant Line Road & SR-99 SB Off-ramp

Existing Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑	↑	↑
Volume (vph)	0	308	119	0	466	552	0	0	0	208	0	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.99	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1605	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1605	1504
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	321	124	0	485	575	0	0	0	217	0	56
RTOR Reduction (vph)	0	0	71	0	0	0	0	0	0	0	2	36
Lane Group Flow (vph)	0	321	53	0	485	575	0	0	0	113	108	14
Turn Type		Perm			Free					Perm		Perm
Protected Phases		6			2					8		8
Permitted Phases		6			Free					8		8
Actuated Green, G (s)		17.4	17.4		17.4	40.8				11.1	11.1	11.1
Effective Green, g (s)		17.4	17.4		17.4	40.8				11.1	11.1	11.1
Actuated g/C Ratio		0.43	0.43		0.43	1.00				0.27	0.27	0.27
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2169	675		2169	1583				457	437	409
v/s Ratio Prot		0.06			0.10							
v/s Ratio Perm			0.03			c0.36				0.07	0.07	0.01
v/c Ratio		0.15	0.08		0.22	0.36				0.25	0.25	0.03
Uniform Delay, d1		7.2	6.9		7.4	0.0				11.6	11.6	10.9
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.0	0.1		0.1	0.6				0.1	0.1	0.0
Delay (s)		7.2	7.0		7.5	0.6				11.7	11.7	10.9
Level of Service		A	A		A	A				B	B	B
Approach Delay (s)		7.2			3.8			0.0		11.6		
Approach LOS		A			A			A		B		













Intersection Summary

HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	40.8	Sum of lost time (s)	0.0
Intersection Capacity Utilization	25.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis






























23: Grant Line Road & SR-99 NB On-ramp

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↗	↖	↖			
Volume (vph)	0	449	67	0	889	268	129	1	519	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1686	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1686	2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	488	73	0	966	291	140	1	564	0	0	0
RTOR Reduction (vph)	0	0	33	0	0	129	0	0	430	0	0	0
Lane Group Flow (vph)	0	488	40	0	966	162	70	71	134	0	0	0
Turn Type		Perm			Perm		Split		Perm			
Protected Phases		6			2		4		4			
Permitted Phases		6			2				4			
Actuated Green, G (s)		27.4	27.4		27.9	27.9	11.9	11.9	11.9			
Effective Green, g (s)		27.4	27.4		27.9	27.9	11.9	11.9	11.9			
Actuated g/C Ratio		0.55	0.55		0.56	0.56	0.24	0.24	0.24			
Clearance Time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2781	866		2832	882	399	400	662			
v/s Ratio Prot		0.10			c0.19		0.04	0.04				
v/s Ratio Perm			0.03			0.10			c0.05			
v/c Ratio		0.18	0.05		0.34	0.18	0.18	0.18	0.20			
Uniform Delay, d1		5.7	5.3		6.1	5.5	15.2	15.2	15.3			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.0	0.0		0.1	0.1	0.1	0.1	0.1			
Delay (s)		5.7	5.3		6.2	5.6	15.3	15.3	15.4			
Level of Service		A	A		A	A	B	B	B			
Approach Delay (s)		5.7			6.0			15.3			0.0	
Approach LOS		A			A			B			A	
Intersection Summary												
HCM Average Control Delay		8.6			HCM Level of Service				A			
HCM Volume to Capacity ratio		0.30										
Actuated Cycle Length (s)		50.1			Sum of lost time (s)				10.3			
Intersection Capacity Utilization		35.8%			ICU Level of Service				A			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & East Stockton Rd

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  					 		
Volume (vph)	187	626	71	36	779	114	162	39	35	107	23	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	4988		1770	1730		1681	1714	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	5085	1583	1770	4988		1770	1730		1681	1714	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	203	680	77	39	847	124	176	42	38	116	25	235
RTOR Reduction (vph)	0	0	45	0	11	0	0	17	0	0	0	206
Lane Group Flow (vph)	203	680	32	39	960	0	176	63	0	70	71	29
Turn Type	Prot		Perm	Prot			Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6									3
Actuated Green, G (s)	11.5	40.9	40.9	4.5	33.9		18.3	18.3		12.3	12.3	12.3
Effective Green, g (s)	11.5	40.9	40.9	4.5	33.9		18.3	18.3		12.3	12.3	12.3
Actuated g/C Ratio	0.12	0.41	0.41	0.05	0.34		0.18	0.18		0.12	0.12	0.12
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	397	2090	651	80	1699		326	318		208	212	196
v/s Ratio Prot	c0.06	c0.13		0.02	c0.19		c0.10	0.04		c0.04	0.04	
v/s Ratio Perm			0.02									0.02
v/c Ratio	0.51	0.33	0.05	0.49	0.56		0.54	0.20		0.34	0.33	0.15
Uniform Delay, d1	41.4	19.9	17.6	46.4	26.8		36.8	34.4		39.9	39.9	38.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.1	0.0	1.7	0.4		1.7	0.3		0.4	0.3	0.1
Delay (s)	41.8	20.0	17.6	48.1	27.2		38.5	34.7		40.2	40.2	39.1
Level of Service	D	C	B	D	C		D	C		D	D	D
Approach Delay (s)		24.4			28.0			37.3			39.5	
Approach LOS		C			C			D			D	

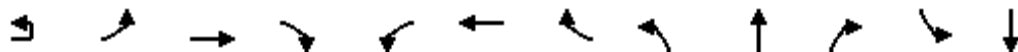
Intersection Summary

HCM Average Control Delay	29.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	99.5	Sum of lost time (s)	29.2
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

25: Grant Line Road & Waterman Road

Existing Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		⇌	⇌		⇌	⇌	⇌		⇌			⇌
Volume (vph)	5	205	580	0	0	639	6	0	0	0	8	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.5			6.5	6.5					7.0
Lane Util. Factor		0.97	1.00			0.95	1.00					1.00
Frbp, ped/bikes		1.00	1.00			1.00	0.98					1.00
Flpb, ped/bikes		1.00	1.00			1.00	1.00					1.00
Frt		1.00	1.00			1.00	0.85					1.00
Flt Protected		0.95	1.00			1.00	1.00					0.95
Satd. Flow (prot)		3433	1863			3539	1559					1770
Flt Permitted		0.95	1.00			1.00	1.00					0.95
Satd. Flow (perm)		3433	1863			3539	1559					1770
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	5	214	604	0	0	666	6	0	0	0	8	0
RTOR Reduction (vph)	0	0	0	0	0	0	4	0	0	0	0	0
Lane Group Flow (vph)	0	219	604	0	0	666	2	0	0	0	0	8
Confl. Bikes (#/hr)				2			4					
Turn Type	Prot	Prot			Prot		Perm	Split				Split
Protected Phases	1	1	6		5	2		4	4			3
Permitted Phases							2					3
Actuated Green, G (s)		10.0	33.8			18.2	18.2					8.1
Effective Green, g (s)		10.0	33.8			18.2	18.2					8.1
Actuated g/C Ratio		0.15	0.51			0.28	0.28					0.12
Clearance Time (s)		5.6	6.5			6.5	6.5					7.0
Vehicle Extension (s)		2.0	2.0			2.0	2.0					2.0
Lane Grp Cap (vph)		523	958			980	432					218
v/s Ratio Prot		0.06	c0.32			0.19						0.00
v/s Ratio Perm							0.00					
v/c Ratio		0.42	0.63			0.68	0.01					0.04
Uniform Delay, d1		25.2	11.5			21.2	17.2					25.4
Progression Factor		1.00	1.00			1.00	1.00					1.00
Incremental Delay, d2		0.2	1.0			1.5	0.0					0.0
Delay (s)		25.4	12.5			22.6	17.2					25.4
Level of Service		C	B			C	B					C
Approach Delay (s)			15.9			22.6			0.0			25.5
Approach LOS			B			C			A			C

Intersection Summary

HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	23.8
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

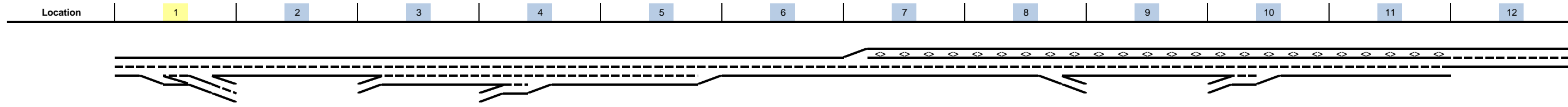
c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 25: Grant Line Road & Waterman Road

Existing Conditions
 PM Peak Hour

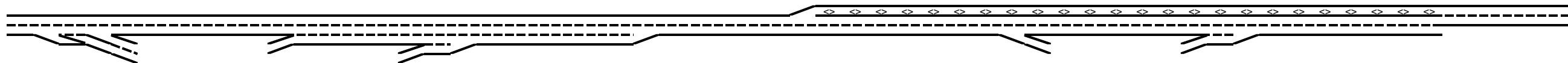
Movement	SBR
Lane Configurations	FF
Volume (vph)	195
Ideal Flow (vphpl)	1900
Total Lost time (s)	7.0
Lane Util. Factor	0.88
Frbp, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	2787
Flt Permitted	1.00
Satd. Flow (perm)	2787
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	203
RTOR Reduction (vph)	178
Lane Group Flow (vph)	25
Confl. Bikes (#/hr)	
Turn Type	Perm
Protected Phases	
Permitted Phases	3
Actuated Green, G (s)	8.1
Effective Green, g (s)	8.1
Actuated g/C Ratio	0.12
Clearance Time (s)	7.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	344
v/s Ratio Prot	
v/s Ratio Perm	c0.01
v/c Ratio	0.07
Uniform Delay, d1	25.5
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	25.5
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Project: Southeast Policy Area EIR
 Freeway Corridor: State Route 99 NB
 Alternative: Existing Conditions
 Time Period: AM Peak Hour



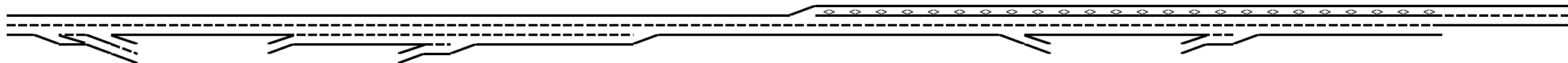
Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Define Freeway Segment												
Type	Diverge	Basic	Basic	Merge	Basic	Basic	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	1,500	1,500	1,300	1,500	400	6,700	1,050	1,500	2,550	1,500	100	8,700
Accel Length				320						1,200		
Decel Length	1,450							170				
Mainline Volume	2,500	1,880	1,880	1,930	2,110	2,110	2,110	2,110	1,870	1,870	3,220	2,500
On Ramp Volume			50	180						1,350		
Off Ramp Volume	620							240				
Express Lane Volume							633	633	561	561	966	
EL On Ramp Volume												
EL Off Ramp Volume												
Calculate Flow Rate in General Purpose Lanes (GP)												
GP Volume (vph)	2,500	1,880	1,930	2,110	2,110	2,110	1,477	1,477	1,309	2,659	2,254	2,500
PHF	0.79	0.92	0.79	0.79	0.92	0.92	0.92	0.85	0.92	0.85	0.92	0.92
GP Lanes	2	2	3	3	3	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	13.0%	5.0%	5.0%	15.0%	15.0%	15.0%	5.0%	10.0%	5.0%	10.0%	13.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.939	0.976	0.976	0.930	0.930	0.930	0.976	0.952	0.976	0.952	0.939
f _P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,244	2,176	2,504	2,738	2,465	2,465	1,726	1,781	1,494	3,206	2,573	2,894
GP Flow (pcphp)	1,622	1,088	835	913	822	1,233	863	891	747	1,603	1,286	1,447
Calculate Speed in General Purpose Lanes												
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70	70



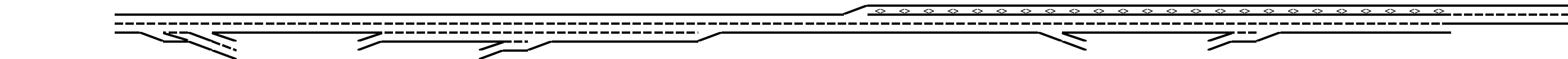
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Operations in General Purpose Lanes												
v/c ratio	0.68	0.45	0.35	0.38	0.34	0.51	0.36	0.37	0.31	0.67	0.54	0.60
Speed (mph)	67.9	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.1	69.9	69.3
Density (pcphpl)	23.9	15.5	11.9	13.0	11.7	17.6	12.3	12.7	10.7	23.5	18.4	20.9
LOS	C	B	B	B	B	B	B	B	A	C	C	C
Calculate Operations for Entering GP Lanes												
GP _{IN} Vol (pcph)			2,439	2,504						1,579		
GP _{IN} Cap (pcph)			4,800	7,200						4,800		
GP _{IN} v/c ratio			0.51	0.35						0.33		
Calculate Operations for Exiting GP Lanes												
GP _{OUT} Vol (pcph)	2,439				2,465			1,492				
GP _{OUT} Cap (pcph)	4,800				4,800			4,800				
GP _{OUT} v/c ratio	0.51				0.51			0.31				
Calculate On Ramp Flow Rate												
On Volume (vph)			50	180						1,350		
PHF			0.79	0.79						0.85		
Total Lanes			1	1						1		
Terrain			Level	Level						Level		
Grade %			0.0%	0.0%						0.0%		
Grade Length (mi)			0.00	0.00						0.00		
Truck & Bus %			5.0%	5.0%						5.0%		
RV %			0.0%	0.0%						0.0%		
E _T			1.5	1.5						1.5		
E _R			1.2	1.2						1.2		
f _{HV}			0.976	0.976						0.976		
f _P			1.00	1.00						1.00		
On Flow (pcph)			65	234						1,628		
On Flow (pcphpl)			65	234						1,628		
Calculate On Ramp Roadway Operations												
On Ramp Type			Right	Right						Right		
On Ramp Speed (mph)			50	60						60		
On Ramp Cap (pcph)			2,100	2,200						2,200		
On Ramp v/c ratio			0.03	0.11						0.74		



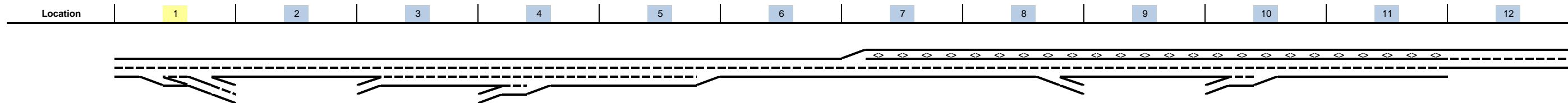
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Off Ramp Flow Rate												
Off Volume (vph)	620							240				
PHF	0.79							0.85				
Total Lanes	2							1				
Terrain	Level							Level				
Grade %	0.0%							0.0%				
Grade Length (mi)	0.00							0.00				
Truck & Bus %	5.0%							5.0%				
RV %	0.0%							0.0%				
E _T	1.5							1.5				
E _R	1.2							1.2				
f _{HV}	0.976							0.976				
f _P	1.00							1.00				
Off Flow (pcph)	804							289				
Off Flow (pcphpl)	402							289				
Calculate Off Ramp Roadway Operations												
Off Ramp Type	Right							Right				
Off Ramp Speed	35							45				
Off Ramp Cap (pcph)	4,000							2,100				
Off Ramp v/c ratio	0.20							0.14				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps												
Up Type			No	On								
Up Distance				1,300								
Up Flow (pcph)				65								
Down Type			On	Off								
Down Distance			1,300	3,000								
Down Flow (pcph)			234	289								



Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Merge Influence Area Operations												
Effective v_p (pcph)				2,504						1,579		
Up Ramp L_{EQ}				1,464								
Down Ramp L_{EQ}				2,012								
P_{FM} (Eqn 13-3)				0.586						0.611		
P_{FM} (Eqn 13-4)												
P_{FM} (Eqn 13-5)				0.574								
P_{FM}				0.586						1.000		
v_{12} (pcph)				1,469						1,579		
v_3 (pcph)				1,036								
v_{34} (pcph)												
v_{12a} (pcph)				1,469						1,579		
v_{R12a} (pcph)				1,702						3,206		
Merge Speed Index				0.30						0.27		
Merge Area Speed				61.5						62.3		
Outer Lanes Volume				1,036								
Outer Lanes Speed				68.1								
Segment Speed				63.8						62.3		
Merge v/c ratio				0.37						0.70		
Merge Density				16.6						22.2		
Merge LOS				B						C		
Calculate Diverge Influence Area Operations												
Effective v_p (pcph)	3,244							1,781				
Up Ramp L_{EQ}												
Down Ramp L_{EQ}												
P_{FD} (Eqn 13-9)	0.642							0.702				
P_{FD} (Eqn 13-10)												
P_{FD} (Eqn 13-11)												
P_{FD}	1.000							1.000				
v_{12} (pcph)	3,244							1,781				
v_3 (pcph)												
v_{34} (pcph)												
v_{12a} (pcph)	3,244							1,781				
Diverge Speed Index	0.50							0.32				
Diverge Area Speed	56.0							60.9				
Outer Lanes Volume												
Outer Lanes Speed												
Segment Speed	56.0							60.9				
Diverge v/c ratio	0.74							0.40				
Diverge Density	19.1							18.0				
Diverge LOS	B							B				

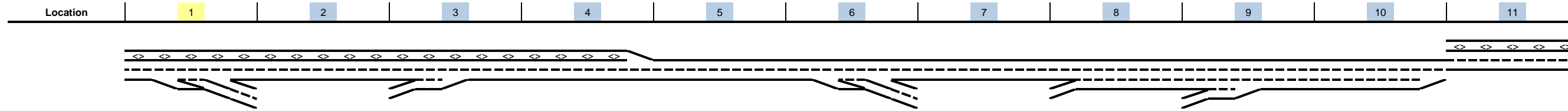


Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Summarize Segment Operations												
Segment v/c ratio	0.74	0.45	0.35	0.37	0.34	0.51	0.36	0.40	0.31	0.70	0.54	0.60
Segment Density	19.1	15.5	11.9	16.6	11.7	17.6	12.3	18.0	10.7	22.2	18.4	20.9
Segment LOS	B	B	B	B	B	B	B	B	A	C	C	C
Over Capacity												

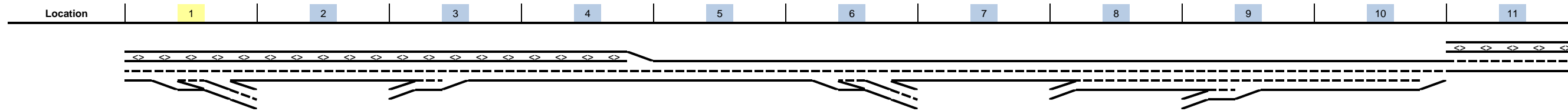
Project: Southeast Policy Area EIR
Freeway Corridor: State Route 99 SB

Alternative: Existing Conditions
Time Period: AM Peak Hour



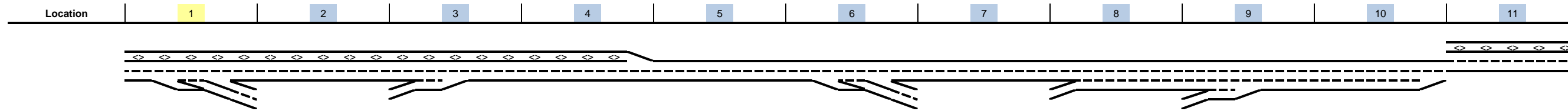
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Define Freeway Segment											
Type	Basic	Basic	Merge	Basic	Basic	Diverge	Basic	Basic	Merge	Basic	Basic
Length (ft)	1,500	2,250	1,500	400	8,050	1,500	1,650	1,200	1,500	400	250
Accel Length			350						350		
Decel Length						1,450					
Mainline Volume	2,890	1,600	1,600	1,890	1,890	1,890	1,640	1,640	2,060	2,160	2,890
On Ramp Volume			290					420	100		
Off Ramp Volume	1,290					250					
Express Lane Volume	867	480									867
EL On Ramp Volume											
EL Off Ramp Volume											
Calculate Flow Rate in General Purpose Lanes (GP)											
GP Volume (vph)	2,023	1,120	1,890	1,890	1,890	1,890	1,640	2,060	2,160	2,160	2,023
PHF	0.85	0.91	0.85	0.91	0.91	0.79	0.91	0.79	0.79	0.91	0.91
GP Lanes	2	2	2	2	2	2	2	3	3	3	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	10.0%	5.0%	15.0%	15.0%	5.0%	13.0%	5.0%	5.0%	13.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.952	0.976	0.930	0.930	0.976	0.939	0.976	0.976	0.939	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,440	1,292	2,279	2,233	2,233	2,452	1,919	2,673	2,803	2,528	2,334
GP Flow (pcphpl)	1,220	646	1,140	1,116	1,116	1,226	960	891	934	843	1,167
Calculate Speed in General Purpose Lanes											
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	73.6	73.6	73.6	73.6	74.2	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70



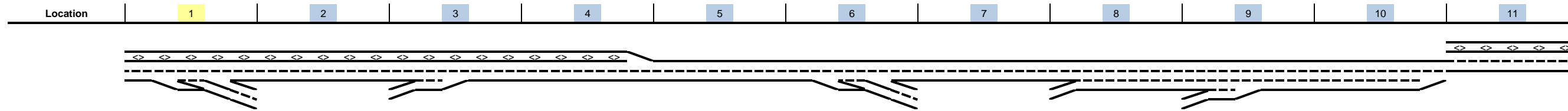
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Operations in General Purpose Lanes											
v/c ratio	0.51	0.27	0.47	0.47	0.47	0.51	0.40	0.37	0.39	0.35	0.49
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	17.4	9.2	16.3	15.9	15.9	17.5	13.7	12.7	13.3	12.0	16.7
LOS	B	A	B	B	B	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes											
GP _{IN} Vol (pcph)			1,929					2,128	2,673		
GP _{IN} Cap (pcph)			4,800					4,800	7,200		
GP _{IN} v/c ratio			0.40					0.44	0.37		
Calculate Operations for Exiting GP Lanes											
GP _{OUT} Vol (pcph)	884					2,128				2,528	
GP _{OUT} Cap (pcph)	4,800					4,800				4,800	
GP _{OUT} v/c ratio	0.18					0.44				0.53	
Calculate On Ramp Flow Rate											
On Volume (vph)			290					420	100		
PHF			0.85					0.79	0.79		
Total Lanes			1					1	1		
Terrain			Level					Level	Level		
Grade %			0.0%					0.0%	0.0%		
Grade Length (mi)			0.00					0.00	0.00		
Truck & Bus %			5.0%					5.0%	5.0%		
RV %			0.0%					0.0%	0.0%		
E _T			1.5					1.5	1.5		
E _R			1.2					1.2	1.2		
f _{HV}			0.976					0.976	0.976		
f _P			1.00					1.00	1.00		
On Flow (pcph)			350					545	130		
On Flow (pcphpl)			350					545	130		
Calculate On Ramp Roadway Operations											
On Ramp Type			Right					Right	Right		
On Ramp Speed (mph)			60					50	60		
On Ramp Cap (pcph)			2,200					2,100	2,200		
On Ramp v/c ratio			0.16					0.26	0.06		



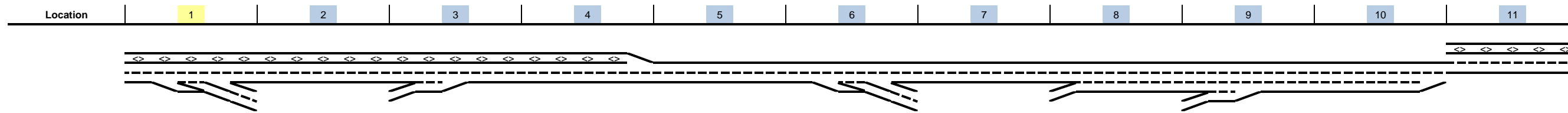
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Off Ramp Flow Rate											
Off Volume (vph)	1,290					250					
PHF	0.85					0.79					
Total Lanes	2					2					
Terrain	Level					Level					
Grade %	0.0%					0.0%					
Grade Length (mi)	0.00					0.00					
Truck & Bus %	5.0%					5.0%					
RV %	0.0%					0.0%					
E _T	1.5					1.5					
E _R	1.2					1.2					
f _{HV}	0.976					0.976					
f _p	1.00					1.00					
Off Flow (pcph)	1,556					324					
Off Flow (pcphpl)	778					162					
Calculate Off Ramp Roadway Operations											
Off Ramp Type	Right					Right					
Off Ramp Speed	45					45					
Off Ramp Cap (pcph)	4,200					4,200					
Off Ramp v/c ratio	0.37					0.08					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps											
Up Type								No	On		
Up Distance									1,200		
Up Flow (pcph)									545		
Down Type								On	No		
Down Distance								1,200			
Down Flow (pcph)								130			



Key
 <> Express Lane (HOV)
 No Trucks

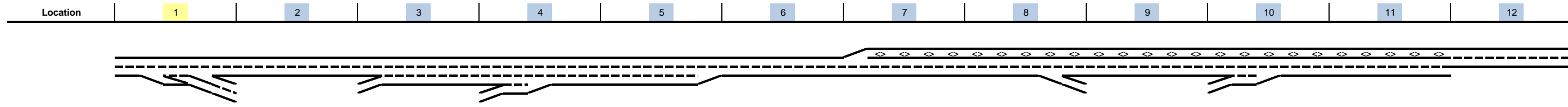
Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Merge Influence Area Operations											
Effective v_p (pcph)			1,929						2,673		
Up Ramp L_{EQ}									1,491		
Down Ramp L_{EQ}											
P_{FM} (Eqn 13-3)			0.587						0.587		
P_{FM} (Eqn 13-4)											
P_{FM} (Eqn 13-5)											
P_{FM}			1.000						0.587		
v_{12} (pcph)			1,929						1,570		
v_3 (pcph)									1,103		
v_{34} (pcph)											
v_{12a} (pcph)			1,929						1,570		
v_{R12a} (pcph)			2,279						1,699		
Merge Speed Index			0.32						0.30		
Merge Area Speed			61.1						61.6		
Outer Lanes Volume									1,103		
Outer Lanes Speed									67.8		
Segment Speed			61.1						63.9		
Merge v/c ratio			0.50						0.37		
Merge Density			20.9						16.5		
Merge LOS			C						B		
Calculate Diverge Influence Area Operations											
Effective v_p (pcph)						2,452					
Up Ramp L_{EQ}											
Down Ramp L_{EQ}											
P_{FD} (Eqn 13-9)						0.684					
P_{FD} (Eqn 13-10)											
P_{FD} (Eqn 13-11)											
P_{FD}						1.000					
v_{12} (pcph)						2,452					
v_3 (pcph)											
v_{34} (pcph)											
v_{12a} (pcph)						2,452					
Diverge Speed Index						0.33					
Diverge Area Speed						60.8					
Outer Lanes Volume											
Outer Lanes Speed											
Segment Speed						60.8					
Diverge v/c ratio						0.56					
Diverge Density						12.3					
Diverge LOS						B					



Key
 <> Express Lane (HOV)
 No Trucks

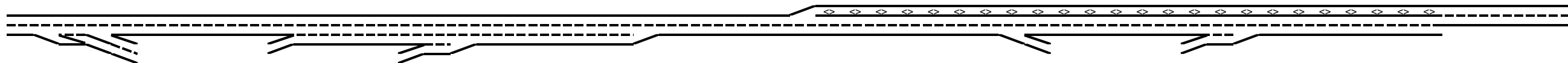
Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Summarize Segment Operations											
Segment v/c ratio	0.51	0.27	0.50	0.47	0.47	0.56	0.40	0.37	0.37	0.35	0.49
Segment Density	17.4	9.2	20.9	15.9	15.9	12.3	13.7	12.7	16.5	12.0	16.7
Segment LOS	B	A	C	B	B	B	B	B	B	B	B
Over Capacity											

Project: Southeast Policy Area EIR
 Freeway Corridor: State Route 99 NB
 Alternative: Existing Conditions
 Time Period: PM Peak Hour



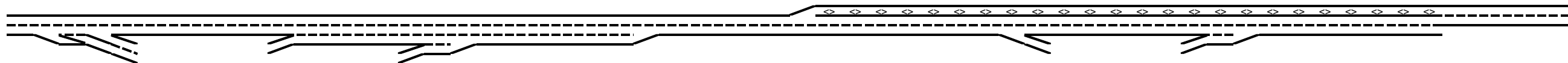
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Define Freeway Segment												
Type	Diverge	Basic	Basic	Merge	Basic	Basic	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	1,500	1,500	1,300	1,500	400	6,700	1,050	1,500	2,550	1,500	100	8,700
Accel Length				320						1,200		
Decel Length	1,450							170				
Mainline Volume	2,470	1,820	1,820	1,890	2,160	2,160	2,160	2,160	1,890	1,890	3,140	2,470
On Ramp Volume			70	270						1,250		
Off Ramp Volume	650							270				
Express Lane Volume							648	648	567	567	942	
EL On Ramp Volume												
EL Off Ramp Volume												
Calculate Flow Rate in General Purpose Lanes (GP)												
GP Volume (vph)	2,470	1,820	1,890	2,160	2,160	2,160	1,512	1,512	1,323	2,573	2,198	2,470
PHF	0.85	0.93	0.85	0.85	0.93	0.93	0.93	0.88	0.93	0.88	0.93	0.93
GP Lanes	2	2	3	3	3	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	13.0%	5.0%	5.0%	15.0%	15.0%	15.0%	5.0%	10.0%	5.0%	10.0%	13.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.939	0.976	0.976	0.930	0.930	0.930	0.976	0.952	0.976	0.952	0.939
f _P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,979	2,084	2,279	2,605	2,497	2,497	1,748	1,761	1,494	2,997	2,482	2,829
GP Flow (pcphp)	1,489	1,042	760	868	832	1,248	874	881	747	1,498	1,241	1,414
Calculate Speed in General Purpose Lanes												
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70	70



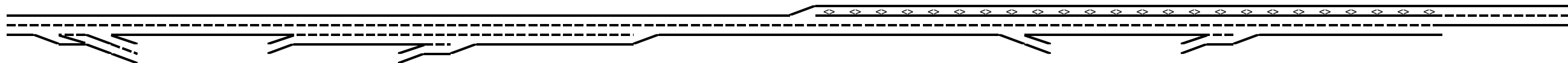
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Operations in General Purpose Lanes												
v/c ratio	0.62	0.43	0.32	0.36	0.35	0.52	0.36	0.37	0.31	0.62	0.52	0.59
Speed (mph)	69.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.0	70.0	69.5
Density (pcphpl)	21.6	14.9	10.9	12.4	11.9	17.8	12.5	12.6	10.7	21.7	17.7	20.4
LOS	C	B	A	B	B	B	B	B	A	C	B	C
Calculate Operations for Entering GP Lanes												
GP _{IN} Vol (pcph)			2,195	2,279						1,541		
GP _{IN} Cap (pcph)			4,800	7,200						4,800		
GP _{IN} v/c ratio			0.46	0.32						0.32		
Calculate Operations for Exiting GP Lanes												
GP _{OUT} Vol (pcph)	2,195				2,497			1,447				
GP _{OUT} Cap (pcph)	4,800				4,800			4,800				
GP _{OUT} v/c ratio	0.46				0.52			0.30				
Calculate On Ramp Flow Rate												
On Volume (vph)			70	270						1,250		
PHF			0.85	0.85						0.88		
Total Lanes			1	1						1		
Terrain			Level	Level						Level		
Grade %			0.0%	0.0%						0.0%		
Grade Length (mi)			0.00	0.00						0.00		
Truck & Bus %			5.0%	5.0%						5.0%		
RV %			0.0%	0.0%						0.0%		
E _T			1.5	1.5						1.5		
E _R			1.2	1.2						1.2		
f _{HV}			0.976	0.976						0.976		
f _P			1.00	1.00						1.00		
On Flow (pcph)			84	326						1,456		
On Flow (pcphpl)			84	326						1,456		
Calculate On Ramp Roadway Operations												
On Ramp Type			Right	Right						Right		
On Ramp Speed (mph)			50	60						60		
On Ramp Cap (pcph)			2,100	2,200						2,200		
On Ramp v/c ratio			0.04	0.15						0.66		



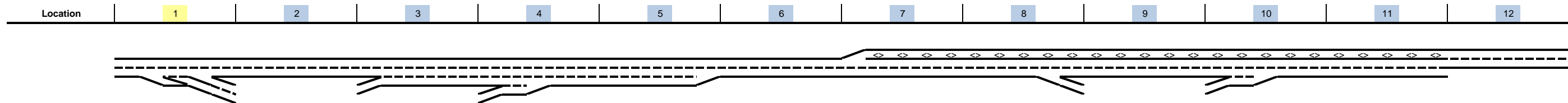
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Off Ramp Flow Rate												
Off Volume (vph)	650							270				
PHF	0.85							0.88				
Total Lanes	2							1				
Terrain	Level							Level				
Grade %	0.0%							0.0%				
Grade Length (mi)	0.00							0.00				
Truck & Bus %	5.0%							5.0%				
RV %	0.0%							0.0%				
E _T	1.5							1.5				
E _R	1.2							1.2				
f _{HV}	0.976							0.976				
f _P	1.00							1.00				
Off Flow (pcph)	784							314				
Off Flow (pcphpl)	392							314				
Calculate Off Ramp Roadway Operations												
Off Ramp Type	Right							Right				
Off Ramp Speed	35							45				
Off Ramp Cap (pcph)	4,000							2,100				
Off Ramp v/c ratio	0.20							0.15				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps												
Up Type			No	On								
Up Distance				1,300								
Up Flow (pcph)				84								
Down Type			On	Off								
Down Distance			1,300	3,000								
Down Flow (pcph)			326	314								



Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Merge Influence Area Operations												
Effective v_p (pcph)				2,279						1,541		
Up Ramp L_{EQ}				1,436								
Down Ramp L_{EQ}				2,186								
P_{FM} (Eqn 13-3)				0.586						0.611		
P_{FM} (Eqn 13-4)												
P_{FM} (Eqn 13-5)				0.576								
P_{FM}				0.586						1.000		
v_{12} (pcph)				1,337						1,541		
v_3 (pcph)				943								
v_{34} (pcph)												
v_{12a} (pcph)				1,337						1,541		
v_{R12a} (pcph)				1,662						2,997		
Merge Speed Index				0.30						0.26		
Merge Area Speed				61.5						62.9		
Outer Lanes Volume				943								
Outer Lanes Speed				68.4								
Segment Speed				63.8						62.9		
Merge v/c ratio				0.36						0.65		
Merge Density				16.3						20.7		
Merge LOS				B						C		
Calculate Diverge Influence Area Operations												
Effective v_p (pcph)	2,979							1,761				
Up Ramp L_{EQ}												
Down Ramp L_{EQ}												
P_{FD} (Eqn 13-9)	0.649							0.702				
P_{FD} (Eqn 13-10)												
P_{FD} (Eqn 13-11)												
P_{FD}	1.000							1.000				
v_{12} (pcph)	2,979							1,761				
v_3 (pcph)												
v_{34} (pcph)												
v_{12a} (pcph)	2,979							1,761				
Diverge Speed Index	0.50							0.33				
Diverge Area Speed	56.0							60.9				
Outer Lanes Volume												
Outer Lanes Speed												
Segment Speed	56.0							60.9				
Diverge v/c ratio	0.68							0.40				
Diverge Density	16.8							17.9				
Diverge LOS	B							B				

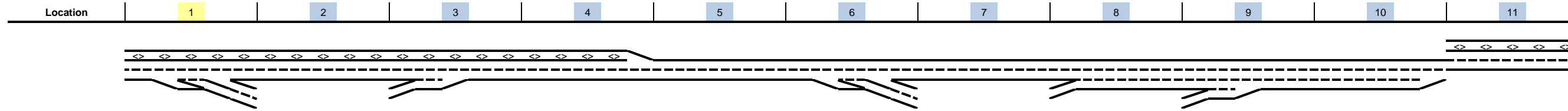


Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Summarize Segment Operations												
Segment v/c ratio	0.68	0.43	0.32	0.36	0.35	0.52	0.36	0.40	0.31	0.65	0.52	0.59
Segment Density	16.8	14.9	10.9	16.3	11.9	17.8	12.5	17.9	10.7	20.7	17.7	20.4
Segment LOS	B	B	A	B	B	B	B	B	A	C	B	C
Over Capacity												

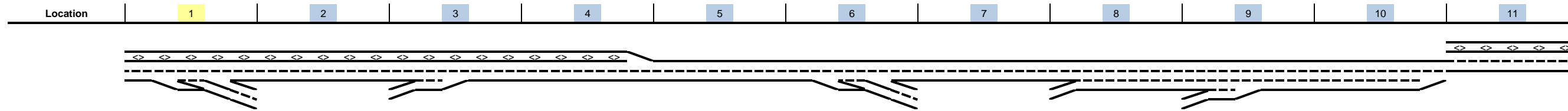
Project: Southeast Policy Area EIR
Freeway Corridor: State Route 99 SB

Alternative: Existing Conditions
Time Period: PM Peak Hour



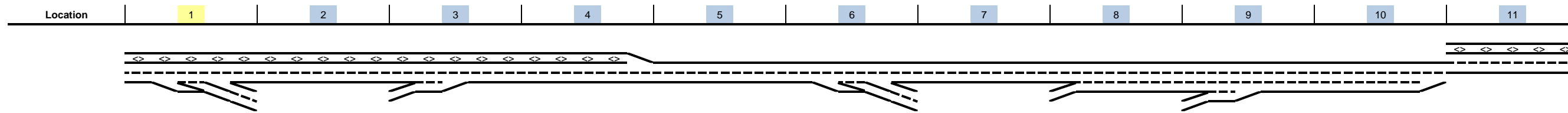
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Define Freeway Segment											
Type	Basic	Basic	Merge	Basic	Basic	Diverge	Basic	Basic	Merge	Basic	Basic
Length (ft)	1,500	2,250	1,500	400	8,050	1,500	1,650	1,200	1,500	400	250
Accel Length			350						350		
Decel Length						1,450					
Mainline Volume	3,640	1,980	1,980	2,290	2,290	2,290	2,030	2,030	2,580	2,700	3,640
On Ramp Volume			310					550	120		
Off Ramp Volume	1,660					260					
Express Lane Volume	1,092	594									1,092
EL On Ramp Volume											
EL Off Ramp Volume											
Calculate Flow Rate in General Purpose Lanes (GP)											
GP Volume (vph)	2,548	1,386	2,290	2,290	2,290	2,290	2,030	2,580	2,700	2,700	2,548
PHF	0.88	0.95	0.88	0.95	0.95	0.85	0.95	0.85	0.85	0.95	0.95
GP Lanes	2	2	2	2	2	2	2	3	3	3	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	10.0%	5.0%	15.0%	15.0%	5.0%	13.0%	5.0%	5.0%	13.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.952	0.976	0.930	0.930	0.976	0.939	0.976	0.976	0.939	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,968	1,532	2,667	2,591	2,591	2,761	2,276	3,111	3,256	3,027	2,816
GP Flow (pcphpl)	1,484	766	1,334	1,296	1,296	1,381	1,138	1,037	1,085	1,009	1,408
Calculate Speed in General Purpose Lanes											
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	73.6	73.6	73.6	73.6	74.2	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70



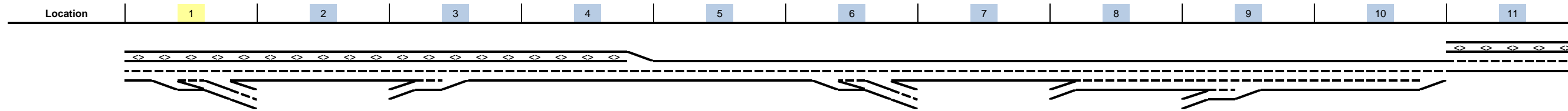
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Operations in General Purpose Lanes											
v/c ratio	0.62	0.32	0.56	0.54	0.54	0.58	0.47	0.43	0.45	0.42	0.59
Speed (mph)	69.1	70.0	69.8	69.9	69.9	69.6	70.0	70.0	70.0	70.0	69.5
Density (pcphpl)	21.5	10.9	19.1	18.5	18.5	19.8	16.3	14.8	15.5	14.4	20.3
LOS	C	A	C	C	C	C	B	B	B	B	C
Calculate Operations for Entering GP Lanes											
GP _{IN} Vol (pcph)			2,306					2,448	3,111		
GP _{IN} Cap (pcph)			4,800					4,800	7,200		
GP _{IN} v/c ratio			0.48					0.51	0.43		
Calculate Operations for Exiting GP Lanes											
GP _{OUT} Vol (pcph)	1,034					2,448				3,027	
GP _{OUT} Cap (pcph)	4,800					4,800				4,800	
GP _{OUT} v/c ratio	0.22					0.51				0.63	
Calculate On Ramp Flow Rate											
On Volume (vph)			310					550	120		
PHF			0.88					0.85	0.85		
Total Lanes			1					1	1		
Terrain			Level					Level	Level		
Grade %			0.0%					0.0%	0.0%		
Grade Length (mi)			0.00					0.00	0.00		
Truck & Bus %			5.0%					5.0%	5.0%		
RV %			0.0%					0.0%	0.0%		
E _T			1.5					1.5	1.5		
E _R			1.2					1.2	1.2		
f _{HV}			0.976					0.976	0.976		
f _P			1.00					1.00	1.00		
On Flow (pcph)			361					663	145		
On Flow (pcphpl)			361					663	145		
Calculate On Ramp Roadway Operations											
On Ramp Type			Right					Right	Right		
On Ramp Speed (mph)			60					50	60		
On Ramp Cap (pcph)			2,200					2,100	2,200		
On Ramp v/c ratio			0.16					0.32	0.07		



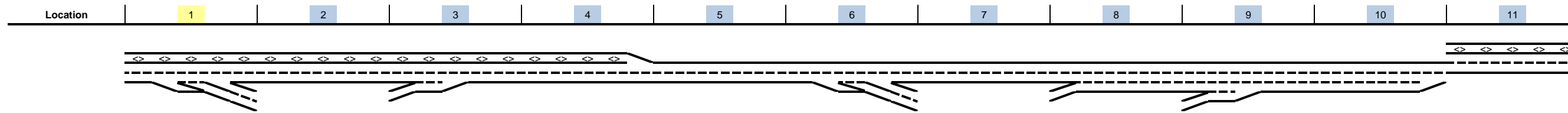
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Off Ramp Flow Rate											
Off Volume (vph)	1,660					260					
PHF	0.88					0.85					
Total Lanes	2					2					
Terrain	Level					Level					
Grade %	0.0%					0.0%					
Grade Length (mi)	0.00					0.00					
Truck & Bus %	5.0%					5.0%					
RV %	0.0%					0.0%					
E _T	1.5					1.5					
E _R	1.2					1.2					
f _{HV}	0.976					0.976					
f _p	1.00					1.00					
Off Flow (pcph)	1,934					314					
Off Flow (pcphpl)	967					157					
Calculate Off Ramp Roadway Operations											
Off Ramp Type	Right					Right					
Off Ramp Speed	45					45					
Off Ramp Cap (pcph)	4,200					4,200					
Off Ramp v/c ratio	0.46					0.07					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps											
Up Type								No	On		
Up Distance									1,200		
Up Flow (pcph)									663		
Down Type								On	No		
Down Distance								1,200			
Down Flow (pcph)								145			



Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Merge Influence Area Operations											
Effective v_p (pcph)			2,306						3,111		
Up Ramp L_{EQ}									1,588		
Down Ramp L_{EQ}											
P_{FM} (Eqn 13-3)			0.587						0.587		
P_{FM} (Eqn 13-4)											
P_{FM} (Eqn 13-5)											
P_{FM}			1.000						0.587		
v_{12} (pcph)			2,306						1,827		
v_3 (pcph)									1,284		
v_{34} (pcph)											
v_{12a} (pcph)			2,306						1,827		
v_{R12a} (pcph)			2,667						1,972		
Merge Speed Index			0.34						0.31		
Merge Area Speed			60.6						61.4		
Outer Lanes Volume									1,284		
Outer Lanes Speed									67.2		
Segment Speed			60.6						63.6		
Merge v/c ratio			0.58						0.43		
Merge Density			23.9						18.6		
Merge LOS			C						B		
Calculate Diverge Influence Area Operations											
Effective v_p (pcph)						2,761					
Up Ramp L_{EQ}											
Down Ramp L_{EQ}											
P_{FD} (Eqn 13-9)						0.677					
P_{FD} (Eqn 13-10)											
P_{FD} (Eqn 13-11)											
P_{FD}						1.000					
v_{12} (pcph)						2,761					
v_3 (pcph)											
v_{34} (pcph)											
v_{12a} (pcph)						2,761					
Diverge Speed Index						0.33					
Diverge Area Speed						60.9					
Outer Lanes Volume											
Outer Lanes Speed											
Segment Speed						60.9					
Diverge v/c ratio						0.63					
Diverge Density						15.0					
Diverge LOS						B					

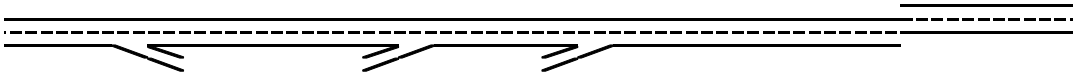


Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Summarize Segment Operations											
Segment v/c ratio	0.62	0.32	0.58	0.54	0.54	0.63	0.47	0.43	0.43	0.42	0.59
Segment Density	21.5	10.9	23.9	18.5	18.5	15.0	16.3	14.8	18.6	14.4	20.3
Segment LOS	C	A	C	C	C	B	B	B	B	B	C
Over Capacity											

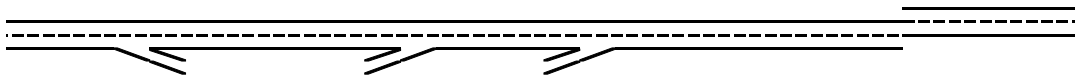
Project: Southeast Policy Area EIR Alternative: Existing Conditions
 Freeway Corridor: Interstate 5 NB Time Period: AM Peak Hour

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key
 <> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,150	1,500	6,900	27,700
Accel Length			450	350		
Decel Length	150					
Mainline Volume	1,610	1,580	1,580	1,610	2,140	1,610
On Ramp Volume			30	530		
Off Ramp Volume	30					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	1,610	1,580	1,610	2,140	2,140	1,610
PHF	0.75	0.81	0.75	0.75	0.81	0.81
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.917
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,200	2,126	2,200	2,925	2,880	2,167
GP Flow (pcphpl)	1,100	1,063	1,100	1,462	1,440	1,083
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.46	0.44	0.46	0.61	0.60	0.45
Speed (mph)	70.0	70.0	70.0	69.2	69.3	70.0
Density (pcphpl)	15.7	15.2	15.7	21.1	20.8	15.5
LOS	B	B	B	C	C	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,159	2,200		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.45	0.46		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,159					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.45					



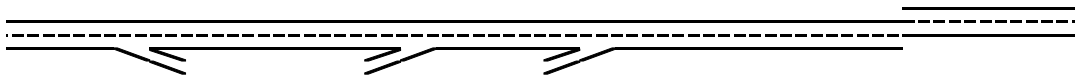
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate On Ramp Flow Rate						
On Volume (vph)			30	530		
PHF			0.75	0.75		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			41	724		
On Flow (pcphpl)			41	724		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.02	0.33		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

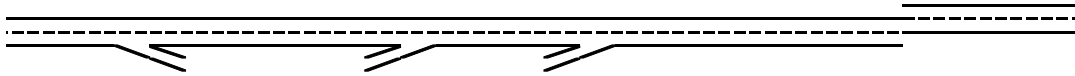


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Off Ramp Flow Rate						
Off Volume (vph)	30					
PHF	0.75					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	41					
Off Flow (pcphpl)	41					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.02					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,159	2,200		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.590	0.587		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,159	2,200		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,159	2,200		
v_{R12a} (pcph)			2,200	2,925		
Merge Speed Index			0.31	0.35		
Merge Area Speed			61.3	60.2		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.3	60.2		
Merge v/c ratio			0.48	0.64		
Merge Density			19.8	25.8		
Merge LOS			B	C		

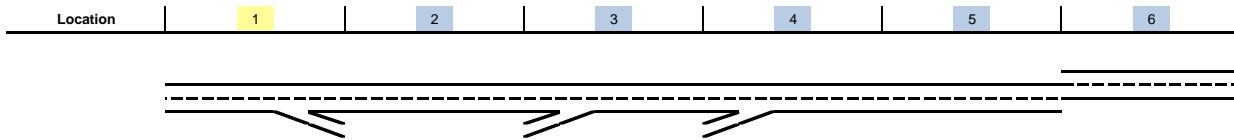


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,200					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.703					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,200					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,200					
Diverge Speed Index	0.30					
Diverge Area Speed	61.6					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	61.6					
Diverge v/c ratio	0.50					
Diverge Density	21.8					
Diverge LOS	C					



Key

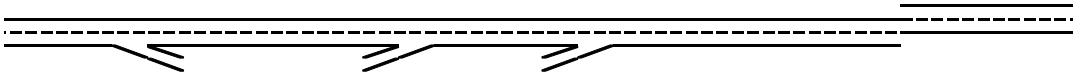
<> Express Lane (HOV)

..... No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Summarize Segment Operations						
Segment v/c ratio	0.50	0.44	0.48	0.64	0.60	0.45
Segment Density	21.8	15.2	19.8	25.8	20.8	15.5
Segment LOS	C	B	B	C	C	B
Over Capacity						

Project: Southeast Policy Area EIR
Freeway Corridor: Interstate 5 SB
Alternative: Existing Conditions
Time Period: AM Peak Hour

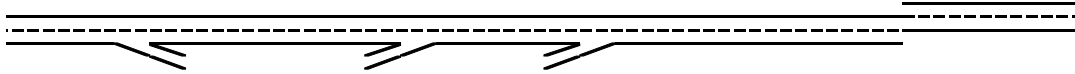
Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,250	1,500	28,500	8,000
Accel Length			300	250		
Decel Length	160					
Mainline Volume	1,530	1,410	1,410	1,480	1,490	1,530
On Ramp Volume			70	10		
Off Ramp Volume	120					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	1,530	1,410	1,480	1,490	1,490	1,530
PHF	0.75	0.91	0.75	0.75	0.91	0.91
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	5.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.976
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,091	1,689	2,023	2,036	1,785	1,723
GP Flow (pcphpl)	1,046	844	1,011	1,018	892	862
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.44	0.35	0.42	0.42	0.37	0.36
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	14.9	12.1	14.4	14.5	12.7	12.3
LOS	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			1,927	2,023		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.40	0.42		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	1,927					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.40					



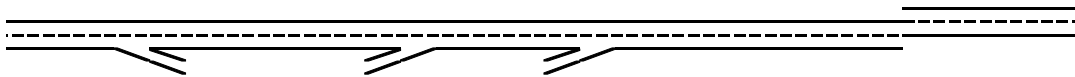
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate On Ramp Flow Rate						
On Volume (vph)			70	10		
PHF			0.75	0.75		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			96	14		
On Flow (pcphpl)			96	14		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.05	0.01		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

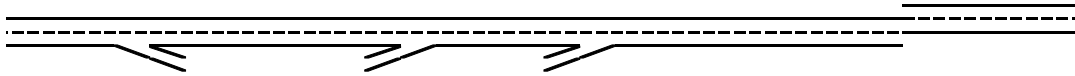


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Off Ramp Flow Rate						
Off Volume (vph)	120					
PHF	0.75					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	164					
Off Flow (pcphpl)	164					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.08					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			1,927	2,023		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.586	0.585		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			1,927	2,023		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			1,927	2,023		
v_{R12a} (pcph)			2,023	2,036		
Merge Speed Index			0.32	0.32		
Merge Area Speed			61.0	61.0		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.0	61.0		
Merge v/c ratio			0.44	0.44		
Merge Density			19.3	19.8		
Merge LOS			B	B		

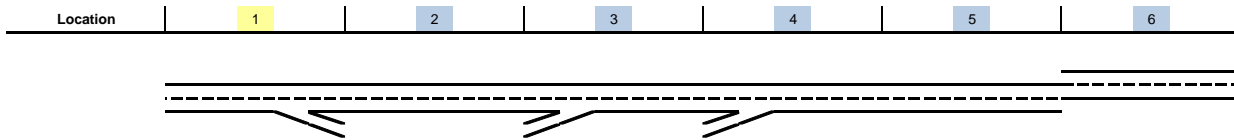


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,091					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.700					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,091					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,091					
Diverge Speed Index	0.31					
Diverge Area Speed	61.2					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	61.2					
Diverge v/c ratio	0.48					
Diverge Density	20.8					
Diverge LOS	C					



Key

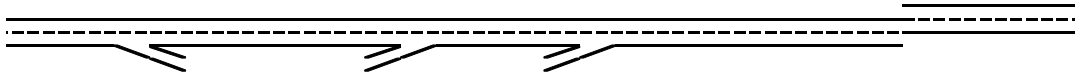
<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Summarize Segment Operations						
Segment v/c ratio	0.48	0.35	0.44	0.44	0.37	0.36
Segment Density	20.8	12.1	19.3	19.8	12.7	12.3
Segment LOS	C	B	B	B	B	B
Over Capacity						

Project: Southeast Policy Area EIR
Freeway Corridor: Interstate 5 NB
Alternative: Existing Conditions
Time Period: PM Peak Hour

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 - - - No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,150	1,500	6,900	27,700
Accel Length			450	350		
Decel Length	150					
Mainline Volume	1,940	1,850	1,850	1,880	1,950	1,940
On Ramp Volume			30	70		
Off Ramp Volume	90					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	1,940	1,850	1,880	1,950	1,950	1,940
PHF	0.9	0.89	0.9	0.9	0.89	0.89
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.917
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,209	2,266	2,141	2,221	2,388	2,376
GP Flow (pcphpl)	1,105	1,133	1,071	1,110	1,194	1,188
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.46	0.47	0.45	0.46	0.50	0.49
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	15.8	16.2	15.3	15.9	17.1	17.0
LOS	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,107	2,141		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.44	0.45		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,107					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.44					



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate On Ramp Flow Rate						
On Volume (vph)			30	70		
PHF			0.9	0.9		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			34	80		
On Flow (pcphpl)			34	80		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.02	0.04		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

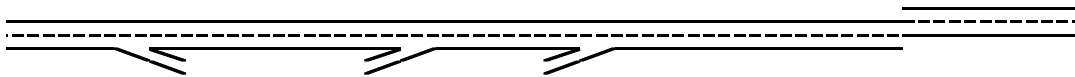


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Off Ramp Flow Rate						
Off Volume (vph)	90					
PHF	0.9					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E _T	1.5					
E _R	1.2					
f _{HV}	0.976					
f _p	1.00					
Off Flow (pcph)	103					
Off Flow (pcphpl)	103					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.05					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v _p (pcph)			2,107	2,141		
Up Ramp L _{EQ}						
Down Ramp L _{EQ}						
P _{FM} (Eqn 13-3)			0.590	0.587		
P _{FM} (Eqn 13-4)						
P _{FM} (Eqn 13-5)						
P _{FM}			1.000	1.000		
v ₁₂ (pcph)			2,107	2,141		
v ₃ (pcph)						
v ₃₄ (pcph)						
v _{12a} (pcph)			2,107	2,141		
v _{R12a} (pcph)			2,141	2,221		
Merge Speed Index			0.31	0.31		
Merge Area Speed			61.3	61.2		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.3	61.2		
Merge v/c ratio			0.47	0.48		
Merge Density			19.3	20.6		
Merge LOS			B	C		

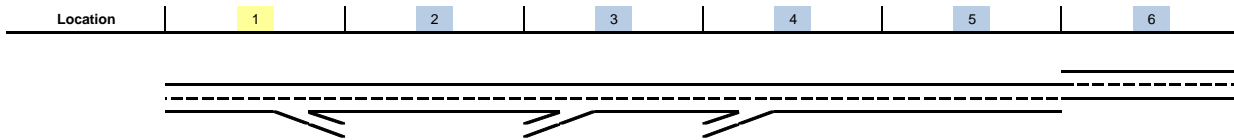


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,209					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.700					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,209					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,209					
Diverge Speed Index	0.31					
Diverge Area Speed	61.4					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	61.4					
Diverge v/c ratio	0.50					
Diverge Density	21.9					
Diverge LOS	C					



Key

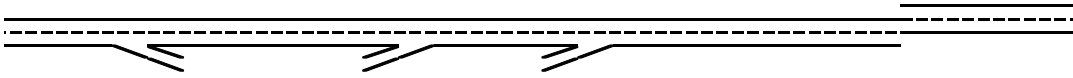
<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Summarize Segment Operations						
Segment v/c ratio	0.50	0.47	0.47	0.48	0.50	0.49
Segment Density	21.9	16.2	19.3	20.6	17.1	17.0
Segment LOS	C	B	B	C	B	B
Over Capacity						

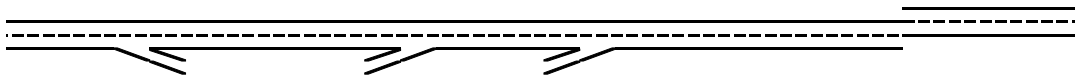
Project: Southeast Policy Area EIR Alternative: Existing Conditions
 Freeway Corridor: Interstate 5 SB Time Period: PM Peak Hour

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key
 <-> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,250	1,500	28,500	8,000
Accel Length			300	250		
Decel Length	160					
Mainline Volume	2,160	1,880	1,880	1,900	1,910	2,160
On Ramp Volume			20	10		
Off Ramp Volume	280					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,160	1,880	1,900	1,910	1,910	2,160
PHF	0.9	0.94	0.9	0.9	0.94	0.94
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	5.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.976
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,460	2,180	2,164	2,175	2,215	2,355
GP Flow (pcphpl)	1,230	1,090	1,082	1,088	1,107	1,178
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.51	0.45	0.45	0.45	0.46	0.49
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	17.6	15.6	15.5	15.5	15.8	16.8
LOS	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,141	2,164		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.45	0.45		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,141					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.45					



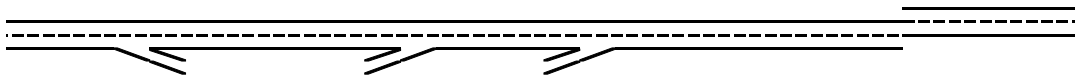
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate On Ramp Flow Rate						
On Volume (vph)			20	10		
PHF			0.9	0.9		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			23	11		
On Flow (pcphpl)			23	11		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.01	0.01		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Off Ramp Flow Rate						
Off Volume (vph)	280					
PHF	0.9					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	319					
Off Flow (pcphpl)	319					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.15					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,141	2,164		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.586	0.585		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,141	2,164		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,141	2,164		
v_{R12a} (pcph)			2,164	2,175		
Merge Speed Index			0.32	0.33		
Merge Area Speed			60.9	60.9		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			60.9	60.9		
Merge v/c ratio			0.47	0.47		
Merge Density			20.5	20.9		
Merge LOS			C	C		

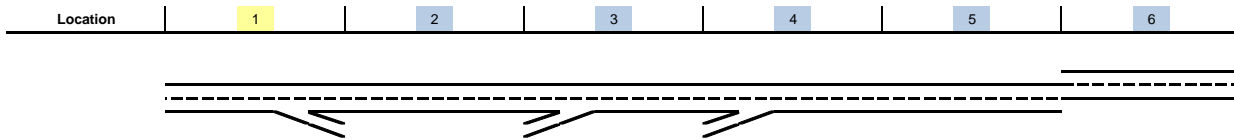


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,460					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.684					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,460					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,460					
Diverge Speed Index	0.33					
Diverge Area Speed	60.9					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	60.9					
Diverge v/c ratio	0.56					
Diverge Density	24.0					
Diverge LOS	C					



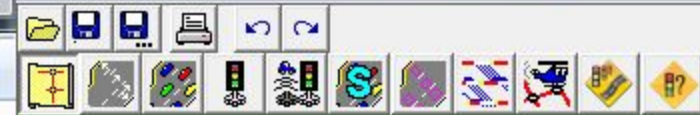
Key

<> Express Lane (HOV)

No Trucks

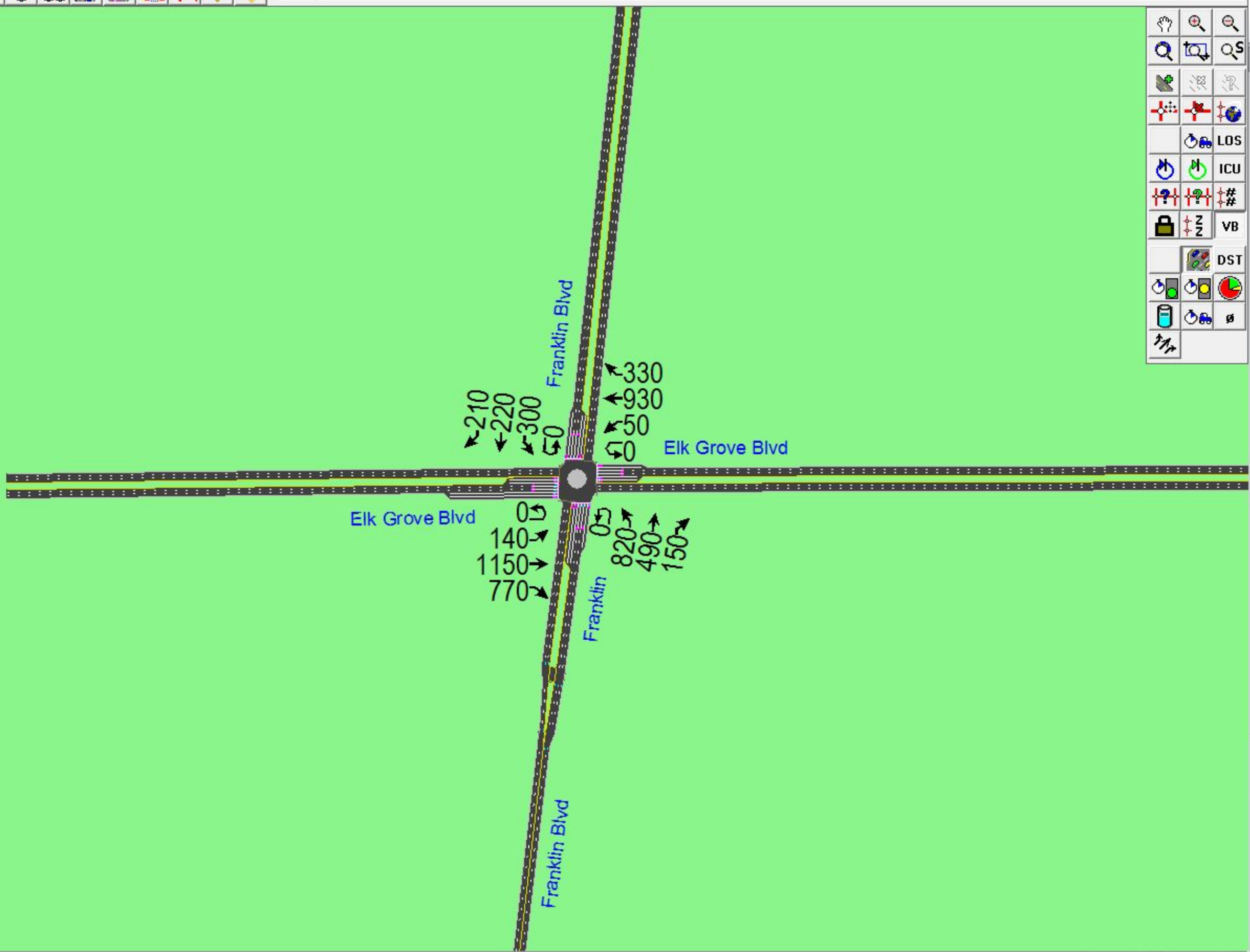
Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Summarize Segment Operations						
Segment v/c ratio	0.56	0.45	0.47	0.47	0.46	0.49
Segment Density	24.0	15.6	20.5	20.9	15.8	16.8
Segment LOS	C	B	C	C	B	B
Over Capacity						

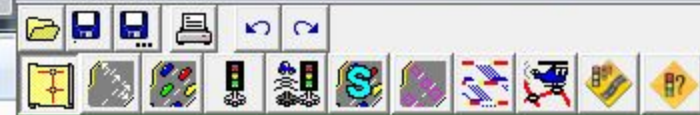
Existing Plus Project Conditions



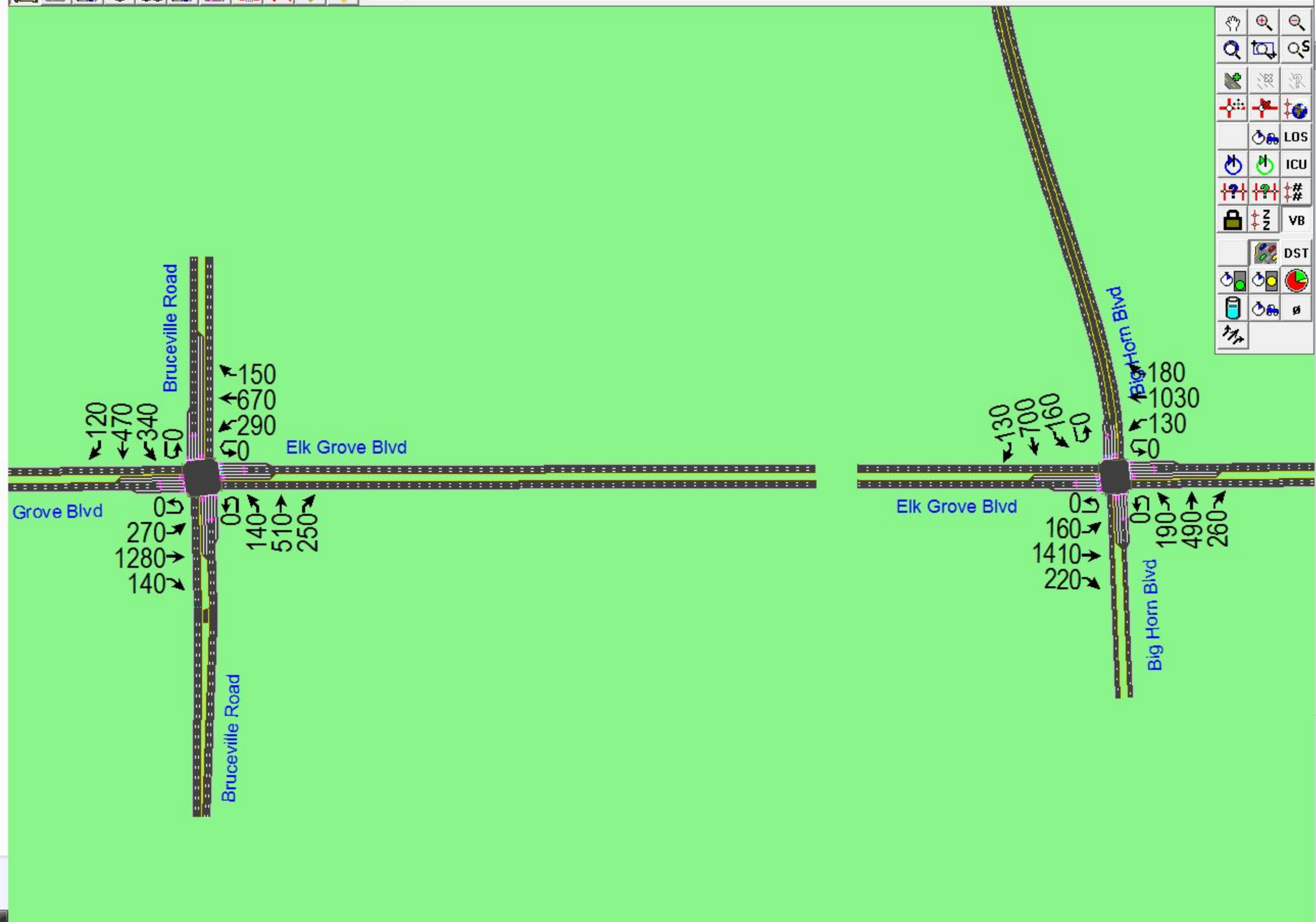
1 Elk Grove Blvd & Franklin Blvd

		LOS
		ICU
		#
		#
		VB
		DST





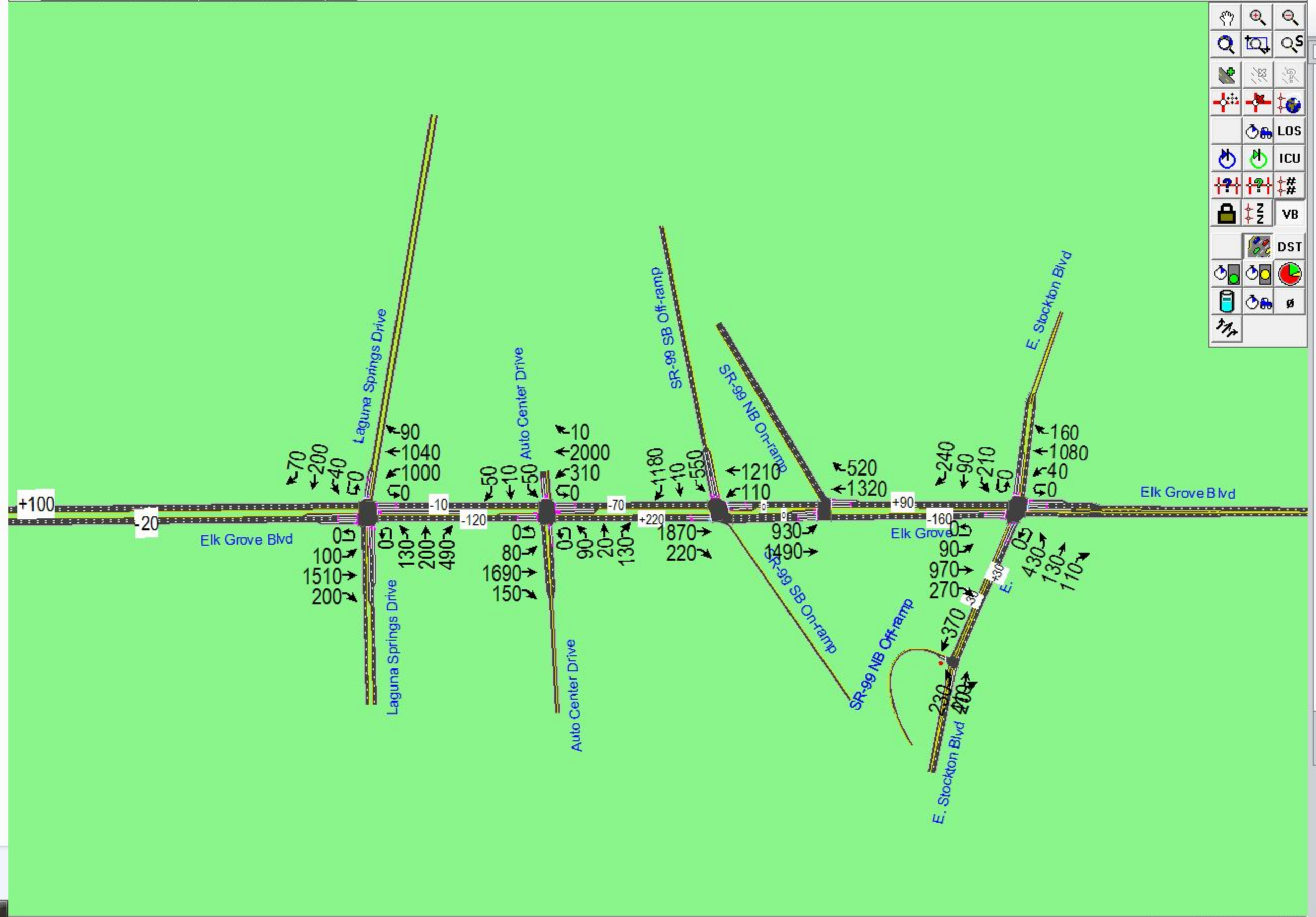
1 Elk Grove Blvd & Franklin Blvd



Vertical toolbar containing icons for zooming (hand, magnifying glass), panning (arrow), and analysis tools (LOS, ICU, #, VB, DST, and a pie chart).



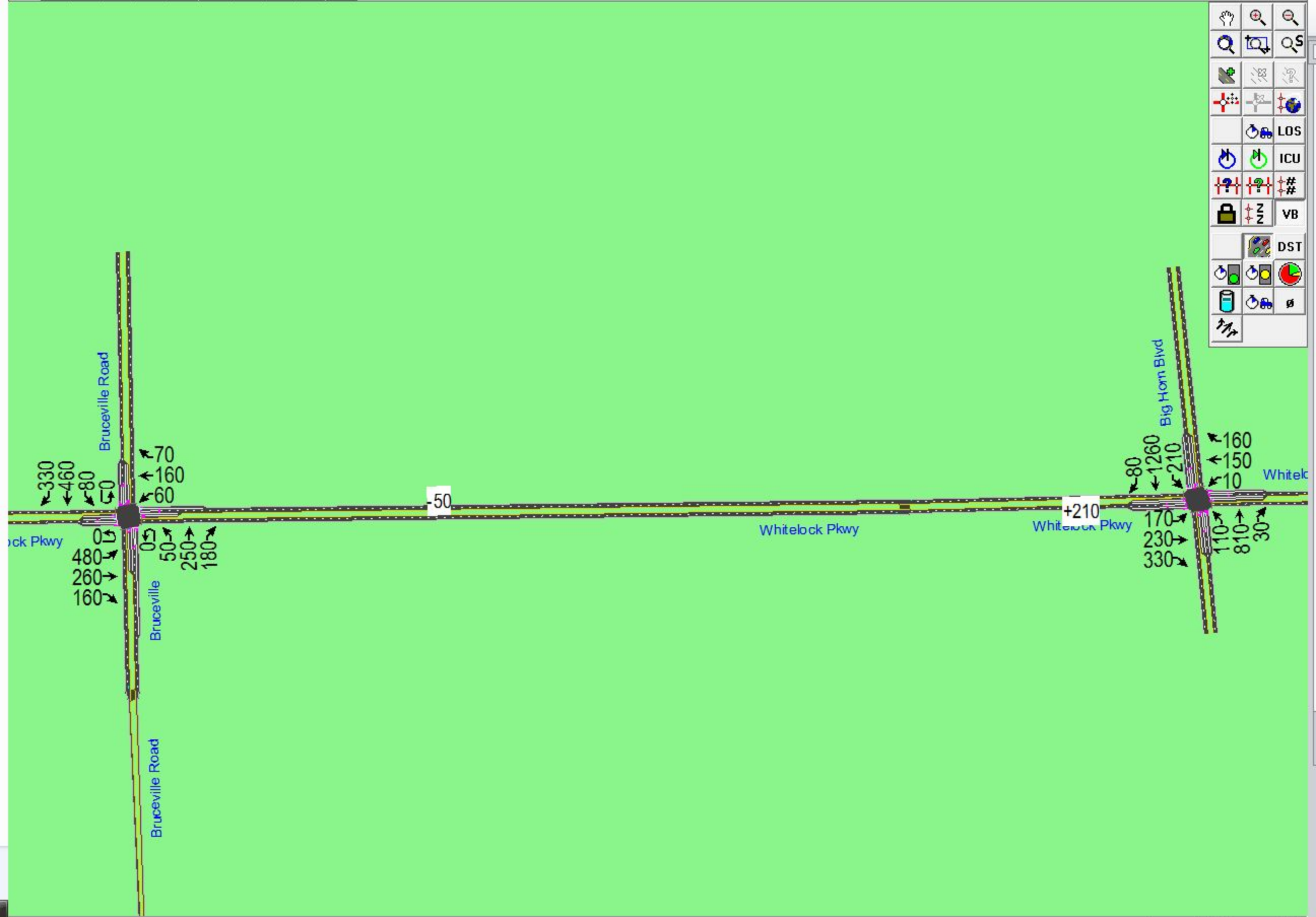
1 Elk Grove Blvd & Franklin Blvd



Vertical toolbar containing icons for:

- Hand (pan)
- Zoom in/out
- Zoom reset
- Layers (visibility icons)
- LOS (Level of Service)
- ICU (Incident Clearance Unit)
- VB (Vehicle Buffer)
- DST (Data Source Tool)
- Other analysis and display icons

Toolbar with icons for file operations (Save, Print, Undo, Redo) and a dropdown menu currently set to "none".

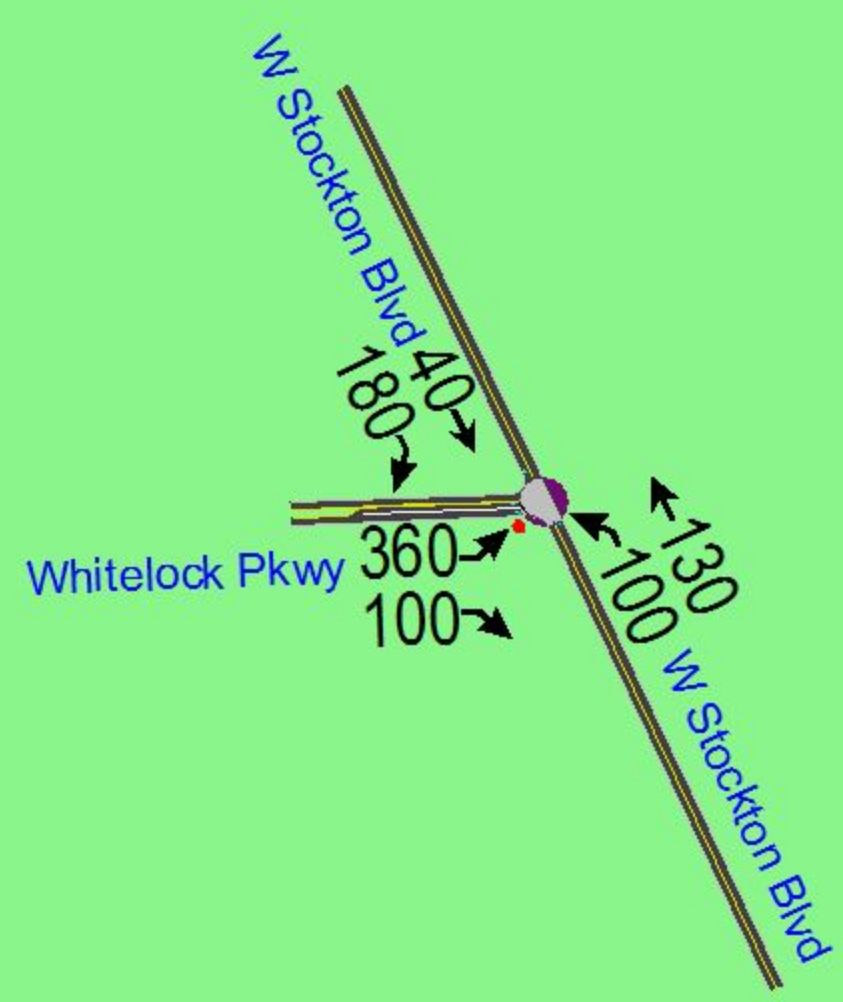


Vertical toolbar with various simulation and analysis tools:

- Hand icon (pan)
- Zoom in/out icons
- Simulation control icons (Start, Stop, Pause)
- Analysis tool icons: LOS, ICU, #, #, VB, DST
- Other utility icons

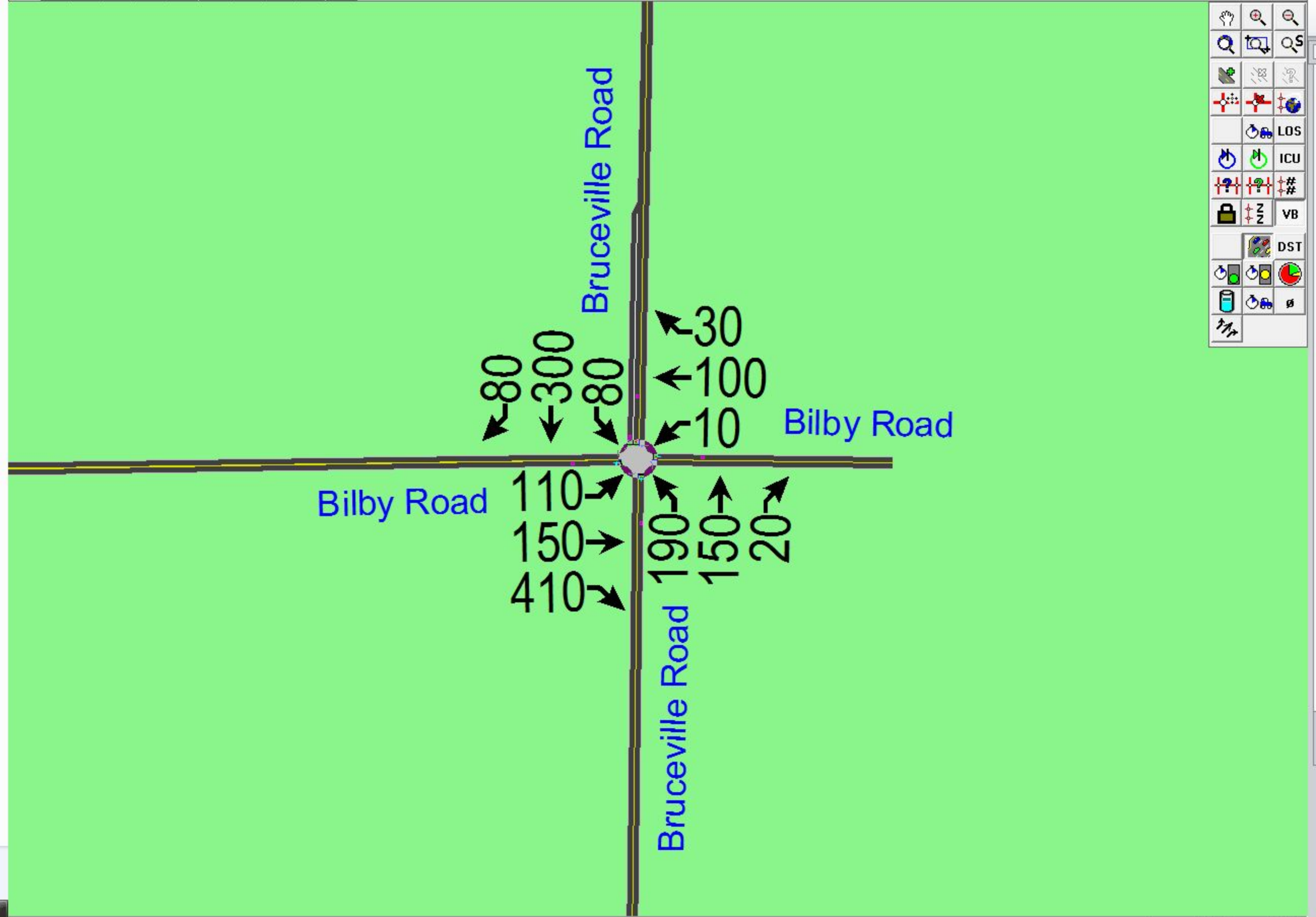


12 Whitelock Pkwy & W Stockton Blvd



A vertical toolbar on the right side of the interface, containing various simulation and analysis tools:

- Hand icon (pan)
- Zoom in and zoom out icons
- Search icon
- Simulation control icons (play, stop, refresh)
- LOS (Level of Service) icon
- ICU (Intersection Control Unit) icon
- Signal control icons (arrows, #)
- VB (Vehicle Buffer) icon
- DST (Dynamic Signal Timing) icon
- Other simulation and analysis icons



A vertical toolbar on the right side of the interface, containing various icons for navigation (hand, zoom in, zoom out, pan, select), analysis (LOS, ICU, #, VB, DST), and other functions (lock, refresh, print, etc.).



14 Hood Franklin Road & I-5 SB Off-ramp



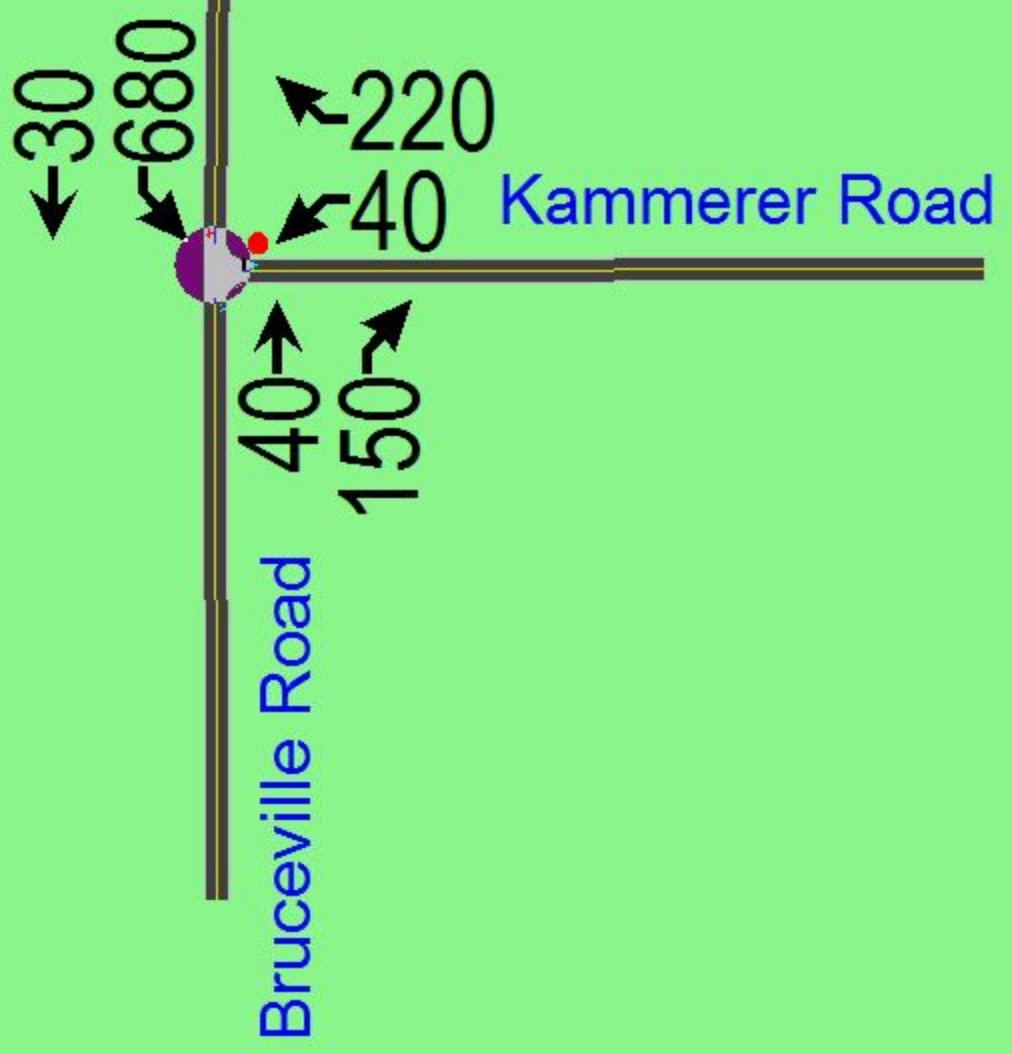
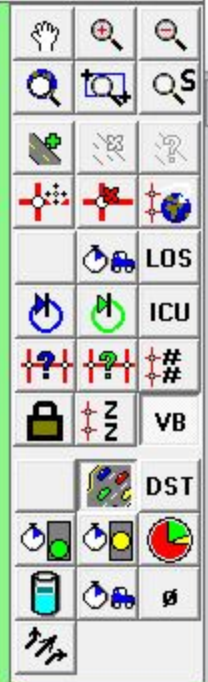
Toolbar icons including File Explorer, Print, Undo, Redo, and various traffic control symbols like STOP, Yield, and Traffic Light.

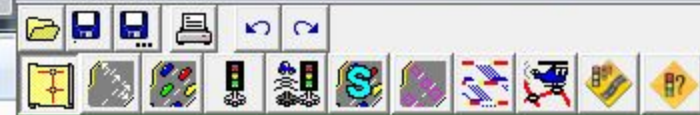
14 Hood Franklin Road & I-5 SB Off-ramp



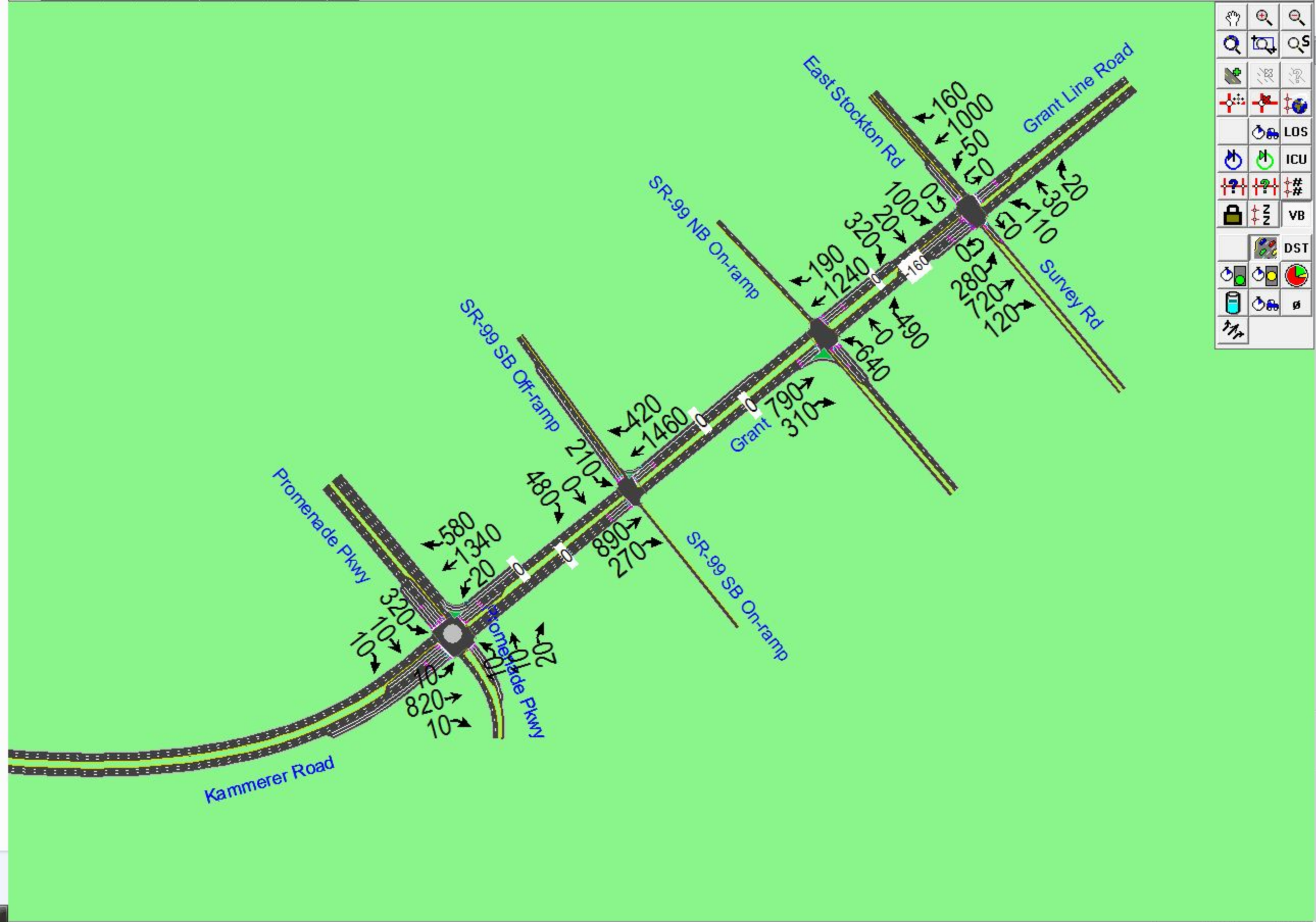


20 Kammerer Road & Bruceville Road





21 Kammerer Road & Promenade Pkwy

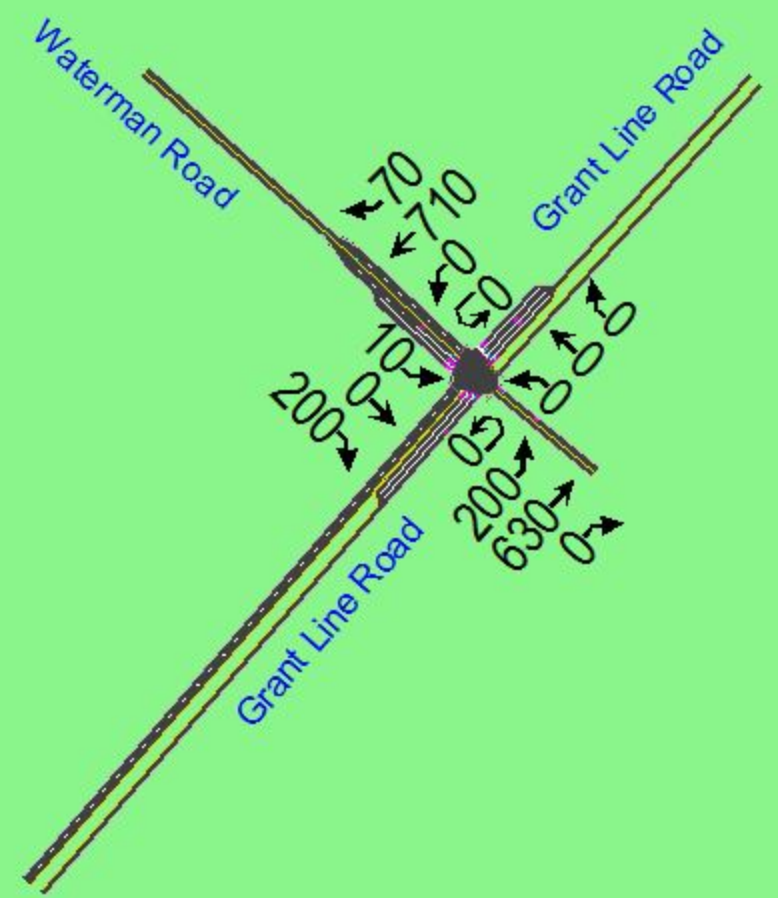


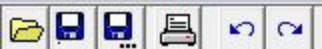
Simulation control panel with various icons and settings:

- Navigation: Hand, Zoom In, Zoom Out, Pan, Select, Deselect, Clear, Undo, Redo.
- Simulation: Play, Pause, Stop, Step Forward, Step Backward, Step First, Step Last.
- Settings: LOS, ICU, #, #, VB, DST, #, #.
- Other: Lock, Unlock, Refresh, Refresh, Refresh, Refresh, Refresh, Refresh.



none





none



























A vertical toolbar on the right side of the screen, containing various icons for navigation and analysis. The icons include a hand (pan), a magnifying glass (zoom), a search icon, a grid, a crosshair, a globe, a refresh icon, a power icon, a fire icon, a lock icon, a DST icon, a pie chart, and a trash can. The text labels for some icons are: LOS, ICU, #, VB, and DST.

HCM Signalized Intersection Capacity Analysis

Existing Plus Project Conditions

1: Elk Grove Blvd & Franklin Blvd

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	1150	770	50	930	330	820	490	150	300	220	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Lane Util. Factor	0.97	0.91	0.88	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	2752	3433	5085	1583	3433	5085	1561	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	2752	3433	5085	1583	3433	5085	1561	3433	5085	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)	156	1278	856	56	1033	367	911	544	167	333	244	233
RTOR Reduction (vph)	0	0	529	0	0	195	0	0	127	0	0	213
Lane Group Flow (vph)	156	1278	327	56	1033	172	911	544	40	333	244	20
Confl. Bikes (#/hr)			1						2			
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	9.8	45.8	45.8	5.5	41.1	41.1	34.0	28.6	28.6	14.9	10.4	10.4
Effective Green, g (s)	9.8	45.8	45.8	5.5	41.1	41.1	34.0	28.6	28.6	14.9	10.4	10.4
Actuated g/C Ratio	0.08	0.38	0.38	0.05	0.34	0.34	0.28	0.24	0.24	0.12	0.09	0.09
Clearance Time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	280	1941	1050	157	1742	542	973	1212	372	426	441	137
v/s Ratio Prot	c0.05	c0.25		0.02	0.20		c0.27	0.11		0.10	c0.05	
v/s Ratio Perm			0.12			0.11			0.03			0.01
v/c Ratio	0.56	0.66	0.31	0.36	0.59	0.32	0.94	0.45	0.11	0.78	0.55	0.15
Uniform Delay, d1	53.0	30.6	26.0	55.5	32.5	29.1	41.9	39.0	35.7	51.0	52.6	50.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	1.8	0.8	0.5	1.5	1.5	15.4	0.1	0.0	8.4	0.9	0.2
Delay (s)	54.4	32.4	26.8	56.0	34.0	30.7	57.4	39.1	35.8	59.3	53.4	50.9
Level of Service	D	C	C	E	C	C	E	D	D	E	D	D
Approach Delay (s)		31.8			34.0			49.0			55.1	
Approach LOS		C			C			D			E	
Intersection Summary												
HCM Average Control Delay			39.9				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		24.3			
Intersection Capacity Utilization			79.1%				ICU Level of Service		D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Elk Grove Blvd & Bruceville Road

Existing Plus Project Conditions
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Volume (vph)	270	1280	140	290	670	150	140	510	250	340	470	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.86	0.86
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1558	3433	4788	1362
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1558	3433	4788	1362
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	318	1506	165	341	788	176	165	600	294	400	553	141
RTOR Reduction (vph)	0	0	66	0	0	108	0	0	218	0	2	99
Lane Group Flow (vph)	318	1506	99	341	788	68	165	600	76	400	565	28
Confl. Bikes (#/hr)									3			
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	14.6	46.0	46.0	15.0	46.4	46.4	10.1	20.2	20.2	15.9	26.0	26.0
Effective Green, g (s)	14.6	46.0	46.0	15.0	46.4	46.4	10.1	20.2	20.2	15.9	26.0	26.0
Actuated g/C Ratio	0.12	0.38	0.38	0.12	0.39	0.39	0.08	0.17	0.17	0.13	0.22	0.22
Clearance Time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	418	1949	607	429	1966	612	289	856	262	455	1037	295
v/s Ratio Prot	0.09	c0.30		c0.10	0.15		0.05	c0.12		c0.12	0.12	
v/s Ratio Perm			0.06			0.04			0.05			0.02
v/c Ratio	0.76	0.77	0.16	0.79	0.40	0.11	0.57	0.70	0.29	0.88	0.54	0.09
Uniform Delay, d1	51.0	32.4	24.3	51.0	26.7	23.6	52.9	47.1	43.6	51.1	41.7	37.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.2	3.0	0.6	9.2	0.6	0.4	1.7	2.1	0.2	16.8	0.3	0.1
Delay (s)	58.2	35.5	24.9	60.2	27.3	24.0	54.6	49.2	43.9	67.9	42.1	37.6
Level of Service	E	D	C	E	C	C	D	D	D	E	D	D
Approach Delay (s)		38.2			35.5			48.5			51.0	
Approach LOS		D			D			D			D	

























Intersection Summary		
HCM Average Control Delay	42.1	HCM Level of Service D
HCM Volume to Capacity ratio	0.78	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 22.9
Intersection Capacity Utilization	77.3%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Elk Grove Blvd & Big Horn Blvd

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1410	220	130	1030	180	190	490	260	160	700	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1563	3433	3539	1583	3433	3539	1549
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1563	3433	3539	1583	3433	3539	1549
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	200	1762	275	162	1288	225	238	612	325	200	875	162
RTOR Reduction (vph)	0	0	91	0	0	99	0	0	211	0	0	65
Lane Group Flow (vph)	200	1762	184	162	1288	126	238	612	114	200	875	97
Confl. Bikes (#/hr)						1						10
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	11.3	45.8	45.8	10.0	44.5	44.5	12.5	28.9	28.9	11.3	27.7	27.7
Effective Green, g (s)	11.3	45.8	45.8	10.0	44.5	44.5	12.5	28.9	28.9	11.3	27.7	27.7
Actuated g/C Ratio	0.09	0.38	0.38	0.08	0.37	0.37	0.10	0.24	0.24	0.09	0.23	0.23
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	323	1941	604	286	1886	580	358	852	381	323	817	358
v/s Ratio Prot	c0.06	c0.35		0.05	0.25		c0.07	0.17		0.06	c0.25	
v/s Ratio Perm			0.12			0.08			0.07			0.06
v/c Ratio	0.62	0.91	0.30	0.57	0.68	0.22	0.66	0.72	0.30	0.62	1.07	0.27
Uniform Delay, d1	52.3	35.1	26.0	52.9	31.8	25.8	51.7	41.8	37.3	52.3	46.1	37.9
Progression Factor	1.00	1.00	1.00	1.41	0.53	0.16	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	7.7	1.3	1.3	1.8	0.7	3.6	2.4	0.2	2.5	52.3	0.1
Delay (s)	54.8	42.8	27.3	76.0	18.7	4.8	55.3	44.2	37.4	54.8	98.4	38.0
Level of Service	D	D	C	E	B	A	E	D	D	D	F	D
Approach Delay (s)		42.0			22.4			44.6			83.4	
Approach LOS		D			C			D			F	
Intersection Summary												
HCM Average Control Delay			45.4				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		18.3			
Intersection Capacity Utilization			76.2%				ICU Level of Service		D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Elk Grove Blvd & Laguna Springs Drive

Existing Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑↑	↗	↔↗	↑↑↑		↔	↑	↗↘	↔	↑↑	
Volume (vph)	100	1510	200	1000	1040	90	130	200	490	40	200	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1563	3433	5016		1770	1863	2787	1770	3386	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1563	3433	5016		1770	1863	2787	1770	3386	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	122	1841	244	1220	1268	110	159	244	598	49	244	85
RTOR Reduction (vph)	0	0	75	0	7	0	0	0	477	0	30	0
Lane Group Flow (vph)	122	1841	169	1220	1371	0	159	244	121	49	299	0
Confl. Bikes (#/hr)			1			1						4
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	12.3	50.3	50.3	16.4	54.4		15.1	24.3	24.3	6.8	16.0	
Effective Green, g (s)	12.3	50.3	50.3	16.4	54.4		15.1	24.3	24.3	6.8	16.0	
Actuated g/C Ratio	0.10	0.42	0.42	0.14	0.45		0.13	0.20	0.20	0.06	0.13	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	181	2131	655	469	2274		223	377	564	100	451	
v/s Ratio Prot	0.07	c0.36		c0.36	c0.27		c0.09	c0.13		0.03	0.09	
v/s Ratio Perm			0.11						0.04			
v/c Ratio	0.67	0.86	0.26	2.60	0.60		0.71	0.65	0.21	0.49	0.66	
Uniform Delay, d1	51.9	31.7	22.7	51.8	24.7		50.4	43.9	39.9	54.9	49.4	
Progression Factor	0.66	1.21	1.60	1.39	0.42		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.2	2.8	0.5	725.6	1.0		8.6	2.9	0.1	1.4	2.8	
Delay (s)	38.5	41.2	36.8	797.5	11.2		59.0	46.8	40.0	56.3	52.3	
Level of Service	D	D	D	F	B		E	D	D	E	D	
Approach Delay (s)		40.6			380.4			44.7			52.8	
Approach LOS		D			F			D			D	






















Intersection Summary

HCM Average Control Delay	184.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.9
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Elk Grove Blvd & Auto Center Drive

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	1690	150	310	2000	10	90	20	130	50	10	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5023		3433	5081		1770	1620		3433	1631	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5023		3433	5081		1770	1620		3433	1631	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	85	1798	160	330	2128	11	96	21	138	53	11	53
RTOR Reduction (vph)	0	6	0	0	0	0	0	129	0	0	49	0
Lane Group Flow (vph)	85	1952	0	330	2139	0	96	30	0	53	15	0
Confl. Bikes (#/hr)						2						
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	9.0	62.5		15.7	69.2		10.9	8.0		12.0	9.1	
Effective Green, g (s)	9.0	62.5		15.7	69.2		10.9	8.0		12.0	9.1	
Actuated g/C Ratio	0.08	0.52		0.13	0.58		0.09	0.07		0.10	0.08	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	133	2616		449	2930		161	108		343	124	
v/s Ratio Prot	0.05	0.39		c0.10	c0.42		c0.05	0.02		c0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.64	0.75		0.73	0.73		0.60	0.28		0.15	0.12	
Uniform Delay, d1	53.9	22.5		50.1	18.6		52.4	53.3		49.4	51.7	
Progression Factor	1.08	0.56		1.13	0.65		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	1.2		1.7	0.5		3.9	0.5		0.1	0.2	
Delay (s)	63.0	13.8		58.5	12.6		56.3	53.8		49.4	51.9	
Level of Service	E	B		E	B		E	D		D	D	
Approach Delay (s)		15.9			18.8			54.7			50.8	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM Average Control Delay			20.2			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.8			
Intersection Capacity Utilization			74.9%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Existing Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↖	↑↑↑					↖	↖	↖↖
Volume (vph)	0	1870	220	110	1210	0	0	0	0	550	10	1180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.98		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4994		1770	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4994		1770	5085					1681	1688	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2033	239	120	1315	0	0	0	0	598	11	1283
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	81
Lane Group Flow (vph)	0	2261	0	120	1315	0	0	0	0	305	304	1202
Confl. Bikes (#/hr)			2			2						
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		55.9		12.5	74.3					33.3	33.3	33.3
Effective Green, g (s)		55.9		12.5	74.3					33.3	33.3	33.3
Actuated g/C Ratio		0.47		0.10	0.62					0.28	0.28	0.28
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2326		184	3148					466	468	773
v/s Ratio Prot		c0.45		c0.07	0.26					0.18	0.18	
v/s Ratio Perm												c0.43
v/c Ratio		0.97		0.65	0.42					0.65	0.65	1.56
Uniform Delay, d1		31.3		51.7	11.7					38.3	38.2	43.4
Progression Factor		0.39		0.49	1.98					1.00	1.00	1.00
Incremental Delay, d2		11.4		5.1	0.3					2.5	2.3	256.1
Delay (s)		23.7		30.4	23.5					40.8	40.5	299.5
Level of Service		C		C	C					D	D	F
Approach Delay (s)		23.7			24.1			0.0			216.2	
Approach LOS		C			C			A			F	

Intersection Summary

HCM Average Control Delay	88.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

Existing Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	930	1490	1320	520	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	5085	5085	1583		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	5085	5085	1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1011	1620	1435	565	0	0
RTOR Reduction (vph)	0	0	0	20	0	0
Lane Group Flow (vph)	1011	1620	1435	545	0	0
Turn Type	Prot		Perm			
Protected Phases	1	6	2			
Permitted Phases				2		
Actuated Green, G (s)	49.4	120.0	59.3	59.3		
Effective Green, g (s)	49.4	120.0	59.3	59.3		
Actuated g/C Ratio	0.41	1.00	0.49	0.49		
Clearance Time (s)	5.6	6.0	5.7	5.7		
Vehicle Extension (s)	2.0	3.0	2.0	2.0		
Lane Grp Cap (vph)	1413	5085	2513	782		
v/s Ratio Prot	c0.29	0.32	0.28			
v/s Ratio Perm				c0.34		
v/c Ratio	0.72	0.32	0.57	0.70		
Uniform Delay, d1	29.4	0.0	21.4	23.4		
Progression Factor	0.57	1.00	0.84	0.80		
Incremental Delay, d2	0.6	0.1	0.8	4.3		
Delay (s)	17.3	0.1	18.8	23.0		
Level of Service	B	A	B	C		
Approach Delay (s)		6.7	20.0		0.0	
Approach LOS		A	B		A	

Intersection Summary

HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.3
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

Existing Plus Project Conditions
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	970	270	40	1080	160	430	130	110	210	90	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (prot)	1770	3539	1550	1770	5085	1583	1610	3190		1681	1734	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (perm)	1770	3539	1550	1770	5085	1583	1610	3190		1681	1734	1562
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	1054	293	43	1174	174	467	141	120	228	98	261
RTOR Reduction (vph)	0	0	136	0	0	79	0	26	0	0	0	201
Lane Group Flow (vph)	98	1054	157	43	1174	95	248	454	0	160	166	60
Confl. Bikes (#/hr)			1									1
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2						4
Actuated Green, G (s)	10.7	53.2	53.2	6.5	49.0	49.0	22.3	22.3		16.5	16.5	16.5
Effective Green, g (s)	10.7	53.2	53.2	6.5	49.0	49.0	22.3	22.3		16.5	16.5	16.5
Actuated g/C Ratio	0.09	0.44	0.44	0.05	0.41	0.41	0.19	0.19		0.14	0.14	0.14
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9	3.9	2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	158	1569	687	96	2076	646	299	593		231	238	215
v/s Ratio Prot	c0.06	c0.30		0.02	0.23		c0.15	0.14		0.10	c0.10	
v/s Ratio Perm			0.10			0.06						0.04
v/c Ratio	0.62	0.67	0.23	0.45	0.57	0.15	0.83	0.77		0.69	0.70	0.28
Uniform Delay, d1	52.7	26.5	20.7	55.0	27.3	22.4	47.0	46.4		49.3	49.4	46.4
Progression Factor	0.92	0.68	1.26	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.2	2.2	0.7	1.2	1.1	0.5	16.3	5.3		7.1	7.0	0.3
Delay (s)	53.5	20.2	26.8	56.2	28.4	22.8	63.3	51.7		56.4	56.4	46.7
Level of Service	D	C	C	E	C	C	E	D		E	E	D
Approach Delay (s)		23.8			28.6			55.6			52.1	
Approach LOS		C			C			E			D	

Intersection Summary

HCM Average Control Delay	35.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 9: SR-99 NB Off-ramp & E. Stockton Blvd

Existing Plus Project Conditions
 AM Peak Hour



































Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	230	20	0	410	370	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	303	26	0	539	487	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		1				
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)					808	
pX, platoon unblocked						
vC, conflicting volume	757	487	487			
vC1, stage 1 conf vol	487					
vC2, stage 2 conf vol	270					
vCu, unblocked vol	757	487	487			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	43	95	100			
cM capacity (veh/h)	528	527	1072			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	329	270	270	487
Volume Left	303	0	0	0
Volume Right	26	0	0	0
cSH	543	1700	1700	1700
Volume to Capacity	0.61	0.16	0.16	0.29
Queue Length 95th (ft)	100	0	0	0
Control Delay (s)	21.3	0.0	0.0	0.0
Lane LOS	C			
Approach Delay (s)	21.3	0.0		0.0
Approach LOS	C			

Intersection Summary			
Average Delay		5.2	
Intersection Capacity Utilization	38.9%		ICU Level of Service A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
10: Whitelock Pkwy & Bruceville Road

























Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	480	260	160	60	160	70	50	250	180	80	460	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Adj. Flow (vph)	632	342	211	79	211	92	66	329	237	105	605	434
RTOR Reduction (vph)	0	0	130	0	0	77	0	0	182	0	0	286
Lane Group Flow (vph)	632	342	81	79	211	15	66	329	55	105	605	148
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Actuated Green, G (s)	26.1	35.8	35.8	5.6	15.3	15.3	5.3	21.5	21.5	7.7	23.9	23.9
Effective Green, g (s)	26.1	35.8	35.8	5.6	15.3	15.3	5.3	21.5	21.5	7.7	23.9	23.9
Actuated g/C Ratio	0.28	0.39	0.39	0.06	0.17	0.17	0.06	0.23	0.23	0.08	0.26	0.26
Clearance Time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	967	1367	611	207	584	261	196	821	367	285	912	408
v/s Ratio Prot	c0.18	0.10		0.02	c0.06		0.02	0.09		c0.03	c0.17	
v/s Ratio Perm			0.05			0.01			0.03			0.09
v/c Ratio	0.65	0.25	0.13	0.38	0.36	0.06	0.34	0.40	0.15	0.37	0.66	0.36
Uniform Delay, d1	29.3	19.3	18.4	41.9	34.4	32.6	42.0	30.1	28.3	40.2	30.8	28.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.0	0.0	0.4	0.1	0.0	0.4	0.1	0.1	0.3	1.4	0.2
Delay (s)	30.5	19.4	18.4	42.3	34.5	32.7	42.4	30.3	28.4	40.5	32.2	28.4
Level of Service	C	B	B	D	C	C	D	C	C	D	C	C
Approach Delay (s)		25.2			35.7			30.8			31.5	
Approach LOS		C			D			C			C	

Intersection Summary		
HCM Average Control Delay	29.6	HCM Level of Service C
HCM Volume to Capacity ratio	0.54	
Actuated Cycle Length (s)	92.7	Sum of lost time (s) 16.8
Intersection Capacity Utilization	61.4%	ICU Level of Service B
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 11: Whitelock Pkwy & Big Horn Blvd

Existing Plus Project Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	230	330	10	150	160	110	810	30	210	1260	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	250	359	11	163	174	120	880	33	228	1370	87
RTOR Reduction (vph)	0	0	271	0	0	147	0	0	12	0	0	27
Lane Group Flow (vph)	185	250	88	11	163	27	120	880	21	228	1370	60
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	10.4	26.8	26.8	0.9	17.3	17.3	8.5	48.0	48.0	12.0	51.5	51.5
Effective Green, g (s)	10.4	26.8	26.8	0.9	17.3	17.3	8.5	48.0	48.0	12.0	51.5	51.5
Actuated g/C Ratio	0.09	0.24	0.24	0.01	0.16	0.16	0.08	0.44	0.44	0.11	0.47	0.47
Clearance Time (s)	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	326	866	387	28	559	250	266	1551	694	376	1664	745
v/s Ratio Prot	c0.05	c0.07		0.00	0.05		0.03	0.25		c0.07	c0.39	
v/s Ratio Perm			0.06			0.02			0.01			0.04
v/c Ratio	0.57	0.29	0.23	0.39	0.29	0.11	0.45	0.57	0.03	0.61	0.82	0.08
Uniform Delay, d1	47.4	33.6	33.1	54.0	40.7	39.5	48.3	23.0	17.5	46.5	25.1	16.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.1	0.1	3.3	0.1	0.1	0.4	0.3	0.0	1.9	3.3	0.0
Delay (s)	48.8	33.7	33.2	57.3	40.8	39.6	48.7	23.3	17.5	48.4	28.3	16.0
Level of Service	D	C	C	E	D	D	D	C	B	D	C	B
Approach Delay (s)		37.0			40.7			26.0			30.4	
Approach LOS		D			D			C			C	

Intersection Summary		
HCM Average Control Delay	31.5	HCM Level of Service C
HCM Volume to Capacity ratio	0.66	
Actuated Cycle Length (s)	109.5	Sum of lost time (s) 17.2
Intersection Capacity Utilization	70.9%	ICU Level of Service C
Analysis Period (min)	15	
c	Critical Lane Group	

HCM Unsignalized Intersection Capacity Analysis
 12: Whitelock Pkwy & W Stockton Blvd


















Existing Plus Project Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	360	100	100	130	40	180
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	486	135	135	176	54	243
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	622	176	297			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	622	176	297			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	84	89			
cM capacity (veh/h)	402	868	1264			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	486	135	311	297		
Volume Left	486	0	135	0		
Volume Right	0	135	0	243		
cSH	402	868	1264	1700		
Volume to Capacity	1.21	0.16	0.11	0.17		
Queue Length 95th (ft)	494	14	9	0		
Control Delay (s)	145.0	9.9	4.1	0.0		
Lane LOS	F	A	A			
Approach Delay (s)	115.7		4.1	0.0		
Approach LOS	F					
Intersection Summary						
Average Delay			59.5			
Intersection Capacity Utilization			55.5%		ICU Level of Service	B
Analysis Period (min)			15			

















HCM Signalized Intersection Capacity Analysis
13: Bilby Road & Bruceville Road

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	150	410	10	100	30	190	150	20	80	300	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			7.0			6.5			6.5	6.5
Lane Util. Factor		1.00			1.00			1.00			1.00	1.00
Frt		0.92			0.97			0.99			1.00	0.85
Flt Protected		0.99			1.00			0.97			0.99	1.00
Satd. Flow (prot)		1695			1802			1802			1843	1583
Flt Permitted		0.91			0.94			0.47			0.83	1.00
Satd. Flow (perm)		1558			1700			861			1552	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	124	169	461	11	112	34	213	169	22	90	337	90
RTOR Reduction (vph)	0	56	0	0	10	0	0	2	0	0	0	51
Lane Group Flow (vph)	0	698	0	0	147	0	0	402	0	0	427	39
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)		44.0			43.5			44.0			44.0	44.0
Effective Green, g (s)		44.0			43.5			44.0			44.0	44.0
Actuated g/C Ratio		0.44			0.43			0.44			0.44	0.44
Clearance Time (s)		6.5			7.0			6.5			6.5	6.5
Vehicle Extension (s)		2.0			2.0			4.5			4.5	4.5
Lane Grp Cap (vph)		679			732			375			676	690
v/s Ratio Prot												
v/s Ratio Perm		c0.45			0.09			c0.47			0.28	0.02
v/c Ratio		1.03			0.20			1.07			0.63	0.06
Uniform Delay, d1		28.5			17.9			28.5			22.2	16.5
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		41.9			0.0			66.8			2.4	0.1
Delay (s)		70.4			18.0			95.3			24.6	16.6
Level of Service		E			B			F			C	B
Approach Delay (s)		70.4			18.0			95.3			23.2	
Approach LOS		E			B			F			C	
Intersection Summary												
HCM Average Control Delay			58.1				HCM Level of Service				E	
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			101.0				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			108.7%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

















HCM Unsignalized Intersection Capacity Analysis
 14: Hood Franklin Road & I-5 SB Off-ramp

Existing Plus Project Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	90	10	0	60	80	0	0	0	100	0	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	0	111	12	0	74	99	0	0	0	123	0	37
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												12
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	74			111			259	191	117	241	235	123
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	74			111			259	191	117	241	235	123
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	83	100	96
cM capacity (veh/h)	1525			1479			666	704	935	713	666	927
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	123	173	160									
Volume Left	0	0	123									
Volume Right	12	99	37									
cSH	1700	1700	927									
Volume to Capacity	0.07	0.10	0.17									
Queue Length 95th (ft)	0	0	16									
Control Delay (s)	0.0	0.0	10.6									
Lane LOS			B									
Approach Delay (s)	0.0	0.0	10.6									
Approach LOS			B									
Intersection Summary												
Average Delay			3.7									
Intersection Capacity Utilization			20.3%		ICU Level of Service					A		
Analysis Period (min)			15									













HCM Unsignalized Intersection Capacity Analysis
 15: Hood Franklin Road & I-5 NB On-ramp

Existing Plus Project Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	130	60	0	120	560	20	0	20	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	143	66	0	132	615	22	0	22	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	132			143			615	308	176	637	582	440
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	132			143			615	308	176	637	582	440
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			95	100	97	100	100	100
cM capacity (veh/h)	1453			1440			403	606	867	380	424	617
Direction, Lane #	EB 1	WB 1	NB 1	NB 2								
Volume Total	209	747	22	22								
Volume Left	0	0	22	0								
Volume Right	66	615	0	22								
cSH	1700	1700	403	867								
Volume to Capacity	0.12	0.44	0.05	0.03								
Queue Length 95th (ft)	0	0	4	2								
Control Delay (s)	0.0	0.0	14.4	9.3								
Lane LOS			B	A								
Approach Delay (s)	0.0	0.0	11.9									
Approach LOS			B									
Intersection Summary												
Average Delay			0.5									
Intersection Capacity Utilization			50.8%		ICU Level of Service				A			
Analysis Period (min)			15									


















HCM Unsignalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd

Existing Plus Project Conditions
 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	140	10	10	300	280	640
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	152	11	11	326	304	696
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	152	11	11	326	304	696
Volume Left (vph)	152	0	11	0	0	0
Volume Right (vph)	0	11	0	0	0	696
Hadj (s)	0.53	-0.67	0.53	0.03	0.03	-0.67
Departure Headway (s)	7.8	6.6	6.8	6.3	5.6	4.9
Degree Utilization, x	0.33	0.02	0.02	0.57	0.48	0.95
Capacity (veh/h)	450	524	513	561	624	724
Control Delay (s)	13.3	8.5	8.8	16.3	12.5	43.7
Approach Delay (s)	13.0		16.0		34.2	
Approach LOS	B		C		D	
Intersection Summary						
Delay			27.8			
HCM Level of Service			D			
Intersection Capacity Utilization			49.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
17: Bilby Road & Franklin Blvd

Existing Plus Project Conditions
AM Peak Hour

															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Sign Control		Stop			Stop			Stop			Stop				
Volume (vph)	0	0	0	650	0	10	0	10	330	200	340	0			
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77			
Hourly flow rate (vph)	0	0	0	844	0	13	0	13	429	260	442	0			
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1										
Volume Total (vph)	0	857	13	429	701										
Volume Left (vph)	0	844	0	0	260										
Volume Right (vph)	0	13	0	429	0										
Hadj (s)	0.00	0.22	0.03	-0.57	0.11										
Departure Headway (s)	7.0	6.0	7.0	3.2	5.9										
Degree Utilization, x	0.00	1.43	0.03	0.38	1.15										
Capacity (veh/h)	515	594	505	1114	615										
Control Delay (s)	10.0	222.5	10.2	8.2	107.9										
Approach Delay (s)	0.0	222.5	8.2		107.9										
Approach LOS	A	F	A		F										
Intersection Summary															
Delay			135.0												
HCM Level of Service			F												
Intersection Capacity Utilization			78.9%					ICU Level of Service			D				
Analysis Period (min)			15												

HCM Signalized Intersection Capacity Analysis
18: Bilby Road & Willard Pkwy

Existing Plus Project Conditions
AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	190	260	440	100	100	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	1863	1583
Peak-hour factor, PHF	0.74	0.74	0.74	0.74	0.74	0.74
Adj. Flow (vph)	257	351	595	135	135	324
RTOR Reduction (vph)	0	261	0	0	0	279
Lane Group Flow (vph)	257	90	595	135	135	45
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	22.2	22.2	25.8	23.1	12.2	12.2
Effective Green, g (s)	22.2	22.2	25.8	17.4	12.2	12.2
Actuated g/C Ratio	0.26	0.26	0.30	0.20	0.14	0.14
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	452	404	526	709	262	222
v/s Ratio Prot	c0.15		c0.34	c0.04	c0.07	
v/s Ratio Perm		0.06				0.03
v/c Ratio	0.57	0.22	1.13	0.19	0.52	0.20
Uniform Delay, d1	28.2	25.5	30.6	28.9	34.6	33.1
Progression Factor	1.00	1.00	1.01	1.11	1.00	1.00
Incremental Delay, d2	1.0	0.1	77.9	0.0	0.7	0.2
Delay (s)	29.2	25.6	108.8	32.0	35.3	33.2
Level of Service	C	C	F	C	D	C
Approach Delay (s)	27.1			94.6	33.8	
Approach LOS	C			F	C	

Intersection Summary

HCM Average Control Delay	56.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.9	Sum of lost time (s)	26.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Bilby Road & Willard Pkwy

Existing Plus Project Conditions
 AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	520	10	10	350	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	5.7		5.6	5.7
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.93		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	1737		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	1737		1770	1863
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	12	612	12	12	412	12
RTOR Reduction (vph)	0	434	10	0	0	0
Lane Group Flow (vph)	12	178	14	0	412	12
Turn Type		Perm			Prot	
Protected Phases	2		4		3	8 1
Permitted Phases		2				
Actuated Green, G (s)	25.3	25.3	12.2		25.8	18.6
Effective Green, g (s)	25.3	25.3	12.2		25.8	18.6
Actuated g/C Ratio	0.29	0.29	0.14		0.30	0.21
Clearance Time (s)	7.0	7.0	5.7		5.6	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	515	461	244		526	399
v/s Ratio Prot	0.01		c0.01		c0.23	c0.01
v/s Ratio Perm		c0.11				
v/c Ratio	0.02	0.39	0.06		0.78	0.03
Uniform Delay, d1	22.0	24.6	32.4		28.0	27.0
Progression Factor	1.00	1.00	1.00		1.29	0.89
Incremental Delay, d2	0.0	0.2	0.0		6.5	0.0
Delay (s)	22.0	24.8	32.4		42.6	24.1
Level of Service	C	C	C		D	C
Approach Delay (s)	24.7		32.4			42.0
Approach LOS	C		C			D

Intersection Summary

HCM Average Control Delay	31.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	86.9	Sum of lost time (s)	18.3
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 20: Kammerer Road & Bruceville Road

Existing Plus Project Conditions
 AM Peak Hour



























Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	40	220	40	150	680	30
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	44	244	44	167	756	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1672	128			211	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1672	128			211	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	5	73			44	
cM capacity (veh/h)	47	922			1359	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	289	211	789
Volume Left	44	0	756
Volume Right	244	167	0
cSH	238	1700	1359
Volume to Capacity	1.22	0.12	0.56
Queue Length 95th (ft)	352	0	90
Control Delay (s)	171.6	0.0	10.7
Lane LOS	F		B
Approach Delay (s)	171.6	0.0	10.7
Approach LOS	F		

Intersection Summary			
Average Delay		45.0	
Intersection Capacity Utilization		76.4%	ICU Level of Service D
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
21: Kammerer Road & Promenade Pkwy

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	820	10	20	1340	580	10	10	20	320	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	11	921	11	22	1506	652	11	11	22	360	11	11
RTOR Reduction (vph)	0	0	6	0	0	282	0	0	21	0	0	9
Lane Group Flow (vph)	11	921	5	22	1506	370	11	11	1	360	11	2
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	0.6	31.9	31.9	2.1	33.4	33.4	0.8	4.9	4.9	9.9	13.5	13.5
Effective Green, g (s)	0.6	31.9	31.9	2.1	33.4	33.4	0.8	4.9	4.9	9.9	13.5	13.5
Actuated g/C Ratio	0.01	0.43	0.43	0.03	0.45	0.45	0.01	0.07	0.07	0.13	0.18	0.18
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	28	2751	680	50	2286	1253	19	123	104	665	643	288
v/s Ratio Prot	0.00	0.14		c0.01	c0.30		0.01	c0.01		c0.07	0.00	
v/s Ratio Perm			0.00			0.13			0.00			0.00
v/c Ratio	0.39	0.33	0.01	0.44	0.66	0.29	0.58	0.09	0.01	0.54	0.02	0.01
Uniform Delay, d1	36.7	14.1	12.1	35.5	16.0	13.0	36.6	32.6	32.4	30.1	25.0	24.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.0	0.0	2.2	0.5	0.0	23.8	0.1	0.0	0.5	0.0	0.0
Delay (s)	40.0	14.2	12.1	37.8	16.5	13.0	60.4	32.7	32.5	30.6	25.0	24.9
Level of Service	D	B	B	D	B	B	E	C	C	C	C	C
Approach Delay (s)		14.4			15.7			39.5			30.2	
Approach LOS		B			B			D			C	













Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	74.3	Sum of lost time (s)	18.8
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis













22: Grant Line Road & SR-99 SB Off-ramp

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↘	↔	↗
Volume (vph)	0	890	270	0	1460	420	0	0	0	210	0	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1456	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1456	1504
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	947	287	0	1553	447	0	0	0	223	0	511
RTOR Reduction (vph)	0	0	118	0	0	0	0	0	0	0	21	21
Lane Group Flow (vph)	0	947	169	0	1553	447	0	0	0	201	246	245
Turn Type		Perm			Free					Perm		Perm
Protected Phases		6			2					8		8
Permitted Phases		6			Free					8		8
Actuated Green, G (s)		47.1	47.1		47.1	80.1				20.7	20.7	20.7
Effective Green, g (s)		47.1	47.1		47.1	80.1				20.7	20.7	20.7
Actuated g/C Ratio		0.59	0.59		0.59	1.00				0.26	0.26	0.26
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2990	931		2990	1583				434	376	389
v/s Ratio Prot		0.19			0.31							
v/s Ratio Perm			0.11			0.28				0.12	0.17	0.16
v/c Ratio		0.32	0.18		0.52	0.28				0.46	0.65	0.63
Uniform Delay, d1		8.4	7.6		9.8	0.0				25.0	26.5	26.3
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.1		0.2	0.4				0.3	3.1	2.4
Delay (s)		8.4	7.7		10.0	0.4				25.3	29.6	28.8
Level of Service		A	A		A	A				C	C	C
Approach Delay (s)		8.3			7.9			0.0		28.1		
Approach LOS		A			A			A		C		
Intersection Summary												
HCM Average Control Delay		11.7			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.56										
Actuated Cycle Length (s)		80.1			Sum of lost time (s)			12.3				
Intersection Capacity Utilization		58.3%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												






























HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↗	↗	↗			
Volume (vph)	0	790	310	0	1240	190	640	0	490	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	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	878	344	0	1378	211	711	0	544	0	0	0
RTOR Reduction (vph)	0	0	152	0	0	92	0	0	179	0	0	0
Lane Group Flow (vph)	0	878	192	0	1378	119	355	356	365	0	0	0
Turn Type		Perm			Perm		Split		Perm			
Protected Phases		6			2		4		4			
Permitted Phases		6			2				4			
Actuated Green, G (s)		47.3	47.3		47.8	47.8	26.8	26.8	26.8			
Effective Green, g (s)		47.3	47.3		47.8	47.8	26.8	26.8	26.8			
Actuated g/C Ratio		0.56	0.56		0.56	0.56	0.32	0.32	0.32			
Clearance Time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2833	882		2863	891	531	531	880			
v/s Ratio Prot		0.17			c0.27		0.21	c0.21				
v/s Ratio Perm			0.12			0.08			0.13			
v/c Ratio		0.31	0.22		0.48	0.13	0.67	0.67	0.42			
Uniform Delay, d1		10.1	9.5		11.1	8.8	25.2	25.2	22.9			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.1	0.2		0.2	0.1	2.5	2.6	0.1			
Delay (s)		10.1	9.6		11.3	8.9	27.7	27.8	23.0			
Level of Service		B	A		B	A	C	C	C			
Approach Delay (s)		10.0			11.0			25.7			0.0	
Approach LOS		B			B			C			A	
Intersection Summary												
HCM Average Control Delay		15.2			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.55										
Actuated Cycle Length (s)		84.9			Sum of lost time (s)			10.3				
Intersection Capacity Utilization		50.3%			ICU Level of Service			A				
Analysis Period (min)		15										
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & East Stockton Rd

Existing Plus Project Conditions
AM Peak Hour



























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  					 		
Volume (vph)	280	720	120	50	1000	160	110	30	20	100	20	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	4980		1770	1749		1681	1713	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	5085	1583	1770	4980		1770	1749		1681	1713	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	301	774	129	54	1075	172	118	32	22	108	22	344
RTOR Reduction (vph)	0	0	61	0	12	0	0	14	0	0	0	279
Lane Group Flow (vph)	301	774	68	54	1235	0	118	40	0	65	65	65
Turn Type	Prot		Perm	Prot			Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6									3
Actuated Green, G (s)	15.9	52.2	52.2	7.3	43.6		16.2	16.2		12.6	12.6	12.6
Effective Green, g (s)	15.9	52.2	52.2	7.3	43.6		16.2	16.2		12.6	12.6	12.6
Actuated g/C Ratio	0.14	0.47	0.47	0.07	0.39		0.14	0.14		0.11	0.11	0.11
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	488	2374	739	116	1942		256	253		189	193	178
v/s Ratio Prot	c0.09	0.15		0.03	c0.25		c0.07	0.02		0.04	0.04	
v/s Ratio Perm			0.04									c0.04
v/c Ratio	0.62	0.33	0.09	0.47	0.64		0.46	0.16		0.34	0.34	0.36
Uniform Delay, d1	45.1	18.7	16.6	50.4	27.7		43.8	41.8		45.8	45.7	45.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.6	0.1	0.1	1.1	0.7		1.3	0.3		0.4	0.4	0.5
Delay (s)	46.7	18.8	16.7	51.4	28.4		45.1	42.1		46.2	46.1	46.3
Level of Service	D	B	B	D	C		D	D		D	D	D
Approach Delay (s)		25.6			29.3			44.2			46.3	
Approach LOS		C			C			D			D	

Intersection Summary

HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	111.8	Sum of lost time (s)	23.5
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: Grant Line Road & Waterman Road

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 			 			 	 
Volume (vph)	200	630	0	0	710	70	0	0	0	10	0	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Lane Util. Factor	0.97	1.00			0.95	1.00					1.00	0.88
Frpb, ped/bikes	1.00	1.00			1.00	0.98					1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00					1.00	1.00
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	1863			3539	1560					1770	2787
Flt Permitted	0.95	1.00			1.00	1.00					0.95	1.00
Satd. Flow (perm)	3433	1863			3539	1560					1770	2787
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	208	656	0	0	740	73	0	0	0	10	0	208
RTOR Reduction (vph)	0	0	0	0	0	36	0	0	0	0	0	183
Lane Group Flow (vph)	208	656	0	0	740	37	0	0	0	0	10	25
Confl. Bikes (#/hr)			2			4						
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases						2						3
Actuated Green, G (s)	10.2	35.8			20.0	20.0					8.1	8.1
Effective Green, g (s)	10.2	35.8			20.0	20.0					8.1	8.1
Actuated g/C Ratio	0.15	0.53			0.29	0.29					0.12	0.12
Clearance Time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0					2.0	2.0
Lane Grp Cap (vph)	516	984			1044	460					211	333
v/s Ratio Prot	0.06	c0.35			0.21						0.01	
v/s Ratio Perm						0.02						c0.01
v/c Ratio	0.40	0.67			0.71	0.08					0.05	0.07
Uniform Delay, d1	26.0	11.7			21.3	17.3					26.4	26.5
Progression Factor	1.00	1.00			1.00	1.00					1.00	1.00
Incremental Delay, d2	0.2	1.3			1.8	0.0					0.0	0.0
Delay (s)	26.2	13.0			23.1	17.3					26.5	26.6
Level of Service	C	B			C	B					C	C
Approach Delay (s)		16.2			22.6			0.0			26.6	
Approach LOS		B			C			A			C	

Intersection Summary

HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	67.8	Sum of lost time (s)	23.9
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
29: Kammerer Rd & Collector 2

Existing Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	210	480	150	30	10	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
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)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	522	163	33	11	43
RTOR Reduction (vph)	0	0	0	24	0	39
Lane Group Flow (vph)	228	522	163	9	11	4
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	8.7	26.7	11.0	11.0	3.5	3.5
Effective Green, g (s)	8.7	26.7	11.0	11.0	3.5	3.5
Actuated g/C Ratio	0.20	0.63	0.26	0.26	0.08	0.08
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	361	2213	912	408	145	130
v/s Ratio Prot	c0.13	c0.15	0.05		c0.01	
v/s Ratio Perm				0.01		0.00
v/c Ratio	0.63	0.24	0.18	0.02	0.08	0.03
Uniform Delay, d1	15.5	3.5	12.3	11.8	18.1	18.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	0.0	0.0	0.0	0.1	0.0
Delay (s)	18.2	3.5	12.4	11.8	18.2	18.1
Level of Service	B	A	B	B	B	B
Approach Delay (s)		8.0	12.3		18.1	
Approach LOS		A	B		B	

Intersection Summary

HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	42.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
30: Kammerer Rd & Big Horn Blvd

Existing Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	190	310	80	180	120	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
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	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	337	87	196	130	98
RTOR Reduction (vph)	0	0	0	144	0	81
Lane Group Flow (vph)	207	337	87	52	130	17
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	5.4	24.2	11.8	11.8	7.5	7.5
Effective Green, g (s)	5.4	24.2	11.8	11.8	7.5	7.5
Actuated g/C Ratio	0.12	0.55	0.27	0.27	0.17	0.17
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	419	1938	945	423	300	269
v/s Ratio Prot	c0.06	c0.10	0.02		c0.07	
v/s Ratio Perm				0.03		0.01
v/c Ratio	0.49	0.17	0.09	0.12	0.43	0.06
Uniform Delay, d1	18.1	5.0	12.2	12.3	16.4	15.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.0	0.0	0.0	0.4	0.0
Delay (s)	18.5	5.0	12.2	12.3	16.8	15.4
Level of Service	B	A	B	B	B	B
Approach Delay (s)		10.1	12.3		16.2	
Approach LOS		B	B		B	

Intersection Summary

HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	44.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	29.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Kammerer Rd & Collector 1

Existing Plus Project Conditions
AM Peak Hour



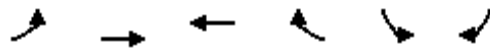
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↕	↕	↗	↖	↗
Volume (vph)	30	400	250	270	170	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	435	272	293	185	11
RTOR Reduction (vph)	0	0	0	193	0	9
Lane Group Flow (vph)	33	435	272	100	185	2
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	0.9	22.7	14.8	14.8	8.1	8.1
Effective Green, g (s)	0.9	22.7	14.8	14.8	8.1	8.1
Actuated g/C Ratio	0.02	0.52	0.34	0.34	0.19	0.19
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	37	1855	1210	541	331	296
v/s Ratio Prot	0.02	c0.12	0.08		c0.10	
v/s Ratio Perm				0.06		0.00
v/c Ratio	0.89	0.23	0.22	0.19	0.56	0.01
Uniform Delay, d1	21.2	5.6	10.2	10.0	16.0	14.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	103.2	0.0	0.0	0.1	1.2	0.0
Delay (s)	124.3	5.6	10.2	10.1	17.1	14.3
Level of Service	F	A	B	B	B	B
Approach Delay (s)		14.0	10.1		17.0	
Approach LOS		B	B		B	

Intersection Summary

HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	43.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Kammerer Rd & Lotz Pkwy

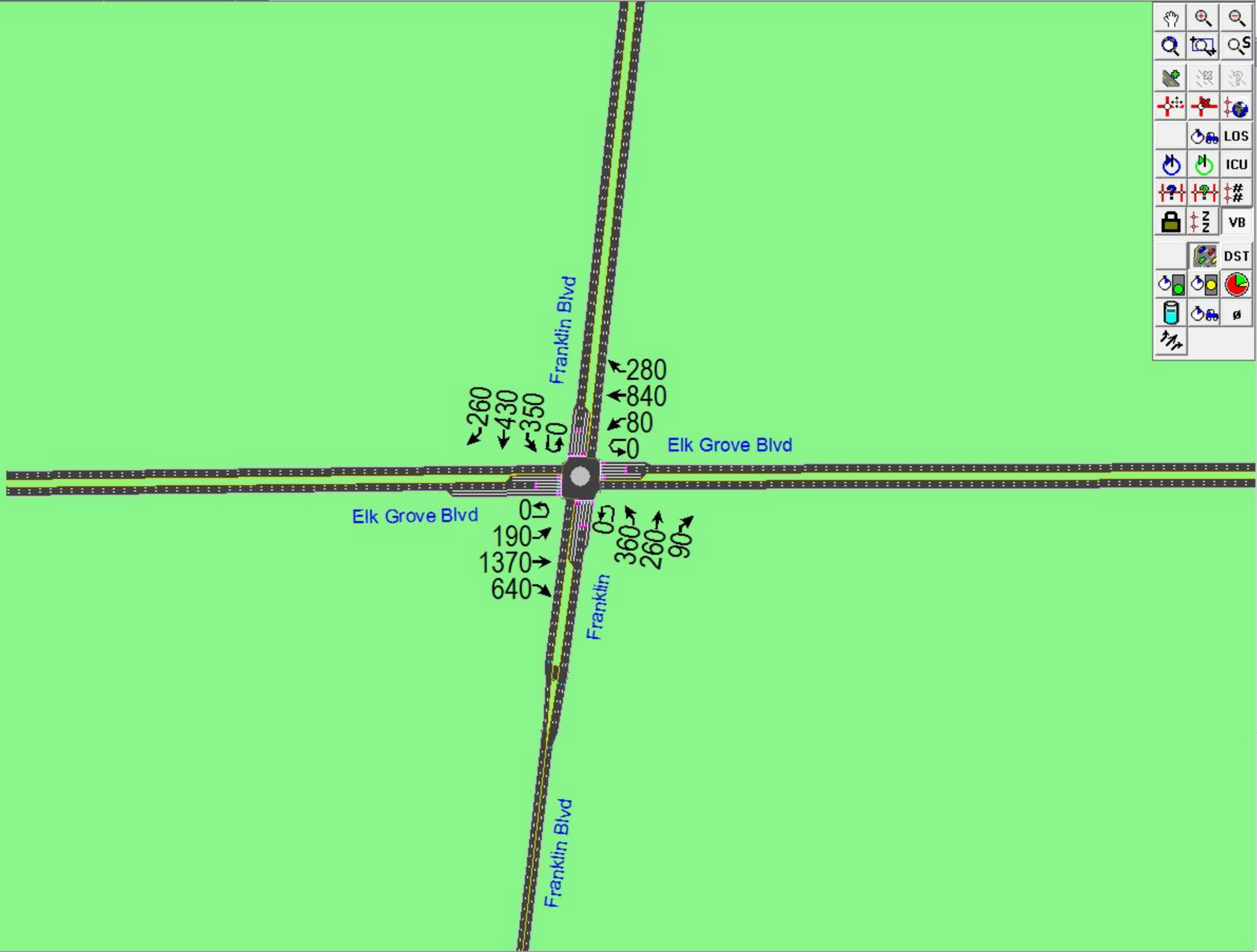
Existing Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	590	1040	10	110	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
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	3539	3539	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	641	1130	11	120	11
RTOR Reduction (vph)	0	0	0	5	0	10
Lane Group Flow (vph)	11	641	1130	6	120	1
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	0.8	39.2	31.4	31.4	7.2	7.2
Effective Green, g (s)	0.8	39.2	31.4	31.4	7.2	7.2
Actuated g/C Ratio	0.01	0.67	0.53	0.53	0.12	0.12
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	47	2355	1887	844	420	194
v/s Ratio Prot	0.00	c0.18	c0.32		c0.03	
v/s Ratio Perm				0.00		0.00
v/c Ratio	0.23	0.27	0.60	0.01	0.29	0.01
Uniform Delay, d1	28.7	4.0	9.4	6.4	23.5	22.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.0	0.3	0.0	0.1	0.0
Delay (s)	29.7	4.0	9.8	6.4	23.6	22.7
Level of Service	C	A	A	A	C	C
Approach Delay (s)		4.5	9.7		23.6	
Approach LOS		A	A		C	

Intersection Summary

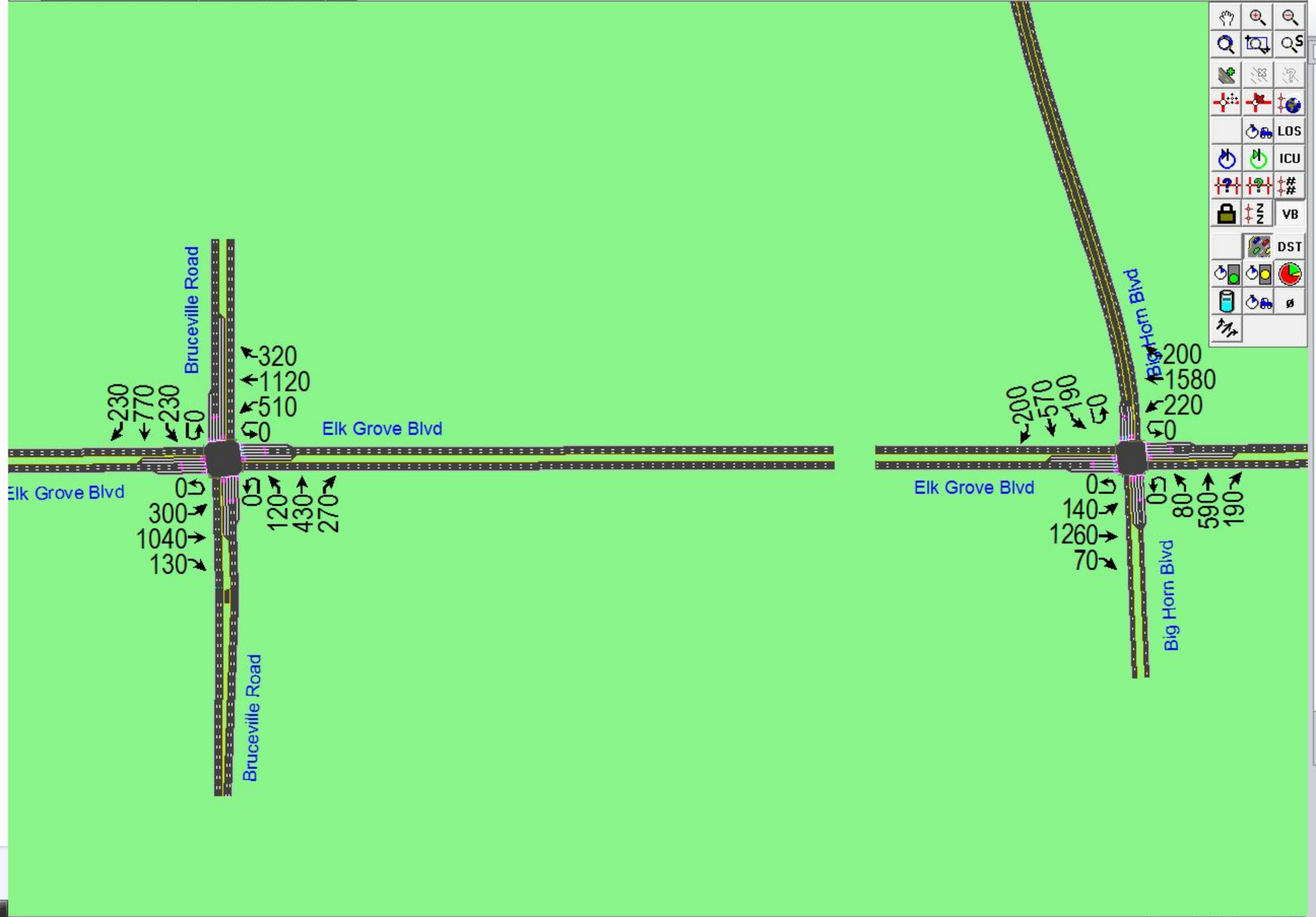
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	19.5
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



A vertical toolbar on the right side of the interface, containing various icons for navigation and analysis. The icons include a hand, magnifying glass, search, and several traffic-related symbols. Text labels next to some icons include LOS, ICU, #, #, VB, and DST.

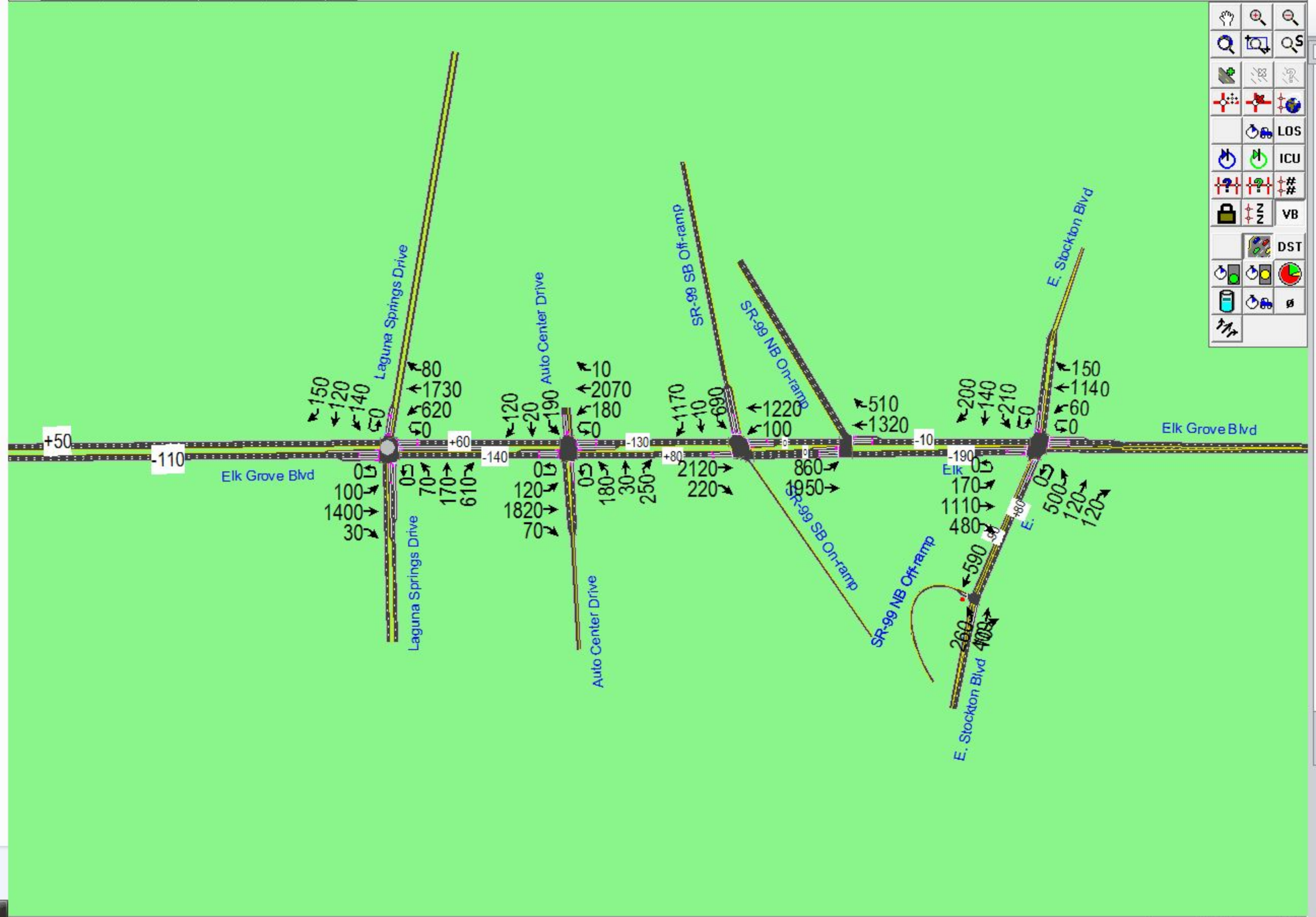


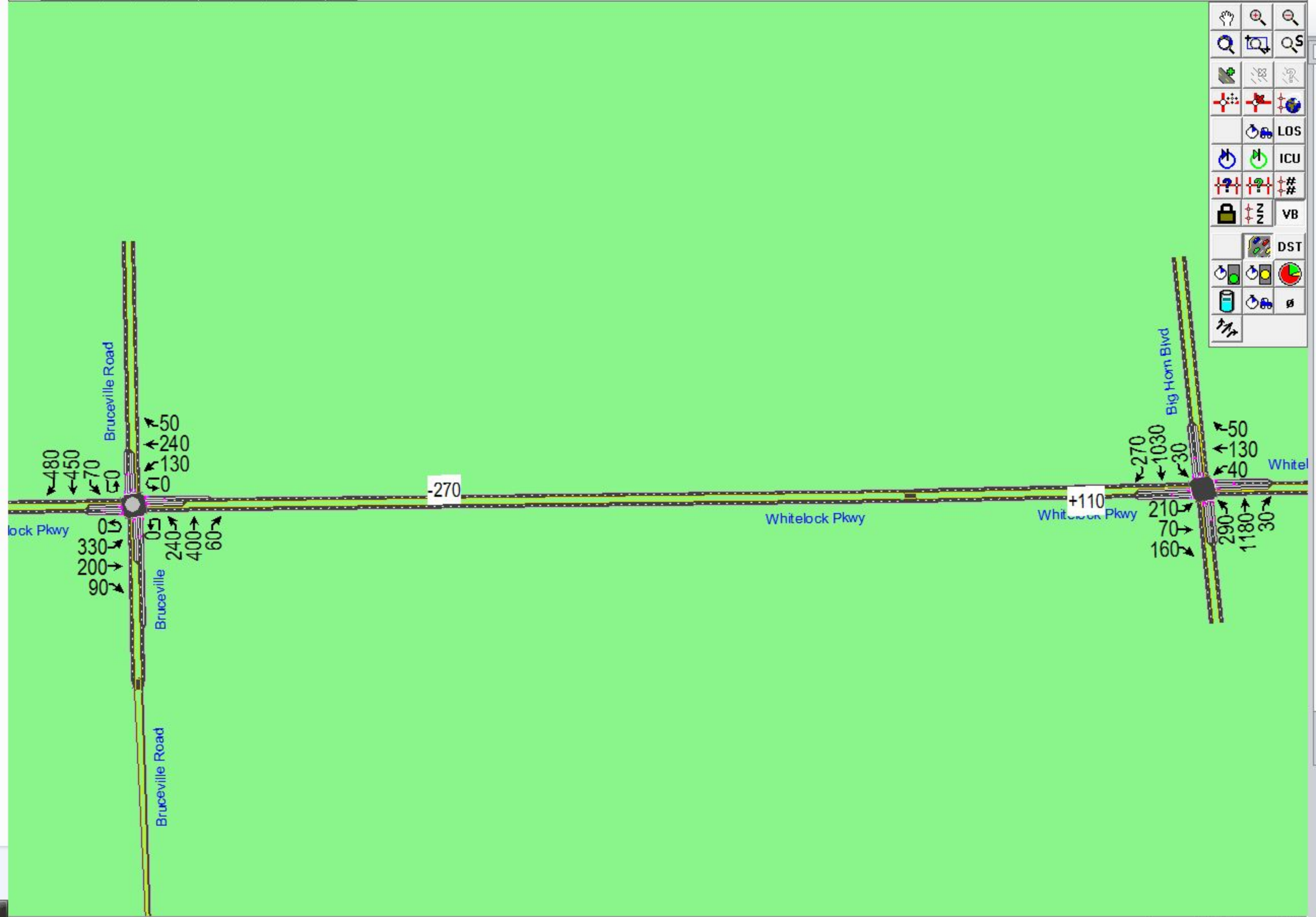
1 Elk Grove Blvd & Franklin Blvd





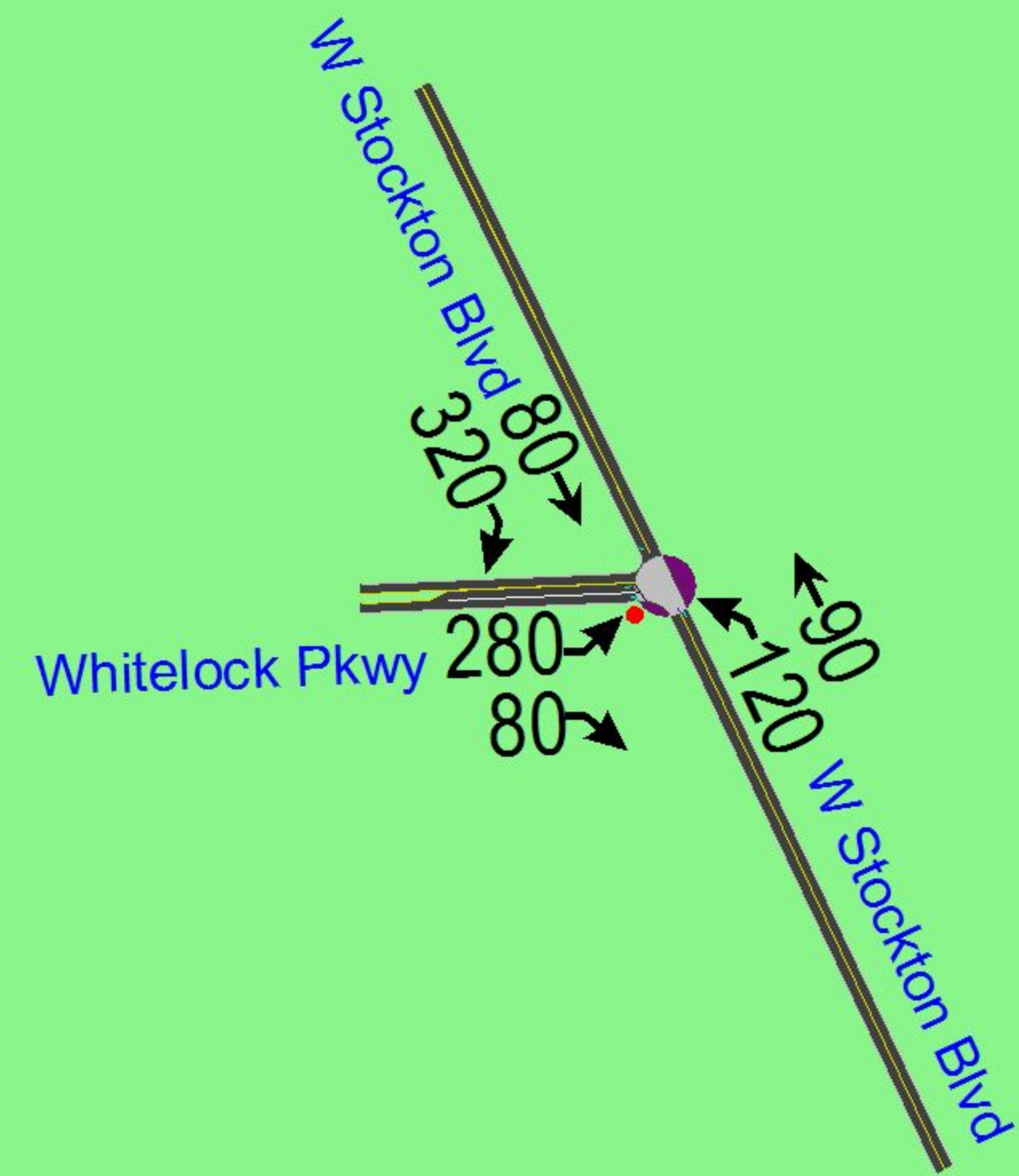
4 Elk Grove Blvd & Laguna Springs Drive







12 Whitelock Pkwy & W Stockton Blvd

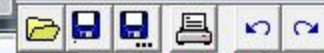


A vertical toolbar on the right side of the interface, containing various simulation and analysis tools such as LOS, ICU, #, VB, DST, and other performance metrics.

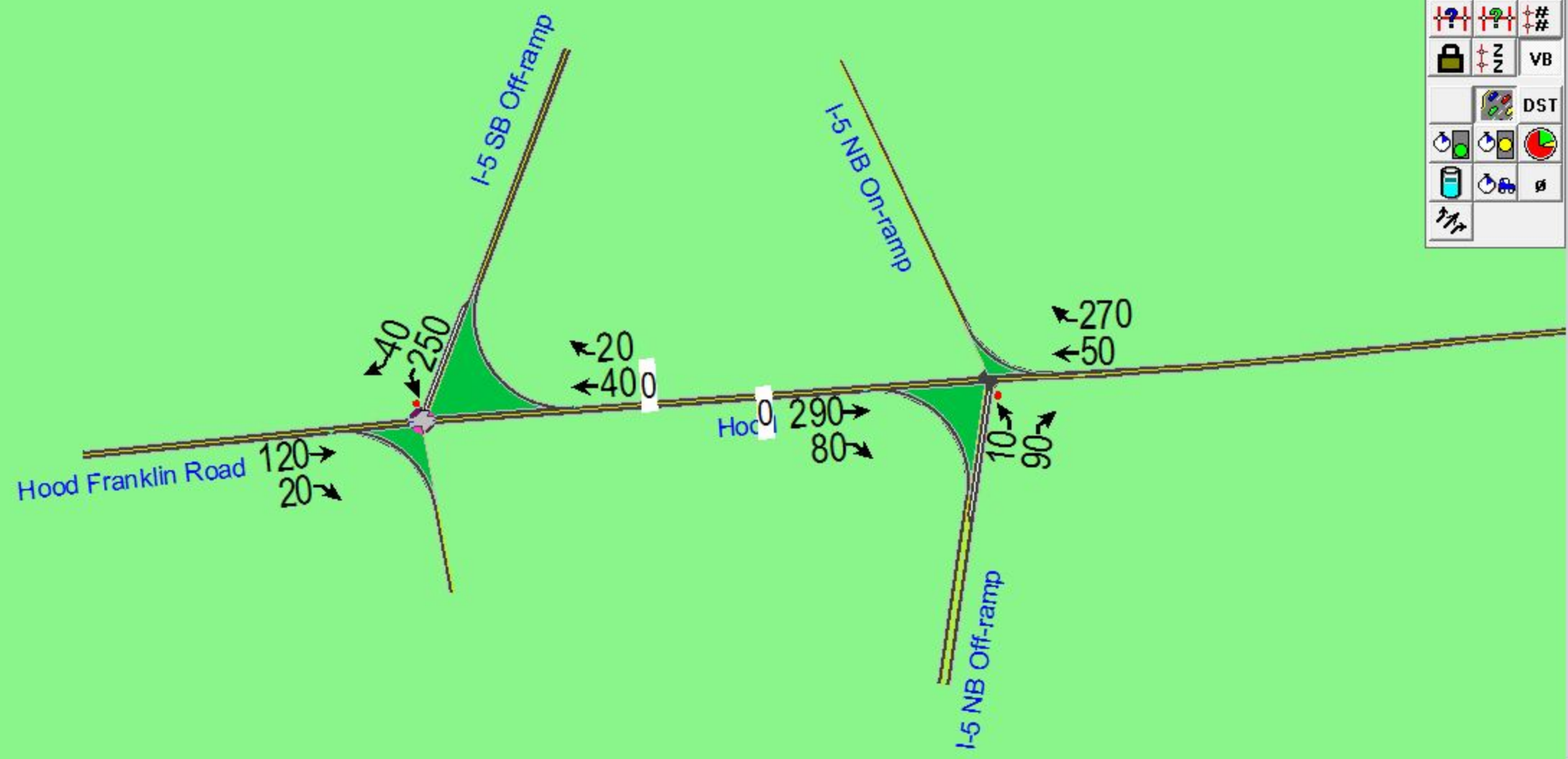


Tool palette containing various icons for navigation and analysis:

- Hand icon (pan)
- Zoom in/out icons
- Search icon
- Layers/visibility icons
- LOS (Level of Service) icon
- ICU (Intersection Control Unit) icon
- VB (Vertical Buffer) icon
- DST (Data Source Tool) icon
- Other traffic analysis and simulation icons

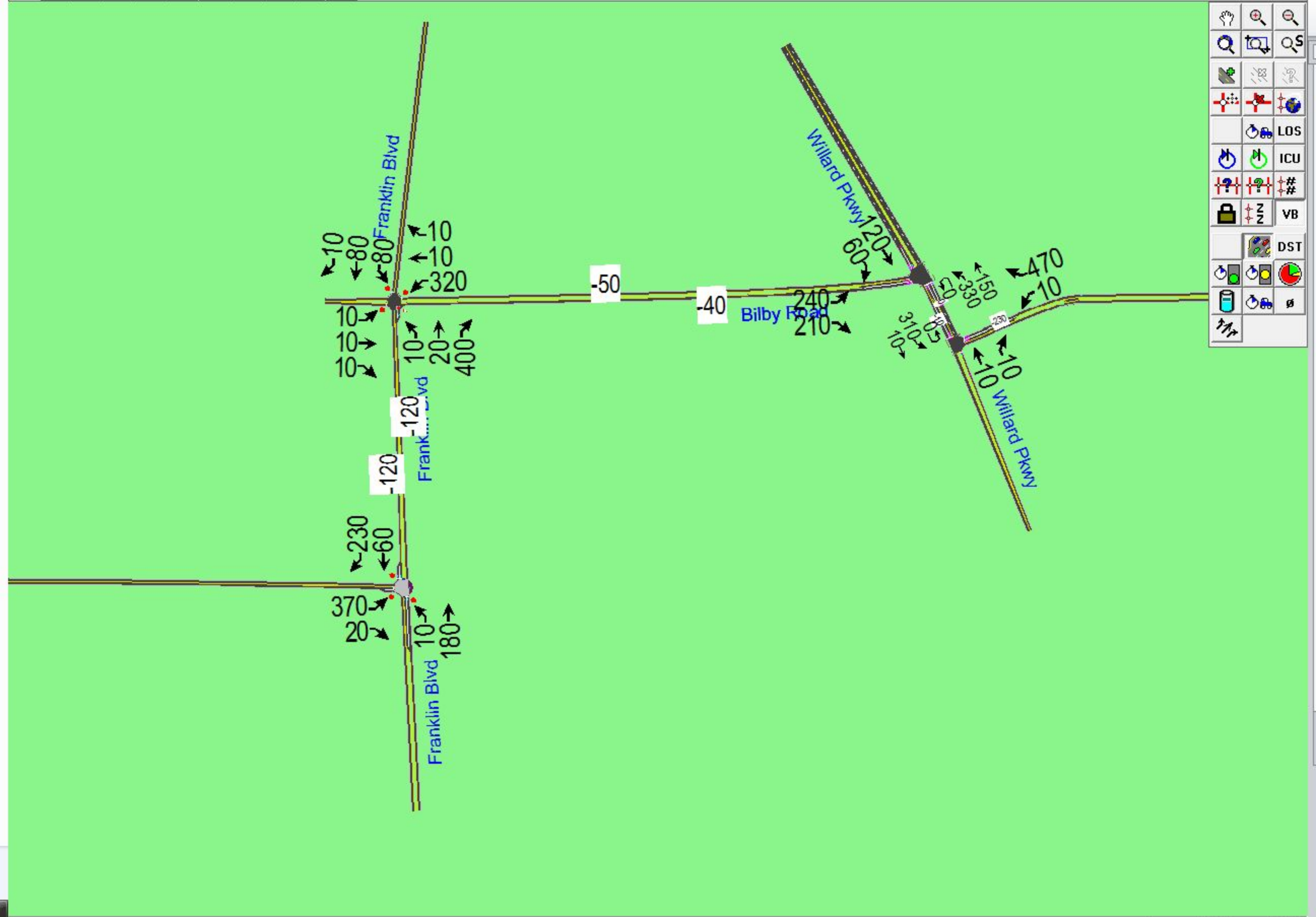


14 Hood Franklin Road & I-5 SB Off-ramp



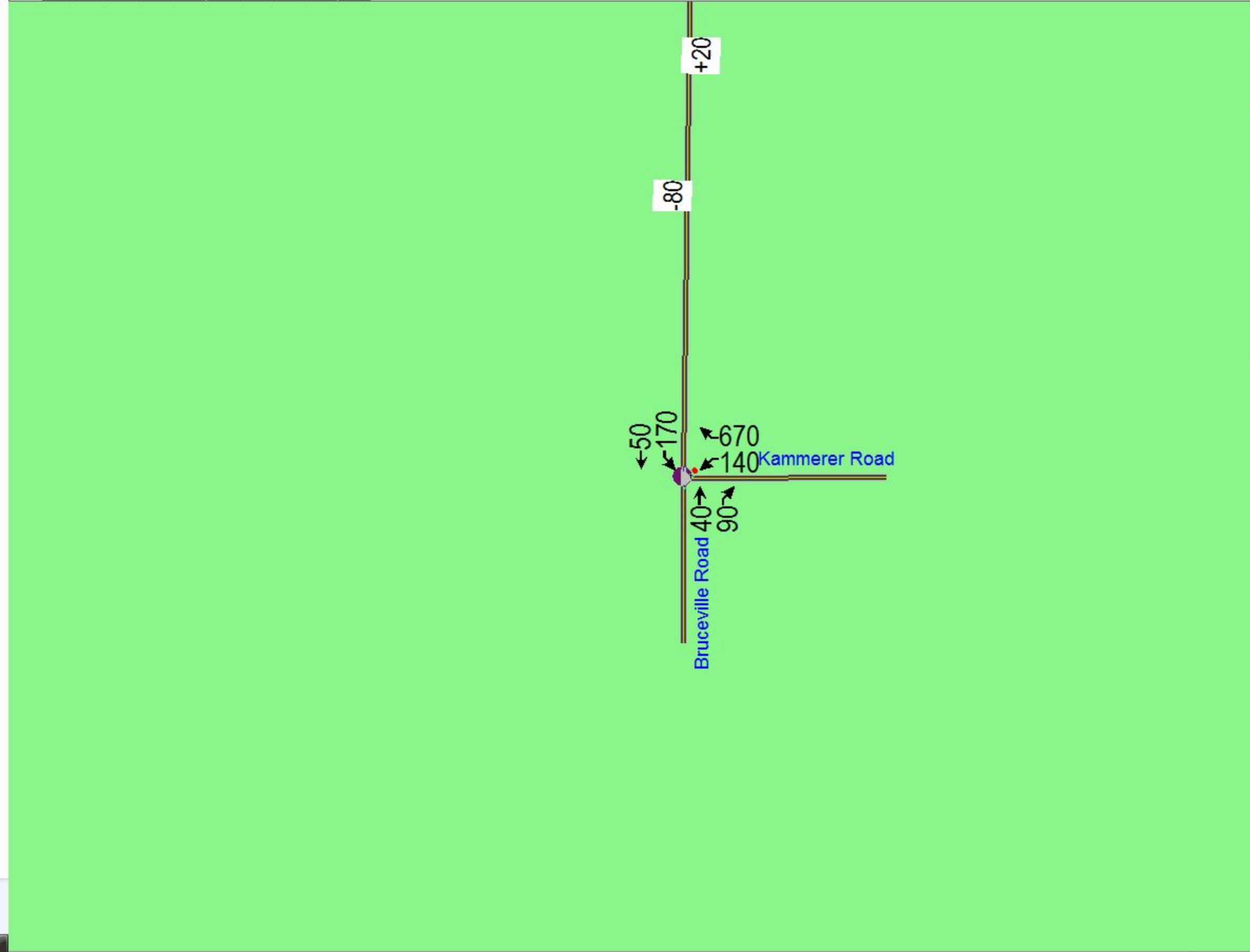
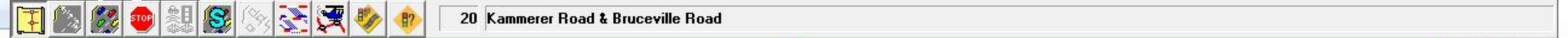
The toolbar contains the following icons and labels:

- Hand icon (pan)
- Zoom in (+) and Zoom out (-) icons
- Search icon (magnifying glass)
- Simulation control icons: LOS, ICU, #, #, VB, DST
- Other simulation and analysis icons

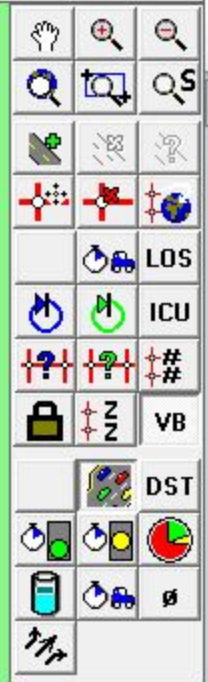
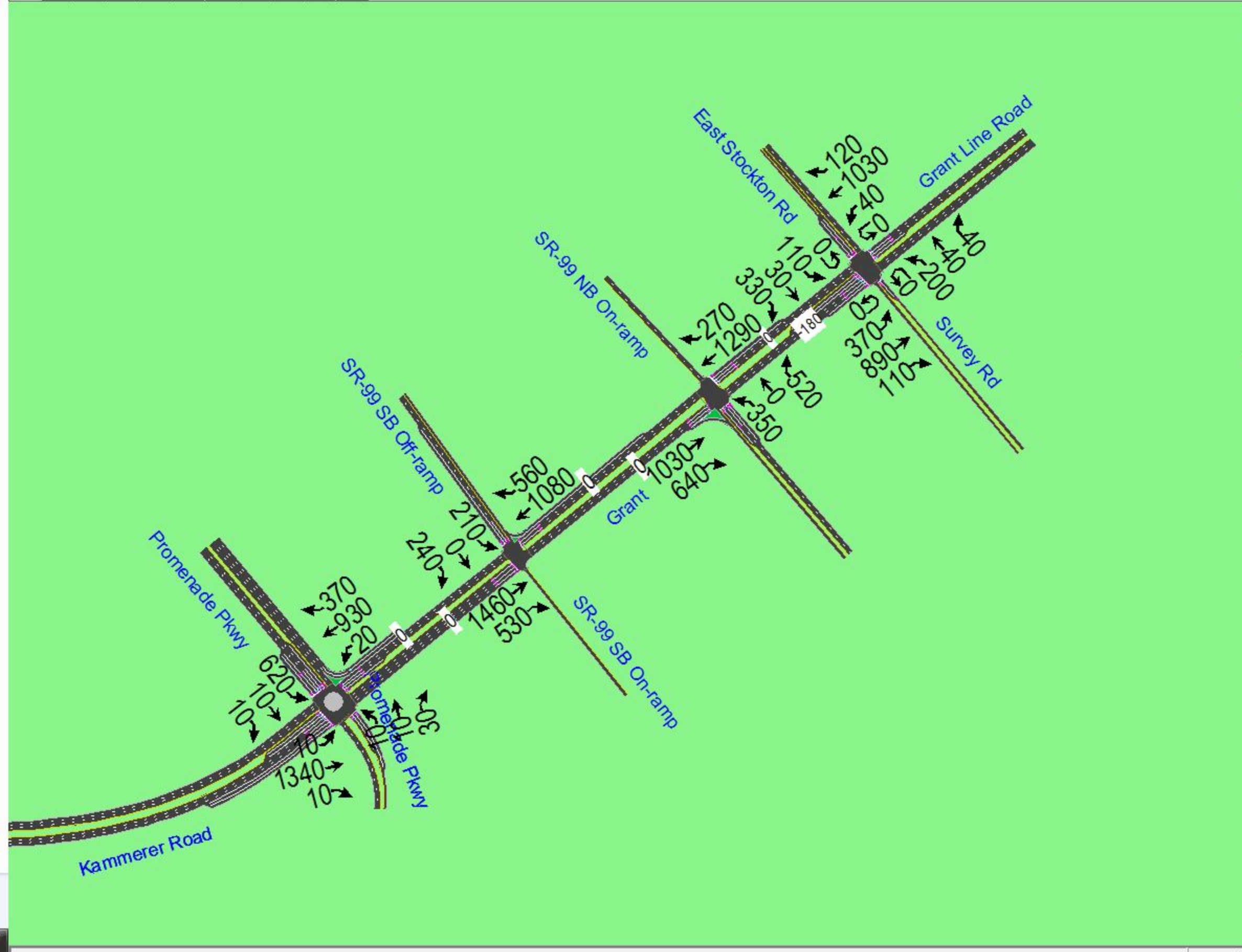


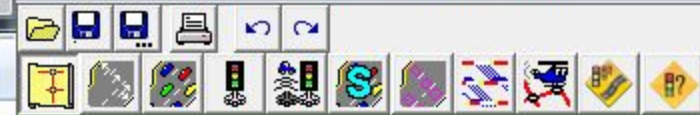
Toolbox containing various icons for navigation and analysis:

- Hand icon (pan)
- Zoom in/out icons
- Search icon
- Layers icon
- LOS (Level of Service) icon
- ICU (Incident Clearance Unit) icon
- VB (Vehicle Buffer) icon
- DST (Data Source Table) icon
- Other traffic analysis icons

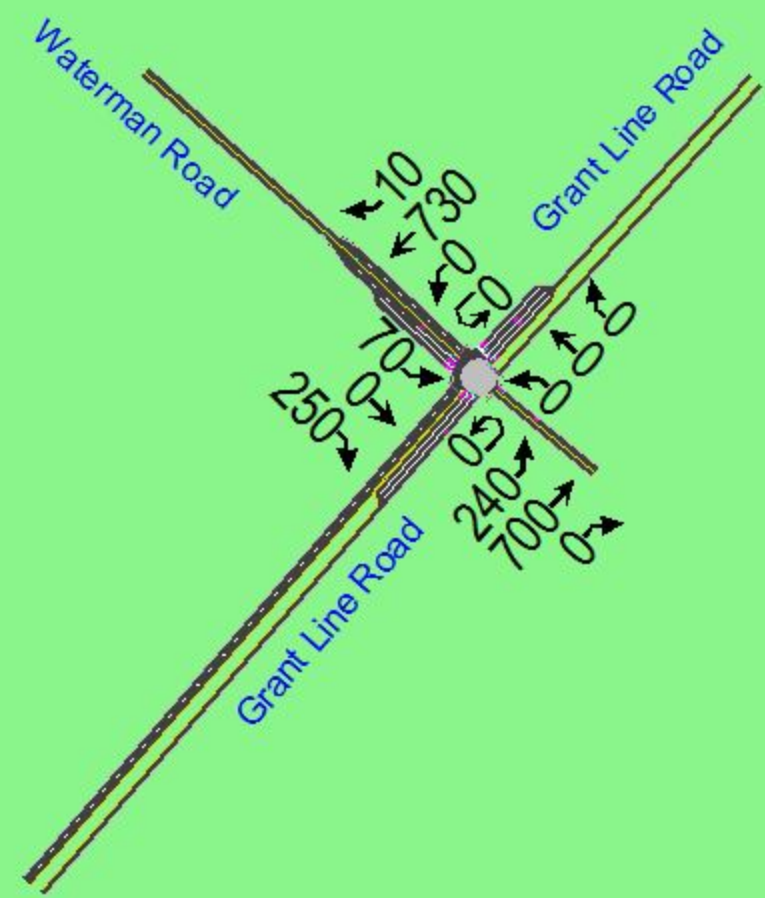


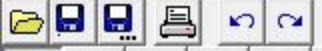
A vertical toolbar on the right side of the workspace, containing various simulation and analysis tools. It includes icons for LOS (Level of Service), ICU (Incident Clearance Unit), VB (Vehicle Buffer), DST (Distance to Stop), and other traffic-related symbols.





