

APPENDIX J – TRAFFIC IMPACT ASSESSMENT

Draft Transportation Impact Analysis Civic Center Aquatics Complex

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Table of Contents

1. INTRODUCTION	1
Study Area	3
Study Intersections	3
Study Freeway Facilities	3
Data Collection	4
Analysis Methodology	4
Intersections	4
Freeway Facilities	6
Travel Demand Forecasting.....	6
Analysis Evaluation Criteria.....	7
Intersections	7
Freeway Facilities	7
Bicycle/Pedestrian/Transit Facilities	8
Report Organization	8
2. EXISTING CONDITIONS	9
Existing Transportation System.....	9
Roadway System.....	9
Bicycle and Pedestrian Facilities	10
Transit Facilities	12
Traffic Operations Analysis	13
Intersection Operations	13
Freeway Facility Operations	15
3. PROPOSED PROJECT	17
Project Description.....	17
Project Description.....	17
Parking.....	18
Operational Characteristics	18
Market Area	18
Trip Generation	20

4. EXISTING PLUS PROJECT CONDITIONS	22
Traffic Operations Analysis	22
Intersection Operations	22
Freeway Facility Operations	28
Bicycle and Pedestrian Facilities	33
Transit Facilities	33
5. CUMULATIVE CONDITIONS	34
Traffic Operations Analysis	34
Intersection Operations	34
Freeway Facility Operations	44
Bicycle and Pedestrian Facilities	47
Transit Facilities	47

List of Figures

Figure 1: Project Location.....	2
Figure 2: Bicycle and Pedestrian Facilities	11
Figure 3: Elk Grove Transit System Map.....	12
Figure 4: Proposed Project.....	19
Figure 5: Project Trip Distribution – Existing Conditions.....	24
Figure 6: Project Trip Distribution – Cumulative Conditions.....	35

List of Tables

Table 1: Intersection Level of Service Thresholds.....	5
Table 2: Freeway Level of Service Definitions.....	6
Table 3: Peak Hour Intersection Level of Service – Existing Conditions	13
Table 4: Freeway Analysis – Existing Conditions	15
Table 5: Trip Generation – Civic Center Aquatics Complex	21
Table 6: Peak Hour Intersection Level of Service – Existing Plus Project Conditions	25
Table 7: Freeway Analysis – Existing Plus Project Conditions	31
Table 8: Peak Hour Intersection Level of Service – Cumulative Plus Project Conditions.....	37
Table 9: Freeway Analysis – Cumulative Plus Project Conditions.....	44

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 Civic Center Aquatics Complex. The project is generally located west of State Route 99 (SR 99) and south of Elk Grove Boulevard in the Laguna Ridge Specific Plan area. Figure 1 shows the project location, which is south of Civic Center Drive and east of Big Horn Boulevard. The project proposes the following access and circulation features:

- Full access driveway at the Big Horn Boulevard/Denali Circle Intersection, which is traffic signal controlled.
- Right-in/right-out driveway on Big Horn Boulevard about 330 feet south of Civic Center Drive.
- Pedestrian connections between the project site and Civic Center Drive and Big Horn Boulevard.
- An 8-foot decomposed granite trail extending from Civic Center Drive along the east boundary of the project south towards Lotz Parkway.
- A 20-foot paved service road bordering the east and south boundary of the project from Civic Center Drive to the Denali Circle driveway.
- Three emergency vehicle access locations, two serving the water park/adventure park and one serving the competition pool area.

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



Figure 1: Project Location



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 21 intersections and 17 freeway facilities were selected for analysis:

STUDY INTERSECTIONS

1. Elk Grove Boulevard/I-5 SB Ramps
2. Elk Grove Boulevard/I-5 NB Ramps
3. Elk Grove Boulevard/Franklin Boulevard
4. Elk Grove Boulevard/Bruceville Road
5. Elk Grove Boulevard/Wymark Drive
6. Elk Grove Boulevard/Big Horn Boulevard
7. Elk Grove Boulevard/Laguna Springs Drive
8. Elk Grove Boulevard/Auto Center Drive
9. Elk Grove Boulevard/SR 99 SB Ramps
10. Elk Grove Boulevard/SR 99 NB On-Ramp
11. Elk Grove Boulevard/East Stockton Boulevard
12. East Stockton Boulevard/SR 99 NB Off-Ramp
13. Civic Center Drive/Bruceville Road
14. Civic Center Drive/Wymark Drive
15. Civic Center Drive/Big Horn Boulevard
16. Civic Center Drive/Laguna Springs Drive
17. Lotz Parkway/Big Horn Boulevard
18. Lotz Parkway/Laguna Springs Drive
19. Whitelock Parkway/Bruceville Road
20. Whitelock Parkway/Big Horn Boulevard
21. Denali Circle/Big Horn Boulevard

STUDY FREEWAY FACILITIES

1. NB SR 99 South of Elk Grove Boulevard
2. NB SR 99 Elk Grove Boulevard Off-Ramp
3. NB SR 99 Elk Grove Boulevard Loop On-Ramp
4. NB SR 99 Elk Grove Boulevard Slip On-Ramp
5. NB SR 99 North of Elk Grove Boulevard
6. SB SR 99 North of Elk Grove Boulevard
7. SB SR 99 Elk Grove Boulevard Off-Ramp
8. SB SR 99 Elk Grove Boulevard Slip On-Ramp
9. SB SR 99 South of Elk Grove Boulevard
10. NB I-5 South of Elk Grove Boulevard
11. NB I-5 Elk Grove Boulevard Off-Ramp
12. NB I-5 Elk Grove Boulevard Slip On-Ramp
13. NB I-5 North of Elk Grove Boulevard
14. SB I-5 North of Elk Grove Boulevard
15. SB I-5 Elk Grove Boulevard Off-Ramp
16. SB I-5 Elk Grove Boulevard Loop On-Ramp
17. SB I-5 South of Elk Grove Boulevard



DATA COLLECTION

To provide a baseline for the transportation analysis, traffic counts were collected at the existing study intersections in May 2014 and April 2013. The intersection turning movement counts were conducted during the PM (4:00 to 6:00) peak period (mid-week) and between 9:00 AM and 11:00 AM on Saturday. 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 most study intersections, the counts indicate that the mid-week PM peak hour begins at 4:45 or 5:00 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	15.1 – 25.0
D	35.1 – 55.0	25.1 – 35.0
E	55.1 – 80.0	35.1 – 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."



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 2 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.

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 cumulative conditions without the proposed project. 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, Southeast Policy Area, Sterling Meadows, the Elk Grove Promenade, and Lent Ranch Marketplace. 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 forecasted 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 2014 (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. Forecasts for Saturday conditions were developed by factoring weekday PM peak hour forecasts based on existing weekday and Saturday traffic counts. Factors were applied by intersection, considering total volume using intersection and individual turn movements.

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

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 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 by State Route 99 (SR 99) and 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. Key study roadways are described below.

ROADWAY SYSTEM

- **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.
- **Civic Center Drive** is a two-lane (with center turn lane) commercial street extending from Bruceville Road to Laguna Springs Drive. Civic Center is constructed to its general plan designation.
- **Lotz Parkway** is a four-lane arterial street extending from Big Horn Boulevard to just east of Laguna Springs Drive. Lotz Parkway is constructed to its general plan designation. Lotz Parkway will continue east and south and connect to and extend south of Whitelock Parkway.
- **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.



- **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.
- **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.
- **Laguna Springs Drive** is a four-lane arterial street extending from Laguna Boulevard to Lotz Parkway. Lotz Parkway is constructed to its general plan designation.
- **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 Elk Grove Boulevard 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.

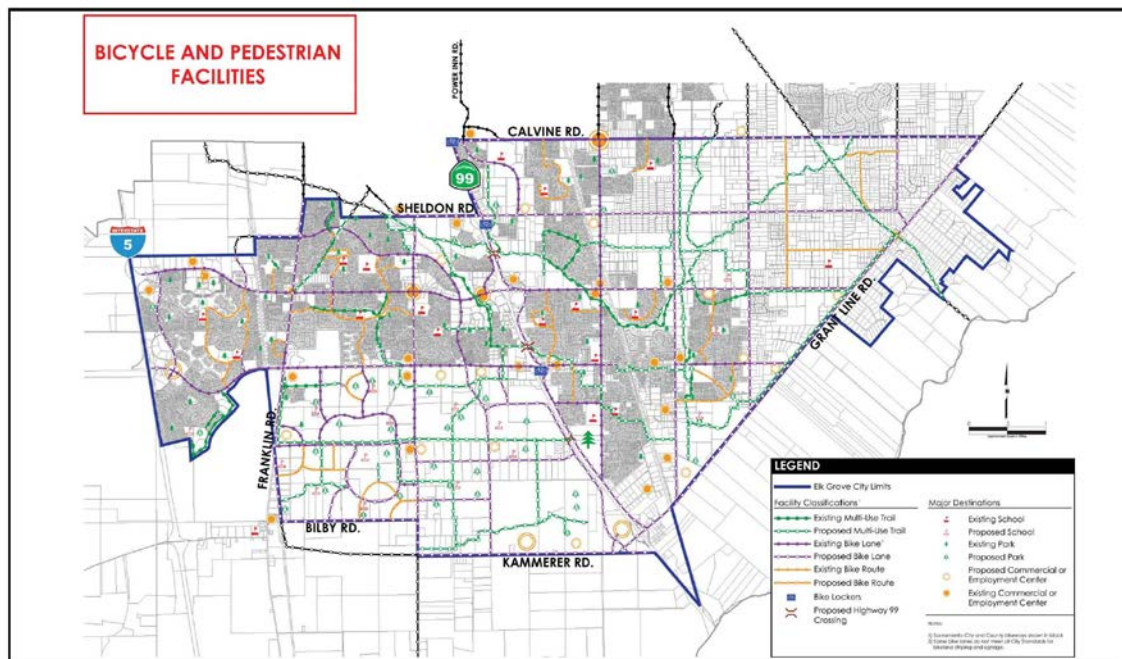


Class II Bike Lanes are striped lanes for one-way bike travel on a street or highway.

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).

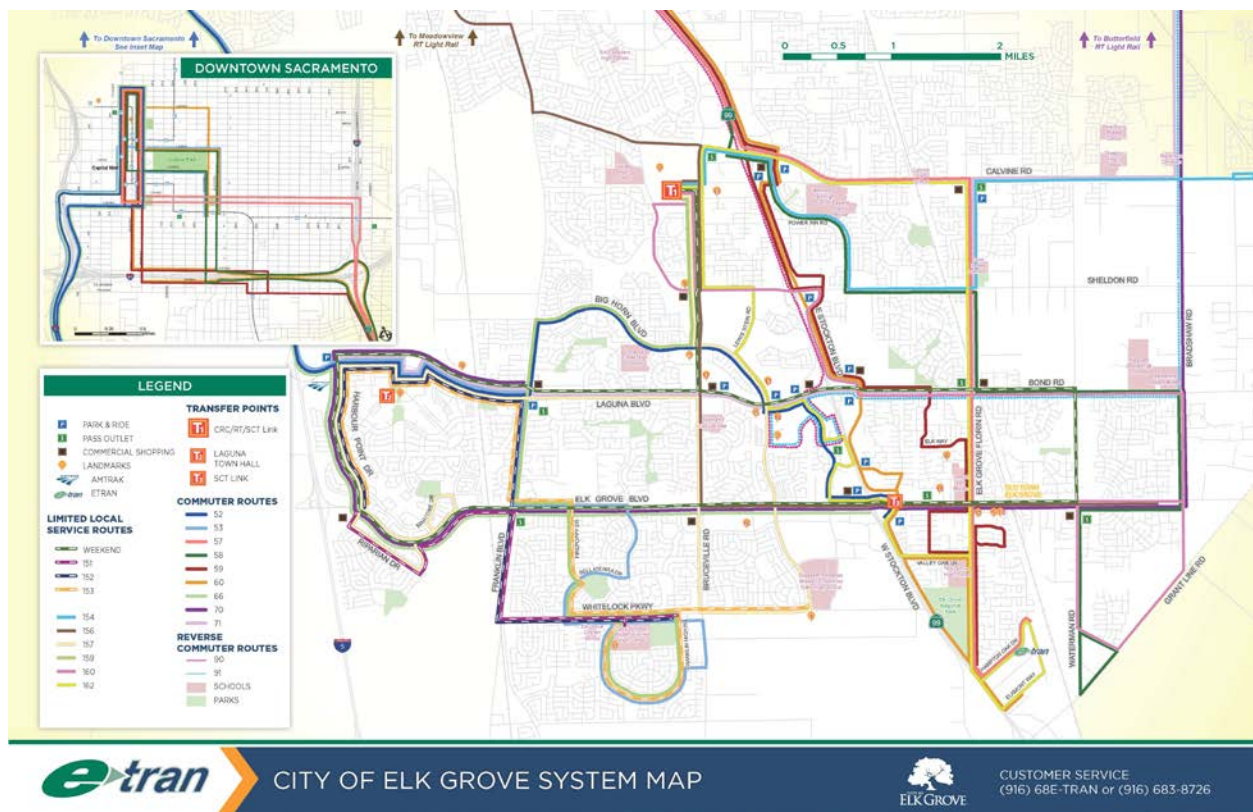
Figure 2: Bicycle and Pedestrian Facilities



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 3: 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 weekday PM and Saturday peak hour intersection turning movement volumes, lane configurations, and traffic controls present at each of the study intersections. Table 3 summarizes the existing peak hour intersection operations (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 Elk Grove Boulevard/I-5 SB Ramps intersection. The controlled eastbound and westbound movements at the intersection operate at LOS F due to uncontrolled southbound left-turn movement from SB I-5, continuing east to Elk Grove. However, the west leg of the intersection is undeveloped and the volumes for turn movements to/from the west are low.

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 3 are based on the number of vehicles that served during the peak conditions and do not include the operational effects of these closely spaced intersections. Therefore, conditions experienced by motorists may be worse than reported on Elk Grove Boulevard between Big Horn Boulevard and SR 99.

TABLE 3: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS

Intersection	Traffic Control	Weekday PM		Saturday	
		Delay	LOS	Delay	LOS
1. Elk Grove Blvd / I-5 SB Ramps	Side-Street Stop	>50	F	30	D
2. Elk Grove Blvd / I-5 NB Ramps	Side-Street Stop	29	D	11	B
3. Elk Grove Blvd / Franklin Blvd	Signal	37	D	35	C
4. Elk Grove Blvd / Bruceville Rd	Signal	37	D	39	D



TABLE 3: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS

Intersection	Traffic Control	Weekday PM		Saturday	
		Delay	LOS	Delay	LOS
5. Elk Grove Blvd / Wymark Drive	Signal	13	B	14	B
6. Elk Grove Blvd / Big Horn Blvd	Signal	25	C	29	C
7. Elk Grove Blvd / Laguna Springs Dr	Signal	22	C	14	B
8. Elk Grove Blvd / Auto Center Dr	Signal	25	C	28	C
9. Elk Grove Blvd / SR 99 SB Ramps	Signal	36	D	34	C
10. Elk Grove Blvd / SR 99 NB On-Ramp	Signal	13	B	15	B
11. Elk Grove Blvd / East Stockton Blvd	Signal	39	D	35	C
12. East Stockton Blvd / SR 99 NB Off-Ramp	Side-Street Stop	22	C	15	B
13. Civic Center Dr / Bruceville Road	Signal	26	C	19	B
14. Civic Center Dr / Wymark Drive	All-way Stop	8	A	8	A
15. Civic Center Dr / Big Horn Blvd	Signal	16	B	14	B
16. Civic Center Dr / Laguna Springs Dr	Signal	20	C	15	B
17. Lotz Parkway / Big Horn Blvd	Signal	18	B	18	B
18. Lotz Parkway / Laguna Springs Dr	Signal	36	D	23	C
19. Whitelock Pkwy / Bruceville Rd	Signal	26	C	26	C
20. Whitelock Pkwy / Big Horn Blvd	Signal	16	B	16	B
21. Denali Circle / Big Horn Blvd	Signal	5	A	6	A

Notes: 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 expected

Bold text indicates LOS worse than established threshold. *Italic and underlined text* identifies a potential impact.

Source: Fehr & Peers, 2014.



FREEWAY FACILITY OPERATIONS

Table 4 summarizes the existing weekday PM and Saturday peak hour freeway operations on SR 99 and I-5 (refer to separate Appendix A for detailed calculations). As shown, most of the freeway facilities operate acceptably at LOS D or better during both peak hours, except for the SB I-5 Elk Grove Boulevard Off-ramp diverge, which operates at the LOS D/E threshold during the weekday PM peak hour.

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.

Freeway Facility	Type	Weekday PM Peak Hour		Saturday Peak Hour	
		Density	LOS	Density	LOS
1. NB SR 99 South of Elk Grove Boulevard	Basic Segment	12.5	B	11.5	B
2. NB SR 99 Elk Grove Boulevard Off-Ramp	Diverge	16.5	B	16.1	B
3. NB SR 99 Elk Grove Boulevard Loop On-Ramp	Merge	Cumulative Conditions Only			
4. NB SR 99 Elk Grove Boulevard Slip On-Ramp	Merge	19.5	B	19.3	B
5. NB SR 99 North of Elk Grove Boulevard	Basic Segment	17.8	B	17.6	B
6. SB SR 99 North of Elk Grove Boulevard	Basic Segment	20.3	C	16.5	B
7. SB SR 99 Elk Grove Boulevard Off-Ramp	Diverge	13.7	B	10.5	B



TABLE 4: FREEWAY ANALYSIS – EXISTING CONDITIONS					
Freeway Facility	Type	Weekday PM Peak Hour		Saturday Peak Hour	
		Density	LOS	Density	LOS
8. SB SR 99 Elk Grove Boulevard Slip On-Ramp	Merge	22.2	C	19.2	B
9. SB SR 99 South of Elk Grove Boulevard	Basic Segment	18.6	C	14.8	B
10. NB I-5 South of Elk Grove Boulevard	Basic Segment	17.1	B	13.7	B
11. NB I-5 Elk Grove Boulevard Off-Ramp	Diverge	20.5	C	17.5	B
12. NB I-5 Elk Grove Boulevard Slip On-Ramp	Merge	19.1	B	18.0	B
13. NB I-5 North of Elk Grove Boulevard	Basic Segment	19.9	C	18.0	C
14. SB I-5 North of Elk Grove Boulevard	Basic Segment	32.4	D	15.1	B
15. SB I-5 Elk Grove Boulevard Off-Ramp	Diverge	35.1	E	20.9	C
16. SB I-5 Elk Grove Boulevard Loop On-Ramp	Merge	18.9	B	14.2	B
17. SB I-5 South of Elk Grove Boulevard	Basic Segment	17.9	B	12.4	B

Bold text indicates LOS worse than established threshold. *Italic and underlined text* identifies a potential impact.

Source: Fehr & Peers, 2014.



3. PROPOSED PROJECT

This chapter discusses the proposed project, including site access and operation characteristics.

PROJECT DESCRIPTION

The Civic Center Aquatics Complex is proposed to be located at the southwest corner of the Civic Center Drive/Big Horn boulevard intersection in the Laguna Ridge Specific Plan area. Figure 4 shows the proposed project.

PROJECT DESCRIPTION

The project includes the construction of an aquatic center (i.e., competition/training facility), a waterpark/adventure park (i.e., commercial recreational facility), parking, and support facilities. The total site area is approximately 30-acres.

The aquatic center will consist of an Olympic-sized swimming pool (approximately 50 meters by 25 yards, 2 meter depth) and a warm-up pool with a 10-meter diving tower (approximately 20 meters by 25 yards, 17-foot depth). Support facilities include the following:

- Shaded seating for 1,000+ spectators
- Water system
- Concessions
- Hot tub for 12 to 20 athletes
- Locker rooms
- Meeting room
- Office and storage space
- Temporary enclosure area

The competitive facilities are anticipated to be home to multiple Elk Grove high schools and a variety of regional club teams for practices and meets. It is also intended for large scale competitive tournaments drawing people from outside the region.

The waterpark will include attractions like a lazy river, wave pool, water slides, children's aquatic play area, family activity pool, spray grounds, geysers, private cabanas, entertainment stage, and group



pavilion. The adventure park will include attractions like a ropes course, zip lines, sky trail, climbing walls, various challenge/team building activities, arcade, and party rooms. The adventure park facilities will be integrated with the waterpark.

PARKING

As shown on Figure 4, the project site includes 724 parking spaces adjacent to the planned facilities and an additional 1,500 parking spaces north of Civic Center.

OPERATIONAL CHARACTERISTICS

As outlined below, the three components of the project will have different operating hours with peak operation in the summer (i.e., June through August) and July representing the peak month. The waterpark will operate for 120 days between May and October. The following summarizes peak operating hours for each component of the project during the summer:

- The aquatic center will be open from 7:00 AM to 9:00 PM
- The adventure park will be open from 10:00 AM to 10:00 PM
- The waterpark will be open from 10:00 AM to 9:00 PM. School events are scheduled for the first week in June (10:00 AM to 4:00 PM). Operating hours are reduced to 10:00 AM to 6:00 PM in mid-August.

Average weekday attendance for the project in July is estimated at 3,230², with maximum attendance occurring on a Saturday in July with 5,500 attendees³.

MARKET AREA

The project will attract about 60 percent of its attendees from outside the City of Elk Grove, with 20 percent of these attendees traveling 60 minutes or more to the project⁴.

² Project demand average attendance estimates developed by Hotel & Leisure Advisors.

³ Maximum attendance developed by Kirk Van Cleave, P3 INTERNATIONAL.

⁴ Market demand developed by Hotel & Leisure Advisors.



Figure 4: Proposed Project



TRIP GENERATION

Table 5 summarizes weekday and Saturday trip generation for the proposed project. As outlined above, average weekday project attendance is estimated at 3,230, with maximum attendance estimated at 5,500 and occurring on a Saturday in July. Due to the unique composition of project uses, trip generation from comparable sites was not available. Therefore, the trip generation presented in Table 5 was developed using the estimated attendance levels for average weekday conditions and the maximum attendance scenario, operational characteristics, and available trip generation characteristics for comparable land used documented in Trip Generation, 9th Edition (Institute of Transportation Engineers). The following outlines the steps used to develop the project trip generation presented in Table 5.

- Project Attendance – Identified weekday and maximum attendance scenarios
- Auto Occupancy – Calculated expected auto occupancy using project auto occupancy based on the ratio of total visitors (adults and youth under the age of 13) to adult chaperones developed by Hotel & Leisure Advisors (for estimating project demand) assuming all adult chaperones drive.
- Daily Vehicle Trips – Calculated daily vehicle trips by dividing project attendance by auto occupancy and multiplied by two to account for vehicles entering/existing the project.
- Peak Hour Trips – Calculated peak hour vehicle trips by multiplying daily vehicle trips by the peak-to-daily factor and directional distribution from Trip Generation, 9th Edition (Institute of Transportation Engineers) for Water Slide Park (Land Use: 414), for weekday and Saturday scenarios.

As shown in Table 5, the project is projected to generate about 2,810 vehicle trips during an average weekday and 4,780 vehicle trips during a maximum attendance day. On an average weekday, the project would generate about 340 trips during the PM peak hour (i.e., peak hour of adjacent street traffic). During maximum attendance, the project would generate about 620 trips.



TABLE 5: TRIP GENERATION – CIVIC CENTER AQUATICS COMPLEX							
Scenario ¹	Daily Attendance ² [Persons]	Auto Occupancy ³ [Persons/Vehicle]	Vehicles	Trips			
				Daily ⁴	Peak Hour ^{5,6} (Weekday=PM, Saturday=Generator)		
					Total	In	Out
Weekday	3,230	2.3	1,404	2,808	337	162	175
Saturday	5,500	2.3	2,391	4,782	622	429	193

Notes: ¹Hours of operation – Waterpark/Adventure Park -10:00 AM to 10:00 PM Monday through Sunday. Analysis scenarios include mid-week (Tuesday, Wednesday, or Thursday) PM peak hour conditions and a peak hour on Saturday. Aquatic Complex – 7:00 AM to 9:00 PM.

²Attendance estimate based on usage levels developed by Hotel & Leisure Advisors

³Auto occupancy based on the ratio of total visitors (adults and youth under the age of 13) to adult chaperones developed by Hotel & Leisure Advisors (for estimating project demand) assuming all adult chaperones drive.

⁴Daily vehicle trips developed by multiplying total vehicles by two to account for vehicles entering and exiting the project.

⁵Total peak hour trips based on the peak-to-daily factor and directional distribution from *Trip Generation, 9th Edition* (Institute of Transportation Engineers) for Water Slide Park (Land Use: 414), for weekday and Saturday scenarios.

⁶Weekday peak hour trip generation represents the peak hour of adjacent street traffic. Saturday peak hour is the peak hour of the generator (i.e., the highest hour of trip generation for the proposed project).

Source: Fehr & Peers, 2014



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 project added to existing development levels and traffic volumes at the time study area traffic counts were collected. Under this analysis scenario, the project is assumed to develop immediately.

The analysis presented below assumes transportation improvements needed to support the project, including site access improvements, parking facilities, bicycle, and pedestrian connections are constructed. This includes construction of the east (i.e., fourth) leg of the Denali Circle/Big Horn Boulevard intersection, which includes turn lane modifications and signal system modifications.

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. The traffic volume forecasts in Appendix B were developed by adding the project traffic from Table 5 through the study intersections using the trip distribution shown on Figure 5.

Table 6 summarizes the intersection operations under existing conditions with the addition of the proposed project (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, except for the Elk Grove Boulevard/I-5 SB Ramps intersection. The controlled eastbound and westbound movements at the intersection operate at LOS F due to uncontrolled southbound left-turn movement from SB I-5, continuing east to Elk Grove. The project would add traffic to the uncontrolled on- and off-ramp movements at this intersection.

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 6 represent isolated intersection operation and are



based on the number of vehicles served during the peak hour conditions. The analysis does not account for the operational effects of these closely spaced intersections, like vehicle queuing extending between intersections. Therefore, conditions experienced by motorists may be worse than reported at the intersections on Elk Grove Boulevard near the SR 99 interchange.



Figure 5: Project Trip Distribution – Existing Conditions



TABLE 6: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	Weekday PM		Saturday		Weekday PM		Saturday	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
		<i>Existing Conditions</i>				<i>Existing Plus Project Conditions</i>			
1. Elk Grove Blvd / I-5 SB Ramps	Side-Street Stop	>50	F	30	D	>50	F	35	D
2. Elk Grove Blvd / I-5 NB Ramps	Side-Street Stop	29	D	11	B	31	D	11	B
3. Elk Grove Blvd / Franklin Blvd	Signal	37	D	35	C	38	D	35	C
4. Elk Grove Blvd / Bruceville Rd	Signal	37	D	39	D	37	D	39	D
5. Elk Grove Blvd / Wymark Drive	Signal	13	B	14	B	13	B	15	B
6. Elk Grove Blvd / Big Horn Blvd	Signal	25	C	29	C	27	C	32	C
7. Elk Grove Blvd / Laguna Springs Dr	Signal	22	C	14	B	23	C	18	B
8. Elk Grove Blvd / Auto Center Dr	Signal	25	C	28	C	26	C	29	C
9. Elk Grove Blvd / SR 99 SB Ramps	Signal	36	D	34	C	41	D	49	D
10. Elk Grove Blvd / SR 99 NB On-Ramp	Signal	13	B	15	B	13	B	16	B
11. Elk Grove Blvd / East Stockton Blvd	Signal	39	D	35	C	39	D	35	D
12. East Stockton Blvd / SR 99 NB Off-Ramp	Side-Street Stop	22	C	15	B	23	C	16	C
13. Civic Center Dr / Bruceville Rd	Signal	26	C	19	B	28	C	21	C
14. Civic Center Dr / Wymark Dr	All-way Stop	8	A	8	A	8	A	8	A
15. Civic Center Dr / Big Horn Blvd	Signal	16	B	14	B	19	B	17	B



TABLE 6: PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	Weekday PM		Saturday		Weekday PM		Saturday	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
16. Civic Center Dr / Laguna Springs Dr	Signal	20	C	15	B	18	B	15	B
17. Lotz Pkwy / Big Horn Blvd	Signal	18	B	18	B	19	B	18	B
18. Lotz Pkwy / Laguna Springs Dr	Signal	36	D	23	C	35	D	21	C
19. Whitelock Pkwy / Bruceville Rd	Signal	26	C	26	C	27	C	26	C
20. Whitelock Pkwy / Big Horn Blvd	Signal	16	B	16	B	16	B	16	B
21. Denali Circle / Big Horn Blvd	Signal	5	A	6	A	18	B	28	C

Notes: 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 expected

Bold text indicates LOS worse than established threshold. *Italic and underlined text* identifies a potential impact.

Source: Fehr & Peers, 2014.



The addition of project trips would result in the following potential impacts:

Impact 1 – Elk Grove Boulevard/I-5 SB Ramps Intersection

This intersection has side-street stop control. The controlled eastbound and westbound movements at the intersection operate at LOS F due to the much higher volume uncontrolled southbound off-ramp left-turn movement from I-5. The project would add traffic to the uncontrolled on-ramp movements at the intersection, which would increase delay for the controlled eastbound and westbound movements at the intersection. However, based on the intersection traffic control, lane configurations, and volumes using the intersection the traffic analysis software cannot report delay for the controlled movements, so we must conservatively find that this is a potentially significant impact.

Mitigation 1

The west leg of the intersection provides access to the Stone Lake National Wildlife Refuge and is and will remain undeveloped, so the volumes for turn movements to/from the west are low. A review of the latest three-year collision records from the Statewide Integrated Traffic Records System (SWITRS) database revealed no reported collision at or near the intersection. Although the project would add traffic to the uncontrolled on- and off-ramp movements at this intersection, no mitigation are recommended based on the following factors:

- The west leg of the intersection is and will remain undeveloped.
- Volumes are low on the controlled movements and will remain low without development.
- There were no reported collisions at the intersection indicating need for modified intersection traffic control.
- Traffic volumes on the controlled movements would not warrant installation of traffic signal control.

Therefore, this impact would remain significant and unavoidable.



Impact 2 – Elk Grove Boulevard Corridor (Near SR 99/Elk Grove Boulevard Interchange)

Implementation of the project would add traffic to the Elk Grove Boulevard Corridor near the SR 99 interchange, which was observed to have vehicle queues that extended through adjacent intersections at times during the peak periods. This is a potentially significant impact.

Mitigation 2

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 interchange that is planned between Elk Grove Boulevard and Grant Line Road, would provide an alternative to Elk Grove Boulevard and Big Horn Boulevard for trips with an origin and destination west of SR 99 in the Laguna Ridge Specific Plan. 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 and routine traffic signal coordination in response to planned growth and changing travel patterns would improve operations and provide an alternative to the Elk Grove corridor for some travel. However, these improvements would not improve intersection spacing. Consequently, 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.

FREEWAY FACILITY OPERATIONS

Table 7 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, most of the study freeway facilities would operate acceptably at LOS D or better during both peak hours, except for the SB I-5 Elk Grove Boulevard Off-ramp diverge, which operates at the LOS D/E threshold during the weekday PM peak hour. The project would add traffic to the SB I-5 Elk Grove Boulevard Off-ramp diverge. The addition of project traffic would result in the following potential impacts.



Impact 3 – SB I-5 Elk Grove Boulevard Off-ramp Diverge

Implementation of the project would add traffic to the SB I-5 Elk Grove Boulevard Off-ramp diverge, which would operate unacceptably at LOS E under existing conditions. The addition of project traffic would result in an increase in density of the diverge influence area at the SB off-ramp from 35.1 to 35.3, corresponding to an increase in the volume-to-capacity ratio of the diverge from 0.85 to 0.86 (i.e., a volume-to-capacity increase of 0.01). Based on the City of Elk Grove analysis evaluation criteria, this is a less than significant impact.

Mitigation 3

No mitigation required.

Impact 4 – SR 99 Freeway Operations

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. This is a potentially significant impact.

Mitigation 4

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.



TABLE 7: FREEWAY ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

Intersection	Traffic Control	Existing Conditions				Existing Plus Project Conditions			
		Weekday PM Peak Hour		Saturday Peak Hour		Weekday PM Peak Hour		Saturday Peak Hour	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
1. NB SR 99 South of Elk Grove Boulevard	Basic Segment	12.5	B	11.5	B	12.6	B	11.8	B
2. NB SR 99 Elk Grove Boulevard Off-Ramp	Diverge	16.5	B	16.1	B	16.6	B	16.4	B
3. NB SR 99 Elk Grove Boulevard Loop On-Ramp	Merge	Cumulative Conditions Only							
4. NB SR 99 Elk Grove Boulevard Slip On-Ramp	Merge	19.5	B	19.3	B	19.9	B	19.7	B
5. NB SR 99 North of Elk Grove Boulevard	Basic Segment	17.8	B	17.6	B	18.0	C	17.9	B
6. SB SR 99 North of Elk Grove Boulevard	Basic Segment	20.3	C	16.5	B	20.5	C	17.1	B
7. SB SR 99 Elk Grove Boulevard Off-Ramp	Diverge	13.7	B	10.5	B	13.9	B	11.3	B
8. SB SR 99 Elk Grove Boulevard Slip On-Ramp	Merge	22.2	C	19.2	B	22.3	C	19.3	B
9. SB SR 99 South of Elk Grove Boulevard	Basic Segment	18.6	C	14.8	B	18.7	C	14.9	B
10. NB I-5 South of Elk Grove Boulevard	Basic Segment	17.1	B	13.7	B	17.1	B	13.9	B
11. NB I-5 Elk Grove Boulevard Off-Ramp	Diverge	20.5	C	17.5	B	20.6	C	17.7	B
12. NB I-5 Elk Grove Boulevard Slip On-Ramp	Merge	19.1	B	18.0	B	19.3	B	18.2	B
13. NB I-5 North of Elk Grove Boulevard	Basic Segment	19.9	C	18.0	C	20.0	C	18.2	C
14. SB I-5 North of Elk Grove Boulevard	Basic Segment	32.4	D	15.1	B	32.7	D	15.4	B
15. SB I-5 Elk Grove Boulevard Off-Ramp	Diverge	35.1	E	20.9	C	35.3	E	21.3	C



TABLE 7: FREEWAY ANALYSIS – EXISTING PLUS PROJECT CONDITIONS									
Intersection	Traffic Control	Existing Conditions				Existing Plus Project Conditions			
		Weekday PM Peak Hour		Saturday Peak Hour		Weekday PM Peak Hour		Saturday Peak Hour	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
16. SB I-5 Elk Grove Boulevard Loop On-Ramp	Merge	18.9	B	14.2	B	19.0	B	14.3	B
17. SB I-5 South of Elk Grove Boulevard	Basic Segment	17.9	B	12.4	B	18.0	B	12.5	B

Bold text indicates LOS worse than established threshold. *Italic and underlined text* identifies a potential impact.

Source: Fehr & Peers, 2014.



BICYCLE AND PEDESTRIAN FACILITIES

The proposed project would integrate with existing bicycle and pedestrian facilities and will implement planned bicycle and pedestrian facilities in the Laguna Ridge Specific Plan, like the decomposed granite trail along the east boundary of the project. 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 region's 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. The traffic volume forecasts in Appendix C were developed by adding the project traffic from Table 5 through the study intersections using the trip distribution shown on Figure 6.



Figure 6: Project Trip Distribution – Cumulative Conditions



Table 8 summarizes the peak hour intersection operations at the study intersections (refer to separate Appendix C for detailed calculations) under cumulative conditions. The following intersections will operate unacceptably (LOS E or F) during at least one peak hour without the addition of project traffic:

- Elk Grove Boulevard/I-5 SB Ramps – LOS F during the weekday PM peak hour
- Elk Grove Boulevard/Bruceville Road – LOS E during the weekday PM peak hour
- Elk Grove Boulevard/Big Horn Boulevard – LOS E during the weekday PM peak hour and LOS F on Saturday
- Elk Grove Boulevard/Laguna Springs Drive – LOS E during the weekday PM peak hour
- Elk Grove Boulevard/SR 99 Southbound Ramps – LOS E during the weekday PM and Saturday peak hours
- Elk Grove Boulevard/East Stockton Boulevard – LOS E during the weekday PM peak hour
- Civic Center Drive/Big Horn Boulevard – LOS F during the weekday PM peak hour and LOS F on Saturday

As noted under existing conditions, significant vehicle queuing was observed during field observations during the PM peak hour near the SR 99/Elk Grove Boulevard intersection. The Synchro intersection operations documented in Table 8 are based on the number of vehicles served during the PM peak hour, plus traffic added by 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 Big Horn Boulevard and SR 99.



TABLE 8: PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE PLUS PROJECT CONDITIONS

Intersection	Traffic Control	Weekday PM		Saturday		Weekday PM		Saturday	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
		<i>Cumulative Conditions</i>				<i>Cumulative Plus Project Conditions</i>			
1. Elk Grove Blvd / I-5 SB Ramps	Side-Street Stop	<u>>50</u>	<u>F</u>	29	D	<u>>50</u>	<u>F</u>	34	D
2. Elk Grove Blvd / I-5 NB Ramps	Side-Street Stop	32	D	11	B	34	D	11	B
3. Elk Grove Blvd / Franklin Blvd	Signal	48	D	45	D	49	D	45	D
4. Elk Grove Blvd / Bruceville Rd	Signal	<u>57</u>	<u>E</u>	49	D	<u>58</u>	<u>E</u>	49	D
5. Elk Grove Blvd / Wymark Drive	Signal	19	B	15	B	18	B	14	B
6. Elk Grove Blvd / Big Horn Blvd	Signal	<u>78</u>	<u>E</u>	<u>89</u>	<u>F</u>	<u>83</u>	<u>F</u>	<u>100</u>	<u>F</u>
7. Elk Grove Blvd / Laguna Springs Dr	Signal	<u>57</u>	<u>E</u>	26	C	<u>65</u>	<u>E</u>	28	C
8. Elk Grove Blvd / Auto Center Dr	Signal	34	C	51	D	37	D	54	D
9. Elk Grove Blvd / SR 99 SB Ramps	Signal	<u>78</u>	<u>E</u>	<u>59</u>	<u>E</u>	<u>88</u>	<u>F</u>	<u>77</u>	<u>E</u>
10. Elk Grove Blvd / SR 99 NB On-Ramp	Signal	-	-	-	-	-	-	-	-
11. Elk Grove Blvd / East Stockton Blvd	Signal	<u>67</u>	<u>E</u>	27	C	<u>72</u>	<u>E</u>	27	C
12. East Stockton Blvd / SR 99 NB Off-Ramp	Signal	50	D	35	D	53	D	36	D
13. Civic Center Dr / Bruceville Rd	Signal	32	C	21	C	32	C	22	C
14. Civic Center Dr / Wymark Dr	Signal	43	D	34	D	44	D	36	D
15. Civic Center Dr / Big Horn Blvd	Signal	<u>91</u>	<u>F</u>	<u>77</u>	<u>E</u>	<u>104</u>	<u>F</u>	<u>96</u>	<u>F</u>
16. Civic Center Dr / Laguna Springs Dr	Signal	22	C	17	B	24	C	18	B



TABLE 8: PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE PLUS PROJECT CONDITIONS

Intersection	Traffic Control	Weekday PM		Saturday		Weekday PM		Saturday	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
17. Lotz Pkwy / Big Horn Blvd	Signal	44	D	43	D	45	D	46	D
18. Lotz Pkwy / Laguna Springs Dr	Signal	34	C	23	C	36	D	24	C
19. Whitelock Pkwy / Bruceville Rd	Signal	30	C	30	C	31	C	30	C
20. Whitelock Pkwy / Big Horn Blvd	Signal	27	C	32	C	27	C	34	C
21. Denali Circle / Big Horn Blvd	Signal	10	B	11	B	27	C	53	D

Notes: 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 expected

Bold text indicates LOS worse than established threshold. *Italic and underlined text* identifies a potential impact.

Source: Fehr & Peers, 2014.



The addition of the project would add traffic to the intersections identified above as operating unacceptably under cumulative conditions without the project, resulting in the following potential impacts.

Impact 5 – Elk Grove Boulevard/I-5 SB Ramps Intersection

This intersection has side-street stop control. The controlled eastbound and westbound movements at the intersection operate at LOS F due to the much higher volume uncontrolled southbound off-ramp left-turn movement from I-5. The project would add traffic to the uncontrolled on-ramp movements at the intersection, which would increase delay for the controlled eastbound and westbound movements at the intersection. However, based on the intersection traffic control, lane configurations, and volumes using the intersection the traffic analysis software cannot report delay for the controlled movements, so we must conservatively find that this is a potentially significant impact.

Mitigation 5

The west leg of the intersection provides access to the Stone Lake National Wildlife Refuge and is and will remain undeveloped, so the volumes for turn movements to/from the west are low. A review of the latest three-year collision records from the Statewide Integrated Traffic Records System (SWITRS) database revealed no reported collision at or near the intersection. Although the project would add traffic to the uncontrolled on- and off-ramp movements at this intersection, no mitigation are recommended based on the following factors:

- The west leg of the intersection is and will remain undeveloped.
- Volumes are low on the controlled movements and will remain low without development.
- There were no reported collisions at the intersection indicating need for modified intersection traffic control.
- Traffic volumes on the controlled movements would not warrant installation of traffic signal control.

Therefore, this impact would remain significant and unavoidable.



Impact 6 – Elk Grove Boulevard/Bruceville Road

The addition of project traffic would worsen weekday PM peak hour operations at this intersection. However, the volume increase would only increase control delay by one second. Based on City of Elk Grove significance criteria, this is a less than significant impact, since the addition of project traffic would not increase control delay by more than five seconds.

Mitigation 6

No mitigation required.

Impact 7 – Elk Grove Boulevard (Near SR 99/Elk Grove Boulevard Interchange)

Intersections 6, 7, 9

The addition of project traffic would worsen unacceptable operations at near the SR 99/Elk Grove Boulevard interchange. This is a potentially significant impact.

Mitigation 7

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 Laguna Ridge Specific Plan. 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 identified below, except for the Elk Grove Boulevard/Big Horn Boulevard intersection. The effect of these improvements diminishes as one travels west of Elk Grove Boulevard. With these improvement, volume would increase on the westbound left-turn lane (a critical turn movement), increasing average intersection delay.



Implementation of Northbound Loop On-Ramp and Whitelock Parkway Interchange		
Intersection	Weekday PM¹	
	Before	After
Elk Grove Boulevard/Big Horn Boulevard	F (83)	F (94)
Elk Grove Boulevard/Laguna Springs Drive	E (65)	D (48)
Elk Grove Boulevard/Auto Center Drive	D (37)	C (29)
Elk Grove Boulevard/SR 99 Southbound Ramps	F (88)	E (57)
Elk Grove Boulevard/East Stockton Boulevard	E (72)	D (45)
East Stockton Boulevard/SR 99 Ramps	D (53)	D (42)
Civic Center Drive/Big Horn Boulevard	F (104)	E (68)
Denali Circle/Big Horn Boulevard	C (27)	C (27)
Lotz Parkway/Big Horn Boulevard	D (45)	D (40)
Whitelock Parkway/Big Horn Boulevard	C (27)	C (27)

Notes: ¹Level of Service (Delay)

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.



Impact 8 – Elk Grove Boulevard/Laguna Springs Drive

The addition of project traffic would worsen weekday PM peak hour operations at this intersection. The volume increase would increase control delay by more than five seconds. Based on City of Elk Grove significance criteria, this is a potentially significant impact.

Mitigation 8

Providing right-turn overlap phasing for the northbound right-turn movement would improve operations to acceptable LOS D conditions during the weekday PM peak hour. Right-turn overlap phasing would require prohibiting westbound u-turn movements at the intersection. With this improvement, this impact would be less than significant. Also refer to Mitigation 7, which relates to operation at this intersection.

Impact 9 – Elk Grove Boulevard/East Stockton Boulevard

The addition of project traffic would worsen weekday PM peak hour operations at this intersection. However, the volume increase would only increase control delay by five seconds. Based on City of Elk Grove significance criteria, this is a less than significant impact, since the addition of project traffic would not increase control delay by more than five seconds.

Mitigation 9

No mitigation required

Impact 10 – Civic Center/Big Horn Boulevard

The addition of project traffic would worsen weekday PM and Saturday peak hour operations at this intersection. The volume increase would increase control delay by more than five seconds. Based on City of Elk Grove significance criteria, this is a potentially significant impact.

Mitigation 10

There is limited right-of-way for physical (i.e., capacity) improvements along Big Horn Boulevard, which is constructed to its general plan designation as a four-lane arterial. However, the planned SR 99/Whitelock Parkway to be located 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 Laguna Ridge Specific Plan. Implementation of the planned SR 99/Whitelock Parkway interchange would reduce delay at this intersection as identified below.



Implementation of the Whitelock Parkway Interchange		
Intersection	Weekday PM ¹	
	Before	After
Civic Center Drive/Big Horn Boulevard	F (104)	E (68)

Notes: ¹Level of Service (Delay)

However, implementation of these improvements would not result in acceptable LOS D or better operations. Therefore, this impact would remain significant and unavoidable.

FREEWAY FACILITY OPERATIONS

Table 9 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, most of the study freeway facilities would operate acceptably at LOS D or better during both peak hours with the addition of project traffic, except for the SB I-5 mainline (north of Elk Grove Boulevard) and the SB I-5 Elk Grove Boulevard Off-ramp diverge area.

Freeway Facility	Type	Weekday PM Peak Hour		Saturday Peak Hour	
		Density	LOS	Density	LOS
1. NB SR 99 South of Elk Grove Boulevard	Basic Segment	19.1	C	17.7	B
2. NB SR 99 Elk Grove Boulevard Off-Ramp	Diverge	23.7	C	23.1	C
3. NB SR 99 Elk Grove Boulevard Loop On-Ramp	Merge	32.9	D	30.3	D
4. NB SR 99 Elk Grove Boulevard Slip On-Ramp	Merge	27.6	C	23.8	C
5. NB SR 99 North of Elk Grove Boulevard	Basic Segment	29.5	D	24.8	C
6. SB SR 99 North of Elk Grove Boulevard	Basic Segment	24.2	C	19.7	C



TABLE 9: FREEWAY ANALYSIS – CUMULATIVE PLUS PROJECT CONDITIONS

Freeway Facility	Type	Weekday PM Peak Hour		Saturday Peak Hour	
		Density	LOS	Density	LOS
7. SB SR 99 Elk Grove Boulevard Off-Ramp	Diverge	17.5	B	13.8	B
8. SB SR 99 Elk Grove Boulevard Slip On-Ramp	Merge	25.8	C	21.7	C
9. SB SR 99 South of Elk Grove Boulevard	Basic Segment	22.7	C	17.5	B
10. NB I-5 South of Elk Grove Boulevard	Basic Segment	22.4	C	18.4	C
11. NB I-5 Elk Grove Boulevard Off-Ramp	Diverge	26.4	C	22.5	C
12. NB I-5 Elk Grove Boulevard Slip On-Ramp	Merge	26.2	C	24.6	C
13. NB I-5 North of Elk Grove Boulevard	Basic Segment	28.5	D	26.1	D
14. SB I-5 North of Elk Grove Boulevard	Basic Segment	=	<u>F</u>	20.9	C
15. SB I-5 Elk Grove Boulevard Off-Ramp	Diverge	=	<u>F</u>	26.2	C
16. SB I-5 Elk Grove Boulevard Loop On-Ramp	Merge	27.0	C	19.2	B
17. SB I-5 South of Elk Grove Boulevard	Basic Segment	27.6	D	18.0	C

Bold text indicates LOS worse than established threshold. ***Italic and underlined text*** identifies a potential impact.

Source: Fehr & Peers, 2014.

Impact 11 – SB I-5 Mainline and Off-ramp Diverge to Elk Grove Boulevard

Implementation of the project would add traffic to the SB I-5 mainline and off-ramp diverge, which would operate unacceptably at LOS F under cumulative conditions. The addition of project traffic would increase the density of the I-5 mainline (north of Elk Grove Boulevard) and the I-5 SB off-ramp diverge influence area to Elk Grove Boulevard. This is a potentially significant impact.



Mitigation 11

Poor operation of the SB I-5 mainline (north of Elk Grove Boulevard) and the SB I-5 off-ramp diverge influence area to Elk Grove Boulevard is due to capacity constraints on SB I-5. Extending the third southbound lane on I-5 from its current terminus just south Laguna Boulevard to just south of Elk Grove Boulevard, would improve operations of these facilities to LOS D or better. Since this impact occurs under cumulative conditions, a fair share contribution to these improvements, based on the project's share of traffic using the facility under cumulative conditions, would mitigate this impact. However, since I-5 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.

Impact 12 – SR 99 Freeway Operations

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. This is a potentially significant impact.

Mitigation 12

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 implement improvements that would mitigate these impacts. Therefore, these impacts would be significant and unavoidable.

BICYCLE AND PEDESTRIAN FACILITIES

The proposed project would integrate with existing bicycle and pedestrian facilities and will implement planned bicycle and pedestrian facilities in the Laguna Ridge Specific Plan, like the decomposed granite trail along the east boundary of the project. 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.

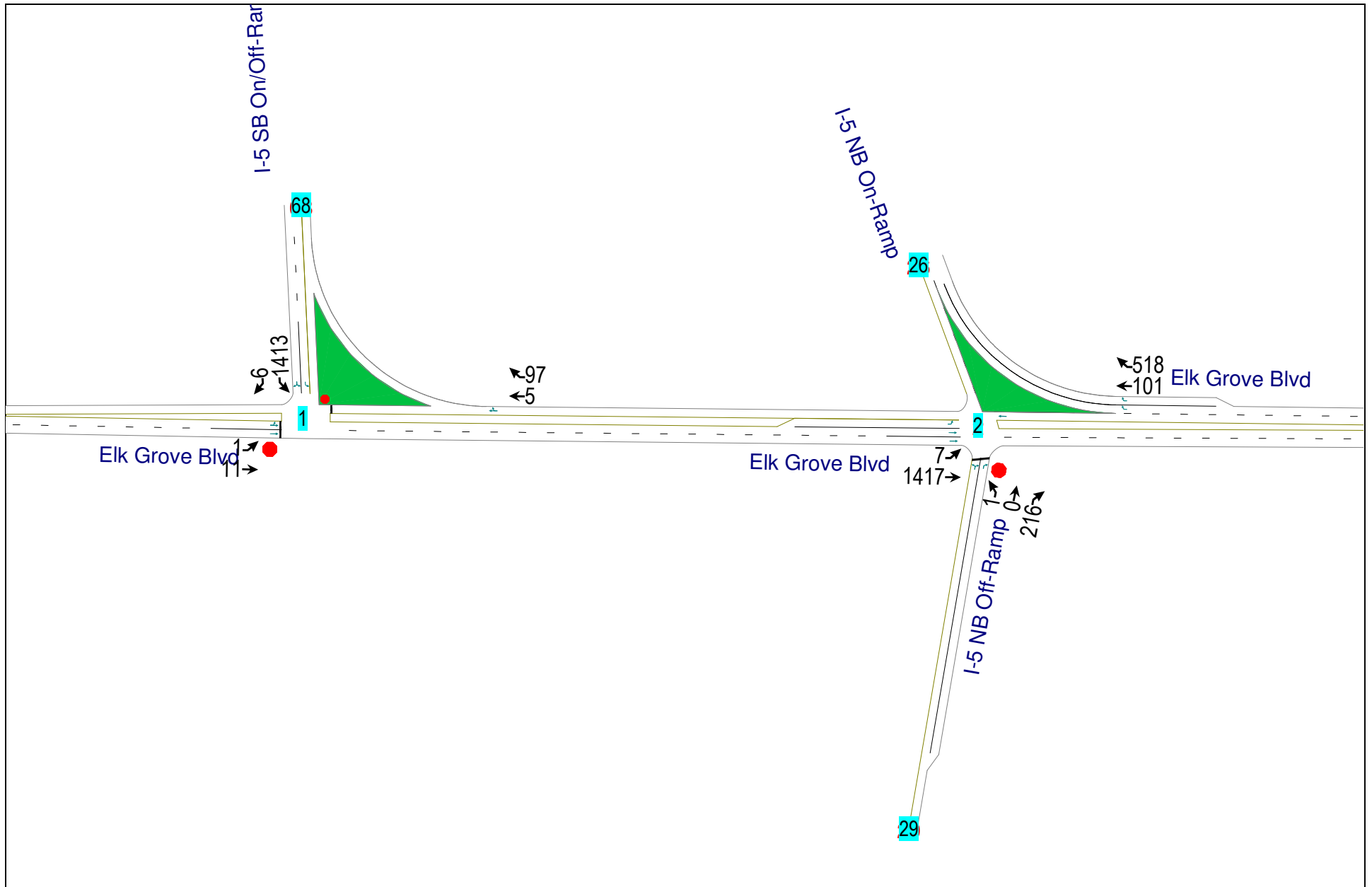
TRANSIT FACILITIES

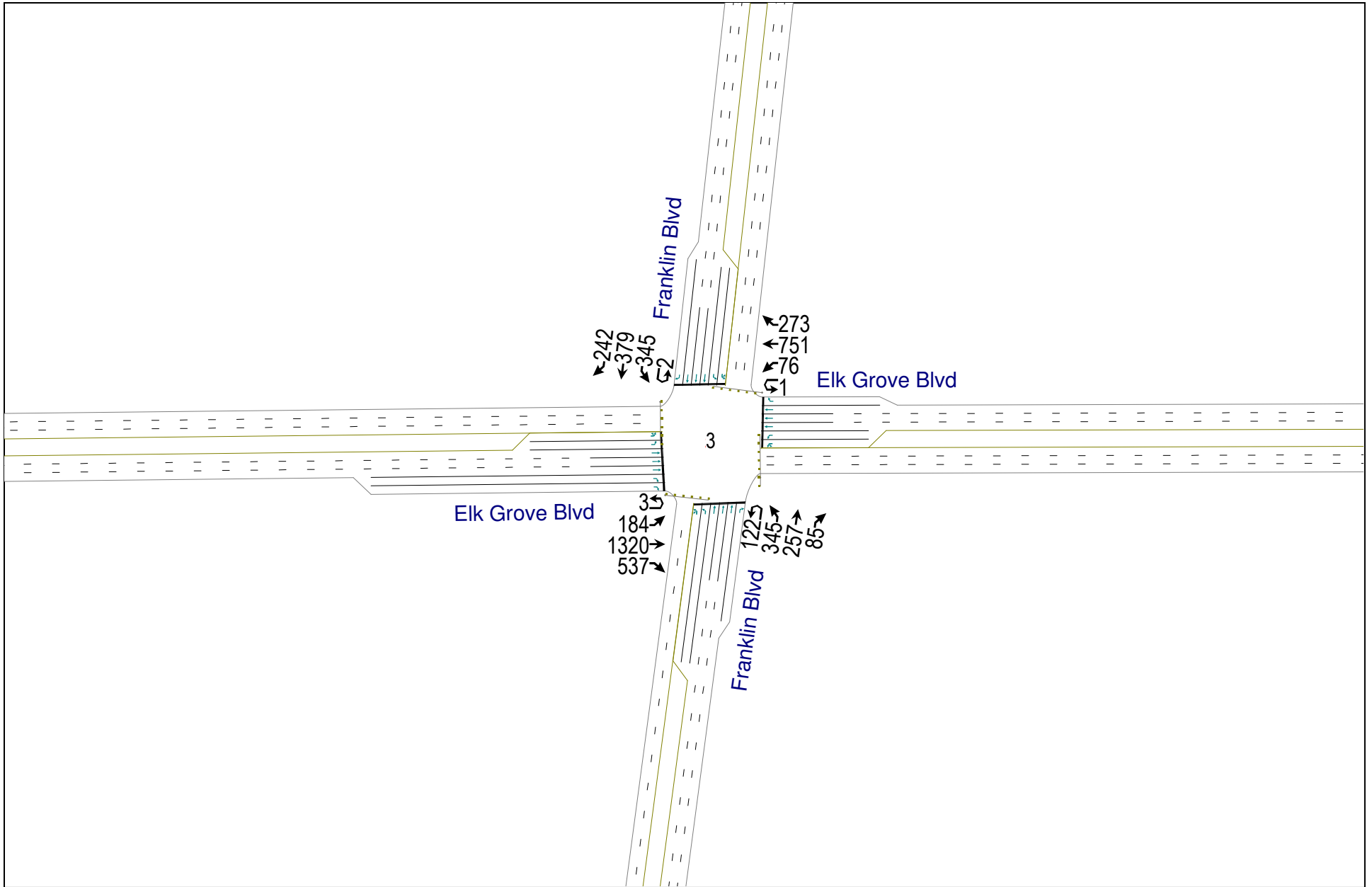
Implementation of the proposed project would not disrupt or interfere with existing or planned transit operations or facilities.