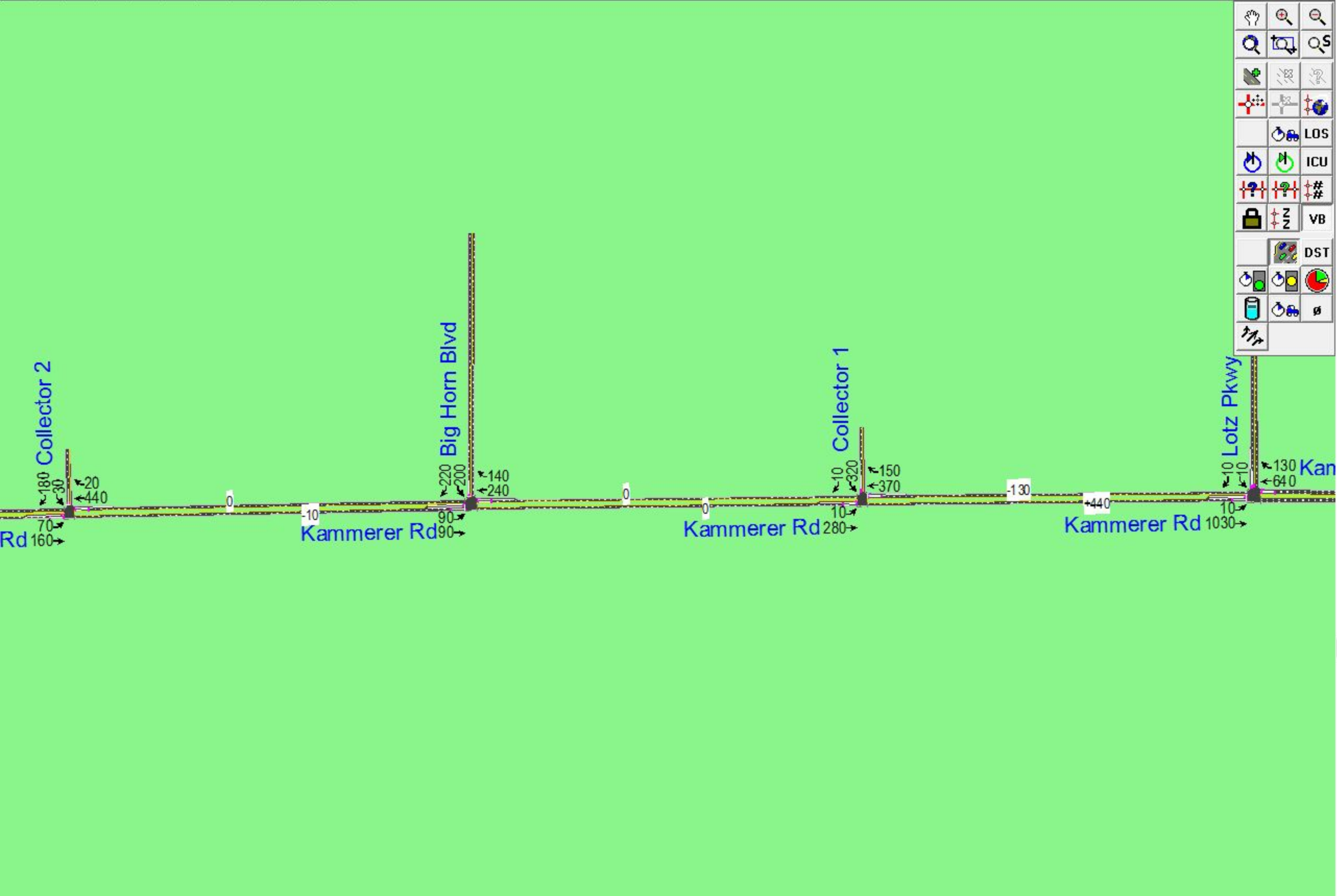
25 Grant Line Road & Waterman Road





none

- Hand icon
- Zoom In icon
- Zoom Out icon
- Search icon
- Refresh icon
- Reset icon
- Global Settings icon
- LDS icon
- ICU icon
- ## icon
- VB icon
- DST icon
- Color palette icon
- Other analysis icons



HCM Signalized Intersection Capacity Analysis

Existing Plus Project Conditions

1: Elk Grove Blvd & Franklin Blvd

PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↑	↔↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Volume (vph)	190	1370	640	80	840	280	360	260	90	350	430	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Lane Util. Factor	0.97	0.91	0.88	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	2750	3433	5085	1583	3433	5085	1583	3433	5085	1557
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	2750	3433	5085	1583	3433	5085	1583	3433	5085	1557
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	1489	696	87	913	304	391	283	98	380	467	283
RTOR Reduction (vph)	0	0	389	0	0	166	0	0	83	0	0	242
Lane Group Flow (vph)	207	1489	307	87	913	138	391	283	15	380	467	41
Confl. Bikes (#/hr)			2									3
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	11.6	53.0	53.0	7.4	48.4	48.4	18.1	18.7	18.7	15.7	17.2	17.2
Effective Green, g (s)	11.6	53.0	53.0	7.4	48.4	48.4	18.1	18.7	18.7	15.7	17.2	17.2
Actuated g/C Ratio	0.10	0.44	0.44	0.06	0.40	0.40	0.15	0.16	0.16	0.13	0.14	0.14
Clearance Time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	332	2246	1215	212	2051	638	518	792	247	449	729	223
v/s Ratio Prot	c0.06	c0.29		0.03	0.18		c0.11	0.06		0.11	c0.09	
v/s Ratio Perm			0.11			0.09			0.01			0.03
v/c Ratio	0.62	0.66	0.25	0.41	0.45	0.22	0.75	0.36	0.06	0.85	0.64	0.18
Uniform Delay, d1	52.1	26.4	21.1	54.2	26.0	23.4	48.8	45.3	43.2	51.0	48.5	45.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	1.6	0.5	0.5	0.7	0.8	5.5	0.1	0.0	13.2	1.4	0.1
Delay (s)	54.7	28.0	21.6	54.7	26.7	24.2	54.3	45.4	43.2	64.2	49.9	45.4
Level of Service	D	C	C	D	C	C	D	D	D	E	D	D
Approach Delay (s)		28.4			28.0			49.6			53.6	
Approach LOS		C			C			D			D	

Intersection Summary

























HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Elk Grove Blvd & Bruceville Road

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	1040	130	510	1120	320	120	430	270	230	770	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.86	0.86
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	4785	1362
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	4785	1362
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	312	1083	135	531	1167	333	125	448	281	240	802	240
RTOR Reduction (vph)	0	0	73	0	0	155	0	0	233	0	2	172
Lane Group Flow (vph)	312	1083	62	531	1167	178	125	448	48	240	824	44
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	15.3	41.2	41.2	22.9	48.8	48.8	8.8	20.7	20.7	12.3	24.2	24.2
Effective Green, g (s)	15.3	41.2	41.2	22.9	48.8	48.8	8.8	20.7	20.7	12.3	24.2	24.2
Actuated g/C Ratio	0.13	0.34	0.34	0.19	0.41	0.41	0.07	0.17	0.17	0.10	0.20	0.20
Clearance Time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	438	1746	543	655	2068	644	252	877	273	352	965	275
v/s Ratio Prot	0.09	c0.21		c0.15	0.23		0.04	0.09		c0.07	c0.17	
v/s Ratio Perm			0.04			0.11			0.03			0.03
v/c Ratio	0.71	0.62	0.11	0.81	0.56	0.28	0.50	0.51	0.18	0.68	0.85	0.16
Uniform Delay, d1	50.2	32.9	26.9	46.5	27.4	23.8	53.5	45.1	42.4	52.0	46.2	39.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	1.7	0.4	7.1	1.1	1.1	0.6	0.2	0.1	4.3	7.2	0.1
Delay (s)	54.8	34.5	27.4	53.6	28.5	24.9	54.0	45.3	42.5	56.3	53.3	39.6
Level of Service	D	C	C	D	C	C	D	D	D	E	D	D
Approach Delay (s)		38.0			34.5			45.6			51.6	
Approach LOS		D			C			D			D	

Intersection Summary

HCM Average Control Delay	41.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.9
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

3: Elk Grove Blvd & Big Horn Blvd

Existing Plus Project Conditions
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	1260	70	220	1580	200	80	590	190	190	570	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	146	1312	73	229	1646	208	83	615	198	198	594	208
RTOR Reduction (vph)	0	0	32	0	0	67	0	0	155	0	0	119
Lane Group Flow (vph)	146	1312	41	229	1646	141	83	615	43	198	594	89
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7		4
Permitted Phases			6			2			8			4
Actuated Green, G (s)	9.5	46.5	46.5	12.2	49.2	49.2	6.3	26.0	26.0	11.3	31.0	31.0
Effective Green, g (s)	9.5	46.5	46.5	12.2	49.2	49.2	6.3	26.0	26.0	11.3	31.0	31.0
Actuated g/C Ratio	0.08	0.39	0.39	0.10	0.41	0.41	0.05	0.22	0.22	0.09	0.26	0.26
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	272	1970	613	349	2085	649	180	767	343	323	914	409
v/s Ratio Prot	0.04	0.26		c0.07	c0.32		0.02	c0.17		c0.06	c0.17	
v/s Ratio Perm			0.03			0.09			0.03			0.06
v/c Ratio	0.54	0.67	0.07	0.66	0.79	0.22	0.46	0.80	0.13	0.61	0.65	0.22
Uniform Delay, d1	53.1	30.3	23.1	51.9	30.9	22.9	55.2	44.6	37.8	52.2	39.7	35.0
Progression Factor	1.00	1.00	1.00	1.35	0.49	0.17	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	1.8	0.2	2.4	2.2	0.5	0.7	5.7	0.1	2.4	1.2	0.1
Delay (s)	54.2	32.1	23.3	72.5	17.3	4.4	55.9	50.3	37.9	54.7	40.9	35.1
Level of Service	D	C	C	E	B	A	E	D	D	D	D	D
Approach Delay (s)		33.8			22.1			48.1			42.4	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay			33.2				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		29.3			
Intersection Capacity Utilization			76.4%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Elk Grove Blvd & Laguna Springs Drive






















Existing Plus Project Conditions
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1400	30	620	1730	80	70	170	610	140	120	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3244	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3244	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	103	1443	31	639	1784	82	72	175	629	144	124	155
RTOR Reduction (vph)	0	0	12	0	3	0	0	0	540	0	126	0
Lane Group Flow (vph)	103	1443	19	639	1863	0	72	175	89	144	153	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	11.3	50.4	50.4	16.4	55.5		8.2	16.9	16.9	14.1	22.8	
Effective Green, g (s)	11.3	50.4	50.4	16.4	55.5		8.2	16.9	16.9	14.1	22.8	
Actuated g/C Ratio	0.09	0.42	0.42	0.14	0.46		0.07	0.14	0.14	0.12	0.19	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	167	2136	665	469	2337		121	262	393	208	616	
v/s Ratio Prot	0.06	0.28		c0.19	c0.37		0.04	c0.09		c0.08	0.05	
v/s Ratio Perm			0.01						0.03			
v/c Ratio	0.62	0.68	0.03	1.36	0.80		0.60	0.67	0.23	0.69	0.25	
Uniform Delay, d1	52.3	28.2	20.4	51.8	27.5		54.3	48.9	45.7	50.9	41.3	
Progression Factor	0.74	0.98	0.91	1.36	0.44		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.8	1.4	0.1	170.4	1.6		5.1	4.9	0.1	7.8	0.1	
Delay (s)	42.6	29.1	18.7	240.7	13.7		59.4	53.8	45.8	58.6	41.4	
Level of Service	D	C	B	F	B		E	D	D	E	D	
Approach Delay (s)		29.8			71.6			48.6			47.3	
Approach LOS		C			E			D			D	
Intersection Summary												
HCM Average Control Delay			53.7			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.2			
Intersection Capacity Utilization			92.3%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Elk Grove Blvd & Auto Center Drive

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1820	70	180	2070	10	180	30	250	190	20	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5057		3433	5082		1770	1613		3433	1624	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5057		3433	5082		1770	1613		3433	1624	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	1896	73	188	2156	10	188	31	260	198	21	125
RTOR Reduction (vph)	0	3	0	0	1	0	0	240	0	0	113	0
Lane Group Flow (vph)	125	1966	0	188	2165	0	188	51	0	198	33	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	12.8	59.2		10.9	57.3		16.6	9.1		19.0	11.5	
Effective Green, g (s)	12.8	59.2		10.9	57.3		16.6	9.1		19.0	11.5	
Actuated g/C Ratio	0.11	0.49		0.09	0.48		0.14	0.08		0.16	0.10	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	189	2495		312	2427		245	122		544	156	
v/s Ratio Prot	c0.07	0.39		0.05	c0.43		c0.11	0.03		c0.06	0.02	
v/s Ratio Perm												
v/c Ratio	0.66	0.79		0.60	0.89		0.77	0.42		0.36	0.21	
Uniform Delay, d1	51.5	25.2		52.5	28.5		49.8	52.9		45.1	50.1	
Progression Factor	0.95	1.15		1.14	0.51		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.1	2.0		1.2	3.1		12.2	0.8		0.2	0.2	
Delay (s)	54.0	30.9		60.8	17.6		62.0	53.8		45.3	50.3	
Level of Service	D	C		E	B		E	D		D	D	
Approach Delay (s)		32.3			21.0			57.0			47.4	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM Average Control Delay			30.5			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.9			
Intersection Capacity Utilization			87.5%			ICU Level of Service				E		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Existing Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↔	↑↑↑					↔	↔	↔
Volume (vph)	0	2120	220	100	1220	0	0	0	0	690	10	1170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frt		0.99		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5014		1770	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5014		1770	5085					1681	1688	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	2163	224	102	1245	0	0	0	0	704	10	1194
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	73
Lane Group Flow (vph)	0	2379	0	102	1245	0	0	0	0	359	355	1121
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		52.1		11.3	69.3					38.3	38.3	38.3
Effective Green, g (s)		52.1		11.3	69.3					38.3	38.3	38.3
Actuated g/C Ratio		0.43		0.09	0.58					0.32	0.32	0.32
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2177		167	2937					537	539	890
v/s Ratio Prot		c0.47		c0.06	0.24					0.21	0.21	
v/s Ratio Perm												c0.40
v/c Ratio		1.09		0.61	0.42					0.67	0.66	1.26
Uniform Delay, d1		34.0		52.2	14.2					35.4	35.2	40.9
Progression Factor		0.46		0.40	1.40					1.00	1.00	1.00
Incremental Delay, d2		47.5		3.3	0.3					2.4	2.2	126.0
Delay (s)		63.2		24.4	20.2					37.8	37.4	166.8
Level of Service		E		C	C					D	D	F
Approach Delay (s)		63.2			20.5			0.0			118.5	
Approach LOS		E			C			A			F	

Intersection Summary

HCM Average Control Delay	71.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

Existing Plus Project Conditions
PM Peak Hour



























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↖	↑↑↑	↑↑↑	↗		
Volume (vph)	860	1950	1320	510	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	5085	5085	1583		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	5085	5085	1583		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	925	2097	1419	548	0	0
RTOR Reduction (vph)	0	0	0	54	0	0
Lane Group Flow (vph)	925	2097	1419	494	0	0
Turn Type	Prot		Perm			
Protected Phases	1	6	2			
Permitted Phases				2		
Actuated Green, G (s)	59.4	120.0	49.3	49.3		
Effective Green, g (s)	59.4	120.0	49.3	49.3		
Actuated g/C Ratio	0.49	1.00	0.41	0.41		
Clearance Time (s)	5.6	6.0	5.7	5.7		
Vehicle Extension (s)	2.0	3.0	2.0	2.0		
Lane Grp Cap (vph)	1699	5085	2089	650		
v/s Ratio Prot	c0.27	0.41	0.28			
v/s Ratio Perm				c0.31		
v/c Ratio	0.54	0.41	0.68	0.76		
Uniform Delay, d1	20.9	0.0	28.9	30.3		
Progression Factor	0.61	1.00	0.78	0.73		
Incremental Delay, d2	0.1	0.1	1.4	6.3		
Delay (s)	12.8	0.1	23.8	28.4		
Level of Service	B	A	C	C		
Approach Delay (s)		4.0	25.1		0.0	
Approach LOS		A	C		A	

Intersection Summary

HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.3
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	1110	480	60	1140	150	500	120	120	210	140	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.99	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1610	3184		1681	1751	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.99	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1610	3184		1681	1751	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	179	1168	505	63	1200	158	526	126	126	221	147	211
RTOR Reduction (vph)	0	0	219	0	0	74	0	24	0	0	0	180
Lane Group Flow (vph)	179	1168	286	63	1200	84	263	491	0	181	187	31
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2						4
Actuated Green, G (s)	13.8	50.6	50.6	7.7	44.5	44.5	22.3	22.3		17.9	17.9	17.9
Effective Green, g (s)	13.8	50.6	50.6	7.7	44.5	44.5	22.3	22.3		17.9	17.9	17.9
Actuated g/C Ratio	0.12	0.42	0.42	0.06	0.37	0.37	0.19	0.19		0.15	0.15	0.15
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9	3.9	2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	204	1492	667	114	1886	587	299	592		251	261	236
v/s Ratio Prot	c0.10	c0.33		0.04	0.24		c0.16	0.15		c0.11	0.11	
v/s Ratio Perm			0.18			0.05						0.02
v/c Ratio	0.88	0.78	0.43	0.55	0.64	0.14	0.88	0.83		0.72	0.72	0.13
Uniform Delay, d1	52.3	30.0	24.5	54.5	31.1	25.1	47.5	47.0		48.7	48.6	44.3
Progression Factor	0.86	0.76	1.39	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	29.3	3.9	1.9	3.3	1.7	0.5	23.5	8.9		8.3	7.6	0.1
Delay (s)	74.2	26.7	35.9	57.7	32.7	25.6	71.0	55.9		57.0	56.2	44.4
Level of Service	E	C	D	E	C	C	E	E		E	E	D
Approach Delay (s)		33.8			33.1			61.0			52.2	
Approach LOS		C			C			E			D	

Intersection Summary

HCM Average Control Delay	40.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 9: SR-99 NB Off-ramp & E. Stockton Blvd

Existing Plus Project Conditions
 PM Peak Hour



























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↘		↑↑	↑	
Volume (veh/h)	260	10	0	400	590	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	268	10	0	412	608	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		1				
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)					808	
pX, platoon unblocked	0.96	0.96	0.96			
vC, conflicting volume	814	608	608			
vC1, stage 1 conf vol	608					
vC2, stage 2 conf vol	206					
vCu, unblocked vol	785	570	570			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	44	98	100			
cM capacity (veh/h)	477	445	958			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	278	206	206	608
Volume Left	268	0	0	0
Volume Right	10	0	0	0
cSH	482	1700	1700	1700
Volume to Capacity	0.58	0.12	0.12	0.36
Queue Length 95th (ft)	90	0	0	0
Control Delay (s)	22.2	0.0	0.0	0.0
Lane LOS	C			
Approach Delay (s)	22.2	0.0		0.0
Approach LOS	C			

Intersection Summary			
Average Delay		4.7	
Intersection Capacity Utilization		52.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
10: Whitelock Pkwy & Bruceville Road

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	330	200	90	130	240	50	240	400	60	70	450	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	355	215	97	140	258	54	258	430	65	75	484	516
RTOR Reduction (vph)	0	0	74	0	0	45	0	0	43	0	0	322
Lane Group Flow (vph)	355	215	23	140	258	9	258	430	22	75	484	194
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Actuated Green, G (s)	14.9	20.8	20.8	9.0	14.9	14.9	12.3	28.8	28.8	5.6	22.1	22.1
Effective Green, g (s)	14.9	20.8	20.8	9.0	14.9	14.9	12.3	28.8	28.8	5.6	22.1	22.1
Actuated g/C Ratio	0.17	0.24	0.24	0.10	0.17	0.17	0.14	0.33	0.33	0.06	0.26	0.26
Clearance Time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	593	853	382	358	611	273	489	1181	528	223	906	405
v/s Ratio Prot	c0.10	0.06		0.04	c0.07		c0.08	c0.12		0.02	c0.14	
v/s Ratio Perm			0.01			0.01			0.01			0.12
v/c Ratio	0.60	0.25	0.06	0.39	0.42	0.03	0.53	0.36	0.04	0.34	0.53	0.48
Uniform Delay, d1	32.9	26.5	25.2	36.1	31.9	29.7	34.3	21.8	19.4	38.6	27.7	27.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1	0.0	0.3	0.2	0.0	0.5	0.1	0.0	0.3	0.3	0.3
Delay (s)	34.0	26.5	25.3	36.3	32.0	29.7	34.8	21.9	19.4	38.9	28.0	27.5
Level of Service	C	C	C	D	C	C	C	C	B	D	C	C
Approach Delay (s)		30.3			33.1			26.1			28.5	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			29.0				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			86.3				Sum of lost time (s)		27.4			
Intersection Capacity Utilization			70.4%				ICU Level of Service		C			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 11: Whitelock Pkwy & Big Horn Blvd

Existing Plus Project Conditions
 PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations												
Volume (vph)	210	70	160	40	130	50	290	1180	30	30	1030	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	226	75	172	43	140	54	312	1269	32	32	1108	290
RTOR Reduction (vph)	0	0	141	0	0	48	0	0	7	0	0	119
Lane Group Flow (vph)	226	75	31	43	140	6	312	1269	25	32	1108	171
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	11.6	19.4	19.4	4.9	12.7	12.7	14.8	56.8	56.8	3.4	45.4	45.4
Effective Green, g (s)	11.6	19.4	19.4	4.9	12.7	12.7	14.8	56.8	56.8	3.4	45.4	45.4
Actuated g/C Ratio	0.11	0.18	0.18	0.05	0.12	0.12	0.14	0.53	0.53	0.03	0.43	0.43
Clearance Time (s)	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	375	646	289	158	423	189	478	1891	846	110	1511	676
v/s Ratio Prot	c0.07	0.02		0.01	c0.04		c0.09	c0.36		0.01	c0.31	
v/s Ratio Perm			0.02			0.00			0.02			0.11
v/c Ratio	0.60	0.12	0.11	0.27	0.33	0.03	0.65	0.67	0.03	0.29	0.73	0.25
Uniform Delay, d1	45.2	36.3	36.2	49.0	42.9	41.4	43.3	18.0	11.7	50.3	25.4	19.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.0	0.1	0.3	0.2	0.0	2.4	0.7	0.0	0.5	1.6	0.1
Delay (s)	47.0	36.3	36.3	49.3	43.1	41.4	45.8	18.7	11.7	50.8	27.0	19.6
Level of Service	D	D	D	D	D	D	D	B	B	D	C	B
Approach Delay (s)		41.4			43.8			23.8			26.0	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			28.1			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			106.3			Sum of lost time (s)			26.4			
Intersection Capacity Utilization			63.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 12: Whitelock Pkwy & W Stockton Blvd

Existing Plus Project Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	280	80	120	90	80	320
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	295	84	126	95	84	337
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	600	253	421			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	600	253	421			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	29	89	89			
cM capacity (veh/h)	412	786	1138			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	295	84	221	421
Volume Left	295	0	126	0
Volume Right	0	84	0	337
cSH	412	786	1138	1700
Volume to Capacity	0.71	0.11	0.11	0.25
Queue Length 95th (ft)	137	9	9	0
Control Delay (s)	32.8	10.1	5.3	0.0
Lane LOS	D	B	A	
Approach Delay (s)	27.7		5.3	0.0
Approach LOS	D			

Intersection Summary			
Average Delay		11.4	
Intersection Capacity Utilization		60.8%	ICU Level of Service B
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 13: Bilby Road & Bruceville Road

Existing Plus Project Conditions
 PM Peak Hour



















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↑	↗
Volume (vph)	80	50	110	10	180	40	400	320	10	30	180	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			7.0			6.5			6.5	6.5
Lane Util. Factor		1.00			1.00			1.00			1.00	1.00
Frt		0.94			0.98			1.00			1.00	0.85
Flt Protected		0.98			1.00			0.97			0.99	1.00
Satd. Flow (prot)		1719			1815			1810			1850	1583
Flt Permitted		0.71			0.98			0.71			0.86	1.00
Satd. Flow (perm)		1249			1776			1321			1602	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	86	54	118	11	194	43	430	344	11	32	194	140
RTOR Reduction (vph)	0	42	0	0	10	0	0	0	0	0	0	54
Lane Group Flow (vph)	0	216	0	0	238	0	0	785	0	0	226	86
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)		15.1			14.6			44.2			44.2	44.2
Effective Green, g (s)		15.1			14.6			44.2			44.2	44.2
Actuated g/C Ratio		0.21			0.20			0.61			0.61	0.61
Clearance Time (s)		6.5			7.0			6.5			6.5	6.5
Vehicle Extension (s)		2.0			2.0			4.5			4.5	4.5
Lane Grp Cap (vph)		261			359			808			979	968
v/s Ratio Prot												
v/s Ratio Perm		c0.17			0.13			c0.59			0.14	0.05
v/c Ratio		0.83			0.66			0.97			0.23	0.09
Uniform Delay, d1		27.4			26.6			13.4			6.4	5.8
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		18.2			3.5			24.8			0.2	0.1
Delay (s)		45.5			30.1			38.2			6.6	5.8
Level of Service		D			C			D			A	A
Approach Delay (s)		45.5			30.1			38.2			6.3	
Approach LOS		D			C			D			A	

Intersection Summary

HCM Average Control Delay	31.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	72.3	Sum of lost time (s)	13.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

























HCM Unsignalized Intersection Capacity Analysis
 14: Hood Franklin Road & I-5 SB Off-ramp

Existing Plus Project Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	120	20	0	40	20	0	0	0	250	0	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	130	22	0	43	22	0	0	0	272	0	43
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												12
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	43			130			217	185	141	196	185	54
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	43			130			217	185	141	196	185	54
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	64	100	96
cM capacity (veh/h)	1565			1455			707	710	907	764	710	1013
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	152	65	315									
Volume Left	0	0	272									
Volume Right	22	22	43									
cSH	1700	1700	886									
Volume to Capacity	0.09	0.04	0.36									
Queue Length 95th (ft)	0	0	41									
Control Delay (s)	0.0	0.0	11.8									
Lane LOS			B									
Approach Delay (s)	0.0	0.0	11.8									
Approach LOS			B									
Intersection Summary												
Average Delay			7.0									
Intersection Capacity Utilization			28.0%		ICU Level of Service					A		
Analysis Period (min)			15									













HCM Unsignalized Intersection Capacity Analysis
 15: Hood Franklin Road & I-5 NB On-ramp

Existing Plus Project Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	290	80	0	50	270	10	0	90	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	305	84	0	53	284	11	0	95	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	53			305			542	400	347	637	500	195
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	53			305			542	400	347	637	500	195
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			98	100	86	100	100	100
cM capacity (veh/h)	1553			1256			451	538	696	337	473	847
Direction, Lane #	EB 1	WB 1	NB 1	NB 2								
Volume Total	389	337	11	95								
Volume Left	0	0	11	0								
Volume Right	84	284	0	95								
cSH	1700	1700	451	696								
Volume to Capacity	0.23	0.20	0.02	0.14								
Queue Length 95th (ft)	0	0	2	12								
Control Delay (s)	0.0	0.0	13.2	11.0								
Lane LOS			B	B								
Approach Delay (s)	0.0	0.0	11.2									
Approach LOS			B									
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			32.4%		ICU Level of Service				A			
Analysis Period (min)			15									


















HCM Unsignalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd

Existing Plus Project Conditions
 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	370	20	10	180	60	230
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	402	22	11	196	65	250
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	402	22	11	196	65	250
Volume Left (vph)	402	0	11	0	0	0
Volume Right (vph)	0	22	0	0	0	250
Hadj (s)	0.53	-0.67	0.53	0.03	0.03	-0.67
Departure Headway (s)	6.5	5.3	7.0	6.5	6.3	5.6
Degree Utilization, x	0.72	0.03	0.02	0.35	0.12	0.39
Capacity (veh/h)	543	649	482	524	531	603
Control Delay (s)	23.2	7.2	8.9	11.7	9.0	11.0
Approach Delay (s)	22.4		11.6		10.6	
Approach LOS	C		B		B	
Intersection Summary						
Delay			16.1			
HCM Level of Service			C			
Intersection Capacity Utilization			36.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 17: Bilby Road & Franklin Blvd

Existing Plus Project Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	10	320	10	10	10	20	400	80	80	10
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
Hourly flow rate (vph)	11	11	11	356	11	11	11	22	444	89	89	11
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total (vph)	33	378	33	444	189							
Volume Left (vph)	11	356	11	0	89							
Volume Right (vph)	11	11	0	444	11							
Hadj (s)	-0.10	0.20	0.10	-0.57	0.09							
Departure Headway (s)	4.9	4.7	5.3	3.2	5.1							
Degree Utilization, x	0.05	0.50	0.05	0.40	0.27							
Capacity (veh/h)	675	730	612	1114	663							
Control Delay (s)	8.1	12.4	8.6	8.3	9.9							
Approach Delay (s)	8.1	12.4	8.3		9.9							
Approach LOS	A	B	A		A							
Intersection Summary												
Delay			10.0									
HCM Level of Service			A									
Intersection Capacity Utilization			48.1%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 18: Bilby Road & Willard Pkwy

Existing Plus Project Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	240	210	330	150	120	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	267	233	367	167	133	67
RTOR Reduction (vph)	0	172	0	0	0	57
Lane Group Flow (vph)	267	61	367	167	133	10
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	22.6	22.6	24.3	26.6	12.2	12.2
Effective Green, g (s)	22.6	22.6	24.3	20.9	12.2	12.2
Actuated g/C Ratio	0.26	0.26	0.28	0.24	0.14	0.14
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	466	417	501	862	265	225
v/s Ratio Prot	c0.15		c0.21	c0.05	c0.07	
v/s Ratio Perm		0.04				0.01
v/c Ratio	0.57	0.15	0.73	0.19	0.50	0.04
Uniform Delay, d1	27.4	24.2	27.8	25.8	34.0	31.8
Progression Factor	1.00	1.00	1.02	1.13	1.00	1.00
Incremental Delay, d2	1.1	0.1	4.0	0.0	0.5	0.0
Delay (s)	28.5	24.3	32.3	29.2	34.5	31.8
Level of Service	C	C	C	C	C	C
Approach Delay (s)	26.5			31.4	33.6	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	85.8	Sum of lost time (s)	30.6
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Bilby Road & Willard Pkwy

Existing Plus Project Conditions
 PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	470	10	10	310	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	5.7		5.6	5.7
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.93		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	1737		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	1737		1770	1863
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	505	11	11	333	11
RTOR Reduction (vph)	0	354	9	0	0	0
Lane Group Flow (vph)	11	151	13	0	333	11
Turn Type		Perm			Prot	
Protected Phases	2		4		3	8 1
Permitted Phases		2				
Actuated Green, G (s)	25.7	25.7	15.7		20.8	18.6
Effective Green, g (s)	25.7	25.7	15.7		20.8	18.6
Actuated g/C Ratio	0.30	0.30	0.18		0.24	0.22
Clearance Time (s)	7.0	7.0	5.7		5.6	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	530	474	318		429	404
v/s Ratio Prot	0.01		c0.01		c0.19	c0.01
v/s Ratio Perm		c0.10				
v/c Ratio	0.02	0.32	0.04		0.78	0.03
Uniform Delay, d1	21.2	23.3	28.9		30.3	26.5
Progression Factor	1.00	1.00	1.00		1.33	0.80
Incremental Delay, d2	0.0	0.1	0.0		7.6	0.0
Delay (s)	21.2	23.4	28.9		47.9	21.3
Level of Service	C	C	C		D	C
Approach Delay (s)	23.4		28.9			47.0
Approach LOS	C		C			D

Intersection Summary

HCM Average Control Delay	32.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	85.8	Sum of lost time (s)	18.3
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 20: Kammerer Road & Bruceville Road

Existing Plus Project Conditions
 PM Peak Hour




































Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	140	670	40	90	170	50
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	147	705	42	95	179	53
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	500	89			137	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	500	89			137	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	68	27			88	
cM capacity (veh/h)	465	968			1447	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	853	137	232
Volume Left	147	0	179
Volume Right	705	95	0
cSH	816	1700	1447
Volume to Capacity	1.05	0.08	0.12
Queue Length 95th (ft)	509	0	11
Control Delay (s)	66.3	0.0	6.3
Lane LOS	F		A
Approach Delay (s)	66.3	0.0	6.3
Approach LOS	F		

Intersection Summary			
Average Delay		47.5	
Intersection Capacity Utilization		78.8%	ICU Level of Service D
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
21: Kammerer Road & Promenade Pkwy

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  	 				  	 	
Volume (vph)	10	1340	10	20	930	370	10	10	30	620	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	1426	11	21	989	394	11	11	32	660	11	11
RTOR Reduction (vph)	0	0	7	0	0	233	0	0	30	0	0	8
Lane Group Flow (vph)	11	1426	4	21	989	161	11	11	2	660	11	3
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	0.7	30.5	30.5	2.0	31.8	31.8	0.8	5.2	5.2	14.5	18.4	18.4
Effective Green, g (s)	0.7	30.5	30.5	2.0	31.8	31.8	0.8	5.2	5.2	14.5	18.4	18.4
Actuated g/C Ratio	0.01	0.39	0.39	0.03	0.41	0.41	0.01	0.07	0.07	0.19	0.24	0.24
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	31	2515	621	46	2081	1141	18	125	106	931	838	375
v/s Ratio Prot	0.00	c0.22		c0.01	0.19		0.01	c0.01		c0.13	0.00	
v/s Ratio Perm			0.00			0.06			0.00			0.00
v/c Ratio	0.35	0.57	0.01	0.46	0.48	0.14	0.61	0.09	0.02	0.71	0.01	0.01
Uniform Delay, d1	38.3	18.4	14.4	37.3	16.8	14.4	38.3	34.0	33.9	29.6	22.7	22.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	0.2	0.0	2.6	0.1	0.0	36.2	0.1	0.0	2.0	0.0	0.0
Delay (s)	40.8	18.6	14.4	39.9	16.9	14.4	74.5	34.1	33.9	31.7	22.7	22.7
Level of Service	D	B	B	D	B	B	E	C	C	C	C	C
Approach Delay (s)		18.8			16.5			42.2			31.4	
Approach LOS		B			B			D			C	

Intersection Summary

HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	77.7	Sum of lost time (s)	25.5
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

22: Grant Line Road & SR-99 SB Off-ramp

Existing Plus Project Conditions
PM Peak Hour















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↘	↕	↗
Volume (vph)	0	1460	530	0	1080	560	0	0	0	210	0	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.90	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.98	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1506	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.98	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1506	1504
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1521	552	0	1125	583	0	0	0	219	0	250
RTOR Reduction (vph)	0	0	175	0	0	0	0	0	0	0	63	66
Lane Group Flow (vph)	0	1521	377	0	1125	583	0	0	0	162	94	84
Turn Type		Perm			Free					Perm		Perm
Protected Phases		6			2					8		8
Permitted Phases		6			Free					8		8
Actuated Green, G (s)		62.3	62.3		62.3	91.1				16.5	16.5	16.5
Effective Green, g (s)		62.3	62.3		62.3	91.1				16.5	16.5	16.5
Actuated g/C Ratio		0.68	0.68		0.68	1.00				0.18	0.18	0.18
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		3477	1083		3477	1583				304	273	272
v/s Ratio Prot		c0.30			0.22					c0.10	0.06	0.06
v/s Ratio Perm			0.24			0.37					0.06	0.06
v/c Ratio		0.44	0.35		0.32	0.37				0.53	0.34	0.31
Uniform Delay, d1		6.5	6.0		5.8	0.0				33.8	32.6	32.4
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.3		0.1	0.7				0.9	0.3	0.2
Delay (s)		6.6	6.2		5.9	0.7				34.7	32.9	32.6
Level of Service		A	A		A	A				C	C	C
Approach Delay (s)		6.5			4.1			0.0		33.4		
Approach LOS		A			A			A		C		

Intersection Summary

HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	91.1	Sum of lost time (s)	12.3
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			























HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↖	↖	↗↗			
Volume (vph)	0	1030	640	0	1290	270	350	0	520	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1120	696	0	1402	293	380	0	565	0	0	0
RTOR Reduction (vph)	0	0	233	0	0	112	0	0	109	0	0	0
Lane Group Flow (vph)	0	1120	463	0	1402	181	190	190	456	0	0	0
Turn Type		Perm			Perm		Split		Perm			
Protected Phases		6			2		4		4			
Permitted Phases		6			2				4			
Actuated Green, G (s)		52.1	52.1		52.6	52.6	22.2	22.2	22.2			
Effective Green, g (s)		52.1	52.1		52.6	52.6	22.2	22.2	22.2			
Actuated g/C Ratio		0.61	0.61		0.62	0.62	0.26	0.26	0.26			
Clearance Time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		3113	969		3143	978	439	439	727			
v/s Ratio Prot		0.22			0.28		0.11	0.11	0.11			
v/s Ratio Perm		c0.29			0.11					c0.16		
v/c Ratio		0.36	0.48		0.45	0.19	0.43	0.43	0.63			
Uniform Delay, d1		8.2	9.0		8.6	7.0	26.2	26.2	27.8			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.1	0.5		0.1	0.1	0.3	0.3	1.2			
Delay (s)		8.3	9.6		8.7	7.1	26.5	26.5	29.0			
Level of Service		A	A		A	A	C	C	C			
Approach Delay (s)		8.8			8.4			28.0			0.0	
Approach LOS		A			A			C			A	
Intersection Summary												
HCM Average Control Delay		12.7			HCM Level of Service				B			
HCM Volume to Capacity ratio		0.52										
Actuated Cycle Length (s)		85.1			Sum of lost time (s)				10.8			
Intersection Capacity Utilization		47.1%			ICU Level of Service				A			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 24: Grant Line Road & East Stockton Rd





















Existing Plus Project Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	370	890	110	40	1030	120	200	40	40	110	30	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	5006		1770	1723		1681	1720	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5006		1770	1723		1681	1720	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	402	967	120	43	1120	130	217	43	43	120	33	359
RTOR Reduction (vph)	0	0	46	0	8	0	0	19	0	0	0	235
Lane Group Flow (vph)	402	967	74	43	1242	0	217	67	0	76	77	124
Turn Type	Prot		Perm	Prot			Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6									3
Actuated Green, G (s)	20.7	61.6	61.6	6.7	47.6		24.8	24.8		16.1	16.1	16.1
Effective Green, g (s)	20.7	61.6	61.6	6.7	47.6		24.8	24.8		16.1	16.1	16.1
Actuated g/C Ratio	0.16	0.46	0.46	0.05	0.36		0.19	0.19		0.12	0.12	0.12
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	536	2360	735	89	1796		331	322		204	209	192
v/s Ratio Prot	c0.12	0.19		0.02	c0.25		c0.12	0.04		0.05	0.04	
v/s Ratio Perm			0.05									c0.08
v/c Ratio	0.75	0.41	0.10	0.48	0.69		0.66	0.21		0.37	0.37	0.65
Uniform Delay, d1	53.5	23.5	20.0	61.3	36.3		50.0	45.7		53.7	53.6	55.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.2	0.1	0.1	1.5	1.2		4.6	0.3		0.4	0.4	5.5
Delay (s)	58.7	23.6	20.0	62.8	37.5		54.6	46.0		54.1	54.0	61.1
Level of Service	E	C	C	E	D		D	D		D	D	E
Approach Delay (s)		32.8			38.3			52.2			59.0	
Approach LOS		C			D			D			E	

Intersection Summary		
HCM Average Control Delay	40.1	HCM Level of Service D
HCM Volume to Capacity ratio	0.69	
Actuated Cycle Length (s)	132.7	Sum of lost time (s) 23.5
Intersection Capacity Utilization	84.2%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
25: Grant Line Road & Waterman Road

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	700	0	0	730	10	0	0	0	70	0	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Lane Util. Factor	0.97	1.00			0.95	1.00					1.00	0.88
Frbp, ped/bikes	1.00	1.00			1.00	0.99					1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00					1.00	1.00
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	1863			3539	1560					1770	2787
Flt Permitted	0.95	1.00			1.00	1.00					0.95	1.00
Satd. Flow (perm)	3433	1863			3539	1560					1770	2787
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	250	729	0	0	760	10	0	0	0	73	0	260
RTOR Reduction (vph)	0	0	0	0	0	5	0	0	0	0	0	226
Lane Group Flow (vph)	250	729	0	0	760	5	0	0	0	0	73	34
Confl. Bikes (#/hr)			2			4						
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases						2						3
Actuated Green, G (s)	12.2	40.5			22.7	22.7					9.6	9.6
Effective Green, g (s)	12.2	40.5			22.7	22.7					9.6	9.6
Actuated g/C Ratio	0.17	0.55			0.31	0.31					0.13	0.13
Clearance Time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0					2.0	2.0
Lane Grp Cap (vph)	568	1022			1089	480					230	363
v/s Ratio Prot	0.07	c0.39			0.21						c0.04	
v/s Ratio Perm						0.00						0.01
v/c Ratio	0.44	0.71			0.70	0.01					0.32	0.09
Uniform Delay, d1	27.7	12.3			22.5	17.7					29.1	28.3
Progression Factor	1.00	1.00			1.00	1.00					1.00	1.00
Incremental Delay, d2	0.2	2.0			1.6	0.0					0.3	0.0
Delay (s)	27.9	14.3			24.1	17.8					29.4	28.3
Level of Service	C	B			C	B					C	C
Approach Delay (s)		17.8			24.0			0.0			28.6	
Approach LOS		B			C			A			C	

Intersection Summary

HCM Average Control Delay	21.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	23.7
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
29: Kammerer Rd & Collector 2

Existing Plus Project Conditions
PM Peak Hour

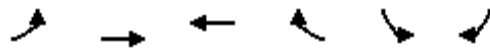


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↑↑	↑	↘	↘
Volume (vph)	70	160	440	20	30	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	174	478	22	33	196
RTOR Reduction (vph)	0	0	0	14	0	170
Lane Group Flow (vph)	76	174	478	8	33	26
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	3.6	26.1	15.5	15.5	6.0	6.0
Effective Green, g (s)	3.6	26.1	15.5	15.5	6.0	6.0
Actuated g/C Ratio	0.08	0.59	0.35	0.35	0.13	0.13
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	143	2071	1230	550	238	213
v/s Ratio Prot	c0.04	0.05	c0.14		c0.02	
v/s Ratio Perm				0.00		0.02
v/c Ratio	0.53	0.08	0.39	0.01	0.14	0.12
Uniform Delay, d1	19.7	4.0	11.0	9.5	17.0	17.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.0	0.1	0.0	0.1	0.1
Delay (s)	21.6	4.0	11.1	9.5	17.1	17.1
Level of Service	C	A	B	A	B	B
Approach Delay (s)		9.4	11.0		17.1	
Approach LOS		A	B		B	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	19.5
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
30: Kammerer Rd & Big Horn Blvd

Existing Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	90	90	240	140	200	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
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	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	98	261	152	217	239
RTOR Reduction (vph)	0	0	0	118	0	179
Lane Group Flow (vph)	98	98	261	34	217	60
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	3.3	20.2	9.9	9.9	11.0	11.0
Effective Green, g (s)	3.3	20.2	9.9	9.9	11.0	11.0
Actuated g/C Ratio	0.08	0.46	0.23	0.23	0.25	0.25
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	259	1636	802	359	446	398
v/s Ratio Prot	c0.03	0.03	c0.07		c0.12	
v/s Ratio Perm				0.02		0.04
v/c Ratio	0.38	0.06	0.33	0.10	0.49	0.15
Uniform Delay, d1	19.2	6.5	14.1	13.4	13.9	12.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.0	0.1	0.0	0.3	0.1
Delay (s)	19.6	6.5	14.2	13.4	14.2	12.8
Level of Service	B	A	B	B	B	B
Approach Delay (s)		13.0	13.9		13.5	
Approach LOS		B	B		B	

Intersection Summary

HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	43.7	Sum of lost time (s)	19.5
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Kammerer Rd & Collector 1

Existing Plus Project Conditions
PM Peak Hour



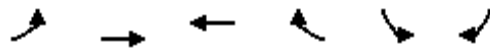
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	280	370	150	320	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	304	402	163	348	11
RTOR Reduction (vph)	0	0	0	123	0	8
Lane Group Flow (vph)	11	304	402	40	348	3
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	0.7	18.1	10.4	10.4	11.8	11.8
Effective Green, g (s)	0.7	18.1	10.4	10.4	11.8	11.8
Actuated g/C Ratio	0.02	0.43	0.25	0.25	0.28	0.28
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	29	1511	868	388	493	441
v/s Ratio Prot	0.01	c0.09	c0.11		c0.20	
v/s Ratio Perm				0.03		0.00
v/c Ratio	0.38	0.20	0.46	0.10	0.71	0.01
Uniform Delay, d1	20.6	7.6	13.6	12.4	13.7	11.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	0.0	0.1	0.0	3.7	0.0
Delay (s)	23.6	7.6	13.8	12.4	17.5	11.1
Level of Service	C	A	B	B	B	B
Approach Delay (s)		8.2	13.4		17.3	
Approach LOS		A	B		B	

Intersection Summary

HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	42.4	Sum of lost time (s)	19.5
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Kammerer Rd & Lotz Pkwy

Existing Plus Project Conditions
PM Peak Hour

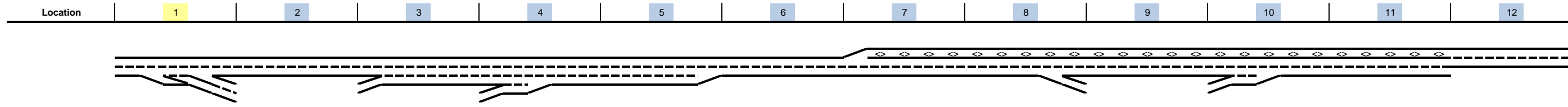


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↗	↑↑	↖↗	↗	↖↗	↗
Volume (vph)	10	1030	640	130	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	3539	3539	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	1120	696	141	11	11
RTOR Reduction (vph)	0	0	0	63	0	10
Lane Group Flow (vph)	11	1120	696	78	11	1
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	0.6	36.6	29.0	29.0	3.5	3.5
Effective Green, g (s)	0.6	36.6	29.0	29.0	3.5	3.5
Actuated g/C Ratio	0.01	0.70	0.55	0.55	0.07	0.07
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	39	2462	1951	873	228	105
v/s Ratio Prot	0.00	c0.32	0.20		c0.00	
v/s Ratio Perm				0.05		0.00
v/c Ratio	0.28	0.45	0.36	0.09	0.05	0.01
Uniform Delay, d1	25.8	3.6	6.6	5.6	23.0	22.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.0	0.0	0.0	0.0	0.0
Delay (s)	27.2	3.6	6.6	5.6	23.0	22.9
Level of Service	C	A	A	A	C	C
Approach Delay (s)		3.8	6.5		23.0	
Approach LOS		A	A		C	

Intersection Summary

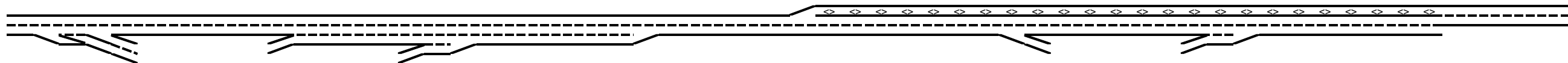
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	52.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Project: Southeast Policy Area EIR
 Freeway Corridor: State Route 99 NB
 Alternative: Existing Plus Project Conditions
 Time Period: AM Peak Hour



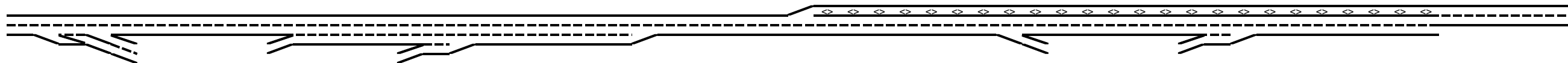
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Define Freeway Segment												
Type	Diverge	Basic	Basic	Merge	Basic	Basic	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	1,500	1,500	1,300	1,500	400	6,700	1,050	1,500	2,550	1,500	100	8,700
Accel Length				320						1,200		
Decel Length	1,450							170				
Mainline Volume	2,730	1,600	1,600	1,910	2,100	2,100	2,100	2,100	1,850	1,850	3,300	2,730
On Ramp Volume			310	190						1,450		
Off Ramp Volume	1,130							250				
Express Lane Volume							630	630	555	555	990	
EL On Ramp Volume												
EL Off Ramp Volume												
Calculate Flow Rate in General Purpose Lanes (GP)												
GP Volume (vph)	2,730	1,600	1,910	2,100	2,100	2,100	1,470	1,470	1,295	2,745	2,310	2,730
PHF	0.79	0.92	0.79	0.79	0.92	0.92	0.92	0.85	0.92	0.85	0.92	0.92
GP Lanes	2	2	3	3	3	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	13.0%	5.0%	5.0%	15.0%	15.0%	15.0%	5.0%	10.0%	5.0%	10.0%	13.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.939	0.976	0.976	0.930	0.930	0.930	0.976	0.952	0.976	0.952	0.939
f _P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,542	1,852	2,478	2,725	2,454	2,454	1,718	1,773	1,478	3,310	2,636	3,160
GP Flow (pcphp)	1,771	926	826	908	818	1,227	859	886	739	1,655	1,318	1,580
Calculate Speed in General Purpose Lanes												
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70	70



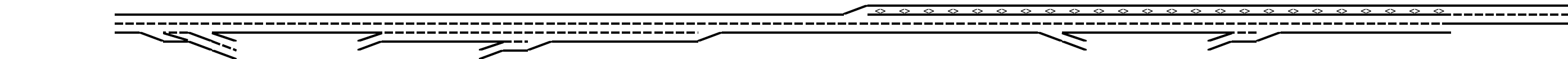
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Operations in General Purpose Lanes												
v/c ratio	0.74	0.39	0.34	0.38	0.34	0.51	0.36	0.37	0.31	0.69	0.55	0.66
Speed (mph)	66.2	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	67.6	69.8	68.3
Density (pcphpl)	26.7	13.2	11.8	13.0	11.7	17.5	12.3	12.7	10.6	24.5	18.9	23.1
LOS	D	B	B	B	B	B	B	B	A	C	C	C
Calculate Operations for Entering GP Lanes												
GP _{IN} Vol (pcph)			2,076	2,478						1,562		
GP _{IN} Cap (pcph)			4,800	7,200						4,800		
GP _{IN} v/c ratio			0.43	0.34						0.33		
Calculate Operations for Exiting GP Lanes												
GP _{OUT} Vol (pcph)	2,076				2,454			1,471				
GP _{OUT} Cap (pcph)	4,800				4,800			4,800				
GP _{OUT} v/c ratio	0.43				0.51			0.31				
Calculate On Ramp Flow Rate												
On Volume (vph)			310	190						1,450		
PHF			0.79	0.79						0.85		
Total Lanes			1	1						1		
Terrain			Level	Level						Level		
Grade %			0.0%	0.0%						0.0%		
Grade Length (mi)			0.00	0.00						0.00		
Truck & Bus %			5.0%	5.0%						5.0%		
RV %			0.0%	0.0%						0.0%		
E _T			1.5	1.5						1.5		
E _R			1.2	1.2						1.2		
f _{HV}			0.976	0.976						0.976		
f _P			1.00	1.00						1.00		
On Flow (pcph)			402	247						1,749		
On Flow (pcphpl)			402	247						1,749		
Calculate On Ramp Roadway Operations												
On Ramp Type			Right	Right						Right		
On Ramp Speed (mph)			50	60						60		
On Ramp Cap (pcph)			2,100	2,200						2,200		
On Ramp v/c ratio			0.19	0.11						0.79		



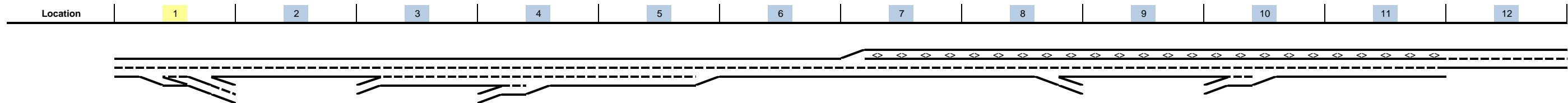
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Off Ramp Flow Rate												
Off Volume (vph)	1,130							250				
PHF	0.79							0.85				
Total Lanes	2							1				
Terrain	Level							Level				
Grade %	0.0%							0.0%				
Grade Length (mi)	0.00							0.00				
Truck & Bus %	5.0%							5.0%				
RV %	0.0%							0.0%				
E _T	1.5							1.5				
E _R	1.2							1.2				
f _{HV}	0.976							0.976				
f _P	1.00							1.00				
Off Flow (pcph)	1,466							301				
Off Flow (pcphpl)	733							301				
Calculate Off Ramp Roadway Operations												
Off Ramp Type	Right							Right				
Off Ramp Speed	35							45				
Off Ramp Cap (pcph)	4,000							2,100				
Off Ramp v/c ratio	0.37							0.14				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps												
Up Type			No	On								
Up Distance				1,300								
Up Flow (pcph)				402								
Down Type			On	Off								
Down Distance			1,300	3,000								
Down Flow (pcph)			247	301								



Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Merge Influence Area Operations												
Effective v_p (pcph)				2,478						1,562		
Up Ramp L_{EQ}				1,461								
Down Ramp L_{EQ}				2,096								
P_{FM} (Eqn 13-3)				0.586						0.611		
P_{FM} (Eqn 13-4)												
P_{FM} (Eqn 13-5)				0.575								
P_{FM}				0.586						1.000		
v_{12} (pcph)				1,453						1,562		
v_3 (pcph)				1,025								
v_{34} (pcph)												
v_{12a} (pcph)				1,453						1,562		
v_{R12a} (pcph)				1,700						3,310		
Merge Speed Index				0.30						0.28		
Merge Area Speed				61.5						62.1		
Outer Lanes Volume				1,025								
Outer Lanes Speed				68.1								
Segment Speed				63.8						62.1		
Merge v/c ratio				0.37						0.72		
Merge Density				16.6						23.0		
Merge LOS				B						C		
Calculate Diverge Influence Area Operations												
Effective v_p (pcph)	3,542							1,773				
Up Ramp L_{EQ}												
Down Ramp L_{EQ}												
P_{FD} (Eqn 13-9)	0.604							0.702				
P_{FD} (Eqn 13-10)												
P_{FD} (Eqn 13-11)												
P_{FD}	1.000							1.000				
v_{12} (pcph)	3,542							1,773				
v_3 (pcph)												
v_{34} (pcph)												
v_{12a} (pcph)	3,542							1,773				
Diverge Speed Index	0.56							0.33				
Diverge Area Speed	54.3							60.9				
Outer Lanes Volume												
Outer Lanes Speed												
Segment Speed	54.3							60.9				
Diverge v/c ratio	0.81							0.40				
Diverge Density	21.7							18.0				
Diverge LOS	C							B				

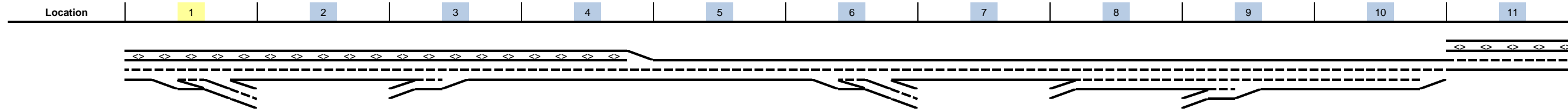


Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Summarize Segment Operations												
Segment v/c ratio	0.81	0.39	0.34	0.37	0.34	0.51	0.36	0.40	0.31	0.72	0.55	0.66
Segment Density	21.7	13.2	11.8	16.6	11.7	17.5	12.3	18.0	10.6	23.0	18.9	23.1
Segment LOS	C	B	B	B	B	B	B	B	A	C	C	C
Over Capacity												

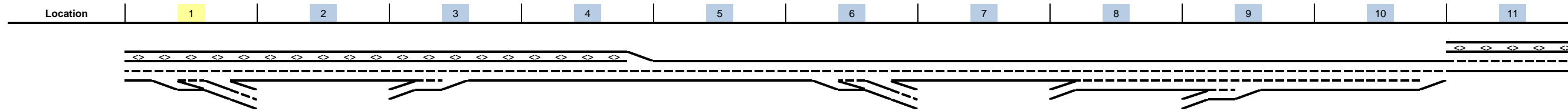
Project: Southeast Policy Area EIR
Freeway Corridor: State Route 99 SB

Alternative: Existing Plus Project Conditions
Time Period: AM Peak Hour



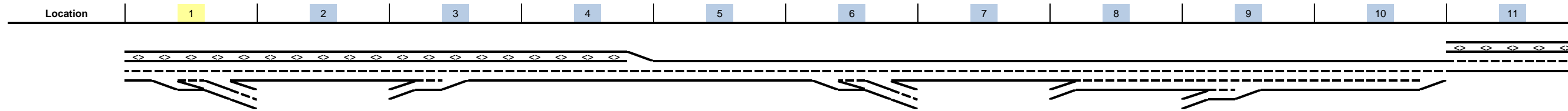
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Define Freeway Segment											
Type	Basic	Basic	Merge	Basic	Basic	Diverge	Basic	Basic	Merge	Basic	Basic
Length (ft)	1,500	2,250	1,500	400	8,050	1,500	1,650	1,200	1,500	400	250
Accel Length			350						350		
Decel Length						1,450					
Mainline Volume	3,650	1,910	1,910	2,240	2,240	2,240	1,550	1,550	1,970	2,240	3,650
On Ramp Volume			330					420	270		
Off Ramp Volume	1,740					690					
Express Lane Volume	1,095	573									1,095
EL On Ramp Volume											
EL Off Ramp Volume											
Calculate Flow Rate in General Purpose Lanes (GP)											
GP Volume (vph)	2,555	1,337	2,240	2,240	2,240	2,240	1,550	1,970	2,240	2,240	2,555
PHF	0.85	0.91	0.85	0.91	0.91	0.79	0.91	0.79	0.79	0.91	0.91
GP Lanes	2	2	2	2	2	2	2	3	3	3	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	10.0%	5.0%	15.0%	15.0%	5.0%	13.0%	5.0%	5.0%	13.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.952	0.976	0.930	0.930	0.976	0.939	0.976	0.976	0.939	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,081	1,543	2,701	2,646	2,646	2,906	1,814	2,556	2,906	2,622	2,948
GP Flow (pcphpl)	1,541	771	1,351	1,323	1,323	1,453	907	852	969	874	1,474
Calculate Speed in General Purpose Lanes											
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	73.6	73.6	73.6	73.6	74.2	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70



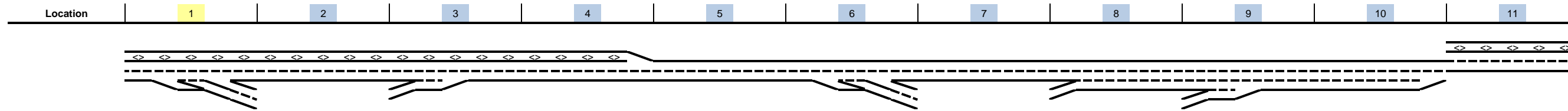
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Operations in General Purpose Lanes											
v/c ratio	0.64	0.32	0.56	0.55	0.55	0.61	0.38	0.36	0.40	0.36	0.61
Speed (mph)	68.7	70.0	69.7	69.8	69.8	69.3	70.0	70.0	70.0	70.0	69.1
Density (pcphpl)	22.4	11.0	19.4	18.9	18.9	21.0	13.0	12.2	13.8	12.5	21.3
LOS	C	B	C	C	C	C	B	B	B	B	C
Calculate Operations for Entering GP Lanes											
GP _{IN} Vol (pcph)			2,303					2,011	2,556		
GP _{IN} Cap (pcph)			4,800					4,800	7,200		
GP _{IN} v/c ratio			0.48					0.42	0.36		
Calculate Operations for Exiting GP Lanes											
GP _{OUT} Vol (pcph)	983					2,011				2,622	
GP _{OUT} Cap (pcph)	4,800					4,800				4,800	
GP _{OUT} v/c ratio	0.20					0.42				0.55	
Calculate On Ramp Flow Rate											
On Volume (vph)			330					420	270		
PHF			0.85					0.79	0.79		
Total Lanes			1					1	1		
Terrain			Level					Level	Level		
Grade %			0.0%					0.0%	0.0%		
Grade Length (mi)			0.00					0.00	0.00		
Truck & Bus %			5.0%					5.0%	5.0%		
RV %			0.0%					0.0%	0.0%		
E _T			1.5					1.5	1.5		
E _R			1.2					1.2	1.2		
f _{HV}			0.976					0.976	0.976		
f _P			1.00					1.00	1.00		
On Flow (pcph)			398					545	350		
On Flow (pcphpl)			398					545	350		
Calculate On Ramp Roadway Operations											
On Ramp Type			Right					Right	Right		
On Ramp Speed (mph)			60					50	60		
On Ramp Cap (pcph)			2,200					2,100	2,200		
On Ramp v/c ratio			0.18					0.26	0.16		



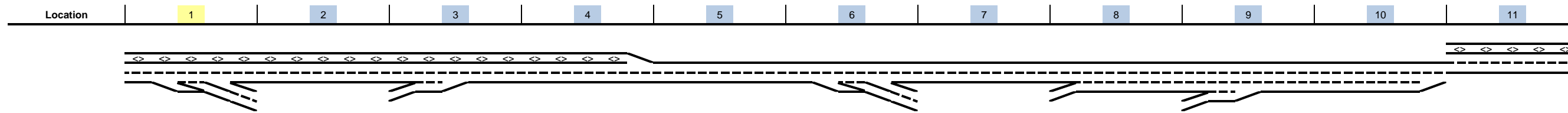
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Off Ramp Flow Rate											
Off Volume (vph)	1,740					690					
PHF	0.85					0.79					
Total Lanes	2					2					
Terrain	Level					Level					
Grade %	0.0%					0.0%					
Grade Length (mi)	0.00					0.00					
Truck & Bus %	5.0%					5.0%					
RV %	0.0%					0.0%					
E _T	1.5					1.5					
E _R	1.2					1.2					
f _{HV}	0.976					0.976					
f _p	1.00					1.00					
Off Flow (pcph)	2,098					895					
Off Flow (pcphpl)	1,049					448					
Calculate Off Ramp Roadway Operations											
Off Ramp Type	Right					Right					
Off Ramp Speed	45					45					
Off Ramp Cap (pcph)	4,200					4,200					
Off Ramp v/c ratio	0.50					0.21					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps											
Up Type								No	On		
Up Distance									1,200		
Up Flow (pcph)									545		
Down Type								On	No		
Down Distance								1,200			
Down Flow (pcph)								350			



Key
 <> Express Lane (HOV)
 No Trucks

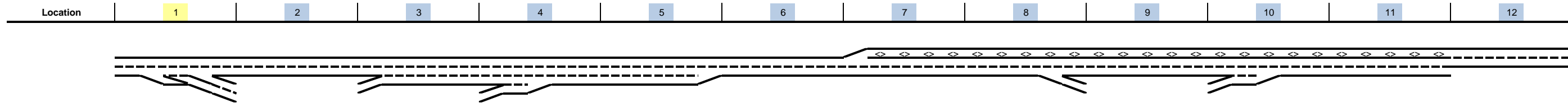
Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Merge Influence Area Operations											
Effective v_p (pcph)			2,303						2,556		
Up Ramp L_{EQ}									1,514		
Down Ramp L_{EQ}											
P_{FM} (Eqn 13-3)			0.587						0.587		
P_{FM} (Eqn 13-4)											
P_{FM} (Eqn 13-5)											
P_{FM}			1.000						0.587		
v_{12} (pcph)			2,303						1,501		
v_3 (pcph)									1,055		
v_{34} (pcph)											
v_{12a} (pcph)			2,303						1,501		
v_{R12a} (pcph)			2,701						1,851		
Merge Speed Index			0.34						0.30		
Merge Area Speed			60.6						61.5		
Outer Lanes Volume									1,055		
Outer Lanes Speed									68.0		
Segment Speed			60.6						63.7		
Merge v/c ratio			0.59						0.40		
Merge Density			24.2						17.6		
Merge LOS			C						B		
Calculate Diverge Influence Area Operations											
Effective v_p (pcph)						2,906					
Up Ramp L_{EQ}											
Down Ramp L_{EQ}											
P_{FD} (Eqn 13-9)						0.646					
P_{FD} (Eqn 13-10)											
P_{FD} (Eqn 13-11)											
P_{FD}						1.000					
v_{12} (pcph)						2,906					
v_3 (pcph)											
v_{34} (pcph)											
v_{12a} (pcph)						2,906					
Diverge Speed Index						0.38					
Diverge Area Speed						59.4					
Outer Lanes Volume											
Outer Lanes Speed											
Segment Speed						59.4					
Diverge v/c ratio						0.66					
Diverge Density						16.2					
Diverge LOS						B					



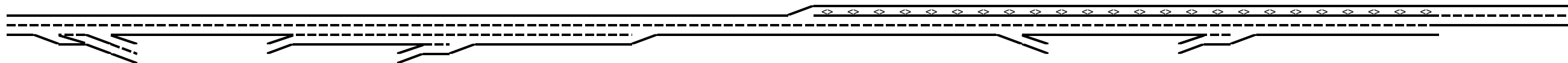
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Summarize Segment Operations											
Segment v/c ratio	0.64	0.32	0.59	0.55	0.55	0.66	0.38	0.36	0.40	0.36	0.61
Segment Density	22.4	11.0	24.2	18.9	18.9	16.2	13.0	12.2	17.6	12.5	21.3
Segment LOS	C	B	C	C	C	B	B	B	B	B	C
Over Capacity											

Project: Southeast Policy Area EIR
 Freeway Corridor: State Route 99 NB
 Alternative: Existing Plus Project Conditions
 Time Period: PM Peak Hour

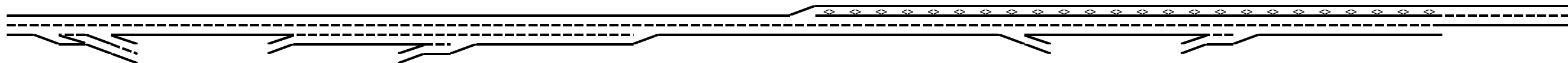


Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Define Freeway Segment												
Type	Diverge	Basic	Basic	Merge	Basic	Basic	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	1,500	1,500	1,300	1,500	400	6,700	1,050	1,500	2,550	1,500	100	8,700
Accel Length				320						1,200		
Decel Length	1,450							170				
Mainline Volume	2,560	1,690	1,690	2,330	2,600	2,600	2,600	2,600	2,330	2,330	3,700	2,560
On Ramp Volume			640	270						1,370		
Off Ramp Volume	870							270				
Express Lane Volume							780	780	699	699	1,110	
EL On Ramp Volume												
EL Off Ramp Volume												
Calculate Flow Rate in General Purpose Lanes (GP)												
GP Volume (vph)	2,560	1,690	2,330	2,600	2,600	2,600	1,820	1,820	1,631	3,001	2,590	2,560
PHF	0.85	0.93	0.85	0.85	0.93	0.93	0.93	0.88	0.93	0.88	0.93	0.93
GP Lanes	2	2	3	3	3	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	13.0%	5.0%	5.0%	15.0%	15.0%	15.0%	5.0%	10.0%	5.0%	10.0%	13.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.939	0.976	0.976	0.930	0.930	0.930	0.976	0.952	0.976	0.952	0.939
f _P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,087	1,935	2,810	3,135	3,005	3,005	2,104	2,120	1,841	3,495	2,924	2,932
GP Flow (pcphp)	1,544	968	937	1,045	1,002	1,503	1,052	1,060	921	1,748	1,462	1,466
Calculate Speed in General Purpose Lanes												
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70	70



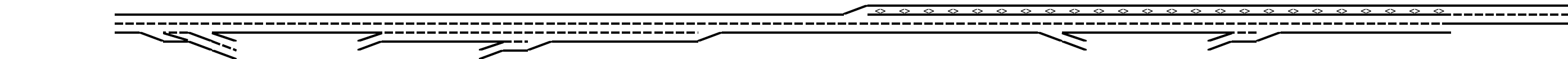
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Operations in General Purpose Lanes												
v/c ratio	0.64	0.40	0.39	0.44	0.42	0.63	0.44	0.44	0.38	0.73	0.61	0.61
Speed (mph)	68.6	70.0	70.0	70.0	70.0	68.9	70.0	70.0	70.0	66.5	69.2	69.2
Density (pcphpl)	22.5	13.8	13.4	14.9	14.3	21.8	15.0	15.1	13.2	26.3	21.1	21.2
LOS	C	B	B	B	B	C	B	B	B	D	C	C
Calculate Operations for Entering GP Lanes												
GP _{IN} Vol (pcph)			2,038	2,810						1,900		
GP _{IN} Cap (pcph)			4,800	7,200						4,800		
GP _{IN} v/c ratio			0.42	0.39						0.40		
Calculate Operations for Exiting GP Lanes												
GP _{OUT} Vol (pcph)	2,038				3,005			1,805				
GP _{OUT} Cap (pcph)	4,800				4,800			4,800				
GP _{OUT} v/c ratio	0.42				0.63			0.38				
Calculate On Ramp Flow Rate												
On Volume (vph)			640	270						1,370		
PHF			0.85	0.85						0.88		
Total Lanes			1	1						1		
Terrain			Level	Level						Level		
Grade %			0.0%	0.0%						0.0%		
Grade Length (mi)			0.00	0.00						0.00		
Truck & Bus %			5.0%	5.0%						5.0%		
RV %			0.0%	0.0%						0.0%		
E _T			1.5	1.5						1.5		
E _R			1.2	1.2						1.2		
f _{HV}			0.976	0.976						0.976		
f _P			1.00	1.00						1.00		
On Flow (pcph)			772	326						1,596		
On Flow (pcphpl)			772	326						1,596		
Calculate On Ramp Roadway Operations												
On Ramp Type			Right	Right						Right		
On Ramp Speed (mph)			50	60						60		
On Ramp Cap (pcph)			2,100	2,200						2,200		
On Ramp v/c ratio			0.37	0.15						0.73		



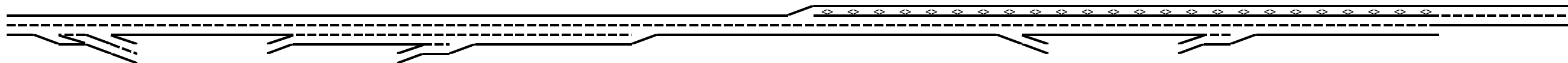
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Off Ramp Flow Rate												
Off Volume (vph)	870							270				
PHF	0.85							0.88				
Total Lanes	2							1				
Terrain	Level							Level				
Grade %	0.0%							0.0%				
Grade Length (mi)	0.00							0.00				
Truck & Bus %	5.0%							5.0%				
RV %	0.0%							0.0%				
E _T	1.5							1.5				
E _R	1.2							1.2				
f _{HV}	0.976							0.976				
f _P	1.00							1.00				
Off Flow (pcph)	1,049							314				
Off Flow (pcphpl)	525							314				
Calculate Off Ramp Roadway Operations												
Off Ramp Type	Right							Right				
Off Ramp Speed	35							45				
Off Ramp Cap (pcph)	4,000							2,100				
Off Ramp v/c ratio	0.26							0.15				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps												
Up Type			No	On								
Up Distance				1,300								
Up Flow (pcph)				772								
Down Type			On	Off								
Down Distance			1,300	3,000								
Down Flow (pcph)			326	314								



Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Merge Influence Area Operations												
Effective v_p (pcph)				2,810						1,900		
Up Ramp L_{EQ}				1,549								
Down Ramp L_{EQ}				2,186								
P_{FM} (Eqn 13-3)				0.586						0.611		
P_{FM} (Eqn 13-4)												
P_{FM} (Eqn 13-5)				0.576								
P_{FM}				0.586						1.000		
v_{12} (pcph)				1,648						1,900		
v_3 (pcph)				1,162								
v_{34} (pcph)												
v_{12a} (pcph)				1,648						1,900		
v_{R12a} (pcph)				1,973						3,495		
Merge Speed Index				0.31						0.31		
Merge Area Speed				61.3						61.4		
Outer Lanes Volume				1,162								
Outer Lanes Speed				67.6								
Segment Speed				63.5						61.4		
Merge v/c ratio				0.43						0.76		
Merge Density				18.7						24.5		
Merge LOS				B						C		
Calculate Diverge Influence Area Operations												
Effective v_p (pcph)	3,087							2,120				
Up Ramp L_{EQ}												
Down Ramp L_{EQ}												
P_{FD} (Eqn 13-9)	0.635							0.693				
P_{FD} (Eqn 13-10)												
P_{FD} (Eqn 13-11)												
P_{FD}	1.000							1.000				
v_{12} (pcph)	3,087							2,120				
v_3 (pcph)												
v_{34} (pcph)												
v_{12a} (pcph)	3,087							2,120				
Diverge Speed Index	0.52							0.33				
Diverge Area Speed	55.4							60.9				
Outer Lanes Volume												
Outer Lanes Speed												
Segment Speed	55.4							60.9				
Diverge v/c ratio	0.70							0.48				
Diverge Density	17.8							21.0				
Diverge LOS	B							C				

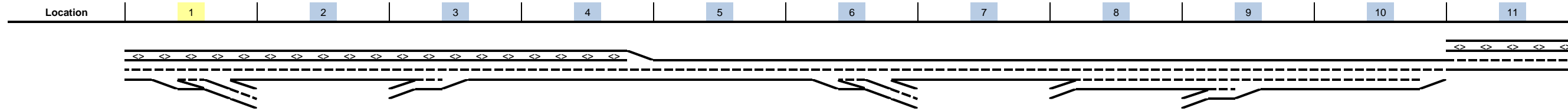


Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Summarize Segment Operations												
Segment v/c ratio	0.70	0.40	0.39	0.43	0.42	0.63	0.44	0.48	0.38	0.76	0.61	0.61
Segment Density	17.8	13.8	13.4	18.7	14.3	21.8	15.0	21.0	13.2	24.5	21.1	21.2
Segment LOS	B	B	B	B	B	C	B	C	B	C	C	C
Over Capacity												

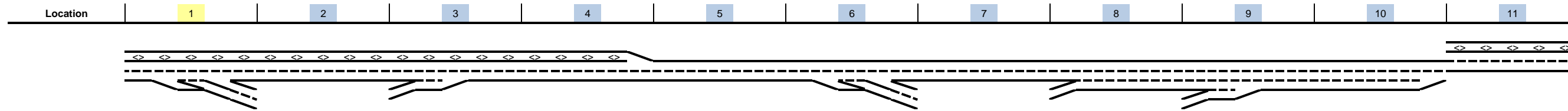
Project: Southeast Policy Area EIR
Freeway Corridor: State Route 99 SB

Alternative: Existing Plus Project Conditions
Time Period: PM Peak Hour



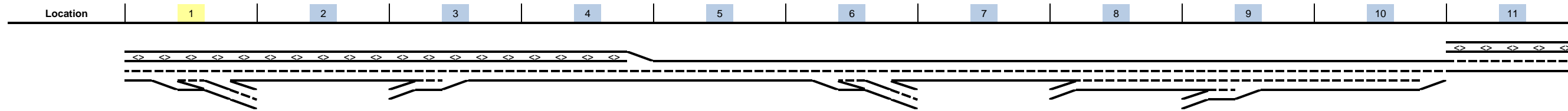
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Define Freeway Segment											
Type	Basic	Basic	Merge	Basic	Basic	Diverge	Basic	Basic	Merge	Basic	Basic
Length (ft)	1,500	2,250	1,500	400	8,050	1,500	1,650	1,200	1,500	400	250
Accel Length			350						350		
Decel Length						1,450					
Mainline Volume	3,740	1,870	1,870	2,190	2,190	2,190	1,740	1,740	2,300	2,830	3,740
On Ramp Volume			320					560	530		
Off Ramp Volume	1,870					450					
Express Lane Volume	1,122	561									1,122
EL On Ramp Volume											
EL Off Ramp Volume											
Calculate Flow Rate in General Purpose Lanes (GP)											
GP Volume (vph)	2,618	1,309	2,190	2,190	2,190	2,190	1,740	2,300	2,830	2,830	2,618
PHF	0.88	0.95	0.88	0.95	0.95	0.85	0.95	0.85	0.85	0.95	0.95
GP Lanes	2	2	2	2	2	2	2	3	3	3	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	10.0%	5.0%	15.0%	15.0%	5.0%	13.0%	5.0%	5.0%	13.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.952	0.976	0.930	0.930	0.976	0.939	0.976	0.976	0.939	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,049	1,447	2,551	2,478	2,478	2,641	1,951	2,774	3,413	3,173	2,894
GP Flow (pcphpl)	1,525	723	1,275	1,239	1,239	1,320	975	925	1,138	1,058	1,447
Calculate Speed in General Purpose Lanes											
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	73.6	73.6	73.6	73.6	74.2	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70



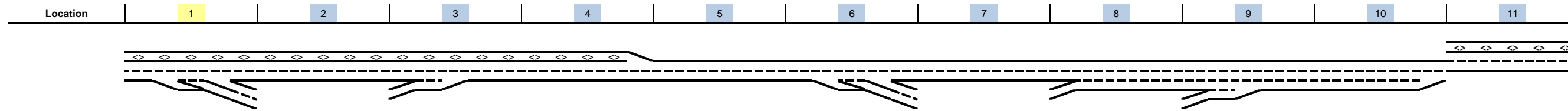
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Operations in General Purpose Lanes											
v/c ratio	0.64	0.30	0.53	0.52	0.52	0.55	0.41	0.39	0.47	0.44	0.60
Speed (mph)	68.8	70.0	69.9	70.0	70.0	69.8	70.0	70.0	70.0	70.0	69.3
Density (pcphpl)	22.2	10.3	18.2	17.7	17.7	18.9	13.9	13.2	16.3	15.1	20.9
LOS	C	A	C	B	B	C	B	B	B	B	C
Calculate Operations for Entering GP Lanes											
GP _{IN} Vol (pcph)			2,178					2,098	2,774		
GP _{IN} Cap (pcph)			4,800					4,800	7,200		
GP _{IN} v/c ratio			0.45					0.44	0.39		
Calculate Operations for Exiting GP Lanes											
GP _{OUT} Vol (pcph)	871					2,098				3,173	
GP _{OUT} Cap (pcph)	4,800					4,800				4,800	
GP _{OUT} v/c ratio	0.18					0.44				0.66	
Calculate On Ramp Flow Rate											
On Volume (vph)			320					560	530		
PHF			0.88					0.85	0.85		
Total Lanes			1					1	1		
Terrain			Level					Level	Level		
Grade %			0.0%					0.0%	0.0%		
Grade Length (mi)			0.00					0.00	0.00		
Truck & Bus %			5.0%					5.0%	5.0%		
RV %			0.0%					0.0%	0.0%		
E _T			1.5					1.5	1.5		
E _R			1.2					1.2	1.2		
f _{HV}			0.976					0.976	0.976		
f _P			1.00					1.00	1.00		
On Flow (pcph)			373					675	639		
On Flow (pcphpl)			373					675	639		
Calculate On Ramp Roadway Operations											
On Ramp Type			Right					Right	Right		
On Ramp Speed (mph)			60					50	60		
On Ramp Cap (pcph)			2,200					2,100	2,200		
On Ramp v/c ratio			0.17					0.32	0.29		



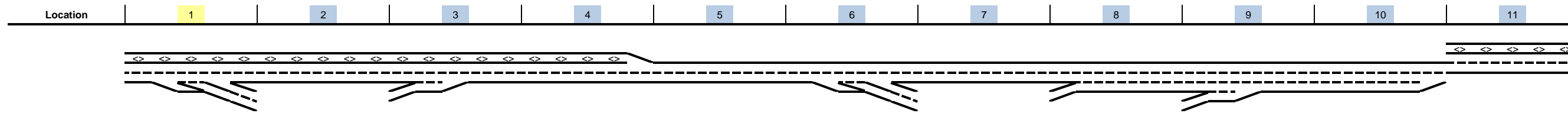
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Off Ramp Flow Rate											
Off Volume (vph)	1,870					450					
PHF	0.88					0.85					
Total Lanes	2					2					
Terrain	Level					Level					
Grade %	0.0%					0.0%					
Grade Length (mi)	0.00					0.00					
Truck & Bus %	5.0%					5.0%					
RV %	0.0%					0.0%					
E _T	1.5					1.5					
E _R	1.2					1.2					
f _{HV}	0.976					0.976					
f _p	1.00					1.00					
Off Flow (pcph)	2,178					543					
Off Flow (pcphpl)	1,089					271					
Calculate Off Ramp Roadway Operations											
Off Ramp Type	Right					Right					
Off Ramp Speed	45					45					
Off Ramp Cap (pcph)	4,200					4,200					
Off Ramp v/c ratio	0.52					0.13					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps											
Up Type								No	On		
Up Distance									1,200		
Up Flow (pcph)									675		
Down Type								On	No		
Down Distance								1,200			
Down Flow (pcph)								639			



Key
 <> Express Lane (HOV)
 - - - No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Merge Influence Area Operations											
Effective v_p (pcph)			2,178						2,774		
Up Ramp L_{EQ}									1,622		
Down Ramp L_{EQ}											
P_{FM} (Eqn 13-3)			0.587						0.587		
P_{FM} (Eqn 13-4)											
P_{FM} (Eqn 13-5)											
P_{FM}			1.000						0.587		
v_{12} (pcph)			2,178						1,629		
v_3 (pcph)									1,145		
v_{34} (pcph)											
v_{12a} (pcph)			2,178						1,629		
v_{R12a} (pcph)			2,551						2,268		
Merge Speed Index			0.33						0.32		
Merge Area Speed			60.8						61.1		
Outer Lanes Volume									1,145		
Outer Lanes Speed									67.7		
Segment Speed			60.8						63.2		
Merge v/c ratio			0.55						0.49		
Merge Density			23.0						20.7		
Merge LOS			C						C		
Calculate Diverge Influence Area Operations											
Effective v_p (pcph)						2,641					
Up Ramp L_{EQ}											
Down Ramp L_{EQ}											
P_{FD} (Eqn 13-9)						0.669					
P_{FD} (Eqn 13-10)											
P_{FD} (Eqn 13-11)											
P_{FD}						1.000					
v_{12} (pcph)						2,641					
v_3 (pcph)											
v_{34} (pcph)											
v_{12a} (pcph)						2,641					
Diverge Speed Index						0.35					
Diverge Area Speed						60.3					
Outer Lanes Volume											
Outer Lanes Speed											
Segment Speed						60.3					
Diverge v/c ratio						0.60					
Diverge Density						13.9					
Diverge LOS						B					

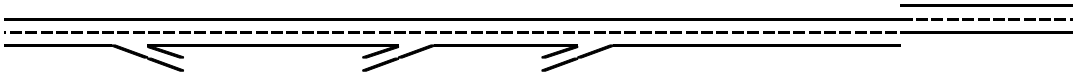


Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Summarize Segment Operations											
Segment v/c ratio	0.64	0.30	0.55	0.52	0.52	0.60	0.41	0.39	0.49	0.44	0.60
Segment Density	22.2	10.3	23.0	17.7	17.7	13.9	13.9	13.2	20.7	15.1	20.9
Segment LOS	C	A	C	B	B	B	B	B	C	B	C
Over Capacity											

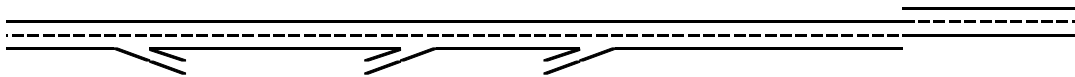
Project: Southeast Policy Area EIR
Freeway Corridor: Interstate 5 NB
Alternative: Existing Plus Project Conditions
Time Period: AM Peak Hour

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key
 <> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,150	1,500	6,900	27,700
Accel Length			450	350		
Decel Length	150					
Mainline Volume	1,620	1,580	1,580	1,640	2,200	1,620
On Ramp Volume			60	560		
Off Ramp Volume	40					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	1,620	1,580	1,640	2,200	2,200	1,620
PHF	0.75	0.81	0.75	0.75	0.81	0.81
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.917
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,214	2,126	2,241	3,007	2,960	2,180
GP Flow (pcphpl)	1,107	1,063	1,121	1,503	1,480	1,090
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.46	0.44	0.47	0.63	0.62	0.45
Speed (mph)	70.0	70.0	70.0	68.9	69.1	70.0
Density (pcphpl)	15.8	15.2	16.0	21.8	21.4	15.6
LOS	B	B	B	C	C	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,159	2,241		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.45	0.47		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,159					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.45					



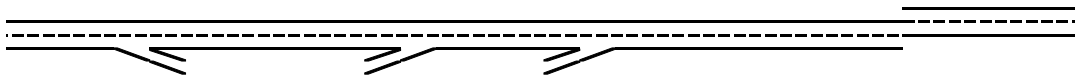
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate On Ramp Flow Rate						
On Volume (vph)			60	560		
PHF			0.75	0.75		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			82	765		
On Flow (pcphpl)			82	765		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.04	0.35		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

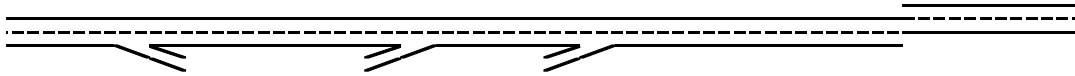


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Off Ramp Flow Rate						
Off Volume (vph)	40					
PHF	0.75					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	55					
Off Flow (pcphpl)	55					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.03					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,159	2,241		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.590	0.587		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,159	2,241		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,159	2,241		
v_{R12a} (pcph)			2,241	3,007		
Merge Speed Index			0.31	0.36		
Merge Area Speed			61.2	60.0		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.2	60.0		
Merge v/c ratio			0.49	0.65		
Merge Density			20.1	26.4		
Merge LOS			C	C		

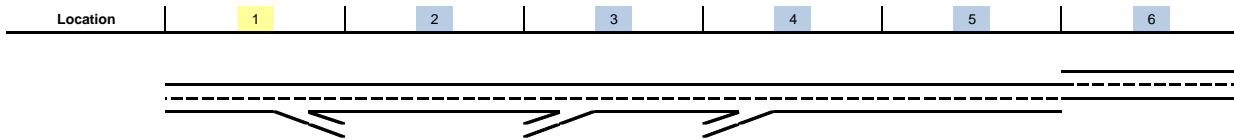


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,214					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.702					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,214					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,214					
Diverge Speed Index	0.30					
Diverge Area Speed	61.5					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	61.5					
Diverge v/c ratio	0.50					
Diverge Density	21.9					
Diverge LOS	C					



Key

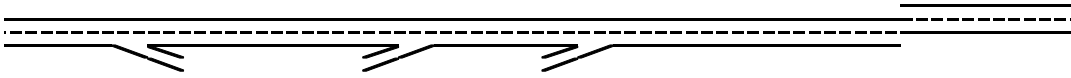
<-> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Summarize Segment Operations						
Segment v/c ratio	0.50	0.44	0.49	0.65	0.62	0.45
Segment Density	21.9	15.2	20.1	26.4	21.4	15.6
Segment LOS	C	B	C	C	C	B
Over Capacity						

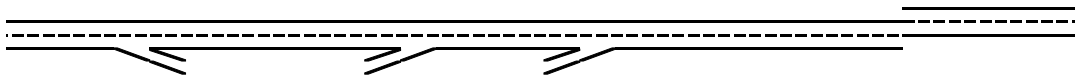
Project: Southeast Policy Area EIR Alternative: Existing Plus Project Conditions
 Freeway Corridor: Interstate 5 SB Time Period: AM Peak Hour

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key
 <> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,250	1,500	28,500	8,000
Accel Length			300	250		
Decel Length	160					
Mainline Volume	1,540	1,410	1,410	1,490	1,500	1,540
On Ramp Volume			80	10		
Off Ramp Volume	130					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	1,540	1,410	1,490	1,500	1,500	1,540
PHF	0.75	0.91	0.75	0.75	0.91	0.91
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	5.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.976
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,105	1,689	2,036	2,050	1,797	1,735
GP Flow (pcphpl)	1,052	844	1,018	1,025	898	867
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.44	0.35	0.42	0.43	0.37	0.36
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	15.0	12.1	14.5	14.6	12.8	12.4
LOS	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			1,927	2,036		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.40	0.42		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	1,927					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.40					



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate On Ramp Flow Rate						
On Volume (vph)			80	10		
PHF			0.75	0.75		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			109	14		
On Flow (pcphpl)			109	14		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.05	0.01		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

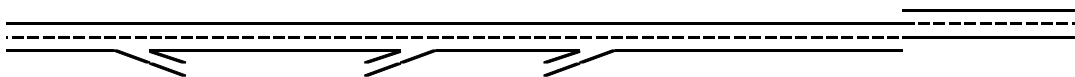


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Off Ramp Flow Rate						
Off Volume (vph)	130					
PHF	0.75					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	178					
Off Flow (pcphpl)	178					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.08					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			1,927	2,036		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.586	0.585		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			1,927	2,036		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			1,927	2,036		
v_{R12a} (pcph)			2,036	2,050		
Merge Speed Index			0.32	0.32		
Merge Area Speed			61.0	61.0		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.0	61.0		
Merge v/c ratio			0.44	0.45		
Merge Density			19.4	19.9		
Merge LOS			B	B		

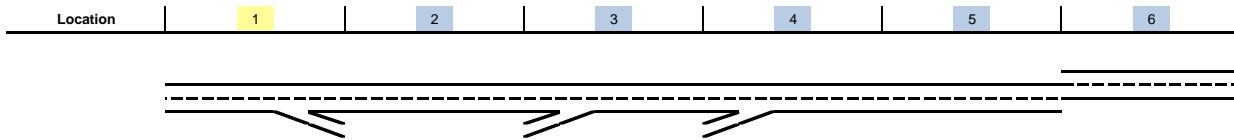


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,105					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.699					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,105					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,105					
Diverge Speed Index	0.31					
Diverge Area Speed	61.2					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	61.2					
Diverge v/c ratio	0.48					
Diverge Density	20.9					
Diverge LOS	C					



Key

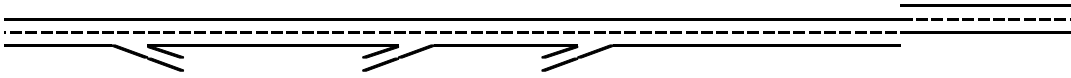
<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Summarize Segment Operations						
Segment v/c ratio	0.48	0.35	0.44	0.45	0.37	0.36
Segment Density	20.9	12.1	19.4	19.9	12.8	12.4
Segment LOS	C	B	B	B	B	B
Over Capacity						

Project: Southeast Policy Area EIR Alternative: Existing Plus Project Conditions
 Freeway Corridor: Interstate 5 NB Time Period: PM Peak Hour

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,150	1,500	6,900	27,700
Accel Length			450	350		
Decel Length	150					
Mainline Volume	1,940	1,840	1,840	1,920	2,190	1,940
On Ramp Volume			80	270		
Off Ramp Volume	100					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	1,940	1,840	1,920	2,190	2,190	1,940
PHF	0.9	0.89	0.9	0.9	0.89	0.89
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.917
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,209	2,253	2,187	2,494	2,682	2,376
GP Flow (pcphpl)	1,105	1,127	1,093	1,247	1,341	1,188
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.46	0.47	0.46	0.52	0.56	0.49
Speed (mph)	70.0	70.0	70.0	70.0	69.8	70.0
Density (pcphpl)	15.8	16.1	15.6	17.8	19.2	17.0
LOS	B	B	B	B	C	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,096	2,187		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.44	0.46		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,096					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.44					



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate On Ramp Flow Rate						
On Volume (vph)			80	270		
PHF			0.9	0.9		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			91	308		
On Flow (pcphpl)			91	308		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.04	0.14		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

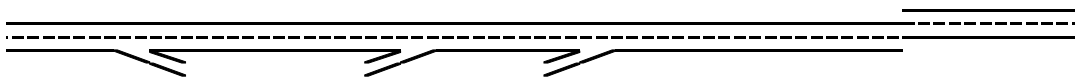


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Off Ramp Flow Rate						
Off Volume (vph)	100					
PHF	0.9					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	114					
Off Flow (pcphpl)	114					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.05					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,096	2,187		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.590	0.587		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,096	2,187		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,096	2,187		
v_{R12a} (pcph)			2,187	2,494		
Merge Speed Index			0.31	0.33		
Merge Area Speed			61.3	60.9		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.3	60.9		
Merge v/c ratio			0.48	0.54		
Merge Density			19.7	22.6		
Merge LOS			B	C		

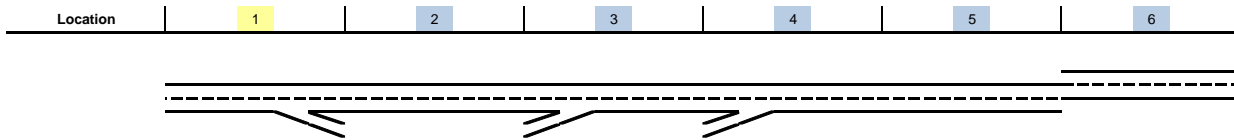


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,209					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.700					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,209					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,209					
Diverge Speed Index	0.31					
Diverge Area Speed	61.4					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	61.4					
Diverge v/c ratio	0.50					
Diverge Density	21.9					
Diverge LOS	C					



Key

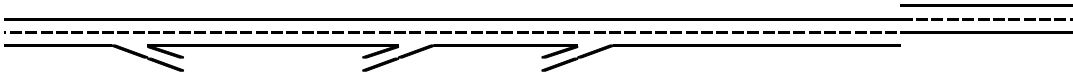
<> Express Lane (HOV)

..... No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Summarize Segment Operations						
Segment v/c ratio	0.50	0.47	0.48	0.54	0.56	0.49
Segment Density	21.9	16.1	19.7	22.6	19.2	17.0
Segment LOS	C	B	B	C	C	B
Over Capacity						

Project: Southeast Policy Area EIR Alternative: Existing Plus Project Conditions
 Freeway Corridor: Interstate 5 SB Time Period: PM Peak Hour

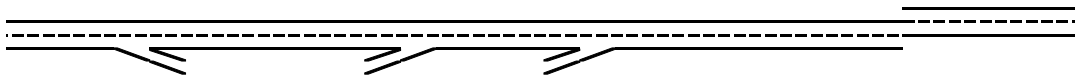
Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,250	1,500	28,500	8,000
Accel Length			300	250		
Decel Length	160					
Mainline Volume	2,170	1,880	1,880	1,900	1,920	2,170
On Ramp Volume			20	20		
Off Ramp Volume	290					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,170	1,880	1,900	1,920	1,920	2,170
PHF	0.9	0.94	0.9	0.9	0.94	0.94
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	5.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.976
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,471	2,180	2,164	2,187	2,226	2,366
GP Flow (pcphpl)	1,236	1,090	1,082	1,093	1,113	1,183
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.51	0.45	0.45	0.46	0.46	0.49
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	17.7	15.6	15.5	15.6	15.9	16.9
LOS	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,141	2,164		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.45	0.45		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,141					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.45					



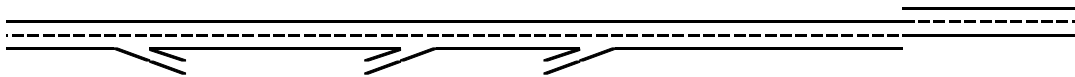
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate On Ramp Flow Rate						
On Volume (vph)			20	20		
PHF			0.9	0.9		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			23	23		
On Flow (pcphpl)			23	23		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.01	0.01		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

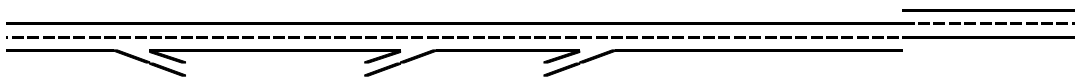


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Off Ramp Flow Rate						
Off Volume (vph)	290					
PHF	0.9					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	330					
Off Flow (pcphpl)	330					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.16					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,141	2,164		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.586	0.585		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,141	2,164		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,141	2,164		
v_{R12a} (pcph)			2,164	2,187		
Merge Speed Index			0.32	0.33		
Merge Area Speed			60.9	60.9		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			60.9	60.9		
Merge v/c ratio			0.47	0.48		
Merge Density			20.5	21.0		
Merge LOS			C	C		

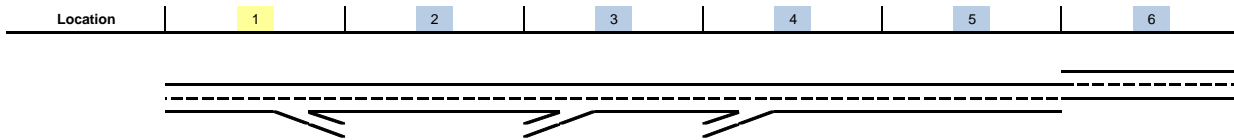


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,471					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.683					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,471					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,471					
Diverge Speed Index	0.33					
Diverge Area Speed	60.8					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	60.8					
Diverge v/c ratio	0.56					
Diverge Density	24.1					
Diverge LOS	C					



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Summarize Segment Operations						
Segment v/c ratio	0.56	0.45	0.47	0.48	0.46	0.49
Segment Density	24.1	15.6	20.5	21.0	15.9	16.9
Segment LOS	C	B	C	C	B	B
Over Capacity						

Existing Plus Project
Conditions
with Mitigations

HCM Signalized Intersection Capacity Analysis
4: Elk Grove Blvd & Laguna Springs Drive

Existing Plus Project - Mitigations
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1510	200	1000	1040	90	130	200	490	40	200	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1563	3433	5016		1770	1863	2787	1770	3387	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1563	3433	5016		1770	1863	2787	1770	3387	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	122	1841	244	1220	1268	110	159	244	598	49	244	85
RTOR Reduction (vph)	0	0	69	0	6	0	0	0	489	0	25	0
Lane Group Flow (vph)	122	1841	175	1220	1372	0	159	244	109	49	304	0
Confl. Bikes (#/hr)			1			1						4
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	13.9	52.0	52.0	37.4	75.5		10.4	26.5	26.5	6.9	23.0	
Effective Green, g (s)	13.9	52.0	52.0	37.4	75.5		10.4	26.5	26.5	6.9	23.0	
Actuated g/C Ratio	0.10	0.36	0.36	0.26	0.52		0.07	0.18	0.18	0.05	0.16	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	170	1824	561	885	2612		127	340	509	84	537	
v/s Ratio Prot	0.07	c0.36		c0.36	0.27		c0.09	c0.13		0.03	0.09	
v/s Ratio Perm			0.11						0.04			
v/c Ratio	0.72	1.01	0.31	1.38	0.53		1.25	0.72	0.21	0.58	0.57	
Uniform Delay, d1	63.6	46.5	33.6	53.8	22.9		67.3	55.7	50.4	67.6	56.4	
Progression Factor	1.18	0.88	0.94	1.17	0.67		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.1	18.7	0.9	176.3	0.6		162.5	5.9	0.1	6.5	0.8	
Delay (s)	82.0	59.7	32.5	239.5	16.0		229.8	61.6	50.5	74.1	57.2	
Level of Service	F	E	C	F	B		F	E	D	E	E	
Approach Delay (s)		57.9			120.9			81.7			59.4	
Approach LOS		E			F			F			E	
Intersection Summary												
HCM Average Control Delay			88.3	HCM Level of Service				F				
HCM Volume to Capacity ratio			1.10									
Actuated Cycle Length (s)			145.0	Sum of lost time (s)				22.2				
Intersection Capacity Utilization			97.5%	ICU Level of Service				F				
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Existing Plus Project - Mitigations
AM Peak Hour



































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↖	↑↑↑					↖	↖	↖↖
Volume (vph)	0	1870	220	110	1210	0	0	0	0	550	10	1180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.98		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4994		1770	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4994		1770	5085					1681	1688	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2033	239	120	1315	0	0	0	0	598	11	1283
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	38
Lane Group Flow (vph)	0	2262	0	120	1315	0	0	0	0	305	304	1245
Confl. Bikes (#/hr)			2			2						
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		60.0		9.4	75.3					57.3	57.3	57.3
Effective Green, g (s)		60.0		9.4	75.3					57.3	57.3	57.3
Actuated g/C Ratio		0.41		0.06	0.52					0.40	0.40	0.40
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2066		115	2641					664	667	1101
v/s Ratio Prot		c0.45		c0.07	0.26					0.18	0.18	
v/s Ratio Perm												c0.45
v/c Ratio		1.09		1.04	0.50					0.46	0.46	1.13
Uniform Delay, d1		42.5		67.8	22.6					32.4	32.3	43.9
Progression Factor		0.40		1.19	1.37					1.00	1.00	1.00
Incremental Delay, d2		50.1		87.7	0.5					0.2	0.2	70.6
Delay (s)		67.0		168.4	31.5					32.6	32.5	114.4
Level of Service		E		F	C					C	C	F
Approach Delay (s)		67.0			43.0			0.0			88.1	
Approach LOS		E			D			A			F	

Intersection Summary		
HCM Average Control Delay	68.0	HCM Level of Service E
HCM Volume to Capacity ratio	1.11	
Actuated Cycle Length (s)	145.0	Sum of lost time (s) 18.3
Intersection Capacity Utilization	77.9%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group




















HCM Signalized Intersection Capacity Analysis
 13: Bilby Road & Bruceville Road

Existing Plus Project - Mitigations
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	110	150	410	10	100	30	190	150	20	80	300	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	124	169	461	11	112	34	213	169	22	90	337	90
RTOR Reduction (vph)	0	0	335	0	0	27	0	0	16	0	0	68
Lane Group Flow (vph)	124	169	126	11	112	7	213	169	6	90	337	22
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Actuated Green, G (s)	3.9	15.9	15.9	0.7	12.7	12.7	5.8	17.7	17.7	3.9	15.8	15.8
Effective Green, g (s)	3.9	15.9	15.9	0.7	12.7	12.7	5.8	17.7	17.7	3.9	15.8	15.8
Actuated g/C Ratio	0.06	0.25	0.25	0.01	0.20	0.20	0.09	0.28	0.28	0.06	0.25	0.25
Clearance Time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.5	4.5	2.0	4.5	4.5
Lane Grp Cap (vph)	210	882	395	38	704	315	312	982	439	210	876	392
v/s Ratio Prot	c0.04	0.05		0.00	0.03		c0.06	0.05		0.03	c0.10	
v/s Ratio Perm			c0.08			0.00			0.00			0.01
v/c Ratio	0.59	0.19	0.32	0.29	0.16	0.02	0.68	0.17	0.01	0.43	0.38	0.06
Uniform Delay, d1	29.2	18.9	19.5	31.3	21.1	20.6	28.1	17.5	16.7	28.9	20.0	18.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	0.0	0.2	1.5	0.0	0.0	4.8	0.1	0.0	0.5	0.5	0.1
Delay (s)	32.1	18.9	19.7	32.8	21.2	20.6	33.0	17.6	16.7	29.4	20.4	18.4
Level of Service	C	B	B	C	C	C	C	B	B	C	C	B
Approach Delay (s)		21.6			21.9			25.7			21.6	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			22.5				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			63.8				Sum of lost time (s)		25.6			
Intersection Capacity Utilization			54.5%				ICU Level of Service		A			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
17: Bilby Road & Franklin Blvd

Existing Plus Project - Mitigations
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	10	650	10	10	10	10	330	200	340	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5			5.5	5.5	5.5	5.5	
Lane Util. Factor		1.00			1.00			1.00	1.00	1.00	1.00	
Frt		0.95			1.00			1.00	0.85	1.00	1.00	
Flt Protected		0.98			0.95			0.98	1.00	0.95	1.00	
Satd. Flow (prot)		1750			1773			1817	1583	1770	1855	
Flt Permitted		0.98			0.95			0.98	1.00	0.95	1.00	
Satd. Flow (perm)		1750			1773			1817	1583	1770	1855	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	11	11	707	11	11	11	11	359	217	370	11
RTOR Reduction (vph)	0	11	0	0	1	0	0	0	335	0	1	0
Lane Group Flow (vph)	0	22	0	0	728	0	0	22	24	217	380	0
Turn Type	Split			Split			Split			Perm	Split	
Protected Phases	4	4		8	8		2	2			6	6
Permitted Phases									2			
Actuated Green, G (s)		4.8			57.2			8.3	8.3	29.6	29.6	
Effective Green, g (s)		4.8			57.2			8.3	8.3	29.6	29.6	
Actuated g/C Ratio		0.04			0.47			0.07	0.07	0.24	0.24	
Clearance Time (s)		5.5			5.5			5.5	5.5	5.5	5.5	
Vehicle Extension (s)		2.0			2.0			2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)		69			832			124	108	430	450	
v/s Ratio Prot		c0.01			c0.41			0.01		0.12	c0.21	
v/s Ratio Perm									c0.02			
v/c Ratio		0.33			0.88			0.18	0.23	0.50	0.84	
Uniform Delay, d1		57.0			29.1			53.6	53.8	39.8	44.0	
Progression Factor		1.00			1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.0			9.9			0.3	0.4	0.3	13.1	
Delay (s)		58.0			39.1			53.8	54.2	40.2	57.0	
Level of Service		E			D			D	D	D	E	
Approach Delay (s)		58.0			39.1			54.1			50.9	
Approach LOS		E			D			D			D	
Intersection Summary												
HCM Average Control Delay			46.8			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			121.9			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			71.5%			ICU Level of Service				C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 18: Bilby Road & Willard Pkwy

Existing Plus Project - Mitigations
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	190	260	440	100	100	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	1863	1583
Peak-hour factor, PHF	0.74	0.74	0.74	0.74	0.74	0.74
Adj. Flow (vph)	257	351	595	135	135	324
RTOR Reduction (vph)	0	269	0	0	0	287
Lane Group Flow (vph)	257	82	595	135	135	37
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	24.8	24.8	42.6	38.3	12.3	12.3
Effective Green, g (s)	24.8	24.8	42.6	32.6	12.3	12.3
Actuated g/C Ratio	0.23	0.23	0.40	0.31	0.12	0.12
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	413	369	709	1085	216	183
v/s Ratio Prot	c0.15		c0.34	c0.04	c0.07	
v/s Ratio Perm		0.05				0.02
v/c Ratio	0.62	0.22	0.84	0.12	0.62	0.20
Uniform Delay, d1	36.5	32.9	28.8	26.6	44.8	42.6
Progression Factor	1.00	1.00	1.03	1.11	1.00	1.00
Incremental Delay, d2	2.1	0.1	7.2	0.0	4.0	0.2
Delay (s)	38.6	33.1	36.8	29.6	48.8	42.8
Level of Service	D	C	D	C	D	D
Approach Delay (s)	35.4			35.4	44.6	
Approach LOS	D			D	D	

Intersection Summary

HCM Average Control Delay	37.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	106.3	Sum of lost time (s)	25.8
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 20: Kammerer Road & Bruceville Road

Existing Plus Project - Mitigations
 AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	40	220	40	150	680	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5		5.5			5.5
Lane Util. Factor	1.00		1.00			1.00
Frt	0.89		0.89			1.00
Flt Protected	0.99		1.00			0.95
Satd. Flow (prot)	1637		1664			1778
Flt Permitted	0.99		1.00			0.95
Satd. Flow (perm)	1637		1664			1778
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	244	44	167	756	33
RTOR Reduction (vph)	216	0	149	0	0	0
Lane Group Flow (vph)	72	0	62	0	0	789
Turn Type					Split	
Protected Phases	8		2		6	6
Permitted Phases						
Actuated Green, G (s)	7.9		7.5			37.8
Effective Green, g (s)	7.9		7.5			37.8
Actuated g/C Ratio	0.11		0.11			0.54
Clearance Time (s)	5.5		5.5			5.5
Vehicle Extension (s)	2.0		2.0			2.0
Lane Grp Cap (vph)	186		179			964
v/s Ratio Prot	c0.04		c0.04			c0.44
v/s Ratio Perm						
v/c Ratio	0.39		0.35			0.82
Uniform Delay, d1	28.6		28.8			13.1
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.5		0.4			5.2
Delay (s)	29.1		29.3			18.3
Level of Service	C		C			B
Approach Delay (s)	29.1		29.3			18.3
Approach LOS	C		C			B

Intersection Summary			
HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	69.7	Sum of lost time (s)	16.5
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Existing Plus Project - Mitigations
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↔	↑↑↑					↔	↔	↔
Volume (vph)	0	2120	220	100	1220	0	0	0	0	690	10	1170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Fr _t		0.99		1.00	1.00					1.00	1.00	0.85
Fl _t Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5014		1770	5085					1681	1688	2787
Fl _t Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5014		1770	5085					1681	1688	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	2163	224	102	1245	0	0	0	0	704	10	1194
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	55
Lane Group Flow (vph)	0	2379	0	102	1245	0	0	0	0	359	355	1139
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		65.9		9.5	81.3					56.3	56.3	56.3
Effective Green, g (s)		65.9		9.5	81.3					56.3	56.3	56.3
Actuated g/C Ratio		0.44		0.06	0.54					0.38	0.38	0.38
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2203		112	2756					631	634	1046
v/s Ratio Prot		c0.47		c0.06	0.24					0.21	0.21	
v/s Ratio Perm												c0.41
v/c Ratio		1.08		0.91	0.45					0.57	0.56	1.09
Uniform Delay, d ₁		42.0		69.8	20.8					37.2	37.1	46.9
Progression Factor		0.47		1.15	0.15					1.00	1.00	1.00
Incremental Delay, d ₂		42.7		51.7	0.5					0.7	0.6	55.3
Delay (s)		62.5		131.7	3.6					37.9	37.7	102.1
Level of Service		E		F	A					D	D	F
Approach Delay (s)		62.5			13.3			0.0			78.1	
Approach LOS		E			B			A			E	

Intersection Summary

HCM Average Control Delay	56.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 20: Kammerer Road & Bruceville Road

Existing Plus Project - Mitigations
 PM Peak Hour

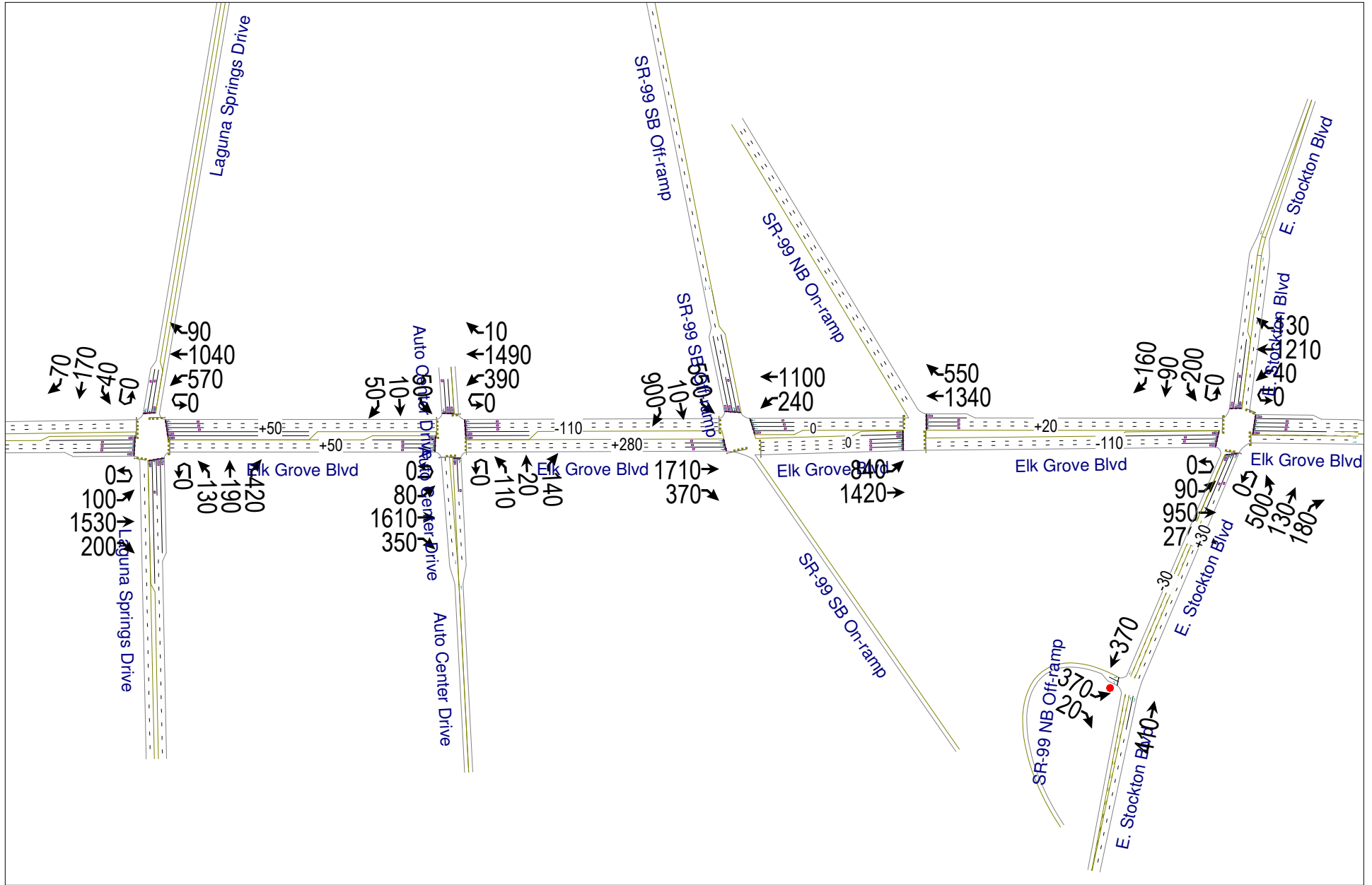


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	140	670	40	90	170	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5		5.5			5.5
Lane Util. Factor	1.00		1.00			1.00
Frt	0.89		0.91			1.00
Flt Protected	0.99		1.00			0.96
Satd. Flow (prot)	1641		1688			1794
Flt Permitted	0.99		1.00			0.96
Satd. Flow (perm)	1641		1688			1794
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	705	42	95	179	53
RTOR Reduction (vph)	166	0	86	0	0	0
Lane Group Flow (vph)	686	0	51	0	0	232
Turn Type					Split	
Protected Phases	8		2		6	6
Permitted Phases						
Actuated Green, G (s)	35.7		7.1			13.3
Effective Green, g (s)	35.7		7.1			13.3
Actuated g/C Ratio	0.49		0.10			0.18
Clearance Time (s)	5.5		5.5			5.5
Vehicle Extension (s)	2.0		2.0			2.0
Lane Grp Cap (vph)	807		165			329
v/s Ratio Prot	c0.42		c0.03			c0.13
v/s Ratio Perm						
v/c Ratio	0.85		0.31			0.71
Uniform Delay, d1	16.1		30.5			27.8
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	8.2		0.4			5.5
Delay (s)	24.4		30.9			33.3
Level of Service	C		C			C
Approach Delay (s)	24.4		30.9			33.3
Approach LOS	C		C			C

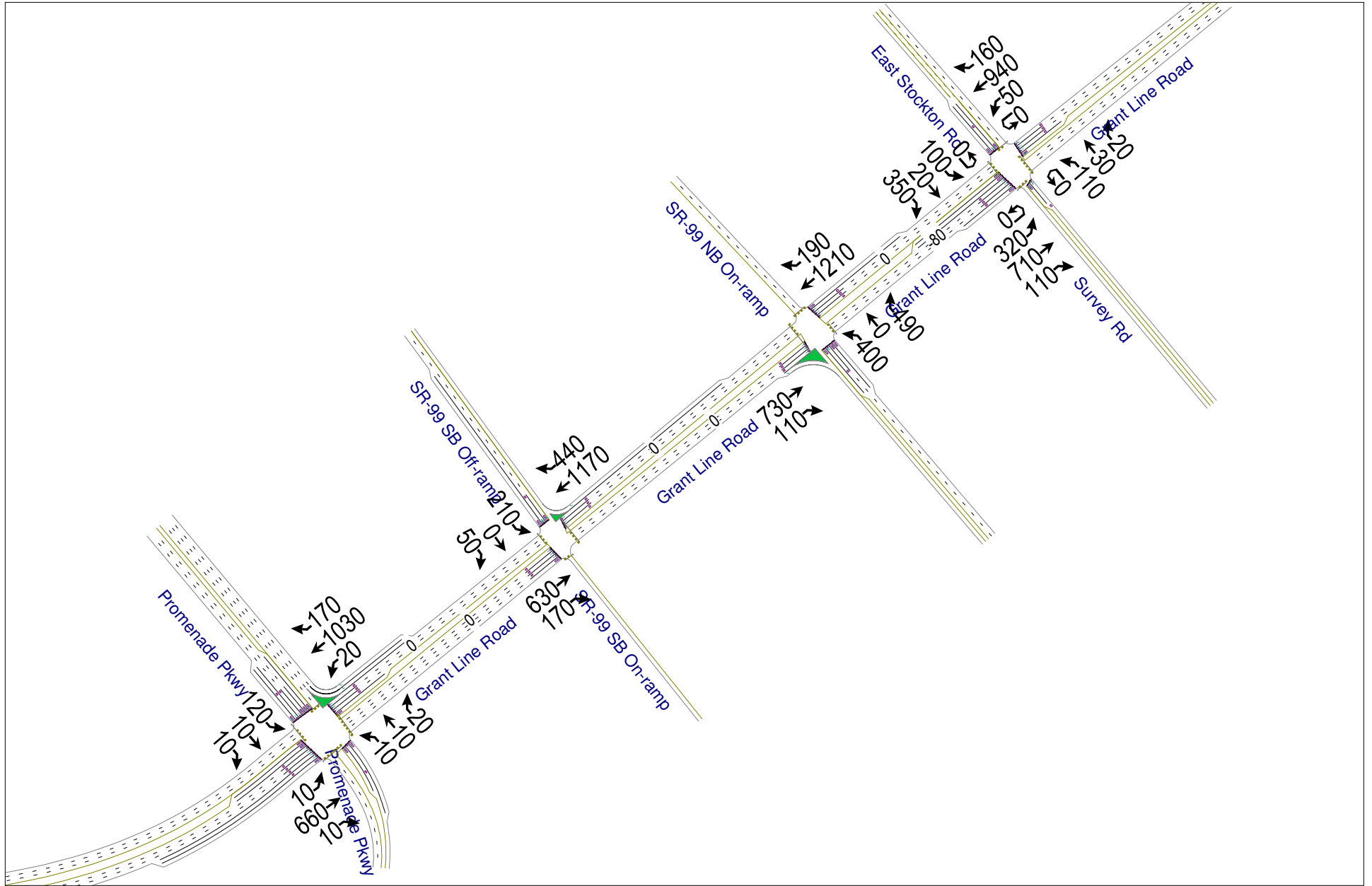
Intersection Summary			
HCM Average Control Delay	26.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	16.5
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Existing Plus Project
Conditions
with Whitelock Interchange

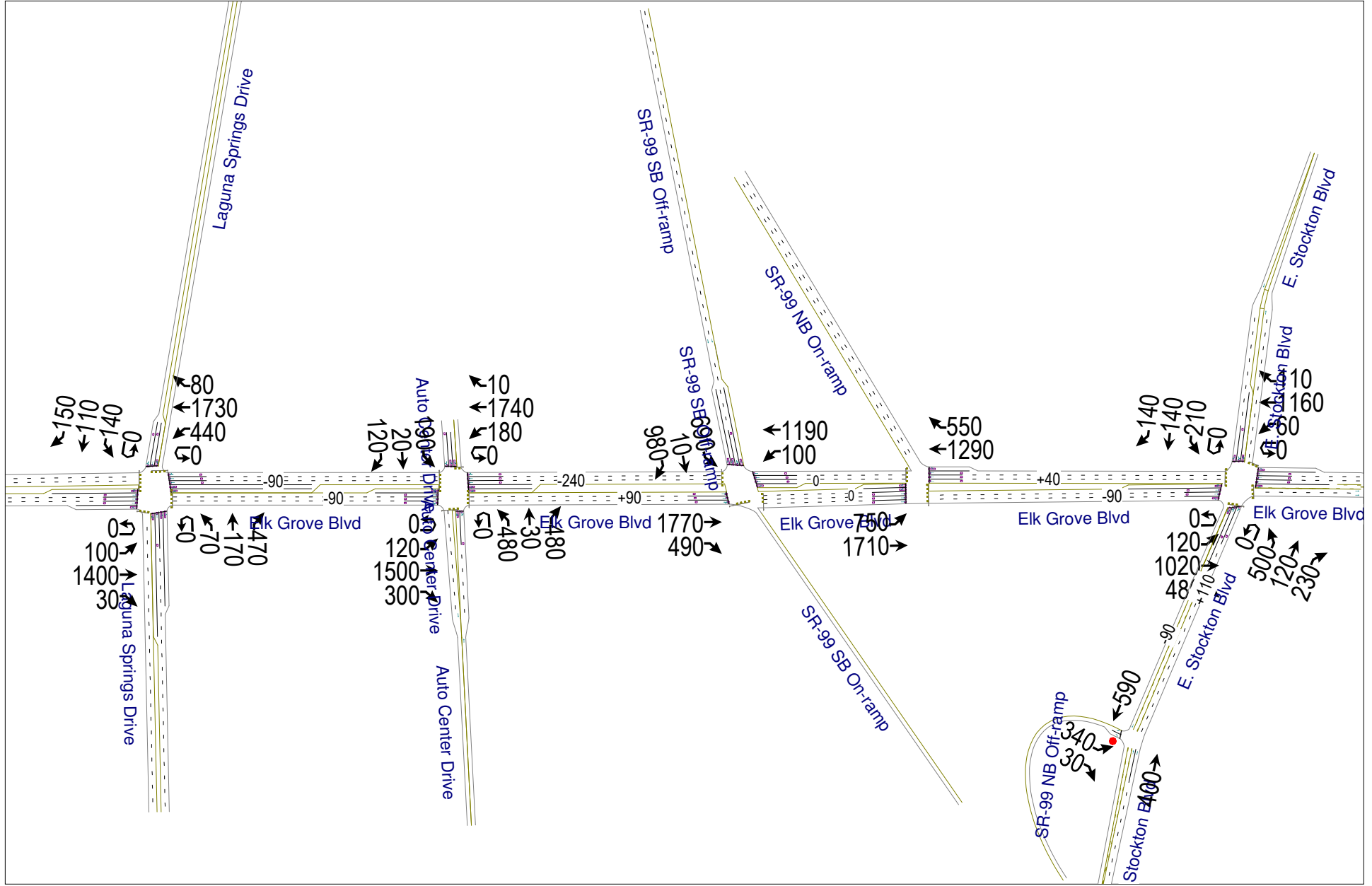
SEPA
E+P Whitelock AM



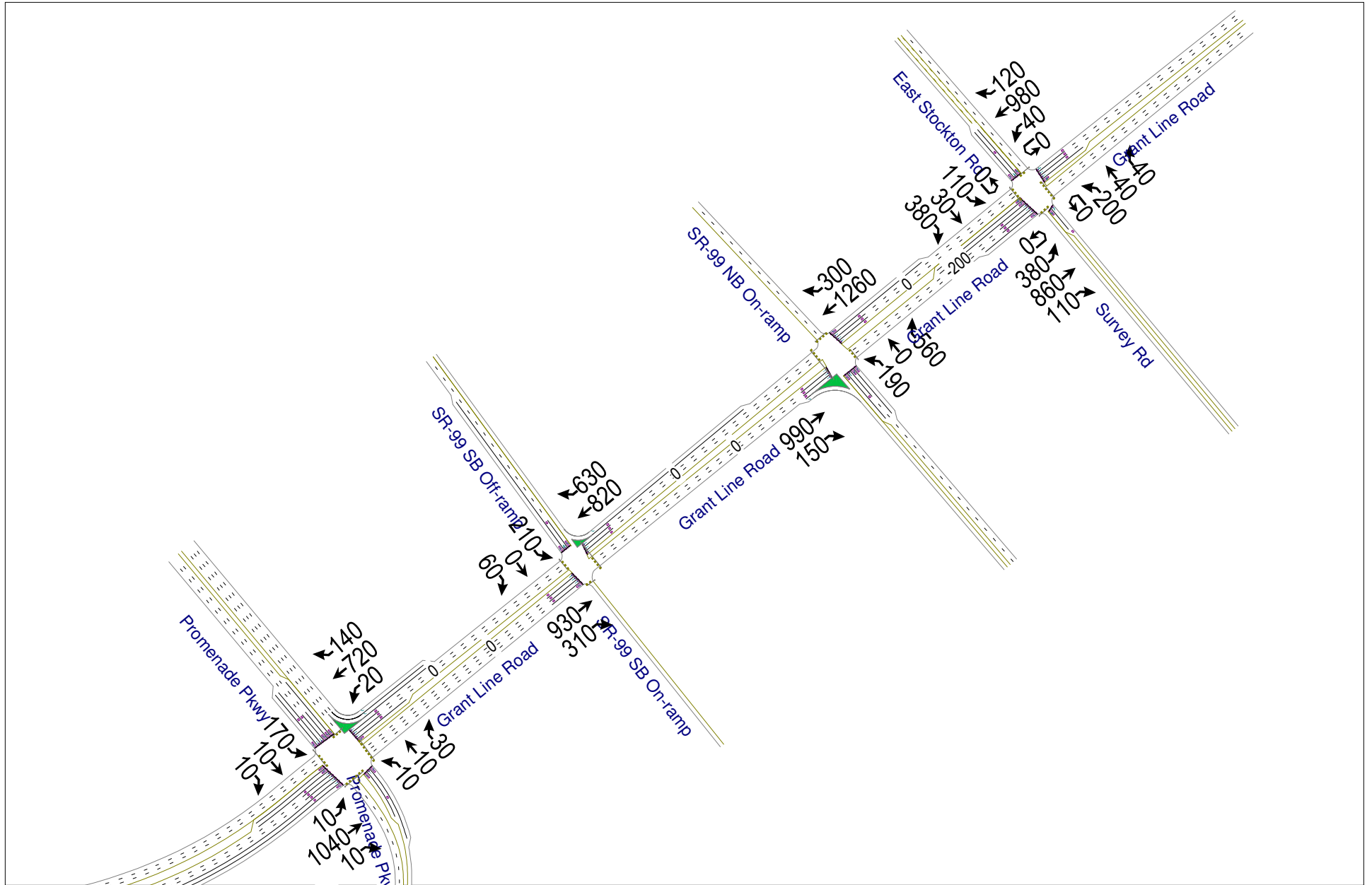
SEPA
E+P Whitelock AM



SEPA
E+P Whitelock PM



SEPA
E+P Whitelock PM



HCM Signalized Intersection Capacity Analysis

4: Laguna Springs Drive & Elk Grove Blvd

E+P Plus Whitelock
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑↑	↗	↔↗	↑↑↑		↔	↑	↗↘	↔	↑↗	
Volume (vph)	100	1530	200	570	1040	90	130	190	420	40	170	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1564	3433	5016		1770	1863	2787	1770	3367	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1564	3433	5016		1770	1863	2787	1770	3367	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	122	1866	244	695	1268	110	159	232	512	49	207	85
RTOR Reduction (vph)	0	0	83	0	6	0	0	0	419	0	34	0
Lane Group Flow (vph)	122	1866	161	695	1372	0	159	232	93	49	258	0
Confl. Bikes (#/hr)			1			1						4
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	13.9	61.3	61.3	28.4	75.8		12.7	26.2	26.2	6.9	20.4	
Effective Green, g (s)	13.9	61.3	61.3	28.4	75.8		12.7	26.2	26.2	6.9	20.4	
Actuated g/C Ratio	0.10	0.42	0.42	0.20	0.52		0.09	0.18	0.18	0.05	0.14	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	169	2149	661	672	2622		155	336	503	84	473	
v/s Ratio Prot	0.07	c0.37		c0.20	0.27		c0.09	c0.12		0.03	0.08	
v/s Ratio Perm			0.10						0.03			
v/c Ratio	0.72	0.87	0.24	1.03	0.52		1.03	0.69	0.18	0.58	0.55	
Uniform Delay, d1	63.7	38.2	26.9	58.3	22.7		66.2	55.6	50.3	67.6	58.0	
Progression Factor	1.00	1.00	1.00	1.17	0.51		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.1	5.1	0.9	42.4	0.7		79.3	4.9	0.1	6.5	0.7	
Delay (s)	75.8	43.3	27.8	110.7	12.3		145.4	60.5	50.4	74.1	58.7	
Level of Service	E	D	C	F	B		F	E	D	E	E	
Approach Delay (s)		43.3			45.3			69.7			60.9	
Approach LOS		D			D			E			E	

Intersection Summary

HCM 2000 Control Delay	49.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Auto Center Drive & Elk Grove Blvd

E+P Plus Whitelock
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑↑		↔	↑↑↑		↔	↑		↔	↑	
Volume (vph)	80	1610	350	390	1490	10	110	20	140	50	10	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4949		3433	5079		1770	1618		3433	1631	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4949		3433	5079		1770	1618		3433	1631	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	85	1713	372	415	1585	11	117	21	149	53	11	53
RTOR Reduction (vph)	0	17	0	0	0	0	0	139	0	0	49	0
Lane Group Flow (vph)	85	2068	0	415	1596	0	117	31	0	53	15	0
Confl. Bikes (#/hr)						2						
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	10.8	83.6		18.0	90.8		10.5	9.4		12.2	11.1	
Effective Green, g (s)	10.8	83.6		18.0	90.8		10.5	9.4		12.2	11.1	
Actuated g/C Ratio	0.07	0.58		0.12	0.63		0.07	0.06		0.08	0.08	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	131	2853		426	3180		128	104		288	124	
v/s Ratio Prot	0.05	c0.42		c0.12	0.31		c0.07	0.02		c0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.65	0.73		0.97	0.50		0.91	0.29		0.18	0.12	
Uniform Delay, d1	65.3	22.3		63.3	14.8		66.8	64.6		61.8	62.4	
Progression Factor	1.03	0.48		1.19	0.55		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.0	1.0		30.2	0.4		52.9	0.6		0.1	0.2	
Delay (s)	72.3	11.7		105.6	8.5		119.7	65.2		61.9	62.6	
Level of Service	E	B		F	A		F	E		E	E	
Approach Delay (s)		14.0			28.5			87.4			62.3	
Approach LOS		B			C			F			E	

Intersection Summary

HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	21.8
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 6: SR-99 SB On-ramp/SR-99 SB Off-ramp & Elk Grove Blvd

E+P Plus Whitelock
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	1710	370	240	1100	0	0	0	0	550	10	900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.97		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4931		1770	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4931		1770	5085					1681	1688	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1859	402	261	1196	0	0	0	0	598	11	978
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	0	102
Lane Group Flow (vph)	0	2238	0	261	1196	0	0	0	0	305	304	876
Confl. Bikes (#/hr)			2			2						
Turn Type		NA		Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		62.0		21.4	89.3					43.3	43.3	43.3
Effective Green, g (s)		62.0		21.4	89.3					43.3	43.3	43.3
Actuated g/C Ratio		0.43		0.15	0.62					0.30	0.30	0.30
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2108		261	3131					501	504	832
v/s Ratio Prot		c0.45		c0.15	0.24					0.18	0.18	
v/s Ratio Perm												c0.31
v/c Ratio		1.06		1.00	0.38					0.61	0.60	1.05
Uniform Delay, d1		41.5		61.8	14.0					43.6	43.5	50.9
Progression Factor		0.46		0.66	0.37					1.00	1.00	1.00
Incremental Delay, d2		36.8		51.7	0.3					1.4	1.4	46.2
Delay (s)		55.9		92.4	5.5					45.0	44.9	97.0
Level of Service		E		F	A					D	D	F
Approach Delay (s)		55.9			21.1			0.0			77.0	
Approach LOS		E			C			A			E	

Intersection Summary

HCM 2000 Control Delay	52.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

E+P Plus Whitelock
AM Peak Hour



























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↖	↑↑↑	↑↑↑	↘		
Volume (vph)	840	1420	1340	550	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	5085	5085	1583		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	5085	5085	1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	913	1543	1457	598	0	0
RTOR Reduction (vph)	0	0	0	19	0	0
Lane Group Flow (vph)	913	1543	1457	579	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	1	6	2			
Permitted Phases				2		
Actuated Green, G (s)	54.4	145.0	79.3	79.3		
Effective Green, g (s)	54.4	145.0	79.3	79.3		
Actuated g/C Ratio	0.38	1.00	0.55	0.55		
Clearance Time (s)	5.6	6.0	5.7	5.7		
Vehicle Extension (s)	2.0	3.0	2.0	2.0		
Lane Grp Cap (vph)	1287	5085	2780	865		
v/s Ratio Prot	c0.27	0.30	0.29			
v/s Ratio Perm				c0.37		
v/c Ratio	0.71	0.30	0.52	0.67		
Uniform Delay, d1	38.6	0.0	20.9	23.5		
Progression Factor	0.56	1.00	0.58	0.59		
Incremental Delay, d2	0.5	0.0	0.6	3.3		
Delay (s)	22.0	0.0	12.6	17.1		
Level of Service	C	A	B	B		
Approach Delay (s)		8.2	13.9		0.0	
Approach LOS		A	B		A	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	11.3
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: E. Stockton Blvd & Elk Grove Blvd

E+P Plus Whitelock
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	950	270	40	1210	130	500	130	180	200	90	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (prot)	1770	3539	1550	1770	5085	1583	1610	3152		1681	1736	1561
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (perm)	1770	3539	1550	1770	5085	1583	1610	3152		1681	1736	1561
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	1033	293	43	1315	141	543	141	196	217	98	174
RTOR Reduction (vph)	0	0	124	0	0	78	0	42	0	0	0	129
Lane Group Flow (vph)	98	1033	169	43	1315	63	299	539	0	156	159	45
Confl. Bikes (#/hr)			1									1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2						4
Actuated Green, G (s)	11.8	68.2	68.2	6.3	62.7	62.7	31.7	31.7		17.3	17.3	17.3
Effective Green, g (s)	11.8	68.2	68.2	6.3	62.7	62.7	31.7	31.7		17.3	17.3	17.3
Actuated g/C Ratio	0.08	0.47	0.47	0.04	0.43	0.43	0.22	0.22		0.12	0.12	0.12
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9	3.9	2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	144	1664	729	76	2198	684	351	689		200	207	186
v/s Ratio Prot	c0.06	c0.29		0.02	0.26		c0.19	0.17		c0.09	0.09	
v/s Ratio Perm			0.11			0.04						0.03
v/c Ratio	0.68	0.62	0.23	0.57	0.60	0.09	0.85	0.78		0.78	0.77	0.24
Uniform Delay, d1	64.8	28.7	22.8	68.0	31.5	24.3	54.4	53.4		62.0	61.9	57.9
Progression Factor	0.90	0.75	1.49	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.8	1.7	0.7	5.6	1.2	0.3	17.1	5.3		16.4	14.2	0.2
Delay (s)	68.0	23.1	34.8	73.6	32.7	24.6	71.5	58.7		78.4	76.1	58.1
Level of Service	E	C	C	E	C	C	E	E		E	E	E
Approach Delay (s)		28.6			33.1			63.1			70.4	
Approach LOS		C			C			E			E	

Intersection Summary		
HCM 2000 Control Delay	42.0	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.72	D
Actuated Cycle Length (s)	145.0	Sum of lost time (s)
Intersection Capacity Utilization	72.2%	21.5
Analysis Period (min)	15	ICU Level of Service
		C

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 9: E. Stockton Blvd & SR-99 NB Off-ramp

E+P Plus Whitelock
 AM Peak Hour



























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↵	↶		↕	↕	
Volume (veh/h)	370	20	0	410	370	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	487	26	0	539	487	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		1				
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)					808	
pX, platoon unblocked	0.99	0.99	0.99			
vC, conflicting volume	757	487	487			
vC1, stage 1 conf vol	487					
vC2, stage 2 conf vol	270					
vCu, unblocked vol	747	473	473			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	8	95	100			
cM capacity (veh/h)	529	530	1071			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	513	270	270	487
Volume Left	487	0	0	0
Volume Right	26	0	0	0
cSH	532	1700	1700	1700
Volume to Capacity	0.96	0.16	0.16	0.29
Queue Length 95th (ft)	318	0	0	0
Control Delay (s)	58.4	0.0	0.0	0.0
Lane LOS	F			
Approach Delay (s)	58.4	0.0		0.0
Approach LOS	F			

Intersection Summary			
Average Delay		19.5	
Intersection Capacity Utilization	46.6%		ICU Level of Service A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
 21: Promenade Pkwy & Kammerer Road/Grant Line Road

E+P Plus Whitelock
 AM Peak Hour













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	660	10	20	1030	170	10	10	20	120	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	11	742	11	22	1157	191	11	11	22	135	11	11
RTOR Reduction (vph)	0	0	6	0	0	112	0	0	20	0	0	9
Lane Group Flow (vph)	11	742	5	22	1157	79	11	11	2	135	11	2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	0.5	26.6	26.6	0.6	26.7	26.7	0.5	5.3	5.3	6.7	11.0	11.0
Effective Green, g (s)	0.5	26.6	26.6	0.6	26.7	26.7	0.5	5.3	5.3	6.7	11.0	11.0
Actuated g/C Ratio	0.01	0.41	0.41	0.01	0.41	0.41	0.01	0.08	0.08	0.10	0.17	0.17
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	26	2634	650	16	2098	1150	13	152	129	516	601	269
v/s Ratio Prot	0.00	0.12		c0.01	c0.23		0.01	c0.01		c0.03	c0.00	
v/s Ratio Perm			0.00			0.03			0.00			0.00
v/c Ratio	0.42	0.28	0.01	1.38	0.55	0.07	0.85	0.07	0.01	0.26	0.02	0.01
Uniform Delay, d1	32.0	12.7	11.3	32.1	14.4	11.5	32.1	27.4	27.3	26.7	22.4	22.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.0	0.0	0.0	361.4	0.2	0.0	162.2	0.1	0.0	0.1	0.0	0.0
Delay (s)	36.0	12.7	11.3	393.4	14.6	11.5	194.3	27.5	27.3	26.8	22.4	22.3
Level of Service	D	B	B	F	B	B	F	C	C	C	C	C
Approach Delay (s)		13.0			20.3			69.1			26.2	
Approach LOS		B			C			E			C	

Intersection Summary

HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	26.0
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 22: SR-99 SB On-ramp/SR-99 SB Off-ramp & Grant Line Road

E+P Plus Whitelock
 AM Peak Hour













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↘	↔	↗
Volume (vph)	0	630	170	0	1170	440	0	0	0	210	0	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.99	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1607	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1607	1504
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	670	181	0	1245	468	0	0	0	223	0	53
RTOR Reduction (vph)	0	0	81	0	0	0	0	0	0	0	26	26
Lane Group Flow (vph)	0	670	100	0	1245	468	0	0	0	114	88	22
Turn Type		NA	Perm		NA	Free				Perm	NA	Perm
Protected Phases		6			2						8	
Permitted Phases			6			Free				8		8
Actuated Green, G (s)		30.4	30.4		30.4	55.0				12.3	12.3	12.3
Effective Green, g (s)		30.4	30.4		30.4	55.0				12.3	12.3	12.3
Actuated g/C Ratio		0.55	0.55		0.55	1.00				0.22	0.22	0.22
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2810	874		2810	1583				375	359	336
v/s Ratio Prot		0.13			c0.24							
v/s Ratio Perm			0.06			c0.30				0.07	0.05	0.01
v/c Ratio		0.24	0.11		0.44	0.30				0.30	0.25	0.07
Uniform Delay, d1		6.3	5.9		7.3	0.0				17.8	17.5	16.8
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.1		0.2	0.5				0.2	0.1	0.0
Delay (s)		6.4	6.0		7.4	0.5				18.0	17.7	16.9
Level of Service		A	A		A	A				B	B	B
Approach Delay (s)		6.3			5.5			0.0			17.6	
Approach LOS		A			A			A			B	

Intersection Summary

HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

E+P Plus Whitelock
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↗	↖	↖				
Volume (vph)	0	730	110	0	1210	190	400	0	490	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6				
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88				
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85				
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00				
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787				
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00				
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	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	811	122	0	1344	211	444	0	544	0	0	0	
RTOR Reduction (vph)	0	0	59	0	0	101	0	0	77	0	0	0	
Lane Group Flow (vph)	0	811	63	0	1344	110	222	222	467	0	0	0	
Turn Type		NA	Perm		NA	Perm	Split	NA	Perm				
Protected Phases		6			2		4	4					
Permitted Phases			6			2			4				
Actuated Green, G (s)		31.8	31.8		32.3	32.3	19.2	19.2	19.2				
Effective Green, g (s)		31.8	31.8		32.3	32.3	19.2	19.2	19.2				
Actuated g/C Ratio		0.51	0.51		0.52	0.52	0.31	0.31	0.31				
Clearance Time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6				
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	2.0	2.0				
Lane Grp Cap (vph)		2616	814		2657	827	522	522	865				
v/s Ratio Prot		0.16			0.26		0.13	0.13					
v/s Ratio Perm			0.04			0.07			0.17				
v/c Ratio		0.31	0.08		0.51	0.13	0.43	0.43	0.54				
Uniform Delay, d1		8.7	7.6		9.6	7.6	16.9	16.9	17.6				
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2		0.1	0.1		0.2	0.1	0.2	0.2	0.4				
Delay (s)		8.8	7.6		9.8	7.7	17.1	17.1	18.0				
Level of Service		A	A		A	A	B	B	B				
Approach Delay (s)		8.6			9.5			17.6			0.0		
Approach LOS		A			A			B			A		
Intersection Summary													
HCM 2000 Control Delay			11.6		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.52										
Actuated Cycle Length (s)			61.8		Sum of lost time (s)				10.8				
Intersection Capacity Utilization			43.0%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 24: Survey Rd/East Stockton Rd & Grant Line Road

E+P Plus Whitelock
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	320	710	110	50	940	160	110	30	20	100	20	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	4974		1770	1749		1681	1713	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	5085	1583	1770	4974		1770	1749		1681	1713	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	344	763	118	54	1011	172	118	32	22	108	22	376
RTOR Reduction (vph)	0	0	60	0	13	0	0	19	0	0	0	332
Lane Group Flow (vph)	344	763	58	54	1170	0	118	35	0	65	65	44
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6									3
Actuated Green, G (s)	15.7	45.9	45.9	6.2	36.4		14.8	14.8		12.1	12.1	12.1
Effective Green, g (s)	15.7	45.9	45.9	6.2	36.4		14.8	14.8		12.1	12.1	12.1
Actuated g/C Ratio	0.15	0.45	0.45	0.06	0.36		0.14	0.14		0.12	0.12	0.12
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	525	2277	708	107	1766		255	252		198	202	186
v/s Ratio Prot	c0.10	0.15		0.03	c0.24		c0.07	0.02		c0.04	0.04	
v/s Ratio Perm			0.04									0.03
v/c Ratio	0.66	0.34	0.08	0.50	0.66		0.46	0.14		0.33	0.32	0.24
Uniform Delay, d1	40.9	18.4	16.2	46.7	27.9		40.2	38.3		41.5	41.4	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.2	0.1	0.0	1.4	0.9		1.3	0.3		0.4	0.3	0.2
Delay (s)	43.1	18.5	16.3	48.0	28.8		41.5	38.5		41.8	41.8	41.3
Level of Service	D	B	B	D	C		D	D		D	D	D
Approach Delay (s)		25.2			29.7			40.6			41.4	
Approach LOS		C			C			D			D	

Intersection Summary

HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	102.5	Sum of lost time (s)	23.5
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

4: Laguna Springs Drive & Elk Grove Blvd

E+P Plus Whitelock
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1400	30	440	1730	80	70	170	470	140	110	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3232	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3232	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	103	1443	31	454	1784	82	72	175	485	144	113	155
RTOR Reduction (vph)	0	0	17	0	3	0	0	0	420	0	129	0
Lane Group Flow (vph)	103	1443	14	454	1863	0	72	175	65	144	139	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	11.6	66.2	66.2	22.3	76.9		9.8	19.3	19.3	15.0	24.5	
Effective Green, g (s)	11.6	66.2	66.2	22.3	76.9		9.8	19.3	19.3	15.0	24.5	
Actuated g/C Ratio	0.08	0.46	0.46	0.15	0.53		0.07	0.13	0.13	0.10	0.17	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	141	2321	722	527	2679		119	247	370	183	546	
v/s Ratio Prot	0.06	0.28		c0.13	c0.37		0.04	c0.09		c0.08	c0.04	
v/s Ratio Perm			0.01						0.02			
v/c Ratio	0.73	0.62	0.02	0.86	0.70		0.61	0.71	0.17	0.79	0.25	
Uniform Delay, d1	65.2	29.9	21.6	59.8	25.3		65.7	60.2	55.8	63.4	52.3	
Progression Factor	1.00	1.00	1.00	1.34	0.46		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.4	1.3	0.0	4.7	0.5		5.8	7.4	0.1	18.3	0.1	
Delay (s)	80.5	31.2	21.7	84.8	12.2		71.6	67.5	55.9	81.7	52.4	
Level of Service	F	C	C	F	B		E	E	E	F	D	
Approach Delay (s)		34.2			26.4			60.2			62.7	
Approach LOS		C			C			E			E	
Intersection Summary												
HCM 2000 Control Delay			36.7			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			145.0			Sum of lost time (s)			22.2			
Intersection Capacity Utilization			82.2%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Auto Center Drive & Elk Grove Blvd

E+P Plus Whitelock
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	🚗	🚗🚗🚗		🚗🚗	🚗🚗🚗		🚗	🚗		🚗🚗	🚗	
Volume (vph)	120	1500	300	180	1740	10	480	30	480	190	20	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.86		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4958		3433	5081		1770	1600		3433	1624	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4958		3433	5081		1770	1600		3433	1624	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	1562	312	188	1812	10	500	31	500	198	21	125
RTOR Reduction (vph)	0	18	0	0	1	0	0	81	0	0	86	0
Lane Group Flow (vph)	125	1856	0	188	1821	0	500	450	0	198	60	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	8.4	59.0		6.4	57.0		32.4	45.8		12.0	25.4	
Effective Green, g (s)	8.4	59.0		6.4	57.0		32.4	45.8		12.0	25.4	
Actuated g/C Ratio	0.06	0.41		0.04	0.39		0.22	0.32		0.08	0.18	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	102	2017		151	1997		395	505		284	284	
v/s Ratio Prot	c0.07	c0.37		0.05	0.36		c0.28	c0.28		c0.06	0.04	
v/s Ratio Perm												
v/c Ratio	1.23	0.92		1.25	0.91		1.27	0.89		0.70	0.21	
Uniform Delay, d1	68.3	40.8		69.3	41.6		56.3	47.2		64.7	51.2	
Progression Factor	1.26	0.67		1.02	0.75		1.00	1.00		1.00	1.00	
Incremental Delay, d2	152.7	6.9		144.4	6.0		138.4	17.3		5.9	0.1	
Delay (s)	238.5	34.3		215.3	37.4		194.7	64.6		70.6	51.4	
Level of Service	F	C		F	D		F	E		E	D	
Approach Delay (s)		47.0			54.1			127.7			62.5	
Approach LOS		D			D			F			E	

Intersection Summary

HCM 2000 Control Delay	66.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	21.8
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 6: SR-99 SB On-ramp/SR-99 SB Off-ramp & Elk Grove Blvd

E+P Plus Whitelock
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	1770	490	100	1190	0	0	0	0	690	10	980
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frt		0.97		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4920		1770	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4920		1770	5085					1681	1688	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1806	500	102	1214	0	0	0	0	704	10	1000
RTOR Reduction (vph)	0	34	0	0	0	0	0	0	0	0	0	75
Lane Group Flow (vph)	0	2272	0	102	1214	0	0	0	0	359	355	925
Turn Type		NA		Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		67.7		9.8	83.4					49.2	49.2	49.2
Effective Green, g (s)		67.7		9.8	83.4					49.2	49.2	49.2
Actuated g/C Ratio		0.47		0.07	0.58					0.34	0.34	0.34
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2297		119	2924					570	572	945
v/s Ratio Prot		c0.46		c0.06	0.24					0.21	0.21	
v/s Ratio Perm												c0.33
v/c Ratio		0.99		0.86	0.42					0.63	0.62	0.98
Uniform Delay, d1		38.3		66.9	17.2					40.2	40.1	47.4
Progression Factor		0.51		0.71	0.87					1.00	1.00	1.00
Incremental Delay, d2		11.1		36.5	0.4					1.6	1.5	23.9
Delay (s)		30.8		83.7	15.3					41.8	41.6	71.3
Level of Service		C		F	B					D	D	E
Approach Delay (s)		30.8			20.6			0.0			59.0	
Approach LOS		C			C			A			E	

Intersection Summary

HCM 2000 Control Delay	37.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

E+P Plus Whitelock
PM Peak Hour



























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↖	↑↑↑	↑↑↑	↘		
Volume (vph)	750	1710	1290	550	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	5085	5085	1583		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	5085	5085	1583		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	806	1839	1387	591	0	0
RTOR Reduction (vph)	0	0	0	18	0	0
Lane Group Flow (vph)	806	1839	1387	573	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	1	6	2			
Permitted Phases				2		
Actuated Green, G (s)	23.4	72.5	37.8	37.8		
Effective Green, g (s)	23.4	72.5	37.8	37.8		
Actuated g/C Ratio	0.32	1.00	0.52	0.52		
Clearance Time (s)	5.6	6.0	5.7	5.7		
Vehicle Extension (s)	2.0	3.0	2.0	2.0		
Lane Grp Cap (vph)	1108	5085	2651	825		
v/s Ratio Prot	c0.23	0.36	0.27			
v/s Ratio Perm				c0.36		
v/c Ratio	0.73	0.36	0.52	0.69		
Uniform Delay, d1	21.7	0.0	11.4	13.0		
Progression Factor	1.34	1.00	0.85	0.90		
Incremental Delay, d2	1.1	0.1	0.6	3.9		
Delay (s)	30.2	0.1	10.3	15.7		
Level of Service	C	A	B	B		
Approach Delay (s)		9.3	11.9		0.0	
Approach LOS		A	B		A	

Intersection Summary

HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	72.5	Sum of lost time (s)	11.3
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: E. Stockton Blvd & Elk Grove Blvd

E+P Plus Whitelock
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1020	480	60	1160	110	500	120	230	210	140	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.99	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1610	3123		1681	1751	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.99	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1610	3123		1681	1751	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	1074	505	63	1221	116	526	126	242	221	147	147
RTOR Reduction (vph)	0	0	213	0	0	69	0	77	0	0	0	128
Lane Group Flow (vph)	126	1074	292	63	1221	47	305	512	0	181	187	19
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2						4
Actuated Green, G (s)	13.7	65.8	65.8	7.2	59.3	59.3	31.6	31.6		18.9	18.9	18.9
Effective Green, g (s)	13.7	65.8	65.8	7.2	59.3	59.3	31.6	31.6		18.9	18.9	18.9
Actuated g/C Ratio	0.09	0.45	0.45	0.05	0.41	0.41	0.22	0.22		0.13	0.13	0.13
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9	3.9	2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	167	1605	718	87	2079	647	350	680		219	228	206
v/s Ratio Prot	c0.07	c0.30		0.04	0.24		c0.19	0.16		c0.11	0.11	
v/s Ratio Perm			0.18			0.03						0.01
v/c Ratio	0.75	0.67	0.41	0.72	0.59	0.07	0.87	0.75		0.83	0.82	0.09
Uniform Delay, d1	64.0	31.1	26.5	67.9	33.3	26.1	54.7	53.0		61.5	61.4	55.5
Progression Factor	0.92	0.77	1.30	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	15.0	2.1	1.6	22.1	1.2	0.2	19.9	4.2		20.9	19.6	0.1
Delay (s)	74.1	25.9	36.1	90.0	34.6	26.3	74.6	57.2		82.3	81.0	55.6
Level of Service	E	C	D	F	C	C	E	E		F	F	E
Approach Delay (s)		32.5			36.4			63.2			74.2	
Approach LOS		C			D			E			E	

Intersection Summary

HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 9: E. Stockton Blvd & SR-99 NB Off-ramp

E+P Plus Whitelock
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↶	↷		↶↷	↶	
Volume (veh/h)	340	30	0	400	590	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	351	31	0	412	608	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		1				
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)					808	
pX, platoon unblocked	0.95	0.95	0.95			
vC, conflicting volume	814	608	608			
vC1, stage 1 conf vol	608					
vC2, stage 2 conf vol	206					
vCu, unblocked vol	775	557	557			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	27	93	100			
cM capacity (veh/h)	478	448	955			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	381	206	206	608
Volume Left	351	0	0	0
Volume Right	31	0	0	0
cSH	486	1700	1700	1700
Volume to Capacity	0.78	0.12	0.12	0.36
Queue Length 95th (ft)	177	0	0	0
Control Delay (s)	34.4	0.0	0.0	0.0
Lane LOS	D			
Approach Delay (s)	34.4	0.0		0.0
Approach LOS	D			

Intersection Summary			
Average Delay		9.4	
Intersection Capacity Utilization		56.6%	ICU Level of Service B
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 21: Promenade Pkwy & Kammerer Road/Grant Line Road

E+P Plus Whitelock
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	1040	10	20	720	140	10	10	30	170	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	1106	11	21	766	149	11	11	32	181	11	11
RTOR Reduction (vph)	0	0	7	0	0	93	0	0	29	0	0	9
Lane Group Flow (vph)	11	1106	4	21	766	56	11	11	3	181	11	2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	0.5	23.1	23.1	0.5	23.1	23.1	0.5	5.0	5.0	7.5	11.5	11.5
Effective Green, g (s)	0.5	23.1	23.1	0.5	23.1	23.1	0.5	5.0	5.0	7.5	11.5	11.5
Actuated g/C Ratio	0.01	0.38	0.38	0.01	0.38	0.38	0.01	0.08	0.08	0.12	0.19	0.19
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	27	2403	593	14	1906	1045	14	151	128	607	660	295
v/s Ratio Prot	0.00	c0.17		c0.01	0.15		0.01	c0.01		c0.04	0.00	
v/s Ratio Perm			0.00			0.02			0.00			0.00
v/c Ratio	0.41	0.46	0.01	1.50	0.40	0.05	0.79	0.07	0.02	0.30	0.02	0.01
Uniform Delay, d1	30.4	14.5	12.1	30.6	14.2	12.3	30.5	26.2	26.0	24.7	20.4	20.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.1	0.0	427.8	0.1	0.0	123.8	0.1	0.0	0.1	0.0	0.0
Delay (s)	34.0	14.6	12.1	458.4	14.2	12.3	154.3	26.2	26.1	24.8	20.4	20.4
Level of Service	C	B	B	F	B	B	F	C	C	C	C	C
Approach Delay (s)		14.8			23.9			52.2			24.3	
Approach LOS		B			C			D			C	

Intersection Summary		
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.39	
Actuated Cycle Length (s)	61.6	Sum of lost time (s) 26.0
Intersection Capacity Utilization	39.1%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 22: SR-99 SB On-ramp/SR-99 SB Off-ramp & Grant Line Road

E+P Plus Whitelock
 PM Peak Hour















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↘	↕	↗
Volume (vph)	0	930	310	0	820	630	0	0	0	210	0	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.99	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1605	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1605	1504
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	969	323	0	854	656	0	0	0	219	0	62
RTOR Reduction (vph)	0	0	146	0	0	0	0	0	0	0	26	43
Lane Group Flow (vph)	0	969	177	0	854	656	0	0	0	114	85	13
Turn Type		NA	Perm		NA	Free				Perm	NA	Perm
Protected Phases		6			2						8	
Permitted Phases			6			Free				8		8
Actuated Green, G (s)		29.4	29.4		29.4	53.8				12.1	12.1	12.1
Effective Green, g (s)		29.4	29.4		29.4	53.8				12.1	12.1	12.1
Actuated g/C Ratio		0.55	0.55		0.55	1.00				0.22	0.22	0.22
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2778	865		2778	1583				378	360	338
v/s Ratio Prot		0.19			0.17							
v/s Ratio Perm			0.11			c0.41				0.07	0.05	0.01
v/c Ratio		0.35	0.20		0.31	0.41				0.30	0.24	0.04
Uniform Delay, d1		6.8	6.2		6.7	0.0				17.3	17.1	16.3
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.2		0.1	0.8				0.2	0.1	0.0
Delay (s)		6.9	6.4		6.7	0.8				17.5	17.2	16.3
Level of Service		A	A		A	A				B	B	B
Approach Delay (s)		6.8			4.2			0.0			17.1	
Approach LOS		A			A			A			B	

Intersection Summary

HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	53.8	Sum of lost time (s)	12.3
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

E+P Plus Whitelock
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↘	↖	↗↗				
Volume (vph)	0	990	150	0	1260	300	190	0	560	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6				
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88				
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85				
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00				
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787				
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00				
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	2787				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	1076	163	0	1370	326	207	0	609	0	0	0	
RTOR Reduction (vph)	0	0	66	0	0	158	0	0	28	0	0	0	
Lane Group Flow (vph)	0	1076	97	0	1370	168	103	104	581	0	0	0	
Turn Type		NA	Perm		NA	Perm	Split	NA	Perm				
Protected Phases		6			2		4	4					
Permitted Phases			6			2			4				
Actuated Green, G (s)		33.0	33.0		33.5	33.5	21.3	21.3	21.3				
Effective Green, g (s)		33.0	33.0		33.5	33.5	21.3	21.3	21.3				
Actuated g/C Ratio		0.51	0.51		0.51	0.51	0.33	0.33	0.33				
Clearance Time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6				
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	2.0	2.0				
Lane Grp Cap (vph)		2577	802		2616	814	550	550	911				
v/s Ratio Prot		0.21			c0.27		0.06	0.06					
v/s Ratio Perm			0.06			0.11			c0.21				
v/c Ratio		0.42	0.12		0.52	0.21	0.19	0.19	0.64				
Uniform Delay, d1		10.0	8.4		10.5	8.6	15.7	15.7	18.6				
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2		0.2	0.1		0.2	0.2	0.1	0.1	1.1				
Delay (s)		10.2	8.5		10.7	8.8	15.8	15.8	19.7				
Level of Service		B	A		B	A	B	B	B				
Approach Delay (s)		10.0			10.4			18.7			0.0		
Approach LOS		A			B			B			A		
Intersection Summary													
HCM 2000 Control Delay			12.0		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.57										
Actuated Cycle Length (s)			65.1		Sum of lost time (s)				10.8				
Intersection Capacity Utilization			47.7%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 24: Survey Rd/East Stockton Rd & Grant Line Road

E+P Plus Whitelock
 PM Peak Hour

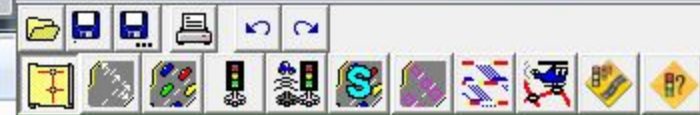


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↑	↗	↔	↑↑↑		↔	↗		↔	↗	↗
Volume (vph)	380	860	110	40	980	120	200	40	40	110	30	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	5002		1770	1723		1681	1720	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5002		1770	1723		1681	1720	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	413	935	120	43	1065	130	217	43	43	120	33	413
RTOR Reduction (vph)	0	0	61	0	9	0	0	26	0	0	0	266
Lane Group Flow (vph)	413	935	59	43	1186	0	217	60	0	76	77	147
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6									3
Actuated Green, G (s)	16.8	48.8	48.8	4.5	36.5		20.0	20.0		15.6	15.6	15.6
Effective Green, g (s)	16.8	48.8	48.8	4.5	36.5		20.0	20.0		15.6	15.6	15.6
Actuated g/C Ratio	0.15	0.43	0.43	0.04	0.32		0.18	0.18		0.14	0.14	0.14
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	513	2207	687	70	1624		314	306		233	238	219
v/s Ratio Prot	c0.12	0.18		0.02	c0.24		c0.12	0.03		0.05	0.04	
v/s Ratio Perm			0.04									c0.09
v/c Ratio	0.81	0.42	0.09	0.61	0.73		0.69	0.20		0.33	0.32	0.67
Uniform Delay, d1	46.2	22.0	18.7	53.1	33.6		43.3	39.3		43.7	43.6	46.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.5	0.1	0.1	10.7	1.7		6.4	0.3		0.3	0.3	6.2
Delay (s)	54.7	22.2	18.7	63.8	35.3		49.7	39.7		44.0	43.9	52.2
Level of Service	D	C	B	E	D		D	D		D	D	D
Approach Delay (s)		31.0			36.3			46.9			49.9	
Approach LOS		C			D			D			D	

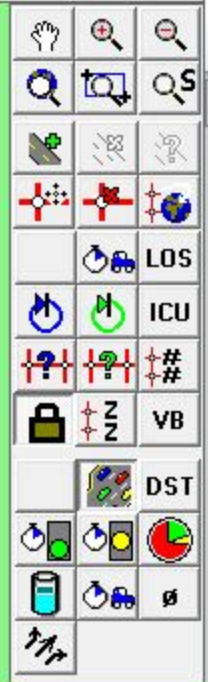
Intersection Summary

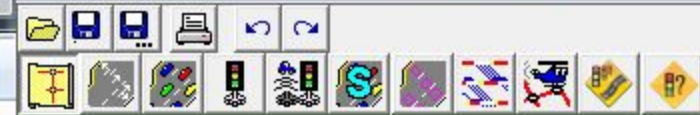
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	112.4	Sum of lost time (s)	23.5
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Cumulative Plus Project Conditions

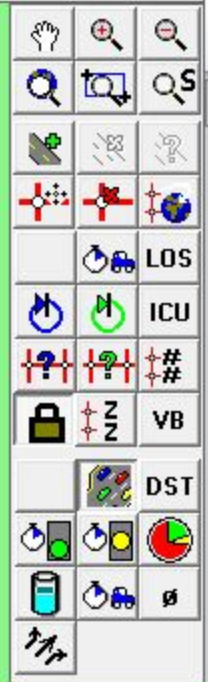


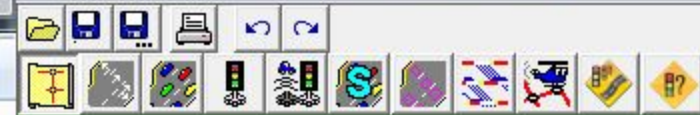
1 Elk Grove Blvd & Franklin Blvd



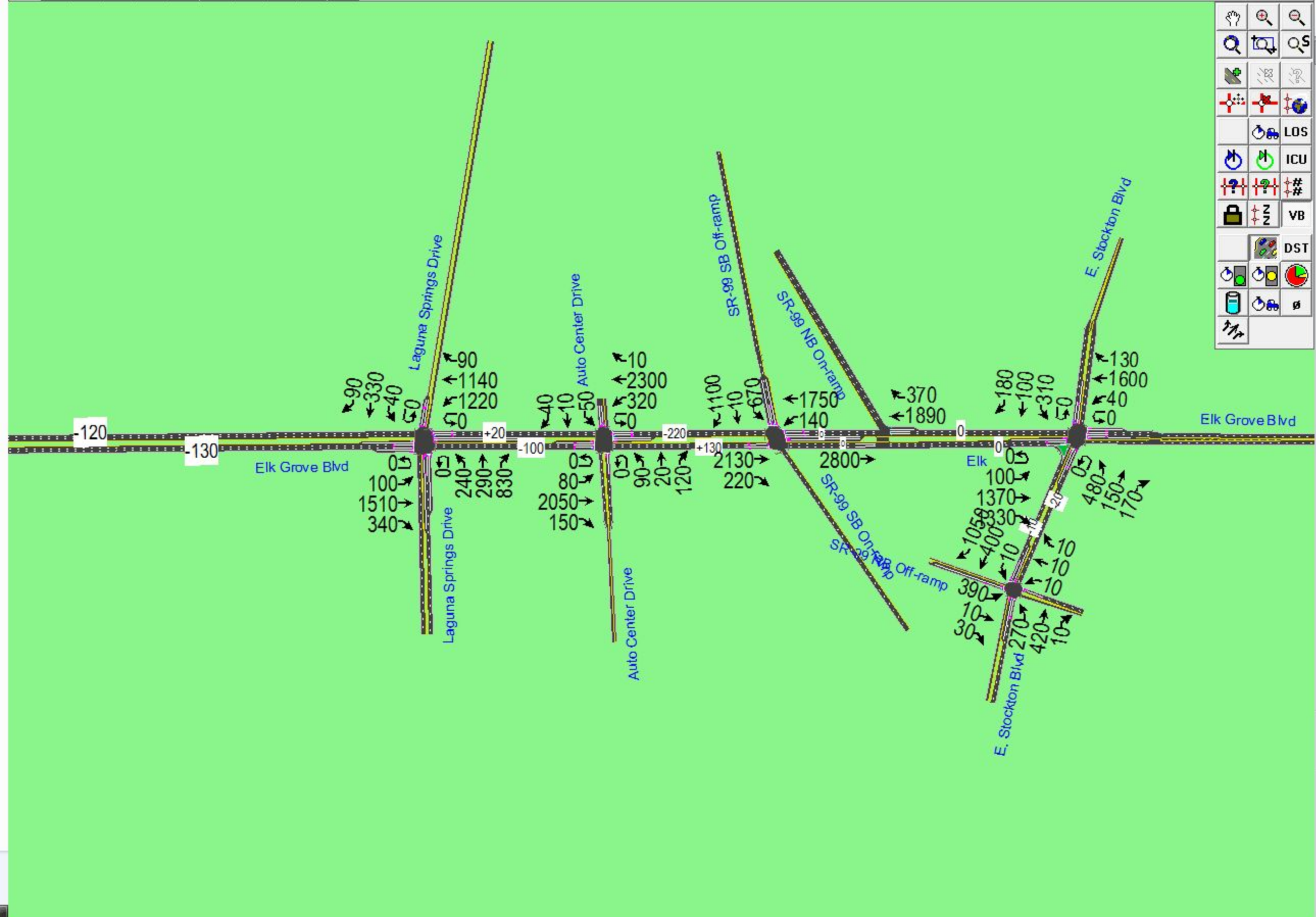


1 Elk Grove Blvd & Franklin Blvd



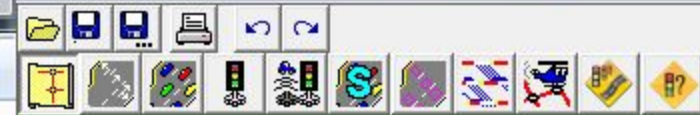


1 Elk Grove Blvd & Franklin Blvd

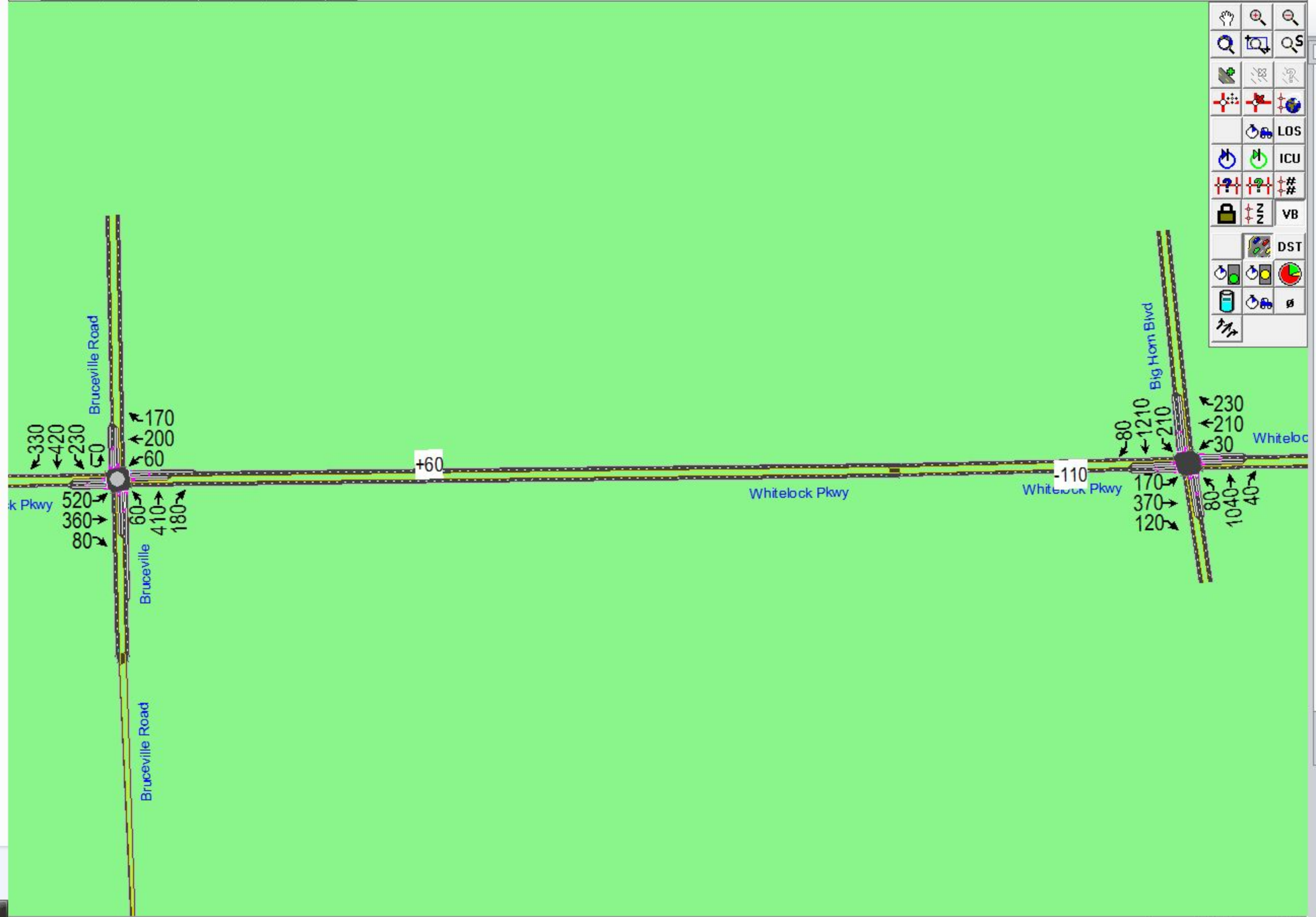


Vertical toolbar on the right side of the software interface. It includes icons for zooming, panning, and simulation controls. The following tools are visible:

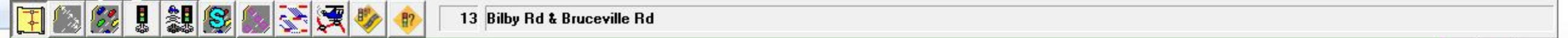
- Hand icon (pan)
- Zoom in icon
- Zoom out icon
- Search icon
- Simulation control icons (stop, play, etc.)
- LOS (Level of Service) tool
- ICU (Incident Clearance Unit) tool
- Vehicle count tool (#)
- Vehicle type tool (VB)
- DST (Data Storage Tool) icon
- Simulation status icons (battery, signal, etc.)



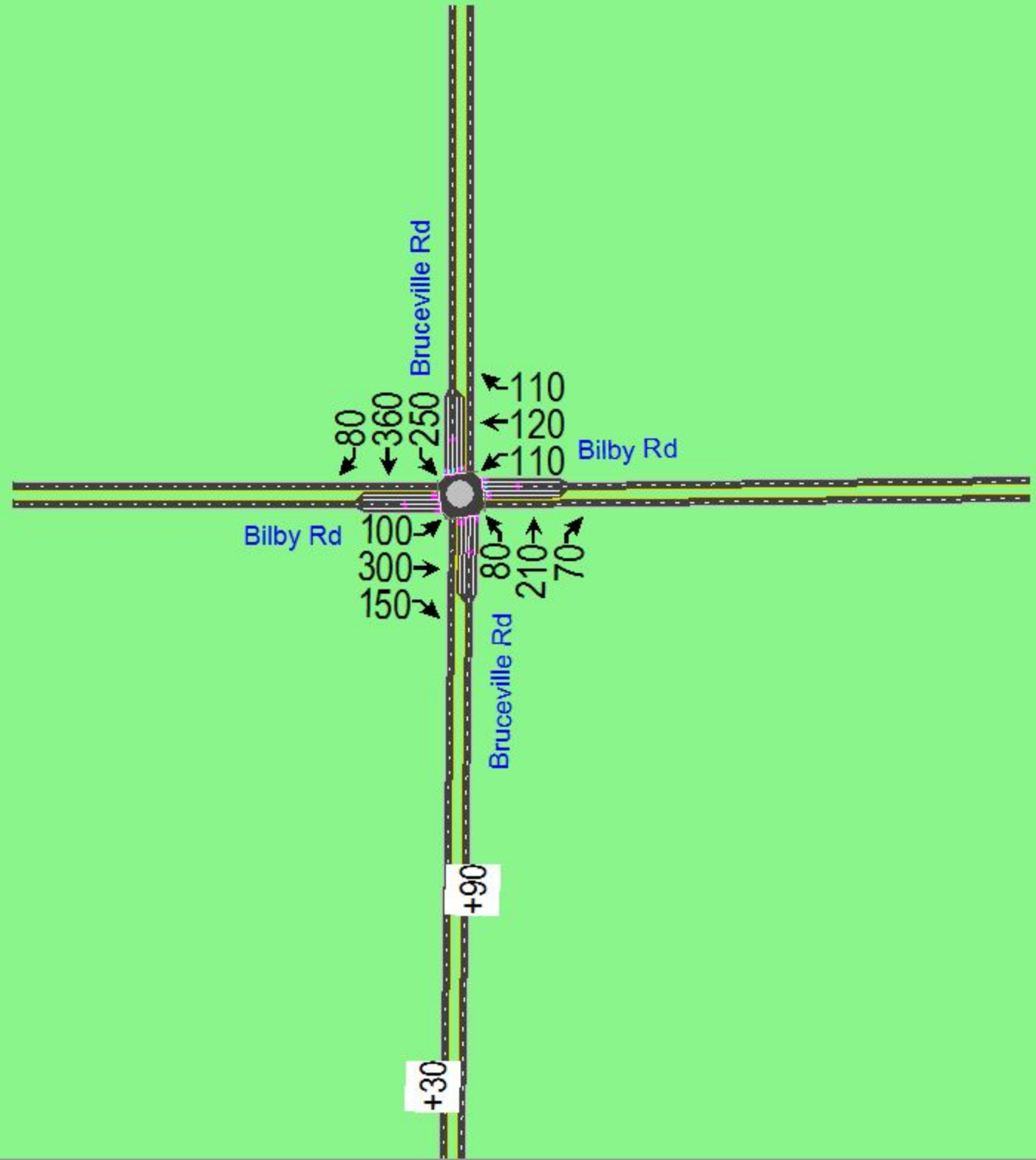
10 Whitelock Pkwy & Bruceville Road

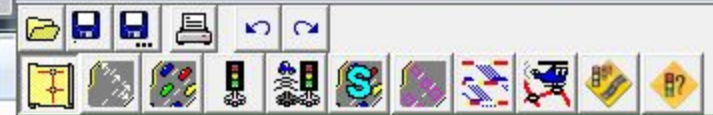


A vertical toolbar on the right side of the interface contains various simulation control icons. From top to bottom, the icons include: a hand (pan), a magnifying glass (zoom in), a magnifying glass with a minus sign (zoom out), a magnifying glass with a square (pan to selection), a magnifying glass with a square and a plus sign (zoom in to selection), a magnifying glass with a square and a minus sign (zoom out to selection), a green tree icon, a red tree icon, a blue globe icon, a blue car icon labeled "LOS", a green car icon labeled "ICU", a red car icon labeled "#", a blue car icon labeled "#", a blue padlock icon labeled "VB", a blue car icon labeled "DST", a blue car icon, a blue car icon, a blue car icon, and a blue car icon.

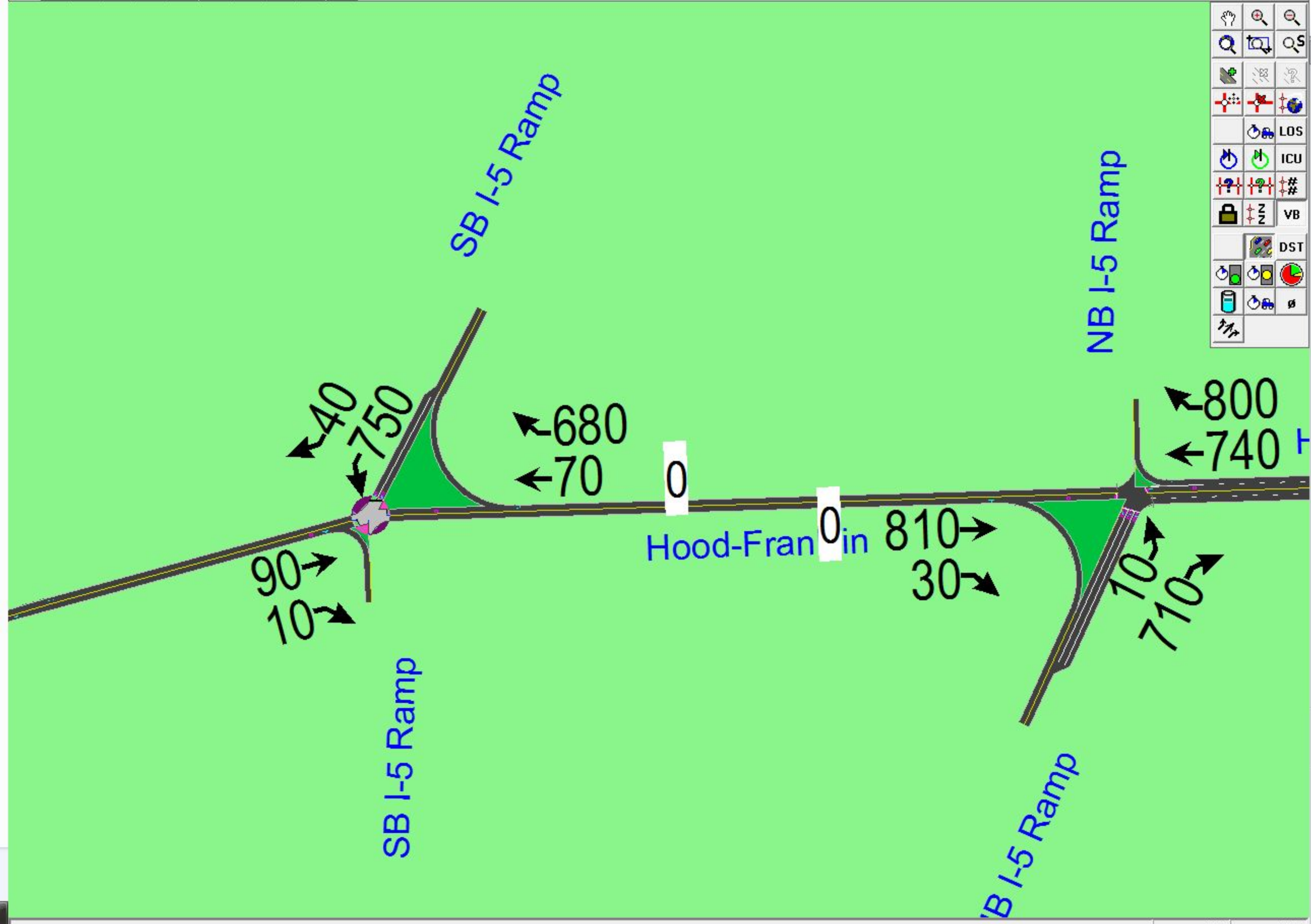


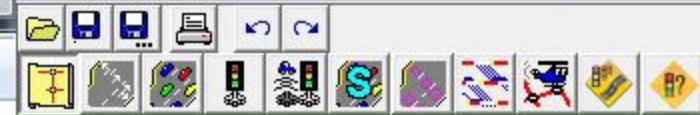
	LOS	
	ICU	
	#	
# icon"/>	#	
	VB	
	DST	



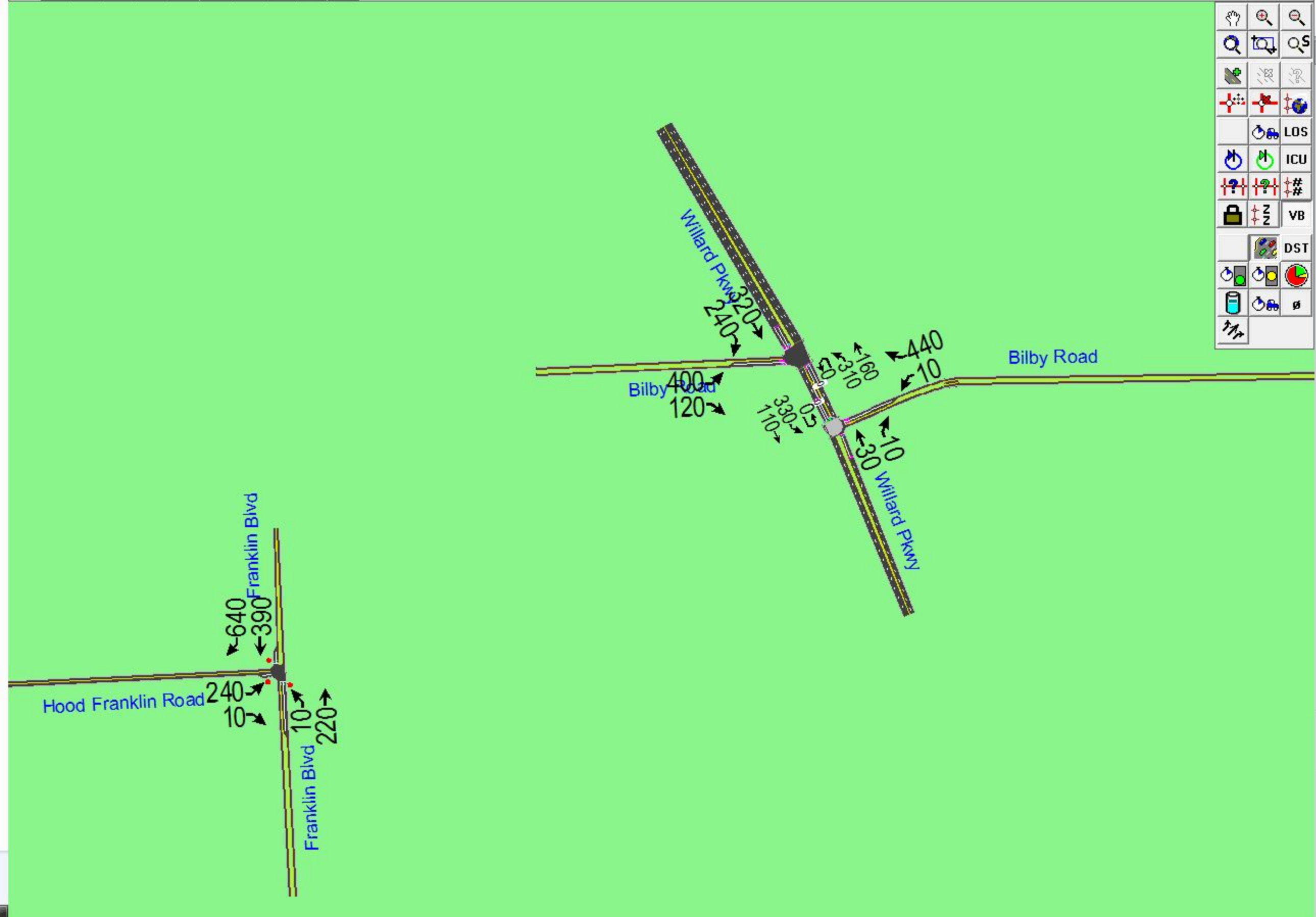


14 Hood-Franklin Rd & SB I-5 Ramp



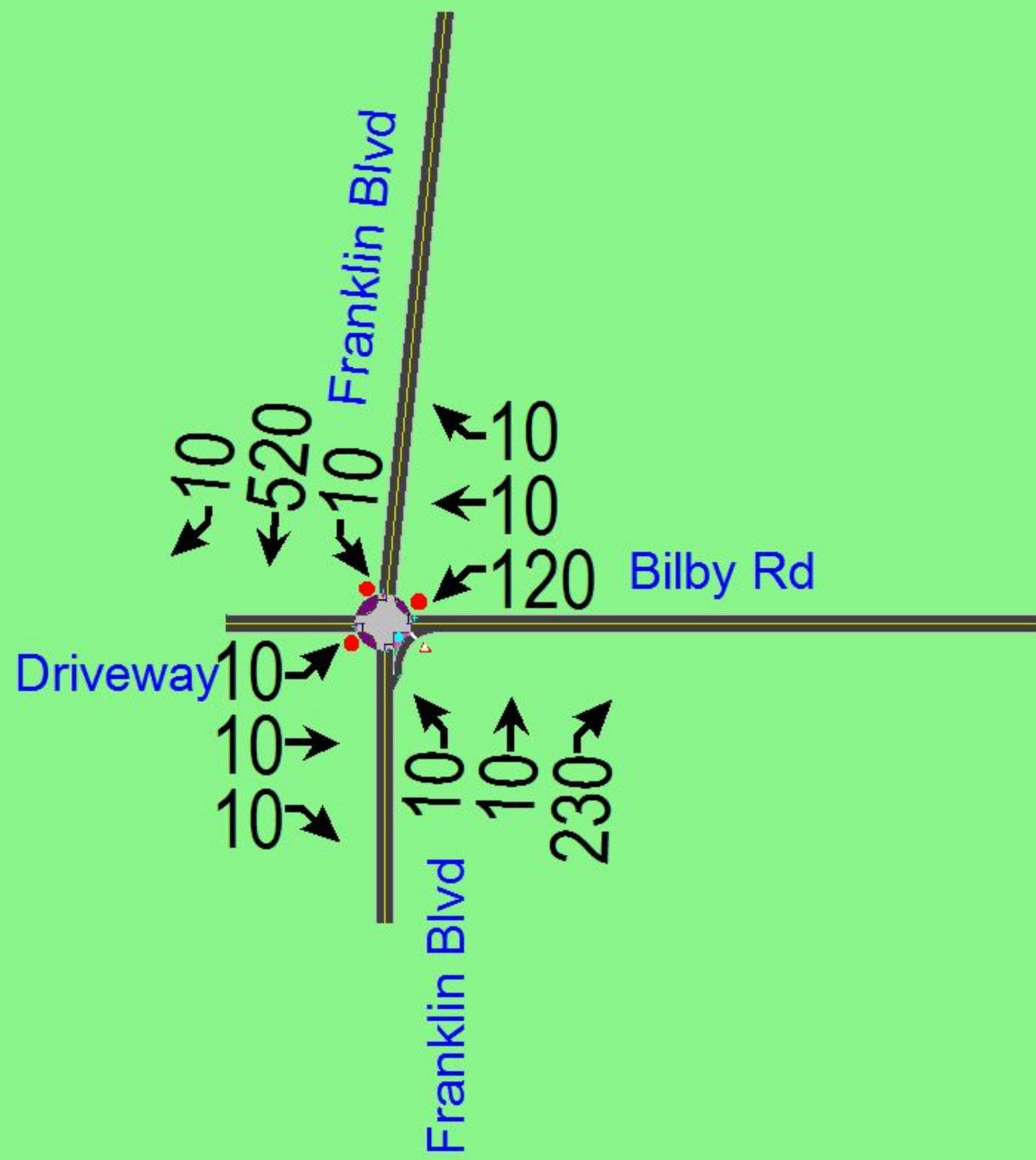
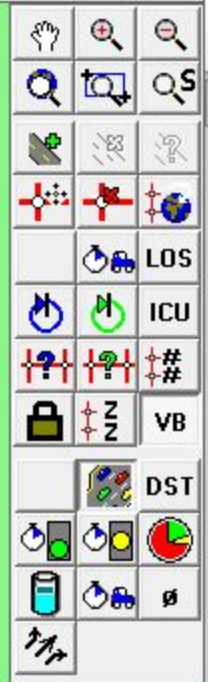


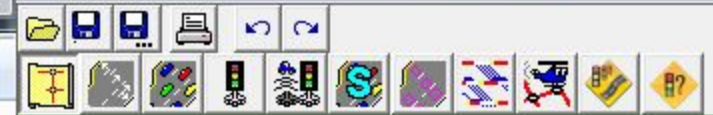
19 Bilby Road & Willard Pkwy



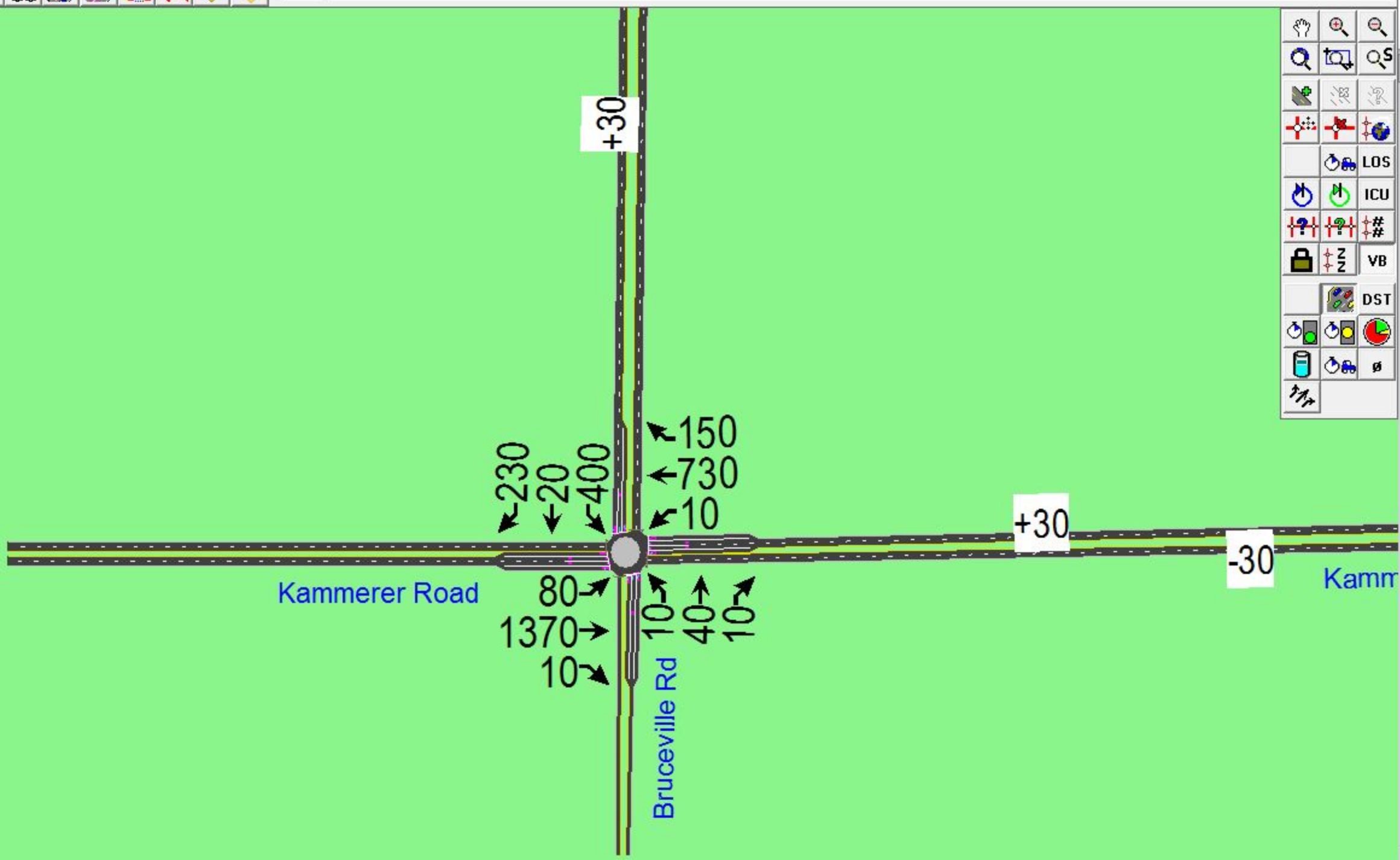


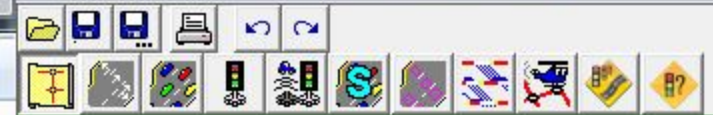
17 Driveway & Franklin Blvd



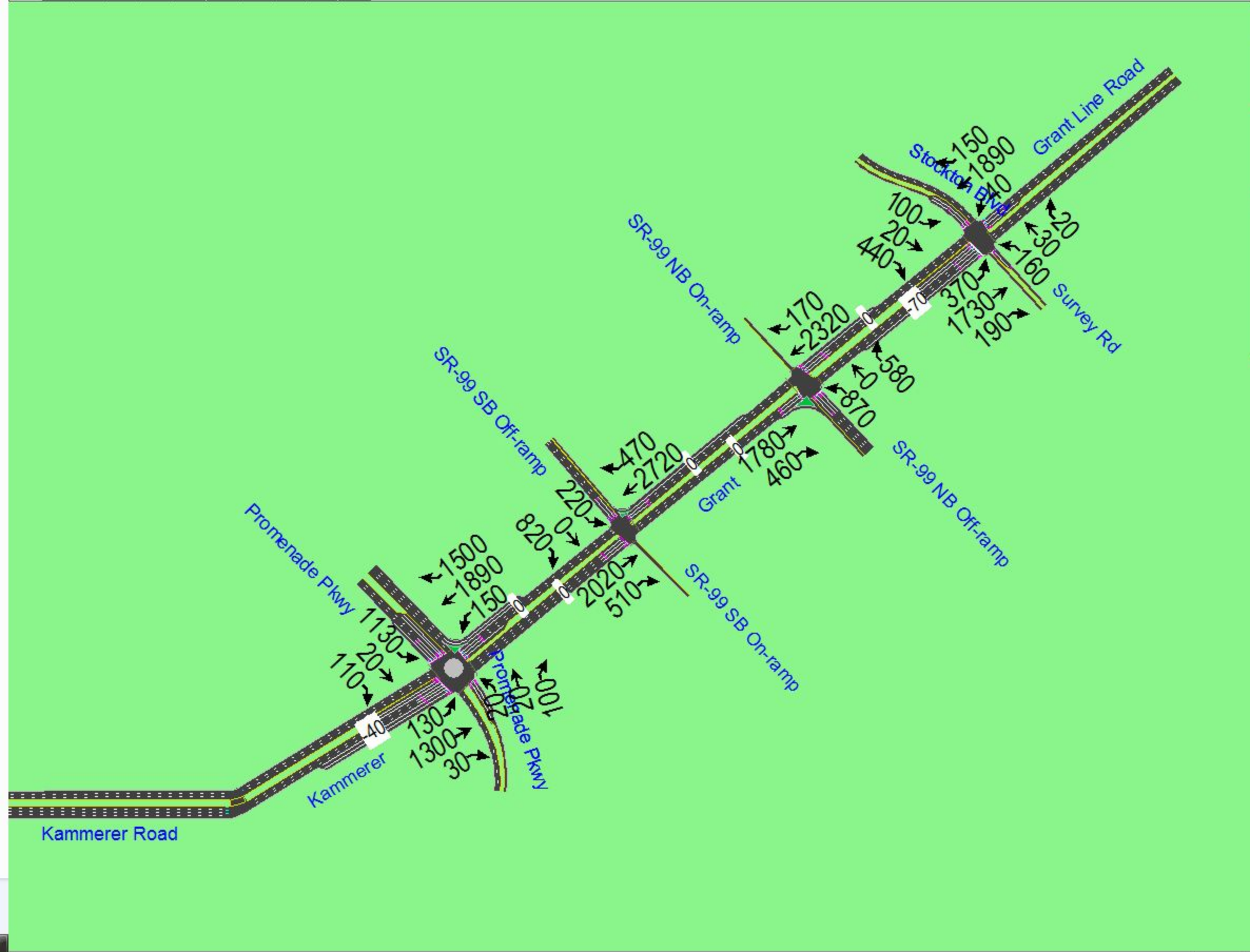


20 Kammerer Road & Bruceville Rd



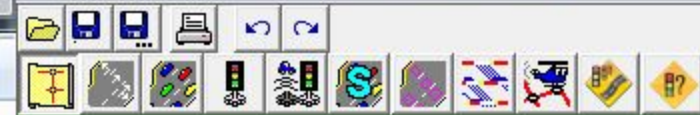


21 Kammerer Road & Promenade Pkwy

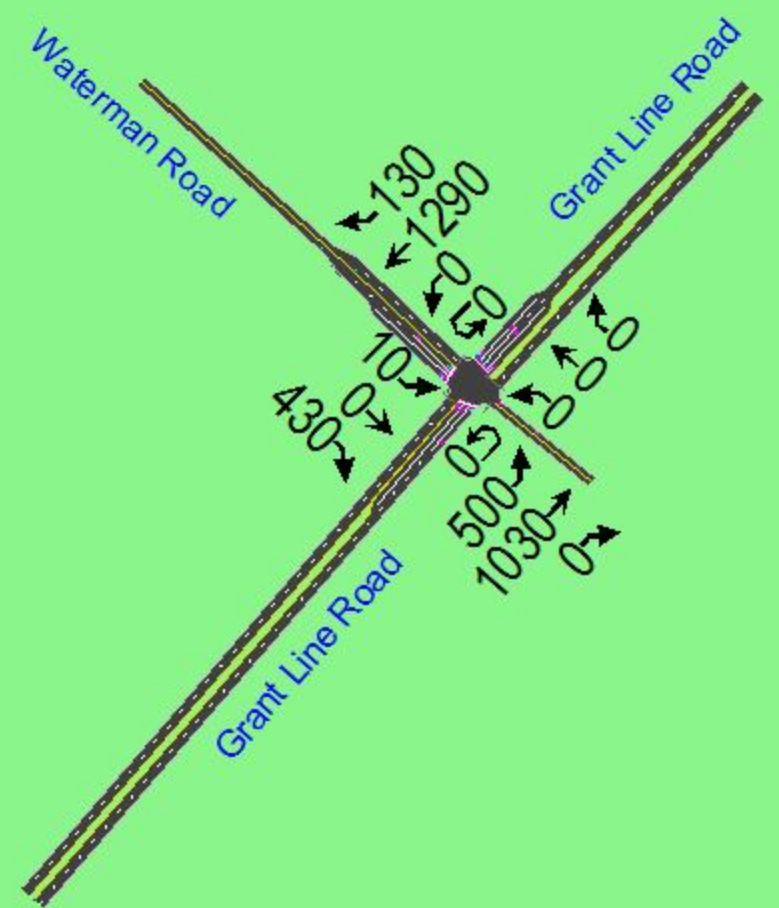


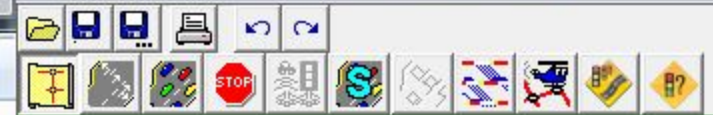
Vertical toolbar containing simulation and analysis tools:

- Hand icon (pan)
- Zoom in/out icons
- Simulation control icons (stop, play, refresh)
- LOS (Level of Service) tool
- ICU (Intersection Control Unit) tool
- # (Number of lanes) tool
- VB (Vehicle Buffer) tool
- DST (Distributed Traffic Signal) tool
- Traffic signal and light icons

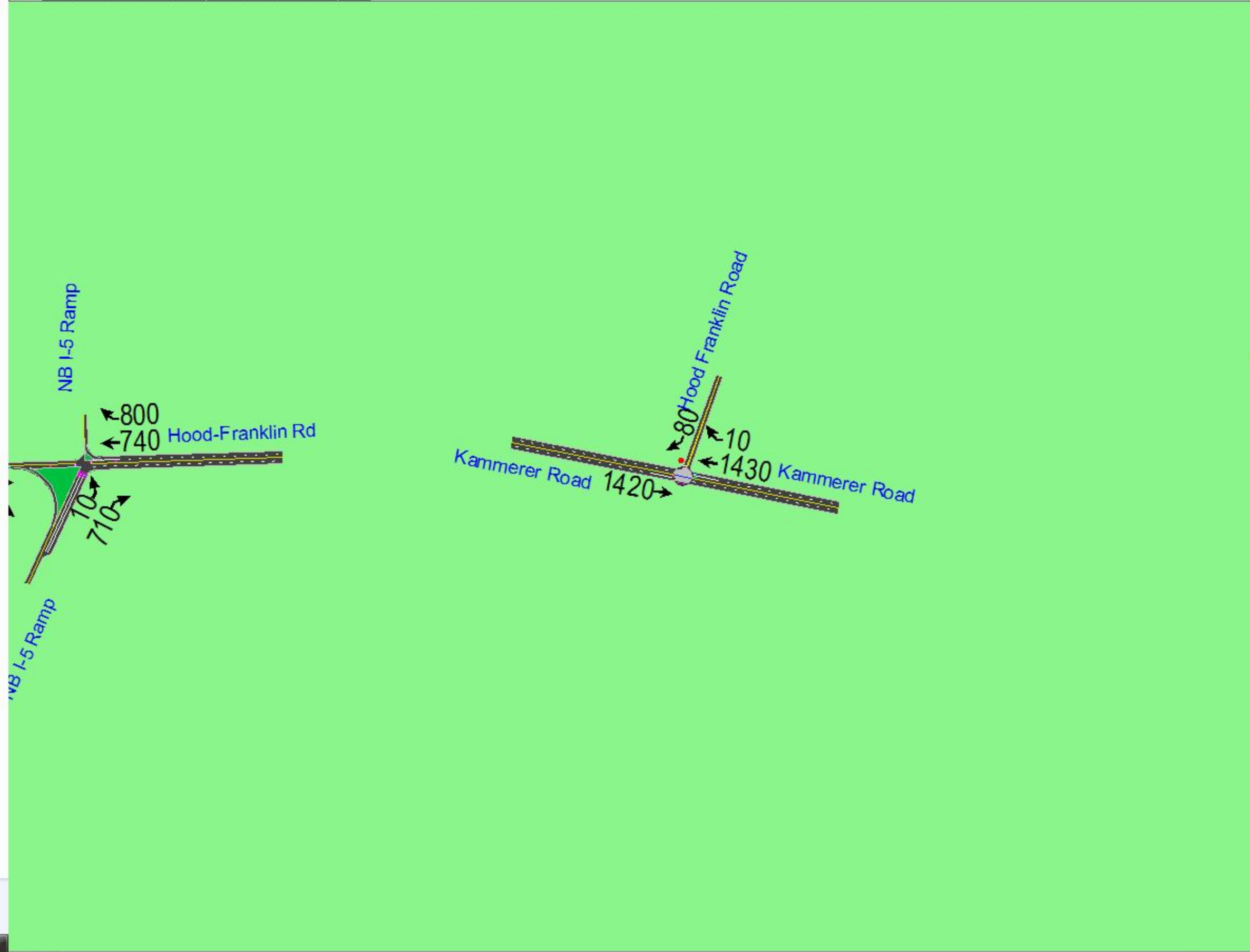


2 Elk Grove Blvd & Bruceville Road

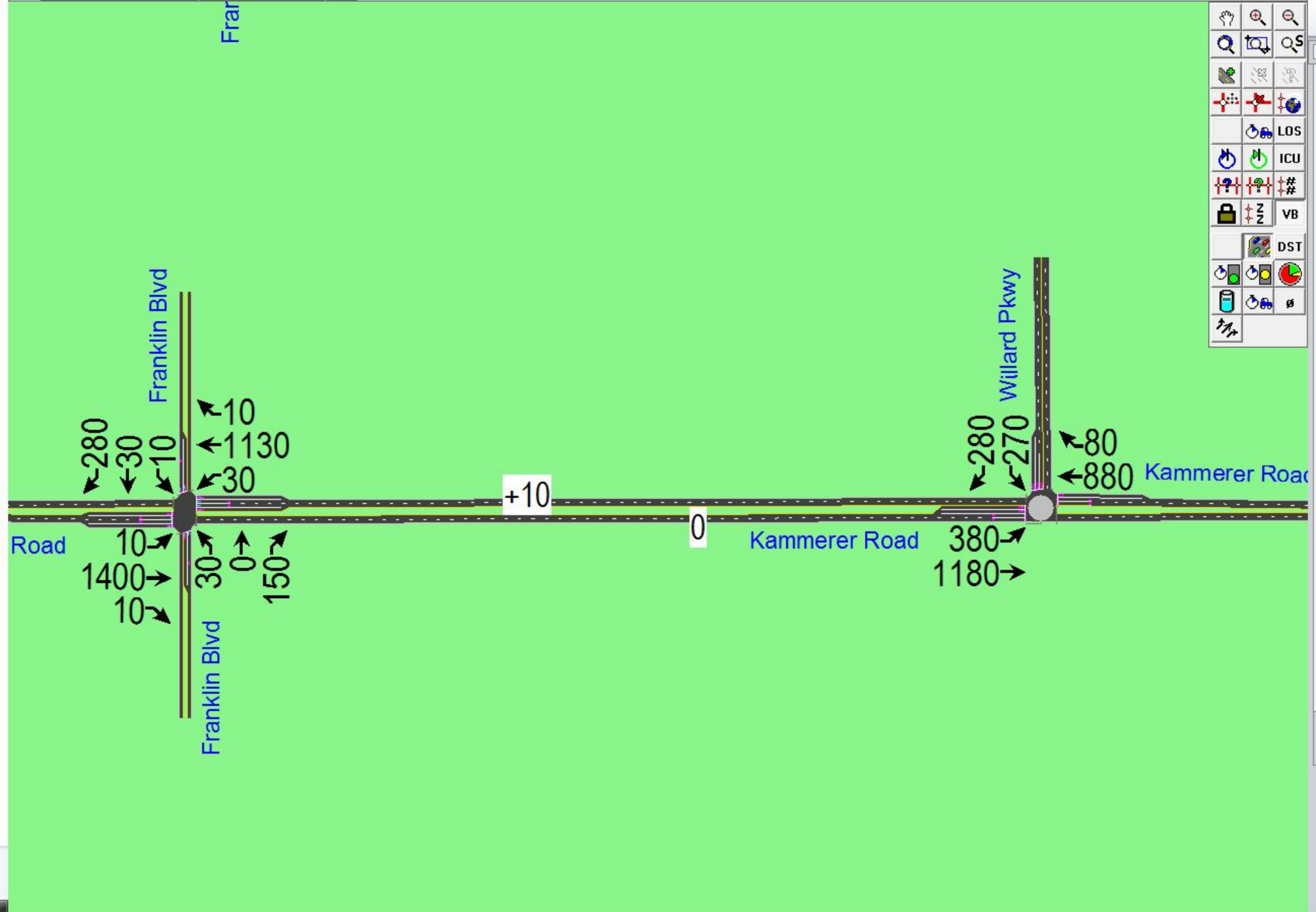


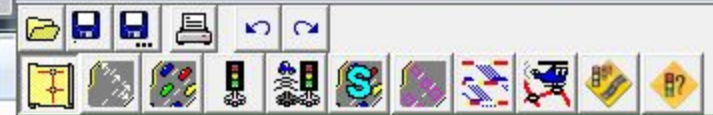


26 Kammerer Road & Hood Franklin Road



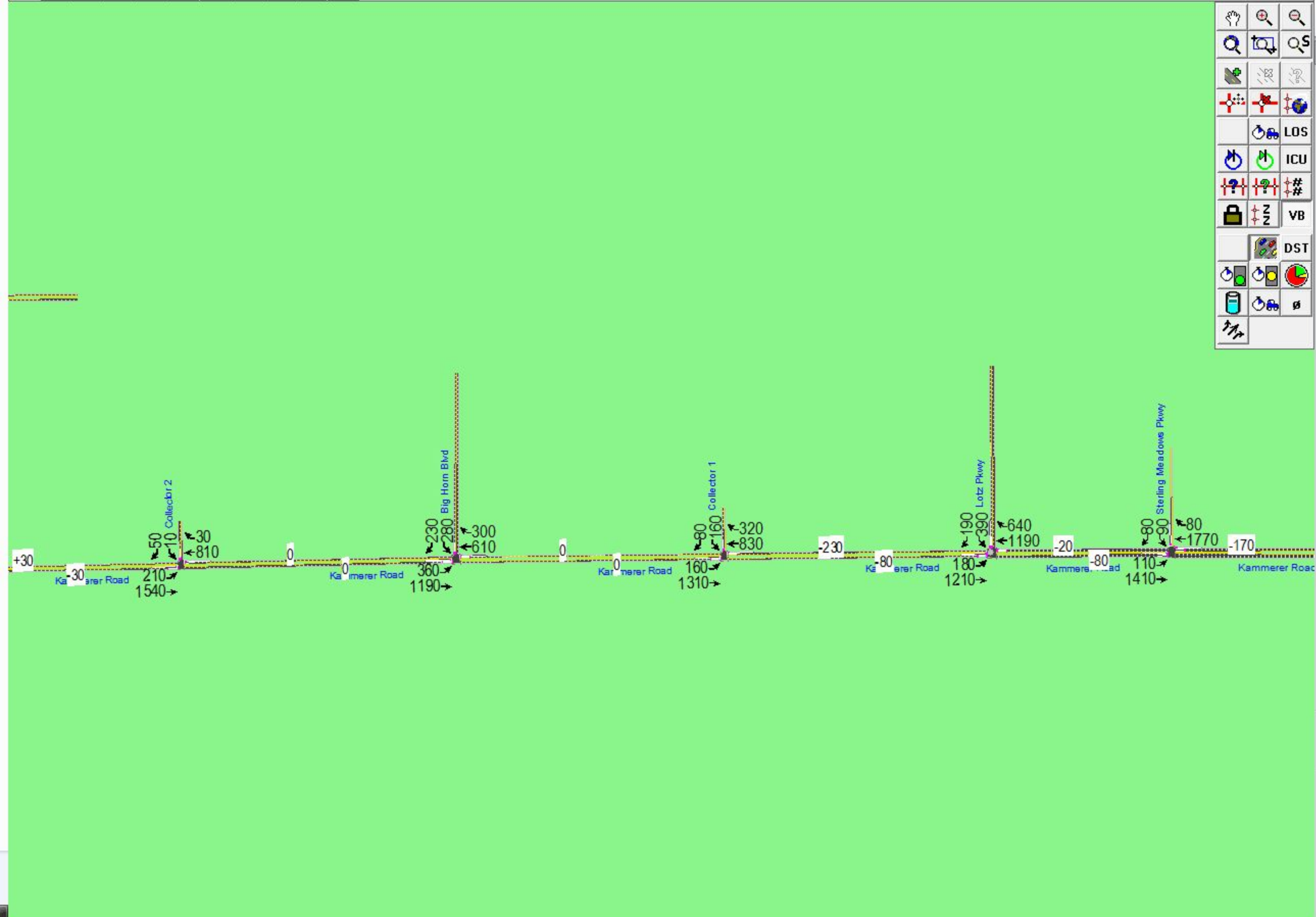
A vertical toolbar on the right side of the interface contains various icons for simulation and analysis. The icons include a hand for panning, a magnifying glass for zooming, a camera for view control, and several traffic-related symbols. Text labels next to some icons include "LOS" (Level of Service), "ICU" (Intersection Control Unit), "#", "VB" (Vehicle Buffer), and "DST" (Data Set).













































32 Kammerer Road & Lotz Pkwy

- Hand icon
- Zoom in (+)
- Zoom out (-)
- Search (magnifying glass)
- Refresh (circular arrow)
- LOS (Level of Service) icon
- ICU (Intersection Control Unit) icon
- VB (Vehicle Buffer) icon
- DST (Data Source Table) icon
- Other analysis and visualization icons



HCM Signalized Intersection Capacity Analysis
1: Elk Grove Blvd & Franklin Blvd

























Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  	 	 	  	 	 	  	 	 	  	 
Volume (vph)	150	1250	750	80	920	330	830	590	250	310	430	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Lane Util. Factor	0.97	0.91	0.88	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	2752	3433	5085	1583	3433	5085	1562	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	2752	3433	5085	1583	3433	5085	1562	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	1359	815	87	1000	359	902	641	272	337	467	228
RTOR Reduction (vph)	0	0	505	0	0	171	0	0	85	0	0	84
Lane Group Flow (vph)	163	1359	310	87	1000	188	902	641	187	337	467	144
Confl. Bikes (#/hr)			1						2			
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	10.7	55.2	55.2	6.2	50.3	50.3	41.6	40.3	40.3	18.1	17.7	17.7
Effective Green, g (s)	10.7	55.2	55.2	6.2	50.3	50.3	41.6	40.3	40.3	18.1	17.7	17.7
Actuated g/C Ratio	0.07	0.38	0.38	0.04	0.35	0.35	0.29	0.28	0.28	0.12	0.12	0.12
Clearance Time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	253	1936	1048	147	1764	549	985	1413	434	429	621	193
v/s Ratio Prot	c0.05	c0.27		0.03	0.20		c0.26	0.13		0.10	c0.09	
v/s Ratio Perm			0.11			0.12			0.12			0.09
v/c Ratio	0.64	0.70	0.30	0.59	0.57	0.34	0.92	0.45	0.43	0.79	0.75	0.74
Uniform Delay, d1	65.3	37.9	31.3	68.2	38.5	35.1	50.0	43.3	42.9	61.6	61.5	61.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	2.2	0.7	4.2	1.3	1.7	12.5	0.1	0.3	8.5	4.6	12.7
Delay (s)	69.5	40.1	32.1	72.4	39.8	36.8	62.5	43.3	43.2	70.0	66.1	74.2
Level of Service	E	D	C	E	D	D	E	D	D	E	E	E
Approach Delay (s)		39.3			41.0			52.8			69.2	
Approach LOS		D			D			D			E	
Intersection Summary												
HCM Average Control Delay			48.1				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			145.0				Sum of lost time (s)		24.3			
Intersection Capacity Utilization			82.6%				ICU Level of Service		E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Elk Grove Blvd & Bruceville Road

























Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	1440	180	260	670	290	140	750	290	520	700	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.86	0.86
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1559	3433	4785	1362
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1559	3433	4785	1362
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	489	1565	196	283	728	315	152	815	315	565	761	228
RTOR Reduction (vph)	0	0	66	0	0	213	0	0	157	0	2	142
Lane Group Flow (vph)	489	1565	130	283	728	102	152	815	158	565	782	63
Confl. Bikes (#/hr)									3			
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	22.0	54.3	54.3	13.3	45.6	45.6	10.1	29.4	29.4	25.1	44.4	44.4
Effective Green, g (s)	22.0	54.3	54.3	13.3	45.6	45.6	10.1	29.4	29.4	25.1	44.4	44.4
Actuated g/C Ratio	0.15	0.37	0.37	0.09	0.31	0.31	0.07	0.20	0.20	0.17	0.31	0.31
Clearance Time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	521	1904	593	315	1599	498	239	1031	316	594	1465	417
v/s Ratio Prot	c0.14	c0.31		0.08	0.14		0.04	c0.16		c0.16	0.16	
v/s Ratio Perm			0.08			0.06			0.10			0.05
v/c Ratio	0.94	0.82	0.22	0.90	0.46	0.21	0.64	0.79	0.50	0.95	0.53	0.15
Uniform Delay, d1	60.8	41.0	30.9	65.2	39.8	36.4	65.7	54.9	51.3	59.3	41.7	36.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.5	4.1	0.9	25.9	0.9	0.9	4.0	3.9	0.5	25.1	0.2	0.1
Delay (s)	85.3	45.1	31.8	91.1	40.7	37.4	69.7	58.8	51.7	84.4	41.9	36.6
Level of Service	F	D	C	F	D	D	E	E	D	F	D	D
Approach Delay (s)		52.7			50.7			58.4			56.7	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM Average Control Delay			54.4				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			145.0				Sum of lost time (s)		16.9			
Intersection Capacity Utilization			87.1%				ICU Level of Service		E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Elk Grove Blvd & Big Horn Blvd

Cumulative Plus Project Conditions
AM Peak Hour
























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	1410	690	140	1030	180	370	1220	510	160	1260	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1563	3433	3539	1583	3433	3539	1554
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1563	3433	3539	1583	3433	3539	1554
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	1533	750	152	1120	196	402	1326	554	174	1370	196
RTOR Reduction (vph)	0	0	96	0	0	90	0	0	75	0	0	42
Lane Group Flow (vph)	239	1533	654	152	1120	106	402	1326	479	174	1370	154
Confl. Bikes (#/hr)						1						10
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	12.6	51.3	51.3	6.3	45.0	45.0	14.7	55.3	55.3	8.1	48.7	48.7
Effective Green, g (s)	12.6	51.3	51.3	6.3	45.0	45.0	14.7	55.3	55.3	8.1	48.7	48.7
Actuated g/C Ratio	0.09	0.35	0.35	0.04	0.31	0.31	0.10	0.38	0.38	0.06	0.34	0.34
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	298	1799	560	149	1578	485	348	1350	604	192	1189	522
v/s Ratio Prot	c0.07	0.30		0.04	0.22		c0.12	c0.37		0.05	c0.39	
v/s Ratio Perm			c0.41			0.07			0.30			0.10
v/c Ratio	0.80	0.85	1.17	1.02	0.71	0.22	1.16	0.98	0.79	0.91	1.15	0.30
Uniform Delay, d1	65.0	43.3	46.9	69.3	44.2	37.0	65.2	44.4	39.8	68.1	48.1	35.5
Progression Factor	1.00	1.00	1.00	0.89	0.70	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.6	5.3	93.8	67.8	2.0	0.7	97.4	20.2	6.6	38.7	78.5	0.1
Delay (s)	78.6	48.7	140.7	129.4	33.0	34.5	162.6	64.5	46.4	106.8	126.7	35.6
Level of Service	E	D	F	F	C	C	F	E	D	F	F	D
Approach Delay (s)		78.9			43.1			77.4			114.4	
Approach LOS		E			D			E			F	
Intersection Summary												
HCM Average Control Delay			79.6				HCM Level of Service		E			
HCM Volume to Capacity ratio			1.23									
Actuated Cycle Length (s)			145.0				Sum of lost time (s)		29.3			
Intersection Capacity Utilization			112.3%				ICU Level of Service		H			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Elk Grove Blvd & Laguna Springs Drive

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1510	340	1220	1140	90	240	290	830	40	330	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1563	3433	5022		1770	1863	2787	1770	3413	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1563	3433	5022		1770	1863	2787	1770	3413	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	1641	370	1326	1239	98	261	315	902	43	359	98
RTOR Reduction (vph)	0	0	119	0	6	0	0	0	626	0	17	0
Lane Group Flow (vph)	109	1641	251	1326	1331	0	261	315	276	43	440	0
Confl. Bikes (#/hr)			1			1						4
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	12.8	45.4	45.4	37.4	70.0		15.4	35.0	35.0	5.0	24.6	
Effective Green, g (s)	12.8	45.4	45.4	37.4	70.0		15.4	35.0	35.0	5.0	24.6	
Actuated g/C Ratio	0.09	0.31	0.31	0.26	0.48		0.11	0.24	0.24	0.03	0.17	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	156	1592	489	885	2424		188	450	673	61	579	
v/s Ratio Prot	0.06	c0.32		c0.39	0.27		c0.15	c0.17		0.02	0.13	
v/s Ratio Perm			0.16						0.10			
v/c Ratio	0.70	1.03	0.51	1.50	0.55		1.39	0.70	0.41	0.70	0.76	
Uniform Delay, d1	64.2	49.8	40.8	53.8	26.4		64.8	50.2	46.3	69.3	57.4	
Progression Factor	0.95	0.97	1.14	1.16	0.89		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.4	24.6	1.9	228.4	0.6		204.0	3.8	0.1	25.9	5.1	
Delay (s)	66.2	72.8	48.4	290.8	24.0		268.8	54.0	46.5	95.2	62.4	
Level of Service	E	E	D	F	C		F	D	D	F	E	
Approach Delay (s)		68.2			156.9			87.3			65.3	
Approach LOS		E			F			F			E	
Intersection Summary												
HCM Average Control Delay			107.1			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			145.0			Sum of lost time (s)		16.9				
Intersection Capacity Utilization			115.7%			ICU Level of Service		H				
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Elk Grove Blvd & Auto Center Drive

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3	↑↑↑		3	↑↑↑		3	↑		↑↑	↑	
Volume (vph)	80	2050	150	320	2300	10	90	20	120	50	10	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Fr _t	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.88	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5033		3433	5081		1770	1623		3433	1640	
Fl _t Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5033		3433	5081		1770	1623		3433	1640	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	85	2181	160	340	2447	11	96	21	128	53	11	43
RTOR Reduction (vph)	0	4	0	0	0	0	0	120	0	0	40	0
Lane Group Flow (vph)	85	2337	0	340	2458	0	96	29	0	53	14	0
Confl. Bikes (#/hr)						2						
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	8.3	89.0		14.6	95.3		8.6	8.9		10.7	11.0	
Effective Green, g (s)	8.3	89.0		14.6	95.3		8.6	8.9		10.7	11.0	
Actuated g/C Ratio	0.06	0.61		0.10	0.66		0.06	0.06		0.07	0.08	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	101	3089		346	3339		105	100		253	124	
v/s Ratio Prot	0.05	0.46		c0.10	c0.48		c0.05	0.02		c0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.84	0.76		0.98	0.74		0.91	0.29		0.21	0.12	
Uniform Delay, d ₁	67.7	20.2		65.1	16.5		67.8	65.0		63.2	62.5	
Progression Factor	0.98	0.48		1.09	0.46		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	22.9	0.8		28.9	0.7		60.0	0.6		0.2	0.2	
Delay (s)	89.4	10.5		100.1	8.2		127.8	65.6		63.3	62.6	
Level of Service	F	B		F	A		F	E		E	E	
Approach Delay (s)		13.3			19.4			90.0			63.0	
Approach LOS		B			B			F			E	

Intersection Summary		
HCM Average Control Delay	20.7	HCM Level of Service C
HCM Volume to Capacity ratio	0.69	
Actuated Cycle Length (s)	145.0	Sum of lost time (s) 11.2
Intersection Capacity Utilization	81.2%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	2130	220	140	1750	0	0	0	0	670	10	1100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		0.97	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.99		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5008		3433	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5008		3433	5085					1681	1688	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2315	239	152	1902	0	0	0	0	728	11	1196
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	9
Lane Group Flow (vph)	0	2546	0	152	1902	0	0	0	0	371	368	1187
Confl. Bikes (#/hr)			2			2						
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		65.0		6.4	77.3					55.3	55.3	55.3
Effective Green, g (s)		65.0		6.4	77.3					55.3	55.3	55.3
Actuated g/C Ratio		0.45		0.04	0.53					0.38	0.38	0.38
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2245		152	2711					641	644	1063
v/s Ratio Prot		c0.51		0.04	c0.37					0.22	0.22	
v/s Ratio Perm												c0.43
v/c Ratio		1.13		1.00	0.70					0.58	0.57	1.12
Uniform Delay, d1		40.0		69.3	25.2					35.6	35.5	44.9
Progression Factor		0.35		0.85	0.94					1.00	1.00	1.00
Incremental Delay, d2		65.0		55.4	0.9					0.8	0.8	65.6
Delay (s)		79.1		114.5	24.7					36.4	36.2	110.5
Level of Service		E		F	C					D	D	F
Approach Delay (s)		79.1			31.4			0.0			82.1	
Approach LOS		E			C			A			F	

Intersection Summary

HCM Average Control Delay	65.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	18.4
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

Cumulative Plus Project Conditions
AM Peak Hour



























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	2800	1890	370	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	3043	2054	402	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		515	937			
pX, platoon unblocked	0.72				0.70	0.72
vC, conflicting volume	2457				3069	685
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1674				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	274				714	784

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	1014	1014	1014	685	685	685	402
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	402
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.60	0.60	0.60	0.40	0.40	0.40	0.24
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							
Approach Delay (s)	0.0			0.0			
Approach LOS							

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		84.1%	ICU Level of Service E
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1370	1330	40	1600	130	480	150	170	310	100	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	4.0	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.97	1.00
Satd. Flow (prot)	1770	3539	1564	1770	5085	1583	1610	3164		1681	1725	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.97	1.00
Satd. Flow (perm)	1770	3539	1564	1770	5085	1583	1610	3164		1681	1725	1562
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	1489	1446	43	1739	141	522	163	185	337	109	196
RTOR Reduction (vph)	0	0	0	0	0	41	0	36	0	0	0	78
Lane Group Flow (vph)	109	1489	1446	43	1739	100	298	536	0	219	227	118
Confl. Bikes (#/hr)			1									1
Turn Type	Prot		Free	Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			Free			2						4
Actuated Green, G (s)	11.4	69.1	145.0	4.3	62.0	62.0	28.9	28.9		21.2	21.2	21.2
Effective Green, g (s)	11.4	69.1	145.0	4.3	62.0	62.0	28.9	28.9		21.2	21.2	21.2
Actuated g/C Ratio	0.08	0.48	1.00	0.03	0.43	0.43	0.20	0.20		0.15	0.15	0.15
Clearance Time (s)	5.6	5.7		5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9		2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	139	1687	1564	52	2174	677	321	631		246	252	228
v/s Ratio Prot	0.06	0.42		0.02	0.34		0.19	0.17		0.13	0.13	
v/s Ratio Perm			c0.92			0.06						0.08
v/c Ratio	0.78	0.88	0.92	0.83	0.80	0.15	0.93	0.85		0.89	0.90	0.52
Uniform Delay, d1	65.6	34.3	0.0	70.0	36.1	25.4	57.0	56.0		60.8	60.9	57.2
Progression Factor	0.83	1.03	1.00	1.00	1.00	1.00	0.61	0.59		1.00	1.00	1.00
Incremental Delay, d2	6.0	1.7	2.9	62.2	3.2	0.5	27.2	8.2		29.7	31.3	0.8
Delay (s)	60.4	37.2	2.9	132.2	39.3	25.8	61.9	41.4		90.5	92.1	58.0
Level of Service	E	D	A	F	D	C	E	D		F	F	E
Approach Delay (s)		21.7			40.4			48.4			81.2	
Approach LOS		C			D			D			F	

Intersection Summary

HCM Average Control Delay	36.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: SR-99 NB Off-ramp & E. Stockton Blvd

Cumulative Plus Project Conditions
 AM Peak Hour

































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	390	10	30	10	10	10	270	420	10	10	400	1050
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.98			1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1664			1817	1583	1770	3527		1770	1863	1583
Flt Permitted	0.95	0.96			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1664			1817	1583	1770	3527		1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	424	11	33	11	11	11	293	457	11	11	435	1141
RTOR Reduction (vph)	0	4	0	0	0	10	0	1	0	0	0	209
Lane Group Flow (vph)	237	227	0	0	22	1	293	467	0	11	435	932
Turn Type	Split			Split		Perm	Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases						8						6
Actuated Green, G (s)	19.5	19.5			6.9	6.9	22.9	91.6		5.0	73.7	93.2
Effective Green, g (s)	19.5	19.5			6.9	6.9	22.9	91.6		5.0	73.7	93.2
Actuated g/C Ratio	0.13	0.13			0.05	0.05	0.16	0.63		0.03	0.51	0.64
Clearance Time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	226	224			86	75	280	2228		61	947	1078
v/s Ratio Prot	c0.14	0.14			c0.01		c0.17	0.13		0.01	0.23	c0.12
v/s Ratio Perm						0.00						0.47
v/c Ratio	1.05	1.01			0.26	0.01	1.05	0.21		0.18	0.46	0.86
Uniform Delay, d1	62.8	62.8			66.6	65.8	61.0	11.3		68.0	22.9	20.8
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.08	0.88	1.09
Incremental Delay, d2	73.2	63.2			0.6	0.0	66.4	0.0		0.2	0.6	3.0
Delay (s)	136.0	126.0			67.1	65.8	127.5	11.4		73.3	20.8	25.6
Level of Service	F	F			E	E	F	B		E	C	C
Approach Delay (s)		131.0			66.7			56.1			24.6	
Approach LOS		F			E			E			C	

Intersection Summary

HCM Average Control Delay	51.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

























HCM Signalized Intersection Capacity Analysis
10: Whitelock Pkwy & Bruceville Road

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	520	360	80	60	200	170	60	410	180	230	420	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	565	391	87	65	217	185	65	446	196	250	457	359
RTOR Reduction (vph)	0	0	60	0	0	152	0	0	153	0	0	262
Lane Group Flow (vph)	565	391	27	65	217	33	65	446	43	250	457	97
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Actuated Green, G (s)	15.2	24.2	24.2	5.0	14.0	14.0	5.2	16.9	16.9	9.2	20.9	20.9
Effective Green, g (s)	15.2	24.2	24.2	5.0	14.0	14.0	5.2	16.9	16.9	9.2	20.9	20.9
Actuated g/C Ratio	0.20	0.31	0.31	0.06	0.18	0.18	0.07	0.22	0.22	0.12	0.27	0.27
Clearance Time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	674	1107	495	222	640	286	231	773	346	408	956	427
v/s Ratio Prot	c0.16	c0.11		0.02	0.06		0.02	c0.13		c0.07	c0.13	
v/s Ratio Perm			0.02			0.02			0.03			0.06
v/c Ratio	0.84	0.35	0.05	0.29	0.34	0.12	0.28	0.58	0.12	0.61	0.48	0.23
Uniform Delay, d1	29.9	20.6	18.6	34.5	27.7	26.5	34.3	27.1	24.3	32.4	23.7	22.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.6	0.1	0.0	0.3	0.1	0.1	0.2	0.7	0.1	1.9	0.1	0.1
Delay (s)	38.5	20.6	18.6	34.8	27.8	26.6	34.6	27.7	24.4	34.3	23.8	22.1
Level of Service	D	C	B	C	C	C	C	C	C	C	C	C
Approach Delay (s)		30.1			28.3			27.4			25.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			27.8				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			77.4				Sum of lost time (s)		22.5			
Intersection Capacity Utilization			61.1%				ICU Level of Service		B			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 11: Whitelock Pkwy & Big Horn Blvd

































Cumulative Plus Project Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	370	120	30	210	230	80	1040	40	210	1210	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.5	5.5	5.5	5.3	5.3	5.5	5.3	5.3	5.3	5.5	5.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	402	130	33	228	250	87	1130	43	228	1315	87
RTOR Reduction (vph)	0	0	101	0	0	209	0	0	13	0	0	33
Lane Group Flow (vph)	185	402	29	33	228	41	87	1130	30	228	1315	54
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	9.5	23.7	23.7	3.4	17.7	17.7	7.5	46.1	46.1	12.2	50.4	50.4
Effective Green, g (s)	9.5	23.7	23.7	3.4	17.7	17.7	7.5	46.1	46.1	12.2	50.4	50.4
Actuated g/C Ratio	0.09	0.22	0.22	0.03	0.17	0.17	0.07	0.43	0.43	0.11	0.47	0.47
Clearance Time (s)	5.6	5.5	5.5	5.5	5.3	5.3	5.5	5.3	5.3	5.3	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	305	784	351	109	585	262	241	1525	682	391	1667	746
v/s Ratio Prot	c0.05	c0.11		0.01	0.06		0.03	0.32		c0.07	c0.37	
v/s Ratio Perm			0.02			0.03			0.02			0.03
v/c Ratio	0.61	0.51	0.08	0.30	0.39	0.16	0.36	0.74	0.04	0.58	0.79	0.07
Uniform Delay, d1	47.0	36.6	33.0	50.6	39.8	38.3	47.5	25.5	17.7	45.0	23.8	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.2	0.0	0.6	0.2	0.1	0.3	1.7	0.0	1.4	2.4	0.0
Delay (s)	49.3	36.8	33.1	51.2	40.0	38.4	47.8	27.2	17.7	46.4	26.2	15.5
Level of Service	D	D	C	D	D	D	D	C	B	D	C	B
Approach Delay (s)		39.4			39.9			28.3			28.4	
Approach LOS		D			D			C			C	

Intersection Summary		
HCM Average Control Delay	31.7	HCM Level of Service C
HCM Volume to Capacity ratio	0.73	
Actuated Cycle Length (s)	107.0	Sum of lost time (s) 21.9
Intersection Capacity Utilization	70.3%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
13: Bilby Rd & Bruceville Rd

















Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	100	300	150	110	120	110	80	210	70	250	360	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	326	163	120	130	120	87	228	76	272	391	87
RTOR Reduction (vph)	0	0	133	0	0	98	0	0	59	0	0	62
Lane Group Flow (vph)	109	326	30	120	130	22	87	228	17	272	391	25
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	5.5	12.7	12.7	5.5	12.7	12.7	5.1	15.6	15.6	9.6	20.1	20.1
Effective Green, g (s)	5.5	12.7	12.7	5.5	12.7	12.7	5.1	15.6	15.6	9.6	20.1	20.1
Actuated g/C Ratio	0.08	0.18	0.18	0.08	0.18	0.18	0.07	0.23	0.23	0.14	0.29	0.29
Clearance Time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.5	4.5	2.0	4.5	4.5
Lane Grp Cap (vph)	274	651	291	274	651	291	254	800	358	478	1031	461
v/s Ratio Prot	0.03	c0.09		c0.03	0.04		0.03	0.06		c0.08	c0.11	
v/s Ratio Perm			0.02			0.01			0.01			0.02
v/c Ratio	0.40	0.50	0.10	0.44	0.20	0.08	0.34	0.28	0.05	0.57	0.38	0.05
Uniform Delay, d1	30.2	25.3	23.4	30.3	23.8	23.3	30.4	22.1	20.9	27.8	19.5	17.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.2	0.1	0.4	0.1	0.0	0.3	0.3	0.1	0.9	0.4	0.1
Delay (s)	30.5	25.5	23.5	30.7	23.9	23.3	30.7	22.4	21.0	28.7	19.9	17.7
Level of Service	C	C	C	C	C	C	C	C	C	C	B	B
Approach Delay (s)		25.9			25.9			24.0			22.8	
Approach LOS		C			C			C			C	

Intersection Summary		
HCM Average Control Delay	24.4	HCM Level of Service C
HCM Volume to Capacity ratio	0.49	
Actuated Cycle Length (s)	69.0	Sum of lost time (s) 25.6
Intersection Capacity Utilization	47.9%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		


















HCM Signalized Intersection Capacity Analysis
 14: Hood-Franklin Rd & SB I-5 Ramp

Cumulative Plus Project Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	90	10	0	70	680	0	0	0	750	0	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.2			7.2					5.6		5.6
Lane Util. Factor		1.00			1.00					1.00		1.00
Frt		0.99			0.88					1.00		0.85
Flt Protected		1.00			1.00					0.95		1.00
Satd. Flow (prot)		1837			1635					1770		1583
Flt Permitted		1.00			1.00					0.95		1.00
Satd. Flow (perm)		1837			1635					1770		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	98	11	0	76	739	0	0	0	815	0	43
RTOR Reduction (vph)	0	7	0	0	572	0	0	0	0	0	0	20
Lane Group Flow (vph)	0	102	0	0	243	0	0	0	0	815	0	23
Turn Type										Prot		custom
Protected Phases		4			8					6		
Permitted Phases												6
Actuated Green, G (s)		11.8			11.8					27.6		27.6
Effective Green, g (s)		11.8			11.8					27.6		27.6
Actuated g/C Ratio		0.23			0.23					0.53		0.53
Clearance Time (s)		7.2			7.2					5.6		5.6
Vehicle Extension (s)		2.0			2.0					2.0		2.0
Lane Grp Cap (vph)		415			370					936		837
v/s Ratio Prot		0.06			c0.15					c0.46		
v/s Ratio Perm												0.01
v/c Ratio		0.25			0.66					0.87		0.03
Uniform Delay, d1		16.6			18.4					10.7		5.9
Progression Factor		1.00			1.00					1.00		1.00
Incremental Delay, d2		0.1			3.2					8.6		0.0
Delay (s)		16.7			21.6					19.4		5.9
Level of Service		B			C					B		A
Approach Delay (s)		16.7			21.6			0.0			18.7	
Approach LOS		B			C			A			B	
Intersection Summary												
HCM Average Control Delay			19.9			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			52.2			Sum of lost time (s)			12.8			
Intersection Capacity Utilization			96.6%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												













HCM Signalized Intersection Capacity Analysis
15: Hood-Franklin Rd & NB I-5 Ramp

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	810	30	0	740	800	10	0	710	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.7	4.0	6.7		6.7			
Lane Util. Factor		1.00			1.00	1.00	1.00		0.88			
Frt		1.00			1.00	0.85	1.00		0.85			
Flt Protected		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)		1854			1863	1583	1770		2787			
Flt Permitted		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)		1854			1863	1583	1770		2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	880	33	0	804	870	11	0	772	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	182	0	0	0
Lane Group Flow (vph)	0	912	0	0	804	870	11	0	590	0	0	0
Turn Type						Free	Prot		custom			
Protected Phases		4			8		2					
Permitted Phases						Free			2			
Actuated Green, G (s)		42.1			41.5	75.2	20.3		20.3			
Effective Green, g (s)		42.1			41.5	75.2	20.3		20.3			
Actuated g/C Ratio		0.56			0.55	1.00	0.27		0.27			
Clearance Time (s)		6.1			6.7		6.7		6.7			
Vehicle Extension (s)		2.0			2.0		2.0		2.0			
Lane Grp Cap (vph)		1038			1028	1583	478		752			
v/s Ratio Prot		c0.49			0.43		0.01					
v/s Ratio Perm						0.55			c0.21			
v/c Ratio		0.88			0.78	0.55	0.02		0.78			
Uniform Delay, d1		14.3			13.3	0.0	20.2		25.4			
Progression Factor		1.00			1.00	1.00	1.00		1.00			
Incremental Delay, d2		8.3			3.6	1.4	0.0		5.0			
Delay (s)		22.7			16.9	1.4	20.2		30.4			
Level of Service		C			B	A	C		C			
Approach Delay (s)		22.7			8.8			30.3			0.0	
Approach LOS		C			A			C			A	
Intersection Summary												
HCM Average Control Delay			17.6			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			75.2			Sum of lost time (s)			12.8			
Intersection Capacity Utilization			80.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c	Critical Lane Group											


















HCM Unsignalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd

Cumulative Plus Project Conditions
 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	240	10	10	220	390	640
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	261	11	11	239	424	696
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	261	11	11	239	424	696
Volume Left (vph)	261	0	11	0	0	0
Volume Right (vph)	0	11	0	0	0	696
Hadj (s)	0.53	-0.67	0.53	0.03	0.03	-0.67
Departure Headway (s)	7.8	6.6	7.5	7.0	6.1	5.4
Degree Utilization, x	0.57	0.02	0.02	0.46	0.72	1.04
Capacity (veh/h)	445	526	466	507	582	671
Control Delay (s)	19.3	8.5	9.4	14.6	22.1	68.6
Approach Delay (s)	18.8		14.4		51.0	
Approach LOS	C		B		F	
Intersection Summary						
Delay			40.1			
HCM Level of Service			E			
Intersection Capacity Utilization			49.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
17: Driveway & Franklin Blvd

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	10	120	10	10	10	10	230	10	520	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	11	11	130	11	11	11	11	250	11	565	11
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total (vph)	33	152	22	250	587							
Volume Left (vph)	11	130	11	0	11							
Volume Right (vph)	11	11	0	250	11							
Hadj (s)	-0.10	0.16	0.13	-0.57	0.03							
Departure Headway (s)	5.5	5.6	5.3	3.2	4.5							
Degree Utilization, x	0.05	0.24	0.03	0.22	0.73							
Capacity (veh/h)	580	587	628	1122	781							
Control Delay (s)	8.8	10.3	8.4	7.1	18.8							
Approach Delay (s)	8.8	10.3	7.2		18.8							
Approach LOS	A	B	A		C							
Intersection Summary												
Delay			14.2									
HCM Level of Service			B									
Intersection Capacity Utilization			56.3%	ICU Level of Service	B							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 18: Bilby Road & Willard Pkwy

Cumulative Plus Project Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	400	120	310	160	320	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	435	130	337	174	348	261
RTOR Reduction (vph)	0	91	0	0	0	220
Lane Group Flow (vph)	435	39	337	174	348	41
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	27.2	27.2	22.5	27.6	14.3	14.3
Effective Green, g (s)	27.2	27.2	22.5	21.9	14.3	14.3
Actuated g/C Ratio	0.30	0.30	0.25	0.24	0.16	0.16
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	531	475	440	855	559	250
v/s Ratio Prot	c0.25		c0.19	c0.05	c0.10	
v/s Ratio Perm		0.02				0.03
v/c Ratio	0.82	0.08	0.77	0.20	0.62	0.16
Uniform Delay, d1	29.4	22.7	31.6	27.4	35.6	33.0
Progression Factor	1.00	1.00	1.06	1.09	1.00	1.00
Incremental Delay, d2	9.1	0.0	6.4	0.0	1.6	0.1
Delay (s)	38.5	22.8	39.8	29.9	37.2	33.1
Level of Service	D	C	D	C	D	C
Approach Delay (s)	34.9			36.4	35.4	
Approach LOS	C			D	D	

Intersection Summary

HCM Average Control Delay	35.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.6	Sum of lost time (s)	21.5
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Bilby Road & Willard Pkwy

Cumulative Plus Project Conditions
 AM Peak Hour



























Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	440	30	10	330	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	5.7		5.6	5.7
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.96		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3406		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3406		1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	478	33	11	359	120
RTOR Reduction (vph)	0	342	9	0	0	0
Lane Group Flow (vph)	11	136	35	0	359	120
Turn Type		Perm			Prot	
Protected Phases	2		4		3	8 1
Permitted Phases		2				
Actuated Green, G (s)	25.8	25.8	16.8		20.0	25.1
Effective Green, g (s)	25.8	25.8	16.8		20.0	25.1
Actuated g/C Ratio	0.28	0.28	0.19		0.22	0.28
Clearance Time (s)	7.0	7.0	5.7		5.6	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	504	451	632		391	980
v/s Ratio Prot	0.01		0.01		c0.20	c0.03
v/s Ratio Perm		c0.09				
v/c Ratio	0.02	0.30	0.06		0.92	0.12
Uniform Delay, d1	23.3	25.4	30.4		34.5	24.5
Progression Factor	1.00	1.00	1.00		1.57	0.33
Incremental Delay, d2	0.0	0.1	0.0		24.9	0.0
Delay (s)	23.3	25.5	30.4		79.2	8.0
Level of Service	C	C	C		E	A
Approach Delay (s)	25.4		30.4			61.4
Approach LOS	C		C			E

Intersection Summary

HCM Average Control Delay	42.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	90.6	Sum of lost time (s)	18.3
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
20: Kammerer Road & Bruceville Rd

Cumulative Plus Project Conditions
AM Peak Hour

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	1370	10	10	730	150	10	40	10	400	20	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	1489	11	11	793	163	11	43	11	435	22	250
RTOR Reduction (vph)	0	0	3	0	0	96	0	0	10	0	0	174
Lane Group Flow (vph)	87	1489	8	11	793	67	11	43	1	435	22	76
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	10.0	53.5	53.5	1.1	44.6	44.6	5.6	8.3	8.3	34.9	37.6	37.6
Effective Green, g (s)	10.0	53.5	53.5	1.1	44.6	44.6	5.6	8.3	8.3	34.9	37.6	37.6
Actuated g/C Ratio	0.08	0.43	0.43	0.01	0.36	0.36	0.05	0.07	0.07	0.28	0.30	0.30
Clearance Time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	143	1534	686	16	1279	572	80	125	106	501	568	482
v/s Ratio Prot	c0.05	c0.42		0.01	0.22		0.01	c0.02		c0.25	0.01	
v/s Ratio Perm			0.00			0.04			0.00			0.05
v/c Ratio	0.61	0.97	0.01	0.69	0.62	0.12	0.14	0.34	0.01	0.87	0.04	0.16
Uniform Delay, d1	54.8	34.2	19.9	61.0	32.4	26.3	56.6	55.0	53.7	42.1	30.2	31.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.9	16.4	0.0	67.5	0.7	0.0	0.3	0.6	0.0	14.3	0.0	0.1
Delay (s)	59.8	50.6	19.9	128.5	33.1	26.3	56.9	55.6	53.7	56.3	30.2	31.4
Level of Service	E	D	B	F	C	C	E	E	D	E	C	C
Approach Delay (s)		50.9			33.0			55.5			46.7	
Approach LOS		D			C			E			D	

Intersection Summary

HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	123.4	Sum of lost time (s)	25.6
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
21: Kammerer Road & Promenade Pkwy

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	1300	30	150	1890	1500	20	20	100	1130	20	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	4.0	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	1413	33	163	2054	1630	22	22	109	1228	22	120
RTOR Reduction (vph)	0	0	22	0	0	0	0	0	97	0	0	82
Lane Group Flow (vph)	141	1413	11	163	2054	1630	22	22	12	1228	22	38
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			Free			4			8
Actuated Green, G (s)	6.4	46.7	46.7	15.8	56.1	134.2	3.6	14.2	14.2	32.0	42.1	42.1
Effective Green, g (s)	6.4	46.7	46.7	15.8	56.1	134.2	3.6	14.2	14.2	32.0	42.1	42.1
Actuated g/C Ratio	0.05	0.35	0.35	0.12	0.42	1.00	0.03	0.11	0.11	0.24	0.31	0.31
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7		6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	164	2230	551	208	2126	2787	47	197	168	1190	1110	497
v/s Ratio Prot	0.04	0.22		c0.09	c0.40		0.01	0.01		c0.25	0.01	
v/s Ratio Perm			0.01			c0.58			0.01			0.02
v/c Ratio	0.86	0.63	0.02	0.78	0.97	0.58	0.47	0.11	0.07	1.03	0.02	0.08
Uniform Delay, d1	63.5	36.6	28.7	57.5	38.1	0.0	64.4	54.3	54.0	51.1	31.8	32.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	32.4	0.4	0.0	16.1	12.4	0.9	2.7	0.1	0.1	34.6	0.0	0.0
Delay (s)	95.9	37.0	28.7	73.7	50.5	0.9	67.0	54.4	54.1	85.7	31.8	32.4
Level of Service	F	D	C	E	D	A	E	D	D	F	C	C
Approach Delay (s)		42.1			30.5			56.0			80.2	
Approach LOS		D			C			E			F	

Intersection Summary

HCM Average Control Delay	43.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	134.2	Sum of lost time (s)	19.7
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

22: Grant Line Road & SR-99 SB Off-ramp

Cumulative Plus Project Conditions
AM Peak Hour















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑	↔	↑
Volume (vph)	0	2020	510	0	2720	470	0	0	0	220	0	820
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1450	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1450	1504
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	2149	543	0	2894	500	0	0	0	234	0	872
RTOR Reduction (vph)	0	0	189	0	0	0	0	0	0	0	1	1
Lane Group Flow (vph)	0	2149	354	0	2894	500	0	0	0	211	449	444
Turn Type		Perm			Free					Split		Perm
Protected Phases		6			2					8	8	
Permitted Phases		6			Free							8
Actuated Green, G (s)		89.3	89.3		89.3	145.0				43.4	43.4	43.4
Effective Green, g (s)		89.3	89.3		89.3	145.0				43.4	43.4	43.4
Actuated g/C Ratio		0.62	0.62		0.62	1.00				0.30	0.30	0.30
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		3132	975		3132	1583				503	434	450
v/s Ratio Prot		0.42			c0.57					0.13	c0.31	
v/s Ratio Perm			0.22			0.32						0.30
v/c Ratio		0.69	0.36		0.92	0.32				0.42	1.04	0.99
Uniform Delay, d1		18.5	13.8		24.8	0.0				40.7	50.8	50.5
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.7	0.3		5.4	0.5				0.2	52.6	38.6
Delay (s)		19.2	14.1		30.2	0.5				40.9	103.4	89.2
Level of Service		B	B		C	A				D	F	F
Approach Delay (s)		18.2			25.8			0.0			85.8	
Approach LOS		B			C			A			F	

Intersection Summary

HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			





























HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↖	↖	↗↗			
Volume (vph)	0	1780	460	0	2320	170	870	0	580	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	4.0		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1935	500	0	2522	185	946	0	630	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	83	0	0	5	0	0	0
Lane Group Flow (vph)	0	1935	500	0	2522	102	473	473	625	0	0	0
Turn Type			Free			Perm	Split		Perm			
Protected Phases		6			2		4	4				
Permitted Phases			Free			2			4			
Actuated Green, G (s)		54.2	101.4		54.7	54.7	36.4	36.4	36.4			
Effective Green, g (s)		54.2	101.4		54.7	54.7	36.4	36.4	36.4			
Actuated g/C Ratio		0.53	1.00		0.54	0.54	0.36	0.36	0.36			
Clearance Time (s)		6.2			5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0			4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2718	1583		2743	854	603	603	1000			
v/s Ratio Prot		0.38			c0.50		c0.28	0.28				
v/s Ratio Perm			0.32			0.06			0.22			
v/c Ratio		0.71	0.32		0.92	0.12	0.78	0.78	0.62			
Uniform Delay, d1		17.7	0.0		21.3	11.5	29.0	29.0	26.9			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		1.0	0.5		5.7	0.1	6.1	6.1	0.9			
Delay (s)		18.7	0.5		27.0	11.6	35.1	35.1	27.7			
Level of Service		B	A		C	B	D	D	C			
Approach Delay (s)		15.0			25.9			32.2			0.0	
Approach LOS		B			C			C			A	
Intersection Summary												
HCM Average Control Delay			23.4				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			101.4				Sum of lost time (s)		10.3			
Intersection Capacity Utilization			77.5%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & Stockton Blvd

Cumulative Plus Project Conditions
AM Peak Hour



























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  						 	
Volume (vph)	370	1730	190	40	1890	150	160	30	20	100	20	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	5029		1770	1749		1681	1713	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.82	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5029		1770	1749		1681	1448	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	398	1860	204	43	2032	161	172	32	22	108	22	473
RTOR Reduction (vph)	0	0	123	0	5	0	0	13	0	0	0	185
Lane Group Flow (vph)	398	1860	81	43	2188	0	172	41	0	65	65	288
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6									8
Actuated Green, G (s)	12.3	56.0	56.0	4.0	47.7		17.9	48.6		8.4	47.5	39.1
Effective Green, g (s)	12.3	56.0	56.0	4.0	47.7		17.9	48.6		8.4	47.5	39.1
Actuated g/C Ratio	0.09	0.40	0.40	0.03	0.34		0.13	0.35		0.06	0.34	0.28
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	301	2027	631	50	1707		226	605		101	505	441
v/s Ratio Prot	c0.12	0.37		0.02	c0.43		c0.10	0.02		0.04	0.01	
v/s Ratio Perm			0.05								0.04	c0.18
v/c Ratio	1.32	0.92	0.13	0.86	1.28		0.76	0.07		0.64	0.13	0.65
Uniform Delay, d1	64.1	40.1	26.8	68.0	46.4		59.2	30.8		64.6	32.2	44.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	166.4	7.1	0.1	74.2	131.4		14.0	0.0		10.1	0.0	2.7
Delay (s)	230.5	47.2	26.9	142.1	177.8		73.2	30.8		74.6	32.2	47.4
Level of Service	F	D	C	F	F		E	C		E	C	D
Approach Delay (s)		75.1			177.1			63.1			48.7	
Approach LOS		E			F			E			D	

Intersection Summary

HCM Average Control Delay	113.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.5	Sum of lost time (s)	23.5
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: Grant Line Road & Waterman Road

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 			 			 	 
Volume (vph)	500	1030	0	0	1290	130	0	0	0	10	0	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Lane Util. Factor	0.97	1.00			0.95	1.00					1.00	0.88
Frpb, ped/bikes	1.00	1.00			1.00	0.99					1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00					1.00	1.00
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	1863			3539	1561					1770	2787
Flt Permitted	0.95	1.00			1.00	1.00					0.95	1.00
Satd. Flow (perm)	3433	1863			3539	1561					1770	2787
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	521	1073	0	0	1344	135	0	0	0	10	0	448
RTOR Reduction (vph)	0	0	0	0	0	32	0	0	0	0	0	419
Lane Group Flow (vph)	521	1073	0	0	1344	103	0	0	0	0	10	29
Confl. Bikes (#/hr)			2			4						
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases						2						3
Actuated Green, G (s)	23.2	81.6			52.8	52.8					7.4	7.4
Effective Green, g (s)	23.2	81.6			52.8	52.8					7.4	7.4
Actuated g/C Ratio	0.20	0.72			0.46	0.46					0.06	0.06
Clearance Time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0					2.0	2.0
Lane Grp Cap (vph)	699	1335			1641	724					115	181
v/s Ratio Prot	0.15	c0.58			0.38						0.01	
v/s Ratio Perm						0.07						c0.01
v/c Ratio	0.75	0.80			0.82	0.14					0.09	0.16
Uniform Delay, d1	42.6	10.8			26.4	17.5					50.1	50.3
Progression Factor	1.00	1.00			1.00	1.00					1.00	1.00
Incremental Delay, d2	3.8	3.4			3.1	0.0					0.1	0.2
Delay (s)	46.4	14.2			29.6	17.6					50.2	50.5
Level of Service	D	B			C	B					D	D
Approach Delay (s)		24.7			28.5			0.0			50.5	
Approach LOS		C			C			A			D	

Intersection Summary

HCM Average Control Delay	29.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	113.9	Sum of lost time (s)	24.9
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 26: Kammerer Road & Hood Franklin Road























Cumulative Plus Project Conditions
 AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↗
Volume (veh/h)	0	1420	1430	10	0	80
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1543	1554	11	0	87
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1565				2332	783
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1565				2332	783
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	74
cM capacity (veh/h)	418				31	337
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	772	772	1036	529	87	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	11	87	
cSH	1700	1700	1700	1700	337	
Volume to Capacity	0.45	0.45	0.61	0.31	0.26	
Queue Length 95th (ft)	0	0	0	0	25	
Control Delay (s)	0.0	0.0	0.0	0.0	19.4	
Lane LOS					C	
Approach Delay (s)	0.0		0.0		19.4	
Approach LOS					C	
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			51.5%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
27: Kammerer Road & Franklin Blvd

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	1400	10	30	1130	10	30	0	150	10	30	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.5	5.5		5.5	5.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1583		1770	1611	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1583		1770	1611	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	1522	11	33	1228	11	33	0	163	11	33	304
RTOR Reduction (vph)	0	0	4	0	0	5	0	137	0	0	244	0
Lane Group Flow (vph)	11	1522	7	33	1228	6	33	26	0	11	93	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	1.0	43.1	43.1	3.5	45.6	45.6	3.6	13.9		1.0	11.3	
Effective Green, g (s)	1.0	43.1	43.1	3.5	45.6	45.6	3.6	13.9		1.0	11.3	
Actuated g/C Ratio	0.01	0.50	0.50	0.04	0.53	0.53	0.04	0.16		0.01	0.13	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.5	5.5		5.5	5.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	20	1763	789	72	1866	835	74	254		20	210	
v/s Ratio Prot	0.01	c0.43		c0.02	0.35		c0.02	c0.02		0.01	c0.06	
v/s Ratio Perm			0.00			0.00						
v/c Ratio	0.55	0.86	0.01	0.46	0.66	0.01	0.45	0.10		0.55	0.44	
Uniform Delay, d1	42.5	19.1	10.9	40.6	14.8	9.7	40.5	31.0		42.5	34.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.2	4.5	0.0	1.7	0.6	0.0	1.6	0.1		17.2	0.5	
Delay (s)	59.8	23.6	10.9	42.3	15.5	9.7	42.0	31.0		59.8	35.2	
Level of Service	E	C	B	D	B	A	D	C		E	D	
Approach Delay (s)		23.8			16.1			32.9			36.0	
Approach LOS		C			B			C			D	

Intersection Summary

HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	30.5
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: Kammerer Road & Willard Pkwy

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗↘	↑↑	↑↑	↗	↘	↗↘
Volume (vph)	380	1180	880	80	270	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	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	3539	3539	1583	1770	2787
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	413	1283	957	87	293	304
RTOR Reduction (vph)	0	0	0	57	0	235
Lane Group Flow (vph)	413	1283	957	30	293	69
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	12.1	44.3	25.2	25.2	16.7	16.7
Effective Green, g (s)	12.1	44.3	25.2	25.2	16.7	16.7
Actuated g/C Ratio	0.16	0.60	0.34	0.34	0.23	0.23
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	565	2133	1213	543	402	633
v/s Ratio Prot	0.12	c0.36	c0.27		c0.17	
v/s Ratio Perm				0.02		0.02
v/c Ratio	0.73	0.60	0.79	0.05	0.73	0.11
Uniform Delay, d1	29.2	9.1	21.8	16.2	26.3	22.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	0.3	3.2	0.0	5.5	0.0
Delay (s)	33.3	9.4	25.0	16.2	31.8	22.5
Level of Service	C	A	C	B	C	C
Approach Delay (s)		15.3	24.2		27.1	
Approach LOS		B	C		C	

Intersection Summary

HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	73.5	Sum of lost time (s)	19.5
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: Kammerer Road & Collector 2

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↑↑	↑	↘	↘
Volume (vph)	210	1540	810	30	10	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
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)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	1674	880	33	11	54
RTOR Reduction (vph)	0	0	0	20	0	50
Lane Group Flow (vph)	228	1674	880	13	11	4
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	8.8	37.7	21.9	21.9	4.5	4.5
Effective Green, g (s)	8.8	37.7	21.9	21.9	4.5	4.5
Actuated g/C Ratio	0.16	0.69	0.40	0.40	0.08	0.08
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	285	2439	1417	634	146	130
v/s Ratio Prot	0.13	c0.47	0.25		c0.01	
v/s Ratio Perm				0.01		0.00
v/c Ratio	0.80	0.69	0.62	0.02	0.08	0.03
Uniform Delay, d1	22.1	5.0	13.1	9.9	23.2	23.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.0	0.6	0.6	0.0	0.1	0.0
Delay (s)	36.1	5.7	13.7	9.9	23.3	23.1
Level of Service	D	A	B	A	C	C
Approach Delay (s)		9.3	13.6		23.2	
Approach LOS		A	B		C	

Intersection Summary

HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	54.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
30: Kammerer Road & Big Horn Blvd

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗↘	↑↑	↑↑	↗	↘	↗
Volume (vph)	360	1190	610	300	280	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
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	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	391	1293	663	326	304	250
RTOR Reduction (vph)	0	0	0	233	0	188
Lane Group Flow (vph)	391	1293	663	93	304	62
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	8.3	32.3	17.0	17.0	14.8	14.8
Effective Green, g (s)	8.3	32.3	17.0	17.0	14.8	14.8
Actuated g/C Ratio	0.14	0.54	0.29	0.29	0.25	0.25
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	478	1918	1009	452	440	393
v/s Ratio Prot	0.11	c0.37	0.19		c0.17	
v/s Ratio Perm				0.06		0.04
v/c Ratio	0.82	0.67	0.66	0.21	0.69	0.16
Uniform Delay, d1	24.9	9.9	18.7	16.2	20.3	17.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.9	0.7	1.2	0.1	3.8	0.1
Delay (s)	34.8	10.6	19.9	16.3	24.1	17.6
Level of Service	C	B	B	B	C	B
Approach Delay (s)		16.2	18.7		21.2	
Approach LOS		B	B		C	

Intersection Summary

HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Kammerer Road & Collector 1

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	160	1310	830	320	160	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
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)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	1424	902	348	174	87
RTOR Reduction (vph)	0	0	0	222	0	71
Lane Group Flow (vph)	174	1424	902	126	174	16
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	8.2	37.1	21.9	21.9	11.1	11.1
Effective Green, g (s)	8.2	37.1	21.9	21.9	11.1	11.1
Actuated g/C Ratio	0.14	0.61	0.36	0.36	0.18	0.18
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	239	2163	1277	571	324	289
v/s Ratio Prot	0.10	c0.40	0.25		c0.10	
v/s Ratio Perm				0.08		0.01
v/c Ratio	0.73	0.66	0.71	0.22	0.54	0.06
Uniform Delay, d1	25.2	7.7	16.6	13.5	22.5	20.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.0	0.6	1.5	0.1	0.9	0.0
Delay (s)	34.2	8.2	18.1	13.5	23.3	20.5
Level of Service	C	A	B	B	C	C
Approach Delay (s)		11.1	16.8		22.4	
Approach LOS		B	B		C	

Intersection Summary

HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	60.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Kammerer Road & Lotz Pkwy

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶↷	↶↷	↶↷	↶↷	↶↷	↶↷
Volume (vph)	180	1210	1190	640	390	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
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	3539	3539	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	196	1315	1293	696	424	207
RTOR Reduction (vph)	0	0	0	385	0	165
Lane Group Flow (vph)	196	1315	1293	311	424	42
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	7.6	48.1	33.5	33.5	14.4	14.4
Effective Green, g (s)	7.6	48.1	33.5	33.5	14.4	14.4
Actuated g/C Ratio	0.10	0.64	0.45	0.45	0.19	0.19
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	348	2270	1581	707	659	304
v/s Ratio Prot	0.06	c0.37	c0.37		c0.12	
v/s Ratio Perm				0.20		0.03
v/c Ratio	0.56	0.58	0.82	0.44	0.64	0.14
Uniform Delay, d1	32.1	7.7	18.1	14.3	27.9	25.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.2	3.2	0.2	1.6	0.1
Delay (s)	33.4	7.9	21.3	14.4	29.6	25.2
Level of Service	C	A	C	B	C	C
Approach Delay (s)		11.2	18.9		28.1	
Approach LOS		B	B		C	

Intersection Summary

HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
33: Kammerer Road & Sterling Meadows Pkwy

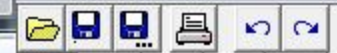
Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↑↑↑	↑↑↑	↖	↗	↖
Volume (vph)	110	1410	1770	80	90	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00
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)	1770	5085	5085	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	5085	5085	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	1533	1924	87	98	87
RTOR Reduction (vph)	0	0	0	44	0	75
Lane Group Flow (vph)	120	1533	1924	43	98	12
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	7.9	51.4	36.5	36.5	10.0	10.0
Effective Green, g (s)	7.9	51.4	36.5	36.5	10.0	10.0
Actuated g/C Ratio	0.10	0.68	0.48	0.48	0.13	0.13
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	185	3466	2462	766	235	210
v/s Ratio Prot	0.07	c0.30	c0.38		c0.06	
v/s Ratio Perm				0.03		0.01
v/c Ratio	0.65	0.44	0.78	0.06	0.42	0.05
Uniform Delay, d1	32.4	5.5	16.1	10.3	30.0	28.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.6	0.1	1.7	0.0	1.2	0.1
Delay (s)	40.0	5.6	17.8	10.3	31.2	28.7
Level of Service	D	A	B	B	C	C
Approach Delay (s)		8.1	17.5		30.0	
Approach LOS		A	B		C	

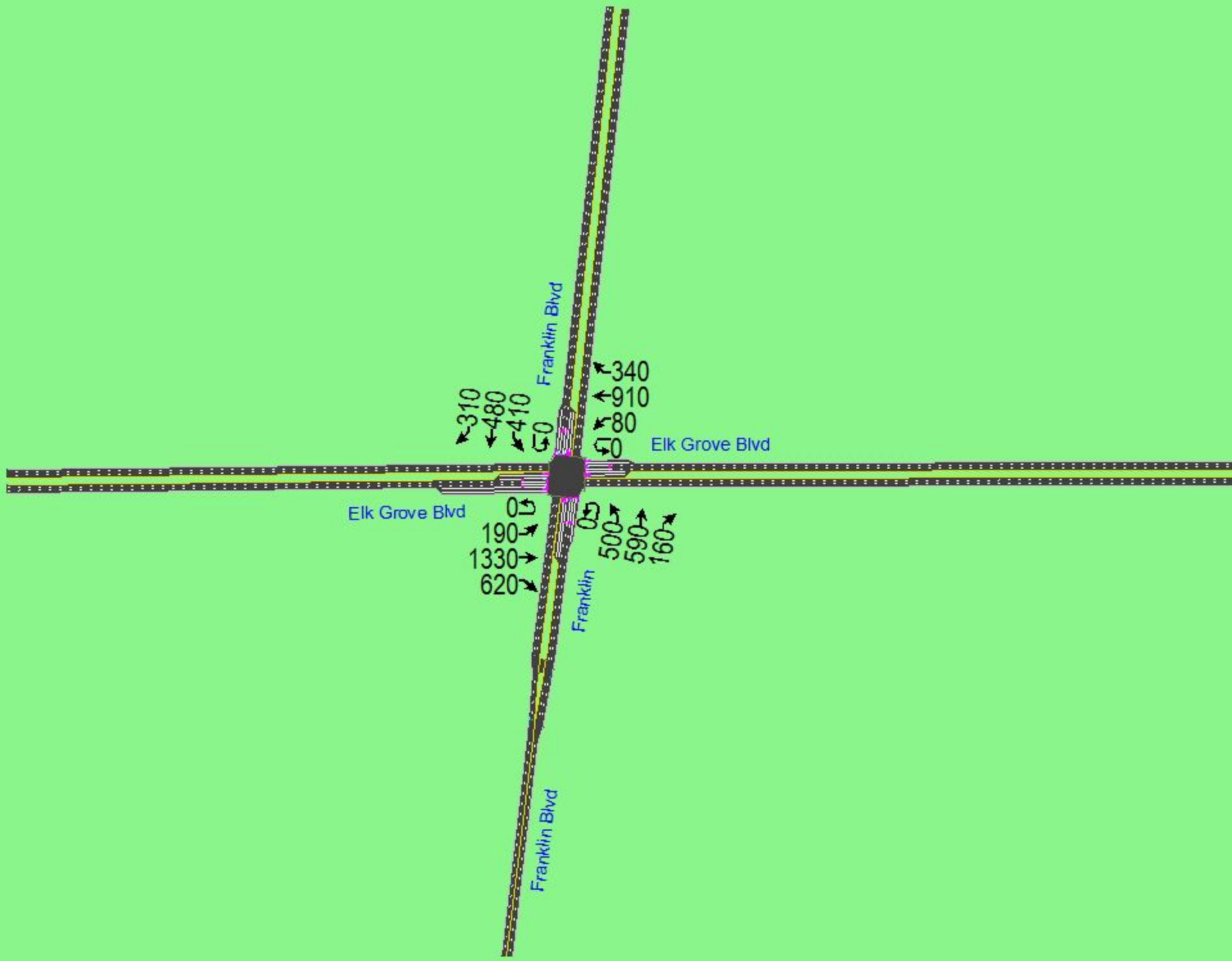
Intersection Summary

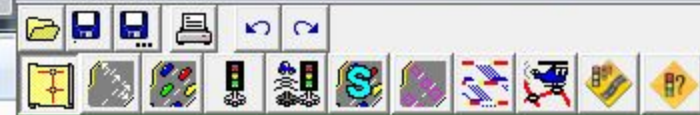
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	75.4	Sum of lost time (s)	21.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



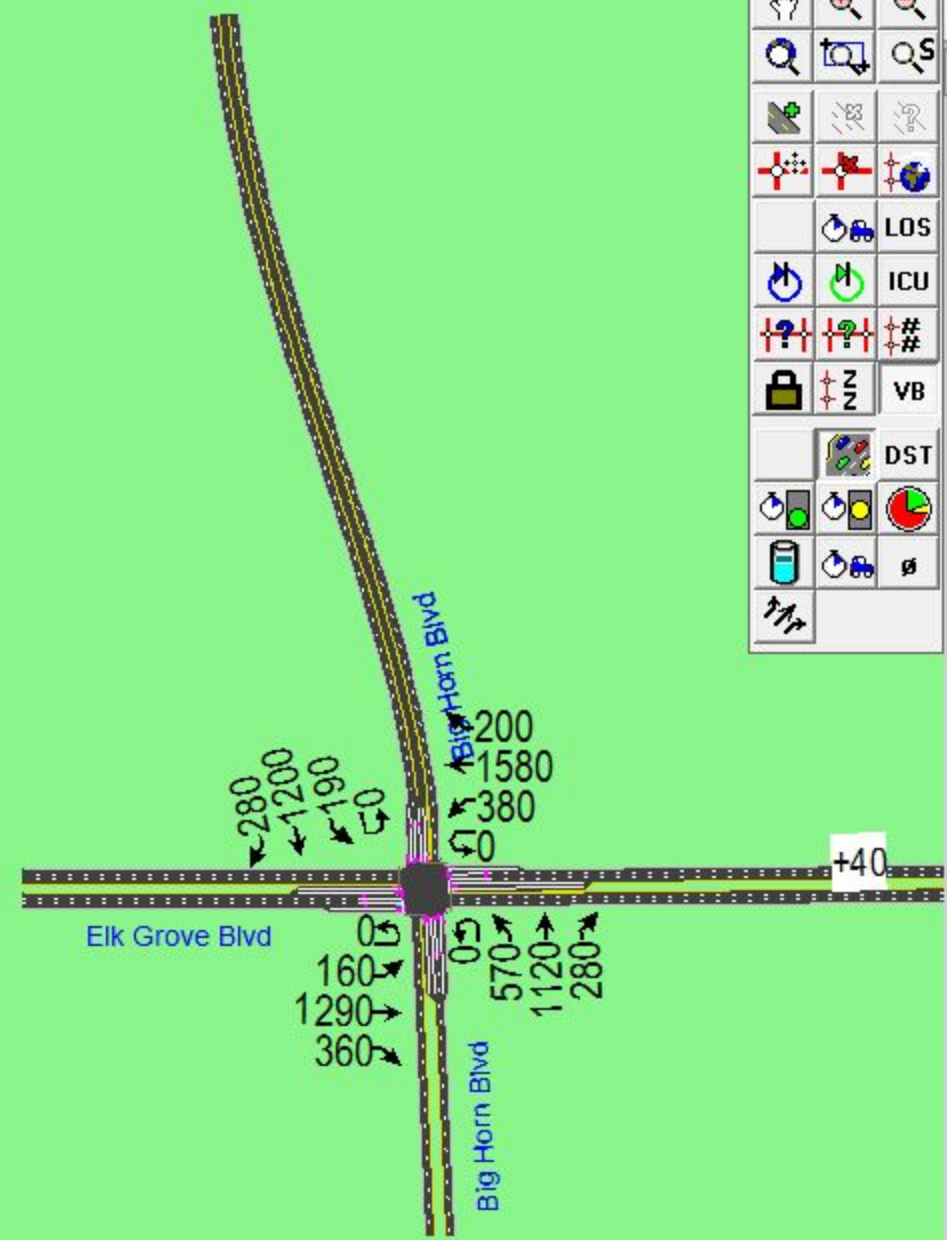
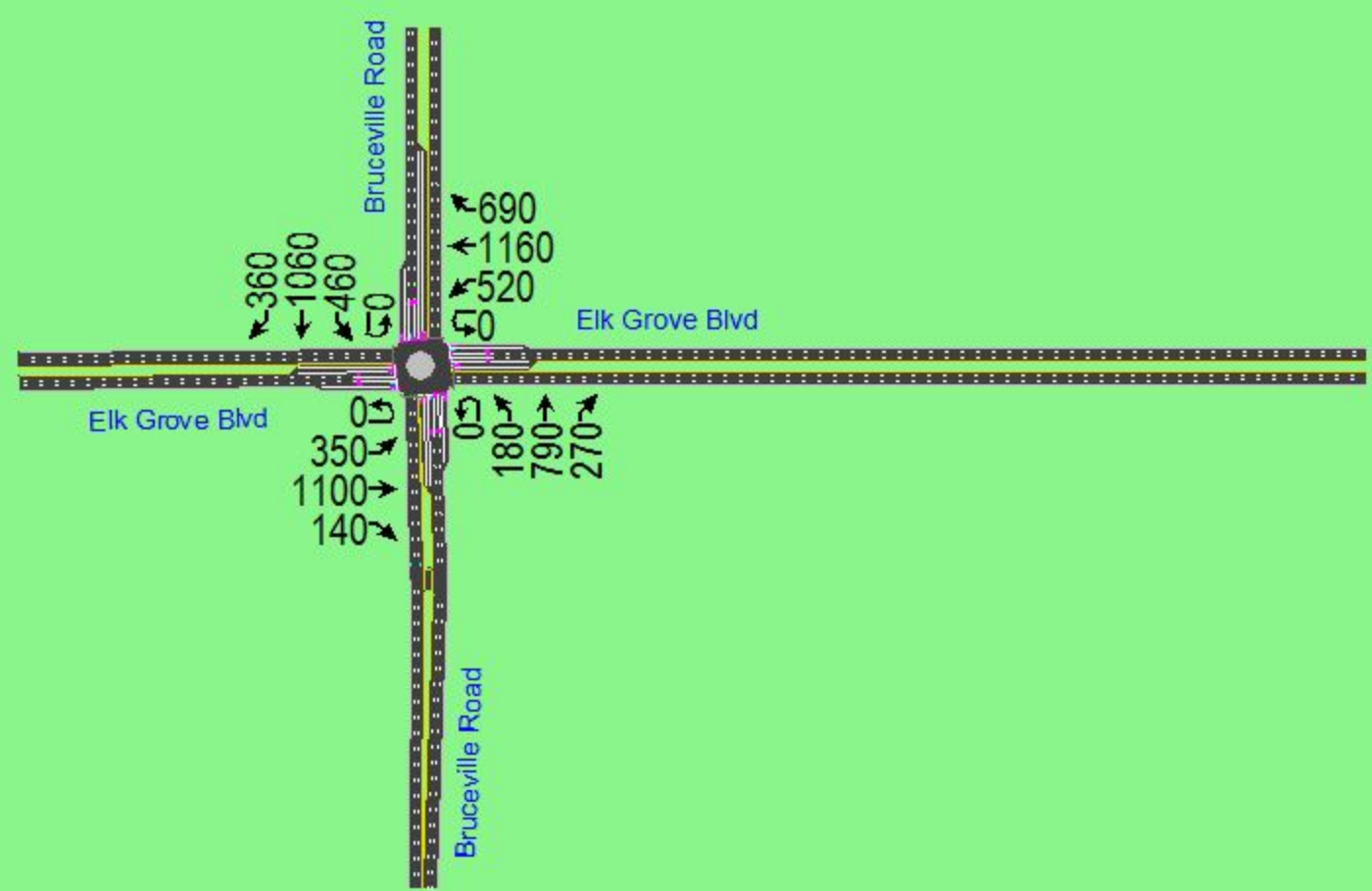
none

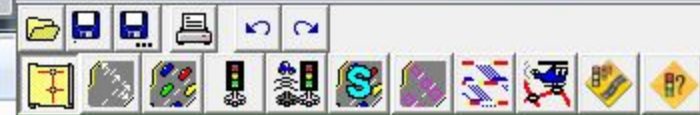
- Hand icon
- Zoom in icon
- Zoom out icon
- Search icon
- Simulation control icons: LOS, ICU, #, #, VB, DST, and a blank icon.
- Other simulation icons: a truck icon, a car icon, and a carpooling icon.



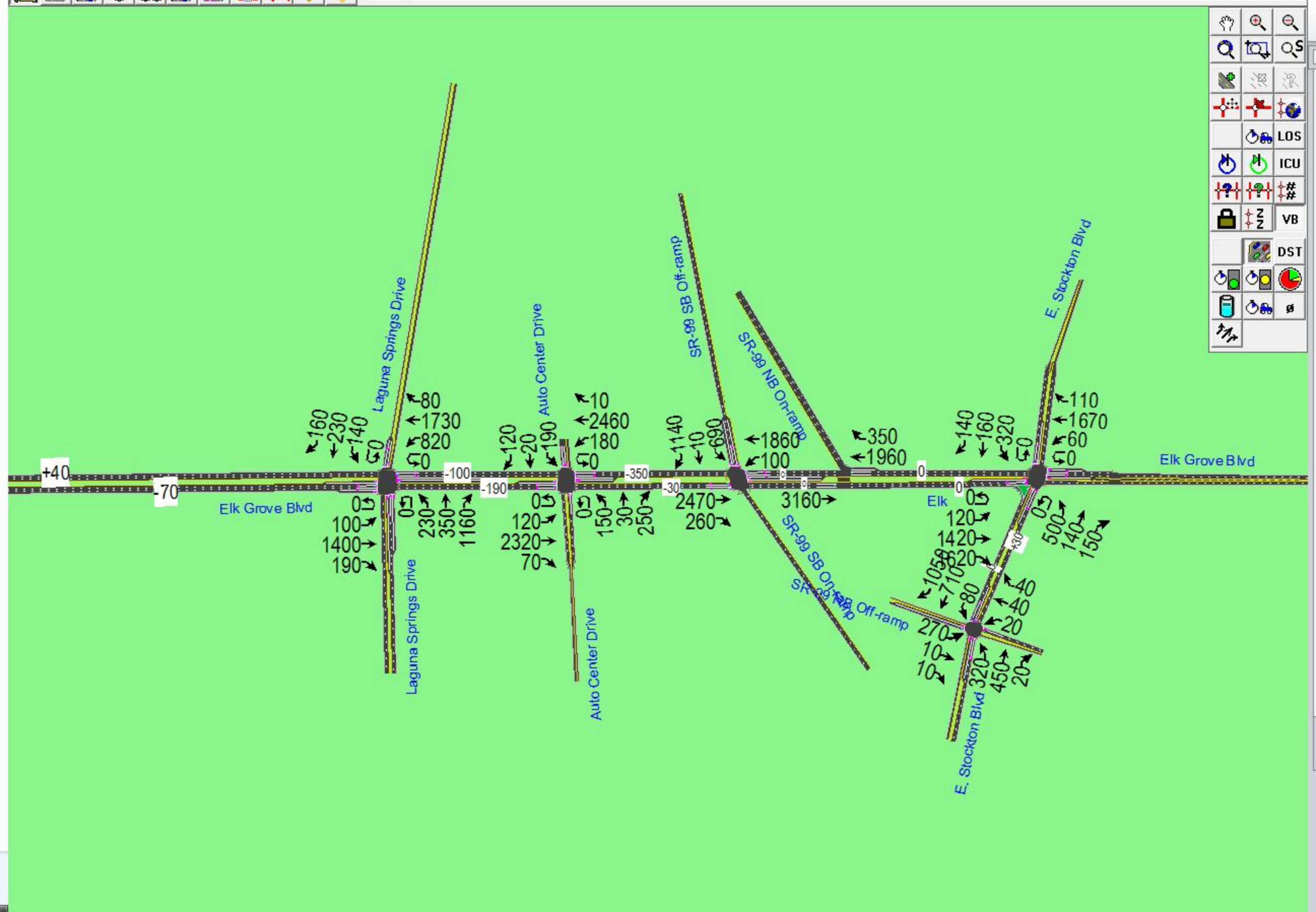


2 Elk Grove Blvd & Bruceville Road



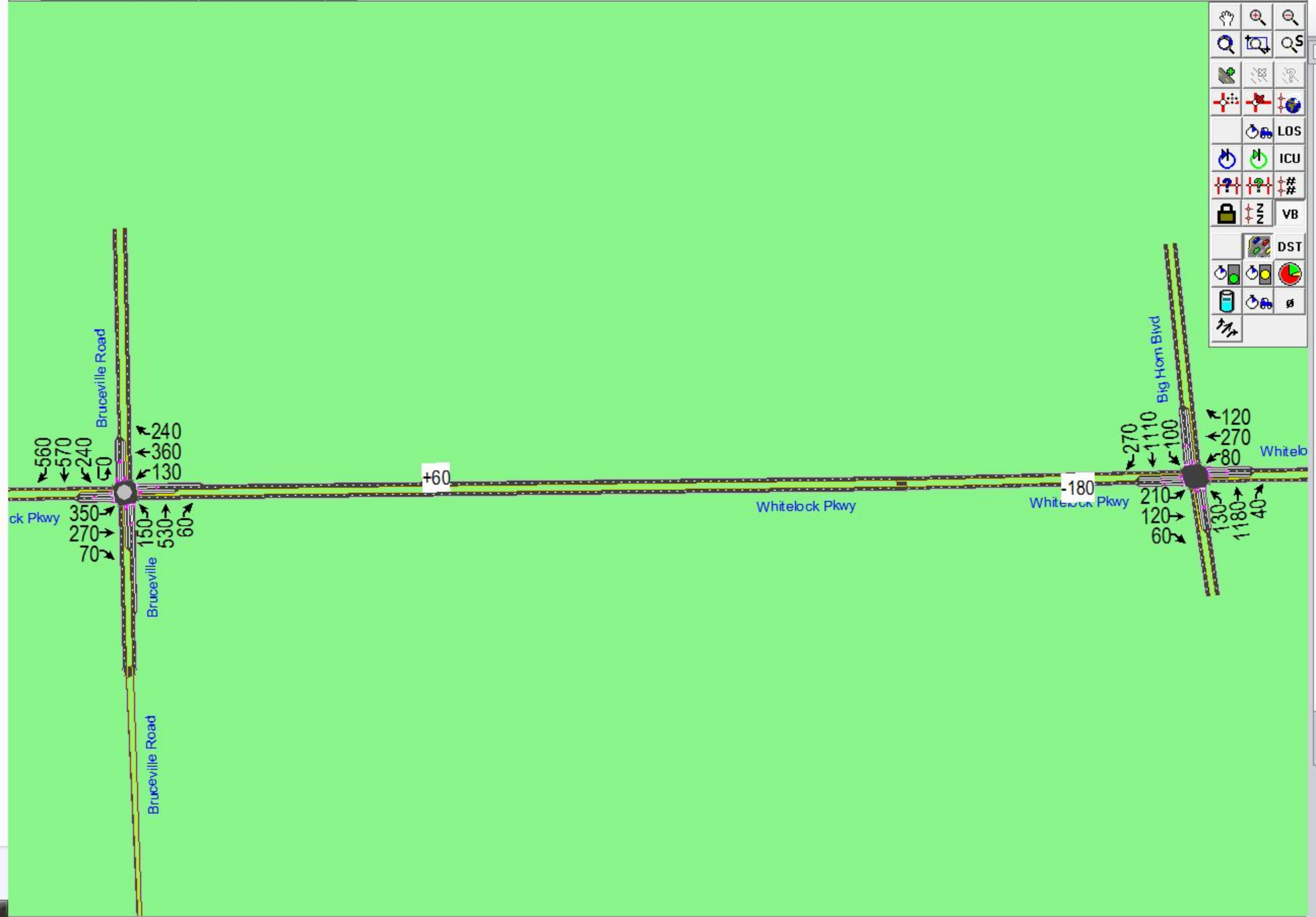


2 Elk Grove Blvd & Bruceville Road



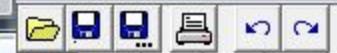
Simulation control panel with the following settings:

- LOS: [Icon]
- ICU: [Icon]
- #: [Icon]
- VB: [Icon]
- DST: [Icon]



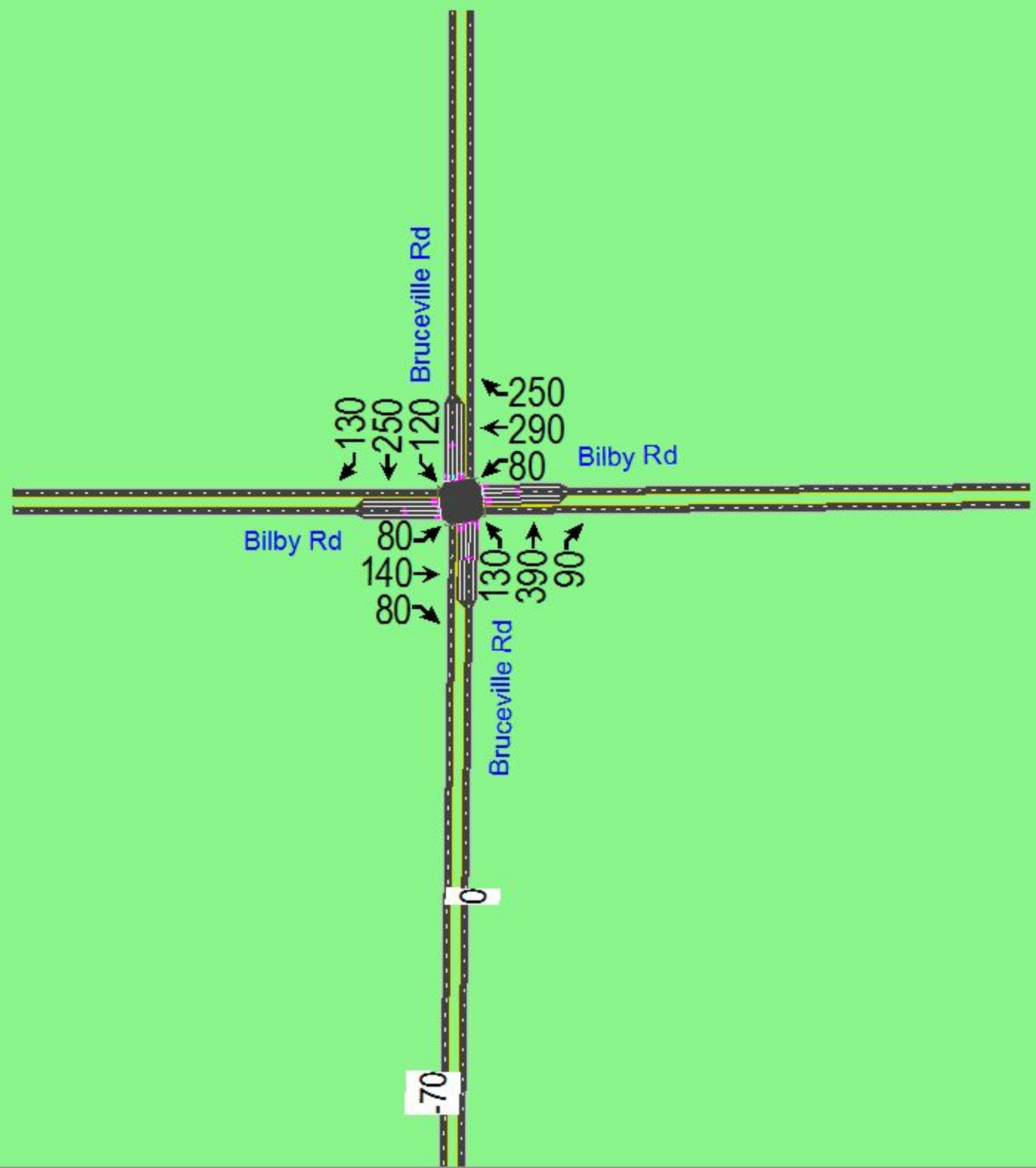
Toolbox containing various simulation and analysis tools:

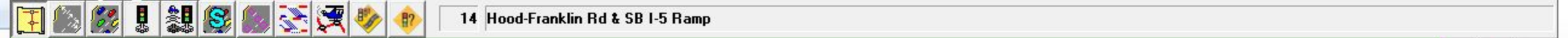
- Navigation: Hand, Zoom In, Zoom Out, Pan, Select, Lasso, Erase, Copy, Paste, Undo, Redo.
- Simulation: LOS, ICU, #, #, VB, DST, #, #.
- Analysis: Pie chart, Bar chart, Traffic light icon, Signal icon, Signal icon.



none

- Hand icon
- Zoom In icon
- Zoom Out icon
- Search icon
- Simulation icon
- LOS icon
- ICU icon
- Queue icon
- VB icon
- DST icon
- Other simulation and analysis icons





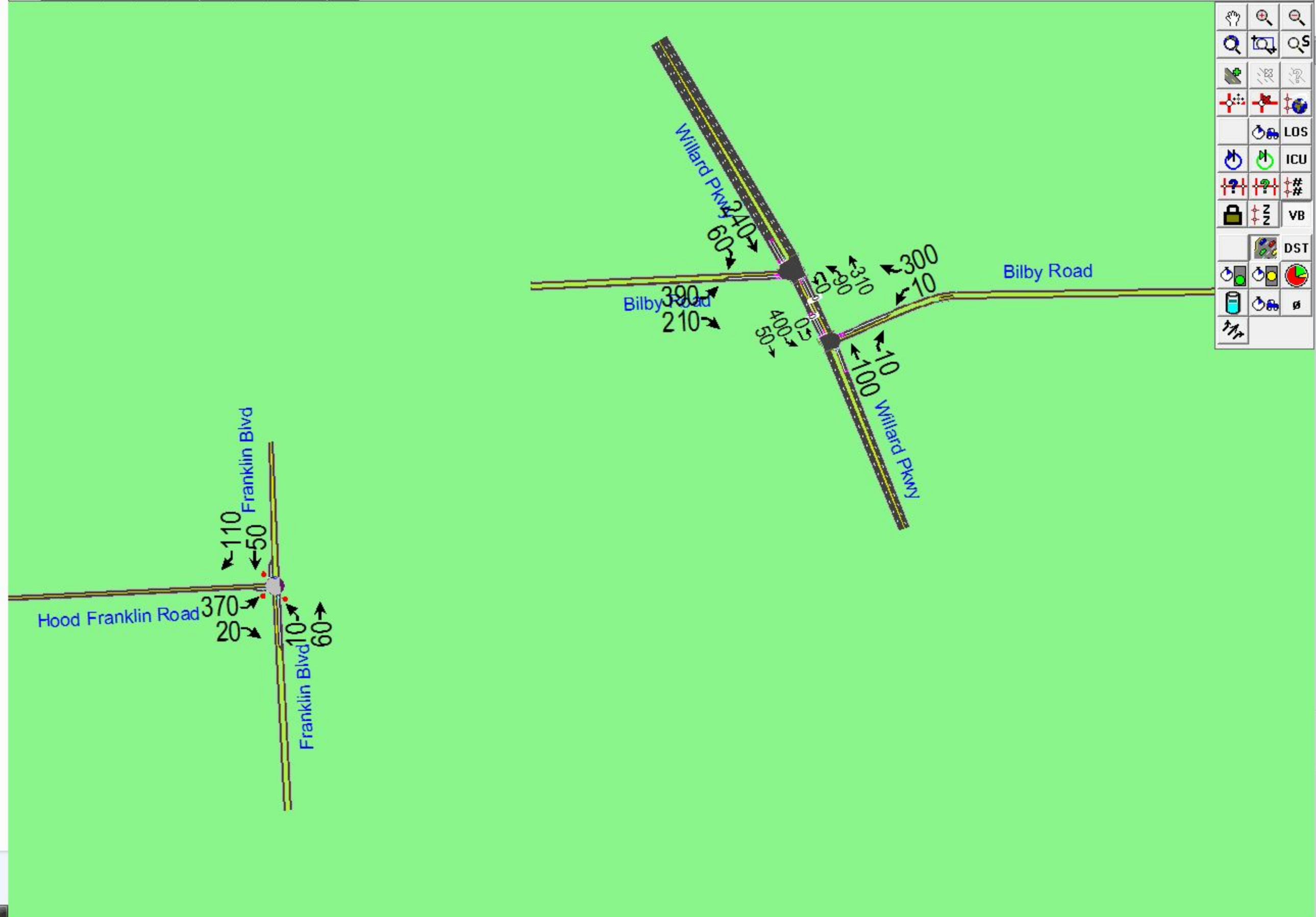
Vertical toolbar containing simulation and analysis tools:

- Hand icon (pan)
- Zoom in/out icons
- Simulation control icons (stop, play, refresh)
- LOS (Level of Service) tool
- ICU (Intersection Control Unit) tool
- VB (Vehicle Buffer) tool
- DST (Data Storage Tool) icon
- Other simulation and analysis icons

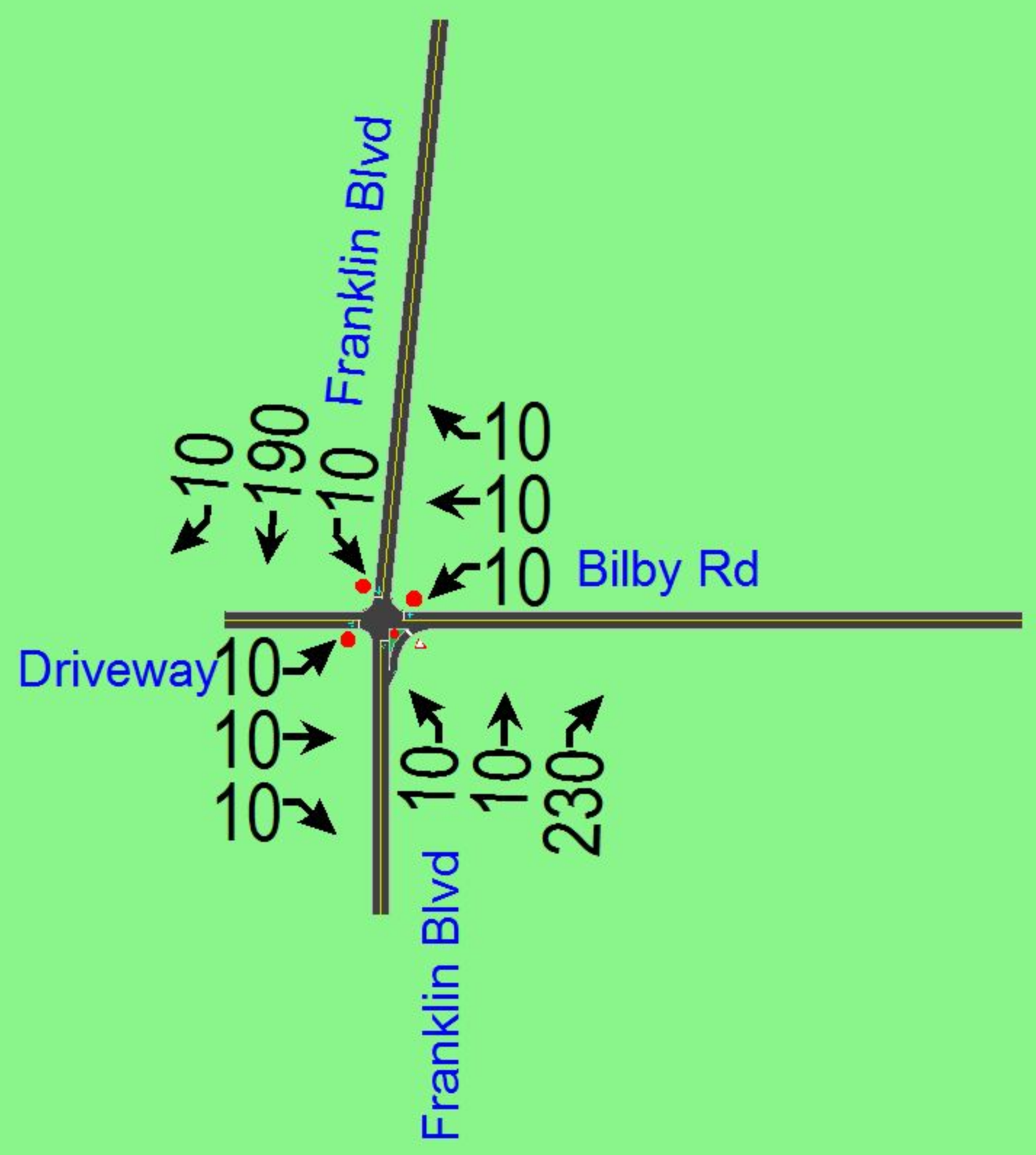
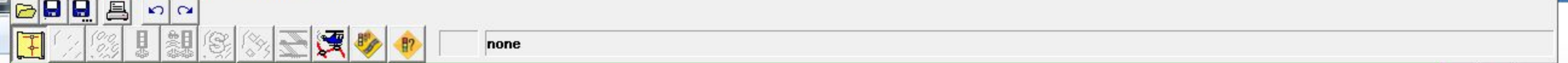
Kammere



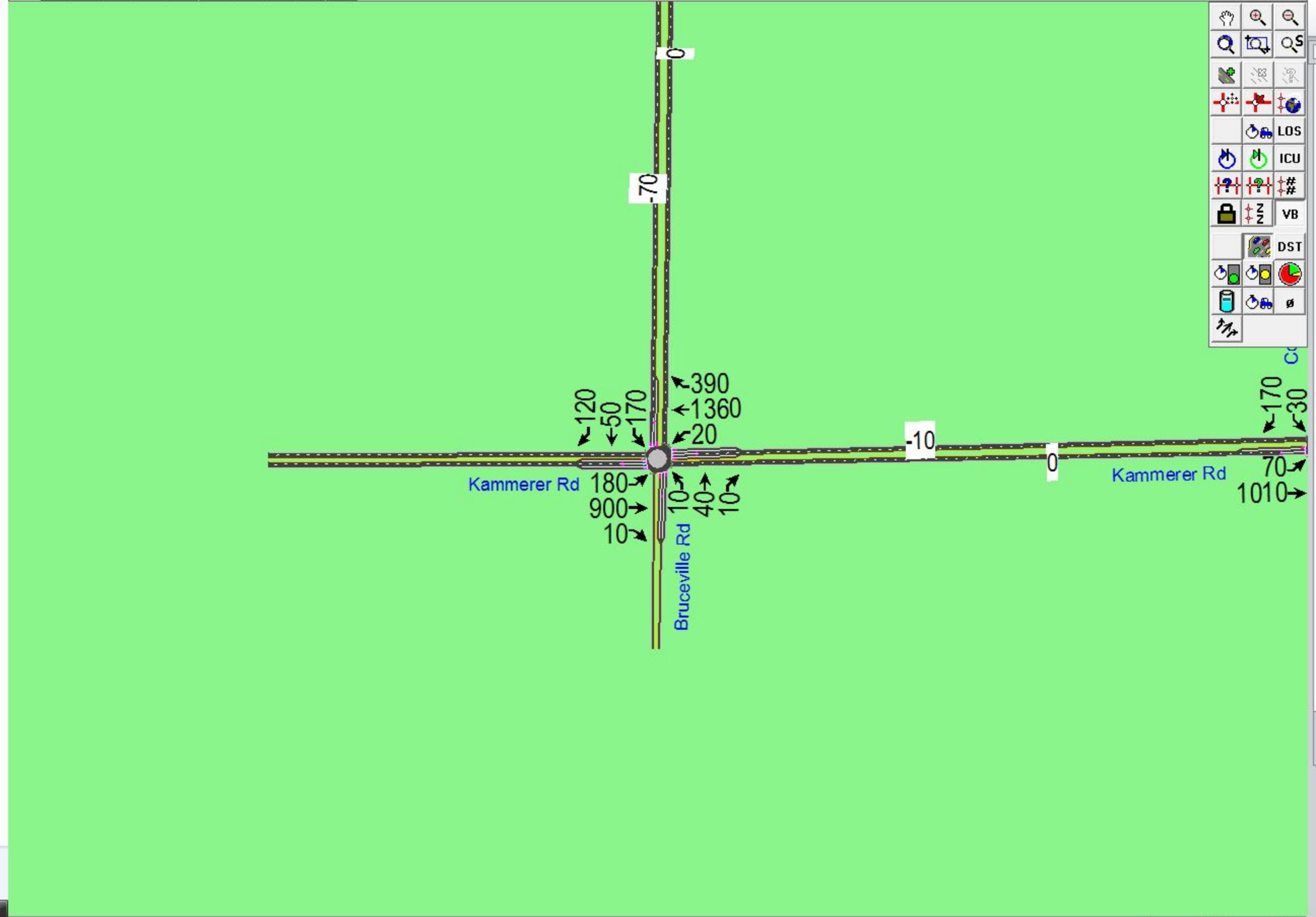
16 Hood Franklin Road & Franklin Blvd



A vertical toolbar on the right side of the screen containing various simulation control icons. The icons include a hand, magnifying glass, search, and several traffic-related symbols. Labels on the right side of the toolbar include: LOS, ICU, #, #, VB, DST, and a set of traffic light symbols.

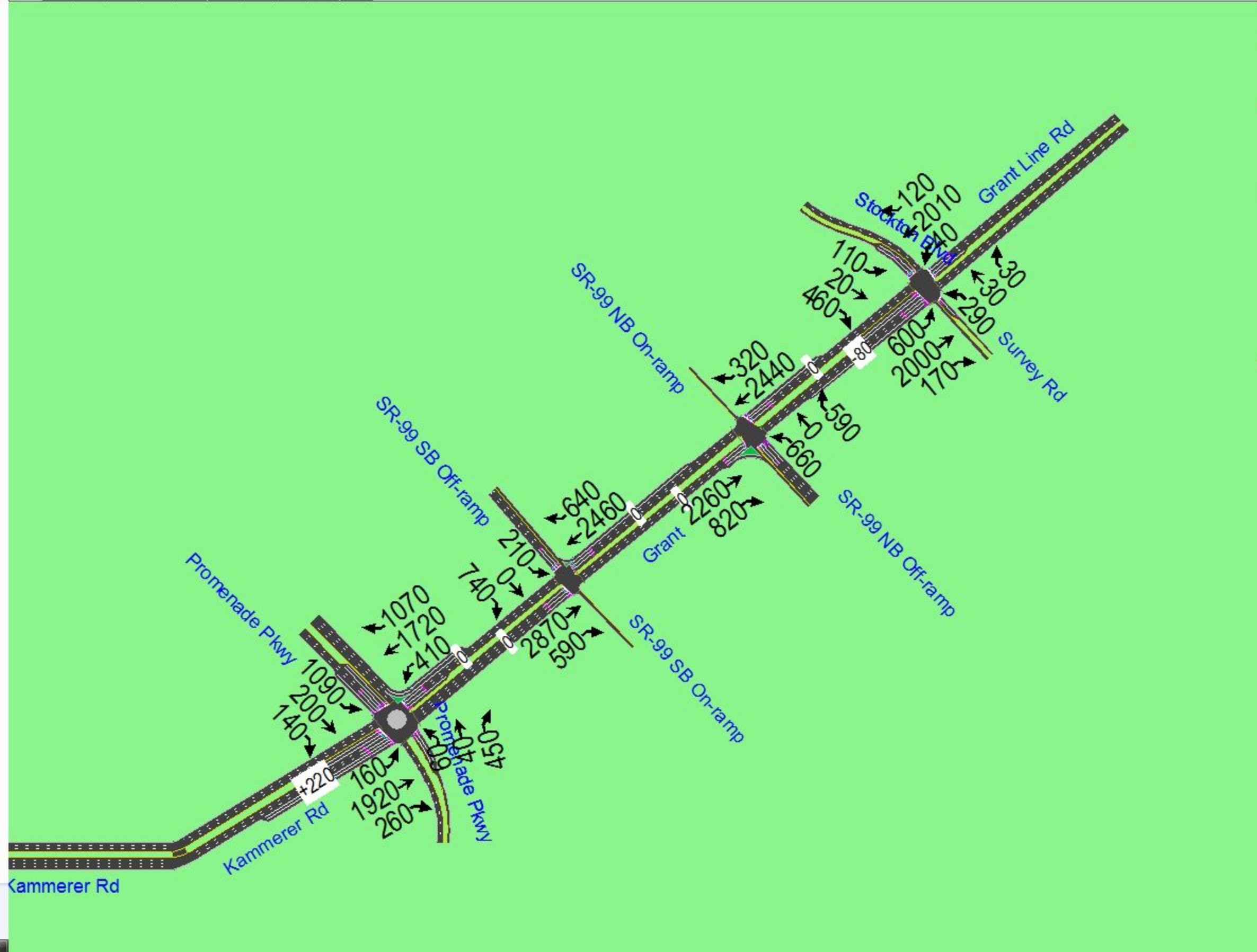


Simulation and analysis tools including: hand, zoom, pan, select, LOS, ICU, #, #, VB, DST, and other icons.



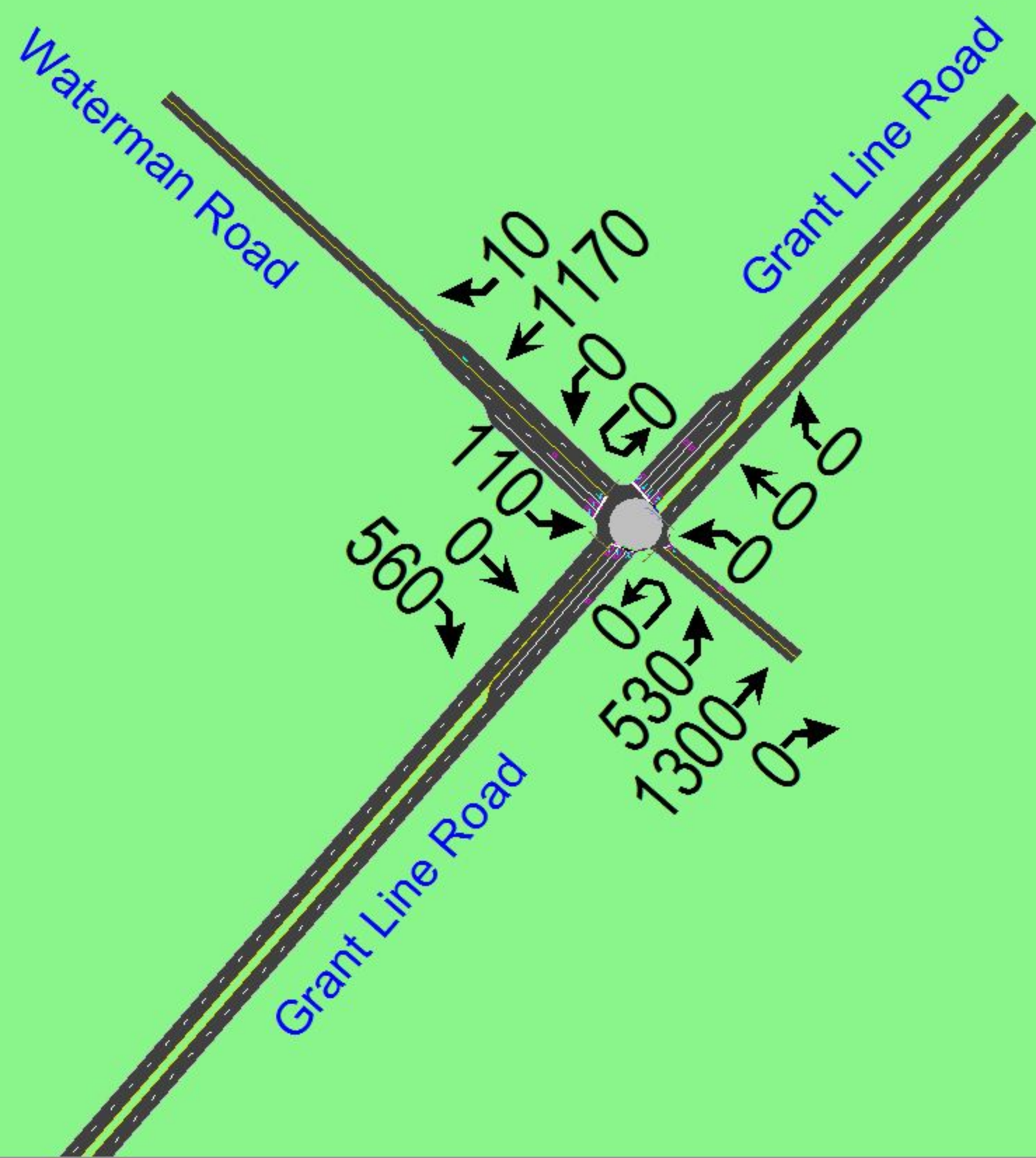
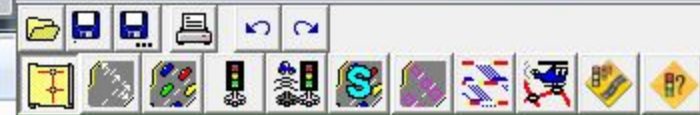
Toolbox containing various simulation and analysis tools:

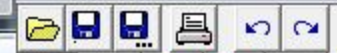
- Hand icon
- Zoom in (+)
- Zoom out (-)
- Search (S)
- Simulation control icons (stop, play, refresh)
- LOS (Level of Service)
- ICU (Intersection Control Unit)
- VB (Vehicle Buffer)
- DST (Data Storage Tool)
- Other simulation parameters and settings icons.



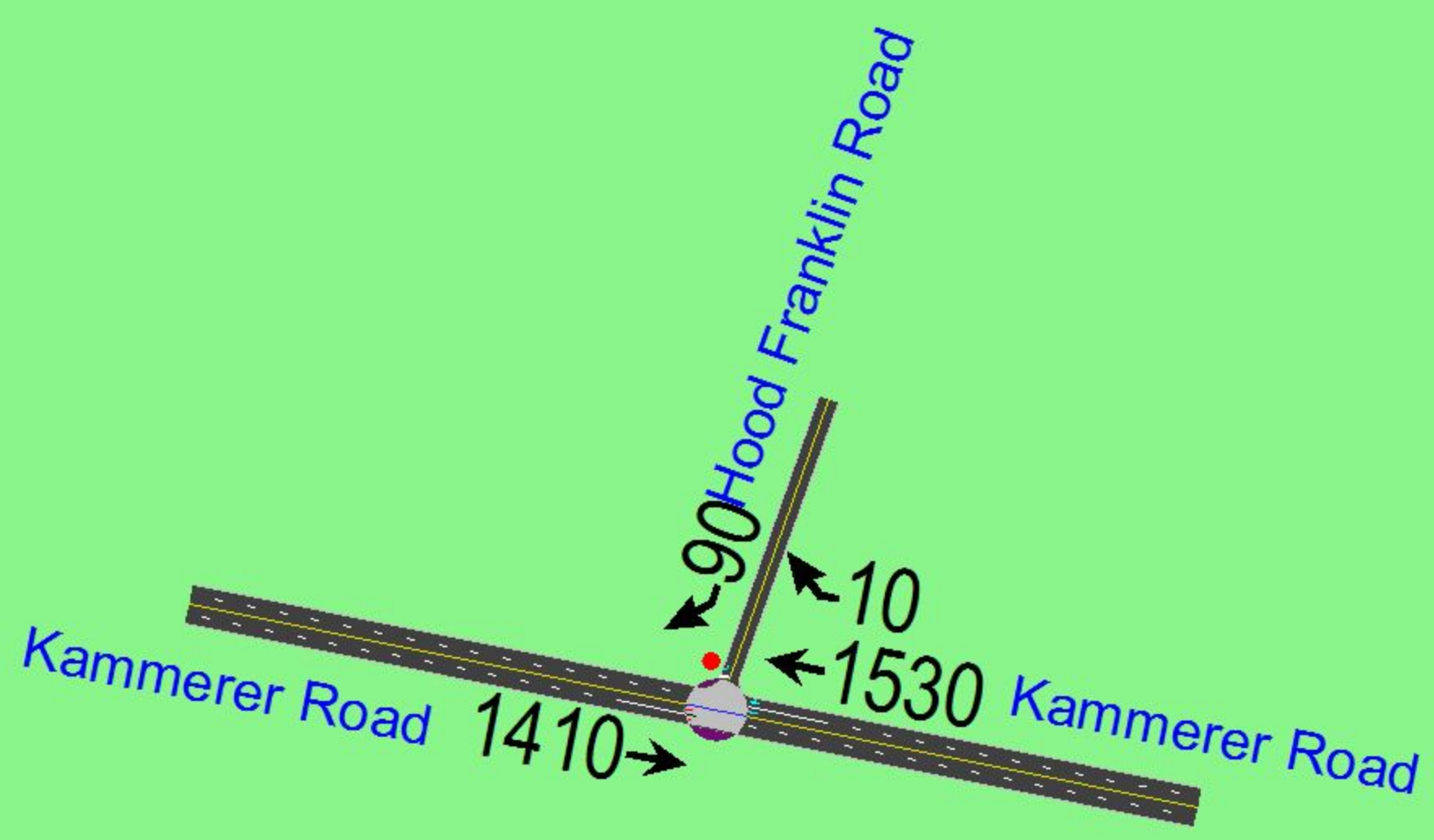
- Hand icon
- Zoom in (+)
- Zoom out (-)
- Search (S)
- Refresh
- Reset
- LOS
- ICU
- VB
- DST
- Other simulation controls

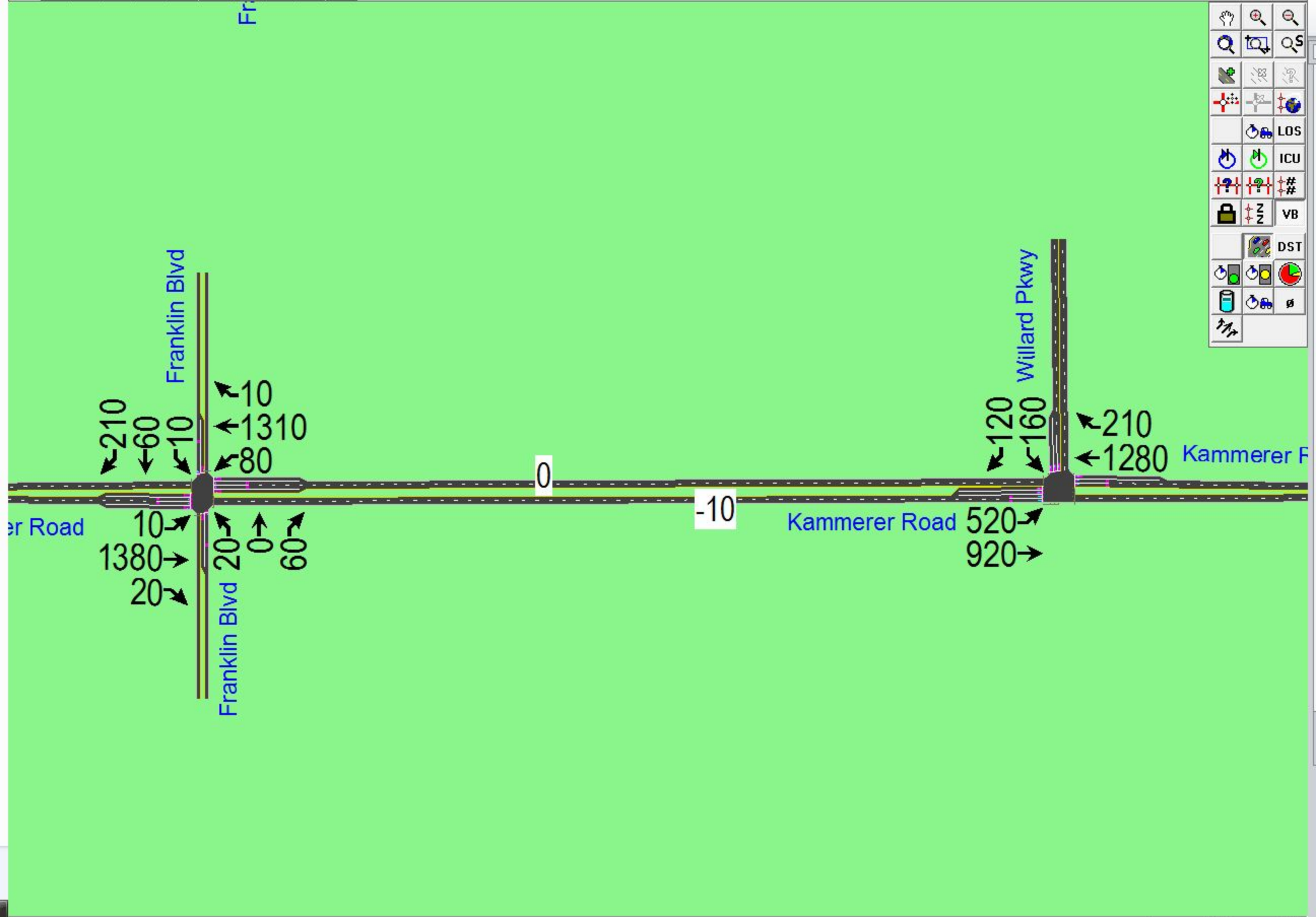
Kammerer Rd





26 Kammerer Road & Hood Franklin Road

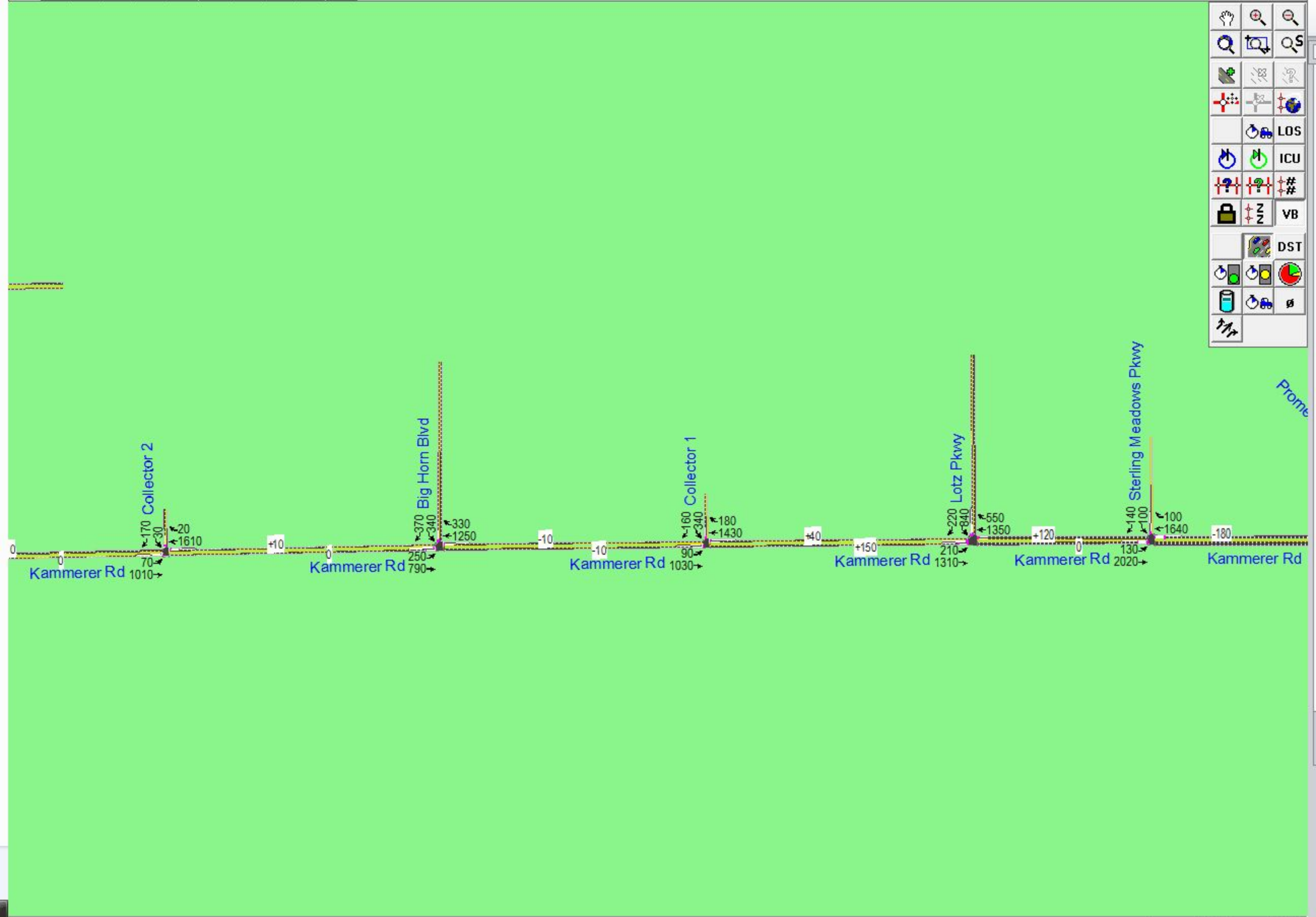




A vertical toolbar on the right side of the interface contains various icons for simulation and editing. The tools are organized into several sections:

- Navigation: Hand, Zoom In, Zoom Out, Pan, Select, Lasso Select, Erase.
- Simulation: LOS (Level of Service), ICU (Incident Clearance Unit), # (Number of Lanes), VB (Vehicle Buffer), DST (Distributed Traffic).
- Other: A set of icons for vehicle types and other simulation parameters.

























Toolbar with icons for file operations (Save, Print, Undo, Redo) and a dropdown menu currently set to "none".



Vertical toolbar on the right side of the workspace containing various icons for navigation (hand, zoom in, zoom out, pan, select) and analysis tools (LOS, ICU, #, VB, DST, and a pie chart icon).

HCM Signalized Intersection Capacity Analysis
1: Elk Grove Blvd & Franklin Blvd

























Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	1330	620	80	910	340	500	590	160	410	480	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Lane Util. Factor	0.97	0.91	0.88	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	2750	3433	5085	1583	3433	5085	1583	3433	5085	1558
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	2750	3433	5085	1583	3433	5085	1583	3433	5085	1558
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	1446	674	87	989	370	543	641	174	446	522	337
RTOR Reduction (vph)	0	0	377	0	0	161	0	0	91	0	0	121
Lane Group Flow (vph)	207	1446	297	87	989	209	543	641	83	446	522	216
Confl. Bikes (#/hr)			2									3
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	13.0	66.0	66.0	7.0	59.6	59.6	27.2	29.0	29.0	22.8	25.5	25.5
Effective Green, g (s)	13.0	66.0	66.0	7.0	59.6	59.6	27.2	29.0	29.0	22.8	25.5	25.5
Actuated g/C Ratio	0.09	0.44	0.44	0.05	0.40	0.40	0.18	0.19	0.19	0.15	0.17	0.17
Clearance Time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	298	2237	1210	160	2020	629	623	983	306	522	864	265
v/s Ratio Prot	c0.06	c0.28		0.03	0.19		c0.16	c0.13		0.13	0.10	
v/s Ratio Perm			0.11			0.13			0.05			c0.14
v/c Ratio	0.69	0.65	0.25	0.54	0.49	0.33	0.87	0.65	0.27	0.85	0.60	0.81
Uniform Delay, d1	66.6	32.9	26.4	69.9	33.8	31.4	59.7	55.8	51.5	62.0	57.6	60.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	1.5	0.5	2.0	0.9	1.4	12.4	1.2	0.2	12.4	0.8	16.4
Delay (s)	72.1	34.3	26.8	72.0	34.7	32.8	72.1	57.0	51.7	74.4	58.4	76.4
Level of Service	E	C	C	E	C	C	E	E	D	E	E	E
Approach Delay (s)		35.5			36.4			62.4			68.5	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM Average Control Delay			48.1				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			31.5		
Intersection Capacity Utilization			77.0%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Elk Grove Blvd & Bruceville Road

























Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	350	1100	140	520	1160	690	180	790	270	460	1060	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.86	0.86
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	4775	1362
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	4775	1362
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	365	1146	146	542	1208	719	188	823	281	479	1104	375
RTOR Reduction (vph)	0	0	66	0	0	169	0	0	176	0	3	163
Lane Group Flow (vph)	365	1146	80	542	1208	550	188	823	105	479	1150	163
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	17.1	47.5	47.5	26.3	56.7	56.7	10.8	31.2	31.2	22.1	42.5	42.5
Effective Green, g (s)	17.1	47.5	47.5	26.3	56.7	56.7	10.8	31.2	31.2	22.1	42.5	42.5
Actuated g/C Ratio	0.11	0.32	0.32	0.18	0.38	0.38	0.07	0.21	0.21	0.15	0.28	0.28
Clearance Time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	391	1610	501	602	1922	598	247	1058	329	506	1353	386
v/s Ratio Prot	0.11	0.23		c0.16	0.24		0.05	0.16		c0.14	c0.24	
v/s Ratio Perm			0.05			c0.35			0.07			0.12
v/c Ratio	0.93	0.71	0.16	0.90	0.63	0.92	0.76	0.78	0.32	0.95	0.85	0.42
Uniform Delay, d1	65.9	45.2	36.9	60.6	38.1	44.5	68.3	56.1	50.4	63.4	50.7	43.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	28.8	2.7	0.7	16.3	1.6	21.7	11.7	3.3	0.2	26.7	5.1	0.3
Delay (s)	94.7	47.9	37.6	76.8	39.6	66.2	80.1	59.5	50.6	90.0	55.9	44.0
Level of Service	F	D	D	E	D	E	F	E	D	F	E	D
Approach Delay (s)		57.3			55.5			60.5			62.3	
Approach LOS		E			E			E			E	
Intersection Summary												
HCM Average Control Delay			58.6	HCM Level of Service				E				
HCM Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			150.0	Sum of lost time (s)				17.2				
Intersection Capacity Utilization			100.2%	ICU Level of Service				G				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Elk Grove Blvd & Big Horn Blvd

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1290	360	380	1580	200	570	1120	280	190	1200	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	167	1344	375	396	1646	208	594	1167	292	198	1250	292
RTOR Reduction (vph)	0	0	145	0	0	63	0	0	96	0	0	66
Lane Group Flow (vph)	167	1344	230	396	1646	145	594	1167	196	198	1250	226
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7		4
Permitted Phases			6			2			8			4
Actuated Green, G (s)	7.6	38.3	38.3	16.3	47.0	47.0	23.7	60.4	60.4	11.0	47.7	47.7
Effective Green, g (s)	7.6	38.3	38.3	16.3	47.0	47.0	23.7	60.4	60.4	11.0	47.7	47.7
Actuated g/C Ratio	0.05	0.26	0.26	0.11	0.31	0.31	0.16	0.40	0.40	0.07	0.32	0.32
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	174	1298	404	373	1593	496	542	1425	637	252	1125	503
v/s Ratio Prot	0.05	0.26		c0.12	c0.32		c0.17	0.33		0.06	c0.35	
v/s Ratio Perm			0.15			0.09			0.12			0.14
v/c Ratio	0.96	1.04	0.57	1.06	1.03	0.29	1.10	0.82	0.31	0.79	1.11	0.45
Uniform Delay, d1	71.0	55.9	48.7	66.8	51.5	38.9	63.1	39.9	30.6	68.3	51.1	40.7
Progression Factor	1.00	1.00	1.00	0.70	0.90	1.03	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	55.4	34.6	5.7	52.8	26.4	0.9	67.5	3.6	0.1	13.8	62.7	0.2
Delay (s)	126.4	90.5	54.4	99.9	72.8	41.1	130.6	43.5	30.7	82.1	113.9	40.9
Level of Service	F	F	D	F	E	D	F	D	C	F	F	D
Approach Delay (s)		86.5			74.7			66.9			98.0	
Approach LOS		F			E			E			F	

Intersection Summary

HCM Average Control Delay	80.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
4: Elk Grove Blvd & Laguna Springs Drive

Cumulative Plus Project Conditions
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1400	190	820	1730	80	230	350	1160	140	230	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3321	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3321	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	103	1443	196	845	1784	82	237	361	1196	144	237	165
RTOR Reduction (vph)	0	0	73	0	3	0	0	0	547	0	84	0
Lane Group Flow (vph)	103	1443	123	845	1863	0	237	361	649	144	318	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	11.3	42.3	42.3	36.1	67.1		20.1	36.2	36.2	13.2	29.3	
Effective Green, g (s)	11.3	42.3	42.3	36.1	67.1		20.1	36.2	36.2	13.2	29.3	
Actuated g/C Ratio	0.08	0.28	0.28	0.24	0.45		0.13	0.24	0.24	0.09	0.20	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	133	1434	446	826	2260		237	450	673	156	649	
v/s Ratio Prot	0.06	c0.28		c0.25	0.37		c0.13	0.19		0.08	0.10	
v/s Ratio Perm			0.08						c0.23			
v/c Ratio	0.77	1.01	0.28	1.02	0.82		1.00	0.80	0.96	0.92	0.49	
Uniform Delay, d1	68.1	53.9	41.9	57.0	36.3		65.0	53.5	56.3	67.9	53.7	
Progression Factor	1.56	0.60	0.62	1.40	0.70		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.0	16.7	0.6	25.3	1.4		58.5	9.4	25.8	49.0	0.2	
Delay (s)	116.0	49.3	26.7	105.0	26.8		123.4	62.9	82.0	116.9	53.9	
Level of Service	F	D	C	F	C		F	E	F	F	D	
Approach Delay (s)		50.7			51.2			83.6			70.5	
Approach LOS		D			D			F			E	






















Intersection Summary

HCM Average Control Delay	61.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	117.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis













5: Elk Grove Blvd & Auto Center Drive

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	2320	70	180	2460	10	150	30	250	190	20	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5063		3433	5082		1770	1613		3433	1624	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5063		3433	5082		1770	1613		3433	1624	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	2417	73	188	2562	10	156	31	260	198	21	125
RTOR Reduction (vph)	0	2	0	0	0	0	0	101	0	0	103	0
Lane Group Flow (vph)	125	2488	0	188	2572	0	156	190	0	198	43	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	11.1	82.6		8.8	80.3		13.0	21.8		15.0	23.8	
Effective Green, g (s)	11.1	82.6		8.8	80.3		13.0	21.8		15.0	23.8	
Actuated g/C Ratio	0.07	0.55		0.06	0.54		0.09	0.15		0.10	0.16	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	131	2788		201	2721		153	234		343	258	
v/s Ratio Prot	c0.07	0.49		0.05	c0.51		c0.09	c0.12		c0.06	0.03	
v/s Ratio Perm												
v/c Ratio	0.95	0.89		0.94	0.95		1.02	0.81		0.58	0.16	
Uniform Delay, d1	69.2	29.8		70.3	32.8		68.5	62.1		64.5	54.5	
Progression Factor	0.97	0.58		1.10	0.49		1.00	1.00		1.00	1.00	
Incremental Delay, d2	27.7	1.3		28.6	4.8		78.0	18.1		1.5	0.1	
Delay (s)	95.1	18.6		105.8	21.0		146.5	80.2		65.9	54.6	
Level of Service	F	B		F	C		F	F		E	D	
Approach Delay (s)		22.2			26.7			103.3			61.1	
Approach LOS		C			C			F			E	
Intersection Summary												
HCM Average Control Delay			32.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			22.8			
Intersection Capacity Utilization			95.0%			ICU Level of Service			F			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	2470	260	100	1860	0	0	0	0	690	10	1140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		0.97	0.91					0.95	0.95	0.88
Frt		0.99		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5013		3433	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5013		3433	5085					1681	1688	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	2520	265	102	1898	0	0	0	0	704	10	1163
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	10
Lane Group Flow (vph)	0	2777	0	102	1898	0	0	0	0	359	355	1153
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		72.0		4.4	82.3					55.3	55.3	55.3
Effective Green, g (s)		72.0		4.4	82.3					55.3	55.3	55.3
Actuated g/C Ratio		0.48		0.03	0.55					0.37	0.37	0.37
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2406		101	2790					620	622	1027
v/s Ratio Prot		c0.55		0.03	c0.37					0.21	0.21	
v/s Ratio Perm												c0.41
v/c Ratio		1.15		1.01	0.68					0.58	0.57	1.12
Uniform Delay, d1		39.0		72.8	24.4					38.0	37.9	47.4
Progression Factor		0.41		0.91	0.92					1.00	1.00	1.00
Incremental Delay, d2		72.1		71.5	0.8					0.8	0.8	68.2
Delay (s)		87.9		138.0	23.3					38.8	38.6	115.5
Level of Service		F		F	C					D	D	F
Approach Delay (s)		87.9			29.2			0.0			86.3	
Approach LOS		F			C			A			F	
Intersection Summary												
HCM Average Control Delay			69.8		HCM Level of Service					E		
HCM Volume to Capacity ratio			1.14									
Actuated Cycle Length (s)			150.0		Sum of lost time (s)				18.4			
Intersection Capacity Utilization			91.5%		ICU Level of Service					F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

Cumulative Plus Project Conditions
PM Peak Hour



























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	3160	1960	350	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	3398	2108	376	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		515	937			
pX, platoon unblocked	0.71				0.67	0.71
vC, conflicting volume	2484				3240	703
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1672				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	271				686	773

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	1133	1133	1133	703	703	703	376
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	376
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.67	0.67	0.67	0.41	0.41	0.41	0.22
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							
Approach Delay (s)	0.0			0.0			
Approach LOS							

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		91.5%	ICU Level of Service F
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1420	1620	60	1670	110	500	140	150	320	160	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	4.0	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1610	3174		1681	1740	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1610	3174		1681	1740	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	1495	1705	63	1758	116	526	147	158	337	168	147
RTOR Reduction (vph)	0	0	0	0	0	32	0	27	0	0	0	91
Lane Group Flow (vph)	126	1495	1705	63	1758	84	279	525	0	249	256	56
Turn Type	Prot		Free	Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			Free			2						4
Actuated Green, G (s)	13.2	70.3	150.0	6.4	63.5	63.5	28.1	28.1		23.7	23.7	23.7
Effective Green, g (s)	13.2	70.3	150.0	6.4	63.5	63.5	28.1	28.1		23.7	23.7	23.7
Actuated g/C Ratio	0.09	0.47	1.00	0.04	0.42	0.42	0.19	0.19		0.16	0.16	0.16
Clearance Time (s)	5.6	5.7		5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9		2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	156	1659	1583	76	2153	670	302	595		266	275	250
v/s Ratio Prot	0.07	0.42		0.04	0.35		0.17	0.17		0.15	0.15	
v/s Ratio Perm			c1.08			0.05						0.04
v/c Ratio	0.81	0.90	1.08	0.83	0.82	0.12	0.92	0.88		0.94	0.93	0.22
Uniform Delay, d1	67.2	36.7	75.0	71.3	38.1	26.3	59.9	59.3		62.4	62.3	55.1
Progression Factor	0.82	1.13	1.00	1.00	1.00	1.00	0.78	0.77		1.00	1.00	1.00
Incremental Delay, d2	7.8	2.6	38.6	47.8	3.6	0.4	31.3	13.7		37.6	35.8	0.2
Delay (s)	62.7	44.1	113.6	119.1	41.7	26.7	78.0	59.1		100.0	98.2	55.3
Level of Service	E	D	F	F	D	C	E	E		F	F	E
Approach Delay (s)		80.4			43.3			65.5			89.2	
Approach LOS		F			D			E			F	

Intersection Summary

HCM Average Control Delay	68.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 9: SR-99 NB Off-ramp & E. Stockton Blvd

Cumulative Plus Project Conditions
 PM Peak Hour

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	270	10	10	20	40	40	320	450	20	80	710	1050
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.99			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1680			1832	1583	1770	3515		1770	1863	1583
Flt Permitted	0.95	0.96			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1680			1832	1583	1770	3515		1770	1863	1583
Peak-hour factor, PHF	0.97	0.92	0.97	0.92	0.92	0.92	0.97	0.97	0.92	0.92	0.97	0.97
Adj. Flow (vph)	278	11	10	22	43	43	330	464	22	87	732	1082
RTOR Reduction (vph)	0	2	0	0	0	40	0	2	0	0	0	141
Lane Group Flow (vph)	150	147	0	0	65	3	330	484	0	87	732	941
Turn Type	Split			Split		Perm	Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases						8						6
Actuated Green, G (s)	30.5	30.5			10.0	10.0	23.5	76.1		11.4	64.0	94.5
Effective Green, g (s)	30.5	30.5			10.0	10.0	23.5	76.1		11.4	64.0	94.5
Actuated g/C Ratio	0.20	0.20			0.07	0.07	0.16	0.51		0.08	0.43	0.63
Clearance Time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	342	342			122	106	277	1783		135	795	997
v/s Ratio Prot	0.09	0.09			c0.04		c0.19	0.14		0.05	0.39	c0.19
v/s Ratio Perm						0.00						0.40
v/c Ratio	0.44	0.43			0.53	0.03	1.19	0.27		0.64	0.92	0.94
Uniform Delay, d1	52.3	52.2			67.7	65.5	63.2	21.1		67.3	40.6	25.3
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.05	0.90	0.72
Incremental Delay, d2	0.3	0.3			2.2	0.0	116.1	0.0		0.7	2.2	2.2
Delay (s)	52.6	52.5			70.0	65.5	179.4	21.1		71.3	38.7	20.4
Level of Service	D	D			E	E	F	C		E	D	C
Approach Delay (s)		52.5			68.2			85.1			29.8	
Approach LOS		D			E			F			C	

Intersection Summary

HCM Average Control Delay	47.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
10: Whitelock Pkwy & Bruceville Road

Cumulative Plus Project Conditions
PM Peak Hour

































												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	350	270	70	130	360	240	150	530	60	240	570	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	376	290	75	140	387	258	161	570	65	258	613	602
RTOR Reduction (vph)	0	0	55	0	0	187	0	0	47	0	0	249
Lane Group Flow (vph)	376	290	20	140	387	71	161	570	18	258	613	353
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Actuated Green, G (s)	13.7	23.0	23.0	7.9	17.2	17.2	8.0	23.8	23.8	9.1	24.9	24.9
Effective Green, g (s)	13.7	23.0	23.0	7.9	17.2	17.2	8.0	23.8	23.8	9.1	24.9	24.9
Actuated g/C Ratio	0.16	0.27	0.27	0.09	0.20	0.20	0.09	0.28	0.28	0.11	0.29	0.29
Clearance Time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	548	948	424	316	709	317	320	981	439	364	1026	459
v/s Ratio Prot	c0.11	0.08		0.04	c0.11		0.05	0.16		c0.08	0.17	
v/s Ratio Perm			0.01			0.04			0.01			c0.22
v/c Ratio	0.69	0.31	0.05	0.44	0.55	0.22	0.50	0.58	0.04	0.71	0.60	0.77
Uniform Delay, d1	34.1	25.1	23.3	36.9	30.8	28.8	37.1	26.8	22.7	37.1	26.2	27.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.1	0.0	0.4	0.5	0.1	0.5	0.6	0.0	5.1	0.6	6.8
Delay (s)	36.9	25.2	23.3	37.3	31.3	28.9	37.5	27.3	22.7	42.2	26.8	34.7
Level of Service	D	C	C	D	C	C	D	C	C	D	C	C
Approach Delay (s)		30.9			31.6			29.0			32.7	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	31.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	85.9	Sum of lost time (s)	16.8
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

































HCM Signalized Intersection Capacity Analysis
11: Whitelock Pkwy & Big Horn Blvd

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	210	120	60	80	270	120	130	1180	40	100	1110	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.5	5.5	5.5	5.3	5.3	5.5	5.3	5.3	5.3	5.5	5.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	130	65	87	293	129	141	1283	43	109	1207	293
RTOR Reduction (vph)	0	0	54	0	0	110	0	0	10	0	0	119
Lane Group Flow (vph)	228	130	11	87	293	19	141	1283	33	109	1207	174
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7		4
Permitted Phases			6			2			8			4
Actuated Green, G (s)	9.6	17.9	17.9	7.3	15.7	15.7	9.2	53.2	53.2	8.2	51.8	51.8
Effective Green, g (s)	9.6	17.9	17.9	7.3	15.7	15.7	9.2	53.2	53.2	8.2	51.8	51.8
Actuated g/C Ratio	0.09	0.17	0.17	0.07	0.15	0.15	0.09	0.49	0.49	0.08	0.48	0.48
Clearance Time (s)	5.6	5.5	5.5	5.5	5.3	5.3	5.5	5.3	5.3	5.3	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	305	585	262	232	514	230	292	1740	778	260	1694	758
v/s Ratio Prot	c0.07	0.04		0.03	c0.08		c0.04	c0.36		0.03	0.34	
v/s Ratio Perm			0.01			0.01			0.02			0.11
v/c Ratio	0.75	0.22	0.04	0.38	0.57	0.08	0.48	0.74	0.04	0.42	0.71	0.23
Uniform Delay, d1	48.1	39.1	37.9	48.3	43.1	40.0	47.2	21.9	14.3	47.7	22.3	16.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.5	0.1	0.0	0.4	1.0	0.1	0.5	1.4	0.0	0.4	1.2	0.1
Delay (s)	56.6	39.2	38.0	48.6	44.1	40.1	47.7	23.4	14.3	48.1	23.5	16.6
Level of Service	E	D	D	D	D	D	D	C	B	D	C	B
Approach Delay (s)		48.4			43.8			25.4			23.9	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			29.6				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			108.2				Sum of lost time (s)		16.4			
Intersection Capacity Utilization			68.1%				ICU Level of Service				C	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
13: Bilby Rd & Bruceville Rd

Cumulative Plus Project Conditions
PM Peak Hour

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	80	140	80	80	290	250	130	390	90	120	250	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	86	151	86	86	312	269	140	419	97	129	269	140
RTOR Reduction (vph)	0	0	70	0	0	217	0	0	72	0	0	104
Lane Group Flow (vph)	86	151	16	86	312	52	140	419	25	129	269	36
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	4.9	12.6	12.6	4.9	12.6	12.6	5.6	17.1	17.1	5.5	17.0	17.0
Effective Green, g (s)	4.9	12.6	12.6	4.9	12.6	12.6	5.6	17.1	17.1	5.5	17.0	17.0
Actuated g/C Ratio	0.07	0.19	0.19	0.07	0.19	0.19	0.09	0.26	0.26	0.08	0.26	0.26
Clearance Time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.5	4.5	2.0	4.5	4.5
Lane Grp Cap (vph)	256	679	304	256	679	304	293	921	412	287	916	410
v/s Ratio Prot	c0.03	0.04		0.03	c0.09		c0.04	c0.12		0.04	0.08	
v/s Ratio Perm			0.01			0.03			0.02			0.02
v/c Ratio	0.34	0.22	0.05	0.34	0.46	0.17	0.48	0.45	0.06	0.45	0.29	0.09
Uniform Delay, d1	28.9	22.4	21.7	28.9	23.5	22.2	28.7	20.4	18.3	28.7	19.5	18.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	0.0	0.3	0.2	0.1	0.4	0.6	0.1	0.4	0.3	0.2
Delay (s)	29.1	22.5	21.7	29.1	23.7	22.3	29.1	21.0	18.4	29.1	19.8	18.6
Level of Service	C	C	C	C	C	C	C	C	B	C	B	B
Approach Delay (s)		24.0			23.8			22.3			21.7	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	18.4
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			


















HCM Signalized Intersection Capacity Analysis
 14: Hood-Franklin Rd & SB I-5 Ramp

Cumulative Plus Project Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	90	10	0	70	620	0	0	0	820	0	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.2			7.2					5.6		5.6
Lane Util. Factor		1.00			1.00					1.00		1.00
Frt		0.99			0.88					1.00		0.85
Flt Protected		1.00			1.00					0.95		1.00
Satd. Flow (prot)		1837			1637					1770		1583
Flt Permitted		1.00			1.00					0.95		1.00
Satd. Flow (perm)		1837			1637					1770		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	98	11	0	76	674	0	0	0	891	0	43
RTOR Reduction (vph)	0	7	0	0	537	0	0	0	0	0	0	19
Lane Group Flow (vph)	0	102	0	0	213	0	0	0	0	891	0	24
Turn Type										Prot		custom
Protected Phases		4			8					6		
Permitted Phases												6
Actuated Green, G (s)		11.2			11.2					31.3		31.3
Effective Green, g (s)		11.2			11.2					31.3		31.3
Actuated g/C Ratio		0.20			0.20					0.57		0.57
Clearance Time (s)		7.2			7.2					5.6		5.6
Vehicle Extension (s)		2.0			2.0					2.0		2.0
Lane Grp Cap (vph)		372			332					1002		896
v/s Ratio Prot		0.06			0.13					0.50		
v/s Ratio Perm												0.02
v/c Ratio		0.27			0.64					0.89		0.03
Uniform Delay, d1		18.6			20.2					10.5		5.3
Progression Factor		1.00			1.00					1.00		1.00
Incremental Delay, d2		0.1			3.1					9.5		0.0
Delay (s)		18.8			23.3					20.0		5.3
Level of Service		B			C					B		A
Approach Delay (s)		18.8			23.3			0.0			19.3	
Approach LOS		B			C			A			B	
Intersection Summary												
HCM Average Control Delay			21.0			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			55.3			Sum of lost time (s)			12.8			
Intersection Capacity Utilization			96.7%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												













HCM Signalized Intersection Capacity Analysis
 15: Hood-Franklin Rd & NB I-5 Ramp

Cumulative Plus Project Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	880	30	0	680	780	10	0	850	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.7	4.0	6.7		6.7			
Lane Util. Factor		1.00			1.00	1.00	1.00		0.88			
Frt		1.00			1.00	0.85	1.00		0.85			
Flt Protected		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)		1854			1863	1583	1770		2787			
Flt Permitted		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)		1854			1863	1583	1770		2787			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	926	32	0	716	821	11	0	895	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	157	0	0	0
Lane Group Flow (vph)	0	957	0	0	716	821	11	0	738	0	0	0
Turn Type						Free	Prot		custom			
Protected Phases		4			8		2					
Permitted Phases						Free			2			
Actuated Green, G (s)		48.1			47.5	86.3	25.4		25.4			
Effective Green, g (s)		48.1			47.5	86.3	25.4		25.4			
Actuated g/C Ratio		0.56			0.55	1.00	0.29		0.29			
Clearance Time (s)		6.1			6.7		6.7		6.7			
Vehicle Extension (s)		2.0			2.0		2.0		2.0			
Lane Grp Cap (vph)		1033			1025	1583	521		820			
v/s Ratio Prot		c0.52			0.38		0.01					
v/s Ratio Perm						0.52			c0.26			
v/c Ratio		0.93			0.70	0.52	0.02		0.90			
Uniform Delay, d1		17.5			14.2	0.0	21.6		29.2			
Progression Factor		1.00			1.00	1.00	1.00		1.00			
Incremental Delay, d2		13.3			1.7	1.2	0.0		12.7			
Delay (s)		30.8			15.9	1.2	21.6		41.9			
Level of Service		C			B	A	C		D			
Approach Delay (s)		30.8			8.0			41.7			0.0	
Approach LOS		C			A			D			A	
Intersection Summary												
HCM Average Control Delay			23.4			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			86.3			Sum of lost time (s)			12.8			
Intersection Capacity Utilization			88.5%			ICU Level of Service			E			
Analysis Period (min)			15									
c	Critical Lane Group											


















HCM Unsignalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd

Cumulative Plus Project Conditions
 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	370	20	10	60	50	110
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	402	22	11	65	54	120
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	402	22	11	65	54	120
Volume Left (vph)	402	0	11	0	0	0
Volume Right (vph)	0	22	0	0	0	120
Hadj (s)	0.53	-0.67	0.53	0.03	0.03	-0.67
Departure Headway (s)	5.7	4.5	6.5	6.0	5.9	5.2
Degree Utilization, x	0.64	0.03	0.02	0.11	0.09	0.17
Capacity (veh/h)	616	767	510	551	566	644
Control Delay (s)	16.9	6.4	8.5	8.6	8.3	8.1
Approach Delay (s)	16.4		8.6		8.2	
Approach LOS	C		A		A	
Intersection Summary						
Delay			13.4			
HCM Level of Service			B			
Intersection Capacity Utilization			34.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
17: Driveway & Franklin Blvd

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	10	10	10	10	10	10	230	10	190	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	11	11	11	11	11	11	11	250	11	207	11
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total (vph)	33	33	22	250	228							
Volume Left (vph)	11	11	11	0	11							
Volume Right (vph)	11	11	0	250	11							
Hadj (s)	-0.10	-0.10	0.13	-0.57	0.01							
Departure Headway (s)	4.4	4.4	4.4	3.2	4.1							
Degree Utilization, x	0.04	0.04	0.03	0.22	0.26							
Capacity (veh/h)	762	763	787	1122	860							
Control Delay (s)	7.6	7.6	7.5	7.1	8.5							
Approach Delay (s)	7.6	7.6	7.1		8.5							
Approach LOS	A	A	A		A							
Intersection Summary												
Delay			7.7									
HCM Level of Service			A									
Intersection Capacity Utilization			38.7%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 18: Bilby Road & Willard Pkwy

Cumulative Plus Project Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	390	210	90	310	240	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	424	228	98	337	261	65
RTOR Reduction (vph)	0	162	0	0	0	43
Lane Group Flow (vph)	424	66	98	337	261	22
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	28.8	28.8	9.8	24.3	33.7	33.7
Effective Green, g (s)	28.8	28.8	9.8	18.6	33.7	33.7
Actuated g/C Ratio	0.29	0.29	0.10	0.19	0.34	0.34
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	515	461	175	666	1206	539
v/s Ratio Prot	c0.24		c0.06	c0.10	c0.07	
v/s Ratio Perm		0.04				0.01
v/c Ratio	0.82	0.14	0.56	0.51	0.22	0.04
Uniform Delay, d1	32.7	25.9	42.5	36.0	23.2	21.8
Progression Factor	1.00	1.00	1.09	0.87	1.00	1.00
Incremental Delay, d2	9.8	0.1	2.4	0.2	0.0	0.0
Delay (s)	42.5	26.0	48.6	31.7	23.2	21.8
Level of Service	D	C	D	C	C	C
Approach Delay (s)	36.7			35.5	23.0	
Approach LOS	D			D	C	

Intersection Summary

HCM Average Control Delay	33.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	98.9	Sum of lost time (s)	26.1
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Bilby Road & Willard Pkwy

Cumulative Plus Project Conditions
 PM Peak Hour



























Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	300	100	10	400	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	5.7		5.6	5.7
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3490		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3490		1770	3539
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	323	108	11	430	54
RTOR Reduction (vph)	0	230	7	0	0	0
Lane Group Flow (vph)	11	93	112	0	430	54
Turn Type		Perm			Prot	
Protected Phases	2		4		3	8 1
Permitted Phases		2				
Actuated Green, G (s)	28.6	28.6	13.5		30.0	43.3
Effective Green, g (s)	28.6	28.6	13.5		30.0	43.3
Actuated g/C Ratio	0.29	0.29	0.14		0.30	0.44
Clearance Time (s)	7.0	7.0	5.7		5.6	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	512	458	476		537	1549
v/s Ratio Prot	0.01		c0.03		c0.24	c0.02
v/s Ratio Perm		c0.06				
v/c Ratio	0.02	0.20	0.24		0.80	0.03
Uniform Delay, d1	25.1	26.6	38.1		31.7	15.9
Progression Factor	1.00	1.00	1.00		0.98	0.59
Incremental Delay, d2	0.0	0.1	0.1		7.8	0.0
Delay (s)	25.1	26.6	38.2		38.9	9.4
Level of Service	C	C	D		D	A
Approach Delay (s)	26.6		38.2			35.6
Approach LOS	C		D			D

Intersection Summary

HCM Average Control Delay	32.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	98.9	Sum of lost time (s)	11.3
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
20: Kammerer Rd & Bruceville Rd

Cumulative Plus Project Conditions
PM Peak Hour


































												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	900	10	20	1360	390	10	40	10	170	50	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	189	947	11	21	1432	411	11	42	11	179	53	126
RTOR Reduction (vph)	0	0	4	0	0	118	0	0	10	0	0	104
Lane Group Flow (vph)	189	947	7	21	1432	293	11	42	1	179	53	22
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	14.6	63.9	63.9	2.7	52.0	52.0	5.5	8.3	8.3	17.5	20.3	20.3
Effective Green, g (s)	14.6	63.9	63.9	2.7	52.0	52.0	5.5	8.3	8.3	17.5	20.3	20.3
Actuated g/C Ratio	0.12	0.54	0.54	0.02	0.44	0.44	0.05	0.07	0.07	0.15	0.17	0.17
Clearance Time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	219	1916	857	41	1560	698	83	131	111	263	320	272
v/s Ratio Prot	c0.11	0.27		0.01	c0.40		0.01	c0.02		c0.10	0.03	
v/s Ratio Perm			0.00			0.19			0.00			0.01
v/c Ratio	0.86	0.49	0.01	0.51	0.92	0.42	0.13	0.32	0.01	0.68	0.17	0.08
Uniform Delay, d1	50.7	16.9	12.5	57.0	31.0	22.6	54.0	52.2	51.0	47.6	41.6	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	26.9	0.1	0.0	4.4	8.7	0.1	0.3	0.5	0.0	5.7	0.1	0.0
Delay (s)	77.7	17.0	12.5	61.4	39.7	22.8	54.2	52.7	51.0	53.3	41.7	41.1
Level of Service	E	B	B	E	D	C	D	D	D	D	D	D
Approach Delay (s)		27.0			36.2			52.7			47.3	
Approach LOS		C			D			D			D	

Intersection Summary

HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	25.6
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			













HCM Signalized Intersection Capacity Analysis
21: Kammerer Rd & Promenade Pkwy

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  	 				  	 	
Volume (vph)	160	1920	260	410	1720	1070	60	40	450	1090	200	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	4.0	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	170	2043	277	436	1830	1138	64	43	479	1160	213	149
RTOR Reduction (vph)	0	0	197	0	0	0	0	0	214	0	0	104
Lane Group Flow (vph)	170	2043	80	436	1830	1138	64	43	265	1160	213	45
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			Free			4			8
Actuated Green, G (s)	8.5	42.7	42.7	26.4	60.6	148.3	8.1	28.9	28.9	24.8	45.1	45.1
Effective Green, g (s)	8.5	42.7	42.7	26.4	60.6	148.3	8.1	28.9	28.9	24.8	45.1	45.1
Actuated g/C Ratio	0.06	0.29	0.29	0.18	0.41	1.00	0.05	0.19	0.19	0.17	0.30	0.30
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7		6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	197	1845	456	315	2078	2787	97	363	308	834	1076	481
v/s Ratio Prot	0.05	c0.32		c0.25	0.36		0.04	0.02		c0.23	0.06	
v/s Ratio Perm			0.05			0.41			c0.17			0.03
v/c Ratio	0.86	1.11	0.17	1.38	0.88	0.41	0.66	0.12	0.86	1.39	0.20	0.09
Uniform Delay, d1	69.3	52.8	39.6	61.0	40.5	0.0	68.7	49.2	57.7	61.8	38.2	37.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.2	56.8	0.1	191.4	4.6	0.4	11.7	0.1	19.9	183.3	0.0	0.0
Delay (s)	98.5	109.6	39.7	252.4	45.1	0.4	80.5	49.3	77.6	245.0	38.2	37.0
Level of Service	F	F	D	F	D	A	F	D	E	F	D	D
Approach Delay (s)		101.1			56.7			75.9			195.7	
Approach LOS		F			E			E			F	
Intersection Summary												
HCM Average Control Delay			98.4			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.17									
Actuated Cycle Length (s)			148.3			Sum of lost time (s)		25.5				
Intersection Capacity Utilization			96.7%			ICU Level of Service		F				
Analysis Period (min)			15									
c Critical Lane Group												













HCM Signalized Intersection Capacity Analysis
22: Grant Line Rd & SR-99 SB Off-ramp

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↖	↕	↗
Volume (vph)	0	2870	590	0	2460	640	0	0	0	210	0	740
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1451	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1451	1504
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2990	615	0	2562	667	0	0	0	219	0	771
RTOR Reduction (vph)	0	0	150	0	0	0	0	0	0	0	2	2
Lane Group Flow (vph)	0	2990	465	0	2562	667	0	0	0	197	398	391
Turn Type		Perm			Free					Split		Perm
Protected Phases		6			2					8	8	
Permitted Phases		6			Free							8
Actuated Green, G (s)		89.4	89.4		89.4	143.1				41.4	41.4	41.4
Effective Green, g (s)		89.4	89.4		89.4	143.1				41.4	41.4	41.4
Actuated g/C Ratio		0.62	0.62		0.62	1.00				0.29	0.29	0.29
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		3177	989		3177	1583				486	420	435
v/s Ratio Prot		c0.59			0.50					0.12	c0.27	
v/s Ratio Perm		0.29			0.42							0.26
v/c Ratio		0.94	0.47		0.81	0.42				0.41	0.95	0.90
Uniform Delay, d1		24.5	14.3		20.3	0.0				40.9	49.8	48.8
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		6.6	0.5		1.7	0.8				0.2	30.2	20.3
Delay (s)		31.1	14.8		22.0	0.8				41.1	80.0	69.2
Level of Service		C	B		C	A				D	E	E
Approach Delay (s)		28.3			17.6			0.0		68.0		
Approach LOS		C			B			A		E		
Intersection Summary												
HCM Average Control Delay		28.9			HCM Level of Service			C				
HCM Volume to Capacity ratio		0.94										
Actuated Cycle Length (s)		143.1			Sum of lost time (s)			12.3				
Intersection Capacity Utilization		88.3%			ICU Level of Service			E				
Analysis Period (min)		15										
c	Critical Lane Group											





























HCM Signalized Intersection Capacity Analysis
23: Grant Line Rd & SR-99 NB On-ramp

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↗	↖	↖			
Volume (vph)	0	2260	820	0	2440	320	660	0	590	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	4.0		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2457	891	0	2652	348	717	0	641	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	138	0	0	1	0	0	0
Lane Group Flow (vph)	0	2457	891	0	2652	210	358	359	640	0	0	0
Turn Type			Free			Perm	Split		Perm			
Protected Phases		6			2		4	4				
Permitted Phases			Free			2			4			
Actuated Green, G (s)		54.2	95.3		54.7	54.7	30.3	30.3	30.3			
Effective Green, g (s)		54.2	95.3		54.7	54.7	30.3	30.3	30.3			
Actuated g/C Ratio		0.57	1.00		0.57	0.57	0.32	0.32	0.32			
Clearance Time (s)		6.2			5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0			4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2892	1583		2919	909	534	534	886			
v/s Ratio Prot		0.48			c0.52		0.21	0.21				
v/s Ratio Perm			0.56			0.13			c0.23			
v/c Ratio		0.85	0.56		0.91	0.23	0.67	0.67	0.72			
Uniform Delay, d1		17.1	0.0		18.1	10.0	28.2	28.2	28.8			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		2.6	1.5		4.7	0.2	2.6	2.6	2.5			
Delay (s)		19.8	1.5		22.8	10.1	30.8	30.8	31.3			
Level of Service		B	A		C	B	C	C	C			
Approach Delay (s)		14.9			21.3			31.0			0.0	
Approach LOS		B			C			C			A	
Intersection Summary												
HCM Average Control Delay			20.2				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			95.3				Sum of lost time (s)		10.3			
Intersection Capacity Utilization			74.0%				ICU Level of Service		D			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
24: Grant Line Rd & Stockton Blvd

Cumulative Plus Project Conditions
PM Peak Hour





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  						 	
Volume (vph)	600	2000	170	40	2010	120	290	30	30	110	20	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	5042		1770	1723		1681	1711	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.82	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5042		1770	1723		1681	1443	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	652	2174	185	43	2185	130	315	33	33	120	22	500
RTOR Reduction (vph)	0	0	115	0	4	0	0	21	0	0	0	149
Lane Group Flow (vph)	652	2174	70	43	2311	0	315	45	0	71	71	351
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6									8
Actuated Green, G (s)	16.3	56.1	56.1	3.9	43.7		30.8	47.6		23.4	63.6	40.2
Effective Green, g (s)	16.3	56.1	56.1	3.9	43.7		30.8	47.6		23.4	63.6	40.2
Actuated g/C Ratio	0.11	0.36	0.36	0.03	0.28		0.20	0.31		0.15	0.41	0.26
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	362	1846	575	45	1426		353	531		255	635	412
v/s Ratio Prot	c0.19	0.43		0.02	c0.46		c0.18	0.03		0.04	0.02	
v/s Ratio Perm			0.04								0.03	c0.22
v/c Ratio	1.80	1.18	0.12	0.96	1.62		0.89	0.09		0.28	0.11	0.85
Uniform Delay, d1	69.1	49.2	32.8	75.2	55.4		60.2	38.0		58.1	28.0	54.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	371.3	86.0	0.1	115.5	282.4		23.5	0.1		0.2	0.0	14.9
Delay (s)	440.4	135.2	32.9	190.7	337.8		83.7	38.0		58.3	28.1	69.2
Level of Service	F	F	C	F	F		F	D		E	C	E
Approach Delay (s)		195.0			335.2			75.8			63.4	
Approach LOS		F			F			E			E	

Intersection Summary

HCM Average Control Delay	226.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	154.5	Sum of lost time (s)	23.5
Intersection Capacity Utilization	100.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: Grant Line Road & Waterman Road

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	530	1300	0	0	1170	10	0	0	0	110	0	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Lane Util. Factor	0.97	1.00			0.95	1.00					1.00	0.88
Frpb, ped/bikes	1.00	1.00			1.00	0.99					1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00					1.00	1.00
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	1863			3539	1561					1770	2787
Flt Permitted	0.95	1.00			1.00	1.00					0.95	1.00
Satd. Flow (perm)	3433	1863			3539	1561					1770	2787
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	552	1354	0	0	1219	10	0	0	0	115	0	583
RTOR Reduction (vph)	0	0	0	0	0	3	0	0	0	0	0	542
Lane Group Flow (vph)	552	1354	0	0	1219	7	0	0	0	0	115	41
Confl. Bikes (#/hr)			2			4						
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases						2						3
Actuated Green, G (s)	25.1	83.0			52.3	52.3					8.2	8.2
Effective Green, g (s)	25.1	83.0			52.3	52.3					8.2	8.2
Actuated g/C Ratio	0.22	0.71			0.45	0.45					0.07	0.07
Clearance Time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0					2.0	2.0
Lane Grp Cap (vph)	742	1331			1593	703					125	197
v/s Ratio Prot	0.16	c0.73			0.34						c0.06	
v/s Ratio Perm						0.00						0.01
v/c Ratio	0.74	1.02			0.77	0.01					0.92	0.21
Uniform Delay, d1	42.5	16.6			26.8	17.7					53.7	50.9
Progression Factor	1.00	1.00			1.00	1.00					1.00	1.00
Incremental Delay, d2	3.6	29.1			2.0	0.0					55.7	0.2
Delay (s)	46.1	45.7			28.8	17.7					109.3	51.1
Level of Service	D	D			C	B					F	D
Approach Delay (s)		45.8			28.7			0.0			60.7	
Approach LOS		D			C			A			E	
Intersection Summary												
HCM Average Control Delay			43.0				HCM Level of Service				D	
HCM Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			116.2				Sum of lost time (s)			25.0		
Intersection Capacity Utilization			94.6%				ICU Level of Service			F		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 26: Kammerer Road & Hood Franklin Road

Cumulative Plus Project Conditions
 PM Peak Hour

























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Volume (veh/h)	0	1410	1530	10	0	90
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1533	1663	11	0	98
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1674				2435	837
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1674				2435	837
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	68
cM capacity (veh/h)	379				26	310

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	766	766	1109	565	98
Volume Left	0	0	0	0	0
Volume Right	0	0	0	11	98
cSH	1700	1700	1700	1700	310
Volume to Capacity	0.45	0.45	0.65	0.33	0.32
Queue Length 95th (ft)	0	0	0	0	33
Control Delay (s)	0.0	0.0	0.0	0.0	21.9
Lane LOS					C
Approach Delay (s)	0.0		0.0		21.9
Approach LOS					C

Intersection Summary					
Average Delay			0.6		
Intersection Capacity Utilization			54.9%	ICU Level of Service	A
Analysis Period (min)			15		

HCM Signalized Intersection Capacity Analysis
27: Kammerer Road & Franklin Blvd

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	1380	20	80	1310	10	20	0	60	10	60	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.5	5.5		5.5	5.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1583		1770	1645	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1583		1770	1645	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	1500	22	87	1424	11	22	0	65	11	65	228
RTOR Reduction (vph)	0	0	8	0	0	4	0	55	0	0	136	0
Lane Group Flow (vph)	11	1500	14	87	1424	7	22	10	0	11	157	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	1.0	44.4	44.4	5.9	49.3	49.3	2.3	13.2		1.0	11.9	
Effective Green, g (s)	1.0	44.4	44.4	5.9	49.3	49.3	2.3	13.2		1.0	11.9	
Actuated g/C Ratio	0.01	0.50	0.50	0.07	0.55	0.55	0.03	0.15		0.01	0.13	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.5	5.5		5.5	5.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	20	1756	785	117	1949	872	45	233		20	219	
v/s Ratio Prot	0.01	c0.42		c0.05	c0.40		c0.01	0.01		0.01	c0.10	
v/s Ratio Perm			0.01			0.00						
v/c Ratio	0.55	0.85	0.02	0.74	0.73	0.01	0.49	0.04		0.55	0.72	
Uniform Delay, d1	44.0	19.7	11.5	41.1	15.1	9.1	43.0	32.7		44.0	37.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.2	4.1	0.0	19.8	1.2	0.0	3.0	0.0		17.2	8.9	
Delay (s)	61.3	23.8	11.5	60.9	16.3	9.1	46.0	32.7		61.3	46.1	
Level of Service	E	C	B	E	B	A	D	C		E	D	
Approach Delay (s)		23.9			18.8			36.1			46.7	
Approach LOS		C			B			D			D	

Intersection Summary

HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	32.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: Kammerer Road & Willard Pkwy

Cumulative Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰↰	↑↑	↰↰	↷	↰	↰↰
Volume (vph)	520	920	1280	210	160	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	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	3539	3539	1583	1770	2787
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	565	1000	1391	228	174	130
RTOR Reduction (vph)	0	0	0	125	0	109
Lane Group Flow (vph)	565	1000	1391	103	174	21
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	13.1	53.2	33.1	33.1	12.7	12.7
Effective Green, g (s)	13.1	53.2	33.1	33.1	12.7	12.7
Actuated g/C Ratio	0.17	0.68	0.42	0.42	0.16	0.16
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	574	2401	1494	668	287	451
v/s Ratio Prot	c0.16	0.28	c0.39		c0.10	
v/s Ratio Perm				0.07		0.01
v/c Ratio	0.98	0.42	0.93	0.15	0.61	0.05
Uniform Delay, d1	32.5	5.6	21.6	14.0	30.5	27.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	33.2	0.0	10.6	0.0	2.5	0.0
Delay (s)	65.8	5.7	32.2	14.0	33.0	27.8
Level of Service	E	A	C	B	C	C
Approach Delay (s)		27.4	29.6		30.8	
Approach LOS		C	C		C	

Intersection Summary			
HCM Average Control Delay	28.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	19.5
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: Kammerer Rd & Collector 2

Cumulative Plus Project Conditions
PM Peak Hour



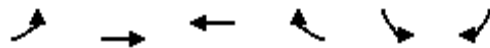
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗↗	→	↙	↘
Volume (vph)	70	1010	1610	20	30	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	1098	1750	22	33	185
RTOR Reduction (vph)	0	0	0	7	0	146
Lane Group Flow (vph)	76	1098	1750	15	33	39
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	6.0	63.9	50.9	50.9	8.2	8.2
Effective Green, g (s)	6.0	63.9	50.9	50.9	8.2	8.2
Actuated g/C Ratio	0.07	0.76	0.60	0.60	0.10	0.10
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	126	2673	2129	952	172	153
v/s Ratio Prot	0.04	c0.31	c0.49		0.02	
v/s Ratio Perm				0.01		c0.02
v/c Ratio	0.60	0.41	0.82	0.02	0.19	0.25
Uniform Delay, d1	38.1	3.7	13.3	6.8	35.2	35.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	0.0	2.6	0.0	0.2	0.3
Delay (s)	43.6	3.7	15.8	6.8	35.3	35.7
Level of Service	D	A	B	A	D	D
Approach Delay (s)		6.3	15.7		35.6	
Approach LOS		A	B		D	

Intersection Summary

HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	19.5
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
30: Kammerer Rd & Big Horn Blvd

Cumulative Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗↘	↑↑	↑↑	↗	↘	↗
Volume (vph)	250	790	1250	330	340	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
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	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	272	859	1359	359	370	402
RTOR Reduction (vph)	0	0	0	223	0	183
Lane Group Flow (vph)	272	859	1359	136	370	219
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	7.9	43.1	28.2	28.2	19.0	19.0
Effective Green, g (s)	7.9	43.1	28.2	28.2	19.0	19.0
Actuated g/C Ratio	0.11	0.58	0.38	0.38	0.25	0.25
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	364	2045	1338	598	451	403
v/s Ratio Prot	c0.08	0.24	c0.38		c0.21	
v/s Ratio Perm				0.09		0.14
v/c Ratio	0.75	0.42	1.02	0.23	0.82	0.54
Uniform Delay, d1	32.4	8.8	23.2	15.8	26.2	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.2	0.1	28.6	0.1	10.9	0.8
Delay (s)	39.5	8.8	51.8	15.9	37.1	24.8
Level of Service	D	A	D	B	D	C
Approach Delay (s)		16.2	44.3		30.7	
Approach LOS		B	D		C	

Intersection Summary

HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	74.6	Sum of lost time (s)	19.5
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Kammerer Rd & Collector 1

Cumulative Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	90	1030	1430	180	340	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
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)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	1120	1554	196	370	174
RTOR Reduction (vph)	0	0	0	97	0	131
Lane Group Flow (vph)	98	1120	1554	99	370	43
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	5.9	53.6	40.7	40.7	21.5	21.5
Effective Green, g (s)	5.9	53.6	40.7	40.7	21.5	21.5
Actuated g/C Ratio	0.07	0.61	0.46	0.46	0.25	0.25
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	119	2165	1644	735	434	389
v/s Ratio Prot	0.06	c0.32	c0.44		c0.21	
v/s Ratio Perm				0.06		0.03
v/c Ratio	0.82	0.52	0.95	0.13	0.85	0.11
Uniform Delay, d1	40.3	9.7	22.4	13.4	31.5	25.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	33.5	0.1	11.5	0.0	14.4	0.0
Delay (s)	73.9	9.7	33.9	13.4	45.9	25.7
Level of Service	E	A	C	B	D	C
Approach Delay (s)		14.9	31.6		39.4	
Approach LOS		B	C		D	

Intersection Summary

HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	87.6	Sum of lost time (s)	19.5
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Kammerer Rd & Lotz Pkwy

Cumulative Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	210	1310	1350	550	840	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
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	3539	3539	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	1424	1467	598	913	239
RTOR Reduction (vph)	0	0	0	341	0	143
Lane Group Flow (vph)	228	1424	1467	257	913	96
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	7.9	52.9	38.0	38.0	24.5	24.5
Effective Green, g (s)	7.9	52.9	38.0	38.0	24.5	24.5
Actuated g/C Ratio	0.09	0.59	0.42	0.42	0.27	0.27
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	302	2082	1496	669	936	431
v/s Ratio Prot	0.07	c0.40	c0.41		c0.27	
v/s Ratio Perm				0.16		0.06
v/c Ratio	0.75	0.68	0.98	0.38	0.98	0.22
Uniform Delay, d1	40.1	12.7	25.6	17.9	32.4	25.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.2	0.8	18.7	0.1	23.3	0.1
Delay (s)	49.2	13.5	44.3	18.0	55.7	25.4
Level of Service	D	B	D	B	E	C
Approach Delay (s)		18.4	36.7		49.4	
Approach LOS		B	D		D	

Intersection Summary

HCM Average Control Delay	33.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	19.5
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
33: Kammerer Rd & Sterling Meadows Pkwy

Cumulative Plus Project Conditions
PM Peak Hour



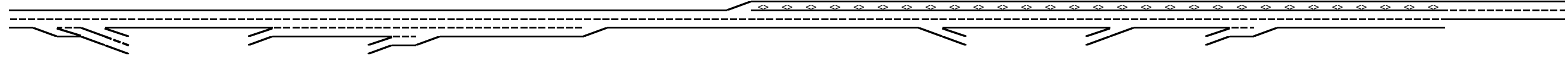
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	130	2020	1640	100	100	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	5085	5085	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	5085	5085	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	2196	1783	109	109	152
RTOR Reduction (vph)	0	0	0	61	0	127
Lane Group Flow (vph)	141	2196	1783	48	109	25
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	8.1	47.7	32.6	32.6	12.1	12.1
Effective Green, g (s)	8.1	47.7	32.6	32.6	12.1	12.1
Actuated g/C Ratio	0.11	0.65	0.44	0.44	0.16	0.16
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	194	3287	2246	699	290	260
v/s Ratio Prot	0.08	c0.43	c0.35		c0.06	
v/s Ratio Perm				0.03		0.02
v/c Ratio	0.73	0.67	0.79	0.07	0.38	0.10
Uniform Delay, d1	31.8	8.1	17.7	11.9	27.5	26.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.7	0.5	2.0	0.0	0.8	0.2
Delay (s)	44.5	8.6	19.7	11.9	28.3	26.4
Level of Service	D	A	B	B	C	C
Approach Delay (s)		10.8	19.3		27.2	
Approach LOS		B	B		C	

Intersection Summary

HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

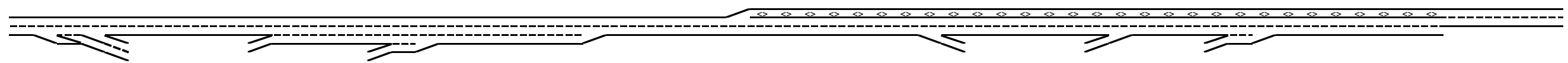
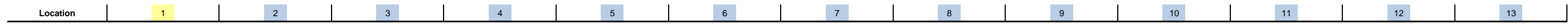
Project: Southeast Policy Area EIR
 Freeway Corridor: State Route 99 NB
 Alternative: Cumulative Plus Project Conditions
 Time Period: AM Peak Hour

hide	0 0 2 0 0	0 0 2 0 0	0 0 2 0 0	0 0 3 0 0	0 0 3 0 0	0 0 2 0 0	1 1 2	1 2 0	1 2	1 2	1 2	1 2	2
hide	0 FALSE FALSE TRUE 0	0 FALSE TRUE FALSE 0	0 FALSE FALSE FALSE 0	0 TRUE FALSE FALSE 0	0 FALSE FALSE FALSE 1	0 FALSE FALSE FALSE 0		FALSE FALSE 0		FALSE	TRUE	FALSE	
hide	0 0 14 2 1	0 0 14 0 0	1 1 14 0 0	1 1 14 0 0	0 0 14 0 0	0 0 14 0 0	0 14 0	0 0 14 1	0 14 0	0 1 14	1 1 14	0 0 14	
hide			0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0							
Location	1	2	3	4	5	6	7	8	9	10	11	12	13



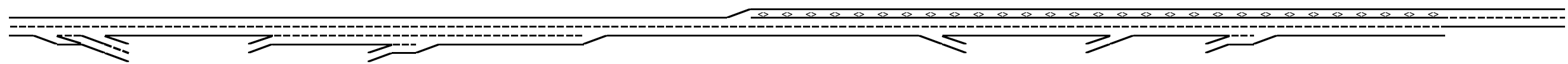
Key
 <-> Express Lane (HOV)
 - - - No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Define Freeway Segment													
Type	Diverge	Basic	Basic	Merge	Basic	Basic	Basic	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,500	1,300	1,500	400	6,700	1,050	1,500	1,700	850	1,500	100	8,700
Accel Length				320						175	1,200		
Decel Length	1,450							170					
Mainline Volume	3,500	2,050	2,050	2,510	2,700	2,700	2,700	2,700	2,270	2,270	3,600	3,970	3,500
On Ramp Volume			460	190						1,330	370		
Off Ramp Volume	1,450							430					
Express Lane Volume							810	810	681	681	1,080	1,191	1,050
EL On Ramp Volume													
EL Off Ramp Volume													
Calculate Flow Rate in General Purpose Lanes (GP)													
GP Volume (vph)	3,500	2,050	2,510	2,700	2,700	2,700	1,890	1,890	1,589	2,919	2,890	2,779	2,450
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	3	3	3	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	13.0%	5.0%	5.0%	15.0%	15.0%	15.0%	5.0%	10.0%	5.0%	5.0%	10.0%	13.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.939	0.976	0.976	0.930	0.930	0.930	0.976	0.952	0.976	0.976	0.952	0.939
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,899	2,373	2,796	3,008	3,155	3,155	2,208	2,106	1,814	3,252	3,220	3,172	2,836
GP Flow (pcphpl)	1,950	1,187	932	1,003	1,052	1,577	1,104	1,053	907	1,626	1,610	1,586	1,418
Calculate Speed in General Purpose Lanes													
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70	70	70