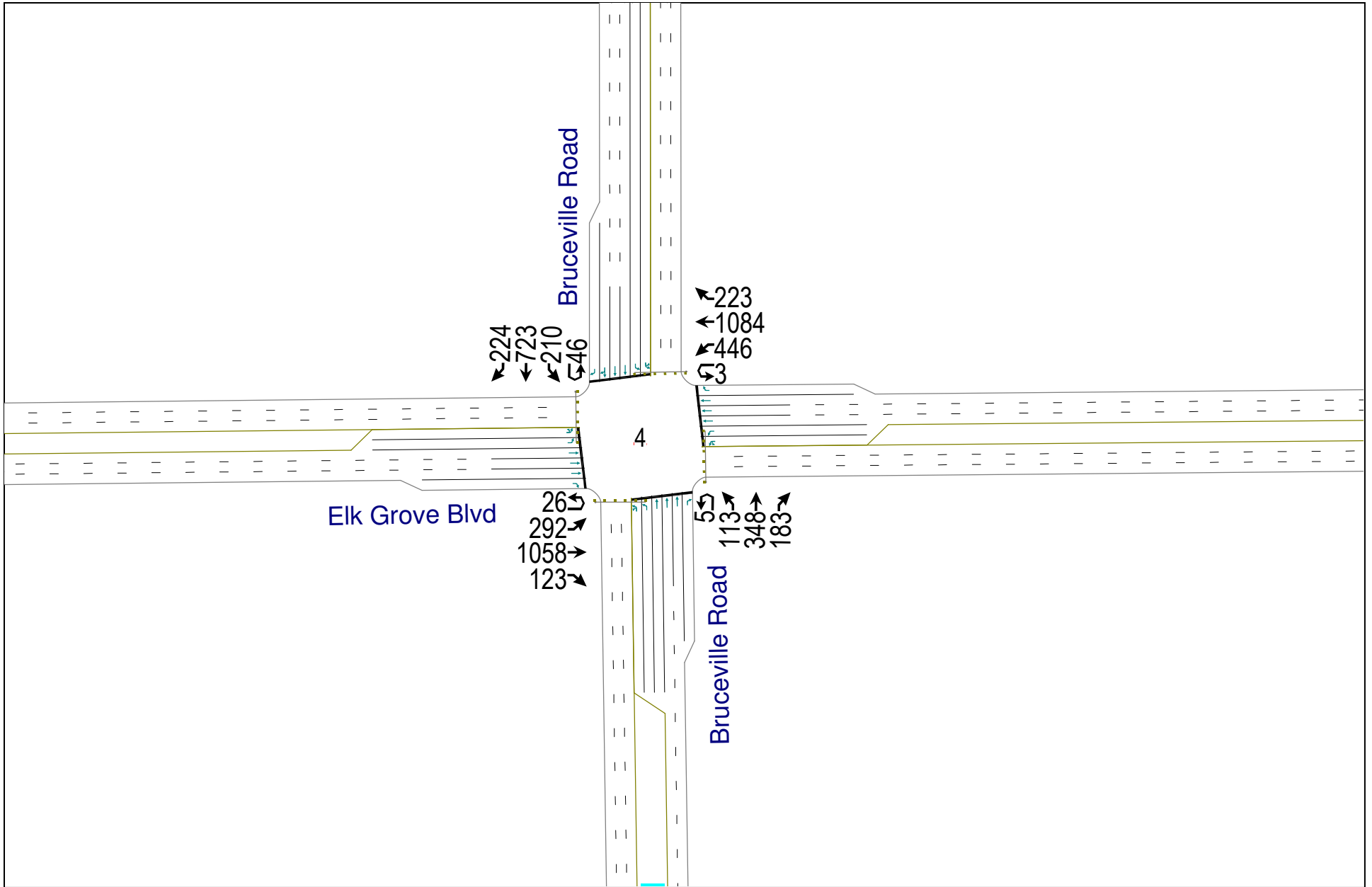


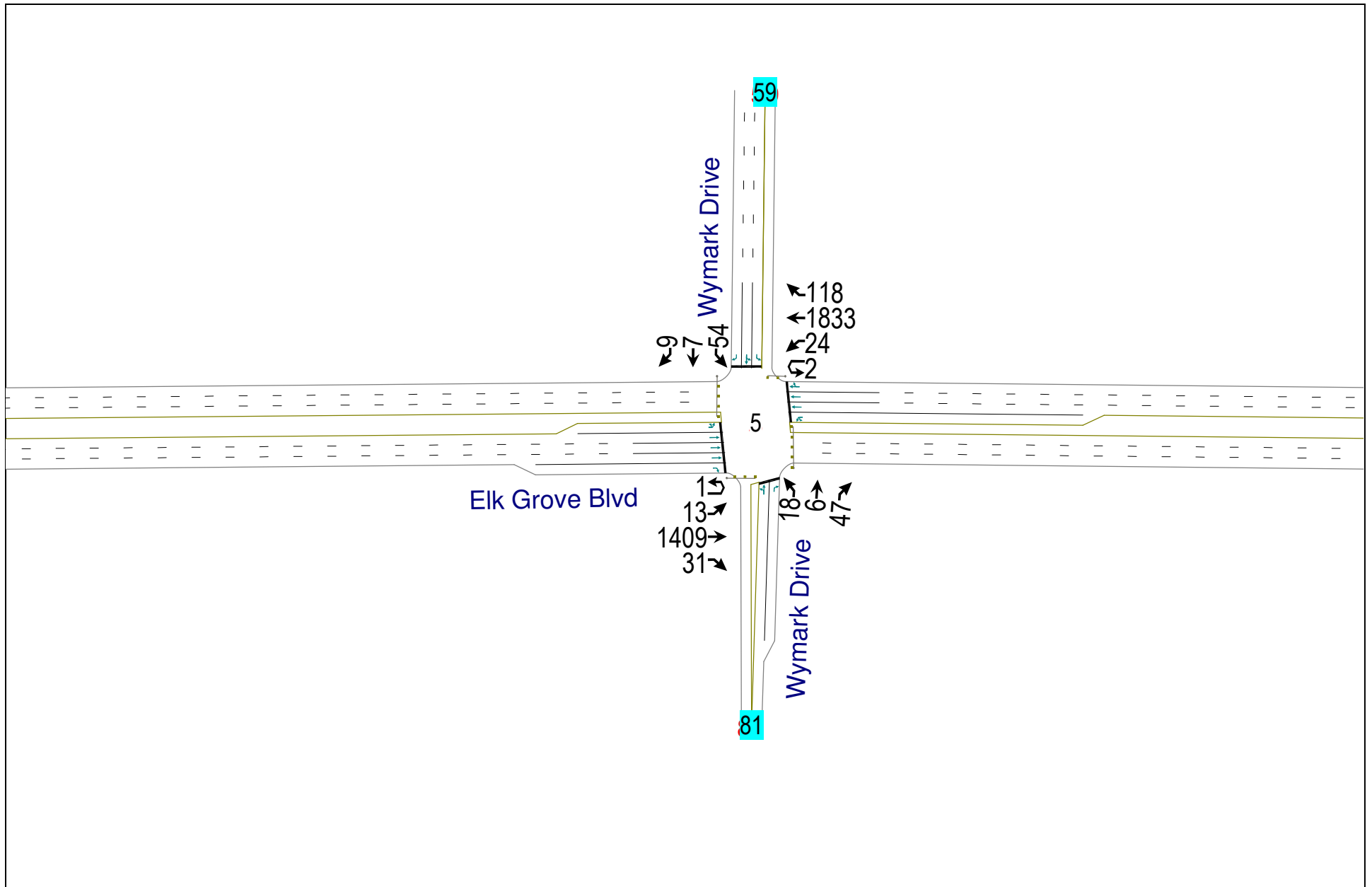
APPENDIX A: EXISTING CONDITIONS

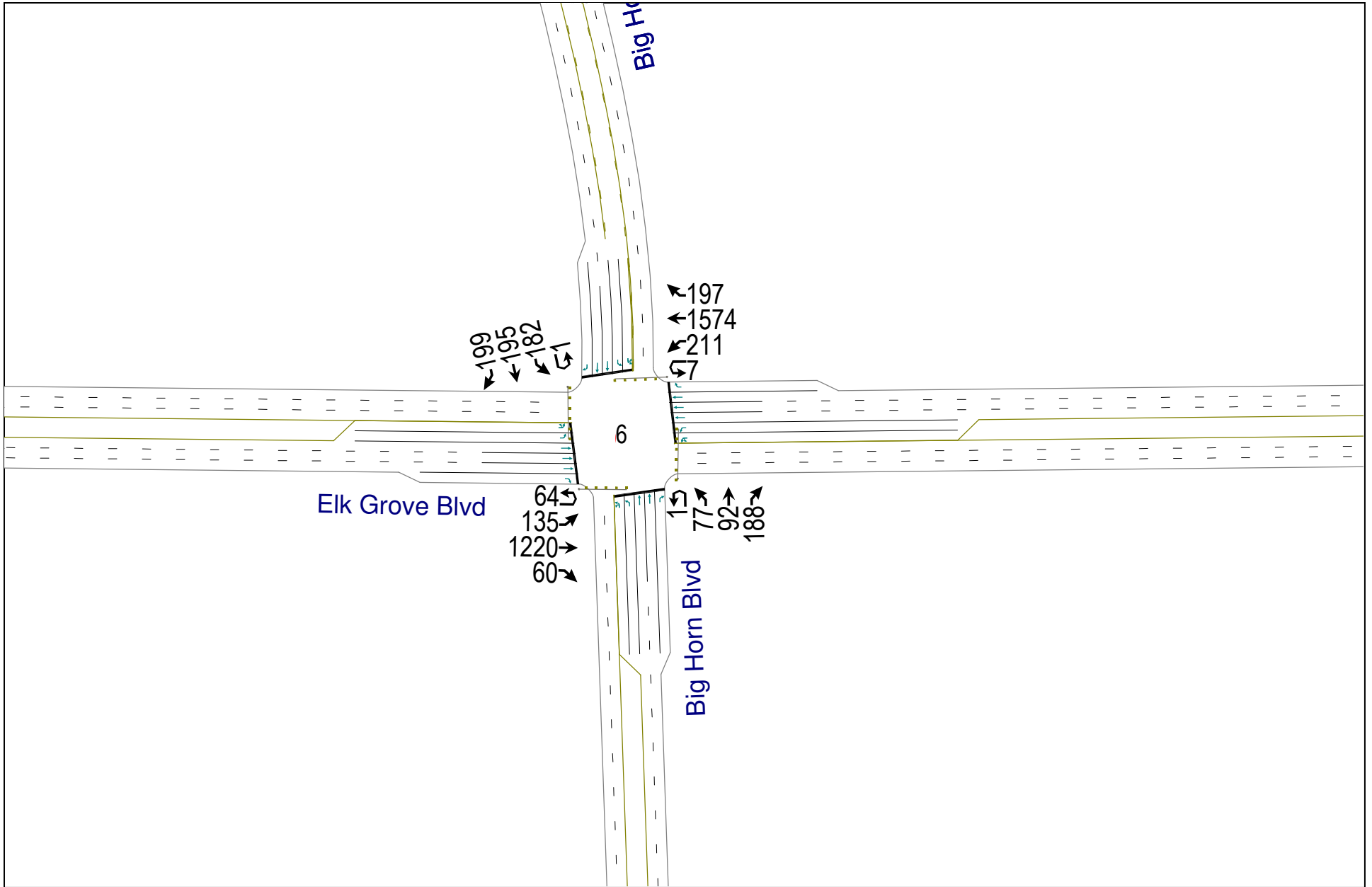


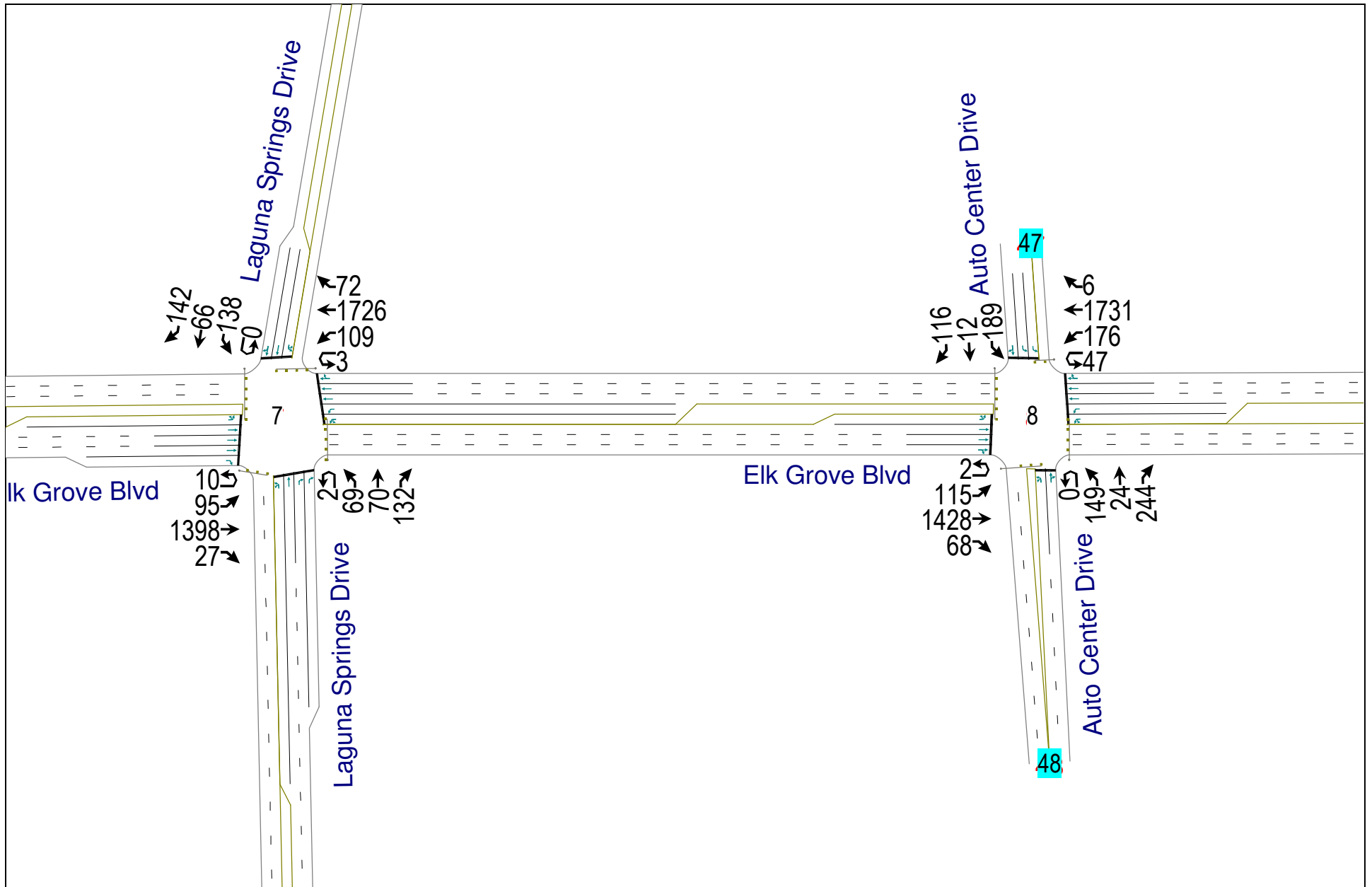


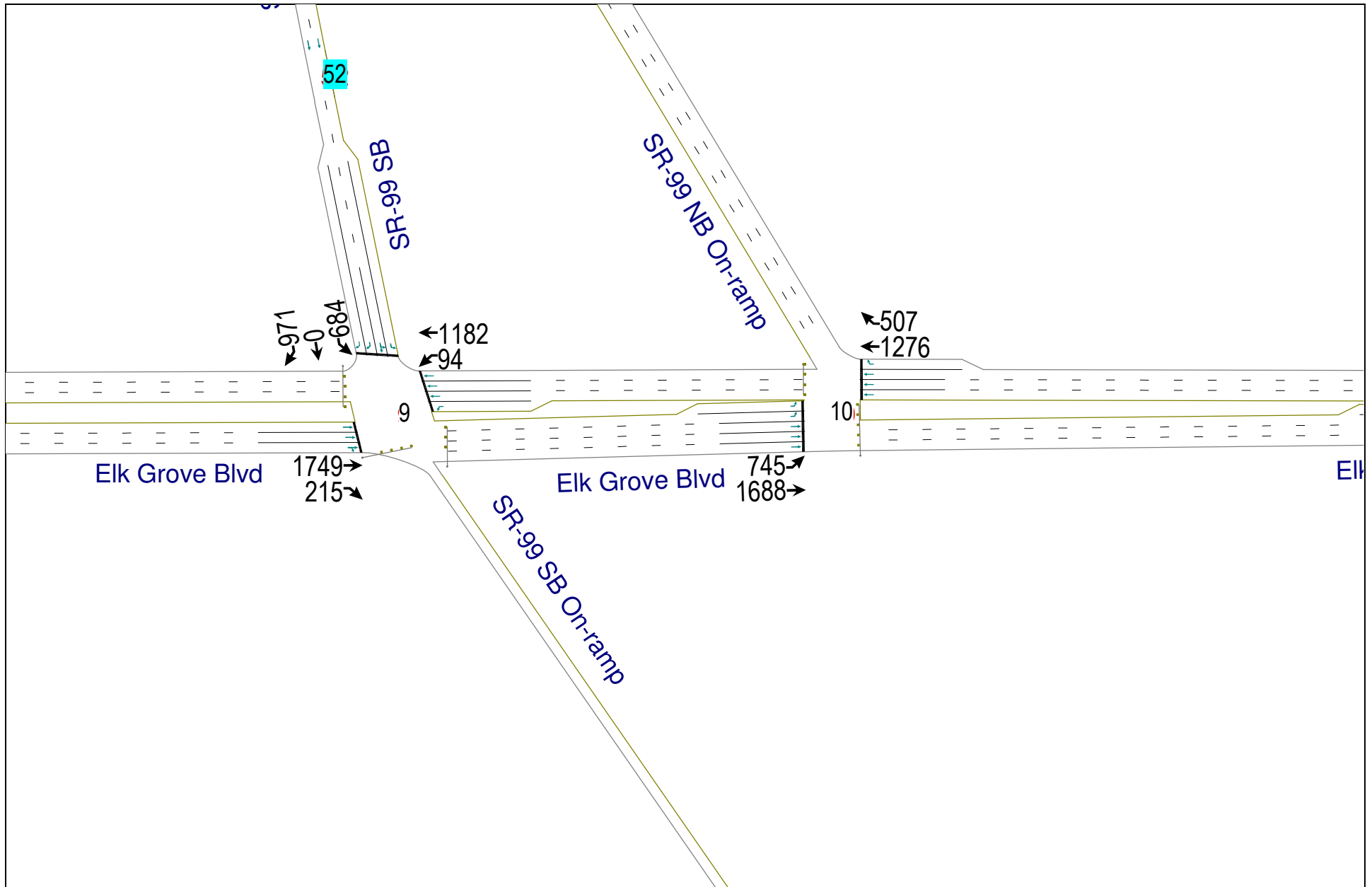


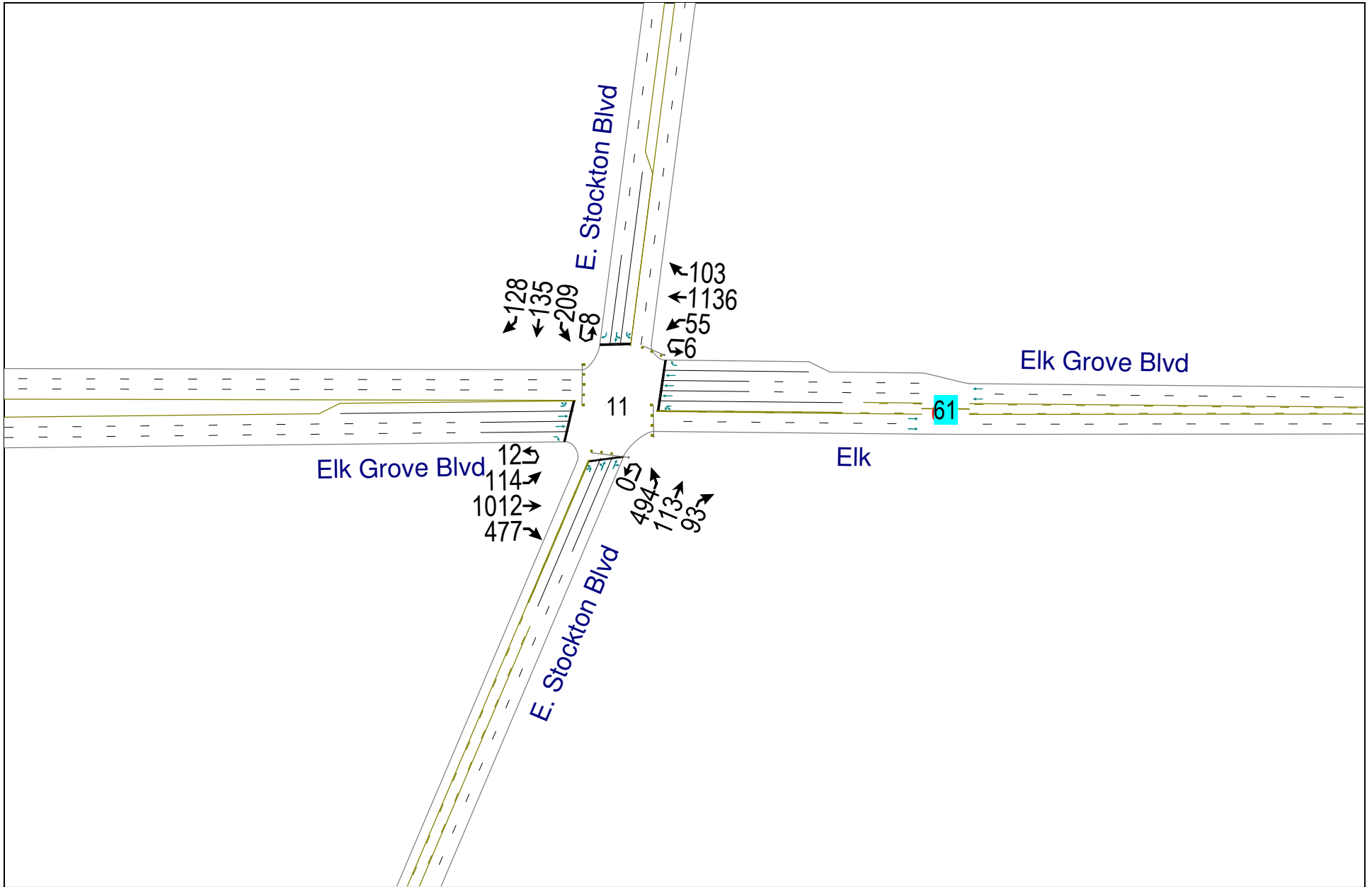


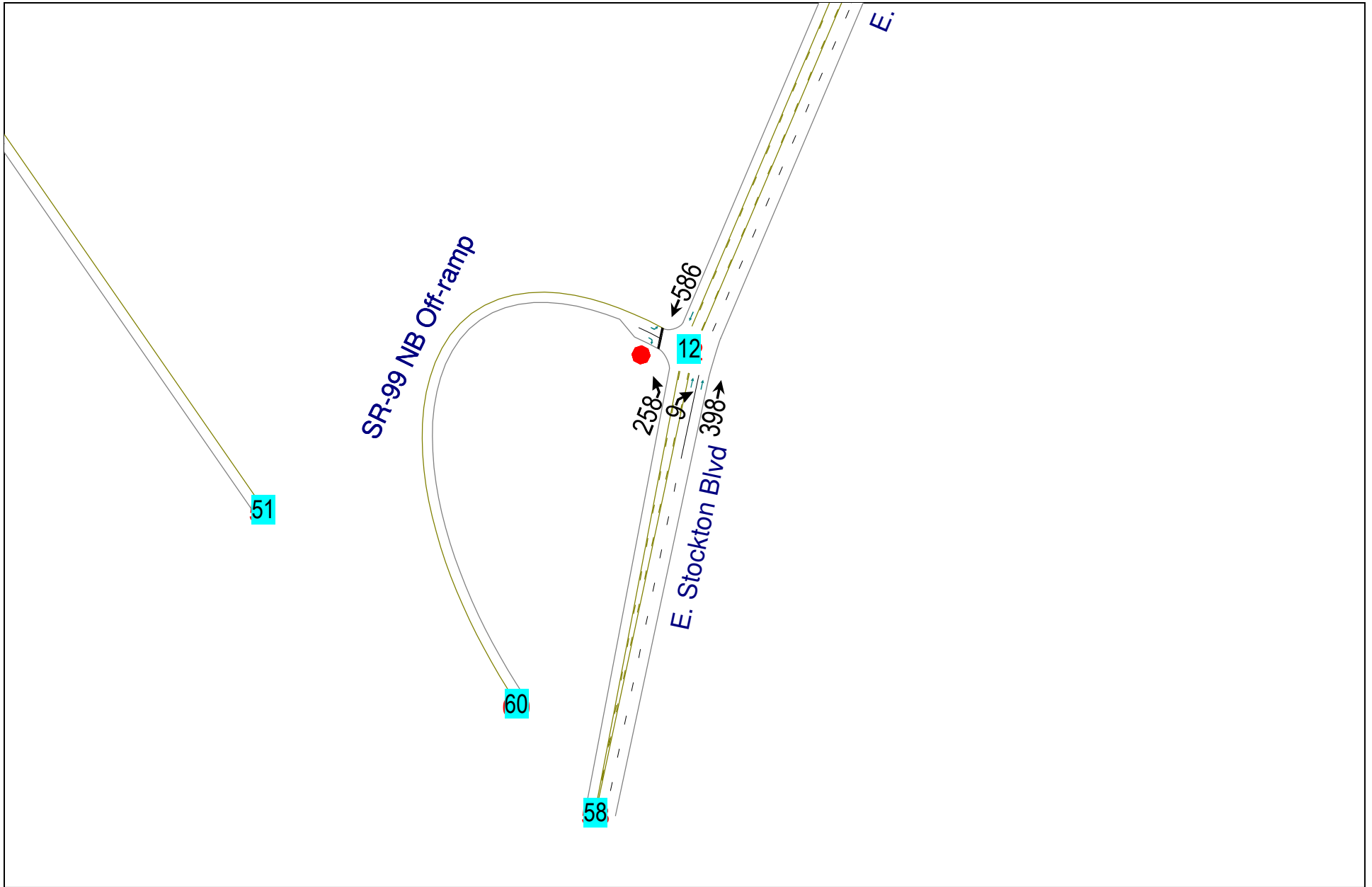


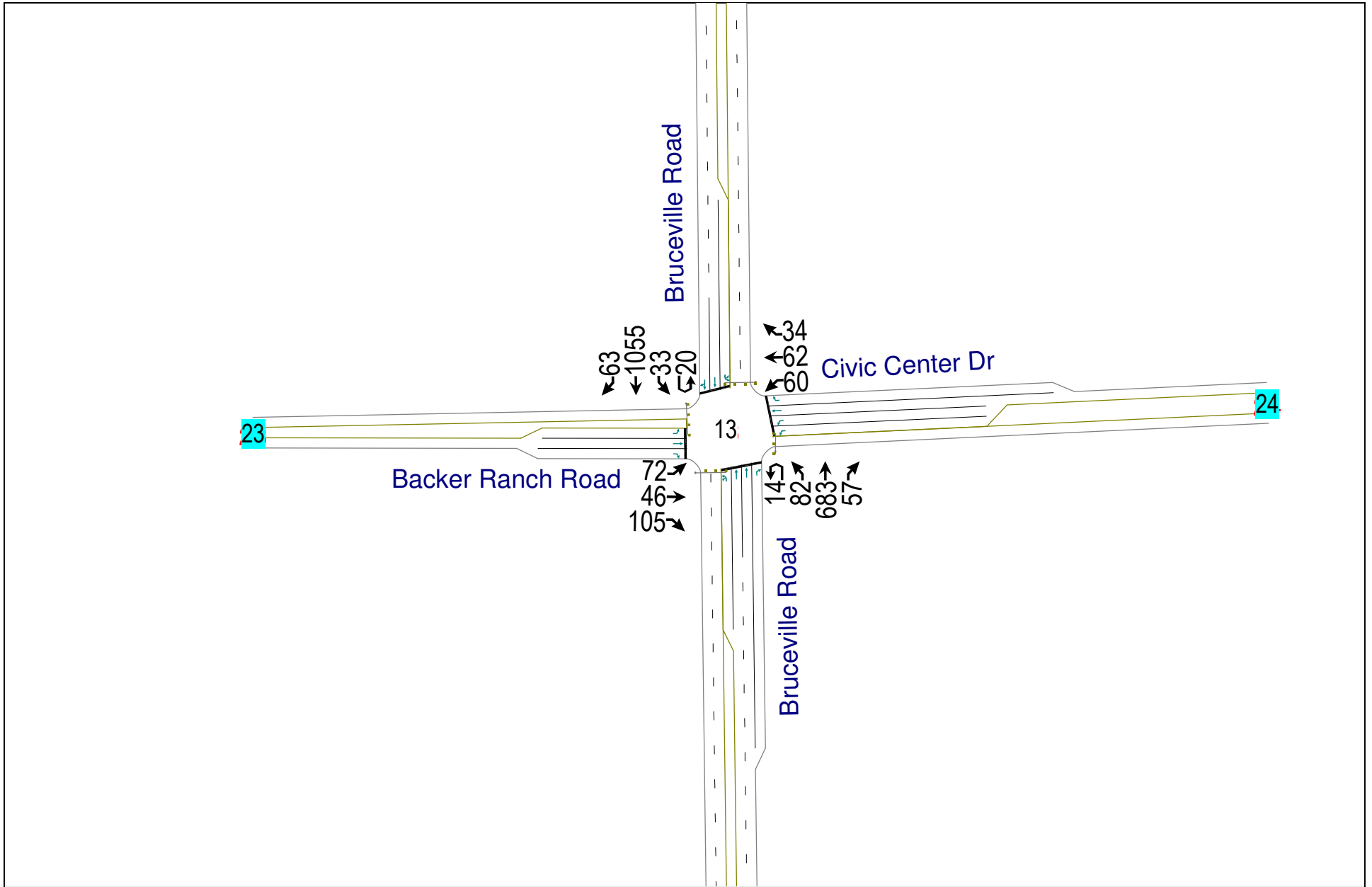


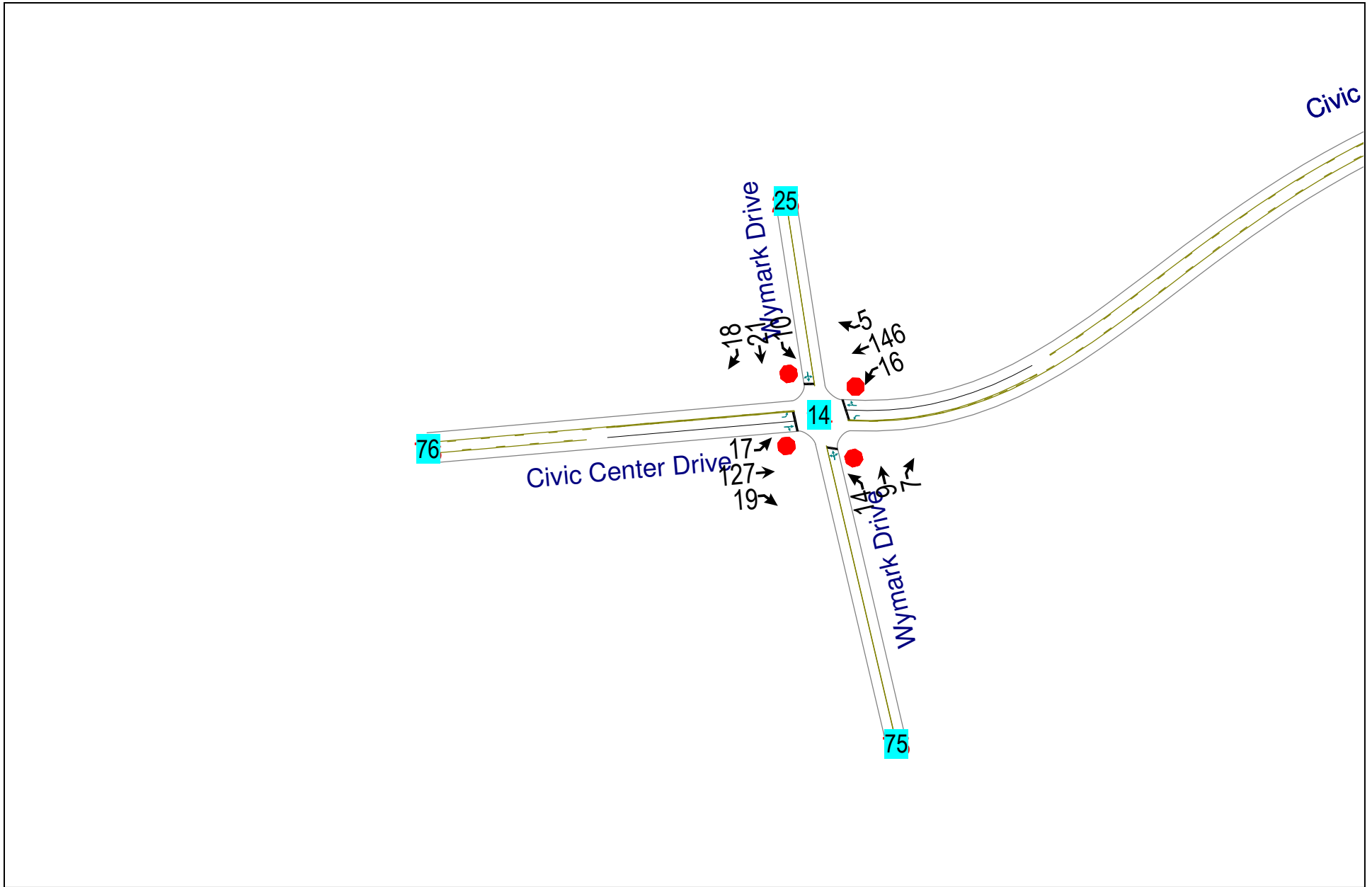


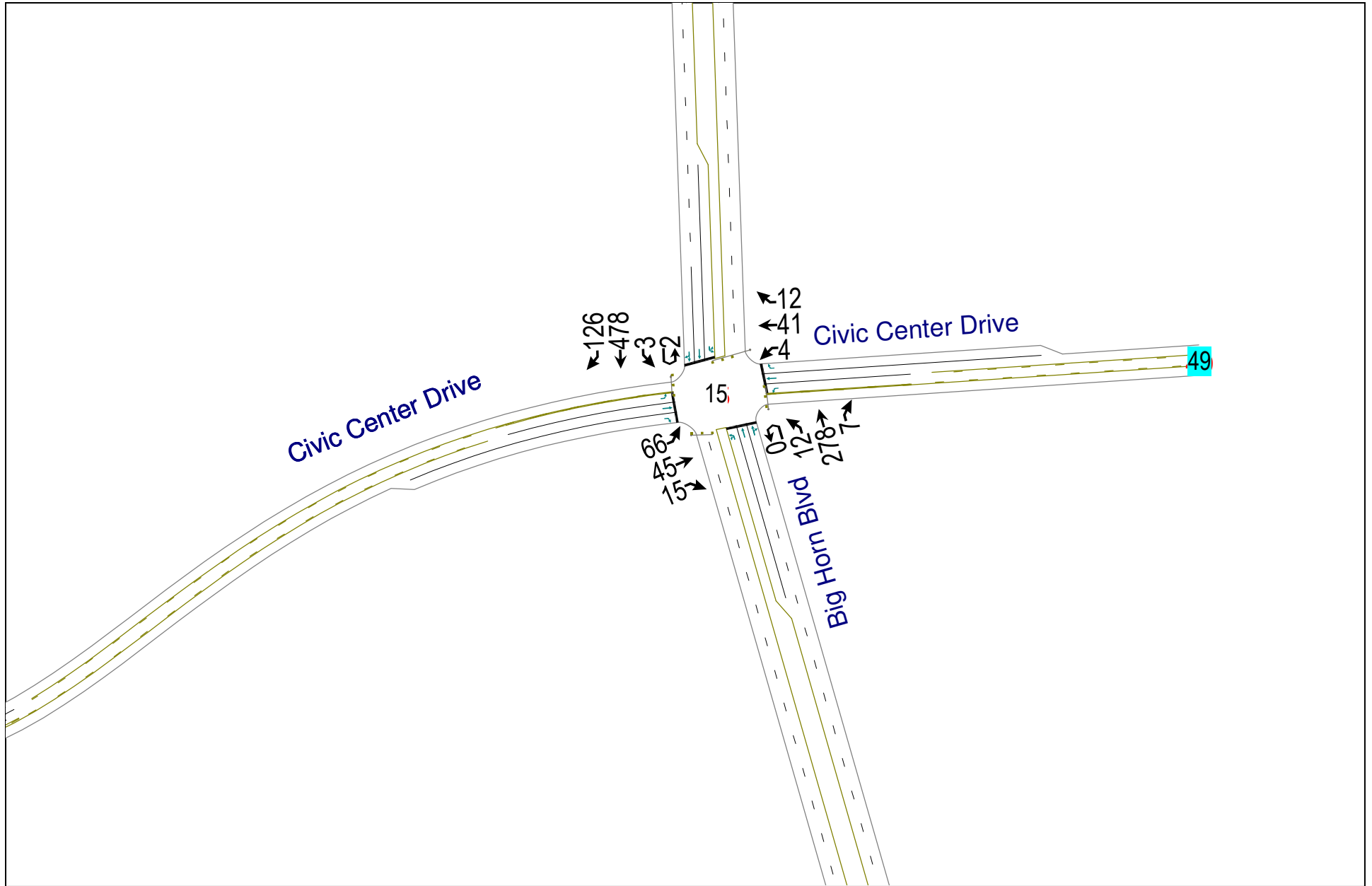


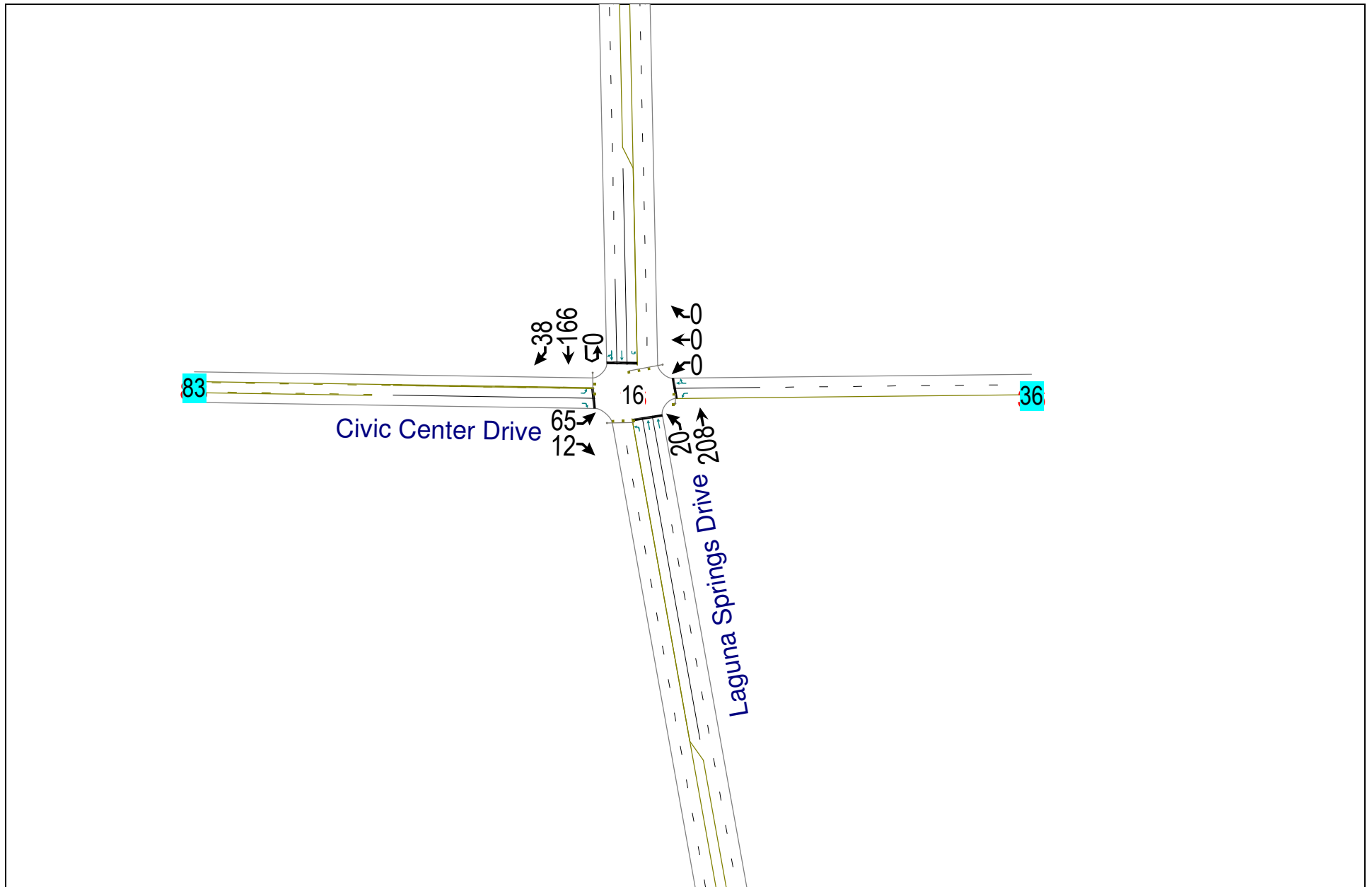


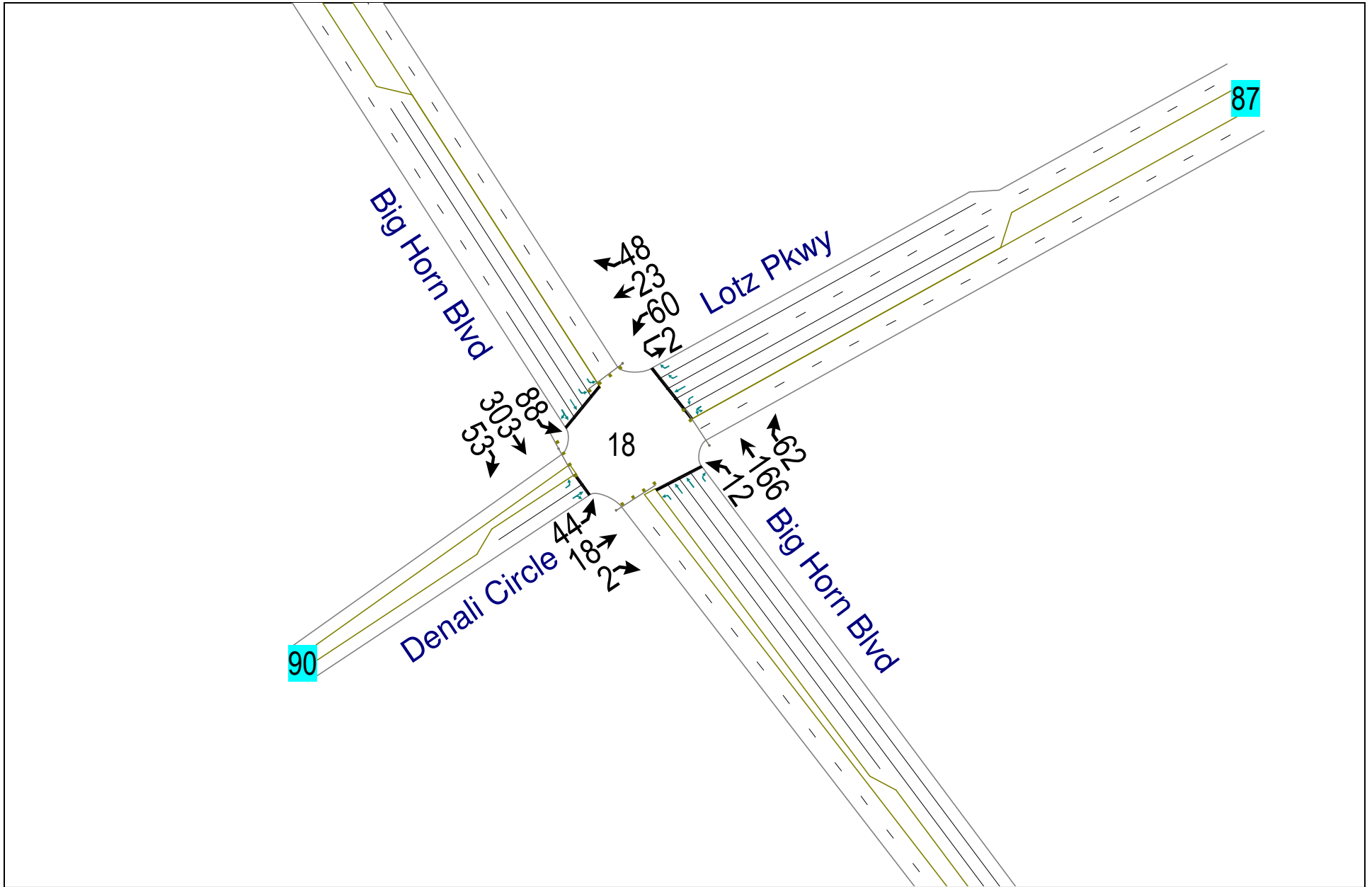


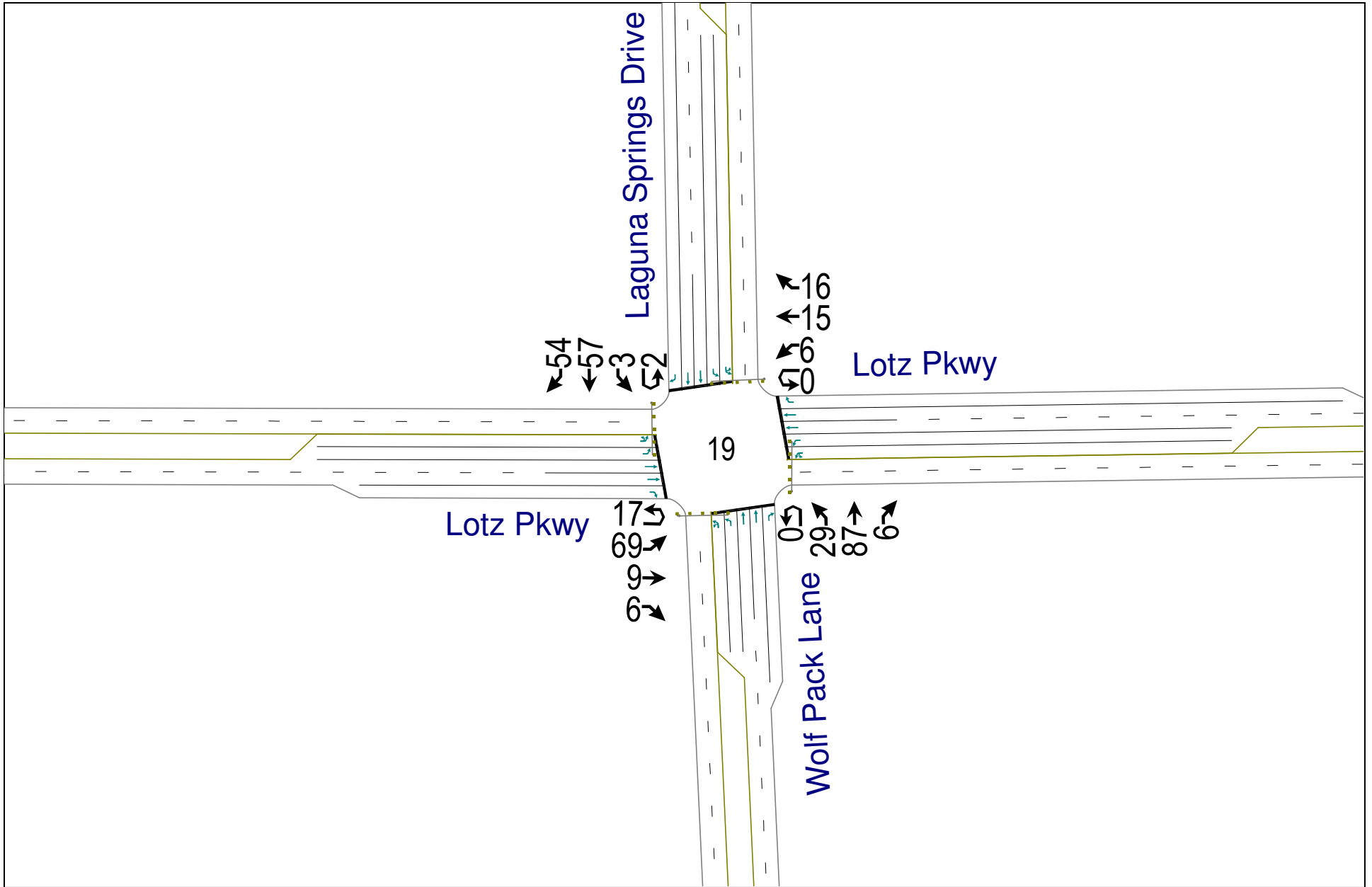


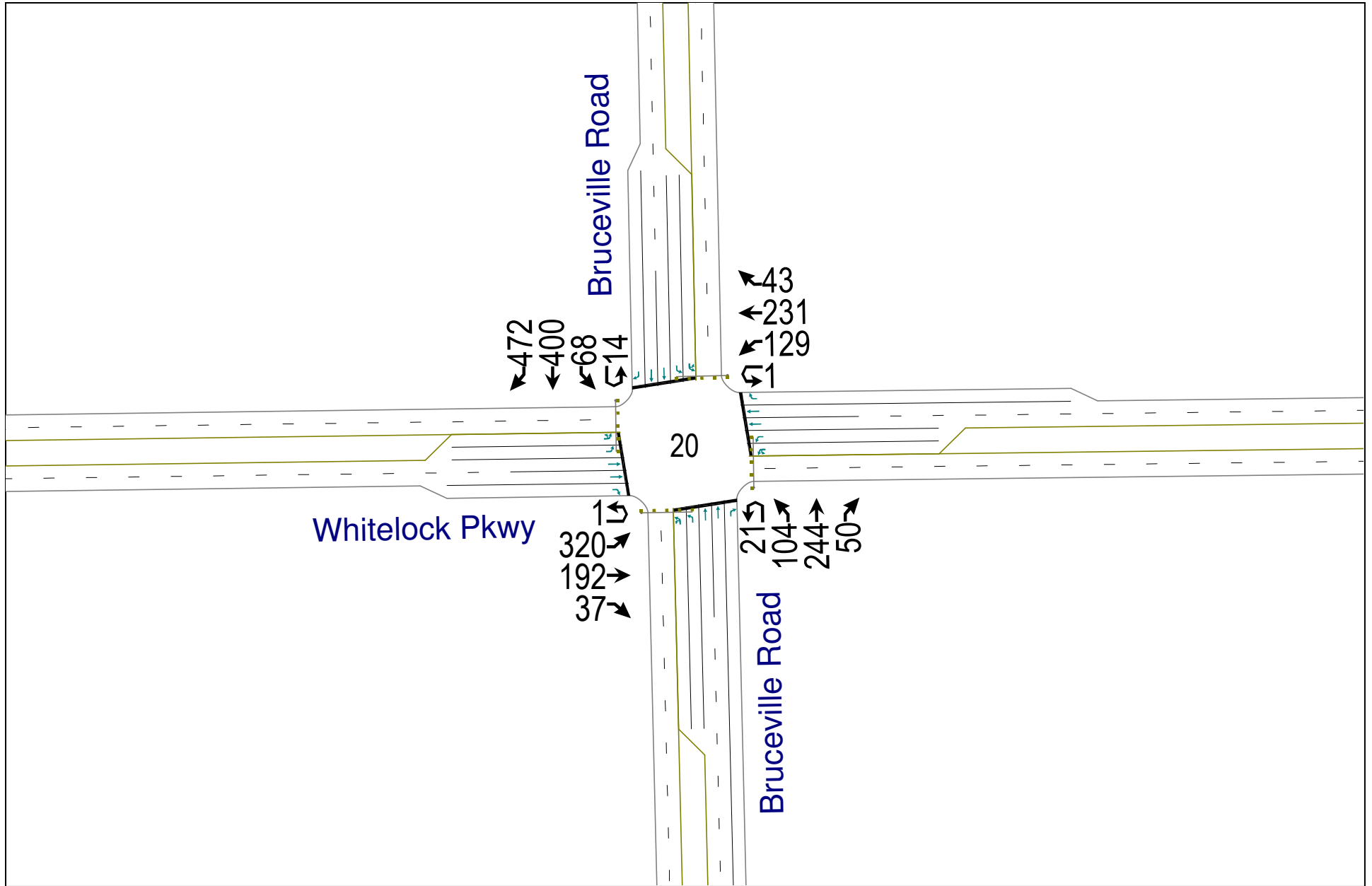


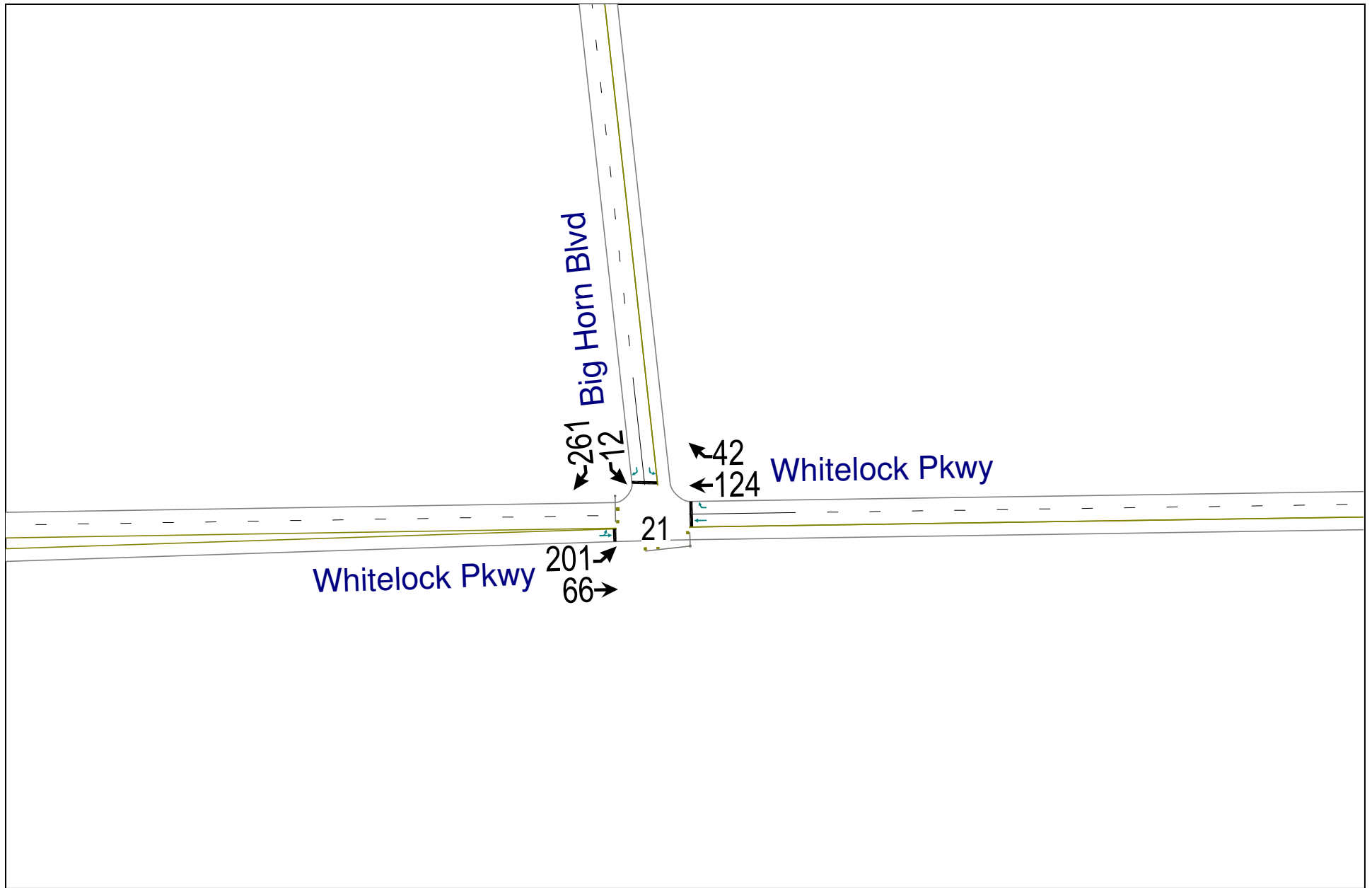


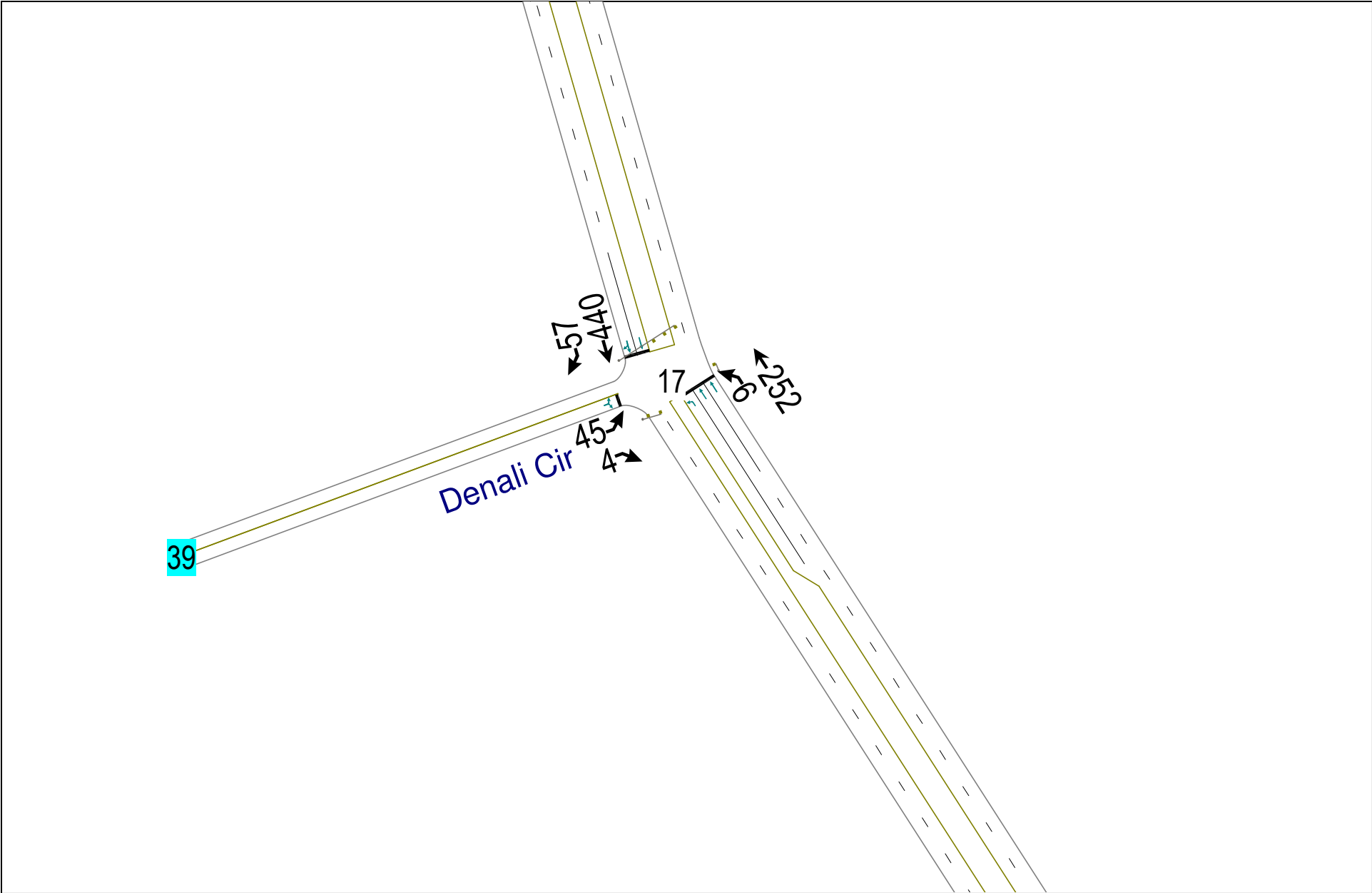


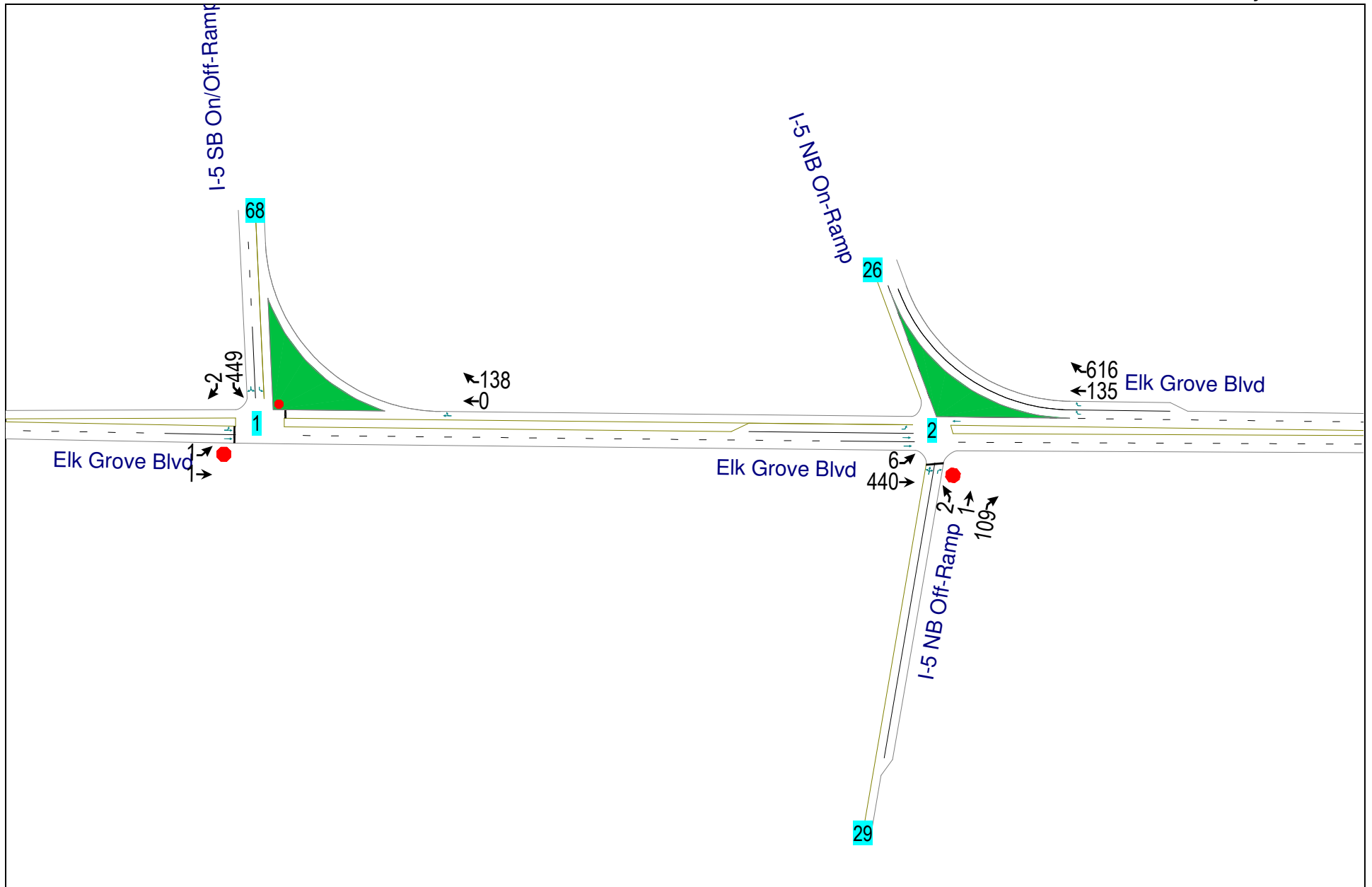