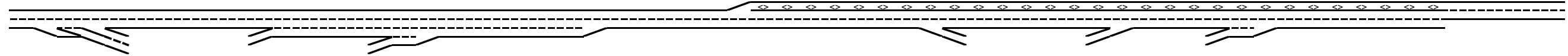
Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Operations in General Purpose Lanes													
v/c ratio	0.81	0.49	0.39	0.42	0.44	0.66	0.46	0.44	0.38	0.68	0.67	0.66	0.59
Speed (mph)	63.5	70.0	70.0	70.0	70.0	68.3	70.0	70.0	70.0	67.9	68.1	68.3	69.4
Density (pcphpl)	30.7	17.0	13.3	14.3	15.0	23.1	15.8	15.0	13.0	24.0	23.7	23.2	20.4
LOS	D	B	B	B	B	C	B	B	B	C	C	C	C
Calculate Operations for Entering GP Lanes													
GP _{IN} Vol (pcph)			2,284	2,796						1,770	2,808		
GP _{IN} Cap (pcph)			4,800	7,200						4,800	4,800		
GP _{IN} v/c ratio			0.48	0.39						0.37	0.58		
Calculate Operations for Exiting GP Lanes													
GP _{OUT} Vol (pcph)	2,284				3,155			1,627					
GP _{OUT} Cap (pcph)	4,800				4,800			4,800					
GP _{OUT} v/c ratio	0.48				0.66			0.34					
Calculate On Ramp Flow Rate													
On Volume (vph)			460	190						1,330	370		
PHF			0.92	0.92						0.92	0.92		
Total Lanes			1	1						1	1		
Terrain			Level	Level						Level	Level		
Grade %			0.0%	0.0%						0.0%	0.0%		
Grade Length (mi)			0.00	0.00						0.00	0.00		
Truck & Bus %			5.0%	5.0%						5.0%	5.0%		
RV %			0.0%	0.0%						0.0%	0.0%		
E _T			1.5	1.5						1.5	1.5		
E _R			1.2	1.2						1.2	1.2		
f _{HV}			0.976	0.976						0.976	0.976		
f _p			1.00	1.00						1.00	1.00		
On Flow (pcph)			513	212						1,482	412		
On Flow (pcphpl)			513	212						1,482	412		
Calculate On Ramp Roadway Operations													
On Ramp Type			Right	Right						Right	Right		
On Ramp Speed (mph)			50	60						60	60		
On Ramp Cap (pcph)			2,100	2,200						2,200	2,200		
On Ramp v/c ratio			0.24	0.10						0.67	0.19		



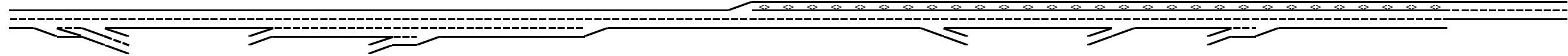
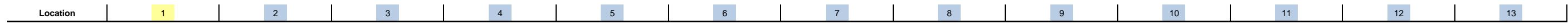
Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Off Ramp Flow Rate													
Off Volume (vph)	1,450							430					
PHF	0.92							0.92					
Total Lanes	2							1					
Terrain	Level							Level					
Grade %	0.0%							0.0%					
Grade Length (mi)	0.00							0.00					
Truck & Bus %	5.0%							5.0%					
RV %	0.0%							0.0%					
E _T	1.5							1.5					
E _R	1.2							1.2					
f _{HV}	0.976							0.976					
f _p	1.00							1.00					
Off Flow (pcph)	1,615							479					
Off Flow (pcphpl)	808							479					
Calculate Off Ramp Roadway Operations													
Off Ramp Type	Right							Right					
Off Ramp Speed	35							45					
Off Ramp Cap (pcph)	4,000							2,100					
Off Ramp v/c ratio	0.40							0.23					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps													
Up Type			No	On									
Up Distance				1,300									
Up Flow (pcph)				513									
Down Type			On	Off									
Down Distance			1,300	3,000									
Down Flow (pcph)			212	479									



Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Merge Influence Area Operations													
Effective v_p (pcph)				2,796						1,770	2,808		
Up Ramp L_{EQ}				1,522									
Down Ramp L_{EQ}				3,331									
P_{FM} (Eqn 13-3)				0.586						0.582	0.611		
P_{FM} (Eqn 13-4)													
P_{FM} (Eqn 13-5)				0.591									
P_{FM}				0.591						1.000	1.000		
v_{12} (pcph)				1,652						1,770	2,808		
v_3 (pcph)				1,145									
v_{34} (pcph)													
v_{12a} (pcph)				1,652						1,770	2,808		
v_{R12a} (pcph)				1,863						3,252	3,220		
Merge Speed Index				0.31						0.40	0.27		
Merge Area Speed				61.4						58.8	62.3		
Outer Lanes Volume				1,145									
Outer Lanes Speed				67.7									
Segment Speed				63.6						58.8	62.3		
Merge v/c ratio				0.41						0.71	0.70		
Merge Density				17.9						29.1	22.9		
Merge LOS				B						D	C		
Calculate Diverge Influence Area Operations													
Effective v_p (pcph)	3,899							2,106					
Up Ramp L_{EQ}													
Down Ramp L_{EQ}													
P_{FD} (Eqn 13-9)	0.588							0.685					
P_{FD} (Eqn 13-10)													
P_{FD} (Eqn 13-11)													
P_{FD}	1.000							1.000					
v_{12} (pcph)	3,899							2,106					
v_3 (pcph)													
v_{34} (pcph)													
v_{12a} (pcph)	3,899							2,106					
Diverge Speed Index	0.57							0.34					
Diverge Area Speed	53.9							60.4					
Outer Lanes Volume													
Outer Lanes Speed													
Segment Speed	53.9							60.4					
Diverge v/c ratio	0.89							0.48					
Diverge Density	24.7							20.8					
Diverge LOS	C							C					

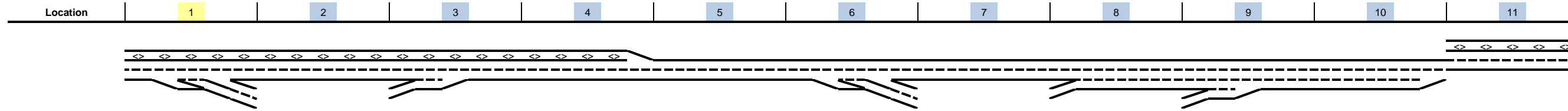


Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Summarize Segment Operations													
Segment v/c ratio	0.89	0.49	0.39	0.41	0.44	0.66	0.46	0.48	0.38	0.71	0.70	0.66	0.59
Segment Density	24.7	17.0	13.3	17.9	15.0	23.1	15.8	20.8	13.0	29.1	22.9	23.2	20.4
Segment LOS	C	B	B	B	B	C	B	C	B	D	C	C	C
Over Capacity													

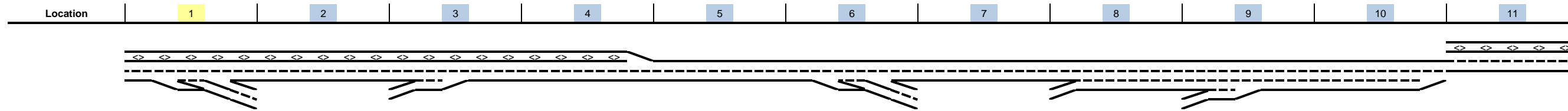
Project: Southeast Policy Area EIR
Freeway Corridor: State Route 99 SB

Alternative: Cumulative Plus Project Conditions
Time Period: AM Peak Hour



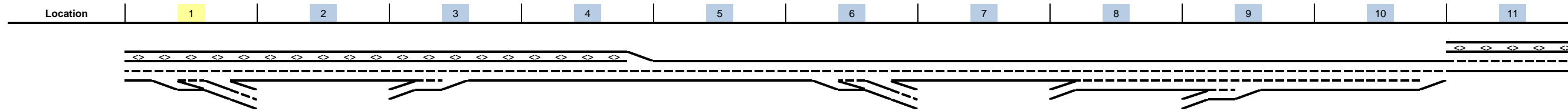
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Define Freeway Segment											
Type	Basic	Basic	Merge	Basic	Basic	Diverge	Basic	Basic	Merge	Basic	Basic
Length (ft)	1,500	2,250	1,500	400	8,050	1,500	1,650	1,200	1,500	400	250
Accel Length			350						350		
Decel Length						1,450					
Mainline Volume	4,540	2,760	2,760	3,120	3,120	3,120	2,080	2,080	2,550	3,060	4,540
On Ramp Volume			360					470	510		
Off Ramp Volume	1,780					1,040					
Express Lane Volume	1,362	828									1,362
EL On Ramp Volume											
EL Off Ramp Volume											
Calculate Flow Rate in General Purpose Lanes (GP)											
GP Volume (vph)	3,178	1,932	3,120	3,120	3,120	3,120	2,080	2,550	3,060	3,060	3,178
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	2	2	2	2	2	3	3	3	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	10.0%	5.0%	15.0%	15.0%	5.0%	13.0%	5.0%	5.0%	13.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.952	0.976	0.930	0.930	0.976	0.939	0.976	0.976	0.939	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,541	2,205	3,476	3,646	3,646	3,476	2,408	2,841	3,409	3,542	3,627
GP Flow (pcphpl)	1,770	1,103	1,738	1,823	1,823	1,738	1,204	947	1,136	1,181	1,814
Calculate Speed in General Purpose Lanes											
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	73.6	73.6	73.6	73.6	74.2	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70



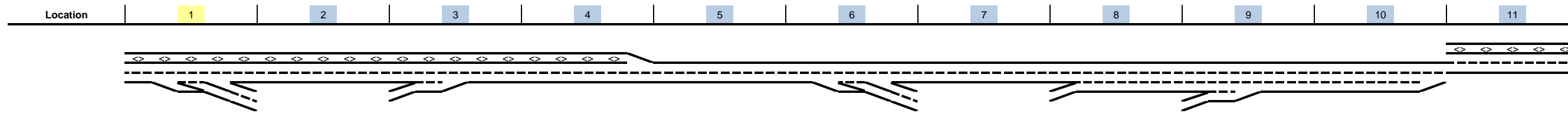
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Operations in General Purpose Lanes											
v/c ratio	0.74	0.46	0.72	0.76	0.76	0.72	0.50	0.39	0.47	0.49	0.76
Speed (mph)	66.2	70.0	66.6	65.5	65.5	66.6	70.0	70.0	70.0	70.0	65.6
Density (pcphpl)	26.7	15.8	26.1	27.8	27.8	26.1	17.2	13.5	16.2	16.9	27.6
LOS	D	B	D	D	D	D	B	B	B	B	D
Calculate Operations for Entering GP Lanes											
GP _{IN} Vol (pcph)			3,075					2,317	2,841		
GP _{IN} Cap (pcph)			4,800					4,800	7,200		
GP _{IN} v/c ratio			0.64					0.48	0.39		
Calculate Operations for Exiting GP Lanes											
GP _{OUT} Vol (pcph)	1,558					2,317				3,542	
GP _{OUT} Cap (pcph)	4,800					4,800				4,800	
GP _{OUT} v/c ratio	0.32					0.48				0.74	
Calculate On Ramp Flow Rate											
On Volume (vph)			360					470	510		
PHF			0.92					0.92	0.92		
Total Lanes			1					1	1		
Terrain			Level					Level	Level		
Grade %			0.0%					0.0%	0.0%		
Grade Length (mi)			0.00					0.00	0.00		
Truck & Bus %			5.0%					5.0%	5.0%		
RV %			0.0%					0.0%	0.0%		
E _T			1.5					1.5	1.5		
E _R			1.2					1.2	1.2		
f _{HV}			0.976					0.976	0.976		
f _P			1.00					1.00	1.00		
On Flow (pcph)			401					524	568		
On Flow (pcphpl)			401					524	568		
Calculate On Ramp Roadway Operations											
On Ramp Type			Right					Right	Right		
On Ramp Speed (mph)			60					50	60		
On Ramp Cap (pcph)			2,200					2,100	2,200		
On Ramp v/c ratio			0.18					0.25	0.26		



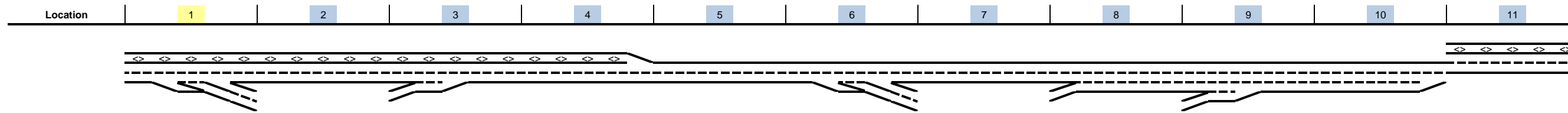
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Off Ramp Flow Rate											
Off Volume (vph)	1,780					1,040					
PHF	0.92					0.92					
Total Lanes	2					2					
Terrain	Level					Level					
Grade %	0.0%					0.0%					
Grade Length (mi)	0.00					0.00					
Truck & Bus %	5.0%					5.0%					
RV %	0.0%					0.0%					
E _T	1.5					1.5					
E _R	1.2					1.2					
f _{HV}	0.976					0.976					
f _p	1.00					1.00					
Off Flow (pcph)	1,983					1,159					
Off Flow (pcphpl)	992					579					
Calculate Off Ramp Roadway Operations											
Off Ramp Type	Right					Right					
Off Ramp Speed	45					45					
Off Ramp Cap (pcph)	4,200					4,200					
Off Ramp v/c ratio	0.47					0.28					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps											
Up Type								No	On		
Up Distance									1,200		
Up Flow (pcph)									524		
Down Type								On	No		
Down Distance								1,200			
Down Flow (pcph)								568			



Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Merge Influence Area Operations											
Effective v_p (pcph)			3,075						2,841		
Up Ramp L_{EQ}									1,621		
Down Ramp L_{EQ}											
P_{FM} (Eqn 13-3)			0.587						0.587		
P_{FM} (Eqn 13-4)											
P_{FM} (Eqn 13-5)											
P_{FM}			1.000						0.587		
v_{12} (pcph)			3,075						1,669		
v_3 (pcph)									1,172		
v_{34} (pcph)											
v_{12a} (pcph)			3,075						1,669		
v_{R12a} (pcph)			3,476						2,237		
Merge Speed Index			0.41						0.32		
Merge Area Speed			58.7						61.2		
Outer Lanes Volume									1,172		
Outer Lanes Speed									67.6		
Segment Speed			58.7						63.2		
Merge v/c ratio			0.76						0.49		
Merge Density			30.2						20.5		
Merge LOS			D						C		
Calculate Diverge Influence Area Operations											
Effective v_p (pcph)						3,476					
Up Ramp L_{EQ}											
Down Ramp L_{EQ}											
P_{FD} (Eqn 13-9)						0.620					
P_{FD} (Eqn 13-10)											
P_{FD} (Eqn 13-11)											
P_{FD}						1.000					
v_{12} (pcph)						3,476					
v_3 (pcph)											
v_{34} (pcph)											
v_{12a} (pcph)						3,476					
Diverge Speed Index						0.40					
Diverge Area Speed						58.7					
Outer Lanes Volume											
Outer Lanes Speed											
Segment Speed						58.7					
Diverge v/c ratio						0.79					
Diverge Density						21.1					
Diverge LOS						C					

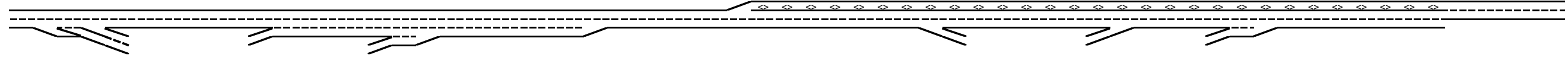


Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Summarize Segment Operations											
Segment v/c ratio	0.74	0.46	0.76	0.76	0.76	0.79	0.50	0.39	0.49	0.49	0.76
Segment Density	26.7	15.8	30.2	27.8	27.8	21.1	17.2	13.5	20.5	16.9	27.6
Segment LOS	D	B	D	D	D	C	B	B	C	B	D
Over Capacity											

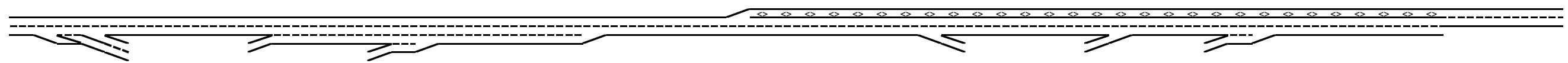
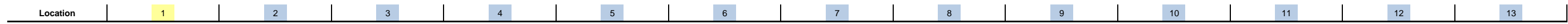
Project: Southeast Policy Area EIR
 Freeway Corridor: State Route 99 NB
 Alternative: Cumulative Plus Project Conditions
 Time Period: PM Peak Hour

hide	0 0 2 0 0	0 0 2 0 0	0 0 2 0 0	0 0 3 0 0	0 0 3 0 0 0 0 2 0 0 1 1 2	1 2 0	1 2	1 2	1 2	1 2	1 2	2	
hide	0 FALSE FALSE TRUE 0	0 FALSE TRUE FALSE 0	0 FALSE FALSE FALSE 0	0 TRUE FALSE FALSE 0	0 FALSE FALSE FALSE 1 0 FALSE FALSE FALSE 0	FALSE FALSE 0	FALSE	TRUE	FALSE				
hide	0 0 14 2 1	0 0 14 0 0	1 1 14 0 0	1 1 14 0 0	0 0 14 0 0 0 0 14 0 0	0 14 0	0 14 0	0 1 14	1 1 14	0 0 14			
hide			0 0 0 0 0	0 0 0 0 0	0 0 0 0 0 0 0 0 0								
Location	1	2	3	4	5	6	7	8	9	10	11	12	13



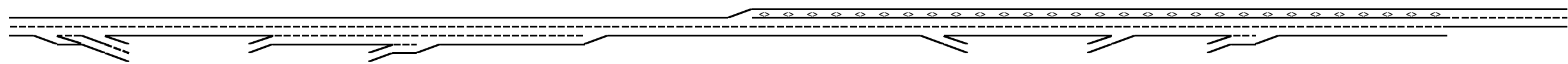
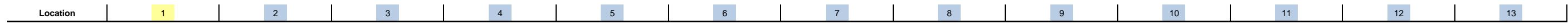
Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Define Freeway Segment													
Type	Diverge	Basic	Basic	Merge	Basic	Basic	Basic	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,500	1,300	1,500	400	6,700	1,050	1,500	1,700	850	1,500	100	8,700
Accel Length				320						175	1,200		
Decel Length	1,450							170					
Mainline Volume	3,390	2,140	2,140	2,960	3,280	3,280	3,280	3,280	2,990	2,990	4,400	4,750	3,390
On Ramp Volume			820	320						1,410	350		
Off Ramp Volume	1,250							290					
Express Lane Volume							984	984	897	897	1,320	1,425	1,017
EL On Ramp Volume													
EL Off Ramp Volume													
Calculate Flow Rate in General Purpose Lanes (GP)													
GP Volume (vph)	3,390	2,140	2,960	3,280	3,280	3,280	2,296	2,296	2,093	3,503	3,430	3,325	2,373
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	3	3	3	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	13.0%	5.0%	5.0%	15.0%	15.0%	15.0%	5.0%	10.0%	5.0%	5.0%	10.0%	13.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.939	0.976	0.976	0.930	0.930	0.930	0.976	0.952	0.976	0.976	0.952	0.939
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,777	2,477	3,298	3,654	3,833	3,833	2,683	2,558	2,389	3,903	3,821	3,795	2,747
GP Flow (pcphpl)	1,888	1,239	1,099	1,218	1,278	1,916	1,341	1,279	1,194	1,951	1,911	1,897	1,374
Calculate Speed in General Purpose Lanes													
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70	70	70



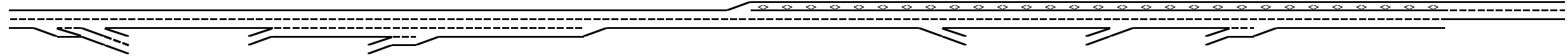
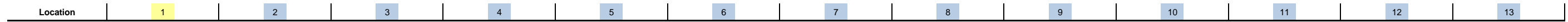
Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Operations in General Purpose Lanes													
v/c ratio	0.79	0.52	0.46	0.51	0.53	0.80	0.56	0.53	0.50	0.81	0.80	0.79	0.57
Speed (mph)	64.5	70.0	70.0	70.0	69.9	64.0	69.8	69.9	70.0	63.5	64.1	64.4	69.7
Density (pcphpl)	29.3	17.7	15.7	17.4	18.3	29.9	19.2	18.3	17.1	30.8	29.8	29.5	19.7
LOS	D	B	B	B	C	D	C	C	B	D	D	D	C
Calculate Operations for Entering GP Lanes													
GP _{IN} Vol (pcph)			2,384	3,298						2,332	3,432		
GP _{IN} Cap (pcph)			4,800	7,200						4,800	4,800		
GP _{IN} v/c ratio			0.50	0.46						0.49	0.71		
Calculate Operations for Exiting GP Lanes													
GP _{OUT} Vol (pcph)	2,384				3,833			2,235					
GP _{OUT} Cap (pcph)	4,800				4,800			4,800					
GP _{OUT} v/c ratio	0.50				0.80			0.47					
Calculate On Ramp Flow Rate													
On Volume (vph)			820	320						1,410	350		
PHF			0.92	0.92						0.92	0.92		
Total Lanes			1	1						1	1		
Terrain			Level	Level						Level	Level		
Grade %			0.0%	0.0%						0.0%	0.0%		
Grade Length (mi)			0.00	0.00						0.00	0.00		
Truck & Bus %			5.0%	5.0%						5.0%	5.0%		
RV %			0.0%	0.0%						0.0%	0.0%		
E _T			1.5	1.5						1.5	1.5		
E _R			1.2	1.2						1.2	1.2		
f _{HV}			0.976	0.976						0.976	0.976		
f _p			1.00	1.00						1.00	1.00		
On Flow (pcph)			914	357						1,571	390		
On Flow (pcphpl)			914	357						1,571	390		
Calculate On Ramp Roadway Operations													
On Ramp Type			Right	Right						Right	Right		
On Ramp Speed (mph)			50	60						60	60		
On Ramp Cap (pcph)			2,100	2,200						2,200	2,200		
On Ramp v/c ratio			0.44	0.16						0.71	0.18		



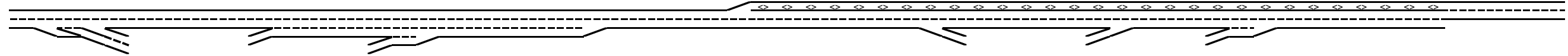
Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Off Ramp Flow Rate													
Off Volume (vph)	1,250							290					
PHF	0.92							0.92					
Total Lanes	2							1					
Terrain	Level							Level					
Grade %	0.0%							0.0%					
Grade Length (mi)	0.00							0.00					
Truck & Bus %	5.0%							5.0%					
RV %	0.0%							0.0%					
E _T	1.5							1.5					
E _R	1.2							1.2					
f _{HV}	0.976							0.976					
f _p	1.00							1.00					
Off Flow (pcph)	1,393							323					
Off Flow (pcphpl)	696							323					
Calculate Off Ramp Roadway Operations													
Off Ramp Type	Right							Right					
Off Ramp Speed	35							45					
Off Ramp Cap (pcph)	4,000							2,100					
Off Ramp v/c ratio	0.35							0.15					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps													
Up Type			No	On									
Up Distance				1,300									
Up Flow (pcph)				914									
Down Type			On	Off									
Down Distance			1,300	3,000									
Down Flow (pcph)			357	323									



Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Merge Influence Area Operations													
Effective v_p (pcph)				3,298						2,332	3,432		
Up Ramp L_{EQ}				1,660									
Down Ramp L_{EQ}				2,246									
P_{FM} (Eqn 13-3)				0.586						0.582	0.611		
P_{FM} (Eqn 13-4)													
P_{FM} (Eqn 13-5)				0.577									
P_{FM}				0.586						1.000	1.000		
v_{12} (pcph)				1,934						2,332	3,432		
v_3 (pcph)				1,364									
v_{34} (pcph)													
v_{12a} (pcph)				1,934						2,332	3,432		
v_{R12a} (pcph)				2,291						3,903	3,821		
Merge Speed Index				0.32						0.49	0.36		
Merge Area Speed				61.0						56.2	60.1		
Outer Lanes Volume				1,364									
Outer Lanes Speed				66.9									
Segment Speed				63.1						56.2	60.1		
Merge v/c ratio				0.50						0.85	0.83		
Merge Density				21.2						34.1	27.6		
Merge LOS				C						D	C		
Calculate Diverge Influence Area Operations													
Effective v_p (pcph)	3,777							2,558					
Up Ramp L_{EQ}													
Down Ramp L_{EQ}													
P_{FD} (Eqn 13-9)	0.602							0.681					
P_{FD} (Eqn 13-10)													
P_{FD} (Eqn 13-11)													
P_{FD}	1.000							1.000					
v_{12} (pcph)	3,777							2,558					
v_3 (pcph)													
v_{34} (pcph)													
v_{12a} (pcph)	3,777							2,558					
Diverge Speed Index	0.55							0.33					
Diverge Area Speed	54.5							60.8					
Outer Lanes Volume													
Outer Lanes Speed													
Segment Speed	54.5							60.8					
Diverge v/c ratio	0.86							0.58					
Diverge Density	23.7							24.7					
Diverge LOS	C							C					

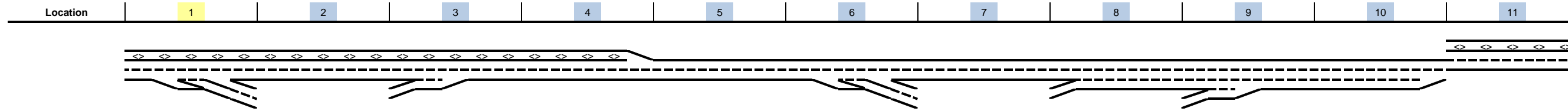


Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Summarize Segment Operations													
Segment v/c ratio	0.86	0.52	0.46	0.50	0.53	0.80	0.56	0.58	0.50	0.85	0.83	0.79	0.57
Segment Density	23.7	17.7	15.7	21.2	18.3	29.9	19.2	24.7	17.1	34.1	27.6	29.5	19.7
Segment LOS	C	B	B	C	C	D	C	C	B	D	C	D	C
Over Capacity													

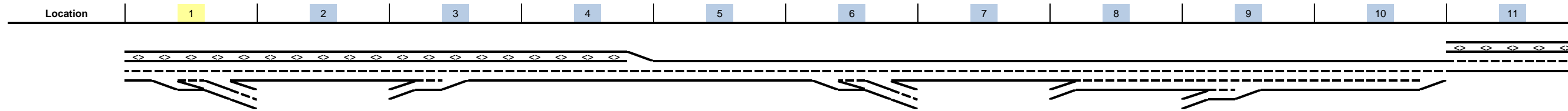
Project: Southeast Policy Area EIR
Freeway Corridor: State Route 99 SB

Alternative: Cumulative Plus Project Conditions
Time Period: PM Peak Hour



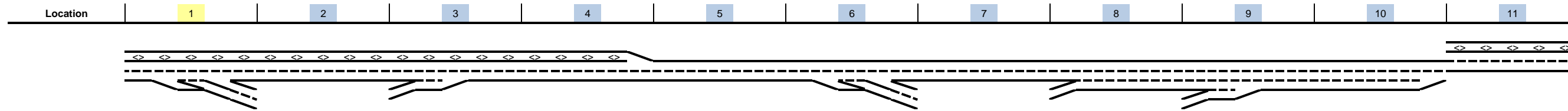
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Define Freeway Segment											
Type	Basic	Basic	Merge	Basic	Basic	Diverge	Basic	Basic	Merge	Basic	Basic
Length (ft)	1,500	2,250	1,500	400	8,050	1,500	1,650	1,200	1,500	400	250
Accel Length			350						350		
Decel Length						1,450					
Mainline Volume	4,200	2,330	2,330	2,690	2,690	2,690	1,740	1,740	2,380	2,970	4,200
On Ramp Volume			360					640	590		
Off Ramp Volume	1,870					950					
Express Lane Volume	1,260	699									1,260
EL On Ramp Volume											
EL Off Ramp Volume											
Calculate Flow Rate in General Purpose Lanes (GP)											
GP Volume (vph)	2,940	1,631	2,690	2,690	2,690	2,690	1,740	2,380	2,970	2,970	2,940
PHF	0.92	0.95	0.92	0.95	0.95	0.92	0.95	0.92	0.92	0.95	0.95
GP Lanes	2	2	2	2	2	2	2	3	3	3	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	10.0%	5.0%	15.0%	15.0%	5.0%	13.0%	5.0%	5.0%	13.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.952	0.976	0.930	0.930	0.976	0.939	0.976	0.976	0.939	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,276	1,803	2,997	3,044	3,044	2,997	1,951	2,652	3,309	3,330	3,249
GP Flow (pcphpl)	1,638	901	1,499	1,522	1,522	1,499	975	884	1,103	1,110	1,625
Calculate Speed in General Purpose Lanes											
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	73.6	73.6	73.6	73.6	74.2	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70



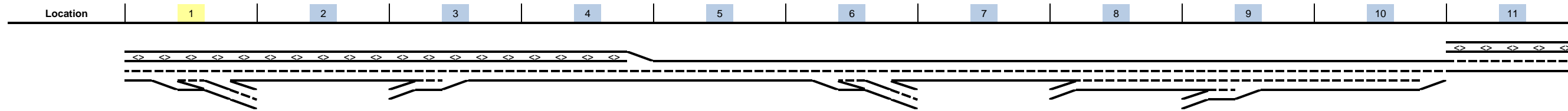
Key
 $\lt;-\gt;$ Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Operations in General Purpose Lanes											
v/c ratio	0.68	0.38	0.62	0.63	0.63	0.62	0.41	0.37	0.46	0.46	0.68
Speed (mph)	67.8	70.0	69.0	68.8	68.8	69.0	70.0	70.0	70.0	70.0	67.9
Density (pcphpl)	24.2	12.9	21.7	22.1	22.1	21.7	13.9	12.6	15.8	15.9	23.9
LOS	C	B	C	C	C	C	B	B	B	B	C
Calculate Operations for Entering GP Lanes											
GP _{IN} Vol (pcph)			2,596					1,939	2,652		
GP _{IN} Cap (pcph)			4,800					4,800	7,200		
GP _{IN} v/c ratio			0.54					0.40	0.37		
Calculate Operations for Exiting GP Lanes											
GP _{OUT} Vol (pcph)	1,192					1,939				3,330	
GP _{OUT} Cap (pcph)	4,800					4,800				4,800	
GP _{OUT} v/c ratio	0.25					0.40				0.69	
Calculate On Ramp Flow Rate											
On Volume (vph)			360					640	590		
PHF			0.92					0.92	0.92		
Total Lanes			1					1	1		
Terrain			Level					Level	Level		
Grade %			0.0%					0.0%	0.0%		
Grade Length (mi)			0.00					0.00	0.00		
Truck & Bus %			5.0%					5.0%	5.0%		
RV %			0.0%					0.0%	0.0%		
E _T			1.5					1.5	1.5		
E _R			1.2					1.2	1.2		
f _{HV}			0.976					0.976	0.976		
f _P			1.00					1.00	1.00		
On Flow (pcph)			401					713	657		
On Flow (pcphpl)			401					713	657		
Calculate On Ramp Roadway Operations											
On Ramp Type			Right					Right	Right		
On Ramp Speed (mph)			60					50	60		
On Ramp Cap (pcph)			2,200					2,100	2,200		
On Ramp v/c ratio			0.18					0.34	0.30		



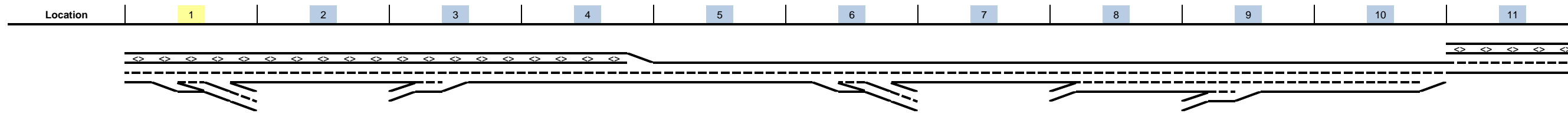
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Off Ramp Flow Rate											
Off Volume (vph)	1,870					950					
PHF	0.92					0.92					
Total Lanes	2					2					
Terrain	Level					Level					
Grade %	0.0%					0.0%					
Grade Length (mi)	0.00					0.00					
Truck & Bus %	5.0%					5.0%					
RV %	0.0%					0.0%					
E _T	1.5					1.5					
E _R	1.2					1.2					
f _{HV}	0.976					0.976					
f _p	1.00					1.00					
Off Flow (pcph)	2,083					1,058					
Off Flow (pcphpl)	1,042					529					
Calculate Off Ramp Roadway Operations											
Off Ramp Type	Right					Right					
Off Ramp Speed	45					45					
Off Ramp Cap (pcph)	4,200					4,200					
Off Ramp v/c ratio	0.50					0.25					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps											
Up Type								No	On		
Up Distance									1,200		
Up Flow (pcph)									713		
Down Type								On	No		
Down Distance								1,200			
Down Flow (pcph)								657			



Key
 <> Express Lane (HOV)
 - - - No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Merge Influence Area Operations											
Effective v_p (pcph)			2,596						2,652		
Up Ramp L_{EQ}									1,600		
Down Ramp L_{EQ}											
P_{FM} (Eqn 13-3)			0.587						0.587		
P_{FM} (Eqn 13-4)											
P_{FM} (Eqn 13-5)											
P_{FM}			1.000						0.587		
v_{12} (pcph)			2,596						1,557		
v_3 (pcph)									1,094		
v_{34} (pcph)											
v_{12a} (pcph)			2,596						1,557		
v_{R12a} (pcph)			2,997						2,215		
Merge Speed Index			0.36						0.31		
Merge Area Speed			60.0						61.2		
Outer Lanes Volume									1,094		
Outer Lanes Speed									67.9		
Segment Speed			60.0						63.2		
Merge v/c ratio			0.65						0.48		
Merge Density			26.5						20.3		
Merge LOS			C						C		
Calculate Diverge Influence Area Operations											
Effective v_p (pcph)						2,997					
Up Ramp L_{EQ}											
Down Ramp L_{EQ}											
P_{FD} (Eqn 13-9)						0.636					
P_{FD} (Eqn 13-10)											
P_{FD} (Eqn 13-11)											
P_{FD}						1.000					
v_{12} (pcph)						2,997					
v_3 (pcph)											
v_{34} (pcph)											
v_{12a} (pcph)						2,997					
Diverge Speed Index						0.39					
Diverge Area Speed						59.0					
Outer Lanes Volume											
Outer Lanes Speed											
Segment Speed						59.0					
Diverge v/c ratio						0.68					
Diverge Density						17.0					
Diverge LOS						B					

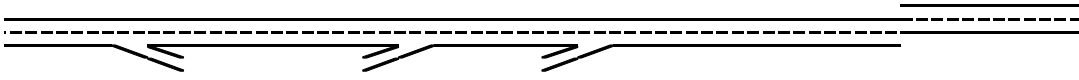


Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Summarize Segment Operations											
Segment v/c ratio	0.68	0.38	0.65	0.63	0.63	0.68	0.41	0.37	0.48	0.46	0.68
Segment Density	24.2	12.9	26.5	22.1	22.1	17.0	13.9	12.6	20.3	15.9	23.9
Segment LOS	C	B	C	C	C	B	B	B	C	B	C
Over Capacity											

Project: Southeast Policy Area EIR **Alternative:** Cumulative Plus Project Conditions
Freeway Corridor: Interstate 5 NB **Time Period:** AM Peak Hour

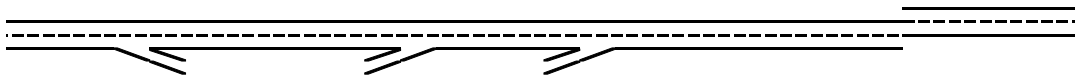
Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,150	1,500	6,900	27,700
Accel Length			450	350		
Decel Length	150					
Mainline Volume	2,470	1,750	1,750	1,780	2,520	2,470
On Ramp Volume			30	740		
Off Ramp Volume	720					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,470	1,750	1,780	2,520	2,520	2,470
PHF	0.92	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.917
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,752	2,073	1,983	2,808	2,986	2,926
GP Flow (pcphpl)	1,376	1,037	992	1,404	1,493	1,463
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.57	0.43	0.41	0.58	0.62	0.61
Speed (mph)	69.6	70.0	70.0	69.5	69.0	69.2
Density (pcphpl)	19.8	14.8	14.2	20.2	21.6	21.1
LOS	C	B	B	C	C	C
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			1,950	1,983		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.41	0.41		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	1,950					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.41					



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate On Ramp Flow Rate						
On Volume (vph)			30	740		
PHF			0.92	0.92		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			33	824		
On Flow (pcphpl)			33	824		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.02	0.37		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

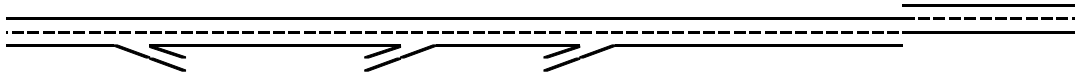


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Off Ramp Flow Rate						
Off Volume (vph)	720					
PHF	0.92					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	802					
Off Flow (pcphpl)	802					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.38					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			1,950	1,983		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.590	0.587		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			1,950	1,983		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			1,950	1,983		
v_{R12a} (pcph)			1,983	2,808		
Merge Speed Index			0.30	0.34		
Merge Area Speed			61.5	60.4		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.5	60.4		
Merge v/c ratio			0.43	0.61		
Merge Density			18.1	24.8		
Merge LOS			B	C		

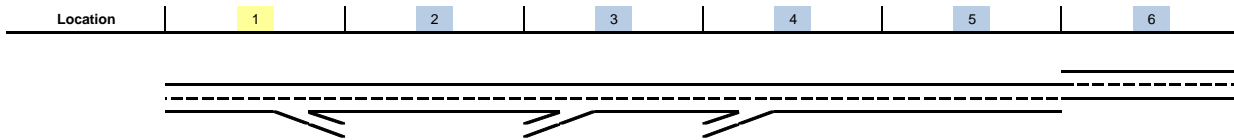


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,752					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.654					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,752					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,752					
Diverge Speed Index	0.37					
Diverge Area Speed	59.6					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	59.6					
Diverge v/c ratio	0.63					
Diverge Density	26.6					
Diverge LOS	C					



Key

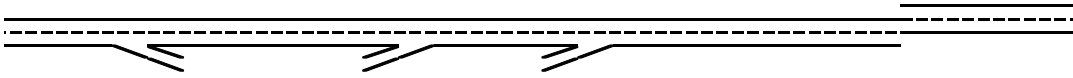
<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Summarize Segment Operations						
Segment v/c ratio	0.63	0.43	0.43	0.61	0.62	0.61
Segment Density	26.6	14.8	18.1	24.8	21.6	21.1
Segment LOS	C	B	B	C	C	C
Over Capacity						

Project: Southeast Policy Area EIR
Freeway Corridor: Interstate 5 SB
Alternative: Cumulative Plus Project Conditions
Time Period: AM Peak Hour

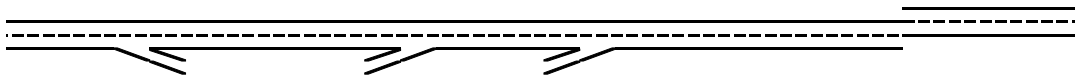
Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,250	1,500	28,500	8,000
Accel Length			300	250		
Decel Length	160					
Mainline Volume	2,500	1,710	1,710	2,390	2,400	2,500
On Ramp Volume			680	10		
Off Ramp Volume	790					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,500	1,710	2,390	2,400	2,400	2,500
PHF	0.92	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	5.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.976
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,785	2,026	2,663	2,674	2,843	2,785
GP Flow (pcphpl)	1,393	1,013	1,331	1,337	1,422	1,393
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.58	0.42	0.55	0.56	0.59	0.58
Speed (mph)	69.6	70.0	69.8	69.8	69.4	69.6
Density (pcphpl)	20.0	14.5	19.1	19.2	20.5	20.0
LOS	C	B	C	C	C	C
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			1,905	2,663		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.40	0.55		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	1,905					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.40					



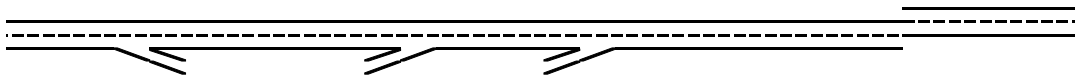
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate On Ramp Flow Rate						
On Volume (vph)			680	10		
PHF			0.92	0.92		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			758	11		
On Flow (pcphpl)			758	11		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.36	0.01		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

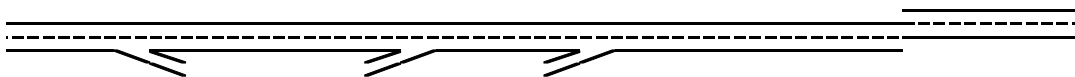


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Off Ramp Flow Rate						
Off Volume (vph)	790					
PHF	0.92					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	880					
Off Flow (pcphpl)	880					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.42					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			1,905	2,663		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.586	0.585		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			1,905	2,663		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			1,905	2,663		
v_{R12a} (pcph)			2,663	2,674		
Merge Speed Index			0.35	0.35		
Merge Area Speed			60.3	60.3		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			60.3	60.3		
Merge v/c ratio			0.58	0.58		
Merge Density			24.0	24.8		
Merge LOS			C	C		

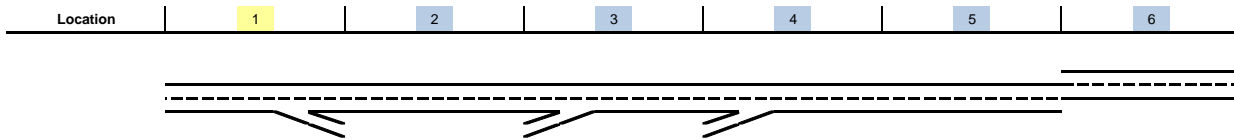


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,785					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.650					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,785					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,785					
Diverge Speed Index	0.38					
Diverge Area Speed	59.4					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	59.4					
Diverge v/c ratio	0.63					
Diverge Density	26.8					
Diverge LOS	C					



Key

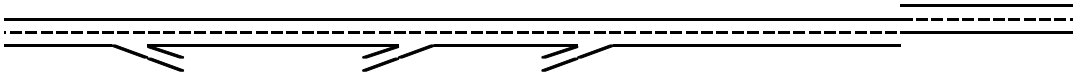
<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Summarize Segment Operations						
Segment v/c ratio	0.63	0.42	0.58	0.58	0.59	0.58
Segment Density	26.8	14.5	24.0	24.8	20.5	20.0
Segment LOS	C	B	C	C	C	C
Over Capacity						

Project: Southeast Policy Area EIR **Alternative:** Cumulative Plus Project Conditions
Freeway Corridor: Interstate 5 NB **Time Period:** PM Peak Hour

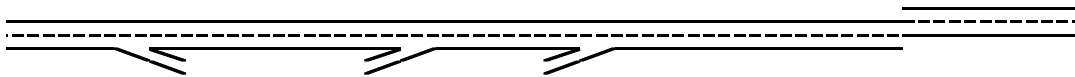
Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,150	1,500	6,900	27,700
Accel Length			450	350		
Decel Length	150					
Mainline Volume	2,640	1,780	1,780	1,810	2,590	2,640
On Ramp Volume			30	780		
Off Ramp Volume	860					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,640	1,780	1,810	2,590	2,590	2,640
PHF	0.92	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.917
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,941	2,109	2,017	2,886	3,069	3,128
GP Flow (pcphpl)	1,471	1,054	1,008	1,443	1,534	1,564
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.61	0.44	0.42	0.60	0.64	0.65
Speed (mph)	69.2	70.0	70.0	69.3	68.7	68.5
Density (pcphpl)	21.3	15.1	14.4	20.8	22.3	22.8
LOS	C	B	B	C	C	C
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			1,983	2,017		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.41	0.42		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	1,983					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.41					



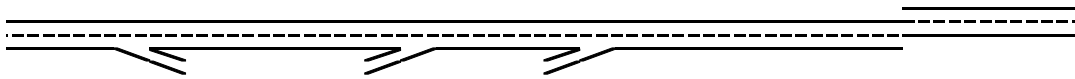
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate On Ramp Flow Rate						
On Volume (vph)			30	780		
PHF			0.92	0.92		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			33	869		
On Flow (pcphpl)			33	869		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.02	0.40		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

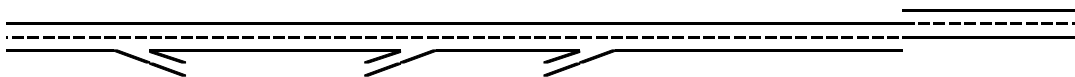


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Off Ramp Flow Rate						
Off Volume (vph)	860					
PHF	0.92					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	958					
Off Flow (pcphpl)	958					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.46					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			1,983	2,017		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.590	0.587		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			1,983	2,017		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			1,983	2,017		
v_{R12a} (pcph)			2,017	2,886		
Merge Speed Index			0.31	0.35		
Merge Area Speed			61.5	60.2		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.5	60.2		
Merge v/c ratio			0.44	0.63		
Merge Density			18.4	25.4		
Merge LOS			B	C		

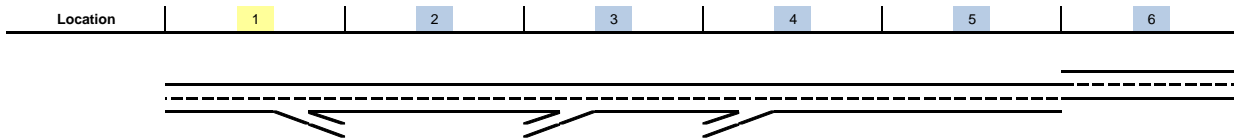


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,941					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.642					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,941					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,941					
Diverge Speed Index	0.38					
Diverge Area Speed	59.2					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	59.2					
Diverge v/c ratio	0.67					
Diverge Density	28.2					
Diverge LOS	D					



Key

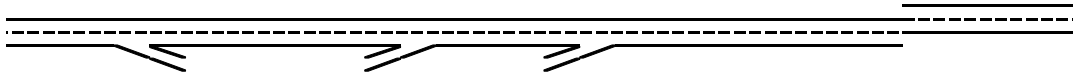
<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Summarize Segment Operations						
Segment v/c ratio	0.67	0.44	0.44	0.63	0.64	0.65
Segment Density	28.2	15.1	18.4	25.4	22.3	22.8
Segment LOS	D	B	B	C	C	C
Over Capacity						

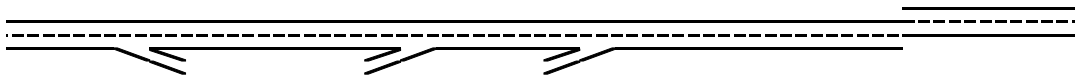
Project: Southeast Policy Area EIR
Freeway Corridor: Interstate 5 SB
Alternative: Cumulative Plus Project Conditions
Time Period: PM Peak Hour

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key
 <-> Express Lane (HOV)
 - - - No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,250	1,500	28,500	8,000
Accel Length			300	250		
Decel Length	160					
Mainline Volume	3,120	2,260	2,260	2,880	2,900	3,120
On Ramp Volume			620	20		
Off Ramp Volume	860					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	3,120	2,260	2,880	2,900	2,900	3,120
PHF	0.92	0.94	0.92	0.92	0.94	0.94
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	5.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.976
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,476	2,621	3,209	3,231	3,363	3,402
GP Flow (pcphpl)	1,738	1,310	1,604	1,615	1,681	1,701
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.72	0.55	0.67	0.67	0.70	0.71
Speed (mph)	66.6	69.9	68.1	68.0	67.3	67.1
Density (pcphpl)	26.1	18.8	23.6	23.8	25.0	25.4
LOS	D	C	C	C	C	C
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,518	3,209		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.52	0.67		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,518					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.52					



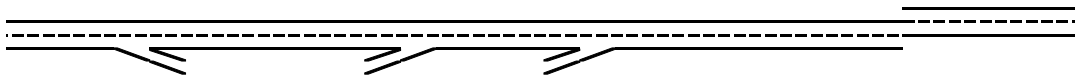
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate On Ramp Flow Rate						
On Volume (vph)			620	20		
PHF			0.92	0.92		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			691	22		
On Flow (pcphpl)			691	22		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.33	0.01		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

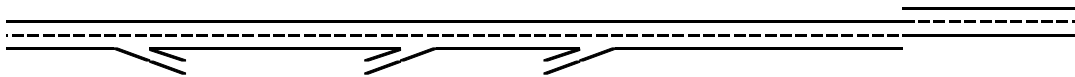


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Off Ramp Flow Rate						
Off Volume (vph)	860					
PHF	0.92					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	958					
Off Flow (pcphpl)	958					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.46					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,518	3,209		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.586	0.585		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,518	3,209		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,518	3,209		
v_{R12a} (pcph)			3,209	3,231		
Merge Speed Index			0.39	0.39		
Merge Area Speed			59.1	59.1		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			59.1	59.1		
Merge v/c ratio			0.70	0.70		
Merge Density			28.3	29.1		
Merge LOS			D	D		

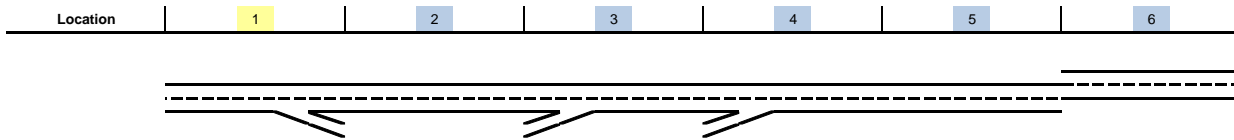


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	3,476					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.629					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	3,476					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	3,476					
Diverge Speed Index	0.38					
Diverge Area Speed	59.2					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	59.2					
Diverge v/c ratio	0.79					
Diverge Density	32.7					
Diverge LOS	D					



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Summarize Segment Operations						
Segment v/c ratio	0.79	0.55	0.70	0.70	0.70	0.71
Segment Density	32.7	18.8	28.3	29.1	25.0	25.4
Segment LOS	D	C	D	D	C	C
Over Capacity						

Cumulative Plus Project
Conditions
with Mitigations

HCM Signalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd

Cumulative Plus Project - Mitigations
 AM Peak Hour































Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	240	10	10	220	390	640
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	1863	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	261	11	11	239	424	696
RTOR Reduction (vph)	0	3	0	0	0	204
Lane Group Flow (vph)	261	8	11	239	424	492
Turn Type		Perm	Split			Perm
Protected Phases	4		2	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	14.7	14.7	13.9	13.9	27.6	27.6
Effective Green, g (s)	14.7	14.7	13.9	13.9	27.6	27.6
Actuated g/C Ratio	0.19	0.19	0.18	0.18	0.36	0.36
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	337	301	319	335	666	566
v/s Ratio Prot	c0.15		0.01	c0.13	0.23	
v/s Ratio Perm		0.00				c0.31
v/c Ratio	0.77	0.03	0.03	0.71	0.64	0.87
Uniform Delay, d1	29.7	25.4	26.1	29.8	20.6	23.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.7	0.0	0.0	5.9	1.5	13.0
Delay (s)	39.4	25.4	26.1	35.7	22.1	36.1
Level of Service	D	C	C	D	C	D
Approach Delay (s)	38.8			35.2	30.8	
Approach LOS	D			D	C	

Intersection Summary

HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	21.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

























HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & Stockton Blvd

Cumulative Plus Project - Mitigations
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		 					
Volume (vph)	370	1730	190	40	1890	150	160	30	20	100	20	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.86		0.97	1.00		1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.86	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	1770	6337		3433	1749		1770	1528	1504
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	1770	6337		3433	1749		1770	1528	1504
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	398	1860	204	43	2032	161	172	32	22	108	22	473
RTOR Reduction (vph)	0	0	97	0	6	0	0	18	0	0	199	215
Lane Group Flow (vph)	398	1860	107	43	2187	0	172	36	0	108	50	31
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6									8
Actuated Green, G (s)	14.6	57.2	57.2	4.0	46.6		10.8	10.9		13.5	13.6	13.6
Effective Green, g (s)	14.6	57.2	57.2	4.0	46.6		10.8	10.9		13.5	13.6	13.6
Actuated g/C Ratio	0.13	0.52	0.52	0.04	0.43		0.10	0.10		0.12	0.12	0.12
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	459	2666	830	65	2707		340	175		219	190	187
v/s Ratio Prot	c0.12	c0.37		0.02	c0.35		0.05	0.02		c0.06	c0.03	
v/s Ratio Perm			0.07									0.02
v/c Ratio	0.87	0.70	0.13	0.66	0.81		0.51	0.21		0.49	0.26	0.16
Uniform Delay, d1	46.3	19.5	13.2	51.9	27.3		46.6	45.1		44.6	43.2	42.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	15.3	0.8	0.1	17.8	1.9		1.2	0.6		0.6	0.3	0.2
Delay (s)	61.5	20.3	13.3	69.7	29.2		47.8	45.7		45.2	43.5	42.8
Level of Service	E	C	B	E	C		D	D		D	D	D
Approach Delay (s)		26.4			30.0			47.3			43.5	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay			30.6			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			109.1			Sum of lost time (s)			29.9			
Intersection Capacity Utilization			76.0%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
21: Kammerer Rd & Promenade Pkwy































Cumulative Plus Project - Mitigations
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1920	260	410	1720	1070	60	40	450	1090	200	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	4.0	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.86	0.88	0.97	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	6408	2787	3433	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	6408	2787	3433	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	170	2043	277	436	1830	1138	64	43	479	1160	213	149
RTOR Reduction (vph)	0	0	197	0	0	0	0	0	214	0	0	101
Lane Group Flow (vph)	170	2043	80	436	1830	1138	64	43	265	1160	213	48
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			Free			4			8
Actuated Green, G (s)	10.1	42.8	42.8	26.4	59.1	148.3	5.2	28.8	28.8	24.8	47.9	47.9
Effective Green, g (s)	10.1	42.8	42.8	26.4	59.1	148.3	5.2	28.8	28.8	24.8	47.9	47.9
Actuated g/C Ratio	0.07	0.29	0.29	0.18	0.40	1.00	0.04	0.19	0.19	0.17	0.32	0.32
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7		6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	234	1849	457	315	2554	2787	120	362	307	834	1143	511
v/s Ratio Prot	0.05	c0.32		c0.25	0.29		0.02	0.02		c0.23	0.06	
v/s Ratio Perm			0.05			0.41			c0.17			0.03
v/c Ratio	0.73	1.10	0.17	1.38	0.72	0.41	0.53	0.12	0.86	1.39	0.19	0.09
Uniform Delay, d1	67.7	52.8	39.5	61.0	37.5	0.0	70.4	49.3	57.8	61.8	36.2	35.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.1	55.9	0.1	191.4	0.8	0.4	2.3	0.1	20.6	183.3	0.0	0.0
Delay (s)	76.9	108.6	39.6	252.4	38.4	0.4	72.6	49.3	78.4	245.0	36.2	35.1
Level of Service	E	F	D	F	D	A	E	D	E	F	D	D
Approach Delay (s)		98.8			53.1			75.6			195.2	
Approach LOS		F			D			E			F	

Intersection Summary		
HCM Average Control Delay	96.0	HCM Level of Service F
HCM Volume to Capacity ratio	1.17	
Actuated Cycle Length (s)	148.3	Sum of lost time (s) 25.5
Intersection Capacity Utilization	94.4%	ICU Level of Service F
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
24: Grant Line Rd & Stockton Blvd

Cumulative Plus Project - Mitigations
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	 	  			  		 						
Volume (vph)	600	2000	170	40	2010	120	290	30	30	110	20	460	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9	
Lane Util. Factor	0.97	0.91	1.00	1.00	0.86		0.97	1.00		1.00	0.95	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.93		1.00	0.86	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	3433	5085	1583	1770	6354		3433	1723		1770	1526	1504	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	3433	5085	1583	1770	6354		3433	1723		1770	1526	1504	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	652	2174	185	43	2185	130	315	33	33	120	22	500	
RTOR Reduction (vph)	0	0	90	0	4	0	0	26	0	0	199	199	
Lane Group Flow (vph)	652	2174	95	43	2311	0	315	40	0	120	63	61	
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm	
Protected Phases	1	6		5	2		7	4		3	8		
Permitted Phases			6									8	
Actuated Green, G (s)	18.7	57.2	57.2	4.0	42.5		15.5	13.7		15.3	13.5	13.5	
Effective Green, g (s)	18.7	57.2	57.2	4.0	42.5		15.5	13.7		15.3	13.5	13.5	
Actuated g/C Ratio	0.16	0.50	0.50	0.04	0.37		0.14	0.12		0.13	0.12	0.12	
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9	
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	565	2558	796	62	2375		468	208		238	181	179	
v/s Ratio Prot	c0.19	0.43		0.02	c0.36		c0.09	0.02		0.07	c0.04		
v/s Ratio Perm			0.06									0.04	
v/c Ratio	1.15	0.85	0.12	0.69	0.97		0.67	0.19		0.50	0.35	0.34	
Uniform Delay, d1	47.5	24.5	14.9	54.2	35.0		46.7	45.0		45.7	46.0	46.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	88.1	2.8	0.1	23.7	12.7		3.8	0.4		0.6	0.4	0.4	
Delay (s)	135.6	27.4	15.0	77.9	47.7		50.5	45.5		46.3	46.5	46.4	
Level of Service	F	C	B	E	D		D	D		D	D	D	
Approach Delay (s)		50.0			48.3			49.6			46.4		
Approach LOS		D			D			D			D		

Intersection Summary		
HCM Average Control Delay	49.0	HCM Level of Service D
HCM Volume to Capacity ratio	0.81	
Actuated Cycle Length (s)	113.7	Sum of lost time (s) 17.6
Intersection Capacity Utilization	86.6%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

Cumulative Plus Project
Conditions
with Whitelock Interchange

none



Toolbox with icons for simulation controls: hand, zoom, pan, LOS, ICU, #, VB, DST, and other simulation settings.



























none



HCM Signalized Intersection Capacity Analysis
4: Elk Grove Blvd & Laguna Springs Drive

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1510	460	790	1040	90	270	350	450	60	310	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1563	3433	5016		1770	1863	2787	1770	3406	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1563	3433	5016		1770	1863	2787	1770	3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	1641	500	859	1130	98	293	380	489	65	337	98
RTOR Reduction (vph)	0	0	160	0	6	0	0	0	361	0	19	0
Lane Group Flow (vph)	109	1641	340	859	1222	0	293	380	128	65	416	0
Confl. Bikes (#/hr)			1			1						4
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	12.8	47.6	47.6	30.4	65.2		20.4	38.1	38.1	6.7	24.4	
Effective Green, g (s)	12.8	47.6	47.6	30.4	65.2		20.4	38.1	38.1	6.7	24.4	
Actuated g/C Ratio	0.09	0.33	0.33	0.21	0.45		0.14	0.26	0.26	0.05	0.17	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	156	1669	513	720	2255		249	490	732	82	573	
v/s Ratio Prot	0.06	c0.32		c0.25	0.24		c0.17	c0.20		0.04	0.12	
v/s Ratio Perm			0.22						0.05			
v/c Ratio	0.70	0.98	0.66	1.19	0.54		1.18	0.78	0.18	0.79	0.73	
Uniform Delay, d1	64.2	48.3	41.8	57.3	29.0		62.3	49.5	41.3	68.5	57.1	
Progression Factor	1.00	1.00	1.00	1.11	0.59		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.5	18.4	6.6	99.2	0.9		113.3	6.9	0.0	37.2	3.9	
Delay (s)	74.7	66.7	48.4	162.6	18.1		175.6	56.4	41.4	105.7	61.0	
Level of Service	E	E	D	F	B		F	E	D	F	E	
Approach Delay (s)		63.0			77.6			80.1			66.8	
Approach LOS		E			E			F			E	
Intersection Summary												
HCM Average Control Delay			71.7			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			145.0			Sum of lost time (s)			16.9			
Intersection Capacity Utilization			96.6%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Elk Grove Blvd & Auto Center Drive

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↕↕		↔↕	↕↕↕		↔	↕		↕↕	↕	
Volume (vph)	80	1610	150	310	1550	10	90	20	120	50	10	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5020		3433	5080		1770	1623		3433	1640	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5020		3433	5080		1770	1623		3433	1640	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	85	1713	160	330	1649	11	96	21	128	53	11	43
RTOR Reduction (vph)	0	5	0	0	0	0	0	120	0	0	40	0
Lane Group Flow (vph)	85	1868	0	330	1660	0	96	29	0	53	14	0
Confl. Bikes (#/hr)						2						
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	10.8	86.4		15.9	91.5		9.9	8.7		12.2	11.0	
Effective Green, g (s)	10.8	86.4		15.9	91.5		9.9	8.7		12.2	11.0	
Actuated g/C Ratio	0.07	0.60		0.11	0.63		0.07	0.06		0.08	0.08	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	132	2991		376	3206		121	97		289	124	
v/s Ratio Prot	0.05	c0.37		c0.10	c0.33		c0.05	0.02		c0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.64	0.62		0.88	0.52		0.79	0.30		0.18	0.12	
Uniform Delay, d1	65.2	18.9		63.6	14.7		66.5	65.2		61.8	62.5	
Progression Factor	1.04	0.44		1.19	0.61		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.2	0.5		16.1	0.5		27.4	0.6		0.1	0.2	
Delay (s)	71.9	8.8		92.0	9.5		93.9	65.8		61.9	62.6	
Level of Service	E	A		F	A		F	E		E	E	
Approach Delay (s)		11.5			23.2			76.8			62.2	
Approach LOS		B			C			E			E	

Intersection Summary

HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	22.6
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	1760	220	340	1030	0	0	0	0	780	20	840
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		0.97	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.98		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4993		3433	5085					1681	1689	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4993		3433	5085					1681	1689	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1913	239	370	1120	0	0	0	0	848	22	913
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	113
Lane Group Flow (vph)	0	2142	0	370	1120	0	0	0	0	432	438	800
Confl. Bikes (#/hr)			2			2						
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		65.5		17.1	88.5					44.1	44.1	44.1
Effective Green, g (s)		65.5		17.1	88.5					44.1	44.1	44.1
Actuated g/C Ratio		0.45		0.12	0.61					0.30	0.30	0.30
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2255		405	3104					511	514	848
v/s Ratio Prot		c0.43		c0.11	0.22					0.26	0.26	
v/s Ratio Perm												c0.29
v/c Ratio		0.95		0.91	0.36					0.85	0.85	0.94
Uniform Delay, d1		38.2		63.2	14.1					47.3	47.4	49.2
Progression Factor		0.30		0.75	1.28					1.00	1.00	1.00
Incremental Delay, d2		9.3		17.7	0.2					11.7	12.4	18.3
Delay (s)		20.7		64.9	18.2					59.0	59.8	67.5
Level of Service		C		E	B					E	E	E
Approach Delay (s)		20.7			29.8			0.0			63.5	
Approach LOS		C			C			A			E	

Intersection Summary

HCM Average Control Delay	37.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 7: Elk Grove Blvd & SR-99 NB On-ramp

C+P w/ Whitelock Intchg - Mitigations
 AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	2540	1370	620	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2761	1489	674	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		515	937			
pX, platoon unblocked	0.81				0.69	0.81
vC, conflicting volume	2163				2409	496
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1608				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	325				702	876

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	920	920	920	496	496	496	674
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	674
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.54	0.54	0.54	0.29	0.29	0.29	0.40
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							
Approach Delay (s)	0.0			0.0			
Approach LOS							

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization	86.0%		ICU Level of Service E
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1400	930	40	1590	130	430	150	200	210	100	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	4.0	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (prot)	1770	3539	1564	1770	5085	1583	1610	3142		1681	1738	1561
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (perm)	1770	3539	1564	1770	5085	1583	1610	3142		1681	1738	1561
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	1522	1011	43	1728	141	467	163	217	228	109	163
RTOR Reduction (vph)	0	0	0	0	0	41	0	62	0	0	0	84
Lane Group Flow (vph)	109	1522	1011	43	1728	100	290	495	0	166	171	79
Confl. Bikes (#/hr)			1									1
Turn Type	Prot		Free	Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			Free			2						4
Actuated Green, G (s)	11.4	73.9	145.0	4.3	66.8	66.8	28.9	28.9		16.4	16.4	16.4
Effective Green, g (s)	11.4	73.9	145.0	4.3	66.8	66.8	28.9	28.9		16.4	16.4	16.4
Actuated g/C Ratio	0.08	0.51	1.00	0.03	0.46	0.46	0.20	0.20		0.11	0.11	0.11
Clearance Time (s)	5.6	5.7		5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9		2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	139	1804	1564	52	2343	729	321	626		190	197	177
v/s Ratio Prot	0.06	c0.43		0.02	0.34		c0.18	0.16		c0.10	0.10	
v/s Ratio Perm			c0.65			0.06						0.05
v/c Ratio	0.78	0.84	0.65	0.83	0.74	0.14	0.90	0.79		0.87	0.87	0.44
Uniform Delay, d1	65.6	30.6	0.0	70.0	31.9	22.5	56.7	55.2		63.3	63.2	60.0
Progression Factor	0.98	0.71	1.00	1.00	1.00	1.00	0.85	0.83		1.00	1.00	1.00
Incremental Delay, d2	10.1	2.1	0.8	62.2	2.1	0.4	26.2	6.2		32.1	29.9	0.7
Delay (s)	74.6	23.9	0.8	132.2	34.1	22.9	74.5	51.8		95.4	93.1	60.7
Level of Service	E	C	A	F	C	C	E	D		F	F	E
Approach Delay (s)		17.2			35.4			59.6			83.3	
Approach LOS		B			D			E			F	

Intersection Summary		
HCM Average Control Delay	34.8	HCM Level of Service C
HCM Volume to Capacity ratio	0.82	
Actuated Cycle Length (s)	145.0	Sum of lost time (s) 10.2
Intersection Capacity Utilization	84.6%	ICU Level of Service E
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: SR-99 NB Ramps & E. Stockton Blvd

























C+P w/ Whitelock Intchg - Mitigations
 AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	10	80	10	10	10	220	420	10	10	390	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.92			1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.98			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1599			1817	1583	1770	3527		1770	1863	1583
Flt Permitted	0.95	0.98			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1599			1817	1583	1770	3527		1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	11	87	11	11	11	239	457	11	11	424	728
RTOR Reduction (vph)	0	28	0	0	0	10	0	1	0	0	0	196
Lane Group Flow (vph)	180	140	0	0	22	1	239	467	0	11	424	532
Turn Type	Split			Split		Perm	Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases						8						6
Actuated Green, G (s)	22.1	22.1			6.9	6.9	23.0	89.0		5.0	71.0	93.1
Effective Green, g (s)	22.1	22.1			6.9	6.9	23.0	89.0		5.0	71.0	93.1
Actuated g/C Ratio	0.15	0.15			0.05	0.05	0.16	0.61		0.03	0.49	0.64
Clearance Time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	256	244			86	75	281	2165		61	912	1016
v/s Ratio Prot	c0.11	0.09			c0.01		c0.14	0.13		0.01	0.23	c0.08
v/s Ratio Perm						0.00						0.26
v/c Ratio	0.70	0.57			0.26	0.01	0.85	0.22		0.18	0.46	0.52
Uniform Delay, d1	58.3	57.1			66.6	65.8	59.3	12.5		68.0	24.4	14.0
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.21	0.79	1.41
Incremental Delay, d2	7.0	2.0			0.6	0.0	20.4	0.0		0.4	1.3	0.2
Delay (s)	65.3	59.1			67.1	65.8	79.7	12.5		82.9	20.7	19.9
Level of Service	E	E			E	E	E	B		F	C	B
Approach Delay (s)		62.3			66.7			35.2			20.8	
Approach LOS		E			E			D			C	

Intersection Summary		
HCM Average Control Delay	32.4	HCM Level of Service C
HCM Volume to Capacity ratio	0.60	
Actuated Cycle Length (s)	145.0	Sum of lost time (s) 22.0
Intersection Capacity Utilization	71.6%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
21: Kammerer Road & Promenade Pkwy

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	990	30	150	1580	1240	20	20	100	1030	20	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	4.0	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	0.97	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	3433	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	3433	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	1076	33	163	1717	1348	22	22	109	1120	22	120
RTOR Reduction (vph)	0	0	21	0	0	0	0	0	96	0	0	80
Lane Group Flow (vph)	163	1076	12	163	1717	1348	22	22	13	1120	22	40
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			Free			4			8
Actuated Green, G (s)	7.9	50.2	50.2	10.2	52.5	134.2	3.6	14.3	14.3	34.0	44.2	44.2
Effective Green, g (s)	7.9	50.2	50.2	10.2	52.5	134.2	3.6	14.3	14.3	34.0	44.2	44.2
Actuated g/C Ratio	0.06	0.37	0.37	0.08	0.39	1.00	0.03	0.11	0.11	0.25	0.33	0.33
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7		6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	202	2397	592	261	1989	2787	47	199	169	1264	1166	521
v/s Ratio Prot	0.05	0.17		0.05	c0.34		0.01	0.01		c0.22	0.01	
v/s Ratio Perm			0.01			c0.48			0.01			0.02
v/c Ratio	0.81	0.45	0.02	0.62	0.86	0.48	0.47	0.11	0.07	0.89	0.02	0.08
Uniform Delay, d1	62.4	31.6	26.5	60.1	37.6	0.0	64.4	54.2	54.0	48.2	30.4	31.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.5	0.0	0.0	3.3	4.0	0.6	2.7	0.1	0.1	7.6	0.0	0.0
Delay (s)	81.9	31.6	26.5	63.5	41.6	0.6	67.0	54.3	54.1	55.8	30.4	31.0
Level of Service	F	C	C	E	D	A	E	D	D	E	C	C
Approach Delay (s)		37.9			25.6			56.0			53.0	
Approach LOS		D			C			E			D	

Intersection Summary

HCM Average Control Delay	34.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	134.2	Sum of lost time (s)	6.3
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			













HCM Signalized Intersection Capacity Analysis
22: Grant Line Road & SR-99 SB Off-ramp

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↖	↕	↗
Volume (vph)	0	1730	390	0	2410	550	0	0	0	300	0	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.87	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1459	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1459	1504
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1840	415	0	2564	585	0	0	0	319	0	596
RTOR Reduction (vph)	0	0	168	0	0	0	0	0	0	0	1	1
Lane Group Flow (vph)	0	1840	247	0	2564	585	0	0	0	287	317	309
Turn Type		Perm			Free					Split		Perm
Protected Phases		6			2					8	8	
Permitted Phases		6			Free							8
Actuated Green, G (s)		57.2	57.2		57.2	96.0				26.5	26.5	26.5
Effective Green, g (s)		57.2	57.2		57.2	96.0				26.5	26.5	26.5
Actuated g/C Ratio		0.60	0.60		0.60	1.00				0.28	0.28	0.28
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		3030	943		3030	1583				464	403	415
v/s Ratio Prot		0.36			c0.50					0.17	c0.22	
v/s Ratio Perm			0.16			0.37						0.21
v/c Ratio		0.61	0.26		0.85	0.37				0.62	0.79	0.75
Uniform Delay, d1		12.3	9.3		15.8	0.0				30.3	32.1	31.7
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.4	0.2		2.4	0.7				1.7	9.1	6.3
Delay (s)		12.7	9.5		18.3	0.7				32.1	41.2	37.9
Level of Service		B	A		B	A				C	D	D
Approach Delay (s)		12.1			15.0			0.0			37.2	
Approach LOS		B			B			A			D	
Intersection Summary												
HCM Average Control Delay			17.2		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			96.0		Sum of lost time (s)				12.3			
Intersection Capacity Utilization			79.9%		ICU Level of Service				D			
Analysis Period (min)			15									
c Critical Lane Group												





























HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑	↑	↑↑			
Volume (vph)	0	1740	290	0	2290	280	670	0	660	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	4.0		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1891	315	0	2489	304	728	0	717	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	106	0	0	6	0	0	0
Lane Group Flow (vph)	0	1891	315	0	2489	198	364	364	711	0	0	0
Turn Type			Free			Perm	Split		Perm			
Protected Phases		6			2		4	4				
Permitted Phases			Free			2			4			
Actuated Green, G (s)		54.5	98.6		55.0	55.0	33.3	33.3	33.3			
Effective Green, g (s)		54.5	98.6		55.0	55.0	33.3	33.3	33.3			
Actuated g/C Ratio		0.55	1.00		0.56	0.56	0.34	0.34	0.34			
Clearance Time (s)		6.2			5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0			4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2811	1583		2836	883	568	568	941			
v/s Ratio Prot		0.37			c0.49		0.22	0.22				
v/s Ratio Perm			0.20			0.13			c0.26			
v/c Ratio		0.67	0.20		0.88	0.22	0.64	0.64	0.76			
Uniform Delay, d1		15.7	0.0		18.9	11.0	27.6	27.6	29.0			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.7	0.3		3.5	0.2	1.9	1.9	3.1			
Delay (s)		16.4	0.3		22.4	11.2	29.5	29.5	32.1			
Level of Service		B	A		C	B	C	C	C			
Approach Delay (s)		14.1			21.2			30.8			0.0	
Approach LOS		B			C			C			A	
Intersection Summary												
HCM Average Control Delay			20.9				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			98.6				Sum of lost time (s)		10.3			
Intersection Capacity Utilization			71.4%				ICU Level of Service		C			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & Stockton Blvd

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		 					
Volume (vph)	380	1750	190	40	1970	150	160	30	20	100	20	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.86		0.97	1.00		1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.86	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	1770	6340		3433	1749		1770	1528	1504
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	1770	6340		3433	1749		1770	1528	1504
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	409	1882	204	43	2118	161	172	32	22	108	22	473
RTOR Reduction (vph)	0	0	97	0	6	0	0	18	0	0	199	215
Lane Group Flow (vph)	409	1882	107	43	2273	0	172	36	0	108	50	31
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6									8
Actuated Green, G (s)	14.6	57.2	57.2	4.0	46.6		10.8	10.9		13.5	13.6	13.6
Effective Green, g (s)	14.6	57.2	57.2	4.0	46.6		10.8	10.9		13.5	13.6	13.6
Actuated g/C Ratio	0.13	0.52	0.52	0.04	0.43		0.10	0.10		0.12	0.12	0.12
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	459	2666	830	65	2708		340	175		219	190	187
v/s Ratio Prot	c0.12	c0.37		0.02	c0.36		0.05	0.02		c0.06	c0.03	
v/s Ratio Perm			0.07									0.02
v/c Ratio	0.89	0.71	0.13	0.66	0.84		0.51	0.21		0.49	0.26	0.16
Uniform Delay, d1	46.5	19.6	13.2	51.9	27.9		46.6	45.1		44.6	43.2	42.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	18.6	0.9	0.1	17.8	2.4		1.2	0.6		0.6	0.3	0.2
Delay (s)	65.1	20.5	13.3	69.7	30.4		47.8	45.7		45.2	43.5	42.8
Level of Service	E	C	B	E	C		D	D		D	D	D
Approach Delay (s)		27.2			31.1			47.3			43.5	
Approach LOS		C			C			D			D	

Intersection Summary

HCM Average Control Delay	31.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	109.1	Sum of lost time (s)	29.9
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Toolbar icons: File Explorer, Print, Undo, Redo, Zoom, etc.



Simulation Control Panel:

- Navigation: Hand, Zoom In, Zoom Out, Home, Find.
- Simulation: Play, Pause, Stop, Step Forward, Step Backward.
- Layers: LOS, ICU, #, VB, DST.
- Tools: Lock, Unlock, Refresh, etc.
























none

- LDS
- ICU
- ##
- VB
- DST



HCM Signalized Intersection Capacity Analysis
4: Elk Grove Blvd & Laguna Springs Drive

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour






















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1400	210	410	1730	80	450	370	770	140	220	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3324	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3324	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	103	1443	216	423	1784	82	464	381	794	144	227	155
RTOR Reduction (vph)	0	0	75	0	3	0	0	0	332	0	91	0
Lane Group Flow (vph)	103	1443	141	423	1863	0	464	381	462	144	291	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	9.0	51.0	51.0	17.2	59.2		35.2	38.8	38.8	15.8	19.4	
Effective Green, g (s)	9.0	51.0	51.0	17.2	59.2		35.2	38.8	38.8	15.8	19.4	
Actuated g/C Ratio	0.06	0.35	0.35	0.12	0.41		0.24	0.27	0.27	0.11	0.13	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	110	1789	557	407	2063		430	499	746	193	445	
v/s Ratio Prot	0.06	0.28		c0.12	c0.37		c0.26	c0.20		0.08	0.09	
v/s Ratio Perm			0.09						0.17			
v/c Ratio	0.94	0.81	0.25	1.04	0.90		1.08	0.76	0.62	0.75	0.65	
Uniform Delay, d1	67.7	42.5	33.5	63.9	40.2		54.9	48.9	46.6	62.7	59.6	
Progression Factor	1.00	1.00	1.00	1.38	0.61		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	64.6	4.0	1.1	49.9	5.6		66.3	6.2	1.1	12.8	2.6	
Delay (s)	132.3	46.5	34.6	138.0	30.1		121.2	55.0	47.7	75.5	62.2	
Level of Service	F	D	C	F	C		F	E	D	E	E	
Approach Delay (s)		50.1			50.1			70.2			65.9	
Approach LOS		D			D			E			E	

Intersection Summary

HCM Average Control Delay	56.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	11.2
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
5: Elk Grove Blvd & Auto Center Drive

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1970	70	180	1740	10	150	30	250	190	20	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5059		3433	5081		1770	1613		3433	1624	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5059		3433	5081		1770	1613		3433	1624	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	2052	73	188	1812	10	156	31	260	198	21	125
RTOR Reduction (vph)	0	2	0	0	0	0	0	122	0	0	106	0
Lane Group Flow (vph)	125	2123	0	188	1822	0	156	169	0	198	40	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	13.0	78.0		9.4	74.4		14.2	19.3		16.5	21.6	
Effective Green, g (s)	13.0	78.0		9.4	74.4		14.2	19.3		16.5	21.6	
Actuated g/C Ratio	0.09	0.54		0.06	0.51		0.10	0.13		0.11	0.15	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	159	2721		223	2607		173	215		391	242	
v/s Ratio Prot	c0.07	c0.42		0.05	0.36		0.09	c0.10		c0.06	c0.02	
v/s Ratio Perm												
v/c Ratio	0.79	0.78		0.84	0.70		0.90	0.78		0.51	0.16	
Uniform Delay, d1	64.6	26.7		67.1	26.8		64.7	60.8		60.4	53.8	
Progression Factor	1.13	0.49		1.13	0.63		1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.0	1.5		17.4	1.1		40.7	15.8		0.4	0.1	
Delay (s)	87.0	14.6		93.5	18.1		105.5	76.6		60.8	53.9	
Level of Service	F	B		F	B		F	E		E	D	
Approach Delay (s)		18.6			25.1			86.7			57.9	
Approach LOS		B			C			F			E	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	2150	220	220	1360	0	0	0	0	740	10	980
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		0.97	0.91					0.95	0.95	0.88
Fr _t		0.99		1.00	1.00					1.00	1.00	0.85
Fl _t Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5015		3433	5085					1681	1687	2787
Fl _t Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5015		3433	5085					1681	1687	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	2194	224	224	1388	0	0	0	0	755	10	1000
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	2409	0	224	1388	0	0	0	0	385	380	950
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		67.5		10.5	83.9					48.7	48.7	48.7
Effective Green, g (s)		67.5		10.5	83.9					48.7	48.7	48.7
Actuated g/C Ratio		0.47		0.07	0.58					0.34	0.34	0.34
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2335		249	2942					565	567	936
v/s Ratio Prot		c0.48		c0.07	0.27					0.23	0.23	
v/s Ratio Perm												c0.34
v/c Ratio		1.03		0.90	0.47					0.68	0.67	1.01
Uniform Delay, d ₁		38.8		66.7	17.7					41.5	41.3	48.1
Progression Factor		0.48		0.72	1.31					1.00	1.00	1.00
Incremental Delay, d ₂		24.2		16.7	0.2					2.7	2.4	33.1
Delay (s)		42.9		64.5	23.5					44.2	43.7	81.2
Level of Service		D		E	C					D	D	F
Approach Delay (s)		42.9			29.2			0.0			65.1	
Approach LOS		D			C			A			E	

Intersection Summary

HCM Average Control Delay	45.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour



























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	2890	1580	750	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	3108	1699	806	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		515	937			
pX, platoon unblocked	0.72				0.69	0.72
vC, conflicting volume	2505				2735	566
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1725				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	260				701	779

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	1036	1036	1036	566	566	566	806
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	806
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.61	0.61	0.61	0.33	0.33	0.33	0.47
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							
Approach Delay (s)	0.0			0.0			
Approach LOS							

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		88.7%	ICU Level of Service E
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	1350	1200	60	1700	110	500	120	200	250	160	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	4.0	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.99	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1610	3137		1681	1749	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.99	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1610	3137		1681	1749	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	1421	1263	63	1789	116	526	126	211	263	168	137
RTOR Reduction (vph)	0	0	0	0	0	34	0	53	0	0	0	119
Lane Group Flow (vph)	263	1421	1263	63	1789	82	295	515	0	210	221	18
Turn Type	Prot		Free	Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			Free			2						4
Actuated Green, G (s)	22.4	69.9	145.0	6.5	54.0	54.0	27.8	27.8		19.3	19.3	19.3
Effective Green, g (s)	22.4	69.9	145.0	6.5	54.0	54.0	27.8	27.8		19.3	19.3	19.3
Actuated g/C Ratio	0.15	0.48	1.00	0.04	0.37	0.37	0.19	0.19		0.13	0.13	0.13
Clearance Time (s)	5.6	5.7		5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9		2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	273	1706	1583	79	1894	590	309	601		224	233	211
v/s Ratio Prot	0.15	0.40		0.04	c0.35		0.18	0.16		0.12	0.13	
v/s Ratio Perm			c0.80			0.05						0.01
v/c Ratio	0.96	0.83	0.80	0.80	0.94	0.14	0.95	0.86		0.94	0.95	0.09
Uniform Delay, d1	60.9	32.5	0.0	68.6	44.1	30.1	58.0	56.7		62.3	62.4	55.1
Progression Factor	0.95	0.70	1.00	1.00	1.00	1.00	0.75	0.72		1.00	1.00	1.00
Incremental Delay, d2	26.4	2.2	1.9	39.0	11.2	0.5	37.5	10.7		42.2	43.9	0.1
Delay (s)	84.1	25.0	1.9	107.6	55.2	30.6	81.2	51.6		104.4	106.2	55.2
Level of Service	F	C	A	F	E	C	F	D		F	F	E
Approach Delay (s)		20.4			55.5			61.7			93.2	
Approach LOS		C			E			E			F	

Intersection Summary

HCM Average Control Delay	43.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	5.7
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 9: SR-99 NB Ramps & E. Stockton Blvd

























C+P w/ Whitelock Intchg - Mitigations
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	10	60	20	40	40	260	410	20	80	720	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1625			1832	1583	1770	3513		1770	1863	1583
Flt Permitted	0.95	0.97			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1625			1832	1583	1770	3513		1770	1863	1583
Peak-hour factor, PHF	0.97	0.92	0.97	0.92	0.92	0.92	0.97	0.97	0.92	0.92	0.97	0.97
Adj. Flow (vph)	268	11	62	22	43	43	268	423	22	87	742	649
RTOR Reduction (vph)	0	15	0	0	0	40	0	2	0	0	0	158
Lane Group Flow (vph)	174	152	0	0	65	3	268	443	0	87	742	491
Turn Type	Split			Split		Perm	Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases						8						6
Actuated Green, G (s)	17.8	17.8			9.9	9.9	22.8	84.2		11.1	72.5	90.3
Effective Green, g (s)	17.8	17.8			9.9	9.9	22.8	84.2		11.1	72.5	90.3
Actuated g/C Ratio	0.12	0.12			0.07	0.07	0.16	0.58		0.08	0.50	0.62
Clearance Time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	206	199			125	108	278	2040		135	932	986
v/s Ratio Prot	c0.10	0.09			c0.04		c0.15	0.13		0.05	c0.40	0.06
v/s Ratio Perm						0.00						0.25
v/c Ratio	0.84	0.76			0.52	0.03	0.96	0.22		0.64	0.80	0.50
Uniform Delay, d1	62.2	61.6			65.3	63.1	60.7	14.6		65.0	30.1	15.0
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.18	0.88	0.82
Incremental Delay, d2	24.9	14.5			1.8	0.0	43.6	0.0		4.4	4.1	0.1
Delay (s)	87.2	76.0			67.0	63.1	104.3	14.6		81.2	30.5	12.4
Level of Service	F	E			E	E	F	B		F	C	B
Approach Delay (s)		81.7			65.5			48.3			25.5	
Approach LOS		F			E			D			C	

Intersection Summary		
HCM Average Control Delay	40.6	HCM Level of Service D
HCM Volume to Capacity ratio	0.81	
Actuated Cycle Length (s)	145.0	Sum of lost time (s) 22.0
Intersection Capacity Utilization	82.0%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
21: Kammerer Rd & Promenade Pkwy

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	1600	190	410	1350	890	60	40	450	990	180	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	4.0	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	0.97	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	3433	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	3433	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	202	1702	202	436	1436	947	64	43	479	1053	191	170
RTOR Reduction (vph)	0	0	147	0	0	0	0	0	130	0	0	104
Lane Group Flow (vph)	202	1702	55	436	1436	947	64	43	349	1053	191	66
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			Free			4			8
Actuated Green, G (s)	10.4	42.6	42.6	19.3	51.5	156.9	8.4	37.7	37.7	31.8	60.6	60.6
Effective Green, g (s)	10.4	42.6	42.6	19.3	51.5	156.9	8.4	37.7	37.7	31.8	60.6	60.6
Actuated g/C Ratio	0.07	0.27	0.27	0.12	0.33	1.00	0.05	0.24	0.24	0.20	0.39	0.39
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7		6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	228	1740	430	422	1669	2787	95	448	380	1011	1367	611
v/s Ratio Prot	0.06	c0.27		c0.13	c0.28		0.04	0.02		c0.21	0.05	
v/s Ratio Perm			0.03			0.34			c0.22			0.04
v/c Ratio	0.89	0.98	0.13	1.03	0.86	0.34	0.67	0.10	0.92	1.04	0.14	0.11
Uniform Delay, d1	72.7	56.7	43.1	68.8	49.3	0.0	72.9	46.3	58.1	62.6	31.2	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	30.3	16.4	0.0	52.6	4.6	0.3	13.8	0.0	26.1	39.7	0.0	0.0
Delay (s)	102.9	73.1	43.2	121.4	54.0	0.3	86.7	46.4	84.3	102.3	31.3	30.9
Level of Service	F	E	D	F	D	A	F	D	F	F	C	C
Approach Delay (s)		73.1			46.4			81.7			84.1	
Approach LOS		E			D			F			F	

Intersection Summary

HCM Average Control Delay	65.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	156.9	Sum of lost time (s)	32.2
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			













HCM Signalized Intersection Capacity Analysis
22: Grant Line Rd & SR-99 SB Off-ramp

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↖	↕	↗
Volume (vph)	0	2550	490	0	2120	700	0	0	0	330	0	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.87	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1462	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1462	1504
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2656	510	0	2208	729	0	0	0	344	0	552
RTOR Reduction (vph)	0	0	143	0	0	0	0	0	0	0	3	3
Lane Group Flow (vph)	0	2656	367	0	2208	729	0	0	0	310	290	290
Turn Type			Perm			Free				Split		Perm
Protected Phases		6			2					8	8	
Permitted Phases			6			Free						8
Actuated Green, G (s)		67.2	67.2		67.2	106.2				26.7	26.7	26.7
Effective Green, g (s)		67.2	67.2		67.2	106.2				26.7	26.7	26.7
Actuated g/C Ratio		0.63	0.63		0.63	1.00				0.25	0.25	0.25
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		3218	1002		3218	1583				423	368	378
v/s Ratio Prot		c0.52			0.43					0.18	c0.20	
v/s Ratio Perm			0.23			0.46						0.19
v/c Ratio		0.83	0.37		0.69	0.46				0.73	0.79	0.77
Uniform Delay, d1		15.0	9.3		12.7	0.0				36.5	37.1	36.9
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		1.9	0.3		0.7	1.0				5.6	9.9	8.2
Delay (s)		16.9	9.6		13.3	1.0				42.1	47.0	45.0
Level of Service		B	A		B	A				D	D	D
Approach Delay (s)		15.7			10.3			0.0			44.6	
Approach LOS		B			B			A			D	
Intersection Summary												
HCM Average Control Delay			17.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			106.2			Sum of lost time (s)			12.3			
Intersection Capacity Utilization			74.1%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												





























HCM Signalized Intersection Capacity Analysis
23: Grant Line Rd & SR-99 NB On-ramp

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑	↑	↑↑			
Volume (vph)	0	2250	630	0	2340	480	480	0	660	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	4.0		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2446	685	0	2543	522	522	0	717	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	164	0	0	2	0	0	0
Lane Group Flow (vph)	0	2446	685	0	2543	358	261	261	715	0	0	0
Turn Type			Free			Perm	Split		Perm			
Protected Phases		6			2		4	4				
Permitted Phases			Free			2			4			
Actuated Green, G (s)		64.5	110.2		65.0	65.0	34.9	34.9	34.9			
Effective Green, g (s)		64.5	110.2		65.0	65.0	34.9	34.9	34.9			
Actuated g/C Ratio		0.59	1.00		0.59	0.59	0.32	0.32	0.32			
Clearance Time (s)		6.2			5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0			4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2976	1583		2999	934	532	532	883			
v/s Ratio Prot		0.48			c0.50		0.16	0.16				
v/s Ratio Perm			0.43			0.23			c0.26			
v/c Ratio		0.82	0.43		0.85	0.38	0.49	0.49	0.81			
Uniform Delay, d1		18.3	0.0		18.5	12.0	30.5	30.5	34.6			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		2.0	0.9		2.5	0.4	0.3	0.3	5.2			
Delay (s)		20.3	0.9		21.1	12.3	30.7	30.7	39.8			
Level of Service		C	A		C	B	C	C	D			
Approach Delay (s)		16.0			19.6			36.0			0.0	
Approach LOS		B			B			D			A	
Intersection Summary												
HCM Average Control Delay			20.8				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			110.2				Sum of lost time (s)		10.3			
Intersection Capacity Utilization			75.6%				ICU Level of Service		D			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
24: Grant Line Rd & Stockton Blvd

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour

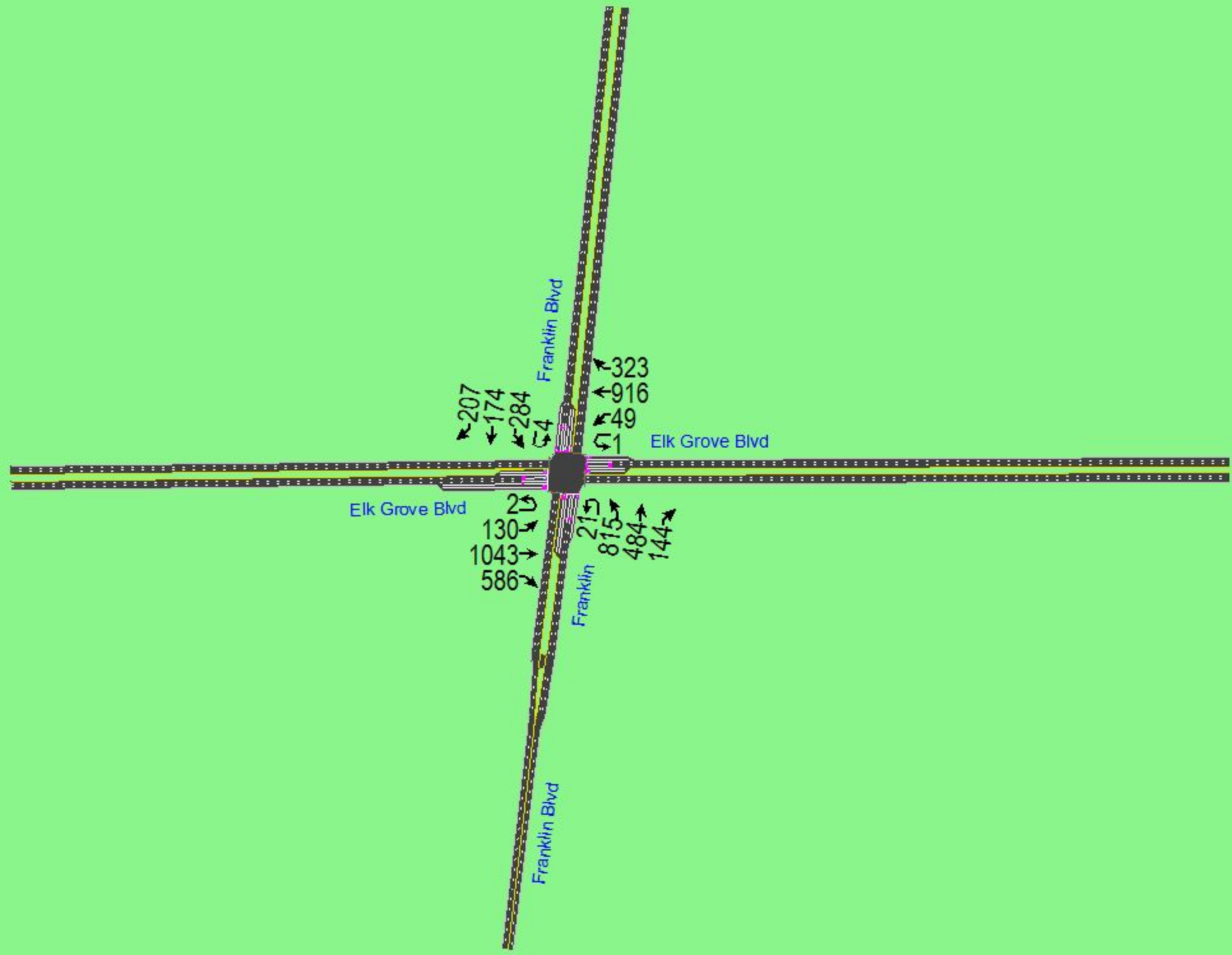
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		 					
Volume (vph)	590	2080	160	40	2070	120	290	30	30	110	20	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.86		0.97	1.00		1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.93		1.00	0.86	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	1770	6355		3433	1723		1770	1526	1504
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	1770	6355		3433	1723		1770	1526	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	641	2261	174	43	2250	130	315	33	33	120	22	500
RTOR Reduction (vph)	0	0	81	0	4	0	0	26	0	0	199	199
Lane Group Flow (vph)	641	2261	93	43	2376	0	315	40	0	120	63	61
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6									8
Actuated Green, G (s)	18.7	57.2	57.2	4.0	42.5		15.5	13.7		15.3	13.5	13.5
Effective Green, g (s)	18.7	57.2	57.2	4.0	42.5		15.5	13.7		15.3	13.5	13.5
Actuated g/C Ratio	0.16	0.50	0.50	0.04	0.37		0.14	0.12		0.13	0.12	0.12
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	565	2558	796	62	2375		468	208		238	181	179
v/s Ratio Prot	c0.19	0.44		0.02	c0.37		c0.09	0.02		0.07	c0.04	
v/s Ratio Perm			0.06									0.04
v/c Ratio	1.13	0.88	0.12	0.69	1.00		0.67	0.19		0.50	0.35	0.34
Uniform Delay, d1	47.5	25.3	14.9	54.2	35.6		46.7	45.0		45.7	46.0	46.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	80.7	4.0	0.1	23.7	18.5		3.8	0.4		0.6	0.4	0.4
Delay (s)	128.2	29.3	15.0	77.9	54.1		50.5	45.5		46.3	46.5	46.4
Level of Service	F	C	B	E	D		D	D		D	D	D
Approach Delay (s)		49.1			54.6			49.6			46.4	
Approach LOS		D			D			D			D	

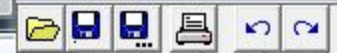
Intersection Summary

HCM Average Control Delay	50.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	113.7	Sum of lost time (s)	17.6
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

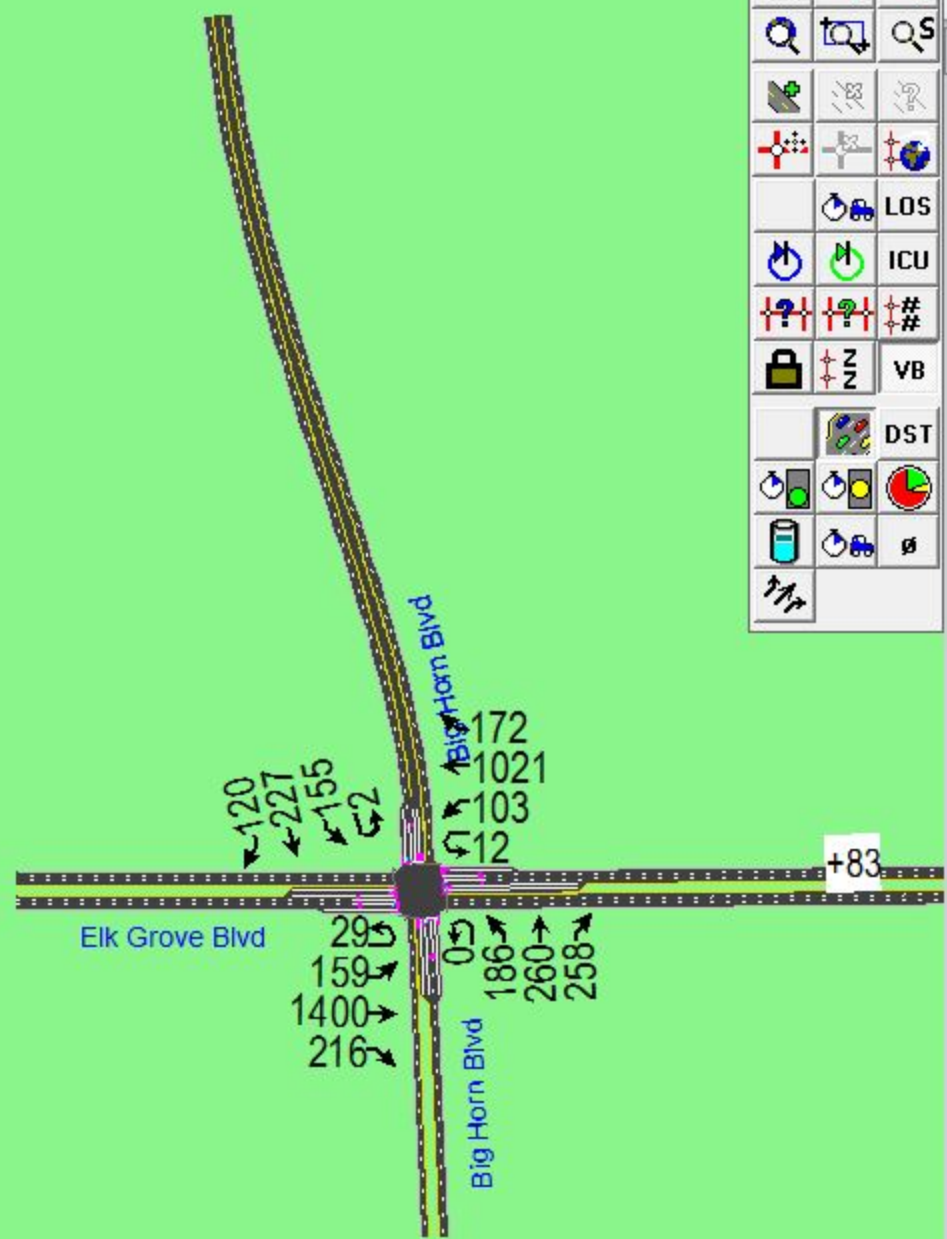
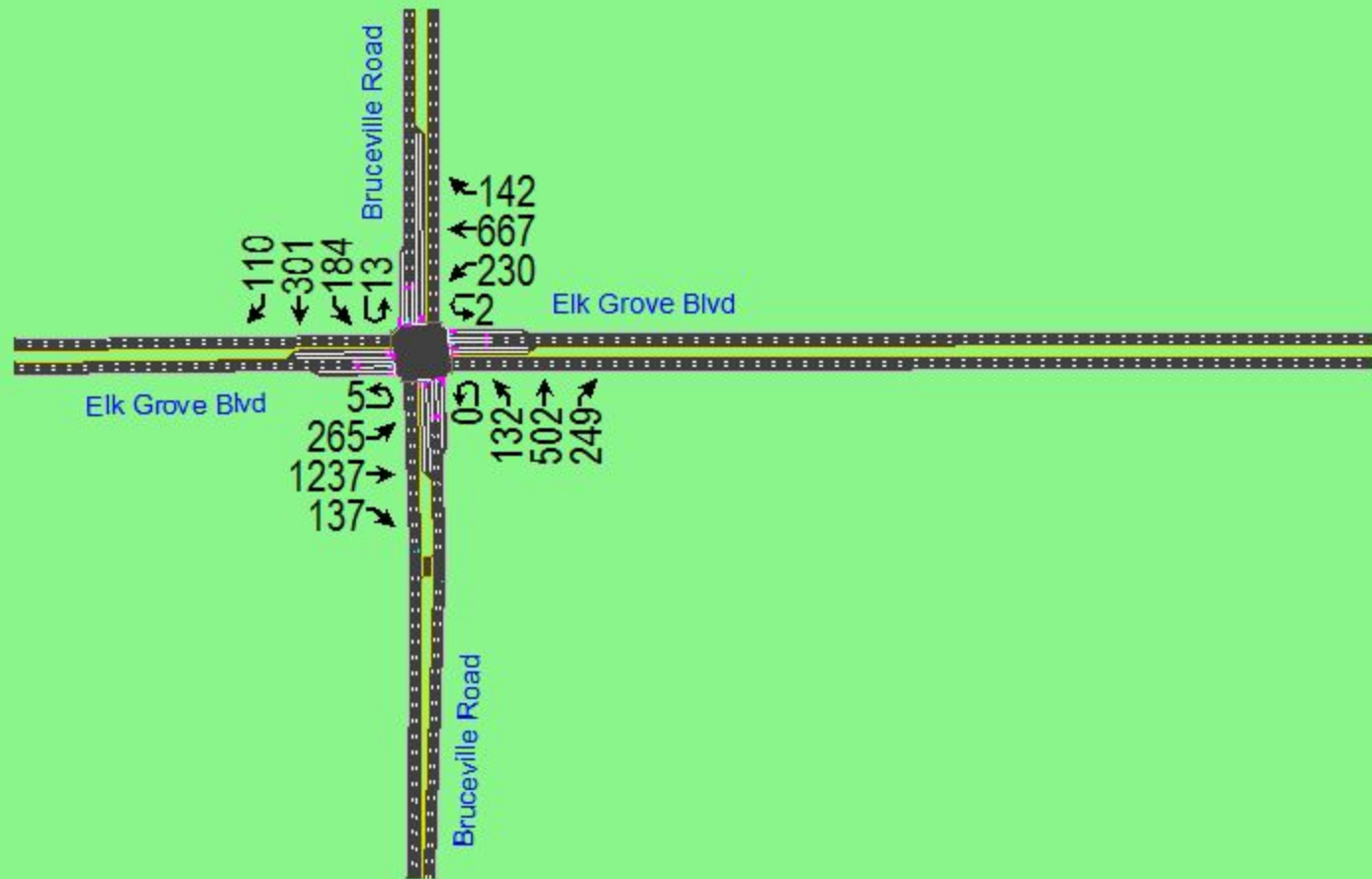
Existing Conditions

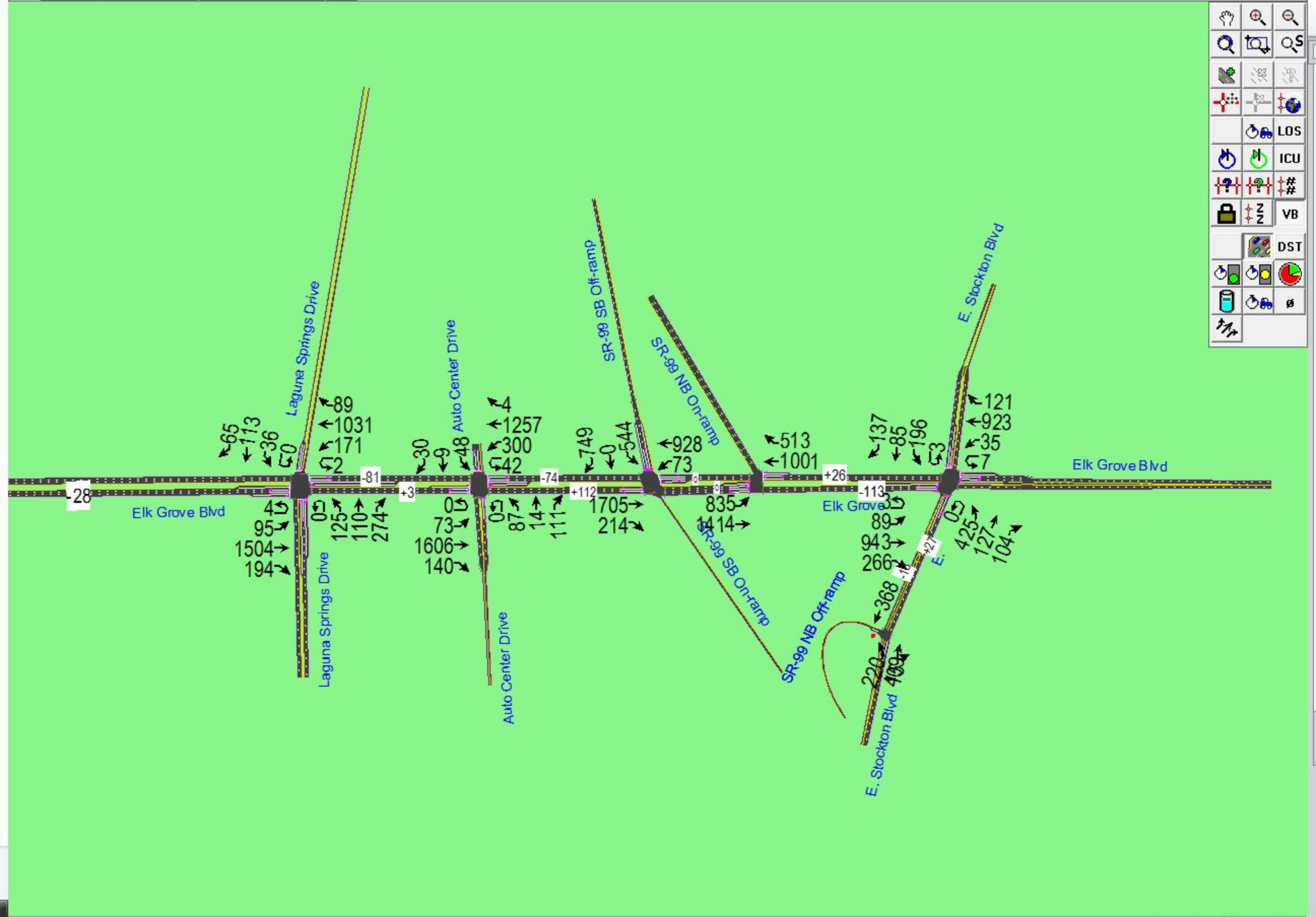
Right-side toolbar containing various icons for navigation and analysis, including zoom in/out, pan, and specific analysis tool icons.





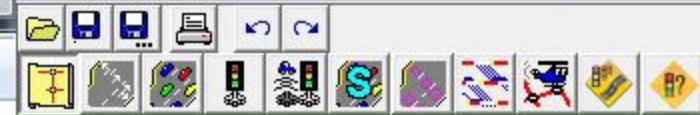
none





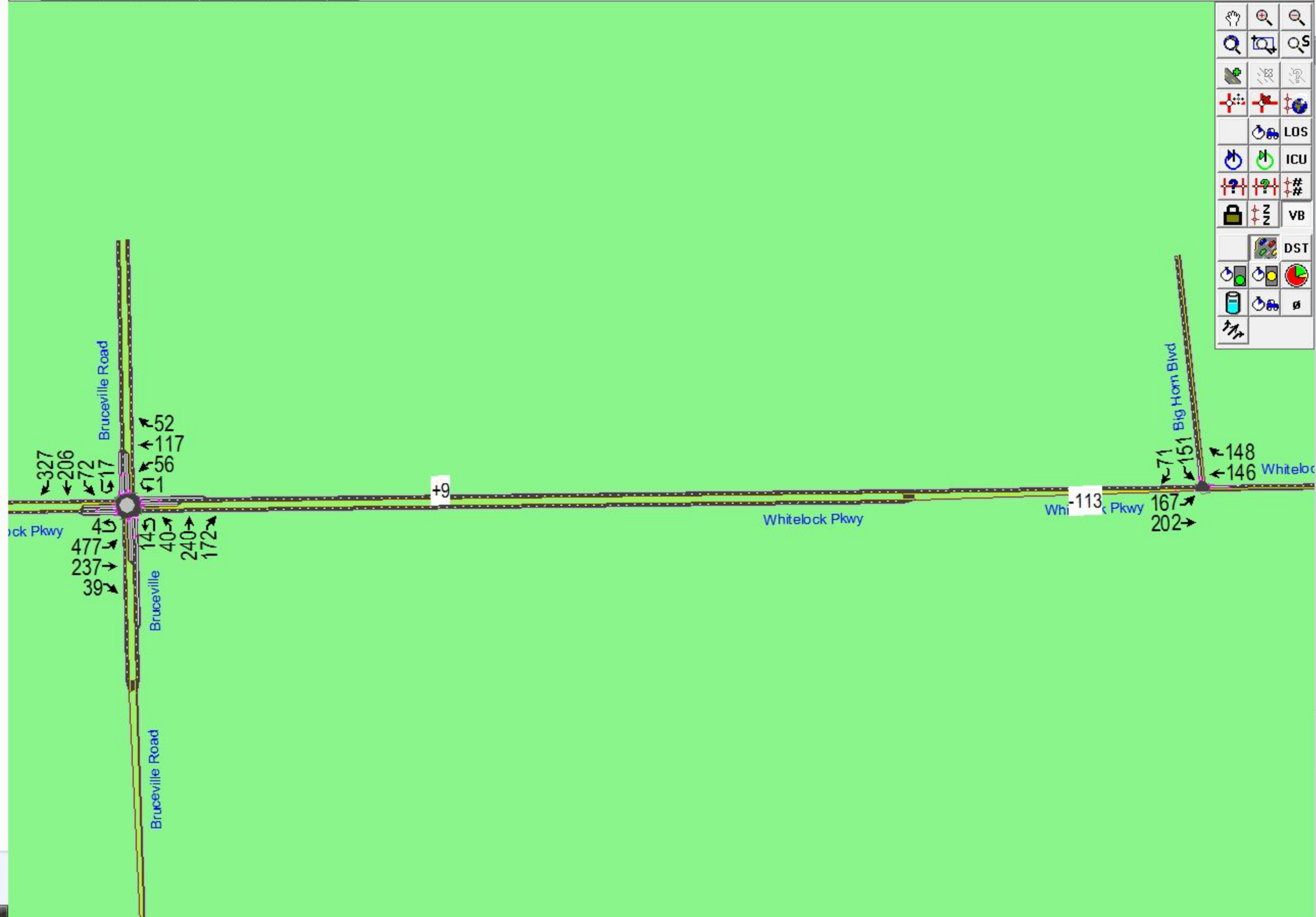
Control Panel

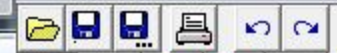
- Hand icon
- Zoom in (+)
- Zoom out (-)
- Search (S)
- Refresh
- Reset
- Global Settings
- LOS
- ICU
- #
- VB
- DST
- Other icons



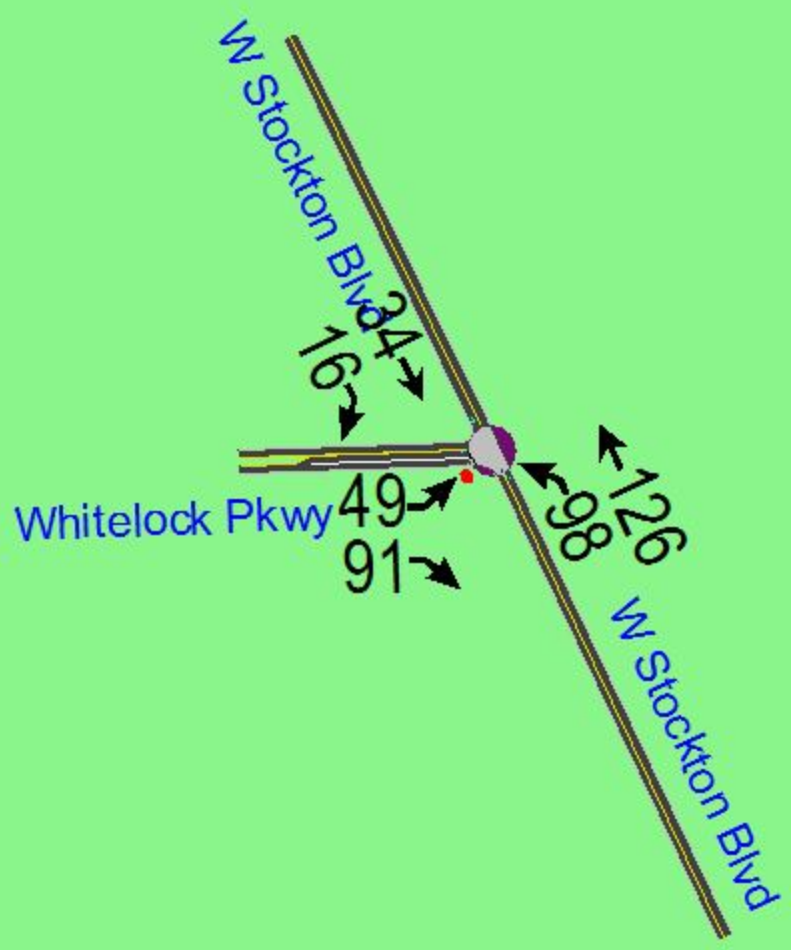
10 Whitelock Pkwy & Bruceville Road

- Hand icon
- Zoom in icon
- Zoom out icon
- Search icon
- Simulation control icons
- LOS (Level of Service)
- ICU (Incident Clearance Unit)
- # (Number of lanes)
- VB (Vehicle type)
- DST (Distributed Traffic)
- Vehicle icons (car, truck, bus)

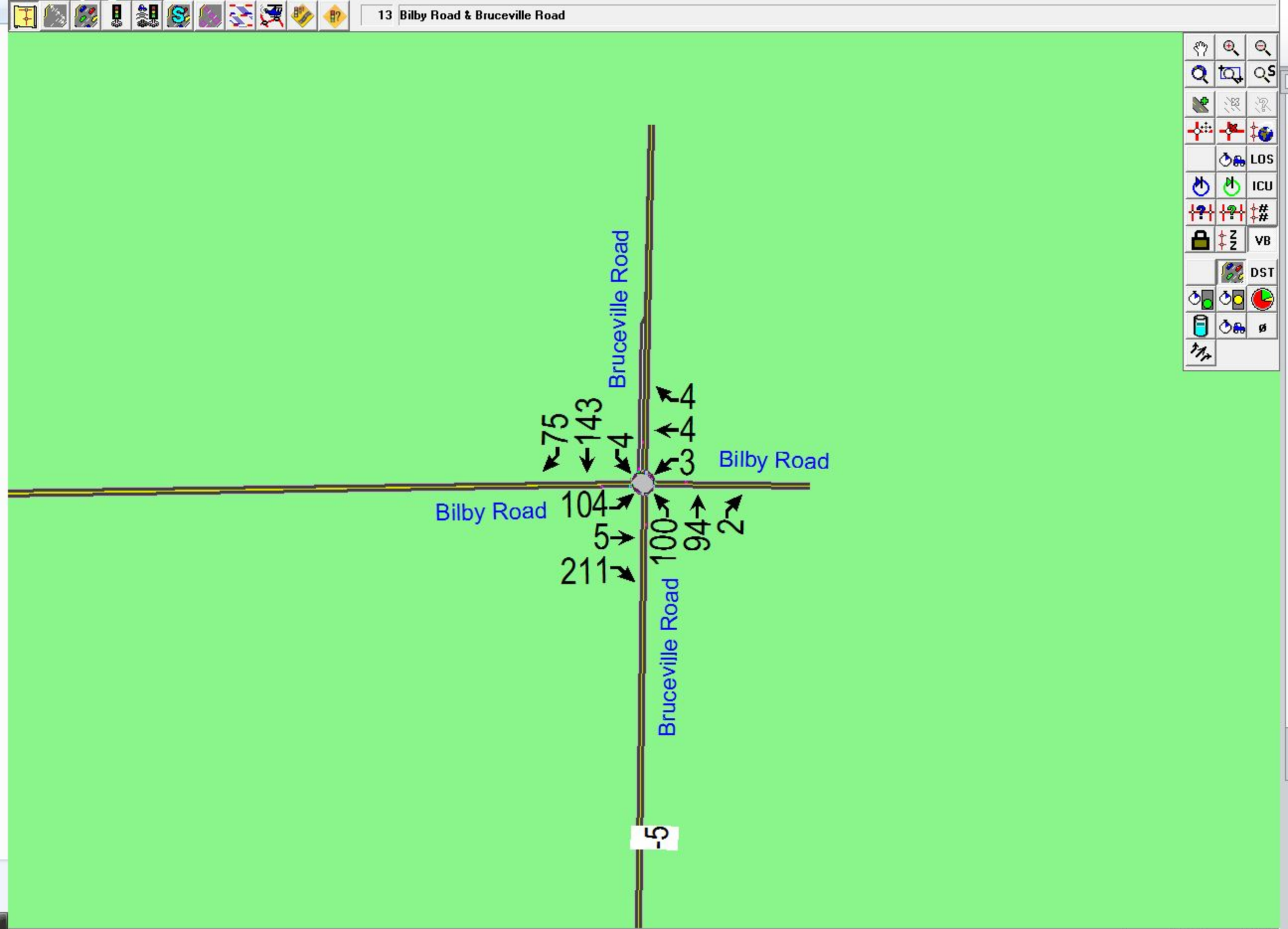




12 Whitelock Pkwy & W Stockton Blvd

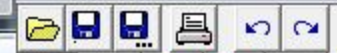


		LOS
		ICU
		#
		#
		VB
		DST



Toolbox containing various simulation and analysis tools:

- Navigation: Hand, Zoom In, Zoom Out, Search.
- Simulation: Start, Stop, Pause, Play, Step Forward, Step Backward.
- Analysis: LOS, ICU, #, #, VB, DST.
- Other: Lock, Unlock, Refresh, Erase, Copy, Paste.

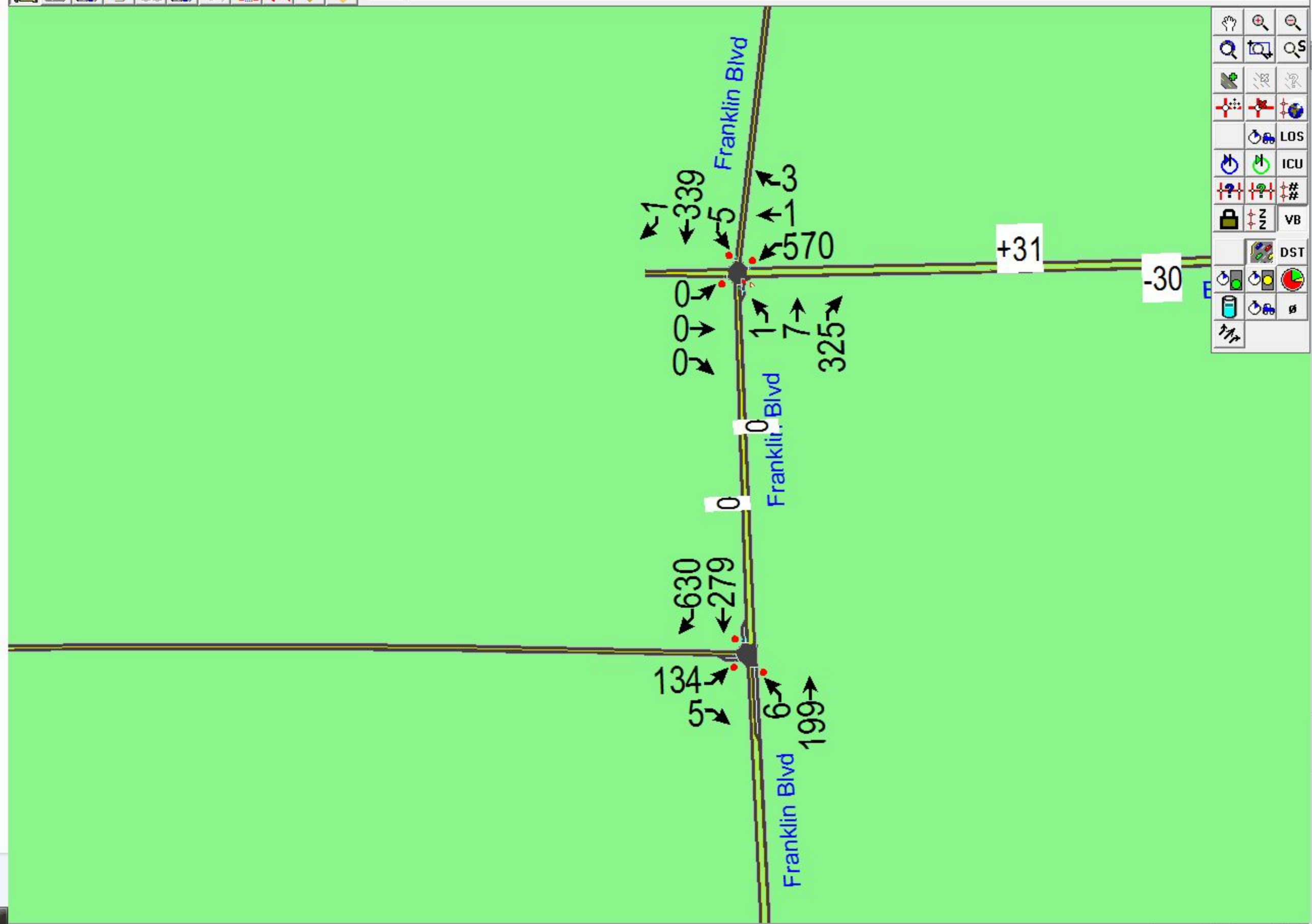


14 Hood Franklin Road & I-5 SB Off-ramp





14 Hood Franklin Road & I-5 SB Off-ramp

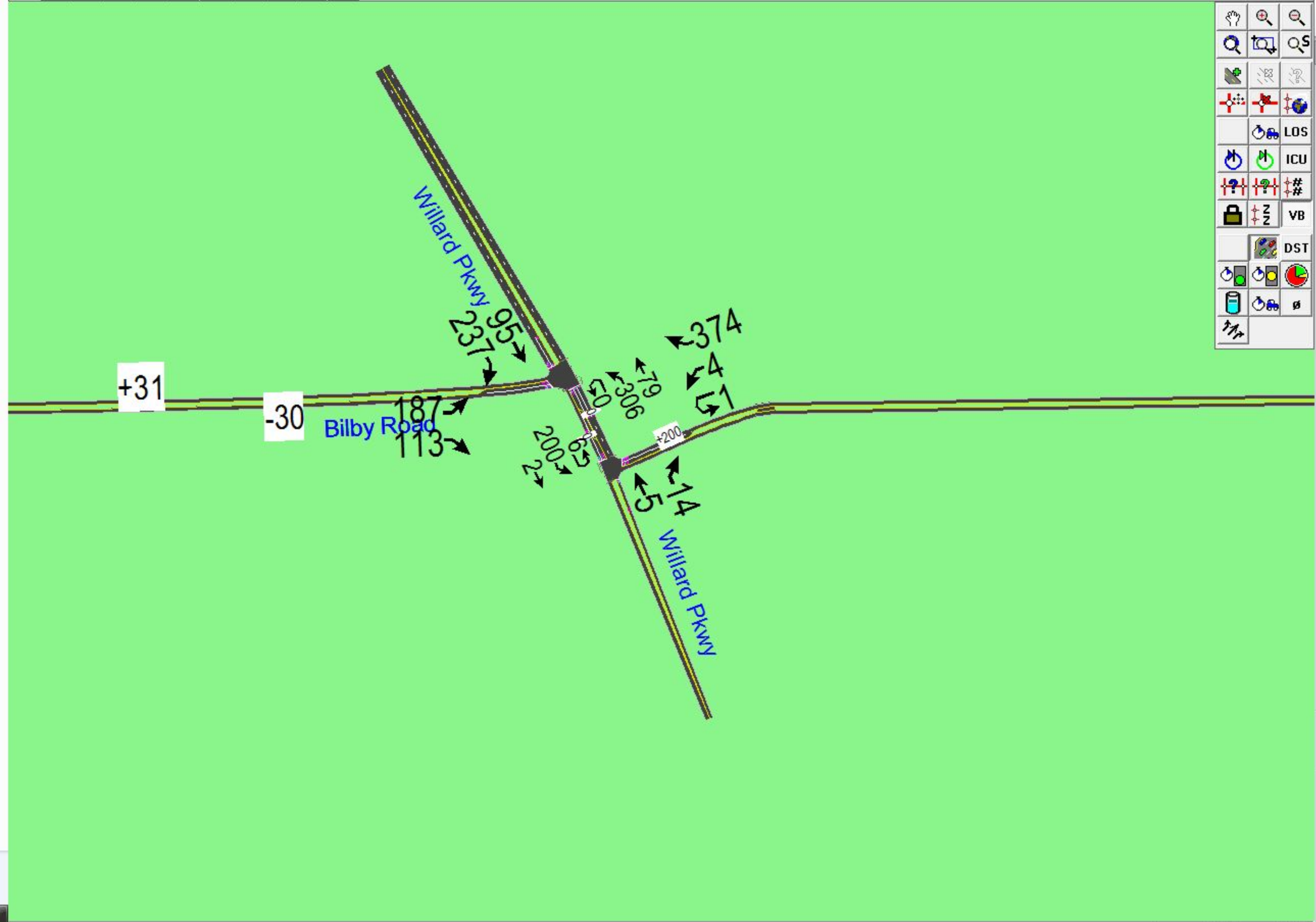


A vertical toolbar on the right side of the interface contains various simulation and analysis tools. The tools are organized into several sections:

- Navigation:** Includes icons for pan, zoom in, zoom out, and search.
- Simulation:** Includes icons for simulation control, LOS (Level of Service), ICU (Incident Clearance Unit), and VB (Vehicle Buffer).
- Analysis:** Includes icons for DST (Distance Traveled) and other performance metrics.



14 Hood Franklin Road & I-5 SB Off-ramp

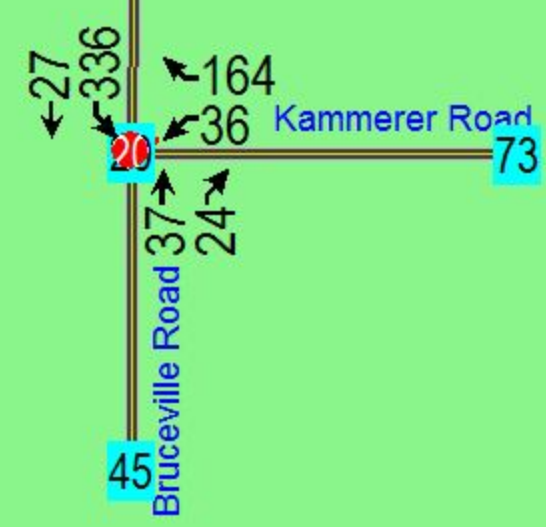


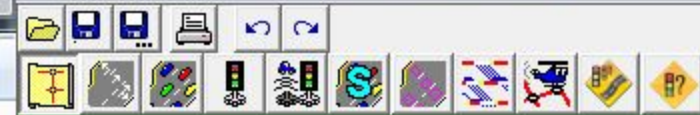
Vertical toolbar containing icons for simulation parameters and analysis tools:

- Hand icon
- Zoom in/out icons
- Simulation control icons (play, stop, refresh)
- LOS (Level of Service) icon
- ICU (Incident Clearance Unit) icon
- Queue length icons (#)
- VB (Vehicle Buffer) icon
- DST (Driver Satisfaction) icon
- Other simulation parameters icons

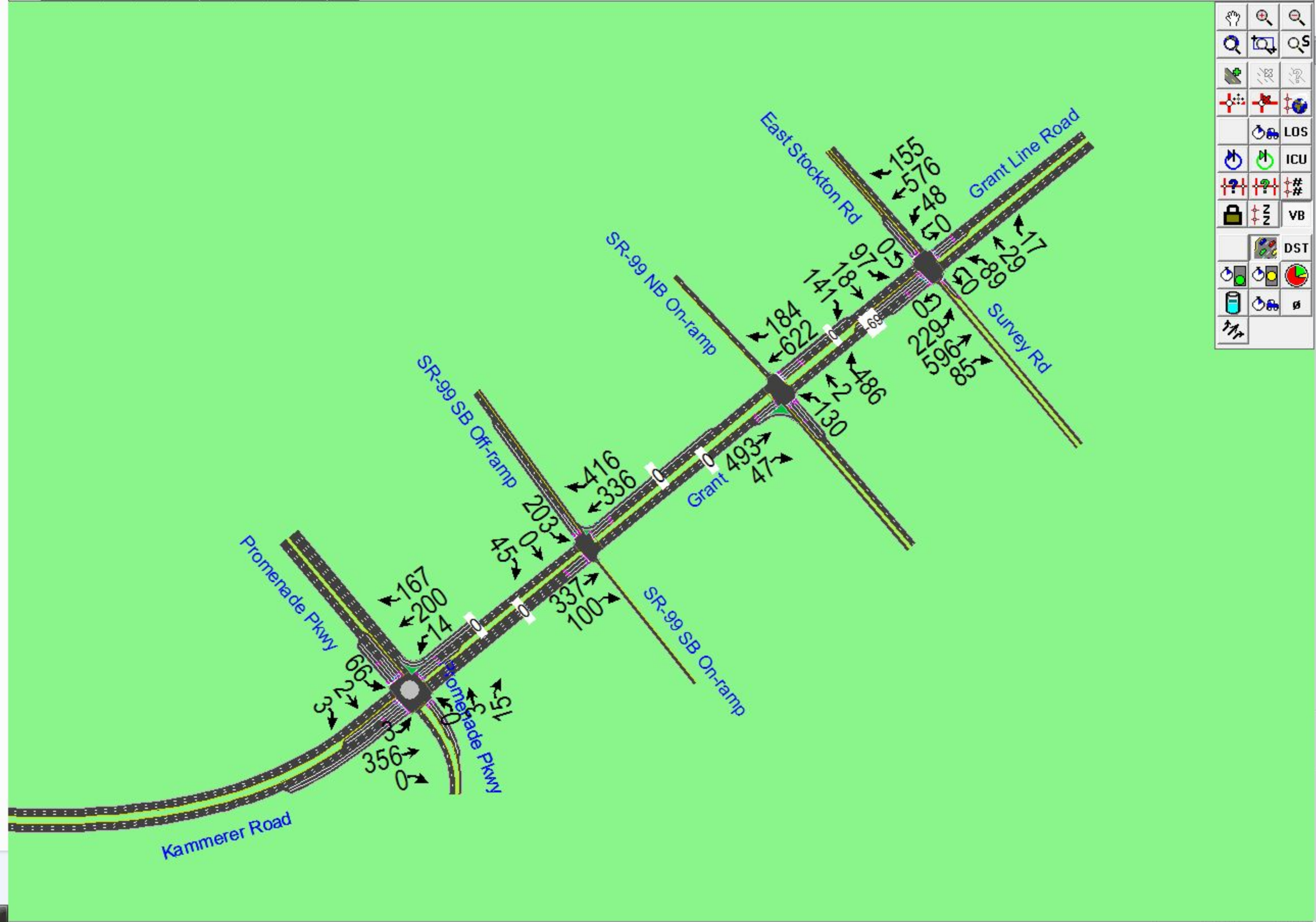


20 Kammerer Road & Bruceville Road

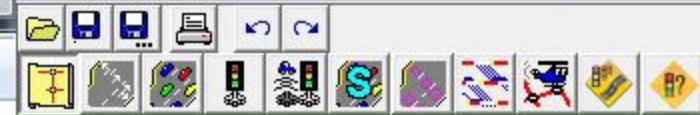




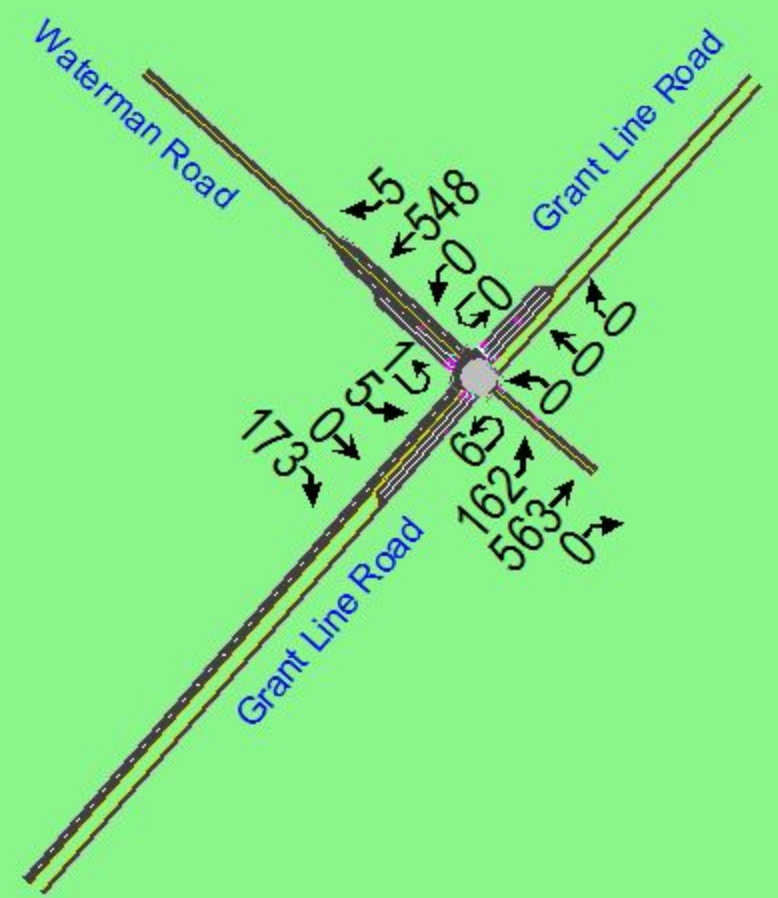
21 Kammerer Road & Promenade Pkwy



- Hand icon
- Zoom in icon
- Zoom out icon
- Search icon
- Simulation control icons
- LOS (Level of Service)
- ICU (Incident Control Unit)
- VB (Vehicle Buffer)
- DST (Dynamic Simulation Tool)

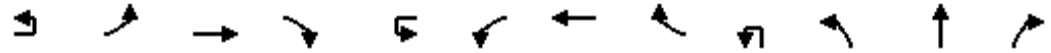


25 Grant Line Road & Waterman Road



HCM Signalized Intersection Capacity Analysis
1: Elk Grove Blvd & Franklin Blvd

Existing Conditions
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↔	↑↑↑	↔↔		↔↔	↑↑↑	↔		↔↔	↑↑↑	↔
Volume (vph)	2	130	1043	586	1	49	916	323	21	815	484	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.8	6.8		5.6	7.2	7.2		5.6	7.2	7.2
Lane Util. Factor		0.97	0.91	0.88		0.97	0.91	1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00	1.00	0.99		1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (prot)		3433	5085	2752		3433	5085	1583		3433	5085	1561
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	2752		3433	5085	1583		3433	5085	1561
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	144	1159	651	1	54	1018	359	23	906	538	160
RTOR Reduction (vph)	0	0	0	399	0	0	0	190	0	0	0	122
Lane Group Flow (vph)	0	146	1159	252	0	55	1018	169	0	929	538	38
Confl. Bikes (#/hr)				1								2
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot	Prot		Perm
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases				6				2				8
Actuated Green, G (s)		9.5	46.5	46.5		5.4	42.0	42.0		34.4	28.3	28.3
Effective Green, g (s)		9.5	46.5	46.5		5.4	42.0	42.0		34.4	28.3	28.3
Actuated g/C Ratio		0.08	0.39	0.39		0.05	0.35	0.35		0.29	0.24	0.24
Clearance Time (s)		5.6	6.8	6.8		5.6	7.2	7.2		5.6	7.2	7.2
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		272	1970	1066		154	1780	554		984	1199	368
v/s Ratio Prot		c0.04	c0.23			0.02	0.20			c0.27	c0.11	
v/s Ratio Perm				0.09				0.11				0.02
v/c Ratio		0.54	0.59	0.24		0.36	0.57	0.30		0.94	0.45	0.10
Uniform Delay, d1		53.1	29.2	24.8		55.6	31.7	28.4		41.9	39.2	35.9
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.0	1.3	0.5		0.5	1.3	1.4		16.6	0.1	0.0
Delay (s)		54.2	30.5	25.3		56.1	33.0	29.8		58.5	39.3	35.9
Level of Service		D	C	C		E	C	C		E	D	D
Approach Delay (s)			30.5				33.1				49.9	
Approach LOS			C				C				D	

Intersection Summary		
HCM Average Control Delay	39.8	HCM Level of Service D
HCM Volume to Capacity ratio	0.68	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 18.0
Intersection Capacity Utilization	79.1%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 1: Elk Grove Blvd & Franklin Blvd

Existing Conditions
 AM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		↔↔	↑↑↑	↔
Volume (vph)	4	284	174	207
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		5.6	6.3	6.3
Lane Util. Factor		0.97	0.91	1.00
Frbp, ped/bikes		1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	5085	1583
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	316	193	230
RTOR Reduction (vph)	0	0	0	212
Lane Group Flow (vph)	0	320	193	18
Confl. Bikes (#/hr)				
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		14.6	9.4	9.4
Effective Green, g (s)		14.6	9.4	9.4
Actuated g/C Ratio		0.12	0.08	0.08
Clearance Time (s)		5.6	6.3	6.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		418	398	124
v/s Ratio Prot		0.09	0.04	
v/s Ratio Perm				0.01
v/c Ratio		0.77	0.48	0.15
Uniform Delay, d1		51.0	53.0	51.6
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		7.4	0.3	0.2
Delay (s)		58.4	53.3	51.8
Level of Service		E	D	D
Approach Delay (s)			55.0	
Approach LOS			E	
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

2: Elk Grove Blvd & Bruceville Road

Existing Conditions
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↘ ↙	↑ ↑ ↑	↗		↘ ↙	↑ ↑ ↑	↗	↘ ↙	↑ ↑ ↑	↗	
Volume (vph)	5	265	1237	137	2	230	667	142	132	502	249	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.0	6.0		5.6	6.0	6.0	5.6	5.7	5.7	
Lane Util. Factor		0.97	0.91	1.00		0.97	0.91	1.00	0.97	0.91	1.00	
Frbp, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98	
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)		3433	5085	1583		3433	5085	1583	3433	5085	1558	
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)		3433	5085	1583		3433	5085	1583	3433	5085	1558	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	6	312	1455	161	2	271	785	167	155	591	293	15
RTOR Reduction (vph)	0	0	0	62	0	0	0	97	0	0	237	0
Lane Group Flow (vph)	0	318	1455	99	0	273	785	70	155	591	56	0
Confl. Bikes (#/hr)												3
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot		Perm	Prot
Protected Phases	1	1	6		5	5	2		3	8		7
Permitted Phases				6				2			8	
Actuated Green, G (s)		14.6	51.1	51.1		13.6	50.1	50.1	9.8	20.0	20.0	
Effective Green, g (s)		14.6	51.1	51.1		13.6	50.1	50.1	9.8	20.0	20.0	
Actuated g/C Ratio		0.12	0.43	0.43		0.11	0.42	0.42	0.08	0.17	0.17	
Clearance Time (s)		5.6	6.0	6.0		5.6	6.0	6.0	5.6	5.7	5.7	
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)		418	2165	674		389	2123	661	280	848	260	
v/s Ratio Prot		c0.09	c0.29			0.08	0.15		0.05	c0.12		
v/s Ratio Perm				0.06				0.04			0.04	
v/c Ratio		0.76	0.67	0.15		0.70	0.37	0.11	0.55	0.70	0.22	
Uniform Delay, d1		51.0	27.7	21.1		51.2	24.1	21.3	53.0	47.1	43.2	
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		7.2	1.7	0.5		4.6	0.5	0.3	1.3	2.0	0.2	
Delay (s)		58.2	29.4	21.6		55.9	24.6	21.6	54.3	49.2	43.4	
Level of Service		E	C	C		E	C	C	D	D	D	
Approach Delay (s)			33.5				31.1			48.3		
Approach LOS			C				C			D		

Intersection Summary

HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.6
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: Elk Grove Blvd & Bruceville Road

Existing Conditions
AM Peak Hour

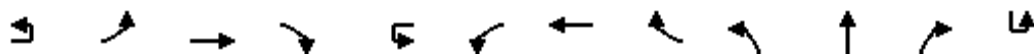


Movement	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↔	↔
Volume (vph)	184	301	110
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7
Lane Util. Factor	0.97	0.86	0.86
Frbp, ped/bikes	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	0.99	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3433	4764	1362
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3433	4764	1362
Peak-hour factor, PHF	0.85	0.85	0.85
Adj. Flow (vph)	216	354	129
RTOR Reduction (vph)	0	6	87
Lane Group Flow (vph)	231	370	20
Confl. Bikes (#/hr)			
Turn Type	Prot		Perm
Protected Phases	7	4	
Permitted Phases			4
Actuated Green, G (s)	12.4	22.6	22.6
Effective Green, g (s)	12.4	22.6	22.6
Actuated g/C Ratio	0.10	0.19	0.19
Clearance Time (s)	5.6	5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	355	897	257
v/s Ratio Prot	c0.07	c0.08	
v/s Ratio Perm			0.01
v/c Ratio	0.65	0.41	0.08
Uniform Delay, d1	51.7	42.9	40.1
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	3.2	0.1	0.0
Delay (s)	55.0	43.0	40.2
Level of Service	D	D	D
Approach Delay (s)		46.4	
Approach LOS		D	
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

3: Elk Grove Blvd & Big Horn Blvd

Existing Conditions
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↘ ↙	↑ ↑ ↑	↗		↘ ↙	↑ ↑ ↑	↗	↘ ↙	↑ ↑	↗	
Volume (vph)	29	159	1400	216	12	103	1021	172	186	260	258	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	5.7	5.7		6.7	5.7	5.7	6.3	5.3	5.3	
Lane Util. Factor		0.97	0.91	1.00		0.97	0.91	1.00	0.97	0.95	1.00	
Frbp, ped/bikes		1.00	1.00	1.00		1.00	1.00	0.99	1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)		3433	5085	1583		3433	5085	1564	3433	3539	1583	
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)		3433	5085	1583		3433	5085	1564	3433	3539	1583	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	36	199	1750	270	15	129	1276	215	232	325	322	2
RTOR Reduction (vph)	0	0	0	75	0	0	0	82	0	0	210	0
Lane Group Flow (vph)	0	235	1750	195	0	144	1276	133	232	325	112	0
Confl. Bikes (#/hr)								1				
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot		Perm	Prot
Protected Phases	1	1	6		5	5	2		3	8		7
Permitted Phases				6				2			8	
Actuated Green, G (s)		12.3	57.9	57.9		9.4	55.0	55.0	12.4	17.5	17.5	
Effective Green, g (s)		12.3	57.9	57.9		9.4	55.0	55.0	12.4	17.5	17.5	
Actuated g/C Ratio		0.10	0.48	0.48		0.08	0.46	0.46	0.10	0.15	0.15	
Clearance Time (s)		6.7	5.7	5.7		6.7	5.7	5.7	6.3	5.3	5.3	
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)		352	2454	764		269	2331	717	355	516	231	
v/s Ratio Prot		c0.07	c0.34			0.04	0.25		c0.07	c0.09		
v/s Ratio Perm				0.12				0.08			0.07	
v/c Ratio		0.67	0.71	0.26		0.54	0.55	0.19	0.65	0.63	0.48	
Uniform Delay, d1		51.9	24.5	18.3		53.2	23.5	19.2	51.7	48.2	47.1	
Progression Factor		1.00	1.00	1.00		1.41	0.48	0.10	1.00	1.00	1.00	
Incremental Delay, d2		3.7	1.8	0.8		0.9	0.8	0.5	3.3	1.7	0.6	
Delay (s)		55.6	26.3	19.1		76.0	12.1	2.4	55.0	49.9	47.7	
Level of Service		E	C	B		E	B	A	E	D	D	
Approach Delay (s)			28.5				16.4			50.5		
Approach LOS			C				B			D		

Intersection Summary

HCM Average Control Delay	31.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: Elk Grove Blvd & Big Horn Blvd

Existing Conditions
 AM Peak Hour



Movement	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗
Volume (vph)	155	227	120
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	6.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1538
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1538
Peak-hour factor, PHF	0.80	0.80	0.80
Adj. Flow (vph)	194	284	150
RTOR Reduction (vph)	0	0	130
Lane Group Flow (vph)	196	284	20
Confl. Bikes (#/hr)			10
Turn Type	Prot		Perm
Protected Phases	7	4	
Permitted Phases			4
Actuated Green, G (s)	11.2	16.3	16.3
Effective Green, g (s)	11.2	16.3	16.3
Actuated g/C Ratio	0.09	0.14	0.14
Clearance Time (s)	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	320	481	209
v/s Ratio Prot	0.06	0.08	
v/s Ratio Perm			0.01
v/c Ratio	0.61	0.59	0.10
Uniform Delay, d1	52.3	48.7	45.4
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	2.4	1.3	0.1
Delay (s)	54.8	50.0	45.5
Level of Service	D	D	D
Approach Delay (s)		50.4	
Approach LOS		D	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
4: Elk Grove Blvd & Laguna Springs Drive

Existing Conditions
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		3	↑↑↑	↑		3	↑↑↑		3	↑	↑↑	3
Volume (vph)	4	95	1504	194	2	171	1031	89	125	110	274	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7	5.7		5.6	5.7		5.6	5.3	5.3	5.6
Lane Util. Factor		1.00	0.91	1.00		0.97	0.91		1.00	1.00	0.88	1.00
Frbp, ped/bikes		1.00	1.00	0.99		1.00	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	0.99		1.00	1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00		0.95	1.00	1.00	0.95
Satd. Flow (prot)		1770	5085	1564		3433	5016		1770	1863	2787	1770
Flt Permitted		0.95	1.00	1.00		0.95	1.00		0.95	1.00	1.00	0.95
Satd. Flow (perm)		1770	5085	1564		3433	5016		1770	1863	2787	1770
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	5	116	1834	237	2	209	1257	109	152	134	334	44
RTOR Reduction (vph)	0	0	0	64	0	0	6	0	0	0	278	0
Lane Group Flow (vph)	0	121	1834	173	0	211	1360	0	152	134	56	44
Confl. Bikes (#/hr)				1				1				
Turn Type	Prot	Prot		Perm	Prot	Prot			Prot		Perm	Prot
Protected Phases	1	1	6		5	5	2		3	8		7
Permitted Phases				6							8	
Actuated Green, G (s)		12.3	59.5	59.5		11.7	58.9		14.7	20.0	20.0	6.6
Effective Green, g (s)		12.3	59.5	59.5		11.7	58.9		14.7	20.0	20.0	6.6
Actuated g/C Ratio		0.10	0.50	0.50		0.10	0.49		0.12	0.17	0.17	0.05
Clearance Time (s)		5.6	5.7	5.7		5.6	5.7		5.6	5.3	5.3	5.6
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		181	2521	775		335	2462		217	311	465	97
v/s Ratio Prot		c0.07	c0.36			0.06	0.27		c0.09	c0.07		0.02
v/s Ratio Perm				0.11							0.02	
v/c Ratio		0.67	0.73	0.22		0.63	0.55		0.70	0.43	0.12	0.45
Uniform Delay, d1		51.9	23.9	17.2		52.1	21.3		50.5	44.9	42.5	55.0
Progression Factor		0.66	1.48	1.87		1.42	0.40		1.00	1.00	1.00	1.00
Incremental Delay, d2		5.3	1.4	0.5		2.5	0.8		8.1	0.4	0.0	1.2
Delay (s)		39.4	36.8	32.5		76.4	9.3		58.6	45.2	42.6	56.2
Level of Service		D	D	C		E	A		E	D	D	E
Approach Delay (s)			36.5				18.3			47.1		
Approach LOS			D				B			D		

Intersection Summary

HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.2
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 4: Elk Grove Blvd & Laguna Springs Drive

Existing Conditions
 AM Peak Hour

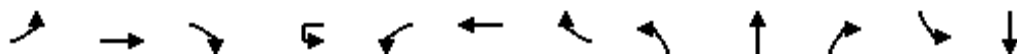


Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	113	65
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.3	
Lane Util. Factor	0.95	
Frbp, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.95	
Flt Protected	1.00	
Satd. Flow (prot)	3320	
Flt Permitted	1.00	
Satd. Flow (perm)	3320	
Peak-hour factor, PHF	0.82	0.82
Adj. Flow (vph)	138	79
RTOR Reduction (vph)	71	0
Lane Group Flow (vph)	146	0
Confl. Bikes (#/hr)		4
Turn Type		
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	11.9	
Effective Green, g (s)	11.9	
Actuated g/C Ratio	0.10	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	329	
v/s Ratio Prot	0.04	
v/s Ratio Perm		
v/c Ratio	0.44	
Uniform Delay, d1	50.9	
Progression Factor	1.00	
Incremental Delay, d2	0.3	
Delay (s)	51.3	
Level of Service	D	
Approach Delay (s)	52.1	
Approach LOS	D	
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

5: Elk Grove Blvd & Auto Center Drive

Existing Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↑↑↑			↔	↑↑↑		↔	↑		↔	↑
Volume (vph)	73	1606	140	42	300	1257	4	87	14	111	48	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7			5.6	5.7		5.6	4.6		5.9	4.9
Lane Util. Factor	1.00	0.91			0.97	0.91		1.00	1.00		0.97	1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	0.99			1.00	1.00		1.00	0.87		1.00	0.89
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	5024			3433	5083		1770	1615		3433	1650
Flt Permitted	0.95	1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1770	5024			3433	5083		1770	1615		3433	1650
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	78	1709	149	45	319	1337	4	93	15	118	51	10
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	111	0	0	30
Lane Group Flow (vph)	78	1852	0	0	364	1341	0	93	22	0	51	12
Confl. Bikes (#/hr)							2					
Turn Type	Prot			Prot	Prot			Prot			Prot	
Protected Phases	1	6		5	5	2		7	4		3	8
Permitted Phases												
Actuated Green, G (s)	8.6	61.9			16.6	69.9		10.6	7.5		12.2	9.1
Effective Green, g (s)	8.6	61.9			16.6	69.9		10.6	7.5		12.2	9.1
Actuated g/C Ratio	0.07	0.52			0.14	0.58		0.09	0.06		0.10	0.08
Clearance Time (s)	5.6	5.7			5.6	5.7		5.6	4.6		5.9	4.9
Vehicle Extension (s)	2.0	2.0			2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	127	2592			475	2961		156	101		349	125
v/s Ratio Prot	0.04	c0.37			c0.11	0.26		c0.05	0.01		c0.01	0.01
v/s Ratio Perm												
v/c Ratio	0.61	0.71			0.77	0.45		0.60	0.22		0.15	0.10
Uniform Delay, d1	54.1	22.3			49.8	14.2		52.6	53.5		49.2	51.6
Progression Factor	1.20	0.36			1.15	0.62		1.00	1.00		1.00	1.00
Incremental Delay, d2	4.6	1.3			5.5	0.4		4.0	0.4		0.1	0.1
Delay (s)	69.4	9.4			62.7	9.2		56.7	53.9		49.2	51.8
Level of Service	E	A			E	A		E	D		D	D
Approach Delay (s)		11.8				20.6			55.0			50.4
Approach LOS		B				C			E			D

Intersection Summary

HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.8
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	30
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	32
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Existing Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	1705	214	73	928	0	0	0	0	544	0	749
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.98		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4988		1770	5085					1681	1681	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4988		1770	5085					1681	1681	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1853	233	79	1009	0	0	0	0	591	0	814
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	166
Lane Group Flow (vph)	0	2075	0	79	1009	0	0	0	0	295	296	648
Confl. Bikes (#/hr)			2			2						
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		62.4		8.6	76.9					30.7	30.7	30.7
Effective Green, g (s)		62.4		8.6	76.9					30.7	30.7	30.7
Actuated g/C Ratio		0.52		0.07	0.64					0.26	0.26	0.26
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2594		127	3259					430	430	713
v/s Ratio Prot		c0.42		c0.04	0.20					0.18	0.18	
v/s Ratio Perm												c0.23
v/c Ratio		0.80		0.62	0.31					0.69	0.69	0.91
Uniform Delay, d1		23.7		54.1	9.7					40.3	40.3	43.3
Progression Factor		0.39		0.48	2.02					1.00	1.00	1.00
Incremental Delay, d2		2.2		6.1	0.2					3.6	3.6	15.1
Delay (s)		11.4		32.2	19.8					43.9	44.0	58.4
Level of Service		B		C	B					D	D	E
Approach Delay (s)		11.4			20.7			0.0			52.3	
Approach LOS		B			C			A			D	

Intersection Summary

HCM Average Control Delay	26.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

Existing Conditions
AM Peak Hour



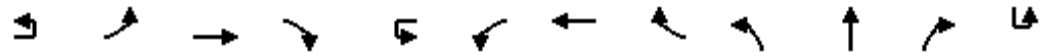
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	835	1414	1001	513	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	5085	5085	1583		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	5085	5085	1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	908	1537	1088	558	0	0
RTOR Reduction (vph)	0	0	0	29	0	0
Lane Group Flow (vph)	908	1537	1088	529	0	0
Turn Type	Prot		Perm			
Protected Phases	1	6	2			
Permitted Phases				2		
Actuated Green, G (s)	49.4	120.0	59.3	59.3		
Effective Green, g (s)	49.4	120.0	59.3	59.3		
Actuated g/C Ratio	0.41	1.00	0.49	0.49		
Clearance Time (s)	5.6	6.0	5.7	5.7		
Vehicle Extension (s)	2.0	3.0	2.0	2.0		
Lane Grp Cap (vph)	1413	5085	2513	782		
v/s Ratio Prot	c0.26	0.30	0.21			
v/s Ratio Perm				c0.33		
v/c Ratio	0.64	0.30	0.43	0.68		
Uniform Delay, d1	28.2	0.0	19.5	23.1		
Progression Factor	0.67	1.00	0.93	0.91		
Incremental Delay, d2	0.5	0.1	0.5	4.1		
Delay (s)	19.3	0.1	18.7	25.0		
Level of Service	B	A	B	C		
Approach Delay (s)		7.2	20.8		0.0	
Approach LOS		A	C		A	

Intersection Summary

HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.3
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

Existing Conditions
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		
Volume (vph)	3	89	943	266	7	35	923	121	425	127	104	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7	5.7		5.6	5.7	5.7	5.6	5.6		
Lane Util. Factor		1.00	0.95	1.00		1.00	0.91	1.00	0.91	0.91		
Frbp, ped/bikes		1.00	1.00	0.98		1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.96		
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.98		
Satd. Flow (prot)		1770	3539	1550		1770	5085	1583	1610	3194		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.98		
Satd. Flow (perm)		1770	3539	1550		1770	5085	1583	1610	3194		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	97	1025	289	8	38	1003	132	462	138	113	3
RTOR Reduction (vph)	0	0	0	136	0	0	0	69	0	25	0	0
Lane Group Flow (vph)	0	100	1025	153	0	46	1003	63	240	449	0	0
Confl. Bikes (#/hr)				1								
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Split			Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				6				2				
Actuated Green, G (s)		10.9	54.4	54.4		6.7	50.2	50.2	22.0	22.0		
Effective Green, g (s)		10.9	54.4	54.4		6.7	50.2	50.2	22.0	22.0		
Actuated g/C Ratio		0.09	0.45	0.45		0.06	0.42	0.42	0.18	0.18		
Clearance Time (s)		5.6	5.7	5.7		5.6	5.7	5.7	5.6	5.6		
Vehicle Extension (s)		2.0	3.9	3.9		2.0	3.9	3.9	2.0	2.0		
Lane Grp Cap (vph)		161	1604	703		99	2127	662	295	586		
v/s Ratio Prot		c0.06	c0.29			0.03	0.20		c0.15	0.14		
v/s Ratio Perm				0.10				0.04				
v/c Ratio		0.62	0.64	0.22		0.46	0.47	0.10	0.81	0.77		
Uniform Delay, d1		52.6	25.2	19.9		54.9	25.3	21.1	47.0	46.5		
Progression Factor		0.87	0.78	1.45		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		5.1	1.9	0.7		1.3	0.8	0.3	14.9	5.3		
Delay (s)		50.6	21.6	29.5		56.2	26.0	21.4	61.9	51.9		
Level of Service		D	C	C		E	C	C	E	D		
Approach Delay (s)			25.2				26.7			55.3		
Approach LOS			C				C			E		

Intersection Summary

HCM Average Control Delay	34.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 8: Elk Grove Blvd & E. Stockton Blvd

Existing Conditions
 AM Peak Hour



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	196	85	137
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6
Lane Util. Factor	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00
Satd. Flow (prot)	1681	1734	1562
Flt Permitted	0.95	0.98	1.00
Satd. Flow (perm)	1681	1734	1562
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	213	92	149
RTOR Reduction (vph)	0	0	130
Lane Group Flow (vph)	152	156	19
Confl. Bikes (#/hr)			1
Turn Type	Split		Perm
Protected Phases	4	4	
Permitted Phases			4
Actuated Green, G (s)	15.4	15.4	15.4
Effective Green, g (s)	15.4	15.4	15.4
Actuated g/C Ratio	0.13	0.13	0.13
Clearance Time (s)	4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	216	223	200
v/s Ratio Prot	c0.09	0.09	
v/s Ratio Perm			0.01
v/c Ratio	0.70	0.70	0.10
Uniform Delay, d1	50.1	50.1	46.2
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	8.2	7.5	0.1
Delay (s)	58.3	57.6	46.2
Level of Service	E	E	D
Approach Delay (s)		54.1	
Approach LOS		D	
Intersection Summary			

HCM Unsignalized Intersection Capacity Analysis
 9: SR-99 NB Off-ramp & E. Stockton Blvd

Existing Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	220	15	0	409	368	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	289	20	0	538	484	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	1					
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)				808		
pX, platoon unblocked						
vC, conflicting volume	753	484	484			
vC1, stage 1 conf vol	484					
vC2, stage 2 conf vol	269					
vCu, unblocked vol	753	484	484			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	45	96	100			
cM capacity (veh/h)	529	529	1075			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	309	269	269	484		
Volume Left	289	0	0	0		
Volume Right	20	0	0	0		
cSH	541	1700	1700	1700		
Volume to Capacity	0.57	0.16	0.16	0.28		
Queue Length 95th (ft)	89	0	0	0		
Control Delay (s)	20.1	0.0	0.0	0.0		
Lane LOS	C					
Approach Delay (s)	20.1	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay	4.7					
Intersection Capacity Utilization	38.2%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis
10: Whitelock Pkwy & Bruceville Road

Existing Conditions
AM Peak Hour

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	4	477	237	39	1	56	117	52	14	40	240	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	4.9	4.9		5.6	4.9	4.9		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00		0.97	0.95	1.00		0.97	0.95	1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1583		3433	3539	1583		3433	3539	1583
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1583		3433	3539	1583		3433	3539	1583
Peak-hour factor, PHF	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Adj. Flow (vph)	5	628	312	51	1	74	154	68	18	53	316	226
RTOR Reduction (vph)	0	0	0	30	0	0	0	57	0	0	0	185
Lane Group Flow (vph)	0	633	312	21	0	75	154	11	0	71	316	41
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot	Prot		Perm
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8				4				6
Actuated Green, G (s)		26.5	34.3	34.3		5.4	13.2	13.2		5.4	15.6	15.6
Effective Green, g (s)		26.5	34.3	34.3		5.4	13.2	13.2		5.4	15.6	15.6
Actuated g/C Ratio		0.31	0.40	0.40		0.06	0.16	0.16		0.06	0.18	0.18
Clearance Time (s)		5.6	4.9	4.9		5.6	4.9	4.9		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		1069	1426	638		218	549	246		218	649	290
v/s Ratio Prot		c0.18	0.09			0.02	c0.04			0.02	c0.09	
v/s Ratio Perm				0.01				0.01				0.03
v/c Ratio		0.59	0.22	0.03		0.34	0.28	0.04		0.33	0.49	0.14
Uniform Delay, d1		24.7	16.6	15.4		38.2	31.8	30.6		38.1	31.2	29.1
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.6	0.0	0.0		0.3	0.1	0.0		0.3	0.2	0.1
Delay (s)		25.3	16.7	15.4		38.5	31.9	30.6		38.4	31.4	29.2
Level of Service		C	B	B		D	C	C		D	C	C
Approach Delay (s)			22.1				33.2				31.4	
Approach LOS			C				C				C	
Intersection Summary												
HCM Average Control Delay			27.7			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			85.1			Sum of lost time (s)			22.1			
Intersection Capacity Utilization			61.0%			ICU Level of Service				B		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 10: Whitelock Pkwy & Bruceville Road

Existing Conditions
 AM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	LT	RT
Volume (vph)	17	72	206	327
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1583
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1583
Peak-hour factor, PHF	0.76	0.76	0.76	0.76
Adj. Flow (vph)	22	95	271	430
RTOR Reduction (vph)	0	0	0	340
Lane Group Flow (vph)	0	117	271	90
Turn Type	Prot	Prot		Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		7.7	17.9	17.9
Effective Green, g (s)		7.7	17.9	17.9
Actuated g/C Ratio		0.09	0.21	0.21
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		311	744	333
v/s Ratio Prot		0.03	0.08	
v/s Ratio Perm				0.06
v/c Ratio		0.38	0.36	0.27
Uniform Delay, d1		36.4	28.7	28.1
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		0.3	0.1	0.2
Delay (s)		36.7	28.8	28.3
Level of Service		D	C	C
Approach Delay (s)			29.7	
Approach LOS			C	

Intersection Summary

HCM Signalized Intersection Capacity Analysis

11: Whitelock Pkwy & Big Horn Blvd

Existing Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	↕
Volume (vph)	167	202	146	148	151	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	4.6	4.6	5.3	5.3
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		0.98	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1822	1863	1583	1770	1583
Flt Permitted		0.98	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1822	1863	1583	1770	1583
Peak-hour factor, PHF	0.53	0.53	0.53	0.53	0.53	0.53
Adj. Flow (vph)	315	381	275	279	285	134
RTOR Reduction (vph)	0	0	0	226	0	106
Lane Group Flow (vph)	0	696	275	53	285	28
Turn Type	Split			Perm		Perm
Protected Phases	3	3	4		2	
Permitted Phases				4		2
Actuated Green, G (s)		50.7	21.1	21.1	22.8	22.8
Effective Green, g (s)		50.7	21.1	21.1	22.8	22.8
Actuated g/C Ratio		0.46	0.19	0.19	0.21	0.21
Clearance Time (s)		5.6	4.6	4.6	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		839	357	303	367	328
v/s Ratio Prot		c0.38	c0.15		c0.16	
v/s Ratio Perm				0.03		0.02
v/c Ratio		0.83	0.77	0.18	0.78	0.08
Uniform Delay, d1		25.9	42.2	37.2	41.2	35.2
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		6.5	9.0	0.1	9.1	0.0
Delay (s)		32.4	51.2	37.3	50.3	35.3
Level of Service		C	D	D	D	D
Approach Delay (s)		32.4	44.2		45.5	
Approach LOS		C	D		D	

Intersection Summary

HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	110.1	Sum of lost time (s)	15.5
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
12: Whitelock Pkwy & W Stockton Blvd

Existing Conditions
AM Peak Hour




















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	49	91	98	126	34	16
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	66	123	132	170	46	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	492	57	68			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	492	57	68			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	86	88	91			
cM capacity (veh/h)	490	1010	1534			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	66	123	303	68		
Volume Left	66	0	132	0		
Volume Right	0	123	0	22		
cSH	490	1010	1534	1700		
Volume to Capacity	0.14	0.12	0.09	0.04		
Queue Length 95th (ft)	12	10	7	0		
Control Delay (s)	13.5	9.1	3.7	0.0		
Lane LOS	B	A	A			
Approach Delay (s)	10.6		3.7	0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			5.6			
Intersection Capacity Utilization			28.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

















13: Bilby Road & Bruceville Road

Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	104	5	211	3	4	4	100	94	2	4	143	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			7.0			6.5			6.5	6.5
Lane Util. Factor		1.00			1.00			1.00			1.00	1.00
Frt		0.91			0.95			1.00			1.00	0.85
Flt Protected		0.98			0.99			0.98			1.00	1.00
Satd. Flow (prot)		1670			1747			1814			1860	1583
Flt Permitted		0.89			0.85			0.75			0.99	1.00
Satd. Flow (perm)		1506			1501			1405			1843	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	117	6	237	3	4	4	112	106	2	4	161	84
RTOR Reduction (vph)	0	84	0	0	3	0	0	1	0	0	0	54
Lane Group Flow (vph)	0	276	0	0	8	0	0	219	0	0	165	30
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)		11.8			11.3			13.5			13.5	13.5
Effective Green, g (s)		11.8			11.3			13.5			13.5	13.5
Actuated g/C Ratio		0.31			0.30			0.35			0.35	0.35
Clearance Time (s)		6.5			7.0			6.5			6.5	6.5
Vehicle Extension (s)		2.0			2.0			4.5			4.5	4.5
Lane Grp Cap (vph)		464			443			495			650	558
v/s Ratio Prot												
v/s Ratio Perm		c0.18			0.01			c0.16			0.09	0.02
v/c Ratio		0.59			0.02			0.44			0.25	0.05
Uniform Delay, d1		11.2			9.6			9.5			8.8	8.2
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		1.4			0.0			1.1			0.4	0.1
Delay (s)		12.6			9.6			10.6			9.2	8.3
Level of Service		B			A			B			A	A
Approach Delay (s)		12.6			9.6			10.6			8.9	
Approach LOS		B			A			B			A	
Intersection Summary												
HCM Average Control Delay			10.9				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			38.3				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			60.3%				ICU Level of Service				B	
Analysis Period (min)			15									
c Critical Lane Group												

















HCM Unsignalized Intersection Capacity Analysis
 14: Hood Franklin Road & I-5 SB Off-ramp

Existing Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	59	7	0	56	71	0	0	0	96	0	26
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	0	73	9	0	69	88	0	0	0	119	0	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												12
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	69			73			206	146	77	190	186	113
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	69			73			206	146	77	190	186	113
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	85	100	97
cM capacity (veh/h)	1532			1527			726	745	984	770	709	940
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	81	157	151									
Volume Left	0	0	119									
Volume Right	9	88	32									
cSH	1700	1700	978									
Volume to Capacity	0.05	0.09	0.15									
Queue Length 95th (ft)	0	0	14									
Control Delay (s)	0.0	0.0	10.2									
Lane LOS			B									
Approach Delay (s)	0.0	0.0	10.2									
Approach LOS			B									
Intersection Summary												
Average Delay			3.9									
Intersection Capacity Utilization			19.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 15: Hood Franklin Road & I-5 NB On-ramp

Existing Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	124	31	0	114	531	13	0	15	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	136	34	0	125	584	14	0	16	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	125			136			570	279	153	587	553	417
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	125			136			570	279	153	587	553	417
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	100	98	100	100	100
cM capacity (veh/h)	1461			1448			432	629	893	413	441	636
Direction, Lane #	EB 1	WB 1	NB 1	NB 2								
Volume Total	170	709	14	16								
Volume Left	0	0	14	0								
Volume Right	34	584	0	16								
cSH	1700	1700	432	893								
Volume to Capacity	0.10	0.42	0.03	0.02								
Queue Length 95th (ft)	0	0	3	1								
Control Delay (s)	0.0	0.0	13.6	9.1								
Lane LOS			B	A								
Approach Delay (s)	0.0	0.0	11.2									
Approach LOS			B									
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			48.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd


















Existing Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	134	5	6	199	279	630
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	146	5	7	216	303	685
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	146	5	7	216	303	685
Volume Left (vph)	146	0	7	0	0	0
Volume Right (vph)	0	5	0	0	0	685
Hadj (s)	0.53	-0.67	0.53	0.03	0.03	-0.67
Departure Headway (s)	7.5	6.3	6.7	6.2	5.4	4.7
Degree Utilization, x	0.30	0.01	0.01	0.37	0.46	0.90
Capacity (veh/h)	462	542	519	561	650	756
Control Delay (s)	12.5	8.1	8.6	11.6	11.7	32.5
Approach Delay (s)	12.3		11.5		26.1	
Approach LOS	B		B		D	
Intersection Summary						
Delay			22.2			
HCM Level of Service			C			
Intersection Capacity Utilization			49.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 17: Bilby Road & Franklin Blvd

Existing Conditions
 AM Peak Hour

															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Sign Control		Stop			Stop			Stop			Stop				
Volume (vph)	0	0	0	570	1	3	1	7	325	5	339	1			
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77			
Hourly flow rate (vph)	0	0	0	740	1	4	1	9	422	6	440	1			
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1										
Volume Total (vph)	0	745	10	422	448										
Volume Left (vph)	0	740	1	0	6										
Volume Right (vph)	0	4	0	422	1										
Hadj (s)	0.00	0.23	0.06	-0.57	0.04										
Departure Headway (s)	6.4	5.6	6.7	3.2	5.8										
Degree Utilization, x	0.00	1.15	0.02	0.38	0.73										
Capacity (veh/h)	536	645	516	1114	607										
Control Delay (s)	9.4	105.6	9.9	8.1	22.7										
Approach Delay (s)	0.0	105.6	8.2		22.7										
Approach LOS	A	F	A		C										
Intersection Summary															
Delay			56.8												
HCM Level of Service			F												
Intersection Capacity Utilization			60.4%					ICU Level of Service			B				
Analysis Period (min)			15												

HCM Signalized Intersection Capacity Analysis
18: Bilby Road & Willard Pkwy

Existing Conditions
AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	187	113	306	79	95	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	1863	1583
Peak-hour factor, PHF	0.74	0.74	0.74	0.74	0.74	0.74
Adj. Flow (vph)	253	153	414	107	128	320
RTOR Reduction (vph)	0	116	0	0	0	269
Lane Group Flow (vph)	253	37	414	107	128	51
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	20.8	20.8	26.2	25.8	13.6	13.6
Effective Green, g (s)	20.8	20.8	26.2	20.1	13.6	13.6
Actuated g/C Ratio	0.24	0.24	0.30	0.23	0.16	0.16
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	428	383	539	827	295	250
v/s Ratio Prot	c0.14		c0.23	c0.03	c0.07	
v/s Ratio Perm		0.02				0.03
v/c Ratio	0.59	0.10	0.77	0.13	0.43	0.20
Uniform Delay, d1	28.8	25.3	27.1	26.0	32.7	31.5
Progression Factor	1.00	1.00	1.00	1.16	1.00	1.00
Incremental Delay, d2	1.5	0.0	5.3	0.0	0.4	0.1
Delay (s)	30.3	25.3	32.5	30.2	33.1	31.6
Level of Service	C	C	C	C	C	C
Approach Delay (s)	28.4			32.0	32.0	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	31.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	26.1
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Bilby Road & Willard Pkwy

Existing Conditions
 AM Peak Hour



Movement	WBU	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations								
Volume (vph)	1	4	374	5	14	6	200	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0	5.7			5.6	5.7
Lane Util. Factor		1.00	1.00	1.00			1.00	1.00
Fr _t		1.00	0.85	0.90			1.00	1.00
Fl _t Protected		0.95	1.00	1.00			0.95	1.00
Satd. Flow (prot)		1770	1583	1680			1770	1863
Fl _t Permitted		0.95	1.00	1.00			0.95	1.00
Satd. Flow (perm)		1770	1583	1680			1770	1863
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	1	5	440	6	16	7	235	2
RTOR Reduction (vph)	0	0	324	13	0	0	0	0
Lane Group Flow (vph)	0	6	116	9	0	0	242	2
Turn Type	Split		Perm			Prot	Prot	
Protected Phases	2	2		4		3	3	8 1
Permitted Phases			2					
Actuated Green, G (s)		22.6	22.6	16.2			23.6	20.0
Effective Green, g (s)		22.6	22.6	16.2			23.6	20.0
Actuated g/C Ratio		0.26	0.26	0.19			0.27	0.23
Clearance Time (s)		7.0	7.0	5.7			5.6	
Vehicle Extension (s)		2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)		465	416	316			486	433
v/s Ratio Prot		0.00		c0.01			c0.14	c0.00
v/s Ratio Perm			c0.07					
v/c Ratio		0.01	0.28	0.03			0.50	0.00
Uniform Delay, d ₁		23.4	25.2	28.5			26.2	25.4
Progression Factor		1.00	1.00	1.00			1.32	0.74
Incremental Delay, d ₂		0.0	0.1	0.0			0.3	0.0
Delay (s)		23.5	25.3	28.5			34.8	18.8
Level of Service		C	C	C			C	B
Approach Delay (s)		25.3		28.5				34.7
Approach LOS		C		C				C

Intersection Summary

HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 20: Kammerer Road & Bruceville Road

Existing Conditions
 AM Peak Hour




































Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	36	164	37	24	336	27
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	40	182	41	27	373	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	831	54			68	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	831	54			68	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	82			76	
cM capacity (veh/h)	257	1013			1534	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	222	68	403
Volume Left	40	0	373
Volume Right	182	27	0
cSH	662	1700	1534
Volume to Capacity	0.34	0.04	0.24
Queue Length 95th (ft)	37	0	24
Control Delay (s)	13.2	0.0	7.6
Lane LOS	B		A
Approach Delay (s)	13.2	0.0	7.6
Approach LOS	B		

Intersection Summary			
Average Delay		8.7	
Intersection Capacity Utilization		45.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 21: Kammerer Road & Promenade Pkwy

Existing Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  	 				  	 	
Volume (vph)	3	356	0	14	200	167	0	3	15	66	2	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7		6.7	6.7	6.7		5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86		1.00	0.91	0.88		1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408		1770	5085	2787		1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408		1770	5085	2787		1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	3	400	0	16	225	188	0	3	17	74	2	3
RTOR Reduction (vph)	0	0	0	0	0	105	0	0	16	0	0	2
Lane Group Flow (vph)	3	400	0	16	225	83	0	3	1	74	2	1
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	0.5	18.7		6.7	24.9	24.9		2.5	2.5	3.1	11.4	11.4
Effective Green, g (s)	0.5	18.7		6.7	24.9	24.9		2.5	2.5	3.1	11.4	11.4
Actuated g/C Ratio	0.01	0.33		0.12	0.44	0.44		0.04	0.04	0.05	0.20	0.20
Clearance Time (s)	6.7	6.7		6.7	6.7	6.7		5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	30	2121		210	2241	1228		82	70	274	714	319
v/s Ratio Prot	0.00	c0.06		c0.01	c0.04		c0.00		c0.01	0.00		
v/s Ratio Perm						0.03		0.00				0.00
v/c Ratio	0.10	0.19		0.08	0.10	0.07		0.04	0.01	0.27	0.00	0.00
Uniform Delay, d1	27.8	13.5		22.1	9.2	9.1		25.8	25.8	25.6	18.0	18.0
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0		0.1	0.0	0.0		0.1	0.0	0.2	0.0	0.0
Delay (s)	28.3	13.5		22.2	9.3	9.1		25.9	25.8	25.8	18.0	18.0
Level of Service	C	B		C	A	A		C	C	C	B	B
Approach Delay (s)		13.6			9.7			25.9			25.3	
Approach LOS		B			A			C			C	

Intersection Summary

HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	32.2
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

22: Grant Line Road & SR-99 SB Off-ramp

Existing Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↘	↕	↗
Volume (vph)	0	337	100	0	336	416	0	0	0	203	0	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.99	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1607	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1607	1504
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	359	106	0	357	443	0	0	0	216	0	48
RTOR Reduction (vph)	0	0	62	0	0	0	0	0	0	0	1	31
Lane Group Flow (vph)	0	359	44	0	357	443	0	0	0	110	110	12
Turn Type		Perm			Free					Perm		Perm
Protected Phases		6			2					8		8
Permitted Phases		6			Free					8		8
Actuated Green, G (s)		16.5	16.5		16.5	39.9				11.1	11.1	11.1
Effective Green, g (s)		16.5	16.5		16.5	39.9				11.1	11.1	11.1
Actuated g/C Ratio		0.41	0.41		0.41	1.00				0.28	0.28	0.28
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2103	655		2103	1583				468	447	418
v/s Ratio Prot		0.07			0.07							
v/s Ratio Perm			0.03			c0.28				0.07	0.07	0.01
v/c Ratio		0.17	0.07		0.17	0.28				0.24	0.25	0.03
Uniform Delay, d1		7.4	7.1		7.4	0.0				11.1	11.2	10.5
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.1		0.1	0.4				0.1	0.1	0.0
Delay (s)		7.4	7.1		7.4	0.4				11.2	11.3	10.5
Level of Service		A	A		A	A				B	B	B
Approach Delay (s)		7.4			3.6			0.0		11.1		
Approach LOS		A			A			A		B		

Intersection Summary

HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	39.9	Sum of lost time (s)	0.0
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

23: Grant Line Road & SR-99 NB On-ramp

Existing Conditions
AM Peak Hour

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑	↑	↑↑			
Volume (vph)	0	493	47	0	622	184	130	2	486	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1688	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1688	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	548	52	0	691	204	144	2	540	0	0	0
RTOR Reduction (vph)	0	0	29	0	0	110	0	0	388	0	0	0
Lane Group Flow (vph)	0	548	23	0	691	94	73	73	152	0	0	0
Turn Type		Perm			Perm		Split		Perm			
Protected Phases		6			2		4		4			
Permitted Phases		6			2				4			
Actuated Green, G (s)		18.1	18.1		18.6	18.6	11.3	11.3	11.3			
Effective Green, g (s)		18.1	18.1		18.6	18.6	11.3	11.3	11.3			
Actuated g/C Ratio		0.45	0.45		0.46	0.46	0.28	0.28	0.28			
Clearance Time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2290	713		2353	732	473	474	783			
v/s Ratio Prot		0.11			c0.14		0.04	0.04				
v/s Ratio Perm			0.01			0.06			c0.05			
v/c Ratio		0.24	0.03		0.29	0.13	0.15	0.15	0.19			
Uniform Delay, d1		6.8	6.2		6.7	6.2	10.9	10.9	11.0			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.1	0.0		0.1	0.1	0.1	0.1	0.0			
Delay (s)		6.9	6.2		6.8	6.3	10.9	10.9	11.0			
Level of Service		A	A		A	A	B	B	B			
Approach Delay (s)		6.8			6.7			11.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	10.3
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & East Stockton Rd

Existing Conditions
AM Peak Hour

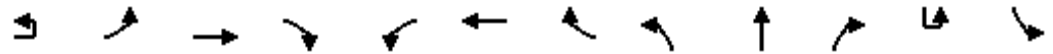
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	596	85	48	576	155	89	29	17	97	18	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	4923		1770	1760		1681	1710	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	5085	1583	1770	4923		1770	1760		1681	1710	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	246	641	91	52	619	167	96	31	18	104	19	152
RTOR Reduction (vph)	0	0	59	0	30	0	0	11	0	0	0	132
Lane Group Flow (vph)	246	641	32	52	756	0	96	38	0	61	62	20
Turn Type	Prot		Perm	Prot			Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6									3
Actuated Green, G (s)	12.1	30.5	30.5	6.5	24.9		13.7	13.7		11.4	11.4	11.4
Effective Green, g (s)	12.1	30.5	30.5	6.5	24.9		13.7	13.7		11.4	11.4	11.4
Actuated g/C Ratio	0.14	0.36	0.36	0.08	0.29		0.16	0.16		0.13	0.13	0.13
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	485	1812	564	134	1432		283	282		224	228	211
v/s Ratio Prot	c0.07	c0.13		0.03	c0.15		c0.05	0.02		c0.04	0.04	
v/s Ratio Perm			0.02									0.01
v/c Ratio	0.51	0.35	0.06	0.39	0.53		0.34	0.14		0.27	0.27	0.10
Uniform Delay, d1	34.0	20.3	18.1	37.7	25.4		31.9	30.9		33.4	33.4	32.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	0.0	0.7	0.4		0.7	0.2		0.2	0.2	0.1
Delay (s)	34.3	20.4	18.1	38.3	25.8		32.6	31.1		33.6	33.6	32.6
Level of Service	C	C	B	D	C		C	C		C	C	C
Approach Delay (s)		23.7			26.6			32.1			33.1	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	26.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	85.6	Sum of lost time (s)	29.2
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: Grant Line Road & Waterman Road

Existing Conditions
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↔	↔		↔	↕	↕		↕			
Volume (vph)	6	162	563	0	0	548	5	0	0	0	1	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.5			6.5	6.5					
Lane Util. Factor		0.97	1.00			0.95	1.00					
Frbp, ped/bikes		1.00	1.00			1.00	0.98					
Flpb, ped/bikes		1.00	1.00			1.00	1.00					
Frt		1.00	1.00			1.00	0.85					
Flt Protected		0.95	1.00			1.00	1.00					
Satd. Flow (prot)		3433	1863			3539	1559					
Flt Permitted		0.95	1.00			1.00	1.00					
Satd. Flow (perm)		3433	1863			3539	1559					
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	6	169	586	0	0	571	5	0	0	0	1	5
RTOR Reduction (vph)	0	0	0	0	0	0	4	0	0	0	0	0
Lane Group Flow (vph)	0	175	586	0	0	571	1	0	0	0	0	0
Confl. Bikes (#/hr)				2			4					
Turn Type	Prot	Prot			Prot		Perm	Split			Split	Split
Protected Phases	1	1	6		5	2		4	4		3	3
Permitted Phases							2					
Actuated Green, G (s)		9.1	31.1			16.4	16.4					
Effective Green, g (s)		9.1	31.1			16.4	16.4					
Actuated g/C Ratio		0.14	0.49			0.26	0.26					
Clearance Time (s)		5.6	6.5			6.5	6.5					
Vehicle Extension (s)		2.0	2.0			2.0	2.0					
Lane Grp Cap (vph)		497	921			923	406					
v/s Ratio Prot		0.05	c0.31			0.16						
v/s Ratio Perm							0.00					
v/c Ratio		0.35	0.64			0.62	0.00					
Uniform Delay, d1		24.2	11.7			20.5	17.2					
Progression Factor		1.00	1.00			1.00	1.00					
Incremental Delay, d2		0.2	1.1			0.9	0.0					
Delay (s)		24.4	12.8			21.4	17.2					
Level of Service		C	B			C	B					
Approach Delay (s)			15.5			21.3		0.0				
Approach LOS			B			C		A				

Intersection Summary

HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	23.7
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

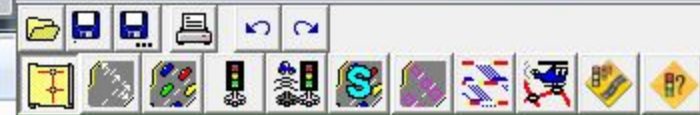
HCM Signalized Intersection Capacity Analysis
 25: Grant Line Road & Waterman Road

Existing Conditions
 AM Peak Hour



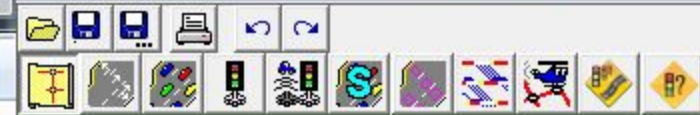
Movement	SBT	SBR
Lane Configurations	↕	↗↘
Volume (vph)	0	173
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	7.0	7.0
Lane Util. Factor	1.00	0.88
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.95	1.00
Satd. Flow (prot)	1770	2787
Flt Permitted	0.95	1.00
Satd. Flow (perm)	1770	2787
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	0	180
RTOR Reduction (vph)	0	157
Lane Group Flow (vph)	6	23
Confl. Bikes (#/hr)		
Turn Type		Perm
Protected Phases	3	
Permitted Phases		3
Actuated Green, G (s)	8.1	8.1
Effective Green, g (s)	8.1	8.1
Actuated g/C Ratio	0.13	0.13
Clearance Time (s)	7.0	7.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	228	359
v/s Ratio Prot	0.00	
v/s Ratio Perm		c0.01
v/c Ratio	0.03	0.06
Uniform Delay, d1	24.0	24.1
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.0
Delay (s)	24.0	24.1
Level of Service	C	C
Approach Delay (s)	24.1	
Approach LOS	C	

Intersection Summary

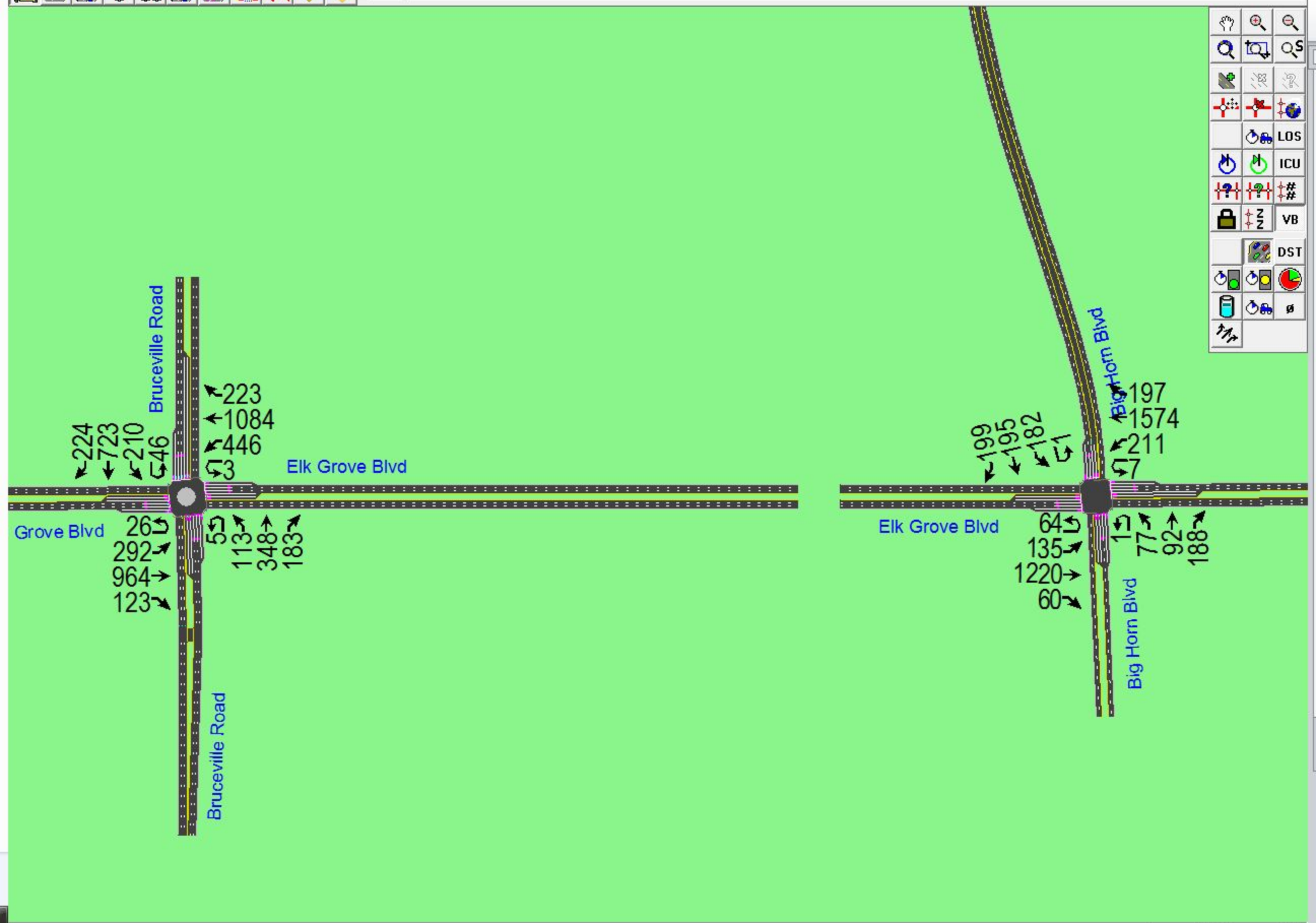


1 Elk Grove Blvd & Franklin Blvd

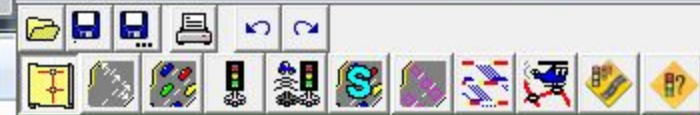




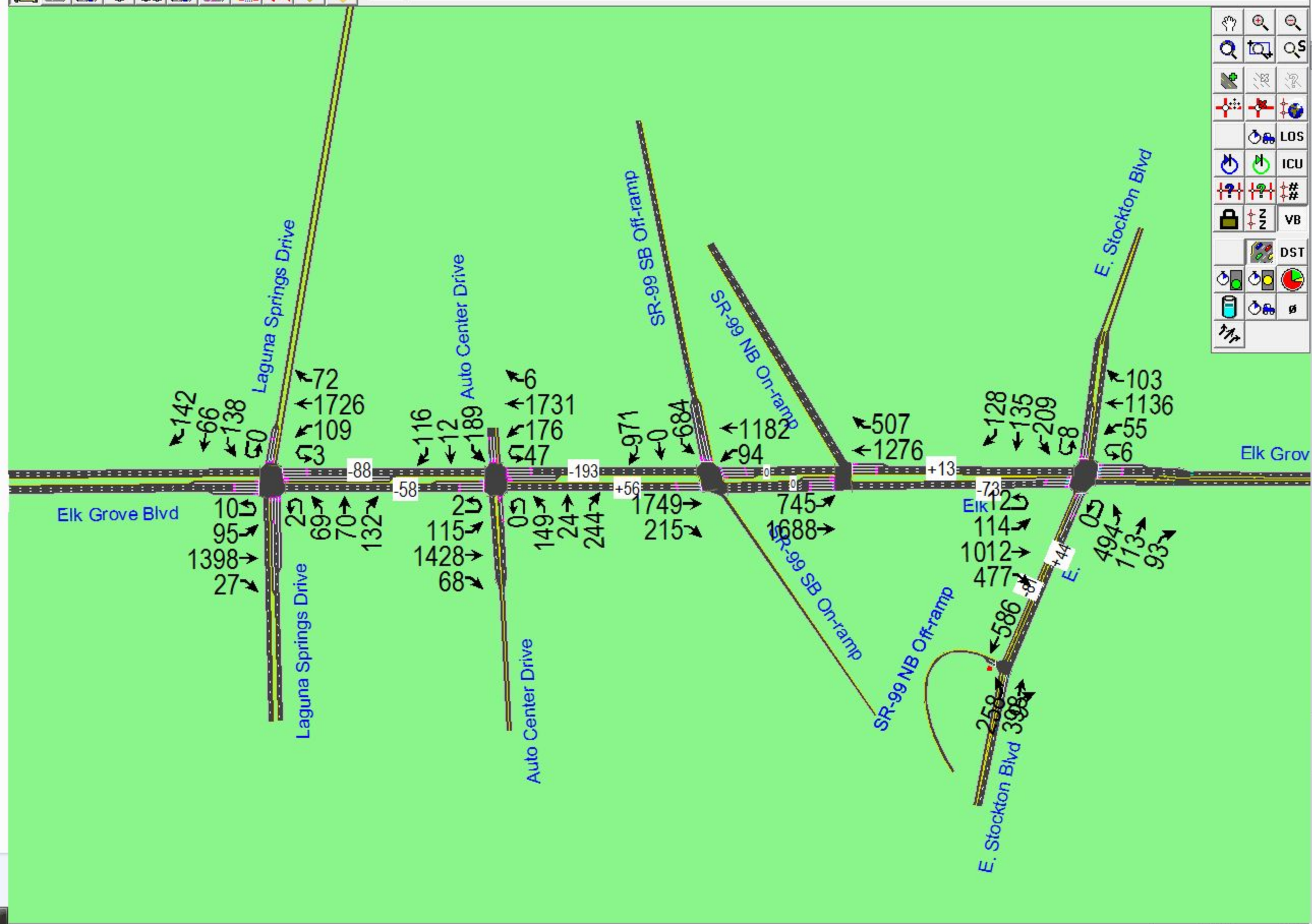
2 Elk Grove Blvd & Bruceville Road

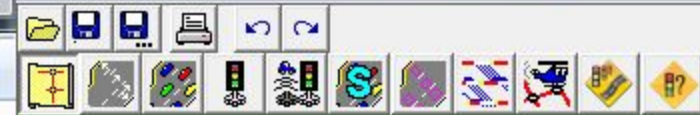


Vertical toolbar containing various simulation and analysis tools, including icons for LOS, ICU, #, VB, DST, and other simulation parameters.