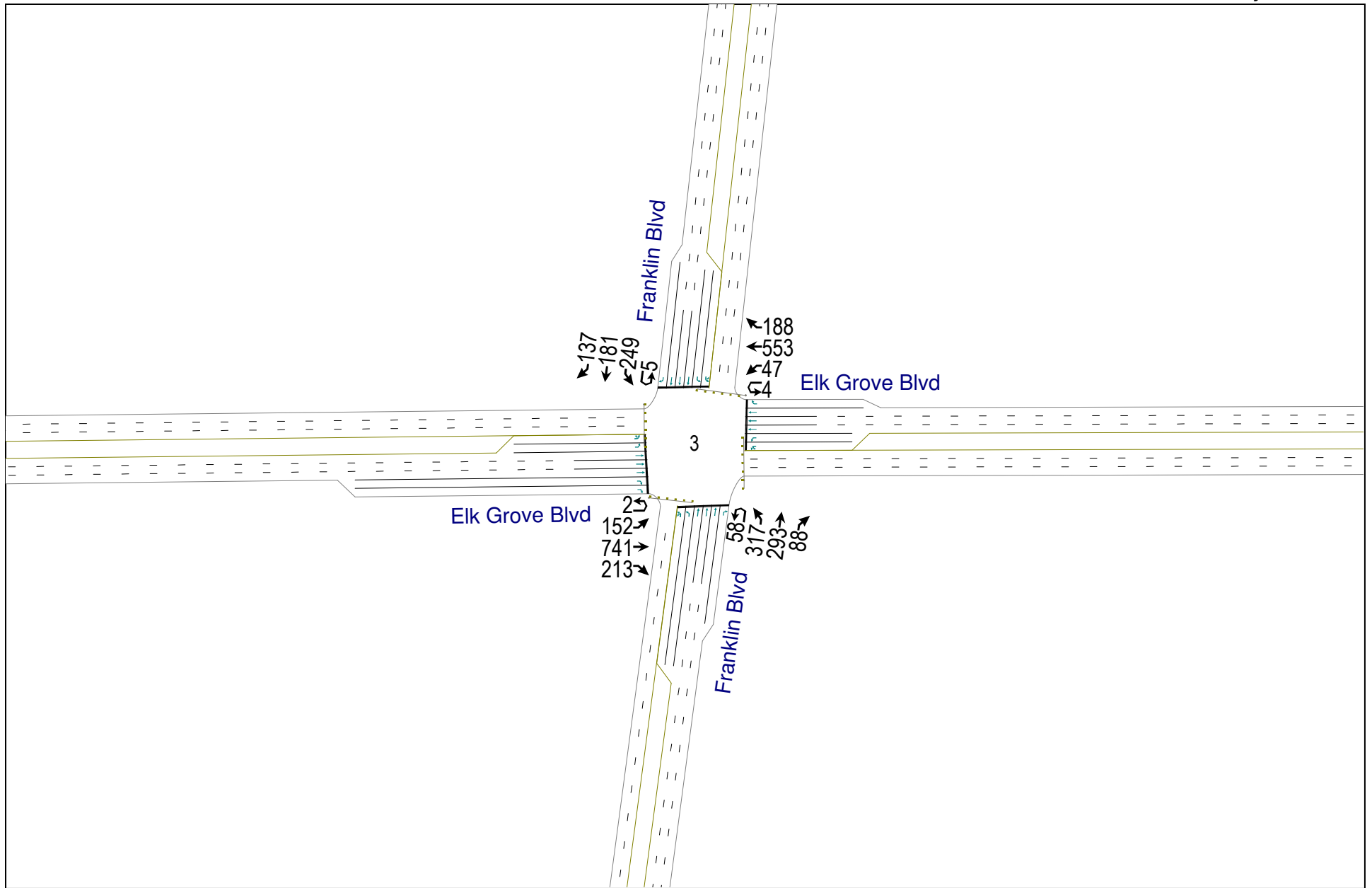


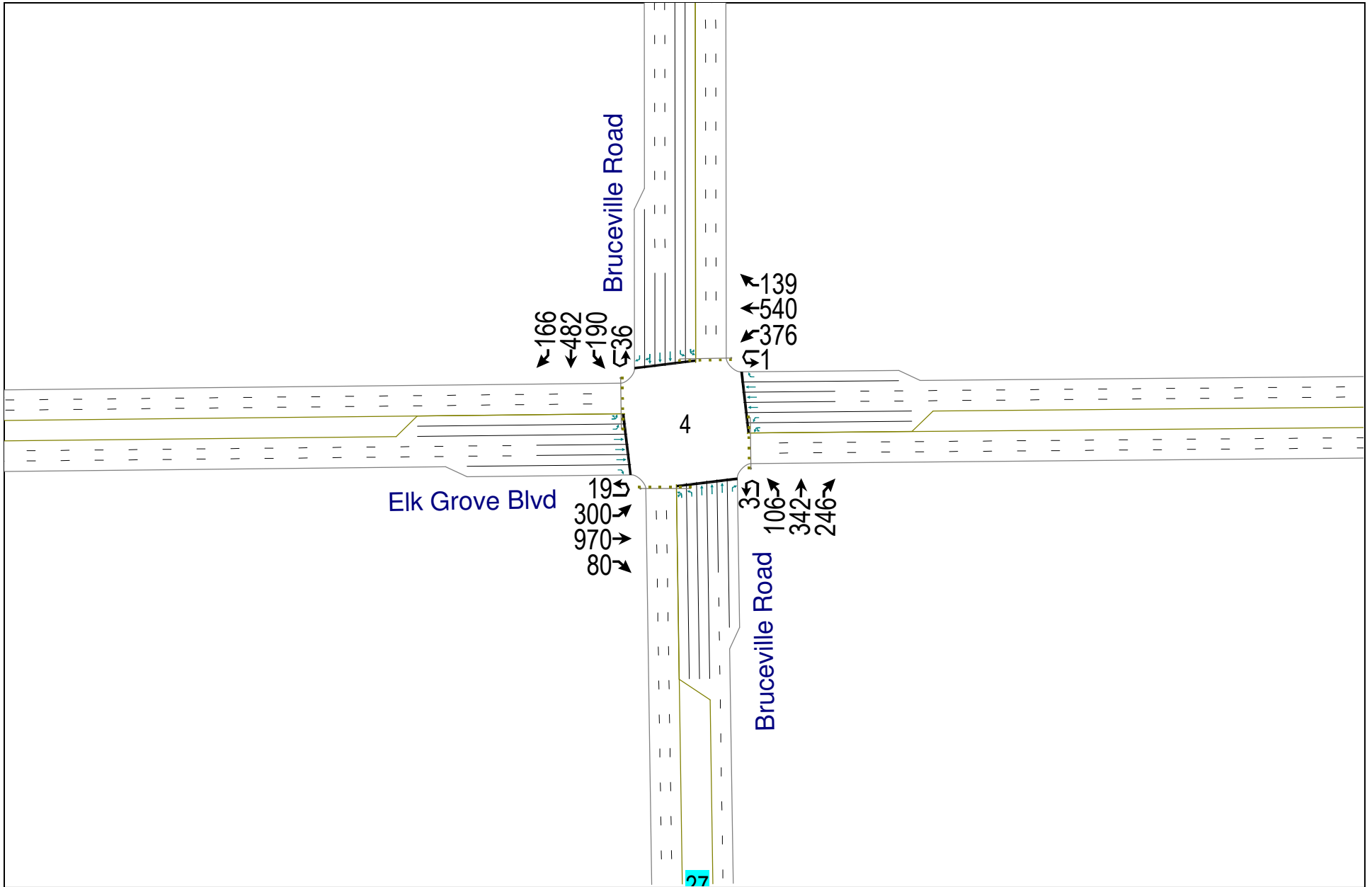


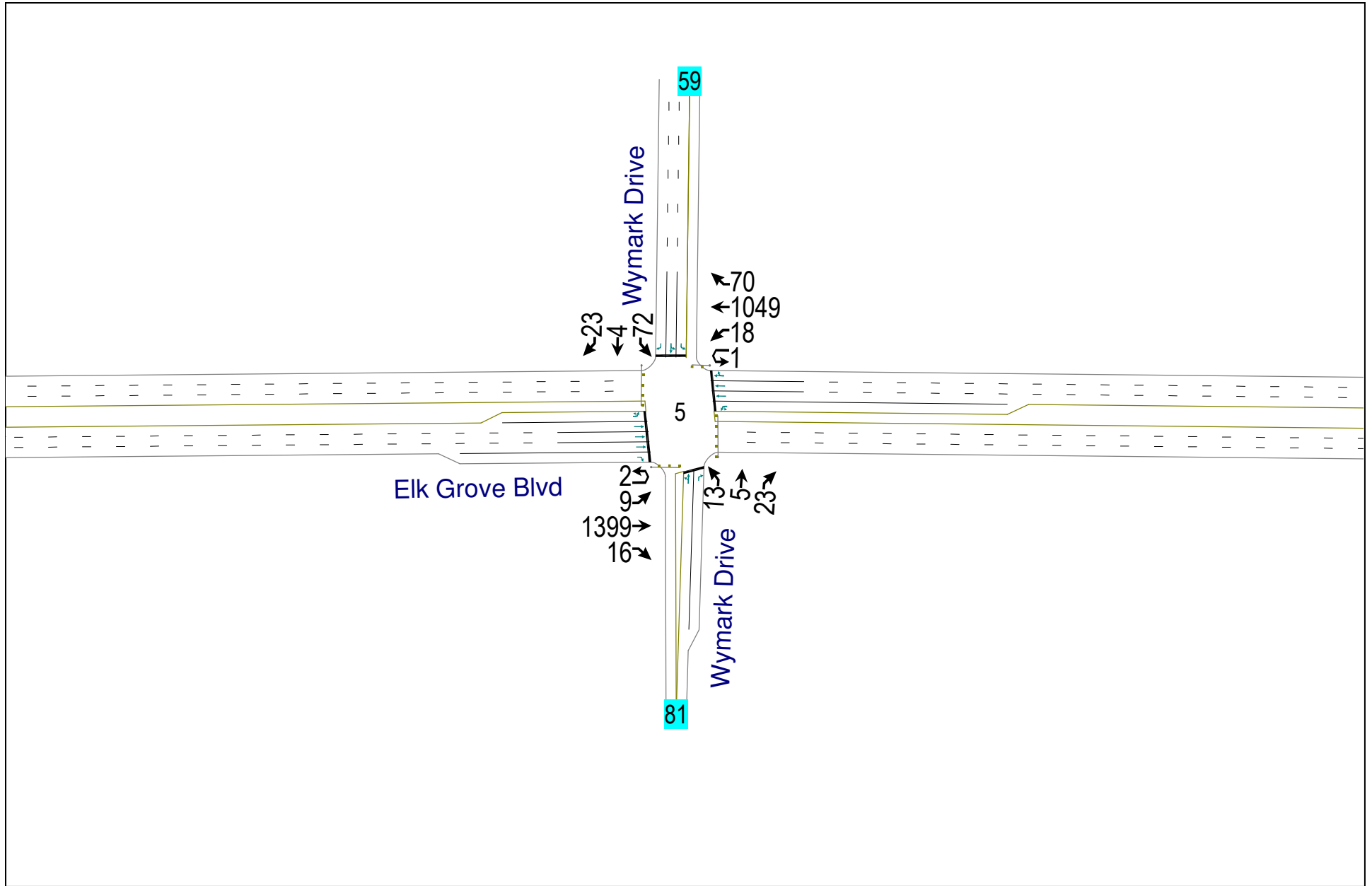


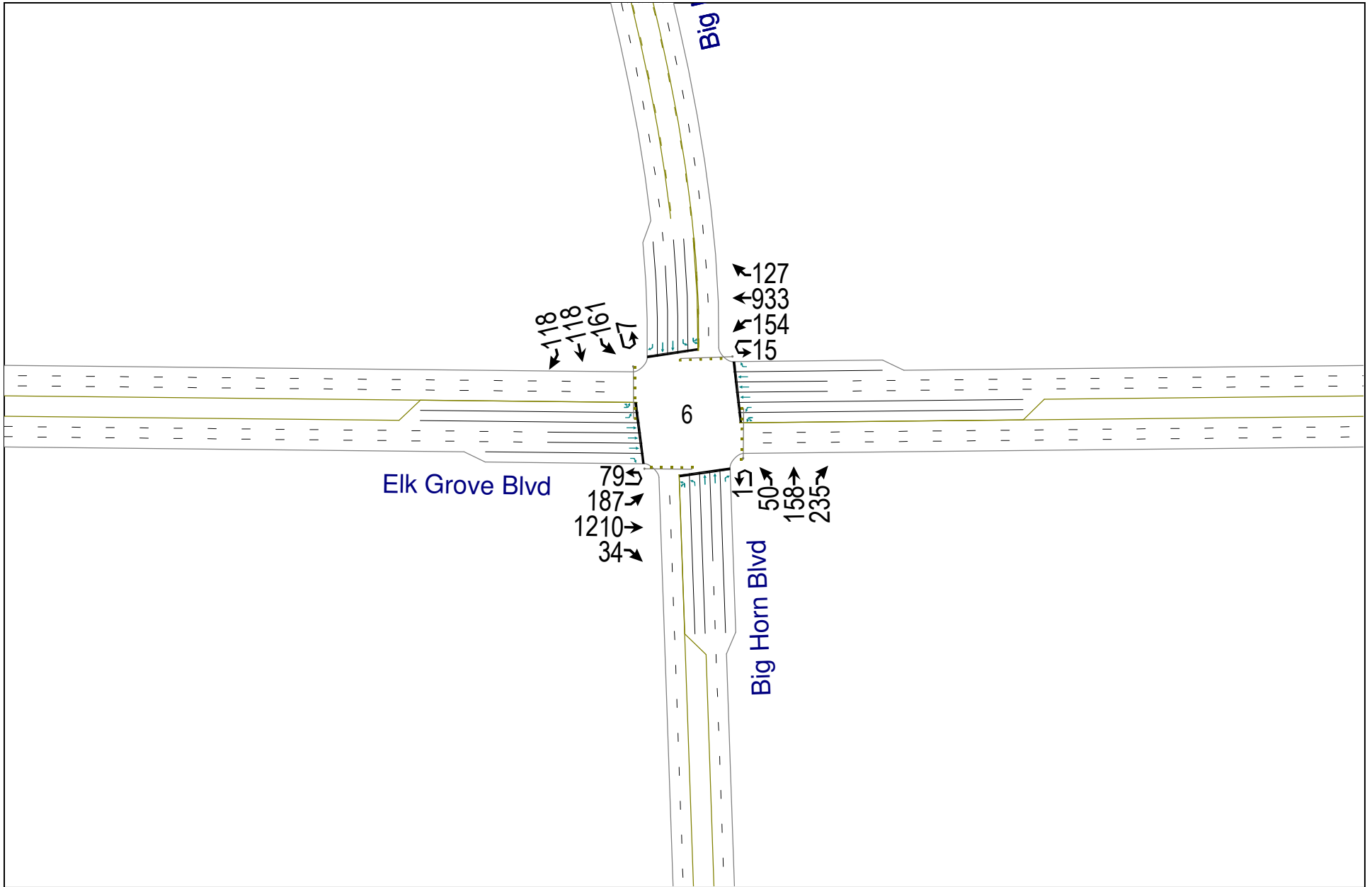


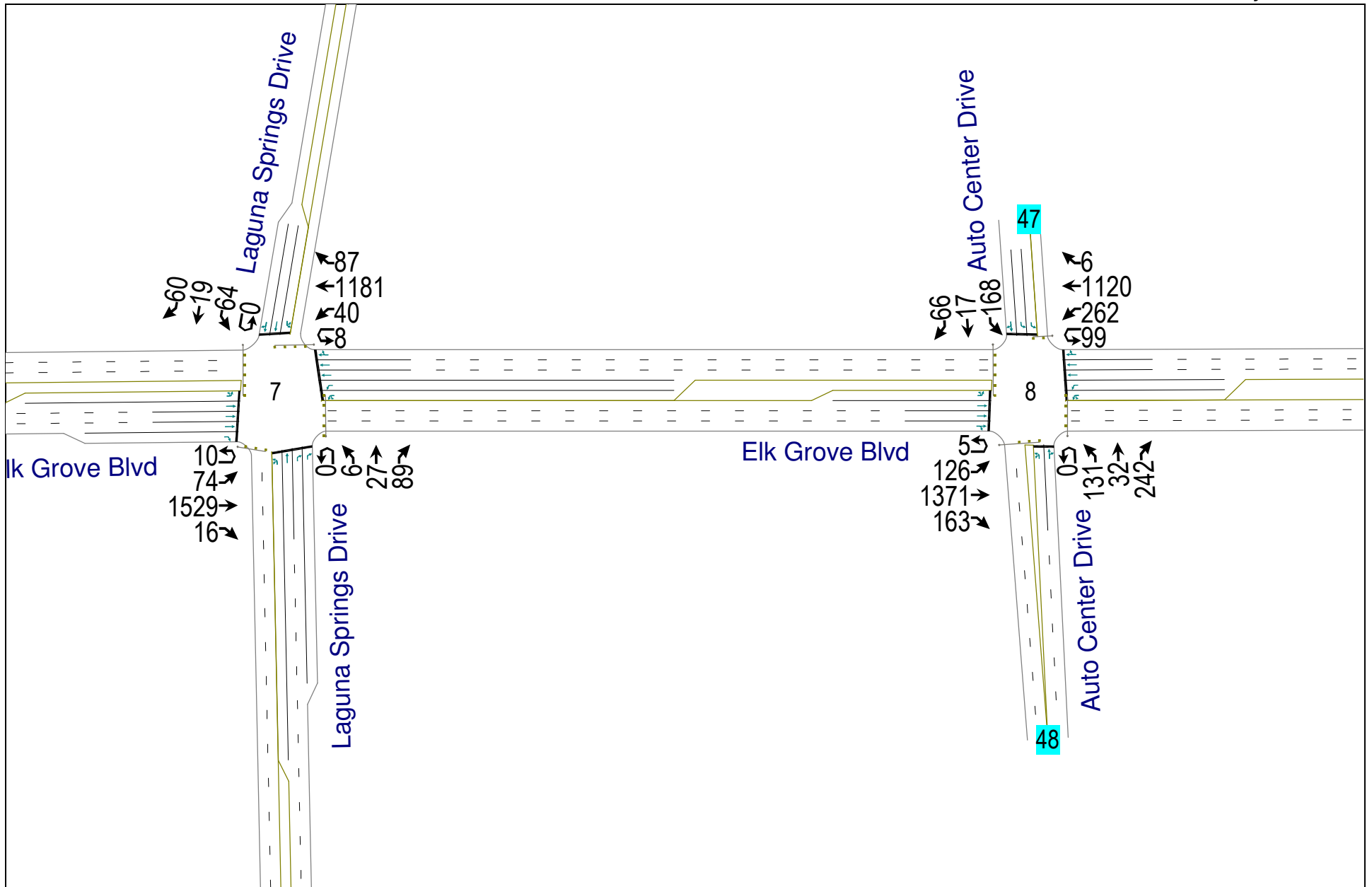


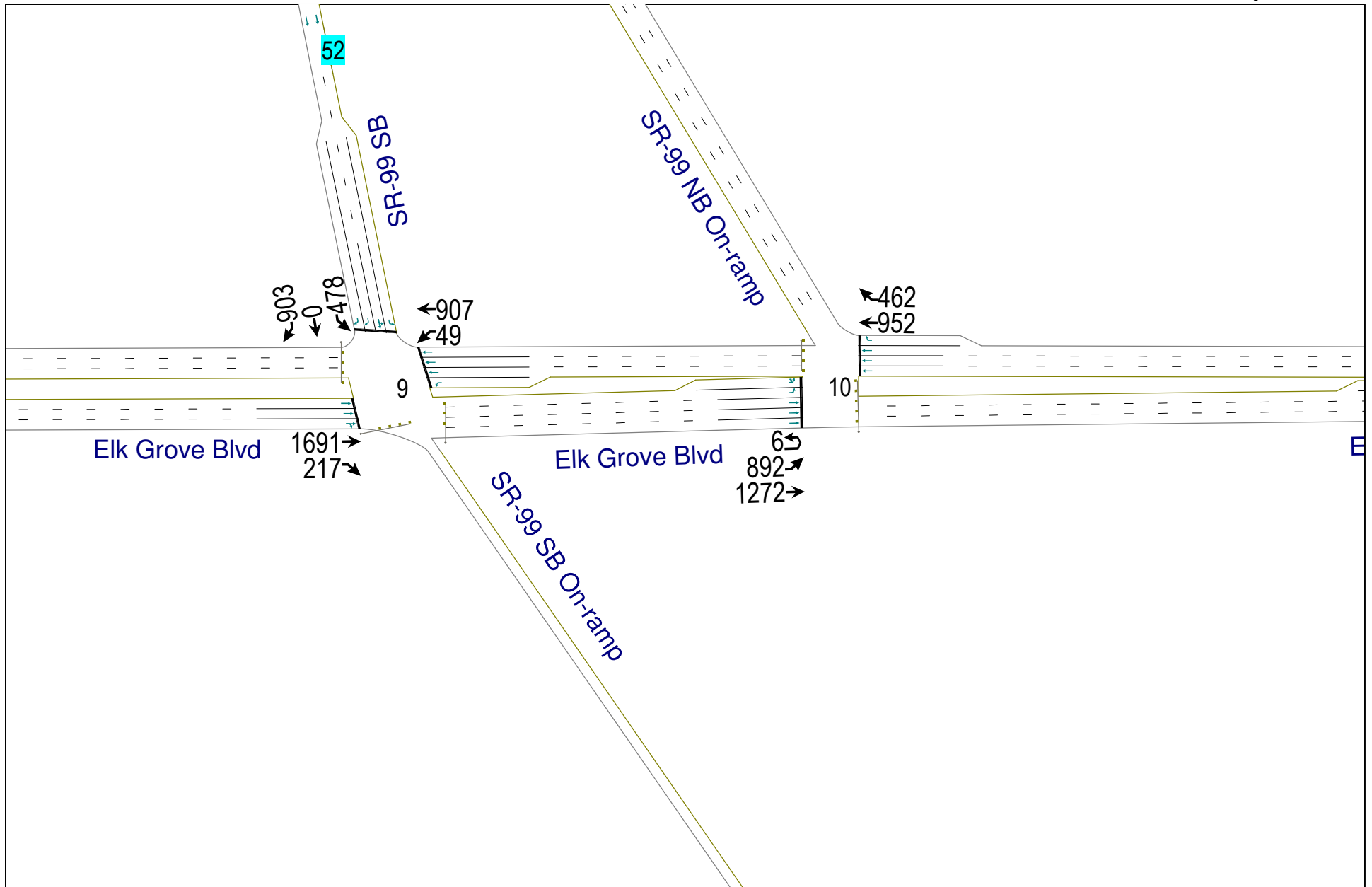


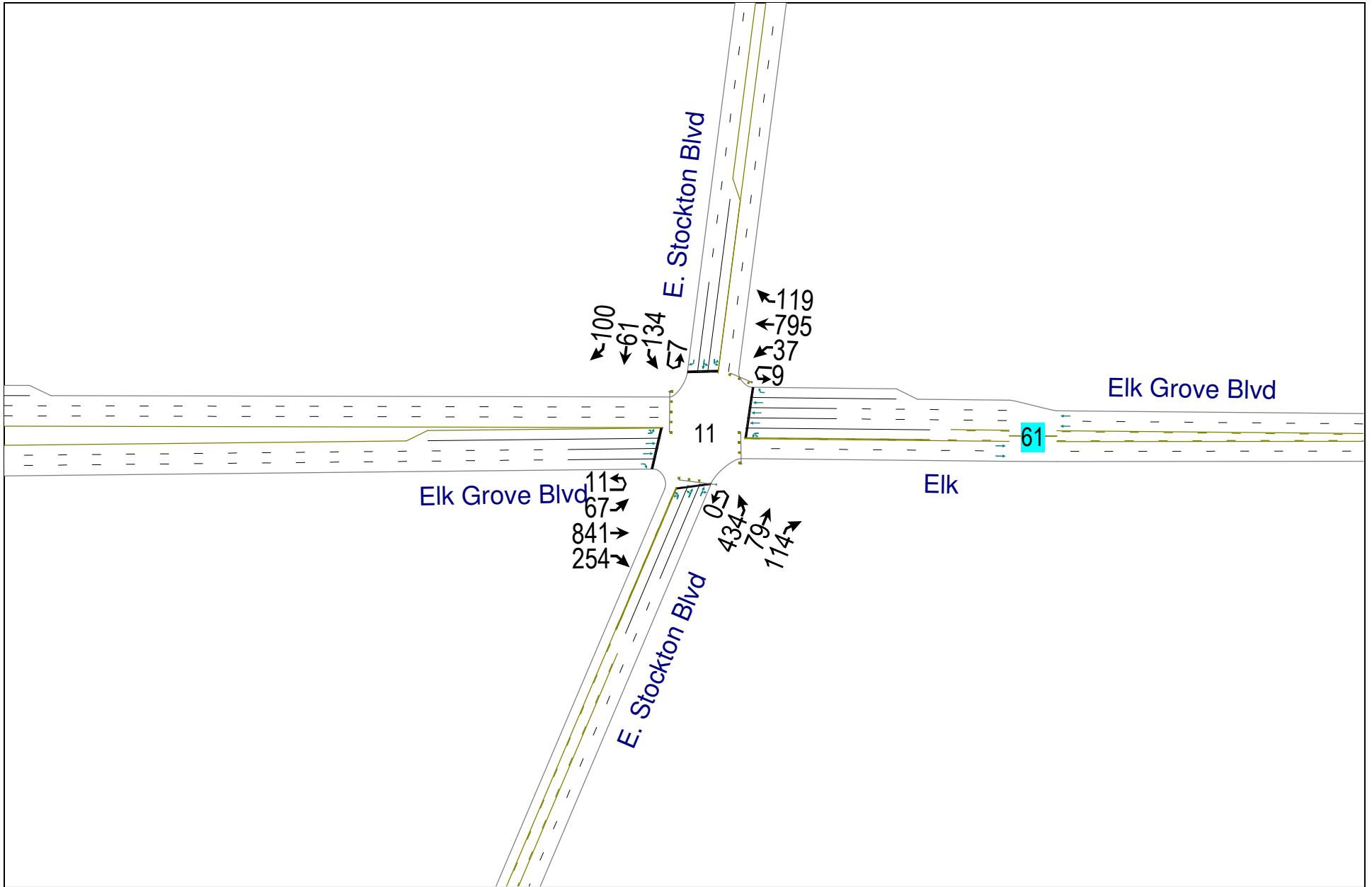


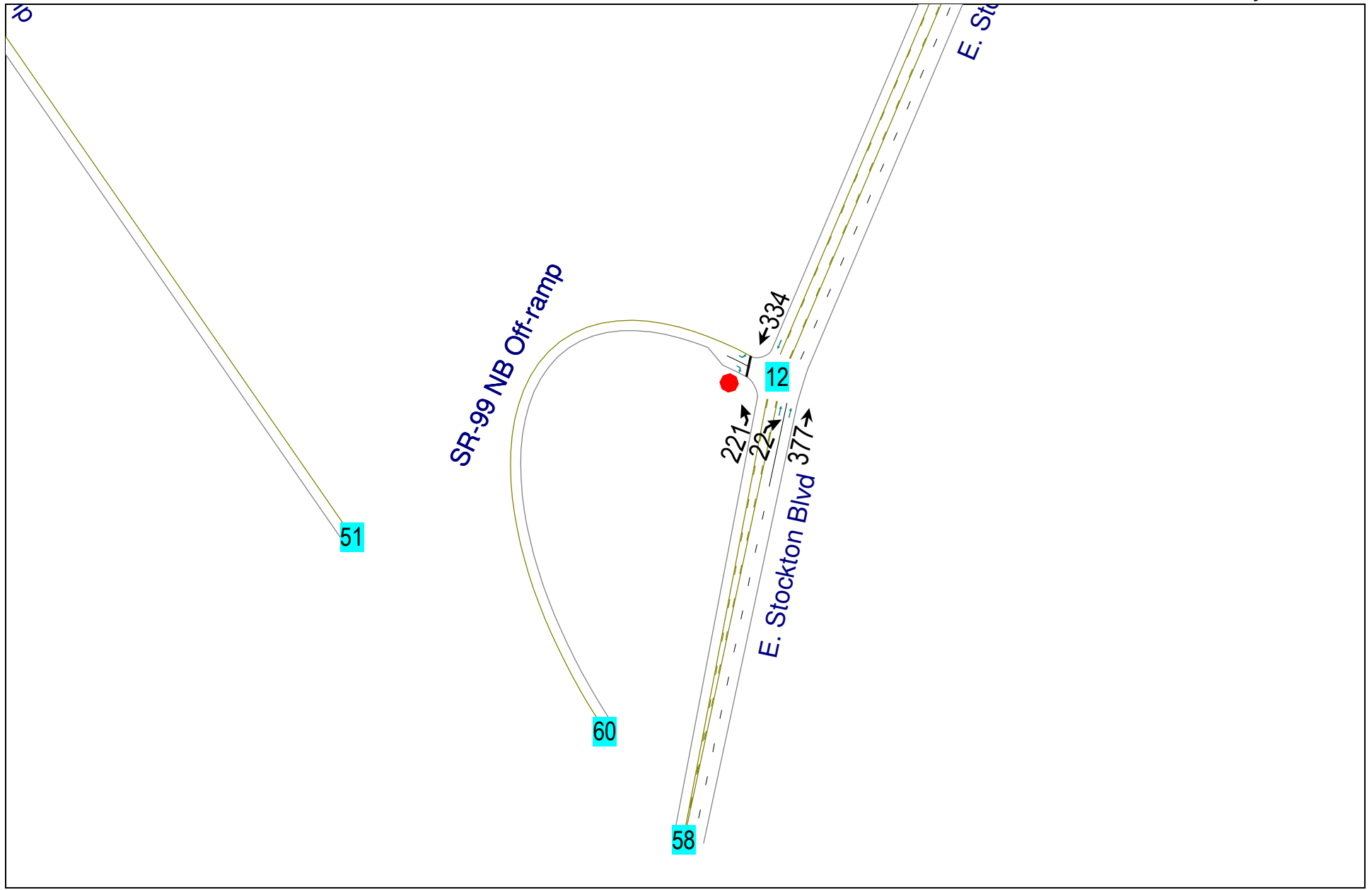


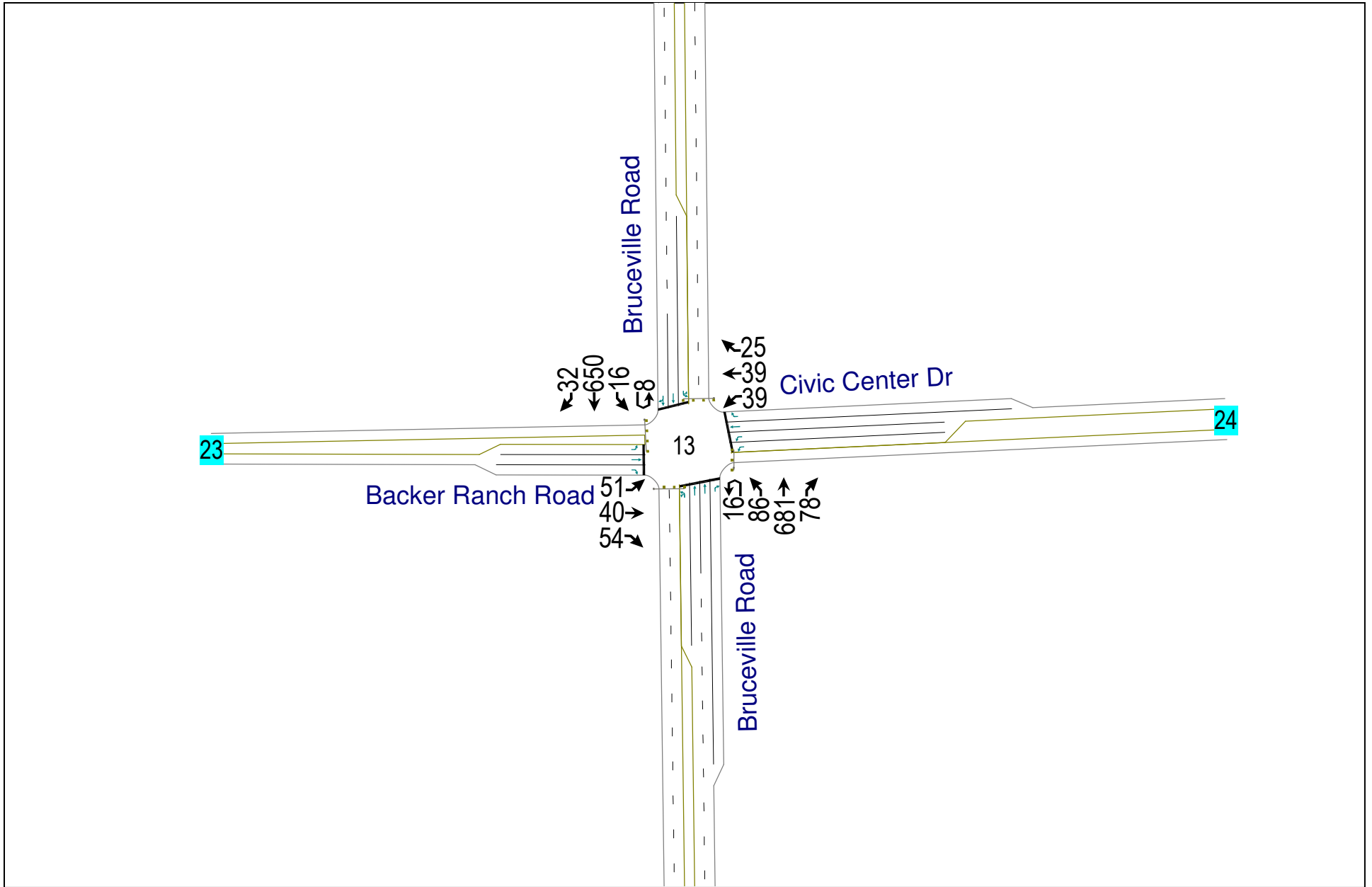


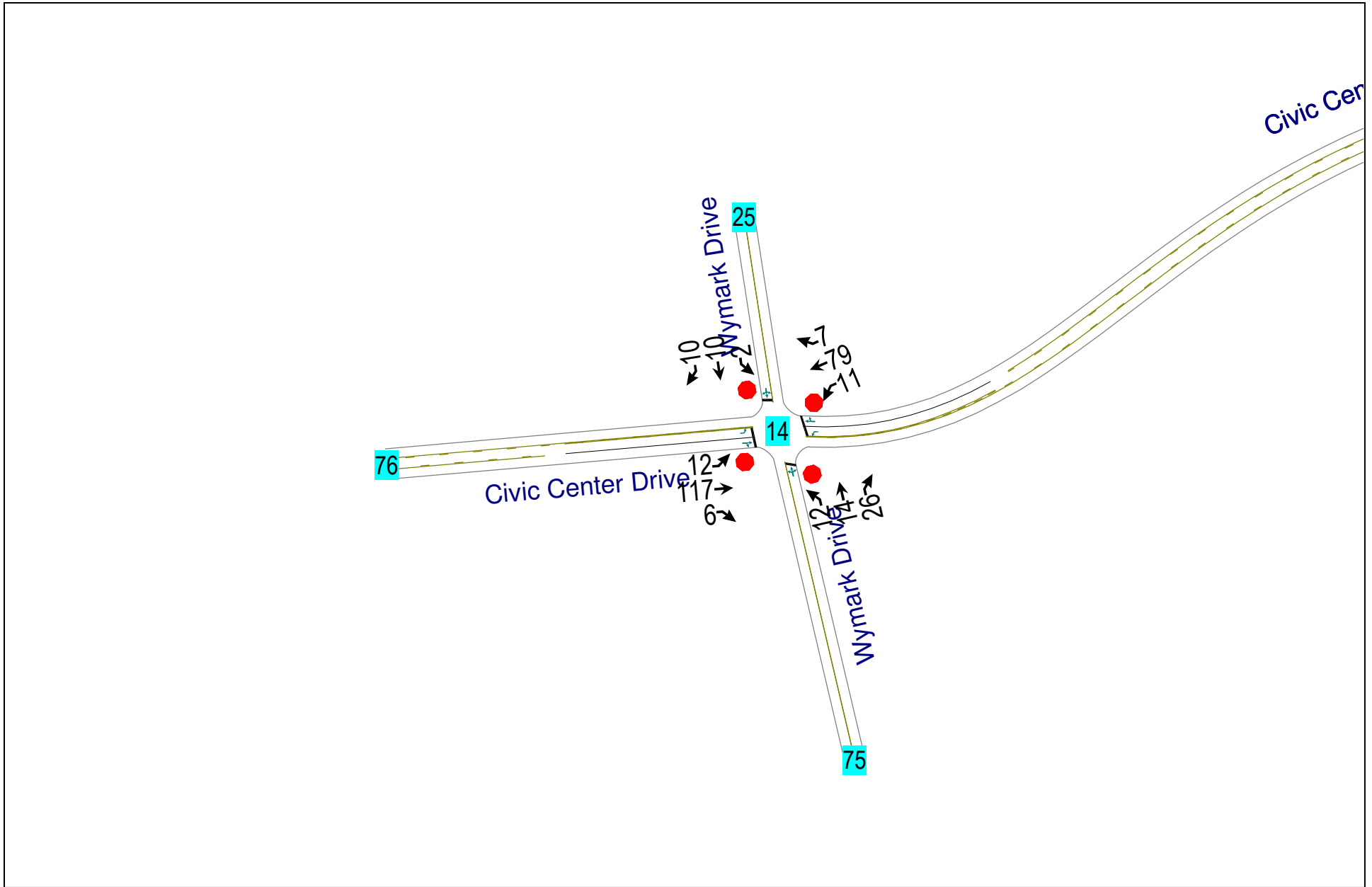


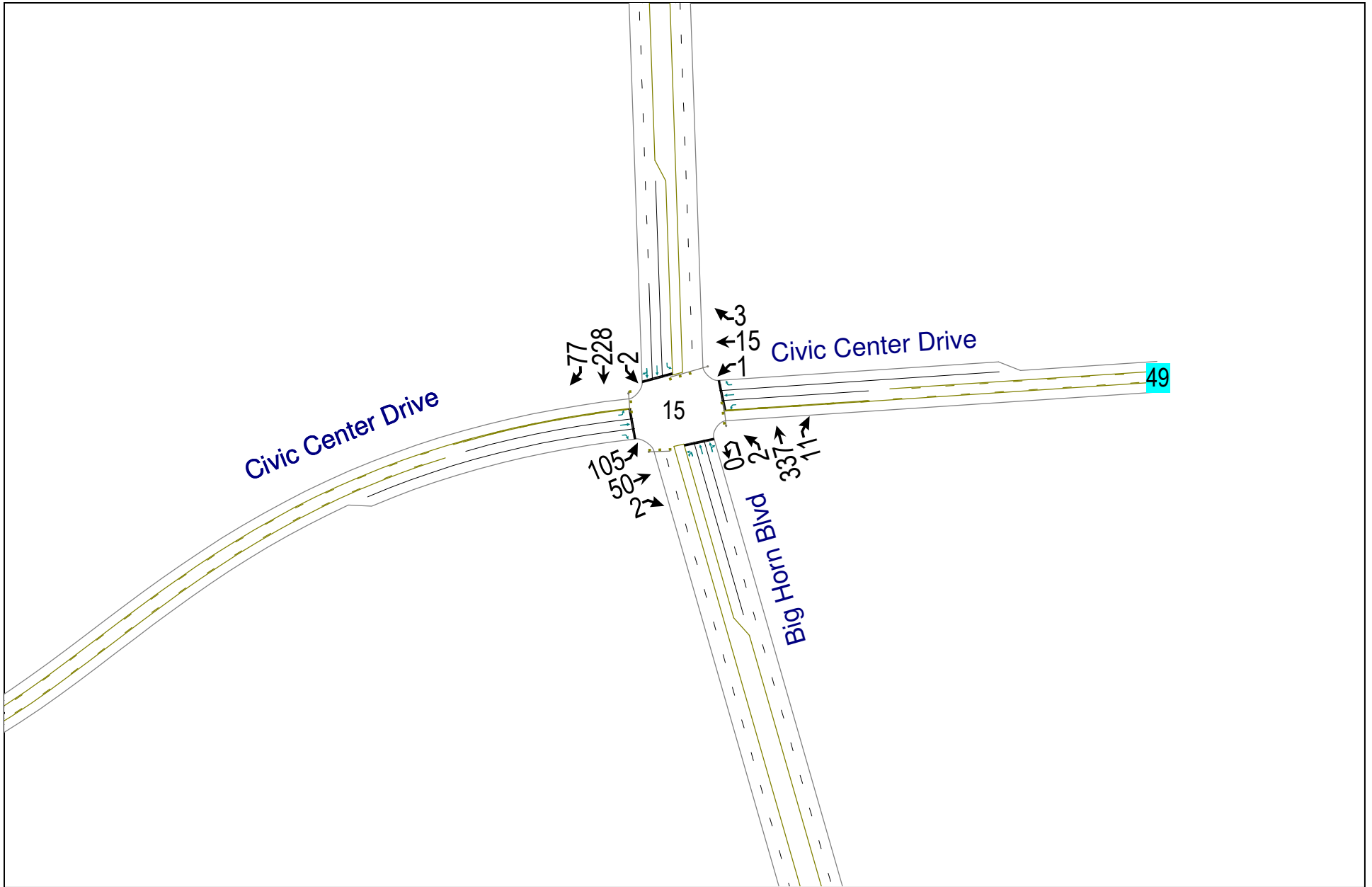


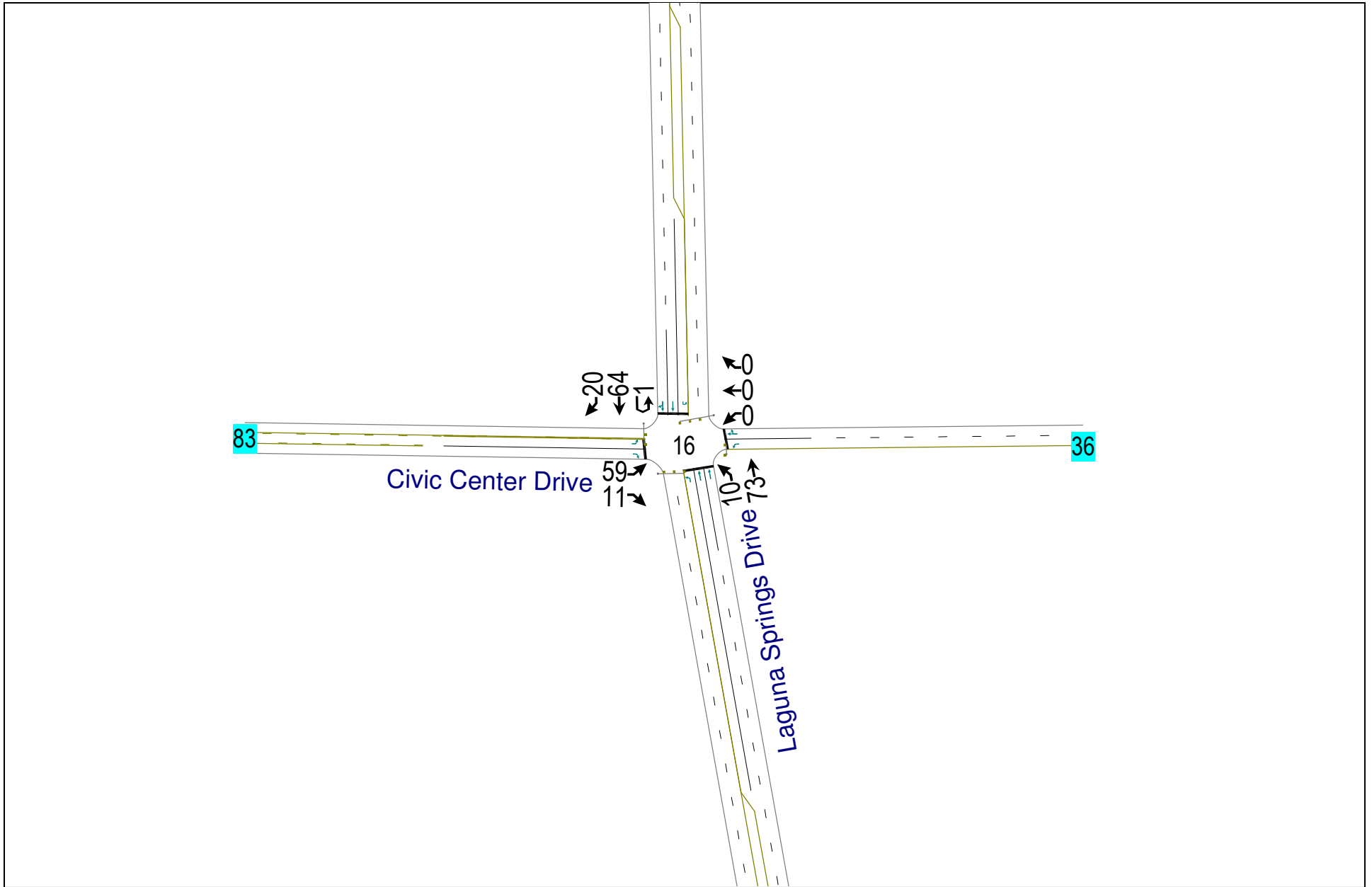


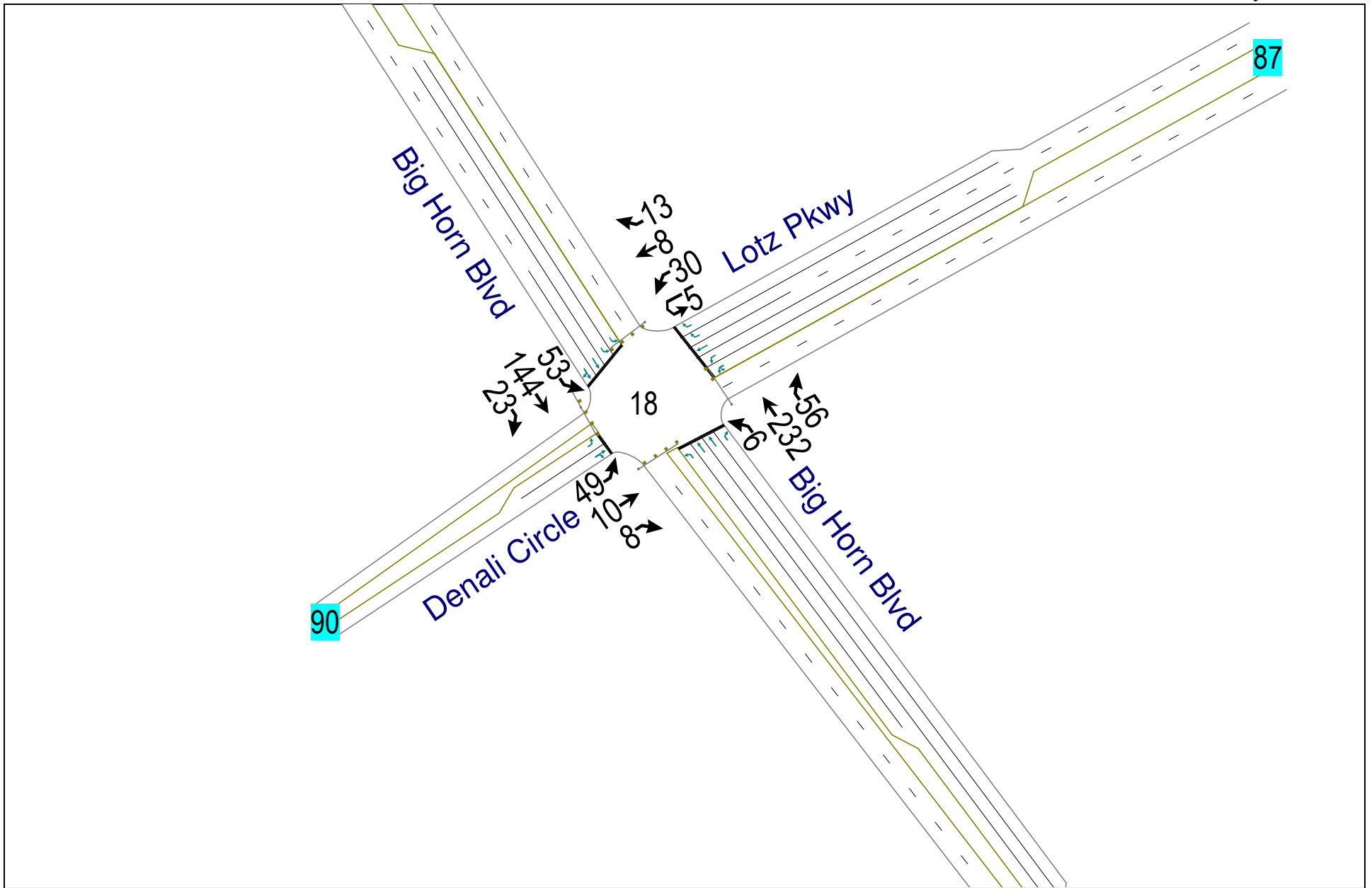


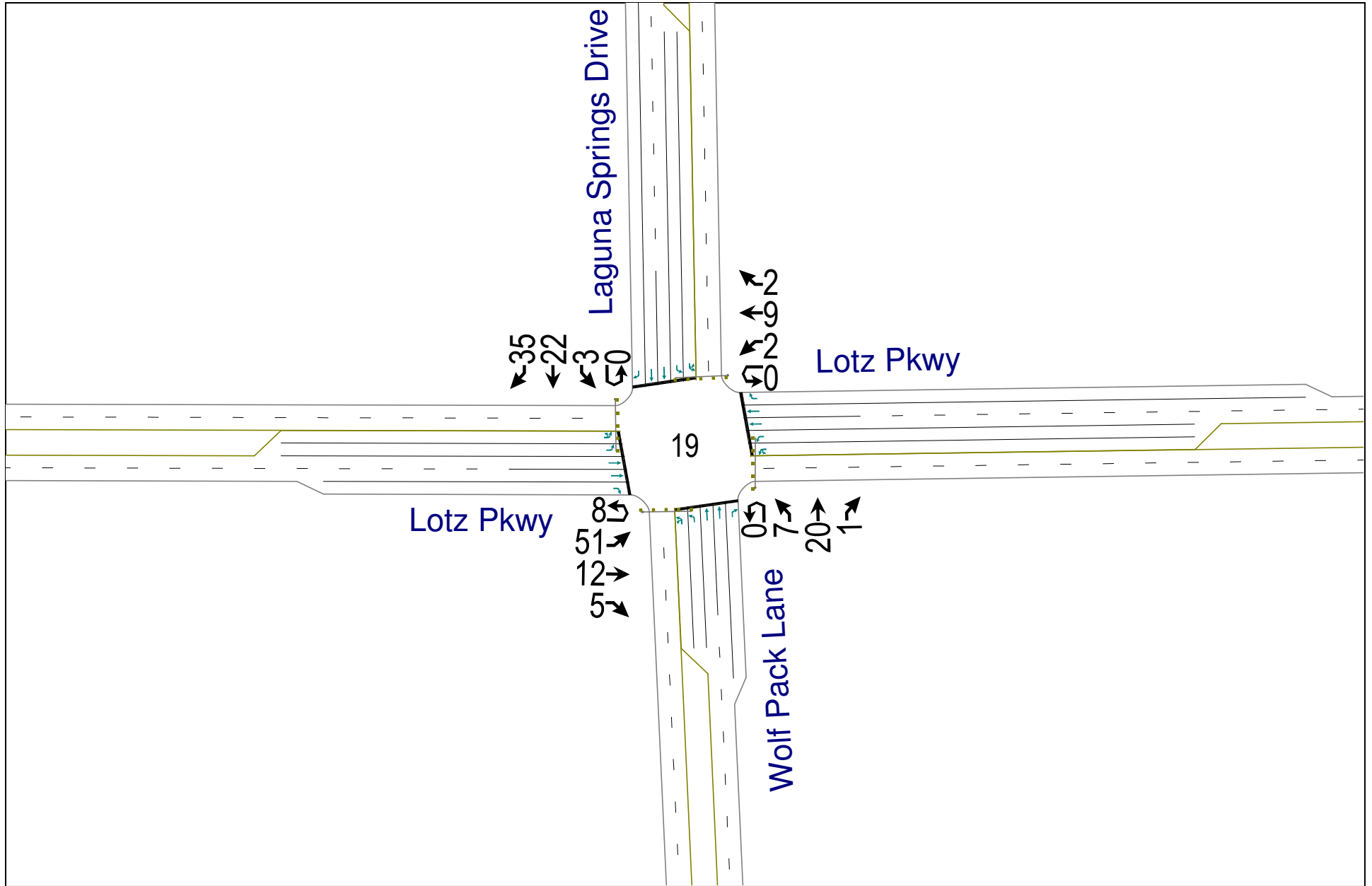


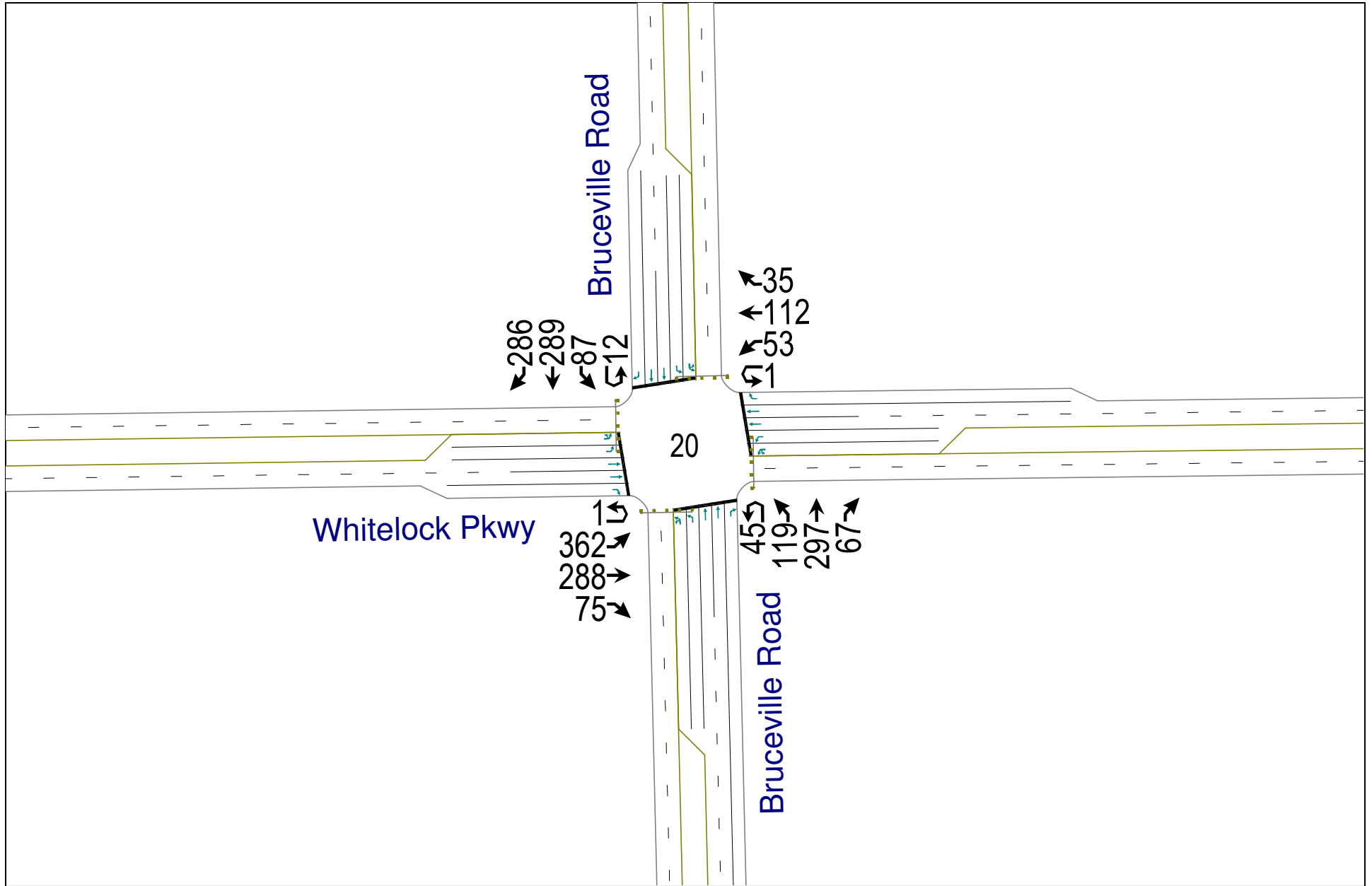




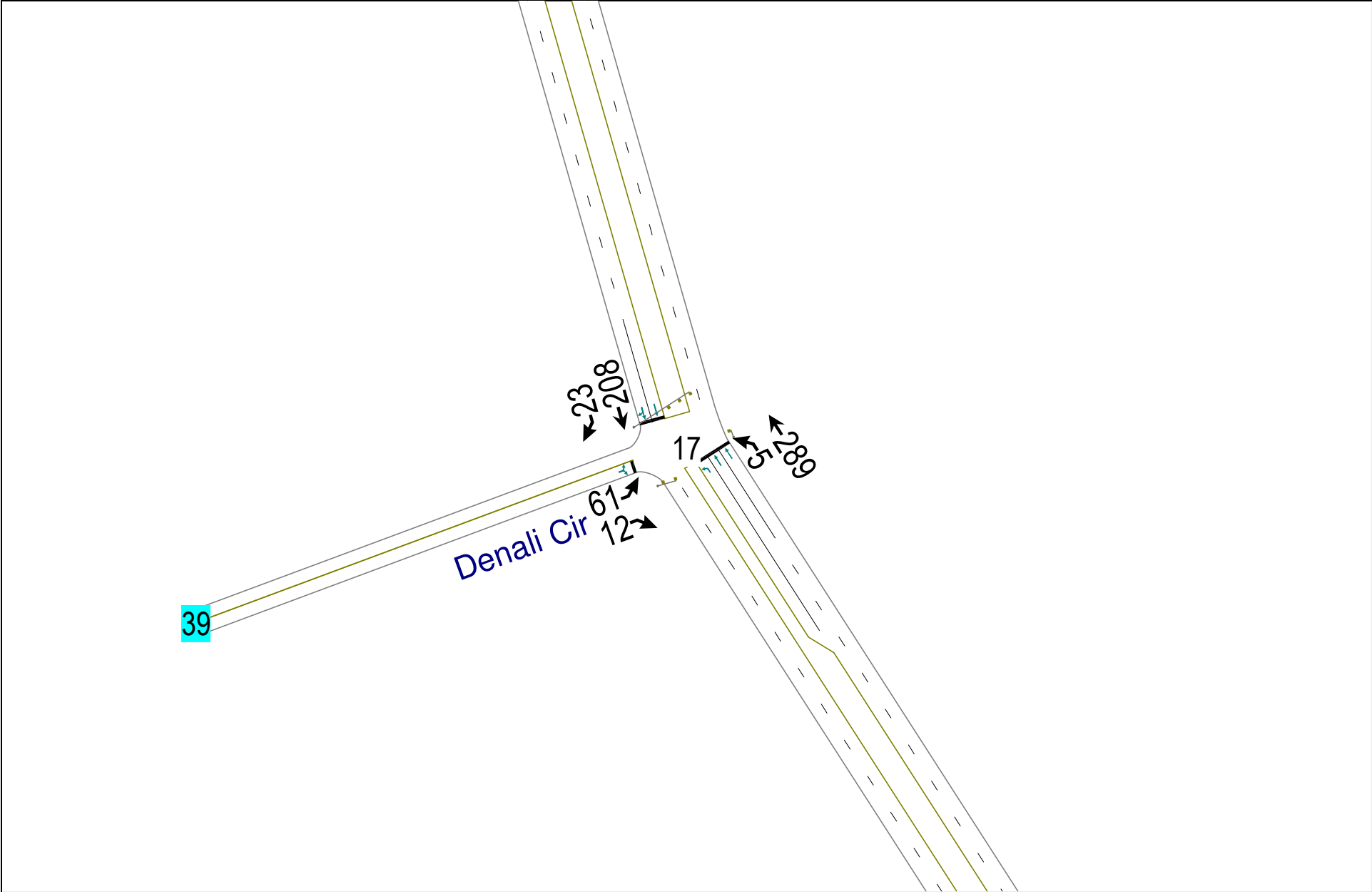












HCM Unsignalized Intersection Capacity Analysis
 1: Elk Grove Blvd & I-5 SB On/Off-Ramp