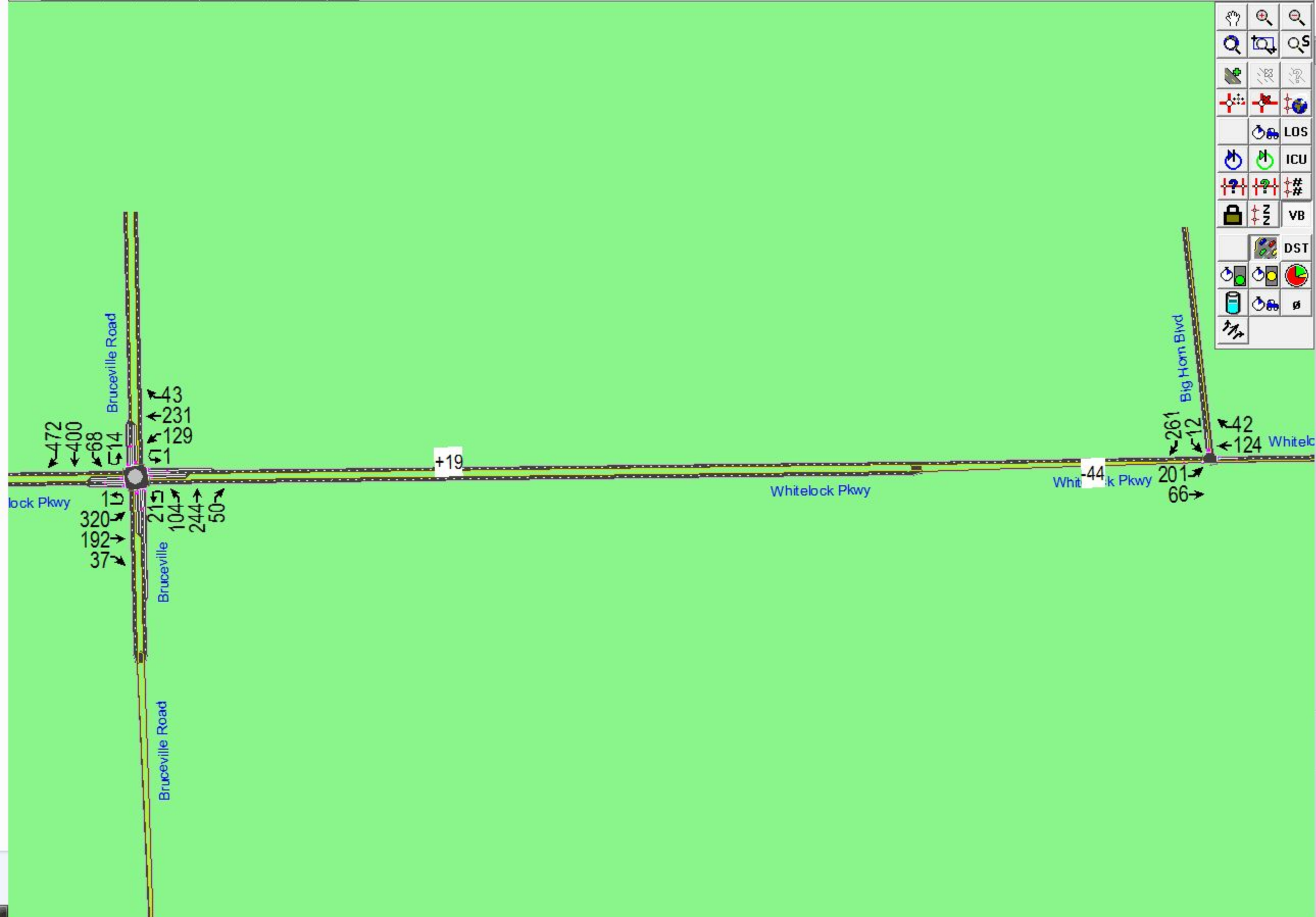
2 Elk Grove Blvd & Bruceville Road

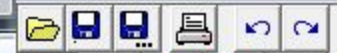




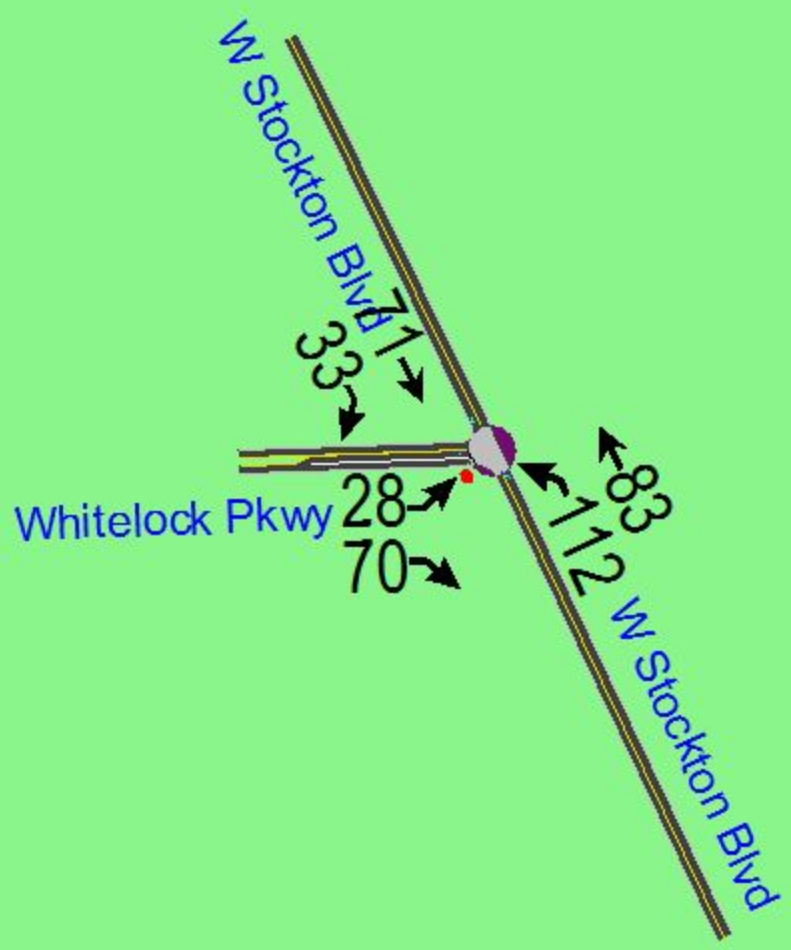
10 Whitelock Pkwy & Bruceville Road

Vertical toolbar containing icons for:
- Hand (pan)
- Zoom In / Zoom Out
- Select / Lasso Select
- Erase
- Layer visibility icons
- LOS (Level of Service)
- ICU (Incident Clearance Unit)
- # (Number of lanes)
- VB (Vehicle Buffer)
- DST (Delay Study Tool)
- Pie chart icon
- Other analysis and display icons



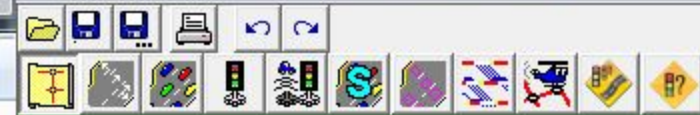


12 Whitelock Pkwy & W Stockton Blvd

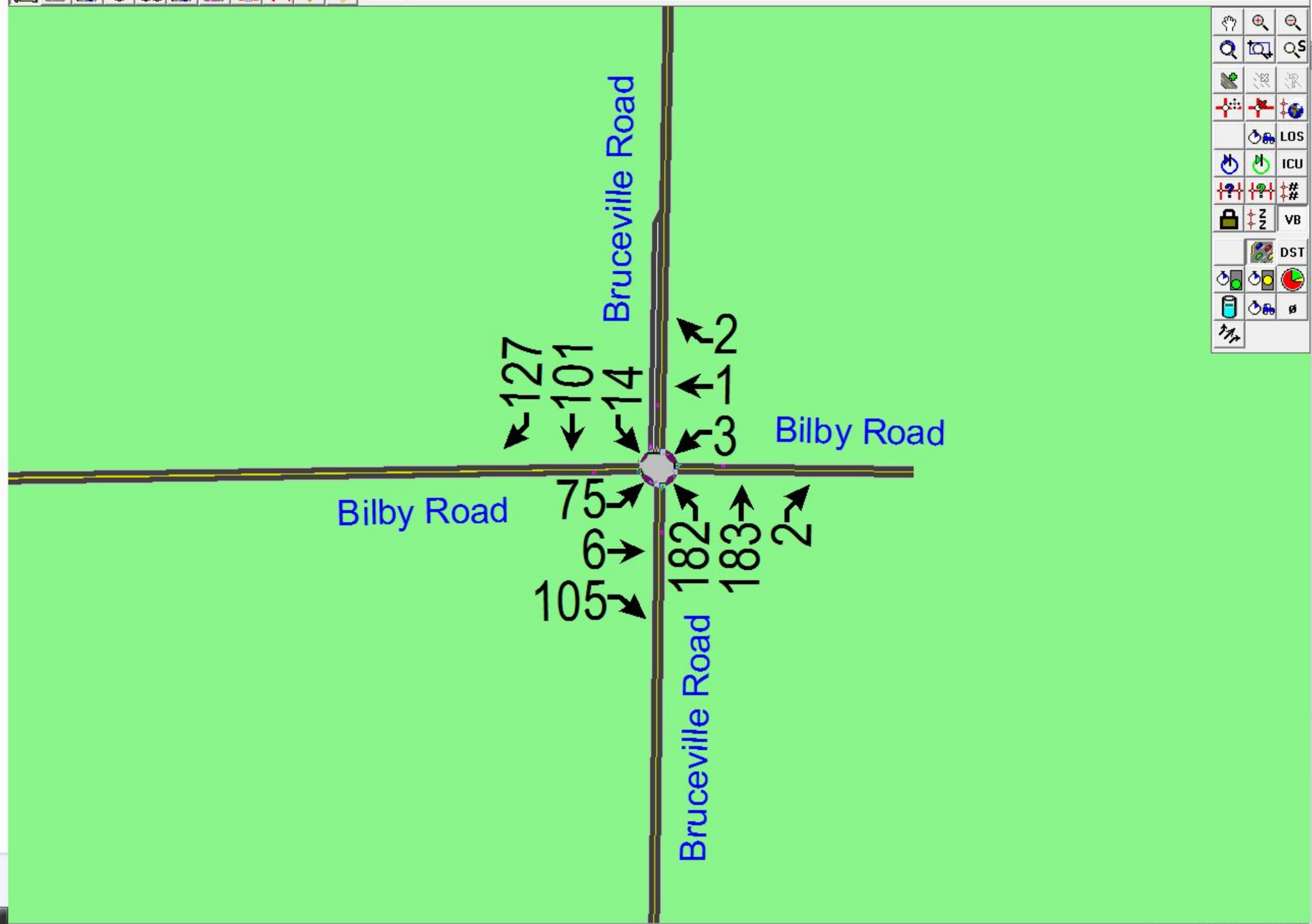


A vertical toolbar on the right side of the interface, containing various icons for simulation and analysis. The icons include:

- Hand icon (pan)
- Zoom in and zoom out icons
- Search icon
- Simulation control icons (stop, play, refresh)
- LOS (Level of Service) icon
- ICU (Intersection Control Unit) icon
- VB (Vehicle Buffer) icon
- DST (Dynamic Signal Timing) icon
- Other simulation and analysis icons.

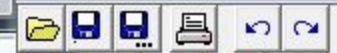


13 Bilby Road & Bruceville Road



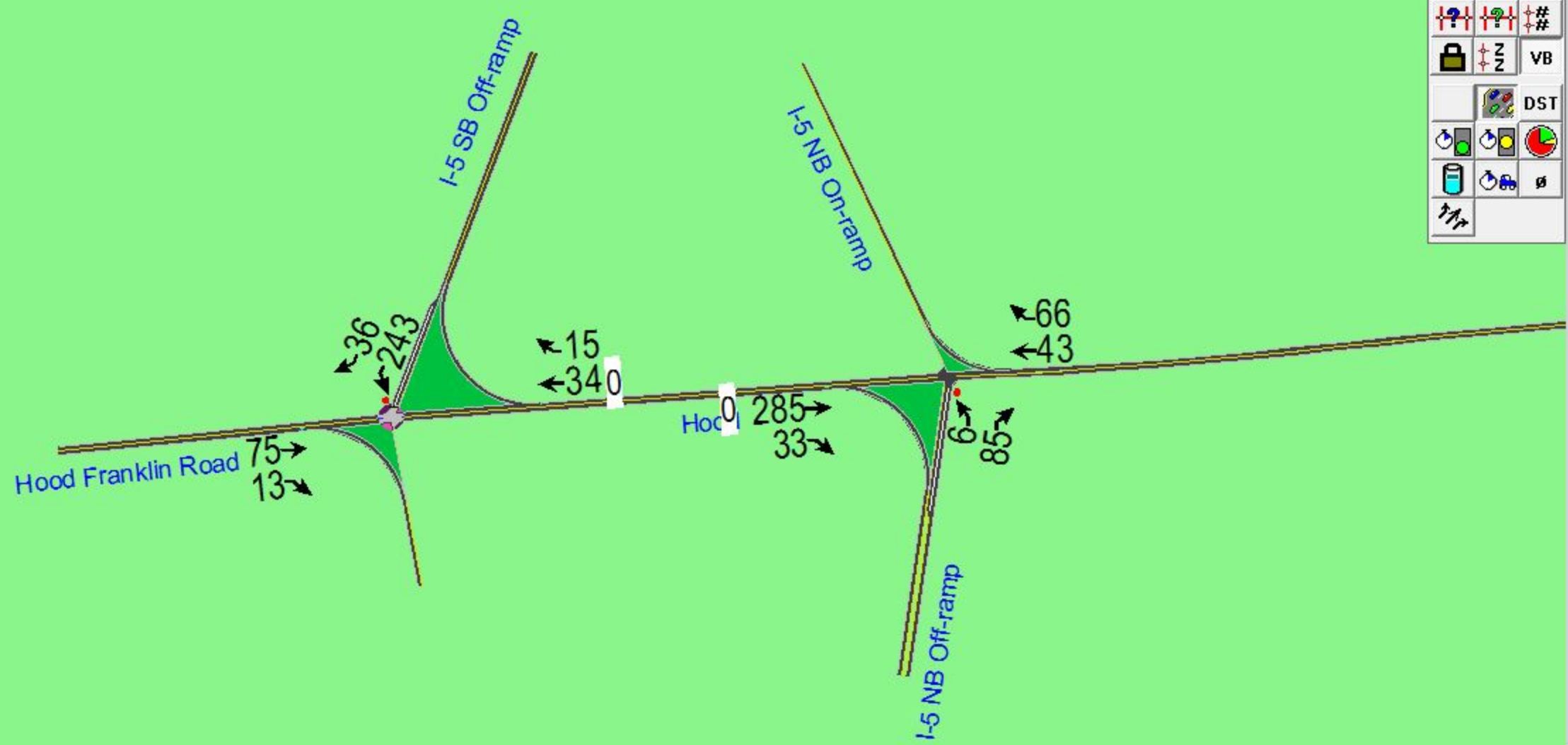
Vertical toolbar containing simulation and analysis tools:

- Hand icon (pan)
- Zoom in/out icons
- Simulation control icons (start, stop, pause, reset)
- LOS (Level of Service) tool
- ICU (Incident Clearance Unit) tool
- VB (Vehicle Buffer) tool
- DST (Data Storage Tool) icon
- Other simulation and analysis icons



14 Hood Franklin Road & I-5 SB Off-ramp

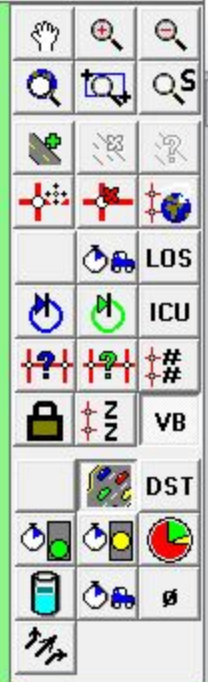
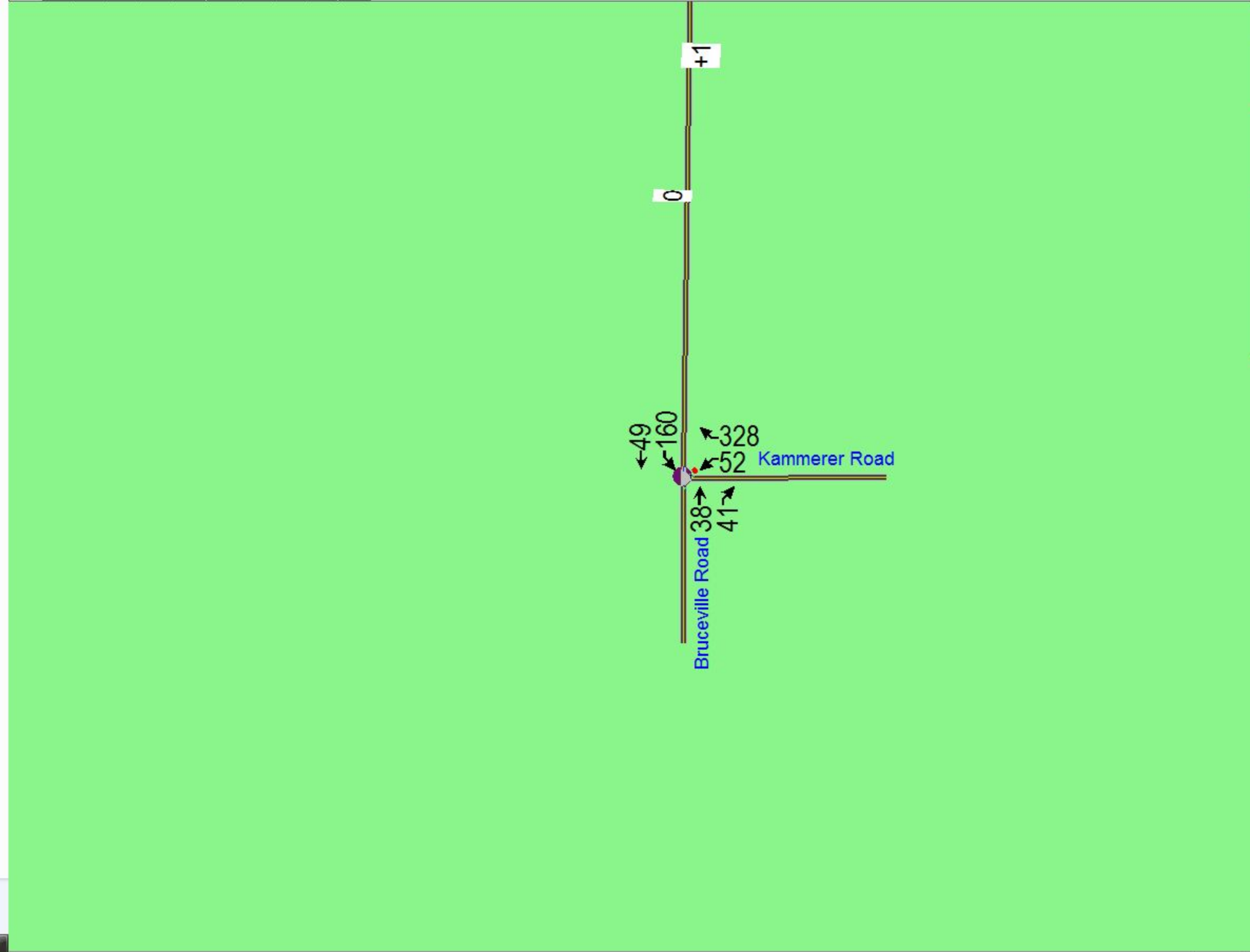
Vertical toolbar containing icons for:
- Hand (pan)
- Magnifying glass (zoom in)
- Magnifying glass with minus (zoom out)
- Magnifying glass with square (pan to selection)
- Magnifying glass with S (search)
- Layer visibility icons (eye on/off)
- Layer visibility icons (eye on/off with red X)
- Layer visibility icons (eye on/off with blue globe)
- LOS (Level of Service) icon
- ICU (Incident Clearance Unit) icon
- # (Number of lanes) icon
- # (Number of lanes) icon
- VB (Vehicle Buffer) icon
- DST (Distance) icon
- Pie chart icon
- Car icon
- Car icon
- Car icon

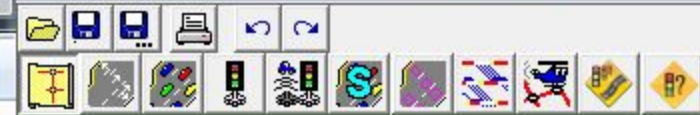




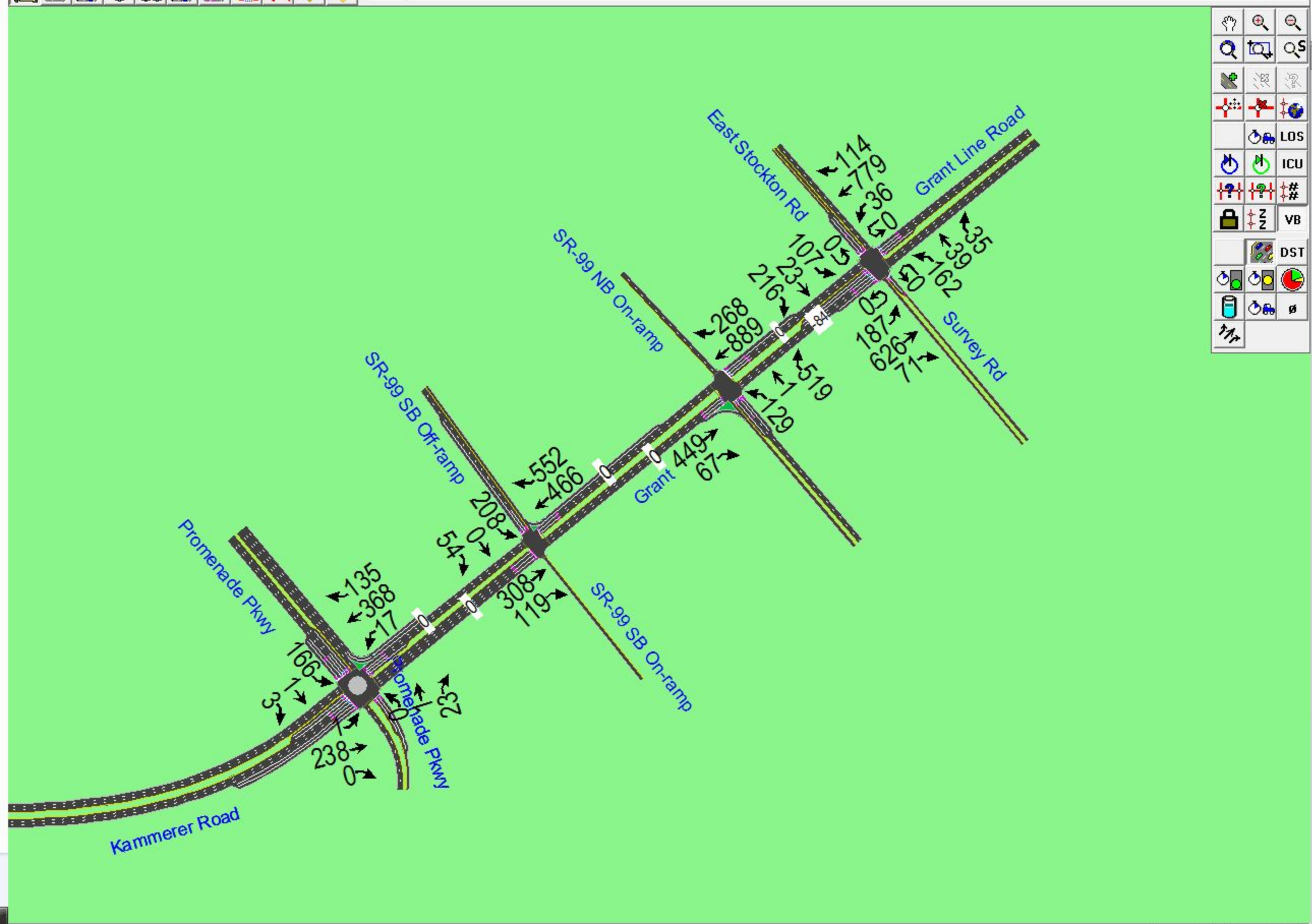


20 Kammerer Road & Bruceville Road



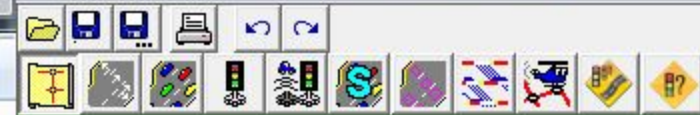


21 Kammerer Road & Promenade Pkwy



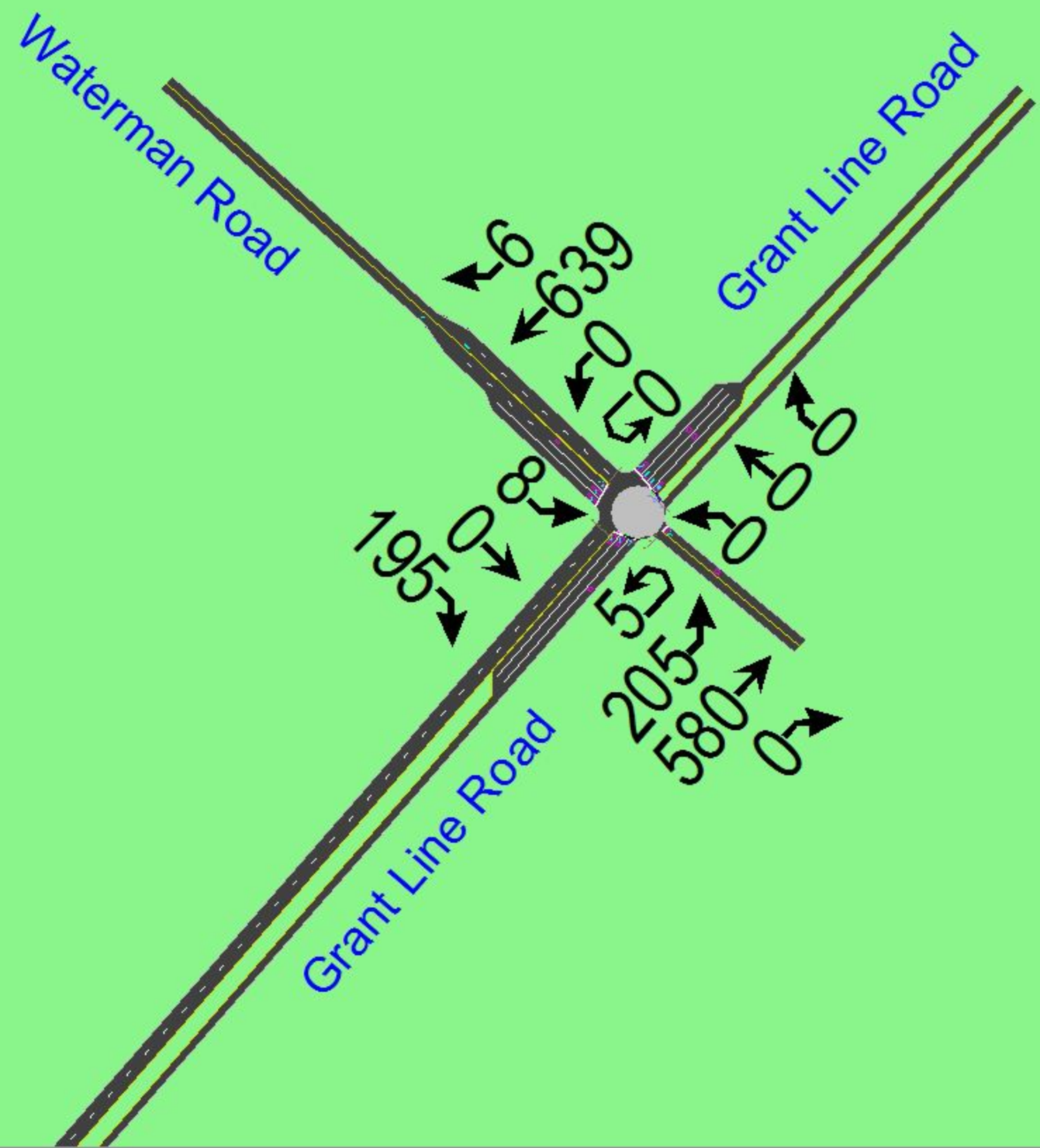
Vertical toolbar containing the following tools and labels:

- Hand icon
- Zoom in (+) and Zoom out (-) icons
- Search (S) icon
- Simulation control icons (stop, play, refresh)
- Labels: LOS, ICU, #, #, VB, DST
- Additional simulation and analysis icons



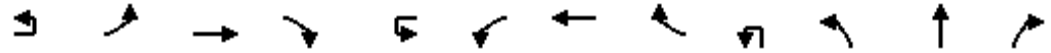
25 Grant Line Road & Waterman Road

Hand	Zoom In	Zoom Out
Search	Reset View	Search S
Green	Red	Blue
LOS	ICU	#
#	#	VB
Lock	Z	VB
DST	Color	Color
Light	Light	Light
Light	Light	Light



HCM Signalized Intersection Capacity Analysis
1: Elk Grove Blvd & Franklin Blvd

Existing Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↘ ↙	↑ ↑ ↑	↗ ↖		↘ ↙	↑ ↑ ↑	↗		↘ ↙	↑ ↑ ↑	↗
Volume (vph)	3	184	1320	537	1	76	751	273	122	345	257	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.8	6.8		5.6	7.2	7.2		5.6	7.2	7.2
Lane Util. Factor		0.97	0.91	0.88		0.97	0.91	1.00		0.97	0.91	1.00
Frbp, ped/bikes		1.00	1.00	0.99		1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (prot)		3433	5085	2750		3433	5085	1583		3433	5085	1583
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	2750		3433	5085	1583		3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	200	1435	584	1	83	816	297	133	375	279	92
RTOR Reduction (vph)	0	0	0	330	0	0	0	182	0	0	0	76
Lane Group Flow (vph)	0	203	1435	254	0	84	816	115	0	508	279	16
Confl. Bikes (#/hr)				2								
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot	Prot		Perm
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases				6				2				8
Actuated Green, G (s)		11.5	52.2	52.2		6.3	46.6	46.6		22.1	20.7	20.7
Effective Green, g (s)		11.5	52.2	52.2		6.3	46.6	46.6		22.1	20.7	20.7
Actuated g/C Ratio		0.10	0.44	0.44		0.05	0.39	0.39		0.18	0.17	0.17
Clearance Time (s)		5.6	6.8	6.8		5.6	7.2	7.2		5.6	7.2	7.2
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		329	2212	1196		180	1975	615		632	877	273
v/s Ratio Prot		c0.06	c0.28			0.02	0.16			c0.15	0.05	
v/s Ratio Perm				0.09				0.07				0.01
v/c Ratio		0.62	0.65	0.21		0.47	0.41	0.19		0.80	0.32	0.06
Uniform Delay, d1		52.1	26.7	21.1		55.2	26.7	24.2		46.9	43.5	41.5
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		2.4	1.5	0.4		0.7	0.6	0.7		6.9	0.1	0.0
Delay (s)		54.6	28.2	21.5		55.9	27.4	24.9		53.8	43.5	41.5
Level of Service		D	C	C		E	C	C		D	D	D
Approach Delay (s)			28.8				28.8				49.3	
Approach LOS			C				C				D	

Intersection Summary		
HCM Average Control Delay	37.3	HCM Level of Service D
HCM Volume to Capacity ratio	0.70	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 24.3
Intersection Capacity Utilization	70.6%	ICU Level of Service C
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 1: Elk Grove Blvd & Franklin Blvd

Existing Conditions
 PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	2	345	379	242
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		5.6	6.3	6.3
Lane Util. Factor		0.97	0.91	1.00
Frbp, ped/bikes		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	5085	1556
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1556
Peak-hour factor, PHF	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	375	412	263
RTOR Reduction (vph)	0	0	0	230
Lane Group Flow (vph)	0	377	412	33
Confl. Bikes (#/hr)				3
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		15.6	15.1	15.1
Effective Green, g (s)		15.6	15.1	15.1
Actuated g/C Ratio		0.13	0.13	0.13
Clearance Time (s)		5.6	6.3	6.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		446	640	196
v/s Ratio Prot		0.11	c0.08	
v/s Ratio Perm				0.02
v/c Ratio		0.85	0.64	0.17
Uniform Delay, d1		51.0	49.9	46.8
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		13.2	1.7	0.1
Delay (s)		64.2	51.6	47.0
Level of Service		E	D	D
Approach Delay (s)			55.0	
Approach LOS			D	
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

2: Elk Grove Blvd & Bruceville Road

Existing Conditions
PM Peak Hour

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	26	292	964	123	3	446	1084	223	5	113	348	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.0	6.0		5.6	6.0	6.0		5.6	5.7	5.7
Lane Util. Factor		0.97	0.91	1.00		0.97	0.91	1.00		0.97	0.91	1.00
Fr _t		1.00	1.00	0.85		1.00	1.00	0.85		1.00	1.00	0.85
Fl _t Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (prot)		3433	5085	1583		3433	5085	1583		3433	5085	1583
Fl _t Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1583		3433	5085	1583		3433	5085	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	304	1004	128	3	465	1129	232	5	118	362	191
RTOR Reduction (vph)	0	0	0	72	0	0	0	111	0	0	0	160
Lane Group Flow (vph)	0	331	1004	56	0	468	1129	121	0	123	362	31
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot	Prot		Perm
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases				6				2				8
Actuated Green, G (s)		15.9	44.3	44.3		20.7	49.1	49.1		8.7	19.3	19.3
Effective Green, g (s)		15.9	44.3	44.3		20.7	49.1	49.1		8.7	19.3	19.3
Actuated g/C Ratio		0.13	0.37	0.37		0.17	0.41	0.41		0.07	0.16	0.16
Clearance Time (s)		5.6	6.0	6.0		5.6	6.0	6.0		5.6	5.7	5.7
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		455	1877	584		592	2081	648		249	818	255
v/s Ratio Prot		0.10	0.20			c0.14	c0.22			0.04	0.07	
v/s Ratio Perm				0.04				0.08				0.02
v/c Ratio		0.73	0.53	0.10		0.79	0.54	0.19		0.49	0.44	0.12
Uniform Delay, d ₁		50.0	29.8	24.8		47.6	26.9	22.7		53.5	45.5	43.1
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d ₂		4.9	1.1	0.3		6.6	1.0	0.6		0.6	0.1	0.1
Delay (s)		54.8	30.8	25.1		54.2	27.9	23.3		54.1	45.6	43.2
Level of Service		D	C	C		D	C	C		D	D	D
Approach Delay (s)			35.8				34.1				46.5	
Approach LOS			D				C				D	
Intersection Summary												
HCM Average Control Delay			40.3				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			22.9		
Intersection Capacity Utilization			70.3%				ICU Level of Service			C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
2: Elk Grove Blvd & Bruceville Road

Existing Conditions
PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	46	210	723	224
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7	5.7
Lane Util. Factor		0.97	0.86	0.86
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	4785	1362
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	4785	1362
Peak-hour factor, PHF	0.96	0.96	0.96	0.96
Adj. Flow (vph)	48	219	753	233
RTOR Reduction (vph)	0	0	2	169
Lane Group Flow (vph)	0	267	774	41
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		12.8	23.4	23.4
Effective Green, g (s)		12.8	23.4	23.4
Actuated g/C Ratio		0.11	0.19	0.19
Clearance Time (s)		5.6	5.7	5.7
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		366	933	266
v/s Ratio Prot		c0.08	c0.16	
v/s Ratio Perm				0.03
v/c Ratio		0.73	0.83	0.15
Uniform Delay, d1		51.9	46.4	40.1
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		6.1	5.9	0.1
Delay (s)		58.0	52.3	40.2
Level of Service		E	D	D
Approach Delay (s)			51.5	
Approach LOS			D	

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Elk Grove Blvd & Big Horn Blvd

Existing Conditions
PM Peak Hour

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	64	135	1220	60	7	211	1574	197	1	77	92	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	5.7	5.7		6.7	5.7	5.7		6.3	5.3	5.3
Lane Util. Factor		0.97	0.91	1.00		0.97	0.91	1.00		0.97	0.95	1.00
Frt		1.00	1.00	0.85		1.00	1.00	0.85		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (prot)		3433	5085	1583		3433	5085	1583		3433	3539	1583
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1583		3433	5085	1583		3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	67	141	1271	62	7	220	1640	205	1	80	96	196
RTOR Reduction (vph)	0	0	0	23	0	0	0	56	0	0	0	176
Lane Group Flow (vph)	0	208	1271	39	0	227	1640	149	0	81	96	20
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot	Prot		Perm
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases				6				2				8
Actuated Green, G (s)		11.6	60.4	60.4		12.1	60.9	60.9		6.2	12.5	12.5
Effective Green, g (s)		11.6	60.4	60.4		12.1	60.9	60.9		6.2	12.5	12.5
Actuated g/C Ratio		0.10	0.50	0.50		0.10	0.51	0.51		0.05	0.10	0.10
Clearance Time (s)		6.7	5.7	5.7		6.7	5.7	5.7		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		332	2559	797		346	2581	803		177	369	165
v/s Ratio Prot		0.06	0.25			c0.07	c0.32			0.02	0.03	
v/s Ratio Perm				0.02				0.09				0.01
v/c Ratio		0.63	0.50	0.05		0.66	0.64	0.19		0.46	0.26	0.12
Uniform Delay, d1		52.1	19.7	15.2		51.9	21.5	16.1		55.3	49.5	48.8
Progression Factor		1.00	1.00	1.00		1.52	0.36	0.10		1.00	1.00	1.00
Incremental Delay, d2		2.7	0.7	0.1		2.6	0.9	0.4		0.7	0.1	0.1
Delay (s)		54.8	20.4	15.3		81.6	8.7	2.0		56.0	49.6	48.9
Level of Service		D	C	B		F	A	A		E	D	D
Approach Delay (s)			24.9				16.0				50.6	
Approach LOS			C				B				D	
Intersection Summary												
HCM Average Control Delay			26.1				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			18.3		
Intersection Capacity Utilization			71.7%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: Elk Grove Blvd & Big Horn Blvd

Existing Conditions
 PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	LT	RT
Volume (vph)	1	182	195	199
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1583
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1	190	203	207
RTOR Reduction (vph)	0	0	0	177
Lane Group Flow (vph)	0	191	203	30
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		11.0	17.3	17.3
Effective Green, g (s)		11.0	17.3	17.3
Actuated g/C Ratio		0.09	0.14	0.14
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		315	510	228
v/s Ratio Prot		c0.06	c0.06	
v/s Ratio Perm				0.02
v/c Ratio		0.61	0.40	0.13
Uniform Delay, d1		52.4	46.6	44.8
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		2.3	0.2	0.1
Delay (s)		54.7	46.8	44.9
Level of Service		D	D	D
Approach Delay (s)			48.6	
Approach LOS			D	

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Elk Grove Blvd & Laguna Springs Drive

Existing Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔	↑↑↑	↗		↙	↑↑↑			↔	↑	↗↗
Volume (vph)	10	95	1398	27	3	109	1726	72	2	69	70	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7	5.7		5.6	5.7			5.6	5.3	5.3
Lane Util. Factor		1.00	0.91	1.00		0.97	0.91			1.00	1.00	0.88
Frt		1.00	1.00	0.85		1.00	0.99			1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)		1770	5085	1583		3433	5055			1770	1863	2787
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	5085	1583		3433	5055			1770	1863	2787
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	98	1441	28	3	112	1779	74	2	71	72	136
RTOR Reduction (vph)	0	0	0	9	0	0	2	0	0	0	0	123
Lane Group Flow (vph)	0	108	1441	19	0	115	1851	0	0	73	72	13
Turn Type	Prot	Prot		Perm	Prot	Prot			Prot	Prot		Perm
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases				6								8
Actuated Green, G (s)		11.7	63.9	63.9		8.4	60.6			8.3	11.5	11.5
Effective Green, g (s)		11.7	63.9	63.9		8.4	60.6			8.3	11.5	11.5
Actuated g/C Ratio		0.10	0.53	0.53		0.07	0.51			0.07	0.10	0.10
Clearance Time (s)		5.6	5.7	5.7		5.6	5.7			5.6	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0			2.0	2.0	2.0
Lane Grp Cap (vph)		173	2708	843		240	2553			122	179	267
v/s Ratio Prot		c0.06	c0.28			0.03	c0.37			0.04	c0.04	
v/s Ratio Perm				0.01								0.00
v/c Ratio		0.62	0.53	0.02		0.48	0.72			0.60	0.40	0.05
Uniform Delay, d1		52.0	18.3	13.3		53.7	23.2			54.2	51.0	49.3
Progression Factor		0.77	1.22	1.04		1.46	0.38			1.00	1.00	1.00
Incremental Delay, d2		4.5	0.7	0.0		0.4	1.3			5.2	0.5	0.0
Delay (s)		44.6	23.0	13.8		78.8	10.0			59.4	51.6	49.3
Level of Service		D	C	B		E	B			E	D	D
Approach Delay (s)			24.3				14.1				52.5	
Approach LOS			C				B				D	

Intersection Summary

HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.9
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 4: Elk Grove Blvd & Laguna Springs Drive

Existing Conditions
 PM Peak Hour

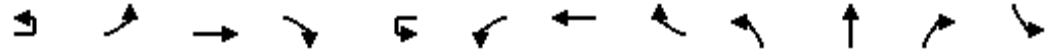


Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	138	66	142
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	5.6	5.3	
Lane Util. Factor	1.00	0.95	
Frt	1.00	0.90	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1770	3177	
Flt Permitted	0.95	1.00	
Satd. Flow (perm)	1770	3177	
Peak-hour factor, PHF	0.97	0.97	0.97
Adj. Flow (vph)	142	68	146
RTOR Reduction (vph)	0	125	0
Lane Group Flow (vph)	142	89	0
Turn Type	Prot		
Protected Phases	7	4	
Permitted Phases			
Actuated Green, G (s)	14.0	17.2	
Effective Green, g (s)	14.0	17.2	
Actuated g/C Ratio	0.12	0.14	
Clearance Time (s)	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	207	455	
v/s Ratio Prot	c0.08	0.03	
v/s Ratio Perm			
v/c Ratio	0.69	0.20	
Uniform Delay, d1	50.9	45.3	
Progression Factor	1.00	1.00	
Incremental Delay, d2	7.3	0.1	
Delay (s)	58.2	45.4	
Level of Service	E	D	
Approach Delay (s)		50.5	
Approach LOS		D	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
5: Elk Grove Blvd & Auto Center Drive

Existing Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑			↔	↑↑↑		↔	↑		↔
Volume (vph)	2	115	1428	68	47	176	1731	6	149	24	244	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7			5.6	5.7		5.6	4.6		5.9
Lane Util. Factor		1.00	0.91			0.97	0.91		1.00	1.00		0.97
Frt		1.00	0.99			1.00	1.00		1.00	0.86		1.00
Flt Protected		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		1770	5051			3433	5083		1770	1608		3433
Flt Permitted		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (perm)		1770	5051			3433	5083		1770	1608		3433
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	2	120	1488	71	49	183	1803	6	155	25	254	197
RTOR Reduction (vph)	0	0	3	0	0	0	0	0	0	236	0	0
Lane Group Flow (vph)	0	122	1556	0	0	232	1809	0	155	43	0	197
Turn Type	Prot	Prot			Prot	Prot			Prot			Prot
Protected Phases	1	1	6		5	5	2		7	4		3
Permitted Phases												
Actuated Green, G (s)		12.6	59.5			12.5	59.4		14.8	8.7		17.5
Effective Green, g (s)		12.6	59.5			12.5	59.4		14.8	8.7		17.5
Actuated g/C Ratio		0.10	0.50			0.10	0.49		0.12	0.07		0.15
Clearance Time (s)		5.6	5.7			5.6	5.7		5.6	4.6		5.9
Vehicle Extension (s)		2.0	2.0			2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)		186	2504			358	2516		218	117		501
v/s Ratio Prot		c0.07	0.31			0.07	c0.36		c0.09	0.03		c0.06
v/s Ratio Perm												
v/c Ratio		0.66	0.62			0.65	0.72		0.71	0.37		0.39
Uniform Delay, d1		51.6	22.0			51.6	23.8		50.5	53.0		46.4
Progression Factor		1.11	0.77			1.18	0.48		1.00	1.00		1.00
Incremental Delay, d2		5.5	1.0			2.2	1.3		8.8	0.7		0.2
Delay (s)		62.9	18.1			63.3	12.7		59.3	53.8		46.6
Level of Service		E	B			E	B		E	D		D
Approach Delay (s)			21.3				18.5			55.7		
Approach LOS			C				B			E		

Intersection Summary		
HCM Average Control Delay	25.3	HCM Level of Service C
HCM Volume to Capacity ratio	0.65	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 16.9
Intersection Capacity Utilization	80.0%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 5: Elk Grove Blvd & Auto Center Drive

Existing Conditions
 PM Peak Hour



Movement	SBT	SBR
Lane Configurations		
Volume (vph)	12	116
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1609	
Flt Permitted	1.00	
Satd. Flow (perm)	1609	
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	12	121
RTOR Reduction (vph)	110	0
Lane Group Flow (vph)	23	0
Turn Type		
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	11.4	
Effective Green, g (s)	11.4	
Actuated g/C Ratio	0.10	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	153	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.15	
Uniform Delay, d1	49.9	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	50.0	
Level of Service	D	
Approach Delay (s)	48.0	
Approach LOS	D	
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Existing Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	1749	215	94	1182	0	0	0	0	684	0	971
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Fr _t		0.98		1.00	1.00					1.00	1.00	0.85
Fl _t Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5002		1770	5085					1681	1681	2787
Fl _t Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5002		1770	5085					1681	1681	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1785	219	96	1206	0	0	0	0	698	0	991
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	80
Lane Group Flow (vph)	0	1993	0	96	1206	0	0	0	0	349	349	911
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		52.5		10.9	69.3					38.3	38.3	38.3
Effective Green, g (s)		52.5		10.9	69.3					38.3	38.3	38.3
Actuated g/C Ratio		0.44		0.09	0.58					0.32	0.32	0.32
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2188		161	2937					537	537	890
v/s Ratio Prot		c0.40		c0.05	0.24					0.21	0.21	
v/s Ratio Perm												c0.33
v/c Ratio		0.91		0.60	0.41					0.65	0.65	1.02
Uniform Delay, d ₁		31.6		52.4	14.0					35.1	35.1	40.9
Progression Factor		0.51		0.41	1.41					1.00	1.00	1.00
Incremental Delay, d ₂		6.0		2.9	0.3					2.0	2.0	36.2
Delay (s)		22.2		24.2	20.1					37.1	37.1	77.0
Level of Service		C		C	C					D	D	E
Approach Delay (s)		22.2		20.4			0.0				60.5	
Approach LOS		C		C			A				E	

Intersection Summary

HCM Average Control Delay	34.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

7: Elk Grove Blvd & SR-99 NB On-ramp

Existing Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶↶	↑↑↑	↑↑↑	↷		
Volume (vph)	745	1688	1276	507	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	5085	5085	1583		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	5085	5085	1583		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	801	1815	1372	545	0	0
RTOR Reduction (vph)	0	0	0	76	0	0
Lane Group Flow (vph)	801	1815	1372	469	0	0
Turn Type	Prot		Perm			
Protected Phases	1	6	2			
Permitted Phases				2		
Actuated Green, G (s)	59.4	120.0	49.3	49.3		
Effective Green, g (s)	59.4	120.0	49.3	49.3		
Actuated g/C Ratio	0.49	1.00	0.41	0.41		
Clearance Time (s)	5.6	6.0	5.7	5.7		
Vehicle Extension (s)	2.0	3.0	2.0	2.0		
Lane Grp Cap (vph)	1699	5085	2089	650		
v/s Ratio Prot	c0.23	0.36	0.27			
v/s Ratio Perm				c0.30		
v/c Ratio	0.47	0.36	0.66	0.72		
Uniform Delay, d1	20.0	0.0	28.5	29.6		
Progression Factor	0.72	1.00	0.80	0.73		
Incremental Delay, d2	0.0	0.1	1.3	5.5		
Delay (s)	14.4	0.1	24.0	27.1		
Level of Service	B	A	C	C		
Approach Delay (s)		4.5	24.9		0.0	
Approach LOS		A	C		A	

Intersection Summary

HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.3
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

Existing Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		
Volume (vph)	12	114	1012	477	6	55	1136	103	494	113	93	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7	5.7		5.6	5.7	5.7	5.6	5.6		
Lane Util. Factor		1.00	0.95	1.00		1.00	0.91	1.00	0.91	0.91		
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.97		
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.97		
Satd. Flow (prot)		1770	3539	1583		1770	5085	1583	1610	3199		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.97		
Satd. Flow (perm)		1770	3539	1583		1770	5085	1583	1610	3199		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	13	120	1065	502	6	58	1196	108	520	119	98	8
RTOR Reduction (vph)	0	0	0	237	0	0	0	50	0	19	0	0
Lane Group Flow (vph)	0	133	1065	265	0	64	1196	58	260	458	0	0
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Split			Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				6				2				
Actuated Green, G (s)		12.3	51.0	51.0		7.7	46.4	46.4	22.1	22.1		
Effective Green, g (s)		12.3	51.0	51.0		7.7	46.4	46.4	22.1	22.1		
Actuated g/C Ratio		0.10	0.42	0.42		0.06	0.39	0.39	0.18	0.18		
Clearance Time (s)		5.6	5.7	5.7		5.6	5.7	5.7	5.6	5.6		
Vehicle Extension (s)		2.0	3.9	3.9		2.0	3.9	3.9	2.0	2.0		
Lane Grp Cap (vph)		181	1504	673		114	1966	612	297	589		
v/s Ratio Prot		c0.08	c0.30			0.04	0.24		c0.16	0.14		
v/s Ratio Perm				0.17				0.04				
v/c Ratio		0.73	0.71	0.39		0.56	0.61	0.10	0.88	0.78		
Uniform Delay, d1		52.3	28.4	23.8		54.5	29.5	23.4	47.6	46.6		
Progression Factor		0.85	0.76	1.60		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		11.9	2.7	1.6		3.7	1.4	0.3	23.1	5.9		
Delay (s)		56.4	24.2	39.7		58.2	30.9	23.7	70.7	52.5		
Level of Service		E	C	D		E	C	C	E	D		
Approach Delay (s)			31.3				31.6			58.9		
Approach LOS			C				C			E		

Intersection Summary

HCM Average Control Delay	38.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 8: Elk Grove Blvd & E. Stockton Blvd

Existing Conditions
 PM Peak Hour



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	209	135	128
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6
Lane Util. Factor	0.95	0.95	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00
Satd. Flow (prot)	1681	1748	1583
Flt Permitted	0.95	0.99	1.00
Satd. Flow (perm)	1681	1748	1583
Peak-hour factor, PHF	0.95	0.95	0.95
Adj. Flow (vph)	220	142	135
RTOR Reduction (vph)	0	0	115
Lane Group Flow (vph)	182	188	20
Turn Type	Split		Perm
Protected Phases	4	4	
Permitted Phases			4
Actuated Green, G (s)	17.7	17.7	17.7
Effective Green, g (s)	17.7	17.7	17.7
Actuated g/C Ratio	0.15	0.15	0.15
Clearance Time (s)	4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	248	258	233
v/s Ratio Prot	c0.11	0.11	
v/s Ratio Perm			0.01
v/c Ratio	0.73	0.73	0.09
Uniform Delay, d1	48.9	48.9	44.2
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	9.3	8.4	0.1
Delay (s)	58.2	57.3	44.2
Level of Service	E	E	D
Approach Delay (s)		54.1	
Approach LOS		D	

Intersection Summary

HCM Unsignalized Intersection Capacity Analysis
 9: SR-99 NB Off-ramp & E. Stockton Blvd

Existing Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↶	↷		↶↷	↶	
Volume (veh/h)	258	9	0	398	586	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	266	9	0	410	604	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		1				
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)					808	
pX, platoon unblocked	0.97	0.97	0.97			
vC, conflicting volume	809	604	604			
vC1, stage 1 conf vol	604					
vC2, stage 2 conf vol	205					
vCu, unblocked vol	785	573	573			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	44	98	100			
cM capacity (veh/h)	479	447	962			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	275	205	205	604		
Volume Left	266	0	0	0		
Volume Right	9	0	0	0		
cSH	484	1700	1700	1700		
Volume to Capacity	0.57	0.12	0.12	0.36		
Queue Length 95th (ft)	87	0	0	0		
Control Delay (s)	21.8	0.0	0.0	0.0		
Lane LOS	C					
Approach Delay (s)	21.8	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			4.7			
Intersection Capacity Utilization			51.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
10: Whitelock Pkwy & Bruceville Road

Existing Conditions
PM Peak Hour

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	1	320	192	37	1	129	231	43	21	104	244	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	4.9	4.9		5.6	4.9	4.9		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00		0.97	0.95	1.00		0.97	0.95	1.00
Fr _t		1.00	1.00	0.85		1.00	1.00	0.85		1.00	1.00	0.85
Fl _t Protected		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1583		3433	3539	1583		3433	3539	1583
Fl _t Permitted		0.95	1.00	1.00		0.95	1.00	1.00		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1583		3433	3539	1583		3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1	344	206	40	1	139	248	46	23	112	262	54
RTOR Reduction (vph)	0	0	0	30	0	0	0	38	0	0	0	38
Lane Group Flow (vph)	0	345	206	10	0	140	248	8	0	135	262	16
Turn Type	Prot	Prot		Perm	Prot	Prot		Perm	Prot	Prot		Perm
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8				4				6
Actuated Green, G (s)		13.6	19.0	19.0		8.6	14.0	14.0		8.5	22.6	22.6
Effective Green, g (s)		13.6	19.0	19.0		8.6	14.0	14.0		8.5	22.6	22.6
Actuated g/C Ratio		0.17	0.24	0.24		0.11	0.18	0.18		0.11	0.29	0.29
Clearance Time (s)		5.6	4.9	4.9		5.6	4.9	4.9		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		599	862	386		379	635	284		374	1025	459
v/s Ratio Prot		c0.10	c0.06			0.04	c0.07			c0.04	c0.07	
v/s Ratio Perm				0.01				0.01				0.01
v/c Ratio		0.58	0.24	0.03		0.37	0.39	0.03		0.36	0.26	0.03
Uniform Delay, d ₁		29.6	23.7	22.5		32.2	28.2	26.4		32.2	21.2	19.9
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d ₂		0.8	0.1	0.0		0.2	0.1	0.0		0.2	0.0	0.0
Delay (s)		30.4	23.7	22.5		32.4	28.4	26.4		32.4	21.3	19.9
Level of Service		C	C	C		C	C	C		C	C	B
Approach Delay (s)			27.5				29.5				24.5	
Approach LOS			C				C				C	
Intersection Summary												
HCM Average Control Delay			26.4				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			78.0				Sum of lost time (s)			32.3		
Intersection Capacity Utilization			67.6%				ICU Level of Service			C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 10: Whitelock Pkwy & Bruceville Road

Existing Conditions
 PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		↘ ↙	↑ ↑	↗
Volume (vph)	14	68	400	472
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1583
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93
Adj. Flow (vph)	15	73	430	508
RTOR Reduction (vph)	0	0	0	379
Lane Group Flow (vph)	0	88	430	129
Turn Type	Prot	Prot		Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		5.7	19.8	19.8
Effective Green, g (s)		5.7	19.8	19.8
Actuated g/C Ratio		0.07	0.25	0.25
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		251	898	402
v/s Ratio Prot		0.03	c0.12	
v/s Ratio Perm				0.08
v/c Ratio		0.35	0.48	0.32
Uniform Delay, d1		34.4	24.7	23.6
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		0.3	0.1	0.2
Delay (s)		34.7	24.9	23.8
Level of Service		C	C	C
Approach Delay (s)			25.2	
Approach LOS			C	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 11: Whitelock Pkwy & Big Horn Blvd

Existing Conditions
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↗	↗	↗
Volume (vph)	201	66	124	42	12	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	4.6	4.6	5.3	5.3
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		0.96	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1795	1863	1583	1770	1583
Flt Permitted		0.96	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1795	1863	1583	1770	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	216	71	133	45	13	281
RTOR Reduction (vph)	0	0	0	36	0	228
Lane Group Flow (vph)	0	287	133	9	13	53
Turn Type	Split			Perm		Perm
Protected Phases	3	3	4		2	
Permitted Phases				4		2
Actuated Green, G (s)		13.4	9.6	9.6	9.0	9.0
Effective Green, g (s)		13.4	9.6	9.6	9.0	9.0
Actuated g/C Ratio		0.28	0.20	0.20	0.19	0.19
Clearance Time (s)		5.6	4.6	4.6	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		506	377	320	335	300
v/s Ratio Prot		c0.16	c0.07		0.01	
v/s Ratio Perm				0.01		c0.03
v/c Ratio		0.57	0.35	0.03	0.04	0.18
Uniform Delay, d1		14.6	16.3	15.2	15.7	16.1
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.9	0.2	0.0	0.0	0.1
Delay (s)		15.4	16.5	15.2	15.7	16.2
Level of Service		B	B	B	B	B
Approach Delay (s)		15.4	16.2		16.2	
Approach LOS		B	B		B	

Intersection Summary

HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	15.5
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
12: Whitelock Pkwy & W Stockton Blvd

Existing Conditions
PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	28	70	112	83	71	33
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	29	74	118	87	75	35
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	415	92	109			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	415	92	109			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	92	92			
cM capacity (veh/h)	546	965	1481			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	29	74	205	109		
Volume Left	29	0	118	0		
Volume Right	0	74	0	35		
cSH	546	965	1481	1700		
Volume to Capacity	0.05	0.08	0.08	0.06		
Queue Length 95th (ft)	4	6	6	0		
Control Delay (s)	12.0	9.0	4.7	0.0		
Lane LOS	B	A	A			
Approach Delay (s)	9.9		4.7	0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			4.7			
Intersection Capacity Utilization			27.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
 13: Bilby Road & Bruceville Road

Existing Conditions
 PM Peak Hour



















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↑	↗
Volume (vph)	75	6	105	3	1	2	182	183	2	14	101	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			7.0			6.5			6.5	6.5
Lane Util. Factor		1.00			1.00			1.00			1.00	1.00
Frt		0.92			0.95			1.00			1.00	0.85
Flt Protected		0.98			0.98			0.98			0.99	1.00
Satd. Flow (prot)		1687			1736			1816			1852	1583
Flt Permitted		0.87			0.78			0.78			0.94	1.00
Satd. Flow (perm)		1489			1382			1452			1743	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	81	6	113	3	1	2	196	197	2	15	109	137
RTOR Reduction (vph)	0	64	0	0	2	0	0	0	0	0	0	71
Lane Group Flow (vph)	0	136	0	0	4	0	0	395	0	0	124	66
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)		9.7			9.2			21.3			21.3	21.3
Effective Green, g (s)		9.7			9.2			21.3			21.3	21.3
Actuated g/C Ratio		0.22			0.21			0.48			0.48	0.48
Clearance Time (s)		6.5			7.0			6.5			6.5	6.5
Vehicle Extension (s)		2.0			2.0			4.5			4.5	4.5
Lane Grp Cap (vph)		328			289			703			844	766
v/s Ratio Prot												
v/s Ratio Perm		c0.09			0.00			c0.27			0.07	0.04
v/c Ratio		0.41			0.02			0.56			0.15	0.09
Uniform Delay, d1		14.7			13.8			8.0			6.3	6.1
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.3			0.0			1.5			0.1	0.1
Delay (s)		15.0			13.8			9.5			6.4	6.2
Level of Service		B			B			A			A	A
Approach Delay (s)		15.0			13.8			9.5			6.3	
Approach LOS		B			B			A			A	

Intersection Summary

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	44.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

















HCM Unsignalized Intersection Capacity Analysis
 14: Hood Franklin Road & I-5 SB Off-ramp

Existing Conditions
 PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (veh/h)	0	75	13	0	34	15	0	0	0	243	0	36	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	82	14	0	37	16	0	0	0	264	0	39	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)												12	
Median type	None					None							
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	37			82				153	126	89	134	127	45
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	37			82				153	126	89	134	127	45
tC, single (s)	4.1			4.1				7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)													
tF (s)	2.2			2.2				3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100				100	100	100	68	100	96
cM capacity (veh/h)	1574			1516				783	765	970	838	764	1025
Direction, Lane #	EB 1	WB 1	SB 1										
Volume Total	96	53	303										
Volume Left	0	0	264										
Volume Right	14	16	39										
cSH	1700	1700	962										
Volume to Capacity	0.06	0.03	0.32										
Queue Length 95th (ft)	0	0	34										
Control Delay (s)	0.0	0.0	10.9										
Lane LOS			B										
Approach Delay (s)	0.0	0.0	10.9										
Approach LOS			B										
Intersection Summary													
Average Delay			7.3										
Intersection Capacity Utilization			24.9%	ICU Level of Service	A								
Analysis Period (min)			15										

HCM Unsignalized Intersection Capacity Analysis
 15: Hood Franklin Road & I-5 NB On-ramp

Existing Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	285	33	0	43	66	6	0	85	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	300	35	0	45	69	6	0	89	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	45			300			397	363	317	487	380	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	45			300			397	363	317	487	380	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	88	100	100	100
cM capacity (veh/h)	1563			1261			563	565	723	430	552	980
Direction, Lane #	EB 1	WB 1	NB 1	NB 2								
Volume Total	335	115	6	89								
Volume Left	0	0	6	0								
Volume Right	35	69	0	89								
cSH	1700	1700	563	723								
Volume to Capacity	0.20	0.07	0.01	0.12								
Queue Length 95th (ft)	0	0	1	11								
Control Delay (s)	0.0	0.0	11.5	10.7								
Lane LOS			B	B								
Approach Delay (s)	0.0	0.0	10.7									
Approach LOS			B									
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization			28.9%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd


















Existing Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	360	10	4	54	47	105
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	391	11	4	59	51	114
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	391	11	4	59	51	114
Volume Left (vph)	391	0	4	0	0	0
Volume Right (vph)	0	11	0	0	0	114
Hadj (s)	0.53	-0.67	0.53	0.03	0.03	-0.67
Departure Headway (s)	5.6	4.4	6.5	6.0	5.8	5.1
Degree Utilization, x	0.61	0.01	0.01	0.10	0.08	0.16
Capacity (veh/h)	623	779	516	559	575	655
Control Delay (s)	15.9	6.3	8.3	8.4	8.2	7.9
Approach Delay (s)	15.6		8.4		8.0	
Approach LOS	C		A		A	
Intersection Summary						
Delay			12.9			
HCM Level of Service			B			
Intersection Capacity Utilization			29.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 17: Bilby Road & Franklin Blvd

Existing Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	0	0	79	1	2	4	14	396	10	73	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
Hourly flow rate (vph)	0	0	0	88	1	2	4	16	440	11	81	2
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total (vph)	0	91	20	440	94							
Volume Left (vph)	0	88	4	0	11							
Volume Right (vph)	0	2	0	440	2							
Hadj (s)	0.00	0.21	0.08	-0.57	0.04							
Departure Headway (s)	4.2	4.4	4.3	3.2	4.2							
Degree Utilization, x	0.00	0.11	0.02	0.39	0.11							
Capacity (veh/h)	824	802	808	1114	834							
Control Delay (s)	7.2	7.9	7.4	8.2	7.7							
Approach Delay (s)	0.0	7.9	8.2		7.7							
Approach LOS	A	A	A		A							
Intersection Summary												
Delay			8.1									
HCM Level of Service			A									
Intersection Capacity Utilization			35.7%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 18: Bilby Road & Willard Pkwy

Existing Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	238	201	83	119	117	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	264	223	92	132	130	57
RTOR Reduction (vph)	0	160	0	0	0	42
Lane Group Flow (vph)	264	63	92	132	130	15
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	21.8	21.8	8.9	19.9	20.1	20.1
Effective Green, g (s)	21.8	21.8	8.9	14.2	20.1	20.1
Actuated g/C Ratio	0.28	0.28	0.11	0.18	0.26	0.26
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	497	445	203	648	483	410
v/s Ratio Prot	c0.15		c0.05	c0.04	c0.07	
v/s Ratio Perm		0.04				0.01
v/c Ratio	0.53	0.14	0.45	0.20	0.27	0.04
Uniform Delay, d1	23.6	20.9	32.1	26.9	22.9	21.5
Progression Factor	1.00	1.00	0.98	1.16	1.00	1.00
Incremental Delay, d2	0.5	0.1	0.6	0.1	0.1	0.0
Delay (s)	24.1	20.9	31.9	31.3	23.0	21.5
Level of Service	C	C	C	C	C	C
Approach Delay (s)	22.7			31.5	22.6	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	77.6	Sum of lost time (s)	21.5
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Bilby Road & Willard Pkwy

Existing Conditions
 PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Volume (vph)	8	189	5	3	8	302	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	5.7			5.6	5.7
Lane Util. Factor	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.85	0.95			1.00	1.00
Flt Protected	0.95	1.00	1.00			0.95	1.00
Satd. Flow (prot)	1770	1583	1768			1770	1863
Flt Permitted	0.95	1.00	1.00			0.95	1.00
Satd. Flow (perm)	1770	1583	1768			1770	1863
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	9	203	5	3	9	325	9
RTOR Reduction (vph)	0	137	3	0	0	0	0
Lane Group Flow (vph)	9	66	5	0	0	334	9
Turn Type		Perm			Prot	Prot	
Protected Phases	2		4		3	3	8 1
Permitted Phases		2					
Actuated Green, G (s)	25.1	25.1	8.9			20.1	26.4
Effective Green, g (s)	25.1	25.1	8.9			20.1	26.4
Actuated g/C Ratio	0.32	0.32	0.11			0.26	0.34
Clearance Time (s)	7.0	7.0	5.7			5.6	
Vehicle Extension (s)	2.0	2.0	2.0			2.0	
Lane Grp Cap (vph)	573	512	203			458	634
v/s Ratio Prot	0.01		c0.00			c0.19	c0.00
v/s Ratio Perm		c0.04					
v/c Ratio	0.02	0.13	0.03			0.73	0.01
Uniform Delay, d1	17.9	18.5	30.5			26.3	17.0
Progression Factor	1.00	1.00	1.00			1.26	0.86
Incremental Delay, d2	0.0	0.0	0.0			4.8	0.0
Delay (s)	17.9	18.6	30.5			37.8	14.7
Level of Service	B	B	C			D	B
Approach Delay (s)	18.5		30.5				37.2
Approach LOS	B		C				D

Intersection Summary			
HCM Average Control Delay		30.1	HCM Level of Service C
HCM Volume to Capacity ratio		0.31	
Actuated Cycle Length (s)		77.6	Sum of lost time (s) 18.3
Intersection Capacity Utilization		46.1%	ICU Level of Service A
Analysis Period (min)		15	
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 20: Kammerer Road & Bruceville Road

Existing Conditions
 PM Peak Hour




































Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	52	328	38	41	160	49
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	55	345	40	43	168	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	450	62			83	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	450	62			83	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	66			89	
cM capacity (veh/h)	504	1003			1514	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	400	83	220
Volume Left	55	0	168
Volume Right	345	43	0
cSH	884	1700	1514
Volume to Capacity	0.45	0.05	0.11
Queue Length 95th (ft)	60	0	9
Control Delay (s)	12.4	0.0	6.1
Lane LOS	B		A
Approach Delay (s)	12.4	0.0	6.1
Approach LOS	B		

Intersection Summary			
Average Delay		9.0	
Intersection Capacity Utilization		47.9%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
21: Kammerer Road & Promenade Pkwy

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  	 				  	 	
Volume (vph)	1	238	0	17	368	135	0	1	23	166	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7		6.7	6.7	6.7		5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86		1.00	0.91	0.88		1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408		1770	5085	2787		1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408		1770	5085	2787		1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1	253	0	18	391	144	0	1	24	177	1	3
RTOR Reduction (vph)	0	0	0	0	0	99	0	0	23	0	0	2
Lane Group Flow (vph)	1	253	0	18	391	45	0	1	1	177	1	1
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	0.4	16.1		0.6	16.3	16.3		2.3	2.3	7.7	15.8	15.8
Effective Green, g (s)	0.4	16.1		0.6	16.3	16.3		2.3	2.3	7.7	15.8	15.8
Actuated g/C Ratio	0.01	0.31		0.01	0.31	0.31		0.04	0.04	0.15	0.30	0.30
Clearance Time (s)	6.7	6.7		6.7	6.7	6.7		5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	26	1976		20	1588	870		82	70	736	1071	479
v/s Ratio Prot	0.00	0.04		c0.01	c0.08			0.00		c0.04	0.00	
v/s Ratio Perm						0.02			c0.00			0.00
v/c Ratio	0.04	0.13		0.90	0.25	0.05		0.01	0.02	0.24	0.00	0.00
Uniform Delay, d1	25.7	13.0		25.8	13.4	12.5		23.9	23.9	19.7	12.7	12.7
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.0		151.8	0.0	0.0		0.0	0.0	0.1	0.0	0.0
Delay (s)	25.9	13.0		177.6	13.4	12.6		23.9	23.9	19.7	12.7	12.7
Level of Service	C	B		F	B	B		C	C	B	B	B
Approach Delay (s)		13.1			18.5			23.9			19.6	
Approach LOS		B			B			C			B	

Intersection Summary		
HCM Average Control Delay	17.5	HCM Level of Service B
HCM Volume to Capacity ratio	0.19	
Actuated Cycle Length (s)	52.2	Sum of lost time (s) 18.8
Intersection Capacity Utilization	34.8%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis

22: Grant Line Road & SR-99 SB Off-ramp

Existing Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑	↑	↑
Volume (vph)	0	308	119	0	466	552	0	0	0	208	0	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.99	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1605	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1605	1504
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	321	124	0	485	575	0	0	0	217	0	56
RTOR Reduction (vph)	0	0	71	0	0	0	0	0	0	0	2	36
Lane Group Flow (vph)	0	321	53	0	485	575	0	0	0	113	108	14
Turn Type		Perm			Free					Perm		Perm
Protected Phases		6			2					8		8
Permitted Phases		6			Free					8		8
Actuated Green, G (s)		17.4	17.4		17.4	40.8				11.1	11.1	11.1
Effective Green, g (s)		17.4	17.4		17.4	40.8				11.1	11.1	11.1
Actuated g/C Ratio		0.43	0.43		0.43	1.00				0.27	0.27	0.27
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2169	675		2169	1583				457	437	409
v/s Ratio Prot		0.06			0.10							
v/s Ratio Perm			0.03			c0.36				0.07	0.07	0.01
v/c Ratio		0.15	0.08		0.22	0.36				0.25	0.25	0.03
Uniform Delay, d1		7.2	6.9		7.4	0.0				11.6	11.6	10.9
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.0	0.1		0.1	0.6				0.1	0.1	0.0
Delay (s)		7.2	7.0		7.5	0.6				11.7	11.7	10.9
Level of Service		A	A		A	A				B	B	B
Approach Delay (s)		7.2			3.8			0.0		11.6		
Approach LOS		A			A			A		B		

Intersection Summary

HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	40.8	Sum of lost time (s)	0.0
Intersection Capacity Utilization	25.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

23: Grant Line Road & SR-99 NB On-ramp

Existing Conditions
PM Peak Hour










































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑	↑	↑↑			
Volume (vph)	0	449	67	0	889	268	129	1	519	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1686	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1686	2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	488	73	0	966	291	140	1	564	0	0	0
RTOR Reduction (vph)	0	0	33	0	0	129	0	0	430	0	0	0
Lane Group Flow (vph)	0	488	40	0	966	162	70	71	134	0	0	0
Turn Type		Perm			Perm		Split		Perm			
Protected Phases		6			2		4	4				
Permitted Phases			6			2			4			
Actuated Green, G (s)		27.4	27.4		27.9	27.9	11.9	11.9	11.9			
Effective Green, g (s)		27.4	27.4		27.9	27.9	11.9	11.9	11.9			
Actuated g/C Ratio		0.55	0.55		0.56	0.56	0.24	0.24	0.24			
Clearance Time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2781	866		2832	882	399	400	662			
v/s Ratio Prot		0.10			c0.19		0.04	0.04				
v/s Ratio Perm			0.03			0.10			c0.05			
v/c Ratio		0.18	0.05		0.34	0.18	0.18	0.18	0.20			
Uniform Delay, d1		5.7	5.3		6.1	5.5	15.2	15.2	15.3			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.0	0.0		0.1	0.1	0.1	0.1	0.1			
Delay (s)		5.7	5.3		6.2	5.6	15.3	15.3	15.4			
Level of Service		A	A		A	A	B	B	B			
Approach Delay (s)		5.7			6.0			15.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary		
HCM Average Control Delay	8.6	HCM Level of Service
HCM Volume to Capacity ratio	0.30	A
Actuated Cycle Length (s)	50.1	Sum of lost time (s)
Intersection Capacity Utilization	35.8%	10.3
Analysis Period (min)	15	ICU Level of Service
		A
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & East Stockton Rd

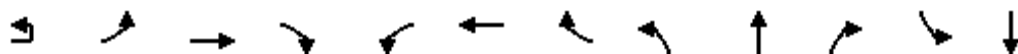
Existing Conditions
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	  	  		  	  			  	 		  	  	  
Volume (vph)	187	626	71	36	779	114	162	39	35	107	23	216	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9	
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.93		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00	
Satd. Flow (prot)	3433	5085	1583	1770	4988		1770	1730		1681	1714	1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00	
Satd. Flow (perm)	3433	5085	1583	1770	4988		1770	1730		1681	1714	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	203	680	77	39	847	124	176	42	38	116	25	235	
RTOR Reduction (vph)	0	0	45	0	11	0	0	17	0	0	0	206	
Lane Group Flow (vph)	203	680	32	39	960	0	176	63	0	70	71	29	
Turn Type	Prot		Perm	Prot			Split			Split		Perm	
Protected Phases	1	6		5	2		4	4		3	3		
Permitted Phases			6									3	
Actuated Green, G (s)	11.5	40.9	40.9	4.5	33.9		18.3	18.3		12.3	12.3	12.3	
Effective Green, g (s)	11.5	40.9	40.9	4.5	33.9		18.3	18.3		12.3	12.3	12.3	
Actuated g/C Ratio	0.12	0.41	0.41	0.05	0.34		0.18	0.18		0.12	0.12	0.12	
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9	
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	397	2090	651	80	1699		326	318		208	212	196	
v/s Ratio Prot	c0.06	c0.13		0.02	c0.19		c0.10	0.04		c0.04	0.04		
v/s Ratio Perm			0.02									0.02	
v/c Ratio	0.51	0.33	0.05	0.49	0.56		0.54	0.20		0.34	0.33	0.15	
Uniform Delay, d1	41.4	19.9	17.6	46.4	26.8		36.8	34.4		39.9	39.9	38.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.1	0.0	1.7	0.4		1.7	0.3		0.4	0.3	0.1	
Delay (s)	41.8	20.0	17.6	48.1	27.2		38.5	34.7		40.2	40.2	39.1	
Level of Service	D	C	B	D	C		D	C		D	D	D	
Approach Delay (s)		24.4			28.0			37.3			39.5		
Approach LOS		C			C			D			D		
Intersection Summary													
HCM Average Control Delay			29.3			HCM Level of Service				C			
HCM Volume to Capacity ratio			0.56										
Actuated Cycle Length (s)			99.5			Sum of lost time (s)			29.2				
Intersection Capacity Utilization			64.9%			ICU Level of Service				C			
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

25: Grant Line Road & Waterman Road

Existing Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		⇌	⇌		⇌	⇌	⇌		⇌			⇌
Volume (vph)	5	205	580	0	0	639	6	0	0	0	8	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.5			6.5	6.5					7.0
Lane Util. Factor		0.97	1.00			0.95	1.00					1.00
Frbp, ped/bikes		1.00	1.00			1.00	0.98					1.00
Flpb, ped/bikes		1.00	1.00			1.00	1.00					1.00
Frt		1.00	1.00			1.00	0.85					1.00
Flt Protected		0.95	1.00			1.00	1.00					0.95
Satd. Flow (prot)		3433	1863			3539	1559					1770
Flt Permitted		0.95	1.00			1.00	1.00					0.95
Satd. Flow (perm)		3433	1863			3539	1559					1770
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	5	214	604	0	0	666	6	0	0	0	8	0
RTOR Reduction (vph)	0	0	0	0	0	0	4	0	0	0	0	0
Lane Group Flow (vph)	0	219	604	0	0	666	2	0	0	0	0	8
Confl. Bikes (#/hr)				2			4					
Turn Type	Prot	Prot			Prot		Perm	Split				Split
Protected Phases	1	1	6		5	2		4	4			3
Permitted Phases							2					3
Actuated Green, G (s)		10.0	33.8			18.2	18.2					8.1
Effective Green, g (s)		10.0	33.8			18.2	18.2					8.1
Actuated g/C Ratio		0.15	0.51			0.28	0.28					0.12
Clearance Time (s)		5.6	6.5			6.5	6.5					7.0
Vehicle Extension (s)		2.0	2.0			2.0	2.0					2.0
Lane Grp Cap (vph)		523	958			980	432					218
v/s Ratio Prot		0.06	c0.32			0.19						0.00
v/s Ratio Perm							0.00					
v/c Ratio		0.42	0.63			0.68	0.01					0.04
Uniform Delay, d1		25.2	11.5			21.2	17.2					25.4
Progression Factor		1.00	1.00			1.00	1.00					1.00
Incremental Delay, d2		0.2	1.0			1.5	0.0					0.0
Delay (s)		25.4	12.5			22.6	17.2					25.4
Level of Service		C	B			C	B					C
Approach Delay (s)			15.9			22.6		0.0				25.5
Approach LOS			B			C		A				C

Intersection Summary

HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	23.8
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

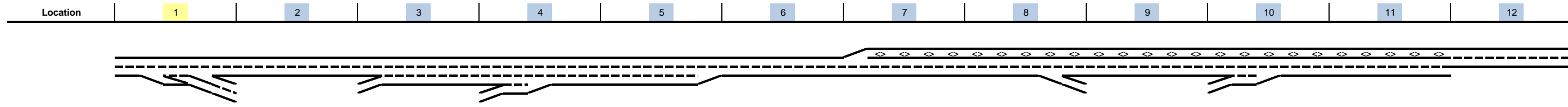
c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 25: Grant Line Road & Waterman Road

Existing Conditions
 PM Peak Hour

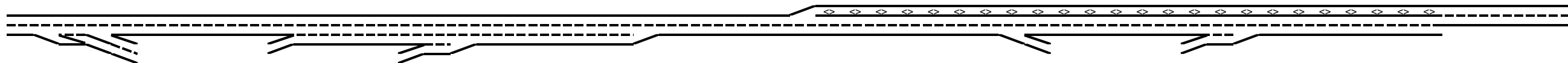
Movement	SBR
Lane Configurations	FF
Volume (vph)	195
Ideal Flow (vphpl)	1900
Total Lost time (s)	7.0
Lane Util. Factor	0.88
Frbp, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	2787
Flt Permitted	1.00
Satd. Flow (perm)	2787
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	203
RTOR Reduction (vph)	178
Lane Group Flow (vph)	25
Confl. Bikes (#/hr)	
Turn Type	Perm
Protected Phases	
Permitted Phases	3
Actuated Green, G (s)	8.1
Effective Green, g (s)	8.1
Actuated g/C Ratio	0.12
Clearance Time (s)	7.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	344
v/s Ratio Prot	
v/s Ratio Perm	c0.01
v/c Ratio	0.07
Uniform Delay, d1	25.5
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	25.5
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Project: Southeast Policy Area EIR
 Freeway Corridor: State Route 99 NB
 Alternative: Existing Conditions
 Time Period: AM Peak Hour



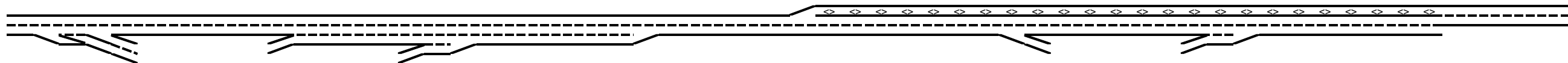
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Define Freeway Segment												
Type	Diverge	Basic	Basic	Merge	Basic	Basic	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	1,500	1,500	1,300	1,500	400	6,700	1,050	1,500	2,550	1,500	100	8,700
Accel Length				320						1,200		
Decel Length	1,450							170				
Mainline Volume	2,500	1,880	1,880	1,930	2,110	2,110	2,110	2,110	1,870	1,870	3,220	2,500
On Ramp Volume			50	180						1,350		
Off Ramp Volume	620							240				
Express Lane Volume							633	633	561	561	966	
EL On Ramp Volume												
EL Off Ramp Volume												
Calculate Flow Rate in General Purpose Lanes (GP)												
GP Volume (vph)	2,500	1,880	1,930	2,110	2,110	2,110	1,477	1,477	1,309	2,659	2,254	2,500
PHF	0.79	0.92	0.79	0.79	0.92	0.92	0.92	0.85	0.92	0.85	0.92	0.92
GP Lanes	2	2	3	3	3	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	13.0%	5.0%	5.0%	15.0%	15.0%	15.0%	5.0%	10.0%	5.0%	10.0%	13.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.939	0.976	0.976	0.930	0.930	0.930	0.976	0.952	0.976	0.952	0.939
f _P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,244	2,176	2,504	2,738	2,465	2,465	1,726	1,781	1,494	3,206	2,573	2,894
GP Flow (pcphp)	1,622	1,088	835	913	822	1,233	863	891	747	1,603	1,286	1,447
Calculate Speed in General Purpose Lanes												
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70	70



Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Operations in General Purpose Lanes												
v/c ratio	0.68	0.45	0.35	0.38	0.34	0.51	0.36	0.37	0.31	0.67	0.54	0.60
Speed (mph)	67.9	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68.1	69.9	69.3
Density (pcphpl)	23.9	15.5	11.9	13.0	11.7	17.6	12.3	12.7	10.7	23.5	18.4	20.9
LOS	C	B	B	B	B	B	B	B	A	C	C	C
Calculate Operations for Entering GP Lanes												
GP _{IN} Vol (pcph)			2,439	2,504						1,579		
GP _{IN} Cap (pcph)			4,800	7,200						4,800		
GP _{IN} v/c ratio			0.51	0.35						0.33		
Calculate Operations for Exiting GP Lanes												
GP _{OUT} Vol (pcph)	2,439				2,465			1,492				
GP _{OUT} Cap (pcph)	4,800				4,800			4,800				
GP _{OUT} v/c ratio	0.51				0.51			0.31				
Calculate On Ramp Flow Rate												
On Volume (vph)			50	180						1,350		
PHF			0.79	0.79						0.85		
Total Lanes			1	1						1		
Terrain			Level	Level						Level		
Grade %			0.0%	0.0%						0.0%		
Grade Length (mi)			0.00	0.00						0.00		
Truck & Bus %			5.0%	5.0%						5.0%		
RV %			0.0%	0.0%						0.0%		
E _T			1.5	1.5						1.5		
E _R			1.2	1.2						1.2		
f _{HV}			0.976	0.976						0.976		
f _P			1.00	1.00						1.00		
On Flow (pcph)			65	234						1,628		
On Flow (pcphpl)			65	234						1,628		
Calculate On Ramp Roadway Operations												
On Ramp Type			Right	Right						Right		
On Ramp Speed (mph)			50	60						60		
On Ramp Cap (pcph)			2,100	2,200						2,200		
On Ramp v/c ratio			0.03	0.11						0.74		



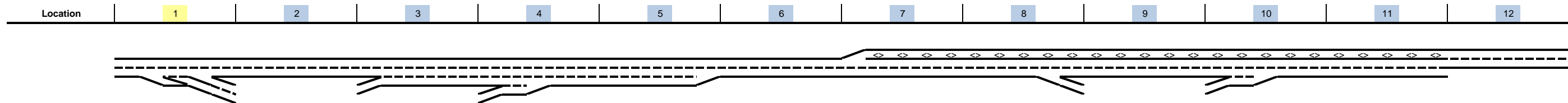
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Off Ramp Flow Rate												
Off Volume (vph)	620							240				
PHF	0.79							0.85				
Total Lanes	2							1				
Terrain	Level							Level				
Grade %	0.0%							0.0%				
Grade Length (mi)	0.00							0.00				
Truck & Bus %	5.0%							5.0%				
RV %	0.0%							0.0%				
E _T	1.5							1.5				
E _R	1.2							1.2				
f _{HV}	0.976							0.976				
f _P	1.00							1.00				
Off Flow (pcph)	804							289				
Off Flow (pcphpl)	402							289				
Calculate Off Ramp Roadway Operations												
Off Ramp Type	Right							Right				
Off Ramp Speed	35							45				
Off Ramp Cap (pcph)	4,000							2,100				
Off Ramp v/c ratio	0.20							0.14				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps												
Up Type			No	On								
Up Distance				1,300								
Up Flow (pcph)				65								
Down Type			On	Off								
Down Distance			1,300	3,000								
Down Flow (pcph)			234	289								



Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Merge Influence Area Operations												
Effective v_p (pcph)				2,504						1,579		
Up Ramp L_{EQ}				1,464								
Down Ramp L_{EQ}				2,012								
P_{FM} (Eqn 13-3)				0.586						0.611		
P_{FM} (Eqn 13-4)												
P_{FM} (Eqn 13-5)				0.574								
P_{FM}				0.586						1.000		
v_{12} (pcph)				1,469						1,579		
v_3 (pcph)				1,036								
v_{34} (pcph)												
v_{12a} (pcph)				1,469						1,579		
v_{R12a} (pcph)				1,702						3,206		
Merge Speed Index				0.30						0.27		
Merge Area Speed				61.5						62.3		
Outer Lanes Volume				1,036								
Outer Lanes Speed				68.1								
Segment Speed				63.8						62.3		
Merge v/c ratio				0.37						0.70		
Merge Density				16.6						22.2		
Merge LOS				B						C		
Calculate Diverge Influence Area Operations												
Effective v_p (pcph)	3,244							1,781				
Up Ramp L_{EQ}												
Down Ramp L_{EQ}												
P_{FD} (Eqn 13-9)	0.642							0.702				
P_{FD} (Eqn 13-10)												
P_{FD} (Eqn 13-11)												
P_{FD}	1.000							1.000				
v_{12} (pcph)	3,244							1,781				
v_3 (pcph)												
v_{34} (pcph)												
v_{12a} (pcph)	3,244							1,781				
Diverge Speed Index	0.50							0.32				
Diverge Area Speed	56.0							60.9				
Outer Lanes Volume												
Outer Lanes Speed												
Segment Speed	56.0							60.9				
Diverge v/c ratio	0.74							0.40				
Diverge Density	19.1							18.0				
Diverge LOS	B							B				

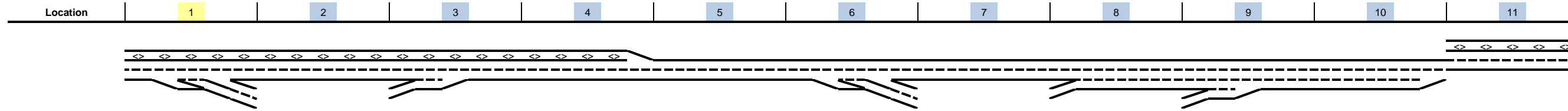


Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Summarize Segment Operations												
Segment v/c ratio	0.74	0.45	0.35	0.37	0.34	0.51	0.36	0.40	0.31	0.70	0.54	0.60
Segment Density	19.1	15.5	11.9	16.6	11.7	17.6	12.3	18.0	10.7	22.2	18.4	20.9
Segment LOS	B	B	B	B	B	B	B	B	A	C	C	C
Over Capacity												

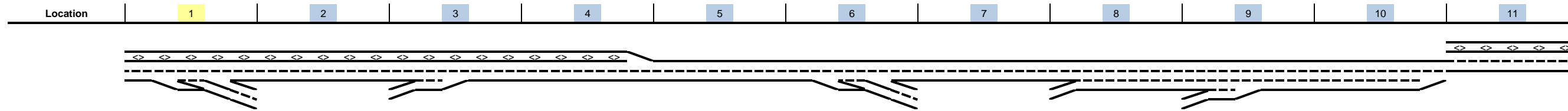
Project: Southeast Policy Area EIR
Freeway Corridor: State Route 99 SB

Alternative: Existing Conditions
Time Period: AM Peak Hour



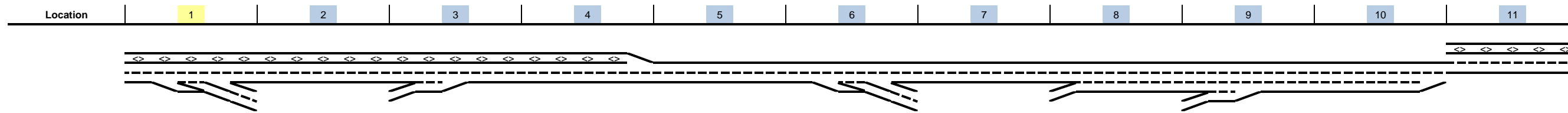
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Define Freeway Segment											
Type	Basic	Basic	Merge	Basic	Basic	Diverge	Basic	Basic	Merge	Basic	Basic
Length (ft)	1,500	2,250	1,500	400	8,050	1,500	1,650	1,200	1,500	400	250
Accel Length			350						350		
Decel Length						1,450					
Mainline Volume	2,890	1,600	1,600	1,890	1,890	1,890	1,640	1,640	2,060	2,160	2,890
On Ramp Volume			290					420	100		
Off Ramp Volume	1,290					250					
Express Lane Volume	867	480									867
EL On Ramp Volume											
EL Off Ramp Volume											
Calculate Flow Rate in General Purpose Lanes (GP)											
GP Volume (vph)	2,023	1,120	1,890	1,890	1,890	1,890	1,640	2,060	2,160	2,160	2,023
PHF	0.85	0.91	0.85	0.91	0.91	0.79	0.91	0.79	0.79	0.91	0.91
GP Lanes	2	2	2	2	2	2	2	3	3	3	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	10.0%	5.0%	15.0%	15.0%	5.0%	13.0%	5.0%	5.0%	13.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.952	0.976	0.930	0.930	0.976	0.939	0.976	0.976	0.939	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,440	1,292	2,279	2,233	2,233	2,452	1,919	2,673	2,803	2,528	2,334
GP Flow (pcphpl)	1,220	646	1,140	1,116	1,116	1,226	960	891	934	843	1,167
Calculate Speed in General Purpose Lanes											
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	73.6	73.6	73.6	73.6	74.2	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70



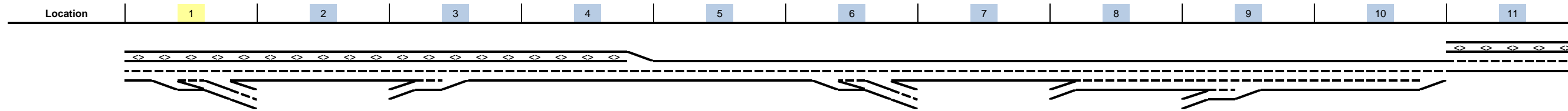
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Operations in General Purpose Lanes											
v/c ratio	0.51	0.27	0.47	0.47	0.47	0.51	0.40	0.37	0.39	0.35	0.49
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	17.4	9.2	16.3	15.9	15.9	17.5	13.7	12.7	13.3	12.0	16.7
LOS	B	A	B	B	B	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes											
GP _{IN} Vol (pcph)			1,929					2,128	2,673		
GP _{IN} Cap (pcph)			4,800					4,800	7,200		
GP _{IN} v/c ratio			0.40					0.44	0.37		
Calculate Operations for Exiting GP Lanes											
GP _{OUT} Vol (pcph)	884					2,128				2,528	
GP _{OUT} Cap (pcph)	4,800					4,800				4,800	
GP _{OUT} v/c ratio	0.18					0.44				0.53	
Calculate On Ramp Flow Rate											
On Volume (vph)			290					420	100		
PHF			0.85					0.79	0.79		
Total Lanes			1					1	1		
Terrain			Level					Level	Level		
Grade %			0.0%					0.0%	0.0%		
Grade Length (mi)			0.00					0.00	0.00		
Truck & Bus %			5.0%					5.0%	5.0%		
RV %			0.0%					0.0%	0.0%		
E _T			1.5					1.5	1.5		
E _R			1.2					1.2	1.2		
f _{HV}			0.976					0.976	0.976		
f _P			1.00					1.00	1.00		
On Flow (pcph)			350					545	130		
On Flow (pcphpl)			350					545	130		
Calculate On Ramp Roadway Operations											
On Ramp Type			Right					Right	Right		
On Ramp Speed (mph)			60					50	60		
On Ramp Cap (pcph)			2,200					2,100	2,200		
On Ramp v/c ratio			0.16					0.26	0.06		



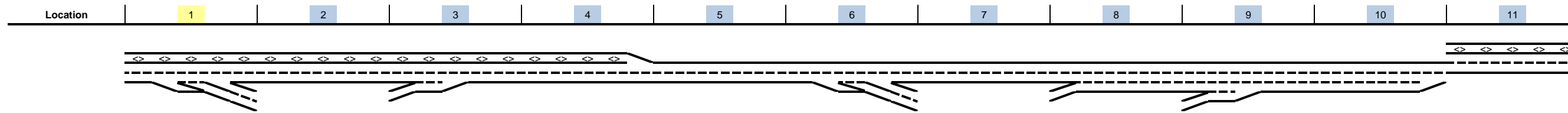
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Off Ramp Flow Rate											
Off Volume (vph)	1,290					250					
PHF	0.85					0.79					
Total Lanes	2					2					
Terrain	Level					Level					
Grade %	0.0%					0.0%					
Grade Length (mi)	0.00					0.00					
Truck & Bus %	5.0%					5.0%					
RV %	0.0%					0.0%					
E _T	1.5					1.5					
E _R	1.2					1.2					
f _{HV}	0.976					0.976					
f _p	1.00					1.00					
Off Flow (pcph)	1,556					324					
Off Flow (pcphpl)	778					162					
Calculate Off Ramp Roadway Operations											
Off Ramp Type	Right					Right					
Off Ramp Speed	45					45					
Off Ramp Cap (pcph)	4,200					4,200					
Off Ramp v/c ratio	0.37					0.08					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps											
Up Type								No	On		
Up Distance									1,200		
Up Flow (pcph)									545		
Down Type								On	No		
Down Distance								1,200			
Down Flow (pcph)								130			



Key
 <> Express Lane (HOV)
 No Trucks

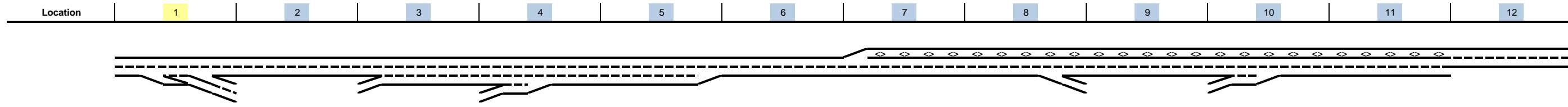
Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Merge Influence Area Operations											
Effective v_p (pcph)			1,929						2,673		
Up Ramp L_{EQ}									1,491		
Down Ramp L_{EQ}											
P_{FM} (Eqn 13-3)			0.587						0.587		
P_{FM} (Eqn 13-4)											
P_{FM} (Eqn 13-5)											
P_{FM}			1.000						0.587		
v_{12} (pcph)			1,929						1,570		
v_3 (pcph)									1,103		
v_{34} (pcph)											
v_{12a} (pcph)			1,929						1,570		
v_{R12a} (pcph)			2,279						1,699		
Merge Speed Index			0.32						0.30		
Merge Area Speed			61.1						61.6		
Outer Lanes Volume									1,103		
Outer Lanes Speed									67.8		
Segment Speed			61.1						63.9		
Merge v/c ratio			0.50						0.37		
Merge Density			20.9						16.5		
Merge LOS			C						B		
Calculate Diverge Influence Area Operations											
Effective v_p (pcph)						2,452					
Up Ramp L_{EQ}											
Down Ramp L_{EQ}											
P_{FD} (Eqn 13-9)						0.684					
P_{FD} (Eqn 13-10)											
P_{FD} (Eqn 13-11)											
P_{FD}						1.000					
v_{12} (pcph)						2,452					
v_3 (pcph)											
v_{34} (pcph)											
v_{12a} (pcph)						2,452					
Diverge Speed Index						0.33					
Diverge Area Speed						60.8					
Outer Lanes Volume											
Outer Lanes Speed											
Segment Speed						60.8					
Diverge v/c ratio						0.56					
Diverge Density						12.3					
Diverge LOS						B					



Key
 <> Express Lane (HOV)
 No Trucks

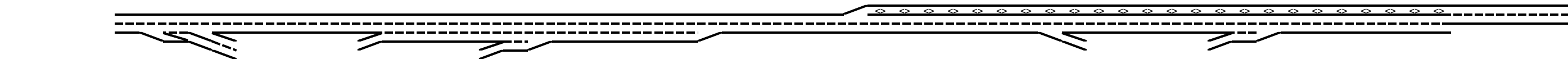
Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Summarize Segment Operations											
Segment v/c ratio	0.51	0.27	0.50	0.47	0.47	0.56	0.40	0.37	0.37	0.35	0.49
Segment Density	17.4	9.2	20.9	15.9	15.9	12.3	13.7	12.7	16.5	12.0	16.7
Segment LOS	B	A	C	B	B	B	B	B	B	B	B
Over Capacity											

Project: Southeast Policy Area EIR
 Freeway Corridor: State Route 99 NB
 Alternative: Existing Conditions
 Time Period: PM Peak Hour



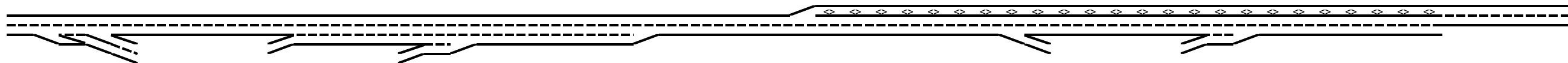
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Define Freeway Segment												
Type	Diverge	Basic	Basic	Merge	Basic	Basic	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	1,500	1,500	1,300	1,500	400	6,700	1,050	1,500	2,550	1,500	100	8,700
Accel Length				320						1,200		
Decel Length	1,450							170				
Mainline Volume	2,470	1,820	1,820	1,890	2,160	2,160	2,160	2,160	1,890	1,890	3,140	2,470
On Ramp Volume			70	270						1,250		
Off Ramp Volume	650							270				
Express Lane Volume							648	648	567	567	942	
EL On Ramp Volume												
EL Off Ramp Volume												
Calculate Flow Rate in General Purpose Lanes (GP)												
GP Volume (vph)	2,470	1,820	1,890	2,160	2,160	2,160	1,512	1,512	1,323	2,573	2,198	2,470
PHF	0.85	0.93	0.85	0.85	0.93	0.93	0.93	0.88	0.93	0.88	0.93	0.93
GP Lanes	2	2	3	3	3	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	13.0%	5.0%	5.0%	15.0%	15.0%	15.0%	5.0%	10.0%	5.0%	10.0%	13.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.939	0.976	0.976	0.930	0.930	0.930	0.976	0.952	0.976	0.952	0.939
f _P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,979	2,084	2,279	2,605	2,497	2,497	1,748	1,761	1,494	2,997	2,482	2,829
GP Flow (pcphp)	1,489	1,042	760	868	832	1,248	874	881	747	1,498	1,241	1,414
Calculate Speed in General Purpose Lanes												
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70	70



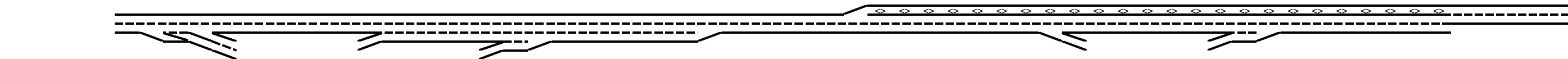
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Operations in General Purpose Lanes												
v/c ratio	0.62	0.43	0.32	0.36	0.35	0.52	0.36	0.37	0.31	0.62	0.52	0.59
Speed (mph)	69.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	69.0	70.0	69.5
Density (pcphpl)	21.6	14.9	10.9	12.4	11.9	17.8	12.5	12.6	10.7	21.7	17.7	20.4
LOS	C	B	A	B	B	B	B	B	A	C	B	C
Calculate Operations for Entering GP Lanes												
GP _{IN} Vol (pcph)			2,195	2,279						1,541		
GP _{IN} Cap (pcph)			4,800	7,200						4,800		
GP _{IN} v/c ratio			0.46	0.32						0.32		
Calculate Operations for Exiting GP Lanes												
GP _{OUT} Vol (pcph)	2,195				2,497			1,447				
GP _{OUT} Cap (pcph)	4,800				4,800			4,800				
GP _{OUT} v/c ratio	0.46				0.52			0.30				
Calculate On Ramp Flow Rate												
On Volume (vph)			70	270						1,250		
PHF			0.85	0.85						0.88		
Total Lanes			1	1						1		
Terrain			Level	Level						Level		
Grade %			0.0%	0.0%						0.0%		
Grade Length (mi)			0.00	0.00						0.00		
Truck & Bus %			5.0%	5.0%						5.0%		
RV %			0.0%	0.0%						0.0%		
E _T			1.5	1.5						1.5		
E _R			1.2	1.2						1.2		
f _{HV}			0.976	0.976						0.976		
f _P			1.00	1.00						1.00		
On Flow (pcph)			84	326						1,456		
On Flow (pcphpl)			84	326						1,456		
Calculate On Ramp Roadway Operations												
On Ramp Type			Right	Right						Right		
On Ramp Speed (mph)			50	60						60		
On Ramp Cap (pcph)			2,100	2,200						2,200		
On Ramp v/c ratio			0.04	0.15						0.66		



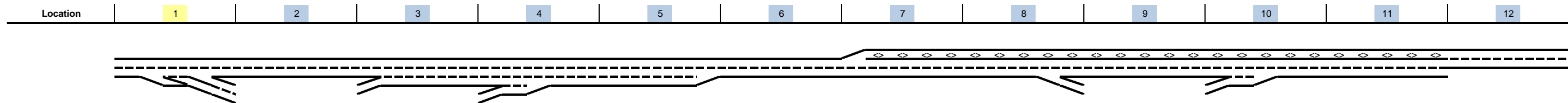
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Off Ramp Flow Rate												
Off Volume (vph)	650							270				
PHF	0.85							0.88				
Total Lanes	2							1				
Terrain	Level							Level				
Grade %	0.0%							0.0%				
Grade Length (mi)	0.00							0.00				
Truck & Bus %	5.0%							5.0%				
RV %	0.0%							0.0%				
E _T	1.5							1.5				
E _R	1.2							1.2				
f _{HV}	0.976							0.976				
f _P	1.00							1.00				
Off Flow (pcph)	784							314				
Off Flow (pcphpl)	392							314				
Calculate Off Ramp Roadway Operations												
Off Ramp Type	Right							Right				
Off Ramp Speed	35							45				
Off Ramp Cap (pcph)	4,000							2,100				
Off Ramp v/c ratio	0.20							0.15				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps												
Up Type			No	On								
Up Distance				1,300								
Up Flow (pcph)				84								
Down Type			On	Off								
Down Distance			1,300	3,000								
Down Flow (pcph)			326	314								



Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Merge Influence Area Operations												
Effective v_p (pcph)				2,279						1,541		
Up Ramp L_{EQ}				1,436								
Down Ramp L_{EQ}				2,186								
P_{FM} (Eqn 13-3)				0.586						0.611		
P_{FM} (Eqn 13-4)												
P_{FM} (Eqn 13-5)				0.576								
P_{FM}				0.586						1.000		
v_{12} (pcph)				1,337						1,541		
v_3 (pcph)				943								
v_{34} (pcph)												
v_{12a} (pcph)				1,337						1,541		
v_{R12a} (pcph)				1,662						2,997		
Merge Speed Index				0.30						0.26		
Merge Area Speed				61.5						62.9		
Outer Lanes Volume				943								
Outer Lanes Speed				68.4								
Segment Speed				63.8						62.9		
Merge v/c ratio				0.36						0.65		
Merge Density				16.3						20.7		
Merge LOS				B						C		
Calculate Diverge Influence Area Operations												
Effective v_p (pcph)	2,979							1,761				
Up Ramp L_{EQ}												
Down Ramp L_{EQ}												
P_{FD} (Eqn 13-9)	0.649							0.702				
P_{FD} (Eqn 13-10)												
P_{FD} (Eqn 13-11)												
P_{FD}	1.000							1.000				
v_{12} (pcph)	2,979							1,761				
v_3 (pcph)												
v_{34} (pcph)												
v_{12a} (pcph)	2,979							1,761				
Diverge Speed Index	0.50							0.33				
Diverge Area Speed	56.0							60.9				
Outer Lanes Volume												
Outer Lanes Speed												
Segment Speed	56.0							60.9				
Diverge v/c ratio	0.68							0.40				
Diverge Density	16.8							17.9				
Diverge LOS	B							B				

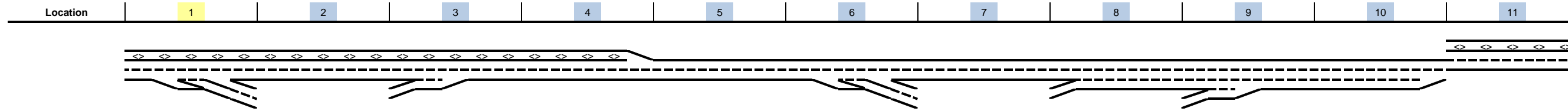


Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Summarize Segment Operations												
Segment v/c ratio	0.68	0.43	0.32	0.36	0.35	0.52	0.36	0.40	0.31	0.65	0.52	0.59
Segment Density	16.8	14.9	10.9	16.3	11.9	17.8	12.5	17.9	10.7	20.7	17.7	20.4
Segment LOS	B	B	A	B	B	B	B	B	A	C	B	C
Over Capacity												

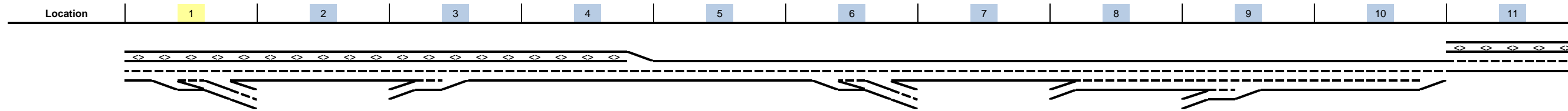
Project: Southeast Policy Area EIR
Freeway Corridor: State Route 99 SB

Alternative: Existing Conditions
Time Period: PM Peak Hour



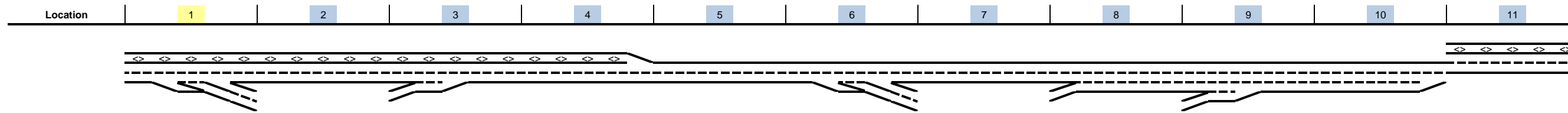
Key
 <> Express Lane (HOV)
 - - - No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Define Freeway Segment											
Type	Basic	Basic	Merge	Basic	Basic	Diverge	Basic	Basic	Merge	Basic	Basic
Length (ft)	1,500	2,250	1,500	400	8,050	1,500	1,650	1,200	1,500	400	250
Accel Length			350						350		
Decel Length						1,450					
Mainline Volume	3,640	1,980	1,980	2,290	2,290	2,290	2,030	2,030	2,580	2,700	3,640
On Ramp Volume			310					550	120		
Off Ramp Volume	1,660					260					
Express Lane Volume	1,092	594									1,092
EL On Ramp Volume											
EL Off Ramp Volume											
Calculate Flow Rate in General Purpose Lanes (GP)											
GP Volume (vph)	2,548	1,386	2,290	2,290	2,290	2,290	2,030	2,580	2,700	2,700	2,548
PHF	0.88	0.95	0.88	0.95	0.95	0.85	0.95	0.85	0.85	0.95	0.95
GP Lanes	2	2	2	2	2	2	2	3	3	3	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	10.0%	5.0%	15.0%	15.0%	5.0%	13.0%	5.0%	5.0%	13.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.952	0.976	0.930	0.930	0.976	0.939	0.976	0.976	0.939	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,968	1,532	2,667	2,591	2,591	2,761	2,276	3,111	3,256	3,027	2,816
GP Flow (pcphpl)	1,484	766	1,334	1,296	1,296	1,381	1,138	1,037	1,085	1,009	1,408
Calculate Speed in General Purpose Lanes											
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	73.6	73.6	73.6	73.6	74.2	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70



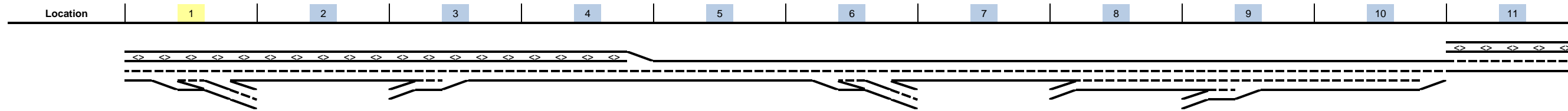
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Operations in General Purpose Lanes											
v/c ratio	0.62	0.32	0.56	0.54	0.54	0.58	0.47	0.43	0.45	0.42	0.59
Speed (mph)	69.1	70.0	69.8	69.9	69.9	69.6	70.0	70.0	70.0	70.0	69.5
Density (pcphpl)	21.5	10.9	19.1	18.5	18.5	19.8	16.3	14.8	15.5	14.4	20.3
LOS	C	A	C	C	C	C	B	B	B	B	C
Calculate Operations for Entering GP Lanes											
GP _{IN} Vol (pcph)			2,306					2,448	3,111		
GP _{IN} Cap (pcph)			4,800					4,800	7,200		
GP _{IN} v/c ratio			0.48					0.51	0.43		
Calculate Operations for Exiting GP Lanes											
GP _{OUT} Vol (pcph)	1,034					2,448				3,027	
GP _{OUT} Cap (pcph)	4,800					4,800				4,800	
GP _{OUT} v/c ratio	0.22					0.51				0.63	
Calculate On Ramp Flow Rate											
On Volume (vph)			310					550	120		
PHF			0.88					0.85	0.85		
Total Lanes			1					1	1		
Terrain			Level					Level	Level		
Grade %			0.0%					0.0%	0.0%		
Grade Length (mi)			0.00					0.00	0.00		
Truck & Bus %			5.0%					5.0%	5.0%		
RV %			0.0%					0.0%	0.0%		
E _T			1.5					1.5	1.5		
E _R			1.2					1.2	1.2		
f _{HV}			0.976					0.976	0.976		
f _P			1.00					1.00	1.00		
On Flow (pcph)			361					663	145		
On Flow (pcphpl)			361					663	145		
Calculate On Ramp Roadway Operations											
On Ramp Type			Right					Right	Right		
On Ramp Speed (mph)			60					50	60		
On Ramp Cap (pcph)			2,200					2,100	2,200		
On Ramp v/c ratio			0.16					0.32	0.07		



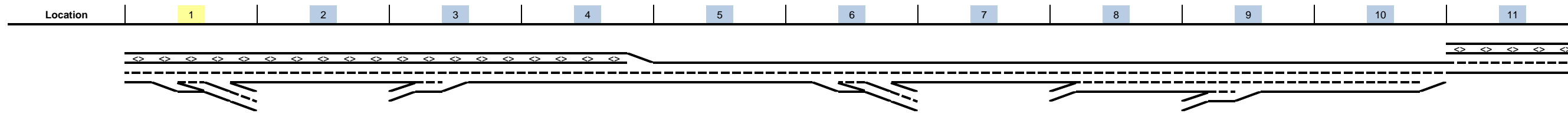
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Off Ramp Flow Rate											
Off Volume (vph)	1,660					260					
PHF	0.88					0.85					
Total Lanes	2					2					
Terrain	Level					Level					
Grade %	0.0%					0.0%					
Grade Length (mi)	0.00					0.00					
Truck & Bus %	5.0%					5.0%					
RV %	0.0%					0.0%					
E _T	1.5					1.5					
E _R	1.2					1.2					
f _{HV}	0.976					0.976					
f _p	1.00					1.00					
Off Flow (pcph)	1,934					314					
Off Flow (pcphpl)	967					157					
Calculate Off Ramp Roadway Operations											
Off Ramp Type	Right					Right					
Off Ramp Speed	45					45					
Off Ramp Cap (pcph)	4,200					4,200					
Off Ramp v/c ratio	0.46					0.07					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps											
Up Type								No	On		
Up Distance									1,200		
Up Flow (pcph)									663		
Down Type								On	No		
Down Distance								1,200			
Down Flow (pcph)								145			



Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Merge Influence Area Operations											
Effective v_p (pcph)			2,306						3,111		
Up Ramp L_{EQ}									1,588		
Down Ramp L_{EQ}											
P_{FM} (Eqn 13-3)			0.587						0.587		
P_{FM} (Eqn 13-4)											
P_{FM} (Eqn 13-5)											
P_{FM}			1.000						0.587		
v_{12} (pcph)			2,306						1,827		
v_3 (pcph)									1,284		
v_{34} (pcph)											
v_{12a} (pcph)			2,306						1,827		
v_{R12a} (pcph)			2,667						1,972		
Merge Speed Index			0.34						0.31		
Merge Area Speed			60.6						61.4		
Outer Lanes Volume									1,284		
Outer Lanes Speed									67.2		
Segment Speed			60.6						63.6		
Merge v/c ratio			0.58						0.43		
Merge Density			23.9						18.6		
Merge LOS			C						B		
Calculate Diverge Influence Area Operations											
Effective v_p (pcph)						2,761					
Up Ramp L_{EQ}											
Down Ramp L_{EQ}											
P_{FD} (Eqn 13-9)						0.677					
P_{FD} (Eqn 13-10)											
P_{FD} (Eqn 13-11)											
P_{FD}						1.000					
v_{12} (pcph)						2,761					
v_3 (pcph)											
v_{34} (pcph)											
v_{12a} (pcph)						2,761					
Diverge Speed Index						0.33					
Diverge Area Speed						60.9					
Outer Lanes Volume											
Outer Lanes Speed											
Segment Speed						60.9					
Diverge v/c ratio						0.63					
Diverge Density						15.0					
Diverge LOS						B					

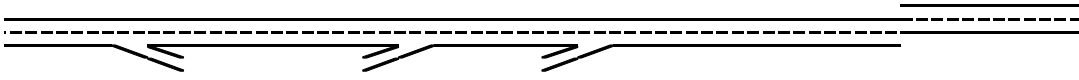


Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Summarize Segment Operations											
Segment v/c ratio	0.62	0.32	0.58	0.54	0.54	0.63	0.47	0.43	0.43	0.42	0.59
Segment Density	21.5	10.9	23.9	18.5	18.5	15.0	16.3	14.8	18.6	14.4	20.3
Segment LOS	C	A	C	C	C	B	B	B	B	B	C
Over Capacity											

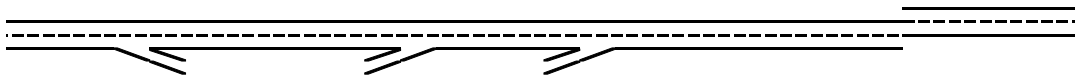
Project: Southeast Policy Area EIR
Freeway Corridor: Interstate 5 NB
Alternative: Existing Conditions
Time Period: AM Peak Hour

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key
 <> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,150	1,500	6,900	27,700
Accel Length			450	350		
Decel Length	150					
Mainline Volume	1,610	1,580	1,580	1,610	2,140	1,610
On Ramp Volume			30	530		
Off Ramp Volume	30					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	1,610	1,580	1,610	2,140	2,140	1,610
PHF	0.75	0.81	0.75	0.75	0.81	0.81
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.917
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,200	2,126	2,200	2,925	2,880	2,167
GP Flow (pcphpl)	1,100	1,063	1,100	1,462	1,440	1,083
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.46	0.44	0.46	0.61	0.60	0.45
Speed (mph)	70.0	70.0	70.0	69.2	69.3	70.0
Density (pcphpl)	15.7	15.2	15.7	21.1	20.8	15.5
LOS	B	B	B	C	C	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,159	2,200		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.45	0.46		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,159					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.45					



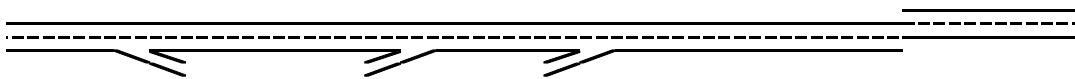
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate On Ramp Flow Rate						
On Volume (vph)			30	530		
PHF			0.75	0.75		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			41	724		
On Flow (pcphpl)			41	724		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.02	0.33		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

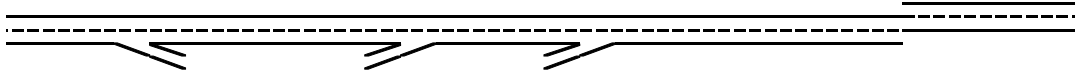


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Off Ramp Flow Rate						
Off Volume (vph)	30					
PHF	0.75					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	41					
Off Flow (pcphpl)	41					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.02					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,159	2,200		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.590	0.587		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,159	2,200		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,159	2,200		
v_{R12a} (pcph)			2,200	2,925		
Merge Speed Index			0.31	0.35		
Merge Area Speed			61.3	60.2		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.3	60.2		
Merge v/c ratio			0.48	0.64		
Merge Density			19.8	25.8		
Merge LOS			B	C		

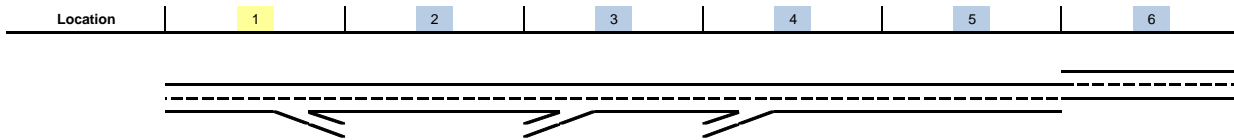


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,200					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.703					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,200					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,200					
Diverge Speed Index	0.30					
Diverge Area Speed	61.6					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	61.6					
Diverge v/c ratio	0.50					
Diverge Density	21.8					
Diverge LOS	C					



Key

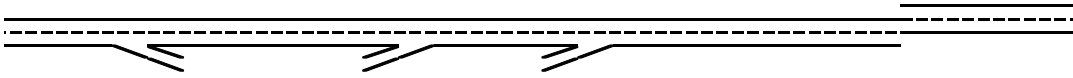
<-> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Summarize Segment Operations						
Segment v/c ratio	0.50	0.44	0.48	0.64	0.60	0.45
Segment Density	21.8	15.2	19.8	25.8	20.8	15.5
Segment LOS	C	B	B	C	C	B
Over Capacity						

Project: Southeast Policy Area EIR
Freeway Corridor: Interstate 5 SB
Alternative: Existing Conditions
Time Period: AM Peak Hour

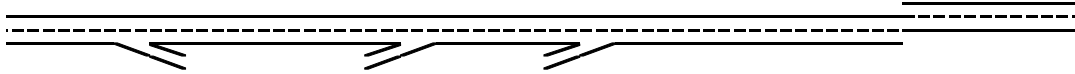
Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,250	1,500	28,500	8,000
Accel Length			300	250		
Decel Length	160					
Mainline Volume	1,530	1,410	1,410	1,480	1,490	1,530
On Ramp Volume			70	10		
Off Ramp Volume	120					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	1,530	1,410	1,480	1,490	1,490	1,530
PHF	0.75	0.91	0.75	0.75	0.91	0.91
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	5.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.976
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,091	1,689	2,023	2,036	1,785	1,723
GP Flow (pcphpl)	1,046	844	1,011	1,018	892	862
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.44	0.35	0.42	0.42	0.37	0.36
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	14.9	12.1	14.4	14.5	12.7	12.3
LOS	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			1,927	2,023		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.40	0.42		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	1,927					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.40					



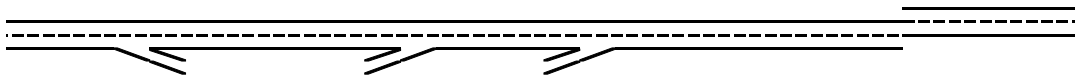
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate On Ramp Flow Rate						
On Volume (vph)			70	10		
PHF			0.75	0.75		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			96	14		
On Flow (pcphpl)			96	14		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.05	0.01		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

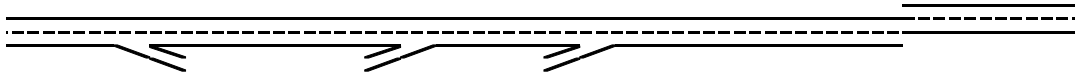


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Off Ramp Flow Rate						
Off Volume (vph)	120					
PHF	0.75					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	164					
Off Flow (pcphpl)	164					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.08					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			1,927	2,023		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.586	0.585		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			1,927	2,023		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			1,927	2,023		
v_{R12a} (pcph)			2,023	2,036		
Merge Speed Index			0.32	0.32		
Merge Area Speed			61.0	61.0		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.0	61.0		
Merge v/c ratio			0.44	0.44		
Merge Density			19.3	19.8		
Merge LOS			B	B		

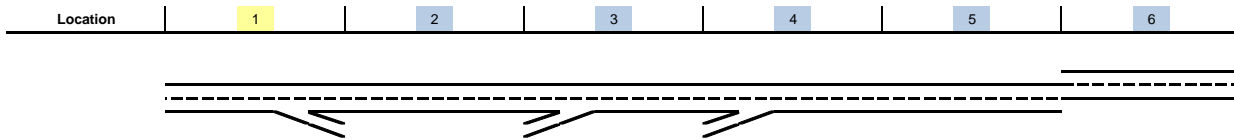


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,091					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.700					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,091					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,091					
Diverge Speed Index	0.31					
Diverge Area Speed	61.2					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	61.2					
Diverge v/c ratio	0.48					
Diverge Density	20.8					
Diverge LOS	C					



Key

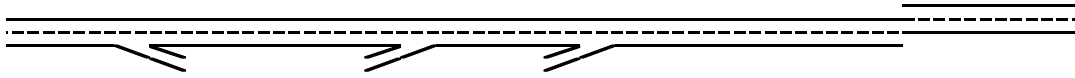
<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Summarize Segment Operations						
Segment v/c ratio	0.48	0.35	0.44	0.44	0.37	0.36
Segment Density	20.8	12.1	19.3	19.8	12.7	12.3
Segment LOS	C	B	B	B	B	B
Over Capacity						

Project: Southeast Policy Area EIR Alternative: Existing Conditions
 Freeway Corridor: Interstate 5 NB Time Period: PM Peak Hour

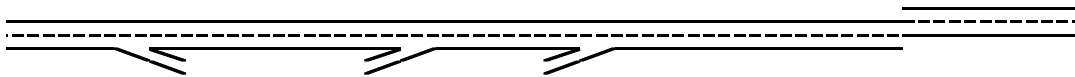
Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,150	1,500	6,900	27,700
Accel Length			450	350		
Decel Length	150					
Mainline Volume	1,940	1,850	1,850	1,880	1,950	1,940
On Ramp Volume			30	70		
Off Ramp Volume	90					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	1,940	1,850	1,880	1,950	1,950	1,940
PHF	0.9	0.89	0.9	0.9	0.89	0.89
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.917
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,209	2,266	2,141	2,221	2,388	2,376
GP Flow (pcphpl)	1,105	1,133	1,071	1,110	1,194	1,188
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.46	0.47	0.45	0.46	0.50	0.49
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	15.8	16.2	15.3	15.9	17.1	17.0
LOS	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,107	2,141		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.44	0.45		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,107					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.44					



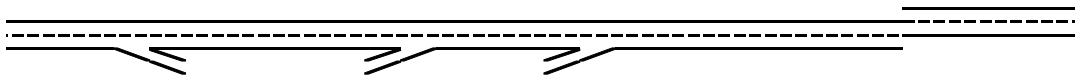
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate On Ramp Flow Rate						
On Volume (vph)			30	70		
PHF			0.9	0.9		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			34	80		
On Flow (pcphpl)			34	80		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.02	0.04		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Off Ramp Flow Rate						
Off Volume (vph)	90					
PHF	0.9					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	103					
Off Flow (pcphpl)	103					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.05					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,107	2,141		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.590	0.587		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,107	2,141		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,107	2,141		
v_{R12a} (pcph)			2,141	2,221		
Merge Speed Index			0.31	0.31		
Merge Area Speed			61.3	61.2		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.3	61.2		
Merge v/c ratio			0.47	0.48		
Merge Density			19.3	20.6		
Merge LOS			B	C		

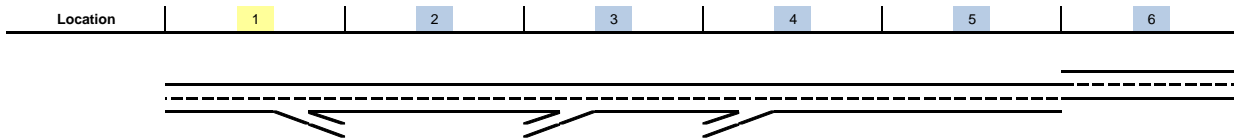


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,209					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.700					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,209					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,209					
Diverge Speed Index	0.31					
Diverge Area Speed	61.4					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	61.4					
Diverge v/c ratio	0.50					
Diverge Density	21.9					
Diverge LOS	C					



Key

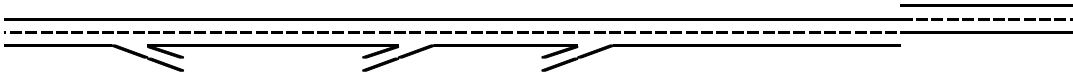
<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Summarize Segment Operations						
Segment v/c ratio	0.50	0.47	0.47	0.48	0.50	0.49
Segment Density	21.9	16.2	19.3	20.6	17.1	17.0
Segment LOS	C	B	B	C	B	B
Over Capacity						

Project: Southeast Policy Area EIR
Freeway Corridor: Interstate 5 SB
Alternative: Existing Conditions
Time Period: PM Peak Hour

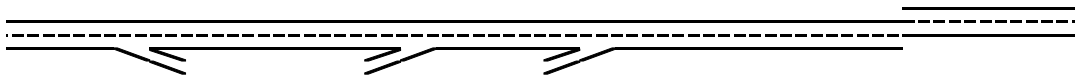
Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,250	1,500	28,500	8,000
Accel Length			300	250		
Decel Length	160					
Mainline Volume	2,160	1,880	1,880	1,900	1,910	2,160
On Ramp Volume			20	10		
Off Ramp Volume	280					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,160	1,880	1,900	1,910	1,910	2,160
PHF	0.9	0.94	0.9	0.9	0.94	0.94
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	5.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.976
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,460	2,180	2,164	2,175	2,215	2,355
GP Flow (pcphpl)	1,230	1,090	1,082	1,088	1,107	1,178
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.51	0.45	0.45	0.45	0.46	0.49
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	17.6	15.6	15.5	15.5	15.8	16.8
LOS	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,141	2,164		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.45	0.45		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,141					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.45					



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate On Ramp Flow Rate						
On Volume (vph)			20	10		
PHF			0.9	0.9		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			23	11		
On Flow (pcphpl)			23	11		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.01	0.01		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

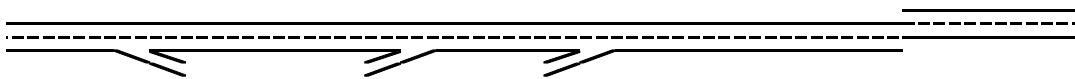


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Off Ramp Flow Rate						
Off Volume (vph)	280					
PHF	0.9					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	319					
Off Flow (pcphpl)	319					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.15					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,141	2,164		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.586	0.585		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,141	2,164		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,141	2,164		
v_{R12a} (pcph)			2,164	2,175		
Merge Speed Index			0.32	0.33		
Merge Area Speed			60.9	60.9		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			60.9	60.9		
Merge v/c ratio			0.47	0.47		
Merge Density			20.5	20.9		
Merge LOS			C	C		

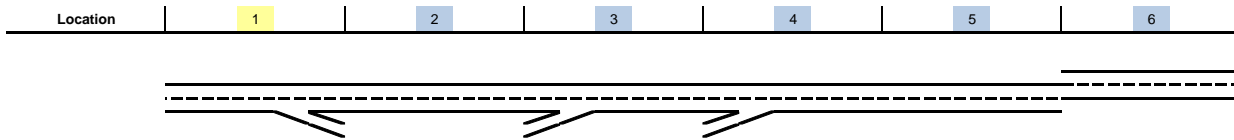


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,460					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.684					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,460					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,460					
Diverge Speed Index	0.33					
Diverge Area Speed	60.9					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	60.9					
Diverge v/c ratio	0.56					
Diverge Density	24.0					
Diverge LOS	C					



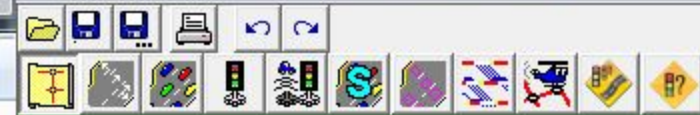
Key

<> Express Lane (HOV)

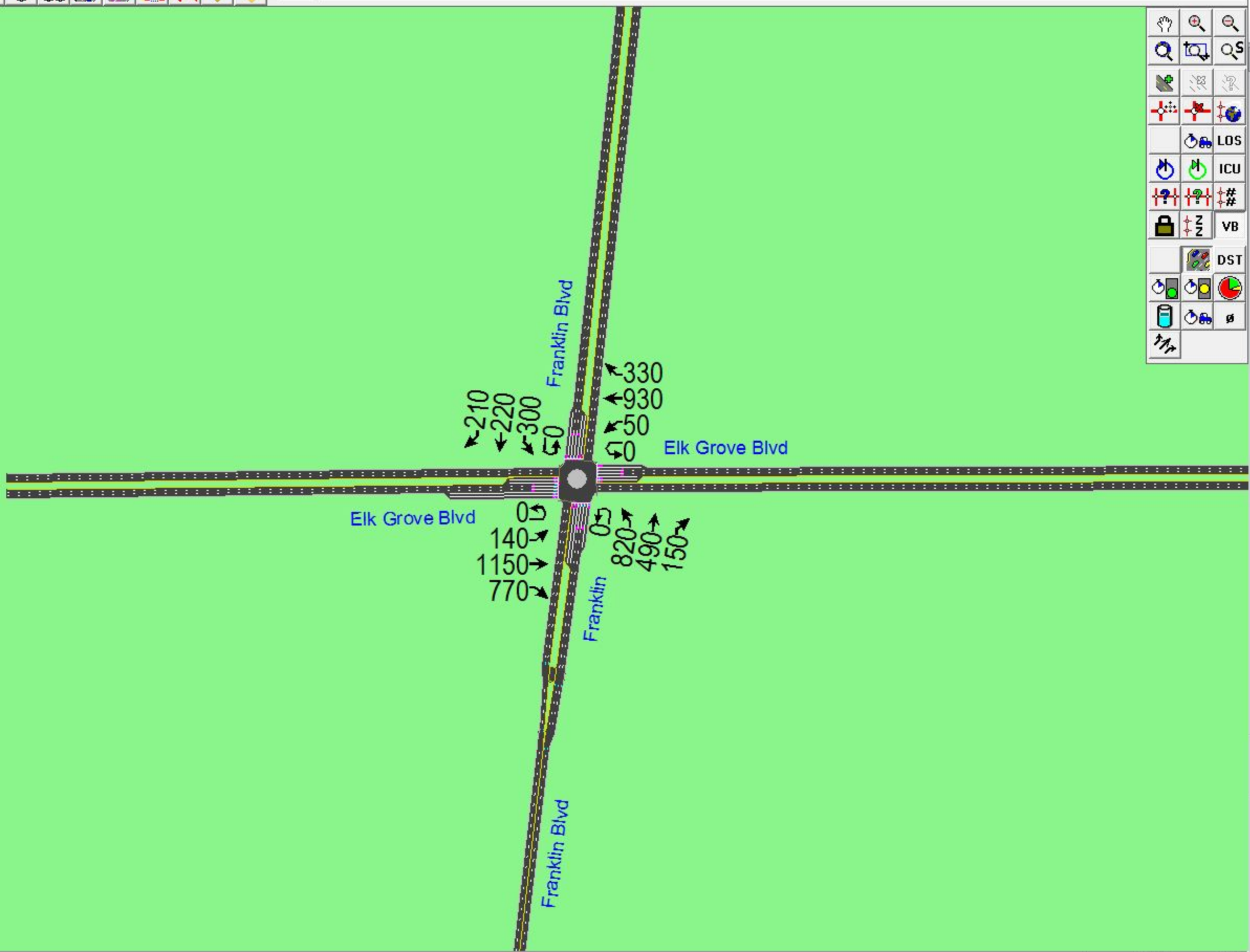
No Trucks

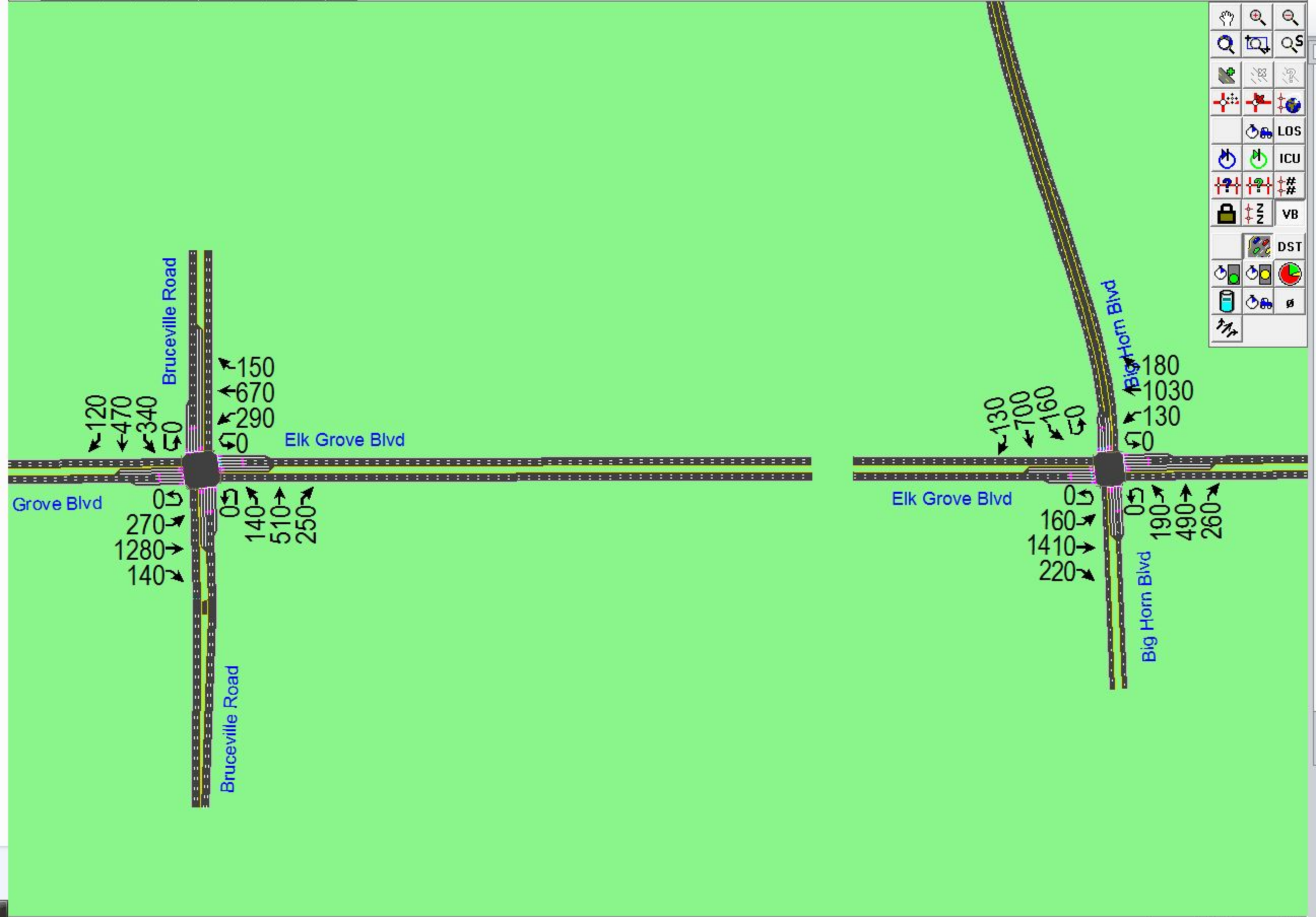
Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Summarize Segment Operations						
Segment v/c ratio	0.56	0.45	0.47	0.47	0.46	0.49
Segment Density	24.0	15.6	20.5	20.9	15.8	16.8
Segment LOS	C	B	C	C	B	B
Over Capacity						

Existing Plus Project Conditions



1 Elk Grove Blvd & Franklin Blvd



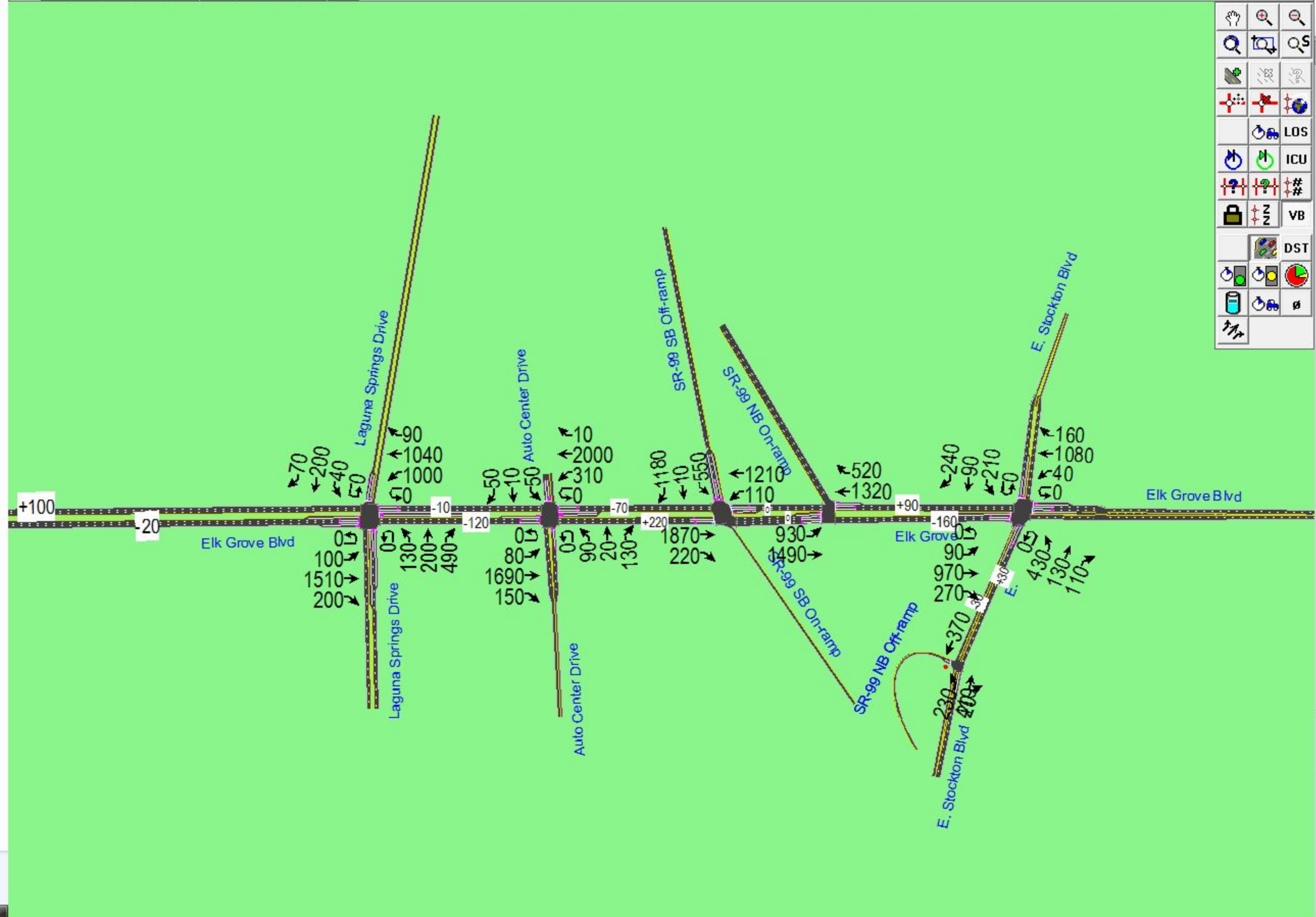


Navigation and analysis tools:

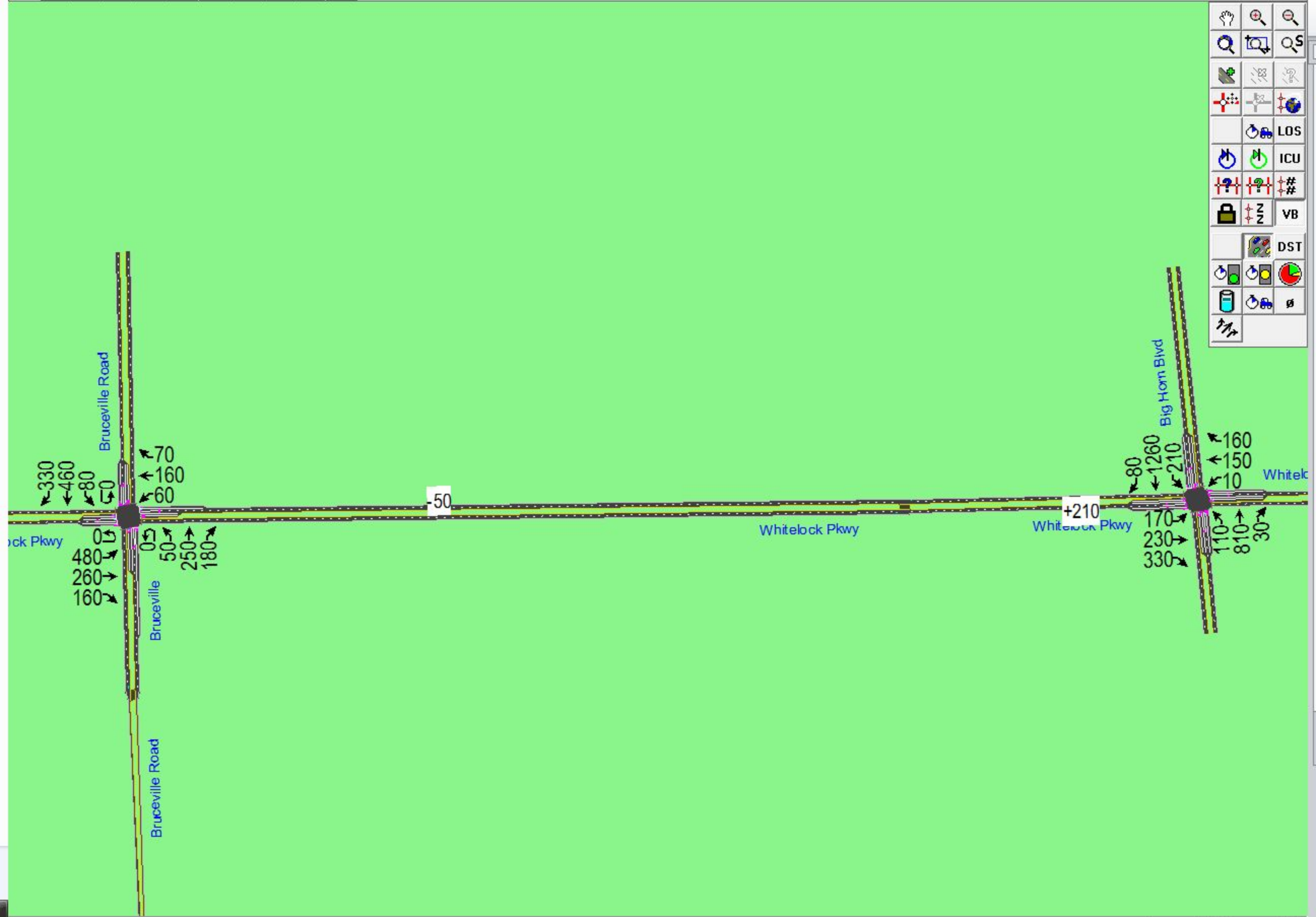
- Hand icon
- Zoom in (+)
- Zoom out (-)
- Search (S)
- Refresh
- Reset
- Global Settings
- LOS (Level of Service)
- ICU (Incident Clearance Unit)
- Queue Length (#)
- VB (Vehicle Buffer)
- DST (Data Source Table)
- Simulation Start/Stop
- Simulation Settings
- Simulation Results
- Simulation Control



1 Elk Grove Blvd & Franklin Blvd



Toolbar with icons for file operations (Save, Print, Undo, Redo) and a dropdown menu currently set to "none".

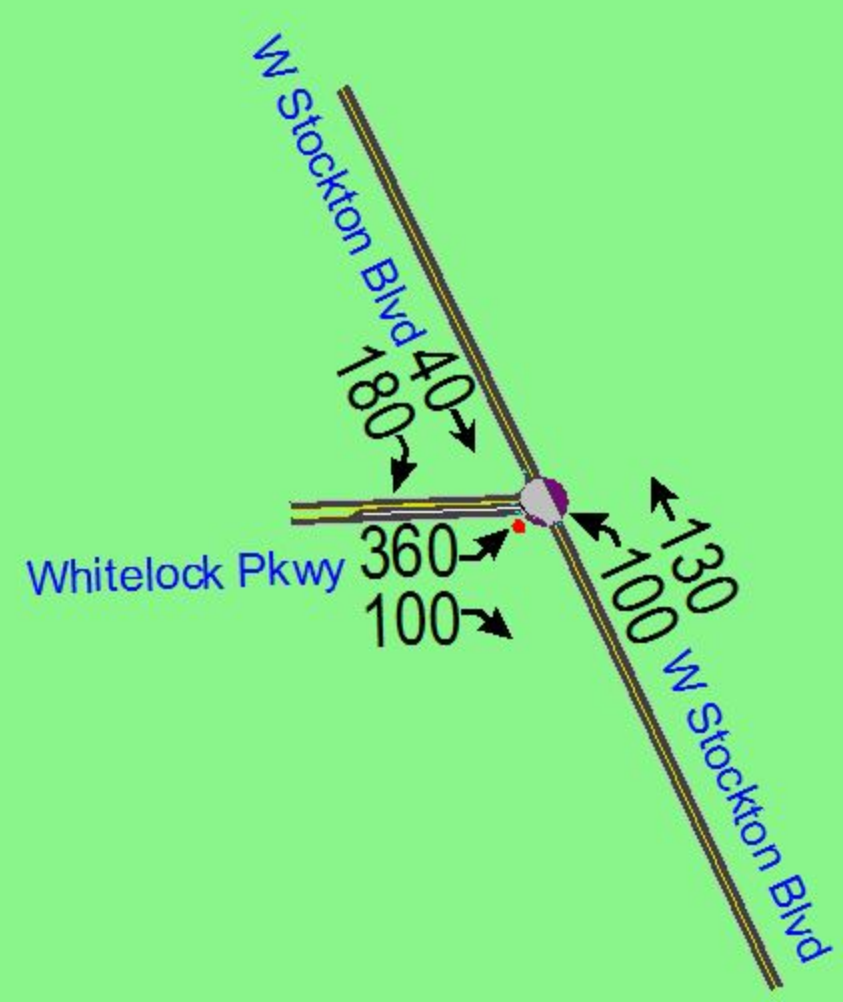


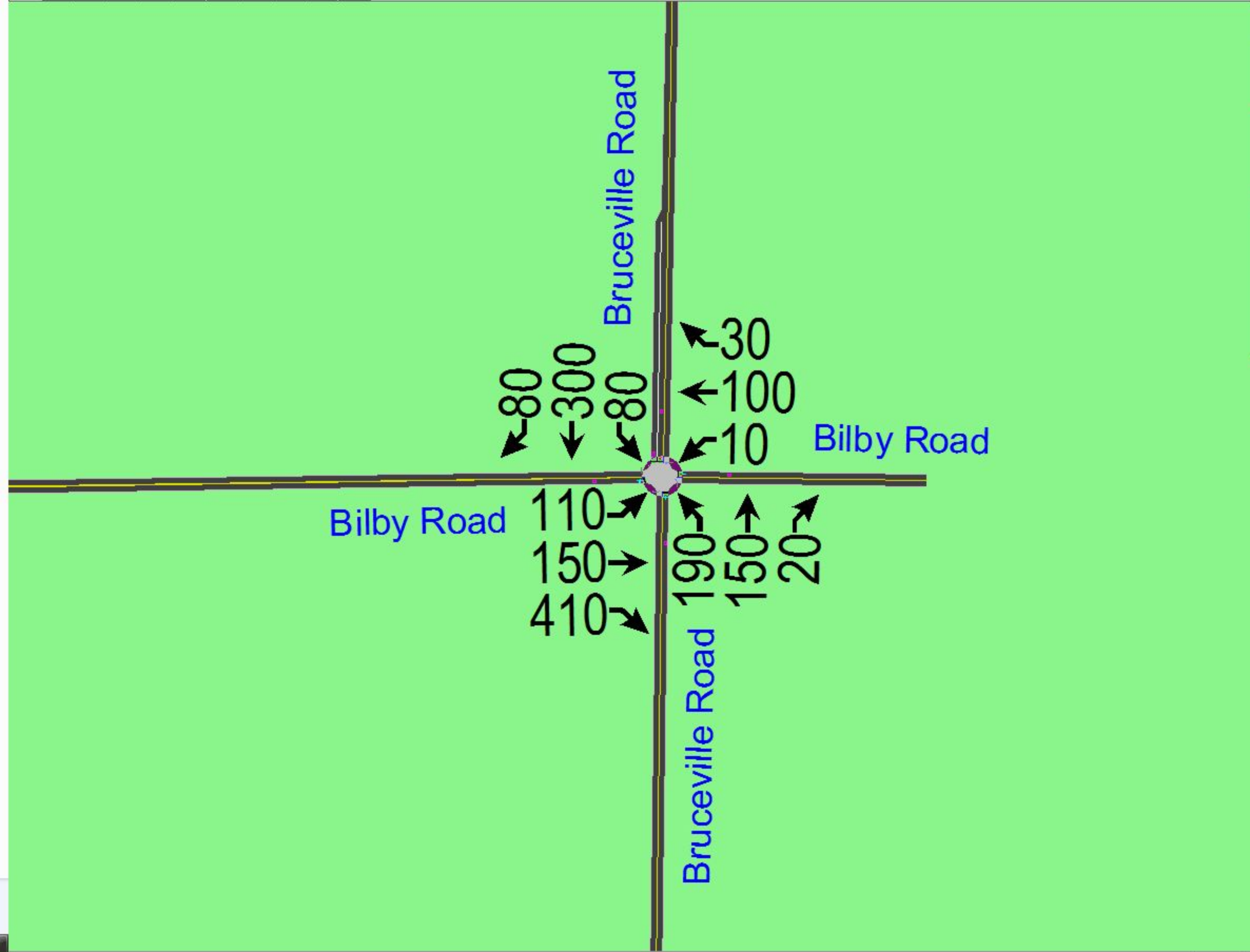
Vertical toolbar with various icons for simulation and analysis, including:

- Hand icon (pan)
- Zoom in/out icons
- Simulation control icons (Start, Stop, Play, Pause)
- Analysis icons: LOS, ICU, #, #, VB, DST
- Other utility icons



12 Whitelock Pkwy & W Stockton Blvd





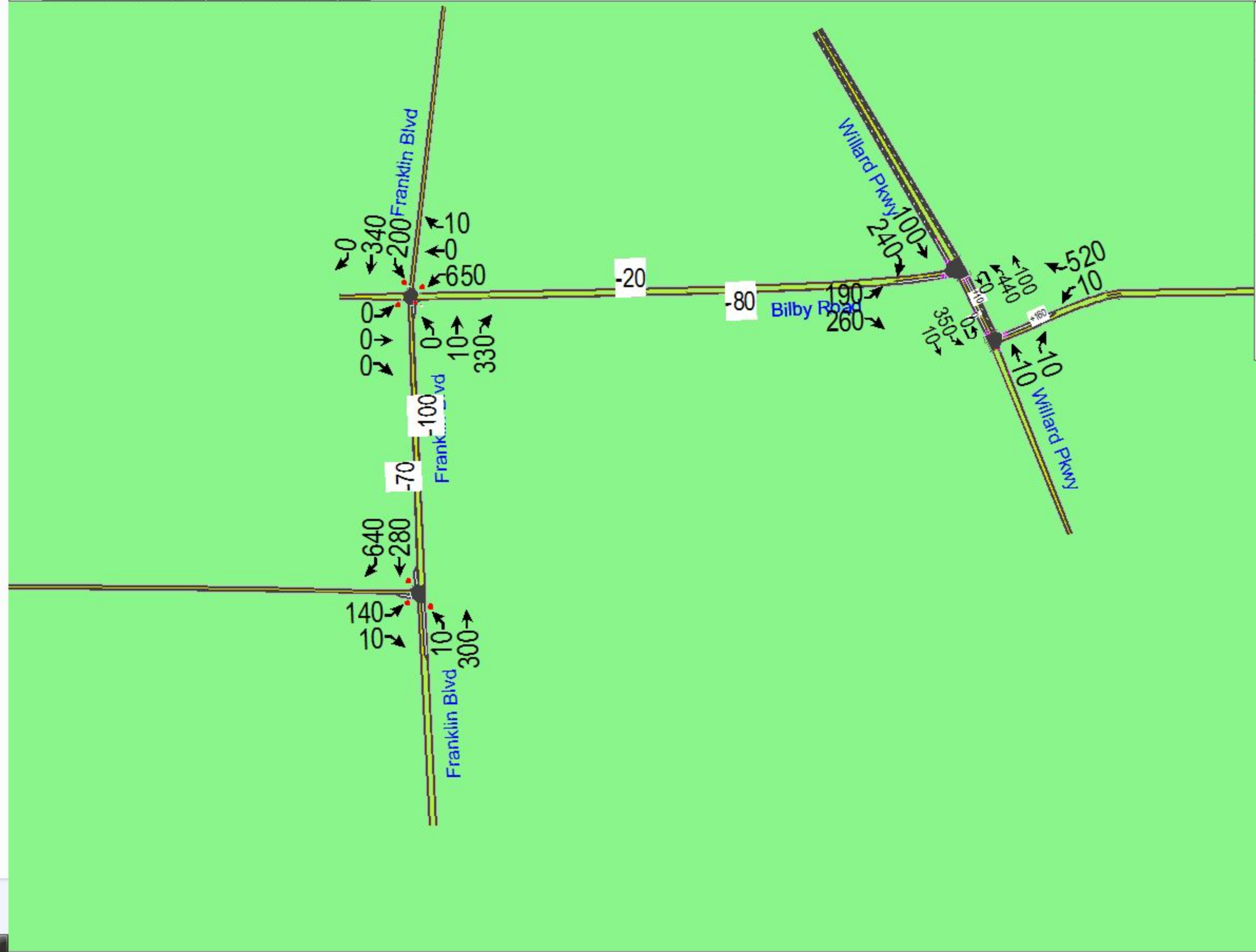
A vertical toolbar on the right side of the interface contains various icons for navigation and analysis. The icons include a hand (pan), magnifying glass (zoom in), magnifying glass with minus sign (zoom out), search (find), and several other symbols. Below the icons are labels for different analysis tools: LOS, ICU, #, #, VB, and DST.



14 Hood Franklin Road & I-5 SB Off-ramp



14 Hood Franklin Road & I-5 SB Off-ramp

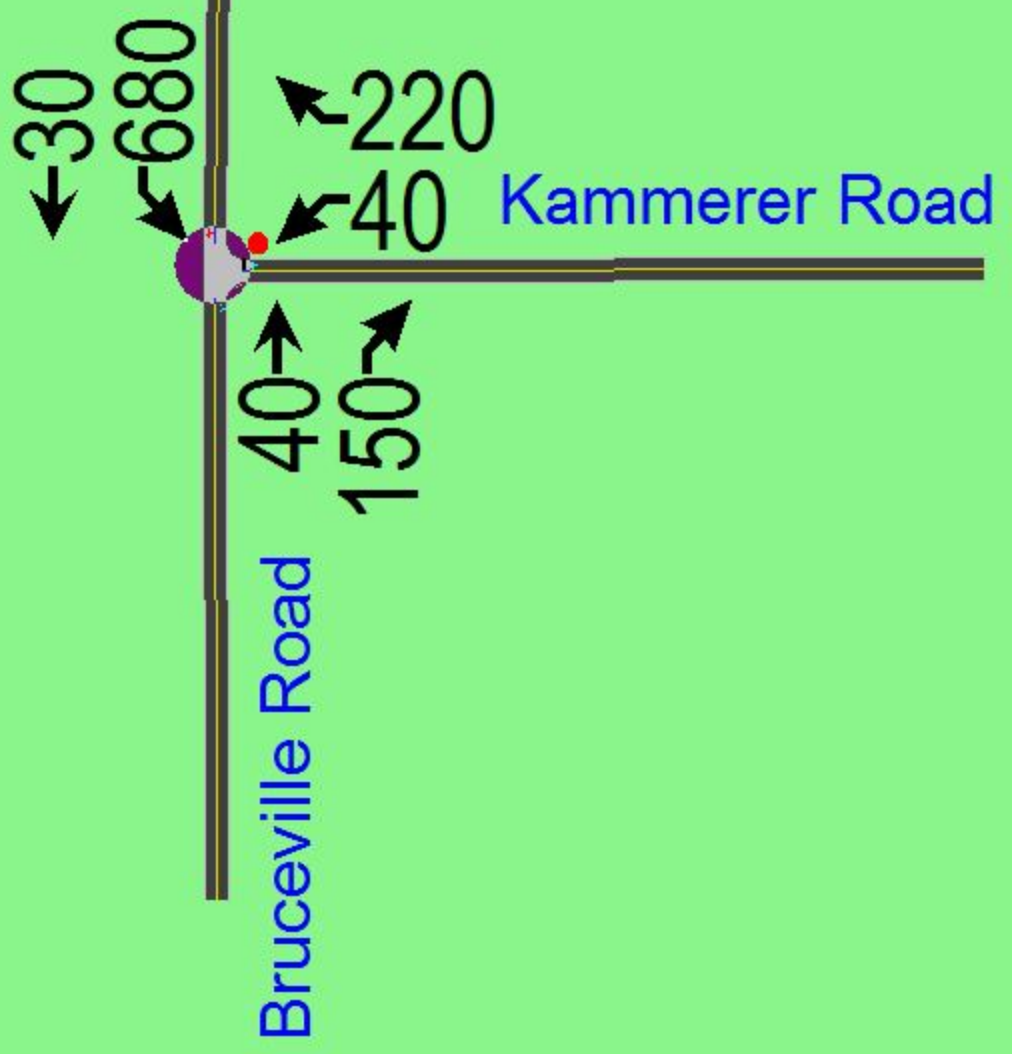


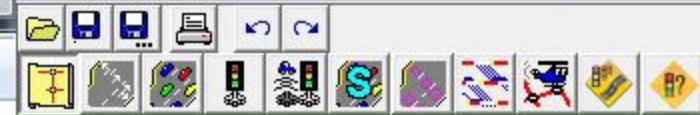
Navigation and analysis tools:

- Hand icon
- Zoom in (+)
- Zoom out (-)
- Search (S)
- Layers (L)
- Legend (L)
- LOS (Level of Service)
- ICU (Incident Clearance Unit)
- Queue (Q)
- VB (Vehicle Buffer)
- DST (Data Source Table)
- Mobile device icon
- Print icon

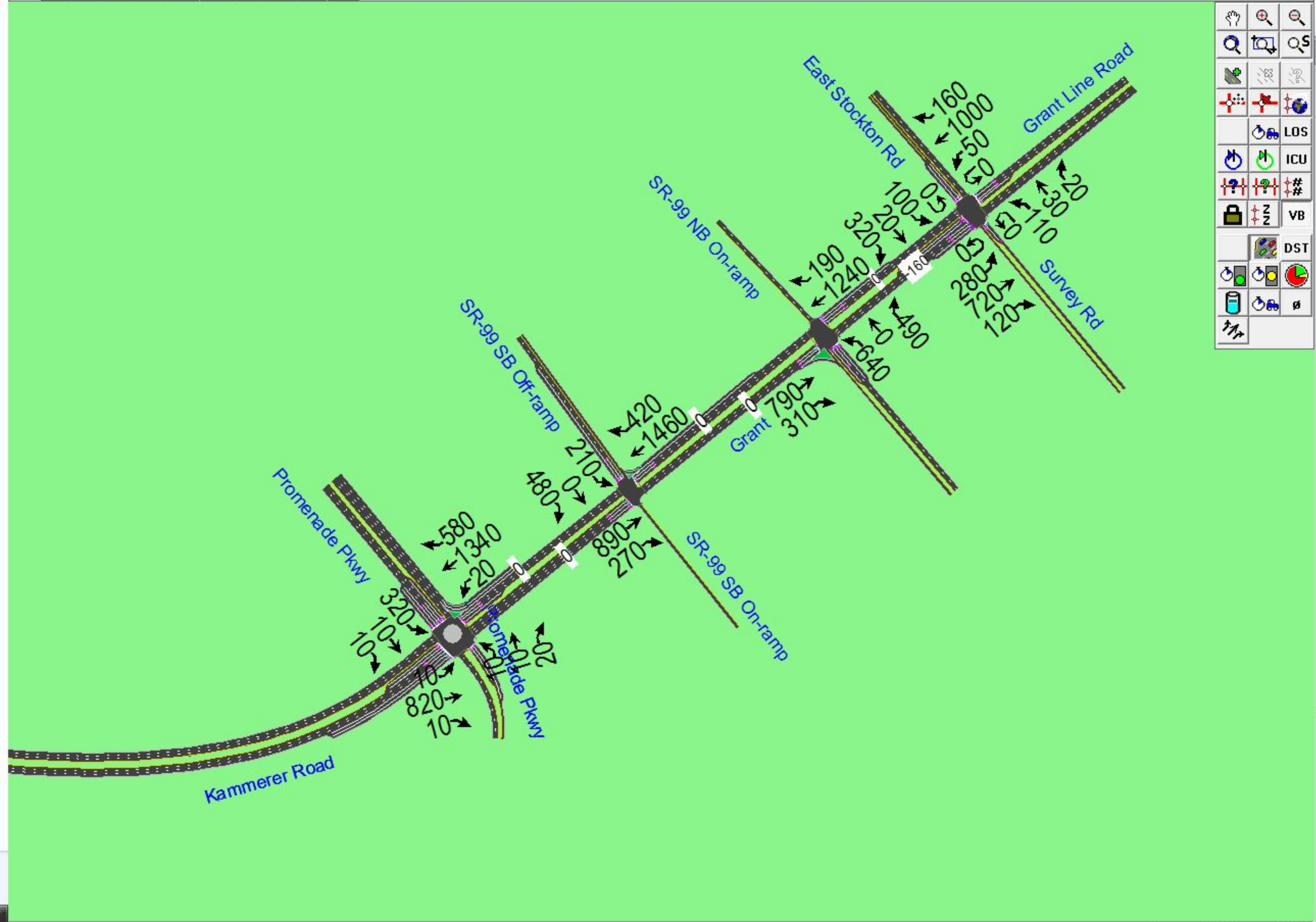


20 Kammerer Road & Bruceville Road



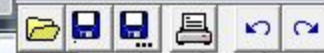


21 Kammerer Road & Promenade Pkwy

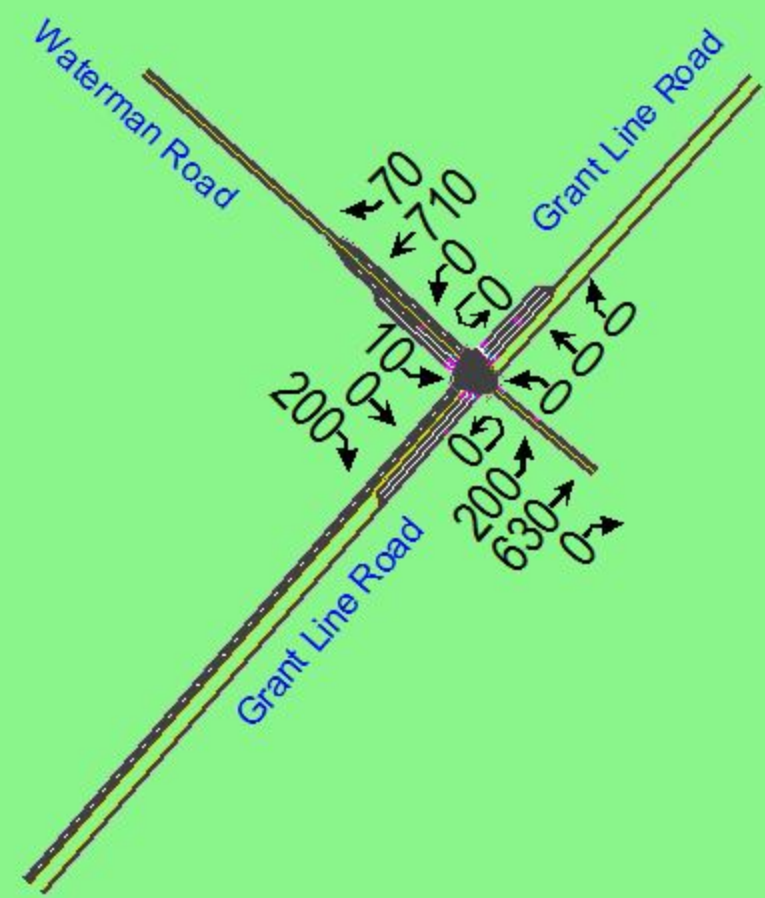


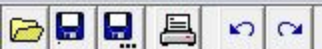
A vertical toolbar on the right side of the interface contains various icons for simulation and analysis. The icons include:

- Hand icon (pan)
- Zoom in and zoom out icons
- Simulation control icons (start, stop, pause, reset)
- Analysis tool icons (LOS, ICU, #, #, VB, DST)
- Other utility icons (lock, refresh, etc.)



none





none



























A vertical toolbar on the right side of the workspace, containing various tool icons for navigation and editing. The icons include a hand (pan), a magnifying glass (zoom), a search icon, a grid, a layer selection icon, a lock, a DST icon, a refresh icon, a mobile device icon, and a zoom in/out icon. The toolbar is organized into several rows of icons.