Existing Weekday Conditions
 PM Peak Hour
























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑	↔		↔↔↔	
Volume (veh/h)	1	11	5	97	1413	6
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	12	5	102	1487	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2981	2978	2981	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2981	2978	2981	0	0	
tC, single (s)	7.1	6.7	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.2	4.0	3.3	2.2	
p0 queue free %	0	0	0	91	8	
cM capacity (veh/h)	0	1	1	1085	1623	

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	5	8	107	992	502
Volume Left	1	0	0	992	496
Volume Right	0	0	102	0	6
cSH	0	1	23	1623	1623
Volume to Capacity	Err	7.53	4.60	0.92	0.92
Queue Length 95th (ft)	Err	Err	Err	415	415
Control Delay (s)	Err	Err	Err	24.0	24.0
Lane LOS	F	F	F	C	C
Approach Delay (s)	Err		9999.0	24.0	
Approach LOS	F		F		

Intersection Summary					
Average Delay			Err		
Intersection Capacity Utilization			53.4%	ICU Level of Service	A
Analysis Period (min)			15		

HCM Unsignalized Intersection Capacity Analysis
2: Elk Grove Blvd & I-5 NB On-Ramp

Existing Weekday Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 				 		 				
Volume (veh/h)	7	1417	0	0	101	518	1	0	216	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	7	1461	0	0	104	534	1	0	223	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									17			
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	104			1461			1579	1579	730	960	1579	104
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	104			1461			1579	1579	730	960	1579	104
tC, single (s)	4.7			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	100	39	100	100	100
cM capacity (veh/h)	1309			459			73	108	365	82	108	930
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1					
Volume Total	7	730	730	104	267	267	224					
Volume Left	7	0	0	0	0	0	1					
Volume Right	0	0	0	0	267	267	223					
cSH	1309	1700	1700	1700	1700	1700	366					
Volume to Capacity	0.01	0.43	0.43	0.06	0.16	0.16	0.61					
Queue Length 95th (ft)	0	0	0	0	0	0	97					
Control Delay (s)	7.8	0.0	0.0	0.0	0.0	0.0	29.3					
Lane LOS	A						D					
Approach Delay (s)	0.0			0.0			29.3					
Approach LOS							D					
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			54.8%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Elk Grove Blvd & Franklin Blvd

Existing Weekday 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	0.98		1.00	1.00	0.98		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	2726		3433	5085	1560		3433	5085	1559
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	2726		3433	5085	1560		3433	5085	1559
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. Peds. (#/hr)								3				4
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	1186		180	1975	606		632	877	269
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	83.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing Weekday 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. Peds. (#/hr)				
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

4: Elk Grove Blvd & Bruceville Road

Existing Weekday Conditions
PM Peak Hour

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔	↑↑↑	↗		↔	↑↑↑	↗		↔	↑↑↑	↗
Volume (vph)	26	292	1058	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
Frbp, ped/bikes		1.00	1.00	0.99		1.00	1.00	0.99		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	1563		3433	5085	1562		3433	5085	1544
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	1563		3433	5085	1562		3433	5085	1544
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	1102	128	3	465	1129	232	5	118	362	191
RTOR Reduction (vph)	0	0	0	66	0	0	0	111	0	0	0	160
Lane Group Flow (vph)	0	331	1102	62	0	468	1129	121	0	123	362	31
Confl. Peds. (#/hr)				1				1				6
Confl. Bikes (#/hr)								1				5
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	577		592	2081	639		249	818	248
v/s Ratio Prot		0.10	c0.22			c0.14	c0.22			0.04	0.07	
v/s Ratio Perm				0.04				0.08				0.02
v/c Ratio		0.73	0.59	0.11		0.79	0.54	0.19		0.49	0.44	0.12
Uniform Delay, d1		50.0	30.5	24.9		47.6	26.9	22.7		53.5	45.5	43.1
Progression Factor		1.00	1.00	1.00		1.09	0.42	0.53		1.00	1.00	1.00
Incremental Delay, d2		4.9	1.4	0.4		5.6	0.9	0.5		0.6	0.1	0.1
Delay (s)		54.8	31.8	25.2		57.6	12.2	12.6		54.1	45.6	43.2
Level of Service		D	C	C		E	B	B		D	D	D
Approach Delay (s)			36.2				23.9				46.5	
Approach LOS			D				C				D	
Intersection Summary												
HCM Average Control Delay			36.9									D
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			120.0							28.9		
Intersection Capacity Utilization			83.4%									E
Analysis Period (min)			15									
c Critical Lane Group												

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

Existing Weekday Conditions
PM Peak Hour

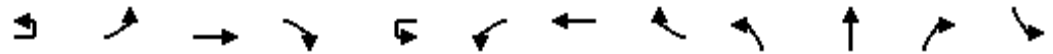


Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	46	210	723	224
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7	5.7
Lane Util. Factor		0.97	0.86	0.86
Frbp, ped/bikes		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	4782	1340
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	4782	1340
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
Confl. Peds. (#/hr)				3
Confl. Bikes (#/hr)				1
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	932	261
v/s Ratio Prot		c0.08	c0.16	
v/s Ratio Perm				0.03
v/c Ratio		0.73	0.83	0.16
Uniform Delay, d1		51.9	46.4	40.1
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		6.1	6.1	0.1
Delay (s)		58.0	52.5	40.2
Level of Service		E	D	D
Approach Delay (s)			51.6	
Approach LOS			D	

Intersection Summary

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

Existing Weekday Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↖	↑↑↑	↗		↖	↑↑↑			↖	↗	↖
Volume (vph)	1	13	1409	31	2	24	1833	118	18	6	47	54
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		5.6	6.7			5.6	5.6	5.6
Lane Util. Factor		1.00	0.91	1.00		1.00	0.91			1.00	1.00	0.95
Frbp, ped/bikes		1.00	1.00	0.97		1.00	1.00			1.00	0.99	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	0.99			1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.96	1.00	0.95
Satd. Flow (prot)		1770	5085	1543		1770	5030			1795	1561	1681
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.96	1.00	0.95
Satd. Flow (perm)		1770	5085	1543		1770	5030			1795	1561	1681
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)	1	14	1468	32	2	25	1909	123	19	6	49	56
RTOR Reduction (vph)	0	0	0	9	0	0	4	0	0	0	46	0
Lane Group Flow (vph)	0	15	1468	23	0	27	2028	0	0	25	3	31
Confl. Peds. (#/hr)				1				3			2	
Confl. Bikes (#/hr)				5				5				
Turn Type	Prot	Prot		Perm	Prot	Prot			Split		Perm	Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				6							3	
Actuated Green, G (s)		2.7	77.0	77.0		4.5	77.7			7.3	7.3	7.7
Effective Green, g (s)		2.7	77.0	77.0		4.5	77.7			7.3	7.3	7.7
Actuated g/C Ratio		0.02	0.64	0.64		0.04	0.65			0.06	0.06	0.06
Clearance Time (s)		6.7	6.7	6.7		5.6	6.7			5.6	5.6	5.6
Vehicle Extension (s)		2.0	3.0	3.0		2.0	3.0			2.0	2.0	2.0
Lane Grp Cap (vph)		40	3263	990		66	3257			109	95	108
v/s Ratio Prot		0.01	0.29			c0.02	c0.40			c0.01		0.02
v/s Ratio Perm				0.02							0.00	
v/c Ratio		0.38	0.45	0.02		0.41	0.62			0.23	0.03	0.29
Uniform Delay, d1		57.8	10.8	7.8		56.5	12.5			53.7	53.0	53.5
Progression Factor		0.70	1.60	1.67		1.31	0.35			1.00	1.00	1.00
Incremental Delay, d2		1.8	0.4	0.0		1.3	0.8			0.4	0.0	0.5
Delay (s)		42.3	17.7	13.1		75.4	5.1			54.1	53.1	54.1
Level of Service		D	B	B		E	A			D	D	D
Approach Delay (s)			17.9			6.0				53.4		
Approach LOS			B			A				D		

Intersection Summary		
HCM Average Control Delay	12.7	HCM Level of Service B
HCM Volume to Capacity ratio	0.52	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 16.8
Intersection Capacity Utilization	63.6%	ICU Level of Service B
Analysis Period (min)	15	
c Critical Lane Group		

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

Existing Weekday Conditions
PM Peak Hour

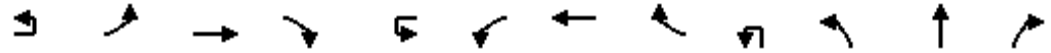


Movement	SBT	SBR
Lane Configurations	↔	↔
Volume (vph)	7	9
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.6	5.6
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.96	1.00
Satd. Flow (prot)	1703	1557
Flt Permitted	0.96	1.00
Satd. Flow (perm)	1703	1557
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	7	9
RTOR Reduction (vph)	0	8
Lane Group Flow (vph)	32	1
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		1
Turn Type		Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	7.7	7.7
Effective Green, g (s)	7.7	7.7
Actuated g/C Ratio	0.06	0.06
Clearance Time (s)	5.6	5.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	109	100
v/s Ratio Prot	c0.02	
v/s Ratio Perm		0.00
v/c Ratio	0.29	0.01
Uniform Delay, d1	53.6	52.6
Progression Factor	1.00	1.00
Incremental Delay, d2	0.5	0.0
Delay (s)	54.1	52.6
Level of Service	D	D
Approach Delay (s)	53.9	
Approach LOS	D	

Intersection Summary

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

Existing Weekday 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
Frbp, ped/bikes		1.00	1.00	0.98		1.00	1.00	0.99		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	1559		3433	5085	1562		3433	3539	1546
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	1559		3433	5085	1562		3433	3539	1546
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
Confl. Peds. (#/hr)				2								6
Confl. Bikes (#/hr)				2			4					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)		11.6	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	785		346	2581	793		177	369	161
v/s Ratio Prot		0.06	0.25			c0.07	c0.32			0.02	0.03	
v/s Ratio Perm				0.03				0.10				0.01
v/c Ratio		0.63	0.50	0.05		0.66	0.64	0.19		0.46	0.26	0.13
Uniform Delay, d1		52.1	19.7	15.2		51.9	21.5	16.1		55.3	49.5	48.8
Progression Factor		1.18	0.72	1.50		1.52	0.36	0.10		1.00	1.00	1.00
Incremental Delay, d2		2.5	0.6	0.1		2.6	0.9	0.4		0.7	0.1	0.1
Delay (s)		64.2	14.8	22.8		81.6	8.7	2.0		56.0	49.6	48.9
Level of Service		E	B	C		F	A	A		E	D	D
Approach Delay (s)			21.8				16.0				50.6	
Approach LOS			C				B				D	

Intersection Summary		
HCM Average Control Delay	25.1	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	75.7%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

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

Existing Weekday Conditions
PM Peak Hour

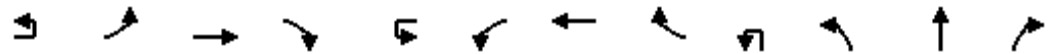


Movement	SBU	SBL	SBT	SBR
Lane Configurations		↔↔	↑↑	↗
Volume (vph)	1	182	195	199
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00
Frbp, ped/bikes		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1554
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1554
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
Confl. Peds. (#/hr)				6
Confl. Bikes (#/hr)				
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	224
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)			48.7	
Approach LOS			D	

Intersection Summary

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

Existing Weekday 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
Frbp, ped/bikes		1.00	1.00	0.99		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
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	1562		3433	5049			1770	1863	2750
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	5085	1562		3433	5049			1770	1863	2750
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
Confl. Peds. (#/hr)								3				1
Confl. Bikes (#/hr)				4				2				
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	832		240	2550			122	179	264
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	0.73			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		1.04	0.87	0.50		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)		58.5	16.5	6.7		78.9	10.0			59.4	51.6	49.3
Level of Service		E	B	A		E	B			E	D	D
Approach Delay (s)			19.2				14.1				52.5	
Approach LOS			B				B				D	

Intersection Summary		
HCM Average Control Delay	21.7	HCM Level of Service C
HCM Volume to Capacity ratio	0.72	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 27.9
Intersection Capacity Utilization	71.8%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

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

Existing Weekday 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	
Frpb, ped/bikes	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	
Frt	1.00	0.90	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1770	3148	
Flt Permitted	0.95	1.00	
Satd. Flow (perm)	1770	3148	
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
Confl. Peds. (#/hr)			1
Confl. Bikes (#/hr)			
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	451	
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
8: Elk Grove Blvd & Auto Center Drive

Existing Weekday 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
Frbp, ped/bikes		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
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	5042			3433	5082		1770	1608		3433
Flt Permitted		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (perm)		1770	5042			3433	5082		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
Confl. Peds. (#/hr)				18				15				
Confl. Bikes (#/hr)				2				4				
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	2500			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	22.1			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			2.1	1.3		8.8	0.7		0.2
Delay (s)		63.0	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			18.4			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			83.2%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

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

Existing Weekday 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	
Frbp, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1573	
Flt Permitted	1.00	
Satd. Flow (perm)	1573	
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	12	121
RTOR Reduction (vph)	110	0
Lane Group Flow (vph)	23	0
Confl. Peds. (#/hr)		13
Confl. Bikes (#/hr)		
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)	149	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.16	
Uniform Delay, d1	49.9	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	50.1	
Level of Service	D	
Approach Delay (s)	48.0	
Approach LOS	D	
Intersection Summary		

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

Existing Weekday Conditions
 PM Peak Hour

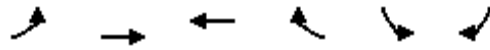


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↔	↑↑↑					↔	↔	↔
Volume (vph)	0	1749	215	94	1182	0	0	0	0	684	0	971
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frbp, ped/bikes		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
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)		4982		1770	5085					1681	1681	2745
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4982		1770	5085					1681	1681	2745
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	78
Lane Group Flow (vph)	0	1993	0	96	1206	0	0	0	0	349	349	913
Confl. Peds. (#/hr)			5			7						3
Confl. Bikes (#/hr)			4			6						
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)		2180		161	2937					537	537	876
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	1.04
Uniform Delay, d1		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, d2		6.3		2.9	0.3					2.0	2.0	42.1
Delay (s)		22.5		24.2	20.1					37.1	37.1	83.0
Level of Service		C		C	C					D	D	F
Approach Delay (s)		22.5			20.4			0.0			64.0	
Approach LOS		C			C			A			E	

Intersection Summary		
HCM Average Control Delay	36.0	HCM Level of Service D
HCM Volume to Capacity ratio	0.93	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 18.3
Intersection Capacity Utilization	79.1%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

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

Existing Weekday Conditions
 PM Peak Hour

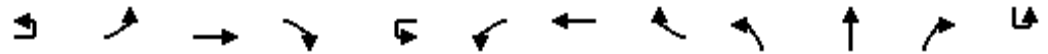


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶↶	↑↑↑	↑↑↑	↷		
Volume (vph)	745	1688	1276	507	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (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		79.1%	ICU Level of Service D
Analysis Period (min)		15	
c Critical Lane Group			

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

Existing Weekday 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		
Frbp, ped/bikes		1.00	1.00	0.97		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	1.00	1.00		
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	1529		1770	5085	1547	1610	3186		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.97		
Satd. Flow (perm)		1770	3539	1529		1770	5085	1547	1610	3186		
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
Confl. Peds. (#/hr)				4				7			6	
Confl. Bikes (#/hr)				4				2				
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	650		114	1966	598	297	587		
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	0.41		0.56	0.61	0.10	0.88	0.78		
Uniform Delay, d1		52.3	28.4	24.0		54.5	29.5	23.5	47.6	46.6		
Progression Factor		0.85	0.76	1.61		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		11.9	2.7	1.8		3.7	1.4	0.3	23.1	6.2		
Delay (s)		56.4	24.2	40.4		58.2	30.9	23.8	70.7	52.8		
Level of Service		E	C	D		E	C	C	E	D		
Approach Delay (s)			31.5			31.6			59.1			
Approach LOS			C			C			E			

Intersection Summary		
HCM Average Control Delay	38.9	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	77.1%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

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

Existing Weekday 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
Frpb, 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	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
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
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
 12: SR-99 NB Off-ramp & E. Stockton Blvd

Existing Weekday 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
13: Backer Ranch Road & Bruceville Road

Existing Weekday Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	72	46	105	60	62	34	14	82	683	57	20	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	4.6	4.6		5.6	5.3	5.3		5.6
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00		1.00	0.95	1.00		1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98		1.00	1.00	0.98		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	1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1770	1863	1583	3433	1863	1558		1770	3539	1549		1770
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1770	1863	1583	3433	1863	1558		1770	3539	1549		1770
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	79	51	115	66	68	37	15	90	751	63	22	36
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	31	0	0
Lane Group Flow (vph)	79	51	115	66	68	37	0	105	751	32	0	58
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)	1					2		1		2		1
Turn Type	Prot		Perm	Prot		Perm	Prot	Prot		Perm	Prot	Prot
Protected Phases	3	8		7	4		1	1	6		5	5
Permitted Phases			8			4				6		
Actuated Green, G (s)	10.6	15.9	15.9	5.6	10.9	10.9		12.2	51.8	51.8		7.1
Effective Green, g (s)	10.6	15.9	15.9	5.6	10.9	10.9		12.2	51.8	51.8		7.1
Actuated g/C Ratio	0.10	0.16	0.16	0.06	0.11	0.11		0.12	0.51	0.51		0.07
Clearance Time (s)	5.6	4.6	4.6	5.6	4.6	4.6		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		2.0
Lane Grp Cap (vph)	185	292	248	189	200	167		213	1806	791		124
v/s Ratio Prot	c0.04	0.03		0.02	0.04			c0.06	c0.21			0.03
v/s Ratio Perm			c0.07			0.02				0.02		
v/c Ratio	0.43	0.17	0.46	0.35	0.34	0.22		0.49	0.42	0.04		0.47
Uniform Delay, d1	42.6	37.1	38.9	46.2	42.0	41.4		41.8	15.4	12.4		45.4
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	0.6	0.1	0.5	0.4	0.4	0.2		0.7	0.1	0.0		1.0
Delay (s)	43.2	37.2	39.4	46.6	42.3	41.7		42.4	15.5	12.4		46.4
Level of Service	D	D	D	D	D	D		D	B	B		D
Approach Delay (s)		40.2			43.8				18.4			
Approach LOS		D			D				B			
Intersection Summary												
HCM Average Control Delay			25.7				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			101.5				Sum of lost time (s)		26.4			
Intersection Capacity Utilization			63.9%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 13: Backer Ranch Road & Bruceville Road




















Existing Weekday Conditions
 PM Peak Hour



Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1055	63
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.3	
Lane Util. Factor	0.95	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	3504	
Flt Permitted	1.00	
Satd. Flow (perm)	3504	
Peak-hour factor, PHF	0.91	0.91
Adj. Flow (vph)	1159	69
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	1226	0
Confl. Peds. (#/hr)		2
Confl. Bikes (#/hr)		1
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	46.7	
Effective Green, g (s)	46.7	
Actuated g/C Ratio	0.46	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1612	
v/s Ratio Prot	c0.35	
v/s Ratio Perm		
v/c Ratio	0.76	
Uniform Delay, d1	22.8	
Progression Factor	1.00	
Incremental Delay, d2	1.9	
Delay (s)	24.7	
Level of Service	C	
Approach Delay (s)	25.7	
Approach LOS	C	
Intersection Summary		

HCM Unsignalized Intersection Capacity Analysis
 14: Civic Center Drive & Wymark Drive

Existing Weekday 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)	17	127	19	16	146	5	14	9	7	10	21	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	18	135	20	17	155	5	15	10	7	11	22	19
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total (vph)	18	155	17	161	32	52						
Volume Left (vph)	18	0	17	0	15	11						
Volume Right (vph)	0	20	0	5	7	19						
Hadj (s)	0.53	-0.06	0.53	0.01	-0.01	-0.15						
Departure Headway (s)	5.4	4.8	5.4	4.9	4.8	4.6						
Degree Utilization, x	0.03	0.21	0.03	0.22	0.04	0.07						
Capacity (veh/h)	653	730	647	721	697	717						
Control Delay (s)	7.3	7.8	7.3	8.0	8.0	7.9						
Approach Delay (s)	7.8		7.9		8.0	7.9						
Approach LOS	A		A		A	A						
Intersection Summary												
Delay			7.9									
HCM Level of Service			A									
Intersection Capacity Utilization			24.2%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
15: Civic Center Drive & Big Horn Blvd

Existing Weekday Conditions
PM Peak Hour























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	66	45	15	4	41	12	12	278	7	2	3	478
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3			6.3	5.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95			1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.97
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	1863	1583	1770	1863	1583	1770	3526			1770	3429
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	1863	1583	1770	1863	1583	1770	3526			1770	3429
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)	72	49	16	4	45	13	13	302	8	2	3	520
RTOR Reduction (vph)	0	0	12	0	0	12	0	1	0	0	0	13
Lane Group Flow (vph)	72	49	4	4	45	1	13	309	0	0	5	644
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot	Prot	
Protected Phases	3	8		7	4		1	6		5	5	2
Permitted Phases			8			4						
Actuated Green, G (s)	6.5	13.6	13.6	0.5	6.6	6.6	0.7	24.4			0.6	24.3
Effective Green, g (s)	6.5	13.6	13.6	0.5	6.6	6.6	0.7	24.4			0.6	24.3
Actuated g/C Ratio	0.11	0.22	0.22	0.01	0.11	0.11	0.01	0.40			0.01	0.40
Clearance Time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3			6.3	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
Lane Grp Cap (vph)	189	416	354	15	202	172	20	1413			17	1368
v/s Ratio Prot	c0.04	0.03		0.00	c0.02		c0.01	0.09			0.00	c0.19
v/s Ratio Perm			0.00			0.00						
v/c Ratio	0.38	0.12	0.01	0.27	0.22	0.01	0.65	0.22			0.29	0.47
Uniform Delay, d1	25.3	18.9	18.4	30.0	24.8	24.2	30.0	12.0			29.9	13.5
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	0.0	3.5	0.2	0.0	45.4	0.0			3.5	0.1
Delay (s)	25.8	18.9	18.4	33.5	25.0	24.2	75.4	12.0			33.4	13.6
Level of Service	C	B	B	C	C	C	E	B			C	B
Approach Delay (s)		22.5			25.4			14.6				13.8
Approach LOS		C			C			B				B

Intersection Summary		
HCM Average Control Delay	15.6	HCM Level of Service B
HCM Volume to Capacity ratio	0.42	
Actuated Cycle Length (s)	60.9	Sum of lost time (s) 22.8
Intersection Capacity Utilization	38.5%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		

Movement	SBR
Lane Configurations	
Volume (vph)	126
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	137
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
 16: Civic Center Drive & Laguna Springs Drive

Existing Weekday Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	65	0	12	0	0	0	20	208	0	0	0	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6		5.6				5.6	4.6				4.6
Lane Util. Factor	1.00		1.00				1.00	0.95				0.95
Fr _t	1.00		0.85				1.00	1.00				0.97
Fl _t Protected	0.95		1.00				0.95	1.00				1.00
Satd. Flow (prot)	1770		1583				1770	3539				3441
Fl _t Permitted	0.95		1.00				0.95	1.00				1.00
Satd. Flow (perm)	1770		1583				1770	3539				3441
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	74	0	14	0	0	0	23	236	0	0	0	189
RTOR Reduction (vph)	0	0	11	0	0	0	0	0	0	0	0	10
Lane Group Flow (vph)	74	0	3	0	0	0	23	236	0	0	0	222
Turn Type	Prot		custom	Prot			Prot			Prot		Prot
Protected Phases	3			7	4		1	6			5	2
Permitted Phases			8									
Actuated Green, G (s)	4.4		12.9				0.6	30.7				24.5
Effective Green, g (s)	4.4		12.9				0.6	30.7				24.5
Actuated g/C Ratio	0.08		0.24				0.01	0.57				0.46
Clearance Time (s)	5.6		5.6				5.6	4.6				4.6
Vehicle Extension (s)	2.0		2.0				2.0	2.0				2.0
Lane Grp Cap (vph)	145		380				20	2019				1567
v/s Ratio Prot	c0.04						c0.01	0.07				c0.06
v/s Ratio Perm			c0.00									
v/c Ratio	0.51		0.01				1.15	0.12				0.14
Uniform Delay, d ₁	23.7		15.6				26.6	5.3				8.5
Progression Factor	1.00		1.00				1.00	1.00				1.00
Incremental Delay, d ₂	1.3		0.0				252.2	0.0				0.0
Delay (s)	24.9		15.6				278.8	5.3				8.5
Level of Service	C		B				F	A				A
Approach Delay (s)		23.4			0.0			29.6				8.5
Approach LOS		C			A			C				A
Intersection Summary												
HCM Average Control Delay			20.2				HCM Level of Service					C
HCM Volume to Capacity ratio			0.17									
Actuated Cycle Length (s)			53.8				Sum of lost time (s)		15.8			
Intersection Capacity Utilization			25.4%				ICU Level of Service		A			
Analysis Period (min)			15									
c	Critical Lane Group											

Movement	SBR
Lane Configurations	
Volume (vph)	38
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frnt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.88
Adj. Flow (vph)	43
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
 17: Denali Cir & Big Horn Blvd

Existing Weekday Conditions
 PM Peak Hour

























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	45	4	6	252	440	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6		5.3	5.3	5.3	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frt	0.99		1.00	1.00	0.98	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1762		1770	3539	3478	
Flt Permitted	0.96		0.95	1.00	1.00	
Satd. Flow (perm)	1762		1770	3539	3478	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	49	4	7	274	478	62
RTOR Reduction (vph)	3	0	0	0	6	0
Lane Group Flow (vph)	50	0	7	274	534	0
Turn Type			Prot			
Protected Phases	3		1	6	2	
Permitted Phases						
Actuated Green, G (s)	4.3		0.6	32.3	26.4	
Effective Green, g (s)	4.3		0.6	32.3	26.4	
Actuated g/C Ratio	0.09		0.01	0.69	0.57	
Clearance Time (s)	4.6		5.3	5.3	5.3	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	163		23	2458	1975	
v/s Ratio Prot	c0.03		0.00	c0.08	c0.15	
v/s Ratio Perm						
v/c Ratio	0.31		0.30	0.11	0.27	
Uniform Delay, d1	19.7		22.7	2.4	5.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.4		2.7	0.0	0.0	
Delay (s)	20.1		25.5	2.4	5.2	
Level of Service	C		C	A	A	
Approach Delay (s)	20.1			2.9	5.2	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	46.5	Sum of lost time (s)	15.2
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Denali Circle & Big Horn Blvd

Existing Weekday Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	44	18	2	2	60	23	48	12	166	62	88	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	5.3
Lane Util. Factor	1.00	1.00			0.97	1.00	0.88	1.00	0.95	1.00	0.97	0.95
Frt	1.00	0.99			1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98
Flt Protected	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1837			3433	1863	2787	1770	3539	1583	3433	3460
Flt Permitted	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1837			3433	1863	2787	1770	3539	1583	3433	3460
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	50	20	2	2	68	26	55	14	189	70	100	344
RTOR Reduction (vph)	0	2	0	0	0	0	44	0	0	43	0	6
Lane Group Flow (vph)	50	20	0	0	70	26	11	14	189	27	100	398
Turn Type	Prot			Prot	Prot		pm+ov	Prot		Perm	Prot	
Protected Phases	3	8		7	7	4	5	1	6		5	2
Permitted Phases							4			6		
Actuated Green, G (s)	4.0	4.6			3.7	5.9	12.3	0.6	24.4	24.4	6.4	30.2
Effective Green, g (s)	4.0	4.6			3.7	5.9	12.3	0.6	24.4	24.4	6.4	30.2
Actuated g/C Ratio	0.06	0.07			0.06	0.09	0.19	0.01	0.38	0.38	0.10	0.48
Clearance Time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	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
Lane Grp Cap (vph)	111	133			200	173	540	17	1360	608	346	1646
v/s Ratio Prot	c0.03	0.01			0.02	c0.01	0.00	0.01	0.05		c0.03	c0.11
v/s Ratio Perm							0.00			0.02		
v/c Ratio	0.45	0.15			0.35	0.15	0.02	0.82	0.14	0.04	0.29	0.24
Uniform Delay, d1	28.7	27.6			28.7	26.5	20.7	31.4	12.7	12.2	26.4	9.9
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	1.1	0.2			0.4	0.1	0.0	127.9	0.0	0.0	0.2	0.0
Delay (s)	29.7	27.8			29.1	26.6	20.7	159.3	12.7	12.3	26.6	9.9
Level of Service	C	C			C	C	C	F	B	B	C	A
Approach Delay (s)		29.2				25.6			20.1			13.2
Approach LOS		C				C			C			B

Intersection Summary

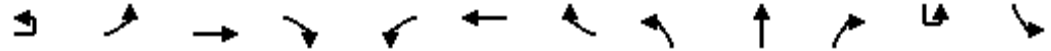
HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	22.8
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR
Lane Configurations	
Volume (vph)	53
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.88
Adj. Flow (vph)	60
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
19: Lotz Pkwy & Laguna Springs Drive

Existing Weekday Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔		↔
Volume (vph)	17	69	9	6	6	15	16	29	87	6	2	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6		5.6
Lane Util. Factor		0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00		0.97
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98		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	1.00	0.85	1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95
Satd. Flow (prot)		3433	3539	1563	3433	3539	1583	3433	3539	1558		3433
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95
Satd. Flow (perm)		3433	3539	1563	3433	3539	1583	3433	3539	1558		3433
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	19	76	10	7	7	16	18	32	96	7	2	3
RTOR Reduction (vph)	0	0	0	4	0	0	12	0	0	6	0	0
Lane Group Flow (vph)	0	95	10	3	7	16	6	32	96	1	0	5
Confl. Peds. (#/hr)										2		
Confl. Bikes (#/hr)				2						2		1
Turn Type	Prot	Prot		Perm	Prot		Perm	Prot		Perm	Prot	Prot
Protected Phases	3	3	8		7	4		1	6		5	5
Permitted Phases				8			4			6		
Actuated Green, G (s)		5.8	25.7	25.7	0.4	20.3	20.3	0.5	7.7	7.7		0.4
Effective Green, g (s)		5.8	25.7	25.7	0.4	20.3	20.3	0.5	7.7	7.7		0.4
Actuated g/C Ratio		0.10	0.45	0.45	0.01	0.35	0.35	0.01	0.13	0.13		0.01
Clearance Time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6		5.6
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)		346	1579	697	24	1247	558	30	473	208		24
v/s Ratio Prot		c0.03	c0.00		0.00	c0.00		c0.01	c0.03			0.00
v/s Ratio Perm				0.00			0.00			0.00		
v/c Ratio		0.27	0.01	0.00	0.29	0.01	0.01	1.07	0.20	0.00		0.21
Uniform Delay, d1		24.0	8.9	8.9	28.5	12.1	12.1	28.6	22.2	21.6		28.4
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	0.0	2.5	0.0	0.0	185.4	0.1	0.0		1.6
Delay (s)		24.1	8.9	8.9	30.9	12.1	12.1	213.9	22.3	21.6		30.0
Level of Service		C	A	A	C	B	B	F	C	C		C
Approach Delay (s)			21.8			15.3			67.7			
Approach LOS			C			B			E			
Intersection Summary												
HCM Average Control Delay			36.0			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.10									
Actuated Cycle Length (s)			57.6			Sum of lost time (s)			24.4			
Intersection Capacity Utilization			34.0%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 19: Lotz Pkwy & Laguna Springs Drive

Existing Weekday Conditions
 PM Peak Hour

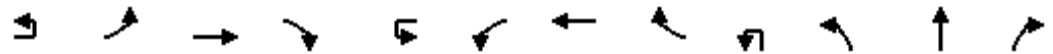


Movement	SBT	SBR
Lane Configurations	↑↑	↑
Volume (vph)	57	54
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.6	4.6
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.99
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3539	1561
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3539	1561
Peak-hour factor, PHF	0.91	0.91
Adj. Flow (vph)	63	59
RTOR Reduction (vph)	0	50
Lane Group Flow (vph)	63	9
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		1
Turn Type		Perm
Protected Phases	2	
Permitted Phases		2
Actuated Green, G (s)	8.6	8.6
Effective Green, g (s)	8.6	8.6
Actuated g/C Ratio	0.15	0.15
Clearance Time (s)	4.6	4.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	528	233
v/s Ratio Prot	0.02	
v/s Ratio Perm		0.01
v/c Ratio	0.12	0.04
Uniform Delay, d1	21.2	21.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.0
Delay (s)	21.3	21.0
Level of Service	C	C
Approach Delay (s)	21.5	
Approach LOS	C	

Intersection Summary

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

Existing Weekday 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
 20: Whitelock Pkwy & Bruceville Road

Existing Weekday Conditions
 PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	LT	RT
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
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	0.93	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, d ₁		34.4	24.7	23.6
Progression Factor		1.00	1.00	1.00
Incremental Delay, d ₂		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
 21: Whitelock Pkwy & Big Horn Blvd

Existing Weekday 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
 1: Elk Grove Blvd & I-5 SB On/Off-Ramp






















Existing Saturday Conditions
 Saturday Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑	↔		↔↔↔	
Volume (veh/h)	1	1	0	138	449	2
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	1	1	0	159	516	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1033	1033	1034	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1033	1033	1034	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	99	99	100	85	68	
cM capacity (veh/h)	135	158	158	1085	1623	
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	2	1	159	344	174	
Volume Left	1	0	0	344	172	
Volume Right	0	0	159	0	2	
cSH	141	158	1085	1623	1623	
Volume to Capacity	0.01	0.00	0.15	0.32	0.32	
Queue Length 95th (ft)	1	0	13	35	35	
Control Delay (s)	30.9	27.8	8.9	8.2	8.2	
Lane LOS	D	D	A	A	A	
Approach Delay (s)	29.9		8.9	8.2		
Approach LOS	D		A			
Intersection Summary						
Average Delay			8.5			
Intersection Capacity Utilization			28.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
2: Elk Grove Blvd & I-5 NB On-Ramp

Existing Saturday Conditions
Saturday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 				 		 				
Volume (veh/h)	6	440	0	0	135	616	2	1	109	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	6	454	0	0	139	635	2	1	112	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									17			
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	139			454			605	605	227	435	605	139
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	139			454			605	605	227	435	605	139
tC, single (s)	4.4			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	86	100	100	100
cM capacity (veh/h)	1339			1103			380	408	776	429	408	884
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1					
Volume Total	6	227	227	139	318	318	115					
Volume Left	6	0	0	0	0	0	2					
Volume Right	0	0	0	0	318	318	112					
cSH	1339	1700	1700	1700	1700	1700	797					
Volume to Capacity	0.00	0.13	0.13	0.08	0.19	0.19	0.14					
Queue Length 95th (ft)	0	0	0	0	0	0	13					
Control Delay (s)	7.7	0.0	0.0	0.0	0.0	0.0	10.5					
Lane LOS	A						B					
Approach Delay (s)	0.1			0.0			10.5					
Approach LOS							B					
Intersection Summary												
Average Delay			0.9									
Intersection Capacity Utilization			38.2%		ICU Level of Service				A			
Analysis Period (min)			15									

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

Existing Saturday Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↔	↑↑↑	↔↔		↔↔	↑↑↑	↔		↔↔	↑↑↑	↔
Volume (vph)	2	152	741	213	4	47	553	188	58	317	293	88
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	0.98		1.00	1.00	0.98		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Frft		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	2729		3433	5085	1552		3433	5085	1541
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	2729		3433	5085	1552		3433	5085	1541
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)	2	165	805	232	4	51	601	204	63	345	318	96
RTOR Reduction (vph)	0	0	0	117	0	0	0	111	0	0	0	83
Lane Group Flow (vph)	0	167	805	115	0	55	601	93	0	408	318	13
Confl. Peds. (#/hr)								7				9
Confl. Bikes (#/hr)				1				1				4
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)		10.2	59.7	59.7		5.4	54.5	54.5		18.7	16.1	16.1
Effective Green, g (s)		10.2	59.7	59.7		5.4	54.5	54.5		18.7	16.1	16.1
Actuated g/C Ratio		0.08	0.50	0.50		0.05	0.45	0.45		0.16	0.13	0.13
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)		292	2530	1358		154	2309	705		535	682	207
v/s Ratio Prot		c0.05	c0.16			0.02	0.12			c0.12	c0.06	
v/s Ratio Perm				0.04				0.06				0.01
v/c Ratio		0.57	0.32	0.08		0.36	0.26	0.13		0.76	0.47	0.06
Uniform Delay, d1		52.8	18.0	15.8		55.6	20.3	19.0		48.5	48.0	45.4
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.7	0.3	0.1		0.5	0.3	0.4		5.7	0.2	0.0
Delay (s)		54.5	18.3	15.9		56.1	20.5	19.4		54.3	48.2	45.4
Level of Service		D	B	B		E	C	B		D	D	D
Approach Delay (s)			22.9				22.5				50.9	
Approach LOS			C				C				D	

Intersection Summary		
HCM Average Control Delay	34.7	HCM Level of Service C
HCM Volume to Capacity ratio	0.47	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 25.2
Intersection Capacity Utilization	74.8%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

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

Existing Saturday Conditions
 Saturday Peak



Movement	SBU	SBL	SBT	SBR
Lane Configurations		←↑	↑↑↑	↑
Volume (vph)	5	249	181	137
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	0.97
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	5085	1543
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1543
Peak-hour factor, PHF	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	271	197	149
RTOR Reduction (vph)	0	0	0	134
Lane Group Flow (vph)	0	276	197	15
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				6
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		13.6	11.9	11.9
Effective Green, g (s)		13.6	11.9	11.9
Actuated g/C Ratio		0.11	0.10	0.10
Clearance Time (s)		5.6	6.3	6.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		389	504	153
v/s Ratio Prot		0.08	0.04	
v/s Ratio Perm				0.01
v/c Ratio		0.71	0.39	0.10
Uniform Delay, d1		51.3	50.7	49.2
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		4.8	0.2	0.1
Delay (s)		56.1	50.8	49.3
Level of Service		E	D	D
Approach Delay (s)			52.8	
Approach LOS			D	

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Elk Grove Blvd & Bruceville Road

Existing Saturday Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↔	↑↑↑	↗		↔↔	↑↑↑	↗		↔↔	↑↑↑	↗
Volume (vph)	19	300	970	80	1	376	540	139	3	106	342	246
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	0.98		1.00	1.00	0.99		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	1556		3433	5085	1561		3433	5085	1557
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	1556		3433	5085	1561		3433	5085	1557
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	21	330	1066	88	1	413	593	153	3	116	376	270
RTOR Reduction (vph)	0	0	0	43	0	0	0	86	0	0	0	235
Lane Group Flow (vph)	0	351	1066	45	0	414	593	67	0	119	376	35
Confl. Peds. (#/hr)				3				2				1
Confl. Bikes (#/hr)				4								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)		16.6	50.1	50.1		18.9	52.4	52.4		8.6	15.6	15.6
Effective Green, g (s)		16.6	50.1	50.1		18.9	52.4	52.4		8.6	15.6	15.6
Actuated g/C Ratio		0.14	0.42	0.42		0.16	0.44	0.44		0.07	0.13	0.13
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)		475	2123	650		541	2220	682		246	661	202
v/s Ratio Prot		0.10	c0.21			c0.12	0.12			0.03	0.07	
v/s Ratio Perm				0.03				0.04				0.02
v/c Ratio		0.74	0.50	0.07		0.77	0.27	0.10		0.48	0.57	0.17
Uniform Delay, d1		49.6	25.8	21.0		48.4	21.6	19.9		53.6	49.0	46.5
Progression Factor		1.00	1.00	1.00		1.37	0.33	0.43		1.00	1.00	1.00
Incremental Delay, d2		5.1	0.9	0.2		5.5	0.3	0.3		0.5	0.7	0.1
Delay (s)		54.8	26.6	21.2		71.9	7.5	8.8		54.1	49.7	46.6
Level of Service		D	C	C		E	A	A		D	D	D
Approach Delay (s)			32.9				30.6				49.3	
Approach LOS			C				C				D	

Intersection Summary

HCM Average Control Delay	39.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.9
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing Saturday Conditions
Saturday Peak



Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	36	190	482	166
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
Frbp, ped/bikes		1.00	1.00	0.98
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	4771	1339
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	4771	1339
Peak-hour factor, PHF	0.91	0.91	0.91	0.91
Adj. Flow (vph)	40	209	530	182
RTOR Reduction (vph)	0	0	4	132
Lane Group Flow (vph)	0	249	550	26
Confl. Peds. (#/hr)				2
Confl. Bikes (#/hr)				2
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		12.5	19.5	19.5
Effective Green, g (s)		12.5	19.5	19.5
Actuated g/C Ratio		0.10	0.16	0.16
Clearance Time (s)		5.6	5.7	5.7
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		358	775	218
v/s Ratio Prot		c0.07	c0.12	
v/s Ratio Perm				0.02
v/c Ratio		0.70	0.71	0.12
Uniform Delay, d1		51.9	47.6	42.9
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		4.7	2.4	0.1
Delay (s)		56.6	50.0	43.0
Level of Service		E	D	D
Approach Delay (s)			50.6	
Approach LOS			D	
Intersection Summary				

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

Existing Saturday Conditions
Saturday Peak

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	2	9	1399	16	1	18	1049	70	13	5	23	72
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		5.6	6.7			5.6	5.6	5.6
Lane Util. Factor		1.00	0.91	1.00		1.00	0.91			1.00	1.00	0.95
Frbp, ped/bikes		1.00	1.00	0.98		1.00	1.00			1.00	0.99	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	0.99			1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.97	1.00	0.95
Satd. Flow (prot)		1770	5085	1549		1770	5027			1648	1563	1681
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.97	1.00	0.95
Satd. Flow (perm)		1770	5085	1549		1770	5027			1648	1563	1681
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)	2	10	1572	18	1	20	1179	79	15	6	26	81
RTOR Reduction (vph)	0	0	0	4	0	0	4	0	0	0	25	0
Lane Group Flow (vph)	0	12	1572	14	0	21	1254	0	0	21	1	42
Confl. Peds. (#/hr)								5			1	
Confl. Bikes (#/hr)				3								
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	15%	2%	2%	2%
Turn Type	Prot	Prot		Perm	Prot	Prot			Split		Perm	Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				6							3	
Actuated Green, G (s)		2.6	79.1	79.1		2.9	78.3			6.3	6.3	8.2
Effective Green, g (s)		2.6	79.1	79.1		2.9	78.3			6.3	6.3	8.2
Actuated g/C Ratio		0.02	0.66	0.66		0.02	0.65			0.05	0.05	0.07
Clearance Time (s)		6.7	6.7	6.7		5.6	6.7			5.6	5.6	5.6
Vehicle Extension (s)		2.0	3.0	3.0		2.0	3.0			2.0	2.0	2.0
Lane Grp Cap (vph)		38	3352	1021		43	3280			87	82	115
v/s Ratio Prot		0.01	c0.31			c0.01	0.25			c0.01		0.02
v/s Ratio Perm				0.01								0.00
v/c Ratio		0.32	0.47	0.01		0.49	0.38			0.24	0.02	0.37
Uniform Delay, d1		57.8	10.1	7.0		57.8	9.7			54.6	53.9	53.4
Progression Factor		0.71	1.72	1.55		1.35	0.24			1.00	1.00	1.00
Incremental Delay, d2		1.5	0.4	0.0		2.9	0.3			0.5	0.0	0.7
Delay (s)		42.5	17.7	10.9		81.0	2.7			55.1	53.9	54.1
Level of Service		D	B	B		F	A			E	D	D
Approach Delay (s)			17.9				3.9			54.5		
Approach LOS			B				A			D		
Intersection Summary												
HCM Average Control Delay			13.9				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			16.8		
Intersection Capacity Utilization			53.3%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

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

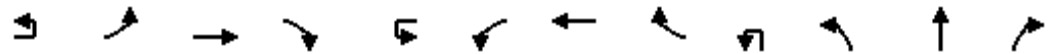
Existing Saturday Conditions
Saturday Peak



Movement	SBT	SBR
Lane Configurations	↕	↗
Volume (vph)	4	23
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.6	5.6
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.96	1.00
Satd. Flow (prot)	1693	1559
Flt Permitted	0.96	1.00
Satd. Flow (perm)	1693	1559
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	4	26
RTOR Reduction (vph)	0	24
Lane Group Flow (vph)	43	2
Confl. Peds. (#/hr)		3
Confl. Bikes (#/hr)		
Heavy Vehicles (%)	2%	2%
Turn Type		Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	8.2	8.2
Effective Green, g (s)	8.2	8.2
Actuated g/C Ratio	0.07	0.07
Clearance Time (s)	5.6	5.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	116	107
v/s Ratio Prot	c0.03	
v/s Ratio Perm		0.00
v/c Ratio	0.37	0.02
Uniform Delay, d1	53.4	52.1
Progression Factor	1.00	1.00
Incremental Delay, d2	0.7	0.0
Delay (s)	54.2	52.2
Level of Service	D	D
Approach Delay (s)	53.7	
Approach LOS	D	
Intersection Summary		

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

Existing Saturday Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↔	↑↑↑	↗		↔↔	↑↑↑	↗		↔↔	↑↑	↗
Volume (vph)	79	187	1210	34	15	154	933	127	1	50	158	235
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	0.99		1.00	1.00	0.98		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	1563		3433	5085	1556		3433	3539	1553
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	1563		3433	5085	1556		3433	3539	1553
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)	88	208	1344	38	17	171	1037	141	1	56	176	261
RTOR Reduction (vph)	0	0	0	14	0	0	0	65	0	0	0	219
Lane Group Flow (vph)	0	296	1344	24	0	188	1037	76	0	57	176	42
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)				2				1				4
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)		13.7	59.7	59.7		10.9	56.9	56.9		5.5	14.5	14.5
Effective Green, g (s)		13.7	59.7	59.7		10.9	56.9	56.9		5.5	14.5	14.5
Actuated g/C Ratio		0.11	0.50	0.50		0.09	0.47	0.47		0.05	0.12	0.12
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)		392	2530	778		312	2411	738		157	428	188
v/s Ratio Prot		c0.09	c0.26			0.05	0.20			0.02	c0.05	
v/s Ratio Perm				0.02				0.05				0.03
v/c Ratio		0.76	0.53	0.03		0.60	0.43	0.10		0.36	0.41	0.22
Uniform Delay, d1		51.5	20.6	15.4		52.5	20.8	17.4		55.6	48.8	47.7
Progression Factor		1.23	0.76	1.43		1.43	0.39	0.30		1.00	1.00	1.00
Incremental Delay, d2		6.7	0.7	0.1		2.1	0.5	0.3		0.5	0.2	0.2
Delay (s)		70.3	16.4	22.1		77.1	8.6	5.5		56.1	49.0	47.9
Level of Service		E	B	C		E	A	A		E	D	D
Approach Delay (s)			26.0				17.8				49.2	
Approach LOS			C				B				D	

Intersection Summary		
HCM Average Control Delay	28.5	HCM Level of Service C
HCM Volume to Capacity ratio	0.60	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 29.3
Intersection Capacity Utilization	67.5%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

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

Existing Saturday Conditions
Saturday Peak



Movement	SBU	SBL	SBT	SBR
Lane Configurations		↔↔	↑↑	↗
Volume (vph)	7	161	118	118
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
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	3539	1549
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1549
Peak-hour factor, PHF	0.90	0.90	0.90	0.90
Adj. Flow (vph)	8	179	131	131
RTOR Reduction (vph)	0	0	0	109
Lane Group Flow (vph)	0	187	131	22
Confl. Peds. (#/hr)				4
Confl. Bikes (#/hr)				4
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		10.9	19.9	19.9
Effective Green, g (s)		10.9	19.9	19.9
Actuated g/C Ratio		0.09	0.17	0.17
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		312	587	257
v/s Ratio Prot		c0.05	c0.04	
v/s Ratio Perm				0.01
v/c Ratio		0.60	0.22	0.08
Uniform Delay, d1		52.5	43.4	42.3
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		2.1	0.1	0.1
Delay (s)		54.5	43.4	42.4
Level of Service		D	D	D
Approach Delay (s)			47.7	
Approach LOS			D	

Intersection Summary

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

Existing Saturday Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		3	↑↑↑	↑		3↑	↑↑↑		3	↑	↑↑	3
Volume (vph)	10	74	1529	16	8	40	1181	87	6	27	89	64
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	0.98		1.00	1.00		1.00	1.00	0.98	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	1555		3433	5024		1770	1863	2737	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	1555		3433	5024		1770	1863	2737	1770
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)	11	78	1609	17	8	42	1243	92	6	28	94	67
RTOR Reduction (vph)	0	0	0	4	0	0	4	0	0	0	85	0
Lane Group Flow (vph)	0	89	1609	13	0	50	1331	0	6	28	9	67
Confl. Peds. (#/hr)				4				2			3	
Confl. Bikes (#/hr)				2				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)		10.4	73.5	73.5		5.3	68.4		1.2	11.1	11.1	7.9
Effective Green, g (s)		10.4	73.5	73.5		5.3	68.4		1.2	11.1	11.1	7.9
Actuated g/C Ratio		0.09	0.61	0.61		0.04	0.57		0.01	0.09	0.09	0.07
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)		153	3115	952		152	2864		18	172	253	117
v/s Ratio Prot		c0.05	c0.32			0.01	0.26		0.00	c0.02		c0.04
v/s Ratio Perm				0.01							0.00	
v/c Ratio		0.58	0.52	0.01		0.33	0.46		0.33	0.16	0.03	0.57
Uniform Delay, d1		52.7	13.2	9.1		55.6	15.1		59.0	50.2	49.6	54.4
Progression Factor		1.11	0.85	0.37		1.19	0.30		1.00	1.00	1.00	1.00
Incremental Delay, d2		3.2	0.5	0.0		0.4	0.5		3.9	0.2	0.0	4.2
Delay (s)		61.5	11.8	3.3		66.6	5.1		63.0	50.3	49.6	58.6
Level of Service		E	B	A		E	A		E	D	D	E
Approach Delay (s)			14.3			7.3				50.4		
Approach LOS			B			A				D		

Intersection Summary

HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing Saturday Conditions
 Saturday Peak



Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	19	60
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	0.89	
Flt Protected	1.00	
Satd. Flow (prot)	3093	
Flt Permitted	1.00	
Satd. Flow (perm)	3093	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	20	63
RTOR Reduction (vph)	54	0
Lane Group Flow (vph)	29	0
Confl. Peds. (#/hr)		4
Confl. Bikes (#/hr)		1
Turn Type		
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	17.8	
Effective Green, g (s)	17.8	
Actuated g/C Ratio	0.15	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	459	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.06	
Uniform Delay, d1	43.9	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	44.0	
Level of Service	D	
Approach Delay (s)	50.5	
Approach LOS	D	
Intersection Summary		

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

Existing Saturday Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑			↔	↑↑↑		↔	↑		↔
Volume (vph)	5	126	1371	163	99	262	1120	6	131	32	242	168
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
Frbp, ped/bikes		1.00	1.00			1.00	1.00		1.00	0.99		1.00
Flpb, ped/bikes		1.00	1.00			1.00	1.00		1.00	1.00		1.00
Frt		1.00	0.98			1.00	1.00		1.00	0.87		1.00
Flt Protected		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		1770	4989			3433	5081		1770	1596		3433
Flt Permitted		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (perm)		1770	4989			3433	5081		1770	1596		3433
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)	5	133	1443	172	104	276	1179	6	138	34	255	177
RTOR Reduction (vph)	0	0	10	0	0	0	1	0	0	175	0	0
Lane Group Flow (vph)	0	138	1605	0	0	380	1184	0	138	114	0	177
Confl. Peds. (#/hr)				11				6				
Confl. Bikes (#/hr)				1				2			1	
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)		13.7	54.8			16.9	58.0		13.6	12.8		13.7
Effective Green, g (s)		13.7	54.8			16.9	58.0		13.6	12.8		13.7
Actuated g/C Ratio		0.11	0.46			0.14	0.48		0.11	0.11		0.11
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)		202	2278			483	2456		201	170		392
v/s Ratio Prot		0.08	c0.32			c0.11	c0.23		c0.08	0.07		c0.05
v/s Ratio Perm												
v/c Ratio		0.68	0.70			0.79	0.48		0.69	0.67		0.45
Uniform Delay, d1		51.1	26.1			49.8	20.9		51.2	51.6		49.6
Progression Factor		1.49	0.40			0.96	0.94		1.00	1.00		1.00
Incremental Delay, d2		6.7	1.7			5.7	0.5		7.5	7.9		0.3
Delay (s)		82.8	12.1			53.8	20.2		58.7	59.4		49.9
Level of Service		F	B			D	C		E	E		D
Approach Delay (s)			17.7				28.3			59.2		
Approach LOS			B				C			E		

Intersection Summary		
HCM Average Control Delay	28.4	HCM Level of Service C
HCM Volume to Capacity ratio	0.70	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 22.6
Intersection Capacity Utilization	82.4%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

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

Existing Saturday Conditions
 Saturday Peak



Movement	SBT	SBR
Lane Configurations	P	
Volume (vph)	17	66
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frbp, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.88	
Flt Protected	1.00	
Satd. Flow (prot)	1600	
Flt Permitted	1.00	
Satd. Flow (perm)	1600	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	18	69
RTOR Reduction (vph)	62	0
Lane Group Flow (vph)	25	0
Confl. Peds. (#/hr)		16
Confl. Bikes (#/hr)		2
Turn Type		
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	12.9	
Effective Green, g (s)	12.9	
Actuated g/C Ratio	0.11	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	172	
v/s Ratio Prot	0.02	
v/s Ratio Perm		
v/c Ratio	0.15	
Uniform Delay, d1	48.6	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	48.7	
Level of Service	D	
Approach Delay (s)	49.5	
Approach LOS	D	
Intersection Summary		

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

Existing Saturday Conditions
Saturday Peak

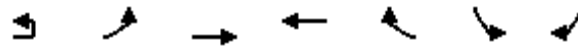


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↖	↑↑↑					↖	↖	↖↖
Volume (vph)	0	1691	217	49	907	0	0	0	0	478	0	903
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	0.99
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)		4982		1736	5085					1681	1681	2748
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4982		1736	5085					1681	1681	2748
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	1879	241	54	1008	0	0	0	0	531	0	1003
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	129
Lane Group Flow (vph)	0	2109	0	54	1008	0	0	0	0	265	266	874
Confl. Peds. (#/hr)			3			2						2
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		56.2		7.2	69.3					38.3	38.3	38.3
Effective Green, g (s)		56.2		7.2	69.3					38.3	38.3	38.3
Actuated g/C Ratio		0.47		0.06	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)		2333		104	2937					537	537	877
v/s Ratio Prot		c0.42		c0.03	0.20					0.16	0.16	
v/s Ratio Perm												c0.32
v/c Ratio		0.90		0.52	0.34					0.49	0.50	1.00
Uniform Delay, d1		29.4		54.7	13.4					33.0	33.0	40.8
Progression Factor		0.69		0.40	1.21					1.00	1.00	1.00
Incremental Delay, d2		5.1		1.6	0.3					0.3	0.3	29.4
Delay (s)		25.5		23.3	16.4					33.3	33.3	70.2
Level of Service		C		C	B					C	C	E
Approach Delay (s)		25.5			16.8			0.0			57.4	
Approach LOS		C			B			A			E	
Intersection Summary												
HCM Average Control Delay			33.9		HCM Level of Service					C		
HCM Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				18.3			
Intersection Capacity Utilization			70.4%		ICU Level of Service					C		
Analysis Period (min)			15									

c Critical Lane Group

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

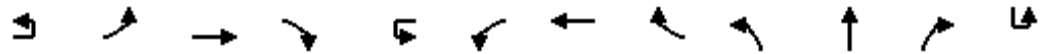
Existing Saturday Conditions
 Saturday Peak



Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↵↵	↑↑↑	↑↑↑	↵		
Volume (vph)	6	892	1272	952	462	0	0
Ideal Flow (vphpl)	1900	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		
Frpb, 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	5085	5085	1559		
Flt Permitted		0.95	1.00	1.00	1.00		
Satd. Flow (perm)		3433	5085	5085	1559		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	959	1368	1024	497	0	0
RTOR Reduction (vph)	0	0	0	0	49	0	0
Lane Group Flow (vph)	0	965	1368	1024	448	0	0
Confl. Peds. (#/hr)					1		
Confl. Bikes (#/hr)					2		
Turn Type	Prot	Prot			Perm		
Protected Phases	1	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	640		
v/s Ratio Prot		c0.28	0.27	0.20			
v/s Ratio Perm					c0.29		
v/c Ratio		0.57	0.27	0.49	0.70		
Uniform Delay, d1		21.3	0.0	26.1	29.2		
Progression Factor		0.52	1.00	1.07	1.09		
Incremental Delay, d2		0.1	0.1	0.8	5.8		
Delay (s)		11.2	0.1	28.6	37.7		
Level of Service		B	A	C	D		
Approach Delay (s)			4.7	31.6		0.0	
Approach LOS			A	C		A	
Intersection Summary							
HCM Average Control Delay			15.3		HCM Level of Service		B
HCM Volume to Capacity ratio			0.63				
Actuated Cycle Length (s)			120.0		Sum of lost time (s)		11.3
Intersection Capacity Utilization			70.4%		ICU Level of Service		C
Analysis Period (min)			15				
c Critical Lane Group							

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

Existing Saturday Conditions
 Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		
Volume (vph)	11	67	841	254	9	37	795	119	434	79	114	7
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	0.97		1.00	1.00	0.98	1.00	0.99		
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	0.97		
Satd. Flow (prot)		1770	3539	1542		1770	5085	1558	1610	3145		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.97		
Satd. Flow (perm)		1770	3539	1542		1770	5085	1558	1610	3145		
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)	12	72	904	273	10	40	855	128	467	85	123	8
RTOR Reduction (vph)	0	0	0	136	0	0	0	68	0	32	0	0
Lane Group Flow (vph)	0	84	904	137	0	50	855	60	233	410	0	0
Confl. Peds. (#/hr)				2				2			4	
Confl. Bikes (#/hr)				1				3			4	
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)		8.9	58.6	58.6		6.9	56.6	56.6	20.9	20.9		
Effective Green, g (s)		8.9	58.6	58.6		6.9	56.6	56.6	20.9	20.9		
Actuated g/C Ratio		0.07	0.49	0.49		0.06	0.47	0.47	0.17	0.17		
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)		131	1728	753		102	2398	735	280	548		
v/s Ratio Prot		c0.05	c0.26			0.03	0.17		c0.14	0.13		
v/s Ratio Perm				0.09				0.04				
v/c Ratio		0.64	0.52	0.18		0.49	0.36	0.08	0.83	0.75		
Uniform Delay, d1		54.0	21.1	17.2		54.8	20.1	17.4	47.9	47.0		
Progression Factor		0.84	0.93	2.55		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		7.6	1.1	0.5		1.3	0.4	0.2	17.9	4.9		
Delay (s)		53.2	20.7	44.5		56.2	20.5	17.6	65.7	51.9		
Level of Service		D	C	D		E	C	B	E	D		
Approach Delay (s)			28.0				21.9			56.7		
Approach LOS			C				C			E		

Intersection Summary		
HCM Average Control Delay	34.6	HCM Level of Service C
HCM Volume to Capacity ratio	0.59	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 15.8
Intersection Capacity Utilization	64.6%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

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

Existing Saturday Conditions
 Saturday Peak



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	134	61	100
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	1561
Flt Permitted	0.95	0.98	1.00
Satd. Flow (perm)	1681	1734	1561
Peak-hour factor, PHF	0.93	0.93	0.93
Adj. Flow (vph)	144	66	108
RTOR Reduction (vph)	0	0	97
Lane Group Flow (vph)	107	111	11
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			1
Turn Type	Split		Perm
Protected Phases	4	4	
Permitted Phases			4
Actuated Green, G (s)	12.1	12.1	12.1
Effective Green, g (s)	12.1	12.1	12.1
Actuated g/C Ratio	0.10	0.10	0.10
Clearance Time (s)	4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	170	175	157
v/s Ratio Prot	0.06	c0.06	
v/s Ratio Perm			0.01
v/c Ratio	0.63	0.63	0.07
Uniform Delay, d1	51.8	51.8	48.9
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	5.2	5.4	0.1
Delay (s)	57.0	57.2	48.9
Level of Service	E	E	D
Approach Delay (s)		54.4	
Approach LOS		D	
Intersection Summary			

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

Existing Saturday Conditions
 Saturday Peak

























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↶	↷		↶↷	↶	
Volume (veh/h)	221	22	0	377	334	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	243	24	0	414	367	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	574	367	367			
vC1, stage 1 conf vol	367					
vC2, stage 2 conf vol	207					
vCu, unblocked vol	574	367	367			
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 %	60	96	100			
cM capacity (veh/h)	614	630	1188			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	267	207	207	367
Volume Left	243	0	0	0
Volume Right	24	0	0	0
cSH	645	1700	1700	1700
Volume to Capacity	0.41	0.12	0.12	0.22
Queue Length 95th (ft)	51	0	0	0
Control Delay (s)	14.5	0.0	0.0	0.0
Lane LOS	B			
Approach Delay (s)	14.5	0.0		0.0
Approach LOS	B			

Intersection Summary			
Average Delay		3.7	
Intersection Capacity Utilization	36.5%		ICU Level of Service A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
13: Backer Ranch Road & Bruceville Road

Existing Saturday Conditions
Saturday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	51	40	54	39	39	25	16	86	681	78	8	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	4.6	4.6		5.6	5.3	5.3		5.6
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00		1.00	0.95	1.00		1.00
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98		1.00	1.00	0.97		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	1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1770	1863	1560	3433	1863	1554		1770	3539	1528		1770
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1770	1863	1560	3433	1863	1554		1770	3539	1528		1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	57	44	60	43	43	28	18	96	757	87	9	18
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	44	0	0
Lane Group Flow (vph)	57	44	60	43	43	28	0	114	757	43	0	27
Confl. Peds. (#/hr)							4			8		
Confl. Bikes (#/hr)	1		2			2		1		3		1
Turn Type	Prot		Perm	Prot		Perm	Prot	Prot		Perm	Prot	Prot
Protected Phases	3	8		7	4		1	1	6		5	5
Permitted Phases			8			4				6		
Actuated Green, G (s)	6.1	12.1	12.1	3.3	9.3	9.3		10.6	38.7	38.7		2.3
Effective Green, g (s)	6.1	12.1	12.1	3.3	9.3	9.3		10.6	38.7	38.7		2.3
Actuated g/C Ratio	0.08	0.16	0.16	0.04	0.12	0.12		0.14	0.50	0.50		0.03
Clearance Time (s)	5.6	4.6	4.6	5.6	4.6	4.6		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		2.0
Lane Grp Cap (vph)	139	291	244	146	224	186		242	1767	763		53
v/s Ratio Prot	c0.03	0.02		0.01	0.02			c0.06	c0.21			0.02
v/s Ratio Perm			c0.04			0.02				0.03		
v/c Ratio	0.41	0.15	0.25	0.29	0.19	0.15		0.47	0.43	0.06		0.51
Uniform Delay, d1	34.0	28.3	28.7	36.0	30.7	30.6		30.9	12.4	10.0		37.0
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	0.7	0.1	0.2	0.4	0.2	0.1		0.5	0.1	0.0		2.8
Delay (s)	34.7	28.3	28.9	36.4	30.9	30.7		31.4	12.4	10.0		39.8
Level of Service	C	C	C	D	C	C		C	B	B		D
Approach Delay (s)		30.8			32.9				14.5			
Approach LOS		C			C				B			
Intersection Summary												
HCM Average Control Delay			18.7				HCM Level of Service		B			
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			77.5				Sum of lost time (s)		26.4			
Intersection Capacity Utilization			51.1%				ICU Level of Service		A			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 13: Backer Ranch Road & Bruceville Road





















Existing Saturday Conditions
 Saturday Peak



Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	650	32
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.3	
Lane Util. Factor	0.95	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	3509	
Flt Permitted	1.00	
Satd. Flow (perm)	3509	
Peak-hour factor, PHF	0.90	0.90
Adj. Flow (vph)	722	36
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	756	0
Confl. Peds. (#/hr)		5
Confl. Bikes (#/hr)		3
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	30.4	
Effective Green, g (s)	30.4	
Actuated g/C Ratio	0.39	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1376	
v/s Ratio Prot	c0.22	
v/s Ratio Perm		
v/c Ratio	0.55	
Uniform Delay, d1	18.2	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	18.5	
Level of Service	B	
Approach Delay (s)	19.2	
Approach LOS	B	
Intersection Summary		

HCM Unsignalized Intersection Capacity Analysis
 14: Civic Center Drive & Wymark Drive

Existing Saturday Conditions
 Saturday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	12	117	6	11	79	7	12	14	26	2	10	10
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	14	134	7	13	91	8	14	16	30	2	11	11
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total (vph)	14	141	13	99	60	25						
Volume Left (vph)	14	0	13	0	14	2						
Volume Right (vph)	0	7	0	8	30	11						
Hadj (s)	0.53	0.00	0.53	-0.02	-0.22	-0.22						
Departure Headway (s)	5.3	4.8	5.4	4.8	4.3	4.4						
Degree Utilization, x	0.02	0.19	0.02	0.13	0.07	0.03						
Capacity (veh/h)	662	732	650	728	779	762						
Control Delay (s)	7.2	7.7	7.3	7.3	7.7	7.5						
Approach Delay (s)	7.7		7.3		7.7	7.5						
Approach LOS	A		A		A	A						
Intersection Summary												
Delay			7.5									
HCM Level of Service			A									
Intersection Capacity Utilization			21.6%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 15: Civic Center Drive & Big Horn Blvd

Existing Saturday Conditions
 Saturday Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	50	2	1	15	3	2	337	11	2	228	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3		6.3	5.3	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.96	
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	1863	1583	1770	1863	1583	1770	3522		1770	3405	
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	1863	1583	1770	1863	1583	1770	3522		1770	3405	
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)	111	53	2	1	16	3	2	355	12	2	240	81
RTOR Reduction (vph)	0	0	2	0	0	3	0	1	0	0	19	0
Lane Group Flow (vph)	111	53	0	1	16	0	2	366	0	2	302	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	7.8	11.3	11.3	0.4	2.9	2.9	0.4	18.9		0.4	18.9	
Effective Green, g (s)	7.8	11.3	11.3	0.4	2.9	2.9	0.4	18.9		0.4	18.9	
Actuated g/C Ratio	0.15	0.21	0.21	0.01	0.05	0.05	0.01	0.36		0.01	0.36	
Clearance Time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3		6.3	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	
Lane Grp Cap (vph)	261	399	339	13	102	87	13	1261		13	1219	
v/s Ratio Prot	c0.06	c0.03		0.00	0.01		c0.00	c0.10		0.00	0.09	
v/s Ratio Perm			0.00			0.00						
v/c Ratio	0.43	0.13	0.00	0.08	0.16	0.00	0.15	0.29		0.15	0.25	
Uniform Delay, d1	20.5	16.8	16.3	26.0	23.8	23.6	26.0	12.1		26.0	11.9	
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	0.4	0.1	0.0	0.9	0.3	0.0	2.0	0.0		2.0	0.0	
Delay (s)	20.9	16.8	16.3	26.9	24.0	23.6	28.0	12.2		28.0	12.0	
Level of Service	C	B	B	C	C	C	C	B		C	B	
Approach Delay (s)		19.5			24.1			12.3			12.1	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	52.8	Sum of lost time (s)	17.2
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Civic Center Drive & Laguna Springs Drive

Existing Saturday Conditions
 Saturday Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations	↖		↗	↖	↗		↖	↕		↘		↗
Volume (vph)	59	0	11	0	0	0	10	73	0	1	0	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6		5.6				5.6	4.6		5.6		4.6
Lane Util. Factor	1.00		1.00				1.00	0.95		1.00		0.95
Frt	1.00		0.85				1.00	1.00		1.00		0.96
Flt Protected	0.95		1.00				0.95	1.00		0.95		1.00
Satd. Flow (prot)	1770		1583				1770	3539		1770		3411
Flt Permitted	0.95		1.00				0.95	1.00		0.95		1.00
Satd. Flow (perm)	1770		1583				1770	3539		1770		3411
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Adj. Flow (vph)	76	0	14	0	0	0	13	94	0	1	0	82
RTOR Reduction (vph)	0	0	8	0	0	0	0	0	0	0	0	20
Lane Group Flow (vph)	76	0	6	0	0	0	13	94	0	1	0	88
Turn Type	Prot		custom	Prot			Prot			Prot		
Protected Phases	3			7	4		1	6		5		2
Permitted Phases			8									
Actuated Green, G (s)	8.4		16.5				0.5	9.2		0.4		9.1
Effective Green, g (s)	8.4		16.5				0.5	9.2		0.4		9.1
Actuated g/C Ratio	0.20		0.39				0.01	0.22		0.01		0.22
Clearance Time (s)	5.6		5.6				5.6	4.6		5.6		4.6
Vehicle Extension (s)	2.0		2.0				2.0	2.0		2.0		2.0
Lane Grp Cap (vph)	355		623				21	777		17		741
v/s Ratio Prot	c0.04						c0.01	c0.03		0.00		0.03
v/s Ratio Perm			c0.00									
v/c Ratio	0.21		0.01				0.62	0.12		0.06		0.12
Uniform Delay, d1	14.0		7.7				20.6	13.1		20.6		13.2
Progression Factor	1.00		1.00				1.00	1.00		1.00		1.00
Incremental Delay, d2	0.1		0.0				32.5	0.0		0.5		0.0
Delay (s)	14.1		7.7				53.1	13.1		21.1		13.2
Level of Service	B		A				D	B		C		B
Approach Delay (s)		13.1			0.0			18.0				13.3
Approach LOS		B			A			B				B

Intersection Summary		
HCM Average Control Delay	14.9	HCM Level of Service B
HCM Volume to Capacity ratio	0.11	
Actuated Cycle Length (s)	41.9	Sum of lost time (s) 11.2
Intersection Capacity Utilization	17.7%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		

Movement	SBR
Lane Configurations	
Volume (vph)	20
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frts	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.78
Adj. Flow (vph)	26
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
 17: Denali Cir & Big Horn Blvd

Existing Saturday Conditions
 Saturday Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	61	12	5	289	208	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6		5.3	5.3	5.3	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frt	0.98		1.00	1.00	0.99	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	1748		1770	3539	3487	
Flt Permitted	0.96		0.95	1.00	1.00	
Satd. Flow (perm)	1748		1770	3539	3487	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	64	13	5	304	219	24
RTOR Reduction (vph)	6	0	0	0	6	0
Lane Group Flow (vph)	71	0	5	304	237	0
Turn Type			Prot			
Protected Phases	3		1	6	2	
Permitted Phases						
Actuated Green, G (s)	5.9		0.6	30.2	24.3	
Effective Green, g (s)	5.9		0.6	30.2	24.3	
Actuated g/C Ratio	0.13		0.01	0.66	0.53	
Clearance Time (s)	4.6		5.3	5.3	5.3	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	224		23	2323	1842	
v/s Ratio Prot	c0.04		0.00	c0.09	0.07	
v/s Ratio Perm						
v/c Ratio	0.32		0.22	0.13	0.13	
Uniform Delay, d1	18.2		22.5	3.0	5.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.3		1.7	0.0	0.0	
Delay (s)	18.5		24.2	3.0	5.5	
Level of Service	B		C	A	A	
Approach Delay (s)	18.5			3.3	5.5	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	46.0	Sum of lost time (s)	9.9
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 18: Denali Circle & Big Horn Blvd

Existing Saturday Conditions
 Saturday Peak

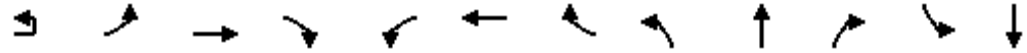
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations													
Volume (vph)	49	10	8	5	30	8	13	6	232	56	53	144	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	5.3	
Lane Util. Factor	1.00	1.00			0.97	1.00	0.88	1.00	0.95	1.00	0.97	0.95	
Frbp, ped/bikes	1.00	0.99			1.00	1.00	0.99	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	1.00	1.00	1.00	1.00	
Frt	1.00	0.93			1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1727			3433	1863	2749	1770	3539	1557	3433	3456	
Flt Permitted	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1727			3433	1863	2749	1770	3539	1557	3433	3456	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	
Adj. Flow (vph)	56	11	9	6	34	9	15	7	267	64	61	166	
RTOR Reduction (vph)	0	9	0	0	0	0	13	0	0	35	0	5	
Lane Group Flow (vph)	56	11	0	0	40	9	2	7	267	29	61	187	
Confl. Peds. (#/hr)			2										
Confl. Bikes (#/hr)							2			9			
Turn Type	Prot			Prot	Prot		pm+ov	Prot		Perm	Prot		
Protected Phases	3	8		7	7	4	5	1	6		5	2	
Permitted Phases							4			6			
Actuated Green, G (s)	2.5	3.3			2.2	4.6	8.7	0.5	27.8	27.8	4.1	31.4	
Effective Green, g (s)	2.5	3.3			2.2	4.6	8.7	0.5	27.8	27.8	4.1	31.4	
Actuated g/C Ratio	0.04	0.05			0.04	0.07	0.14	0.01	0.45	0.45	0.07	0.51	
Clearance Time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	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	
Lane Grp Cap (vph)	72	92			122	139	387	14	1592	700	228	1756	
v/s Ratio Prot	c0.03	c0.01			0.01	0.00	0.00	0.00	c0.08		c0.02	c0.05	
v/s Ratio Perm							0.00			0.02			
v/c Ratio	0.78	0.12			0.33	0.06	0.01	0.50	0.17	0.04	0.27	0.11	
Uniform Delay, d1	29.4	27.9			29.1	26.6	22.8	30.5	10.1	9.5	27.4	7.9	
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	37.0	0.2			0.6	0.1	0.0	9.9	0.0	0.0	0.2	0.0	
Delay (s)	66.4	28.1			29.7	26.7	22.8	40.4	10.1	9.5	27.7	7.9	
Level of Service	E	C			C	C	C	D	B	A	C	A	
Approach Delay (s)		56.3				27.6			10.6			12.7	
Approach LOS		E				C			B			B	
Intersection Summary													
HCM Average Control Delay			17.6									HCM Level of Service	B
HCM Volume to Capacity ratio			0.21										
Actuated Cycle Length (s)			61.8									Sum of lost time (s)	22.5
Intersection Capacity Utilization			37.3%									ICU Level of Service	A
Analysis Period (min)			15										
c	Critical Lane Group												



Movement	SBR
Lane Configurations	
Volume (vph)	23
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	0.87
Adj. Flow (vph)	26
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	2
Confl. Bikes (#/hr)	3
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
 19: Lotz Pkwy & Laguna Springs Drive

Existing Saturday Conditions
 Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↘ ↙	↑↑	↗	↘ ↙	↑↑	↗	↘ ↙	↑↑	↗	↘ ↙	↑↑
Volume (vph)	8	51	12	5	2	9	2	7	20	1	3	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6	5.6	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
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	0.99	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	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
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3433	3539	1564	3433	3539	1561	3433	3539	1558	3433	3539
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3433	3539	1564	3433	3539	1561	3433	3539	1558	3433	3539
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Adj. Flow (vph)	10	65	15	6	3	12	3	9	26	1	4	28
RTOR Reduction (vph)	0	0	0	3	0	0	2	0	0	1	0	0
Lane Group Flow (vph)	0	75	15	3	3	12	1	9	26	0	4	28
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)				1			4			1	1	
Turn Type	Prot	Prot		Perm	Prot		Perm	Prot		Perm	Prot	
Protected Phases	3	3	8		7	4		1	6		5	2
Permitted Phases				8			4			6		
Actuated Green, G (s)		2.1	27.3	27.3	0.4	25.6	25.6	0.4	3.1	3.1	0.4	4.1
Effective Green, g (s)		2.1	27.3	27.3	0.4	25.6	25.6	0.4	3.1	3.1	0.4	4.1
Actuated g/C Ratio		0.04	0.50	0.50	0.01	0.47	0.47	0.01	0.06	0.06	0.01	0.08
Clearance Time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6	5.6	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
Lane Grp Cap (vph)		132	1770	782	25	1659	732	25	201	88	25	266
v/s Ratio Prot		c0.02	c0.00		0.00	0.00		c0.00	0.01		0.00	c0.01
v/s Ratio Perm				0.00			0.00			0.00		
v/c Ratio		0.57	0.01	0.00	0.12	0.01	0.00	0.36	0.13	0.00	0.16	0.11
Uniform Delay, d1		25.8	6.9	6.8	26.9	7.7	7.7	27.0	24.5	24.3	26.9	23.5
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.3	0.0	0.0	0.8	0.0	0.0	3.2	0.1	0.0	1.1	0.1
Delay (s)		29.1	6.9	6.8	27.7	7.7	7.7	30.2	24.6	24.3	28.0	23.6
Level of Service		C	A	A	C	A	A	C	C	C	C	C
Approach Delay (s)			24.2			11.1			26.0			23.7
Approach LOS			C			B			C			C

Intersection Summary		
HCM Average Control Delay	23.3	HCM Level of Service C
HCM Volume to Capacity ratio	0.05	
Actuated Cycle Length (s)	54.6	Sum of lost time (s) 15.8
Intersection Capacity Utilization	33.1%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		

Movement	SBR
Lane Configurations	
Volume (vph)	35
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.6
Lane Util. Factor	1.00
Frbp, ped/bikes	0.98
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1558
Flt Permitted	1.00
Satd. Flow (perm)	1558
Peak-hour factor, PHF	0.78
Adj. Flow (vph)	45
RTOR Reduction (vph)	42
Lane Group Flow (vph)	3
Confl. Peds. (#/hr)	3
Confl. Bikes (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	4.1
Effective Green, g (s)	4.1
Actuated g/C Ratio	0.08
Clearance Time (s)	4.6
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	117
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.03
Uniform Delay, d1	23.4
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	23.4
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	

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

Existing Saturday Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↔	↕↕	↗		↔↔	↕↕	↗		↔↔	↕↕	↗
Volume (vph)	1	362	288	75	1	53	112	35	45	119	297	67
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
Frbp, ped/bikes		1.00	1.00	0.98		1.00	1.00	0.98		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	3539	1547		3433	3539	1548		3433	3539	1555
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	1547		3433	3539	1548		3433	3539	1555
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1	411	327	85	1	60	127	40	51	135	338	76
RTOR Reduction (vph)	0	0	0	58	0	0	0	33	0	0	0	59
Lane Group Flow (vph)	0	412	327	27	0	61	127	7	0	186	338	17
Confl. Peds. (#/hr)				14				5				7
Confl. Bikes (#/hr)				4				6				1
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)		16.1	23.9	23.9		5.2	13.0	13.0		9.8	16.9	16.9
Effective Green, g (s)		16.1	23.9	23.9		5.2	13.0	13.0		9.8	16.9	16.9
Actuated g/C Ratio		0.21	0.31	0.31		0.07	0.17	0.17		0.13	0.22	0.22
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)		727	1113	486		235	605	265		443	787	346
v/s Ratio Prot		c0.12	c0.09			0.02	0.04			c0.05	c0.10	
v/s Ratio Perm				0.02				0.00				0.01
v/c Ratio		0.57	0.29	0.06		0.26	0.21	0.03		0.42	0.43	0.05
Uniform Delay, d1		26.8	19.7	18.2		33.6	27.1	26.2		30.5	25.4	23.2
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	0.1	0.0		0.2	0.1	0.0		0.2	0.1	0.0
Delay (s)		27.4	19.7	18.2		33.8	27.1	26.2		30.7	25.5	23.3
Level of Service		C	B	B		C	C	C		C	C	C
Approach Delay (s)			23.4				28.8				26.9	
Approach LOS			C				C				C	

Intersection Summary

HCM Average Control Delay	26.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	76.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing Saturday Conditions
 Saturday Peak

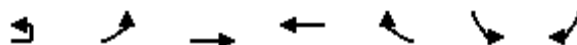


Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	TT	RT
Volume (vph)	12	87	289	286
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00
Frbp, ped/bikes		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1555
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1555
Peak-hour factor, PHF	0.88	0.88	0.88	0.88
Adj. Flow (vph)	14	99	328	325
RTOR Reduction (vph)	0	0	0	261
Lane Group Flow (vph)	0	113	328	64
Confl. Peds. (#/hr)				4
Confl. Bikes (#/hr)				3
Turn Type	Prot	Prot		Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		7.9	15.0	15.0
Effective Green, g (s)		7.9	15.0	15.0
Actuated g/C Ratio		0.10	0.20	0.20
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		357	698	307
v/s Ratio Prot		0.03	0.09	
v/s Ratio Perm				0.04
v/c Ratio		0.32	0.47	0.21
Uniform Delay, d1		31.5	27.0	25.5
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		0.2	0.2	0.1
Delay (s)		31.7	27.2	25.7
Level of Service		C	C	C
Approach Delay (s)			27.2	
Approach LOS			C	

Intersection Summary

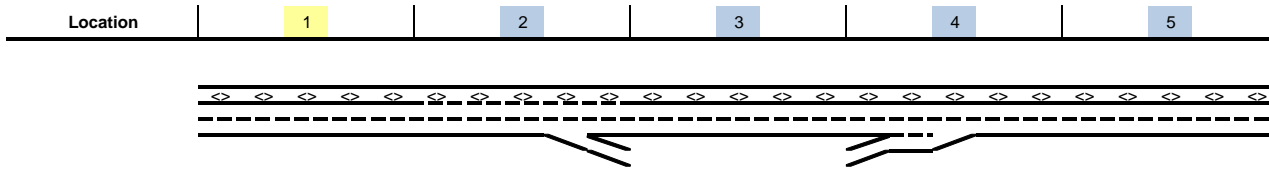
HCM Signalized Intersection Capacity Analysis
21: Whitelock Pkwy & Big Horn Blvd

Existing Saturday Conditions
Saturday Peak



Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↕	↑	↗	↖	↗
Volume (vph)	3	257	95	55	40	31	143
Ideal Flow (vphpl)	1900	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
Frbp, ped/bikes			1.00	1.00	0.98	1.00	0.98
Flpb, ped/bikes			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)			1797	1863	1545	1770	1559
Flt Permitted			0.96	1.00	1.00	0.95	1.00
Satd. Flow (perm)			1797	1863	1545	1770	1559
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	4	317	117	68	49	38	177
RTOR Reduction (vph)	0	0	0	0	42	0	144
Lane Group Flow (vph)	0	0	438	68	7	38	33
Confl. Peds. (#/hr)					1		
Confl. Bikes (#/hr)					1		3
Turn Type	Split	Split			Perm		Perm
Protected Phases	3	3	3	4		2	
Permitted Phases					4		2
Actuated Green, G (s)			18.7	6.7	6.7	9.5	9.5
Effective Green, g (s)			18.7	6.7	6.7	9.5	9.5
Actuated g/C Ratio			0.37	0.13	0.13	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)			667	248	205	334	294
v/s Ratio Prot			c0.24	c0.04		c0.02	
v/s Ratio Perm					0.00		0.02
v/c Ratio			0.66	0.27	0.03	0.11	0.11
Uniform Delay, d1			13.2	19.7	19.0	17.0	17.0
Progression Factor			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2			1.8	0.2	0.0	0.1	0.1
Delay (s)			15.0	19.9	19.0	17.0	17.0
Level of Service			B	B	B	B	B
Approach Delay (s)			15.0	19.5		17.0	
Approach LOS			B	B		B	
Intersection Summary							
HCM Average Control Delay			16.2		HCM Level of Service		B
HCM Volume to Capacity ratio			0.44				
Actuated Cycle Length (s)			50.4		Sum of lost time (s)		15.5
Intersection Capacity Utilization			44.0%		ICU Level of Service		A
Analysis Period (min)			15				
c Critical Lane Group							

Project: Elk Grove Civic Center
 Freeway Corridor: State Route 99 NB
 Alternative: Existing Conditions
 Time Period: Weekday PM Peak Hou



Key

- <> Express Lane (HOV)
- No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	1,050	1,500	2,550	1,500	180
Accel Length				1,200	
Decel Length		170			
Mainline Volume	2,160	2,160	1,893	1,893	3,145
On Ramp Volume				1,252	
Off Ramp Volume		267			
Express Lane Volume	648	648	568	568	944
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	1,512	1,512	1,325	2,577	2,202
PHF	0.93	0.97	0.93	0.93	0.93
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	15.0%	5.0%	10.0%	5.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.930	0.976	0.952	0.976	0.952
f _P	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,748	1,598	1,496	2,840	2,486
GP Flow (pcphpl)	874	799	748	1,420	1,243
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.8	1.8	1.8	1.8	1.8
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	70.1	70.1	70.1	70.1	70.1
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70

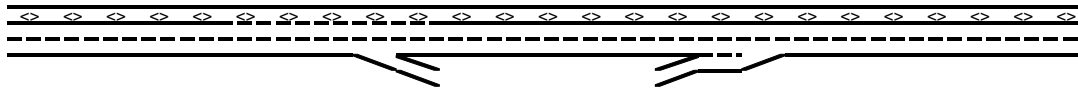


Key

<> Express Lane (HOV)

..... No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Operations in General Purpose Lanes					
v/c ratio	0.36	0.33	0.31	0.59	0.52
Speed (mph)	70.0	70.0	70.0	69.4	70.0
Density (pcphpl)	12.5	11.4	10.7	20.5	17.8
LOS	B	B	A	C	B
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				1,460	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.30	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		1,316			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.27			
Calculate On Ramp Flow Rate					
On Volume (vph)				1,252	
PHF				0.93	
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	
On Flow (pcph)				1,380	
On Flow (pcphpl)				1,380	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.66	



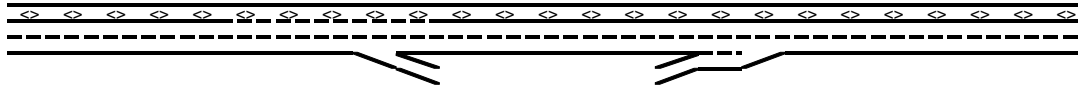
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<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Off Ramp Flow Rate					
Off Volume (vph)		267			
PHF		0.97			
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)		282			
Off Flow (pcphpl)		282			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.14			
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)					

Location	1	2	3	4	5
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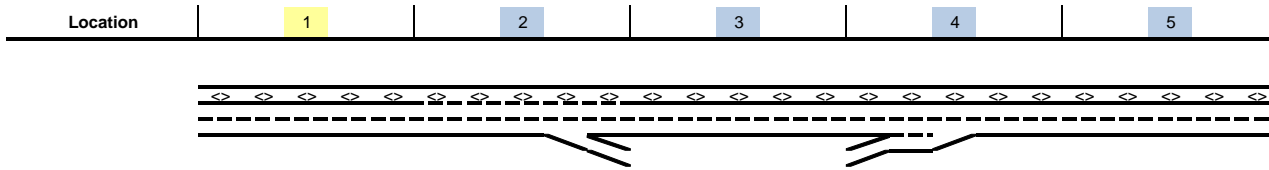


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<> Express Lane (HOV)

--- No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Merge Influence Area Operations					
Effective v_F (pcph)				1,460	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.611	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				1,460	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				1,460	
v_{R12a} (pcph)				2,840	
Merge Speed Index				0.28	
Merge Area Speed				62.2	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				62.2	
Merge v/c ratio				0.62	
Merge Density				19.5	
Merge LOS				B	
Calculate Diverge Influence Area Operations					
Effective v_F (pcph)		1,598			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.707			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		1,598			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		1,598			
Diverge Speed Index		0.45			
Diverge Area Speed		57.3			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		57.3			
Diverge v/c ratio		0.36			
Diverge Density		16.5			
Diverge LOS		B			



Key

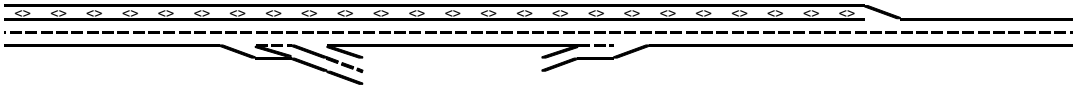
<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Summarize Segment Operations					
Segment v/c ratio	0.36	0.36	0.31	0.62	0.52
Segment Density	12.5	16.5	10.7	19.5	17.8
Segment LOS	B	B	A	B	B
Over Capacity					

Project: Elk Grove Civic Center
Freeway Corridor: State Route 99 SB

Alternative: Existing Conditions
Time Period: Wkdy PM Peak Hour

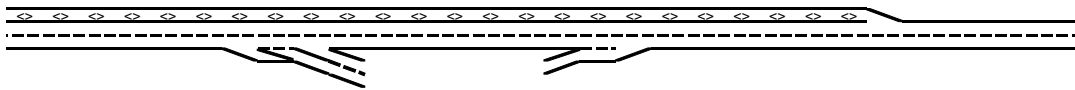


Key

- <> Express Lane (HOV)
- No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Define Freeway Segment						
Type	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	250	1,500	2,250	1,500	400	8,050
Accel Length				300		
Decel Length		1,500				
Mainline Volume	3,640	3,640	1,985	1,985	2,294	2,294
On Ramp Volume				309		
Off Ramp Volume		1,655				
Express Lane Volume	1,092	1,092				
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,548	2,548	1,985	2,294	2,294	2,294
PHF	0.95	0.98	0.95	0.98	0.95	0.95
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 %	10.0%	5.0%	10.0%	5.0%	15.0%	15.0%
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}	0.952	0.976	0.952	0.976	0.930	0.930
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,816	2,665	2,194	2,399	2,596	2,596
GP Flow (pcphpl)	1,408	1,333	1,097	1,200	1,298	1,298
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	1.8	1.8	1.8	1.8	1.8	1.8
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	70.1	70.1	70.1	70.1	70.1	70.1
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70

Location	1	2	3	4	5	6
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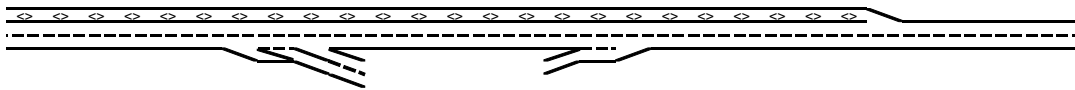


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<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Operations in General Purpose Lanes						
v/c ratio	0.59	0.56	0.46	0.50	0.54	0.54
Speed (mph)	69.5	69.8	70.0	70.0	69.9	69.9
Density (pcphpl)	20.3	19.1	15.7	17.1	18.6	18.6
LOS	C	C	B	B	C	C
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)				2,076		
GP _{IN} Cap (pcph)				4,800		
GP _{IN} v/c ratio				0.43		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)		934				
GP _{OUT} Cap (pcph)		4,800				
GP _{OUT} v/c ratio		0.19				
Calculate On Ramp Flow Rate						
On Volume (vph)				309		
PHF				0.98		
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		
On Flow (pcph)				323		
On Flow (pcphpl)				323		
Calculate On Ramp Roadway Operations						
On Ramp Type				Right		
On Ramp Speed (mph)				60		
On Ramp Cap (pcph)				2,200		
On Ramp v/c ratio				0.15		



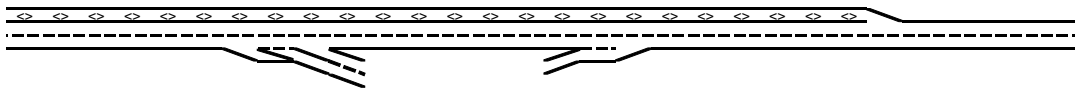
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<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Off Ramp Flow Rate						
Off Volume (vph)		1,655				
PHF		0.98				
Total Lanes		2				
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)		1,731				
Off Flow (pcphpl)		865				
Calculate Off Ramp Roadway Operations						
Off Ramp Type		Right				
Off Ramp Speed		35				
Off Ramp Cap (pcph)		4,000				
Off Ramp v/c ratio		0.43				
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)						

Location	1	2	3	4	5	6
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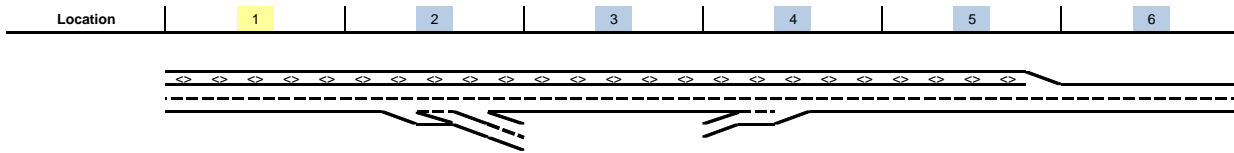


Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Merge Influence Area Operations						
Effective v_p (pcph)				2,076		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)				0.586		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}				1.000		
v_{12} (pcph)				2,076		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)				2,076		
v_{R12a} (pcph)				2,399		
Merge Speed Index				0.33		
Merge Area Speed				60.8		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed				60.8		
Merge v/c ratio				0.52		
Merge Density				22.2		
Merge LOS				C		
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)		2,665				
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)		0.614				
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}		1.000				
v_{12} (pcph)		2,665				
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)		2,665				
Diverge Speed Index		0.58				
Diverge Area Speed		53.7				
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed		53.7				
Diverge v/c ratio		0.61				
Diverge Density		13.7				
Diverge LOS		B				



Key

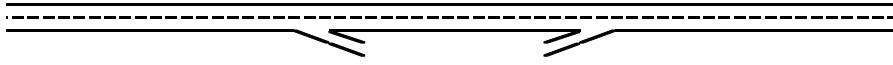
<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Summarize Segment Operations						
Segment v/c ratio	0.59	0.61	0.46	0.52	0.54	0.54
Segment Density	20.3	13.7	15.7	22.2	18.6	18.6
Segment LOS	C	B	B	C	C	C
Over Capacity						

Project: Elk Grove Civic Center
 Freeway Corridor: Interstate 5 NB
 Alternative: Existing Conditions
 Time Period: Weekday PM Peak Hour

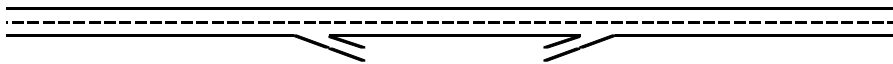
Location	1	2	3	4	5
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Key

<> Express Lane (HOV)
 No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	6,900	1,500	3,100	1,500	500
Accel Length				750	
Decel Length		160			
Mainline Volume	1,950	1,950	1,733	1,733	2,258
On Ramp Volume				525	
Off Ramp Volume		217			
Express Lane Volume					
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	1,950	1,950	1,733	2,258	2,258
PHF	0.89	0.97	0.89	0.97	0.89
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	18.0%	5.0%	18.0%	5.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.917	0.976	0.917	0.976	0.917
f _p	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,388	2,061	2,122	2,386	2,765
GP Flow (pcphpl)	1,194	1,030	1,061	1,193	1,383
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.2	1.2	1.2	1.2	1.2
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	71.7	71.7	71.7	71.7	71.7
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70
Calculate Operations in General Purpose Lanes					
v/c ratio	0.50	0.43	0.44	0.50	0.58
Speed (mph)	70.0	70.0	70.0	70.0	69.6
Density (pcphpl)	17.1	14.7	15.2	17.0	19.9
LOS	B	B	B	B	C
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				1,831	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.38	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		1,831			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.38			



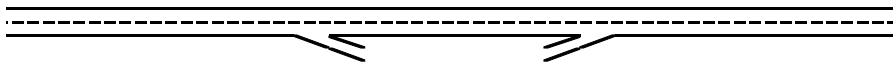
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate On Ramp Flow Rate					
On Volume (vph)				525	
PHF				0.97	
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	
On Flow (pcph)				555	
On Flow (pcphpl)				555	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.26	

Location	1	2	3	4	5
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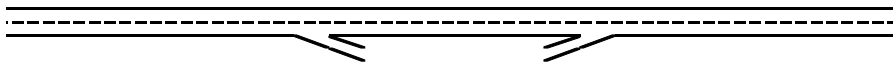


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<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate Off Ramp Flow Rate					
Off Volume (vph)		217			
PHF		0.97			
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)		229			
Off Flow (pcphp)		229			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.11			
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)				1,831	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.599	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				1,831	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				1,831	
v_{R12a} (pcph)				2,386	
Merge Speed Index				0.30	
Merge Area Speed				61.7	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				61.7	
Merge v/c ratio				0.52	
Merge Density				19.1	
Merge LOS				B	

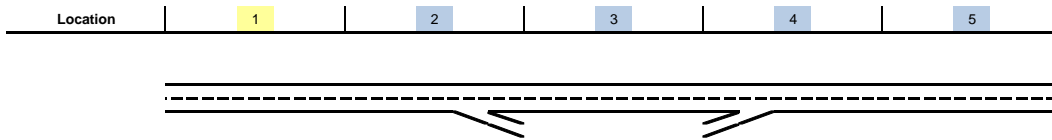


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate Diverge Influence Area Operations					
Effective v_p (pcph)		2,061			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.698			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		2,061			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		2,061			
Diverge Speed Index		0.45			
Diverge Area Speed		57.4			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		57.4			
Diverge v/c ratio		0.47			
Diverge Density		20.5			
Diverge LOS		C			



Key

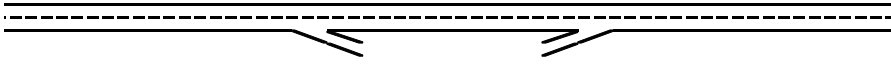
<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Summarize Segment Operations					
Segment v/c ratio	0.50	0.47	0.44	0.52	0.58
Segment Density	17.1	20.5	15.2	19.1	19.9
Segment LOS	B	C	B	B	C
Over Capacity					

Project: Elk Grove Civic Center
 Freeway Corridor: Interstate 5 SB
 Alternative: Existing Conditions
 Time Period: Weekday PM Peak Hour

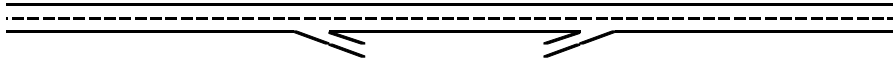
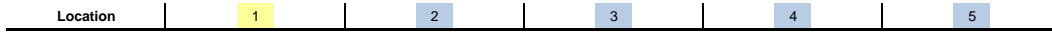
Location	1	2	3	4	5
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Key

<> Express Lane (HOV)
 No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	2,500	1,500	1,450	1,500	7,750
Accel Length				750	
Decel Length		160			
Mainline Volume	3,481	3,481	2,062	2,062	2,160
On Ramp Volume				98	
Off Ramp Volume		1,419			
Express Lane Volume					
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	3,481	3,481	2,062	2,160	2,160
PHF	0.94	0.95	0.94	0.95	0.94
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	18.0%	5.0%	18.0%	5.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.917	0.976	0.917	0.976	0.917
f _p	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,036	3,756	2,391	2,331	2,505
GP Flow (pcphpl)	2,018	1,878	1,196	1,165	1,252
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.2	1.2	1.2	1.2	1.2
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	71.7	71.7	71.7	71.7	71.7
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70
Calculate Operations in General Purpose Lanes					
v/c ratio	0.84	0.78	0.50	0.49	0.52
Speed (mph)	62.2	64.7	70.0	70.0	70.0
Density (pcphpl)	32.4	29.0	17.1	16.6	17.9
LOS	D	D	B	B	B
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				2,225	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.46	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		2,225			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.46			



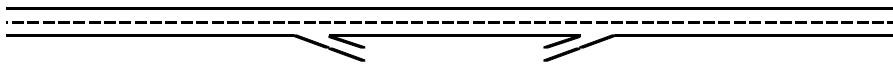
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate On Ramp Flow Rate					
On Volume (vph)				98	
PHF				0.95	
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	
On Flow (pcph)				106	
On Flow (pcphpl)				106	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.05	

Location	1	2	3	4	5
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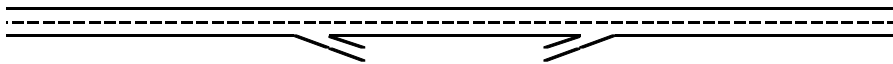
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate Off Ramp Flow Rate					
Off Volume (vph)		1,419			
PHF		0.95			
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)		1,531			
Off Flow (pcphpl)		1,531			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.77			
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)				2,225	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.599	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				2,225	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				2,225	
v_{R12a} (pcph)				2,331	
Merge Speed Index				0.29	
Merge Area Speed				61.8	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				61.8	
Merge v/c ratio				0.51	
Merge Density				18.9	
Merge LOS				B	

Location	1	2	3	4	5
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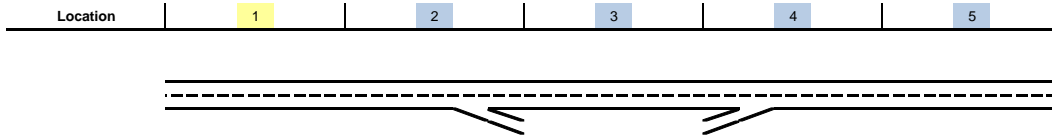


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate Diverge Influence Area Operations					
Effective v_p (pcph)		3,756			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.596			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		3,756			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		3,756			
Diverge Speed Index		0.57			
Diverge Area Speed		54.2			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		54.2			
Diverge v/c ratio		0.85			
Diverge Density		35.1			
Diverge LOS		E			



Key

<> Express Lane (HOV)

No Trucks

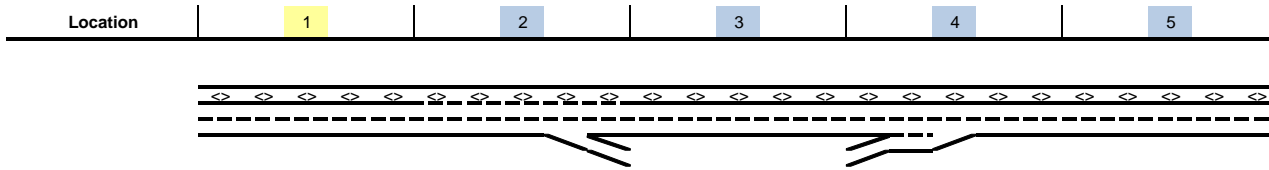
Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Summarize Segment Operations					
Segment v/c ratio	0.84	0.85	0.50	0.51	0.52
Segment Density	32.4	35.1	17.1	18.9	17.9
Segment LOS	D	E	B	B	B
Over Capacity					

Project:
Freeway Corridor:

Elk Grove Civic Center
State Route 99 NB

Alternative:
Time Period:

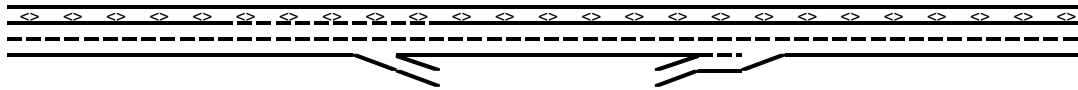
Existing Conditions
Sat. AM Peak Hour



Key

- <> Express Lane (HOV)
- No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	1,050	1,500	2,550	1,500	180
Accel Length				1,200	
Decel Length		170			
Mainline Volume	1,970	1,970	1,727	1,727	3,081
On Ramp Volume				1,354	
Off Ramp Volume		243			
Express Lane Volume	591	591	518	518	924
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	1,379	1,379	1,209	2,563	2,157
PHF	0.92	0.91	0.92	0.93	0.92
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	15.0%	5.0%	10.0%	5.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.930	0.976	0.952	0.976	0.952
f _P	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,611	1,553	1,380	2,825	2,461
GP Flow (pcphpl)	806	777	690	1,412	1,231
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.8	1.8	1.8	1.8	1.8
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	70.1	70.1	70.1	70.1	70.1
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70

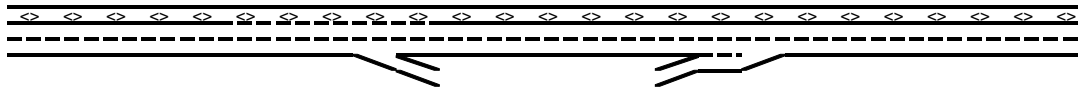


Key

<> Express Lane (HOV)

..... No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Operations in General Purpose Lanes					
v/c ratio	0.34	0.32	0.29	0.59	0.51
Speed (mph)	70.0	70.0	70.0	69.5	70.0
Density (pcphpl)	11.5	11.1	9.9	20.3	17.6
LOS	B	B	A	C	B
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				1,332	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.28	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		1,280			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.27			
Calculate On Ramp Flow Rate					
On Volume (vph)				1,354	
PHF				0.93	
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	
On Flow (pcph)				1,492	
On Flow (pcphpl)				1,492	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.71	



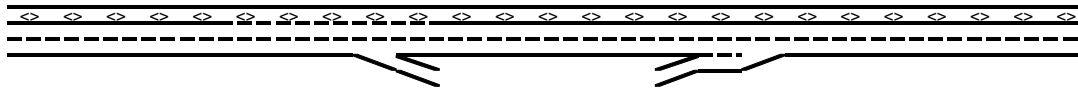
Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Off Ramp Flow Rate					
Off Volume (vph)		243			
PHF		0.91			
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)		274			
Off Flow (pcphpl)		274			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.14			
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)					

Location	1	2	3	4	5
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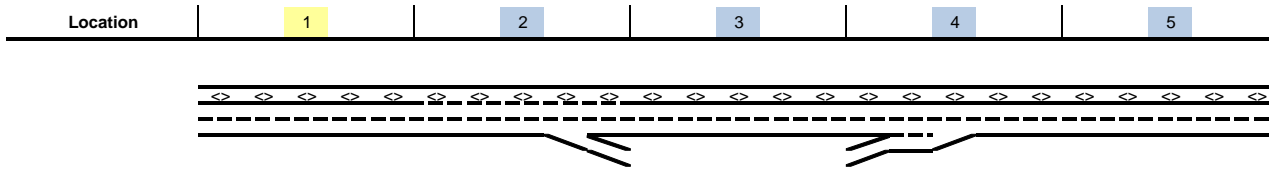


Key

<> Express Lane (HOV)

--- No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Merge Influence Area Operations					
Effective v_F (pcph)				1,332	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.611	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				1,332	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				1,332	
v_{R12a} (pcph)				2,825	
Merge Speed Index				0.28	
Merge Area Speed				62.2	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				62.2	
Merge v/c ratio				0.61	
Merge Density				19.3	
Merge LOS				B	
Calculate Diverge Influence Area Operations					
Effective v_F (pcph)		1,553			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.709			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		1,553			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		1,553			
Diverge Speed Index		0.45			
Diverge Area Speed		57.3			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		57.3			
Diverge v/c ratio		0.35			
Diverge Density		16.1			
Diverge LOS		B			



Key

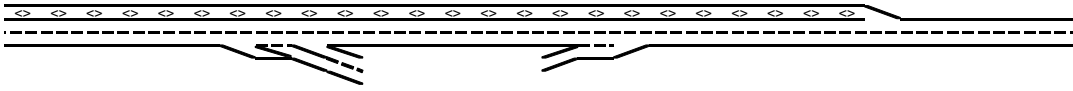
<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Summarize Segment Operations					
Segment v/c ratio	0.34	0.35	0.29	0.61	0.51
Segment Density	11.5	16.1	9.9	19.3	17.6
Segment LOS	B	B	A	B	B
Over Capacity					

Project: Elk Grove Civic Center
Freeway Corridor: State Route 99 SB

Alternative: Existing Conditions
Time Period: Sat. AM Peak Hour

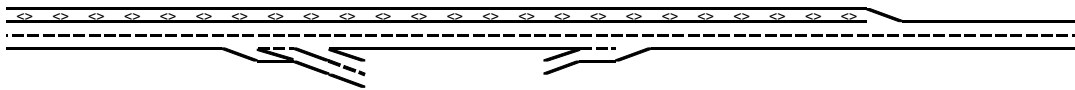


Key

- <> Express Lane (HOV)
- No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Define Freeway Segment						
Type	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	250	1,500	2,250	1,500	400	8,050
Accel Length				300		
Decel Length		1,500				
Mainline Volume	2,885	2,885	1,504	1,504	1,770	1,770
On Ramp Volume				266		
Off Ramp Volume		1,381				
Express Lane Volume	866	866				
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,020	2,020	1,504	1,770	1,770	1,770
PHF	0.92	0.9	0.92	0.9	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 %	10.0%	5.0%	10.0%	5.0%	15.0%	15.0%
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}	0.952	0.976	0.952	0.976	0.930	0.930
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,305	2,300	1,717	2,016	2,068	2,068
GP Flow (pcphpl)	1,152	1,150	858	1,008	1,034	1,034
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	1.8	1.8	1.8	1.8	1.8	1.8
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	70.1	70.1	70.1	70.1	70.1	70.1
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70

Location	1	2	3	4	5	6
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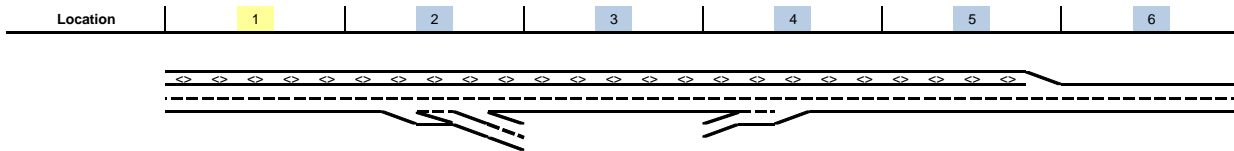


Key

<> Express Lane (HOV)