HCM Signalized Intersection Capacity Analysis

Existing Plus Project Conditions

1: Elk Grove Blvd & Franklin Blvd

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	1150	770	50	930	330	820	490	150	300	220	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Lane Util. Factor	0.97	0.91	0.88	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	2752	3433	5085	1583	3433	5085	1561	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	2752	3433	5085	1583	3433	5085	1561	3433	5085	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)	156	1278	856	56	1033	367	911	544	167	333	244	233
RTOR Reduction (vph)	0	0	529	0	0	195	0	0	127	0	0	213
Lane Group Flow (vph)	156	1278	327	56	1033	172	911	544	40	333	244	20
Confl. Bikes (#/hr)			1						2			
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	9.8	45.8	45.8	5.5	41.1	41.1	34.0	28.6	28.6	14.9	10.4	10.4
Effective Green, g (s)	9.8	45.8	45.8	5.5	41.1	41.1	34.0	28.6	28.6	14.9	10.4	10.4
Actuated g/C Ratio	0.08	0.38	0.38	0.05	0.34	0.34	0.28	0.24	0.24	0.12	0.09	0.09
Clearance Time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	280	1941	1050	157	1742	542	973	1212	372	426	441	137
v/s Ratio Prot	c0.05	c0.25		0.02	0.20		c0.27	0.11		0.10	c0.05	
v/s Ratio Perm			0.12			0.11			0.03			0.01
v/c Ratio	0.56	0.66	0.31	0.36	0.59	0.32	0.94	0.45	0.11	0.78	0.55	0.15
Uniform Delay, d1	53.0	30.6	26.0	55.5	32.5	29.1	41.9	39.0	35.7	51.0	52.6	50.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	1.8	0.8	0.5	1.5	1.5	15.4	0.1	0.0	8.4	0.9	0.2
Delay (s)	54.4	32.4	26.8	56.0	34.0	30.7	57.4	39.1	35.8	59.3	53.4	50.9
Level of Service	D	C	C	E	C	C	E	D	D	E	D	D
Approach Delay (s)		31.8			34.0			49.0			55.1	
Approach LOS		C			C			D			E	

Intersection Summary

HCM Average Control Delay	39.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Elk Grove Blvd & Bruceville Road

Existing Plus Project Conditions
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	🚗🚗	↑↑↑	↘	🚗🚗	↑↑↑	↘	🚗🚗	↑↑↑	↘	🚗🚗	↑↑↑	↘
Volume (vph)	270	1280	140	290	670	150	140	510	250	340	470	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.86	0.86
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1558	3433	4788	1362
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1558	3433	4788	1362
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	318	1506	165	341	788	176	165	600	294	400	553	141
RTOR Reduction (vph)	0	0	66	0	0	108	0	0	218	0	2	99
Lane Group Flow (vph)	318	1506	99	341	788	68	165	600	76	400	565	28
Confl. Bikes (#/hr)									3			
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	14.6	46.0	46.0	15.0	46.4	46.4	10.1	20.2	20.2	15.9	26.0	26.0
Effective Green, g (s)	14.6	46.0	46.0	15.0	46.4	46.4	10.1	20.2	20.2	15.9	26.0	26.0
Actuated g/C Ratio	0.12	0.38	0.38	0.12	0.39	0.39	0.08	0.17	0.17	0.13	0.22	0.22
Clearance Time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	418	1949	607	429	1966	612	289	856	262	455	1037	295
v/s Ratio Prot	0.09	c0.30		c0.10	0.15		0.05	c0.12		c0.12	0.12	
v/s Ratio Perm			0.06			0.04			0.05			0.02
v/c Ratio	0.76	0.77	0.16	0.79	0.40	0.11	0.57	0.70	0.29	0.88	0.54	0.09
Uniform Delay, d1	51.0	32.4	24.3	51.0	26.7	23.6	52.9	47.1	43.6	51.1	41.7	37.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.2	3.0	0.6	9.2	0.6	0.4	1.7	2.1	0.2	16.8	0.3	0.1
Delay (s)	58.2	35.5	24.9	60.2	27.3	24.0	54.6	49.2	43.9	67.9	42.1	37.6
Level of Service	E	D	C	E	C	C	D	D	D	E	D	D
Approach Delay (s)		38.2			35.5			48.5			51.0	
Approach LOS		D			D			D			D	

























Intersection Summary		
HCM Average Control Delay	42.1	HCM Level of Service D
HCM Volume to Capacity ratio	0.78	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 22.9
Intersection Capacity Utilization	77.3%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Elk Grove Blvd & Big Horn Blvd

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1410	220	130	1030	180	190	490	260	160	700	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1563	3433	3539	1583	3433	3539	1549
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1563	3433	3539	1583	3433	3539	1549
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	200	1762	275	162	1288	225	238	612	325	200	875	162
RTOR Reduction (vph)	0	0	91	0	0	99	0	0	211	0	0	65
Lane Group Flow (vph)	200	1762	184	162	1288	126	238	612	114	200	875	97
Confl. Bikes (#/hr)						1						10
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	11.3	45.8	45.8	10.0	44.5	44.5	12.5	28.9	28.9	11.3	27.7	27.7
Effective Green, g (s)	11.3	45.8	45.8	10.0	44.5	44.5	12.5	28.9	28.9	11.3	27.7	27.7
Actuated g/C Ratio	0.09	0.38	0.38	0.08	0.37	0.37	0.10	0.24	0.24	0.09	0.23	0.23
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	323	1941	604	286	1886	580	358	852	381	323	817	358
v/s Ratio Prot	c0.06	c0.35		0.05	0.25		c0.07	0.17		0.06	c0.25	
v/s Ratio Perm			0.12			0.08			0.07			0.06
v/c Ratio	0.62	0.91	0.30	0.57	0.68	0.22	0.66	0.72	0.30	0.62	1.07	0.27
Uniform Delay, d1	52.3	35.1	26.0	52.9	31.8	25.8	51.7	41.8	37.3	52.3	46.1	37.9
Progression Factor	1.00	1.00	1.00	1.41	0.53	0.16	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	7.7	1.3	1.3	1.8	0.7	3.6	2.4	0.2	2.5	52.3	0.1
Delay (s)	54.8	42.8	27.3	76.0	18.7	4.8	55.3	44.2	37.4	54.8	98.4	38.0
Level of Service	D	D	C	E	B	A	E	D	D	D	F	D
Approach Delay (s)		42.0			22.4			44.6			83.4	
Approach LOS		D			C			D			F	
Intersection Summary												
HCM Average Control Delay			45.4				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		18.3			
Intersection Capacity Utilization			76.2%				ICU Level of Service		D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Elk Grove Blvd & Laguna Springs Drive

Existing Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑↑	↗	↔↗	↑↑↑		↔	↑	↗↘	↔	↑↑	
Volume (vph)	100	1510	200	1000	1040	90	130	200	490	40	200	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1563	3433	5016		1770	1863	2787	1770	3386	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1563	3433	5016		1770	1863	2787	1770	3386	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	122	1841	244	1220	1268	110	159	244	598	49	244	85
RTOR Reduction (vph)	0	0	75	0	7	0	0	0	477	0	30	0
Lane Group Flow (vph)	122	1841	169	1220	1371	0	159	244	121	49	299	0
Confl. Bikes (#/hr)			1			1						4
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	12.3	50.3	50.3	16.4	54.4		15.1	24.3	24.3	6.8	16.0	
Effective Green, g (s)	12.3	50.3	50.3	16.4	54.4		15.1	24.3	24.3	6.8	16.0	
Actuated g/C Ratio	0.10	0.42	0.42	0.14	0.45		0.13	0.20	0.20	0.06	0.13	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	181	2131	655	469	2274		223	377	564	100	451	
v/s Ratio Prot	0.07	c0.36		c0.36	c0.27		c0.09	c0.13		0.03	0.09	
v/s Ratio Perm			0.11						0.04			
v/c Ratio	0.67	0.86	0.26	2.60	0.60		0.71	0.65	0.21	0.49	0.66	
Uniform Delay, d1	51.9	31.7	22.7	51.8	24.7		50.4	43.9	39.9	54.9	49.4	
Progression Factor	0.66	1.21	1.60	1.39	0.42		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.2	2.8	0.5	725.6	1.0		8.6	2.9	0.1	1.4	2.8	
Delay (s)	38.5	41.2	36.8	797.5	11.2		59.0	46.8	40.0	56.3	52.3	
Level of Service	D	D	D	F	B		E	D	D	E	D	
Approach Delay (s)		40.6			380.4			44.7			52.8	
Approach LOS		D			F			D			D	






















Intersection Summary

HCM Average Control Delay	184.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.9
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Elk Grove Blvd & Auto Center Drive

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	1690	150	310	2000	10	90	20	130	50	10	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5023		3433	5081		1770	1620		3433	1631	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5023		3433	5081		1770	1620		3433	1631	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	85	1798	160	330	2128	11	96	21	138	53	11	53
RTOR Reduction (vph)	0	6	0	0	0	0	0	129	0	0	49	0
Lane Group Flow (vph)	85	1952	0	330	2139	0	96	30	0	53	15	0
Confl. Bikes (#/hr)						2						
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	9.0	62.5		15.7	69.2		10.9	8.0		12.0	9.1	
Effective Green, g (s)	9.0	62.5		15.7	69.2		10.9	8.0		12.0	9.1	
Actuated g/C Ratio	0.08	0.52		0.13	0.58		0.09	0.07		0.10	0.08	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	133	2616		449	2930		161	108		343	124	
v/s Ratio Prot	0.05	0.39		c0.10	c0.42		c0.05	0.02		c0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.64	0.75		0.73	0.73		0.60	0.28		0.15	0.12	
Uniform Delay, d1	53.9	22.5		50.1	18.6		52.4	53.3		49.4	51.7	
Progression Factor	1.08	0.56		1.13	0.65		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	1.2		1.7	0.5		3.9	0.5		0.1	0.2	
Delay (s)	63.0	13.8		58.5	12.6		56.3	53.8		49.4	51.9	
Level of Service	E	B		E	B		E	D		D	D	
Approach Delay (s)		15.9			18.8			54.7			50.8	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM Average Control Delay			20.2			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.8			
Intersection Capacity Utilization			74.9%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Existing Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↖	↑↑↑					↖	↖	↖↖
Volume (vph)	0	1870	220	110	1210	0	0	0	0	550	10	1180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.98		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4994		1770	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4994		1770	5085					1681	1688	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2033	239	120	1315	0	0	0	0	598	11	1283
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	81
Lane Group Flow (vph)	0	2261	0	120	1315	0	0	0	0	305	304	1202
Confl. Bikes (#/hr)			2			2						
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		55.9		12.5	74.3					33.3	33.3	33.3
Effective Green, g (s)		55.9		12.5	74.3					33.3	33.3	33.3
Actuated g/C Ratio		0.47		0.10	0.62					0.28	0.28	0.28
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2326		184	3148					466	468	773
v/s Ratio Prot		c0.45		c0.07	0.26					0.18	0.18	
v/s Ratio Perm												c0.43
v/c Ratio		0.97		0.65	0.42					0.65	0.65	1.56
Uniform Delay, d1		31.3		51.7	11.7					38.3	38.2	43.4
Progression Factor		0.39		0.49	1.98					1.00	1.00	1.00
Incremental Delay, d2		11.4		5.1	0.3					2.5	2.3	256.1
Delay (s)		23.7		30.4	23.5					40.8	40.5	299.5
Level of Service		C		C	C					D	D	F
Approach Delay (s)		23.7			24.1			0.0			216.2	
Approach LOS		C			C			A			F	

Intersection Summary

HCM Average Control Delay	88.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

Existing Plus Project Conditions
AM Peak Hour



























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↗	↑↑↑	↑↑↑	↖		
Volume (vph)	930	1490	1320	520	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	5085	5085	1583		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	5085	5085	1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1011	1620	1435	565	0	0
RTOR Reduction (vph)	0	0	0	20	0	0
Lane Group Flow (vph)	1011	1620	1435	545	0	0
Turn Type	Prot		Perm			
Protected Phases	1	6	2			
Permitted Phases				2		
Actuated Green, G (s)	49.4	120.0	59.3	59.3		
Effective Green, g (s)	49.4	120.0	59.3	59.3		
Actuated g/C Ratio	0.41	1.00	0.49	0.49		
Clearance Time (s)	5.6	6.0	5.7	5.7		
Vehicle Extension (s)	2.0	3.0	2.0	2.0		
Lane Grp Cap (vph)	1413	5085	2513	782		
v/s Ratio Prot	c0.29	0.32	0.28			
v/s Ratio Perm				c0.34		
v/c Ratio	0.72	0.32	0.57	0.70		
Uniform Delay, d1	29.4	0.0	21.4	23.4		
Progression Factor	0.57	1.00	0.84	0.80		
Incremental Delay, d2	0.6	0.1	0.8	4.3		
Delay (s)	17.3	0.1	18.8	23.0		
Level of Service	B	A	B	C		
Approach Delay (s)		6.7	20.0		0.0	
Approach LOS		A	B		A	

Intersection Summary

HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.3
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	970	270	40	1080	160	430	130	110	210	90	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (prot)	1770	3539	1550	1770	5085	1583	1610	3190		1681	1734	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (perm)	1770	3539	1550	1770	5085	1583	1610	3190		1681	1734	1562
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	1054	293	43	1174	174	467	141	120	228	98	261
RTOR Reduction (vph)	0	0	136	0	0	79	0	26	0	0	0	201
Lane Group Flow (vph)	98	1054	157	43	1174	95	248	454	0	160	166	60
Confl. Bikes (#/hr)			1									1
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2						4
Actuated Green, G (s)	10.7	53.2	53.2	6.5	49.0	49.0	22.3	22.3		16.5	16.5	16.5
Effective Green, g (s)	10.7	53.2	53.2	6.5	49.0	49.0	22.3	22.3		16.5	16.5	16.5
Actuated g/C Ratio	0.09	0.44	0.44	0.05	0.41	0.41	0.19	0.19		0.14	0.14	0.14
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9	3.9	2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	158	1569	687	96	2076	646	299	593		231	238	215
v/s Ratio Prot	c0.06	c0.30		0.02	0.23		c0.15	0.14		0.10	c0.10	
v/s Ratio Perm			0.10			0.06						0.04
v/c Ratio	0.62	0.67	0.23	0.45	0.57	0.15	0.83	0.77		0.69	0.70	0.28
Uniform Delay, d1	52.7	26.5	20.7	55.0	27.3	22.4	47.0	46.4		49.3	49.4	46.4
Progression Factor	0.92	0.68	1.26	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.2	2.2	0.7	1.2	1.1	0.5	16.3	5.3		7.1	7.0	0.3
Delay (s)	53.5	20.2	26.8	56.2	28.4	22.8	63.3	51.7		56.4	56.4	46.7
Level of Service	D	C	C	E	C	C	E	D		E	E	D
Approach Delay (s)		23.8			28.6			55.6			52.1	
Approach LOS		C			C			E			D	

Intersection Summary

HCM Average Control Delay	35.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 9: SR-99 NB Off-ramp & E. Stockton Blvd

Existing Plus Project Conditions
 AM Peak Hour



























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	230	20	0	410	370	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	303	26	0	539	487	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		1				
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)					808	
pX, platoon unblocked						
vC, conflicting volume	757	487	487			
vC1, stage 1 conf vol	487					
vC2, stage 2 conf vol	270					
vCu, unblocked vol	757	487	487			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	43	95	100			
cM capacity (veh/h)	528	527	1072			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	329	270	270	487
Volume Left	303	0	0	0
Volume Right	26	0	0	0
cSH	543	1700	1700	1700
Volume to Capacity	0.61	0.16	0.16	0.29
Queue Length 95th (ft)	100	0	0	0
Control Delay (s)	21.3	0.0	0.0	0.0
Lane LOS	C			
Approach Delay (s)	21.3	0.0		0.0
Approach LOS	C			

Intersection Summary			
Average Delay		5.2	
Intersection Capacity Utilization	38.9%		ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
10: Whitelock Pkwy & Bruceville Road
































Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	480	260	160	60	160	70	50	250	180	80	460	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Adj. Flow (vph)	632	342	211	79	211	92	66	329	237	105	605	434
RTOR Reduction (vph)	0	0	130	0	0	77	0	0	182	0	0	286
Lane Group Flow (vph)	632	342	81	79	211	15	66	329	55	105	605	148
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Actuated Green, G (s)	26.1	35.8	35.8	5.6	15.3	15.3	5.3	21.5	21.5	7.7	23.9	23.9
Effective Green, g (s)	26.1	35.8	35.8	5.6	15.3	15.3	5.3	21.5	21.5	7.7	23.9	23.9
Actuated g/C Ratio	0.28	0.39	0.39	0.06	0.17	0.17	0.06	0.23	0.23	0.08	0.26	0.26
Clearance Time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	967	1367	611	207	584	261	196	821	367	285	912	408
v/s Ratio Prot	c0.18	0.10		0.02	c0.06		0.02	0.09		c0.03	c0.17	
v/s Ratio Perm			0.05			0.01			0.03			0.09
v/c Ratio	0.65	0.25	0.13	0.38	0.36	0.06	0.34	0.40	0.15	0.37	0.66	0.36
Uniform Delay, d1	29.3	19.3	18.4	41.9	34.4	32.6	42.0	30.1	28.3	40.2	30.8	28.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.0	0.0	0.4	0.1	0.0	0.4	0.1	0.1	0.3	1.4	0.2
Delay (s)	30.5	19.4	18.4	42.3	34.5	32.7	42.4	30.3	28.4	40.5	32.2	28.4
Level of Service	C	B	B	D	C	C	D	C	C	D	C	C
Approach Delay (s)		25.2			35.7			30.8			31.5	
Approach LOS		C			D			C			C	

Intersection Summary		
HCM Average Control Delay	29.6	HCM Level of Service C
HCM Volume to Capacity ratio	0.54	
Actuated Cycle Length (s)	92.7	Sum of lost time (s) 16.8
Intersection Capacity Utilization	61.4%	ICU Level of Service B
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 11: Whitelock Pkwy & Big Horn Blvd

Existing Plus Project Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	170	230	330	10	150	160	110	810	30	210	1260	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	250	359	11	163	174	120	880	33	228	1370	87
RTOR Reduction (vph)	0	0	271	0	0	147	0	0	12	0	0	27
Lane Group Flow (vph)	185	250	88	11	163	27	120	880	21	228	1370	60
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7		4
Permitted Phases			6			2			8			4
Actuated Green, G (s)	10.4	26.8	26.8	0.9	17.3	17.3	8.5	48.0	48.0	12.0	51.5	51.5
Effective Green, g (s)	10.4	26.8	26.8	0.9	17.3	17.3	8.5	48.0	48.0	12.0	51.5	51.5
Actuated g/C Ratio	0.09	0.24	0.24	0.01	0.16	0.16	0.08	0.44	0.44	0.11	0.47	0.47
Clearance Time (s)	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	326	866	387	28	559	250	266	1551	694	376	1664	745
v/s Ratio Prot	c0.05	c0.07		0.00	0.05		0.03	0.25		c0.07	c0.39	
v/s Ratio Perm			0.06			0.02			0.01			0.04
v/c Ratio	0.57	0.29	0.23	0.39	0.29	0.11	0.45	0.57	0.03	0.61	0.82	0.08
Uniform Delay, d1	47.4	33.6	33.1	54.0	40.7	39.5	48.3	23.0	17.5	46.5	25.1	16.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.1	0.1	3.3	0.1	0.1	0.4	0.3	0.0	1.9	3.3	0.0
Delay (s)	48.8	33.7	33.2	57.3	40.8	39.6	48.7	23.3	17.5	48.4	28.3	16.0
Level of Service	D	C	C	E	D	D	D	C	B	D	C	B
Approach Delay (s)		37.0			40.7			26.0			30.4	
Approach LOS		D			D			C			C	

Intersection Summary		
HCM Average Control Delay	31.5	HCM Level of Service C
HCM Volume to Capacity ratio	0.66	
Actuated Cycle Length (s)	109.5	Sum of lost time (s) 17.2
Intersection Capacity Utilization	70.9%	ICU Level of Service C
Analysis Period (min)	15	
c	Critical Lane Group	

HCM Unsignalized Intersection Capacity Analysis
 12: Whitelock Pkwy & W Stockton Blvd


















Existing Plus Project Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	360	100	100	130	40	180
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	486	135	135	176	54	243
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	622	176	297			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	622	176	297			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	84	89			
cM capacity (veh/h)	402	868	1264			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	486	135	311	297		
Volume Left	486	0	135	0		
Volume Right	0	135	0	243		
cSH	402	868	1264	1700		
Volume to Capacity	1.21	0.16	0.11	0.17		
Queue Length 95th (ft)	494	14	9	0		
Control Delay (s)	145.0	9.9	4.1	0.0		
Lane LOS	F	A	A			
Approach Delay (s)	115.7		4.1	0.0		
Approach LOS	F					
Intersection Summary						
Average Delay			59.5			
Intersection Capacity Utilization			55.5%		ICU Level of Service	B
Analysis Period (min)			15			

















HCM Signalized Intersection Capacity Analysis
13: Bilby Road & Bruceville Road

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	150	410	10	100	30	190	150	20	80	300	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			7.0			6.5			6.5	6.5
Lane Util. Factor		1.00			1.00			1.00			1.00	1.00
Frt		0.92			0.97			0.99			1.00	0.85
Flt Protected		0.99			1.00			0.97			0.99	1.00
Satd. Flow (prot)		1695			1802			1802			1843	1583
Flt Permitted		0.91			0.94			0.47			0.83	1.00
Satd. Flow (perm)		1558			1700			861			1552	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	124	169	461	11	112	34	213	169	22	90	337	90
RTOR Reduction (vph)	0	56	0	0	10	0	0	2	0	0	0	51
Lane Group Flow (vph)	0	698	0	0	147	0	0	402	0	0	427	39
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)		44.0			43.5			44.0			44.0	44.0
Effective Green, g (s)		44.0			43.5			44.0			44.0	44.0
Actuated g/C Ratio		0.44			0.43			0.44			0.44	0.44
Clearance Time (s)		6.5			7.0			6.5			6.5	6.5
Vehicle Extension (s)		2.0			2.0			4.5			4.5	4.5
Lane Grp Cap (vph)		679			732			375			676	690
v/s Ratio Prot												
v/s Ratio Perm		c0.45			0.09			c0.47			0.28	0.02
v/c Ratio		1.03			0.20			1.07			0.63	0.06
Uniform Delay, d1		28.5			17.9			28.5			22.2	16.5
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		41.9			0.0			66.8			2.4	0.1
Delay (s)		70.4			18.0			95.3			24.6	16.6
Level of Service		E			B			F			C	B
Approach Delay (s)		70.4			18.0			95.3			23.2	
Approach LOS		E			B			F			C	
Intersection Summary												
HCM Average Control Delay			58.1				HCM Level of Service				E	
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			101.0				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			108.7%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

















HCM Unsignalized Intersection Capacity Analysis
 14: Hood Franklin Road & I-5 SB Off-ramp

Existing Plus Project Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	90	10	0	60	80	0	0	0	100	0	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	0	111	12	0	74	99	0	0	0	123	0	37
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												12
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	74			111			259	191	117	241	235	123
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	74			111			259	191	117	241	235	123
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	83	100	96
cM capacity (veh/h)	1525			1479			666	704	935	713	666	927
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	123	173	160									
Volume Left	0	0	123									
Volume Right	12	99	37									
cSH	1700	1700	927									
Volume to Capacity	0.07	0.10	0.17									
Queue Length 95th (ft)	0	0	16									
Control Delay (s)	0.0	0.0	10.6									
Lane LOS			B									
Approach Delay (s)	0.0	0.0	10.6									
Approach LOS			B									
Intersection Summary												
Average Delay			3.7									
Intersection Capacity Utilization			20.3%		ICU Level of Service					A		
Analysis Period (min)			15									













HCM Unsignalized Intersection Capacity Analysis
 15: Hood Franklin Road & I-5 NB On-ramp

Existing Plus Project Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	130	60	0	120	560	20	0	20	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	143	66	0	132	615	22	0	22	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	132			143			615	308	176	637	582	440
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	132			143			615	308	176	637	582	440
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			95	100	97	100	100	100
cM capacity (veh/h)	1453			1440			403	606	867	380	424	617
Direction, Lane #	EB 1	WB 1	NB 1	NB 2								
Volume Total	209	747	22	22								
Volume Left	0	0	22	0								
Volume Right	66	615	0	22								
cSH	1700	1700	403	867								
Volume to Capacity	0.12	0.44	0.05	0.03								
Queue Length 95th (ft)	0	0	4	2								
Control Delay (s)	0.0	0.0	14.4	9.3								
Lane LOS			B	A								
Approach Delay (s)	0.0	0.0	11.9									
Approach LOS			B									
Intersection Summary												
Average Delay			0.5									
Intersection Capacity Utilization			50.8%		ICU Level of Service				A			
Analysis Period (min)			15									


















HCM Unsignalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd

Existing Plus Project Conditions
 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	140	10	10	300	280	640
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	152	11	11	326	304	696
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	152	11	11	326	304	696
Volume Left (vph)	152	0	11	0	0	0
Volume Right (vph)	0	11	0	0	0	696
Hadj (s)	0.53	-0.67	0.53	0.03	0.03	-0.67
Departure Headway (s)	7.8	6.6	6.8	6.3	5.6	4.9
Degree Utilization, x	0.33	0.02	0.02	0.57	0.48	0.95
Capacity (veh/h)	450	524	513	561	624	724
Control Delay (s)	13.3	8.5	8.8	16.3	12.5	43.7
Approach Delay (s)	13.0		16.0		34.2	
Approach LOS	B		C		D	
Intersection Summary						
Delay			27.8			
HCM Level of Service			D			
Intersection Capacity Utilization			49.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 17: Bilby Road & Franklin Blvd

Existing Plus Project Conditions
 AM Peak Hour

															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Sign Control		Stop			Stop			Stop			Stop				
Volume (vph)	0	0	0	650	0	10	0	10	330	200	340	0			
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77			
Hourly flow rate (vph)	0	0	0	844	0	13	0	13	429	260	442	0			
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1										
Volume Total (vph)	0	857	13	429	701										
Volume Left (vph)	0	844	0	0	260										
Volume Right (vph)	0	13	0	429	0										
Hadj (s)	0.00	0.22	0.03	-0.57	0.11										
Departure Headway (s)	7.0	6.0	7.0	3.2	5.9										
Degree Utilization, x	0.00	1.43	0.03	0.38	1.15										
Capacity (veh/h)	515	594	505	1114	615										
Control Delay (s)	10.0	222.5	10.2	8.2	107.9										
Approach Delay (s)	0.0	222.5	8.2		107.9										
Approach LOS	A	F	A		F										
Intersection Summary															
Delay			135.0												
HCM Level of Service			F												
Intersection Capacity Utilization			78.9%					ICU Level of Service			D				
Analysis Period (min)			15												

HCM Signalized Intersection Capacity Analysis
18: Bilby Road & Willard Pkwy

Existing Plus Project Conditions
AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	190	260	440	100	100	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	1863	1583
Peak-hour factor, PHF	0.74	0.74	0.74	0.74	0.74	0.74
Adj. Flow (vph)	257	351	595	135	135	324
RTOR Reduction (vph)	0	261	0	0	0	279
Lane Group Flow (vph)	257	90	595	135	135	45
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	22.2	22.2	25.8	23.1	12.2	12.2
Effective Green, g (s)	22.2	22.2	25.8	17.4	12.2	12.2
Actuated g/C Ratio	0.26	0.26	0.30	0.20	0.14	0.14
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	452	404	526	709	262	222
v/s Ratio Prot	c0.15		c0.34	c0.04	c0.07	
v/s Ratio Perm		0.06				0.03
v/c Ratio	0.57	0.22	1.13	0.19	0.52	0.20
Uniform Delay, d1	28.2	25.5	30.6	28.9	34.6	33.1
Progression Factor	1.00	1.00	1.01	1.11	1.00	1.00
Incremental Delay, d2	1.0	0.1	77.9	0.0	0.7	0.2
Delay (s)	29.2	25.6	108.8	32.0	35.3	33.2
Level of Service	C	C	F	C	D	C
Approach Delay (s)	27.1			94.6	33.8	
Approach LOS	C			F	C	

Intersection Summary

HCM Average Control Delay	56.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.9	Sum of lost time (s)	26.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Bilby Road & Willard Pkwy

Existing Plus Project Conditions
 AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	520	10	10	350	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	5.7		5.6	5.7
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.93		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	1737		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	1737		1770	1863
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	12	612	12	12	412	12
RTOR Reduction (vph)	0	434	10	0	0	0
Lane Group Flow (vph)	12	178	14	0	412	12
Turn Type		Perm			Prot	
Protected Phases	2		4		3	8 1
Permitted Phases		2				
Actuated Green, G (s)	25.3	25.3	12.2		25.8	18.6
Effective Green, g (s)	25.3	25.3	12.2		25.8	18.6
Actuated g/C Ratio	0.29	0.29	0.14		0.30	0.21
Clearance Time (s)	7.0	7.0	5.7		5.6	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	515	461	244		526	399
v/s Ratio Prot	0.01		c0.01		c0.23	c0.01
v/s Ratio Perm		c0.11				
v/c Ratio	0.02	0.39	0.06		0.78	0.03
Uniform Delay, d1	22.0	24.6	32.4		28.0	27.0
Progression Factor	1.00	1.00	1.00		1.29	0.89
Incremental Delay, d2	0.0	0.2	0.0		6.5	0.0
Delay (s)	22.0	24.8	32.4		42.6	24.1
Level of Service	C	C	C		D	C
Approach Delay (s)	24.7		32.4			42.0
Approach LOS	C		C			D

Intersection Summary

HCM Average Control Delay	31.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	86.9	Sum of lost time (s)	18.3
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 20: Kammerer Road & Bruceville Road

Existing Plus Project Conditions
 AM Peak Hour



























Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	40	220	40	150	680	30
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	44	244	44	167	756	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1672	128			211	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1672	128			211	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	5	73			44	
cM capacity (veh/h)	47	922			1359	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	289	211	789
Volume Left	44	0	756
Volume Right	244	167	0
cSH	238	1700	1359
Volume to Capacity	1.22	0.12	0.56
Queue Length 95th (ft)	352	0	90
Control Delay (s)	171.6	0.0	10.7
Lane LOS	F		B
Approach Delay (s)	171.6	0.0	10.7
Approach LOS	F		

Intersection Summary			
Average Delay		45.0	
Intersection Capacity Utilization		76.4%	ICU Level of Service D
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
21: Kammerer Road & Promenade Pkwy

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	820	10	20	1340	580	10	10	20	320	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	11	921	11	22	1506	652	11	11	22	360	11	11
RTOR Reduction (vph)	0	0	6	0	0	282	0	0	21	0	0	9
Lane Group Flow (vph)	11	921	5	22	1506	370	11	11	1	360	11	2
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	0.6	31.9	31.9	2.1	33.4	33.4	0.8	4.9	4.9	9.9	13.5	13.5
Effective Green, g (s)	0.6	31.9	31.9	2.1	33.4	33.4	0.8	4.9	4.9	9.9	13.5	13.5
Actuated g/C Ratio	0.01	0.43	0.43	0.03	0.45	0.45	0.01	0.07	0.07	0.13	0.18	0.18
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	28	2751	680	50	2286	1253	19	123	104	665	643	288
v/s Ratio Prot	0.00	0.14		c0.01	c0.30		0.01	c0.01		c0.07	0.00	
v/s Ratio Perm			0.00			0.13			0.00			0.00
v/c Ratio	0.39	0.33	0.01	0.44	0.66	0.29	0.58	0.09	0.01	0.54	0.02	0.01
Uniform Delay, d1	36.7	14.1	12.1	35.5	16.0	13.0	36.6	32.6	32.4	30.1	25.0	24.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.0	0.0	2.2	0.5	0.0	23.8	0.1	0.0	0.5	0.0	0.0
Delay (s)	40.0	14.2	12.1	37.8	16.5	13.0	60.4	32.7	32.5	30.6	25.0	24.9
Level of Service	D	B	B	D	B	B	E	C	C	C	C	C
Approach Delay (s)		14.4			15.7			39.5			30.2	
Approach LOS		B			B			D			C	

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	74.3	Sum of lost time (s)	18.8
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

22: Grant Line Road & SR-99 SB Off-ramp

Existing Plus Project Conditions
AM Peak Hour















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑	↑	↑
Volume (vph)	0	890	270	0	1460	420	0	0	0	210	0	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1456	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1456	1504
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	947	287	0	1553	447	0	0	0	223	0	511
RTOR Reduction (vph)	0	0	118	0	0	0	0	0	0	0	21	21
Lane Group Flow (vph)	0	947	169	0	1553	447	0	0	0	201	246	245
Turn Type		Perm			Free					Perm		Perm
Protected Phases		6			2					8		8
Permitted Phases		6			Free					8		8
Actuated Green, G (s)		47.1	47.1		47.1	80.1				20.7	20.7	20.7
Effective Green, g (s)		47.1	47.1		47.1	80.1				20.7	20.7	20.7
Actuated g/C Ratio		0.59	0.59		0.59	1.00				0.26	0.26	0.26
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2990	931		2990	1583				434	376	389
v/s Ratio Prot		0.19			0.31							
v/s Ratio Perm			0.11			0.28				0.12	0.17	0.16
v/c Ratio		0.32	0.18		0.52	0.28				0.46	0.65	0.63
Uniform Delay, d1		8.4	7.6		9.8	0.0				25.0	26.5	26.3
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.1		0.2	0.4				0.3	3.1	2.4
Delay (s)		8.4	7.7		10.0	0.4				25.3	29.6	28.8
Level of Service		A	A		A	A				C	C	C
Approach Delay (s)		8.3			7.9			0.0		28.1		
Approach LOS		A			A			A		C		

Intersection Summary

HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	80.1	Sum of lost time (s)	12.3
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			























HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑	↑	↑↑			
Volume (vph)	0	790	310	0	1240	190	640	0	490	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	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	878	344	0	1378	211	711	0	544	0	0	0
RTOR Reduction (vph)	0	0	152	0	0	92	0	0	179	0	0	0
Lane Group Flow (vph)	0	878	192	0	1378	119	355	356	365	0	0	0
Turn Type		Perm			Perm		Split		Perm			
Protected Phases		6			2		4		4			
Permitted Phases		6			2				4			
Actuated Green, G (s)		47.3	47.3		47.8	47.8	26.8	26.8	26.8			
Effective Green, g (s)		47.3	47.3		47.8	47.8	26.8	26.8	26.8			
Actuated g/C Ratio		0.56	0.56		0.56	0.56	0.32	0.32	0.32			
Clearance Time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2833	882		2863	891	531	531	880			
v/s Ratio Prot		0.17			c0.27		0.21	c0.21				
v/s Ratio Perm			0.12			0.08			0.13			
v/c Ratio		0.31	0.22		0.48	0.13	0.67	0.67	0.42			
Uniform Delay, d1		10.1	9.5		11.1	8.8	25.2	25.2	22.9			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.1	0.2		0.2	0.1	2.5	2.6	0.1			
Delay (s)		10.1	9.6		11.3	8.9	27.7	27.8	23.0			
Level of Service		B	A		B	A	C	C	C			
Approach Delay (s)		10.0			11.0			25.7			0.0	
Approach LOS		B			B			C			A	
Intersection Summary												
HCM Average Control Delay		15.2			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.55										
Actuated Cycle Length (s)		84.9			Sum of lost time (s)			10.3				
Intersection Capacity Utilization		50.3%			ICU Level of Service			A				
Analysis Period (min)		15										
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & East Stockton Rd

Existing Plus Project Conditions
AM Peak Hour



























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	280	720	120	50	1000	160	110	30	20	100	20	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	4980		1770	1749		1681	1713	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	5085	1583	1770	4980		1770	1749		1681	1713	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	301	774	129	54	1075	172	118	32	22	108	22	344
RTOR Reduction (vph)	0	0	61	0	12	0	0	14	0	0	0	279
Lane Group Flow (vph)	301	774	68	54	1235	0	118	40	0	65	65	65
Turn Type	Prot		Perm	Prot			Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6									3
Actuated Green, G (s)	15.9	52.2	52.2	7.3	43.6		16.2	16.2		12.6	12.6	12.6
Effective Green, g (s)	15.9	52.2	52.2	7.3	43.6		16.2	16.2		12.6	12.6	12.6
Actuated g/C Ratio	0.14	0.47	0.47	0.07	0.39		0.14	0.14		0.11	0.11	0.11
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	488	2374	739	116	1942		256	253		189	193	178
v/s Ratio Prot	c0.09	0.15		0.03	c0.25		c0.07	0.02		0.04	0.04	
v/s Ratio Perm			0.04									c0.04
v/c Ratio	0.62	0.33	0.09	0.47	0.64		0.46	0.16		0.34	0.34	0.36
Uniform Delay, d1	45.1	18.7	16.6	50.4	27.7		43.8	41.8		45.8	45.7	45.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.6	0.1	0.1	1.1	0.7		1.3	0.3		0.4	0.4	0.5
Delay (s)	46.7	18.8	16.7	51.4	28.4		45.1	42.1		46.2	46.1	46.3
Level of Service	D	B	B	D	C		D	D		D	D	D
Approach Delay (s)		25.6			29.3			44.2			46.3	
Approach LOS		C			C			D			D	

Intersection Summary

HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	111.8	Sum of lost time (s)	23.5
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: Grant Line Road & Waterman Road

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 			 			 	 
Volume (vph)	200	630	0	0	710	70	0	0	0	10	0	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Lane Util. Factor	0.97	1.00			0.95	1.00					1.00	0.88
Frpb, ped/bikes	1.00	1.00			1.00	0.98					1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00					1.00	1.00
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	1863			3539	1560					1770	2787
Flt Permitted	0.95	1.00			1.00	1.00					0.95	1.00
Satd. Flow (perm)	3433	1863			3539	1560					1770	2787
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	208	656	0	0	740	73	0	0	0	10	0	208
RTOR Reduction (vph)	0	0	0	0	0	36	0	0	0	0	0	183
Lane Group Flow (vph)	208	656	0	0	740	37	0	0	0	0	10	25
Confl. Bikes (#/hr)			2			4						
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases						2						3
Actuated Green, G (s)	10.2	35.8			20.0	20.0					8.1	8.1
Effective Green, g (s)	10.2	35.8			20.0	20.0					8.1	8.1
Actuated g/C Ratio	0.15	0.53			0.29	0.29					0.12	0.12
Clearance Time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0					2.0	2.0
Lane Grp Cap (vph)	516	984			1044	460					211	333
v/s Ratio Prot	0.06	c0.35			0.21						0.01	
v/s Ratio Perm						0.02						c0.01
v/c Ratio	0.40	0.67			0.71	0.08					0.05	0.07
Uniform Delay, d1	26.0	11.7			21.3	17.3					26.4	26.5
Progression Factor	1.00	1.00			1.00	1.00					1.00	1.00
Incremental Delay, d2	0.2	1.3			1.8	0.0					0.0	0.0
Delay (s)	26.2	13.0			23.1	17.3					26.5	26.6
Level of Service	C	B			C	B					C	C
Approach Delay (s)		16.2			22.6			0.0			26.6	
Approach LOS		B			C			A			C	

Intersection Summary

HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	67.8	Sum of lost time (s)	23.9
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
29: Kammerer Rd & Collector 2

Existing Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	210	480	150	30	10	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
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)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	522	163	33	11	43
RTOR Reduction (vph)	0	0	0	24	0	39
Lane Group Flow (vph)	228	522	163	9	11	4
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	8.7	26.7	11.0	11.0	3.5	3.5
Effective Green, g (s)	8.7	26.7	11.0	11.0	3.5	3.5
Actuated g/C Ratio	0.20	0.63	0.26	0.26	0.08	0.08
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	361	2213	912	408	145	130
v/s Ratio Prot	c0.13	c0.15	0.05		c0.01	
v/s Ratio Perm				0.01		0.00
v/c Ratio	0.63	0.24	0.18	0.02	0.08	0.03
Uniform Delay, d1	15.5	3.5	12.3	11.8	18.1	18.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	0.0	0.0	0.0	0.1	0.0
Delay (s)	18.2	3.5	12.4	11.8	18.2	18.1
Level of Service	B	A	B	B	B	B
Approach Delay (s)		8.0	12.3		18.1	
Approach LOS		A	B		B	

Intersection Summary

HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	42.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
30: Kammerer Rd & Big Horn Blvd

Existing Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	190	310	80	180	120	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
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	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	337	87	196	130	98
RTOR Reduction (vph)	0	0	0	144	0	81
Lane Group Flow (vph)	207	337	87	52	130	17
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	5.4	24.2	11.8	11.8	7.5	7.5
Effective Green, g (s)	5.4	24.2	11.8	11.8	7.5	7.5
Actuated g/C Ratio	0.12	0.55	0.27	0.27	0.17	0.17
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	419	1938	945	423	300	269
v/s Ratio Prot	c0.06	c0.10	0.02		c0.07	
v/s Ratio Perm				0.03		0.01
v/c Ratio	0.49	0.17	0.09	0.12	0.43	0.06
Uniform Delay, d1	18.1	5.0	12.2	12.3	16.4	15.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.0	0.0	0.0	0.4	0.0
Delay (s)	18.5	5.0	12.2	12.3	16.8	15.4
Level of Service	B	A	B	B	B	B
Approach Delay (s)		10.1	12.3		16.2	
Approach LOS		B	B		B	

Intersection Summary

HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	44.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	29.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Kammerer Rd & Collector 1

Existing Plus Project Conditions
AM Peak Hour



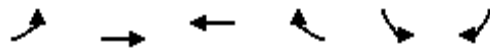
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↑↑	↗	↖	↗
Volume (vph)	30	400	250	270	170	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	435	272	293	185	11
RTOR Reduction (vph)	0	0	0	193	0	9
Lane Group Flow (vph)	33	435	272	100	185	2
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	0.9	22.7	14.8	14.8	8.1	8.1
Effective Green, g (s)	0.9	22.7	14.8	14.8	8.1	8.1
Actuated g/C Ratio	0.02	0.52	0.34	0.34	0.19	0.19
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	37	1855	1210	541	331	296
v/s Ratio Prot	0.02	c0.12	0.08		c0.10	
v/s Ratio Perm				0.06		0.00
v/c Ratio	0.89	0.23	0.22	0.19	0.56	0.01
Uniform Delay, d1	21.2	5.6	10.2	10.0	16.0	14.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	103.2	0.0	0.0	0.1	1.2	0.0
Delay (s)	124.3	5.6	10.2	10.1	17.1	14.3
Level of Service	F	A	B	B	B	B
Approach Delay (s)		14.0	10.1		17.0	
Approach LOS		B	B		B	

Intersection Summary

HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	43.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Kammerer Rd & Lotz Pkwy

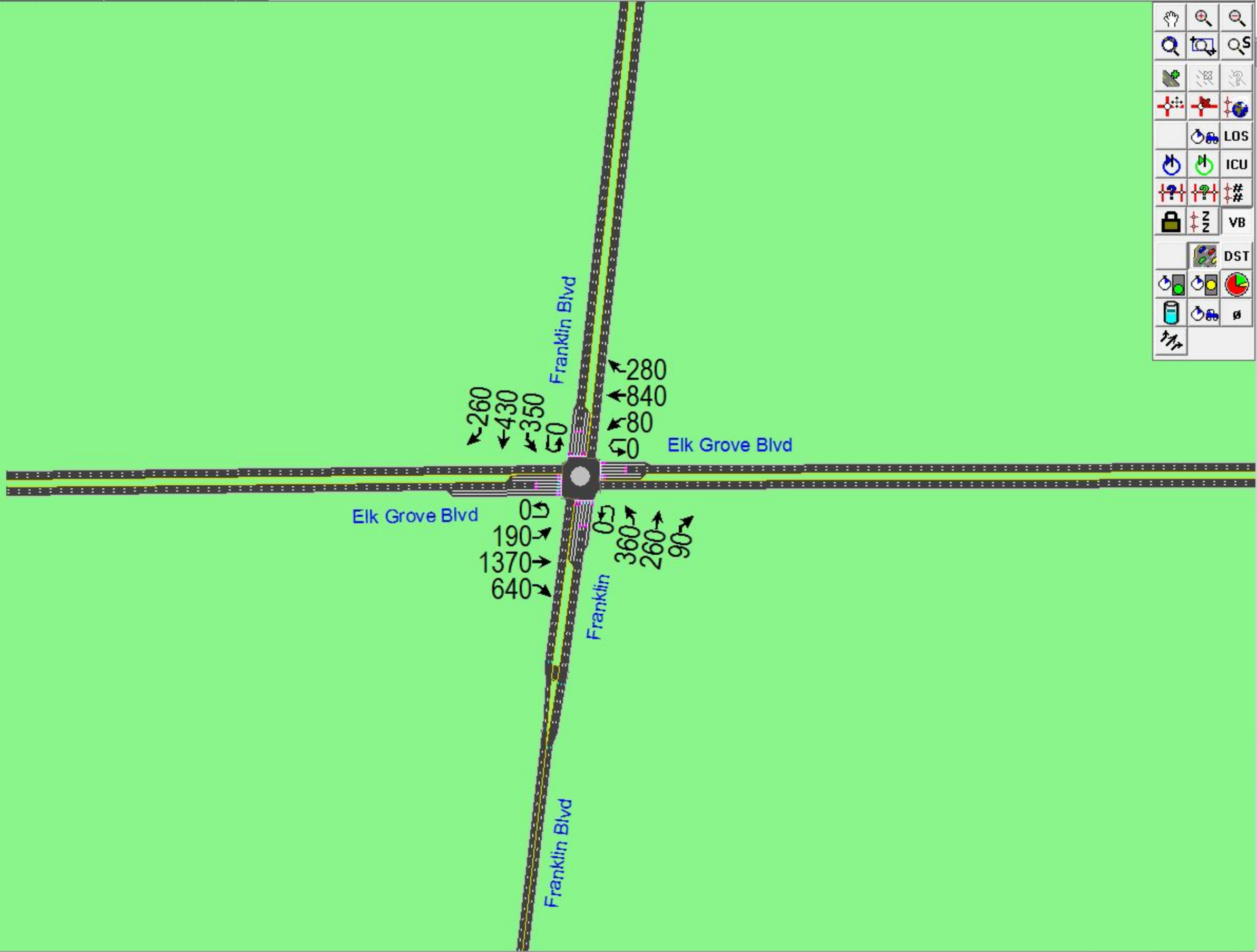
Existing Plus Project Conditions
AM Peak Hour



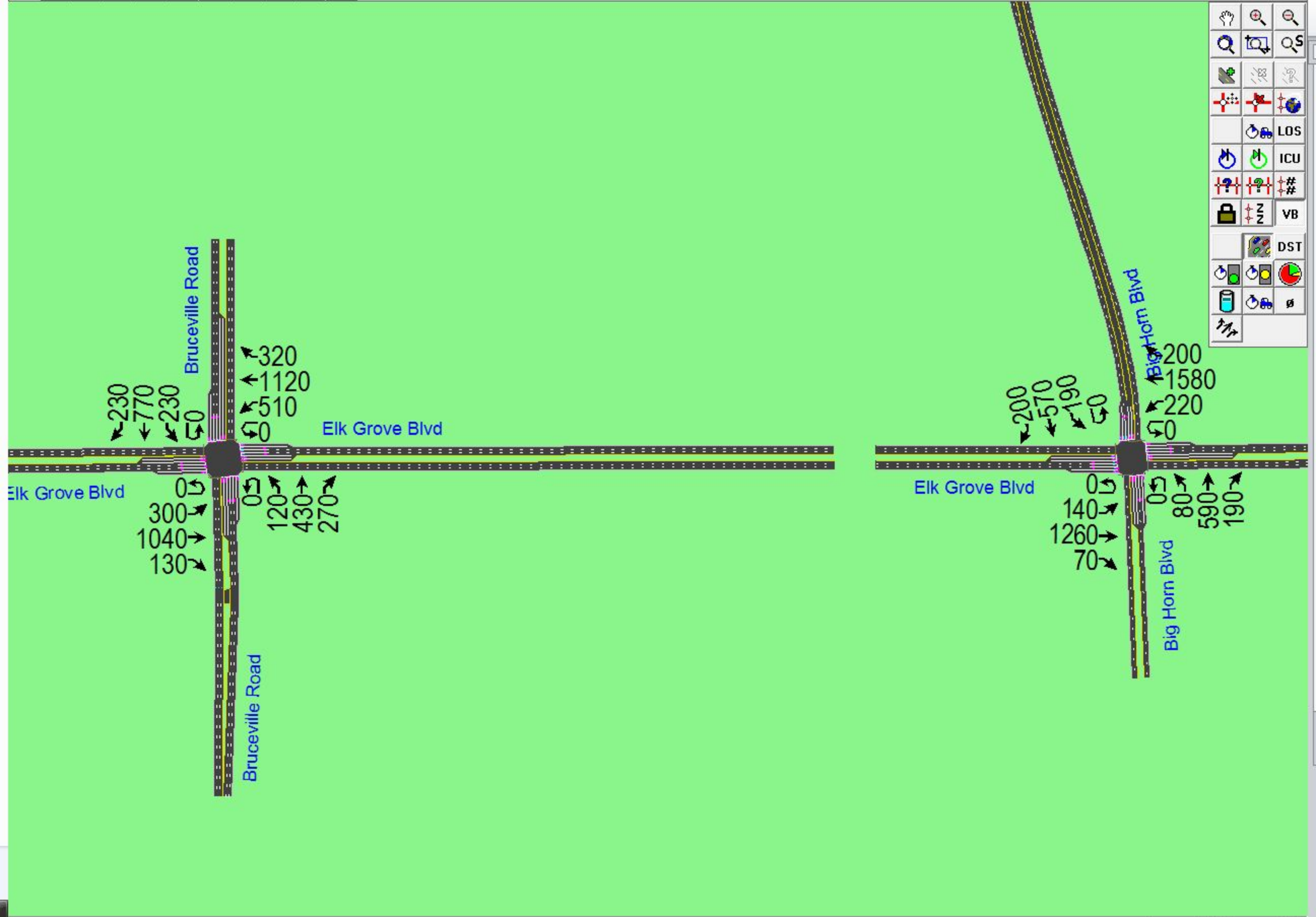
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	10	590	1040	10	110	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	3539	3539	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	641	1130	11	120	11
RTOR Reduction (vph)	0	0	0	5	0	10
Lane Group Flow (vph)	11	641	1130	6	120	1
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	0.8	39.2	31.4	31.4	7.2	7.2
Effective Green, g (s)	0.8	39.2	31.4	31.4	7.2	7.2
Actuated g/C Ratio	0.01	0.67	0.53	0.53	0.12	0.12
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	47	2355	1887	844	420	194
v/s Ratio Prot	0.00	c0.18	c0.32		c0.03	
v/s Ratio Perm				0.00		0.00
v/c Ratio	0.23	0.27	0.60	0.01	0.29	0.01
Uniform Delay, d1	28.7	4.0	9.4	6.4	23.5	22.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.0	0.3	0.0	0.1	0.0
Delay (s)	29.7	4.0	9.8	6.4	23.6	22.7
Level of Service	C	A	A	A	C	C
Approach Delay (s)		4.5	9.7		23.6	
Approach LOS		A	A		C	

Intersection Summary

HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	19.5
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

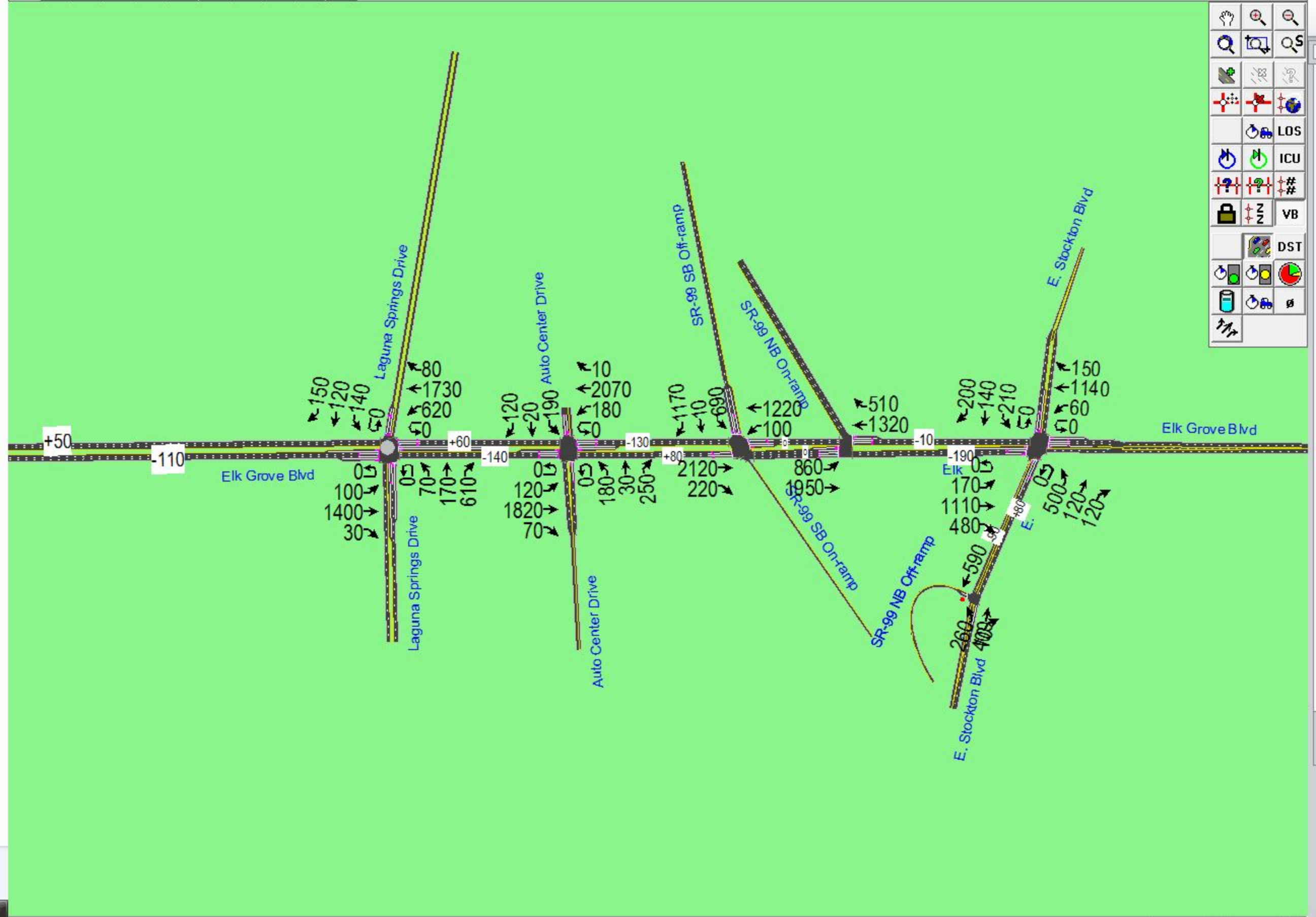


A vertical toolbar on the right side of the interface, containing various icons for navigation and analysis. The icons include a hand, magnifying glass, search, and several traffic-related symbols. Text labels next to some icons include LOS, ICU, #, #, VB, and DST.



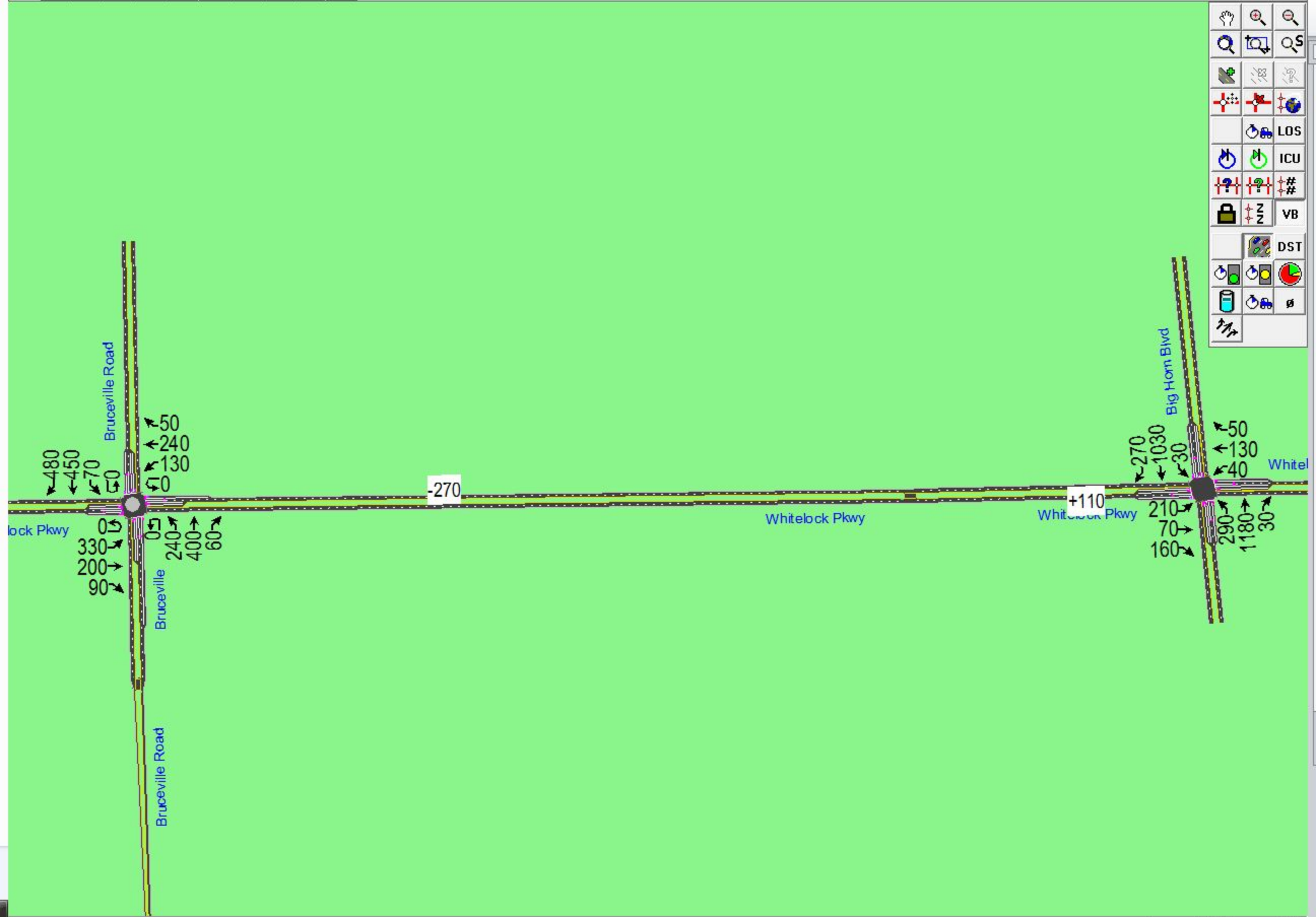
Navigation and analysis tools:

- Hand icon
- Zoom in (+)
- Zoom out (-)
- Search (S)
- Layers (L)
- LOS (Level of Service)
- ICU (Incident Clearance Unit)
- VB (Vehicle Buffer)
- DST (Data Source Tool)



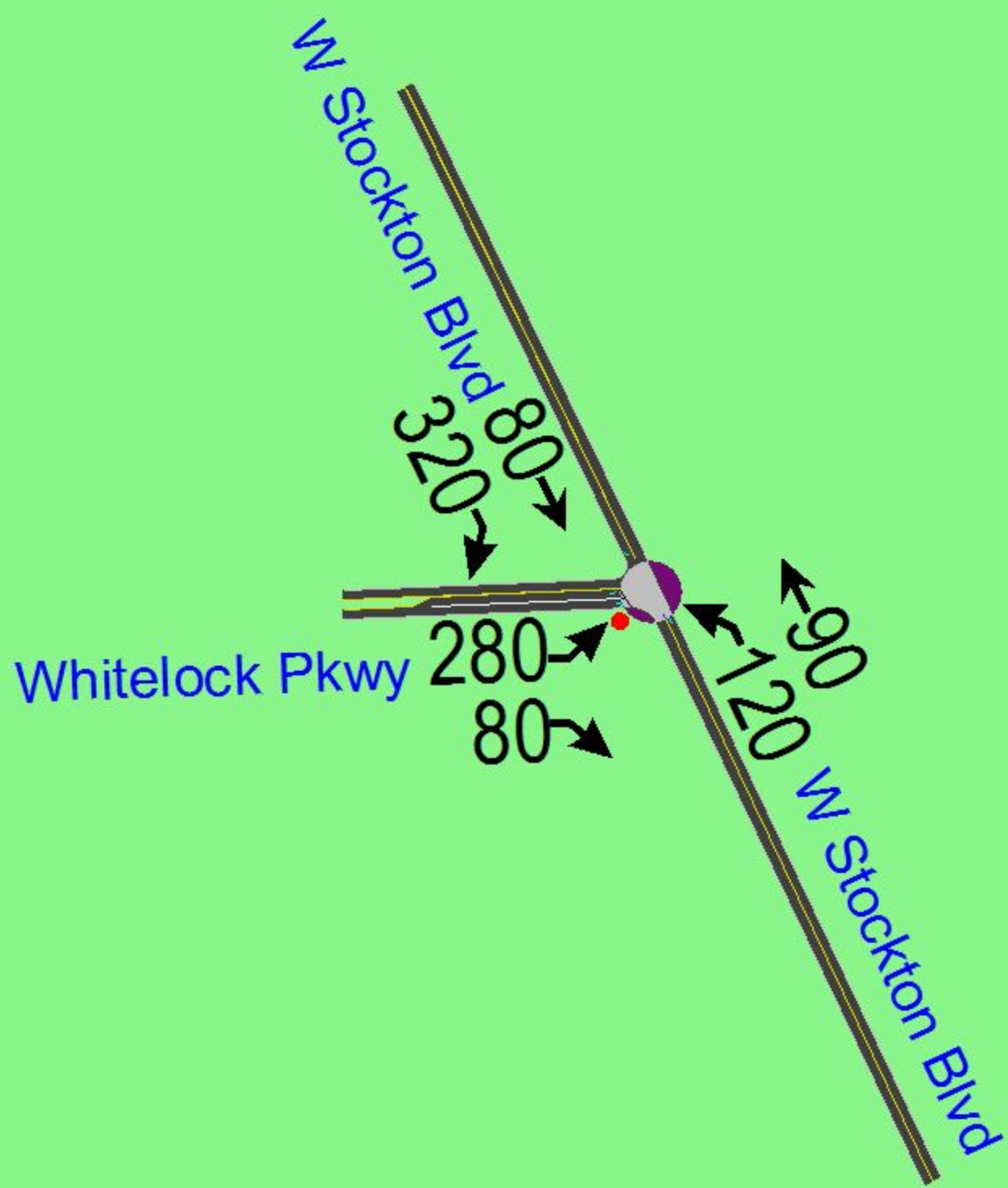
Control Panel:

- Hand icon
- Zoom in (+)
- Zoom out (-)
- Search (S)
- Refresh
- Reset
- Global Settings
- LOS
- ICU
- #
- VB
- DST
- Simulation Settings

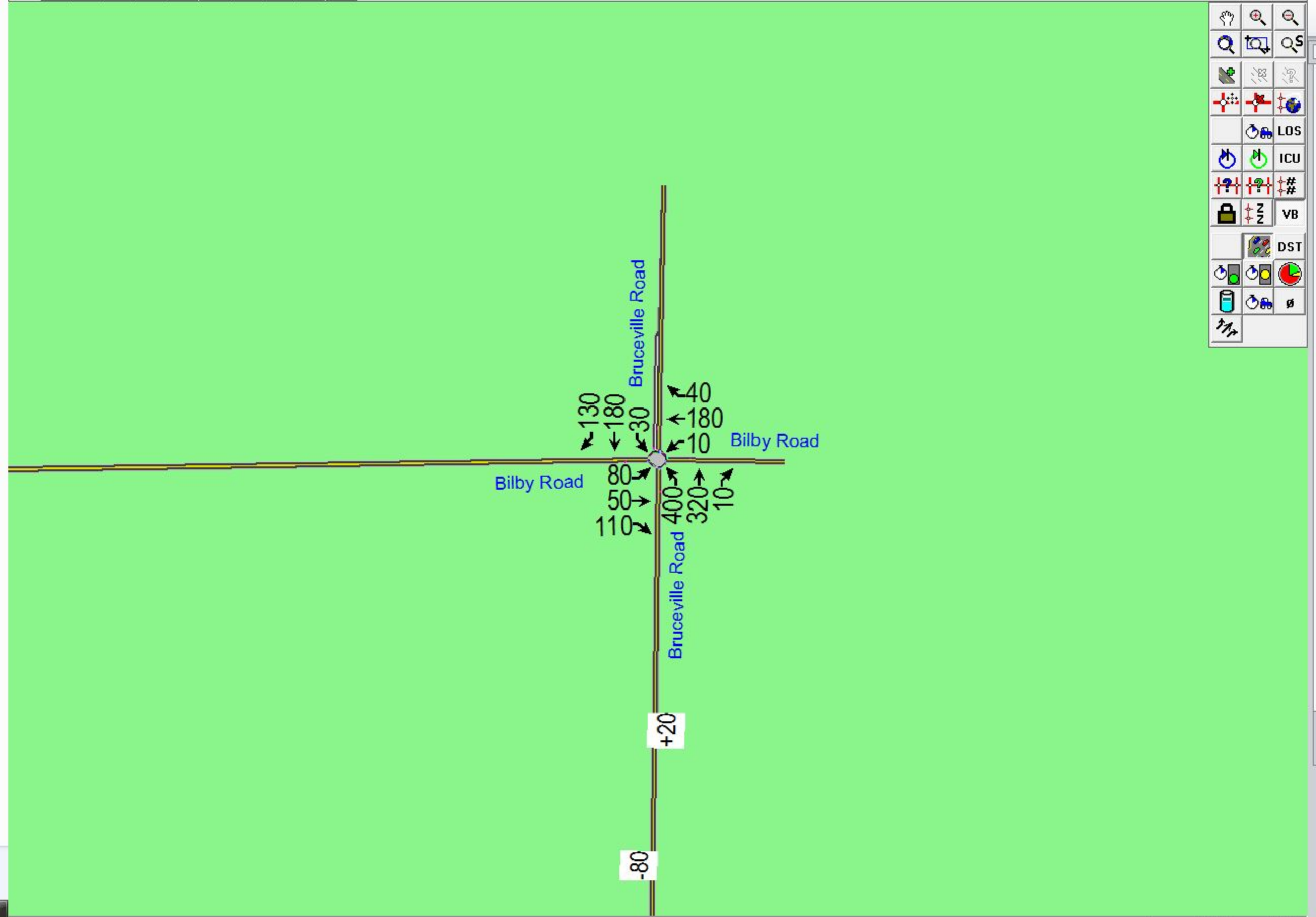




12 Whitelock Pkwy & W Stockton Blvd



A vertical toolbar on the right side of the interface, containing various simulation and analysis tools such as LOS, ICU, #, VB, DST, and a pie chart icon.



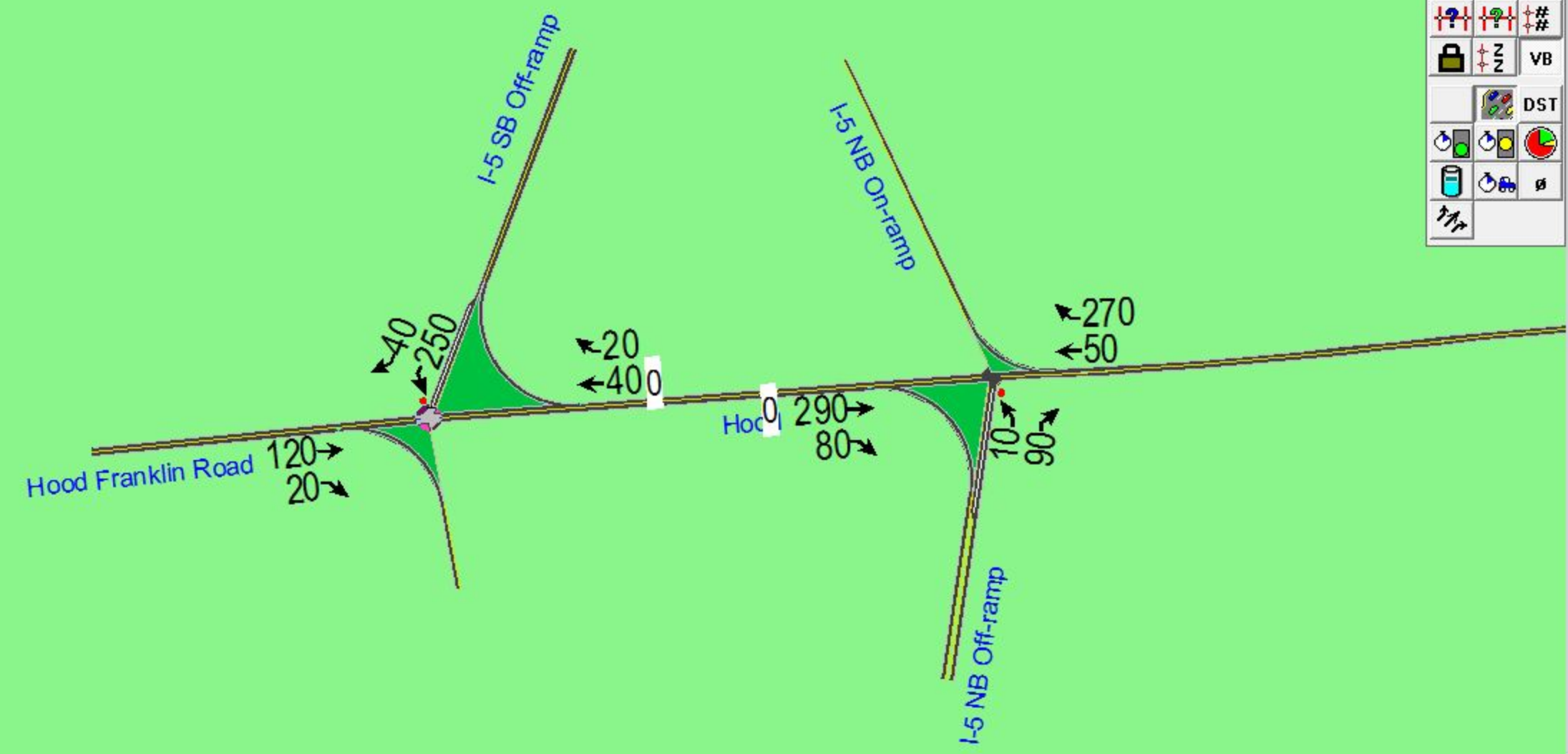
A vertical toolbar on the right side of the screen containing various icons for navigation and analysis. The icons include a hand, magnifying glass, search, and several traffic-related symbols. Labels on the right side of the toolbar include: LOS, ICU, #, #, VB, DST, and a symbol with a car and a person.

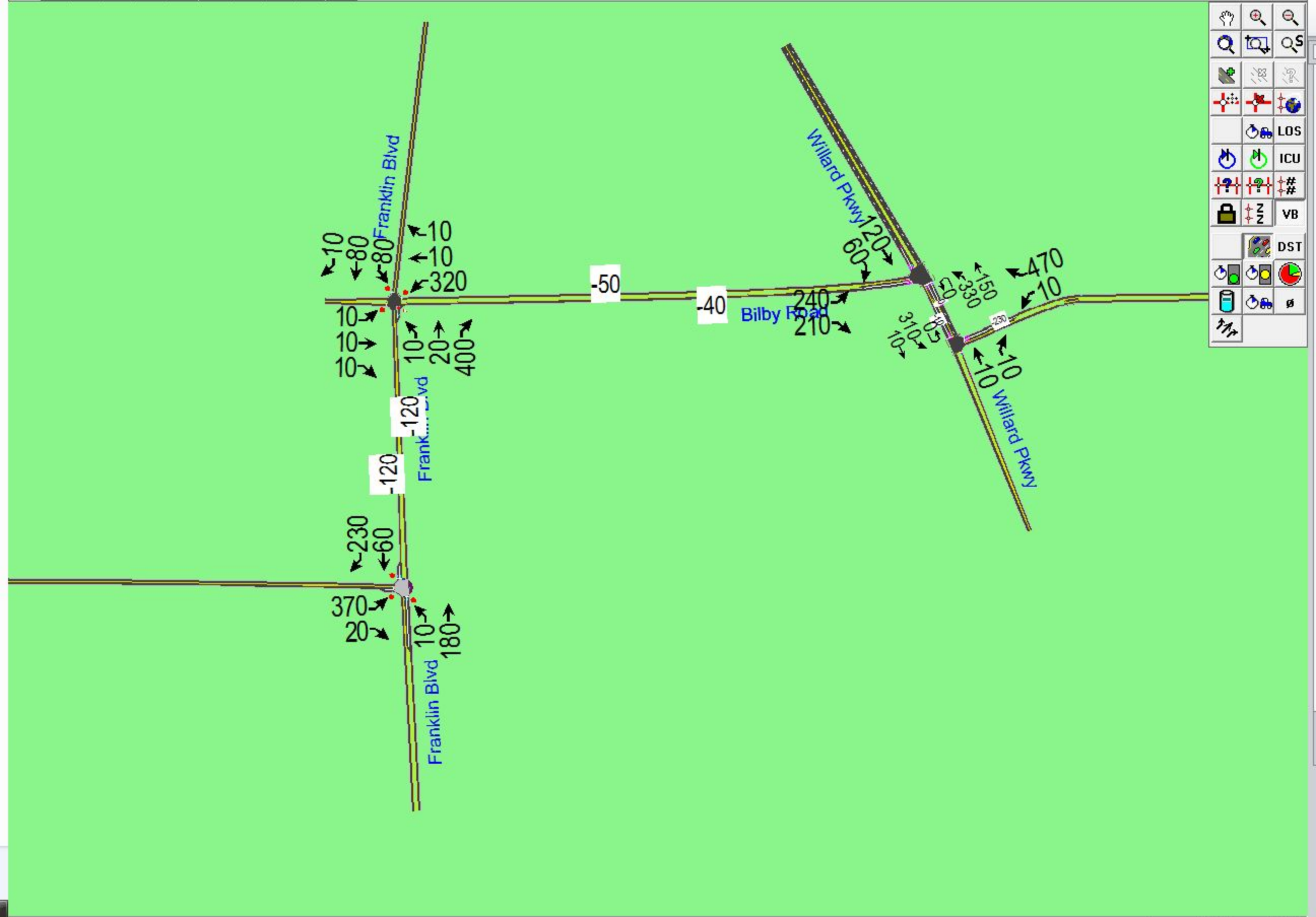


14 Hood Franklin Road & I-5 SB Off-ramp

LOS
ICU

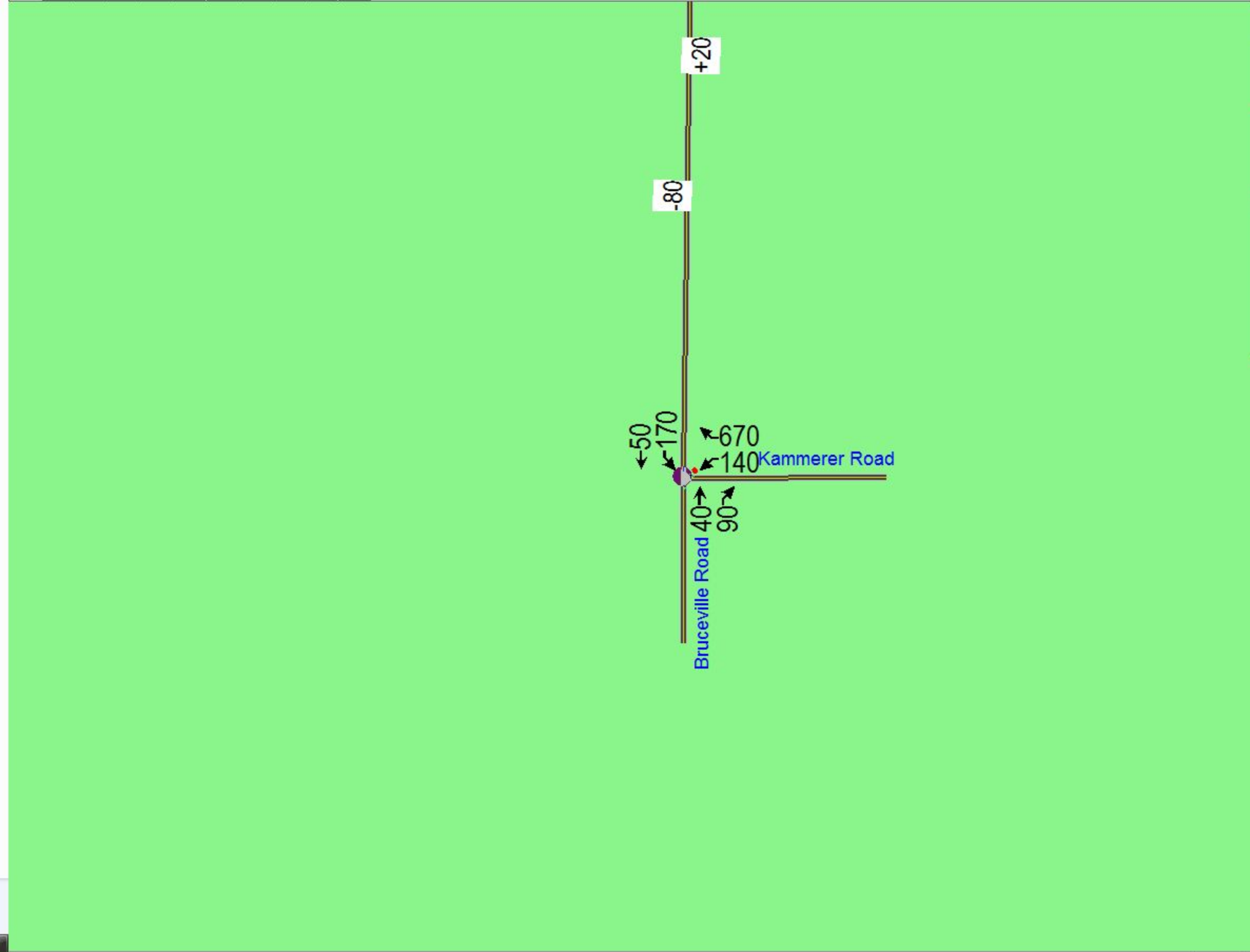
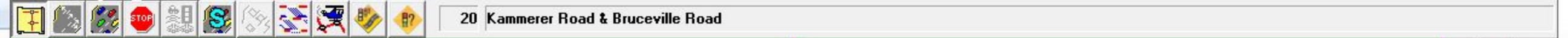
VB
DST





Toolbox containing various icons for navigation and analysis:

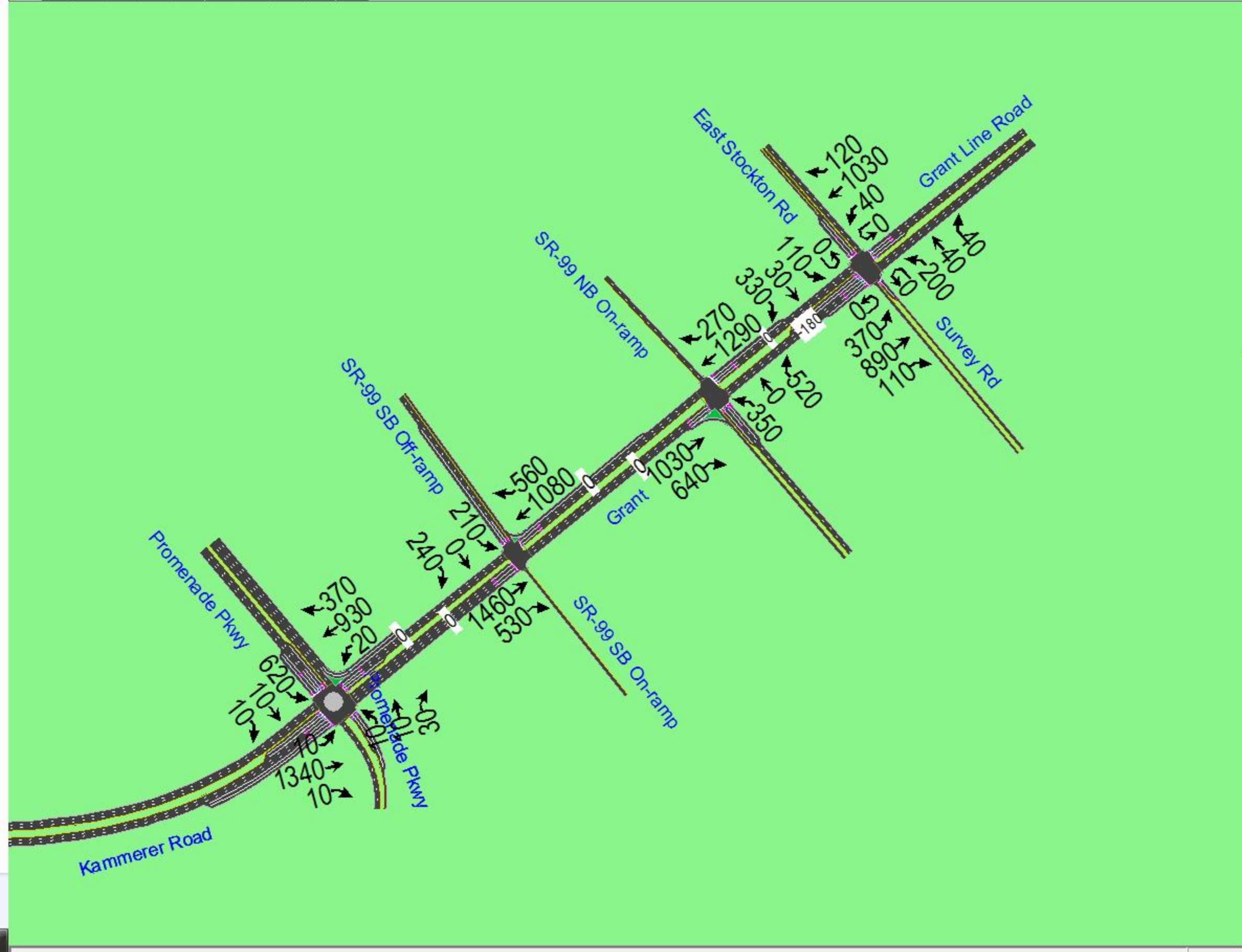
- Hand icon (pan)
- Zoom in/out icons
- Search icon
- Layers icon
- LOS (Level of Service) icon
- ICU (Incident Clearance Unit) icon
- Sign icons
- VB (Vehicle Buffer) icon
- DST (Data Source Table) icon
- Other utility icons



A vertical toolbar on the right side of the workspace. It contains various icons for simulation and analysis, including a hand, a magnifying glass, a search icon, a refresh icon, a power icon, a lock icon, and several traffic-related symbols. The labels "LOS", "ICU", "#", "VB", "DST", and "∅" are visible next to some of the icons.

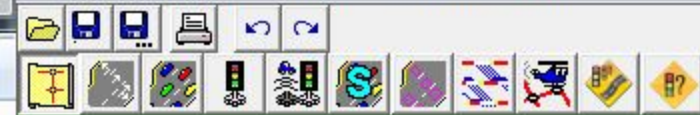


21 Kammerer Road & Promenade Pkwy

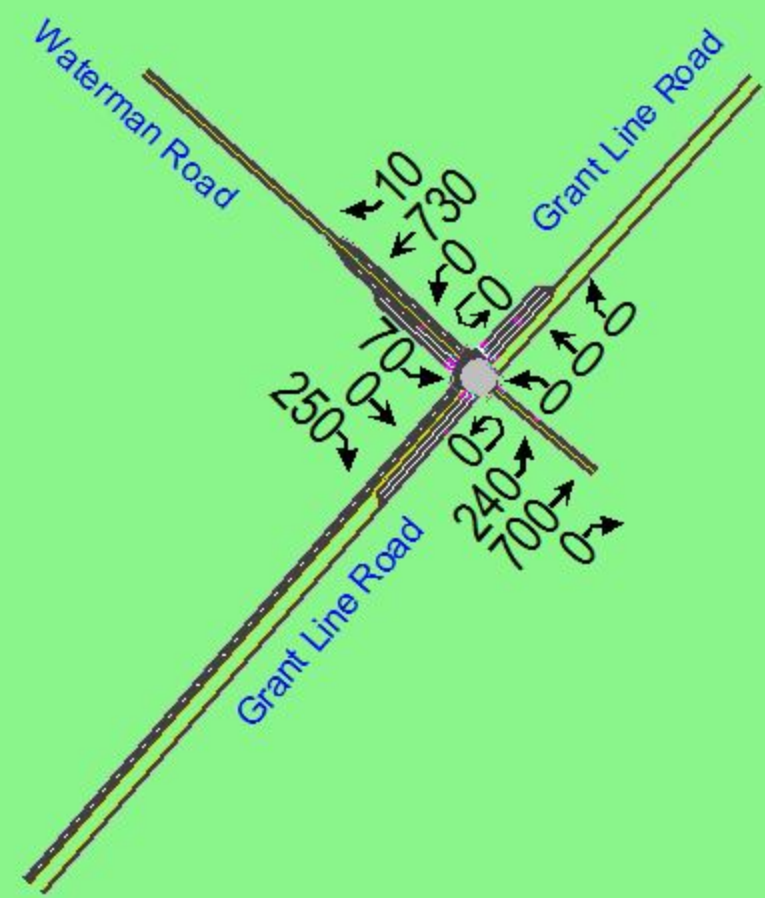


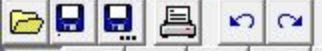
Vertical toolbar containing various analysis and navigation tools:

- Hand icon (pan)
- Zoom in/out icons
- Analysis tools: LOS, ICU, #, #, VB, DST
- Other icons for simulation and data visualization.



25 Grant Line Road & Waterman Road





none



























Right-side toolbar icons include: Hand, Zoom In, Zoom Out, Pan, Select, Lasso, Erase, Copy, Paste, Undo, Redo, Refresh, and various simulation and analysis tools like LOS, ICU, #, VB, DST, and a pie chart.

HCM Signalized Intersection Capacity Analysis

Existing Plus Project Conditions

1: Elk Grove Blvd & Franklin Blvd

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	1370	640	80	840	280	360	260	90	350	430	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Lane Util. Factor	0.97	0.91	0.88	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	2750	3433	5085	1583	3433	5085	1583	3433	5085	1557
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	2750	3433	5085	1583	3433	5085	1583	3433	5085	1557
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	1489	696	87	913	304	391	283	98	380	467	283
RTOR Reduction (vph)	0	0	389	0	0	166	0	0	83	0	0	242
Lane Group Flow (vph)	207	1489	307	87	913	138	391	283	15	380	467	41
Confl. Bikes (#/hr)			2									3
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	11.6	53.0	53.0	7.4	48.4	48.4	18.1	18.7	18.7	15.7	17.2	17.2
Effective Green, g (s)	11.6	53.0	53.0	7.4	48.4	48.4	18.1	18.7	18.7	15.7	17.2	17.2
Actuated g/C Ratio	0.10	0.44	0.44	0.06	0.40	0.40	0.15	0.16	0.16	0.13	0.14	0.14
Clearance Time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	332	2246	1215	212	2051	638	518	792	247	449	729	223
v/s Ratio Prot	c0.06	c0.29		0.03	0.18		c0.11	0.06		0.11	c0.09	
v/s Ratio Perm			0.11			0.09			0.01			0.03
v/c Ratio	0.62	0.66	0.25	0.41	0.45	0.22	0.75	0.36	0.06	0.85	0.64	0.18
Uniform Delay, d1	52.1	26.4	21.1	54.2	26.0	23.4	48.8	45.3	43.2	51.0	48.5	45.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	1.6	0.5	0.5	0.7	0.8	5.5	0.1	0.0	13.2	1.4	0.1
Delay (s)	54.7	28.0	21.6	54.7	26.7	24.2	54.3	45.4	43.2	64.2	49.9	45.4
Level of Service	D	C	C	D	C	C	D	D	D	E	D	D
Approach Delay (s)		28.4			28.0			49.6			53.6	
Approach LOS		C			C			D			D	

Intersection Summary

























HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Elk Grove Blvd & Bruceville Road

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	1040	130	510	1120	320	120	430	270	230	770	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.86	0.86
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	4785	1362
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	4785	1362
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	312	1083	135	531	1167	333	125	448	281	240	802	240
RTOR Reduction (vph)	0	0	73	0	0	155	0	0	233	0	2	172
Lane Group Flow (vph)	312	1083	62	531	1167	178	125	448	48	240	824	44
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	15.3	41.2	41.2	22.9	48.8	48.8	8.8	20.7	20.7	12.3	24.2	24.2
Effective Green, g (s)	15.3	41.2	41.2	22.9	48.8	48.8	8.8	20.7	20.7	12.3	24.2	24.2
Actuated g/C Ratio	0.13	0.34	0.34	0.19	0.41	0.41	0.07	0.17	0.17	0.10	0.20	0.20
Clearance Time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	438	1746	543	655	2068	644	252	877	273	352	965	275
v/s Ratio Prot	0.09	c0.21		c0.15	0.23		0.04	0.09		c0.07	c0.17	
v/s Ratio Perm			0.04			0.11			0.03			0.03
v/c Ratio	0.71	0.62	0.11	0.81	0.56	0.28	0.50	0.51	0.18	0.68	0.85	0.16
Uniform Delay, d1	50.2	32.9	26.9	46.5	27.4	23.8	53.5	45.1	42.4	52.0	46.2	39.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	1.7	0.4	7.1	1.1	1.1	0.6	0.2	0.1	4.3	7.2	0.1
Delay (s)	54.8	34.5	27.4	53.6	28.5	24.9	54.0	45.3	42.5	56.3	53.3	39.6
Level of Service	D	C	C	D	C	C	D	D	D	E	D	D
Approach Delay (s)		38.0			34.5			45.6			51.6	
Approach LOS		D			C			D			D	

























Intersection Summary

HCM Average Control Delay	41.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.9
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

3: Elk Grove Blvd & Big Horn Blvd

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	1260	70	220	1580	200	80	590	190	190	570	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	146	1312	73	229	1646	208	83	615	198	198	594	208
RTOR Reduction (vph)	0	0	32	0	0	67	0	0	155	0	0	119
Lane Group Flow (vph)	146	1312	41	229	1646	141	83	615	43	198	594	89
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7		4
Permitted Phases			6			2			8			4
Actuated Green, G (s)	9.5	46.5	46.5	12.2	49.2	49.2	6.3	26.0	26.0	11.3	31.0	31.0
Effective Green, g (s)	9.5	46.5	46.5	12.2	49.2	49.2	6.3	26.0	26.0	11.3	31.0	31.0
Actuated g/C Ratio	0.08	0.39	0.39	0.10	0.41	0.41	0.05	0.22	0.22	0.09	0.26	0.26
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	272	1970	613	349	2085	649	180	767	343	323	914	409
v/s Ratio Prot	0.04	0.26		c0.07	c0.32		0.02	c0.17		c0.06	c0.17	
v/s Ratio Perm			0.03			0.09			0.03			0.06
v/c Ratio	0.54	0.67	0.07	0.66	0.79	0.22	0.46	0.80	0.13	0.61	0.65	0.22
Uniform Delay, d1	53.1	30.3	23.1	51.9	30.9	22.9	55.2	44.6	37.8	52.2	39.7	35.0
Progression Factor	1.00	1.00	1.00	1.35	0.49	0.17	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	1.8	0.2	2.4	2.2	0.5	0.7	5.7	0.1	2.4	1.2	0.1
Delay (s)	54.2	32.1	23.3	72.5	17.3	4.4	55.9	50.3	37.9	54.7	40.9	35.1
Level of Service	D	C	C	E	B	A	E	D	D	D	D	D
Approach Delay (s)		33.8			22.1			48.1			42.4	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay			33.2				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		29.3			
Intersection Capacity Utilization			76.4%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Elk Grove Blvd & Laguna Springs Drive

Existing Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑↑	↗	↔↗	↑↑↑		↔	↑	↗↘	↔	↑↗	
Volume (vph)	100	1400	30	620	1730	80	70	170	610	140	120	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3244	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3244	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	103	1443	31	639	1784	82	72	175	629	144	124	155
RTOR Reduction (vph)	0	0	12	0	3	0	0	0	540	0	126	0
Lane Group Flow (vph)	103	1443	19	639	1863	0	72	175	89	144	153	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	11.3	50.4	50.4	16.4	55.5		8.2	16.9	16.9	14.1	22.8	
Effective Green, g (s)	11.3	50.4	50.4	16.4	55.5		8.2	16.9	16.9	14.1	22.8	
Actuated g/C Ratio	0.09	0.42	0.42	0.14	0.46		0.07	0.14	0.14	0.12	0.19	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	167	2136	665	469	2337		121	262	393	208	616	
v/s Ratio Prot	0.06	0.28		c0.19	c0.37		0.04	c0.09		c0.08	0.05	
v/s Ratio Perm			0.01						0.03			
v/c Ratio	0.62	0.68	0.03	1.36	0.80		0.60	0.67	0.23	0.69	0.25	
Uniform Delay, d1	52.3	28.2	20.4	51.8	27.5		54.3	48.9	45.7	50.9	41.3	
Progression Factor	0.74	0.98	0.91	1.36	0.44		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.8	1.4	0.1	170.4	1.6		5.1	4.9	0.1	7.8	0.1	
Delay (s)	42.6	29.1	18.7	240.7	13.7		59.4	53.8	45.8	58.6	41.4	
Level of Service	D	C	B	F	B		E	D	D	E	D	
Approach Delay (s)		29.8			71.6			48.6			47.3	
Approach LOS		C			E			D			D	






















Intersection Summary

HCM Average Control Delay	53.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

5: Elk Grove Blvd & Auto Center Drive

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1820	70	180	2070	10	180	30	250	190	20	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5057		3433	5082		1770	1613		3433	1624	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5057		3433	5082		1770	1613		3433	1624	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	1896	73	188	2156	10	188	31	260	198	21	125
RTOR Reduction (vph)	0	3	0	0	1	0	0	240	0	0	113	0
Lane Group Flow (vph)	125	1966	0	188	2165	0	188	51	0	198	33	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	12.8	59.2		10.9	57.3		16.6	9.1		19.0	11.5	
Effective Green, g (s)	12.8	59.2		10.9	57.3		16.6	9.1		19.0	11.5	
Actuated g/C Ratio	0.11	0.49		0.09	0.48		0.14	0.08		0.16	0.10	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	189	2495		312	2427		245	122		544	156	
v/s Ratio Prot	c0.07	0.39		0.05	c0.43		c0.11	0.03		c0.06	0.02	
v/s Ratio Perm												
v/c Ratio	0.66	0.79		0.60	0.89		0.77	0.42		0.36	0.21	
Uniform Delay, d1	51.5	25.2		52.5	28.5		49.8	52.9		45.1	50.1	
Progression Factor	0.95	1.15		1.14	0.51		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.1	2.0		1.2	3.1		12.2	0.8		0.2	0.2	
Delay (s)	54.0	30.9		60.8	17.6		62.0	53.8		45.3	50.3	
Level of Service	D	C		E	B		E	D		D	D	
Approach Delay (s)		32.3			21.0			57.0			47.4	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM Average Control Delay			30.5			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.9			
Intersection Capacity Utilization			87.5%			ICU Level of Service				E		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Existing Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↔	↑↑↑					↔	↔	↔
Volume (vph)	0	2120	220	100	1220	0	0	0	0	690	10	1170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frt		0.99		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5014		1770	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5014		1770	5085					1681	1688	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	2163	224	102	1245	0	0	0	0	704	10	1194
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	73
Lane Group Flow (vph)	0	2379	0	102	1245	0	0	0	0	359	355	1121
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		52.1		11.3	69.3					38.3	38.3	38.3
Effective Green, g (s)		52.1		11.3	69.3					38.3	38.3	38.3
Actuated g/C Ratio		0.43		0.09	0.58					0.32	0.32	0.32
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2177		167	2937					537	539	890
v/s Ratio Prot		c0.47		c0.06	0.24					0.21	0.21	
v/s Ratio Perm												c0.40
v/c Ratio		1.09		0.61	0.42					0.67	0.66	1.26
Uniform Delay, d1		34.0		52.2	14.2					35.4	35.2	40.9
Progression Factor		0.46		0.40	1.40					1.00	1.00	1.00
Incremental Delay, d2		47.5		3.3	0.3					2.4	2.2	126.0
Delay (s)		63.2		24.4	20.2					37.8	37.4	166.8
Level of Service		E		C	C					D	D	F
Approach Delay (s)		63.2			20.5			0.0			118.5	
Approach LOS		E			C			A			F	

Intersection Summary

HCM Average Control Delay	71.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

Existing Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔↔	↑↑↑	↑↑↑	↗		
Volume (vph)	860	1950	1320	510	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	5085	5085	1583		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	5085	5085	1583		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	925	2097	1419	548	0	0
RTOR Reduction (vph)	0	0	0	54	0	0
Lane Group Flow (vph)	925	2097	1419	494	0	0
Turn Type	Prot		Perm			
Protected Phases	1	6	2			
Permitted Phases				2		
Actuated Green, G (s)	59.4	120.0	49.3	49.3		
Effective Green, g (s)	59.4	120.0	49.3	49.3		
Actuated g/C Ratio	0.49	1.00	0.41	0.41		
Clearance Time (s)	5.6	6.0	5.7	5.7		
Vehicle Extension (s)	2.0	3.0	2.0	2.0		
Lane Grp Cap (vph)	1699	5085	2089	650		
v/s Ratio Prot	c0.27	0.41	0.28			
v/s Ratio Perm				c0.31		
v/c Ratio	0.54	0.41	0.68	0.76		
Uniform Delay, d1	20.9	0.0	28.9	30.3		
Progression Factor	0.61	1.00	0.78	0.73		
Incremental Delay, d2	0.1	0.1	1.4	6.3		
Delay (s)	12.8	0.1	23.8	28.4		
Level of Service	B	A	C	C		
Approach Delay (s)		4.0	25.1		0.0	
Approach LOS		A	C		A	

























Intersection Summary

HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.3
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

8: Elk Grove Blvd & E. Stockton Blvd

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	1110	480	60	1140	150	500	120	120	210	140	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.99	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1610	3184		1681	1751	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.99	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1610	3184		1681	1751	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	179	1168	505	63	1200	158	526	126	126	221	147	211
RTOR Reduction (vph)	0	0	219	0	0	74	0	24	0	0	0	180
Lane Group Flow (vph)	179	1168	286	63	1200	84	263	491	0	181	187	31
Turn Type	Prot		Perm	Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2						4
Actuated Green, G (s)	13.8	50.6	50.6	7.7	44.5	44.5	22.3	22.3		17.9	17.9	17.9
Effective Green, g (s)	13.8	50.6	50.6	7.7	44.5	44.5	22.3	22.3		17.9	17.9	17.9
Actuated g/C Ratio	0.12	0.42	0.42	0.06	0.37	0.37	0.19	0.19		0.15	0.15	0.15
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9	3.9	2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	204	1492	667	114	1886	587	299	592		251	261	236
v/s Ratio Prot	c0.10	c0.33		0.04	0.24		c0.16	0.15		c0.11	0.11	
v/s Ratio Perm			0.18			0.05						0.02
v/c Ratio	0.88	0.78	0.43	0.55	0.64	0.14	0.88	0.83		0.72	0.72	0.13
Uniform Delay, d1	52.3	30.0	24.5	54.5	31.1	25.1	47.5	47.0		48.7	48.6	44.3
Progression Factor	0.86	0.76	1.39	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	29.3	3.9	1.9	3.3	1.7	0.5	23.5	8.9		8.3	7.6	0.1
Delay (s)	74.2	26.7	35.9	57.7	32.7	25.6	71.0	55.9		57.0	56.2	44.4
Level of Service	E	C	D	E	C	C	E	E		E	E	D
Approach Delay (s)		33.8			33.1			61.0			52.2	
Approach LOS		C			C			E			D	

Intersection Summary

HCM Average Control Delay	40.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 9: SR-99 NB Off-ramp & E. Stockton Blvd

Existing Plus Project Conditions
 PM Peak Hour



























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↶	↷		↶↷	↶	
Volume (veh/h)	260	10	0	400	590	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	268	10	0	412	608	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		1				
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)					808	
pX, platoon unblocked	0.96	0.96	0.96			
vC, conflicting volume	814	608	608			
vC1, stage 1 conf vol	608					
vC2, stage 2 conf vol	206					
vCu, unblocked vol	785	570	570			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	44	98	100			
cM capacity (veh/h)	477	445	958			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	278	206	206	608
Volume Left	268	0	0	0
Volume Right	10	0	0	0
cSH	482	1700	1700	1700
Volume to Capacity	0.58	0.12	0.12	0.36
Queue Length 95th (ft)	90	0	0	0
Control Delay (s)	22.2	0.0	0.0	0.0
Lane LOS	C			
Approach Delay (s)	22.2	0.0		0.0
Approach LOS	C			

Intersection Summary			
Average Delay		4.7	
Intersection Capacity Utilization		52.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
10: Whitelock Pkwy & Bruceville Road

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	330	200	90	130	240	50	240	400	60	70	450	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	355	215	97	140	258	54	258	430	65	75	484	516
RTOR Reduction (vph)	0	0	74	0	0	45	0	0	43	0	0	322
Lane Group Flow (vph)	355	215	23	140	258	9	258	430	22	75	484	194
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Actuated Green, G (s)	14.9	20.8	20.8	9.0	14.9	14.9	12.3	28.8	28.8	5.6	22.1	22.1
Effective Green, g (s)	14.9	20.8	20.8	9.0	14.9	14.9	12.3	28.8	28.8	5.6	22.1	22.1
Actuated g/C Ratio	0.17	0.24	0.24	0.10	0.17	0.17	0.14	0.33	0.33	0.06	0.26	0.26
Clearance Time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	593	853	382	358	611	273	489	1181	528	223	906	405
v/s Ratio Prot	c0.10	0.06		0.04	c0.07		c0.08	c0.12		0.02	c0.14	
v/s Ratio Perm			0.01			0.01			0.01			0.12
v/c Ratio	0.60	0.25	0.06	0.39	0.42	0.03	0.53	0.36	0.04	0.34	0.53	0.48
Uniform Delay, d1	32.9	26.5	25.2	36.1	31.9	29.7	34.3	21.8	19.4	38.6	27.7	27.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1	0.0	0.3	0.2	0.0	0.5	0.1	0.0	0.3	0.3	0.3
Delay (s)	34.0	26.5	25.3	36.3	32.0	29.7	34.8	21.9	19.4	38.9	28.0	27.5
Level of Service	C	C	C	D	C	C	C	C	B	D	C	C
Approach Delay (s)		30.3			33.1			26.1			28.5	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			29.0				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			86.3				Sum of lost time (s)		27.4			
Intersection Capacity Utilization			70.4%				ICU Level of Service		C			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 11: Whitelock Pkwy & Big Horn Blvd

Existing Plus Project Conditions
 PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations												
Volume (vph)	210	70	160	40	130	50	290	1180	30	30	1030	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	226	75	172	43	140	54	312	1269	32	32	1108	290
RTOR Reduction (vph)	0	0	141	0	0	48	0	0	7	0	0	119
Lane Group Flow (vph)	226	75	31	43	140	6	312	1269	25	32	1108	171
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	11.6	19.4	19.4	4.9	12.7	12.7	14.8	56.8	56.8	3.4	45.4	45.4
Effective Green, g (s)	11.6	19.4	19.4	4.9	12.7	12.7	14.8	56.8	56.8	3.4	45.4	45.4
Actuated g/C Ratio	0.11	0.18	0.18	0.05	0.12	0.12	0.14	0.53	0.53	0.03	0.43	0.43
Clearance Time (s)	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6	6.3	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	375	646	289	158	423	189	478	1891	846	110	1511	676
v/s Ratio Prot	c0.07	0.02		0.01	c0.04		c0.09	c0.36		0.01	c0.31	
v/s Ratio Perm			0.02			0.00			0.02			0.11
v/c Ratio	0.60	0.12	0.11	0.27	0.33	0.03	0.65	0.67	0.03	0.29	0.73	0.25
Uniform Delay, d1	45.2	36.3	36.2	49.0	42.9	41.4	43.3	18.0	11.7	50.3	25.4	19.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.0	0.1	0.3	0.2	0.0	2.4	0.7	0.0	0.5	1.6	0.1
Delay (s)	47.0	36.3	36.3	49.3	43.1	41.4	45.8	18.7	11.7	50.8	27.0	19.6
Level of Service	D	D	D	D	D	D	D	B	B	D	C	B
Approach Delay (s)		41.4			43.8			23.8			26.0	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			28.1			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			106.3			Sum of lost time (s)			26.4			
Intersection Capacity Utilization			63.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 12: Whitelock Pkwy & W Stockton Blvd

Existing Plus Project Conditions
 PM Peak Hour




















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	280	80	120	90	80	320
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	295	84	126	95	84	337
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	600	253	421			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	600	253	421			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	29	89	89			
cM capacity (veh/h)	412	786	1138			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	295	84	221	421
Volume Left	295	0	126	0
Volume Right	0	84	0	337
cSH	412	786	1138	1700
Volume to Capacity	0.71	0.11	0.11	0.25
Queue Length 95th (ft)	137	9	9	0
Control Delay (s)	32.8	10.1	5.3	0.0
Lane LOS	D	B	A	
Approach Delay (s)	27.7		5.3	0.0
Approach LOS	D			

Intersection Summary			
Average Delay		11.4	
Intersection Capacity Utilization		60.8%	ICU Level of Service B
Analysis Period (min)		15	

















HCM Signalized Intersection Capacity Analysis
13: Bilby Road & Bruceville Road

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	50	110	10	180	40	400	320	10	30	180	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			7.0			6.5			6.5	6.5
Lane Util. Factor		1.00			1.00			1.00			1.00	1.00
Frt		0.94			0.98			1.00			1.00	0.85
Flt Protected		0.98			1.00			0.97			0.99	1.00
Satd. Flow (prot)		1719			1815			1810			1850	1583
Flt Permitted		0.71			0.98			0.71			0.86	1.00
Satd. Flow (perm)		1249			1776			1321			1602	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	86	54	118	11	194	43	430	344	11	32	194	140
RTOR Reduction (vph)	0	42	0	0	10	0	0	0	0	0	0	54
Lane Group Flow (vph)	0	216	0	0	238	0	0	785	0	0	226	86
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)		15.1			14.6			44.2			44.2	44.2
Effective Green, g (s)		15.1			14.6			44.2			44.2	44.2
Actuated g/C Ratio		0.21			0.20			0.61			0.61	0.61
Clearance Time (s)		6.5			7.0			6.5			6.5	6.5
Vehicle Extension (s)		2.0			2.0			4.5			4.5	4.5
Lane Grp Cap (vph)		261			359			808			979	968
v/s Ratio Prot												
v/s Ratio Perm		c0.17			0.13			c0.59			0.14	0.05
v/c Ratio		0.83			0.66			0.97			0.23	0.09
Uniform Delay, d1		27.4			26.6			13.4			6.4	5.8
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		18.2			3.5			24.8			0.2	0.1
Delay (s)		45.5			30.1			38.2			6.6	5.8
Level of Service		D			C			D			A	A
Approach Delay (s)		45.5			30.1			38.2			6.3	
Approach LOS		D			C			D			A	
Intersection Summary												
HCM Average Control Delay			31.1				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			72.3				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			99.1%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												

























HCM Unsignalized Intersection Capacity Analysis
 14: Hood Franklin Road & I-5 SB Off-ramp

Existing Plus Project Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	120	20	0	40	20	0	0	0	250	0	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	130	22	0	43	22	0	0	0	272	0	43
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												12
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	43			130			217	185	141	196	185	54
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	43			130			217	185	141	196	185	54
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	64	100	96
cM capacity (veh/h)	1565			1455			707	710	907	764	710	1013
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	152	65	315									
Volume Left	0	0	272									
Volume Right	22	22	43									
cSH	1700	1700	886									
Volume to Capacity	0.09	0.04	0.36									
Queue Length 95th (ft)	0	0	41									
Control Delay (s)	0.0	0.0	11.8									
Lane LOS			B									
Approach Delay (s)	0.0	0.0	11.8									
Approach LOS			B									
Intersection Summary												
Average Delay			7.0									
Intersection Capacity Utilization			28.0%		ICU Level of Service					A		
Analysis Period (min)			15									













HCM Unsignalized Intersection Capacity Analysis
 15: Hood Franklin Road & I-5 NB On-ramp

Existing Plus Project Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	290	80	0	50	270	10	0	90	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	305	84	0	53	284	11	0	95	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	53			305			542	400	347	637	500	195
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	53			305			542	400	347	637	500	195
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			98	100	86	100	100	100
cM capacity (veh/h)	1553			1256			451	538	696	337	473	847
Direction, Lane #	EB 1	WB 1	NB 1	NB 2								
Volume Total	389	337	11	95								
Volume Left	0	0	11	0								
Volume Right	84	284	0	95								
cSH	1700	1700	451	696								
Volume to Capacity	0.23	0.20	0.02	0.14								
Queue Length 95th (ft)	0	0	2	12								
Control Delay (s)	0.0	0.0	13.2	11.0								
Lane LOS			B	B								
Approach Delay (s)	0.0	0.0	11.2									
Approach LOS			B									
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			32.4%		ICU Level of Service				A			
Analysis Period (min)			15									


















HCM Unsignalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd

Existing Plus Project Conditions
 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	370	20	10	180	60	230
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	402	22	11	196	65	250
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	402	22	11	196	65	250
Volume Left (vph)	402	0	11	0	0	0
Volume Right (vph)	0	22	0	0	0	250
Hadj (s)	0.53	-0.67	0.53	0.03	0.03	-0.67
Departure Headway (s)	6.5	5.3	7.0	6.5	6.3	5.6
Degree Utilization, x	0.72	0.03	0.02	0.35	0.12	0.39
Capacity (veh/h)	543	649	482	524	531	603
Control Delay (s)	23.2	7.2	8.9	11.7	9.0	11.0
Approach Delay (s)	22.4		11.6		10.6	
Approach LOS	C		B		B	
Intersection Summary						
Delay			16.1			
HCM Level of Service			C			
Intersection Capacity Utilization			36.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 17: Bilby Road & Franklin Blvd

Existing Plus Project Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	10	320	10	10	10	20	400	80	80	10
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
Hourly flow rate (vph)	11	11	11	356	11	11	11	22	444	89	89	11
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total (vph)	33	378	33	444	189							
Volume Left (vph)	11	356	11	0	89							
Volume Right (vph)	11	11	0	444	11							
Hadj (s)	-0.10	0.20	0.10	-0.57	0.09							
Departure Headway (s)	4.9	4.7	5.3	3.2	5.1							
Degree Utilization, x	0.05	0.50	0.05	0.40	0.27							
Capacity (veh/h)	675	730	612	1114	663							
Control Delay (s)	8.1	12.4	8.6	8.3	9.9							
Approach Delay (s)	8.1	12.4	8.3		9.9							
Approach LOS	A	B	A		A							
Intersection Summary												
Delay			10.0									
HCM Level of Service			A									
Intersection Capacity Utilization			48.1%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 18: Bilby Road & Willard Pkwy

Existing Plus Project Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	240	210	330	150	120	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	267	233	367	167	133	67
RTOR Reduction (vph)	0	172	0	0	0	57
Lane Group Flow (vph)	267	61	367	167	133	10
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	22.6	22.6	24.3	26.6	12.2	12.2
Effective Green, g (s)	22.6	22.6	24.3	20.9	12.2	12.2
Actuated g/C Ratio	0.26	0.26	0.28	0.24	0.14	0.14
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	466	417	501	862	265	225
v/s Ratio Prot	c0.15		c0.21	c0.05	c0.07	
v/s Ratio Perm		0.04				0.01
v/c Ratio	0.57	0.15	0.73	0.19	0.50	0.04
Uniform Delay, d1	27.4	24.2	27.8	25.8	34.0	31.8
Progression Factor	1.00	1.00	1.02	1.13	1.00	1.00
Incremental Delay, d2	1.1	0.1	4.0	0.0	0.5	0.0
Delay (s)	28.5	24.3	32.3	29.2	34.5	31.8
Level of Service	C	C	C	C	C	C
Approach Delay (s)	26.5			31.4	33.6	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	85.8	Sum of lost time (s)	30.6
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Bilby Road & Willard Pkwy

Existing Plus Project Conditions
 PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	470	10	10	310	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	5.7		5.6	5.7
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.93		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	1737		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	1737		1770	1863
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	505	11	11	333	11
RTOR Reduction (vph)	0	354	9	0	0	0
Lane Group Flow (vph)	11	151	13	0	333	11
Turn Type		Perm			Prot	
Protected Phases	2		4		3	8 1
Permitted Phases		2				
Actuated Green, G (s)	25.7	25.7	15.7		20.8	18.6
Effective Green, g (s)	25.7	25.7	15.7		20.8	18.6
Actuated g/C Ratio	0.30	0.30	0.18		0.24	0.22
Clearance Time (s)	7.0	7.0	5.7		5.6	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	530	474	318		429	404
v/s Ratio Prot	0.01		c0.01		c0.19	c0.01
v/s Ratio Perm		c0.10				
v/c Ratio	0.02	0.32	0.04		0.78	0.03
Uniform Delay, d1	21.2	23.3	28.9		30.3	26.5
Progression Factor	1.00	1.00	1.00		1.33	0.80
Incremental Delay, d2	0.0	0.1	0.0		7.6	0.0
Delay (s)	21.2	23.4	28.9		47.9	21.3
Level of Service	C	C	C		D	C
Approach Delay (s)	23.4		28.9			47.0
Approach LOS	C		C			D

Intersection Summary

HCM Average Control Delay	32.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	85.8	Sum of lost time (s)	18.3
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 20: Kammerer Road & Bruceville Road

Existing Plus Project Conditions
 PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	140	670	40	90	170	50
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	147	705	42	95	179	53
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	500	89			137	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	500	89			137	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	68	27			88	
cM capacity (veh/h)	465	968			1447	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	853	137	232
Volume Left	147	0	179
Volume Right	705	95	0
cSH	816	1700	1447
Volume to Capacity	1.05	0.08	0.12
Queue Length 95th (ft)	509	0	11
Control Delay (s)	66.3	0.0	6.3
Lane LOS	F		A
Approach Delay (s)	66.3	0.0	6.3
Approach LOS	F		

Intersection Summary			
Average Delay		47.5	
Intersection Capacity Utilization		78.8%	ICU Level of Service
Analysis Period (min)		15	D

HCM Signalized Intersection Capacity Analysis
21: Kammerer Road & Promenade Pkwy

Existing Plus Project Conditions
PM Peak Hour













Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	1340	10	20	930	370	10	10	30	620	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	1426	11	21	989	394	11	11	32	660	11	11
RTOR Reduction (vph)	0	0	7	0	0	233	0	0	30	0	0	8
Lane Group Flow (vph)	11	1426	4	21	989	161	11	11	2	660	11	3
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	0.7	30.5	30.5	2.0	31.8	31.8	0.8	5.2	5.2	14.5	18.4	18.4
Effective Green, g (s)	0.7	30.5	30.5	2.0	31.8	31.8	0.8	5.2	5.2	14.5	18.4	18.4
Actuated g/C Ratio	0.01	0.39	0.39	0.03	0.41	0.41	0.01	0.07	0.07	0.19	0.24	0.24
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	31	2515	621	46	2081	1141	18	125	106	931	838	375
v/s Ratio Prot	0.00	c0.22		c0.01	0.19		0.01	c0.01		c0.13	0.00	
v/s Ratio Perm			0.00			0.06			0.00			0.00
v/c Ratio	0.35	0.57	0.01	0.46	0.48	0.14	0.61	0.09	0.02	0.71	0.01	0.01
Uniform Delay, d1	38.3	18.4	14.4	37.3	16.8	14.4	38.3	34.0	33.9	29.6	22.7	22.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	0.2	0.0	2.6	0.1	0.0	36.2	0.1	0.0	2.0	0.0	0.0
Delay (s)	40.8	18.6	14.4	39.9	16.9	14.4	74.5	34.1	33.9	31.7	22.7	22.7
Level of Service	D	B	B	D	B	B	E	C	C	C	C	C
Approach Delay (s)		18.8			16.5			42.2			31.4	
Approach LOS		B			B			D			C	

Intersection Summary

HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	77.7	Sum of lost time (s)	25.5
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			













HCM Signalized Intersection Capacity Analysis
22: Grant Line Road & SR-99 SB Off-ramp

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↖	↕	↗
Volume (vph)	0	1460	530	0	1080	560	0	0	0	210	0	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.90	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.98	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1506	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.98	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1506	1504
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1521	552	0	1125	583	0	0	0	219	0	250
RTOR Reduction (vph)	0	0	175	0	0	0	0	0	0	0	63	66
Lane Group Flow (vph)	0	1521	377	0	1125	583	0	0	0	162	94	84
Turn Type		Perm			Free					Perm		Perm
Protected Phases		6			2					8		8
Permitted Phases		6			Free					8		8
Actuated Green, G (s)		62.3	62.3		62.3	91.1				16.5	16.5	16.5
Effective Green, g (s)		62.3	62.3		62.3	91.1				16.5	16.5	16.5
Actuated g/C Ratio		0.68	0.68		0.68	1.00				0.18	0.18	0.18
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		3477	1083		3477	1583				304	273	272
v/s Ratio Prot		c0.30			0.22					c0.10	0.06	0.06
v/s Ratio Perm			0.24			0.37					0.06	0.06
v/c Ratio		0.44	0.35		0.32	0.37				0.53	0.34	0.31
Uniform Delay, d1		6.5	6.0		5.8	0.0				33.8	32.6	32.4
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.3		0.1	0.7				0.9	0.3	0.2
Delay (s)		6.6	6.2		5.9	0.7				34.7	32.9	32.6
Level of Service		A	A		A	A				C	C	C
Approach Delay (s)		6.5			4.1			0.0		33.4		
Approach LOS		A			A			A		C		
Intersection Summary												
HCM Average Control Delay		8.5			HCM Level of Service			A				
HCM Volume to Capacity ratio		0.46										
Actuated Cycle Length (s)		91.1			Sum of lost time (s)			12.3				
Intersection Capacity Utilization		51.3%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												































HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

Existing Plus Project Conditions
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↖	↖	↗↗				
Volume (vph)	0	1030	640	0	1290	270	350	0	520	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6				
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88				
Fr _t		1.00	0.85		1.00	0.85	1.00	1.00	0.85				
Fl _t Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00				
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787				
Fl _t Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00				
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	2787				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	1120	696	0	1402	293	380	0	565	0	0	0	
RTOR Reduction (vph)	0	0	233	0	0	112	0	0	109	0	0	0	
Lane Group Flow (vph)	0	1120	463	0	1402	181	190	190	456	0	0	0	
Turn Type		Perm			Perm		Split		Perm				
Protected Phases		6			2		4	4					
Permitted Phases			6			2			4				
Actuated Green, G (s)		52.1	52.1		52.6	52.6	22.2	22.2	22.2				
Effective Green, g (s)		52.1	52.1		52.6	52.6	22.2	22.2	22.2				
Actuated g/C Ratio		0.61	0.61		0.62	0.62	0.26	0.26	0.26				
Clearance Time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6				
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	2.0	2.0				
Lane Grp Cap (vph)		3113	969		3143	978	439	439	727				
v/s Ratio Prot		0.22			0.28		0.11	0.11					
v/s Ratio Perm			c0.29			0.11			c0.16				
v/c Ratio		0.36	0.48		0.45	0.19	0.43	0.43	0.63				
Uniform Delay, d ₁		8.2	9.0		8.6	7.0	26.2	26.2	27.8				
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d ₂		0.1	0.5		0.1	0.1	0.3	0.3	1.2				
Delay (s)		8.3	9.6		8.7	7.1	26.5	26.5	29.0				
Level of Service		A	A		A	A	C	C	C				
Approach Delay (s)		8.8			8.4			28.0			0.0		
Approach LOS		A			A			C			A		
Intersection Summary													
HCM Average Control Delay			12.7		HCM Level of Service					B			
HCM Volume to Capacity ratio			0.52										
Actuated Cycle Length (s)			85.1		Sum of lost time (s)					10.8			
Intersection Capacity Utilization			47.1%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & East Stockton Rd

Existing Plus Project Conditions
PM Peak Hour





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  					 	 	
Volume (vph)	370	890	110	40	1030	120	200	40	40	110	30	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	5006		1770	1723		1681	1720	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5006		1770	1723		1681	1720	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	402	967	120	43	1120	130	217	43	43	120	33	359
RTOR Reduction (vph)	0	0	46	0	8	0	0	19	0	0	0	235
Lane Group Flow (vph)	402	967	74	43	1242	0	217	67	0	76	77	124
Turn Type	Prot		Perm	Prot			Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6									3
Actuated Green, G (s)	20.7	61.6	61.6	6.7	47.6		24.8	24.8		16.1	16.1	16.1
Effective Green, g (s)	20.7	61.6	61.6	6.7	47.6		24.8	24.8		16.1	16.1	16.1
Actuated g/C Ratio	0.16	0.46	0.46	0.05	0.36		0.19	0.19		0.12	0.12	0.12
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	536	2360	735	89	1796		331	322		204	209	192
v/s Ratio Prot	c0.12	0.19		0.02	c0.25		c0.12	0.04		0.05	0.04	
v/s Ratio Perm			0.05									c0.08
v/c Ratio	0.75	0.41	0.10	0.48	0.69		0.66	0.21		0.37	0.37	0.65
Uniform Delay, d1	53.5	23.5	20.0	61.3	36.3		50.0	45.7		53.7	53.6	55.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.2	0.1	0.1	1.5	1.2		4.6	0.3		0.4	0.4	5.5
Delay (s)	58.7	23.6	20.0	62.8	37.5		54.6	46.0		54.1	54.0	61.1
Level of Service	E	C	C	E	D		D	D		D	D	E
Approach Delay (s)		32.8			38.3			52.2			59.0	
Approach LOS		C			D			D			E	

Intersection Summary

HCM Average Control Delay	40.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	132.7	Sum of lost time (s)	23.5
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: Grant Line Road & Waterman Road

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	700	0	0	730	10	0	0	0	70	0	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Lane Util. Factor	0.97	1.00			0.95	1.00					1.00	0.88
Frbp, ped/bikes	1.00	1.00			1.00	0.99					1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00					1.00	1.00
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	1863			3539	1560					1770	2787
Flt Permitted	0.95	1.00			1.00	1.00					0.95	1.00
Satd. Flow (perm)	3433	1863			3539	1560					1770	2787
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	250	729	0	0	760	10	0	0	0	73	0	260
RTOR Reduction (vph)	0	0	0	0	0	5	0	0	0	0	0	226
Lane Group Flow (vph)	250	729	0	0	760	5	0	0	0	0	73	34
Confl. Bikes (#/hr)			2			4						
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases						2						3
Actuated Green, G (s)	12.2	40.5			22.7	22.7					9.6	9.6
Effective Green, g (s)	12.2	40.5			22.7	22.7					9.6	9.6
Actuated g/C Ratio	0.17	0.55			0.31	0.31					0.13	0.13
Clearance Time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0					2.0	2.0
Lane Grp Cap (vph)	568	1022			1089	480					230	363
v/s Ratio Prot	0.07	c0.39			0.21						c0.04	
v/s Ratio Perm						0.00						0.01
v/c Ratio	0.44	0.71			0.70	0.01					0.32	0.09
Uniform Delay, d1	27.7	12.3			22.5	17.7					29.1	28.3
Progression Factor	1.00	1.00			1.00	1.00					1.00	1.00
Incremental Delay, d2	0.2	2.0			1.6	0.0					0.3	0.0
Delay (s)	27.9	14.3			24.1	17.8					29.4	28.3
Level of Service	C	B			C	B					C	C
Approach Delay (s)		17.8			24.0			0.0			28.6	
Approach LOS		B			C			A			C	

Intersection Summary

HCM Average Control Delay	21.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	23.7
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
29: Kammerer Rd & Collector 2

Existing Plus Project Conditions
PM Peak Hour



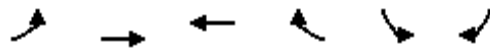
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↑↑	↑	↙	↘
Volume (vph)	70	160	440	20	30	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	174	478	22	33	196
RTOR Reduction (vph)	0	0	0	14	0	170
Lane Group Flow (vph)	76	174	478	8	33	26
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	3.6	26.1	15.5	15.5	6.0	6.0
Effective Green, g (s)	3.6	26.1	15.5	15.5	6.0	6.0
Actuated g/C Ratio	0.08	0.59	0.35	0.35	0.13	0.13
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	143	2071	1230	550	238	213
v/s Ratio Prot	c0.04	0.05	c0.14		c0.02	
v/s Ratio Perm				0.00		0.02
v/c Ratio	0.53	0.08	0.39	0.01	0.14	0.12
Uniform Delay, d1	19.7	4.0	11.0	9.5	17.0	17.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.0	0.1	0.0	0.1	0.1
Delay (s)	21.6	4.0	11.1	9.5	17.1	17.1
Level of Service	C	A	B	A	B	B
Approach Delay (s)		9.4	11.0		17.1	
Approach LOS		A	B		B	

Intersection Summary

HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	19.5
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 30: Kammerer Rd & Big Horn Blvd

Existing Plus Project Conditions
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	90	90	240	140	200	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
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	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	98	261	152	217	239
RTOR Reduction (vph)	0	0	0	118	0	179
Lane Group Flow (vph)	98	98	261	34	217	60
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	3.3	20.2	9.9	9.9	11.0	11.0
Effective Green, g (s)	3.3	20.2	9.9	9.9	11.0	11.0
Actuated g/C Ratio	0.08	0.46	0.23	0.23	0.25	0.25
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	259	1636	802	359	446	398
v/s Ratio Prot	c0.03	0.03	c0.07		c0.12	
v/s Ratio Perm				0.02		0.04
v/c Ratio	0.38	0.06	0.33	0.10	0.49	0.15
Uniform Delay, d1	19.2	6.5	14.1	13.4	13.9	12.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.0	0.1	0.0	0.3	0.1
Delay (s)	19.6	6.5	14.2	13.4	14.2	12.8
Level of Service	B	A	B	B	B	B
Approach Delay (s)		13.0	13.9		13.5	
Approach LOS		B	B		B	

Intersection Summary			
HCM Average Control Delay		13.6	HCM Level of Service B
HCM Volume to Capacity ratio		0.41	
Actuated Cycle Length (s)		43.7	Sum of lost time (s) 19.5
Intersection Capacity Utilization		37.3%	ICU Level of Service A
Analysis Period (min)		15	
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Kammerer Rd & Collector 1

Existing Plus Project Conditions
PM Peak Hour



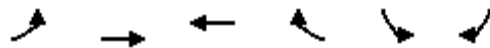
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗↗	↑	↘	↙
Volume (vph)	10	280	370	150	320	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	304	402	163	348	11
RTOR Reduction (vph)	0	0	0	123	0	8
Lane Group Flow (vph)	11	304	402	40	348	3
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	0.7	18.1	10.4	10.4	11.8	11.8
Effective Green, g (s)	0.7	18.1	10.4	10.4	11.8	11.8
Actuated g/C Ratio	0.02	0.43	0.25	0.25	0.28	0.28
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	29	1511	868	388	493	441
v/s Ratio Prot	0.01	c0.09	c0.11		c0.20	
v/s Ratio Perm				0.03		0.00
v/c Ratio	0.38	0.20	0.46	0.10	0.71	0.01
Uniform Delay, d1	20.6	7.6	13.6	12.4	13.7	11.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	0.0	0.1	0.0	3.7	0.0
Delay (s)	23.6	7.6	13.8	12.4	17.5	11.1
Level of Service	C	A	B	B	B	B
Approach Delay (s)		8.2	13.4		17.3	
Approach LOS		A	B		B	

Intersection Summary

HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	42.4	Sum of lost time (s)	19.5
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Kammerer Rd & Lotz Pkwy

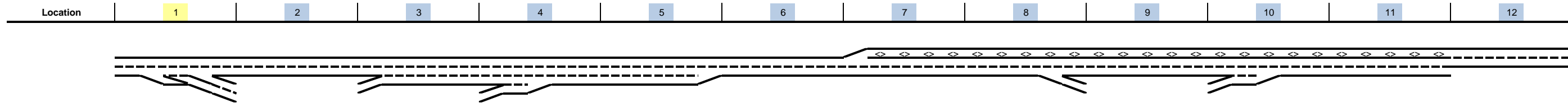
Existing Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↗	↕	↖↗	↗	↖↗	↗
Volume (vph)	10	1030	640	130	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
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	3539	3539	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	1120	696	141	11	11
RTOR Reduction (vph)	0	0	0	63	0	10
Lane Group Flow (vph)	11	1120	696	78	11	1
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	0.6	36.6	29.0	29.0	3.5	3.5
Effective Green, g (s)	0.6	36.6	29.0	29.0	3.5	3.5
Actuated g/C Ratio	0.01	0.70	0.55	0.55	0.07	0.07
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	39	2462	1951	873	228	105
v/s Ratio Prot	0.00	c0.32	0.20		c0.00	
v/s Ratio Perm				0.05		0.00
v/c Ratio	0.28	0.45	0.36	0.09	0.05	0.01
Uniform Delay, d1	25.8	3.6	6.6	5.6	23.0	22.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.0	0.0	0.0	0.0	0.0
Delay (s)	27.2	3.6	6.6	5.6	23.0	22.9
Level of Service	C	A	A	A	C	C
Approach Delay (s)		3.8	6.5		23.0	
Approach LOS		A	A		C	

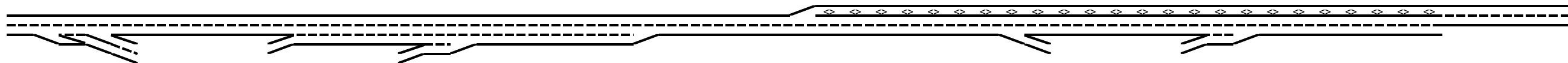
Intersection Summary			
HCM Average Control Delay		5.2	HCM Level of Service A
HCM Volume to Capacity ratio		0.42	
Actuated Cycle Length (s)		52.6	Sum of lost time (s) 12.5
Intersection Capacity Utilization		42.2%	ICU Level of Service A
Analysis Period (min)		15	
c Critical Lane Group			

Project: Southeast Policy Area EIR
 Freeway Corridor: State Route 99 NB
 Alternative: Existing Plus Project Conditions
 Time Period: AM Peak Hour



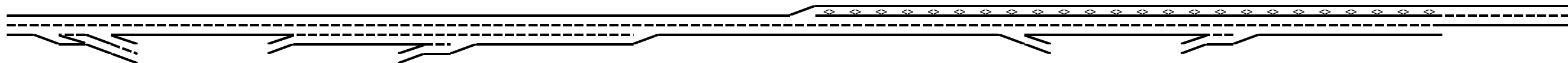
Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Define Freeway Segment												
Type	Diverge	Basic	Basic	Merge	Basic	Basic	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	1,500	1,500	1,300	1,500	400	6,700	1,050	1,500	2,550	1,500	100	8,700
Accel Length				320						1,200		
Decel Length	1,450							170				
Mainline Volume	2,730	1,600	1,600	1,910	2,100	2,100	2,100	2,100	1,850	1,850	3,300	2,730
On Ramp Volume			310	190						1,450		
Off Ramp Volume	1,130							250				
Express Lane Volume							630	630	555	555	990	
EL On Ramp Volume												
EL Off Ramp Volume												
Calculate Flow Rate in General Purpose Lanes (GP)												
GP Volume (vph)	2,730	1,600	1,910	2,100	2,100	2,100	1,470	1,470	1,295	2,745	2,310	2,730
PHF	0.79	0.92	0.79	0.79	0.92	0.92	0.92	0.85	0.92	0.85	0.92	0.92
GP Lanes	2	2	3	3	3	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	13.0%	5.0%	5.0%	15.0%	15.0%	15.0%	5.0%	10.0%	5.0%	10.0%	13.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.939	0.976	0.976	0.930	0.930	0.930	0.976	0.952	0.976	0.952	0.939
f _P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,542	1,852	2,478	2,725	2,454	2,454	1,718	1,773	1,478	3,310	2,636	3,160
GP Flow (pcphpl)	1,771	926	826	908	818	1,227	859	886	739	1,655	1,318	1,580
Calculate Speed in General Purpose Lanes												
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70	70



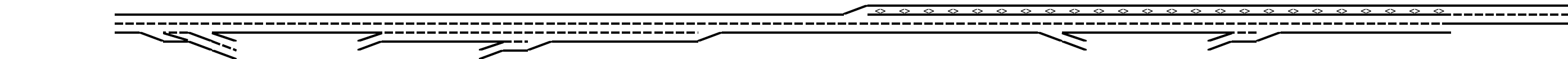
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Operations in General Purpose Lanes												
v/c ratio	0.74	0.39	0.34	0.38	0.34	0.51	0.36	0.37	0.31	0.69	0.55	0.66
Speed (mph)	66.2	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	67.6	69.8	68.3
Density (pcphpl)	26.7	13.2	11.8	13.0	11.7	17.5	12.3	12.7	10.6	24.5	18.9	23.1
LOS	D	B	B	B	B	B	B	B	A	C	C	C
Calculate Operations for Entering GP Lanes												
GP _{IN} Vol (pcph)			2,076	2,478						1,562		
GP _{IN} Cap (pcph)			4,800	7,200						4,800		
GP _{IN} v/c ratio			0.43	0.34						0.33		
Calculate Operations for Exiting GP Lanes												
GP _{OUT} Vol (pcph)	2,076				2,454			1,471				
GP _{OUT} Cap (pcph)	4,800				4,800			4,800				
GP _{OUT} v/c ratio	0.43				0.51			0.31				
Calculate On Ramp Flow Rate												
On Volume (vph)			310	190						1,450		
PHF			0.79	0.79						0.85		
Total Lanes			1	1						1		
Terrain			Level	Level						Level		
Grade %			0.0%	0.0%						0.0%		
Grade Length (mi)			0.00	0.00						0.00		
Truck & Bus %			5.0%	5.0%						5.0%		
RV %			0.0%	0.0%						0.0%		
E _T			1.5	1.5						1.5		
E _R			1.2	1.2						1.2		
f _{HV}			0.976	0.976						0.976		
f _P			1.00	1.00						1.00		
On Flow (pcph)			402	247						1,749		
On Flow (pcphpl)			402	247						1,749		
Calculate On Ramp Roadway Operations												
On Ramp Type			Right	Right						Right		
On Ramp Speed (mph)			50	60						60		
On Ramp Cap (pcph)			2,100	2,200						2,200		
On Ramp v/c ratio			0.19	0.11						0.79		



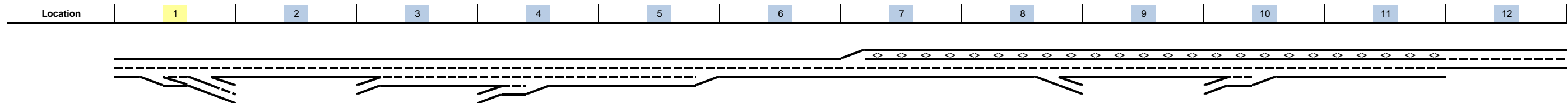
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Off Ramp Flow Rate												
Off Volume (vph)	1,130							250				
PHF	0.79							0.85				
Total Lanes	2							1				
Terrain	Level							Level				
Grade %	0.0%							0.0%				
Grade Length (mi)	0.00							0.00				
Truck & Bus %	5.0%							5.0%				
RV %	0.0%							0.0%				
E _T	1.5							1.5				
E _R	1.2							1.2				
f _{HV}	0.976							0.976				
f _P	1.00							1.00				
Off Flow (pcph)	1,466							301				
Off Flow (pcphpl)	733							301				
Calculate Off Ramp Roadway Operations												
Off Ramp Type	Right							Right				
Off Ramp Speed	35							45				
Off Ramp Cap (pcph)	4,000							2,100				
Off Ramp v/c ratio	0.37							0.14				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps												
Up Type			No	On								
Up Distance				1,300								
Up Flow (pcph)				402								
Down Type			On	Off								
Down Distance			1,300	3,000								
Down Flow (pcph)			247	301								



Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Merge Influence Area Operations												
Effective v_p (pcph)				2,478						1,562		
Up Ramp L_{EQ}				1,461								
Down Ramp L_{EQ}				2,096								
P_{FM} (Eqn 13-3)				0.586						0.611		
P_{FM} (Eqn 13-4)												
P_{FM} (Eqn 13-5)				0.575								
P_{FM}				0.586						1.000		
v_{12} (pcph)				1,453						1,562		
v_3 (pcph)				1,025								
v_{34} (pcph)												
v_{12a} (pcph)				1,453						1,562		
v_{R12a} (pcph)				1,700						3,310		
Merge Speed Index				0.30						0.28		
Merge Area Speed				61.5						62.1		
Outer Lanes Volume				1,025								
Outer Lanes Speed				68.1								
Segment Speed				63.8						62.1		
Merge v/c ratio				0.37						0.72		
Merge Density				16.6						23.0		
Merge LOS				B						C		
Calculate Diverge Influence Area Operations												
Effective v_p (pcph)	3,542							1,773				
Up Ramp L_{EQ}												
Down Ramp L_{EQ}												
P_{FD} (Eqn 13-9)	0.604							0.702				
P_{FD} (Eqn 13-10)												
P_{FD} (Eqn 13-11)												
P_{FD}	1.000							1.000				
v_{12} (pcph)	3,542							1,773				
v_3 (pcph)												
v_{34} (pcph)												
v_{12a} (pcph)	3,542							1,773				
Diverge Speed Index	0.56							0.33				
Diverge Area Speed	54.3							60.9				
Outer Lanes Volume												
Outer Lanes Speed												
Segment Speed	54.3							60.9				
Diverge v/c ratio	0.81							0.40				
Diverge Density	21.7							18.0				
Diverge LOS	C							B				

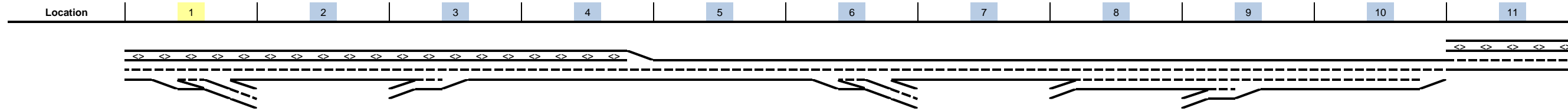


Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Summarize Segment Operations												
Segment v/c ratio	0.81	0.39	0.34	0.37	0.34	0.51	0.36	0.40	0.31	0.72	0.55	0.66
Segment Density	21.7	13.2	11.8	16.6	11.7	17.5	12.3	18.0	10.6	23.0	18.9	23.1
Segment LOS	C	B	B	B	B	B	B	B	A	C	C	C
Over Capacity												

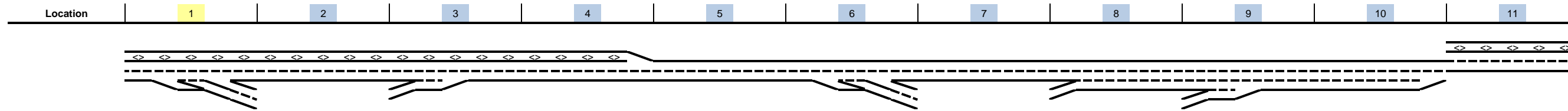
Project: Southeast Policy Area EIR
Freeway Corridor: State Route 99 SB

Alternative: Existing Plus Project Conditions
Time Period: AM Peak Hour



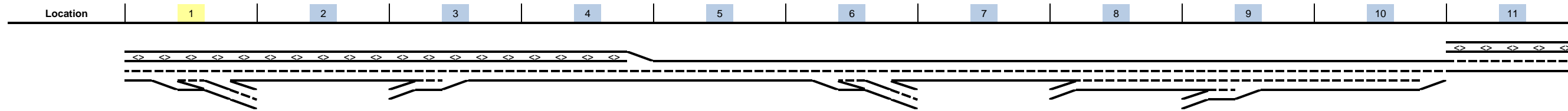
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Define Freeway Segment											
Type	Basic	Basic	Merge	Basic	Basic	Diverge	Basic	Basic	Merge	Basic	Basic
Length (ft)	1,500	2,250	1,500	400	8,050	1,500	1,650	1,200	1,500	400	250
Accel Length			350						350		
Decel Length						1,450					
Mainline Volume	3,650	1,910	1,910	2,240	2,240	2,240	1,550	1,550	1,970	2,240	3,650
On Ramp Volume			330					420	270		
Off Ramp Volume	1,740					690					
Express Lane Volume	1,095	573									1,095
EL On Ramp Volume											
EL Off Ramp Volume											
Calculate Flow Rate in General Purpose Lanes (GP)											
GP Volume (vph)	2,555	1,337	2,240	2,240	2,240	2,240	1,550	1,970	2,240	2,240	2,555
PHF	0.85	0.91	0.85	0.91	0.91	0.79	0.91	0.79	0.79	0.91	0.91
GP Lanes	2	2	2	2	2	2	2	3	3	3	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	10.0%	5.0%	15.0%	15.0%	5.0%	13.0%	5.0%	5.0%	13.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.952	0.976	0.930	0.930	0.976	0.939	0.976	0.976	0.939	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,081	1,543	2,701	2,646	2,646	2,906	1,814	2,556	2,906	2,622	2,948
GP Flow (pcphpl)	1,541	771	1,351	1,323	1,323	1,453	907	852	969	874	1,474
Calculate Speed in General Purpose Lanes											
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	73.6	73.6	73.6	73.6	74.2	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70



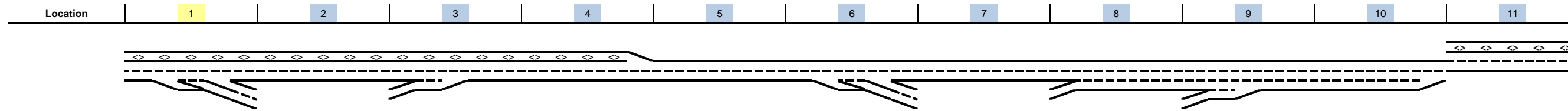
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Operations in General Purpose Lanes											
v/c ratio	0.64	0.32	0.56	0.55	0.55	0.61	0.38	0.36	0.40	0.36	0.61
Speed (mph)	68.7	70.0	69.7	69.8	69.8	69.3	70.0	70.0	70.0	70.0	69.1
Density (pcphpl)	22.4	11.0	19.4	18.9	18.9	21.0	13.0	12.2	13.8	12.5	21.3
LOS	C	B	C	C	C	C	B	B	B	B	C
Calculate Operations for Entering GP Lanes											
GP _{IN} Vol (pcph)			2,303					2,011		2,556	
GP _{IN} Cap (pcph)			4,800					4,800		7,200	
GP _{IN} v/c ratio			0.48					0.42		0.36	
Calculate Operations for Exiting GP Lanes											
GP _{OUT} Vol (pcph)	983					2,011				2,622	
GP _{OUT} Cap (pcph)	4,800					4,800				4,800	
GP _{OUT} v/c ratio	0.20					0.42				0.55	
Calculate On Ramp Flow Rate											
On Volume (vph)			330					420	270		
PHF			0.85					0.79	0.79		
Total Lanes			1					1	1		
Terrain			Level					Level	Level		
Grade %			0.0%					0.0%	0.0%		
Grade Length (mi)			0.00					0.00	0.00		
Truck & Bus %			5.0%					5.0%	5.0%		
RV %			0.0%					0.0%	0.0%		
E _T			1.5					1.5	1.5		
E _R			1.2					1.2	1.2		
f _{HV}			0.976					0.976	0.976		
f _P			1.00					1.00	1.00		
On Flow (pcph)			398					545	350		
On Flow (pcphpl)			398					545	350		
Calculate On Ramp Roadway Operations											
On Ramp Type			Right					Right	Right		
On Ramp Speed (mph)			60					50	60		
On Ramp Cap (pcph)			2,200					2,100	2,200		
On Ramp v/c ratio			0.18					0.26	0.16		



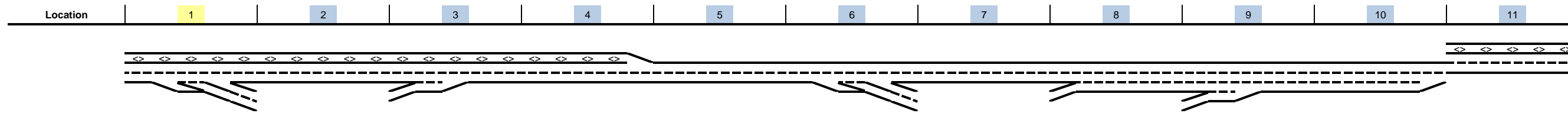
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Off Ramp Flow Rate											
Off Volume (vph)	1,740					690					
PHF	0.85					0.79					
Total Lanes	2					2					
Terrain	Level					Level					
Grade %	0.0%					0.0%					
Grade Length (mi)	0.00					0.00					
Truck & Bus %	5.0%					5.0%					
RV %	0.0%					0.0%					
E _T	1.5					1.5					
E _R	1.2					1.2					
f _{HV}	0.976					0.976					
f _p	1.00					1.00					
Off Flow (pcph)	2,098					895					
Off Flow (pcphpl)	1,049					448					
Calculate Off Ramp Roadway Operations											
Off Ramp Type	Right					Right					
Off Ramp Speed	45					45					
Off Ramp Cap (pcph)	4,200					4,200					
Off Ramp v/c ratio	0.50					0.21					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps											
Up Type								No	On		
Up Distance									1,200		
Up Flow (pcph)									545		
Down Type								On	No		
Down Distance								1,200			
Down Flow (pcph)								350			



Key
 <> Express Lane (HOV)
 No Trucks

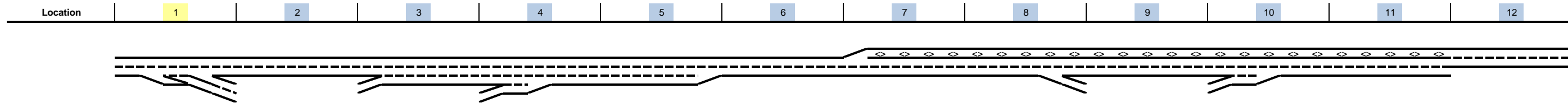
Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Merge Influence Area Operations											
Effective v_p (pcph)			2,303						2,556		
Up Ramp L_{EQ}									1,514		
Down Ramp L_{EQ}											
P_{FM} (Eqn 13-3)			0.587						0.587		
P_{FM} (Eqn 13-4)											
P_{FM} (Eqn 13-5)											
P_{FM}			1.000						0.587		
v_{12} (pcph)			2,303						1,501		
v_3 (pcph)									1,055		
v_{34} (pcph)											
v_{12a} (pcph)			2,303						1,501		
v_{R12a} (pcph)			2,701						1,851		
Merge Speed Index			0.34						0.30		
Merge Area Speed			60.6						61.5		
Outer Lanes Volume									1,055		
Outer Lanes Speed									68.0		
Segment Speed			60.6						63.7		
Merge v/c ratio			0.59						0.40		
Merge Density			24.2						17.6		
Merge LOS			C						B		
Calculate Diverge Influence Area Operations											
Effective v_p (pcph)						2,906					
Up Ramp L_{EQ}											
Down Ramp L_{EQ}											
P_{FD} (Eqn 13-9)						0.646					
P_{FD} (Eqn 13-10)											
P_{FD} (Eqn 13-11)											
P_{FD}						1.000					
v_{12} (pcph)						2,906					
v_3 (pcph)											
v_{34} (pcph)											
v_{12a} (pcph)						2,906					
Diverge Speed Index						0.38					
Diverge Area Speed						59.4					
Outer Lanes Volume											
Outer Lanes Speed											
Segment Speed						59.4					
Diverge v/c ratio						0.66					
Diverge Density						16.2					
Diverge LOS						B					



Key
 <> Express Lane (HOV)
 No Trucks

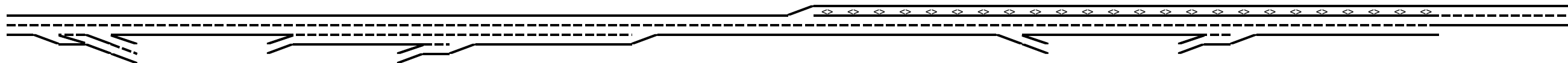
Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Summarize Segment Operations											
Segment v/c ratio	0.64	0.32	0.59	0.55	0.55	0.66	0.38	0.36	0.40	0.36	0.61
Segment Density	22.4	11.0	24.2	18.9	18.9	16.2	13.0	12.2	17.6	12.5	21.3
Segment LOS	C	B	C	C	C	B	B	B	B	B	C
Over Capacity											

Project: Southeast Policy Area EIR
 Freeway Corridor: State Route 99 NB
 Alternative: Existing Plus Project Conditions
 Time Period: PM Peak Hour



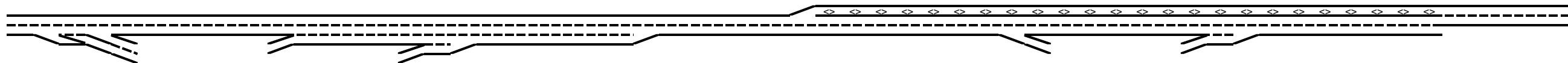
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Define Freeway Segment												
Type	Diverge	Basic	Basic	Merge	Basic	Basic	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	1,500	1,500	1,300	1,500	400	6,700	1,050	1,500	2,550	1,500	100	8,700
Accel Length				320						1,200		
Decel Length	1,450							170				
Mainline Volume	2,560	1,690	1,690	2,330	2,600	2,600	2,600	2,600	2,330	2,330	3,700	2,560
On Ramp Volume			640	270						1,370		
Off Ramp Volume	870							270				
Express Lane Volume							780	780	699	699	1,110	
EL On Ramp Volume												
EL Off Ramp Volume												
Calculate Flow Rate in General Purpose Lanes (GP)												
GP Volume (vph)	2,560	1,690	2,330	2,600	2,600	2,600	1,820	1,820	1,631	3,001	2,590	2,560
PHF	0.85	0.93	0.85	0.85	0.93	0.93	0.93	0.88	0.93	0.88	0.93	0.93
GP Lanes	2	2	3	3	3	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	13.0%	5.0%	5.0%	15.0%	15.0%	15.0%	5.0%	10.0%	5.0%	10.0%	13.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.939	0.976	0.976	0.930	0.930	0.930	0.976	0.952	0.976	0.952	0.939
f _P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,087	1,935	2,810	3,135	3,005	3,005	2,104	2,120	1,841	3,495	2,924	2,932
GP Flow (pcphp)	1,544	968	937	1,045	1,002	1,503	1,052	1,060	921	1,748	1,462	1,466
Calculate Speed in General Purpose Lanes												
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70	70



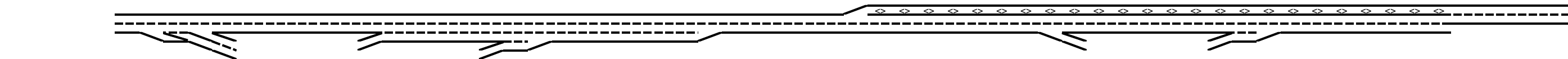
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Operations in General Purpose Lanes												
v/c ratio	0.64	0.40	0.39	0.44	0.42	0.63	0.44	0.44	0.38	0.73	0.61	0.61
Speed (mph)	68.6	70.0	70.0	70.0	70.0	68.9	70.0	70.0	70.0	66.5	69.2	69.2
Density (pcphpl)	22.5	13.8	13.4	14.9	14.3	21.8	15.0	15.1	13.2	26.3	21.1	21.2
LOS	C	B	B	B	B	C	B	B	B	D	C	C
Calculate Operations for Entering GP Lanes												
GP _{IN} Vol (pcph)			2,038	2,810						1,900		
GP _{IN} Cap (pcph)			4,800	7,200						4,800		
GP _{IN} v/c ratio			0.42	0.39						0.40		
Calculate Operations for Exiting GP Lanes												
GP _{OUT} Vol (pcph)	2,038				3,005			1,805				
GP _{OUT} Cap (pcph)	4,800				4,800			4,800				
GP _{OUT} v/c ratio	0.42				0.63			0.38				
Calculate On Ramp Flow Rate												
On Volume (vph)			640	270						1,370		
PHF			0.85	0.85						0.88		
Total Lanes			1	1						1		
Terrain			Level	Level						Level		
Grade %			0.0%	0.0%						0.0%		
Grade Length (mi)			0.00	0.00						0.00		
Truck & Bus %			5.0%	5.0%						5.0%		
RV %			0.0%	0.0%						0.0%		
E _T			1.5	1.5						1.5		
E _R			1.2	1.2						1.2		
f _{HV}			0.976	0.976						0.976		
f _P			1.00	1.00						1.00		
On Flow (pcph)			772	326						1,596		
On Flow (pcphpl)			772	326						1,596		
Calculate On Ramp Roadway Operations												
On Ramp Type			Right	Right						Right		
On Ramp Speed (mph)			50	60						60		
On Ramp Cap (pcph)			2,100	2,200						2,200		
On Ramp v/c ratio			0.37	0.15						0.73		



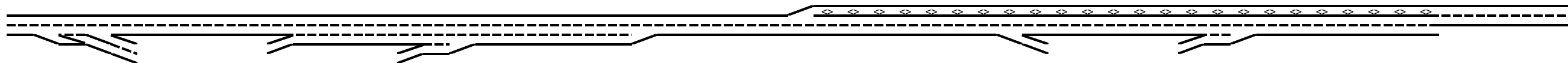
Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Off Ramp Flow Rate												
Off Volume (vph)	870							270				
PHF	0.85							0.88				
Total Lanes	2							1				
Terrain	Level							Level				
Grade %	0.0%							0.0%				
Grade Length (mi)	0.00							0.00				
Truck & Bus %	5.0%							5.0%				
RV %	0.0%							0.0%				
E _T	1.5							1.5				
E _R	1.2							1.2				
f _{HV}	0.976							0.976				
f _P	1.00							1.00				
Off Flow (pcph)	1,049							314				
Off Flow (pcphpl)	525							314				
Calculate Off Ramp Roadway Operations												
Off Ramp Type	Right							Right				
Off Ramp Speed	35							45				
Off Ramp Cap (pcph)	4,000							2,100				
Off Ramp v/c ratio	0.26							0.15				
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps												
Up Type			No	On								
Up Distance				1,300								
Up Flow (pcph)				772								
Down Type			On	Off								
Down Distance			1,300	3,000								
Down Flow (pcph)			326	314								



Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Merge Influence Area Operations												
Effective v_p (pcph)				2,810						1,900		
Up Ramp L_{EQ}				1,549								
Down Ramp L_{EQ}				2,186								
P_{FM} (Eqn 13-3)				0.586						0.611		
P_{FM} (Eqn 13-4)												
P_{FM} (Eqn 13-5)				0.576								
P_{FM}				0.586						1.000		
v_{12} (pcph)				1,648						1,900		
v_3 (pcph)				1,162								
v_{34} (pcph)												
v_{12a} (pcph)				1,648						1,900		
v_{R12a} (pcph)				1,973						3,495		
Merge Speed Index				0.31						0.31		
Merge Area Speed				61.3						61.4		
Outer Lanes Volume				1,162								
Outer Lanes Speed				67.6								
Segment Speed				63.5						61.4		
Merge v/c ratio				0.43						0.76		
Merge Density				18.7						24.5		
Merge LOS				B						C		
Calculate Diverge Influence Area Operations												
Effective v_p (pcph)	3,087							2,120				
Up Ramp L_{EQ}												
Down Ramp L_{EQ}												
P_{FD} (Eqn 13-9)	0.635							0.693				
P_{FD} (Eqn 13-10)												
P_{FD} (Eqn 13-11)												
P_{FD}	1.000							1.000				
v_{12} (pcph)	3,087							2,120				
v_3 (pcph)												
v_{34} (pcph)												
v_{12a} (pcph)	3,087							2,120				
Diverge Speed Index	0.52							0.33				
Diverge Area Speed	55.4							60.9				
Outer Lanes Volume												
Outer Lanes Speed												
Segment Speed	55.4							60.9				
Diverge v/c ratio	0.70							0.48				
Diverge Density	17.8							21.0				
Diverge LOS	B							C				

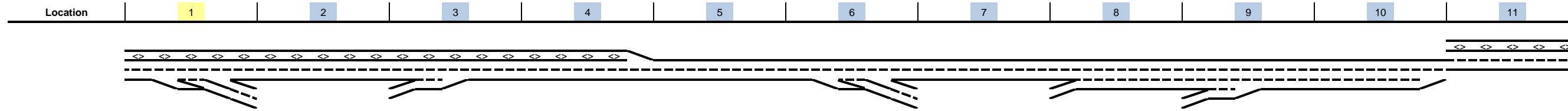


Key
 <> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Summarize Segment Operations												
Segment v/c ratio	0.70	0.40	0.39	0.43	0.42	0.63	0.44	0.48	0.38	0.76	0.61	0.61
Segment Density	17.8	13.8	13.4	18.7	14.3	21.8	15.0	21.0	13.2	24.5	21.1	21.2
Segment LOS	B	B	B	B	B	C	B	C	B	C	C	C
Over Capacity												

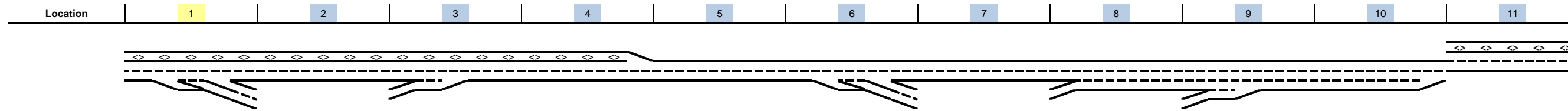
Project: Southeast Policy Area EIR
Freeway Corridor: State Route 99 SB

Alternative: Existing Plus Project Conditions
Time Period: PM Peak Hour



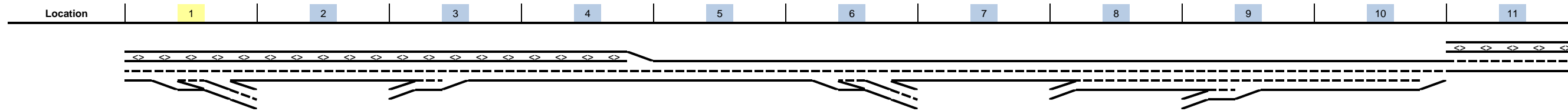
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Define Freeway Segment											
Type	Basic	Basic	Merge	Basic	Basic	Diverge	Basic	Basic	Merge	Basic	Basic
Length (ft)	1,500	2,250	1,500	400	8,050	1,500	1,650	1,200	1,500	400	250
Accel Length			350						350		
Decel Length						1,450					
Mainline Volume	3,740	1,870	1,870	2,190	2,190	2,190	1,740	1,740	2,300	2,830	3,740
On Ramp Volume			320					560	530		
Off Ramp Volume	1,870					450					
Express Lane Volume	1,122	561									1,122
EL On Ramp Volume											
EL Off Ramp Volume											
Calculate Flow Rate in General Purpose Lanes (GP)											
GP Volume (vph)	2,618	1,309	2,190	2,190	2,190	2,190	1,740	2,300	2,830	2,830	2,618
PHF	0.88	0.95	0.88	0.95	0.95	0.85	0.95	0.85	0.85	0.95	0.95
GP Lanes	2	2	2	2	2	2	2	3	3	3	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	10.0%	5.0%	15.0%	15.0%	5.0%	13.0%	5.0%	5.0%	13.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.952	0.976	0.930	0.930	0.976	0.939	0.976	0.976	0.939	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,049	1,447	2,551	2,478	2,478	2,641	1,951	2,774	3,413	3,173	2,894
GP Flow (pcphpl)	1,525	723	1,275	1,239	1,239	1,320	975	925	1,138	1,058	1,447
Calculate Speed in General Purpose Lanes											
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	73.6	73.6	73.6	73.6	74.2	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70



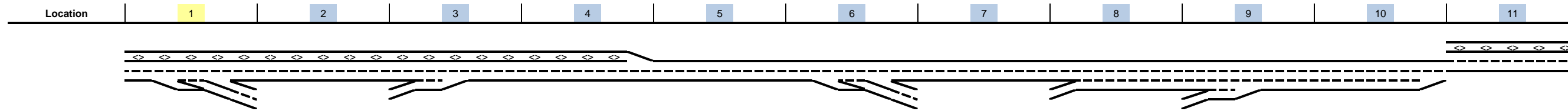
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Operations in General Purpose Lanes											
v/c ratio	0.64	0.30	0.53	0.52	0.52	0.55	0.41	0.39	0.47	0.44	0.60
Speed (mph)	68.8	70.0	69.9	70.0	70.0	69.8	70.0	70.0	70.0	70.0	69.3
Density (pcphpl)	22.2	10.3	18.2	17.7	17.7	18.9	13.9	13.2	16.3	15.1	20.9
LOS	C	A	C	B	B	C	B	B	B	B	C
Calculate Operations for Entering GP Lanes											
GP _{IN} Vol (pcph)			2,178					2,098	2,774		
GP _{IN} Cap (pcph)			4,800					4,800	7,200		
GP _{IN} v/c ratio			0.45					0.44	0.39		
Calculate Operations for Exiting GP Lanes											
GP _{OUT} Vol (pcph)	871					2,098				3,173	
GP _{OUT} Cap (pcph)	4,800					4,800				4,800	
GP _{OUT} v/c ratio	0.18					0.44				0.66	
Calculate On Ramp Flow Rate											
On Volume (vph)			320					560	530		
PHF			0.88					0.85	0.85		
Total Lanes			1					1	1		
Terrain			Level					Level	Level		
Grade %			0.0%					0.0%	0.0%		
Grade Length (mi)			0.00					0.00	0.00		
Truck & Bus %			5.0%					5.0%	5.0%		
RV %			0.0%					0.0%	0.0%		
E _T			1.5					1.5	1.5		
E _R			1.2					1.2	1.2		
f _{HV}			0.976					0.976	0.976		
f _P			1.00					1.00	1.00		
On Flow (pcph)			373					675	639		
On Flow (pcphpl)			373					675	639		
Calculate On Ramp Roadway Operations											
On Ramp Type			Right					Right	Right		
On Ramp Speed (mph)			60					50	60		
On Ramp Cap (pcph)			2,200					2,100	2,200		
On Ramp v/c ratio			0.17					0.32	0.29		



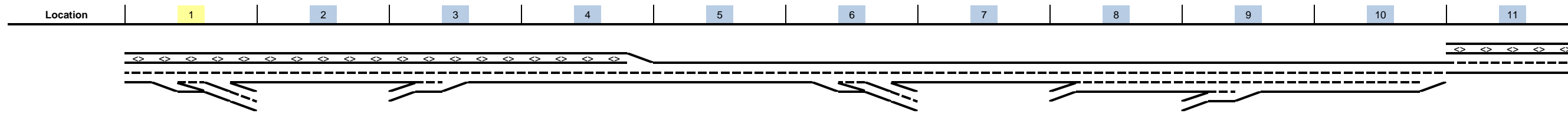
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Off Ramp Flow Rate											
Off Volume (vph)	1,870					450					
PHF	0.88					0.85					
Total Lanes	2					2					
Terrain	Level					Level					
Grade %	0.0%					0.0%					
Grade Length (mi)	0.00					0.00					
Truck & Bus %	5.0%					5.0%					
RV %	0.0%					0.0%					
E _T	1.5					1.5					
E _R	1.2					1.2					
f _{HV}	0.976					0.976					
f _p	1.00					1.00					
Off Flow (pcph)	2,178					543					
Off Flow (pcphpl)	1,089					271					
Calculate Off Ramp Roadway Operations											
Off Ramp Type	Right					Right					
Off Ramp Speed	45					45					
Off Ramp Cap (pcph)	4,200					4,200					
Off Ramp v/c ratio	0.52					0.13					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps											
Up Type								No	On		
Up Distance									1,200		
Up Flow (pcph)									675		
Down Type								On	No		
Down Distance								1,200			
Down Flow (pcph)								639			



Key
 <> Express Lane (HOV)
 - - - No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Merge Influence Area Operations											
Effective v_p (pcph)			2,178						2,774		
Up Ramp L_{EQ}									1,622		
Down Ramp L_{EQ}											
P_{FM} (Eqn 13-3)			0.587						0.587		
P_{FM} (Eqn 13-4)											
P_{FM} (Eqn 13-5)											
P_{FM}			1.000						0.587		
v_{12} (pcph)			2,178						1,629		
v_3 (pcph)									1,145		
v_{34} (pcph)											
v_{12a} (pcph)			2,178						1,629		
v_{R12a} (pcph)			2,551						2,268		
Merge Speed Index			0.33						0.32		
Merge Area Speed			60.8						61.1		
Outer Lanes Volume									1,145		
Outer Lanes Speed									67.7		
Segment Speed			60.8						63.2		
Merge v/c ratio			0.55						0.49		
Merge Density			23.0						20.7		
Merge LOS			C						C		
Calculate Diverge Influence Area Operations											
Effective v_p (pcph)						2,641					
Up Ramp L_{EQ}											
Down Ramp L_{EQ}											
P_{FD} (Eqn 13-9)						0.669					
P_{FD} (Eqn 13-10)											
P_{FD} (Eqn 13-11)											
P_{FD}						1.000					
v_{12} (pcph)						2,641					
v_3 (pcph)											
v_{34} (pcph)											
v_{12a} (pcph)						2,641					
Diverge Speed Index						0.35					
Diverge Area Speed						60.3					
Outer Lanes Volume											
Outer Lanes Speed											
Segment Speed						60.3					
Diverge v/c ratio						0.60					
Diverge Density						13.9					
Diverge LOS						B					

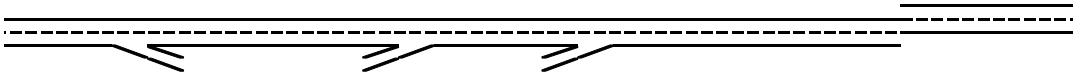


Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Summarize Segment Operations											
Segment v/c ratio	0.64	0.30	0.55	0.52	0.52	0.60	0.41	0.39	0.49	0.44	0.60
Segment Density	22.2	10.3	23.0	17.7	17.7	13.9	13.9	13.2	20.7	15.1	20.9
Segment LOS	C	A	C	B	B	B	B	B	C	B	C
Over Capacity											

Project: Southeast Policy Area EIR
Freeway Corridor: Interstate 5 NB
Alternative: Existing Plus Project Conditions
Time Period: AM Peak Hour

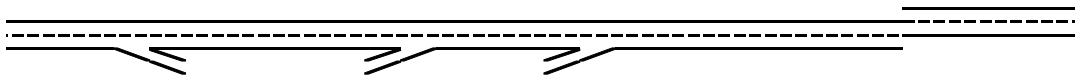
Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,150	1,500	6,900	27,700
Accel Length			450	350		
Decel Length	150					
Mainline Volume	1,620	1,580	1,580	1,640	2,200	1,620
On Ramp Volume			60	560		
Off Ramp Volume	40					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	1,620	1,580	1,640	2,200	2,200	1,620
PHF	0.75	0.81	0.75	0.75	0.81	0.81
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.917
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,214	2,126	2,241	3,007	2,960	2,180
GP Flow (pcphpl)	1,107	1,063	1,121	1,503	1,480	1,090
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.46	0.44	0.47	0.63	0.62	0.45
Speed (mph)	70.0	70.0	70.0	68.9	69.1	70.0
Density (pcphpl)	15.8	15.2	16.0	21.8	21.4	15.6
LOS	B	B	B	C	C	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,159	2,241		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.45	0.47		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,159					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.45					



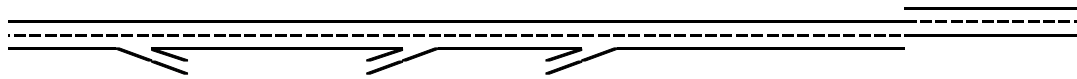
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate On Ramp Flow Rate						
On Volume (vph)			60	560		
PHF			0.75	0.75		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			82	765		
On Flow (pcphpl)			82	765		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.04	0.35		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

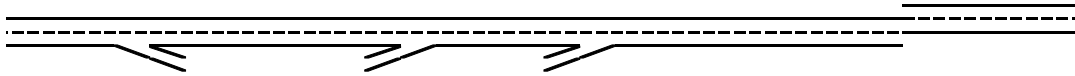


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Off Ramp Flow Rate						
Off Volume (vph)	40					
PHF	0.75					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	55					
Off Flow (pcphpl)	55					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.03					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,159	2,241		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.590	0.587		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,159	2,241		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,159	2,241		
v_{R12a} (pcph)			2,241	3,007		
Merge Speed Index			0.31	0.36		
Merge Area Speed			61.2	60.0		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.2	60.0		
Merge v/c ratio			0.49	0.65		
Merge Density			20.1	26.4		
Merge LOS			C	C		

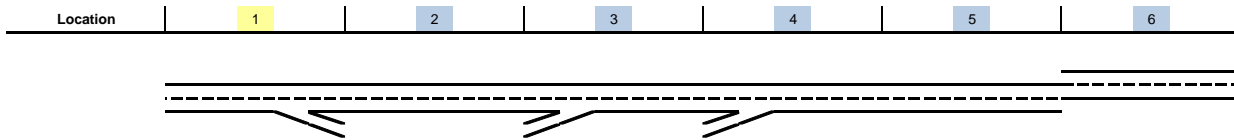


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,214					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.702					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,214					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,214					
Diverge Speed Index	0.30					
Diverge Area Speed	61.5					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	61.5					
Diverge v/c ratio	0.50					
Diverge Density	21.9					
Diverge LOS	C					



Key

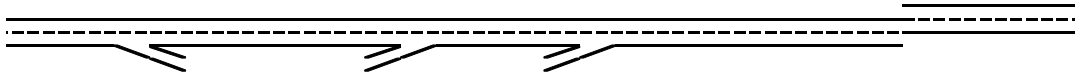
<> Express Lane (HOV)

..... No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Summarize Segment Operations						
Segment v/c ratio	0.50	0.44	0.49	0.65	0.62	0.45
Segment Density	21.9	15.2	20.1	26.4	21.4	15.6
Segment LOS	C	B	C	C	C	B
Over Capacity						

Project: Southeast Policy Area EIR
Freeway Corridor: Interstate 5 SB
Alternative: Existing Plus Project Conditions
Time Period: AM Peak Hour

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key
 <> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,250	1,500	28,500	8,000
Accel Length			300	250		
Decel Length	160					
Mainline Volume	1,540	1,410	1,410	1,490	1,500	1,540
On Ramp Volume			80	10		
Off Ramp Volume	130					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	1,540	1,410	1,490	1,500	1,500	1,540
PHF	0.75	0.91	0.75	0.75	0.91	0.91
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	5.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.976
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,105	1,689	2,036	2,050	1,797	1,735
GP Flow (pcphpl)	1,052	844	1,018	1,025	898	867
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.44	0.35	0.42	0.43	0.37	0.36
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	15.0	12.1	14.5	14.6	12.8	12.4
LOS	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			1,927	2,036		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.40	0.42		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	1,927					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.40					



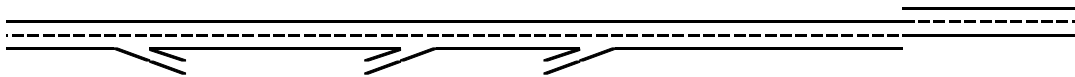
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate On Ramp Flow Rate						
On Volume (vph)			80	10		
PHF			0.75	0.75		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			109	14		
On Flow (pcphpl)			109	14		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.05	0.01		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

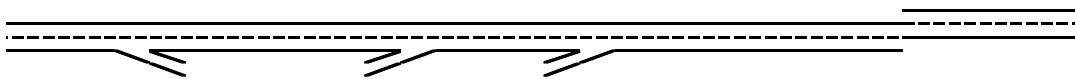


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Off Ramp Flow Rate						
Off Volume (vph)	130					
PHF	0.75					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	178					
Off Flow (pcphpl)	178					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.08					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			1,927	2,036		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.586	0.585		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			1,927	2,036		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			1,927	2,036		
v_{R12a} (pcph)			2,036	2,050		
Merge Speed Index			0.32	0.32		
Merge Area Speed			61.0	61.0		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.0	61.0		
Merge v/c ratio			0.44	0.45		
Merge Density			19.4	19.9		
Merge LOS			B	B		

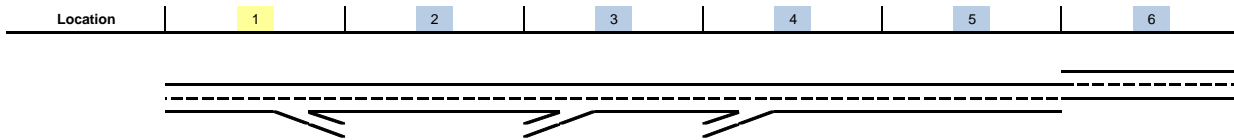


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,105					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.699					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,105					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,105					
Diverge Speed Index	0.31					
Diverge Area Speed	61.2					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	61.2					
Diverge v/c ratio	0.48					
Diverge Density	20.9					
Diverge LOS	C					



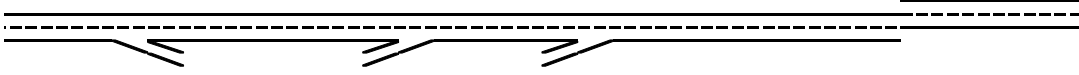
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Summarize Segment Operations						
Segment v/c ratio	0.48	0.35	0.44	0.45	0.37	0.36
Segment Density	20.9	12.1	19.4	19.9	12.8	12.4
Segment LOS	C	B	B	B	B	B
Over Capacity						

Project: Southeast Policy Area EIR Alternative: Existing Plus Project Conditions
 Freeway Corridor: Interstate 5 NB Time Period: PM Peak Hour



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,150	1,500	6,900	27,700
Accel Length			450	350		
Decel Length	150					
Mainline Volume	1,940	1,840	1,840	1,920	2,190	1,940
On Ramp Volume			80	270		
Off Ramp Volume	100					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	1,940	1,840	1,920	2,190	2,190	1,940
PHF	0.9	0.89	0.9	0.9	0.89	0.89
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.917
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,209	2,253	2,187	2,494	2,682	2,376
GP Flow (pcphpl)	1,105	1,127	1,093	1,247	1,341	1,188
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.46	0.47	0.46	0.52	0.56	0.49
Speed (mph)	70.0	70.0	70.0	70.0	69.8	70.0
Density (pcphpl)	15.8	16.1	15.6	17.8	19.2	17.0
LOS	B	B	B	B	C	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,096	2,187		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.44	0.46		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,096					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.44					



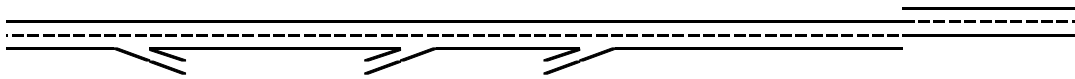
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate On Ramp Flow Rate						
On Volume (vph)			80	270		
PHF			0.9	0.9		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			91	308		
On Flow (pcphpl)			91	308		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.04	0.14		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

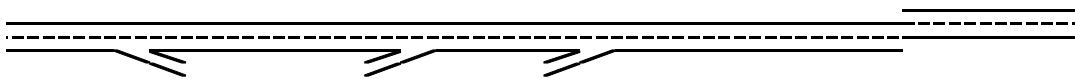


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Off Ramp Flow Rate						
Off Volume (vph)	100					
PHF	0.9					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	114					
Off Flow (pcphpl)	114					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.05					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,096	2,187		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.590	0.587		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,096	2,187		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,096	2,187		
v_{R12a} (pcph)			2,187	2,494		
Merge Speed Index			0.31	0.33		
Merge Area Speed			61.3	60.9		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.3	60.9		
Merge v/c ratio			0.48	0.54		
Merge Density			19.7	22.6		
Merge LOS			B	C		

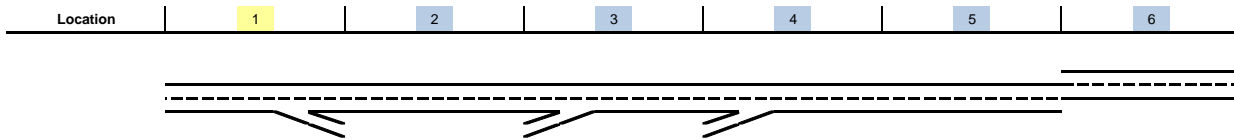


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,209					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.700					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,209					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,209					
Diverge Speed Index	0.31					
Diverge Area Speed	61.4					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	61.4					
Diverge v/c ratio	0.50					
Diverge Density	21.9					
Diverge LOS	C					



Key

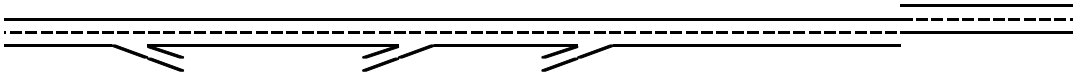
<> Express Lane (HOV)

No Trucks

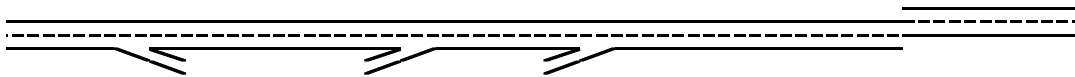
Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Summarize Segment Operations						
Segment v/c ratio	0.50	0.47	0.48	0.54	0.56	0.49
Segment Density	21.9	16.1	19.7	22.6	19.2	17.0
Segment LOS	C	B	B	C	C	B
Over Capacity						

Project: Southeast Policy Area EIR Alternative: Existing Plus Project Conditions
 Freeway Corridor: Interstate 5 SB Time Period: PM Peak Hour

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,250	1,500	28,500	8,000
Accel Length			300	250		
Decel Length	160					
Mainline Volume	2,170	1,880	1,880	1,900	1,920	2,170
On Ramp Volume			20	20		
Off Ramp Volume	290					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,170	1,880	1,900	1,920	1,920	2,170
PHF	0.9	0.94	0.9	0.9	0.94	0.94
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	5.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.976
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,471	2,180	2,164	2,187	2,226	2,366
GP Flow (pcphpl)	1,236	1,090	1,082	1,093	1,113	1,183
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.51	0.45	0.45	0.46	0.46	0.49
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	17.7	15.6	15.5	15.6	15.9	16.9
LOS	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,141	2,164		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.45	0.45		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,141					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.45					



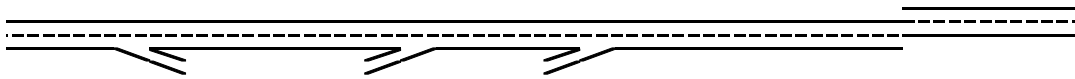
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate On Ramp Flow Rate						
On Volume (vph)			20	20		
PHF			0.9	0.9		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			23	23		
On Flow (pcphpl)			23	23		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.01	0.01		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Off Ramp Flow Rate						
Off Volume (vph)	290					
PHF	0.9					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	330					
Off Flow (pcphpl)	330					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.16					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,141	2,164		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.586	0.585		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,141	2,164		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,141	2,164		
v_{R12a} (pcph)			2,164	2,187		
Merge Speed Index			0.32	0.33		
Merge Area Speed			60.9	60.9		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			60.9	60.9		
Merge v/c ratio			0.47	0.48		
Merge Density			20.5	21.0		
Merge LOS			C	C		

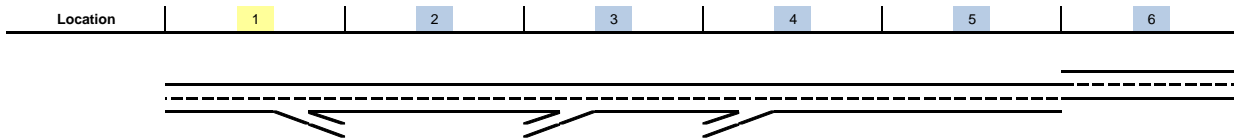


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,471					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.683					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,471					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,471					
Diverge Speed Index	0.33					
Diverge Area Speed	60.8					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	60.8					
Diverge v/c ratio	0.56					
Diverge Density	24.1					
Diverge LOS	C					



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Summarize Segment Operations						
Segment v/c ratio	0.56	0.45	0.47	0.48	0.46	0.49
Segment Density	24.1	15.6	20.5	21.0	15.9	16.9
Segment LOS	C	B	C	C	B	B
Over Capacity						

Existing Plus Project
Conditions
with Mitigations

HCM Signalized Intersection Capacity Analysis

4: Elk Grove Blvd & Laguna Springs Drive

Existing Plus Project - Mitigations
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑↑	↗	↔↗	↑↑↑		↔	↑	↗↘	↔	↑↗	
Volume (vph)	100	1510	200	1000	1040	90	130	200	490	40	200	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1563	3433	5016		1770	1863	2787	1770	3387	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1563	3433	5016		1770	1863	2787	1770	3387	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	122	1841	244	1220	1268	110	159	244	598	49	244	85
RTOR Reduction (vph)	0	0	69	0	6	0	0	0	489	0	25	0
Lane Group Flow (vph)	122	1841	175	1220	1372	0	159	244	109	49	304	0
Confl. Bikes (#/hr)			1			1						4
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	13.9	52.0	52.0	37.4	75.5		10.4	26.5	26.5	6.9	23.0	
Effective Green, g (s)	13.9	52.0	52.0	37.4	75.5		10.4	26.5	26.5	6.9	23.0	
Actuated g/C Ratio	0.10	0.36	0.36	0.26	0.52		0.07	0.18	0.18	0.05	0.16	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	170	1824	561	885	2612		127	340	509	84	537	
v/s Ratio Prot	0.07	c0.36		c0.36	0.27		c0.09	c0.13		0.03	0.09	
v/s Ratio Perm			0.11						0.04			
v/c Ratio	0.72	1.01	0.31	1.38	0.53		1.25	0.72	0.21	0.58	0.57	
Uniform Delay, d1	63.6	46.5	33.6	53.8	22.9		67.3	55.7	50.4	67.6	56.4	
Progression Factor	1.18	0.88	0.94	1.17	0.67		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.1	18.7	0.9	176.3	0.6		162.5	5.9	0.1	6.5	0.8	
Delay (s)	82.0	59.7	32.5	239.5	16.0		229.8	61.6	50.5	74.1	57.2	
Level of Service	F	E	C	F	B		F	E	D	E	E	
Approach Delay (s)		57.9			120.9			81.7			59.4	
Approach LOS		E			F			F			E	

Intersection Summary

HCM Average Control Delay	88.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Existing Plus Project - Mitigations
AM Peak Hour



































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↔	↑↑↑					↔	↔	↔
Volume (vph)	0	1870	220	110	1210	0	0	0	0	550	10	1180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.98		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4994		1770	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4994		1770	5085					1681	1688	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2033	239	120	1315	0	0	0	0	598	11	1283
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	38
Lane Group Flow (vph)	0	2262	0	120	1315	0	0	0	0	305	304	1245
Confl. Bikes (#/hr)			2			2						
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		60.0		9.4	75.3					57.3	57.3	57.3
Effective Green, g (s)		60.0		9.4	75.3					57.3	57.3	57.3
Actuated g/C Ratio		0.41		0.06	0.52					0.40	0.40	0.40
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2066		115	2641					664	667	1101
v/s Ratio Prot		c0.45		c0.07	0.26					0.18	0.18	
v/s Ratio Perm												c0.45
v/c Ratio		1.09		1.04	0.50					0.46	0.46	1.13
Uniform Delay, d1		42.5		67.8	22.6					32.4	32.3	43.9
Progression Factor		0.40		1.19	1.37					1.00	1.00	1.00
Incremental Delay, d2		50.1		87.7	0.5					0.2	0.2	70.6
Delay (s)		67.0		168.4	31.5					32.6	32.5	114.4
Level of Service		E		F	C					C	C	F
Approach Delay (s)		67.0			43.0			0.0			88.1	
Approach LOS		E			D			A			F	

Intersection Summary		
HCM Average Control Delay	68.0	HCM Level of Service E
HCM Volume to Capacity ratio	1.11	
Actuated Cycle Length (s)	145.0	Sum of lost time (s) 18.3
Intersection Capacity Utilization	77.9%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group



















HCM Signalized Intersection Capacity Analysis
 13: Bilby Road & Bruceville Road

Existing Plus Project - Mitigations
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	110	150	410	10	100	30	190	150	20	80	300	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	124	169	461	11	112	34	213	169	22	90	337	90
RTOR Reduction (vph)	0	0	335	0	0	27	0	0	16	0	0	68
Lane Group Flow (vph)	124	169	126	11	112	7	213	169	6	90	337	22
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Actuated Green, G (s)	3.9	15.9	15.9	0.7	12.7	12.7	5.8	17.7	17.7	3.9	15.8	15.8
Effective Green, g (s)	3.9	15.9	15.9	0.7	12.7	12.7	5.8	17.7	17.7	3.9	15.8	15.8
Actuated g/C Ratio	0.06	0.25	0.25	0.01	0.20	0.20	0.09	0.28	0.28	0.06	0.25	0.25
Clearance Time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.5	4.5	2.0	4.5	4.5
Lane Grp Cap (vph)	210	882	395	38	704	315	312	982	439	210	876	392
v/s Ratio Prot	c0.04	0.05		0.00	0.03		c0.06	0.05		0.03	c0.10	
v/s Ratio Perm			c0.08			0.00			0.00			0.01
v/c Ratio	0.59	0.19	0.32	0.29	0.16	0.02	0.68	0.17	0.01	0.43	0.38	0.06
Uniform Delay, d1	29.2	18.9	19.5	31.3	21.1	20.6	28.1	17.5	16.7	28.9	20.0	18.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	0.0	0.2	1.5	0.0	0.0	4.8	0.1	0.0	0.5	0.5	0.1
Delay (s)	32.1	18.9	19.7	32.8	21.2	20.6	33.0	17.6	16.7	29.4	20.4	18.4
Level of Service	C	B	B	C	C	C	C	B	B	C	C	B
Approach Delay (s)		21.6			21.9			25.7			21.6	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			22.5			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			63.8			Sum of lost time (s)			25.6			
Intersection Capacity Utilization			54.5%			ICU Level of Service			A			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
17: Bilby Road & Franklin Blvd

Existing Plus Project - Mitigations
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	10	650	10	10	10	10	330	200	340	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5			5.5	5.5	5.5	5.5	
Lane Util. Factor		1.00			1.00			1.00	1.00	1.00	1.00	
Frt		0.95			1.00			1.00	0.85	1.00	1.00	
Flt Protected		0.98			0.95			0.98	1.00	0.95	1.00	
Satd. Flow (prot)		1750			1773			1817	1583	1770	1855	
Flt Permitted		0.98			0.95			0.98	1.00	0.95	1.00	
Satd. Flow (perm)		1750			1773			1817	1583	1770	1855	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	11	11	707	11	11	11	11	359	217	370	11
RTOR Reduction (vph)	0	11	0	0	1	0	0	0	335	0	1	0
Lane Group Flow (vph)	0	22	0	0	728	0	0	22	24	217	380	0
Turn Type	Split			Split			Split			Perm	Split	
Protected Phases	4	4		8	8		2	2			6	6
Permitted Phases									2			
Actuated Green, G (s)		4.8			57.2			8.3	8.3	29.6	29.6	
Effective Green, g (s)		4.8			57.2			8.3	8.3	29.6	29.6	
Actuated g/C Ratio		0.04			0.47			0.07	0.07	0.24	0.24	
Clearance Time (s)		5.5			5.5			5.5	5.5	5.5	5.5	
Vehicle Extension (s)		2.0			2.0			2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)		69			832			124	108	430	450	
v/s Ratio Prot		c0.01			c0.41			0.01		0.12	c0.21	
v/s Ratio Perm									c0.02			
v/c Ratio		0.33			0.88			0.18	0.23	0.50	0.84	
Uniform Delay, d1		57.0			29.1			53.6	53.8	39.8	44.0	
Progression Factor		1.00			1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.0			9.9			0.3	0.4	0.3	13.1	
Delay (s)		58.0			39.1			53.8	54.2	40.2	57.0	
Level of Service		E			D			D	D	D	E	
Approach Delay (s)		58.0			39.1			54.1			50.9	
Approach LOS		E			D			D			D	
Intersection Summary												
HCM Average Control Delay			46.8			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			121.9			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			71.5%			ICU Level of Service				C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 18: Bilby Road & Willard Pkwy

Existing Plus Project - Mitigations
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	190	260	440	100	100	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	1863	1583
Peak-hour factor, PHF	0.74	0.74	0.74	0.74	0.74	0.74
Adj. Flow (vph)	257	351	595	135	135	324
RTOR Reduction (vph)	0	269	0	0	0	287
Lane Group Flow (vph)	257	82	595	135	135	37
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	24.8	24.8	42.6	38.3	12.3	12.3
Effective Green, g (s)	24.8	24.8	42.6	32.6	12.3	12.3
Actuated g/C Ratio	0.23	0.23	0.40	0.31	0.12	0.12
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	413	369	709	1085	216	183
v/s Ratio Prot	c0.15		c0.34	c0.04	c0.07	
v/s Ratio Perm		0.05				0.02
v/c Ratio	0.62	0.22	0.84	0.12	0.62	0.20
Uniform Delay, d1	36.5	32.9	28.8	26.6	44.8	42.6
Progression Factor	1.00	1.00	1.03	1.11	1.00	1.00
Incremental Delay, d2	2.1	0.1	7.2	0.0	4.0	0.2
Delay (s)	38.6	33.1	36.8	29.6	48.8	42.8
Level of Service	D	C	D	C	D	D
Approach Delay (s)	35.4			35.4	44.6	
Approach LOS	D			D	D	

Intersection Summary

HCM Average Control Delay	37.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	106.3	Sum of lost time (s)	25.8
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
20: Kammerer Road & Bruceville Road

Existing Plus Project - Mitigations
AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	40	220	40	150	680	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5		5.5			5.5
Lane Util. Factor	1.00		1.00			1.00
Frt	0.89		0.89			1.00
Flt Protected	0.99		1.00			0.95
Satd. Flow (prot)	1637		1664			1778
Flt Permitted	0.99		1.00			0.95
Satd. Flow (perm)	1637		1664			1778
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	244	44	167	756	33
RTOR Reduction (vph)	216	0	149	0	0	0
Lane Group Flow (vph)	72	0	62	0	0	789
Turn Type					Split	
Protected Phases	8		2		6	6
Permitted Phases						
Actuated Green, G (s)	7.9		7.5			37.8
Effective Green, g (s)	7.9		7.5			37.8
Actuated g/C Ratio	0.11		0.11			0.54
Clearance Time (s)	5.5		5.5			5.5
Vehicle Extension (s)	2.0		2.0			2.0
Lane Grp Cap (vph)	186		179			964
v/s Ratio Prot	c0.04		c0.04			c0.44
v/s Ratio Perm						
v/c Ratio	0.39		0.35			0.82
Uniform Delay, d1	28.6		28.8			13.1
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.5		0.4			5.2
Delay (s)	29.1		29.3			18.3
Level of Service	C		C			B
Approach Delay (s)	29.1		29.3			18.3
Approach LOS	C		C			B

Intersection Summary

HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	69.7	Sum of lost time (s)	16.5
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Existing Plus Project - Mitigations
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↔	↑↑↑					↔	↔	↔
Volume (vph)	0	2120	220	100	1220	0	0	0	0	690	10	1170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Fr _t		0.99		1.00	1.00					1.00	1.00	0.85
Fl _t Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5014		1770	5085					1681	1688	2787
Fl _t Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5014		1770	5085					1681	1688	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	2163	224	102	1245	0	0	0	0	704	10	1194
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	55
Lane Group Flow (vph)	0	2379	0	102	1245	0	0	0	0	359	355	1139
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		65.9		9.5	81.3					56.3	56.3	56.3
Effective Green, g (s)		65.9		9.5	81.3					56.3	56.3	56.3
Actuated g/C Ratio		0.44		0.06	0.54					0.38	0.38	0.38
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2203		112	2756					631	634	1046
v/s Ratio Prot		c0.47		c0.06	0.24					0.21	0.21	
v/s Ratio Perm												c0.41
v/c Ratio		1.08		0.91	0.45					0.57	0.56	1.09
Uniform Delay, d ₁		42.0		69.8	20.8					37.2	37.1	46.9
Progression Factor		0.47		1.15	0.15					1.00	1.00	1.00
Incremental Delay, d ₂		42.7		51.7	0.5					0.7	0.6	55.3
Delay (s)		62.5		131.7	3.6					37.9	37.7	102.1
Level of Service		E		F	A					D	D	F
Approach Delay (s)		62.5			13.3			0.0			78.1	
Approach LOS		E			B			A			E	

Intersection Summary

HCM Average Control Delay	56.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 20: Kammerer Road & Bruceville Road