No Trucks

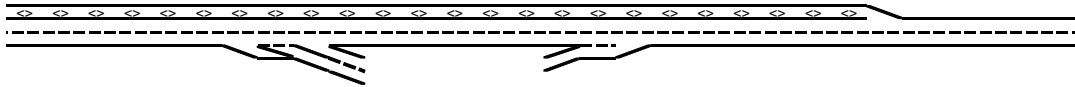
Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Operations in General Purpose Lanes						
v/c ratio	0.48	0.48	0.36	0.42	0.43	0.43
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	16.5	16.4	12.3	14.4	14.8	14.8
LOS	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)				1,713		
GP _{IN} Cap (pcph)				4,800		
GP _{IN} v/c ratio				0.36		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)		727				
GP _{OUT} Cap (pcph)		4,800				
GP _{OUT} v/c ratio		0.15				
Calculate On Ramp Flow Rate						
On Volume (vph)				266		
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		
On Flow (pcph)				303		
On Flow (pcphpl)				303		
Calculate On Ramp Roadway Operations						
On Ramp Type				Right		
On Ramp Speed (mph)				60		
On Ramp Cap (pcph)				2,200		
On Ramp v/c ratio				0.14		



Key
 < > Express Lane (HOV)
 No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Off Ramp Flow Rate						
Off Volume (vph)		1,381				
PHF		0.9				
Total Lanes		2				
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)		1,573				
Off Flow (pcphpl)		786				
Calculate Off Ramp Roadway Operations						
Off Ramp Type		Right				
Off Ramp Speed		35				
Off Ramp Cap (pcph)		4,000				
Off Ramp v/c ratio		0.39				
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)						

Location	1	2	3	4	5	6
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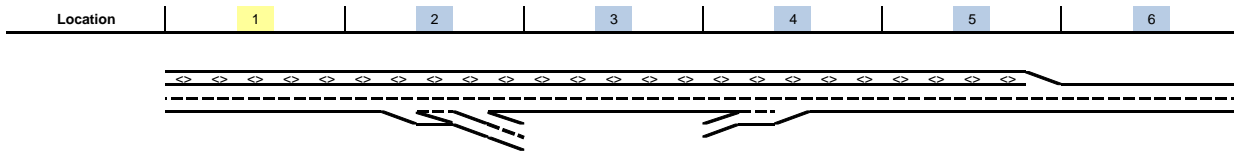


Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Merge Influence Area Operations						
Effective v_p (pcph)				1,713		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)				0.586		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}				1.000		
v_{12} (pcph)				1,713		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)				1,713		
v_{R12a} (pcph)				2,016		
Merge Speed Index				0.31		
Merge Area Speed				61.2		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed				61.2		
Merge v/c ratio				0.44		
Merge Density				19.2		
Merge LOS				B		
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)		2,300				
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)		0.630				
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}		1.000				
v_{12} (pcph)		2,300				
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)		2,300				
Diverge Speed Index		0.57				
Diverge Area Speed		54.1				
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed		54.1				
Diverge v/c ratio		0.52				
Diverge Density		10.5				
Diverge LOS		B				



Key

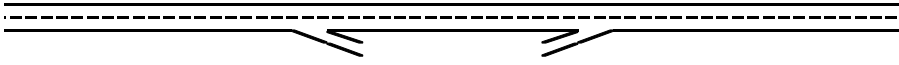
<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Summarize Segment Operations						
Segment v/c ratio	0.48	0.52	0.36	0.44	0.43	0.43
Segment Density	16.5	10.5	12.3	19.2	14.8	14.8
Segment LOS	B	B	B	B	B	B
Over Capacity						

Project: Elk Grove Civic Center
Freeway Corridor: Interstate 5 NB
Alternative: Existing Conditions
Time Period: Sat. AM Peak Hour

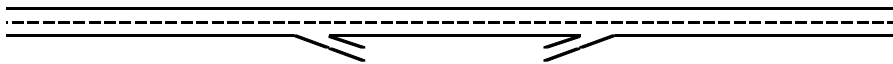
Location	1	2	3	4	5
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Key

<> Express Lane (HOV)
 No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	6,900	1,500	3,100	1,500	500
Accel Length				750	
Decel Length		160			
Mainline Volume	1,620	1,620	1,509	1,509	2,131
On Ramp Volume				622	
Off Ramp Volume		111			
Express Lane Volume					
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	1,620	1,620	1,509	2,131	2,131
PHF	0.92	0.97	0.92	0.97	0.92
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	18.0%	5.0%	18.0%	5.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.917	0.976	0.917	0.976	0.917
f _p	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,919	1,712	1,788	2,252	2,525
GP Flow (pcphpl)	960	856	894	1,126	1,262
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.2	1.2	1.2	1.2	1.2
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	71.7	71.7	71.7	71.7	71.7
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70
Calculate Operations in General Purpose Lanes					
v/c ratio	0.40	0.36	0.37	0.47	0.53
Speed (mph)	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	13.7	12.2	12.8	16.1	18.0
LOS	B	B	B	B	C
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				1,595	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.33	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		1,595			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.33			



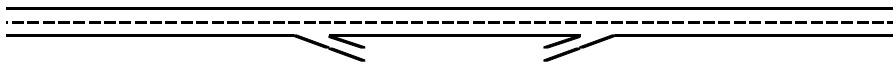
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate On Ramp Flow Rate					
On Volume (vph)				622	
PHF				0.97	
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	
On Flow (pcph)				657	
On Flow (pcphpl)				657	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.31	

Location	1	2	3	4	5
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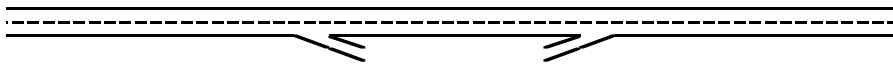


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate Off Ramp Flow Rate					
Off Volume (vph)		111			
PHF		0.97			
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)		117			
Off Flow (pcphpl)		117			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.06			
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)				1,595	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.599	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				1,595	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				1,595	
v_{R12a} (pcph)				2,252	
Merge Speed Index				0.29	
Merge Area Speed				61.9	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				61.9	
Merge v/c ratio				0.49	
Merge Density				18.0	
Merge LOS				B	

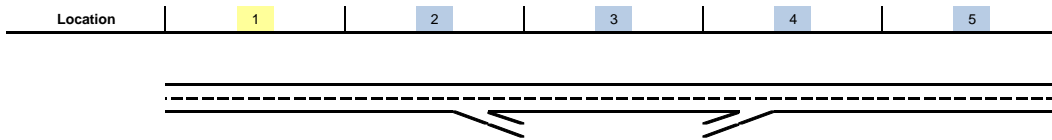


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate Diverge Influence Area Operations					
Effective v_p (pcph)		1,712			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.712			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		1,712			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		1,712			
Diverge Speed Index		0.44			
Diverge Area Speed		57.7			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		57.7			
Diverge v/c ratio		0.39			
Diverge Density		17.5			
Diverge LOS		B			



Key

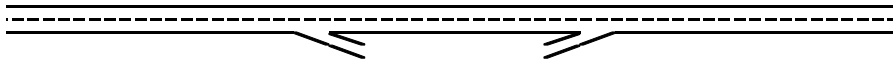
<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Summarize Segment Operations					
Segment v/c ratio	0.40	0.39	0.37	0.49	0.53
Segment Density	13.7	17.5	12.8	18.0	18.0
Segment LOS	B	B	B	B	C
Over Capacity					

Project: Elk Grove Civic Center
Freeway Corridor: Interstate 5 SB
Alternative: Existing Conditions
Time Period: Sat. AM Peak Hour

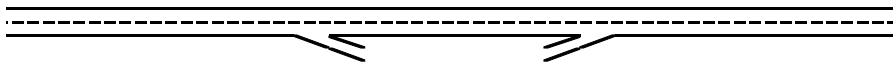
Location	1	2	3	4	5
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Key

- <> Express Lane (HOV)
- No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	2,500	1,500	1,450	1,500	7,750
Accel Length				750	
Decel Length		160			
Mainline Volume	1,782	1,782	1,331	1,331	1,470
On Ramp Volume				139	
Off Ramp Volume		451			
Express Lane Volume					
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	1,782	1,782	1,331	1,470	1,470
PHF	0.92	0.87	0.92	0.87	0.92
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	18.0%	5.0%	18.0%	5.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.917	0.976	0.917	0.976	0.917
f _p	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,111	2,099	1,577	1,732	1,742
GP Flow (pcphpl)	1,056	1,050	788	866	871
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.2	1.2	1.2	1.2	1.2
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	71.7	71.7	71.7	71.7	71.7
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70
Calculate Operations in General Purpose Lanes					
v/c ratio	0.44	0.44	0.33	0.36	0.36
Speed (mph)	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	15.1	15.0	11.3	12.4	12.4
LOS	B	B	B	B	B
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				1,568	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.33	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		1,568			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.33			



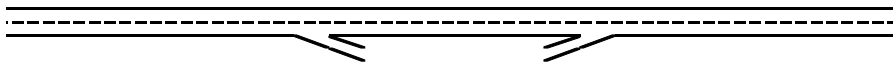
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<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate On Ramp Flow Rate					
On Volume (vph)				139	
PHF				0.87	
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	
On Flow (pcph)				164	
On Flow (pcphpl)				164	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.08	

Location	1	2	3	4	5
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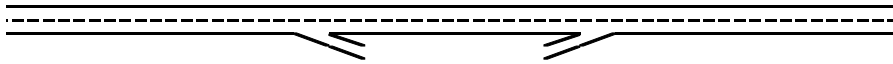
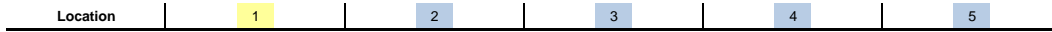


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate Off Ramp Flow Rate					
Off Volume (vph)		451			
PHF		0.87			
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)		531			
Off Flow (pcphpl)		531			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.27			
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)				1,568	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.599	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				1,568	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				1,568	
v_{R12a} (pcph)				1,732	
Merge Speed Index				0.28	
Merge Area Speed				62.3	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				62.3	
Merge v/c ratio				0.38	
Merge Density				14.2	
Merge LOS				B	

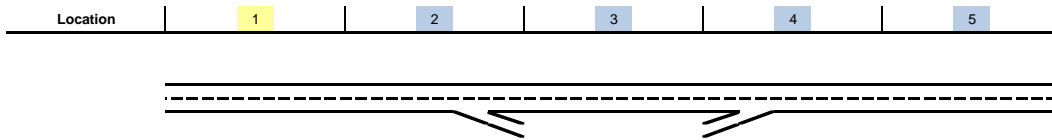


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate Diverge Influence Area Operations					
Effective v_p (pcph)		2,099			
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)		2,099			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		2,099			
Diverge Speed Index		0.48			
Diverge Area Speed		56.7			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		56.7			
Diverge v/c ratio		0.48			
Diverge Density		20.9			
Diverge LOS		C			



Key

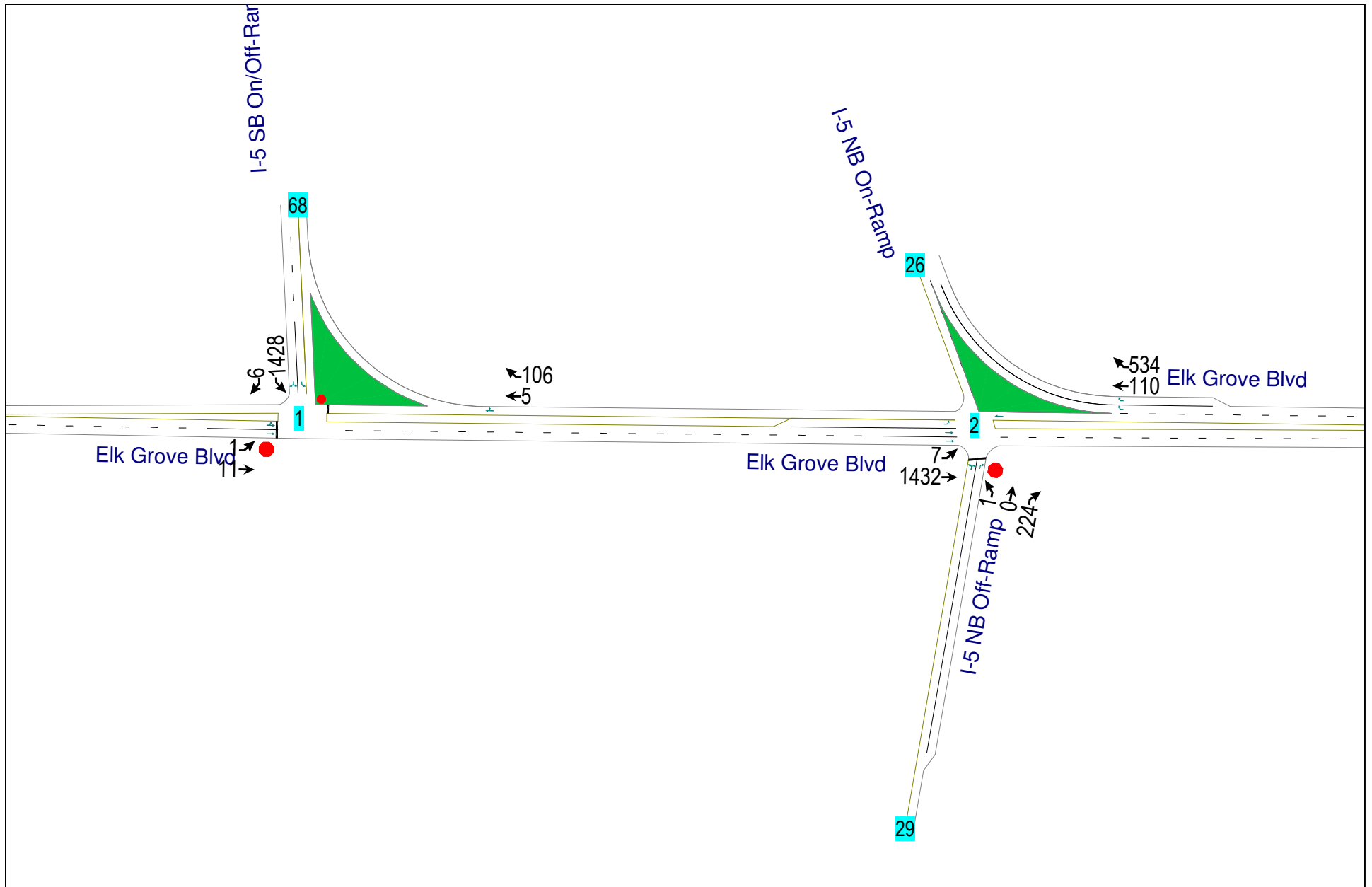
<> Express Lane (HOV)

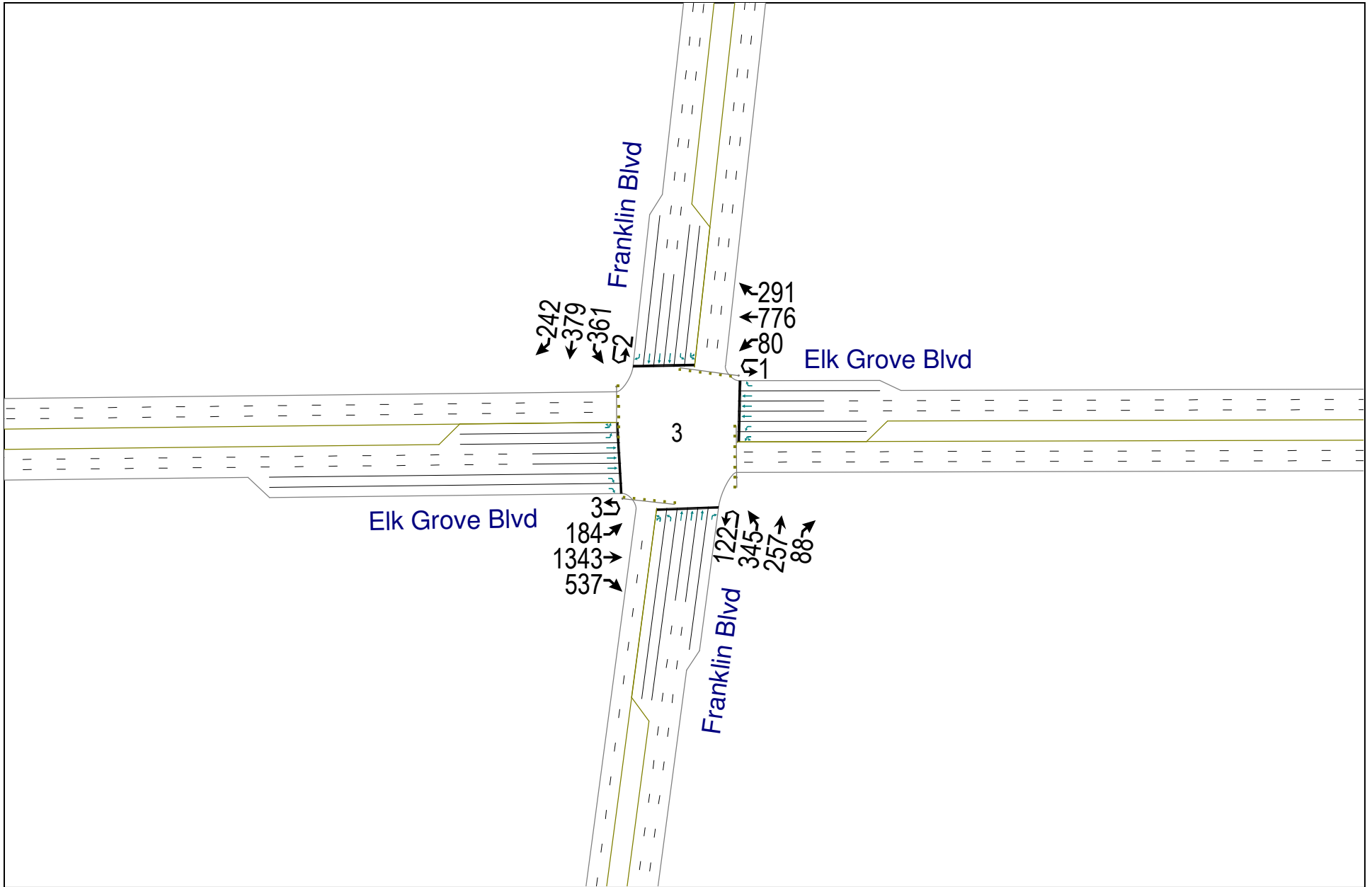
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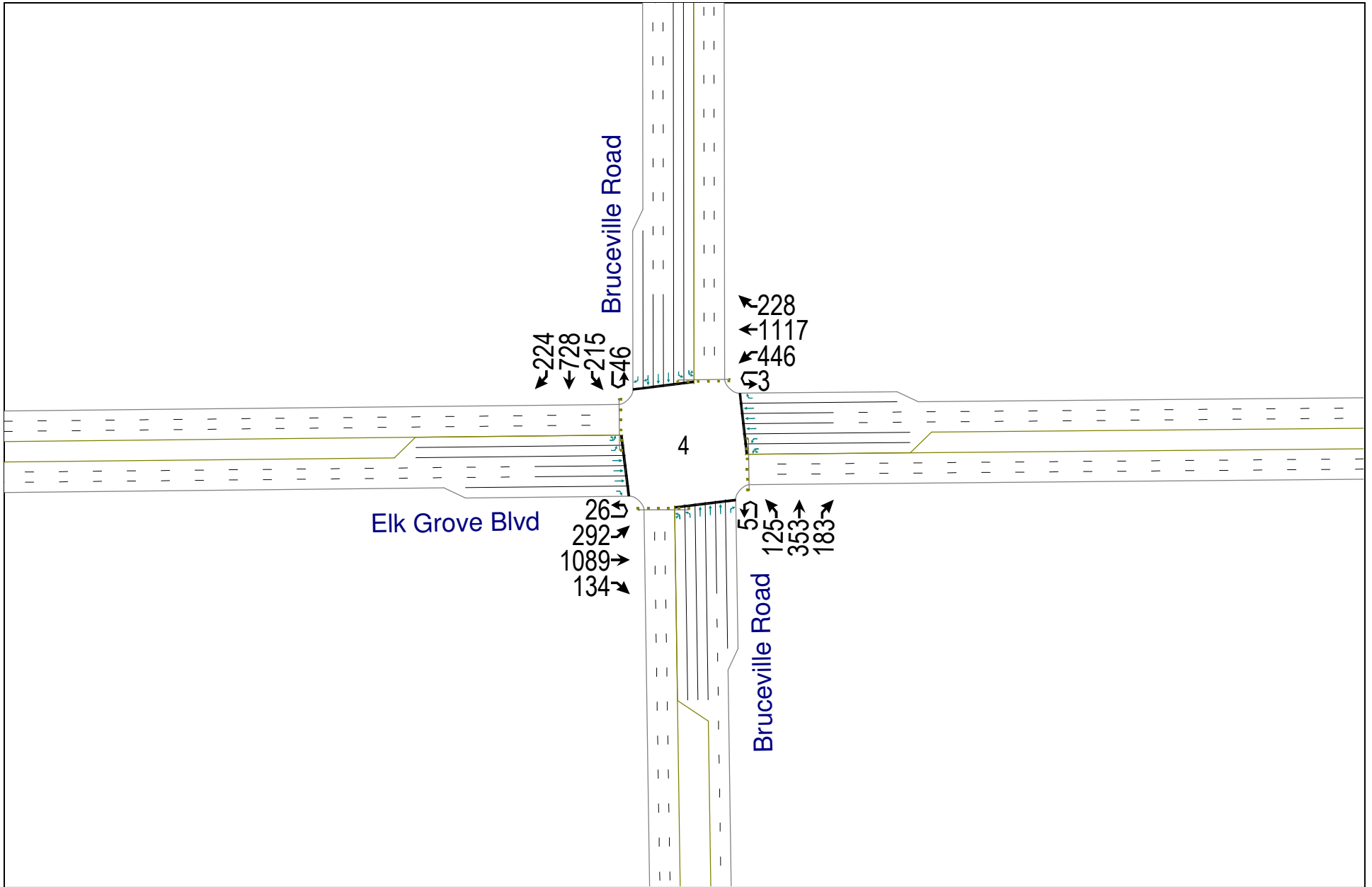
Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Summarize Segment Operations					
Segment v/c ratio	0.44	0.48	0.33	0.38	0.36
Segment Density	15.1	20.9	11.3	14.2	12.4
Segment LOS	B	C	B	B	B
Over Capacity					

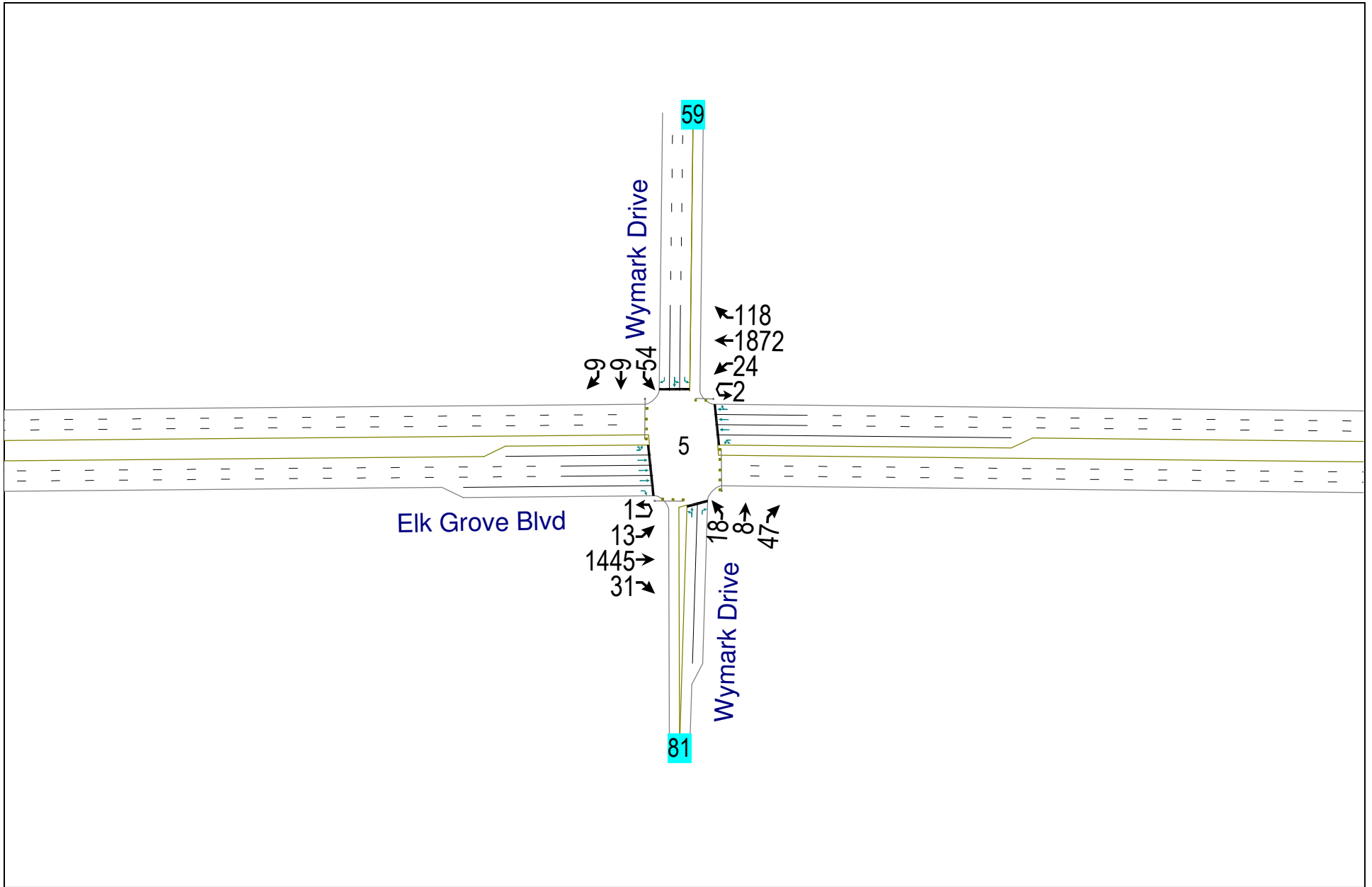
APPENDIX B: EXISTING PLUS PROJECT

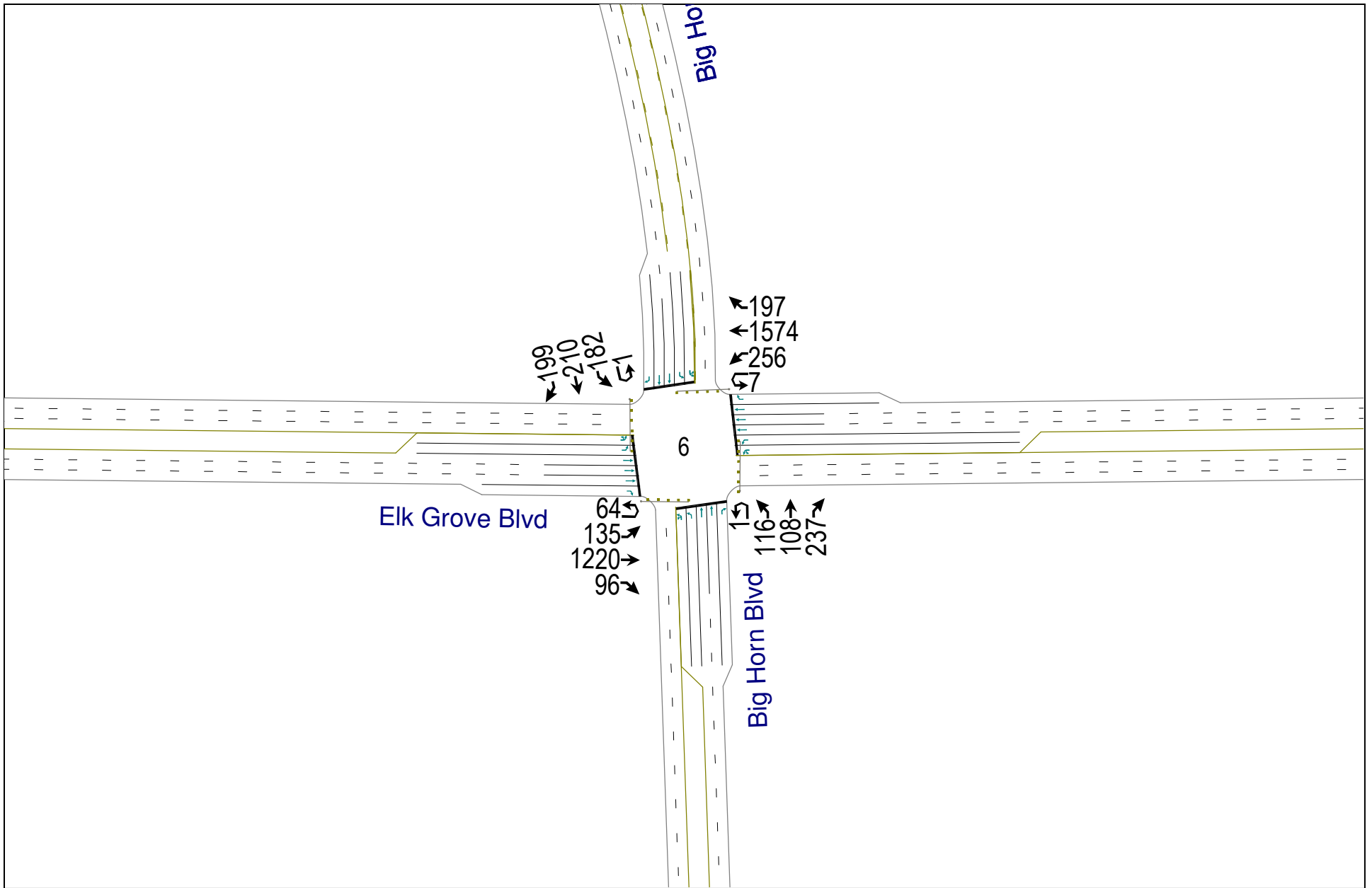


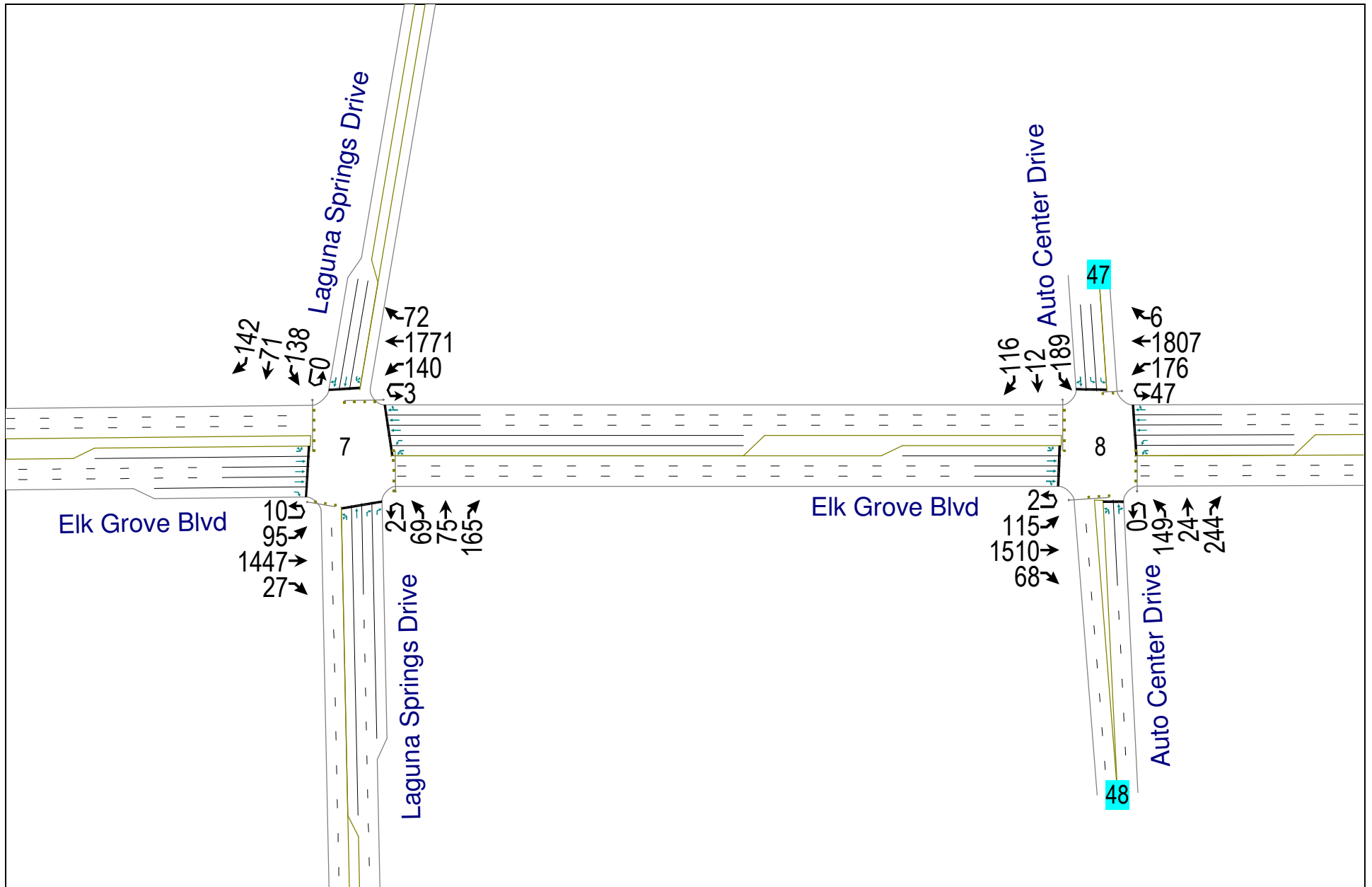


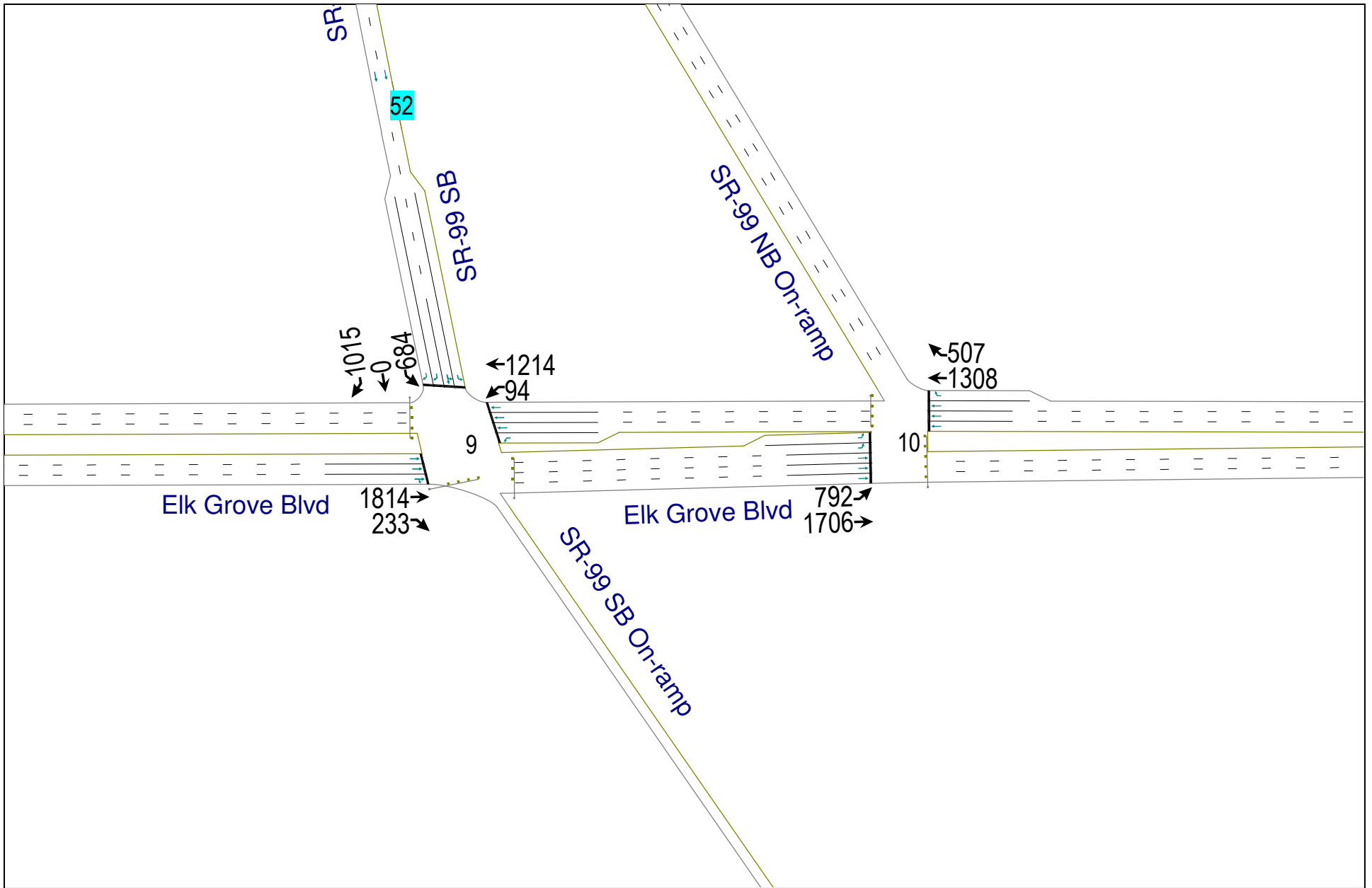


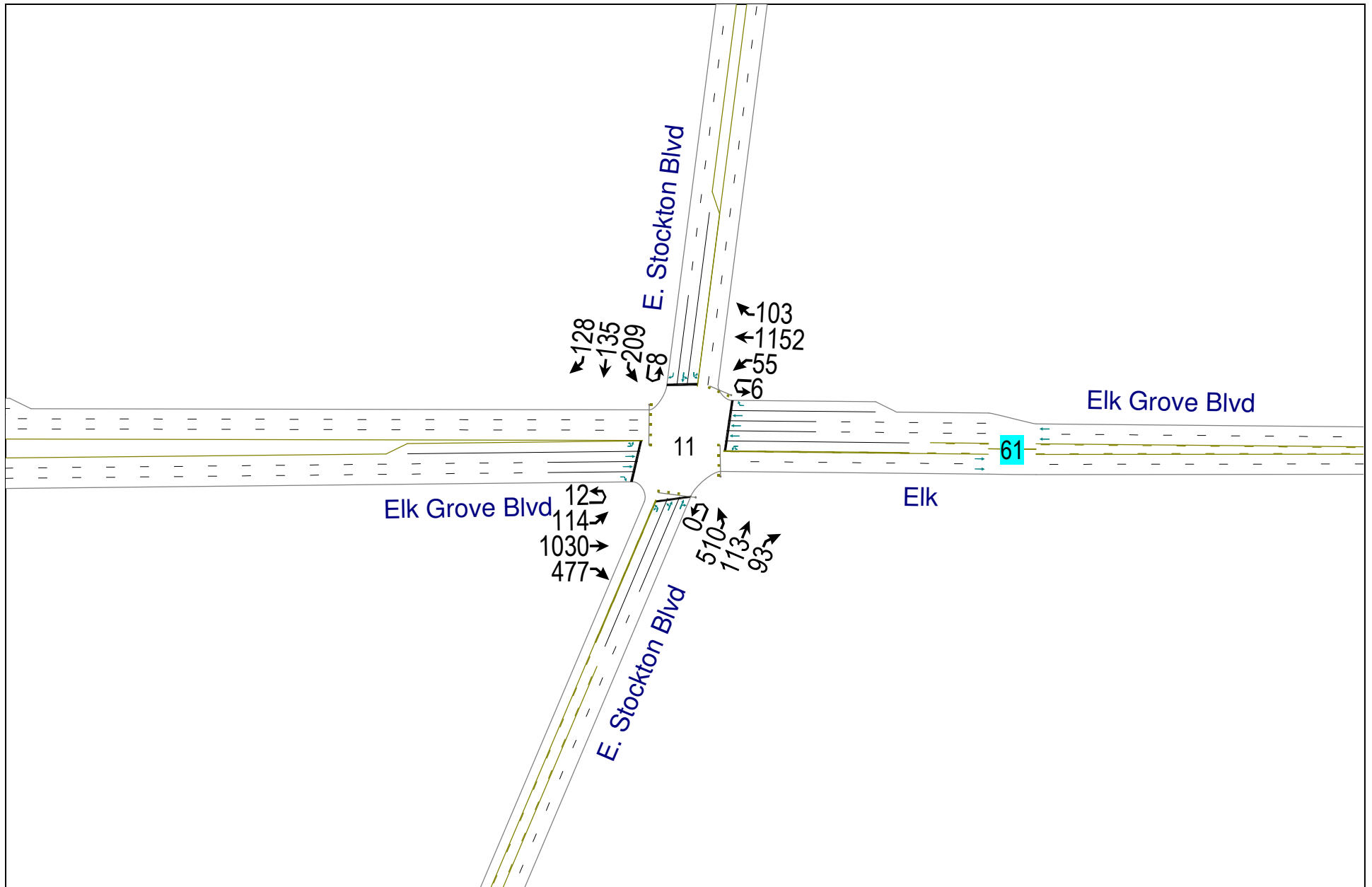


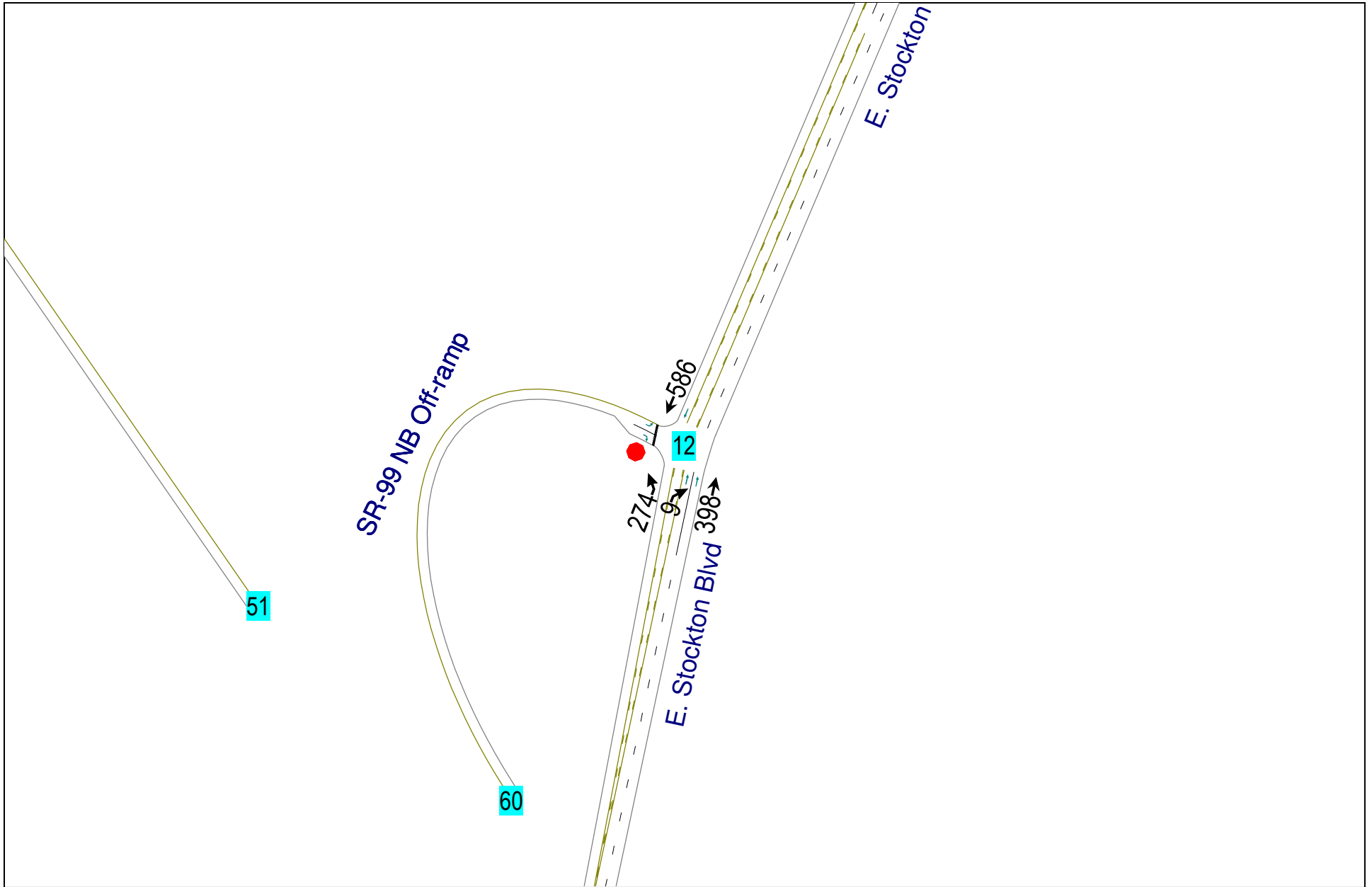


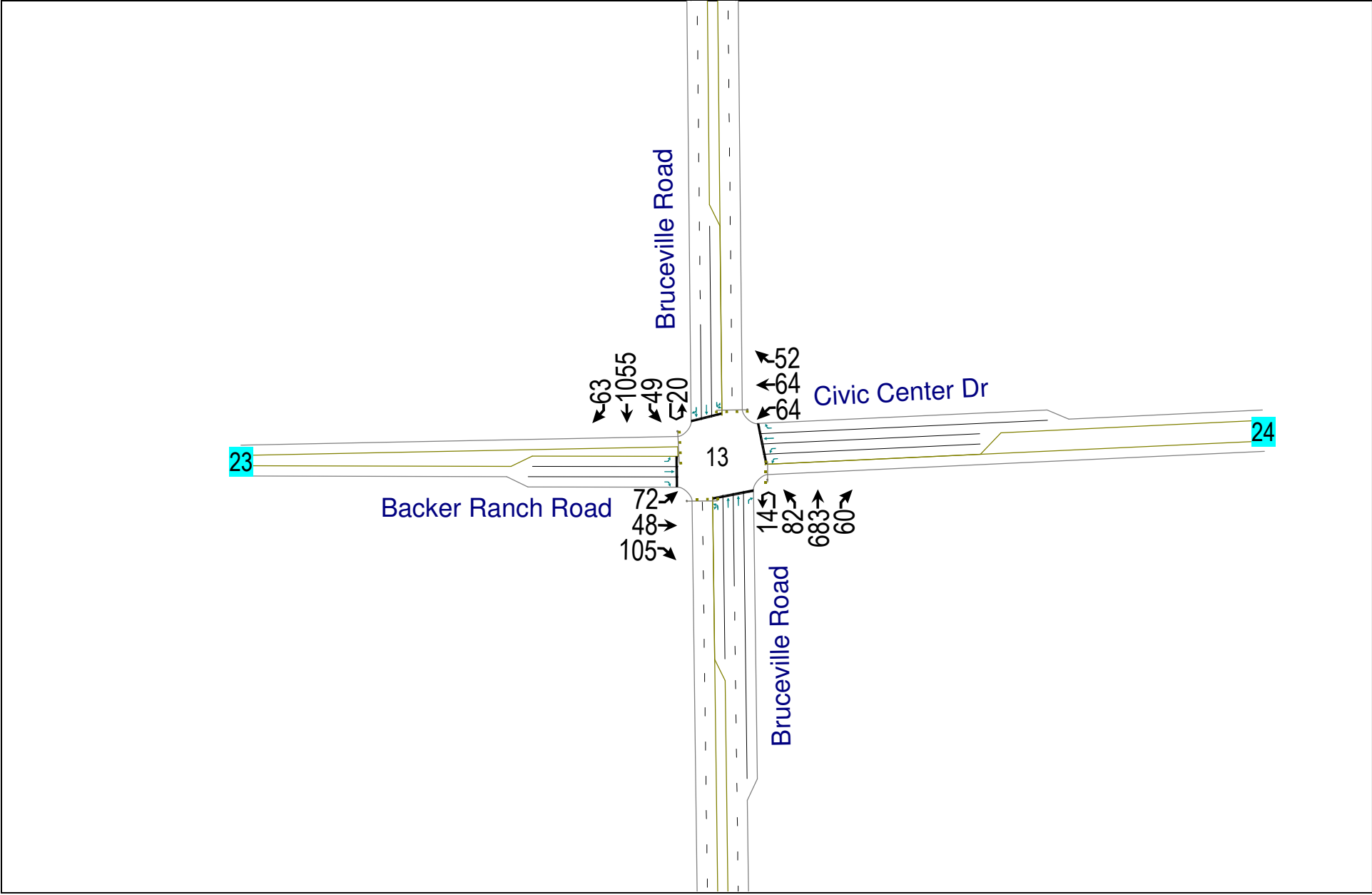


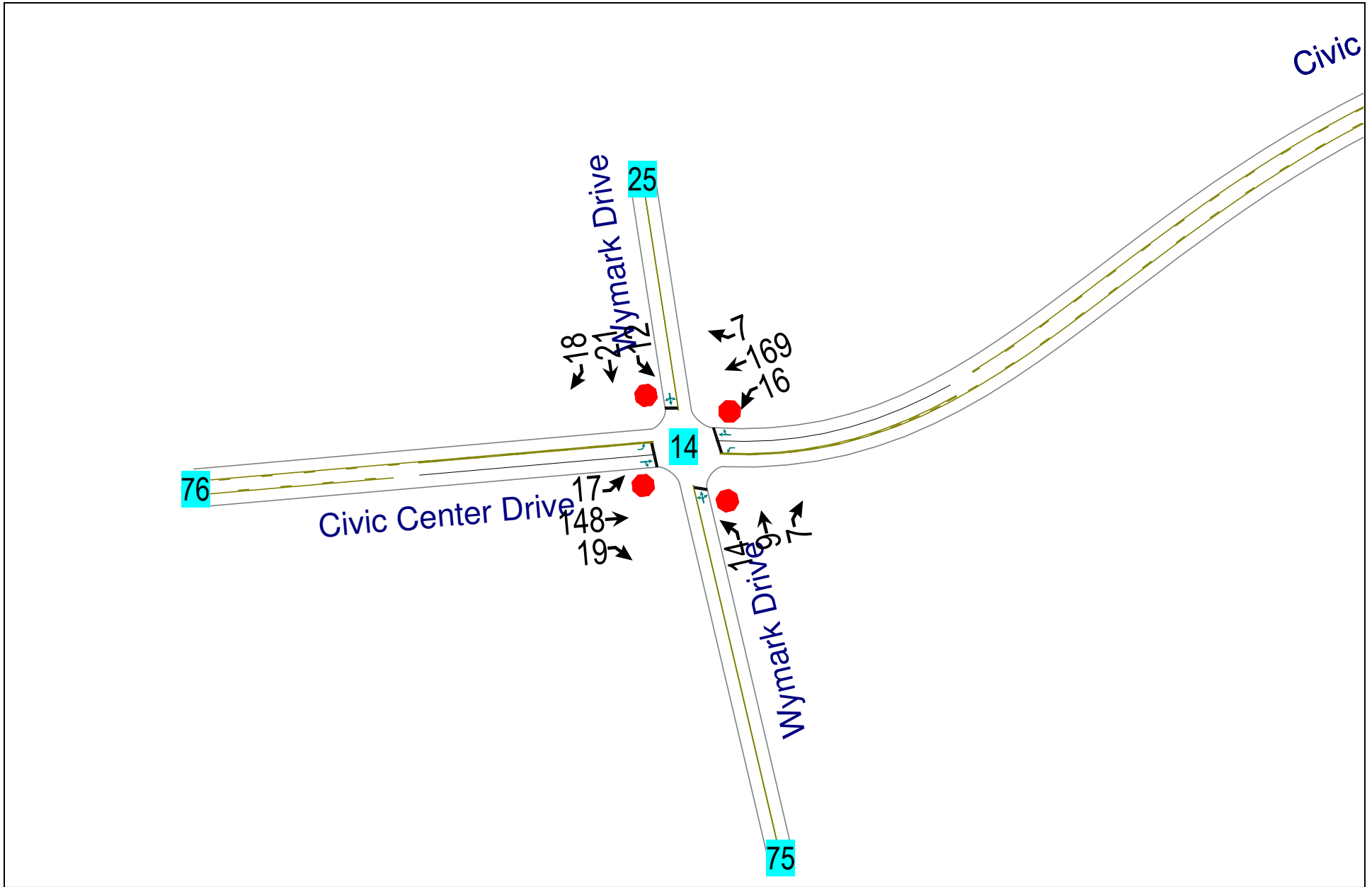


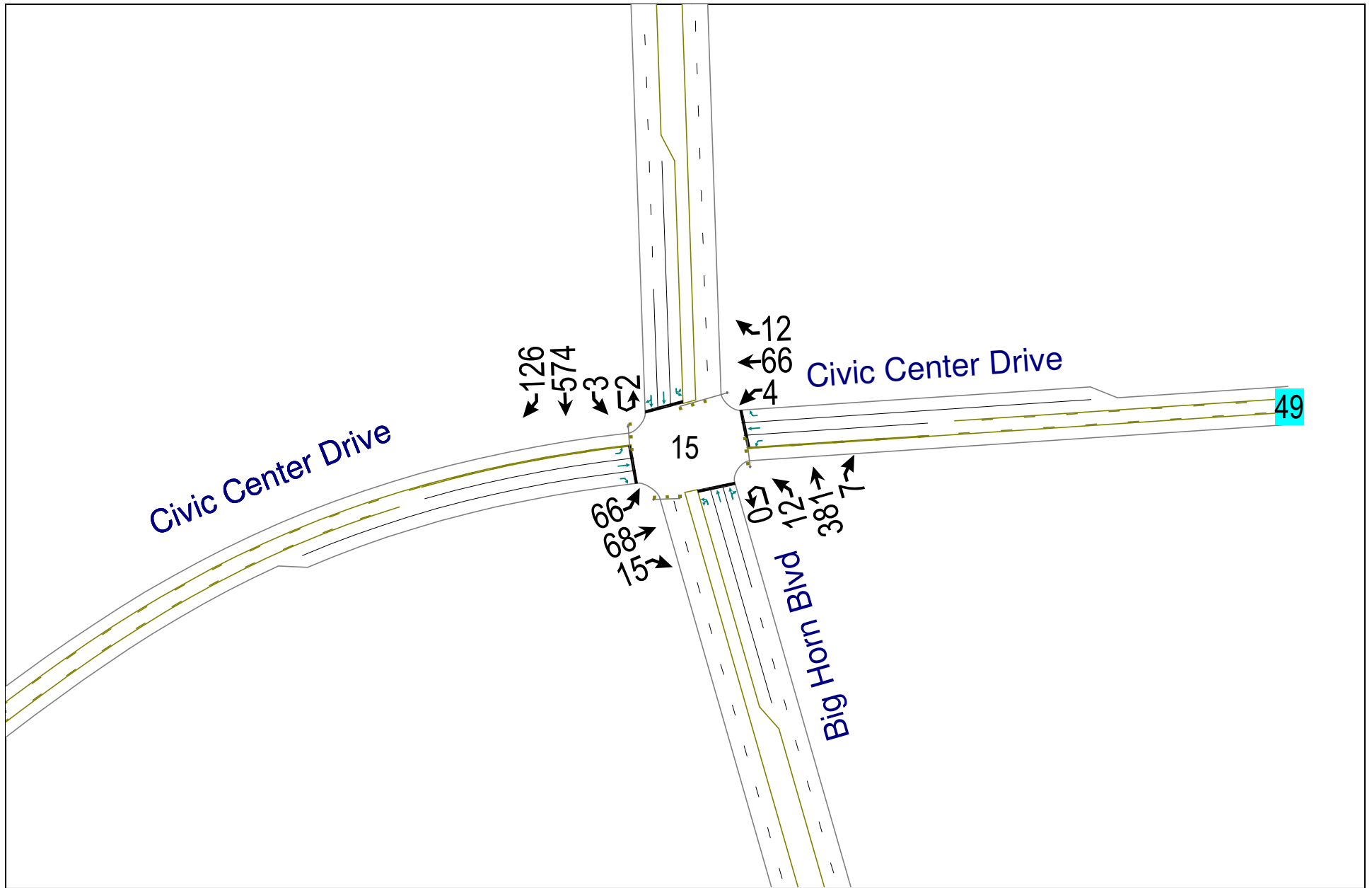


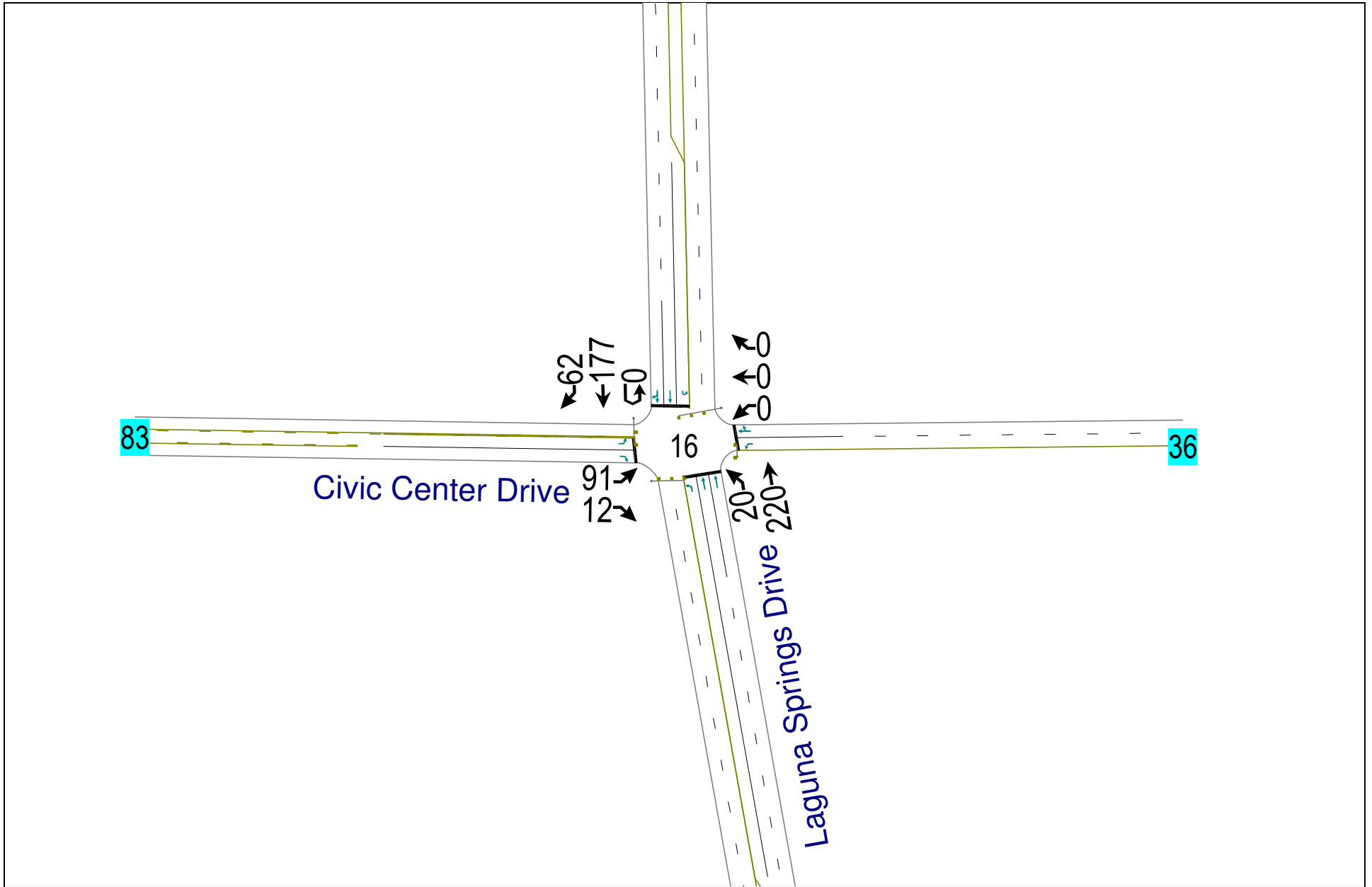


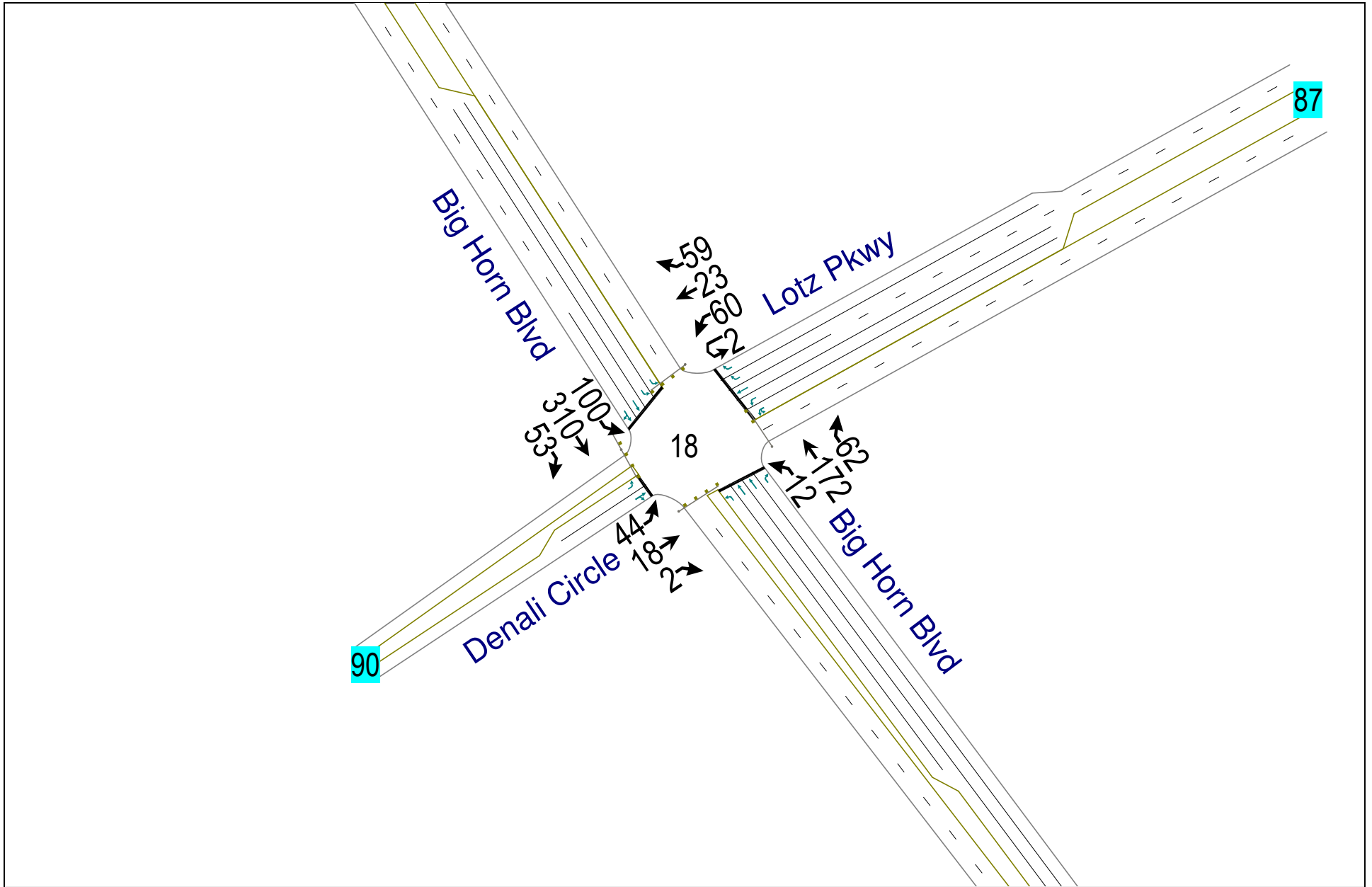


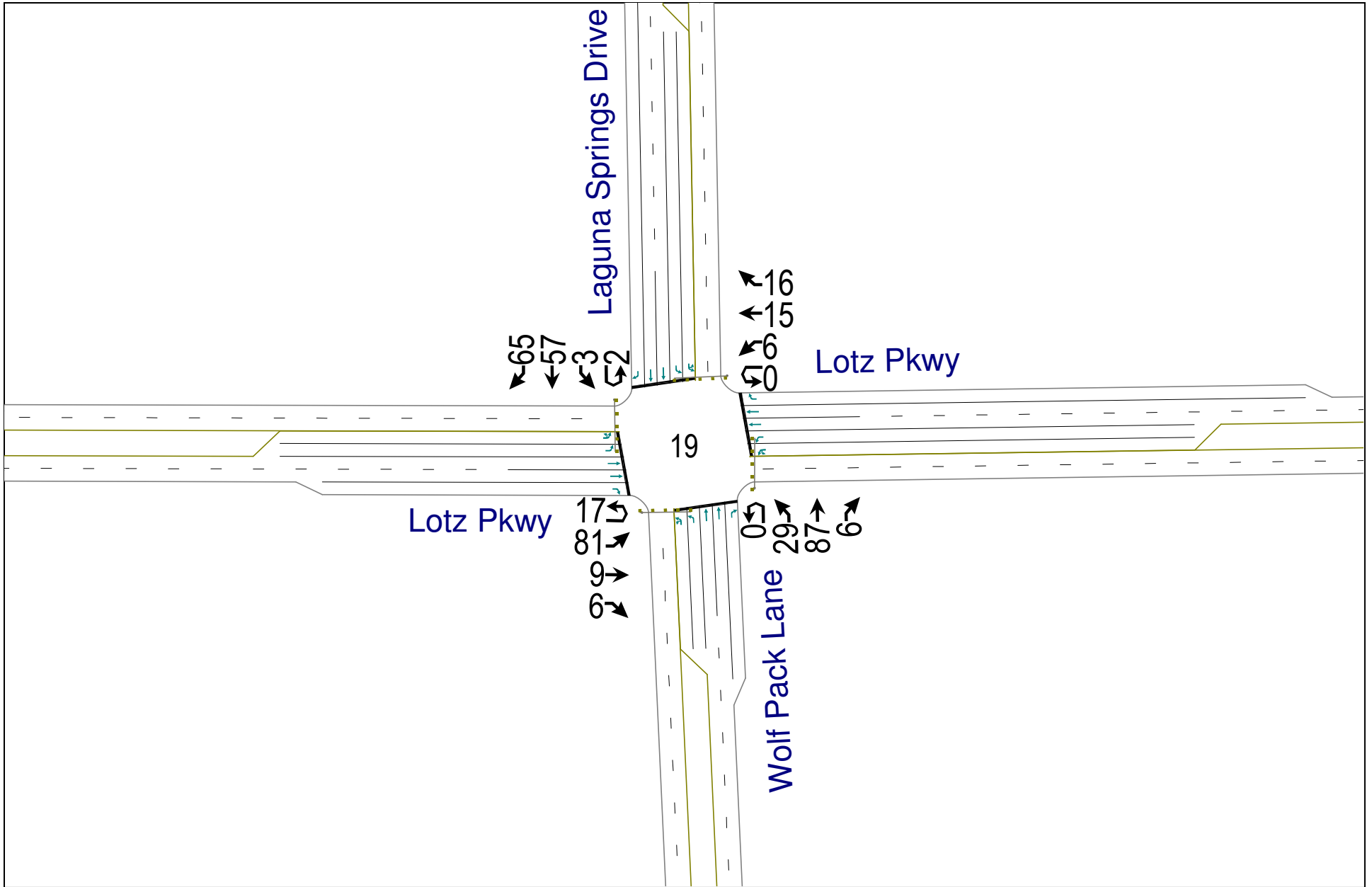


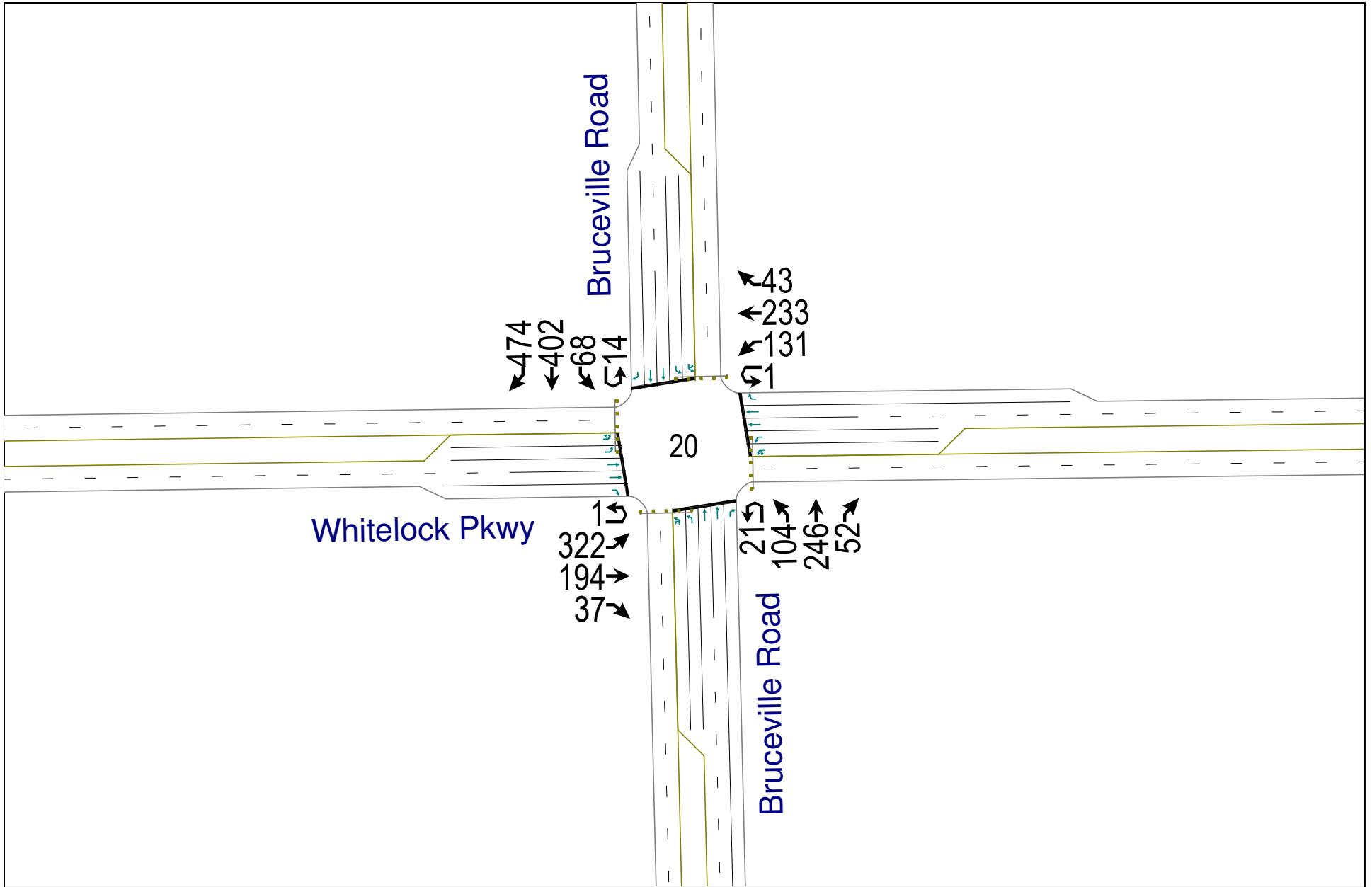




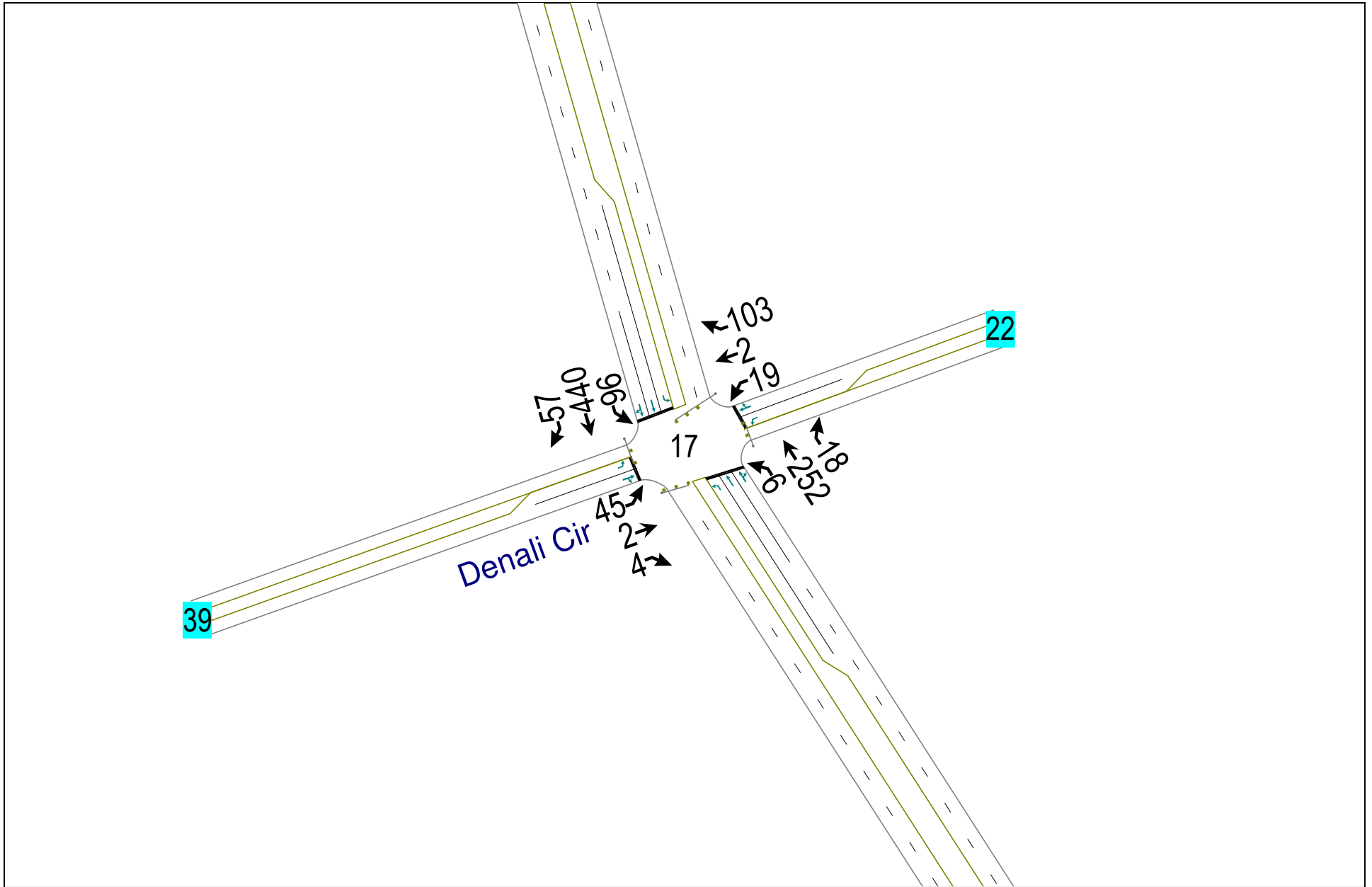


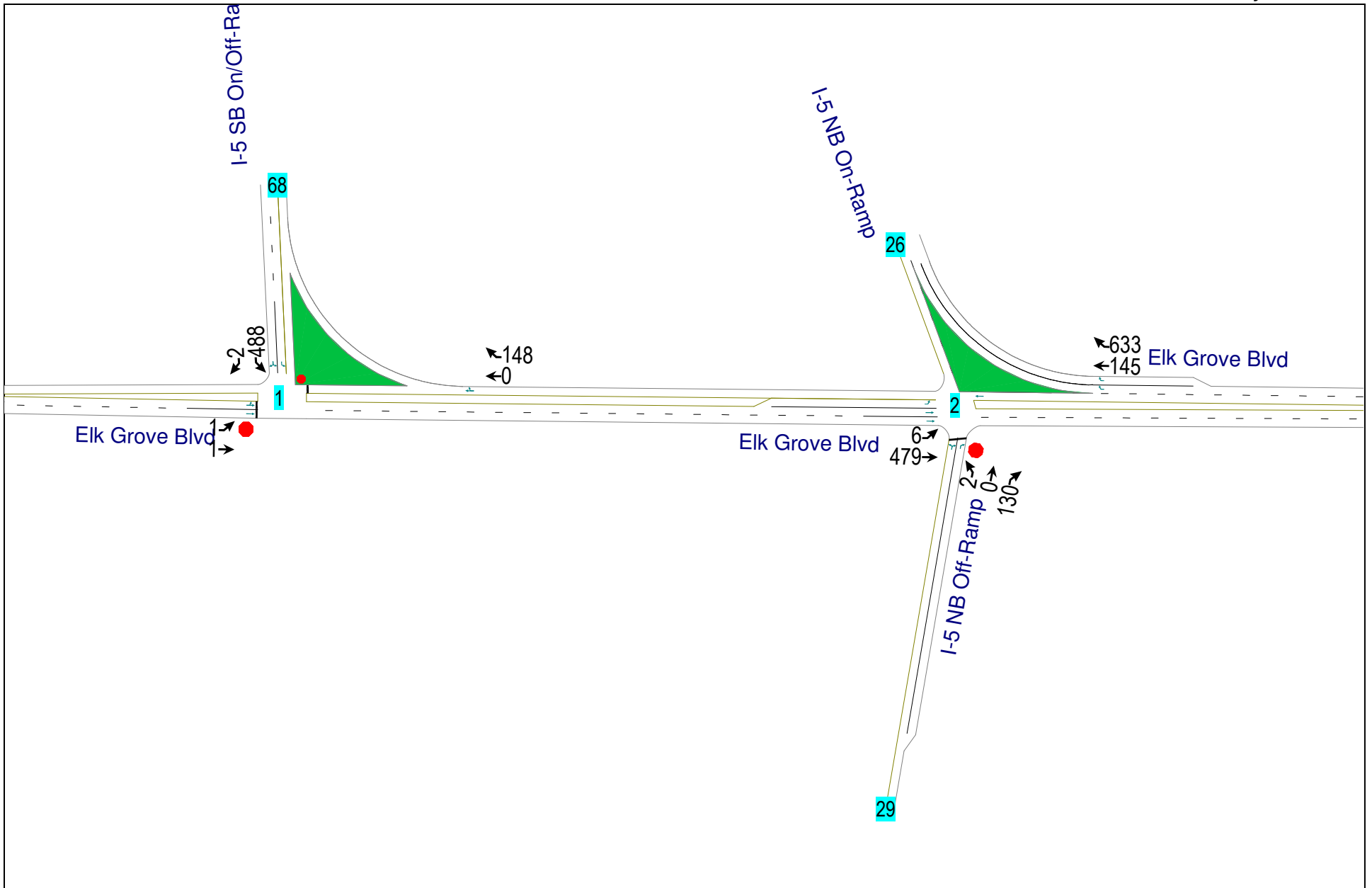


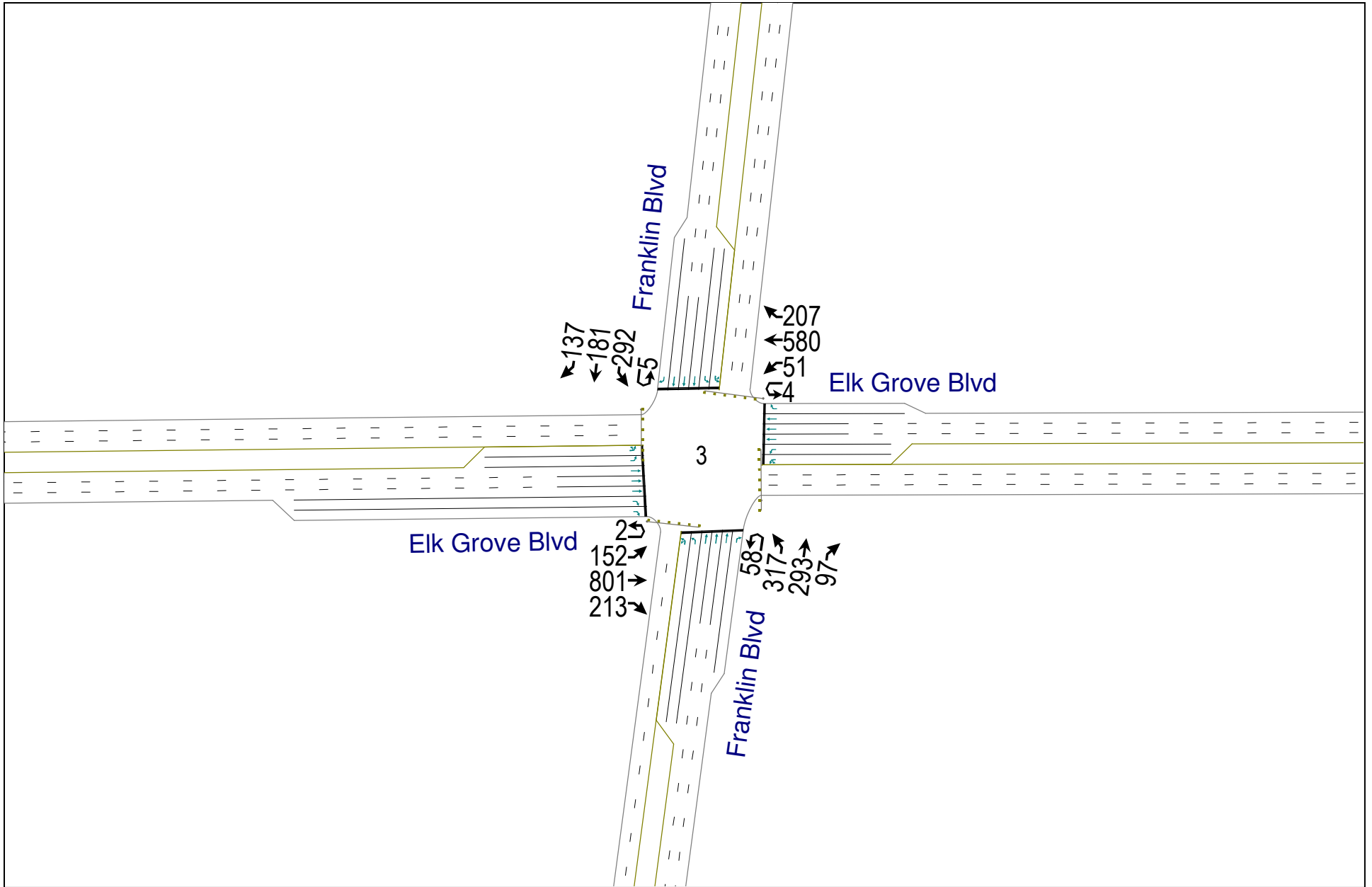


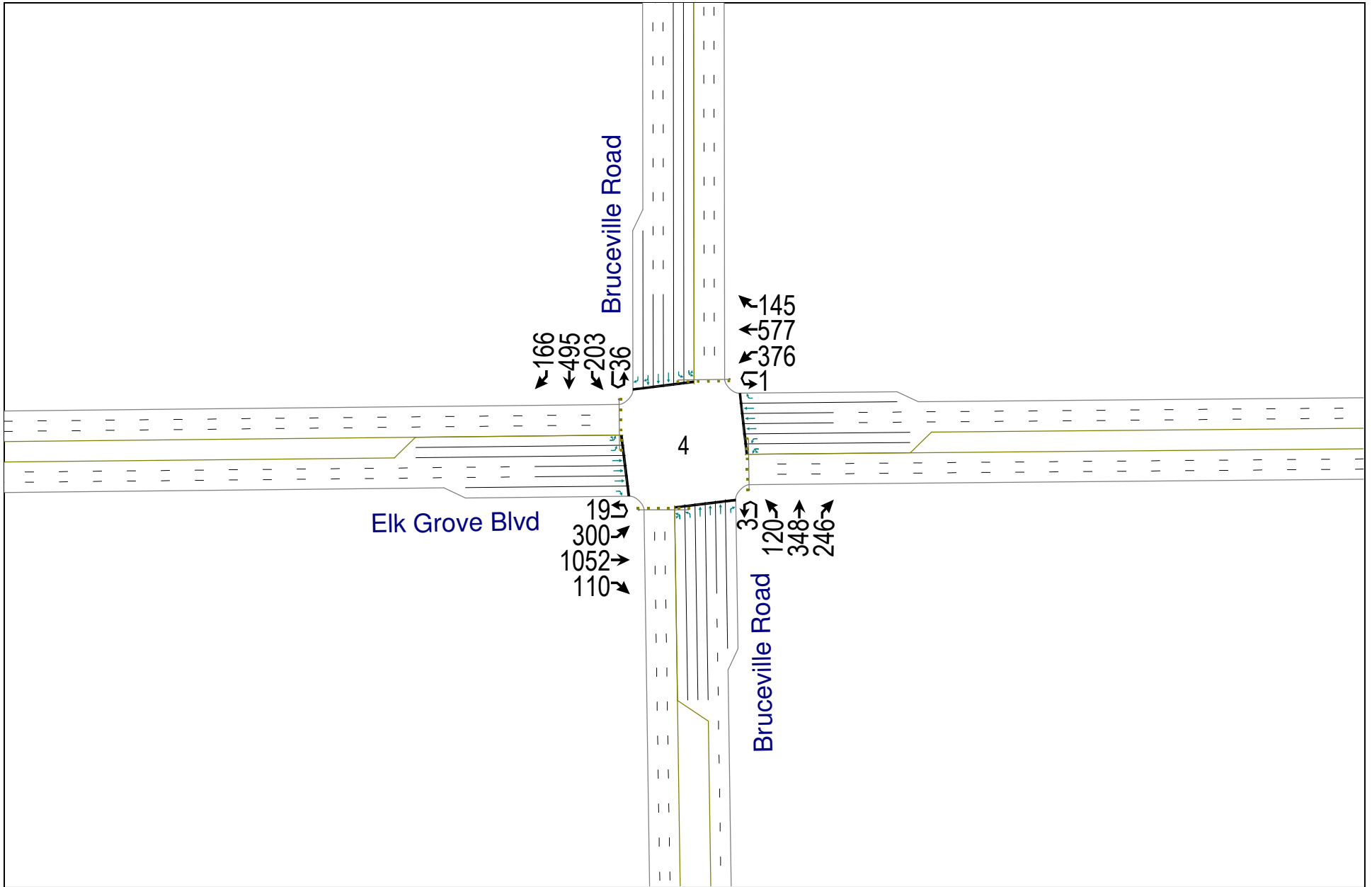


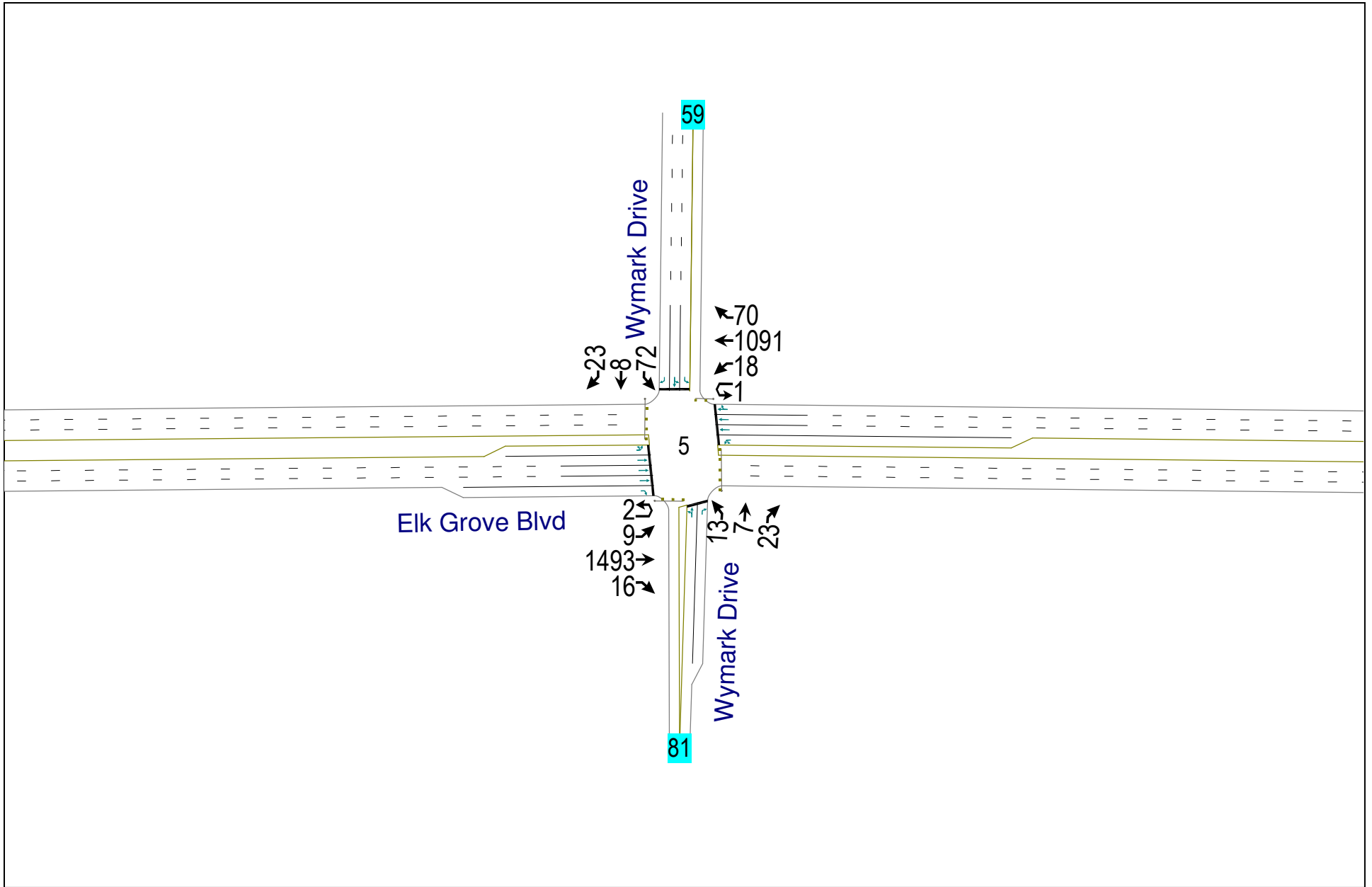


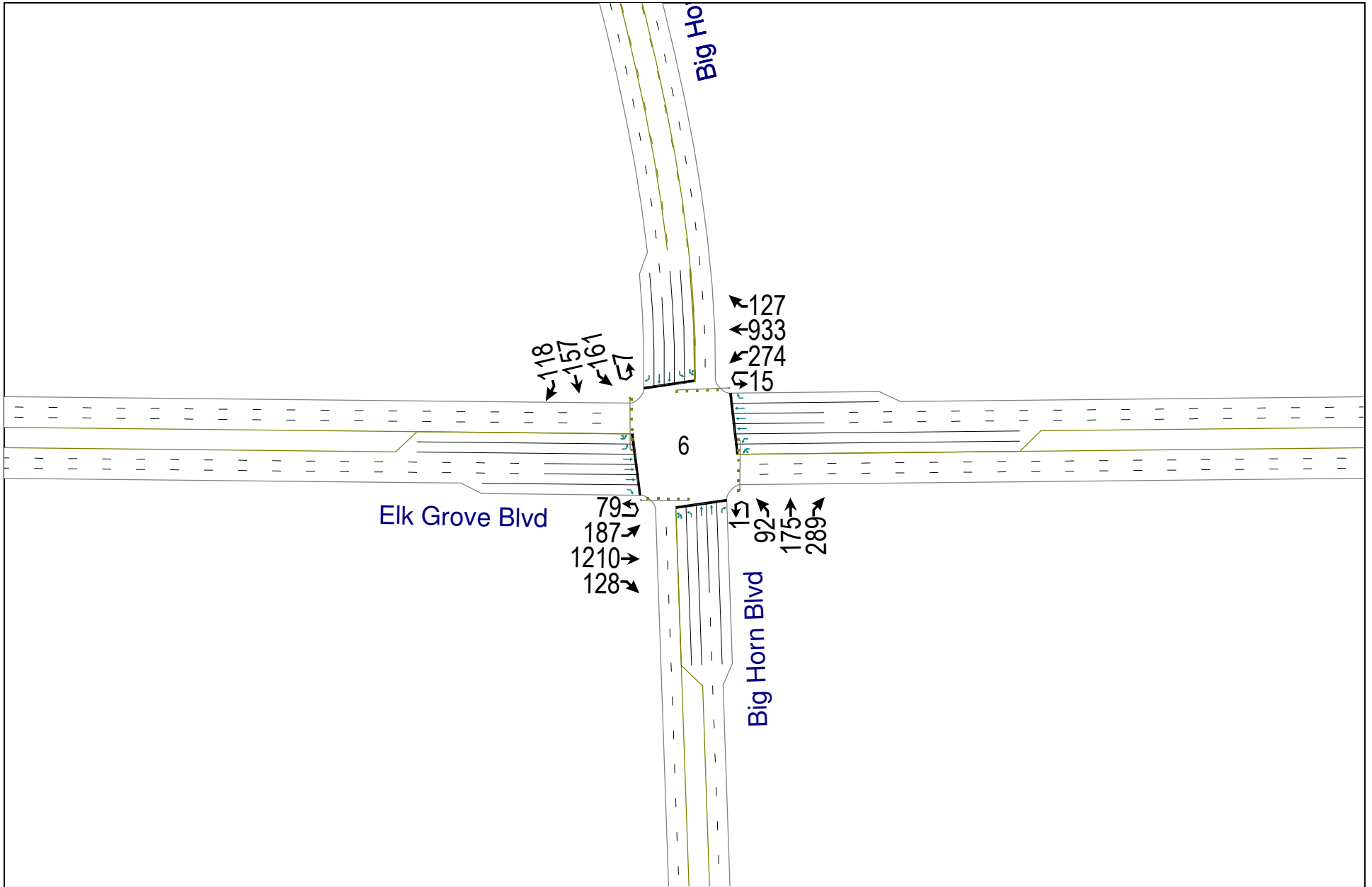


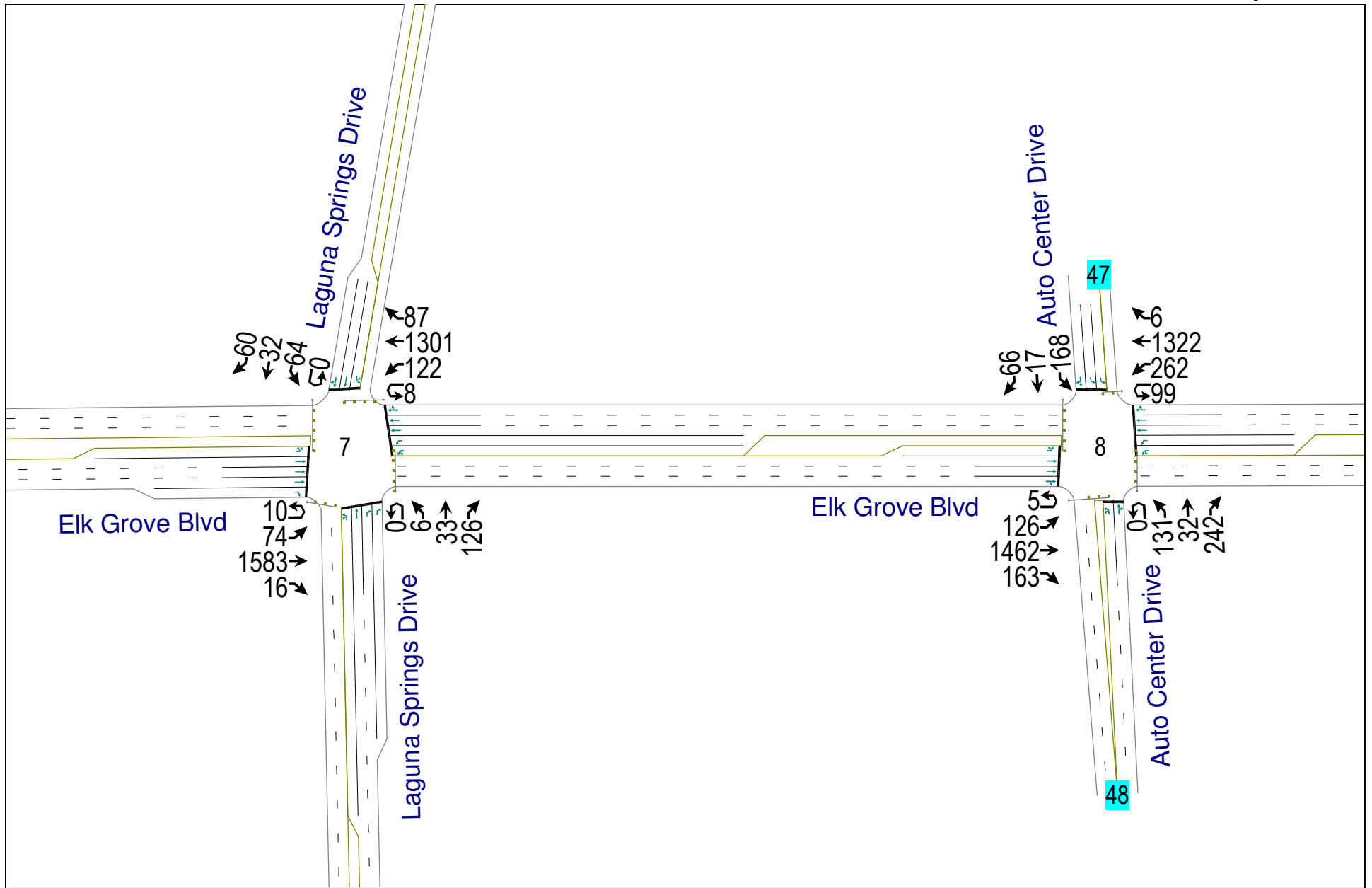


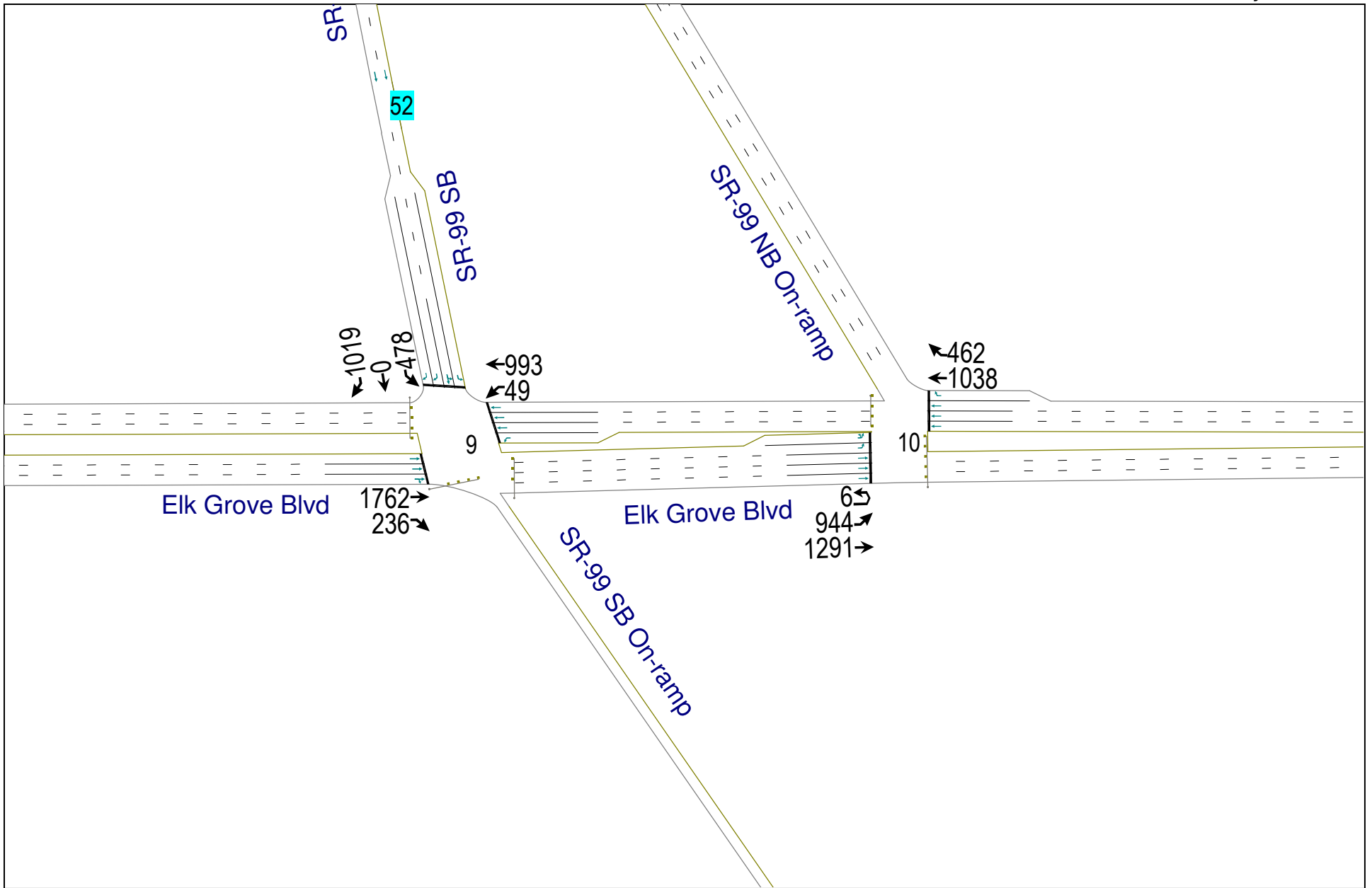


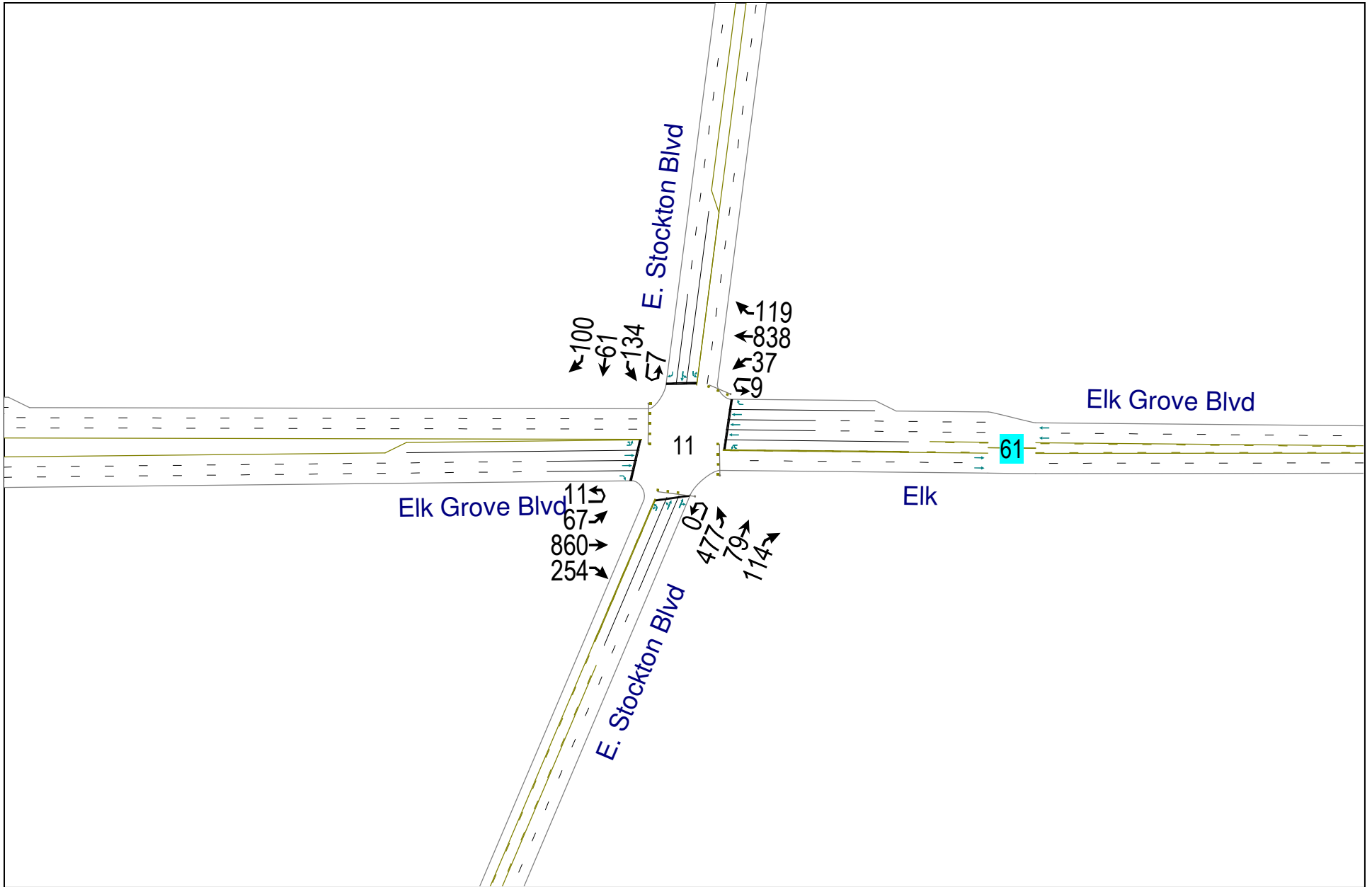


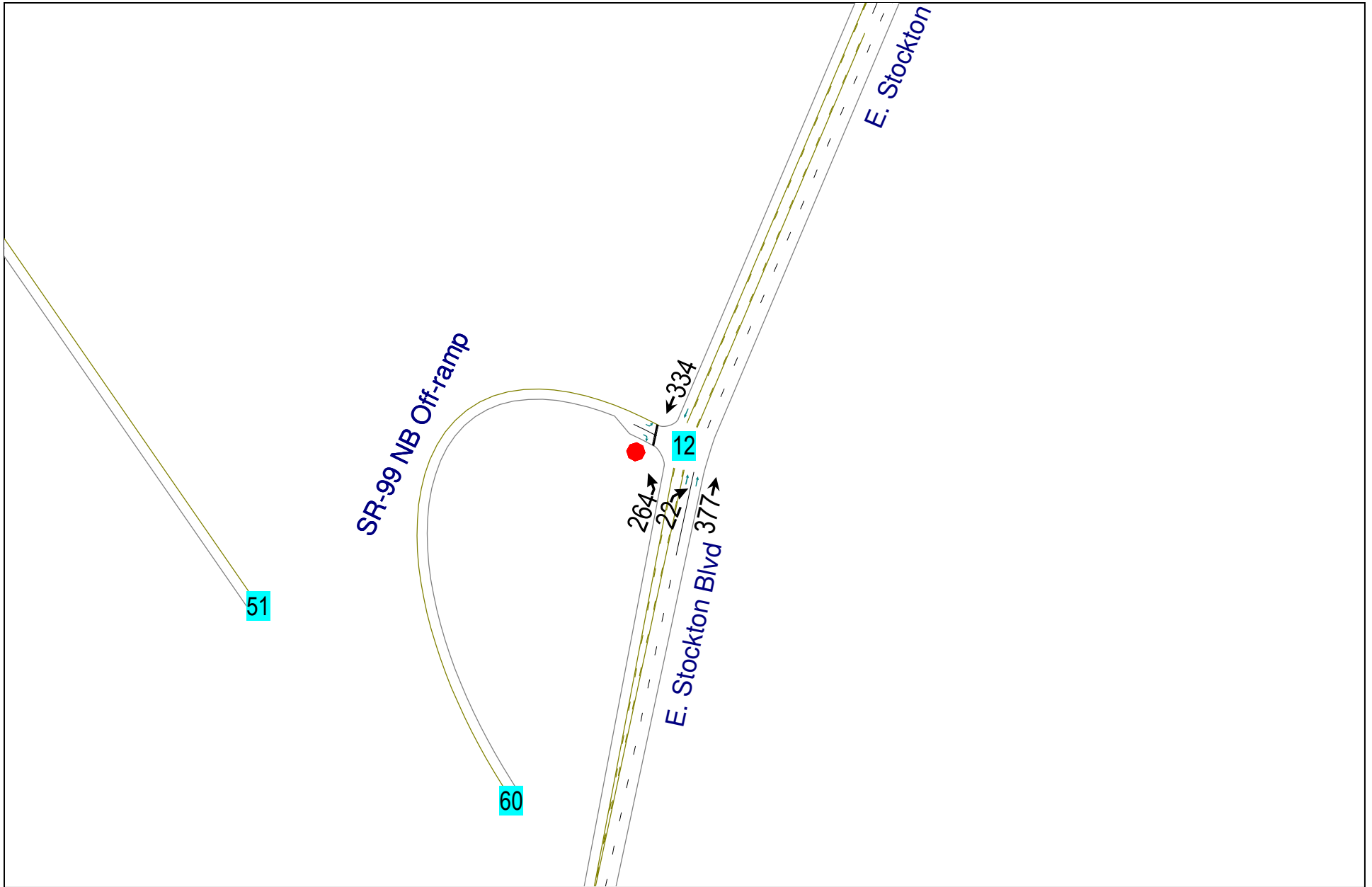


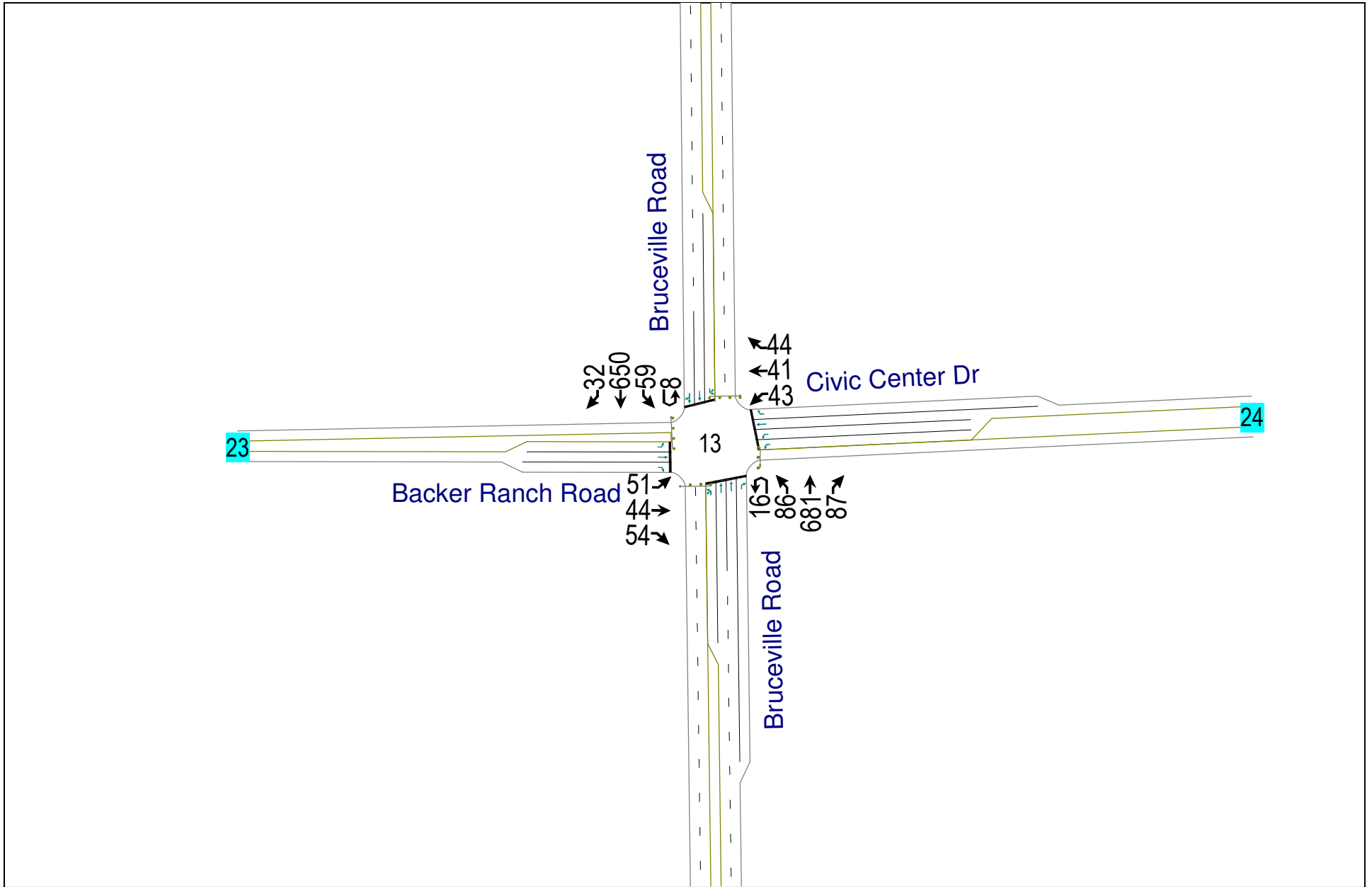


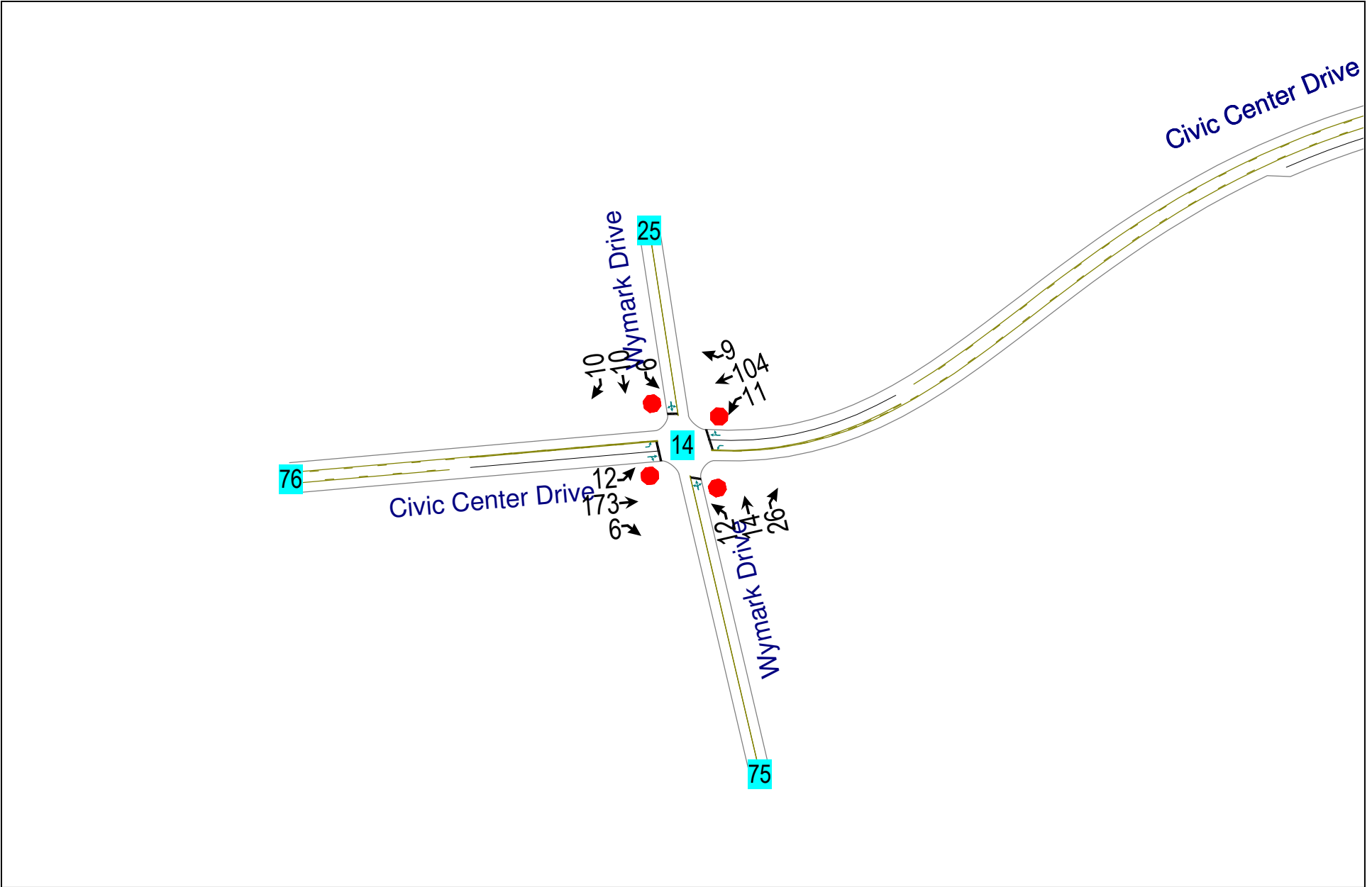


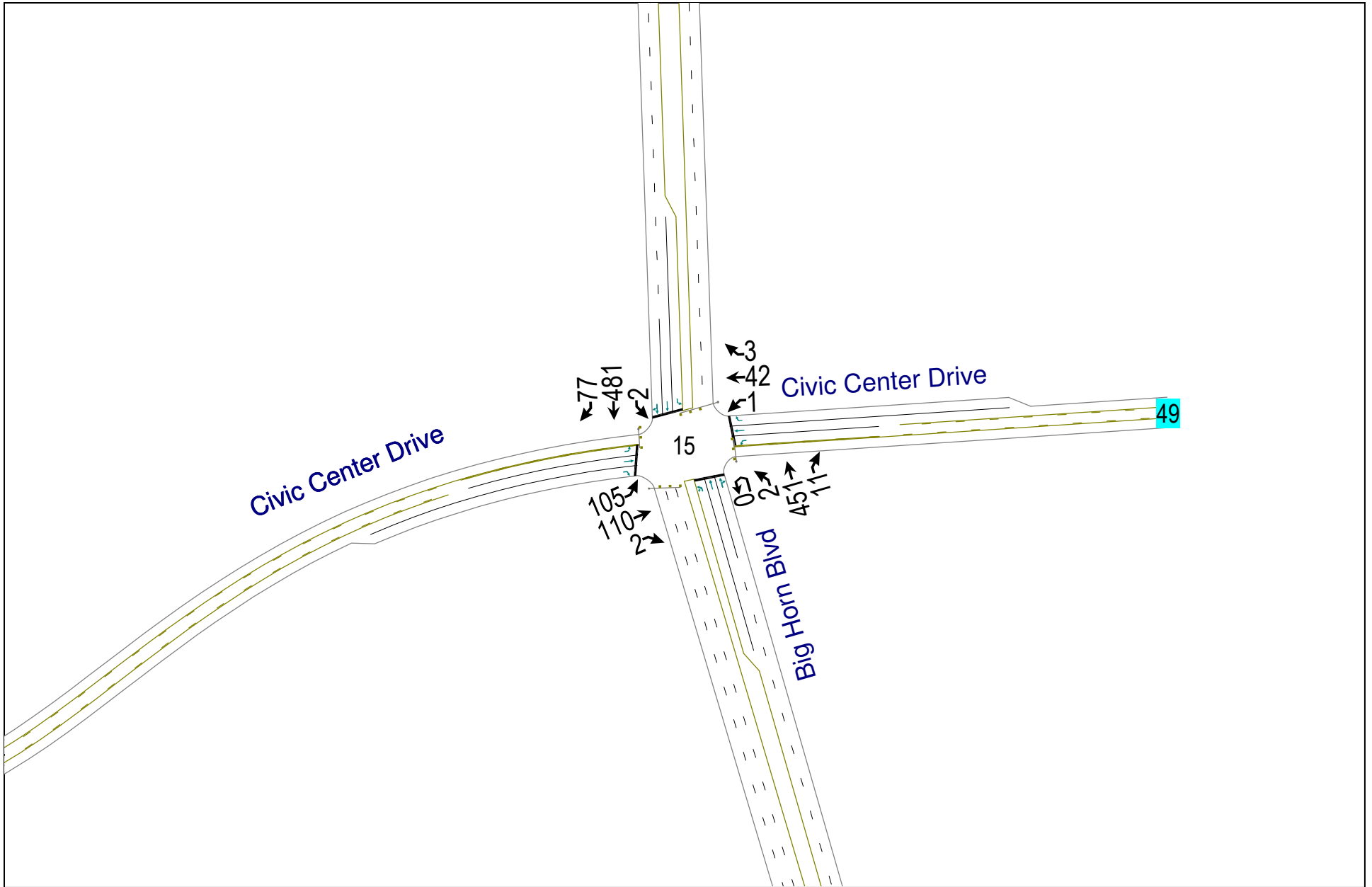


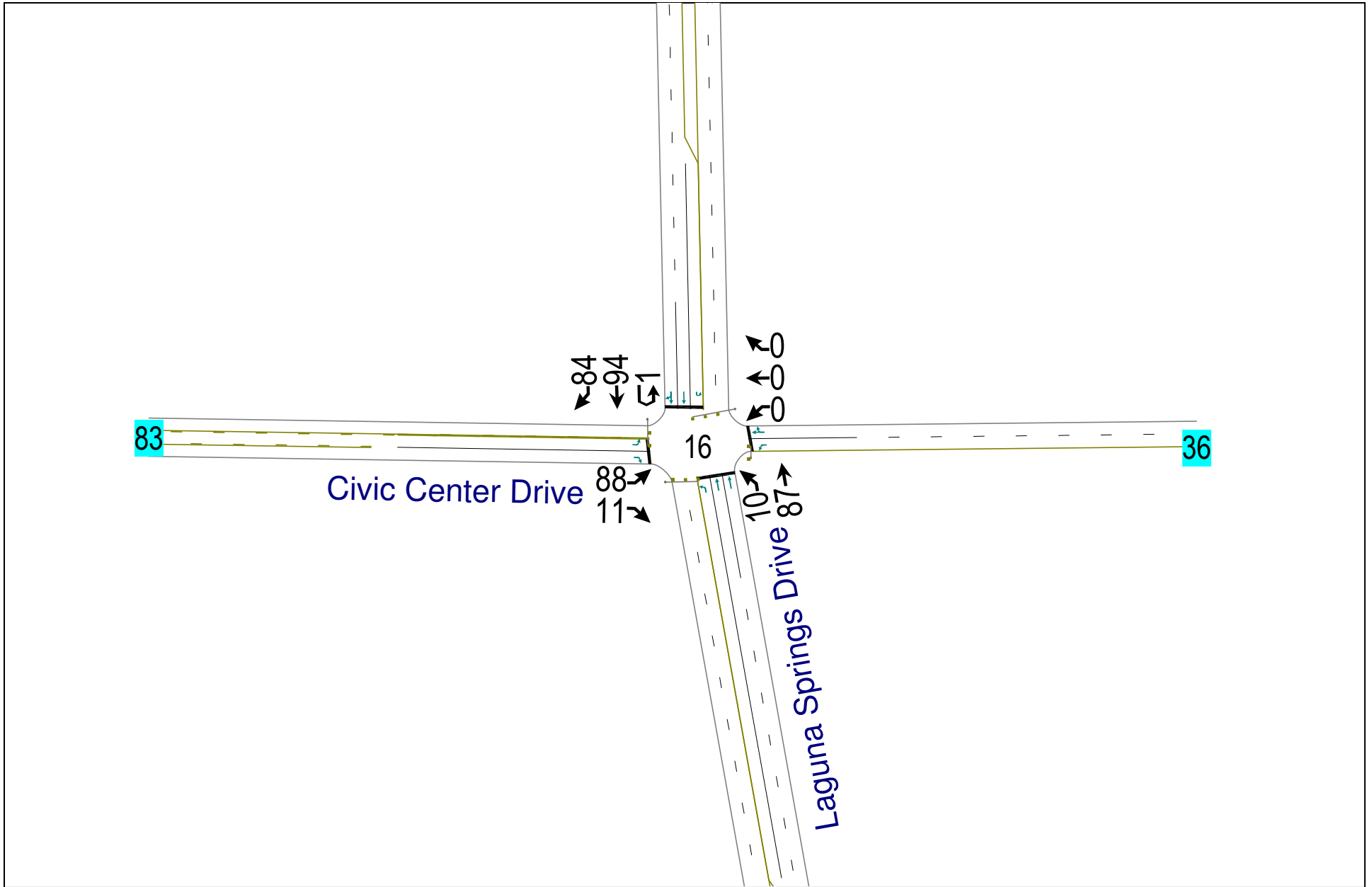


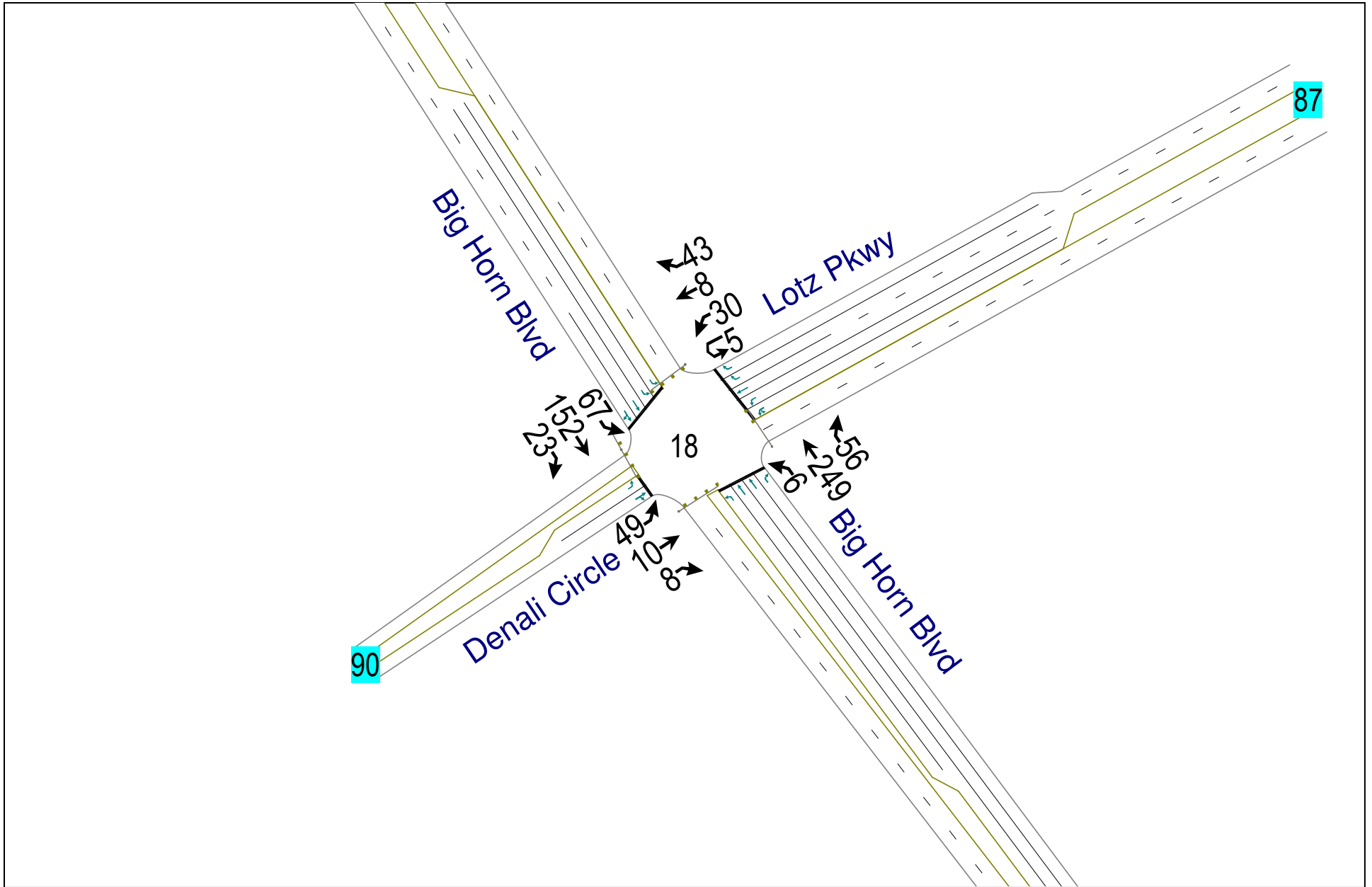


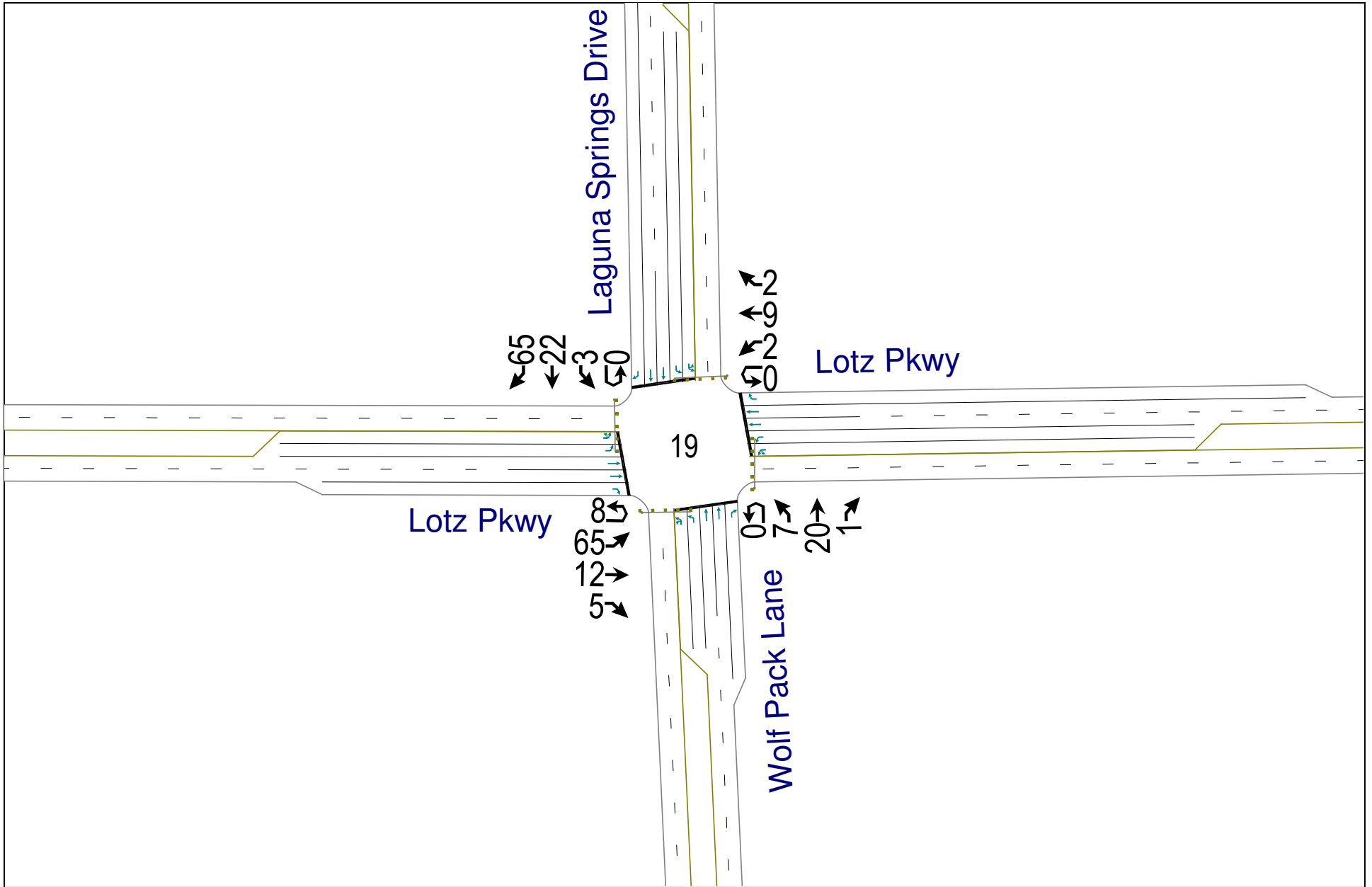


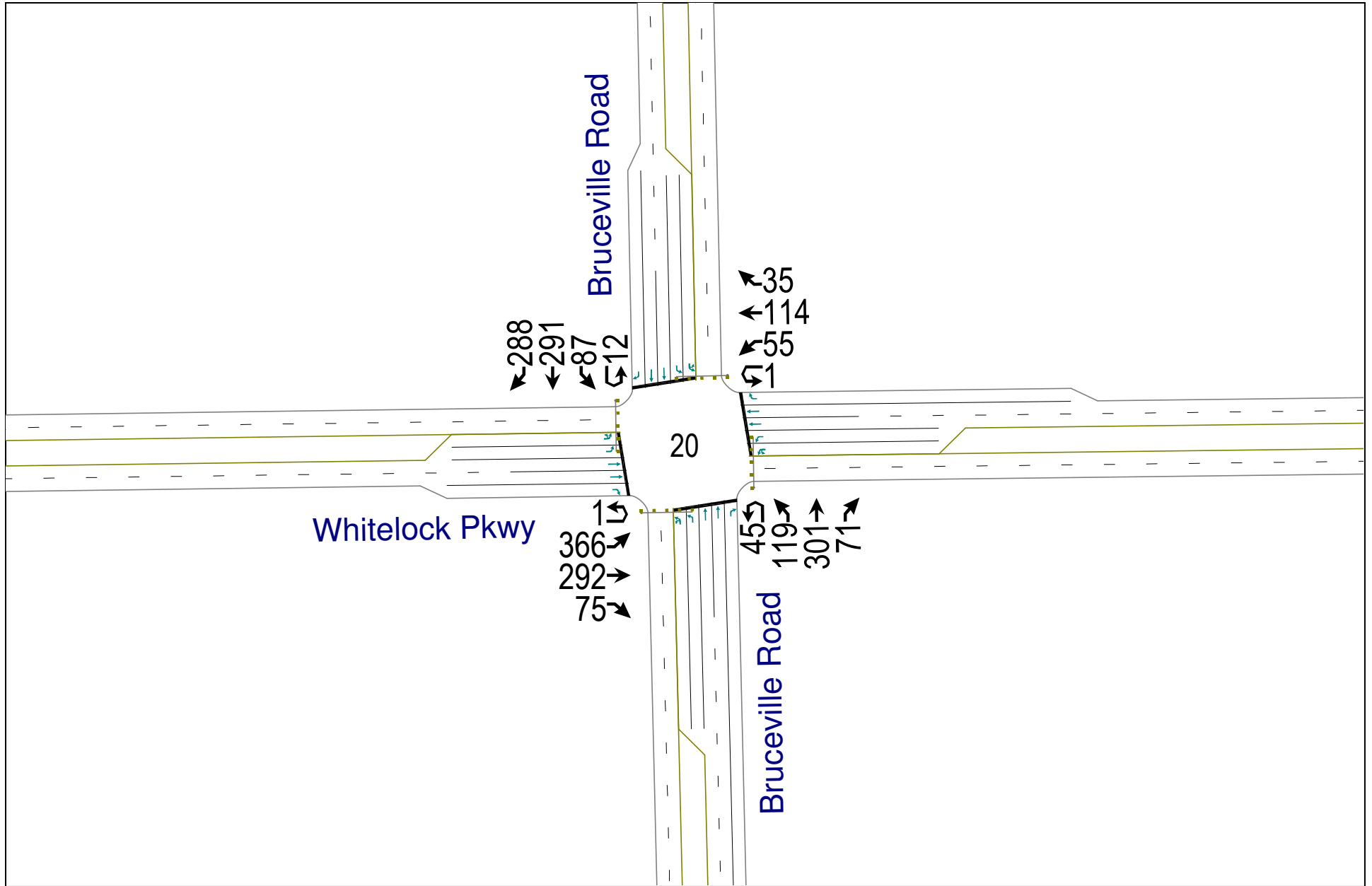


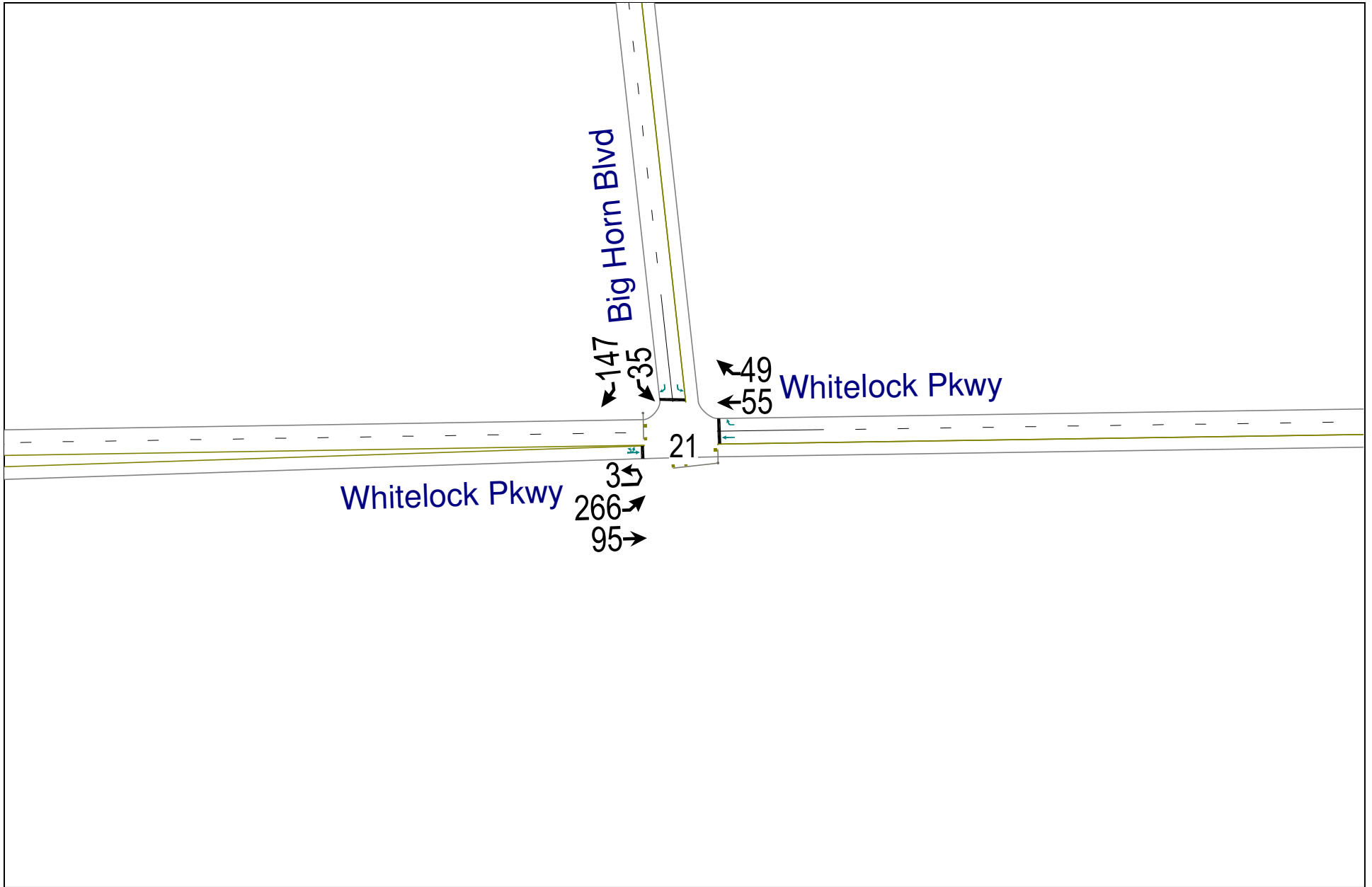


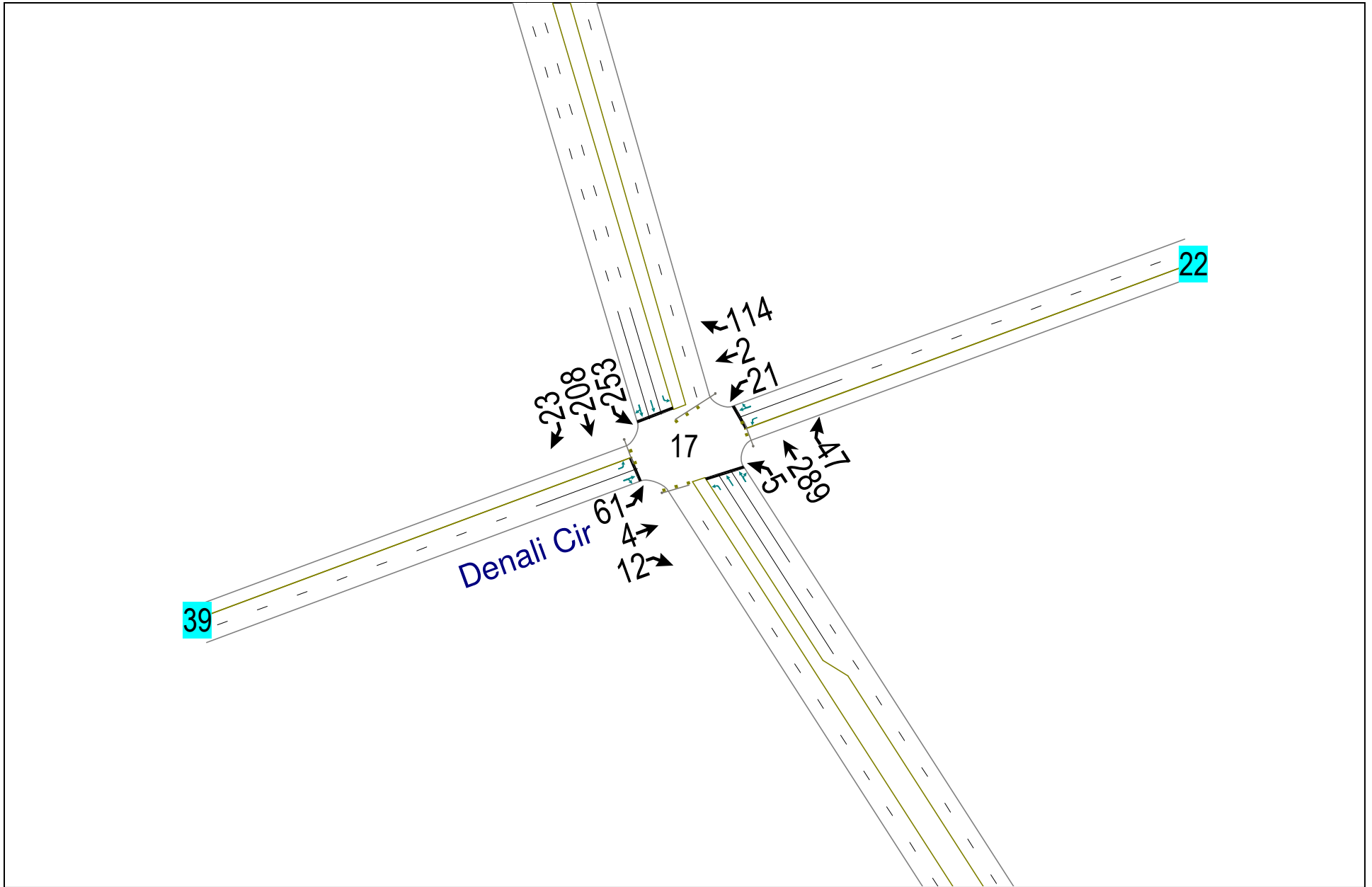












HCM Unsignalized Intersection Capacity Analysis
 1: Elk Grove Blvd & I-5 SB On/Off-Ramp

Existing Weekday Plus Project Conditions
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑	↔		↔↔	
Volume (veh/h)	1	11	5	106	1428	6
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	12	5	112	1503	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3012	3009	3013	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3012	3009	3013	0	0	
tC, single (s)	7.1	6.7	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.2	4.0	3.3	2.2	
p0 queue free %	0	0	0	90	7	
cM capacity (veh/h)	0	1	1	1085	1623	
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	5	8	117	1002	507	
Volume Left	1	0	0	1002	501	
Volume Right	0	0	112	0	6	
cSH	0	1	21	1623	1623	
Volume to Capacity	Err	8.96	5.45	0.93	0.93	
Queue Length 95th (ft)	Err	Err	Err	435	435	
Control Delay (s)	Err	Err	Err	25.2	25.2	
Lane LOS	F	F	F	D	D	
Approach Delay (s)	Err		Err	25.2		
Approach LOS	F		F			
Intersection Summary						
Average Delay			Err			
Intersection Capacity Utilization			54.4%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis Existing Weekday Plus Project Conditions
 2: Elk Grove Blvd & I-5 NB On-Ramp PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	1432	0	0	110	534	1	0	224	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	7	1476	0	0	113	551	1	0	231	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									17			
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	113			1476			1604	1604	738	981	1604	113
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	113			1476			1604	1604	738	981	1604	113
tC, single (s)	4.7			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	100	36	100	100	100
cM capacity (veh/h)	1297			452			70	104	360	73	104	918
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1					
Volume Total	7	738	738	113	275	275	232					
Volume Left	7	0	0	0	0	0	1					
Volume Right	0	0	0	0	275	275	231					
cSH	1297	1700	1700	1700	1700	1700	362					
Volume to Capacity	0.01	0.43	0.43	0.07	0.16	0.16	0.64					
Queue Length 95th (ft)	0	0	0	0	0	0	106					
Control Delay (s)	7.8	0.0	0.0	0.0	0.0	0.0	31.3					
Lane LOS	A						D					
Approach Delay (s)	0.0			0.0			31.3					
Approach LOS							D					
Intersection Summary												
Average Delay			3.1									
Intersection Capacity Utilization			55.5%			ICU Level of Service			B			
Analysis Period (min)			15									

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

Existing Weekday Plus Project Conditions
PM Peak Hour

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	3	184	1343	537	1	80	776	291	122	345	257	88
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	0.98		1.00	1.00	0.98		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	2726		3433	5085	1560		3433	5085	1559
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	2726		3433	5085	1560		3433	5085	1559
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	1460	584	1	87	843	316	133	375	279	96
RTOR Reduction (vph)	0	0	0	336	0	0	0	191	0	0	0	80
Lane Group Flow (vph)	0	203	1460	248	0	88	843	125	0	508	279	16
Confl. Peds. (#/hr)								3				4
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	51.0	51.0		7.5	46.6	46.6		22.1	20.4	20.4
Effective Green, g (s)		11.5	51.0	51.0		7.5	46.6	46.6		22.1	20.4	20.4
Actuated g/C Ratio		0.10	0.42	0.42		0.06	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	2161	1159		215	1975	606		632	864	265
v/s Ratio Prot		c0.06	c0.29			0.03	0.17			c0.15	0.05	
v/s Ratio Perm				0.09				0.08				0.01
v/c Ratio		0.62	0.68	0.21		0.41	0.43	0.21		0.80	0.32	0.06
Uniform Delay, d1		52.1	27.8	21.8		54.1	26.9	24.4		46.9	43.7	41.8
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	1.7	0.4		0.5	0.7	0.8		6.9	0.1	0.0
Delay (s)		54.6	29.5	22.2		54.6	27.6	25.2		53.8	43.8	41.8
Level of Service		D	C	C		D	C	C		D	D	D
Approach Delay (s)			29.9				28.9				49.3	
Approach LOS			C				C				D	
Intersection Summary												
HCM Average Control Delay			37.9				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			24.3		
Intersection Capacity Utilization			83.4%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

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

Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		↔↔	↑↑↑	↗
Volume (vph)	2	361	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	392	412	263
RTOR Reduction (vph)	0	0	0	230
Lane Group Flow (vph)	0	394	412	33
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				3
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		15.9	15.1	15.1
Effective Green, g (s)		15.9	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)		455	640	196
v/s Ratio Prot		0.11	c0.08	
v/s Ratio Perm				0.02
v/c Ratio		0.87	0.64	0.17
Uniform Delay, d1		51.0	49.9	46.8
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		15.3	1.7	0.1
Delay (s)		66.3	51.6	47.0
Level of Service		E	D	D
Approach Delay (s)			55.9	
Approach LOS			E	

Intersection Summary

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

Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↗	↑↑↑	↗		↔↗	↑↑↑	↗		↔↗	↑↑↑	↗
Volume (vph)	26	292	1089	134	3	446	1117	228	5	125	353	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
Frbp, ped/bikes		1.00	1.00	0.99		1.00	1.00	0.99		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	1563		3433	5085	1562		3433	5085	1544
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	1563		3433	5085	1562		3433	5085	1544
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	1134	140	3	465	1164	238	5	130	368	191
RTOR Reduction (vph)	0	0	0	70	0	0	0	111	0	0	0	160
Lane Group Flow (vph)	0	331	1134	70	0	468	1164	127	0	135	368	31
Confl. Peds. (#/hr)				1				1				6
Confl. Bikes (#/hr)								1				5
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	43.9	43.9		20.7	48.7	48.7		9.1	19.6	19.6
Effective Green, g (s)		15.9	43.9	43.9		20.7	48.7	48.7		9.1	19.6	19.6
Actuated g/C Ratio		0.13	0.37	0.37		0.17	0.41	0.41		0.08	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	1860	572		592	2064	634		260	831	252
v/s Ratio Prot		0.10	c0.22			c0.14	c0.23			0.04	0.07	
v/s Ratio Perm				0.04				0.08				0.02
v/c Ratio		0.73	0.61	0.12		0.79	0.56	0.20		0.52	0.44	0.12
Uniform Delay, d1		50.0	31.1	25.3		47.6	27.5	23.1		53.3	45.3	42.9
Progression Factor		1.00	1.00	1.00		1.12	0.43	0.48		1.00	1.00	1.00
Incremental Delay, d2		4.9	1.5	0.4		5.6	0.9	0.6		0.7	0.1	0.1
Delay (s)		54.8	32.6	25.7		58.8	12.6	11.6		54.1	45.4	42.9
Level of Service		D	C	C		E	B	B		D	D	D
Approach Delay (s)			36.6				24.1				46.4	
Approach LOS			D				C				D	

Intersection Summary		
HCM Average Control Delay	37.1	HCM Level of Service D
HCM Volume to Capacity ratio	0.79	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 28.9
Intersection Capacity Utilization	83.6%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

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

Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	46	215	728	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
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	4782	1340
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	4782	1340
Peak-hour factor, PHF	0.96	0.96	0.96	0.96
Adj. Flow (vph)	48	224	758	233
RTOR Reduction (vph)	0	0	2	169
Lane Group Flow (vph)	0	272	779	41
Confl. Peds. (#/hr)				3
Confl. Bikes (#/hr)				1
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		12.9	23.4	23.4
Effective Green, g (s)		12.9	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)		369	932	261
v/s Ratio Prot		c0.08	c0.16	
v/s Ratio Perm				0.03
v/c Ratio		0.74	0.84	0.16
Uniform Delay, d1		51.9	46.4	40.1
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		6.5	6.3	0.1
Delay (s)		58.4	52.7	40.2
Level of Service		E	D	D
Approach Delay (s)			51.9	
Approach LOS			D	

Intersection Summary

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

Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↖	↑↑↑	↗		↖	↑↑↑			↖	↗	↖
Volume (vph)	1	13	1445	31	2	24	1872	118	18	8	47	54
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		5.6	6.7			5.6	5.6	5.6
Lane Util. Factor		1.00	0.91	1.00		1.00	0.91			1.00	1.00	0.95
Frbp, ped/bikes		1.00	1.00	0.97		1.00	1.00			1.00	0.99	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	0.99			1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.97	1.00	0.95
Satd. Flow (prot)		1770	5085	1543		1770	5031			1799	1561	1681
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.97	1.00	0.95
Satd. Flow (perm)		1770	5085	1543		1770	5031			1799	1561	1681
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)	1	14	1505	32	2	25	1950	123	19	8	49	56
RTOR Reduction (vph)	0	0	0	9	0	0	4	0	0	0	46	0
Lane Group Flow (vph)	0	15	1505	23	0	27	2069	0	0	27	3	32
Confl. Peds. (#/hr)				1				3			2	
Confl. Bikes (#/hr)				5				5				
Turn Type	Prot	Prot		Perm	Prot	Prot			Split		Perm	Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				6							3	
Actuated Green, G (s)		2.7	76.9	76.9		4.5	77.6			7.4	7.4	7.7
Effective Green, g (s)		2.7	76.9	76.9		4.5	77.6			7.4	7.4	7.7
Actuated g/C Ratio		0.02	0.64	0.64		0.04	0.65			0.06	0.06	0.06
Clearance Time (s)		6.7	6.7	6.7		5.6	6.7			5.6	5.6	5.6
Vehicle Extension (s)		2.0	3.0	3.0		2.0	3.0			2.0	2.0	2.0
Lane Grp Cap (vph)		40	3259	989		66	3253			111	96	108
v/s Ratio Prot		0.01	0.30			c0.02	c0.41			c0.02		0.02
v/s Ratio Perm				0.02							0.00	
v/c Ratio		0.38	0.46	0.02		0.41	0.64			0.24	0.03	0.30
Uniform Delay, d1		57.8	11.0	7.9		56.5	12.7			53.6	52.9	53.6
Progression Factor		0.71	1.59	1.63		1.31	0.37			1.00	1.00	1.00
Incremental Delay, d2		1.7	0.4	0.0		1.2	0.8			0.4	0.0	0.6
Delay (s)		42.8	17.8	12.9		75.0	5.5			54.0	53.0	54.1
Level of Service		D	B	B		E	A			D	D	D
Approach Delay (s)			18.0				6.4			53.4		
Approach LOS			B				A			D		

Intersection Summary

HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBT	SBR
Lane Configurations	↕	↗
Volume (vph)	9	9
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.6	5.6
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.96	1.00
Satd. Flow (prot)	1708	1557
Flt Permitted	0.96	1.00
Satd. Flow (perm)	1708	1557
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	9	9
RTOR Reduction (vph)	0	8
Lane Group Flow (vph)	33	1
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		1
Turn Type		Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	7.7	7.7
Effective Green, g (s)	7.7	7.7
Actuated g/C Ratio	0.06	0.06
Clearance Time (s)	5.6	5.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	110	100
v/s Ratio Prot	c0.02	
v/s Ratio Perm		0.00
v/c Ratio	0.30	0.01
Uniform Delay, d1	53.6	52.6
Progression Factor	1.00	1.00
Incremental Delay, d2	0.6	0.0
Delay (s)	54.1	52.6
Level of Service	D	D
Approach Delay (s)	53.9	
Approach LOS	D	

Intersection Summary

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

Existing Weekday Plus Project Conditions
PM Peak Hour

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	64	135	1220	96	7	256	1574	197	1	116	108	237
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	0.98		1.00	1.00	0.99		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	1559		3433	5085	1562		3433	3539	1547
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	1559		3433	5085	1562		3433	3539	1547
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	100	7	267	1640	205	1	121	112	247
RTOR Reduction (vph)	0	0	0	38	0	0	0	56	0	0	0	221
Lane Group Flow (vph)	0	208	1271	62	0	274	1640	149	0	122	112	26
Confl. Peds. (#/hr)				2								6
Confl. Bikes (#/hr)				2			4					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)		11.6	59.1	59.1		13.3	60.8	60.8		8.7	12.6	12.6
Effective Green, g (s)		11.6	59.1	59.1		13.3	60.8	60.8		8.7	12.6	12.6
Actuated g/C Ratio		0.10	0.49	0.49		0.11	0.51	0.51		0.07	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	2504	768		380	2576	791		249	372	162
v/s Ratio Prot		0.06	0.25			c0.08	c0.32			0.04	0.03	
v/s Ratio Perm				0.04				0.10				0.02
v/c Ratio		0.63	0.51	0.08		0.72	0.64	0.19		0.49	0.30	0.16
Uniform Delay, d1		52.1	20.6	16.1		51.6	21.6	16.1		53.5	49.6	48.9
Progression Factor		1.20	0.71	1.48		1.50	0.38	0.11		1.00	1.00	1.00
Incremental Delay, d2		2.5	0.7	0.2		4.2	0.9	0.4		0.6	0.2	0.2
Delay (s)		65.0	15.2	24.0		81.5	9.0	2.2		54.1	49.8	49.1
Level of Service		E	B	C		F	A	A		D	D	D
Approach Delay (s)			22.3				17.7				50.5	
Approach LOS			C				B				D	
Intersection Summary												
HCM Average Control Delay			26.7				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			75.7%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

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

Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	LT	RT
Volume (vph)	1	182	210	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
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	3539	1554
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1554
Peak-hour factor, PHF	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1	190	219	207
RTOR Reduction (vph)	0	0	0	176
Lane Group Flow (vph)	0	191	219	31
Confl. Peds. (#/hr)				6
Confl. Bikes (#/hr)				
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		11.0	14.9	14.9
Effective Green, g (s)		11.0	14.9	14.9
Actuated g/C Ratio		0.09	0.12	0.12
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		315	439	193
v/s Ratio Prot		c0.06	c0.06	
v/s Ratio Perm				0.02
v/c Ratio		0.61	0.50	0.16
Uniform Delay, d1		52.4	49.1	47.0
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		2.3	0.3	0.1
Delay (s)		54.7	49.4	47.1
Level of Service		D	D	D
Approach Delay (s)			50.3	
Approach LOS			D	

Intersection Summary

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

Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		3	3	1		2	2			3	1	2
Volume (vph)	10	95	1447	27	3	140	1771	72	2	69	75	165
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
Frbp, ped/bikes		1.00	1.00	0.99		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
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	1562		3433	5050			1770	1863	2750
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	5085	1562		3433	5050			1770	1863	2750
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	1492	28	3	144	1826	74	2	71	77	170
RTOR Reduction (vph)	0	0	0	9	0	0	2	0	0	0	0	153
Lane Group Flow (vph)	0	108	1492	19	0	147	1898	0	0	73	77	17
Confl. Peds. (#/hr)								3				1
Confl. Bikes (#/hr)				4				2				
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	62.6	62.6		9.5	60.4			8.3	11.7	11.7
Effective Green, g (s)		11.7	62.6	62.6		9.5	60.4			8.3	11.7	11.7
Actuated g/C Ratio		0.10	0.52	0.52		0.08	0.50			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	2653	815		272	2542			122	182	268
v/s Ratio Prot		c0.06	0.29			0.04	c0.38			0.04	c0.04	
v/s Ratio Perm				0.01								0.01
v/c Ratio		0.62	0.56	0.02		0.54	0.75			0.60	0.42	0.06