Existing Plus Project - Mitigations
 PM Peak Hour

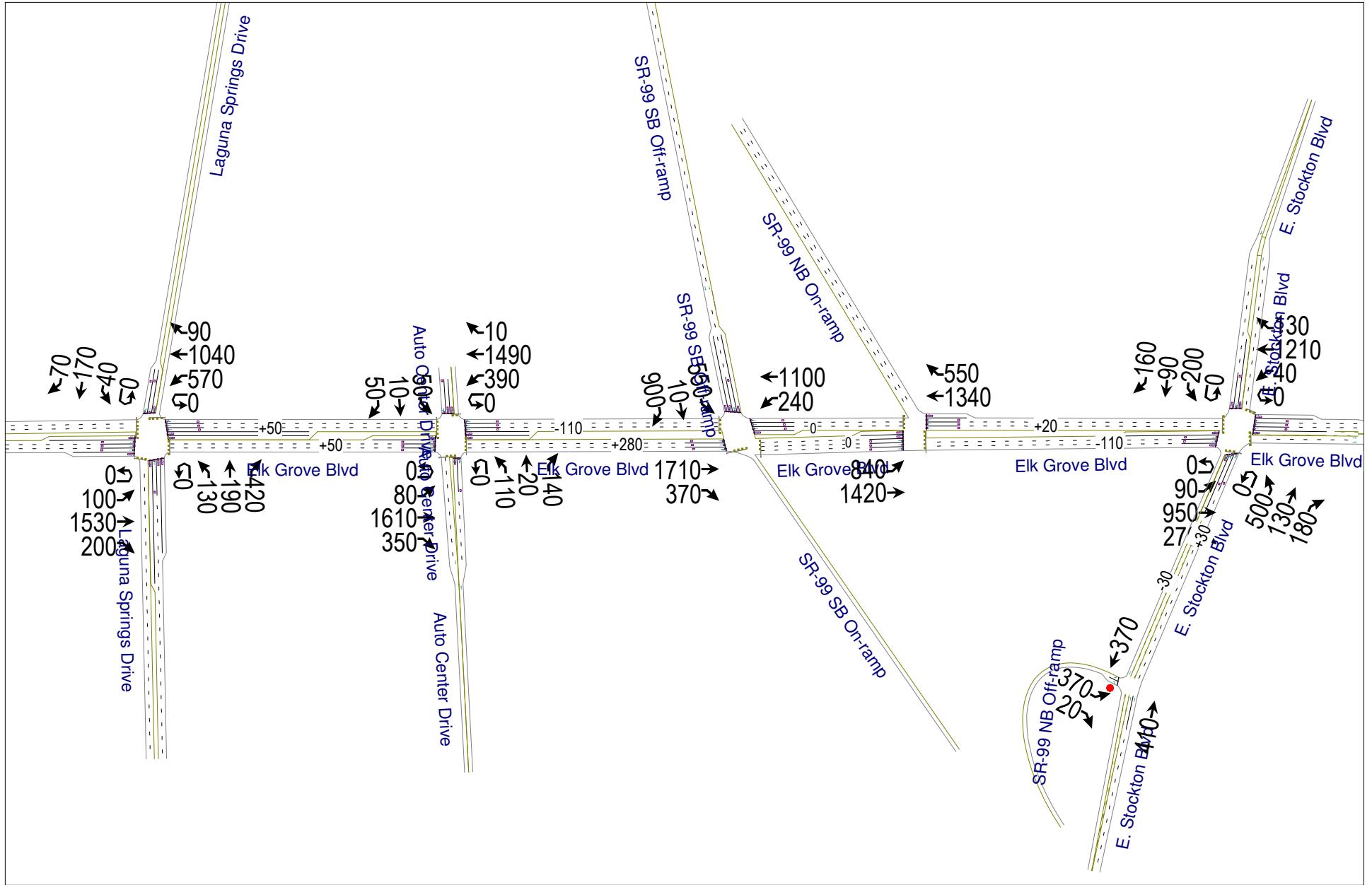


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	140	670	40	90	170	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5		5.5			5.5
Lane Util. Factor	1.00		1.00			1.00
Frt	0.89		0.91			1.00
Flt Protected	0.99		1.00			0.96
Satd. Flow (prot)	1641		1688			1794
Flt Permitted	0.99		1.00			0.96
Satd. Flow (perm)	1641		1688			1794
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	705	42	95	179	53
RTOR Reduction (vph)	166	0	86	0	0	0
Lane Group Flow (vph)	686	0	51	0	0	232
Turn Type					Split	
Protected Phases	8		2		6	6
Permitted Phases						
Actuated Green, G (s)	35.7		7.1			13.3
Effective Green, g (s)	35.7		7.1			13.3
Actuated g/C Ratio	0.49		0.10			0.18
Clearance Time (s)	5.5		5.5			5.5
Vehicle Extension (s)	2.0		2.0			2.0
Lane Grp Cap (vph)	807		165			329
v/s Ratio Prot	c0.42		c0.03			c0.13
v/s Ratio Perm						
v/c Ratio	0.85		0.31			0.71
Uniform Delay, d1	16.1		30.5			27.8
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	8.2		0.4			5.5
Delay (s)	24.4		30.9			33.3
Level of Service	C		C			C
Approach Delay (s)	24.4		30.9			33.3
Approach LOS	C		C			C

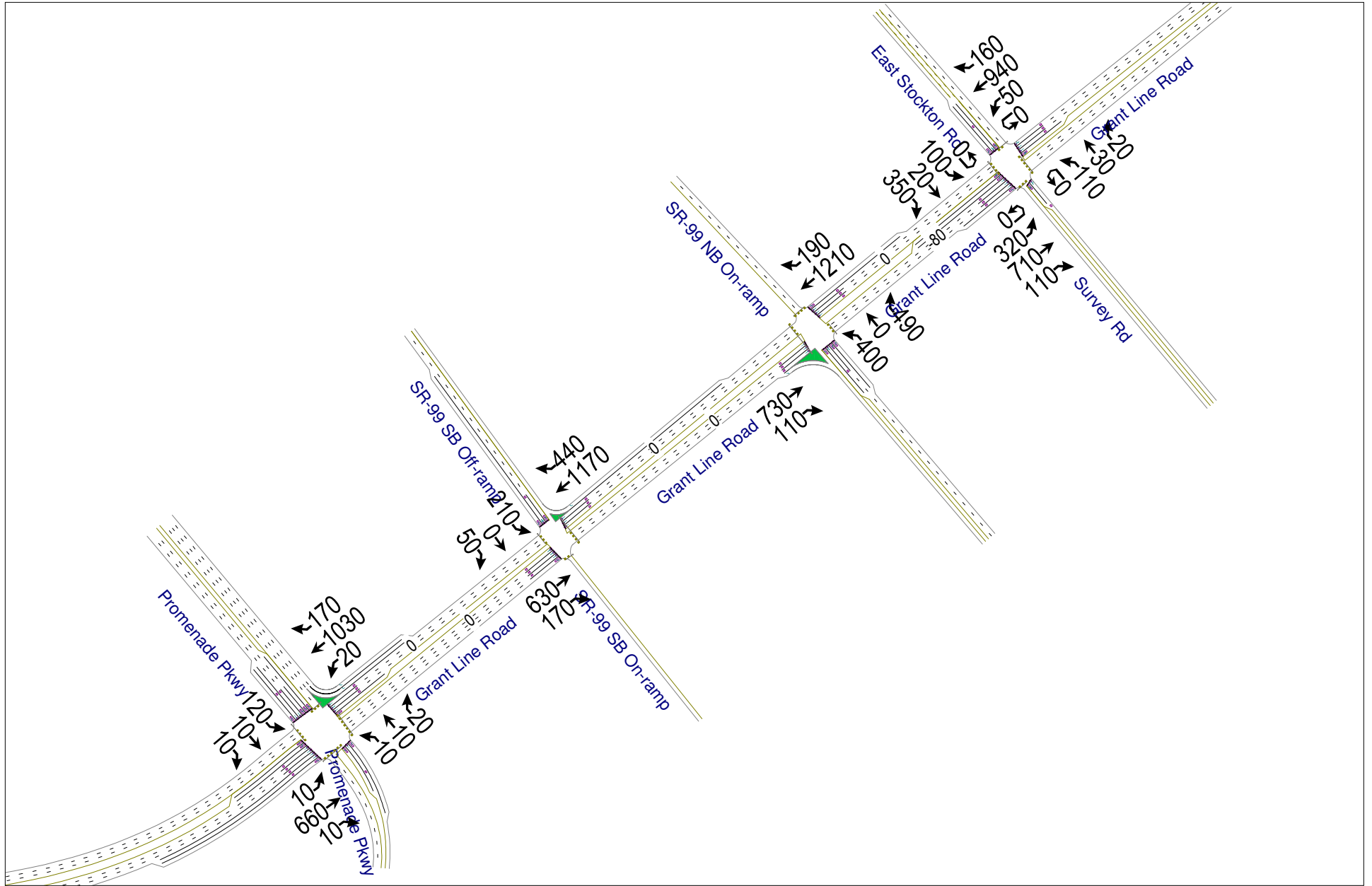
Intersection Summary			
HCM Average Control Delay	26.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	16.5
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Existing Plus Project
Conditions
with Whitelock Interchange

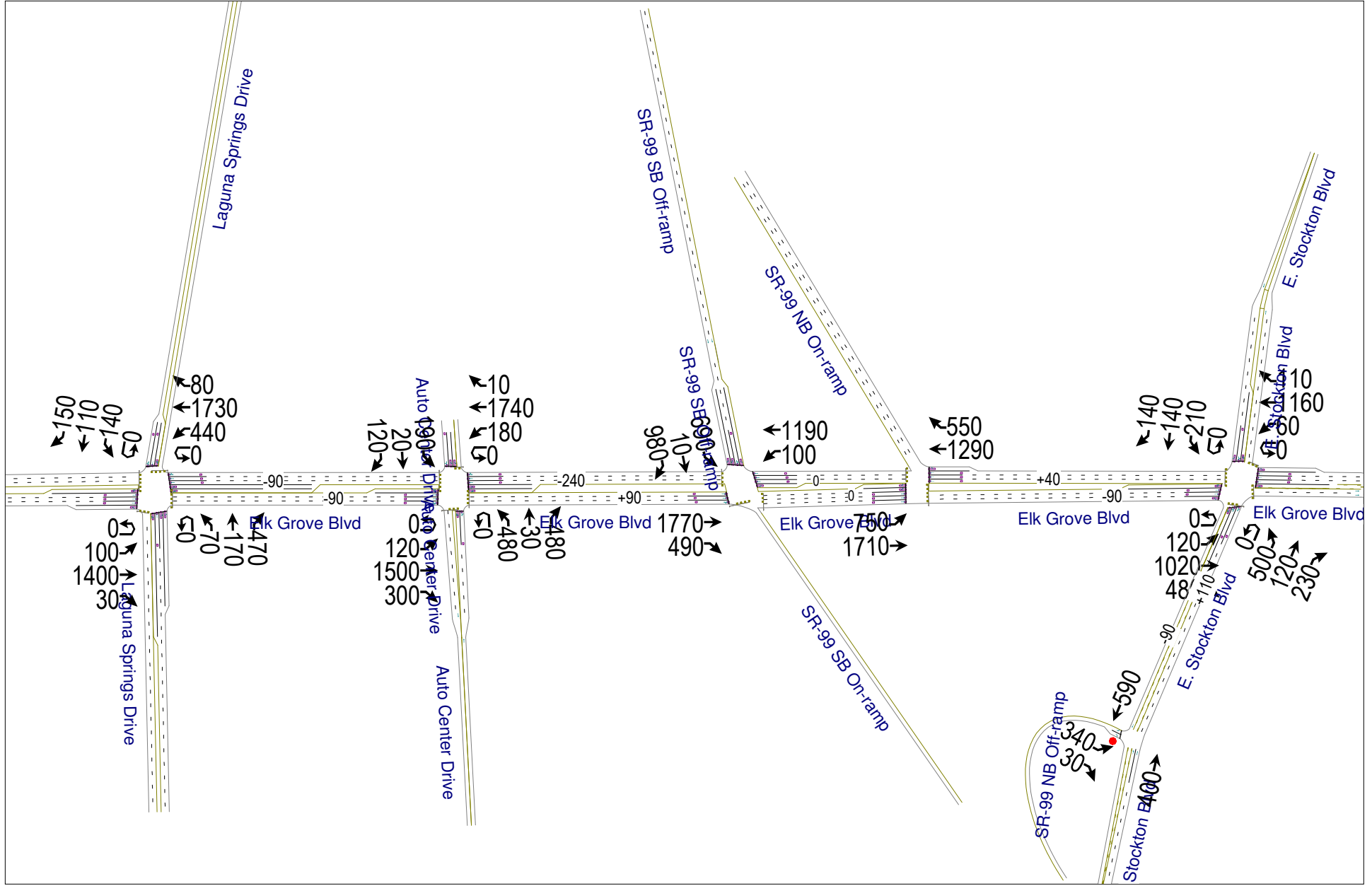
SEPA
E+P Whitelock AM



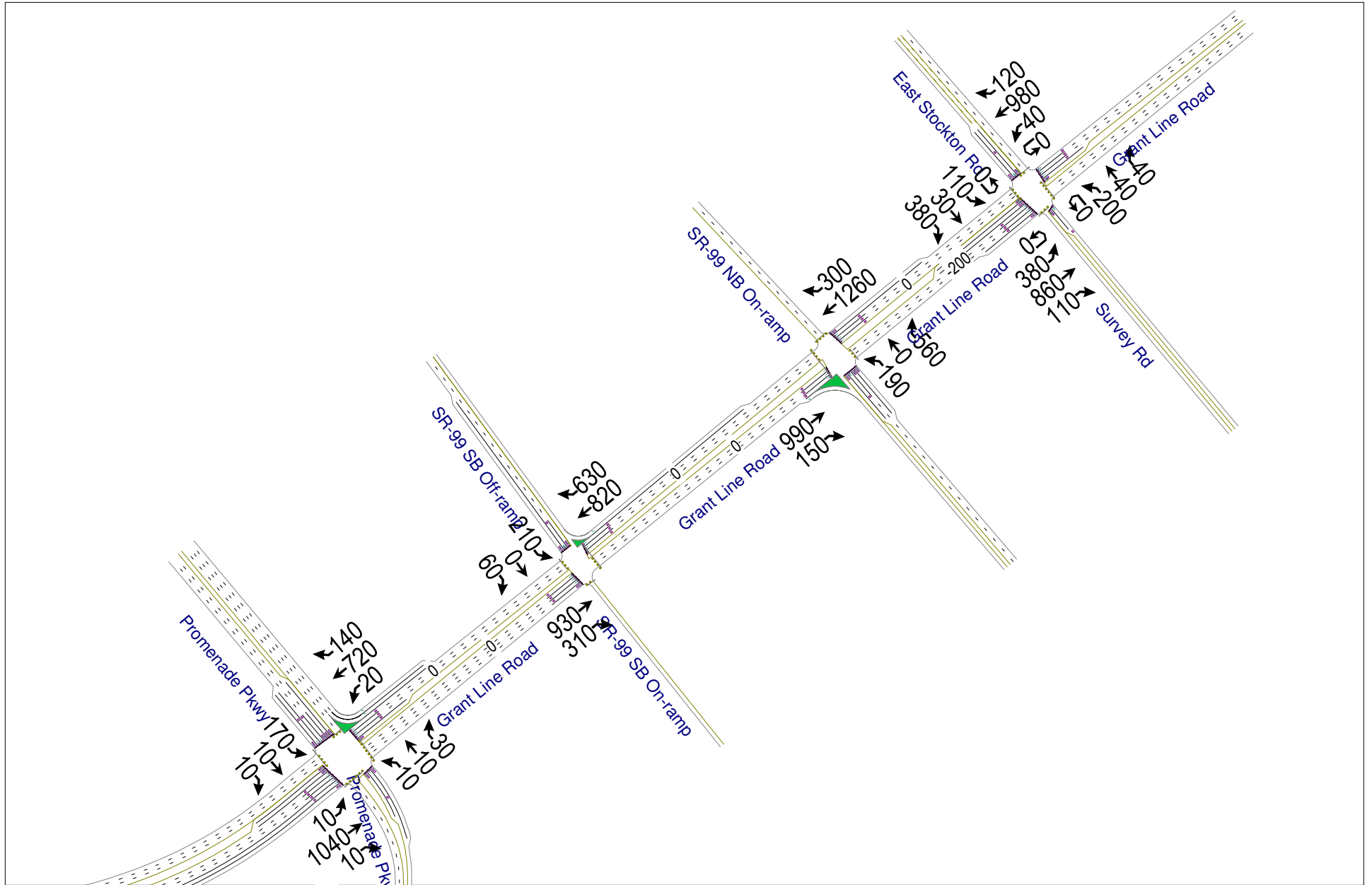
SEPA
E+P Whitelock AM



SEPA
E+P Whitelock PM



SEPA
E+P Whitelock PM



HCM Signalized Intersection Capacity Analysis

4: Laguna Springs Drive & Elk Grove Blvd

E+P Plus Whitelock
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑↑	↗	↔↗	↑↑↑		↔	↑	↗↘	↔	↑↑	
Volume (vph)	100	1530	200	570	1040	90	130	190	420	40	170	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1564	3433	5016		1770	1863	2787	1770	3367	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1564	3433	5016		1770	1863	2787	1770	3367	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	122	1866	244	695	1268	110	159	232	512	49	207	85
RTOR Reduction (vph)	0	0	83	0	6	0	0	0	419	0	34	0
Lane Group Flow (vph)	122	1866	161	695	1372	0	159	232	93	49	258	0
Confl. Bikes (#/hr)			1			1						4
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	13.9	61.3	61.3	28.4	75.8		12.7	26.2	26.2	6.9	20.4	
Effective Green, g (s)	13.9	61.3	61.3	28.4	75.8		12.7	26.2	26.2	6.9	20.4	
Actuated g/C Ratio	0.10	0.42	0.42	0.20	0.52		0.09	0.18	0.18	0.05	0.14	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	169	2149	661	672	2622		155	336	503	84	473	
v/s Ratio Prot	0.07	c0.37		c0.20	0.27		c0.09	c0.12		0.03	0.08	
v/s Ratio Perm			0.10						0.03			
v/c Ratio	0.72	0.87	0.24	1.03	0.52		1.03	0.69	0.18	0.58	0.55	
Uniform Delay, d1	63.7	38.2	26.9	58.3	22.7		66.2	55.6	50.3	67.6	58.0	
Progression Factor	1.00	1.00	1.00	1.17	0.51		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.1	5.1	0.9	42.4	0.7		79.3	4.9	0.1	6.5	0.7	
Delay (s)	75.8	43.3	27.8	110.7	12.3		145.4	60.5	50.4	74.1	58.7	
Level of Service	E	D	C	F	B		F	E	D	E	E	
Approach Delay (s)		43.3			45.3			69.7			60.9	
Approach LOS		D			D			E			E	

Intersection Summary

HCM 2000 Control Delay	49.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Auto Center Drive & Elk Grove Blvd

E+P Plus Whitelock
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↕↕		↔↕	↕↕↕		↔	↕		↕↕	↕	
Volume (vph)	80	1610	350	390	1490	10	110	20	140	50	10	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4949		3433	5079		1770	1618		3433	1631	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4949		3433	5079		1770	1618		3433	1631	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	85	1713	372	415	1585	11	117	21	149	53	11	53
RTOR Reduction (vph)	0	17	0	0	0	0	0	139	0	0	49	0
Lane Group Flow (vph)	85	2068	0	415	1596	0	117	31	0	53	15	0
Confl. Bikes (#/hr)						2						
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	10.8	83.6		18.0	90.8		10.5	9.4		12.2	11.1	
Effective Green, g (s)	10.8	83.6		18.0	90.8		10.5	9.4		12.2	11.1	
Actuated g/C Ratio	0.07	0.58		0.12	0.63		0.07	0.06		0.08	0.08	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	131	2853		426	3180		128	104		288	124	
v/s Ratio Prot	0.05	c0.42		c0.12	0.31		c0.07	0.02		c0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.65	0.73		0.97	0.50		0.91	0.29		0.18	0.12	
Uniform Delay, d1	65.3	22.3		63.3	14.8		66.8	64.6		61.8	62.4	
Progression Factor	1.03	0.48		1.19	0.55		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.0	1.0		30.2	0.4		52.9	0.6		0.1	0.2	
Delay (s)	72.3	11.7		105.6	8.5		119.7	65.2		61.9	62.6	
Level of Service	E	B		F	A		F	E		E	E	
Approach Delay (s)		14.0			28.5			87.4			62.3	
Approach LOS		B			C			F			E	

Intersection Summary

HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	21.8
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 6: SR-99 SB On-ramp/SR-99 SB Off-ramp & Elk Grove Blvd

E+P Plus Whitelock
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	1710	370	240	1100	0	0	0	0	550	10	900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.97		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4931		1770	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4931		1770	5085					1681	1688	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1859	402	261	1196	0	0	0	0	598	11	978
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	0	102
Lane Group Flow (vph)	0	2238	0	261	1196	0	0	0	0	305	304	876
Confl. Bikes (#/hr)			2			2						
Turn Type		NA		Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		62.0		21.4	89.3					43.3	43.3	43.3
Effective Green, g (s)		62.0		21.4	89.3					43.3	43.3	43.3
Actuated g/C Ratio		0.43		0.15	0.62					0.30	0.30	0.30
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2108		261	3131					501	504	832
v/s Ratio Prot		c0.45		c0.15	0.24					0.18	0.18	
v/s Ratio Perm												c0.31
v/c Ratio		1.06		1.00	0.38					0.61	0.60	1.05
Uniform Delay, d1		41.5		61.8	14.0					43.6	43.5	50.9
Progression Factor		0.46		0.66	0.37					1.00	1.00	1.00
Incremental Delay, d2		36.8		51.7	0.3					1.4	1.4	46.2
Delay (s)		55.9		92.4	5.5					45.0	44.9	97.0
Level of Service		E		F	A					D	D	F
Approach Delay (s)		55.9			21.1			0.0			77.0	
Approach LOS		E			C			A			E	

Intersection Summary

HCM 2000 Control Delay	52.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 7: Elk Grove Blvd & SR-99 NB On-ramp

E+P Plus Whitelock
 AM Peak Hour



























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↖	↗↗↗	↖↖↖	↗		
Volume (vph)	840	1420	1340	550	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	5085	5085	1583		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	5085	5085	1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	913	1543	1457	598	0	0
RTOR Reduction (vph)	0	0	0	19	0	0
Lane Group Flow (vph)	913	1543	1457	579	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	1	6	2			
Permitted Phases				2		
Actuated Green, G (s)	54.4	145.0	79.3	79.3		
Effective Green, g (s)	54.4	145.0	79.3	79.3		
Actuated g/C Ratio	0.38	1.00	0.55	0.55		
Clearance Time (s)	5.6	6.0	5.7	5.7		
Vehicle Extension (s)	2.0	3.0	2.0	2.0		
Lane Grp Cap (vph)	1287	5085	2780	865		
v/s Ratio Prot	c0.27	0.30	0.29			
v/s Ratio Perm				c0.37		
v/c Ratio	0.71	0.30	0.52	0.67		
Uniform Delay, d1	38.6	0.0	20.9	23.5		
Progression Factor	0.56	1.00	0.58	0.59		
Incremental Delay, d2	0.5	0.0	0.6	3.3		
Delay (s)	22.0	0.0	12.6	17.1		
Level of Service	C	A	B	B		
Approach Delay (s)		8.2	13.9		0.0	
Approach LOS		A	B		A	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	11.3
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: E. Stockton Blvd & Elk Grove Blvd

E+P Plus Whitelock
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	950	270	40	1210	130	500	130	180	200	90	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (prot)	1770	3539	1550	1770	5085	1583	1610	3152		1681	1736	1561
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (perm)	1770	3539	1550	1770	5085	1583	1610	3152		1681	1736	1561
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	1033	293	43	1315	141	543	141	196	217	98	174
RTOR Reduction (vph)	0	0	124	0	0	78	0	42	0	0	0	129
Lane Group Flow (vph)	98	1033	169	43	1315	63	299	539	0	156	159	45
Confl. Bikes (#/hr)			1									1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2						4
Actuated Green, G (s)	11.8	68.2	68.2	6.3	62.7	62.7	31.7	31.7		17.3	17.3	17.3
Effective Green, g (s)	11.8	68.2	68.2	6.3	62.7	62.7	31.7	31.7		17.3	17.3	17.3
Actuated g/C Ratio	0.08	0.47	0.47	0.04	0.43	0.43	0.22	0.22		0.12	0.12	0.12
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9	3.9	2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	144	1664	729	76	2198	684	351	689		200	207	186
v/s Ratio Prot	c0.06	c0.29		0.02	0.26		c0.19	0.17		c0.09	0.09	
v/s Ratio Perm			0.11			0.04						0.03
v/c Ratio	0.68	0.62	0.23	0.57	0.60	0.09	0.85	0.78		0.78	0.77	0.24
Uniform Delay, d1	64.8	28.7	22.8	68.0	31.5	24.3	54.4	53.4		62.0	61.9	57.9
Progression Factor	0.90	0.75	1.49	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.8	1.7	0.7	5.6	1.2	0.3	17.1	5.3		16.4	14.2	0.2
Delay (s)	68.0	23.1	34.8	73.6	32.7	24.6	71.5	58.7		78.4	76.1	58.1
Level of Service	E	C	C	E	C	C	E	E		E	E	E
Approach Delay (s)		28.6			33.1			63.1			70.4	
Approach LOS		C			C			E			E	

Intersection Summary		
HCM 2000 Control Delay	42.0	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.72	D
Actuated Cycle Length (s)	145.0	Sum of lost time (s)
Intersection Capacity Utilization	72.2%	21.5
Analysis Period (min)	15	ICU Level of Service
		C

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 9: E. Stockton Blvd & SR-99 NB Off-ramp

E+P Plus Whitelock
 AM Peak Hour



























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↶	↷		↶↷	↶	
Volume (veh/h)	370	20	0	410	370	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	487	26	0	539	487	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		1				
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)					808	
pX, platoon unblocked	0.99	0.99	0.99			
vC, conflicting volume	757	487	487			
vC1, stage 1 conf vol	487					
vC2, stage 2 conf vol	270					
vCu, unblocked vol	747	473	473			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	8	95	100			
cM capacity (veh/h)	529	530	1071			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	513	270	270	487
Volume Left	487	0	0	0
Volume Right	26	0	0	0
cSH	532	1700	1700	1700
Volume to Capacity	0.96	0.16	0.16	0.29
Queue Length 95th (ft)	318	0	0	0
Control Delay (s)	58.4	0.0	0.0	0.0
Lane LOS	F			
Approach Delay (s)	58.4	0.0		0.0
Approach LOS	F			

Intersection Summary			
Average Delay		19.5	
Intersection Capacity Utilization	46.6%		ICU Level of Service A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
 21: Promenade Pkwy & Kammerer Road/Grant Line Road

E+P Plus Whitelock
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	660	10	20	1030	170	10	10	20	120	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	11	742	11	22	1157	191	11	11	22	135	11	11
RTOR Reduction (vph)	0	0	6	0	0	112	0	0	20	0	0	9
Lane Group Flow (vph)	11	742	5	22	1157	79	11	11	2	135	11	2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	0.5	26.6	26.6	0.6	26.7	26.7	0.5	5.3	5.3	6.7	11.0	11.0
Effective Green, g (s)	0.5	26.6	26.6	0.6	26.7	26.7	0.5	5.3	5.3	6.7	11.0	11.0
Actuated g/C Ratio	0.01	0.41	0.41	0.01	0.41	0.41	0.01	0.08	0.08	0.10	0.17	0.17
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	26	2634	650	16	2098	1150	13	152	129	516	601	269
v/s Ratio Prot	0.00	0.12		c0.01	c0.23		0.01	c0.01		c0.03	c0.00	
v/s Ratio Perm			0.00			0.03			0.00			0.00
v/c Ratio	0.42	0.28	0.01	1.38	0.55	0.07	0.85	0.07	0.01	0.26	0.02	0.01
Uniform Delay, d1	32.0	12.7	11.3	32.1	14.4	11.5	32.1	27.4	27.3	26.7	22.4	22.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.0	0.0	0.0	361.4	0.2	0.0	162.2	0.1	0.0	0.1	0.0	0.0
Delay (s)	36.0	12.7	11.3	393.4	14.6	11.5	194.3	27.5	27.3	26.8	22.4	22.3
Level of Service	D	B	B	F	B	B	F	C	C	C	C	C
Approach Delay (s)		13.0			20.3			69.1			26.2	
Approach LOS		B			C			E			C	

Intersection Summary

HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	26.0
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 22: SR-99 SB On-ramp/SR-99 SB Off-ramp & Grant Line Road













E+P Plus Whitelock
 AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↗	↔	↗
Volume (vph)	0	630	170	0	1170	440	0	0	0	210	0	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.99	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1607	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1607	1504
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	670	181	0	1245	468	0	0	0	223	0	53
RTOR Reduction (vph)	0	0	81	0	0	0	0	0	0	0	26	26
Lane Group Flow (vph)	0	670	100	0	1245	468	0	0	0	114	88	22
Turn Type		NA	Perm		NA	Free				Perm	NA	Perm
Protected Phases		6			2						8	
Permitted Phases			6			Free				8		8
Actuated Green, G (s)		30.4	30.4		30.4	55.0				12.3	12.3	12.3
Effective Green, g (s)		30.4	30.4		30.4	55.0				12.3	12.3	12.3
Actuated g/C Ratio		0.55	0.55		0.55	1.00				0.22	0.22	0.22
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2810	874		2810	1583				375	359	336
v/s Ratio Prot		0.13			c0.24							
v/s Ratio Perm			0.06			c0.30				0.07	0.05	0.01
v/c Ratio		0.24	0.11		0.44	0.30				0.30	0.25	0.07
Uniform Delay, d1		6.3	5.9		7.3	0.0				17.8	17.5	16.8
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.1		0.2	0.5				0.2	0.1	0.0
Delay (s)		6.4	6.0		7.4	0.5				18.0	17.7	16.9
Level of Service		A	A		A	A				B	B	B
Approach Delay (s)		6.3			5.5			0.0			17.6	
Approach LOS		A			A			A			B	

Intersection Summary		
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service A
HCM 2000 Volume to Capacity ratio	0.45	
Actuated Cycle Length (s)	55.0	Sum of lost time (s) 12.3
Intersection Capacity Utilization	39.2%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

E+P Plus Whitelock
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↗	↖	↖				
Volume (vph)	0	730	110	0	1210	190	400	0	490	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6				
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88				
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85				
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00				
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787				
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00				
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	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	811	122	0	1344	211	444	0	544	0	0	0	
RTOR Reduction (vph)	0	0	59	0	0	101	0	0	77	0	0	0	
Lane Group Flow (vph)	0	811	63	0	1344	110	222	222	467	0	0	0	
Turn Type		NA	Perm		NA	Perm	Split	NA	Perm				
Protected Phases		6			2		4	4					
Permitted Phases			6			2			4				
Actuated Green, G (s)		31.8	31.8		32.3	32.3	19.2	19.2	19.2				
Effective Green, g (s)		31.8	31.8		32.3	32.3	19.2	19.2	19.2				
Actuated g/C Ratio		0.51	0.51		0.52	0.52	0.31	0.31	0.31				
Clearance Time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6				
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	2.0	2.0				
Lane Grp Cap (vph)		2616	814		2657	827	522	522	865				
v/s Ratio Prot		0.16			0.26		0.13	0.13					
v/s Ratio Perm			0.04			0.07			0.17				
v/c Ratio		0.31	0.08		0.51	0.13	0.43	0.43	0.54				
Uniform Delay, d1		8.7	7.6		9.6	7.6	16.9	16.9	17.6				
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2		0.1	0.1		0.2	0.1	0.2	0.2	0.4				
Delay (s)		8.8	7.6		9.8	7.7	17.1	17.1	18.0				
Level of Service		A	A		A	A	B	B	B				
Approach Delay (s)		8.6			9.5			17.6			0.0		
Approach LOS		A			A			B			A		
Intersection Summary													
HCM 2000 Control Delay			11.6		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.52										
Actuated Cycle Length (s)			61.8		Sum of lost time (s)				10.8				
Intersection Capacity Utilization			43.0%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 24: Survey Rd/East Stockton Rd & Grant Line Road

E+P Plus Whitelock
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↑	↗	↔	↑↑↑		↔	↗		↔	↗	↗
Volume (vph)	320	710	110	50	940	160	110	30	20	100	20	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	4974		1770	1749		1681	1713	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	5085	1583	1770	4974		1770	1749		1681	1713	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	344	763	118	54	1011	172	118	32	22	108	22	376
RTOR Reduction (vph)	0	0	60	0	13	0	0	19	0	0	0	332
Lane Group Flow (vph)	344	763	58	54	1170	0	118	35	0	65	65	44
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6									3
Actuated Green, G (s)	15.7	45.9	45.9	6.2	36.4		14.8	14.8		12.1	12.1	12.1
Effective Green, g (s)	15.7	45.9	45.9	6.2	36.4		14.8	14.8		12.1	12.1	12.1
Actuated g/C Ratio	0.15	0.45	0.45	0.06	0.36		0.14	0.14		0.12	0.12	0.12
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	525	2277	708	107	1766		255	252		198	202	186
v/s Ratio Prot	c0.10	0.15		0.03	c0.24		c0.07	0.02		c0.04	0.04	
v/s Ratio Perm			0.04									0.03
v/c Ratio	0.66	0.34	0.08	0.50	0.66		0.46	0.14		0.33	0.32	0.24
Uniform Delay, d1	40.9	18.4	16.2	46.7	27.9		40.2	38.3		41.5	41.4	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.2	0.1	0.0	1.4	0.9		1.3	0.3		0.4	0.3	0.2
Delay (s)	43.1	18.5	16.3	48.0	28.8		41.5	38.5		41.8	41.8	41.3
Level of Service	D	B	B	D	C		D	D		D	D	D
Approach Delay (s)		25.2			29.7			40.6			41.4	
Approach LOS		C			C			D			D	
























Intersection Summary

HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	102.5	Sum of lost time (s)	23.5
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

4: Laguna Springs Drive & Elk Grove Blvd

E+P Plus Whitelock
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1400	30	440	1730	80	70	170	470	140	110	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3232	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3232	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	103	1443	31	454	1784	82	72	175	485	144	113	155
RTOR Reduction (vph)	0	0	17	0	3	0	0	0	420	0	129	0
Lane Group Flow (vph)	103	1443	14	454	1863	0	72	175	65	144	139	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	11.6	66.2	66.2	22.3	76.9		9.8	19.3	19.3	15.0	24.5	
Effective Green, g (s)	11.6	66.2	66.2	22.3	76.9		9.8	19.3	19.3	15.0	24.5	
Actuated g/C Ratio	0.08	0.46	0.46	0.15	0.53		0.07	0.13	0.13	0.10	0.17	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	141	2321	722	527	2679		119	247	370	183	546	
v/s Ratio Prot	0.06	0.28		c0.13	c0.37		0.04	c0.09		c0.08	c0.04	
v/s Ratio Perm			0.01						0.02			
v/c Ratio	0.73	0.62	0.02	0.86	0.70		0.61	0.71	0.17	0.79	0.25	
Uniform Delay, d1	65.2	29.9	21.6	59.8	25.3		65.7	60.2	55.8	63.4	52.3	
Progression Factor	1.00	1.00	1.00	1.34	0.46		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.4	1.3	0.0	4.7	0.5		5.8	7.4	0.1	18.3	0.1	
Delay (s)	80.5	31.2	21.7	84.8	12.2		71.6	67.5	55.9	81.7	52.4	
Level of Service	F	C	C	F	B		E	E	E	F	D	
Approach Delay (s)		34.2			26.4			60.2			62.7	
Approach LOS		C			C			E			E	
Intersection Summary												
HCM 2000 Control Delay			36.7			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			145.0			Sum of lost time (s)			22.2			
Intersection Capacity Utilization			82.2%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Auto Center Drive & Elk Grove Blvd

E+P Plus Whitelock
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	🚗	🚗🚗🚗		🚗🚗	🚗🚗🚗		🚗	🚗		🚗🚗	🚗	
Volume (vph)	120	1500	300	180	1740	10	480	30	480	190	20	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.86		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4958		3433	5081		1770	1600		3433	1624	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4958		3433	5081		1770	1600		3433	1624	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	1562	312	188	1812	10	500	31	500	198	21	125
RTOR Reduction (vph)	0	18	0	0	1	0	0	81	0	0	86	0
Lane Group Flow (vph)	125	1856	0	188	1821	0	500	450	0	198	60	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	8.4	59.0		6.4	57.0		32.4	45.8		12.0	25.4	
Effective Green, g (s)	8.4	59.0		6.4	57.0		32.4	45.8		12.0	25.4	
Actuated g/C Ratio	0.06	0.41		0.04	0.39		0.22	0.32		0.08	0.18	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	102	2017		151	1997		395	505		284	284	
v/s Ratio Prot	c0.07	c0.37		0.05	0.36		c0.28	c0.28		c0.06	0.04	
v/s Ratio Perm												
v/c Ratio	1.23	0.92		1.25	0.91		1.27	0.89		0.70	0.21	
Uniform Delay, d1	68.3	40.8		69.3	41.6		56.3	47.2		64.7	51.2	
Progression Factor	1.26	0.67		1.02	0.75		1.00	1.00		1.00	1.00	
Incremental Delay, d2	152.7	6.9		144.4	6.0		138.4	17.3		5.9	0.1	
Delay (s)	238.5	34.3		215.3	37.4		194.7	64.6		70.6	51.4	
Level of Service	F	C		F	D		F	E		E	D	
Approach Delay (s)		47.0			54.1			127.7			62.5	
Approach LOS		D			D			F			E	

Intersection Summary

HCM 2000 Control Delay	66.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	21.8
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 6: SR-99 SB On-ramp/SR-99 SB Off-ramp & Elk Grove Blvd

E+P Plus Whitelock
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	1770	490	100	1190	0	0	0	0	690	10	980
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frt		0.97		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4920		1770	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4920		1770	5085					1681	1688	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1806	500	102	1214	0	0	0	0	704	10	1000
RTOR Reduction (vph)	0	34	0	0	0	0	0	0	0	0	0	75
Lane Group Flow (vph)	0	2272	0	102	1214	0	0	0	0	359	355	925
Turn Type		NA		Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		67.7		9.8	83.4					49.2	49.2	49.2
Effective Green, g (s)		67.7		9.8	83.4					49.2	49.2	49.2
Actuated g/C Ratio		0.47		0.07	0.58					0.34	0.34	0.34
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2297		119	2924					570	572	945
v/s Ratio Prot		c0.46		c0.06	0.24					0.21	0.21	
v/s Ratio Perm												c0.33
v/c Ratio		0.99		0.86	0.42					0.63	0.62	0.98
Uniform Delay, d1		38.3		66.9	17.2					40.2	40.1	47.4
Progression Factor		0.51		0.71	0.87					1.00	1.00	1.00
Incremental Delay, d2		11.1		36.5	0.4					1.6	1.5	23.9
Delay (s)		30.8		83.7	15.3					41.8	41.6	71.3
Level of Service		C		F	B					D	D	E
Approach Delay (s)		30.8			20.6			0.0			59.0	
Approach LOS		C			C			A			E	

Intersection Summary

HCM 2000 Control Delay	37.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

E+P Plus Whitelock
PM Peak Hour



























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↖	↑↑↑	↑↑↑	↘		
Volume (vph)	750	1710	1290	550	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	5085	5085	1583		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	5085	5085	1583		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	806	1839	1387	591	0	0
RTOR Reduction (vph)	0	0	0	18	0	0
Lane Group Flow (vph)	806	1839	1387	573	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	1	6	2			
Permitted Phases				2		
Actuated Green, G (s)	23.4	72.5	37.8	37.8		
Effective Green, g (s)	23.4	72.5	37.8	37.8		
Actuated g/C Ratio	0.32	1.00	0.52	0.52		
Clearance Time (s)	5.6	6.0	5.7	5.7		
Vehicle Extension (s)	2.0	3.0	2.0	2.0		
Lane Grp Cap (vph)	1108	5085	2651	825		
v/s Ratio Prot	c0.23	0.36	0.27			
v/s Ratio Perm				c0.36		
v/c Ratio	0.73	0.36	0.52	0.69		
Uniform Delay, d1	21.7	0.0	11.4	13.0		
Progression Factor	1.34	1.00	0.85	0.90		
Incremental Delay, d2	1.1	0.1	0.6	3.9		
Delay (s)	30.2	0.1	10.3	15.7		
Level of Service	C	A	B	B		
Approach Delay (s)		9.3	11.9		0.0	
Approach LOS		A	B		A	

Intersection Summary

HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	72.5	Sum of lost time (s)	11.3
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
8: E. Stockton Blvd & Elk Grove Blvd

E+P Plus Whitelock
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1020	480	60	1160	110	500	120	230	210	140	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.99	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1610	3123		1681	1751	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.99	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1610	3123		1681	1751	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	1074	505	63	1221	116	526	126	242	221	147	147
RTOR Reduction (vph)	0	0	213	0	0	69	0	77	0	0	0	128
Lane Group Flow (vph)	126	1074	292	63	1221	47	305	512	0	181	187	19
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			6			2						4
Actuated Green, G (s)	13.7	65.8	65.8	7.2	59.3	59.3	31.6	31.6		18.9	18.9	18.9
Effective Green, g (s)	13.7	65.8	65.8	7.2	59.3	59.3	31.6	31.6		18.9	18.9	18.9
Actuated g/C Ratio	0.09	0.45	0.45	0.05	0.41	0.41	0.22	0.22		0.13	0.13	0.13
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9	3.9	2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	167	1605	718	87	2079	647	350	680		219	228	206
v/s Ratio Prot	c0.07	c0.30		0.04	0.24		c0.19	0.16		c0.11	0.11	
v/s Ratio Perm			0.18			0.03						0.01
v/c Ratio	0.75	0.67	0.41	0.72	0.59	0.07	0.87	0.75		0.83	0.82	0.09
Uniform Delay, d1	64.0	31.1	26.5	67.9	33.3	26.1	54.7	53.0		61.5	61.4	55.5
Progression Factor	0.92	0.77	1.30	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	15.0	2.1	1.6	22.1	1.2	0.2	19.9	4.2		20.9	19.6	0.1
Delay (s)	74.1	25.9	36.1	90.0	34.6	26.3	74.6	57.2		82.3	81.0	55.6
Level of Service	E	C	D	F	C	C	E	E		F	F	E
Approach Delay (s)		32.5			36.4			63.2			74.2	
Approach LOS		C			D			E			E	

Intersection Summary

HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 9: E. Stockton Blvd & SR-99 NB Off-ramp

E+P Plus Whitelock
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↶	↷		↶↷	↶	
Volume (veh/h)	340	30	0	400	590	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	351	31	0	412	608	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		1				
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)					808	
pX, platoon unblocked	0.95	0.95	0.95			
vC, conflicting volume	814	608	608			
vC1, stage 1 conf vol	608					
vC2, stage 2 conf vol	206					
vCu, unblocked vol	775	557	557			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	27	93	100			
cM capacity (veh/h)	478	448	955			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	381	206	206	608
Volume Left	351	0	0	0
Volume Right	31	0	0	0
cSH	486	1700	1700	1700
Volume to Capacity	0.78	0.12	0.12	0.36
Queue Length 95th (ft)	177	0	0	0
Control Delay (s)	34.4	0.0	0.0	0.0
Lane LOS	D			
Approach Delay (s)	34.4	0.0		0.0
Approach LOS	D			

Intersection Summary			
Average Delay		9.4	
Intersection Capacity Utilization		56.6%	ICU Level of Service B
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 21: Promenade Pkwy & Kammerer Road/Grant Line Road

E+P Plus Whitelock
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	1040	10	20	720	140	10	10	30	170	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	1106	11	21	766	149	11	11	32	181	11	11
RTOR Reduction (vph)	0	0	7	0	0	93	0	0	29	0	0	9
Lane Group Flow (vph)	11	1106	4	21	766	56	11	11	3	181	11	2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			2			4			8
Actuated Green, G (s)	0.5	23.1	23.1	0.5	23.1	23.1	0.5	5.0	5.0	7.5	11.5	11.5
Effective Green, g (s)	0.5	23.1	23.1	0.5	23.1	23.1	0.5	5.0	5.0	7.5	11.5	11.5
Actuated g/C Ratio	0.01	0.38	0.38	0.01	0.38	0.38	0.01	0.08	0.08	0.12	0.19	0.19
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	27	2403	593	14	1906	1045	14	151	128	607	660	295
v/s Ratio Prot	0.00	c0.17		c0.01	0.15		0.01	c0.01		c0.04	0.00	
v/s Ratio Perm			0.00			0.02			0.00			0.00
v/c Ratio	0.41	0.46	0.01	1.50	0.40	0.05	0.79	0.07	0.02	0.30	0.02	0.01
Uniform Delay, d1	30.4	14.5	12.1	30.6	14.2	12.3	30.5	26.2	26.0	24.7	20.4	20.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.1	0.0	427.8	0.1	0.0	123.8	0.1	0.0	0.1	0.0	0.0
Delay (s)	34.0	14.6	12.1	458.4	14.2	12.3	154.3	26.2	26.1	24.8	20.4	20.4
Level of Service	C	B	B	F	B	B	F	C	C	C	C	C
Approach Delay (s)		14.8			23.9			52.2			24.3	
Approach LOS		B			C			D			C	

Intersection Summary

HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	26.0
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 22: SR-99 SB On-ramp/SR-99 SB Off-ramp & Grant Line Road

E+P Plus Whitelock
 PM Peak Hour















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↘	↕	↗
Volume (vph)	0	930	310	0	820	630	0	0	0	210	0	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.99	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1605	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.95	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1605	1504
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	969	323	0	854	656	0	0	0	219	0	62
RTOR Reduction (vph)	0	0	146	0	0	0	0	0	0	0	26	43
Lane Group Flow (vph)	0	969	177	0	854	656	0	0	0	114	85	13
Turn Type		NA	Perm		NA	Free				Perm	NA	Perm
Protected Phases		6			2						8	
Permitted Phases			6			Free				8		8
Actuated Green, G (s)		29.4	29.4		29.4	53.8				12.1	12.1	12.1
Effective Green, g (s)		29.4	29.4		29.4	53.8				12.1	12.1	12.1
Actuated g/C Ratio		0.55	0.55		0.55	1.00				0.22	0.22	0.22
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2778	865		2778	1583				378	360	338
v/s Ratio Prot		0.19			0.17							
v/s Ratio Perm			0.11			c0.41				0.07	0.05	0.01
v/c Ratio		0.35	0.20		0.31	0.41				0.30	0.24	0.04
Uniform Delay, d1		6.8	6.2		6.7	0.0				17.3	17.1	16.3
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.1	0.2		0.1	0.8				0.2	0.1	0.0
Delay (s)		6.9	6.4		6.7	0.8				17.5	17.2	16.3
Level of Service		A	A		A	A				B	B	B
Approach Delay (s)		6.8			4.2			0.0			17.1	
Approach LOS		A			A			A			B	

Intersection Summary

HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	53.8	Sum of lost time (s)	12.3
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

E+P Plus Whitelock
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↘	↖	↗↗				
Volume (vph)	0	990	150	0	1260	300	190	0	560	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6				
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88				
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85				
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00				
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787				
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00				
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	2787				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	1076	163	0	1370	326	207	0	609	0	0	0	
RTOR Reduction (vph)	0	0	66	0	0	158	0	0	28	0	0	0	
Lane Group Flow (vph)	0	1076	97	0	1370	168	103	104	581	0	0	0	
Turn Type		NA	Perm		NA	Perm	Split	NA	Perm				
Protected Phases		6			2		4	4					
Permitted Phases			6			2			4				
Actuated Green, G (s)		33.0	33.0		33.5	33.5	21.3	21.3	21.3				
Effective Green, g (s)		33.0	33.0		33.5	33.5	21.3	21.3	21.3				
Actuated g/C Ratio		0.51	0.51		0.51	0.51	0.33	0.33	0.33				
Clearance Time (s)		6.2	6.2		5.7	5.7	4.6	4.6	4.6				
Vehicle Extension (s)		4.0	4.0		4.0	4.0	2.0	2.0	2.0				
Lane Grp Cap (vph)		2577	802		2616	814	550	550	911				
v/s Ratio Prot		0.21			c0.27		0.06	0.06					
v/s Ratio Perm			0.06			0.11			c0.21				
v/c Ratio		0.42	0.12		0.52	0.21	0.19	0.19	0.64				
Uniform Delay, d1		10.0	8.4		10.5	8.6	15.7	15.7	18.6				
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2		0.2	0.1		0.2	0.2	0.1	0.1	1.1				
Delay (s)		10.2	8.5		10.7	8.8	15.8	15.8	19.7				
Level of Service		B	A		B	A	B	B	B				
Approach Delay (s)		10.0			10.4			18.7			0.0		
Approach LOS		A			B			B			A		
Intersection Summary													
HCM 2000 Control Delay			12.0		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.57										
Actuated Cycle Length (s)			65.1		Sum of lost time (s)				10.8				
Intersection Capacity Utilization			47.7%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 24: Survey Rd/East Stockton Rd & Grant Line Road

E+P Plus Whitelock
 PM Peak Hour

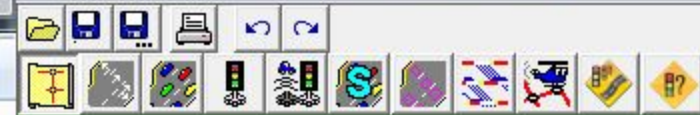


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	380	860	110	40	980	120	200	40	40	110	30	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	5002		1770	1723		1681	1720	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5002		1770	1723		1681	1720	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	413	935	120	43	1065	130	217	43	43	120	33	413
RTOR Reduction (vph)	0	0	61	0	9	0	0	26	0	0	0	266
Lane Group Flow (vph)	413	935	59	43	1186	0	217	60	0	76	77	147
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases			6									3
Actuated Green, G (s)	16.8	48.8	48.8	4.5	36.5		20.0	20.0		15.6	15.6	15.6
Effective Green, g (s)	16.8	48.8	48.8	4.5	36.5		20.0	20.0		15.6	15.6	15.6
Actuated g/C Ratio	0.15	0.43	0.43	0.04	0.32		0.18	0.18		0.14	0.14	0.14
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	513	2207	687	70	1624		314	306		233	238	219
v/s Ratio Prot	c0.12	0.18		0.02	c0.24		c0.12	0.03		0.05	0.04	
v/s Ratio Perm			0.04									c0.09
v/c Ratio	0.81	0.42	0.09	0.61	0.73		0.69	0.20		0.33	0.32	0.67
Uniform Delay, d1	46.2	22.0	18.7	53.1	33.6		43.3	39.3		43.7	43.6	46.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.5	0.1	0.1	10.7	1.7		6.4	0.3		0.3	0.3	6.2
Delay (s)	54.7	22.2	18.7	63.8	35.3		49.7	39.7		44.0	43.9	52.2
Level of Service	D	C	B	E	D		D	D		D	D	D
Approach Delay (s)		31.0			36.3			46.9			49.9	
Approach LOS		C			D			D			D	

Intersection Summary

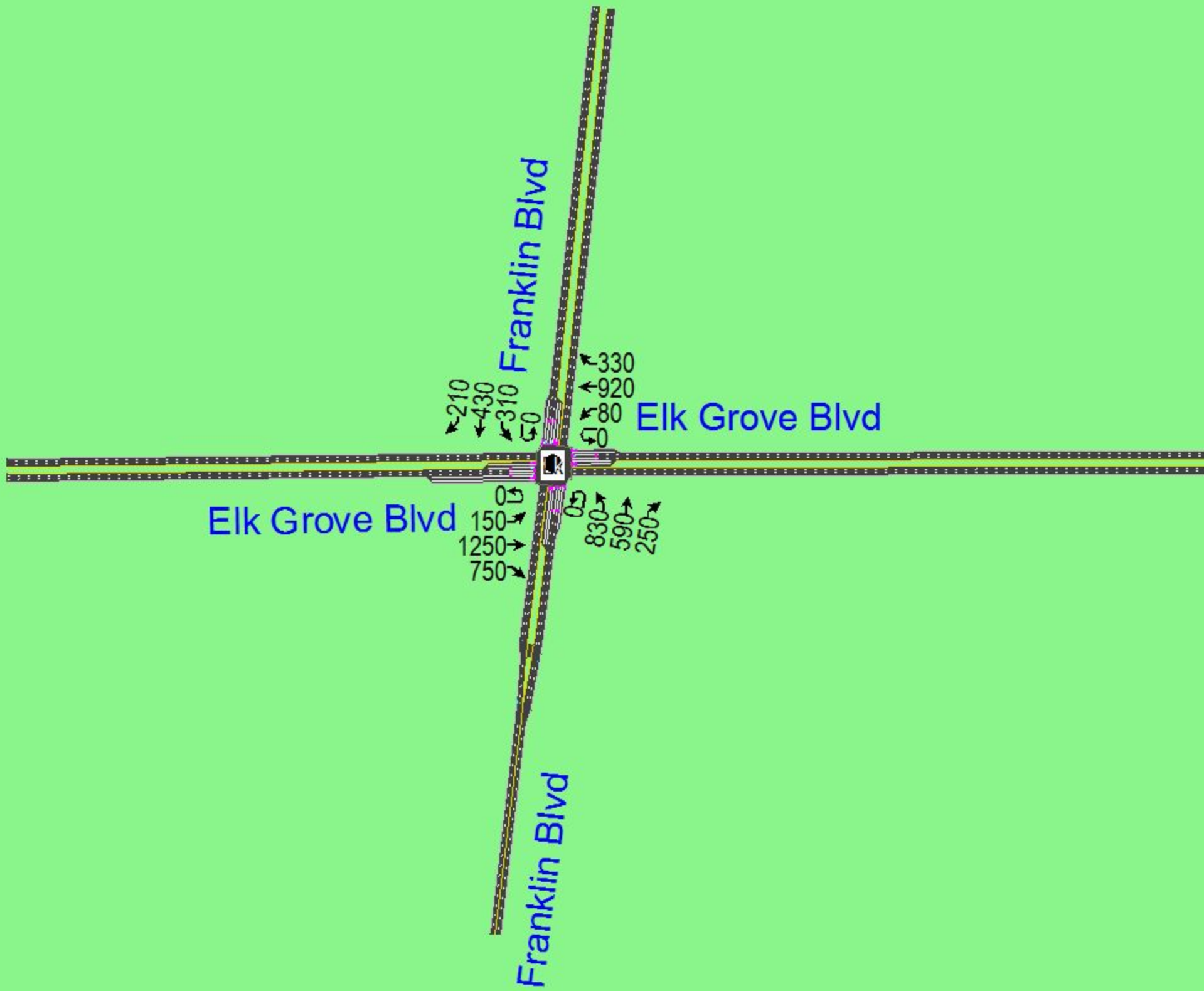
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	112.4	Sum of lost time (s)	23.5
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

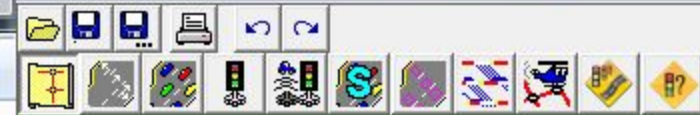
Cumulative Plus Project Conditions



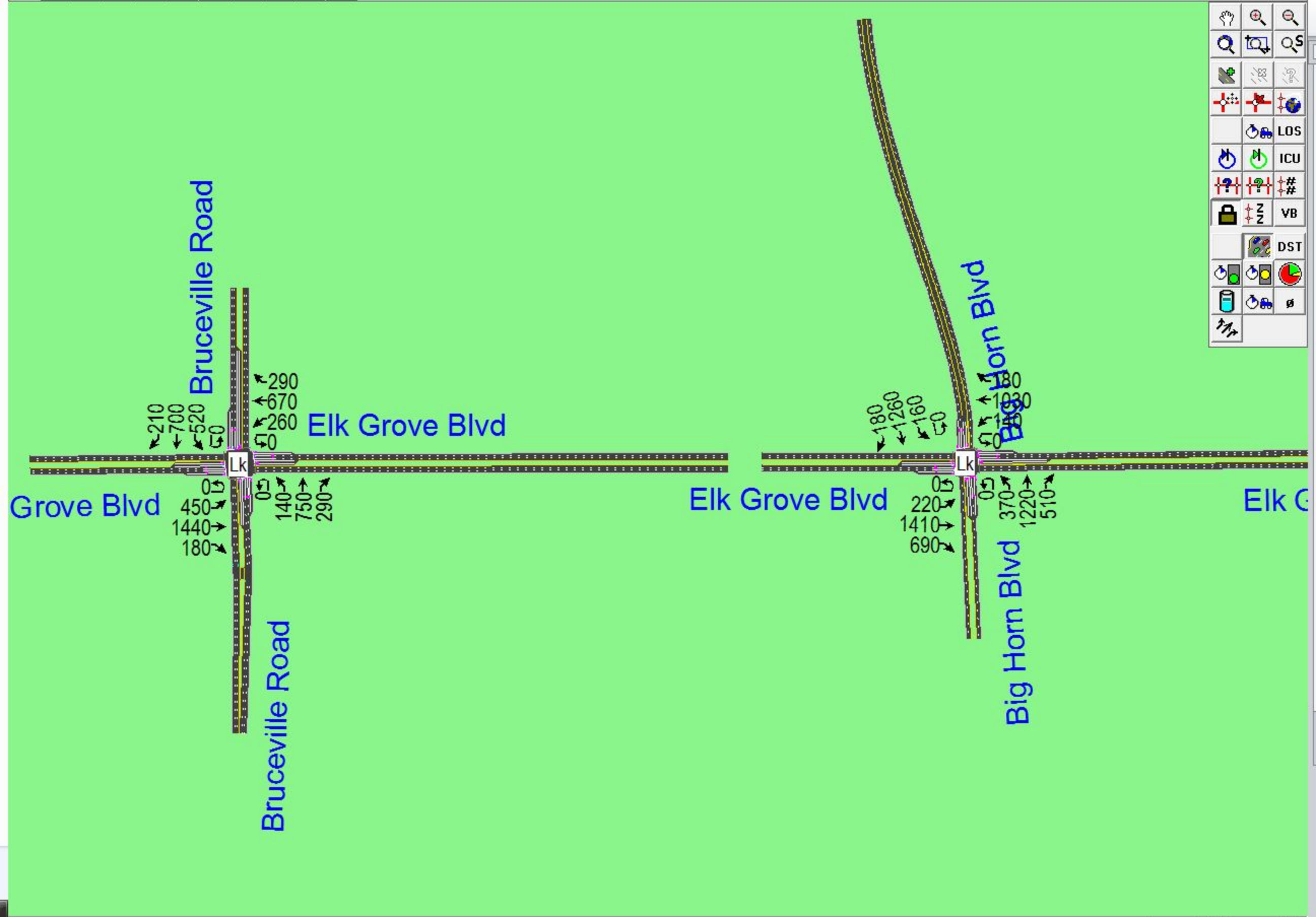
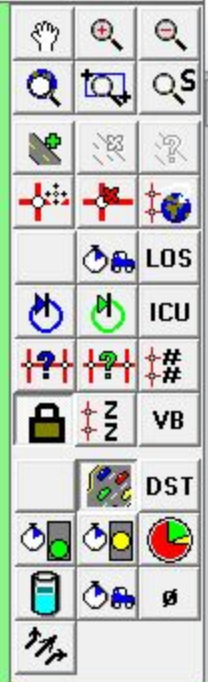
1 Elk Grove Blvd & Franklin Blvd

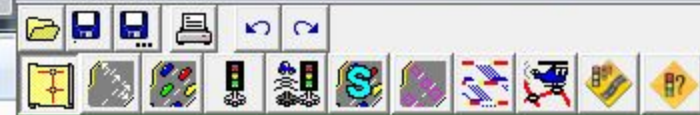
		LOS
		ICU
		#
# icon"/>	# icon"/>	#
		VB
		DST



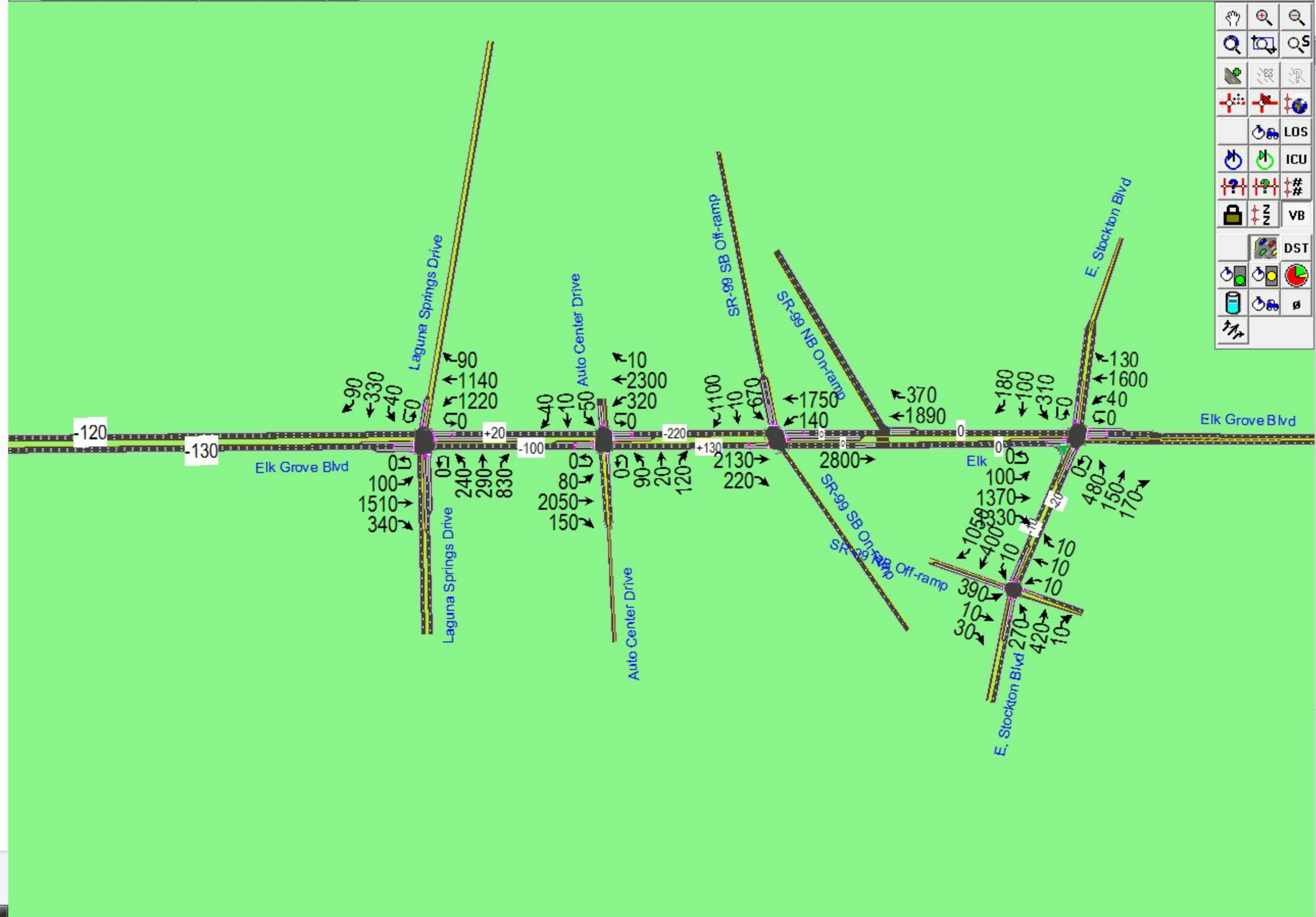


1 Elk Grove Blvd & Franklin Blvd



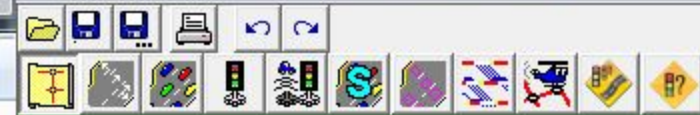


1 Elk Grove Blvd & Franklin Blvd



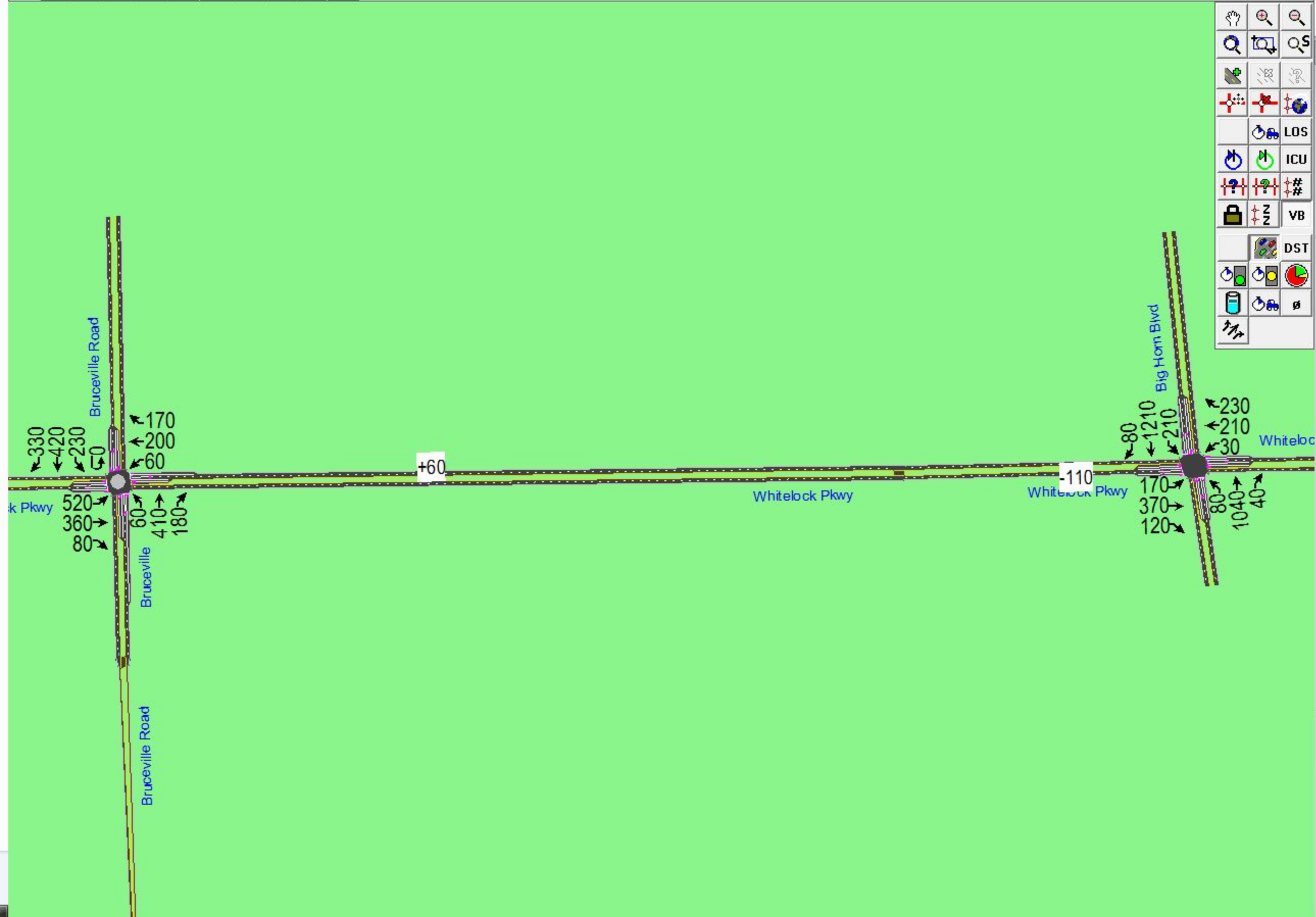
The vertical toolbar on the right side of the interface contains various simulation and analysis tools. The tools are arranged in a grid and include:

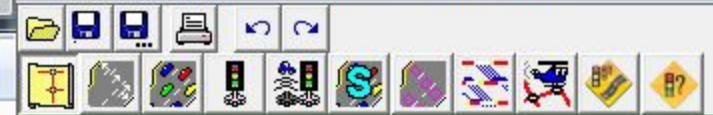
- Hand icon for panning.
- Zoom in and zoom out icons.
- Simulation control icons (start, stop, pause, reset).
- Analysis tool icons (LOS, ICU, #, #, VB, DST).
- Other utility icons like a lock and a trash can.



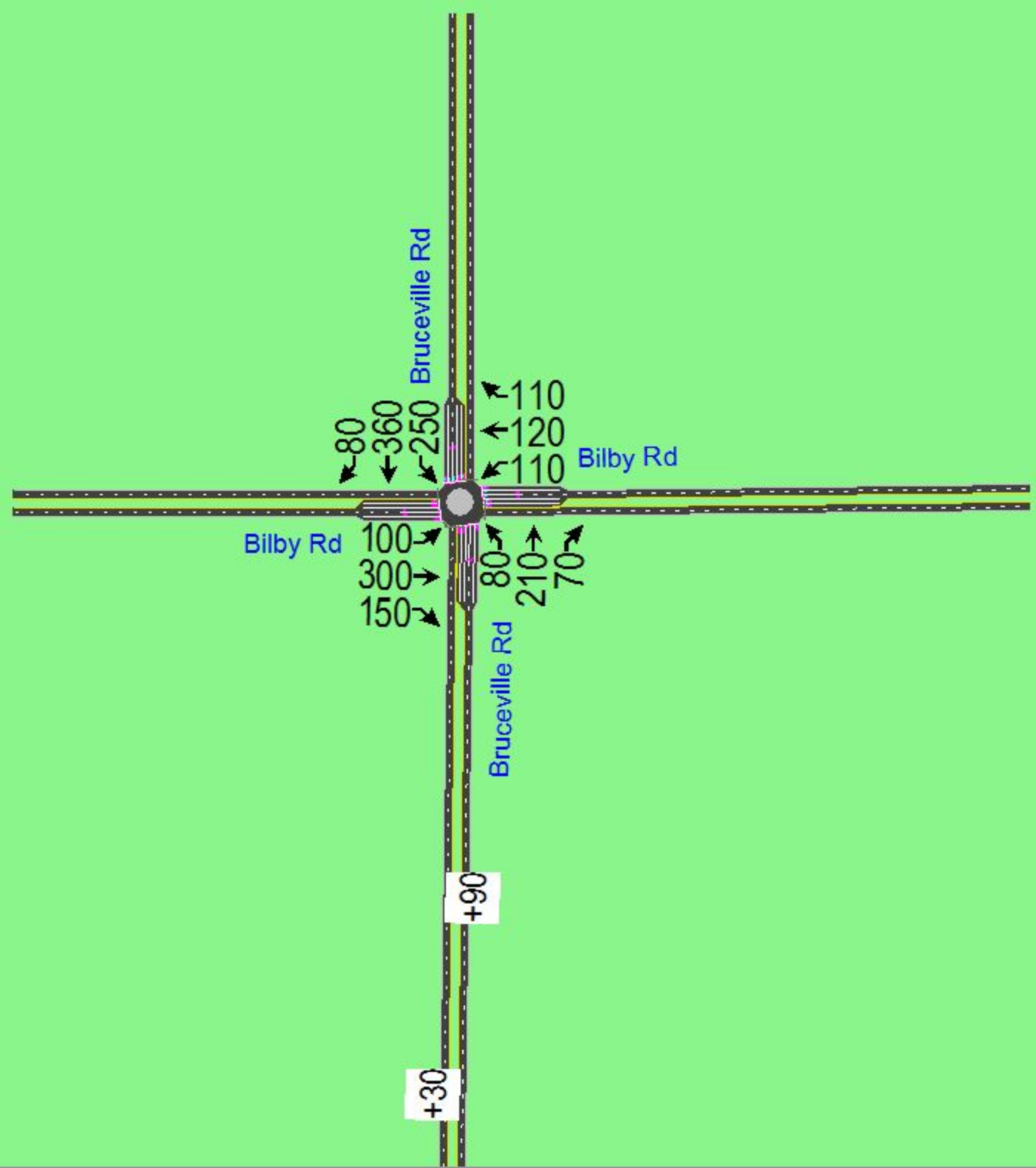
10 Whitelock Pkwy & Bruceville Road

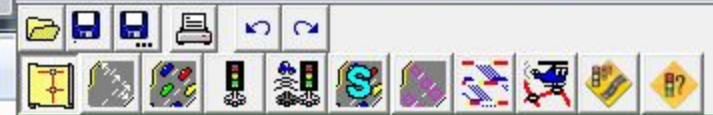
Hand	Zoom In	Zoom Out
Search	Reset View	Search S
Simulation	Simulation	Simulation
LOS	LOS	LOS
ICU	ICU	ICU
#	#	#
VB	VB	VB
DST	DST	DST
Other	Other	Other



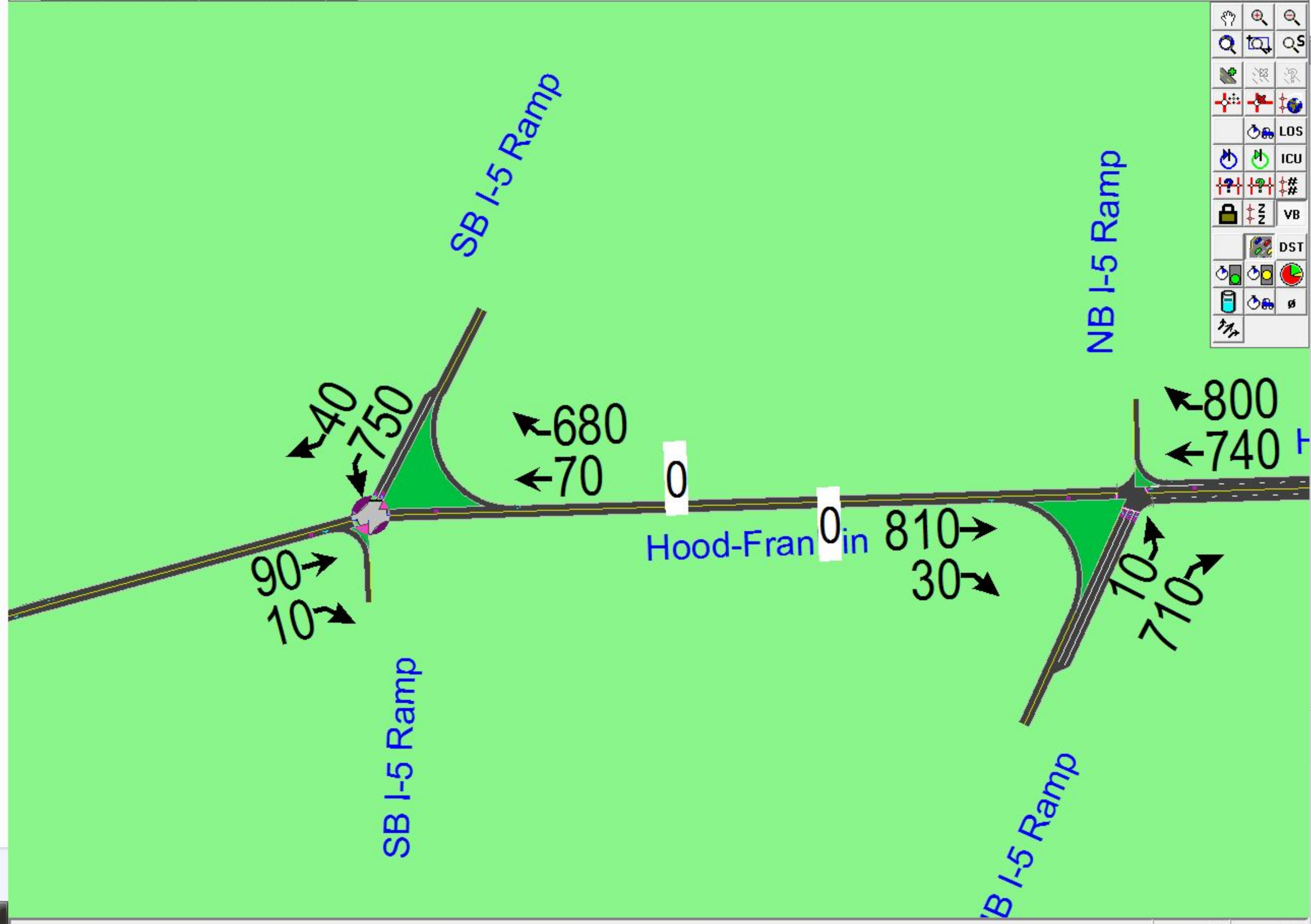
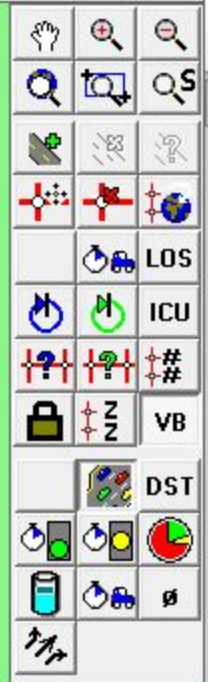


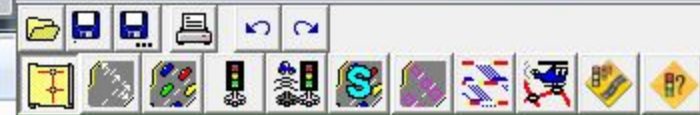
13 Bilby Rd & Bruceville Rd





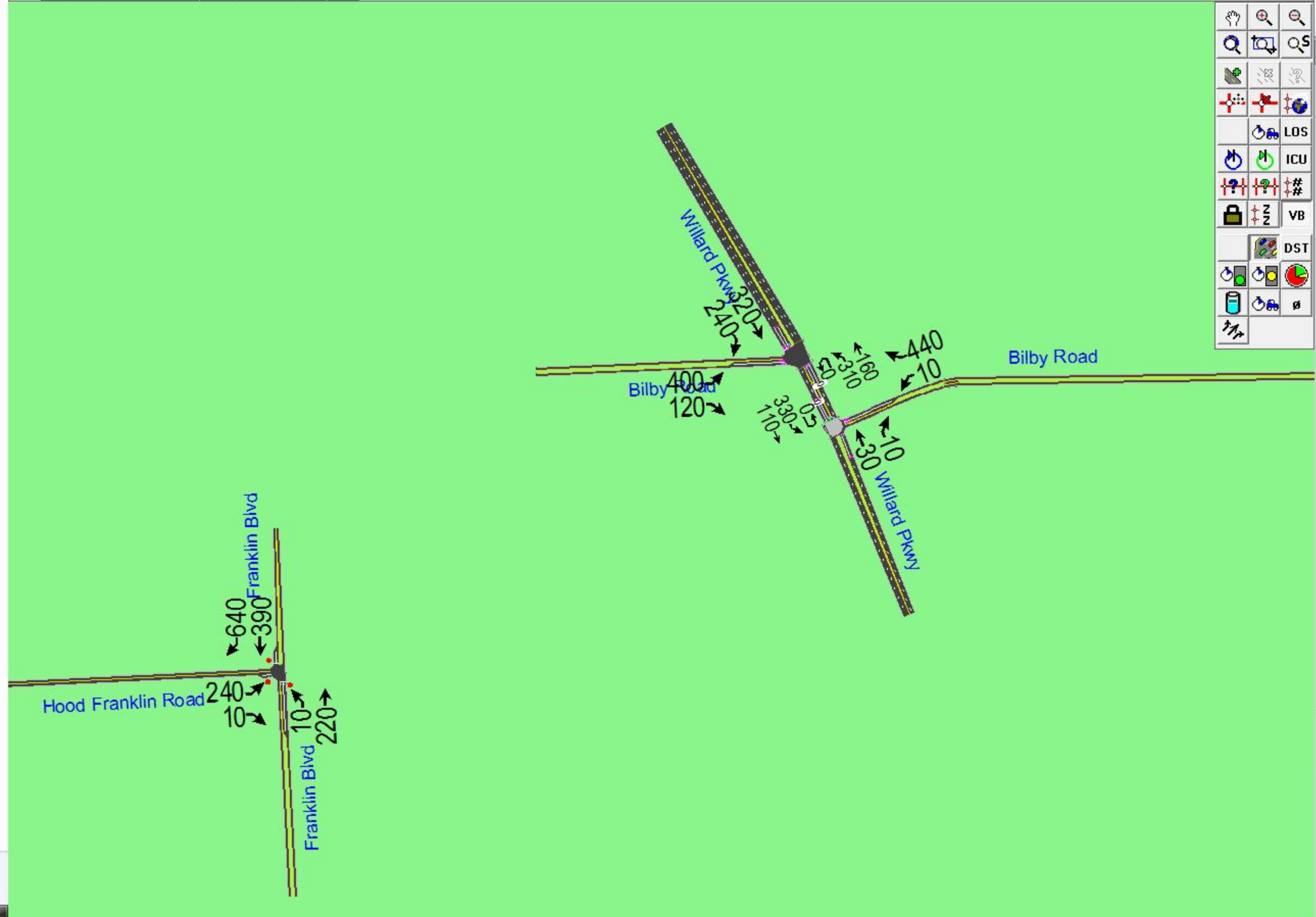
14 Hood-Franklin Rd & SB I-5 Ramp

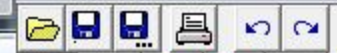




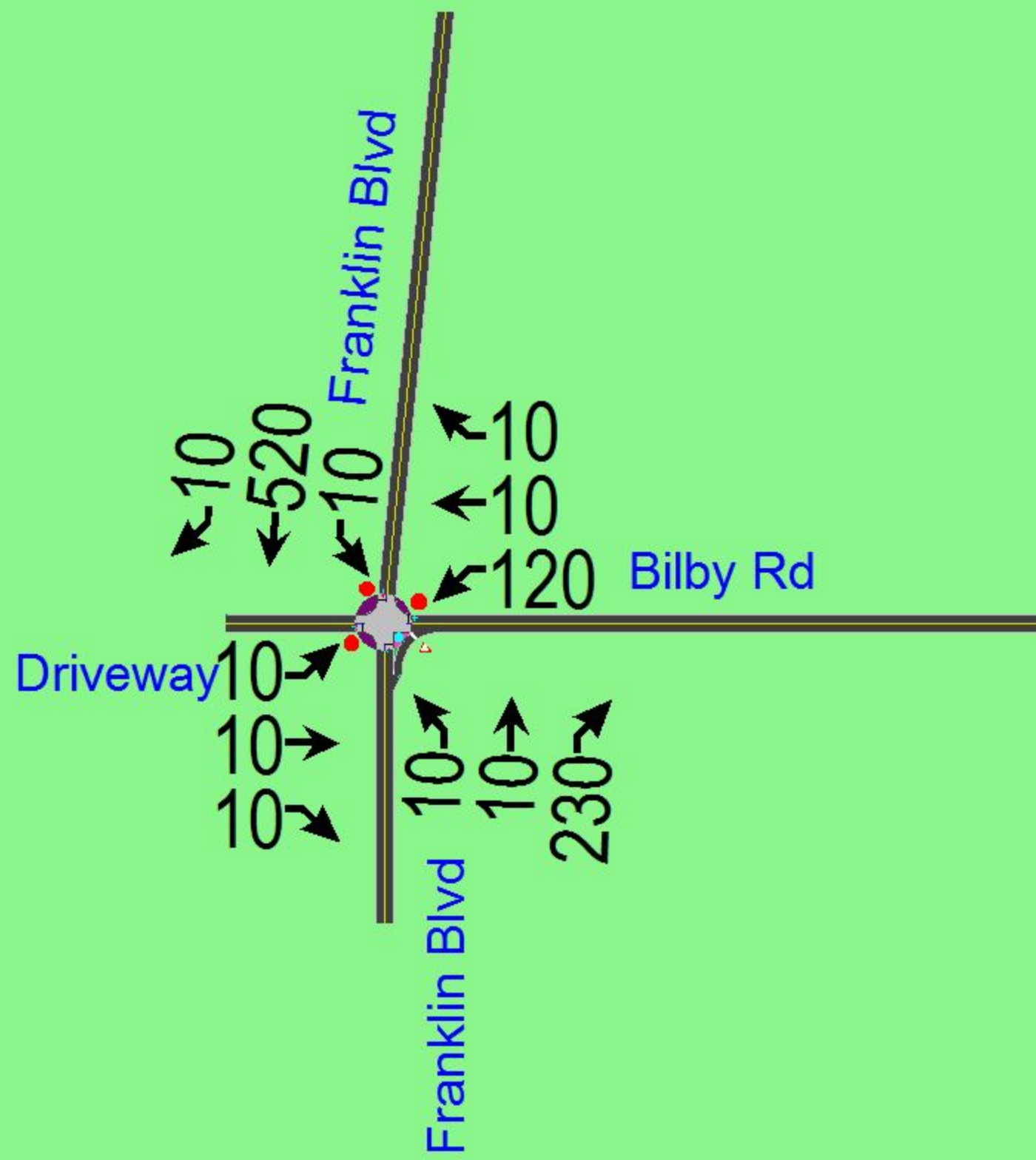
19 Bilby Road & Willard Pkwy

	LOS	
	ICU	
	#	
# icon"/>	#	
Z icon"/>	Z	
Z icon"/>	Z	
DST icon"/>	DST	



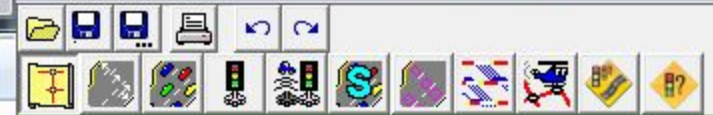


17 Driveway & Franklin Blvd

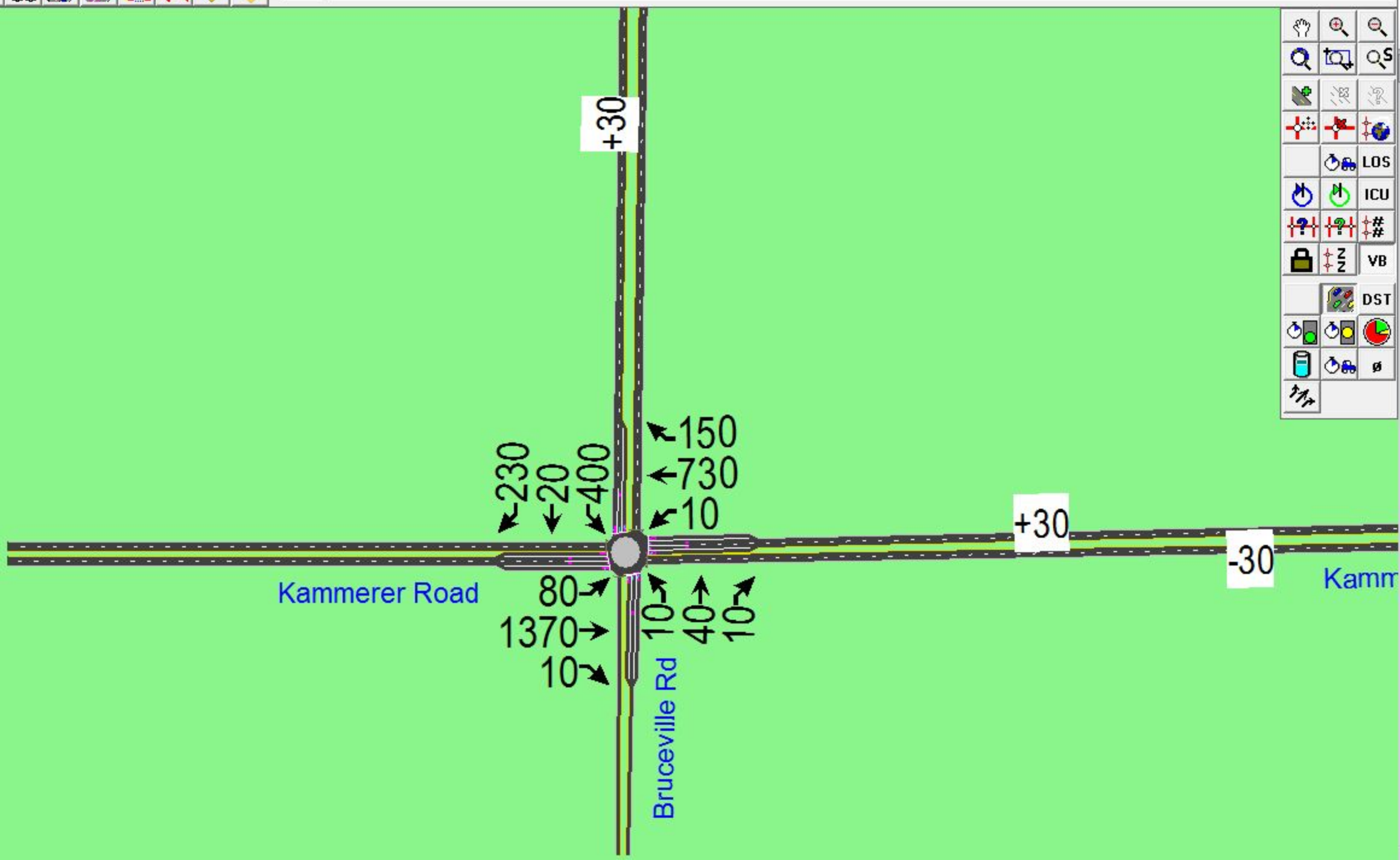


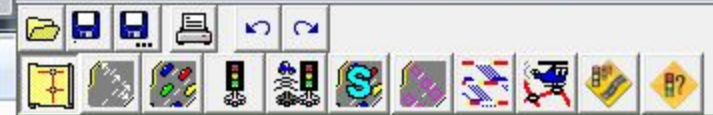
This toolbar includes icons for:

- Navigation: Hand, Zoom In, Zoom Out, Find, Find Next, Find Previous.
- Simulation: Start, Stop, Pause, Play, Step Forward, Step Backward.
- Analysis: LOS (Level of Service), ICU (Intersection Control Unit), # (Number of Lanes), VB (Vehicle Buffer), DST (Distance).
- Other: A trash can icon and a refresh icon.

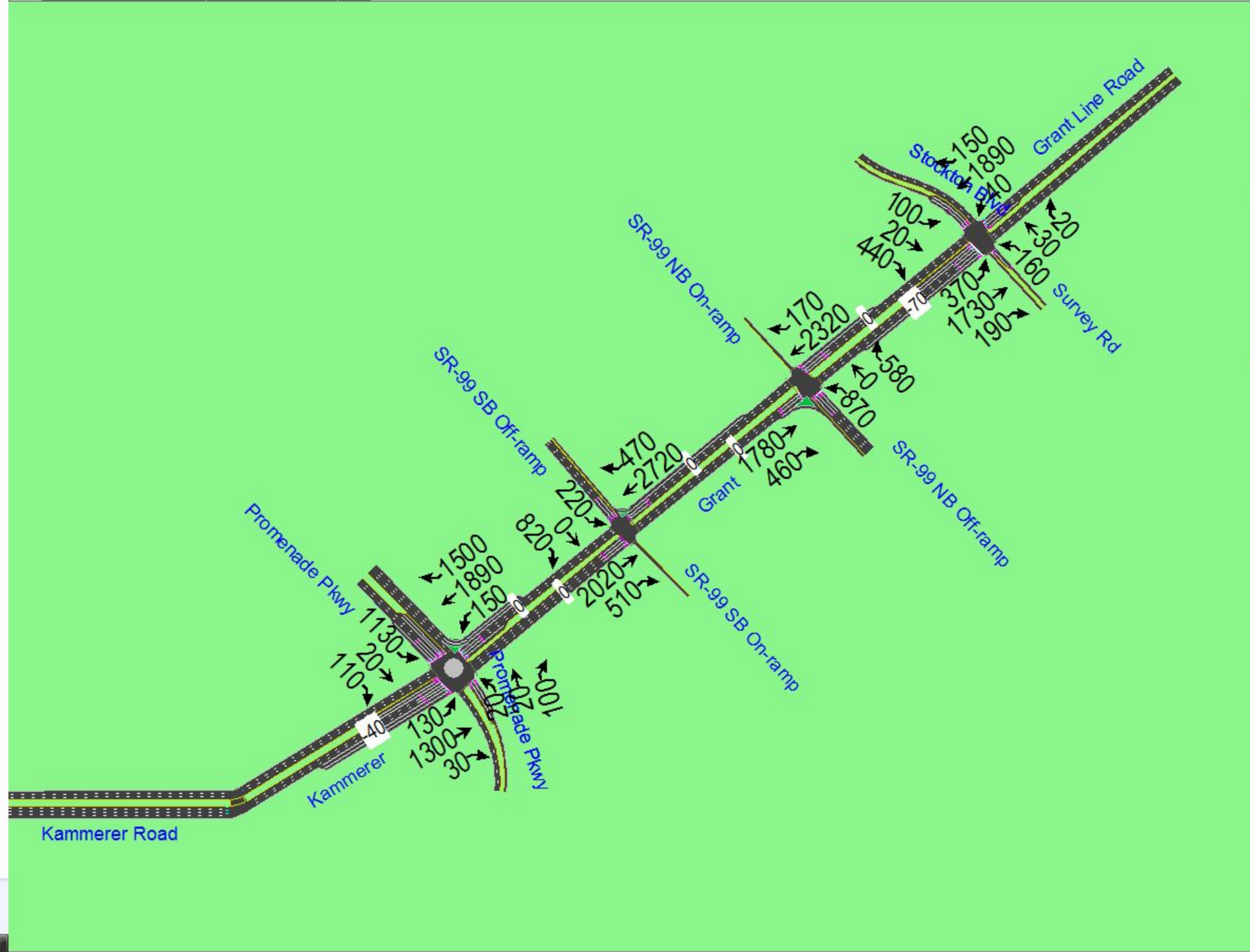


20 Kammerer Road & Bruceville Rd



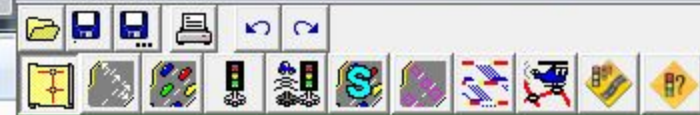


21 Kammerer Road & Promenade Pkwy



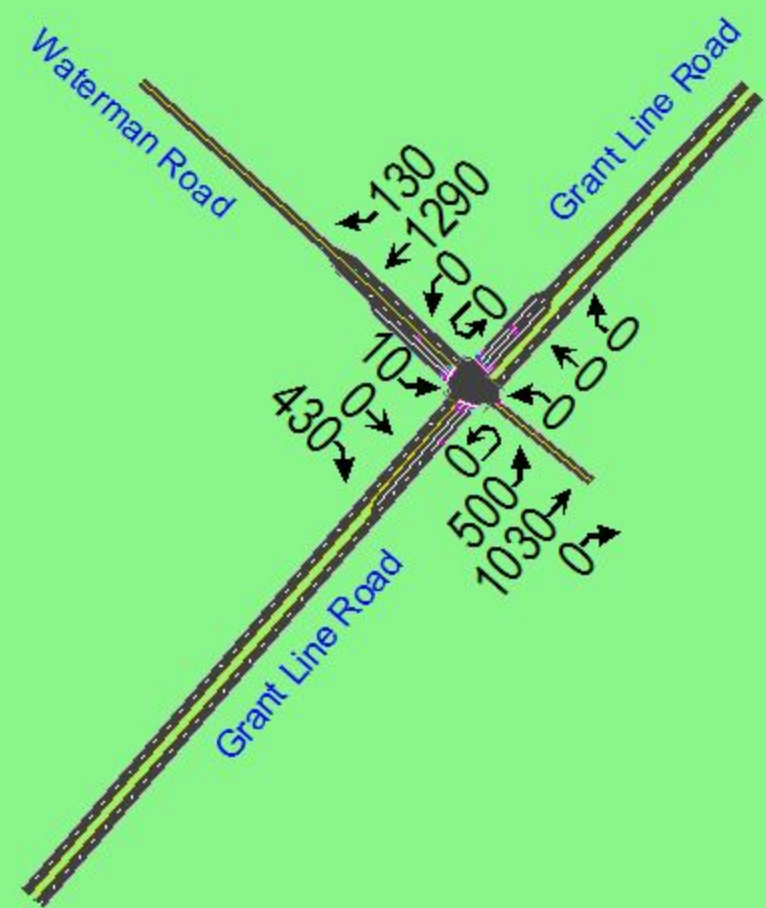
Vertical toolbar containing simulation and analysis tools:

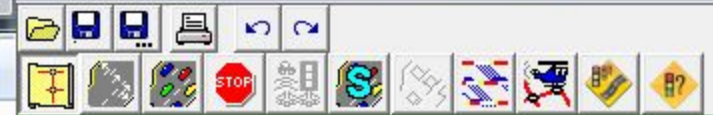
- Hand icon (pan)
- Zoom in/out icons
- Simulation control icons (stop, play, refresh)
- LOS (Level of Service) tool
- ICU (In-Cycle Utilization) tool
- # (Number of vehicles) tool
- VB (Vehicle Buffer) tool
- DST (Delay Statistics Table) tool
- Vehicle icons (car, truck, bus, motorcycle)



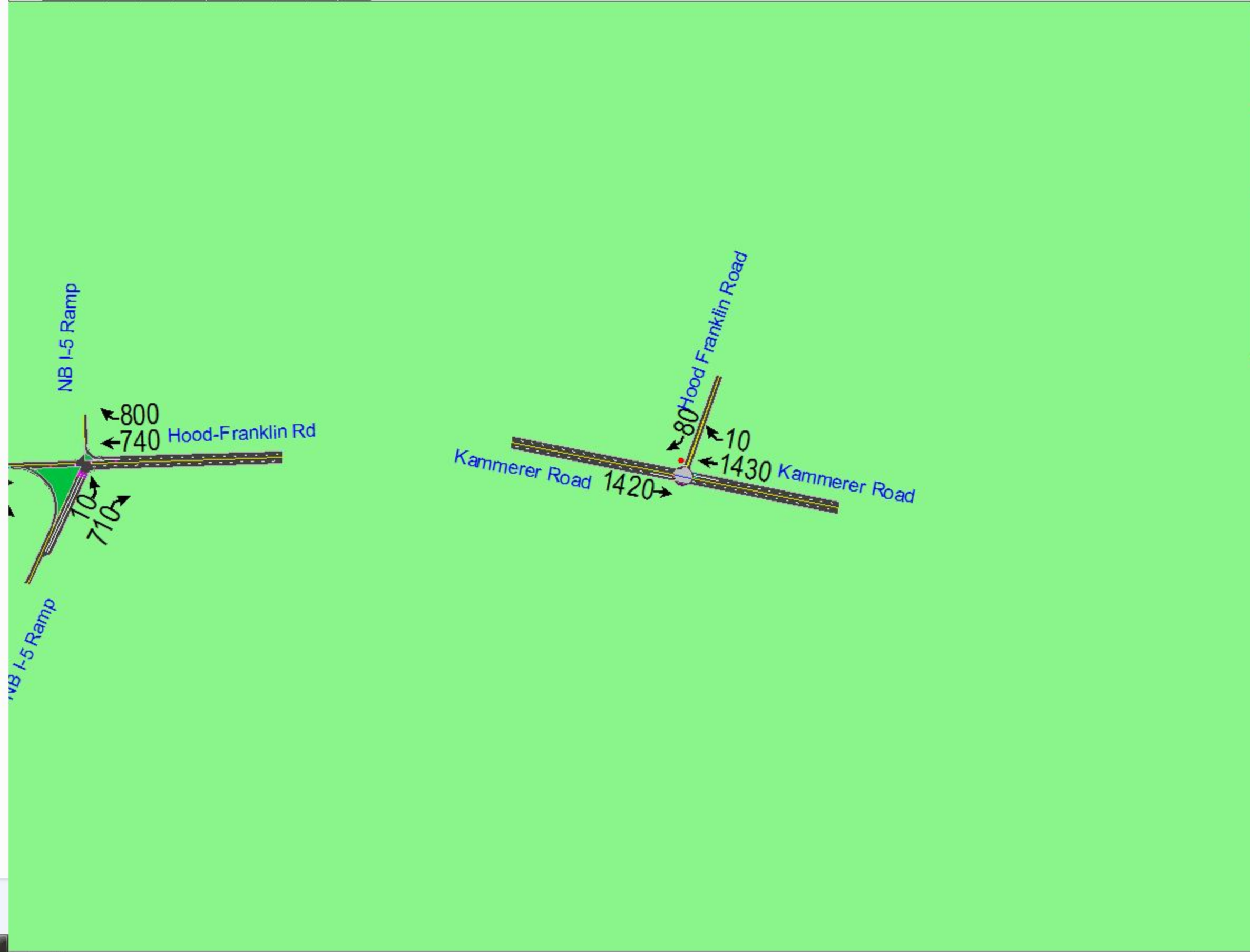
2 Elk Grove Blvd & Bruceville Road

		LOS
		ICU
		#
# icon"/>	# icon"/>	#
		VB
		DST

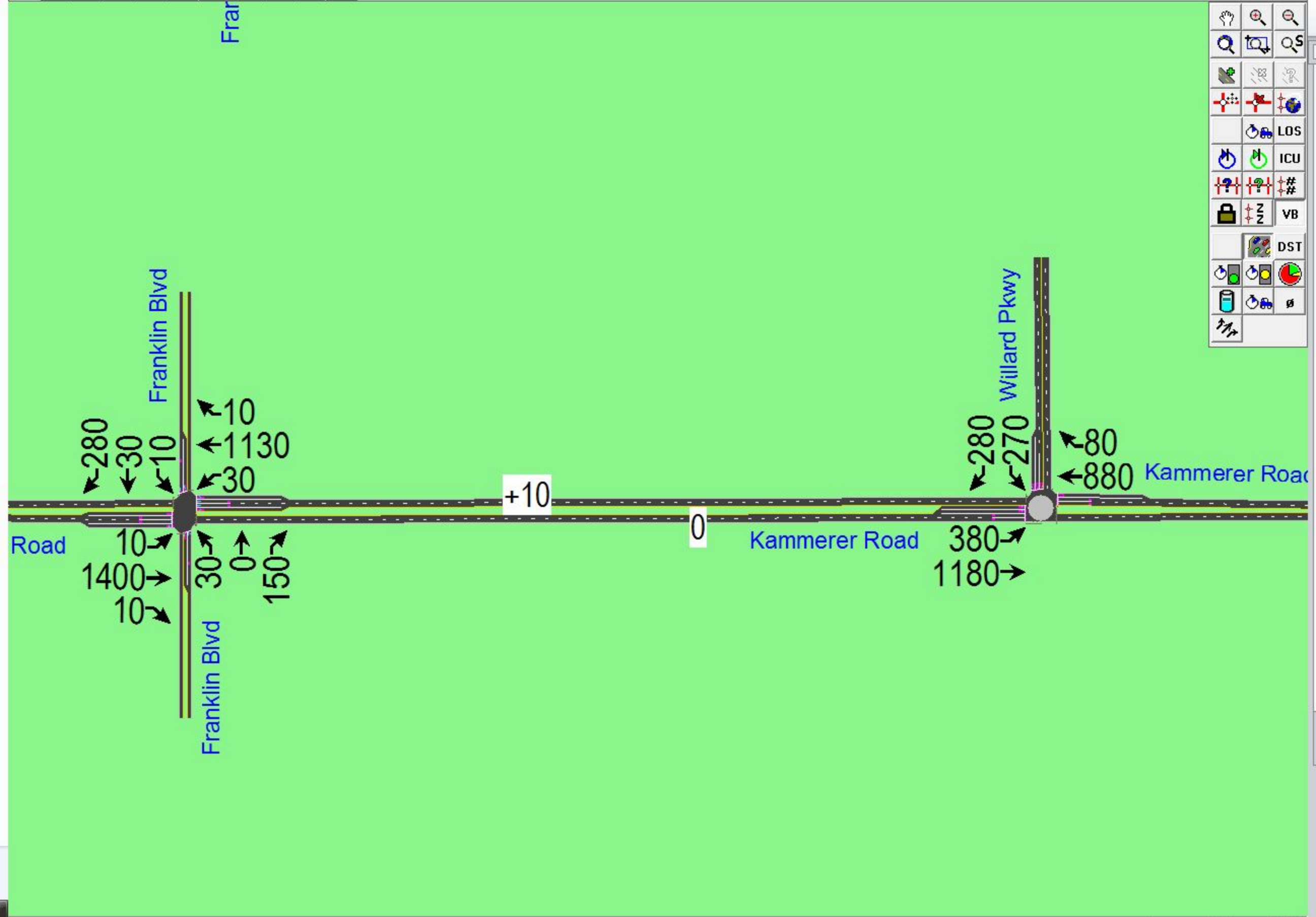


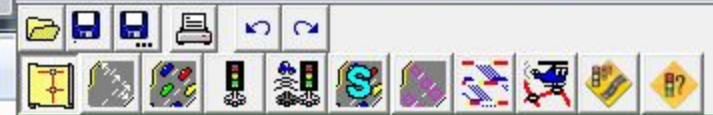


26 Kammerer Road & Hood Franklin Road



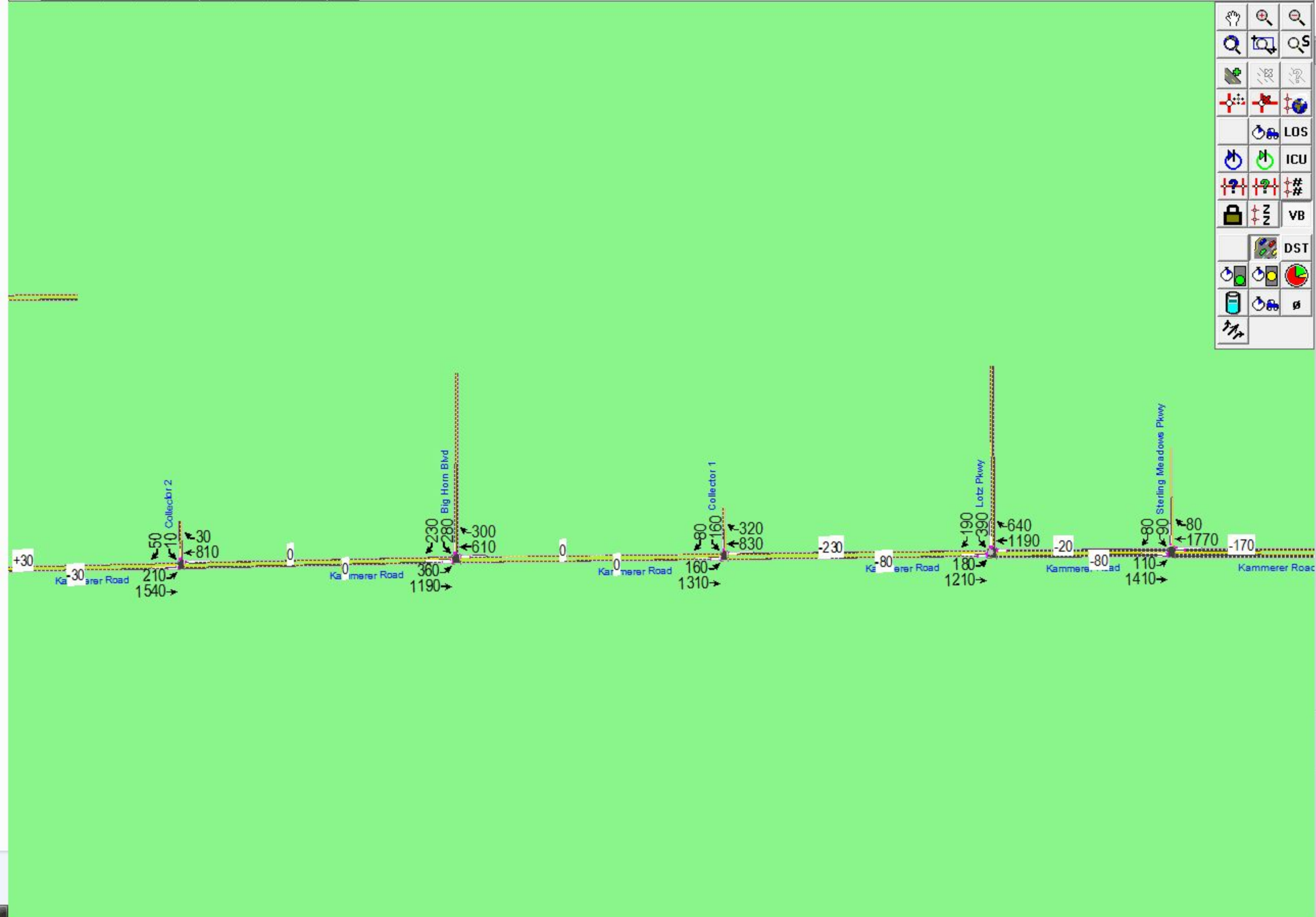
A vertical toolbar on the right side of the interface contains various icons for simulation and analysis. The icons include a hand, a magnifying glass, a search icon, a refresh icon, a stop icon, a play icon, a power icon, a question mark icon, a lock icon, a DST icon, a pie chart icon, a traffic light icon, and a trash icon. Text labels next to some icons include "LOS", "ICU", "#", "VB", and "DST".





























32 Kammerer Road & Lotz Pkwy

- Hand icon
- Zoom In icon
- Zoom Out icon
- Search icon
- Simulation controls: LOS, ICU, #, VB, DST
- Other simulation icons: car, truck, pedestrian



HCM Signalized Intersection Capacity Analysis
1: Elk Grove Blvd & Franklin Blvd

























Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	1250	750	80	920	330	830	590	250	310	430	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Lane Util. Factor	0.97	0.91	0.88	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	2752	3433	5085	1583	3433	5085	1562	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	2752	3433	5085	1583	3433	5085	1562	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	1359	815	87	1000	359	902	641	272	337	467	228
RTOR Reduction (vph)	0	0	505	0	0	171	0	0	85	0	0	84
Lane Group Flow (vph)	163	1359	310	87	1000	188	902	641	187	337	467	144
Confl. Bikes (#/hr)			1						2			
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	10.7	55.2	55.2	6.2	50.3	50.3	41.6	40.3	40.3	18.1	17.7	17.7
Effective Green, g (s)	10.7	55.2	55.2	6.2	50.3	50.3	41.6	40.3	40.3	18.1	17.7	17.7
Actuated g/C Ratio	0.07	0.38	0.38	0.04	0.35	0.35	0.29	0.28	0.28	0.12	0.12	0.12
Clearance Time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	253	1936	1048	147	1764	549	985	1413	434	429	621	193
v/s Ratio Prot	c0.05	c0.27		0.03	0.20		c0.26	0.13		0.10	c0.09	
v/s Ratio Perm			0.11			0.12			0.12			0.09
v/c Ratio	0.64	0.70	0.30	0.59	0.57	0.34	0.92	0.45	0.43	0.79	0.75	0.74
Uniform Delay, d1	65.3	37.9	31.3	68.2	38.5	35.1	50.0	43.3	42.9	61.6	61.5	61.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	2.2	0.7	4.2	1.3	1.7	12.5	0.1	0.3	8.5	4.6	12.7
Delay (s)	69.5	40.1	32.1	72.4	39.8	36.8	62.5	43.3	43.2	70.0	66.1	74.2
Level of Service	E	D	C	E	D	D	E	D	D	E	E	E
Approach Delay (s)		39.3			41.0			52.8			69.2	
Approach LOS		D			D			D			E	
Intersection Summary												
HCM Average Control Delay			48.1				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			145.0				Sum of lost time (s)		24.3			
Intersection Capacity Utilization			82.6%				ICU Level of Service		E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Elk Grove Blvd & Bruceville Road

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	1440	180	260	670	290	140	750	290	520	700	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.86	0.86
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1559	3433	4785	1362
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1559	3433	4785	1362
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	489	1565	196	283	728	315	152	815	315	565	761	228
RTOR Reduction (vph)	0	0	66	0	0	213	0	0	157	0	2	142
Lane Group Flow (vph)	489	1565	130	283	728	102	152	815	158	565	782	63
Confl. Bikes (#/hr)									3			
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	22.0	54.3	54.3	13.3	45.6	45.6	10.1	29.4	29.4	25.1	44.4	44.4
Effective Green, g (s)	22.0	54.3	54.3	13.3	45.6	45.6	10.1	29.4	29.4	25.1	44.4	44.4
Actuated g/C Ratio	0.15	0.37	0.37	0.09	0.31	0.31	0.07	0.20	0.20	0.17	0.31	0.31
Clearance Time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	521	1904	593	315	1599	498	239	1031	316	594	1465	417
v/s Ratio Prot	c0.14	c0.31		0.08	0.14		0.04	c0.16		c0.16	0.16	
v/s Ratio Perm			0.08			0.06			0.10			0.05
v/c Ratio	0.94	0.82	0.22	0.90	0.46	0.21	0.64	0.79	0.50	0.95	0.53	0.15
Uniform Delay, d1	60.8	41.0	30.9	65.2	39.8	36.4	65.7	54.9	51.3	59.3	41.7	36.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.5	4.1	0.9	25.9	0.9	0.9	4.0	3.9	0.5	25.1	0.2	0.1
Delay (s)	85.3	45.1	31.8	91.1	40.7	37.4	69.7	58.8	51.7	84.4	41.9	36.6
Level of Service	F	D	C	F	D	D	E	E	D	F	D	D
Approach Delay (s)		52.7			50.7			58.4			56.7	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM Average Control Delay			54.4				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			145.0				Sum of lost time (s)		16.9			
Intersection Capacity Utilization			87.1%				ICU Level of Service		E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Elk Grove Blvd & Big Horn Blvd

Cumulative Plus Project Conditions
AM Peak Hour
























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	1410	690	140	1030	180	370	1220	510	160	1260	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1563	3433	3539	1583	3433	3539	1554
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1563	3433	3539	1583	3433	3539	1554
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	1533	750	152	1120	196	402	1326	554	174	1370	196
RTOR Reduction (vph)	0	0	96	0	0	90	0	0	75	0	0	42
Lane Group Flow (vph)	239	1533	654	152	1120	106	402	1326	479	174	1370	154
Confl. Bikes (#/hr)						1						10
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	12.6	51.3	51.3	6.3	45.0	45.0	14.7	55.3	55.3	8.1	48.7	48.7
Effective Green, g (s)	12.6	51.3	51.3	6.3	45.0	45.0	14.7	55.3	55.3	8.1	48.7	48.7
Actuated g/C Ratio	0.09	0.35	0.35	0.04	0.31	0.31	0.10	0.38	0.38	0.06	0.34	0.34
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	298	1799	560	149	1578	485	348	1350	604	192	1189	522
v/s Ratio Prot	c0.07	0.30		0.04	0.22		c0.12	c0.37		0.05	c0.39	
v/s Ratio Perm			c0.41			0.07			0.30			0.10
v/c Ratio	0.80	0.85	1.17	1.02	0.71	0.22	1.16	0.98	0.79	0.91	1.15	0.30
Uniform Delay, d1	65.0	43.3	46.9	69.3	44.2	37.0	65.2	44.4	39.8	68.1	48.1	35.5
Progression Factor	1.00	1.00	1.00	0.89	0.70	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.6	5.3	93.8	67.8	2.0	0.7	97.4	20.2	6.6	38.7	78.5	0.1
Delay (s)	78.6	48.7	140.7	129.4	33.0	34.5	162.6	64.5	46.4	106.8	126.7	35.6
Level of Service	E	D	F	F	C	C	F	E	D	F	F	D
Approach Delay (s)		78.9			43.1			77.4			114.4	
Approach LOS		E			D			E			F	
Intersection Summary												
HCM Average Control Delay			79.6				HCM Level of Service		E			
HCM Volume to Capacity ratio			1.23									
Actuated Cycle Length (s)			145.0				Sum of lost time (s)		29.3			
Intersection Capacity Utilization			112.3%				ICU Level of Service		H			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Elk Grove Blvd & Laguna Springs Drive

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1510	340	1220	1140	90	240	290	830	40	330	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1563	3433	5022		1770	1863	2787	1770	3413	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1563	3433	5022		1770	1863	2787	1770	3413	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	1641	370	1326	1239	98	261	315	902	43	359	98
RTOR Reduction (vph)	0	0	119	0	6	0	0	0	626	0	17	0
Lane Group Flow (vph)	109	1641	251	1326	1331	0	261	315	276	43	440	0
Confl. Bikes (#/hr)			1			1						4
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	12.8	45.4	45.4	37.4	70.0		15.4	35.0	35.0	5.0	24.6	
Effective Green, g (s)	12.8	45.4	45.4	37.4	70.0		15.4	35.0	35.0	5.0	24.6	
Actuated g/C Ratio	0.09	0.31	0.31	0.26	0.48		0.11	0.24	0.24	0.03	0.17	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	156	1592	489	885	2424		188	450	673	61	579	
v/s Ratio Prot	0.06	c0.32		c0.39	0.27		c0.15	c0.17		0.02	0.13	
v/s Ratio Perm			0.16						0.10			
v/c Ratio	0.70	1.03	0.51	1.50	0.55		1.39	0.70	0.41	0.70	0.76	
Uniform Delay, d1	64.2	49.8	40.8	53.8	26.4		64.8	50.2	46.3	69.3	57.4	
Progression Factor	0.95	0.97	1.14	1.16	0.89		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.4	24.6	1.9	228.4	0.6		204.0	3.8	0.1	25.9	5.1	
Delay (s)	66.2	72.8	48.4	290.8	24.0		268.8	54.0	46.5	95.2	62.4	
Level of Service	E	E	D	F	C		F	D	D	F	E	
Approach Delay (s)		68.2			156.9			87.3			65.3	
Approach LOS		E			F			F			E	
Intersection Summary												
HCM Average Control Delay	107.1			HCM Level of Service				F				
HCM Volume to Capacity ratio	1.12											
Actuated Cycle Length (s)	145.0			Sum of lost time (s)				16.9				
Intersection Capacity Utilization	115.7%			ICU Level of Service				H				
Analysis Period (min)	15											

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Elk Grove Blvd & Auto Center Drive

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	🚗	🚗🚗🚗		🚗🚗	🚗🚗🚗		🚗	🚗		🚗🚗	🚗	
Volume (vph)	80	2050	150	320	2300	10	90	20	120	50	10	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5033		3433	5081		1770	1623		3433	1640	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5033		3433	5081		1770	1623		3433	1640	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	85	2181	160	340	2447	11	96	21	128	53	11	43
RTOR Reduction (vph)	0	4	0	0	0	0	0	120	0	0	40	0
Lane Group Flow (vph)	85	2337	0	340	2458	0	96	29	0	53	14	0
Confl. Bikes (#/hr)						2						
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	8.3	89.0		14.6	95.3		8.6	8.9		10.7	11.0	
Effective Green, g (s)	8.3	89.0		14.6	95.3		8.6	8.9		10.7	11.0	
Actuated g/C Ratio	0.06	0.61		0.10	0.66		0.06	0.06		0.07	0.08	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	101	3089		346	3339		105	100		253	124	
v/s Ratio Prot	0.05	0.46		c0.10	c0.48		c0.05	0.02		c0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.84	0.76		0.98	0.74		0.91	0.29		0.21	0.12	
Uniform Delay, d1	67.7	20.2		65.1	16.5		67.8	65.0		63.2	62.5	
Progression Factor	0.98	0.48		1.09	0.46		1.00	1.00		1.00	1.00	
Incremental Delay, d2	22.9	0.8		28.9	0.7		60.0	0.6		0.2	0.2	
Delay (s)	89.4	10.5		100.1	8.2		127.8	65.6		63.3	62.6	
Level of Service	F	B		F	A		F	E		E	E	
Approach Delay (s)		13.3			19.4			90.0			63.0	
Approach LOS		B			B			F			E	

Intersection Summary		
HCM Average Control Delay	20.7	HCM Level of Service C
HCM Volume to Capacity ratio	0.69	
Actuated Cycle Length (s)	145.0	Sum of lost time (s) 11.2
Intersection Capacity Utilization	81.2%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	2130	220	140	1750	0	0	0	0	670	10	1100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		0.97	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.99		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5008		3433	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5008		3433	5085					1681	1688	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2315	239	152	1902	0	0	0	0	728	11	1196
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	9
Lane Group Flow (vph)	0	2546	0	152	1902	0	0	0	0	371	368	1187
Confl. Bikes (#/hr)			2			2						
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		65.0		6.4	77.3					55.3	55.3	55.3
Effective Green, g (s)		65.0		6.4	77.3					55.3	55.3	55.3
Actuated g/C Ratio		0.45		0.04	0.53					0.38	0.38	0.38
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2245		152	2711					641	644	1063
v/s Ratio Prot		c0.51		0.04	c0.37					0.22	0.22	
v/s Ratio Perm												c0.43
v/c Ratio		1.13		1.00	0.70					0.58	0.57	1.12
Uniform Delay, d1		40.0		69.3	25.2					35.6	35.5	44.9
Progression Factor		0.35		0.85	0.94					1.00	1.00	1.00
Incremental Delay, d2		65.0		55.4	0.9					0.8	0.8	65.6
Delay (s)		79.1		114.5	24.7					36.4	36.2	110.5
Level of Service		E		F	C					D	D	F
Approach Delay (s)		79.1			31.4			0.0			82.1	
Approach LOS		E			C			A			F	

Intersection Summary

HCM Average Control Delay	65.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	18.4
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	2800	1890	370	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	3043	2054	402	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		515	937			
pX, platoon unblocked	0.72				0.70	0.72
vC, conflicting volume	2457				3069	685
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1674				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	274				714	784

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	1014	1014	1014	685	685	685	402
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	402
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.60	0.60	0.60	0.40	0.40	0.40	0.24
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							
Approach Delay (s)	0.0			0.0			
Approach LOS							

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		84.1%	ICU Level of Service E
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

Cumulative Plus Project Conditions
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1370	1330	40	1600	130	480	150	170	310	100	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	4.0	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.97	1.00
Satd. Flow (prot)	1770	3539	1564	1770	5085	1583	1610	3164		1681	1725	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.97	1.00
Satd. Flow (perm)	1770	3539	1564	1770	5085	1583	1610	3164		1681	1725	1562
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	1489	1446	43	1739	141	522	163	185	337	109	196
RTOR Reduction (vph)	0	0	0	0	0	41	0	36	0	0	0	78
Lane Group Flow (vph)	109	1489	1446	43	1739	100	298	536	0	219	227	118
Confl. Bikes (#/hr)			1									1
Turn Type	Prot		Free	Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			Free			2						4
Actuated Green, G (s)	11.4	69.1	145.0	4.3	62.0	62.0	28.9	28.9		21.2	21.2	21.2
Effective Green, g (s)	11.4	69.1	145.0	4.3	62.0	62.0	28.9	28.9		21.2	21.2	21.2
Actuated g/C Ratio	0.08	0.48	1.00	0.03	0.43	0.43	0.20	0.20		0.15	0.15	0.15
Clearance Time (s)	5.6	5.7		5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9		2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	139	1687	1564	52	2174	677	321	631		246	252	228
v/s Ratio Prot	0.06	0.42		0.02	0.34		0.19	0.17		0.13	0.13	
v/s Ratio Perm			c0.92			0.06						0.08
v/c Ratio	0.78	0.88	0.92	0.83	0.80	0.15	0.93	0.85		0.89	0.90	0.52
Uniform Delay, d1	65.6	34.3	0.0	70.0	36.1	25.4	57.0	56.0		60.8	60.9	57.2
Progression Factor	0.83	1.03	1.00	1.00	1.00	1.00	0.61	0.59		1.00	1.00	1.00
Incremental Delay, d2	6.0	1.7	2.9	62.2	3.2	0.5	27.2	8.2		29.7	31.3	0.8
Delay (s)	60.4	37.2	2.9	132.2	39.3	25.8	61.9	41.4		90.5	92.1	58.0
Level of Service	E	D	A	F	D	C	E	D		F	F	E
Approach Delay (s)		21.7			40.4			48.4			81.2	
Approach LOS		C			D			D			F	

Intersection Summary

HCM Average Control Delay	36.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
9: SR-99 NB Off-ramp & E. Stockton Blvd

Cumulative Plus Project Conditions
AM Peak Hour

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	390	10	30	10	10	10	270	420	10	10	400	1050
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.98			1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1664			1817	1583	1770	3527		1770	1863	1583
Flt Permitted	0.95	0.96			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1664			1817	1583	1770	3527		1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	424	11	33	11	11	11	293	457	11	11	435	1141
RTOR Reduction (vph)	0	4	0	0	0	10	0	1	0	0	0	209
Lane Group Flow (vph)	237	227	0	0	22	1	293	467	0	11	435	932
Turn Type	Split			Split		Perm	Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases						8						6
Actuated Green, G (s)	19.5	19.5			6.9	6.9	22.9	91.6		5.0	73.7	93.2
Effective Green, g (s)	19.5	19.5			6.9	6.9	22.9	91.6		5.0	73.7	93.2
Actuated g/C Ratio	0.13	0.13			0.05	0.05	0.16	0.63		0.03	0.51	0.64
Clearance Time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	226	224			86	75	280	2228		61	947	1078
v/s Ratio Prot	c0.14	0.14			c0.01		c0.17	0.13		0.01	0.23	c0.12
v/s Ratio Perm						0.00						0.47
v/c Ratio	1.05	1.01			0.26	0.01	1.05	0.21		0.18	0.46	0.86
Uniform Delay, d1	62.8	62.8			66.6	65.8	61.0	11.3		68.0	22.9	20.8
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.08	0.88	1.09
Incremental Delay, d2	73.2	63.2			0.6	0.0	66.4	0.0		0.2	0.6	3.0
Delay (s)	136.0	126.0			67.1	65.8	127.5	11.4		73.3	20.8	25.6
Level of Service	F	F			E	E	F	B		E	C	C
Approach Delay (s)		131.0			66.7			56.1			24.6	
Approach LOS		F			E			E			C	

Intersection Summary

HCM Average Control Delay	51.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

































HCM Signalized Intersection Capacity Analysis
10: Whitelock Pkwy & Bruceville Road

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	520	360	80	60	200	170	60	410	180	230	420	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	565	391	87	65	217	185	65	446	196	250	457	359
RTOR Reduction (vph)	0	0	60	0	0	152	0	0	153	0	0	262
Lane Group Flow (vph)	565	391	27	65	217	33	65	446	43	250	457	97
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Actuated Green, G (s)	15.2	24.2	24.2	5.0	14.0	14.0	5.2	16.9	16.9	9.2	20.9	20.9
Effective Green, g (s)	15.2	24.2	24.2	5.0	14.0	14.0	5.2	16.9	16.9	9.2	20.9	20.9
Actuated g/C Ratio	0.20	0.31	0.31	0.06	0.18	0.18	0.07	0.22	0.22	0.12	0.27	0.27
Clearance Time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	674	1107	495	222	640	286	231	773	346	408	956	427
v/s Ratio Prot	c0.16	c0.11		0.02	0.06		0.02	c0.13		c0.07	c0.13	
v/s Ratio Perm			0.02			0.02			0.03			0.06
v/c Ratio	0.84	0.35	0.05	0.29	0.34	0.12	0.28	0.58	0.12	0.61	0.48	0.23
Uniform Delay, d1	29.9	20.6	18.6	34.5	27.7	26.5	34.3	27.1	24.3	32.4	23.7	22.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.6	0.1	0.0	0.3	0.1	0.1	0.2	0.7	0.1	1.9	0.1	0.1
Delay (s)	38.5	20.6	18.6	34.8	27.8	26.6	34.6	27.7	24.4	34.3	23.8	22.1
Level of Service	D	C	B	C	C	C	C	C	C	C	C	C
Approach Delay (s)		30.1			28.3			27.4			25.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			27.8				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			77.4				Sum of lost time (s)		22.5			
Intersection Capacity Utilization			61.1%				ICU Level of Service		B			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 11: Whitelock Pkwy & Big Horn Blvd

































Cumulative Plus Project Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	170	370	120	30	210	230	80	1040	40	210	1210	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.5	5.5	5.5	5.3	5.3	5.5	5.3	5.3	5.3	5.5	5.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	402	130	33	228	250	87	1130	43	228	1315	87
RTOR Reduction (vph)	0	0	101	0	0	209	0	0	13	0	0	33
Lane Group Flow (vph)	185	402	29	33	228	41	87	1130	30	228	1315	54
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	9.5	23.7	23.7	3.4	17.7	17.7	7.5	46.1	46.1	12.2	50.4	50.4
Effective Green, g (s)	9.5	23.7	23.7	3.4	17.7	17.7	7.5	46.1	46.1	12.2	50.4	50.4
Actuated g/C Ratio	0.09	0.22	0.22	0.03	0.17	0.17	0.07	0.43	0.43	0.11	0.47	0.47
Clearance Time (s)	5.6	5.5	5.5	5.5	5.3	5.3	5.5	5.3	5.3	5.3	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	305	784	351	109	585	262	241	1525	682	391	1667	746
v/s Ratio Prot	c0.05	c0.11		0.01	0.06		0.03	0.32		c0.07	c0.37	
v/s Ratio Perm			0.02			0.03			0.02			0.03
v/c Ratio	0.61	0.51	0.08	0.30	0.39	0.16	0.36	0.74	0.04	0.58	0.79	0.07
Uniform Delay, d1	47.0	36.6	33.0	50.6	39.8	38.3	47.5	25.5	17.7	45.0	23.8	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.2	0.0	0.6	0.2	0.1	0.3	1.7	0.0	1.4	2.4	0.0
Delay (s)	49.3	36.8	33.1	51.2	40.0	38.4	47.8	27.2	17.7	46.4	26.2	15.5
Level of Service	D	D	C	D	D	D	D	C	B	D	C	B
Approach Delay (s)		39.4			39.9			28.3			28.4	
Approach LOS		D			D			C			C	

Intersection Summary		
HCM Average Control Delay	31.7	HCM Level of Service C
HCM Volume to Capacity ratio	0.73	
Actuated Cycle Length (s)	107.0	Sum of lost time (s) 21.9
Intersection Capacity Utilization	70.3%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
13: Bilby Rd & Bruceville Rd

Cumulative Plus Project Conditions
AM Peak Hour

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	100	300	150	110	120	110	80	210	70	250	360	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	326	163	120	130	120	87	228	76	272	391	87
RTOR Reduction (vph)	0	0	133	0	0	98	0	0	59	0	0	62
Lane Group Flow (vph)	109	326	30	120	130	22	87	228	17	272	391	25
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	5.5	12.7	12.7	5.5	12.7	12.7	5.1	15.6	15.6	9.6	20.1	20.1
Effective Green, g (s)	5.5	12.7	12.7	5.5	12.7	12.7	5.1	15.6	15.6	9.6	20.1	20.1
Actuated g/C Ratio	0.08	0.18	0.18	0.08	0.18	0.18	0.07	0.23	0.23	0.14	0.29	0.29
Clearance Time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.5	4.5	2.0	4.5	4.5
Lane Grp Cap (vph)	274	651	291	274	651	291	254	800	358	478	1031	461
v/s Ratio Prot	0.03	c0.09		c0.03	0.04		0.03	0.06		c0.08	c0.11	
v/s Ratio Perm			0.02			0.01			0.01			0.02
v/c Ratio	0.40	0.50	0.10	0.44	0.20	0.08	0.34	0.28	0.05	0.57	0.38	0.05
Uniform Delay, d1	30.2	25.3	23.4	30.3	23.8	23.3	30.4	22.1	20.9	27.8	19.5	17.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.2	0.1	0.4	0.1	0.0	0.3	0.3	0.1	0.9	0.4	0.1
Delay (s)	30.5	25.5	23.5	30.7	23.9	23.3	30.7	22.4	21.0	28.7	19.9	17.7
Level of Service	C	C	C	C	C	C	C	C	C	C	B	B
Approach Delay (s)		25.9			25.9			24.0			22.8	
Approach LOS		C			C			C			C	

Intersection Summary		
HCM Average Control Delay	24.4	HCM Level of Service C
HCM Volume to Capacity ratio	0.49	
Actuated Cycle Length (s)	69.0	Sum of lost time (s) 25.6
Intersection Capacity Utilization	47.9%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis


















14: Hood-Franklin Rd & SB I-5 Ramp

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	90	10	0	70	680	0	0	0	750	0	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.2			7.2					5.6		5.6
Lane Util. Factor		1.00			1.00					1.00		1.00
Frt		0.99			0.88					1.00		0.85
Flt Protected		1.00			1.00					0.95		1.00
Satd. Flow (prot)		1837			1635					1770		1583
Flt Permitted		1.00			1.00					0.95		1.00
Satd. Flow (perm)		1837			1635					1770		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	98	11	0	76	739	0	0	0	815	0	43
RTOR Reduction (vph)	0	7	0	0	572	0	0	0	0	0	0	20
Lane Group Flow (vph)	0	102	0	0	243	0	0	0	0	815	0	23
Turn Type										Prot		custom
Protected Phases		4			8					6		
Permitted Phases												6
Actuated Green, G (s)		11.8			11.8					27.6		27.6
Effective Green, g (s)		11.8			11.8					27.6		27.6
Actuated g/C Ratio		0.23			0.23					0.53		0.53
Clearance Time (s)		7.2			7.2					5.6		5.6
Vehicle Extension (s)		2.0			2.0					2.0		2.0
Lane Grp Cap (vph)		415			370					936		837
v/s Ratio Prot		0.06			0.15					0.46		
v/s Ratio Perm												0.01
v/c Ratio		0.25			0.66					0.87		0.03
Uniform Delay, d1		16.6			18.4					10.7		5.9
Progression Factor		1.00			1.00					1.00		1.00
Incremental Delay, d2		0.1			3.2					8.6		0.0
Delay (s)		16.7			21.6					19.4		5.9
Level of Service		B			C					B		A
Approach Delay (s)		16.7			21.6			0.0			18.7	
Approach LOS		B			C			A			B	
Intersection Summary												
HCM Average Control Delay			19.9			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			52.2			Sum of lost time (s)			12.8			
Intersection Capacity Utilization			96.6%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												













HCM Signalized Intersection Capacity Analysis
 15: Hood-Franklin Rd & NB I-5 Ramp

Cumulative Plus Project Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	810	30	0	740	800	10	0	710	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.7	4.0	6.7		6.7			
Lane Util. Factor		1.00			1.00	1.00	1.00		0.88			
Frt		1.00			1.00	0.85	1.00		0.85			
Flt Protected		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)		1854			1863	1583	1770		2787			
Flt Permitted		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)		1854			1863	1583	1770		2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	880	33	0	804	870	11	0	772	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	182	0	0	0
Lane Group Flow (vph)	0	912	0	0	804	870	11	0	590	0	0	0
Turn Type						Free	Prot		custom			
Protected Phases		4			8		2					
Permitted Phases						Free			2			
Actuated Green, G (s)		42.1			41.5	75.2	20.3		20.3			
Effective Green, g (s)		42.1			41.5	75.2	20.3		20.3			
Actuated g/C Ratio		0.56			0.55	1.00	0.27		0.27			
Clearance Time (s)		6.1			6.7		6.7		6.7			
Vehicle Extension (s)		2.0			2.0		2.0		2.0			
Lane Grp Cap (vph)		1038			1028	1583	478		752			
v/s Ratio Prot		c0.49			0.43		0.01					
v/s Ratio Perm						0.55			c0.21			
v/c Ratio		0.88			0.78	0.55	0.02		0.78			
Uniform Delay, d1		14.3			13.3	0.0	20.2		25.4			
Progression Factor		1.00			1.00	1.00	1.00		1.00			
Incremental Delay, d2		8.3			3.6	1.4	0.0		5.0			
Delay (s)		22.7			16.9	1.4	20.2		30.4			
Level of Service		C			B	A	C		C			
Approach Delay (s)		22.7			8.8			30.3			0.0	
Approach LOS		C			A			C			A	
Intersection Summary												
HCM Average Control Delay			17.6			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			75.2			Sum of lost time (s)			12.8			
Intersection Capacity Utilization			80.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c	Critical Lane Group											


















HCM Unsignalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd

Cumulative Plus Project Conditions
 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	240	10	10	220	390	640
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	261	11	11	239	424	696
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	261	11	11	239	424	696
Volume Left (vph)	261	0	11	0	0	0
Volume Right (vph)	0	11	0	0	0	696
Hadj (s)	0.53	-0.67	0.53	0.03	0.03	-0.67
Departure Headway (s)	7.8	6.6	7.5	7.0	6.1	5.4
Degree Utilization, x	0.57	0.02	0.02	0.46	0.72	1.04
Capacity (veh/h)	445	526	466	507	582	671
Control Delay (s)	19.3	8.5	9.4	14.6	22.1	68.6
Approach Delay (s)	18.8		14.4		51.0	
Approach LOS	C		B		F	
Intersection Summary						
Delay			40.1			
HCM Level of Service			E			
Intersection Capacity Utilization			49.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
17: Driveway & Franklin Blvd

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	10	120	10	10	10	10	230	10	520	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	11	11	130	11	11	11	11	250	11	565	11
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total (vph)	33	152	22	250	587							
Volume Left (vph)	11	130	11	0	11							
Volume Right (vph)	11	11	0	250	11							
Hadj (s)	-0.10	0.16	0.13	-0.57	0.03							
Departure Headway (s)	5.5	5.6	5.3	3.2	4.5							
Degree Utilization, x	0.05	0.24	0.03	0.22	0.73							
Capacity (veh/h)	580	587	628	1122	781							
Control Delay (s)	8.8	10.3	8.4	7.1	18.8							
Approach Delay (s)	8.8	10.3	7.2		18.8							
Approach LOS	A	B	A		C							
Intersection Summary												
Delay			14.2									
HCM Level of Service			B									
Intersection Capacity Utilization			56.3%	ICU Level of Service	B							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 18: Bilby Road & Willard Pkwy

Cumulative Plus Project Conditions
 AM Peak Hour

















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	400	120	310	160	320	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	435	130	337	174	348	261
RTOR Reduction (vph)	0	91	0	0	0	220
Lane Group Flow (vph)	435	39	337	174	348	41
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	27.2	27.2	22.5	27.6	14.3	14.3
Effective Green, g (s)	27.2	27.2	22.5	21.9	14.3	14.3
Actuated g/C Ratio	0.30	0.30	0.25	0.24	0.16	0.16
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	531	475	440	855	559	250
v/s Ratio Prot	c0.25		c0.19	c0.05	c0.10	
v/s Ratio Perm		0.02				0.03
v/c Ratio	0.82	0.08	0.77	0.20	0.62	0.16
Uniform Delay, d1	29.4	22.7	31.6	27.4	35.6	33.0
Progression Factor	1.00	1.00	1.06	1.09	1.00	1.00
Incremental Delay, d2	9.1	0.0	6.4	0.0	1.6	0.1
Delay (s)	38.5	22.8	39.8	29.9	37.2	33.1
Level of Service	D	C	D	C	D	C
Approach Delay (s)	34.9			36.4	35.4	
Approach LOS	C			D	D	

Intersection Summary			
HCM Average Control Delay	35.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.6	Sum of lost time (s)	21.5
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Bilby Road & Willard Pkwy

Cumulative Plus Project Conditions
 AM Peak Hour

























						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 		 	 
Volume (vph)	10	440	30	10	330	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	5.7		5.6	5.7
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.96		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3406		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3406		1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	478	33	11	359	120
RTOR Reduction (vph)	0	342	9	0	0	0
Lane Group Flow (vph)	11	136	35	0	359	120
Turn Type		Perm			Prot	
Protected Phases	2		4		3	8 1
Permitted Phases		2				
Actuated Green, G (s)	25.8	25.8	16.8		20.0	25.1
Effective Green, g (s)	25.8	25.8	16.8		20.0	25.1
Actuated g/C Ratio	0.28	0.28	0.19		0.22	0.28
Clearance Time (s)	7.0	7.0	5.7		5.6	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	504	451	632		391	980
v/s Ratio Prot	0.01		0.01		c0.20	c0.03
v/s Ratio Perm		c0.09				
v/c Ratio	0.02	0.30	0.06		0.92	0.12
Uniform Delay, d1	23.3	25.4	30.4		34.5	24.5
Progression Factor	1.00	1.00	1.00		1.57	0.33
Incremental Delay, d2	0.0	0.1	0.0		24.9	0.0
Delay (s)	23.3	25.5	30.4		79.2	8.0
Level of Service	C	C	C		E	A
Approach Delay (s)	25.4		30.4			61.4
Approach LOS	C		C			E

Intersection Summary

HCM Average Control Delay	42.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	90.6	Sum of lost time (s)	18.3
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
20: Kammerer Road & Bruceville Rd

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	1370	10	10	730	150	10	40	10	400	20	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	1489	11	11	793	163	11	43	11	435	22	250
RTOR Reduction (vph)	0	0	3	0	0	96	0	0	10	0	0	174
Lane Group Flow (vph)	87	1489	8	11	793	67	11	43	1	435	22	76
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	10.0	53.5	53.5	1.1	44.6	44.6	5.6	8.3	8.3	34.9	37.6	37.6
Effective Green, g (s)	10.0	53.5	53.5	1.1	44.6	44.6	5.6	8.3	8.3	34.9	37.6	37.6
Actuated g/C Ratio	0.08	0.43	0.43	0.01	0.36	0.36	0.05	0.07	0.07	0.28	0.30	0.30
Clearance Time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	143	1534	686	16	1279	572	80	125	106	501	568	482
v/s Ratio Prot	c0.05	c0.42		0.01	0.22		0.01	c0.02		c0.25	0.01	
v/s Ratio Perm			0.00			0.04			0.00			0.05
v/c Ratio	0.61	0.97	0.01	0.69	0.62	0.12	0.14	0.34	0.01	0.87	0.04	0.16
Uniform Delay, d1	54.8	34.2	19.9	61.0	32.4	26.3	56.6	55.0	53.7	42.1	30.2	31.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.9	16.4	0.0	67.5	0.7	0.0	0.3	0.6	0.0	14.3	0.0	0.1
Delay (s)	59.8	50.6	19.9	128.5	33.1	26.3	56.9	55.6	53.7	56.3	30.2	31.4
Level of Service	E	D	B	F	C	C	E	E	D	E	C	C
Approach Delay (s)		50.9			33.0			55.5			46.7	
Approach LOS		D			C			E			D	

Intersection Summary

HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	123.4	Sum of lost time (s)	25.6
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
21: Kammerer Road & Promenade Pkwy

Cumulative Plus Project Conditions
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	1300	30	150	1890	1500	20	20	100	1130	20	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	4.0	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	1413	33	163	2054	1630	22	22	109	1228	22	120
RTOR Reduction (vph)	0	0	22	0	0	0	0	0	97	0	0	82
Lane Group Flow (vph)	141	1413	11	163	2054	1630	22	22	12	1228	22	38
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			Free			4			8
Actuated Green, G (s)	6.4	46.7	46.7	15.8	56.1	134.2	3.6	14.2	14.2	32.0	42.1	42.1
Effective Green, g (s)	6.4	46.7	46.7	15.8	56.1	134.2	3.6	14.2	14.2	32.0	42.1	42.1
Actuated g/C Ratio	0.05	0.35	0.35	0.12	0.42	1.00	0.03	0.11	0.11	0.24	0.31	0.31
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7		6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	164	2230	551	208	2126	2787	47	197	168	1190	1110	497
v/s Ratio Prot	0.04	0.22		c0.09	c0.40		0.01	0.01		c0.25	0.01	
v/s Ratio Perm			0.01			c0.58			0.01			0.02
v/c Ratio	0.86	0.63	0.02	0.78	0.97	0.58	0.47	0.11	0.07	1.03	0.02	0.08
Uniform Delay, d1	63.5	36.6	28.7	57.5	38.1	0.0	64.4	54.3	54.0	51.1	31.8	32.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	32.4	0.4	0.0	16.1	12.4	0.9	2.7	0.1	0.1	34.6	0.0	0.0
Delay (s)	95.9	37.0	28.7	73.7	50.5	0.9	67.0	54.4	54.1	85.7	31.8	32.4
Level of Service	F	D	C	E	D	A	E	D	D	F	C	C
Approach Delay (s)		42.1			30.5			56.0			80.2	
Approach LOS		D			C			E			F	

Intersection Summary

HCM Average Control Delay	43.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	134.2	Sum of lost time (s)	19.7
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

22: Grant Line Road & SR-99 SB Off-ramp

Cumulative Plus Project Conditions
AM Peak Hour















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑				↑	↔	↑
Volume (vph)	0	2020	510	0	2720	470	0	0	0	220	0	820
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1450	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1450	1504
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	2149	543	0	2894	500	0	0	0	234	0	872
RTOR Reduction (vph)	0	0	189	0	0	0	0	0	0	0	1	1
Lane Group Flow (vph)	0	2149	354	0	2894	500	0	0	0	211	449	444
Turn Type		Perm			Free					Split		Perm
Protected Phases		6			2					8	8	
Permitted Phases		6			Free							8
Actuated Green, G (s)		89.3	89.3		89.3	145.0				43.4	43.4	43.4
Effective Green, g (s)		89.3	89.3		89.3	145.0				43.4	43.4	43.4
Actuated g/C Ratio		0.62	0.62		0.62	1.00				0.30	0.30	0.30
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		3132	975		3132	1583				503	434	450
v/s Ratio Prot		0.42			c0.57					0.13	c0.31	
v/s Ratio Perm			0.22			0.32						0.30
v/c Ratio		0.69	0.36		0.92	0.32				0.42	1.04	0.99
Uniform Delay, d1		18.5	13.8		24.8	0.0				40.7	50.8	50.5
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.7	0.3		5.4	0.5				0.2	52.6	38.6
Delay (s)		19.2	14.1		30.2	0.5				40.9	103.4	89.2
Level of Service		B	B		C	A				D	F	F
Approach Delay (s)		18.2			25.8			0.0			85.8	
Approach LOS		B			C			A			F	

Intersection Summary

HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			





























HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↗	↖	↖			
Volume (vph)	0	1780	460	0	2320	170	870	0	580	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	4.0		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1935	500	0	2522	185	946	0	630	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	83	0	0	5	0	0	0
Lane Group Flow (vph)	0	1935	500	0	2522	102	473	473	625	0	0	0
Turn Type			Free			Perm	Split		Perm			
Protected Phases		6			2		4	4				
Permitted Phases			Free			2			4			
Actuated Green, G (s)		54.2	101.4		54.7	54.7	36.4	36.4	36.4			
Effective Green, g (s)		54.2	101.4		54.7	54.7	36.4	36.4	36.4			
Actuated g/C Ratio		0.53	1.00		0.54	0.54	0.36	0.36	0.36			
Clearance Time (s)		6.2			5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0			4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2718	1583		2743	854	603	603	1000			
v/s Ratio Prot		0.38			c0.50		c0.28	0.28				
v/s Ratio Perm			0.32			0.06			0.22			
v/c Ratio		0.71	0.32		0.92	0.12	0.78	0.78	0.62			
Uniform Delay, d1		17.7	0.0		21.3	11.5	29.0	29.0	26.9			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		1.0	0.5		5.7	0.1	6.1	6.1	0.9			
Delay (s)		18.7	0.5		27.0	11.6	35.1	35.1	27.7			
Level of Service		B	A		C	B	D	D	C			
Approach Delay (s)		15.0			25.9			32.2			0.0	
Approach LOS		B			C			C			A	
Intersection Summary												
HCM Average Control Delay			23.4				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			101.4				Sum of lost time (s)		10.3			
Intersection Capacity Utilization			77.5%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & Stockton Blvd

Cumulative Plus Project Conditions
AM Peak Hour



























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  						 	
Volume (vph)	370	1730	190	40	1890	150	160	30	20	100	20	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	5029		1770	1749		1681	1713	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.82	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5029		1770	1749		1681	1448	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	398	1860	204	43	2032	161	172	32	22	108	22	473
RTOR Reduction (vph)	0	0	123	0	5	0	0	13	0	0	0	185
Lane Group Flow (vph)	398	1860	81	43	2188	0	172	41	0	65	65	288
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6									8
Actuated Green, G (s)	12.3	56.0	56.0	4.0	47.7		17.9	48.6		8.4	47.5	39.1
Effective Green, g (s)	12.3	56.0	56.0	4.0	47.7		17.9	48.6		8.4	47.5	39.1
Actuated g/C Ratio	0.09	0.40	0.40	0.03	0.34		0.13	0.35		0.06	0.34	0.28
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	301	2027	631	50	1707		226	605		101	505	441
v/s Ratio Prot	c0.12	0.37		0.02	c0.43		c0.10	0.02		0.04	0.01	
v/s Ratio Perm			0.05								0.04	c0.18
v/c Ratio	1.32	0.92	0.13	0.86	1.28		0.76	0.07		0.64	0.13	0.65
Uniform Delay, d1	64.1	40.1	26.8	68.0	46.4		59.2	30.8		64.6	32.2	44.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	166.4	7.1	0.1	74.2	131.4		14.0	0.0		10.1	0.0	2.7
Delay (s)	230.5	47.2	26.9	142.1	177.8		73.2	30.8		74.6	32.2	47.4
Level of Service	F	D	C	F	F		E	C		E	C	D
Approach Delay (s)		75.1			177.1			63.1			48.7	
Approach LOS		E			F			E			D	

Intersection Summary

HCM Average Control Delay	113.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.5	Sum of lost time (s)	23.5
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: Grant Line Road & Waterman Road

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 			 			 	 
Volume (vph)	500	1030	0	0	1290	130	0	0	0	10	0	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Lane Util. Factor	0.97	1.00			0.95	1.00					1.00	0.88
Frpb, ped/bikes	1.00	1.00			1.00	0.99					1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00					1.00	1.00
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	1863			3539	1561					1770	2787
Flt Permitted	0.95	1.00			1.00	1.00					0.95	1.00
Satd. Flow (perm)	3433	1863			3539	1561					1770	2787
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	521	1073	0	0	1344	135	0	0	0	10	0	448
RTOR Reduction (vph)	0	0	0	0	0	32	0	0	0	0	0	419
Lane Group Flow (vph)	521	1073	0	0	1344	103	0	0	0	0	10	29
Confl. Bikes (#/hr)			2			4						
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases						2						3
Actuated Green, G (s)	23.2	81.6			52.8	52.8					7.4	7.4
Effective Green, g (s)	23.2	81.6			52.8	52.8					7.4	7.4
Actuated g/C Ratio	0.20	0.72			0.46	0.46					0.06	0.06
Clearance Time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0					2.0	2.0
Lane Grp Cap (vph)	699	1335			1641	724					115	181
v/s Ratio Prot	0.15	c0.58			0.38						0.01	
v/s Ratio Perm						0.07						c0.01
v/c Ratio	0.75	0.80			0.82	0.14					0.09	0.16
Uniform Delay, d1	42.6	10.8			26.4	17.5					50.1	50.3
Progression Factor	1.00	1.00			1.00	1.00					1.00	1.00
Incremental Delay, d2	3.8	3.4			3.1	0.0					0.1	0.2
Delay (s)	46.4	14.2			29.6	17.6					50.2	50.5
Level of Service	D	B			C	B					D	D
Approach Delay (s)		24.7			28.5			0.0			50.5	
Approach LOS		C			C			A			D	

Intersection Summary

HCM Average Control Delay	29.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	113.9	Sum of lost time (s)	24.9
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 26: Kammerer Road & Hood Franklin Road

Cumulative Plus Project Conditions
 AM Peak Hour

























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↗
Volume (veh/h)	0	1420	1430	10	0	80
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1543	1554	11	0	87
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1565				2332	783
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1565				2332	783
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	74
cM capacity (veh/h)	418				31	337

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	772	772	1036	529	87
Volume Left	0	0	0	0	0
Volume Right	0	0	0	11	87
cSH	1700	1700	1700	1700	337
Volume to Capacity	0.45	0.45	0.61	0.31	0.26
Queue Length 95th (ft)	0	0	0	0	25
Control Delay (s)	0.0	0.0	0.0	0.0	19.4
Lane LOS					C
Approach Delay (s)	0.0		0.0		19.4
Approach LOS					C

Intersection Summary					
Average Delay			0.5		
Intersection Capacity Utilization			51.5%	ICU Level of Service	A
Analysis Period (min)			15		

HCM Signalized Intersection Capacity Analysis
27: Kammerer Road & Franklin Blvd

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	1400	10	30	1130	10	30	0	150	10	30	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.5	5.5		5.5	5.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1583		1770	1611	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1583		1770	1611	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	1522	11	33	1228	11	33	0	163	11	33	304
RTOR Reduction (vph)	0	0	4	0	0	5	0	137	0	0	244	0
Lane Group Flow (vph)	11	1522	7	33	1228	6	33	26	0	11	93	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	1.0	43.1	43.1	3.5	45.6	45.6	3.6	13.9		1.0	11.3	
Effective Green, g (s)	1.0	43.1	43.1	3.5	45.6	45.6	3.6	13.9		1.0	11.3	
Actuated g/C Ratio	0.01	0.50	0.50	0.04	0.53	0.53	0.04	0.16		0.01	0.13	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.5	5.5		5.5	5.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	20	1763	789	72	1866	835	74	254		20	210	
v/s Ratio Prot	0.01	c0.43		c0.02	0.35		c0.02	c0.02		0.01	c0.06	
v/s Ratio Perm			0.00			0.00						
v/c Ratio	0.55	0.86	0.01	0.46	0.66	0.01	0.45	0.10		0.55	0.44	
Uniform Delay, d1	42.5	19.1	10.9	40.6	14.8	9.7	40.5	31.0		42.5	34.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.2	4.5	0.0	1.7	0.6	0.0	1.6	0.1		17.2	0.5	
Delay (s)	59.8	23.6	10.9	42.3	15.5	9.7	42.0	31.0		59.8	35.2	
Level of Service	E	C	B	D	B	A	D	C		E	D	
Approach Delay (s)		23.8			16.1			32.9			36.0	
Approach LOS		C			B			C			D	
Intersection Summary												
HCM Average Control Delay			22.7				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			86.5				Sum of lost time (s)			30.5		
Intersection Capacity Utilization			74.0%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
28: Kammerer Road & Willard Pkwy

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	380	1180	880	80	270	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	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	3539	3539	1583	1770	2787
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	413	1283	957	87	293	304
RTOR Reduction (vph)	0	0	0	57	0	235
Lane Group Flow (vph)	413	1283	957	30	293	69
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	12.1	44.3	25.2	25.2	16.7	16.7
Effective Green, g (s)	12.1	44.3	25.2	25.2	16.7	16.7
Actuated g/C Ratio	0.16	0.60	0.34	0.34	0.23	0.23
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	565	2133	1213	543	402	633
v/s Ratio Prot	0.12	c0.36	c0.27		c0.17	
v/s Ratio Perm				0.02		0.02
v/c Ratio	0.73	0.60	0.79	0.05	0.73	0.11
Uniform Delay, d1	29.2	9.1	21.8	16.2	26.3	22.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	0.3	3.2	0.0	5.5	0.0
Delay (s)	33.3	9.4	25.0	16.2	31.8	22.5
Level of Service	C	A	C	B	C	C
Approach Delay (s)		15.3	24.2		27.1	
Approach LOS		B	C		C	

Intersection Summary

HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	73.5	Sum of lost time (s)	19.5
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: Kammerer Road & Collector 2

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	210	1540	810	30	10	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
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)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	1674	880	33	11	54
RTOR Reduction (vph)	0	0	0	20	0	50
Lane Group Flow (vph)	228	1674	880	13	11	4
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	8.8	37.7	21.9	21.9	4.5	4.5
Effective Green, g (s)	8.8	37.7	21.9	21.9	4.5	4.5
Actuated g/C Ratio	0.16	0.69	0.40	0.40	0.08	0.08
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	285	2439	1417	634	146	130
v/s Ratio Prot	0.13	c0.47	0.25		c0.01	
v/s Ratio Perm				0.01		0.00
v/c Ratio	0.80	0.69	0.62	0.02	0.08	0.03
Uniform Delay, d1	22.1	5.0	13.1	9.9	23.2	23.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.0	0.6	0.6	0.0	0.1	0.0
Delay (s)	36.1	5.7	13.7	9.9	23.3	23.1
Level of Service	D	A	B	A	C	C
Approach Delay (s)		9.3	13.6		23.2	
Approach LOS		A	B		C	

Intersection Summary

HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	54.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
30: Kammerer Road & Big Horn Blvd

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	360	1190	610	300	280	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
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	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	391	1293	663	326	304	250
RTOR Reduction (vph)	0	0	0	233	0	188
Lane Group Flow (vph)	391	1293	663	93	304	62
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	8.3	32.3	17.0	17.0	14.8	14.8
Effective Green, g (s)	8.3	32.3	17.0	17.0	14.8	14.8
Actuated g/C Ratio	0.14	0.54	0.29	0.29	0.25	0.25
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	478	1918	1009	452	440	393
v/s Ratio Prot	0.11	c0.37	0.19		c0.17	
v/s Ratio Perm				0.06		0.04
v/c Ratio	0.82	0.67	0.66	0.21	0.69	0.16
Uniform Delay, d1	24.9	9.9	18.7	16.2	20.3	17.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.9	0.7	1.2	0.1	3.8	0.1
Delay (s)	34.8	10.6	19.9	16.3	24.1	17.6
Level of Service	C	B	B	B	C	B
Approach Delay (s)		16.2	18.7		21.2	
Approach LOS		B	B		C	

Intersection Summary

HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Kammerer Road & Collector 1

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	160	1310	830	320	160	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
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)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	1424	902	348	174	87
RTOR Reduction (vph)	0	0	0	222	0	71
Lane Group Flow (vph)	174	1424	902	126	174	16
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	8.2	37.1	21.9	21.9	11.1	11.1
Effective Green, g (s)	8.2	37.1	21.9	21.9	11.1	11.1
Actuated g/C Ratio	0.14	0.61	0.36	0.36	0.18	0.18
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	239	2163	1277	571	324	289
v/s Ratio Prot	0.10	c0.40	0.25		c0.10	
v/s Ratio Perm				0.08		0.01
v/c Ratio	0.73	0.66	0.71	0.22	0.54	0.06
Uniform Delay, d1	25.2	7.7	16.6	13.5	22.5	20.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.0	0.6	1.5	0.1	0.9	0.0
Delay (s)	34.2	8.2	18.1	13.5	23.3	20.5
Level of Service	C	A	B	B	C	C
Approach Delay (s)		11.1	16.8		22.4	
Approach LOS		B	B		C	

Intersection Summary

HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	60.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Kammerer Road & Lotz Pkwy

Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	180	1210	1190	640	390	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
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	3539	3539	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	196	1315	1293	696	424	207
RTOR Reduction (vph)	0	0	0	385	0	165
Lane Group Flow (vph)	196	1315	1293	311	424	42
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	7.6	48.1	33.5	33.5	14.4	14.4
Effective Green, g (s)	7.6	48.1	33.5	33.5	14.4	14.4
Actuated g/C Ratio	0.10	0.64	0.45	0.45	0.19	0.19
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	348	2270	1581	707	659	304
v/s Ratio Prot	0.06	c0.37	c0.37		c0.12	
v/s Ratio Perm				0.20		0.03
v/c Ratio	0.56	0.58	0.82	0.44	0.64	0.14
Uniform Delay, d1	32.1	7.7	18.1	14.3	27.9	25.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.2	3.2	0.2	1.6	0.1
Delay (s)	33.4	7.9	21.3	14.4	29.6	25.2
Level of Service	C	A	C	B	C	C
Approach Delay (s)		11.2	18.9		28.1	
Approach LOS		B	B		C	

Intersection Summary

HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
33: Kammerer Road & Sterling Meadows Pkwy

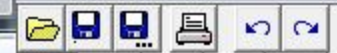
Cumulative Plus Project Conditions
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	110	1410	1770	80	90	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00
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)	1770	5085	5085	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	5085	5085	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	1533	1924	87	98	87
RTOR Reduction (vph)	0	0	0	44	0	75
Lane Group Flow (vph)	120	1533	1924	43	98	12
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	7.9	51.4	36.5	36.5	10.0	10.0
Effective Green, g (s)	7.9	51.4	36.5	36.5	10.0	10.0
Actuated g/C Ratio	0.10	0.68	0.48	0.48	0.13	0.13
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	185	3466	2462	766	235	210
v/s Ratio Prot	0.07	c0.30	c0.38		c0.06	
v/s Ratio Perm				0.03		0.01
v/c Ratio	0.65	0.44	0.78	0.06	0.42	0.05
Uniform Delay, d1	32.4	5.5	16.1	10.3	30.0	28.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.6	0.1	1.7	0.0	1.2	0.1
Delay (s)	40.0	5.6	17.8	10.3	31.2	28.7
Level of Service	D	A	B	B	C	C
Approach Delay (s)		8.1	17.5		30.0	
Approach LOS		A	B		C	

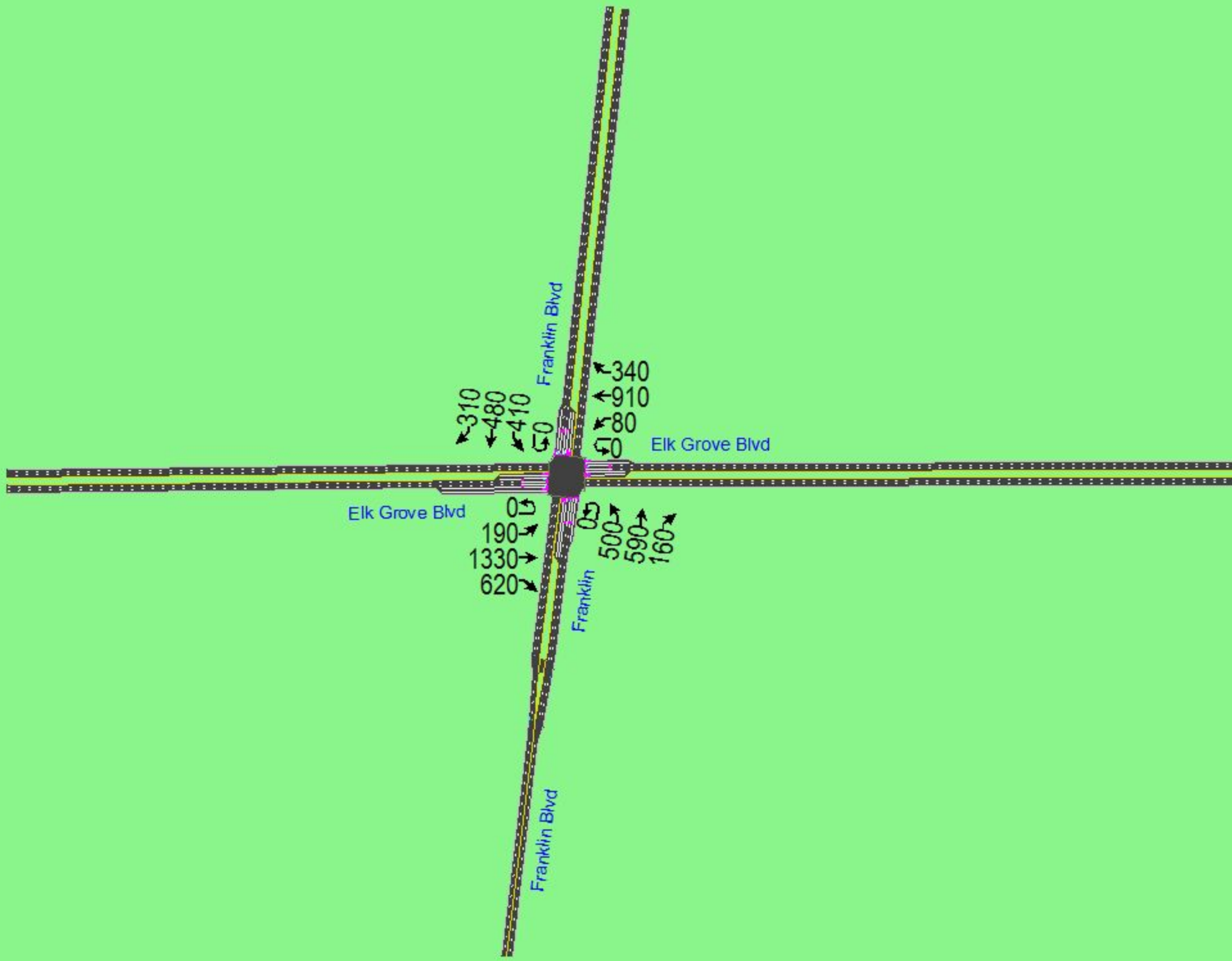
Intersection Summary

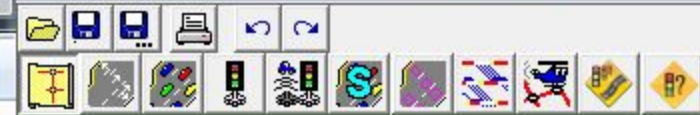
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	75.4	Sum of lost time (s)	21.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



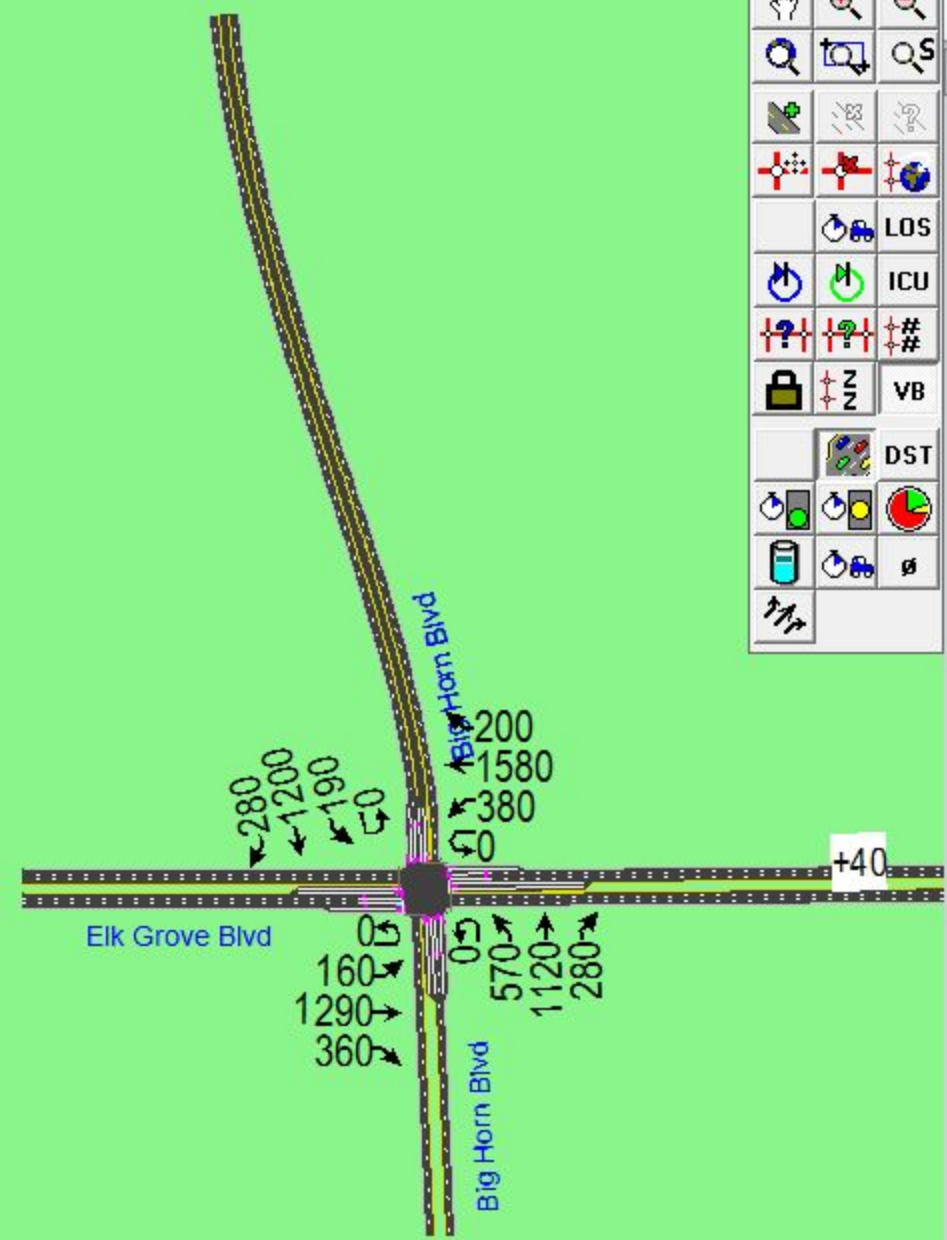
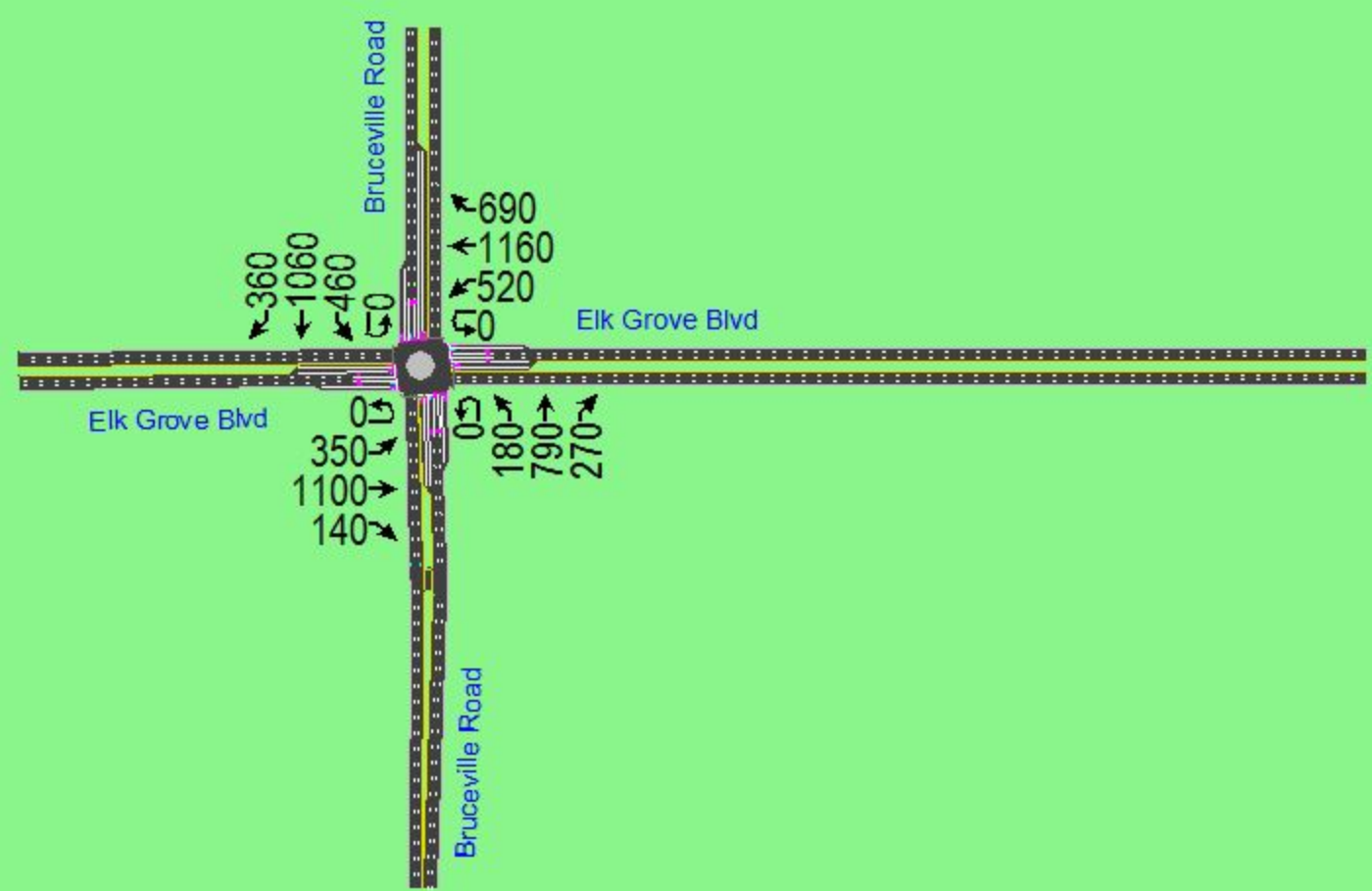
none

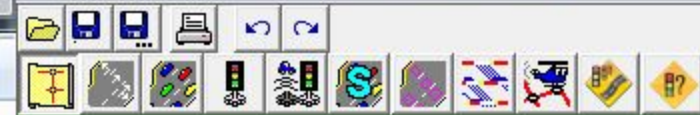
- Hand icon
- Zoom in icon
- Zoom out icon
- Search icon
- Simulation control icons: LOS, ICU, #, #, VB, DST, and a blank icon.
- Other simulation icons: a truck icon, a car icon, and a carpooling icon.



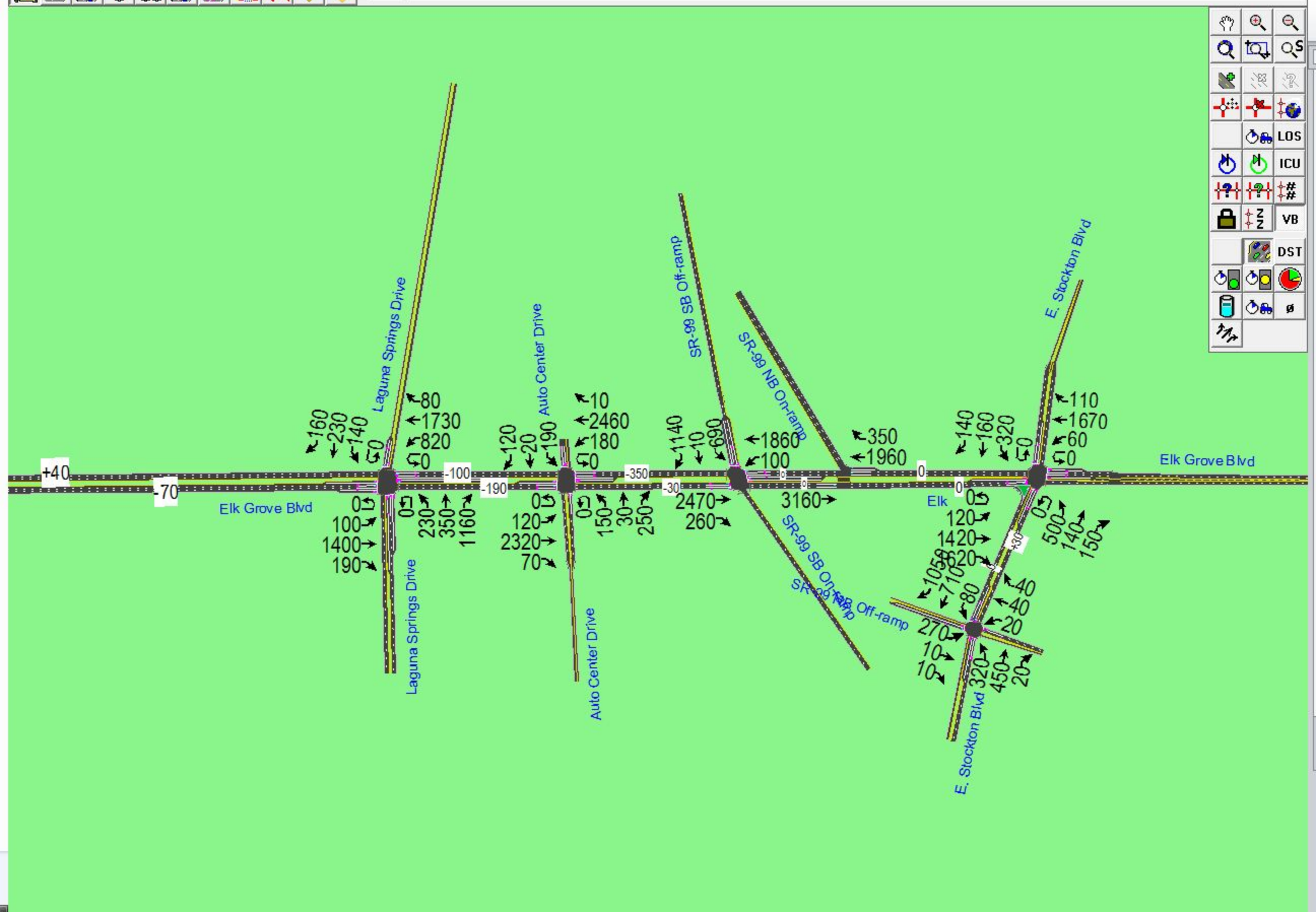


2 Elk Grove Blvd & Bruceville Road

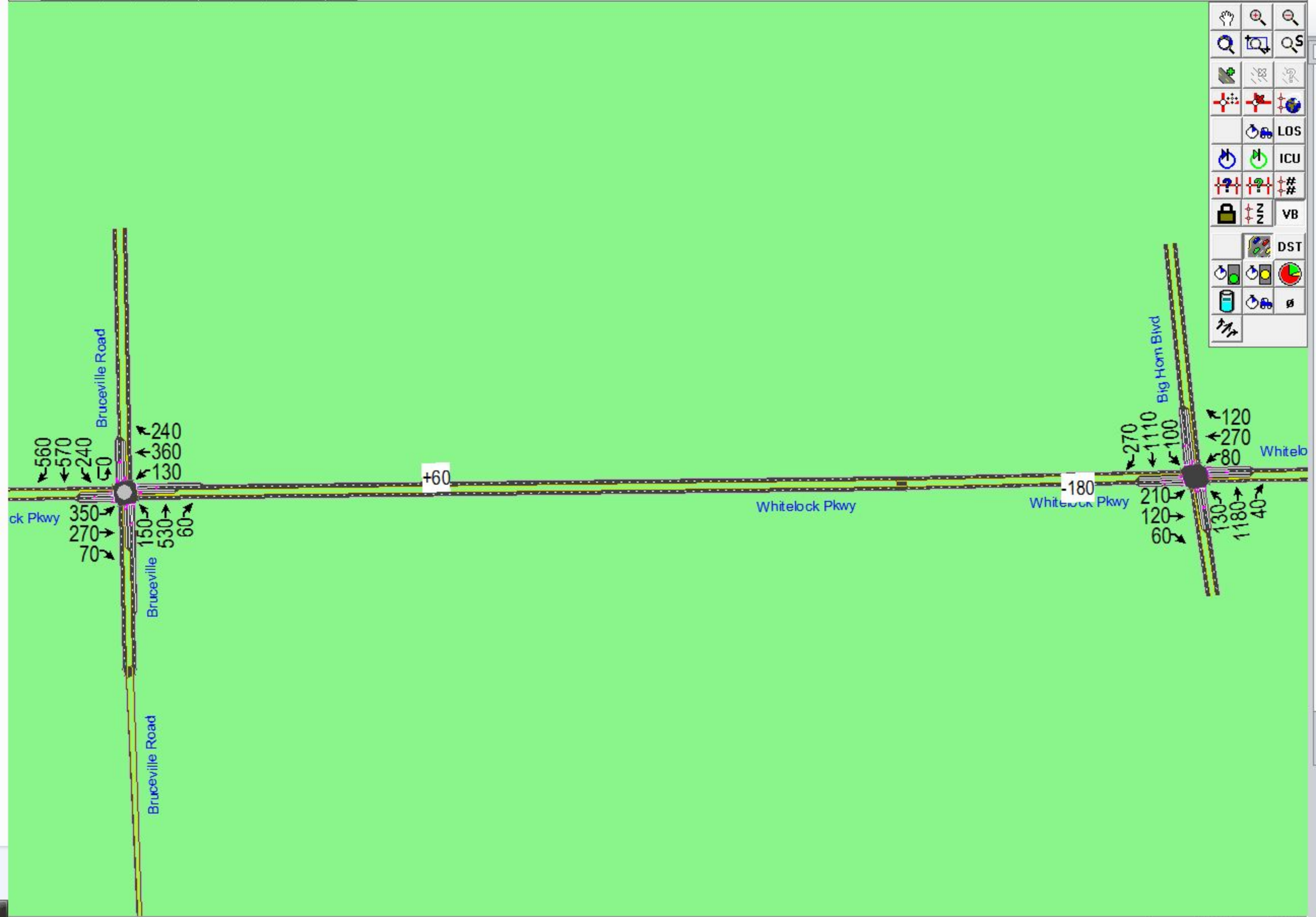




2 Elk Grove Blvd & Bruceville Road

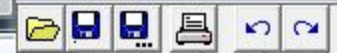


Vertical toolbar containing various simulation and analysis tools, including icons for zooming, simulation control, and data visualization. The tools are arranged in a grid and include labels for LOS, ICU, #, VB, DST, and other simulation parameters.



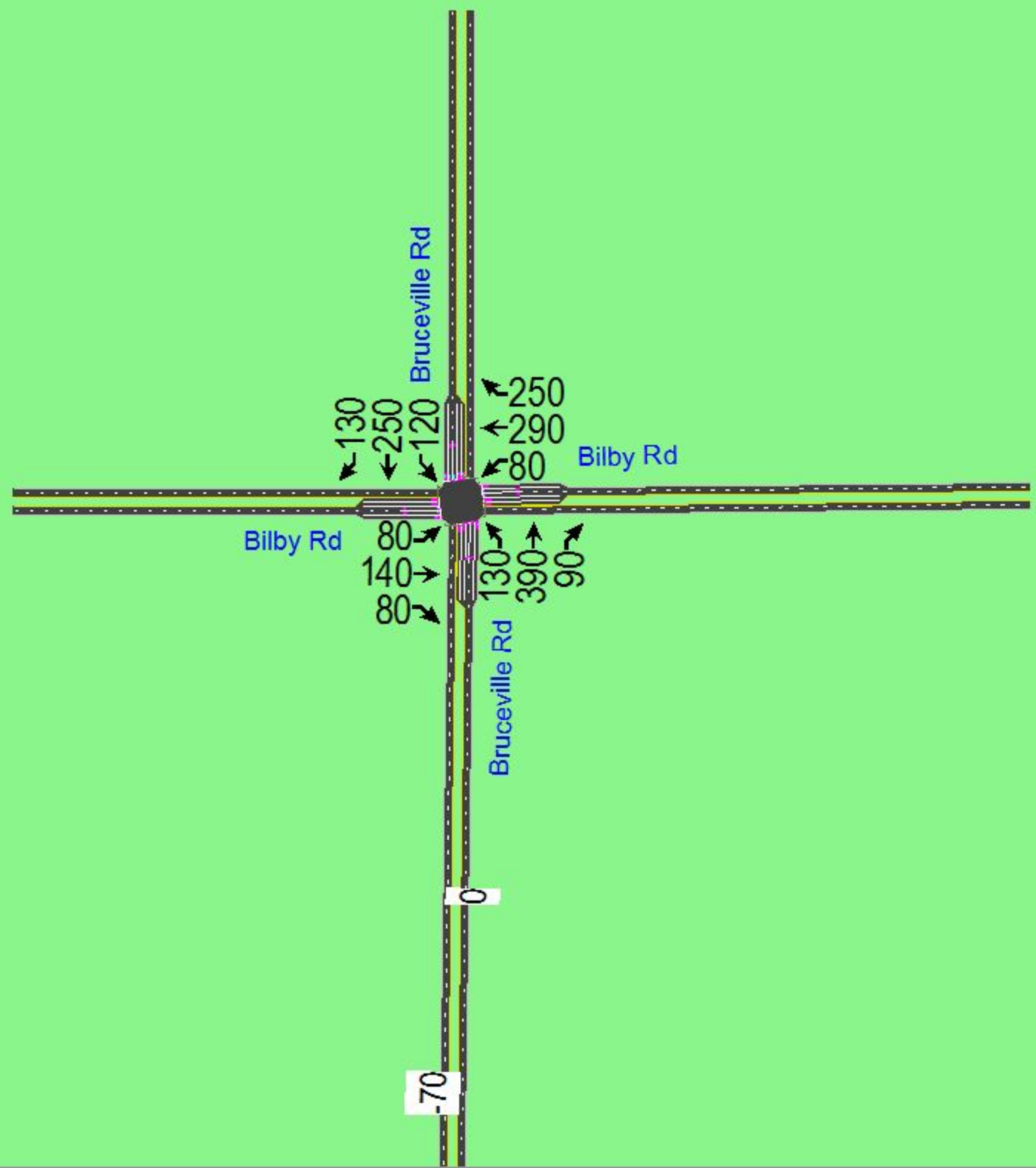
Navigation and simulation controls:

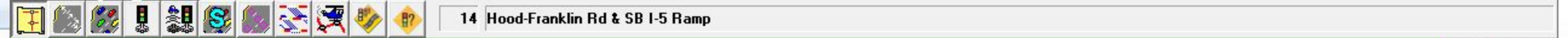
- Hand icon: Pan
- Zoom in/out icons: Zoom
- Search icon: Search
- Simulation control icons: Start, Stop, Pause, Play, Step, Step Back, Step Forward
- Simulation mode icons: LOS, ICU, #, #, VB, DST
- Other icons: Lock, Unlock, Refresh, etc.



none

- Hand icon
- Zoom in icon
- Zoom out icon
- Search icon
- Simulation icon
- LOS icon
- ICU icon
- Queue length icon
- VB icon
- DST icon
- Other simulation and analysis icons





Kammere

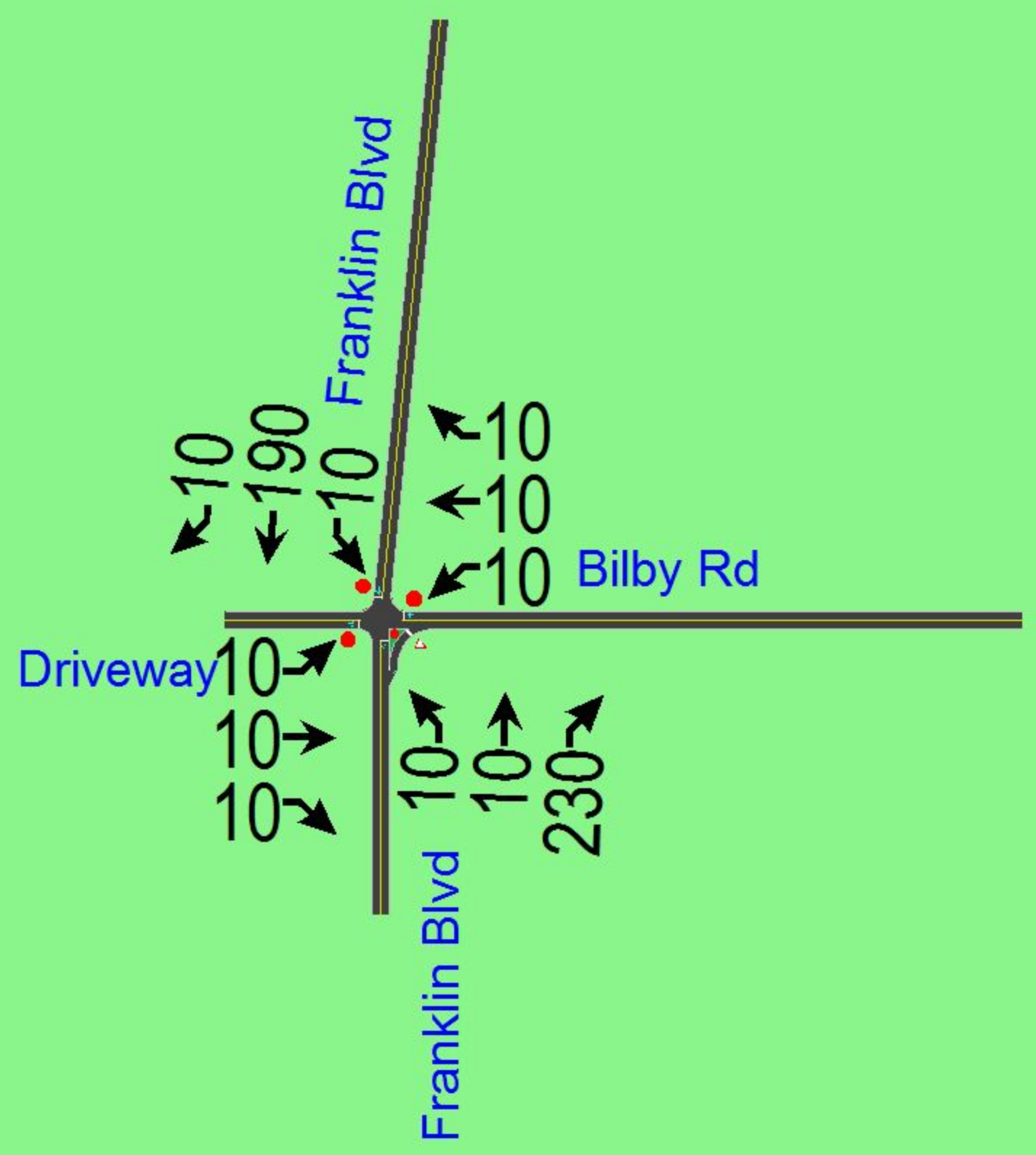
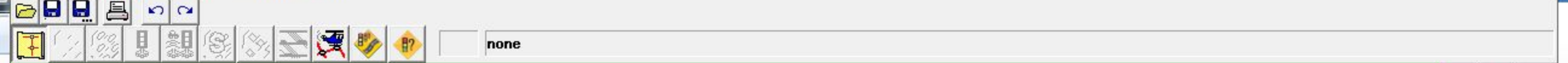


16 Hood Franklin Road & Franklin Blvd

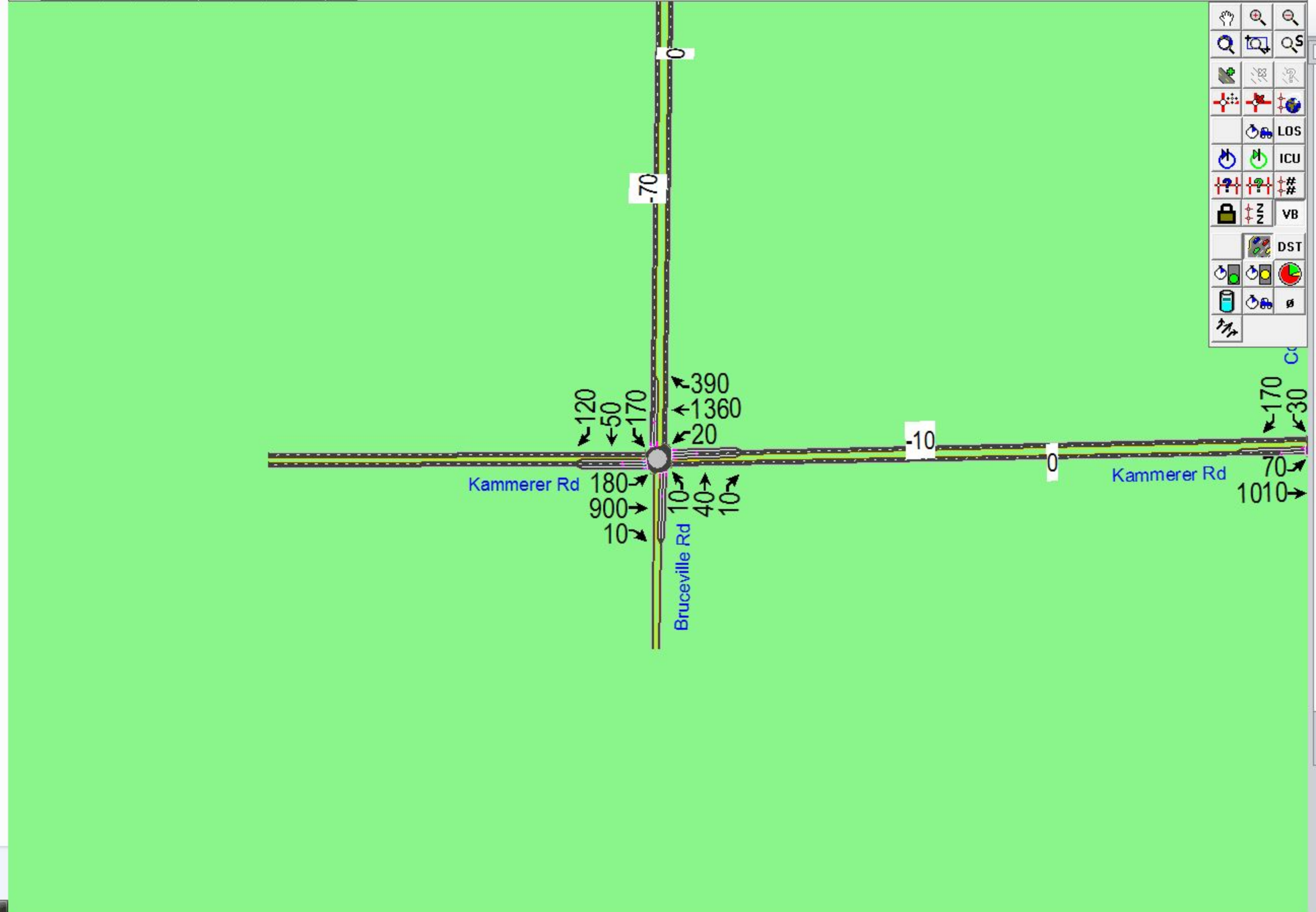


Vertical toolbar containing simulation control icons:

- Hand icon (pan)
- Zoom in/out icons
- Simulation control icons: LOS, ICU, #, #, VB, DST, and a pie chart.

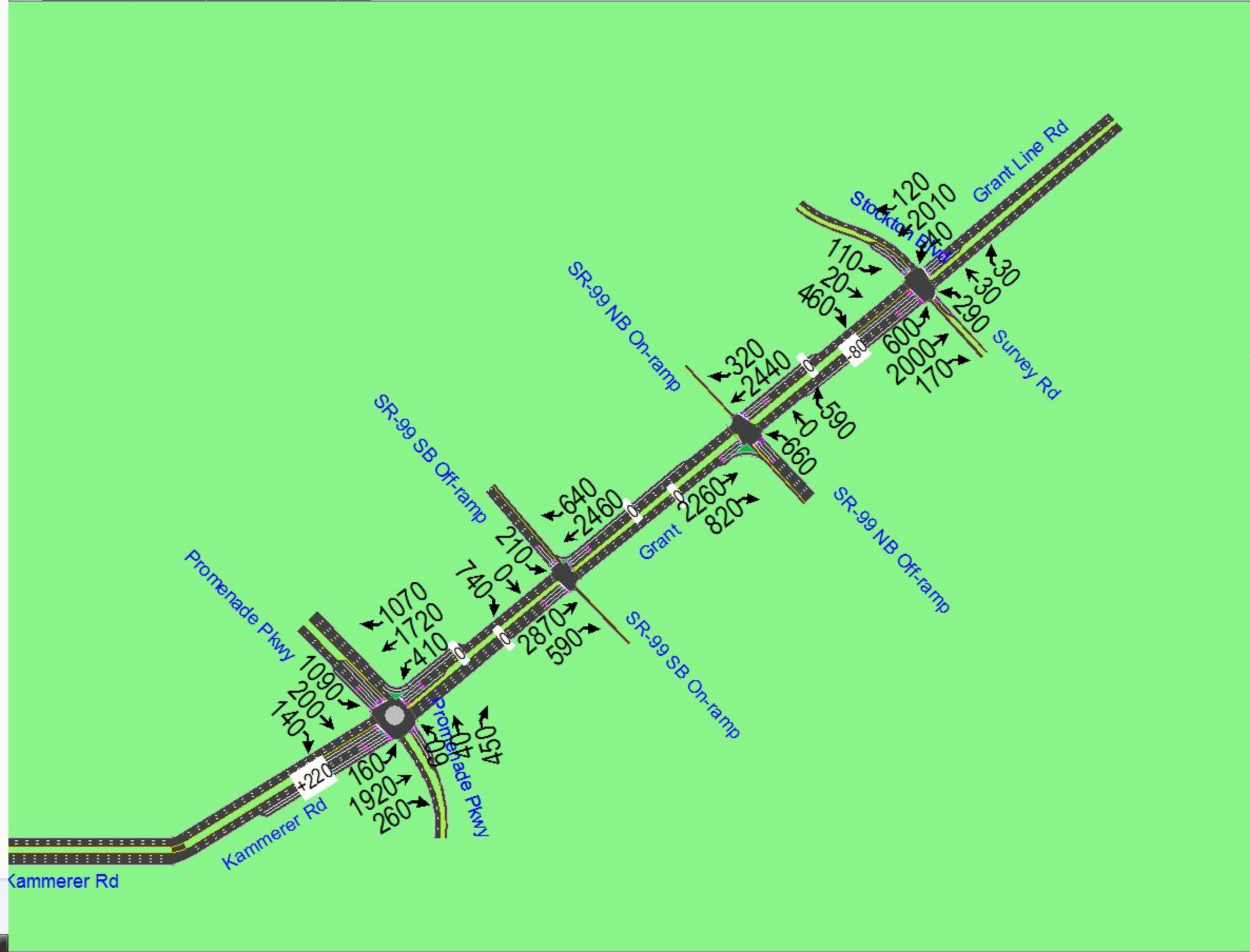


Simulation and analysis tools including: hand, zoom, pan, select, LOS, ICU, #, #, VB, DST, and other icons.



Toolbox containing various simulation and analysis tools:

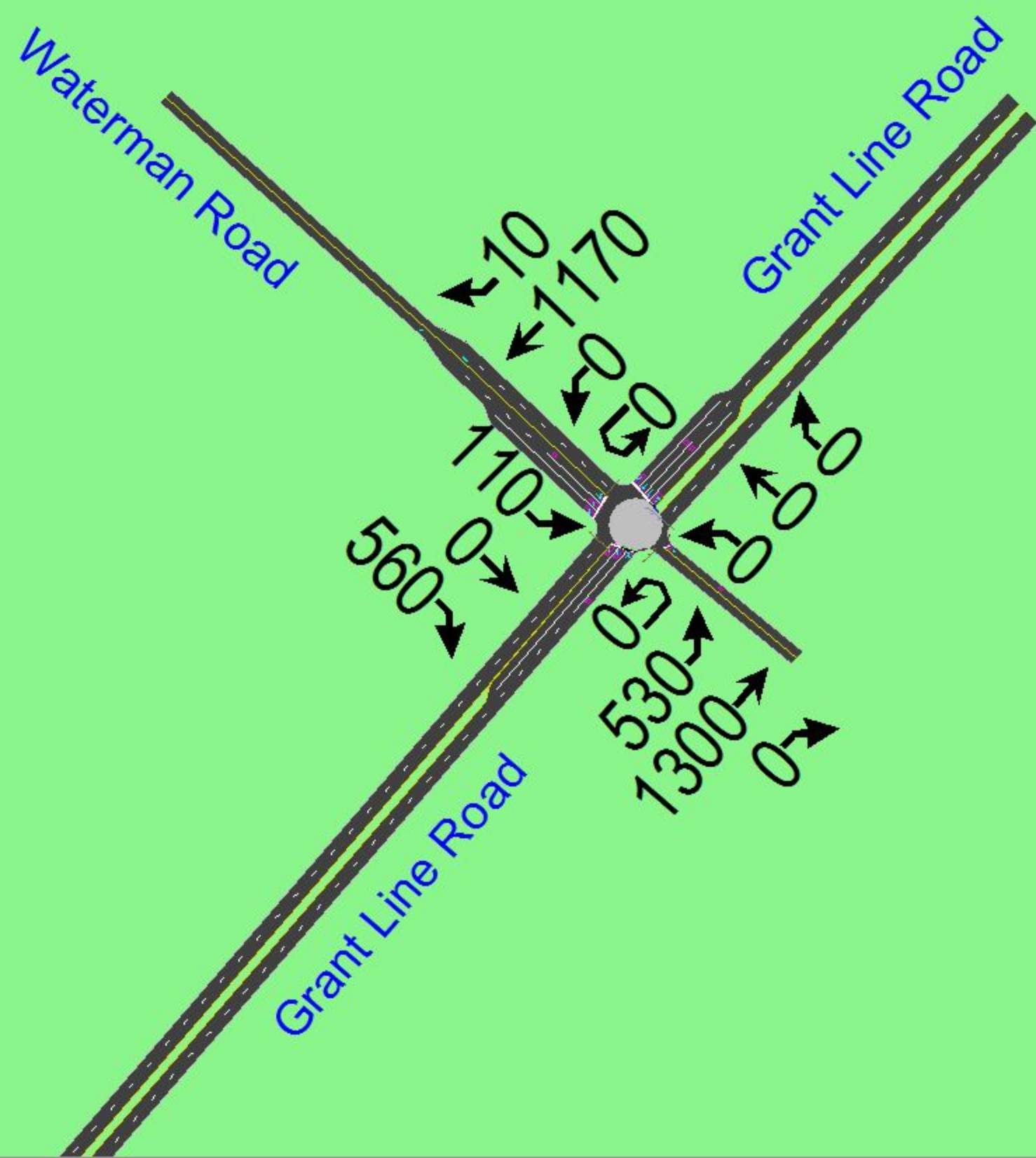
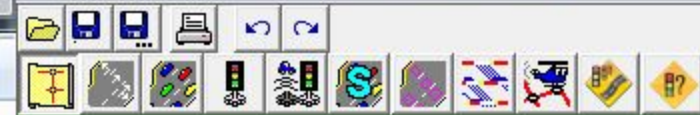
- Navigation: Hand, Zoom In, Zoom Out, Pan, Select, Lasso, Erase, Copy, Paste.
- Simulation: LOS, ICU, #, #, VB, DST.
- Analysis: Pie chart, Bar chart, and other data visualization tools.

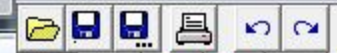


Navigation and analysis tools:

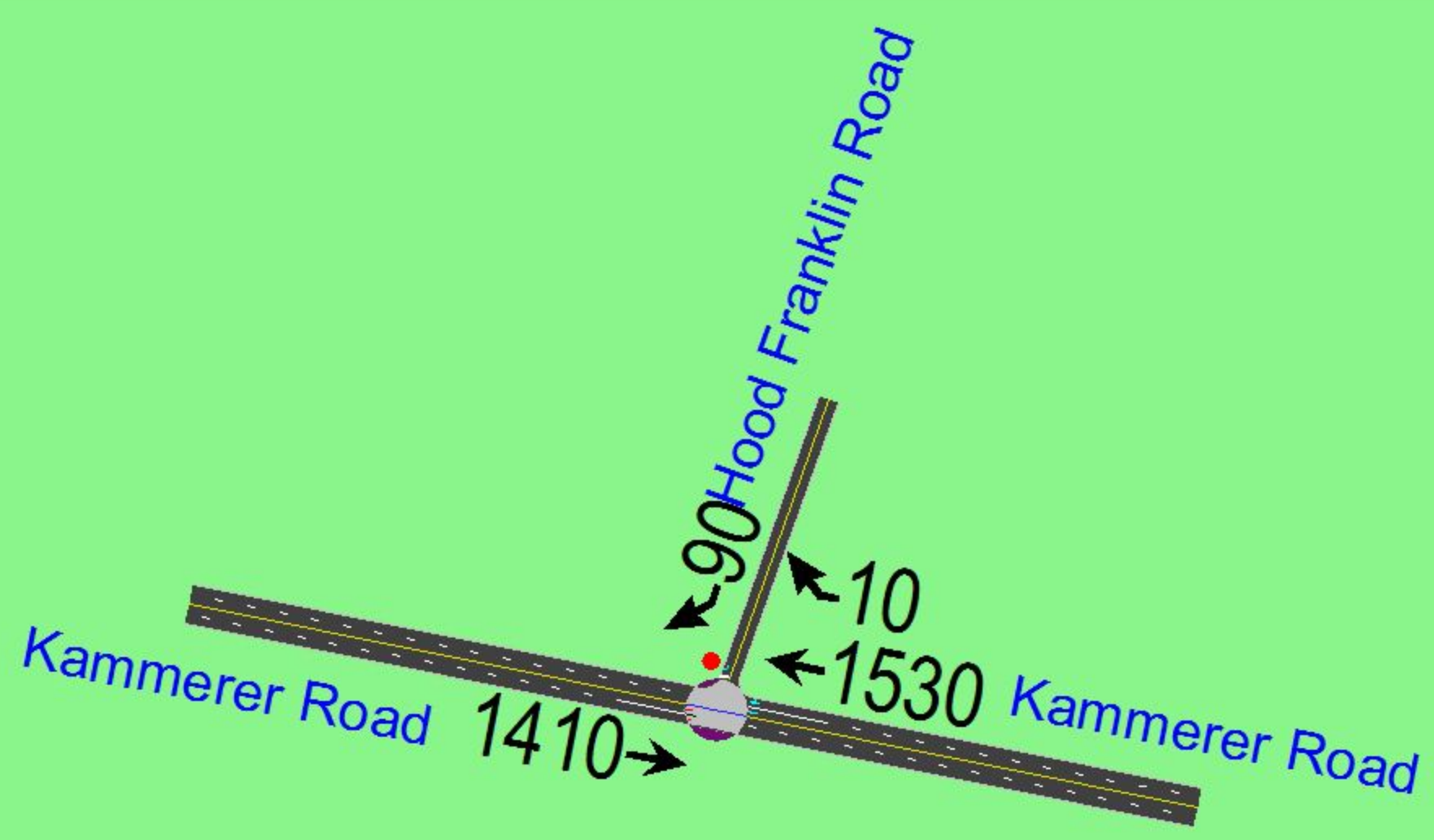
- Hand icon (pan)
- Zoom in (+) and Zoom out (-) icons
- Search icon (magnifying glass)
- Layers icon (stack of papers)
- Simulation controls: LOS, ICU, #, VB, DST
- Other icons for simulation parameters and data visualization.

Kammerer Rd

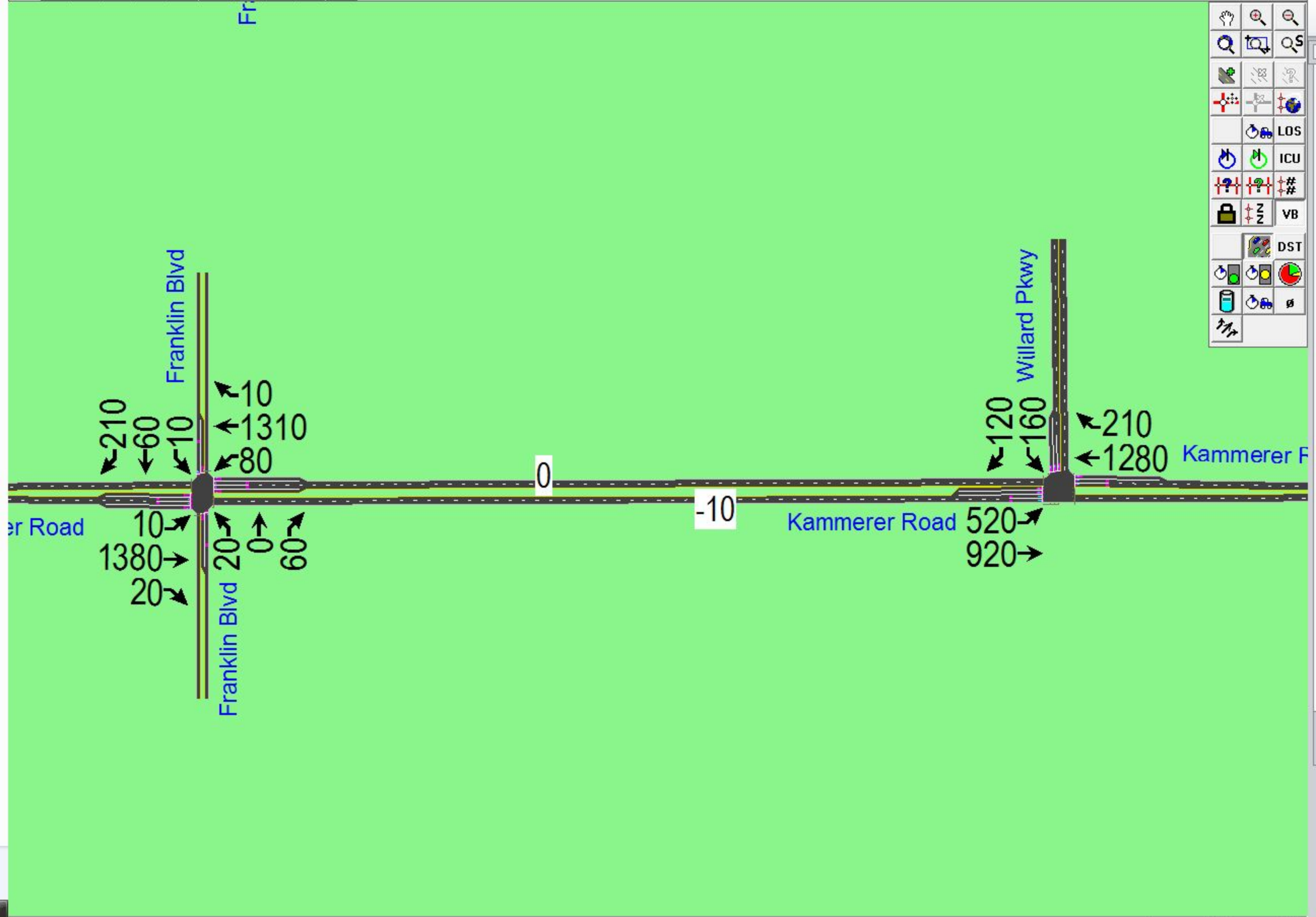




26 Kammerer Road & Hood Franklin Road



Hand	Zoom In	Zoom Out
Search	Zoom	Search
Refresh	Refresh	Refresh
Stop	Stop	Stop
Start	Start	Start
LOS	LOS	LOS
ICU	ICU	ICU
#	#	#
VB	VB	VB
DST	DST	DST
Other icons	Other icons	Other icons

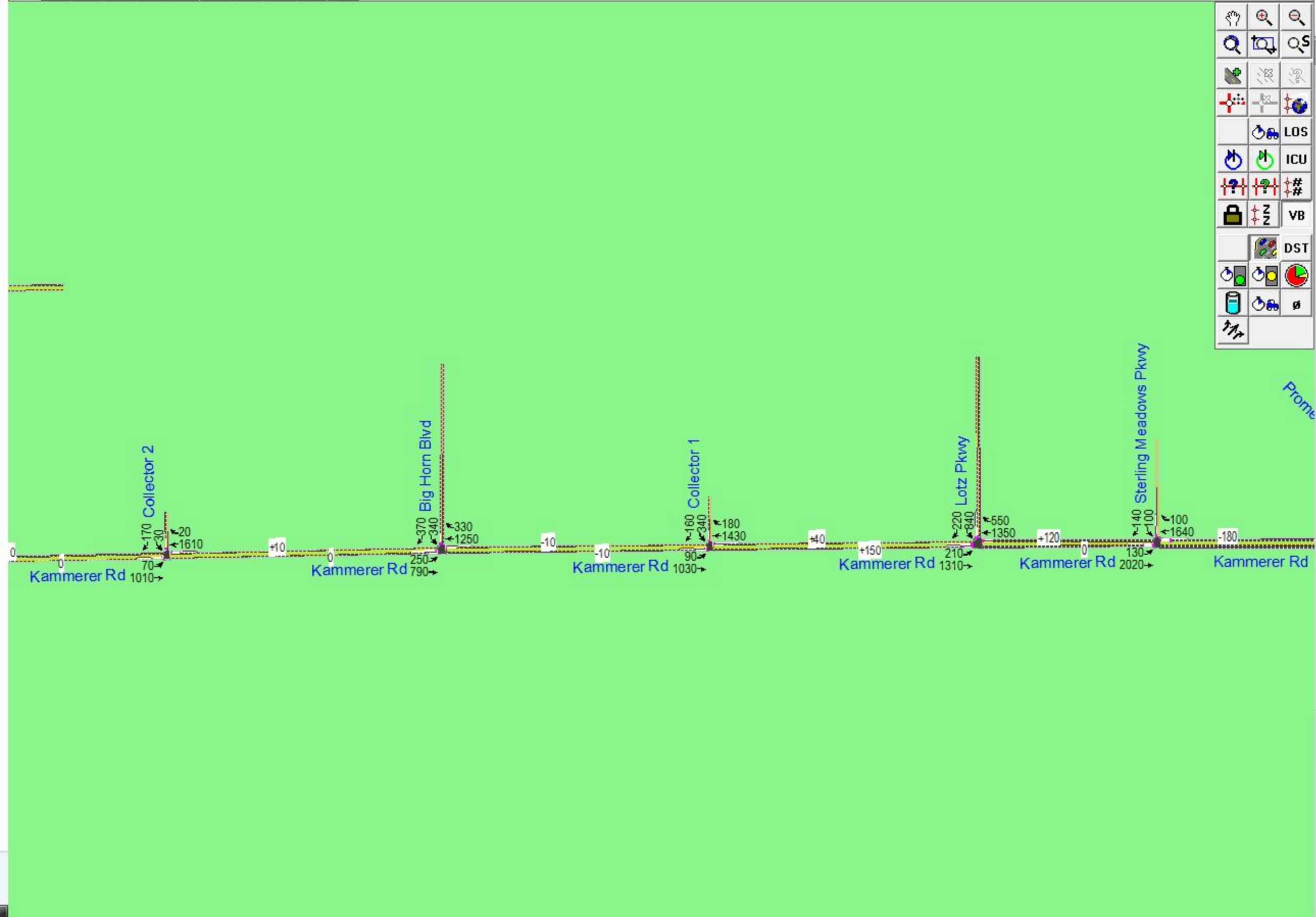


Toolbox containing various simulation and editing tools:

- Hand icon (pan)
- Zoom in/out icons
- Selection tools (arrow, lasso)
- Simulation controls: LOS, ICU, #, #, VB, DST
- Other icons for simulation parameters and settings.

Toolbar with icons for file operations (Save, Print, Undo, Redo) and drawing tools. A dropdown menu is currently set to "none".

Vertical toolbar with various analysis and visualization tools including icons for LOS, ICU, #, VB, DST, and other simulation parameters.



HCM Signalized Intersection Capacity Analysis
1: Elk Grove Blvd & Franklin Blvd

























Cumulative Plus Project Conditions
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	1330	620	80	910	340	500	590	160	410	480	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Lane Util. Factor	0.97	0.91	0.88	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	2750	3433	5085	1583	3433	5085	1583	3433	5085	1558
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	2750	3433	5085	1583	3433	5085	1583	3433	5085	1558
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	1446	674	87	989	370	543	641	174	446	522	337
RTOR Reduction (vph)	0	0	377	0	0	161	0	0	91	0	0	121
Lane Group Flow (vph)	207	1446	297	87	989	209	543	641	83	446	522	216
Confl. Bikes (#/hr)			2									3
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	13.0	66.0	66.0	7.0	59.6	59.6	27.2	29.0	29.0	22.8	25.5	25.5
Effective Green, g (s)	13.0	66.0	66.0	7.0	59.6	59.6	27.2	29.0	29.0	22.8	25.5	25.5
Actuated g/C Ratio	0.09	0.44	0.44	0.05	0.40	0.40	0.18	0.19	0.19	0.15	0.17	0.17
Clearance Time (s)	5.6	6.8	6.8	5.6	7.2	7.2	5.6	7.2	7.2	5.6	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	298	2237	1210	160	2020	629	623	983	306	522	864	265
v/s Ratio Prot	c0.06	c0.28		0.03	0.19		c0.16	c0.13		0.13	0.10	
v/s Ratio Perm			0.11			0.13			0.05			c0.14
v/c Ratio	0.69	0.65	0.25	0.54	0.49	0.33	0.87	0.65	0.27	0.85	0.60	0.81
Uniform Delay, d1	66.6	32.9	26.4	69.9	33.8	31.4	59.7	55.8	51.5	62.0	57.6	60.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	1.5	0.5	2.0	0.9	1.4	12.4	1.2	0.2	12.4	0.8	16.4
Delay (s)	72.1	34.3	26.8	72.0	34.7	32.8	72.1	57.0	51.7	74.4	58.4	76.4
Level of Service	E	C	C	E	C	C	E	E	D	E	E	E
Approach Delay (s)		35.5			36.4			62.4			68.5	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM Average Control Delay			48.1				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)		31.5			
Intersection Capacity Utilization			77.0%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

























2: Elk Grove Blvd & Bruceville Road

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	350	1100	140	520	1160	690	180	790	270	460	1060	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.86	0.86
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	4775	1362
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	4775	1362
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	365	1146	146	542	1208	719	188	823	281	479	1104	375
RTOR Reduction (vph)	0	0	66	0	0	169	0	0	176	0	3	163
Lane Group Flow (vph)	365	1146	80	542	1208	550	188	823	105	479	1150	163
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7		4
Permitted Phases			6			2			8			4
Actuated Green, G (s)	17.1	47.5	47.5	26.3	56.7	56.7	10.8	31.2	31.2	22.1	42.5	42.5
Effective Green, g (s)	17.1	47.5	47.5	26.3	56.7	56.7	10.8	31.2	31.2	22.1	42.5	42.5
Actuated g/C Ratio	0.11	0.32	0.32	0.18	0.38	0.38	0.07	0.21	0.21	0.15	0.28	0.28
Clearance Time (s)	5.6	6.0	6.0	5.6	6.0	6.0	5.6	5.7	5.7	5.6	5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	391	1610	501	602	1922	598	247	1058	329	506	1353	386
v/s Ratio Prot	0.11	0.23		c0.16	0.24		0.05	0.16		c0.14	c0.24	
v/s Ratio Perm			0.05			c0.35			0.07			0.12
v/c Ratio	0.93	0.71	0.16	0.90	0.63	0.92	0.76	0.78	0.32	0.95	0.85	0.42
Uniform Delay, d1	65.9	45.2	36.9	60.6	38.1	44.5	68.3	56.1	50.4	63.4	50.7	43.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	28.8	2.7	0.7	16.3	1.6	21.7	11.7	3.3	0.2	26.7	5.1	0.3
Delay (s)	94.7	47.9	37.6	76.8	39.6	66.2	80.1	59.5	50.6	90.0	55.9	44.0
Level of Service	F	D	D	E	D	E	F	E	D	F	E	D
Approach Delay (s)		57.3			55.5			60.5			62.3	
Approach LOS		E			E			E			E	
Intersection Summary												
HCM Average Control Delay			58.6	HCM Level of Service				E				
HCM Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			150.0	Sum of lost time (s)				17.2				
Intersection Capacity Utilization			100.2%	ICU Level of Service				G				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
3: Elk Grove Blvd & Big Horn Blvd

Cumulative Plus Project Conditions
PM Peak Hour
























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1290	360	380	1580	200	570	1120	280	190	1200	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	167	1344	375	396	1646	208	594	1167	292	198	1250	292
RTOR Reduction (vph)	0	0	145	0	0	63	0	0	96	0	0	66
Lane Group Flow (vph)	167	1344	230	396	1646	145	594	1167	196	198	1250	226
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	7.6	38.3	38.3	16.3	47.0	47.0	23.7	60.4	60.4	11.0	47.7	47.7
Effective Green, g (s)	7.6	38.3	38.3	16.3	47.0	47.0	23.7	60.4	60.4	11.0	47.7	47.7
Actuated g/C Ratio	0.05	0.26	0.26	0.11	0.31	0.31	0.16	0.40	0.40	0.07	0.32	0.32
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7	5.7	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	174	1298	404	373	1593	496	542	1425	637	252	1125	503
v/s Ratio Prot	0.05	0.26		c0.12	c0.32		c0.17	0.33		0.06	c0.35	
v/s Ratio Perm			0.15			0.09			0.12			0.14
v/c Ratio	0.96	1.04	0.57	1.06	1.03	0.29	1.10	0.82	0.31	0.79	1.11	0.45
Uniform Delay, d1	71.0	55.9	48.7	66.8	51.5	38.9	63.1	39.9	30.6	68.3	51.1	40.7
Progression Factor	1.00	1.00	1.00	0.70	0.90	1.03	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	55.4	34.6	5.7	52.8	26.4	0.9	67.5	3.6	0.1	13.8	62.7	0.2
Delay (s)	126.4	90.5	54.4	99.9	72.8	41.1	130.6	43.5	30.7	82.1	113.9	40.9
Level of Service	F	F	D	F	E	D	F	D	C	F	F	D
Approach Delay (s)		86.5			74.7			66.9			98.0	
Approach LOS		F			E			E			F	

Intersection Summary

HCM Average Control Delay	80.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
4: Elk Grove Blvd & Laguna Springs Drive

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1400	190	820	1730	80	230	350	1160	140	230	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3321	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3321	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	103	1443	196	845	1784	82	237	361	1196	144	237	165
RTOR Reduction (vph)	0	0	73	0	3	0	0	0	547	0	84	0
Lane Group Flow (vph)	103	1443	123	845	1863	0	237	361	649	144	318	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	11.3	42.3	42.3	36.1	67.1		20.1	36.2	36.2	13.2	29.3	
Effective Green, g (s)	11.3	42.3	42.3	36.1	67.1		20.1	36.2	36.2	13.2	29.3	
Actuated g/C Ratio	0.08	0.28	0.28	0.24	0.45		0.13	0.24	0.24	0.09	0.20	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	133	1434	446	826	2260		237	450	673	156	649	
v/s Ratio Prot	0.06	c0.28		c0.25	0.37		c0.13	0.19		0.08	0.10	
v/s Ratio Perm			0.08						c0.23			
v/c Ratio	0.77	1.01	0.28	1.02	0.82		1.00	0.80	0.96	0.92	0.49	
Uniform Delay, d1	68.1	53.9	41.9	57.0	36.3		65.0	53.5	56.3	67.9	53.7	
Progression Factor	1.56	0.60	0.62	1.40	0.70		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.0	16.7	0.6	25.3	1.4		58.5	9.4	25.8	49.0	0.2	
Delay (s)	116.0	49.3	26.7	105.0	26.8		123.4	62.9	82.0	116.9	53.9	
Level of Service	F	D	C	F	C		F	E	F	F	D	
Approach Delay (s)		50.7			51.2			83.6			70.5	
Approach LOS		D			D			F			E	






















Intersection Summary

HCM Average Control Delay	61.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	117.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis













5: Elk Grove Blvd & Auto Center Drive

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	2320	70	180	2460	10	150	30	250	190	20	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5063		3433	5082		1770	1613		3433	1624	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5063		3433	5082		1770	1613		3433	1624	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	2417	73	188	2562	10	156	31	260	198	21	125
RTOR Reduction (vph)	0	2	0	0	0	0	0	101	0	0	103	0
Lane Group Flow (vph)	125	2488	0	188	2572	0	156	190	0	198	43	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	11.1	82.6		8.8	80.3		13.0	21.8		15.0	23.8	
Effective Green, g (s)	11.1	82.6		8.8	80.3		13.0	21.8		15.0	23.8	
Actuated g/C Ratio	0.07	0.55		0.06	0.54		0.09	0.15		0.10	0.16	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	131	2788		201	2721		153	234		343	258	
v/s Ratio Prot	c0.07	0.49		0.05	c0.51		c0.09	c0.12		c0.06	0.03	
v/s Ratio Perm												
v/c Ratio	0.95	0.89		0.94	0.95		1.02	0.81		0.58	0.16	
Uniform Delay, d1	69.2	29.8		70.3	32.8		68.5	62.1		64.5	54.5	
Progression Factor	0.97	0.58		1.10	0.49		1.00	1.00		1.00	1.00	
Incremental Delay, d2	27.7	1.3		28.6	4.8		78.0	18.1		1.5	0.1	
Delay (s)	95.1	18.6		105.8	21.0		146.5	80.2		65.9	54.6	
Level of Service	F	B		F	C		F	F		E	D	
Approach Delay (s)		22.2			26.7			103.3			61.1	
Approach LOS		C			C			F			E	
Intersection Summary												
HCM Average Control Delay			32.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			22.8			
Intersection Capacity Utilization			95.0%			ICU Level of Service				F		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	2470	260	100	1860	0	0	0	0	690	10	1140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		0.97	0.91					0.95	0.95	0.88
Frt		0.99		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5013		3433	5085					1681	1688	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5013		3433	5085					1681	1688	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	2520	265	102	1898	0	0	0	0	704	10	1163
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	10
Lane Group Flow (vph)	0	2777	0	102	1898	0	0	0	0	359	355	1153
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		72.0		4.4	82.3					55.3	55.3	55.3
Effective Green, g (s)		72.0		4.4	82.3					55.3	55.3	55.3
Actuated g/C Ratio		0.48		0.03	0.55					0.37	0.37	0.37
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2406		101	2790					620	622	1027
v/s Ratio Prot		c0.55		0.03	c0.37					0.21	0.21	
v/s Ratio Perm												c0.41
v/c Ratio		1.15		1.01	0.68					0.58	0.57	1.12
Uniform Delay, d1		39.0		72.8	24.4					38.0	37.9	47.4
Progression Factor		0.41		0.91	0.92					1.00	1.00	1.00
Incremental Delay, d2		72.1		71.5	0.8					0.8	0.8	68.2
Delay (s)		87.9		138.0	23.3					38.8	38.6	115.5
Level of Service		F		F	C					D	D	F
Approach Delay (s)		87.9			29.2			0.0			86.3	
Approach LOS		F			C			A			F	
Intersection Summary												
HCM Average Control Delay			69.8		HCM Level of Service					E		
HCM Volume to Capacity ratio			1.14									
Actuated Cycle Length (s)			150.0		Sum of lost time (s)				18.4			
Intersection Capacity Utilization			91.5%		ICU Level of Service				F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

Cumulative Plus Project Conditions
PM Peak Hour



























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	3160	1960	350	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	3398	2108	376	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		515	937			
pX, platoon unblocked	0.71				0.67	0.71
vC, conflicting volume	2484				3240	703
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1672				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	271				686	773

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	1133	1133	1133	703	703	703	376
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	376
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.67	0.67	0.67	0.41	0.41	0.41	0.22
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							
Approach Delay (s)	0.0			0.0			
Approach LOS							

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		91.5%	ICU Level of Service F
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1420	1620	60	1670	110	500	140	150	320	160	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	4.0	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1610	3174		1681	1740	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1610	3174		1681	1740	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	1495	1705	63	1758	116	526	147	158	337	168	147
RTOR Reduction (vph)	0	0	0	0	0	32	0	27	0	0	0	91
Lane Group Flow (vph)	126	1495	1705	63	1758	84	279	525	0	249	256	56
Turn Type	Prot		Free	Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			Free			2						4
Actuated Green, G (s)	13.2	70.3	150.0	6.4	63.5	63.5	28.1	28.1		23.7	23.7	23.7
Effective Green, g (s)	13.2	70.3	150.0	6.4	63.5	63.5	28.1	28.1		23.7	23.7	23.7
Actuated g/C Ratio	0.09	0.47	1.00	0.04	0.42	0.42	0.19	0.19		0.16	0.16	0.16
Clearance Time (s)	5.6	5.7		5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9		2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	156	1659	1583	76	2153	670	302	595		266	275	250
v/s Ratio Prot	0.07	0.42		0.04	0.35		0.17	0.17		0.15	0.15	
v/s Ratio Perm			c1.08			0.05						0.04
v/c Ratio	0.81	0.90	1.08	0.83	0.82	0.12	0.92	0.88		0.94	0.93	0.22
Uniform Delay, d1	67.2	36.7	75.0	71.3	38.1	26.3	59.9	59.3		62.4	62.3	55.1
Progression Factor	0.82	1.13	1.00	1.00	1.00	1.00	0.78	0.77		1.00	1.00	1.00
Incremental Delay, d2	7.8	2.6	38.6	47.8	3.6	0.4	31.3	13.7		37.6	35.8	0.2
Delay (s)	62.7	44.1	113.6	119.1	41.7	26.7	78.0	59.1		100.0	98.2	55.3
Level of Service	E	D	F	F	D	C	E	E		F	F	E
Approach Delay (s)		80.4			43.3			65.5			89.2	
Approach LOS		F			D			E			F	

Intersection Summary

HCM Average Control Delay	68.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 9: SR-99 NB Off-ramp & E. Stockton Blvd

Cumulative Plus Project Conditions
 PM Peak Hour

































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	270	10	10	20	40	40	320	450	20	80	710	1050
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.99			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1680			1832	1583	1770	3515		1770	1863	1583
Flt Permitted	0.95	0.96			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1680			1832	1583	1770	3515		1770	1863	1583
Peak-hour factor, PHF	0.97	0.92	0.97	0.92	0.92	0.92	0.97	0.97	0.92	0.92	0.97	0.97
Adj. Flow (vph)	278	11	10	22	43	43	330	464	22	87	732	1082
RTOR Reduction (vph)	0	2	0	0	0	40	0	2	0	0	0	141
Lane Group Flow (vph)	150	147	0	0	65	3	330	484	0	87	732	941
Turn Type	Split			Split		Perm	Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases						8						6
Actuated Green, G (s)	30.5	30.5			10.0	10.0	23.5	76.1		11.4	64.0	94.5
Effective Green, g (s)	30.5	30.5			10.0	10.0	23.5	76.1		11.4	64.0	94.5
Actuated g/C Ratio	0.20	0.20			0.07	0.07	0.16	0.51		0.08	0.43	0.63
Clearance Time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	342	342			122	106	277	1783		135	795	997
v/s Ratio Prot	0.09	0.09			c0.04		c0.19	0.14		0.05	0.39	c0.19
v/s Ratio Perm						0.00						0.40
v/c Ratio	0.44	0.43			0.53	0.03	1.19	0.27		0.64	0.92	0.94
Uniform Delay, d1	52.3	52.2			67.7	65.5	63.2	21.1		67.3	40.6	25.3
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.05	0.90	0.72
Incremental Delay, d2	0.3	0.3			2.2	0.0	116.1	0.0		0.7	2.2	2.2
Delay (s)	52.6	52.5			70.0	65.5	179.4	21.1		71.3	38.7	20.4
Level of Service	D	D			E	E	F	C		E	D	C
Approach Delay (s)		52.5			68.2			85.1			29.8	
Approach LOS		D			E			F			C	

Intersection Summary

HCM Average Control Delay	47.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
10: Whitelock Pkwy & Bruceville Road

























Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	350	270	70	130	360	240	150	530	60	240	570	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	376	290	75	140	387	258	161	570	65	258	613	602
RTOR Reduction (vph)	0	0	55	0	0	187	0	0	47	0	0	249
Lane Group Flow (vph)	376	290	20	140	387	71	161	570	18	258	613	353
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Actuated Green, G (s)	13.7	23.0	23.0	7.9	17.2	17.2	8.0	23.8	23.8	9.1	24.9	24.9
Effective Green, g (s)	13.7	23.0	23.0	7.9	17.2	17.2	8.0	23.8	23.8	9.1	24.9	24.9
Actuated g/C Ratio	0.16	0.27	0.27	0.09	0.20	0.20	0.09	0.28	0.28	0.11	0.29	0.29
Clearance Time (s)	5.6	4.9	4.9	5.6	4.9	4.9	6.3	5.3	5.3	6.3	5.3	5.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	548	948	424	316	709	317	320	981	439	364	1026	459
v/s Ratio Prot	c0.11	0.08		0.04	c0.11		0.05	0.16		c0.08	0.17	
v/s Ratio Perm			0.01			0.04			0.01			c0.22
v/c Ratio	0.69	0.31	0.05	0.44	0.55	0.22	0.50	0.58	0.04	0.71	0.60	0.77
Uniform Delay, d1	34.1	25.1	23.3	36.9	30.8	28.8	37.1	26.8	22.7	37.1	26.2	27.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.1	0.0	0.4	0.5	0.1	0.5	0.6	0.0	5.1	0.6	6.8
Delay (s)	36.9	25.2	23.3	37.3	31.3	28.9	37.5	27.3	22.7	42.2	26.8	34.7
Level of Service	D	C	C	D	C	C	D	C	C	D	C	C
Approach Delay (s)		30.9			31.6			29.0			32.7	
Approach LOS		C			C			C			C	

Intersection Summary		
HCM Average Control Delay	31.4	HCM Level of Service C
HCM Volume to Capacity ratio	0.64	
Actuated Cycle Length (s)	85.9	Sum of lost time (s) 16.8
Intersection Capacity Utilization	64.2%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

































HCM Signalized Intersection Capacity Analysis
11: Whitelock Pkwy & Big Horn Blvd

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	120	60	80	270	120	130	1180	40	100	1110	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.5	5.5	5.5	5.3	5.3	5.5	5.3	5.3	5.3	5.5	5.5
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	130	65	87	293	129	141	1283	43	109	1207	293
RTOR Reduction (vph)	0	0	54	0	0	110	0	0	10	0	0	119
Lane Group Flow (vph)	228	130	11	87	293	19	141	1283	33	109	1207	174
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)	9.6	17.9	17.9	7.3	15.7	15.7	9.2	53.2	53.2	8.2	51.8	51.8
Effective Green, g (s)	9.6	17.9	17.9	7.3	15.7	15.7	9.2	53.2	53.2	8.2	51.8	51.8
Actuated g/C Ratio	0.09	0.17	0.17	0.07	0.15	0.15	0.09	0.49	0.49	0.08	0.48	0.48
Clearance Time (s)	5.6	5.5	5.5	5.5	5.3	5.3	5.5	5.3	5.3	5.3	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	305	585	262	232	514	230	292	1740	778	260	1694	758
v/s Ratio Prot	c0.07	0.04		0.03	c0.08		c0.04	c0.36		0.03	0.34	
v/s Ratio Perm			0.01			0.01			0.02			0.11
v/c Ratio	0.75	0.22	0.04	0.38	0.57	0.08	0.48	0.74	0.04	0.42	0.71	0.23
Uniform Delay, d1	48.1	39.1	37.9	48.3	43.1	40.0	47.2	21.9	14.3	47.7	22.3	16.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.5	0.1	0.0	0.4	1.0	0.1	0.5	1.4	0.0	0.4	1.2	0.1
Delay (s)	56.6	39.2	38.0	48.6	44.1	40.1	47.7	23.4	14.3	48.1	23.5	16.6
Level of Service	E	D	D	D	D	D	D	C	B	D	C	B
Approach Delay (s)		48.4			43.8			25.4			23.9	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			29.6				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			108.2				Sum of lost time (s)			16.4		
Intersection Capacity Utilization			68.1%				ICU Level of Service				C	
Analysis Period (min)			15									
c	Critical Lane Group											

















HCM Signalized Intersection Capacity Analysis
13: Bilby Rd & Bruceville Rd

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	80	140	80	80	290	250	130	390	90	120	250	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	86	151	86	86	312	269	140	419	97	129	269	140
RTOR Reduction (vph)	0	0	70	0	0	217	0	0	72	0	0	104
Lane Group Flow (vph)	86	151	16	86	312	52	140	419	25	129	269	36
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	4.9	12.6	12.6	4.9	12.6	12.6	5.6	17.1	17.1	5.5	17.0	17.0
Effective Green, g (s)	4.9	12.6	12.6	4.9	12.6	12.6	5.6	17.1	17.1	5.5	17.0	17.0
Actuated g/C Ratio	0.07	0.19	0.19	0.07	0.19	0.19	0.09	0.26	0.26	0.08	0.26	0.26
Clearance Time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	4.5	4.5	2.0	4.5	4.5
Lane Grp Cap (vph)	256	679	304	256	679	304	293	921	412	287	916	410
v/s Ratio Prot	c0.03	0.04		0.03	c0.09		c0.04	c0.12		0.04	0.08	
v/s Ratio Perm			0.01			0.03			0.02			0.02
v/c Ratio	0.34	0.22	0.05	0.34	0.46	0.17	0.48	0.45	0.06	0.45	0.29	0.09
Uniform Delay, d1	28.9	22.4	21.7	28.9	23.5	22.2	28.7	20.4	18.3	28.7	19.5	18.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	0.0	0.3	0.2	0.1	0.4	0.6	0.1	0.4	0.3	0.2
Delay (s)	29.1	22.5	21.7	29.1	23.7	22.3	29.1	21.0	18.4	29.1	19.8	18.6
Level of Service	C	C	C	C	C	C	C	C	B	C	B	B
Approach Delay (s)		24.0			23.8			22.3			21.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			22.9				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			65.7				Sum of lost time (s)		18.4			
Intersection Capacity Utilization			48.5%				ICU Level of Service		A			
Analysis Period (min)			15									
c	Critical Lane Group											


















HCM Signalized Intersection Capacity Analysis
 14: Hood-Franklin Rd & SB I-5 Ramp

Cumulative Plus Project Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	90	10	0	70	620	0	0	0	820	0	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.2			7.2					5.6		5.6
Lane Util. Factor		1.00			1.00					1.00		1.00
Frt		0.99			0.88					1.00		0.85
Flt Protected		1.00			1.00					0.95		1.00
Satd. Flow (prot)		1837			1637					1770		1583
Flt Permitted		1.00			1.00					0.95		1.00
Satd. Flow (perm)		1837			1637					1770		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	98	11	0	76	674	0	0	0	891	0	43
RTOR Reduction (vph)	0	7	0	0	537	0	0	0	0	0	0	19
Lane Group Flow (vph)	0	102	0	0	213	0	0	0	0	891	0	24
Turn Type										Prot		custom
Protected Phases		4			8					6		
Permitted Phases												6
Actuated Green, G (s)		11.2			11.2					31.3		31.3
Effective Green, g (s)		11.2			11.2					31.3		31.3
Actuated g/C Ratio		0.20			0.20					0.57		0.57
Clearance Time (s)		7.2			7.2					5.6		5.6
Vehicle Extension (s)		2.0			2.0					2.0		2.0
Lane Grp Cap (vph)		372			332					1002		896
v/s Ratio Prot		0.06			0.13					0.50		
v/s Ratio Perm												0.02
v/c Ratio		0.27			0.64					0.89		0.03
Uniform Delay, d1		18.6			20.2					10.5		5.3
Progression Factor		1.00			1.00					1.00		1.00
Incremental Delay, d2		0.1			3.1					9.5		0.0
Delay (s)		18.8			23.3					20.0		5.3
Level of Service		B			C					B		A
Approach Delay (s)		18.8			23.3			0.0			19.3	
Approach LOS		B			C			A			B	
Intersection Summary												
HCM Average Control Delay			21.0			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			55.3			Sum of lost time (s)			12.8			
Intersection Capacity Utilization			96.7%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												













HCM Signalized Intersection Capacity Analysis
 15: Hood-Franklin Rd & NB I-5 Ramp

Cumulative Plus Project Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	880	30	0	680	780	10	0	850	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.7	4.0	6.7		6.7			
Lane Util. Factor		1.00			1.00	1.00	1.00		0.88			
Frt		1.00			1.00	0.85	1.00		0.85			
Flt Protected		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)		1854			1863	1583	1770		2787			
Flt Permitted		1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)		1854			1863	1583	1770		2787			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	926	32	0	716	821	11	0	895	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	157	0	0	0
Lane Group Flow (vph)	0	957	0	0	716	821	11	0	738	0	0	0
Turn Type						Free	Prot		custom			
Protected Phases		4			8		2					
Permitted Phases						Free			2			
Actuated Green, G (s)		48.1			47.5	86.3	25.4		25.4			
Effective Green, g (s)		48.1			47.5	86.3	25.4		25.4			
Actuated g/C Ratio		0.56			0.55	1.00	0.29		0.29			
Clearance Time (s)		6.1			6.7		6.7		6.7			
Vehicle Extension (s)		2.0			2.0		2.0		2.0			
Lane Grp Cap (vph)		1033			1025	1583	521		820			
v/s Ratio Prot		c0.52			0.38		0.01					
v/s Ratio Perm						0.52			c0.26			
v/c Ratio		0.93			0.70	0.52	0.02		0.90			
Uniform Delay, d1		17.5			14.2	0.0	21.6		29.2			
Progression Factor		1.00			1.00	1.00	1.00		1.00			
Incremental Delay, d2		13.3			1.7	1.2	0.0		12.7			
Delay (s)		30.8			15.9	1.2	21.6		41.9			
Level of Service		C			B	A	C		D			
Approach Delay (s)		30.8			8.0			41.7			0.0	
Approach LOS		C			A			D			A	
Intersection Summary												
HCM Average Control Delay			23.4			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			86.3			Sum of lost time (s)			12.8			
Intersection Capacity Utilization			88.5%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												


















HCM Unsignalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd

Cumulative Plus Project Conditions
 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	370	20	10	60	50	110
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	402	22	11	65	54	120
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	402	22	11	65	54	120
Volume Left (vph)	402	0	11	0	0	0
Volume Right (vph)	0	22	0	0	0	120
Hadj (s)	0.53	-0.67	0.53	0.03	0.03	-0.67
Departure Headway (s)	5.7	4.5	6.5	6.0	5.9	5.2
Degree Utilization, x	0.64	0.03	0.02	0.11	0.09	0.17
Capacity (veh/h)	616	767	510	551	566	644
Control Delay (s)	16.9	6.4	8.5	8.6	8.3	8.1
Approach Delay (s)	16.4		8.6		8.2	
Approach LOS	C		A		A	
Intersection Summary						
Delay			13.4			
HCM Level of Service			B			
Intersection Capacity Utilization			34.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
17: Driveway & Franklin Blvd

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	10	10	10	10	10	10	10	230	10	190	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	11	11	11	11	11	11	11	250	11	207	11
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total (vph)	33	33	22	250	228							
Volume Left (vph)	11	11	11	0	11							
Volume Right (vph)	11	11	0	250	11							
Hadj (s)	-0.10	-0.10	0.13	-0.57	0.01							
Departure Headway (s)	4.4	4.4	4.4	3.2	4.1							
Degree Utilization, x	0.04	0.04	0.03	0.22	0.26							
Capacity (veh/h)	762	763	787	1122	860							
Control Delay (s)	7.6	7.6	7.5	7.1	8.5							
Approach Delay (s)	7.6	7.6	7.1		8.5							
Approach LOS	A	A	A		A							
Intersection Summary												
Delay			7.7									
HCM Level of Service			A									
Intersection Capacity Utilization			38.7%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 18: Bilby Road & Willard Pkwy

Cumulative Plus Project Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	390	210	90	310	240	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	4.6	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	424	228	98	337	261	65
RTOR Reduction (vph)	0	162	0	0	0	43
Lane Group Flow (vph)	424	66	98	337	261	22
Turn Type		Perm	Prot			Perm
Protected Phases	6		7	5 4	8	
Permitted Phases		6				8
Actuated Green, G (s)	28.8	28.8	9.8	24.3	33.7	33.7
Effective Green, g (s)	28.8	28.8	9.8	18.6	33.7	33.7
Actuated g/C Ratio	0.29	0.29	0.10	0.19	0.34	0.34
Clearance Time (s)	5.6	5.6	5.6		5.7	5.7
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	515	461	175	666	1206	539
v/s Ratio Prot	c0.24		c0.06	c0.10	c0.07	
v/s Ratio Perm		0.04				0.01
v/c Ratio	0.82	0.14	0.56	0.51	0.22	0.04
Uniform Delay, d1	32.7	25.9	42.5	36.0	23.2	21.8
Progression Factor	1.00	1.00	1.09	0.87	1.00	1.00
Incremental Delay, d2	9.8	0.1	2.4	0.2	0.0	0.0
Delay (s)	42.5	26.0	48.6	31.7	23.2	21.8
Level of Service	D	C	D	C	C	C
Approach Delay (s)	36.7			35.5	23.0	
Approach LOS	D			D	C	

Intersection Summary

HCM Average Control Delay	33.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	98.9	Sum of lost time (s)	26.1
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: Bilby Road & Willard Pkwy

Cumulative Plus Project Conditions
 PM Peak Hour



























Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	300	100	10	400	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	5.7		5.6	5.7
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3490		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	3490		1770	3539
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	323	108	11	430	54
RTOR Reduction (vph)	0	230	7	0	0	0
Lane Group Flow (vph)	11	93	112	0	430	54
Turn Type		Perm			Prot	
Protected Phases	2		4		3	8 1
Permitted Phases		2				
Actuated Green, G (s)	28.6	28.6	13.5		30.0	43.3
Effective Green, g (s)	28.6	28.6	13.5		30.0	43.3
Actuated g/C Ratio	0.29	0.29	0.14		0.30	0.44
Clearance Time (s)	7.0	7.0	5.7		5.6	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	512	458	476		537	1549
v/s Ratio Prot	0.01		c0.03		c0.24	c0.02
v/s Ratio Perm		c0.06				
v/c Ratio	0.02	0.20	0.24		0.80	0.03
Uniform Delay, d1	25.1	26.6	38.1		31.7	15.9
Progression Factor	1.00	1.00	1.00		0.98	0.59
Incremental Delay, d2	0.0	0.1	0.1		7.8	0.0
Delay (s)	25.1	26.6	38.2		38.9	9.4
Level of Service	C	C	D		D	A
Approach Delay (s)	26.6		38.2			35.6
Approach LOS	C		D			D

Intersection Summary			
HCM Average Control Delay		32.7	HCM Level of Service C
HCM Volume to Capacity ratio		0.38	
Actuated Cycle Length (s)		98.9	Sum of lost time (s) 11.3
Intersection Capacity Utilization		58.0%	ICU Level of Service B
Analysis Period (min)		15	
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
20: Kammerer Rd & Bruceville Rd

Cumulative Plus Project Conditions
PM Peak Hour

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	900	10	20	1360	390	10	40	10	170	50	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	189	947	11	21	1432	411	11	42	11	179	53	126
RTOR Reduction (vph)	0	0	4	0	0	118	0	0	10	0	0	104
Lane Group Flow (vph)	189	947	7	21	1432	293	11	42	1	179	53	22
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	14.6	63.9	63.9	2.7	52.0	52.0	5.5	8.3	8.3	17.5	20.3	20.3
Effective Green, g (s)	14.6	63.9	63.9	2.7	52.0	52.0	5.5	8.3	8.3	17.5	20.3	20.3
Actuated g/C Ratio	0.12	0.54	0.54	0.02	0.44	0.44	0.05	0.07	0.07	0.15	0.17	0.17
Clearance Time (s)	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2	5.6	7.2	7.2
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	219	1916	857	41	1560	698	83	131	111	263	320	272
v/s Ratio Prot	c0.11	0.27		0.01	c0.40		0.01	c0.02		c0.10	0.03	
v/s Ratio Perm			0.00			0.19			0.00			0.01
v/c Ratio	0.86	0.49	0.01	0.51	0.92	0.42	0.13	0.32	0.01	0.68	0.17	0.08
Uniform Delay, d1	50.7	16.9	12.5	57.0	31.0	22.6	54.0	52.2	51.0	47.6	41.6	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	26.9	0.1	0.0	4.4	8.7	0.1	0.3	0.5	0.0	5.7	0.1	0.0
Delay (s)	77.7	17.0	12.5	61.4	39.7	22.8	54.2	52.7	51.0	53.3	41.7	41.1
Level of Service	E	B	B	E	D	C	D	D	D	D	D	D
Approach Delay (s)		27.0			36.2			52.7			47.3	
Approach LOS		C			D			D			D	

Intersection Summary

HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	25.6
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			













HCM Signalized Intersection Capacity Analysis
21: Kammerer Rd & Promenade Pkwy

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1920	260	410	1720	1070	60	40	450	1090	200	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	4.0	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	170	2043	277	436	1830	1138	64	43	479	1160	213	149
RTOR Reduction (vph)	0	0	197	0	0	0	0	0	214	0	0	104
Lane Group Flow (vph)	170	2043	80	436	1830	1138	64	43	265	1160	213	45
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			Free			4			8
Actuated Green, G (s)	8.5	42.7	42.7	26.4	60.6	148.3	8.1	28.9	28.9	24.8	45.1	45.1
Effective Green, g (s)	8.5	42.7	42.7	26.4	60.6	148.3	8.1	28.9	28.9	24.8	45.1	45.1
Actuated g/C Ratio	0.06	0.29	0.29	0.18	0.41	1.00	0.05	0.19	0.19	0.17	0.30	0.30
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7		6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	197	1845	456	315	2078	2787	97	363	308	834	1076	481
v/s Ratio Prot	0.05	c0.32		c0.25	0.36		0.04	0.02		c0.23	0.06	
v/s Ratio Perm			0.05			0.41			c0.17			0.03
v/c Ratio	0.86	1.11	0.17	1.38	0.88	0.41	0.66	0.12	0.86	1.39	0.20	0.09
Uniform Delay, d1	69.3	52.8	39.6	61.0	40.5	0.0	68.7	49.2	57.7	61.8	38.2	37.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.2	56.8	0.1	191.4	4.6	0.4	11.7	0.1	19.9	183.3	0.0	0.0
Delay (s)	98.5	109.6	39.7	252.4	45.1	0.4	80.5	49.3	77.6	245.0	38.2	37.0
Level of Service	F	F	D	F	D	A	F	D	E	F	D	D
Approach Delay (s)		101.1			56.7			75.9			195.7	
Approach LOS		F			E			E			F	
Intersection Summary												
HCM Average Control Delay			98.4			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.17									
Actuated Cycle Length (s)			148.3			Sum of lost time (s)		25.5				
Intersection Capacity Utilization			96.7%			ICU Level of Service		F				
Analysis Period (min)			15									
c Critical Lane Group												













HCM Signalized Intersection Capacity Analysis
22: Grant Line Rd & SR-99 SB Off-ramp

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↖	↕	↗
Volume (vph)	0	2870	590	0	2460	640	0	0	0	210	0	740
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1451	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1451	1504
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2990	615	0	2562	667	0	0	0	219	0	771
RTOR Reduction (vph)	0	0	150	0	0	0	0	0	0	0	2	2
Lane Group Flow (vph)	0	2990	465	0	2562	667	0	0	0	197	398	391
Turn Type		Perm			Free					Split		Perm
Protected Phases		6			2					8	8	
Permitted Phases			6			Free						8
Actuated Green, G (s)		89.4	89.4		89.4	143.1				41.4	41.4	41.4
Effective Green, g (s)		89.4	89.4		89.4	143.1				41.4	41.4	41.4
Actuated g/C Ratio		0.62	0.62		0.62	1.00				0.29	0.29	0.29
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		3177	989		3177	1583				486	420	435
v/s Ratio Prot		c0.59			0.50					0.12	c0.27	
v/s Ratio Perm			0.29			0.42						0.26
v/c Ratio		0.94	0.47		0.81	0.42				0.41	0.95	0.90
Uniform Delay, d1		24.5	14.3		20.3	0.0				40.9	49.8	48.8
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		6.6	0.5		1.7	0.8				0.2	30.2	20.3
Delay (s)		31.1	14.8		22.0	0.8				41.1	80.0	69.2
Level of Service		C	B		C	A				D	E	E
Approach Delay (s)		28.3			17.6			0.0			68.0	
Approach LOS		C			B			A			E	
Intersection Summary												
HCM Average Control Delay			28.9									HCM Level of Service C
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			143.1							12.3		
Intersection Capacity Utilization			88.3%									ICU Level of Service E
Analysis Period (min)			15									
c	Critical Lane Group											





























HCM Signalized Intersection Capacity Analysis
23: Grant Line Rd & SR-99 NB On-ramp

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↗	↖	↖			
Volume (vph)	0	2260	820	0	2440	320	660	0	590	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	4.0		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2457	891	0	2652	348	717	0	641	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	138	0	0	1	0	0	0
Lane Group Flow (vph)	0	2457	891	0	2652	210	358	359	640	0	0	0
Turn Type			Free			Perm	Split		Perm			
Protected Phases		6			2		4	4				
Permitted Phases			Free			2			4			
Actuated Green, G (s)		54.2	95.3		54.7	54.7	30.3	30.3	30.3			
Effective Green, g (s)		54.2	95.3		54.7	54.7	30.3	30.3	30.3			
Actuated g/C Ratio		0.57	1.00		0.57	0.57	0.32	0.32	0.32			
Clearance Time (s)		6.2			5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0			4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2892	1583		2919	909	534	534	886			
v/s Ratio Prot		0.48			c0.52		0.21	0.21				
v/s Ratio Perm			0.56			0.13			c0.23			
v/c Ratio		0.85	0.56		0.91	0.23	0.67	0.67	0.72			
Uniform Delay, d1		17.1	0.0		18.1	10.0	28.2	28.2	28.8			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		2.6	1.5		4.7	0.2	2.6	2.6	2.5			
Delay (s)		19.8	1.5		22.8	10.1	30.8	30.8	31.3			
Level of Service		B	A		C	B	C	C	C			
Approach Delay (s)		14.9			21.3			31.0			0.0	
Approach LOS		B			C			C			A	
Intersection Summary												
HCM Average Control Delay			20.2				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			95.3				Sum of lost time (s)		10.3			
Intersection Capacity Utilization			74.0%				ICU Level of Service		D			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
24: Grant Line Rd & Stockton Blvd

Cumulative Plus Project Conditions
PM Peak Hour





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  						 	
Volume (vph)	600	2000	170	40	2010	120	290	30	30	110	20	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91		1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	5085	1583	1770	5042		1770	1723		1681	1711	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	0.82	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5042		1770	1723		1681	1443	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	652	2174	185	43	2185	130	315	33	33	120	22	500
RTOR Reduction (vph)	0	0	115	0	4	0	0	21	0	0	0	149
Lane Group Flow (vph)	652	2174	70	43	2311	0	315	45	0	71	71	351
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6									8
Actuated Green, G (s)	16.3	56.1	56.1	3.9	43.7		30.8	47.6		23.4	63.6	40.2
Effective Green, g (s)	16.3	56.1	56.1	3.9	43.7		30.8	47.6		23.4	63.6	40.2
Actuated g/C Ratio	0.11	0.36	0.36	0.03	0.28		0.20	0.31		0.15	0.41	0.26
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	362	1846	575	45	1426		353	531		255	635	412
v/s Ratio Prot	c0.19	0.43		0.02	c0.46		c0.18	0.03		0.04	0.02	
v/s Ratio Perm			0.04								0.03	c0.22
v/c Ratio	1.80	1.18	0.12	0.96	1.62		0.89	0.09		0.28	0.11	0.85
Uniform Delay, d1	69.1	49.2	32.8	75.2	55.4		60.2	38.0		58.1	28.0	54.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	371.3	86.0	0.1	115.5	282.4		23.5	0.1		0.2	0.0	14.9
Delay (s)	440.4	135.2	32.9	190.7	337.8		83.7	38.0		58.3	28.1	69.2
Level of Service	F	F	C	F	F		F	D		E	C	E
Approach Delay (s)		195.0			335.2			75.8			63.4	
Approach LOS		F			F			E			E	

Intersection Summary

HCM Average Control Delay	226.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	154.5	Sum of lost time (s)	23.5
Intersection Capacity Utilization	100.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
25: Grant Line Road & Waterman Road

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	530	1300	0	0	1170	10	0	0	0	110	0	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Lane Util. Factor	0.97	1.00			0.95	1.00					1.00	0.88
Frpb, ped/bikes	1.00	1.00			1.00	0.99					1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00					1.00	1.00
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	1863			3539	1561					1770	2787
Flt Permitted	0.95	1.00			1.00	1.00					0.95	1.00
Satd. Flow (perm)	3433	1863			3539	1561					1770	2787
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	552	1354	0	0	1219	10	0	0	0	115	0	583
RTOR Reduction (vph)	0	0	0	0	0	3	0	0	0	0	0	542
Lane Group Flow (vph)	552	1354	0	0	1219	7	0	0	0	0	115	41
Confl. Bikes (#/hr)			2			4						
Turn Type	Prot			Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases						2						3
Actuated Green, G (s)	25.1	83.0			52.3	52.3					8.2	8.2
Effective Green, g (s)	25.1	83.0			52.3	52.3					8.2	8.2
Actuated g/C Ratio	0.22	0.71			0.45	0.45					0.07	0.07
Clearance Time (s)	5.6	6.5			6.5	6.5					7.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0					2.0	2.0
Lane Grp Cap (vph)	742	1331			1593	703					125	197
v/s Ratio Prot	0.16	c0.73			0.34						c0.06	
v/s Ratio Perm						0.00						0.01
v/c Ratio	0.74	1.02			0.77	0.01					0.92	0.21
Uniform Delay, d1	42.5	16.6			26.8	17.7					53.7	50.9
Progression Factor	1.00	1.00			1.00	1.00					1.00	1.00
Incremental Delay, d2	3.6	29.1			2.0	0.0					55.7	0.2
Delay (s)	46.1	45.7			28.8	17.7					109.3	51.1
Level of Service	D	D			C	B					F	D
Approach Delay (s)		45.8			28.7			0.0			60.7	
Approach LOS		D			C			A			E	
Intersection Summary												
HCM Average Control Delay			43.0				HCM Level of Service				D	
HCM Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			116.2				Sum of lost time (s)			25.0		
Intersection Capacity Utilization			94.6%				ICU Level of Service			F		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 26: Kammerer Road & Hood Franklin Road























Cumulative Plus Project Conditions
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Volume (veh/h)	0	1410	1530	10	0	90
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1533	1663	11	0	98
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1674				2435	837
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1674				2435	837
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	68
cM capacity (veh/h)	379				26	310
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	766	766	1109	565	98	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	11	98	
cSH	1700	1700	1700	1700	310	
Volume to Capacity	0.45	0.45	0.65	0.33	0.32	
Queue Length 95th (ft)	0	0	0	0	33	
Control Delay (s)	0.0	0.0	0.0	0.0	21.9	
Lane LOS					C	
Approach Delay (s)	0.0		0.0		21.9	
Approach LOS					C	
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			54.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
27: Kammerer Road & Franklin Blvd

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	1380	20	80	1310	10	20	0	60	10	60	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.5	5.5		5.5	5.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1583		1770	1645	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1583		1770	1645	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	1500	22	87	1424	11	22	0	65	11	65	228
RTOR Reduction (vph)	0	0	8	0	0	4	0	55	0	0	136	0
Lane Group Flow (vph)	11	1500	14	87	1424	7	22	10	0	11	157	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	1.0	44.4	44.4	5.9	49.3	49.3	2.3	13.2		1.0	11.9	
Effective Green, g (s)	1.0	44.4	44.4	5.9	49.3	49.3	2.3	13.2		1.0	11.9	
Actuated g/C Ratio	0.01	0.50	0.50	0.07	0.55	0.55	0.03	0.15		0.01	0.13	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.5	5.5		5.5	5.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	20	1756	785	117	1949	872	45	233		20	219	
v/s Ratio Prot	0.01	c0.42		c0.05	c0.40		c0.01	0.01		0.01	c0.10	
v/s Ratio Perm			0.01			0.00						
v/c Ratio	0.55	0.85	0.02	0.74	0.73	0.01	0.49	0.04		0.55	0.72	
Uniform Delay, d1	44.0	19.7	11.5	41.1	15.1	9.1	43.0	32.7		44.0	37.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.2	4.1	0.0	19.8	1.2	0.0	3.0	0.0		17.2	8.9	
Delay (s)	61.3	23.8	11.5	60.9	16.3	9.1	46.0	32.7		61.3	46.1	
Level of Service	E	C	B	E	B	A	D	C		E	D	
Approach Delay (s)		23.9			18.8			36.1			46.7	
Approach LOS		C			B			D			D	

Intersection Summary

HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	32.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
28: Kammerer Road & Willard Pkwy

Cumulative Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↗	↑↑	↖↗	↗	↖	↖↗
Volume (vph)	520	920	1280	210	160	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	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	3539	3539	1583	1770	2787
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	565	1000	1391	228	174	130
RTOR Reduction (vph)	0	0	0	125	0	109
Lane Group Flow (vph)	565	1000	1391	103	174	21
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	13.1	53.2	33.1	33.1	12.7	12.7
Effective Green, g (s)	13.1	53.2	33.1	33.1	12.7	12.7
Actuated g/C Ratio	0.17	0.68	0.42	0.42	0.16	0.16
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	574	2401	1494	668	287	451
v/s Ratio Prot	c0.16	0.28	c0.39		c0.10	
v/s Ratio Perm				0.07		0.01
v/c Ratio	0.98	0.42	0.93	0.15	0.61	0.05
Uniform Delay, d1	32.5	5.6	21.6	14.0	30.5	27.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	33.2	0.0	10.6	0.0	2.5	0.0
Delay (s)	65.8	5.7	32.2	14.0	33.0	27.8
Level of Service	E	A	C	B	C	C
Approach Delay (s)		27.4	29.6		30.8	
Approach LOS		C	C		C	

Intersection Summary

HCM Average Control Delay	28.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	19.5
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: Kammerer Rd & Collector 2

Cumulative Plus Project Conditions
PM Peak Hour



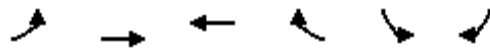
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↗↗	↖	↖	↖
Volume (vph)	70	1010	1610	20	30	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	1098	1750	22	33	185
RTOR Reduction (vph)	0	0	0	7	0	146
Lane Group Flow (vph)	76	1098	1750	15	33	39
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	6.0	63.9	50.9	50.9	8.2	8.2
Effective Green, g (s)	6.0	63.9	50.9	50.9	8.2	8.2
Actuated g/C Ratio	0.07	0.76	0.60	0.60	0.10	0.10
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	126	2673	2129	952	172	153
v/s Ratio Prot	0.04	c0.31	c0.49		0.02	
v/s Ratio Perm				0.01		c0.02
v/c Ratio	0.60	0.41	0.82	0.02	0.19	0.25
Uniform Delay, d1	38.1	3.7	13.3	6.8	35.2	35.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	0.0	2.6	0.0	0.2	0.3
Delay (s)	43.6	3.7	15.8	6.8	35.3	35.7
Level of Service	D	A	B	A	D	D
Approach Delay (s)		6.3	15.7		35.6	
Approach LOS		A	B		D	

Intersection Summary

HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	19.5
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
30: Kammerer Rd & Big Horn Blvd

Cumulative Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗↘	↑↑	↑↑	↗	↘	↗
Volume (vph)	250	790	1250	330	340	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
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	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	272	859	1359	359	370	402
RTOR Reduction (vph)	0	0	0	223	0	183
Lane Group Flow (vph)	272	859	1359	136	370	219
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	7.9	43.1	28.2	28.2	19.0	19.0
Effective Green, g (s)	7.9	43.1	28.2	28.2	19.0	19.0
Actuated g/C Ratio	0.11	0.58	0.38	0.38	0.25	0.25
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	364	2045	1338	598	451	403
v/s Ratio Prot	c0.08	0.24	c0.38		c0.21	
v/s Ratio Perm				0.09		0.14
v/c Ratio	0.75	0.42	1.02	0.23	0.82	0.54
Uniform Delay, d1	32.4	8.8	23.2	15.8	26.2	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.2	0.1	28.6	0.1	10.9	0.8
Delay (s)	39.5	8.8	51.8	15.9	37.1	24.8
Level of Service	D	A	D	B	D	C
Approach Delay (s)		16.2	44.3		30.7	
Approach LOS		B	D		C	

Intersection Summary

HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	74.6	Sum of lost time (s)	19.5
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
31: Kammerer Rd & Collector 1

Cumulative Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	90	1030	1430	180	340	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
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)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	1120	1554	196	370	174
RTOR Reduction (vph)	0	0	0	97	0	131
Lane Group Flow (vph)	98	1120	1554	99	370	43
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	5.9	53.6	40.7	40.7	21.5	21.5
Effective Green, g (s)	5.9	53.6	40.7	40.7	21.5	21.5
Actuated g/C Ratio	0.07	0.61	0.46	0.46	0.25	0.25
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	119	2165	1644	735	434	389
v/s Ratio Prot	0.06	c0.32	c0.44		c0.21	
v/s Ratio Perm				0.06		0.03
v/c Ratio	0.82	0.52	0.95	0.13	0.85	0.11
Uniform Delay, d1	40.3	9.7	22.4	13.4	31.5	25.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	33.5	0.1	11.5	0.0	14.4	0.0
Delay (s)	73.9	9.7	33.9	13.4	45.9	25.7
Level of Service	E	A	C	B	D	C
Approach Delay (s)		14.9	31.6		39.4	
Approach LOS		B	C		D	

Intersection Summary

HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	87.6	Sum of lost time (s)	19.5
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
32: Kammerer Rd & Lotz Pkwy

Cumulative Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	210	1310	1350	550	840	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Lane Util. Factor	0.97	0.95	0.95	1.00	0.97	1.00
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	3539	3539	1583	3433	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3539	1583	3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	1424	1467	598	913	239
RTOR Reduction (vph)	0	0	0	341	0	143
Lane Group Flow (vph)	228	1424	1467	257	913	96
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	7.9	52.9	38.0	38.0	24.5	24.5
Effective Green, g (s)	7.9	52.9	38.0	38.0	24.5	24.5
Actuated g/C Ratio	0.09	0.59	0.42	0.42	0.27	0.27
Clearance Time (s)	7.0	7.0	7.0	7.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	302	2082	1496	669	936	431
v/s Ratio Prot	0.07	c0.40	c0.41		c0.27	
v/s Ratio Perm				0.16		0.06
v/c Ratio	0.75	0.68	0.98	0.38	0.98	0.22
Uniform Delay, d1	40.1	12.7	25.6	17.9	32.4	25.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.2	0.8	18.7	0.1	23.3	0.1
Delay (s)	49.2	13.5	44.3	18.0	55.7	25.4
Level of Service	D	B	D	B	E	C
Approach Delay (s)		18.4	36.7		49.4	
Approach LOS		B	D		D	

Intersection Summary

HCM Average Control Delay	33.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	19.5
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
33: Kammerer Rd & Sterling Meadows Pkwy

Cumulative Plus Project Conditions
PM Peak Hour



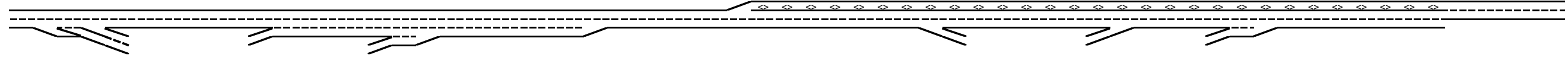
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	130	2020	1640	100	100	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	5085	5085	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	5085	5085	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	2196	1783	109	109	152
RTOR Reduction (vph)	0	0	0	61	0	127
Lane Group Flow (vph)	141	2196	1783	48	109	25
Turn Type	Prot			Perm		Perm
Protected Phases	7	4	8		6	
Permitted Phases				8		6
Actuated Green, G (s)	8.1	47.7	32.6	32.6	12.1	12.1
Effective Green, g (s)	8.1	47.7	32.6	32.6	12.1	12.1
Actuated g/C Ratio	0.11	0.65	0.44	0.44	0.16	0.16
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	194	3287	2246	699	290	260
v/s Ratio Prot	0.08	c0.43	c0.35		c0.06	
v/s Ratio Perm				0.03		0.02
v/c Ratio	0.73	0.67	0.79	0.07	0.38	0.10
Uniform Delay, d1	31.8	8.1	17.7	11.9	27.5	26.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.7	0.5	2.0	0.0	0.8	0.2
Delay (s)	44.5	8.6	19.7	11.9	28.3	26.4
Level of Service	D	A	B	B	C	C
Approach Delay (s)		10.8	19.3		27.2	
Approach LOS		B	B		C	

Intersection Summary

HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Project: Southeast Policy Area EIR
 Freeway Corridor: State Route 99 NB
 Alternative: Cumulative Plus Project Conditions
 Time Period: AM Peak Hour

hide	0 0 2 0 0	0 0 2 0 0	0 0 2 0 0	0 0 3 0 0	0 0 3 0 0	0 0 2 0 0	1 1 2	1 2 0	1 2	1 2	1 2	1 2	2
hide	0 FALSE FALSE TRUE 0	0 FALSE TRUE FALSE 0	0 FALSE FALSE FALSE 0	0 TRUE FALSE FALSE 0	0 FALSE FALSE FALSE 1	0 FALSE FALSE FALSE 0		FALSE FALSE 0		FALSE	TRUE	FALSE	
hide	0 0 14 2 1	0 0 14 0 0	1 1 14 0 0	1 1 14 0 0	0 0 14 0 0	0 0 14 0 0	0 14 0	0 0 14 1	0 14 0	0 1 14	1 1 14	0 0 14	
hide			0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0							
Location	1	2	3	4	5	6	7	8	9	10	11	12	13

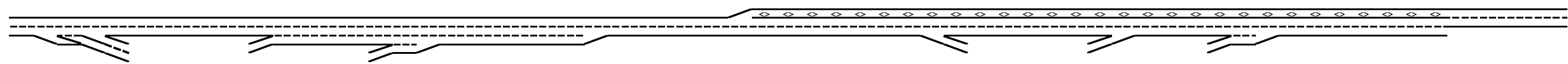
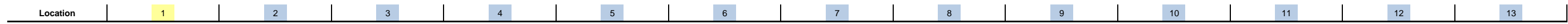


Key

$\langle \rangle$ Express Lane (HOV)

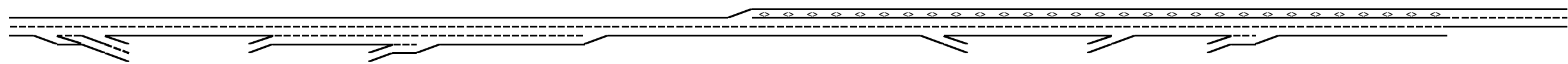
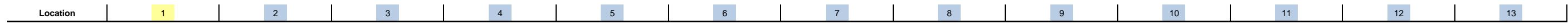
No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Define Freeway Segment													
Type	Diverge	Basic	Basic	Merge	Basic	Basic	Basic	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,500	1,300	1,500	400	6,700	1,050	1,500	1,700	850	1,500	100	8,700
Accel Length				320						175	1,200		
Decel Length	1,450							170					
Mainline Volume	3,500	2,050	2,050	2,510	2,700	2,700	2,700	2,700	2,270	2,270	3,600	3,970	3,500
On Ramp Volume			460	190						1,330	370		
Off Ramp Volume	1,450							430					
Express Lane Volume							810	810	681	681	1,080	1,191	1,050
EL On Ramp Volume													
EL Off Ramp Volume													
Calculate Flow Rate in General Purpose Lanes (GP)													
GP Volume (vph)	3,500	2,050	2,510	2,700	2,700	2,700	1,890	1,890	1,589	2,919	2,890	2,779	2,450
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	3	3	3	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	13.0%	5.0%	5.0%	15.0%	15.0%	15.0%	5.0%	10.0%	5.0%	5.0%	10.0%	13.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.976	0.939	0.976	0.976	0.930	0.930	0.930	0.976	0.952	0.976	0.976	0.952	0.939
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,899	2,373	2,796	3,008	3,155	3,155	2,208	2,106	1,814	3,252	3,220	3,172	2,836
GP Flow (pcphpl)	1,950	1,187	932	1,003	1,052	1,577	1,104	1,053	907	1,626	1,610	1,586	1,418
Calculate Speed in General Purpose Lanes													
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70	70	70



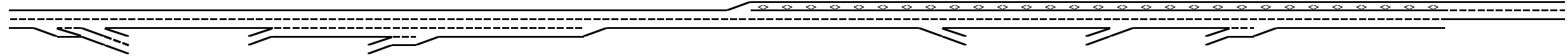
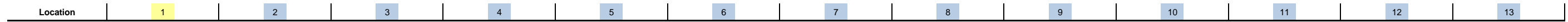
Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Operations in General Purpose Lanes													
v/c ratio	0.81	0.49	0.39	0.42	0.44	0.66	0.46	0.44	0.38	0.68	0.67	0.66	0.59
Speed (mph)	63.5	70.0	70.0	70.0	70.0	68.3	70.0	70.0	70.0	67.9	68.1	68.3	69.4
Density (pcphpl)	30.7	17.0	13.3	14.3	15.0	23.1	15.8	15.0	13.0	24.0	23.7	23.2	20.4
LOS	D	B	B	B	B	C	B	B	B	C	C	C	C
Calculate Operations for Entering GP Lanes													
GP _{IN} Vol (pcph)			2,284	2,796						1,770	2,808		
GP _{IN} Cap (pcph)			4,800	7,200						4,800	4,800		
GP _{IN} v/c ratio			0.48	0.39						0.37	0.58		
Calculate Operations for Exiting GP Lanes													
GP _{OUT} Vol (pcph)	2,284				3,155			1,627					
GP _{OUT} Cap (pcph)	4,800				4,800			4,800					
GP _{OUT} v/c ratio	0.48				0.66			0.34					
Calculate On Ramp Flow Rate													
On Volume (vph)			460	190						1,330	370		
PHF			0.92	0.92						0.92	0.92		
Total Lanes			1	1						1	1		
Terrain			Level	Level						Level	Level		
Grade %			0.0%	0.0%						0.0%	0.0%		
Grade Length (mi)			0.00	0.00						0.00	0.00		
Truck & Bus %			5.0%	5.0%						5.0%	5.0%		
RV %			0.0%	0.0%						0.0%	0.0%		
E _T			1.5	1.5						1.5	1.5		
E _R			1.2	1.2						1.2	1.2		
f _{HV}			0.976	0.976						0.976	0.976		
f _p			1.00	1.00						1.00	1.00		
On Flow (pcph)			513	212						1,482	412		
On Flow (pcphpl)			513	212						1,482	412		
Calculate On Ramp Roadway Operations													
On Ramp Type			Right	Right						Right	Right		
On Ramp Speed (mph)			50	60						60	60		
On Ramp Cap (pcph)			2,100	2,200						2,200	2,200		
On Ramp v/c ratio			0.24	0.10						0.67	0.19		



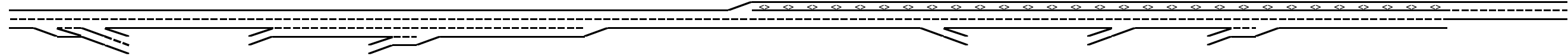
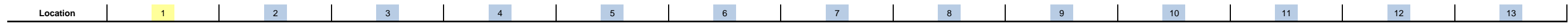
Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Off Ramp Flow Rate													
Off Volume (vph)	1,450							430					
PHF	0.92							0.92					
Total Lanes	2							1					
Terrain	Level							Level					
Grade %	0.0%							0.0%					
Grade Length (mi)	0.00							0.00					
Truck & Bus %	5.0%							5.0%					
RV %	0.0%							0.0%					
E _T	1.5							1.5					
E _R	1.2							1.2					
f _{HV}	0.976							0.976					
f _p	1.00							1.00					
Off Flow (pcph)	1,615							479					
Off Flow (pcphpl)	808							479					
Calculate Off Ramp Roadway Operations													
Off Ramp Type	Right							Right					
Off Ramp Speed	35							45					
Off Ramp Cap (pcph)	4,000							2,100					
Off Ramp v/c ratio	0.40							0.23					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps													
Up Type			No	On									
Up Distance				1,300									
Up Flow (pcph)				513									
Down Type			On	Off									
Down Distance			1,300	3,000									
Down Flow (pcph)			212	479									



Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Merge Influence Area Operations													
Effective v_p (pcph)				2,796						1,770	2,808		
Up Ramp L_{EQ}				1,522									
Down Ramp L_{EQ}				3,331									
P_{FM} (Eqn 13-3)				0.586						0.582	0.611		
P_{FM} (Eqn 13-4)													
P_{FM} (Eqn 13-5)				0.591									
P_{FM}				0.591						1.000	1.000		
v_{12} (pcph)				1,652						1,770	2,808		
v_3 (pcph)				1,145									
v_{34} (pcph)													
v_{12a} (pcph)				1,652						1,770	2,808		
v_{R12a} (pcph)				1,863						3,252	3,220		
Merge Speed Index				0.31						0.40	0.27		
Merge Area Speed				61.4						58.8	62.3		
Outer Lanes Volume				1,145									
Outer Lanes Speed				67.7									
Segment Speed				63.6						58.8	62.3		
Merge v/c ratio				0.41						0.71	0.70		
Merge Density				17.9						29.1	22.9		
Merge LOS				B						D	C		
Calculate Diverge Influence Area Operations													
Effective v_p (pcph)	3,899							2,106					
Up Ramp L_{EQ}													
Down Ramp L_{EQ}													
P_{FD} (Eqn 13-9)	0.588							0.685					
P_{FD} (Eqn 13-10)													
P_{FD} (Eqn 13-11)													
P_{FD}	1.000							1.000					
v_{12} (pcph)	3,899							2,106					
v_3 (pcph)													
v_{34} (pcph)													
v_{12a} (pcph)	3,899							2,106					
Diverge Speed Index	0.57							0.34					
Diverge Area Speed	53.9							60.4					
Outer Lanes Volume													
Outer Lanes Speed													
Segment Speed	53.9							60.4					
Diverge v/c ratio	0.89							0.48					
Diverge Density	24.7							20.8					
Diverge LOS	C							C					

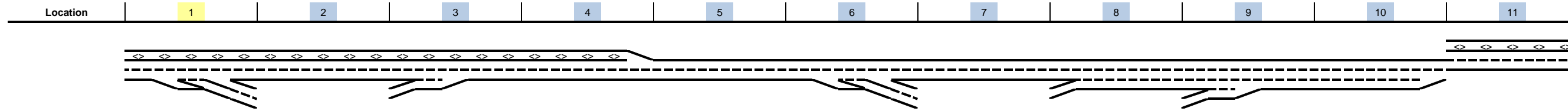


Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Summarize Segment Operations													
Segment v/c ratio	0.89	0.49	0.39	0.41	0.44	0.66	0.46	0.48	0.38	0.71	0.70	0.66	0.59
Segment Density	24.7	17.0	13.3	17.9	15.0	23.1	15.8	20.8	13.0	29.1	22.9	23.2	20.4
Segment LOS	C	B	B	B	B	C	B	C	B	D	C	C	C
Over Capacity													

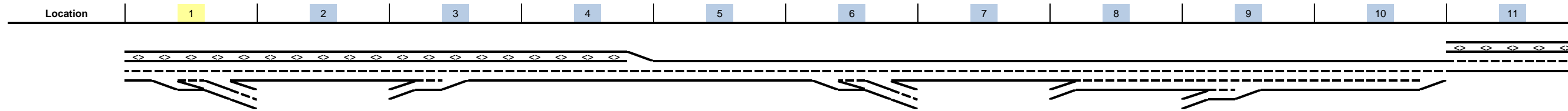
Project: Southeast Policy Area EIR
Freeway Corridor: State Route 99 SB

Alternative: Cumulative Plus Project Conditions
Time Period: AM Peak Hour



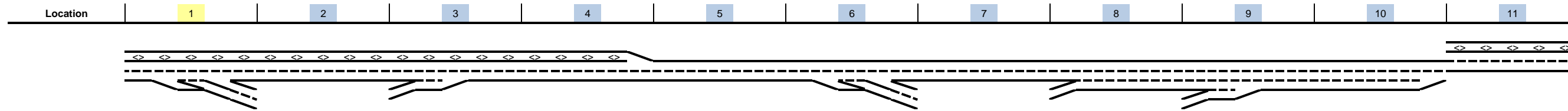
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Define Freeway Segment											
Type	Basic	Basic	Merge	Basic	Basic	Diverge	Basic	Basic	Merge	Basic	Basic
Length (ft)	1,500	2,250	1,500	400	8,050	1,500	1,650	1,200	1,500	400	250
Accel Length			350						350		
Decel Length						1,450					
Mainline Volume	4,540	2,760	2,760	3,120	3,120	3,120	2,080	2,080	2,550	3,060	4,540
On Ramp Volume			360					470	510		
Off Ramp Volume	1,780					1,040					
Express Lane Volume	1,362	828									1,362
EL On Ramp Volume											
EL Off Ramp Volume											
Calculate Flow Rate in General Purpose Lanes (GP)											
GP Volume (vph)	3,178	1,932	3,120	3,120	3,120	3,120	2,080	2,550	3,060	3,060	3,178
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	2	2	2	2	2	3	3	3	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	10.0%	5.0%	15.0%	15.0%	5.0%	13.0%	5.0%	5.0%	13.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.952	0.976	0.930	0.930	0.976	0.939	0.976	0.976	0.939	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,541	2,205	3,476	3,646	3,646	3,476	2,408	2,841	3,409	3,542	3,627
GP Flow (pcphpl)	1,770	1,103	1,738	1,823	1,823	1,738	1,204	947	1,136	1,181	1,814
Calculate Speed in General Purpose Lanes											
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	73.6	73.6	73.6	73.6	74.2	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70



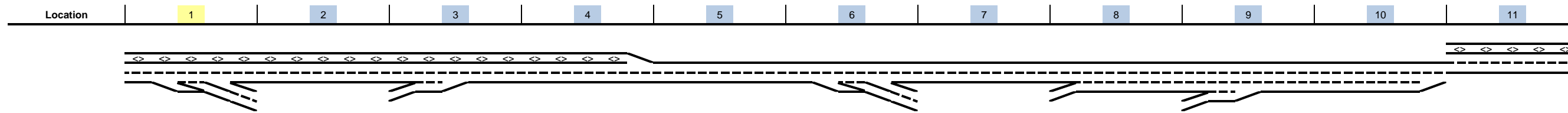
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Operations in General Purpose Lanes											
v/c ratio	0.74	0.46	0.72	0.76	0.76	0.72	0.50	0.39	0.47	0.49	0.76
Speed (mph)	66.2	70.0	66.6	65.5	65.5	66.6	70.0	70.0	70.0	70.0	65.6
Density (pcphpl)	26.7	15.8	26.1	27.8	27.8	26.1	17.2	13.5	16.2	16.9	27.6
LOS	D	B	D	D	D	D	B	B	B	B	D
Calculate Operations for Entering GP Lanes											
GP _{IN} Vol (pcph)			3,075					2,317	2,841		
GP _{IN} Cap (pcph)			4,800					4,800	7,200		
GP _{IN} v/c ratio			0.64					0.48	0.39		
Calculate Operations for Exiting GP Lanes											
GP _{OUT} Vol (pcph)	1,558					2,317				3,542	
GP _{OUT} Cap (pcph)	4,800					4,800				4,800	
GP _{OUT} v/c ratio	0.32					0.48				0.74	
Calculate On Ramp Flow Rate											
On Volume (vph)			360					470	510		
PHF			0.92					0.92	0.92		
Total Lanes			1					1	1		
Terrain			Level					Level	Level		
Grade %			0.0%					0.0%	0.0%		
Grade Length (mi)			0.00					0.00	0.00		
Truck & Bus %			5.0%					5.0%	5.0%		
RV %			0.0%					0.0%	0.0%		
E _T			1.5					1.5	1.5		
E _R			1.2					1.2	1.2		
f _{HV}			0.976					0.976	0.976		
f _P			1.00					1.00	1.00		
On Flow (pcph)			401					524	568		
On Flow (pcphpl)			401					524	568		
Calculate On Ramp Roadway Operations											
On Ramp Type			Right					Right	Right		
On Ramp Speed (mph)			60					50	60		
On Ramp Cap (pcph)			2,200					2,100	2,200		
On Ramp v/c ratio			0.18					0.25	0.26		



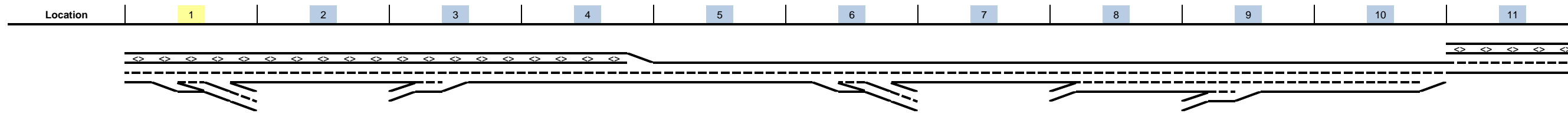
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Off Ramp Flow Rate											
Off Volume (vph)	1,780					1,040					
PHF	0.92					0.92					
Total Lanes	2					2					
Terrain	Level					Level					
Grade %	0.0%					0.0%					
Grade Length (mi)	0.00					0.00					
Truck & Bus %	5.0%					5.0%					
RV %	0.0%					0.0%					
E _T	1.5					1.5					
E _R	1.2					1.2					
f _{HV}	0.976					0.976					
f _p	1.00					1.00					
Off Flow (pcph)	1,983					1,159					
Off Flow (pcphpl)	992					579					
Calculate Off Ramp Roadway Operations											
Off Ramp Type	Right					Right					
Off Ramp Speed	45					45					
Off Ramp Cap (pcph)	4,200					4,200					
Off Ramp v/c ratio	0.47					0.28					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps											
Up Type								No	On		
Up Distance									1,200		
Up Flow (pcph)									524		
Down Type								On	No		
Down Distance								1,200			
Down Flow (pcph)								568			



Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Merge Influence Area Operations											
Effective v_p (pcph)			3,075						2,841		
Up Ramp L_{EQ}									1,621		
Down Ramp L_{EQ}											
P_{FM} (Eqn 13-3)			0.587						0.587		
P_{FM} (Eqn 13-4)											
P_{FM} (Eqn 13-5)											
P_{FM}			1.000						0.587		
v_{12} (pcph)			3,075						1,669		
v_3 (pcph)									1,172		
v_{34} (pcph)											
v_{12a} (pcph)			3,075						1,669		
v_{R12a} (pcph)			3,476						2,237		
Merge Speed Index			0.41						0.32		
Merge Area Speed			58.7						61.2		
Outer Lanes Volume									1,172		
Outer Lanes Speed									67.6		
Segment Speed			58.7						63.2		
Merge v/c ratio			0.76						0.49		
Merge Density			30.2						20.5		
Merge LOS			D						C		
Calculate Diverge Influence Area Operations											
Effective v_p (pcph)						3,476					
Up Ramp L_{EQ}											
Down Ramp L_{EQ}											
P_{FD} (Eqn 13-9)						0.620					
P_{FD} (Eqn 13-10)											
P_{FD} (Eqn 13-11)											
P_{FD}						1.000					
v_{12} (pcph)						3,476					
v_3 (pcph)											
v_{34} (pcph)											
v_{12a} (pcph)						3,476					
Diverge Speed Index						0.40					
Diverge Area Speed						58.7					
Outer Lanes Volume											
Outer Lanes Speed											
Segment Speed						58.7					
Diverge v/c ratio						0.79					
Diverge Density						21.1					
Diverge LOS						C					

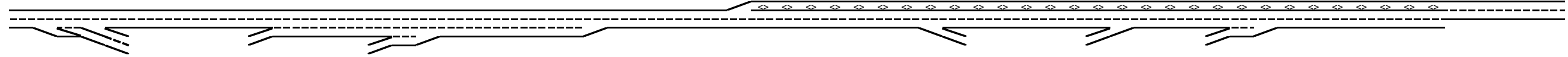


Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Summarize Segment Operations											
Segment v/c ratio	0.74	0.46	0.76	0.76	0.76	0.79	0.50	0.39	0.49	0.49	0.76
Segment Density	26.7	15.8	30.2	27.8	27.8	21.1	17.2	13.5	20.5	16.9	27.6
Segment LOS	D	B	D	D	D	C	B	B	C	B	D
Over Capacity											

Project: Southeast Policy Area EIR
 Freeway Corridor: State Route 99 NB
 Alternative: Cumulative Plus Project Conditions
 Time Period: PM Peak Hour

hide	0 0 2 0 0	0 0 2 0 0	0 0 2 0 0	0 0 3 0 0	0 0 3 0 0	0 0 2 0 0	1 1 2	1 2 0	1 2	1 2	1 2	1 2	2
hide	0 FALSE FALSE TRUE 0	0 FALSE TRUE FALSE 0	0 FALSE FALSE FALSE 0	0 TRUE FALSE FALSE 0	0 FALSE FALSE FALSE 1	0 FALSE FALSE FALSE 0		FALSE FALSE 0		FALSE	TRUE	FALSE	
hide	0 0 14 2 1	0 0 14 0 0	1 1 14 0 0	1 1 14 0 0	0 0 14 0 0	0 0 14 0 0	0 14 0	0 0 14 1	0 14 0	0 1 14	1 1 14	0 0 14	
hide													
Location	1	2	3	4	5	6	7	8	9	10	11	12	13

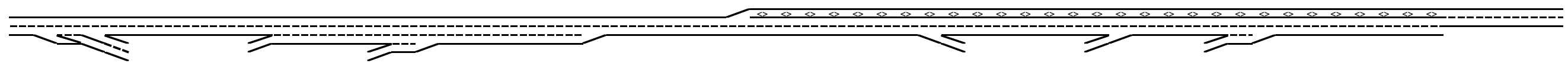
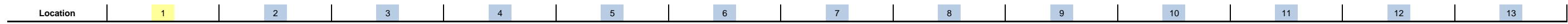


Key

<> Express Lane (HOV)

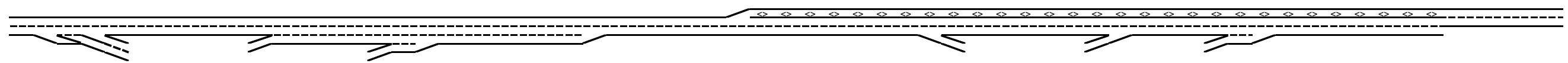
No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Define Freeway Segment													
Type	Diverge	Basic	Basic	Merge	Basic	Basic	Basic	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,500	1,300	1,500	400	6,700	1,050	1,500	1,700	850	1,500	100	8,700
Accel Length				320						175	1,200		
Decel Length	1,450							170					
Mainline Volume	3,390	2,140	2,140	2,960	3,280	3,280	3,280	3,280	2,990	2,990	4,400	4,750	3,390
On Ramp Volume			820	320						1,410	350		
Off Ramp Volume	1,250							290					
Express Lane Volume							984	984	897	897	1,320	1,425	1,017
EL On Ramp Volume													
EL Off Ramp Volume													
Calculate Flow Rate in General Purpose Lanes (GP)													
GP Volume (vph)	3,390	2,140	2,960	3,280	3,280	3,280	2,296	2,296	2,093	3,503	3,430	3,325	2,373
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	3	3	3	2	2	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	13.0%	5.0%	5.0%	15.0%	15.0%	15.0%	5.0%	10.0%	5.0%	5.0%	10.0%	13.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.939	0.976	0.976	0.930	0.930	0.930	0.976	0.952	0.976	0.976	0.952	0.939
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,777	2,477	3,298	3,654	3,833	3,833	2,683	2,558	2,389	3,903	3,821	3,795	2,747
GP Flow (pcphpl)	1,888	1,239	1,099	1,218	1,278	1,916	1,341	1,279	1,194	1,951	1,911	1,897	1,374
Calculate Speed in General Purpose Lanes													
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70	70	70



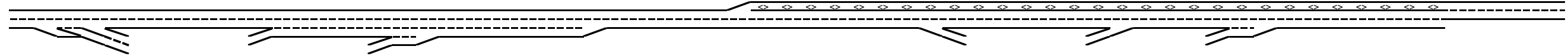
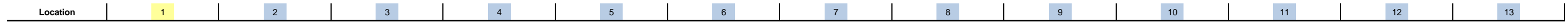
Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Operations in General Purpose Lanes													
v/c ratio	0.79	0.52	0.46	0.51	0.53	0.80	0.56	0.53	0.50	0.81	0.80	0.79	0.57
Speed (mph)	64.5	70.0	70.0	70.0	69.9	64.0	69.8	69.9	70.0	63.5	64.1	64.4	69.7
Density (pcphpl)	29.3	17.7	15.7	17.4	18.3	29.9	19.2	18.3	17.1	30.8	29.8	29.5	19.7
LOS	D	B	B	B	C	D	C	C	B	D	D	D	C
Calculate Operations for Entering GP Lanes													
GP _{IN} Vol (pcph)			2,384	3,298						2,332	3,432		
GP _{IN} Cap (pcph)			4,800	7,200						4,800	4,800		
GP _{IN} v/c ratio			0.50	0.46						0.49	0.71		
Calculate Operations for Exiting GP Lanes													
GP _{OUT} Vol (pcph)	2,384				3,833			2,235					
GP _{OUT} Cap (pcph)	4,800				4,800			4,800					
GP _{OUT} v/c ratio	0.50				0.80			0.47					
Calculate On Ramp Flow Rate													
On Volume (vph)			820	320						1,410	350		
PHF			0.92	0.92						0.92	0.92		
Total Lanes			1	1						1	1		
Terrain			Level	Level						Level	Level		
Grade %			0.0%	0.0%						0.0%	0.0%		
Grade Length (mi)			0.00	0.00						0.00	0.00		
Truck & Bus %			5.0%	5.0%						5.0%	5.0%		
RV %			0.0%	0.0%						0.0%	0.0%		
E _T			1.5	1.5						1.5	1.5		
E _R			1.2	1.2						1.2	1.2		
f _{HV}			0.976	0.976						0.976	0.976		
f _p			1.00	1.00						1.00	1.00		
On Flow (pcph)			914	357						1,571	390		
On Flow (pcphpl)			914	357						1,571	390		
Calculate On Ramp Roadway Operations													
On Ramp Type			Right	Right						Right	Right		
On Ramp Speed (mph)			50	60						60	60		
On Ramp Cap (pcph)			2,100	2,200						2,200	2,200		
On Ramp v/c ratio			0.44	0.16						0.71	0.18		



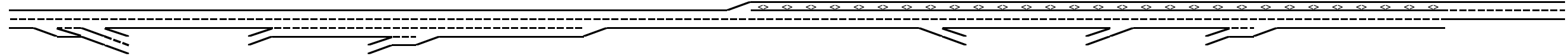
Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Off Ramp Flow Rate													
Off Volume (vph)	1,250							290					
PHF	0.92							0.92					
Total Lanes	2							1					
Terrain	Level							Level					
Grade %	0.0%							0.0%					
Grade Length (mi)	0.00							0.00					
Truck & Bus %	5.0%							5.0%					
RV %	0.0%							0.0%					
E _T	1.5							1.5					
E _R	1.2							1.2					
f _{HV}	0.976							0.976					
f _p	1.00							1.00					
Off Flow (pcph)	1,393							323					
Off Flow (pcphpl)	696							323					
Calculate Off Ramp Roadway Operations													
Off Ramp Type	Right							Right					
Off Ramp Speed	35							45					
Off Ramp Cap (pcph)	4,000							2,100					
Off Ramp v/c ratio	0.35							0.15					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps													
Up Type			No	On									
Up Distance				1,300									
Up Flow (pcph)				914									
Down Type			On	Off									
Down Distance			1,300	3,000									
Down Flow (pcph)			357	323									



Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Calculate Merge Influence Area Operations													
Effective v_p (pcph)				3,298						2,332	3,432		
Up Ramp L_{EQ}				1,660									
Down Ramp L_{EQ}				2,246									
P_{FM} (Eqn 13-3)				0.586						0.582	0.611		
P_{FM} (Eqn 13-4)													
P_{FM} (Eqn 13-5)				0.577									
P_{FM}				0.586						1.000	1.000		
v_{12} (pcph)				1,934						2,332	3,432		
v_3 (pcph)				1,364									
v_{34} (pcph)													
v_{12a} (pcph)				1,934						2,332	3,432		
v_{R12a} (pcph)				2,291						3,903	3,821		
Merge Speed Index				0.32						0.49	0.36		
Merge Area Speed				61.0						56.2	60.1		
Outer Lanes Volume				1,364									
Outer Lanes Speed				66.9									
Segment Speed				63.1						56.2	60.1		
Merge v/c ratio				0.50						0.85	0.83		
Merge Density				21.2						34.1	27.6		
Merge LOS				C						D	C		
Calculate Diverge Influence Area Operations													
Effective v_p (pcph)	3,777							2,558					
Up Ramp L_{EQ}													
Down Ramp L_{EQ}													
P_{FD} (Eqn 13-9)	0.602							0.681					
P_{FD} (Eqn 13-10)													
P_{FD} (Eqn 13-11)													
P_{FD}	1.000							1.000					
v_{12} (pcph)	3,777							2,558					
v_3 (pcph)													
v_{34} (pcph)													
v_{12a} (pcph)	3,777							2,558					
Diverge Speed Index	0.55							0.33					
Diverge Area Speed	54.5							60.8					
Outer Lanes Volume													
Outer Lanes Speed													
Segment Speed	54.5							60.8					
Diverge v/c ratio	0.86							0.58					
Diverge Density	23.7							24.7					
Diverge LOS	C							C					

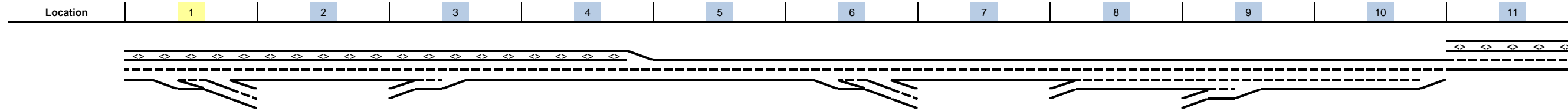


Key
 <-> Express Lane (HOV)
 No Trucks

Name	Grant Line Off	Grant Line Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 North of Grant Line	Grant Line to Elk Grove	SR 99 South of Elk Grove	East Stockton Loop Off	ES Off to EG On	Elk Grove Loop On	Elk Grove Slip On	SR 99 North of Elk Grove	SR 99 South of Grant Line
Summarize Segment Operations													
Segment v/c ratio	0.86	0.52	0.46	0.50	0.53	0.80	0.56	0.58	0.50	0.85	0.83	0.79	0.57
Segment Density	23.7	17.7	15.7	21.2	18.3	29.9	19.2	24.7	17.1	34.1	27.6	29.5	19.7
Segment LOS	C	B	B	C	C	D	C	C	B	D	C	D	C
Over Capacity													

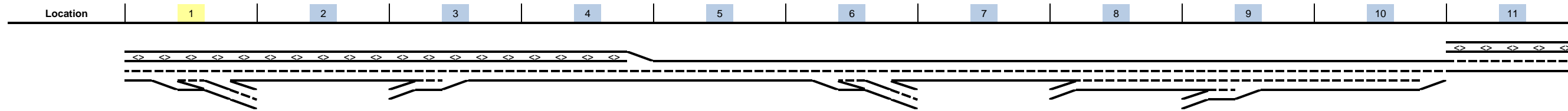
Project: Southeast Policy Area EIR
Freeway Corridor: State Route 99 SB

Alternative: Cumulative Plus Project Conditions
Time Period: PM Peak Hour



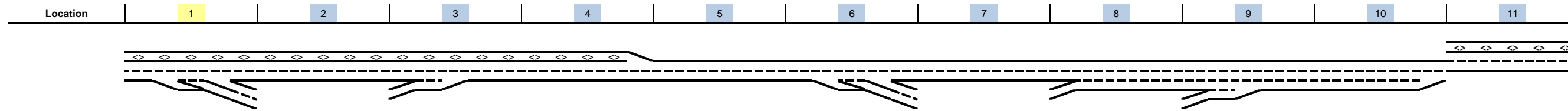
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Define Freeway Segment											
Type	Basic	Basic	Merge	Basic	Basic	Diverge	Basic	Basic	Merge	Basic	Basic
Length (ft)	1,500	2,250	1,500	400	8,050	1,500	1,650	1,200	1,500	400	250
Accel Length			350						350		
Decel Length						1,450					
Mainline Volume	4,200	2,330	2,330	2,690	2,690	2,690	1,740	1,740	2,380	2,970	4,200
On Ramp Volume			360					640	590		
Off Ramp Volume	1,870					950					
Express Lane Volume	1,260	699									1,260
EL On Ramp Volume											
EL Off Ramp Volume											
Calculate Flow Rate in General Purpose Lanes (GP)											
GP Volume (vph)	2,940	1,631	2,690	2,690	2,690	2,690	1,740	2,380	2,970	2,970	2,940
PHF	0.92	0.95	0.92	0.95	0.95	0.92	0.95	0.92	0.92	0.95	0.95
GP Lanes	2	2	2	2	2	2	2	3	3	3	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	10.0%	5.0%	15.0%	15.0%	5.0%	13.0%	5.0%	5.0%	13.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.952	0.976	0.930	0.930	0.976	0.939	0.976	0.976	0.939	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,276	1,803	2,997	3,044	3,044	2,997	1,951	2,652	3,309	3,330	3,249
GP Flow (pcphpl)	1,638	901	1,499	1,522	1,522	1,499	975	884	1,103	1,110	1,625
Calculate Speed in General Purpose Lanes											
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	73.6	73.6	73.6	73.6	74.2	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	70	70	70	70	70	70	70	70	70	70	70



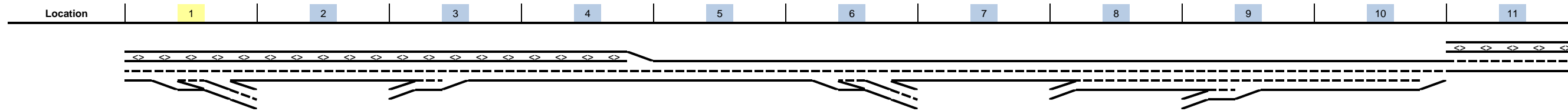
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Operations in General Purpose Lanes											
v/c ratio	0.68	0.38	0.62	0.63	0.63	0.62	0.41	0.37	0.46	0.46	0.68
Speed (mph)	67.8	70.0	69.0	68.8	68.8	69.0	70.0	70.0	70.0	70.0	67.9
Density (pcphpl)	24.2	12.9	21.7	22.1	22.1	21.7	13.9	12.6	15.8	15.9	23.9
LOS	C	B	C	C	C	C	B	B	B	B	C
Calculate Operations for Entering GP Lanes											
GP _{IN} Vol (pcph)			2,596					1,939	2,652		
GP _{IN} Cap (pcph)			4,800					4,800	7,200		
GP _{IN} v/c ratio			0.54					0.40	0.37		
Calculate Operations for Exiting GP Lanes											
GP _{OUT} Vol (pcph)	1,192					1,939				3,330	
GP _{OUT} Cap (pcph)	4,800					4,800				4,800	
GP _{OUT} v/c ratio	0.25					0.40				0.69	
Calculate On Ramp Flow Rate											
On Volume (vph)			360					640	590		
PHF			0.92					0.92	0.92		
Total Lanes			1					1	1		
Terrain			Level					Level	Level		
Grade %			0.0%					0.0%	0.0%		
Grade Length (mi)			0.00					0.00	0.00		
Truck & Bus %			5.0%					5.0%	5.0%		
RV %			0.0%					0.0%	0.0%		
E _T			1.5					1.5	1.5		
E _R			1.2					1.2	1.2		
f _{HV}			0.976					0.976	0.976		
f _P			1.00					1.00	1.00		
On Flow (pcph)			401					713	657		
On Flow (pcphpl)			401					713	657		
Calculate On Ramp Roadway Operations											
On Ramp Type			Right					Right	Right		
On Ramp Speed (mph)			60					50	60		
On Ramp Cap (pcph)			2,200					2,100	2,200		
On Ramp v/c ratio			0.18					0.34	0.30		



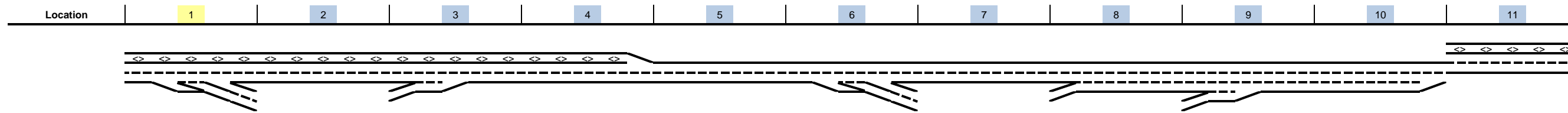
Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Off Ramp Flow Rate											
Off Volume (vph)	1,870					950					
PHF	0.92					0.92					
Total Lanes	2					2					
Terrain	Level					Level					
Grade %	0.0%					0.0%					
Grade Length (mi)	0.00					0.00					
Truck & Bus %	5.0%					5.0%					
RV %	0.0%					0.0%					
E _T	1.5					1.5					
E _R	1.2					1.2					
f _{HV}	0.976					0.976					
f _p	1.00					1.00					
Off Flow (pcph)	2,083					1,058					
Off Flow (pcphpl)	1,042					529					
Calculate Off Ramp Roadway Operations											
Off Ramp Type	Right					Right					
Off Ramp Speed	45					45					
Off Ramp Cap (pcph)	4,200					4,200					
Off Ramp v/c ratio	0.50					0.25					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps											
Up Type								No	On		
Up Distance									1,200		
Up Flow (pcph)									713		
Down Type								On	No		
Down Distance								1,200			
Down Flow (pcph)								657			



Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Calculate Merge Influence Area Operations											
Effective v_p (pcph)			2,596						2,652		
Up Ramp L_{EQ}									1,600		
Down Ramp L_{EQ}											
P_{FM} (Eqn 13-3)			0.587						0.587		
P_{FM} (Eqn 13-4)											
P_{FM} (Eqn 13-5)											
P_{FM}			1.000						0.587		
v_{12} (pcph)			2,596						1,557		
v_3 (pcph)									1,094		
v_{34} (pcph)											
v_{12a} (pcph)			2,596						1,557		
v_{R12a} (pcph)			2,997						2,215		
Merge Speed Index			0.36						0.31		
Merge Area Speed			60.0						61.2		
Outer Lanes Volume									1,094		
Outer Lanes Speed									67.9		
Segment Speed			60.0						63.2		
Merge v/c ratio			0.65						0.48		
Merge Density			26.5						20.3		
Merge LOS			C						C		
Calculate Diverge Influence Area Operations											
Effective v_p (pcph)						2,997					
Up Ramp L_{EQ}											
Down Ramp L_{EQ}											
P_{FD} (Eqn 13-9)						0.636					
P_{FD} (Eqn 13-10)											
P_{FD} (Eqn 13-11)											
P_{FD}						1.000					
v_{12} (pcph)						2,997					
v_3 (pcph)											
v_{34} (pcph)											
v_{12a} (pcph)						2,997					
Diverge Speed Index						0.39					
Diverge Area Speed						59.0					
Outer Lanes Volume											
Outer Lanes Speed											
Segment Speed						59.0					
Diverge v/c ratio						0.68					
Diverge Density						17.0					
Diverge LOS						B					

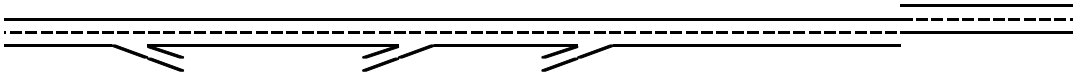


Key
 <> Express Lane (HOV)
 No Trucks

Name	Elk Grove Off	Elk Grove Off to On	Elk Grove On	SR 99 South of Elk Grove	SR 99 South of Elk Grove	Grant Line Slip Off	Grant Line Slip Off to Loop On	Grant Line Loop On	Grant Line Slip On	SR 99 South of Grant Line	SR 99 North of Elk Grove
Summarize Segment Operations											
Segment v/c ratio	0.68	0.38	0.65	0.63	0.63	0.68	0.41	0.37	0.48	0.46	0.68
Segment Density	24.2	12.9	26.5	22.1	22.1	17.0	13.9	12.6	20.3	15.9	23.9
Segment LOS	C	B	C	C	C	B	B	B	C	B	C
Over Capacity											

Project: Southeast Policy Area EIR **Alternative:** Cumulative Plus Project Conditions
Freeway Corridor: Interstate 5 NB **Time Period:** AM Peak Hour

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,150	1,500	6,900	27,700
Accel Length			450	350		
Decel Length	150					
Mainline Volume	2,470	1,750	1,750	1,780	2,520	2,470
On Ramp Volume			30	740		
Off Ramp Volume	720					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,470	1,750	1,780	2,520	2,520	2,470
PHF	0.92	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.917
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,752	2,073	1,983	2,808	2,986	2,926
GP Flow (pcphpl)	1,376	1,037	992	1,404	1,493	1,463
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.57	0.43	0.41	0.58	0.62	0.61
Speed (mph)	69.6	70.0	70.0	69.5	69.0	69.2
Density (pcphpl)	19.8	14.8	14.2	20.2	21.6	21.1
LOS	C	B	B	C	C	C
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			1,950	1,983		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.41	0.41		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	1,950					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.41					



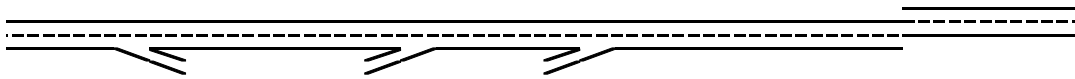
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate On Ramp Flow Rate						
On Volume (vph)			30	740		
PHF			0.92	0.92		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			33	824		
On Flow (pcphpl)			33	824		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.02	0.37		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

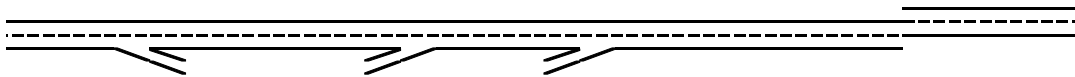


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Off Ramp Flow Rate						
Off Volume (vph)	720					
PHF	0.92					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	802					
Off Flow (pcphpl)	802					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.38					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			1,950	1,983		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.590	0.587		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			1,950	1,983		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			1,950	1,983		
v_{R12a} (pcph)			1,983	2,808		
Merge Speed Index			0.30	0.34		
Merge Area Speed			61.5	60.4		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.5	60.4		
Merge v/c ratio			0.43	0.61		
Merge Density			18.1	24.8		
Merge LOS			B	C		

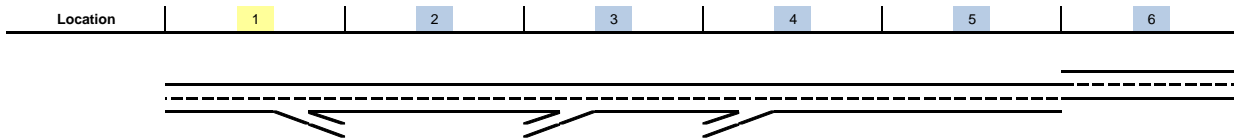


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,752					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.654					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,752					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,752					
Diverge Speed Index	0.37					
Diverge Area Speed	59.6					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	59.6					
Diverge v/c ratio	0.63					
Diverge Density	26.6					
Diverge LOS	C					



Key

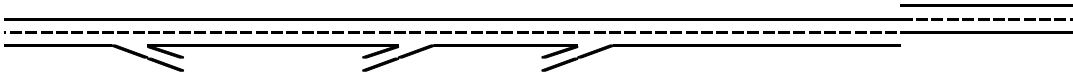
<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Summarize Segment Operations						
Segment v/c ratio	0.63	0.43	0.43	0.61	0.62	0.61
Segment Density	26.6	14.8	18.1	24.8	21.6	21.1
Segment LOS	C	B	B	C	C	C
Over Capacity						

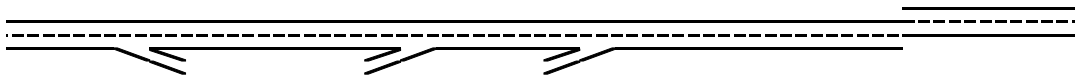
Project: Southeast Policy Area EIR **Alternative:** Cumulative Plus Project Conditions
Freeway Corridor: Interstate 5 SB **Time Period:** AM Peak Hour

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key
 <> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,250	1,500	28,500	8,000
Accel Length			300	250		
Decel Length	160					
Mainline Volume	2,500	1,710	1,710	2,390	2,400	2,500
On Ramp Volume			680	10		
Off Ramp Volume	790					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,500	1,710	2,390	2,400	2,400	2,500
PHF	0.92	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	5.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.976
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,785	2,026	2,663	2,674	2,843	2,785
GP Flow (pcphpl)	1,393	1,013	1,331	1,337	1,422	1,393
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.58	0.42	0.55	0.56	0.59	0.58
Speed (mph)	69.6	70.0	69.8	69.8	69.4	69.6
Density (pcphpl)	20.0	14.5	19.1	19.2	20.5	20.0
LOS	C	B	C	C	C	C
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			1,905	2,663		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.40	0.55		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	1,905					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.40					



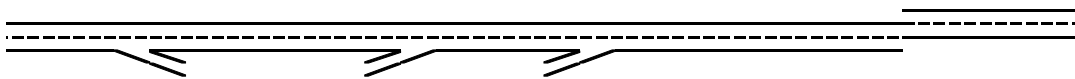
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate On Ramp Flow Rate						
On Volume (vph)			680	10		
PHF			0.92	0.92		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			758	11		
On Flow (pcphpl)			758	11		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.36	0.01		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

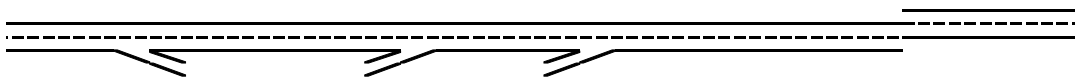


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Off Ramp Flow Rate						
Off Volume (vph)	790					
PHF	0.92					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	880					
Off Flow (pcphpl)	880					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.42					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			1,905	2,663		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.586	0.585		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			1,905	2,663		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			1,905	2,663		
v_{R12a} (pcph)			2,663	2,674		
Merge Speed Index			0.35	0.35		
Merge Area Speed			60.3	60.3		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			60.3	60.3		
Merge v/c ratio			0.58	0.58		
Merge Density			24.0	24.8		
Merge LOS			C	C		

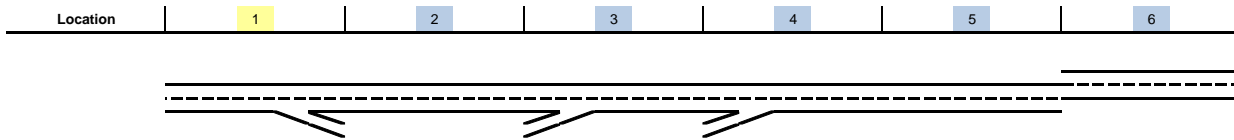


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,785					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.650					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,785					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,785					
Diverge Speed Index	0.38					
Diverge Area Speed	59.4					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	59.4					
Diverge v/c ratio	0.63					
Diverge Density	26.8					
Diverge LOS	C					



Key

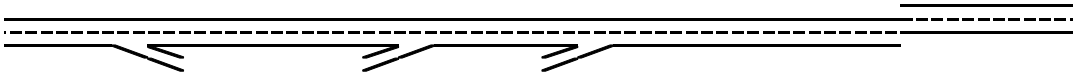
<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Summarize Segment Operations						
Segment v/c ratio	0.63	0.42	0.58	0.58	0.59	0.58
Segment Density	26.8	14.5	24.0	24.8	20.5	20.0
Segment LOS	C	B	C	C	C	C
Over Capacity						

Project: Southeast Policy Area EIR **Alternative:** Cumulative Plus Project Conditions
Freeway Corridor: Interstate 5 NB **Time Period:** PM Peak Hour

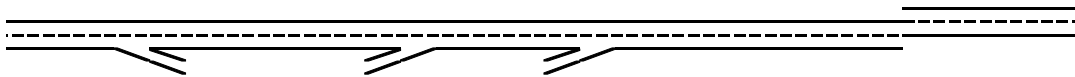
Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,150	1,500	6,900	27,700
Accel Length			450	350		
Decel Length	150					
Mainline Volume	2,640	1,780	1,780	1,810	2,590	2,640
On Ramp Volume			30	780		
Off Ramp Volume	860					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,640	1,780	1,810	2,590	2,590	2,640
PHF	0.92	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.917
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,941	2,109	2,017	2,886	3,069	3,128
GP Flow (pcphpl)	1,471	1,054	1,008	1,443	1,534	1,564
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.61	0.44	0.42	0.60	0.64	0.65
Speed (mph)	69.2	70.0	70.0	69.3	68.7	68.5
Density (pcphpl)	21.3	15.1	14.4	20.8	22.3	22.8
LOS	C	B	B	C	C	C
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			1,983	2,017		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.41	0.42		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	1,983					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.41					



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate On Ramp Flow Rate						
On Volume (vph)			30	780		
PHF			0.92	0.92		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			33	869		
On Flow (pcphpl)			33	869		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.02	0.40		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

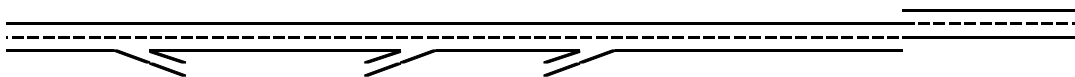


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Off Ramp Flow Rate						
Off Volume (vph)	860					
PHF	0.92					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	958					
Off Flow (pcphpl)	958					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.46					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			1,983	2,017		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.590	0.587		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			1,983	2,017		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			1,983	2,017		
v_{R12a} (pcph)			2,017	2,886		
Merge Speed Index			0.31	0.35		
Merge Area Speed			61.5	60.2		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			61.5	60.2		
Merge v/c ratio			0.44	0.63		
Merge Density			18.4	25.4		
Merge LOS			B	C		

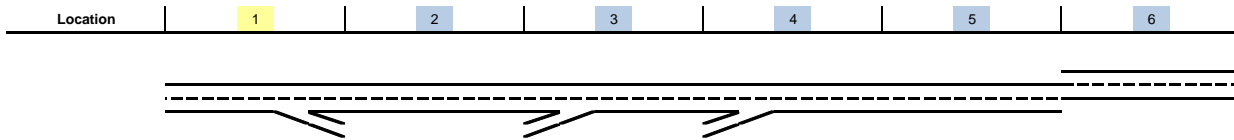


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	2,941					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.642					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	2,941					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	2,941					
Diverge Speed Index	0.38					
Diverge Area Speed	59.2					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	59.2					
Diverge v/c ratio	0.67					
Diverge Density	28.2					
Diverge LOS	D					



Key

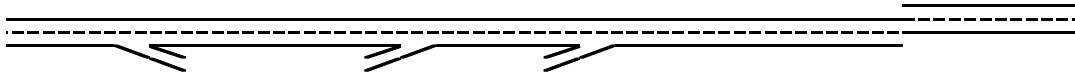
<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	Northbound I5 N/O HF	Northbound I5 S/O Hood Franklin
Summarize Segment Operations						
Segment v/c ratio	0.67	0.44	0.44	0.63	0.64	0.65
Segment Density	28.2	15.1	18.4	25.4	22.3	22.8
Segment LOS	D	B	B	C	C	C
Over Capacity						

Project: Southeast Policy Area EIR **Alternative:** Cumulative Plus Project Conditions
Freeway Corridor: Interstate 5 SB **Time Period:** PM Peak Hour

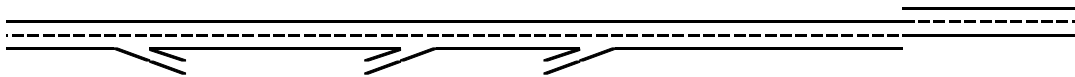
Location	1	2	3	4	5	6
----------	---	---	---	---	---	---



Key

<> Express Lane (HOV)
 No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Define Freeway Segment						
Type	Diverge	Basic	Merge	Merge	Basic	Basic
Length (ft)	1,500	1,600	1,250	1,500	28,500	8,000
Accel Length			300	250		
Decel Length	160					
Mainline Volume	3,120	2,260	2,260	2,880	2,900	3,120
On Ramp Volume			620	20		
Off Ramp Volume	860					
Express Lane Volume						
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	3,120	2,260	2,880	2,900	2,900	3,120
PHF	0.92	0.94	0.92	0.92	0.94	0.94
GP Lanes	2	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	5.0%	18.0%	5.0%	5.0%	18.0%	5.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.976	0.917	0.976	0.976	0.917	0.976
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,476	2,621	3,209	3,231	3,363	3,402
GP Flow (pcphpl)	1,738	1,310	1,604	1,615	1,681	1,701
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	0.3	0.3	0.3	0.3	0.3	0.3
f _{LW}	0.0	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	74.2	74.2	74.2	74.2	74.2	74.2
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70
Calculate Operations in General Purpose Lanes						
v/c ratio	0.72	0.55	0.67	0.67	0.70	0.71
Speed (mph)	66.6	69.9	68.1	68.0	67.3	67.1
Density (pcphpl)	26.1	18.8	23.6	23.8	25.0	25.4
LOS	D	C	C	C	C	C
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)			2,518	3,209		
GP _{IN} Cap (pcph)			4,800	4,800		
GP _{IN} v/c ratio			0.52	0.67		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)	2,518					
GP _{OUT} Cap (pcph)	4,800					
GP _{OUT} v/c ratio	0.52					



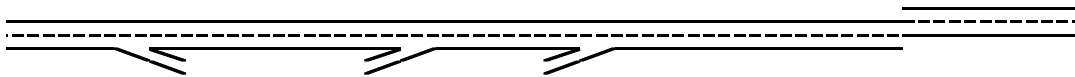
Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate On Ramp Flow Rate						
On Volume (vph)			620	20		
PHF			0.92	0.92		
Total Lanes			1	1		
Terrain			Level	Level		
Grade %			0.0%	0.0%		
Grade Length (mi)			0.00	0.00		
Truck & Bus %			5.0%	5.0%		
RV %			0.0%	0.0%		
E_T			1.5	1.5		
E_R			1.2	1.2		
f_{HV}			0.976	0.976		
f_p			1.00	1.00		
On Flow (pcph)			691	22		
On Flow (pcphpl)			691	22		
Calculate On Ramp Roadway Operations						
On Ramp Type			Right	Right		
On Ramp Speed (mph)			50	60		
On Ramp Cap (pcph)			2,100	2,200		
On Ramp v/c ratio			0.33	0.01		

Location	1	2	3	4	5	6
----------	---	---	---	---	---	---

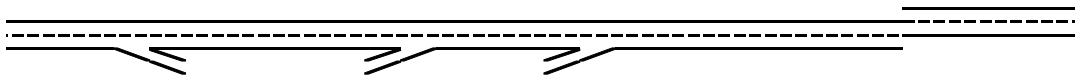


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Off Ramp Flow Rate						
Off Volume (vph)	860					
PHF	0.92					
Total Lanes	1					
Terrain	Level					
Grade %	0.0%					
Grade Length (mi)	0.00					
Truck & Bus %	5.0%					
RV %	0.0%					
E_T	1.5					
E_R	1.2					
f_{HV}	0.976					
f_p	1.00					
Off Flow (pcph)	958					
Off Flow (pcphpl)	958					
Calculate Off Ramp Roadway Operations						
Off Ramp Type	Right					
Off Ramp Speed	45					
Off Ramp Cap (pcph)	2,100					
Off Ramp v/c ratio	0.46					
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps						
Up Type						
Up Distance						
Up Flow (pcph)						
Down Type						
Down Distance						
Down Flow (pcph)						
Calculate Merge Influence Area Operations						
Effective v_p (pcph)			2,518	3,209		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)			0.586	0.585		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}			1.000	1.000		
v_{12} (pcph)			2,518	3,209		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)			2,518	3,209		
v_{R12a} (pcph)			3,209	3,231		
Merge Speed Index			0.39	0.39		
Merge Area Speed			59.1	59.1		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed			59.1	59.1		
Merge v/c ratio			0.70	0.70		
Merge Density			28.3	29.1		
Merge LOS			D	D		

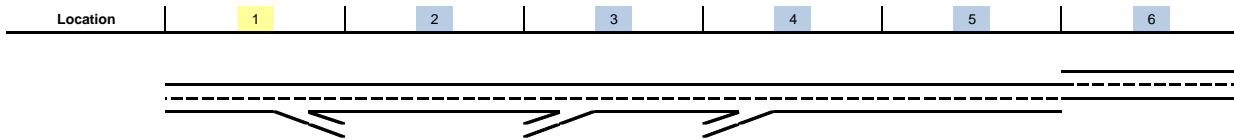


Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)	3,476					
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)	0.629					
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}	1.000					
v_{12} (pcph)	3,476					
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)	3,476					
Diverge Speed Index	0.38					
Diverge Area Speed	59.2					
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed	59.2					
Diverge v/c ratio	0.79					
Diverge Density	32.7					
Diverge LOS	D					



Key

<> Express Lane (HOV)

No Trucks

Name	Hood Franklin Off	Hood Franklin Off to Loop On	Hood Franklin Loop On	Hood Franklin Slip On	SB I/5 S/O HF	SB I/5 N/O HF
Summarize Segment Operations						
Segment v/c ratio	0.79	0.55	0.70	0.70	0.70	0.71
Segment Density	32.7	18.8	28.3	29.1	25.0	25.4
Segment LOS	D	C	D	D	C	C
Over Capacity						

Cumulative Plus Project
Conditions
with Mitigations

HCM Signalized Intersection Capacity Analysis
 16: Hood Franklin Road & Franklin Blvd

Cumulative Plus Project - Mitigations
 AM Peak Hour































Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	240	10	10	220	390	640
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	1863	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	261	11	11	239	424	696
RTOR Reduction (vph)	0	3	0	0	0	204
Lane Group Flow (vph)	261	8	11	239	424	492
Turn Type		Perm	Split			Perm
Protected Phases	4		2	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	14.7	14.7	13.9	13.9	27.6	27.6
Effective Green, g (s)	14.7	14.7	13.9	13.9	27.6	27.6
Actuated g/C Ratio	0.19	0.19	0.18	0.18	0.36	0.36
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	337	301	319	335	666	566
v/s Ratio Prot	c0.15		0.01	c0.13	0.23	
v/s Ratio Perm		0.00				c0.31
v/c Ratio	0.77	0.03	0.03	0.71	0.64	0.87
Uniform Delay, d1	29.7	25.4	26.1	29.8	20.6	23.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.7	0.0	0.0	5.9	1.5	13.0
Delay (s)	39.4	25.4	26.1	35.7	22.1	36.1
Level of Service	D	C	C	D	C	D
Approach Delay (s)	38.8			35.2	30.8	
Approach LOS	D			D	C	

Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	21.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

























HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & Stockton Blvd

Cumulative Plus Project - Mitigations
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		 					
Volume (vph)	370	1730	190	40	1890	150	160	30	20	100	20	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.86		0.97	1.00		1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.86	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	1770	6337		3433	1749		1770	1528	1504
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	1770	6337		3433	1749		1770	1528	1504
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	398	1860	204	43	2032	161	172	32	22	108	22	473
RTOR Reduction (vph)	0	0	97	0	6	0	0	18	0	0	199	215
Lane Group Flow (vph)	398	1860	107	43	2187	0	172	36	0	108	50	31
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6									8
Actuated Green, G (s)	14.6	57.2	57.2	4.0	46.6		10.8	10.9		13.5	13.6	13.6
Effective Green, g (s)	14.6	57.2	57.2	4.0	46.6		10.8	10.9		13.5	13.6	13.6
Actuated g/C Ratio	0.13	0.52	0.52	0.04	0.43		0.10	0.10		0.12	0.12	0.12
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	459	2666	830	65	2707		340	175		219	190	187
v/s Ratio Prot	c0.12	c0.37		0.02	c0.35		0.05	0.02		c0.06	c0.03	
v/s Ratio Perm			0.07									0.02
v/c Ratio	0.87	0.70	0.13	0.66	0.81		0.51	0.21		0.49	0.26	0.16
Uniform Delay, d1	46.3	19.5	13.2	51.9	27.3		46.6	45.1		44.6	43.2	42.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	15.3	0.8	0.1	17.8	1.9		1.2	0.6		0.6	0.3	0.2
Delay (s)	61.5	20.3	13.3	69.7	29.2		47.8	45.7		45.2	43.5	42.8
Level of Service	E	C	B	E	C		D	D		D	D	D
Approach Delay (s)		26.4			30.0			47.3			43.5	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay			30.6			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			109.1			Sum of lost time (s)			29.9			
Intersection Capacity Utilization			76.0%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
21: Kammerer Rd & Promenade Pkwy





























Cumulative Plus Project - Mitigations
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1920	260	410	1720	1070	60	40	450	1090	200	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	4.0	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	1.00	0.86	0.88	0.97	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	1770	6408	2787	3433	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	1770	6408	2787	3433	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	170	2043	277	436	1830	1138	64	43	479	1160	213	149
RTOR Reduction (vph)	0	0	197	0	0	0	0	0	214	0	0	101
Lane Group Flow (vph)	170	2043	80	436	1830	1138	64	43	265	1160	213	48
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			Free			4			8
Actuated Green, G (s)	10.1	42.8	42.8	26.4	59.1	148.3	5.2	28.8	28.8	24.8	47.9	47.9
Effective Green, g (s)	10.1	42.8	42.8	26.4	59.1	148.3	5.2	28.8	28.8	24.8	47.9	47.9
Actuated g/C Ratio	0.07	0.29	0.29	0.18	0.40	1.00	0.04	0.19	0.19	0.17	0.32	0.32
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7		6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	234	1849	457	315	2554	2787	120	362	307	834	1143	511
v/s Ratio Prot	0.05	c0.32		c0.25	0.29		0.02	0.02		c0.23	0.06	
v/s Ratio Perm			0.05			0.41			c0.17			0.03
v/c Ratio	0.73	1.10	0.17	1.38	0.72	0.41	0.53	0.12	0.86	1.39	0.19	0.09
Uniform Delay, d1	67.7	52.8	39.5	61.0	37.5	0.0	70.4	49.3	57.8	61.8	36.2	35.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.1	55.9	0.1	191.4	0.8	0.4	2.3	0.1	20.6	183.3	0.0	0.0
Delay (s)	76.9	108.6	39.6	252.4	38.4	0.4	72.6	49.3	78.4	245.0	36.2	35.1
Level of Service	E	F	D	F	D	A	E	D	E	F	D	D
Approach Delay (s)		98.8			53.1			75.6			195.2	
Approach LOS		F			D			E			F	

Intersection Summary		
HCM Average Control Delay	96.0	HCM Level of Service F
HCM Volume to Capacity ratio	1.17	
Actuated Cycle Length (s)	148.3	Sum of lost time (s) 25.5
Intersection Capacity Utilization	94.4%	ICU Level of Service F
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 24: Grant Line Rd & Stockton Blvd

Cumulative Plus Project - Mitigations
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		 					
Volume (vph)	600	2000	170	40	2010	120	290	30	30	110	20	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.86		0.97	1.00		1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.93		1.00	0.86	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	1770	6354		3433	1723		1770	1526	1504
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	1770	6354		3433	1723		1770	1526	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	652	2174	185	43	2185	130	315	33	33	120	22	500
RTOR Reduction (vph)	0	0	90	0	4	0	0	26	0	0	199	199
Lane Group Flow (vph)	652	2174	95	43	2311	0	315	40	0	120	63	61
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6									8
Actuated Green, G (s)	18.7	57.2	57.2	4.0	42.5		15.5	13.7		15.3	13.5	13.5
Effective Green, g (s)	18.7	57.2	57.2	4.0	42.5		15.5	13.7		15.3	13.5	13.5
Actuated g/C Ratio	0.16	0.50	0.50	0.04	0.37		0.14	0.12		0.13	0.12	0.12
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	565	2558	796	62	2375		468	208		238	181	179
v/s Ratio Prot	c0.19	0.43		0.02	c0.36		c0.09	0.02		0.07	c0.04	
v/s Ratio Perm			0.06									0.04
v/c Ratio	1.15	0.85	0.12	0.69	0.97		0.67	0.19		0.50	0.35	0.34
Uniform Delay, d1	47.5	24.5	14.9	54.2	35.0		46.7	45.0		45.7	46.0	46.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	88.1	2.8	0.1	23.7	12.7		3.8	0.4		0.6	0.4	0.4
Delay (s)	135.6	27.4	15.0	77.9	47.7		50.5	45.5		46.3	46.5	46.4
Level of Service	F	C	B	E	D		D	D		D	D	D
Approach Delay (s)		50.0			48.3			49.6			46.4	
Approach LOS		D			D			D			D	

Intersection Summary		
HCM Average Control Delay	49.0	HCM Level of Service D
HCM Volume to Capacity ratio	0.81	
Actuated Cycle Length (s)	113.7	Sum of lost time (s) 17.6
Intersection Capacity Utilization	86.6%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

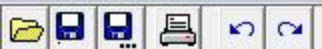
Cumulative Plus Project
Conditions
with Whitelock Interchange

none



Toolbox with icons for navigation and simulation controls:

- Hand icon (pan)
- Zoom in/out icons
- Simulation control icons: LOS, ICU, #, VB, DST, and a pie chart.
- Other utility icons like a lock and a refresh symbol.



none



- Hand icon (pan)
- Zoom in (+)
- Zoom out (-)
- Search icon
- Simulation controls: LOS, ICU, #, VB, DST
- Other simulation and display icons

HCM Signalized Intersection Capacity Analysis
4: Elk Grove Blvd & Laguna Springs Drive

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1510	460	790	1040	90	270	350	450	60	310	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1563	3433	5016		1770	1863	2787	1770	3406	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1563	3433	5016		1770	1863	2787	1770	3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	1641	500	859	1130	98	293	380	489	65	337	98
RTOR Reduction (vph)	0	0	160	0	6	0	0	0	361	0	19	0
Lane Group Flow (vph)	109	1641	340	859	1222	0	293	380	128	65	416	0
Confl. Bikes (#/hr)			1			1						4
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	12.8	47.6	47.6	30.4	65.2		20.4	38.1	38.1	6.7	24.4	
Effective Green, g (s)	12.8	47.6	47.6	30.4	65.2		20.4	38.1	38.1	6.7	24.4	
Actuated g/C Ratio	0.09	0.33	0.33	0.21	0.45		0.14	0.26	0.26	0.05	0.17	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	156	1669	513	720	2255		249	490	732	82	573	
v/s Ratio Prot	0.06	c0.32		c0.25	0.24		c0.17	c0.20		0.04	0.12	
v/s Ratio Perm			0.22						0.05			
v/c Ratio	0.70	0.98	0.66	1.19	0.54		1.18	0.78	0.18	0.79	0.73	
Uniform Delay, d1	64.2	48.3	41.8	57.3	29.0		62.3	49.5	41.3	68.5	57.1	
Progression Factor	1.00	1.00	1.00	1.11	0.59		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.5	18.4	6.6	99.2	0.9		113.3	6.9	0.0	37.2	3.9	
Delay (s)	74.7	66.7	48.4	162.6	18.1		175.6	56.4	41.4	105.7	61.0	
Level of Service	E	E	D	F	B		F	E	D	F	E	
Approach Delay (s)		63.0			77.6			80.1			66.8	
Approach LOS		E			E			F			E	
Intersection Summary												
HCM Average Control Delay			71.7			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			145.0			Sum of lost time (s)			16.9			
Intersection Capacity Utilization			96.6%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Elk Grove Blvd & Auto Center Drive

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↕↕		↔↕	↕↕↕		↔	↕		↕↕	↕	
Volume (vph)	80	1610	150	310	1550	10	90	20	120	50	10	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5020		3433	5080		1770	1623		3433	1640	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5020		3433	5080		1770	1623		3433	1640	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	85	1713	160	330	1649	11	96	21	128	53	11	43
RTOR Reduction (vph)	0	5	0	0	0	0	0	120	0	0	40	0
Lane Group Flow (vph)	85	1868	0	330	1660	0	96	29	0	53	14	0
Confl. Bikes (#/hr)						2						
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	10.8	86.4		15.9	91.5		9.9	8.7		12.2	11.0	
Effective Green, g (s)	10.8	86.4		15.9	91.5		9.9	8.7		12.2	11.0	
Actuated g/C Ratio	0.07	0.60		0.11	0.63		0.07	0.06		0.08	0.08	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	132	2991		376	3206		121	97		289	124	
v/s Ratio Prot	0.05	c0.37		c0.10	c0.33		c0.05	0.02		c0.02	0.01	
v/s Ratio Perm												
v/c Ratio	0.64	0.62		0.88	0.52		0.79	0.30		0.18	0.12	
Uniform Delay, d1	65.2	18.9		63.6	14.7		66.5	65.2		61.8	62.5	
Progression Factor	1.04	0.44		1.19	0.61		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.2	0.5		16.1	0.5		27.4	0.6		0.1	0.2	
Delay (s)	71.9	8.8		92.0	9.5		93.9	65.8		61.9	62.6	
Level of Service	E	A		F	A		F	E		E	E	
Approach Delay (s)		11.5			23.2			76.8			62.2	
Approach LOS		B			C			E			E	

Intersection Summary

HCM Average Control Delay	21.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	22.6
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	1760	220	340	1030	0	0	0	0	780	20	840
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		0.97	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	1.00
Frt		0.98		1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4993		3433	5085					1681	1689	2787
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4993		3433	5085					1681	1689	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1913	239	370	1120	0	0	0	0	848	22	913
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	113
Lane Group Flow (vph)	0	2142	0	370	1120	0	0	0	0	432	438	800
Confl. Bikes (#/hr)			2			2						
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		65.5		17.1	88.5					44.1	44.1	44.1
Effective Green, g (s)		65.5		17.1	88.5					44.1	44.1	44.1
Actuated g/C Ratio		0.45		0.12	0.61					0.30	0.30	0.30
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2255		405	3104					511	514	848
v/s Ratio Prot		c0.43		c0.11	0.22					0.26	0.26	
v/s Ratio Perm												c0.29
v/c Ratio		0.95		0.91	0.36					0.85	0.85	0.94
Uniform Delay, d1		38.2		63.2	14.1					47.3	47.4	49.2
Progression Factor		0.30		0.75	1.28					1.00	1.00	1.00
Incremental Delay, d2		9.3		17.7	0.2					11.7	12.4	18.3
Delay (s)		20.7		64.9	18.2					59.0	59.8	67.5
Level of Service		C		E	B					E	E	E
Approach Delay (s)		20.7			29.8			0.0			63.5	
Approach LOS		C			C			A			E	

Intersection Summary

HCM Average Control Delay	37.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 7: Elk Grove Blvd & SR-99 NB On-ramp

C+P w/ Whitelock Intchg - Mitigations
 AM Peak Hour



























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	2540	1370	620	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2761	1489	674	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		515	937			
pX, platoon unblocked	0.81				0.69	0.81
vC, conflicting volume	2163				2409	496
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1608				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	325				702	876

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	920	920	920	496	496	496	674
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	674
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.54	0.54	0.54	0.29	0.29	0.29	0.40
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							
Approach Delay (s)	0.0			0.0			
Approach LOS							

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization	86.0%		ICU Level of Service E
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1400	930	40	1590	130	430	150	200	210	100	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	4.0	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (prot)	1770	3539	1564	1770	5085	1583	1610	3142		1681	1738	1561
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.98	1.00
Satd. Flow (perm)	1770	3539	1564	1770	5085	1583	1610	3142		1681	1738	1561
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	1522	1011	43	1728	141	467	163	217	228	109	163
RTOR Reduction (vph)	0	0	0	0	0	41	0	62	0	0	0	84
Lane Group Flow (vph)	109	1522	1011	43	1728	100	290	495	0	166	171	79
Confl. Bikes (#/hr)			1									1
Turn Type	Prot		Free	Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			Free			2						4
Actuated Green, G (s)	11.4	73.9	145.0	4.3	66.8	66.8	28.9	28.9		16.4	16.4	16.4
Effective Green, g (s)	11.4	73.9	145.0	4.3	66.8	66.8	28.9	28.9		16.4	16.4	16.4
Actuated g/C Ratio	0.08	0.51	1.00	0.03	0.46	0.46	0.20	0.20		0.11	0.11	0.11
Clearance Time (s)	5.6	5.7		5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9		2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	139	1804	1564	52	2343	729	321	626		190	197	177
v/s Ratio Prot	0.06	c0.43		0.02	0.34		c0.18	0.16		c0.10	0.10	
v/s Ratio Perm			c0.65			0.06						0.05
v/c Ratio	0.78	0.84	0.65	0.83	0.74	0.14	0.90	0.79		0.87	0.87	0.44
Uniform Delay, d1	65.6	30.6	0.0	70.0	31.9	22.5	56.7	55.2		63.3	63.2	60.0
Progression Factor	0.98	0.71	1.00	1.00	1.00	1.00	0.85	0.83		1.00	1.00	1.00
Incremental Delay, d2	10.1	2.1	0.8	62.2	2.1	0.4	26.2	6.2		32.1	29.9	0.7
Delay (s)	74.6	23.9	0.8	132.2	34.1	22.9	74.5	51.8		95.4	93.1	60.7
Level of Service	E	C	A	F	C	C	E	D		F	F	E
Approach Delay (s)		17.2			35.4			59.6			83.3	
Approach LOS		B			D			E			F	
Intersection Summary												
HCM Average Control Delay			34.8									C
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			145.0							10.2		
Intersection Capacity Utilization			84.6%									E
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: SR-99 NB Ramps & E. Stockton Blvd

























C+P w/ Whitelock Intchg - Mitigations
 AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	10	80	10	10	10	220	420	10	10	390	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.92			1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.98			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1599			1817	1583	1770	3527		1770	1863	1583
Flt Permitted	0.95	0.98			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1599			1817	1583	1770	3527		1770	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	11	87	11	11	11	239	457	11	11	424	728
RTOR Reduction (vph)	0	28	0	0	0	10	0	1	0	0	0	196
Lane Group Flow (vph)	180	140	0	0	22	1	239	467	0	11	424	532
Turn Type	Split			Split		Perm	Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases						8						6
Actuated Green, G (s)	22.1	22.1			6.9	6.9	23.0	89.0		5.0	71.0	93.1
Effective Green, g (s)	22.1	22.1			6.9	6.9	23.0	89.0		5.0	71.0	93.1
Actuated g/C Ratio	0.15	0.15			0.05	0.05	0.16	0.61		0.03	0.49	0.64
Clearance Time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	256	244			86	75	281	2165		61	912	1016
v/s Ratio Prot	c0.11	0.09			c0.01		c0.14	0.13		0.01	0.23	c0.08
v/s Ratio Perm						0.00						0.26
v/c Ratio	0.70	0.57			0.26	0.01	0.85	0.22		0.18	0.46	0.52
Uniform Delay, d1	58.3	57.1			66.6	65.8	59.3	12.5		68.0	24.4	14.0
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.21	0.79	1.41
Incremental Delay, d2	7.0	2.0			0.6	0.0	20.4	0.0		0.4	1.3	0.2
Delay (s)	65.3	59.1			67.1	65.8	79.7	12.5		82.9	20.7	19.9
Level of Service	E	E			E	E	E	B		F	C	B
Approach Delay (s)		62.3			66.7			35.2			20.8	
Approach LOS		E			E			D			C	

Intersection Summary		
HCM Average Control Delay	32.4	HCM Level of Service C
HCM Volume to Capacity ratio	0.60	
Actuated Cycle Length (s)	145.0	Sum of lost time (s) 22.0
Intersection Capacity Utilization	71.6%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
 21: Kammerer Road & Promenade Pkwy













C+P w/ Whitelock Intchg - Mitigations
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	990	30	150	1580	1240	20	20	100	1030	20	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	4.0	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	0.97	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	3433	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	3433	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	1076	33	163	1717	1348	22	22	109	1120	22	120
RTOR Reduction (vph)	0	0	21	0	0	0	0	0	96	0	0	80
Lane Group Flow (vph)	163	1076	12	163	1717	1348	22	22	13	1120	22	40
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			Free			4			8
Actuated Green, G (s)	7.9	50.2	50.2	10.2	52.5	134.2	3.6	14.3	14.3	34.0	44.2	44.2
Effective Green, g (s)	7.9	50.2	50.2	10.2	52.5	134.2	3.6	14.3	14.3	34.0	44.2	44.2
Actuated g/C Ratio	0.06	0.37	0.37	0.08	0.39	1.00	0.03	0.11	0.11	0.25	0.33	0.33
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7		6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	202	2397	592	261	1989	2787	47	199	169	1264	1166	521
v/s Ratio Prot	0.05	0.17		0.05	c0.34		0.01	0.01		c0.22	0.01	
v/s Ratio Perm			0.01			c0.48			0.01			0.02
v/c Ratio	0.81	0.45	0.02	0.62	0.86	0.48	0.47	0.11	0.07	0.89	0.02	0.08
Uniform Delay, d1	62.4	31.6	26.5	60.1	37.6	0.0	64.4	54.2	54.0	48.2	30.4	31.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.5	0.0	0.0	3.3	4.0	0.6	2.7	0.1	0.1	7.6	0.0	0.0
Delay (s)	81.9	31.6	26.5	63.5	41.6	0.6	67.0	54.3	54.1	55.8	30.4	31.0
Level of Service	F	C	C	E	D	A	E	D	D	E	C	C
Approach Delay (s)		37.9			25.6			56.0			53.0	
Approach LOS		D			C			E			D	

Intersection Summary		
HCM Average Control Delay	34.9	HCM Level of Service C
HCM Volume to Capacity ratio	0.73	
Actuated Cycle Length (s)	134.2	Sum of lost time (s) 6.3
Intersection Capacity Utilization	77.5%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		













HCM Signalized Intersection Capacity Analysis
22: Grant Line Road & SR-99 SB Off-ramp

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↖	↕	↗
Volume (vph)	0	1730	390	0	2410	550	0	0	0	300	0	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.87	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1459	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1459	1504
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1840	415	0	2564	585	0	0	0	319	0	596
RTOR Reduction (vph)	0	0	168	0	0	0	0	0	0	0	1	1
Lane Group Flow (vph)	0	1840	247	0	2564	585	0	0	0	287	317	309
Turn Type		Perm			Free					Split		Perm
Protected Phases		6			2					8	8	
Permitted Phases		6			Free							8
Actuated Green, G (s)		57.2	57.2		57.2	96.0				26.5	26.5	26.5
Effective Green, g (s)		57.2	57.2		57.2	96.0				26.5	26.5	26.5
Actuated g/C Ratio		0.60	0.60		0.60	1.00				0.28	0.28	0.28
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		3030	943		3030	1583				464	403	415
v/s Ratio Prot		0.36			c0.50					0.17	c0.22	
v/s Ratio Perm			0.16			0.37						0.21
v/c Ratio		0.61	0.26		0.85	0.37				0.62	0.79	0.75
Uniform Delay, d1		12.3	9.3		15.8	0.0				30.3	32.1	31.7
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		0.4	0.2		2.4	0.7				1.7	9.1	6.3
Delay (s)		12.7	9.5		18.3	0.7				32.1	41.2	37.9
Level of Service		B	A		B	A				C	D	D
Approach Delay (s)		12.1			15.0			0.0			37.2	
Approach LOS		B			B			A			D	
Intersection Summary												
HCM Average Control Delay			17.2		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			96.0		Sum of lost time (s)				12.3			
Intersection Capacity Utilization			79.9%		ICU Level of Service				D			
Analysis Period (min)			15									
c Critical Lane Group												





























HCM Signalized Intersection Capacity Analysis
23: Grant Line Road & SR-99 NB On-ramp

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↗	↖	↖			
Volume (vph)	0	1740	290	0	2290	280	670	0	660	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	4.0		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1891	315	0	2489	304	728	0	717	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	106	0	0	6	0	0	0
Lane Group Flow (vph)	0	1891	315	0	2489	198	364	364	711	0	0	0
Turn Type			Free			Perm	Split		Perm			
Protected Phases		6			2		4	4				
Permitted Phases			Free			2			4			
Actuated Green, G (s)		54.5	98.6		55.0	55.0	33.3	33.3	33.3			
Effective Green, g (s)		54.5	98.6		55.0	55.0	33.3	33.3	33.3			
Actuated g/C Ratio		0.55	1.00		0.56	0.56	0.34	0.34	0.34			
Clearance Time (s)		6.2			5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0			4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2811	1583		2836	883	568	568	941			
v/s Ratio Prot		0.37			c0.49		0.22	0.22				
v/s Ratio Perm			0.20			0.13			c0.26			
v/c Ratio		0.67	0.20		0.88	0.22	0.64	0.64	0.76			
Uniform Delay, d1		15.7	0.0		18.9	11.0	27.6	27.6	29.0			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.7	0.3		3.5	0.2	1.9	1.9	3.1			
Delay (s)		16.4	0.3		22.4	11.2	29.5	29.5	32.1			
Level of Service		B	A		C	B	C	C	C			
Approach Delay (s)		14.1			21.2			30.8			0.0	
Approach LOS		B			C			C			A	
Intersection Summary												
HCM Average Control Delay			20.9				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			98.6				Sum of lost time (s)		10.3			
Intersection Capacity Utilization			71.4%				ICU Level of Service		C			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
24: Grant Line Road & Stockton Blvd

C+P w/ Whitelock Intchg - Mitigations
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		 					
Volume (vph)	380	1750	190	40	1970	150	160	30	20	100	20	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.86		0.97	1.00		1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.86	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	1770	6340		3433	1749		1770	1528	1504
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	1770	6340		3433	1749		1770	1528	1504
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	409	1882	204	43	2118	161	172	32	22	108	22	473
RTOR Reduction (vph)	0	0	97	0	6	0	0	18	0	0	199	215
Lane Group Flow (vph)	409	1882	107	43	2273	0	172	36	0	108	50	31
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6									8
Actuated Green, G (s)	14.6	57.2	57.2	4.0	46.6		10.8	10.9		13.5	13.6	13.6
Effective Green, g (s)	14.6	57.2	57.2	4.0	46.6		10.8	10.9		13.5	13.6	13.6
Actuated g/C Ratio	0.13	0.52	0.52	0.04	0.43		0.10	0.10		0.12	0.12	0.12
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	459	2666	830	65	2708		340	175		219	190	187
v/s Ratio Prot	c0.12	c0.37		0.02	c0.36		0.05	0.02		c0.06	c0.03	
v/s Ratio Perm			0.07									0.02
v/c Ratio	0.89	0.71	0.13	0.66	0.84		0.51	0.21		0.49	0.26	0.16
Uniform Delay, d1	46.5	19.6	13.2	51.9	27.9		46.6	45.1		44.6	43.2	42.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	18.6	0.9	0.1	17.8	2.4		1.2	0.6		0.6	0.3	0.2
Delay (s)	65.1	20.5	13.3	69.7	30.4		47.8	45.7		45.2	43.5	42.8
Level of Service	E	C	B	E	C		D	D		D	D	D
Approach Delay (s)		27.2			31.1			47.3			43.5	
Approach LOS		C			C			D			D	

Intersection Summary

HCM Average Control Delay	31.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	109.1	Sum of lost time (s)	29.9
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



none

- LOS
- ICU
- VB
- DST




























none

		LDS
		ICU
		#
		#
		VB
		DST



HCM Signalized Intersection Capacity Analysis
4: Elk Grove Blvd & Laguna Springs Drive

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1400	210	410	1730	80	450	370	770	140	220	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	1.00	0.88	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3324	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	3433	5052		1770	1863	2787	1770	3324	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	103	1443	216	423	1784	82	464	381	794	144	227	155
RTOR Reduction (vph)	0	0	75	0	3	0	0	0	332	0	91	0
Lane Group Flow (vph)	103	1443	141	423	1863	0	464	381	462	144	291	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6						8			
Actuated Green, G (s)	9.0	51.0	51.0	17.2	59.2		35.2	38.8	38.8	15.8	19.4	
Effective Green, g (s)	9.0	51.0	51.0	17.2	59.2		35.2	38.8	38.8	15.8	19.4	
Actuated g/C Ratio	0.06	0.35	0.35	0.12	0.41		0.24	0.27	0.27	0.11	0.13	
Clearance Time (s)	5.6	5.7	5.7	5.6	5.7		5.6	5.3	5.3	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	110	1789	557	407	2063		430	499	746	193	445	
v/s Ratio Prot	0.06	0.28		c0.12	c0.37		c0.26	c0.20		0.08	0.09	
v/s Ratio Perm			0.09						0.17			
v/c Ratio	0.94	0.81	0.25	1.04	0.90		1.08	0.76	0.62	0.75	0.65	
Uniform Delay, d1	67.7	42.5	33.5	63.9	40.2		54.9	48.9	46.6	62.7	59.6	
Progression Factor	1.00	1.00	1.00	1.38	0.61		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	64.6	4.0	1.1	49.9	5.6		66.3	6.2	1.1	12.8	2.6	
Delay (s)	132.3	46.5	34.6	138.0	30.1		121.2	55.0	47.7	75.5	62.2	
Level of Service	F	D	C	F	C		F	E	D	E	E	
Approach Delay (s)		50.1			50.1			70.2			65.9	
Approach LOS		D			D			E			E	

Intersection Summary

HCM Average Control Delay	56.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	11.2
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
5: Elk Grove Blvd & Auto Center Drive

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	🚗	🚗🚗🚗		🚗🚗	🚗🚗🚗		🚗	🚗		🚗🚗	🚗	
Volume (vph)	120	1970	70	180	1740	10	150	30	250	190	20	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Lane Util. Factor	1.00	0.91		0.97	0.91		1.00	1.00		0.97	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5059		3433	5081		1770	1613		3433	1624	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5059		3433	5081		1770	1613		3433	1624	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	2052	73	188	1812	10	156	31	260	198	21	125
RTOR Reduction (vph)	0	2	0	0	0	0	0	122	0	0	106	0
Lane Group Flow (vph)	125	2123	0	188	1822	0	156	169	0	198	40	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases												
Actuated Green, G (s)	13.0	78.0		9.4	74.4		14.2	19.3		16.5	21.6	
Effective Green, g (s)	13.0	78.0		9.4	74.4		14.2	19.3		16.5	21.6	
Actuated g/C Ratio	0.09	0.54		0.06	0.51		0.10	0.13		0.11	0.15	
Clearance Time (s)	5.6	5.7		5.6	5.7		5.6	4.6		5.9	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	159	2721		223	2607		173	215		391	242	
v/s Ratio Prot	c0.07	c0.42		0.05	0.36		0.09	c0.10		c0.06	c0.02	
v/s Ratio Perm												
v/c Ratio	0.79	0.78		0.84	0.70		0.90	0.78		0.51	0.16	
Uniform Delay, d1	64.6	26.7		67.1	26.8		64.7	60.8		60.4	53.8	
Progression Factor	1.13	0.49		1.13	0.63		1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.0	1.5		17.4	1.1		40.7	15.8		0.4	0.1	
Delay (s)	87.0	14.6		93.5	18.1		105.5	76.6		60.8	53.9	
Level of Service	F	B		F	B		F	E		E	D	
Approach Delay (s)		18.6			25.1			86.7			57.9	
Approach LOS		B			C			F			E	

Intersection Summary		
HCM Average Control Delay	29.9	HCM Level of Service
HCM Volume to Capacity ratio	0.79	C
Actuated Cycle Length (s)	145.0	Sum of lost time (s)
Intersection Capacity Utilization	85.4%	26.7
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		E

HCM Signalized Intersection Capacity Analysis
6: Elk Grove Blvd & SR-99 SB Off-ramp

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	2150	220	220	1360	0	0	0	0	740	10	980
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		0.97	0.91					0.95	0.95	0.88
Fr _t		0.99		1.00	1.00					1.00	1.00	0.85
Fl _t Protected		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5015		3433	5085					1681	1687	2787
Fl _t Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5015		3433	5085					1681	1687	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	2194	224	224	1388	0	0	0	0	755	10	1000
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	2409	0	224	1388	0	0	0	0	385	380	950
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		67.5		10.5	83.9					48.7	48.7	48.7
Effective Green, g (s)		67.5		10.5	83.9					48.7	48.7	48.7
Actuated g/C Ratio		0.47		0.07	0.58					0.34	0.34	0.34
Clearance Time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Vehicle Extension (s)		2.0		2.0	2.0					1.0	1.0	1.0
Lane Grp Cap (vph)		2335		249	2942					565	567	936
v/s Ratio Prot		c0.48		c0.07	0.27					0.23	0.23	
v/s Ratio Perm												c0.34
v/c Ratio		1.03		0.90	0.47					0.68	0.67	1.01
Uniform Delay, d ₁		38.8		66.7	17.7					41.5	41.3	48.1
Progression Factor		0.48		0.72	1.31					1.00	1.00	1.00
Incremental Delay, d ₂		24.2		16.7	0.2					2.7	2.4	33.1
Delay (s)		42.9		64.5	23.5					44.2	43.7	81.2
Level of Service		D		E	C					D	D	F
Approach Delay (s)		42.9			29.2			0.0			65.1	
Approach LOS		D			C			A			E	

Intersection Summary

HCM Average Control Delay	45.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
7: Elk Grove Blvd & SR-99 NB On-ramp

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour



























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	2890	1580	750	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	3108	1699	806	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		515	937			
pX, platoon unblocked	0.72				0.69	0.72
vC, conflicting volume	2505				2735	566
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1725				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	260				701	779

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	1036	1036	1036	566	566	566	806
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	806
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.61	0.61	0.61	0.33	0.33	0.33	0.47
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							
Approach Delay (s)	0.0			0.0			
Approach LOS							

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		88.7%	ICU Level of Service E
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
8: Elk Grove Blvd & E. Stockton Blvd

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	1350	1200	60	1700	110	500	120	200	250	160	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.7	4.0	5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.91	0.91		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.99	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1610	3137		1681	1749	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98		0.95	0.99	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5085	1583	1610	3137		1681	1749	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	1421	1263	63	1789	116	526	126	211	263	168	137
RTOR Reduction (vph)	0	0	0	0	0	34	0	53	0	0	0	119
Lane Group Flow (vph)	263	1421	1263	63	1789	82	295	515	0	210	221	18
Turn Type	Prot		Free	Prot		Perm	Split			Split		Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases			Free			2						4
Actuated Green, G (s)	22.4	69.9	145.0	6.5	54.0	54.0	27.8	27.8		19.3	19.3	19.3
Effective Green, g (s)	22.4	69.9	145.0	6.5	54.0	54.0	27.8	27.8		19.3	19.3	19.3
Actuated g/C Ratio	0.15	0.48	1.00	0.04	0.37	0.37	0.19	0.19		0.13	0.13	0.13
Clearance Time (s)	5.6	5.7		5.6	5.7	5.7	5.6	5.6		4.6	4.6	4.6
Vehicle Extension (s)	2.0	3.9		2.0	3.9	3.9	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	273	1706	1583	79	1894	590	309	601		224	233	211
v/s Ratio Prot	0.15	0.40		0.04	c0.35		0.18	0.16		0.12	0.13	
v/s Ratio Perm			c0.80			0.05						0.01
v/c Ratio	0.96	0.83	0.80	0.80	0.94	0.14	0.95	0.86		0.94	0.95	0.09
Uniform Delay, d1	60.9	32.5	0.0	68.6	44.1	30.1	58.0	56.7		62.3	62.4	55.1
Progression Factor	0.95	0.70	1.00	1.00	1.00	1.00	0.75	0.72		1.00	1.00	1.00
Incremental Delay, d2	26.4	2.2	1.9	39.0	11.2	0.5	37.5	10.7		42.2	43.9	0.1
Delay (s)	84.1	25.0	1.9	107.6	55.2	30.6	81.2	51.6		104.4	106.2	55.2
Level of Service	F	C	A	F	E	C	F	D		F	F	E
Approach Delay (s)		20.4			55.5			61.7			93.2	
Approach LOS		C			E			E			F	

Intersection Summary

HCM Average Control Delay	43.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	5.7
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
9: SR-99 NB Ramps & E. Stockton Blvd

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	10	60	20	40	40	260	410	20	80	720	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.94			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1625			1832	1583	1770	3513		1770	1863	1583
Flt Permitted	0.95	0.97			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1625			1832	1583	1770	3513		1770	1863	1583
Peak-hour factor, PHF	0.97	0.92	0.97	0.92	0.92	0.92	0.97	0.97	0.92	0.92	0.97	0.97
Adj. Flow (vph)	268	11	62	22	43	43	268	423	22	87	742	649
RTOR Reduction (vph)	0	15	0	0	0	40	0	2	0	0	0	158
Lane Group Flow (vph)	174	152	0	0	65	3	268	443	0	87	742	491
Turn Type	Split			Split		Perm	Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases						8						6
Actuated Green, G (s)	17.8	17.8			9.9	9.9	22.8	84.2		11.1	72.5	90.3
Effective Green, g (s)	17.8	17.8			9.9	9.9	22.8	84.2		11.1	72.5	90.3
Actuated g/C Ratio	0.12	0.12			0.07	0.07	0.16	0.58		0.08	0.50	0.62
Clearance Time (s)	5.5	5.5			5.5	5.5	5.5	5.5		5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	206	199			125	108	278	2040		135	932	986
v/s Ratio Prot	c0.10	0.09			c0.04		c0.15	0.13		0.05	c0.40	0.06
v/s Ratio Perm						0.00						0.25
v/c Ratio	0.84	0.76			0.52	0.03	0.96	0.22		0.64	0.80	0.50
Uniform Delay, d1	62.2	61.6			65.3	63.1	60.7	14.6		65.0	30.1	15.0
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.18	0.88	0.82
Incremental Delay, d2	24.9	14.5			1.8	0.0	43.6	0.0		4.4	4.1	0.1
Delay (s)	87.2	76.0			67.0	63.1	104.3	14.6		81.2	30.5	12.4
Level of Service	F	E			E	E	F	B		F	C	B
Approach Delay (s)		81.7			65.5			48.3			25.5	
Approach LOS		F			E			D			C	

Intersection Summary		
HCM Average Control Delay	40.6	HCM Level of Service D
HCM Volume to Capacity ratio	0.81	
Actuated Cycle Length (s)	145.0	Sum of lost time (s) 22.0
Intersection Capacity Utilization	82.0%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
21: Kammerer Rd & Promenade Pkwy

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour













Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	1600	190	410	1350	890	60	40	450	990	180	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	4.0	6.3	5.8	5.8	6.3	6.3	6.3
Lane Util. Factor	0.97	0.86	1.00	0.97	0.91	0.88	1.00	1.00	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	6408	1583	3433	5085	2787	1770	1863	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	6408	1583	3433	5085	2787	1770	1863	1583	4990	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	202	1702	202	436	1436	947	64	43	479	1053	191	170
RTOR Reduction (vph)	0	0	147	0	0	0	0	0	130	0	0	104
Lane Group Flow (vph)	202	1702	55	436	1436	947	64	43	349	1053	191	66
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6			Free			4			8
Actuated Green, G (s)	10.4	42.6	42.6	19.3	51.5	156.9	8.4	37.7	37.7	31.8	60.6	60.6
Effective Green, g (s)	10.4	42.6	42.6	19.3	51.5	156.9	8.4	37.7	37.7	31.8	60.6	60.6
Actuated g/C Ratio	0.07	0.27	0.27	0.12	0.33	1.00	0.05	0.24	0.24	0.20	0.39	0.39
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7		6.3	5.8	5.8	6.3	6.3	6.3
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	228	1740	430	422	1669	2787	95	448	380	1011	1367	611
v/s Ratio Prot	0.06	c0.27		c0.13	c0.28		0.04	0.02		c0.21	0.05	
v/s Ratio Perm			0.03			0.34			c0.22			0.04
v/c Ratio	0.89	0.98	0.13	1.03	0.86	0.34	0.67	0.10	0.92	1.04	0.14	0.11
Uniform Delay, d1	72.7	56.7	43.1	68.8	49.3	0.0	72.9	46.3	58.1	62.6	31.2	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	30.3	16.4	0.0	52.6	4.6	0.3	13.8	0.0	26.1	39.7	0.0	0.0
Delay (s)	102.9	73.1	43.2	121.4	54.0	0.3	86.7	46.4	84.3	102.3	31.3	30.9
Level of Service	F	E	D	F	D	A	F	D	F	F	C	C
Approach Delay (s)		73.1			46.4			81.7			84.1	
Approach LOS		E			D			F			F	

Intersection Summary

HCM Average Control Delay	65.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	156.9	Sum of lost time (s)	32.2
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			













HCM Signalized Intersection Capacity Analysis
22: Grant Line Rd & SR-99 SB Off-ramp

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗				↗	↕	↗
Volume (vph)	0	2550	490	0	2120	700	0	0	0	330	0	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7	4.0				6.6	6.6	6.6
Lane Util. Factor		0.91	1.00		0.91	1.00				0.95	0.91	0.95
Frt		1.00	0.85		1.00	0.85				1.00	0.87	0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (prot)		5085	1583		5085	1583				1681	1462	1504
Flt Permitted		1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (perm)		5085	1583		5085	1583				1681	1462	1504
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	2656	510	0	2208	729	0	0	0	344	0	552
RTOR Reduction (vph)	0	0	143	0	0	0	0	0	0	0	3	3
Lane Group Flow (vph)	0	2656	367	0	2208	729	0	0	0	310	290	290
Turn Type			Perm			Free				Split		Perm
Protected Phases		6			2					8	8	
Permitted Phases			6			Free						8
Actuated Green, G (s)		67.2	67.2		67.2	106.2				26.7	26.7	26.7
Effective Green, g (s)		67.2	67.2		67.2	106.2				26.7	26.7	26.7
Actuated g/C Ratio		0.63	0.63		0.63	1.00				0.25	0.25	0.25
Clearance Time (s)		5.7	5.7		5.7					6.6	6.6	6.6
Vehicle Extension (s)		4.0	4.0		4.0					2.0	2.0	2.0
Lane Grp Cap (vph)		3218	1002		3218	1583				423	368	378
v/s Ratio Prot		c0.52			0.43					0.18	c0.20	
v/s Ratio Perm			0.23			0.46						0.19
v/c Ratio		0.83	0.37		0.69	0.46				0.73	0.79	0.77
Uniform Delay, d1		15.0	9.3		12.7	0.0				36.5	37.1	36.9
Progression Factor		1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2		1.9	0.3		0.7	1.0				5.6	9.9	8.2
Delay (s)		16.9	9.6		13.3	1.0				42.1	47.0	45.0
Level of Service		B	A		B	A				D	D	D
Approach Delay (s)		15.7			10.3			0.0			44.6	
Approach LOS		B			B			A			D	
Intersection Summary												
HCM Average Control Delay			17.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			106.2			Sum of lost time (s)			12.3			
Intersection Capacity Utilization			74.1%			ICU Level of Service				D		
Analysis Period (min)			15									
c	Critical Lane Group											





























HCM Signalized Intersection Capacity Analysis
23: Grant Line Rd & SR-99 NB On-ramp

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↗	↖	↖			
Volume (vph)	0	2250	630	0	2340	480	480	0	660	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	4.0		5.7	5.7	4.6	4.6	4.6			
Lane Util. Factor		0.91	1.00		0.91	1.00	0.95	0.95	0.88			
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)		5085	1583		5085	1583	1681	1681	2787			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)		5085	1583		5085	1583	1681	1681	2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2446	685	0	2543	522	522	0	717	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	164	0	0	2	0	0	0
Lane Group Flow (vph)	0	2446	685	0	2543	358	261	261	715	0	0	0
Turn Type			Free			Perm	Split		Perm			
Protected Phases		6			2		4	4				
Permitted Phases			Free			2			4			
Actuated Green, G (s)		64.5	110.2		65.0	65.0	34.9	34.9	34.9			
Effective Green, g (s)		64.5	110.2		65.0	65.0	34.9	34.9	34.9			
Actuated g/C Ratio		0.59	1.00		0.59	0.59	0.32	0.32	0.32			
Clearance Time (s)		6.2			5.7	5.7	4.6	4.6	4.6			
Vehicle Extension (s)		4.0			4.0	4.0	2.0	2.0	2.0			
Lane Grp Cap (vph)		2976	1583		2999	934	532	532	883			
v/s Ratio Prot		0.48			c0.50		0.16	0.16				
v/s Ratio Perm			0.43			0.23			c0.26			
v/c Ratio		0.82	0.43		0.85	0.38	0.49	0.49	0.81			
Uniform Delay, d1		18.3	0.0		18.5	12.0	30.5	30.5	34.6			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		2.0	0.9		2.5	0.4	0.3	0.3	5.2			
Delay (s)		20.3	0.9		21.1	12.3	30.7	30.7	39.8			
Level of Service		C	A		C	B	C	C	D			
Approach Delay (s)		16.0			19.6			36.0			0.0	
Approach LOS		B			B			D			A	
Intersection Summary												
HCM Average Control Delay			20.8				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			110.2				Sum of lost time (s)		10.3			
Intersection Capacity Utilization			75.6%				ICU Level of Service		D			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
24: Grant Line Rd & Stockton Blvd

C+P w/ Whitelock Intchg - Mitigations
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		 					
Volume (vph)	590	2080	160	40	2070	120	290	30	30	110	20	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Lane Util. Factor	0.97	0.91	1.00	1.00	0.86		0.97	1.00		1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.93		1.00	0.86	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	1770	6355		3433	1723		1770	1526	1504
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	1770	6355		3433	1723		1770	1526	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	641	2261	174	43	2250	130	315	33	33	120	22	500
RTOR Reduction (vph)	0	0	81	0	4	0	0	26	0	0	199	199
Lane Group Flow (vph)	641	2261	93	43	2376	0	315	40	0	120	63	61
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6									8
Actuated Green, G (s)	18.7	57.2	57.2	4.0	42.5		15.5	13.7		15.3	13.5	13.5
Effective Green, g (s)	18.7	57.2	57.2	4.0	42.5		15.5	13.7		15.3	13.5	13.5
Actuated g/C Ratio	0.16	0.50	0.50	0.04	0.37		0.14	0.12		0.13	0.12	0.12
Clearance Time (s)	6.7	5.7	5.7	6.7	5.7		5.2	5.2		5.9	5.9	5.9
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		3.0	3.0		2.0	2.0	2.0
Lane Grp Cap (vph)	565	2558	796	62	2375		468	208		238	181	179
v/s Ratio Prot	c0.19	0.44		0.02	c0.37		c0.09	0.02		0.07	c0.04	
v/s Ratio Perm			0.06									0.04
v/c Ratio	1.13	0.88	0.12	0.69	1.00		0.67	0.19		0.50	0.35	0.34
Uniform Delay, d1	47.5	25.3	14.9	54.2	35.6		46.7	45.0		45.7	46.0	46.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	80.7	4.0	0.1	23.7	18.5		3.8	0.4		0.6	0.4	0.4
Delay (s)	128.2	29.3	15.0	77.9	54.1		50.5	45.5		46.3	46.5	46.4
Level of Service	F	C	B	E	D		D	D		D	D	D
Approach Delay (s)		49.1			54.6			49.6			46.4	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	50.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	113.7	Sum of lost time (s)	17.6
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			