Uniform Delay, d1		52.0	19.4	13.9		53.2	23.7			54.2	51.0	49.2
Progression Factor		1.03	0.88	0.53		1.47	0.37			1.00	1.00	1.00
Incremental Delay, d2		4.4	0.8	0.0		0.8	1.4			5.2	0.6	0.0
Delay (s)		58.0	17.9	7.4		79.0	10.2			59.4	51.6	49.2
Level of Service		E	B	A		E	B			E	D	D
Approach Delay (s)			20.4				15.1				52.1	
Approach LOS			C				B				D	

Intersection Summary

HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	138	71	142
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	5.6	5.3	
Lane Util. Factor	1.00	0.95	
Frpb, ped/bikes	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	
Fr _t	1.00	0.90	
Fl _t Protected	0.95	1.00	
Satd. Flow (prot)	1770	3157	
Fl _t Permitted	0.95	1.00	
Satd. Flow (perm)	1770	3157	
Peak-hour factor, PHF	0.97	0.97	0.97
Adj. Flow (vph)	142	73	146
RTOR Reduction (vph)	0	125	0
Lane Group Flow (vph)	142	94	0
Confl. Peds. (#/hr)			1
Confl. Bikes (#/hr)			
Turn Type	Prot		
Protected Phases	7	4	
Permitted Phases			
Actuated Green, G (s)	14.0	17.4	
Effective Green, g (s)	14.0	17.4	
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	458	
v/s Ratio Prot	c0.08	0.03	
v/s Ratio Perm			
v/c Ratio	0.69	0.21	
Uniform Delay, d ₁	50.9	45.2	
Progression Factor	1.00	1.00	
Incremental Delay, d ₂	7.3	0.1	
Delay (s)	58.2	45.3	
Level of Service	E	D	
Approach Delay (s)		50.4	
Approach LOS		D	
Intersection Summary			

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

Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑			↔	↑↑↑		↔	↑		↔
Volume (vph)	2	115	1510	68	47	176	1807	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
Frbp, ped/bikes		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
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	5044			3433	5082		1770	1608		3433
Flt Permitted		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (perm)		1770	5044			3433	5082		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	1573	71	49	183	1882	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	1641	0	0	232	1888	0	155	43	0	197
Confl. Peds. (#/hr)				18				15				
Confl. Bikes (#/hr)				2				4				
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	2501			358	2516		218	117		501
v/s Ratio Prot		c0.07	0.33			0.07	c0.37		c0.09	0.03		c0.06
v/s Ratio Perm												
v/c Ratio		0.66	0.66			0.65	0.75		0.71	0.37		0.39
Uniform Delay, d1		51.6	22.6			51.6	24.3		50.5	53.0		46.4
Progression Factor		1.08	0.82			1.18	0.47		1.00	1.00		1.00
Incremental Delay, d2		5.4	1.2			2.0	1.4		8.8	0.7		0.2
Delay (s)		61.2	19.8			62.8	12.9		59.3	53.8		46.6
Level of Service		E	B			E	B		E	D		D
Approach Delay (s)			22.6			18.4			55.7			
Approach LOS			C			B			E			
Intersection Summary												
HCM Average Control Delay			25.6			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.9			
Intersection Capacity Utilization			84.6%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBT	SBR
Lane Configurations	T	
Volume (vph)	12	116
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frbp, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.86	
Flt Protected	1.00	
Satd. Flow (prot)	1573	
Flt Permitted	1.00	
Satd. Flow (perm)	1573	
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	12	121
RTOR Reduction (vph)	110	0
Lane Group Flow (vph)	23	0
Confl. Peds. (#/hr)		13
Confl. Bikes (#/hr)		
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)	149	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.16	
Uniform Delay, d1	49.9	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	50.1	
Level of Service	D	
Approach Delay (s)	48.0	
Approach LOS	D	
Intersection Summary		

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

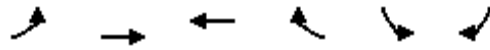
Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	1814	233	94	1214	0	0	0	0	684	0	1015
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	0.99
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)		4977		1770	5085					1681	1681	2745
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4977		1770	5085					1681	1681	2745
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	1851	238	96	1239	0	0	0	0	698	0	1036
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	72
Lane Group Flow (vph)	0	2078	0	96	1239	0	0	0	0	349	349	964
Confl. Peds. (#/hr)			5			7						3
Confl. Bikes (#/hr)			4			6						
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)		2177		161	2937					537	537	876
v/s Ratio Prot		c0.42		c0.05	0.24					0.21	0.21	
v/s Ratio Perm												c0.35
v/c Ratio		0.95		0.60	0.42					0.65	0.65	1.10
Uniform Delay, d1		32.6		52.4	14.2					35.1	35.1	40.9
Progression Factor		0.50		0.41	1.41					1.00	1.00	1.00
Incremental Delay, d2		9.5		2.9	0.3					2.0	2.0	61.6
Delay (s)		25.7		24.4	20.2					37.1	37.1	102.5
Level of Service		C		C	C					D	D	F
Approach Delay (s)		25.7			20.5			0.0			76.2	
Approach LOS		C			C			A			E	
Intersection Summary												
HCM Average Control Delay			41.3			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			18.3			
Intersection Capacity Utilization			80.8%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

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

Existing Weekday Plus Project Conditions
 PM Peak Hour

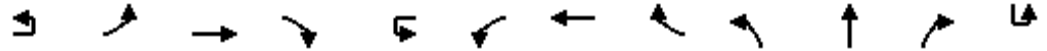


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↖	↑↑↑	↑↑↑	↘		
Volume (vph)	792	1706	1308	507	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.0	5.7	5.7		
Lane Util. Factor	0.97	0.91	0.91	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (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)	852	1834	1406	545	0	0
RTOR Reduction (vph)	0	0	0	66	0	0
Lane Group Flow (vph)	852	1834	1406	479	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	c0.25	0.36	0.28			
v/s Ratio Perm				c0.30		
v/c Ratio	0.50	0.36	0.67	0.74		
Uniform Delay, d1	20.4	0.0	28.8	29.9		
Progression Factor	0.70	1.00	0.80	0.74		
Incremental Delay, d2	0.0	0.1	1.4	5.8		
Delay (s)	14.2	0.1	24.4	27.9		
Level of Service	B	A	C	C		
Approach Delay (s)		4.6	25.4		0.0	
Approach LOS		A	C		A	

Intersection Summary			
HCM Average Control Delay		13.3	HCM Level of Service B
HCM Volume to Capacity ratio		0.61	
Actuated Cycle Length (s)		120.0	Sum of lost time (s) 11.3
Intersection Capacity Utilization		80.8%	ICU Level of Service D
Analysis Period (min)		15	
c Critical Lane Group			

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

Existing Weekday Plus Project Conditions
 PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		
Volume (vph)	12	114	1030	477	6	55	1152	103	510	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		
Frbp, ped/bikes		1.00	1.00	0.97		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	1.00	1.00		
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	1529		1770	5085	1547	1610	3186		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.97		
Satd. Flow (perm)		1770	3539	1529		1770	5085	1547	1610	3186		
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	1084	502	6	58	1213	108	537	119	98	8
RTOR Reduction (vph)	0	0	0	234	0	0	0	49	0	18	0	0
Lane Group Flow (vph)	0	133	1084	268	0	64	1213	59	268	468	0	0
Confl. Peds. (#/hr)				4				7			6	
Confl. Bikes (#/hr)				4				2				
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	50.7	50.7		7.7	46.1	46.1	22.4	22.4		
Effective Green, g (s)		12.3	50.7	50.7		7.7	46.1	46.1	22.4	22.4		
Actuated g/C Ratio		0.10	0.42	0.42		0.06	0.38	0.38	0.19	0.19		
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	1495	646		114	1953	594	301	595		
v/s Ratio Prot		c0.08	c0.31			0.04	0.24		c0.17	0.15		
v/s Ratio Perm				0.17				0.04				
v/c Ratio		0.73	0.73	0.41		0.56	0.62	0.10	0.89	0.79		
Uniform Delay, d1		52.3	28.8	24.3		54.5	29.9	23.7	47.6	46.5		
Progression Factor		0.86	0.76	1.55		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		11.9	2.9	1.9		3.7	1.5	0.3	25.6	6.3		
Delay (s)		56.8	24.8	39.5		58.2	31.4	24.0	73.2	52.8		
Level of Service		E	C	D		E	C	C	E	D		
Approach Delay (s)			31.5				32.0			60.1		
Approach LOS			C				C			E		

Intersection Summary		
HCM Average Control Delay	39.2	HCM Level of Service D
HCM Volume to Capacity ratio	0.79	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 21.5
Intersection Capacity Utilization	77.4%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		



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
Frpb, 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	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
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
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
 12: SR-99 NB Off-ramp & E. Stockton Blvd

Existing Weekday Plus Project Conditions
 PM Peak Hour

























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	274	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)	282	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 %	41	98	100			
cM capacity (veh/h)	479	447	962			

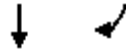
Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	292	205	205	604
Volume Left	282	0	0	0
Volume Right	9	0	0	0
cSH	484	1700	1700	1700
Volume to Capacity	0.60	0.12	0.12	0.36
Queue Length 95th (ft)	98	0	0	0
Control Delay (s)	23.1	0.0	0.0	0.0
Lane LOS	C			
Approach Delay (s)	23.1	0.0		0.0
Approach LOS	C			

Intersection Summary			
Average Delay		5.2	
Intersection Capacity Utilization		52.7%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
13: Backer Ranch Road & Bruceville Road

Existing Weekday Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	72	48	105	64	64	52	14	82	683	60	20	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	4.6	4.6		5.6	5.3	5.3		5.6
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00		1.00	0.95	1.00		1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98		1.00	1.00	0.98		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	1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1770	1863	1583	3433	1863	1559		1770	3539	1549		1770
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1770	1863	1583	3433	1863	1559		1770	3539	1549		1770
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	79	53	115	70	70	57	15	90	751	66	22	54
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	34	0	0
Lane Group Flow (vph)	79	53	115	70	70	57	0	105	751	32	0	76
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)	1					2		1		2		1
Turn Type	Prot		Perm	Prot		Perm	Prot	Prot		Perm	Prot	Prot
Protected Phases	3	8		7	4		1	1	6		5	5
Permitted Phases			8			4				6		
Actuated Green, G (s)	10.3	18.6	18.6	5.8	14.1	14.1		12.1	49.7	49.7		8.3
Effective Green, g (s)	10.3	18.6	18.6	5.8	14.1	14.1		12.1	49.7	49.7		8.3
Actuated g/C Ratio	0.10	0.18	0.18	0.06	0.14	0.14		0.12	0.48	0.48		0.08
Clearance Time (s)	5.6	4.6	4.6	5.6	4.6	4.6		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		2.0
Lane Grp Cap (vph)	176	335	284	192	254	212		207	1699	744		142
v/s Ratio Prot	c0.04	0.03		0.02	0.04			c0.06	c0.21			0.04
v/s Ratio Perm			c0.07			0.04				0.02		
v/c Ratio	0.45	0.16	0.40	0.36	0.28	0.27		0.51	0.44	0.04		0.54
Uniform Delay, d1	43.9	35.8	37.6	47.1	40.1	40.1		42.9	17.8	14.3		45.7
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	0.7	0.1	0.3	0.4	0.2	0.2		0.7	0.1	0.0		1.9
Delay (s)	44.6	35.9	37.9	47.5	40.3	40.3		43.6	17.8	14.3		47.7
Level of Service	D	D	D	D	D	D		D	B	B		D
Approach Delay (s)		39.6			42.9				20.5			
Approach LOS		D			D				C			
Intersection Summary												
HCM Average Control Delay			27.8				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			103.5				Sum of lost time (s)		26.4			
Intersection Capacity Utilization			63.9%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1055	63
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.3	
Lane Util. Factor	0.95	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	3504	
Flt Permitted	1.00	
Satd. Flow (perm)	3504	
Peak-hour factor, PHF	0.91	0.91
Adj. Flow (vph)	1159	69
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	1226	0
Confl. Peds. (#/hr)		2
Confl. Bikes (#/hr)		1
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	45.9	
Effective Green, g (s)	45.9	
Actuated g/C Ratio	0.44	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1554	
v/s Ratio Prot	c0.35	
v/s Ratio Perm		
v/c Ratio	0.79	
Uniform Delay, d1	24.7	
Progression Factor	1.00	
Incremental Delay, d2	2.5	
Delay (s)	27.2	
Level of Service	C	
Approach Delay (s)	28.4	
Approach LOS	C	
Intersection Summary		

HCM Unsignalized Intersection Capacity Analysis
 14: Civic Center Drive & Wymark Drive

Existing Weekday 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)	17	148	19	16	169	7	14	9	7	12	21	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	18	157	20	17	180	7	15	10	7	13	22	19

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	18	178	17	187	32	54
Volume Left (vph)	18	0	17	0	15	13
Volume Right (vph)	0	20	0	7	7	19
Hadj (s)	0.53	-0.05	0.53	0.01	-0.01	-0.13
Departure Headway (s)	5.4	4.8	5.4	4.9	4.9	4.7
Degree Utilization, x	0.03	0.24	0.03	0.25	0.04	0.07
Capacity (veh/h)	649	724	643	718	673	693
Control Delay (s)	7.4	8.2	7.4	8.3	8.1	8.1
Approach Delay (s)	8.1		8.3		8.1	8.1
Approach LOS	A		A		A	A

Intersection Summary

Delay	8.2
HCM Level of Service	A
Intersection Capacity Utilization	24.1%
ICU Level of Service	A
Analysis Period (min)	15

HCM Signalized Intersection Capacity Analysis
15: Civic Center Drive & Big Horn Blvd

Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	66	68	15	4	66	12	12	381	7	2	3	574
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3			6.3	5.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95			1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.97
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	1863	1583	1770	1863	1583	1770	3529			1770	3444
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	1863	1583	1770	1863	1583	1770	3529			1770	3444
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)	72	74	16	4	72	13	13	414	8	2	3	624
RTOR Reduction (vph)	0	0	11	0	0	11	0	1	0	0	0	11
Lane Group Flow (vph)	72	74	5	4	72	2	13	421	0	0	5	750
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot	Prot	
Protected Phases	3	8		7	4		1	6		5	5	2
Permitted Phases			8			4						
Actuated Green, G (s)	6.7	19.7	19.7	0.6	12.6	12.6	0.7	25.9			0.6	25.8
Effective Green, g (s)	6.7	19.7	19.7	0.6	12.6	12.6	0.7	25.9			0.6	25.8
Actuated g/C Ratio	0.10	0.29	0.29	0.01	0.18	0.18	0.01	0.38			0.01	0.38
Clearance Time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3			6.3	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
Lane Grp Cap (vph)	173	535	455	15	342	291	18	1332			15	1295
v/s Ratio Prot	c0.04	0.04		0.00	c0.04		c0.01	0.12			0.00	c0.22
v/s Ratio Perm			0.00			0.00						
v/c Ratio	0.42	0.14	0.01	0.27	0.21	0.01	0.72	0.32			0.33	0.58
Uniform Delay, d1	29.1	18.1	17.5	33.8	23.8	22.9	33.9	15.1			33.8	17.1
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	0.6	0.0	0.0	3.5	0.1	0.0	77.2	0.1			4.7	0.4
Delay (s)	29.7	18.2	17.5	37.2	23.9	22.9	111.0	15.1			38.5	17.5
Level of Service	C	B	B	D	C	C	F	B			D	B
Approach Delay (s)		23.2			24.3			18.0				17.6
Approach LOS		C			C			B				B





















Intersection Summary

HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	68.6	Sum of lost time (s)	22.8
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	126
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frts	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	137
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
16: Civic Center Drive & Laguna Springs Drive

Existing Weekday Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	91	0	12	0	0	0	20	220	0	0	0	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6		5.6				5.6	4.6				4.6
Lane Util. Factor	1.00		1.00				1.00	0.95				0.95
Frt	1.00		0.85				1.00	1.00				0.96
Flt Protected	0.95		1.00				0.95	1.00				1.00
Satd. Flow (prot)	1770		1583				1770	3539				3402
Flt Permitted	0.95		1.00				0.95	1.00				1.00
Satd. Flow (perm)	1770		1583				1770	3539				3402
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	103	0	14	0	0	0	23	250	0	0	0	201
RTOR Reduction (vph)	0	0	10	0	0	0	0	0	0	0	0	18
Lane Group Flow (vph)	103	0	4	0	0	0	23	250	0	0	0	253
Turn Type	Prot		custom	Prot			Prot			Prot		Prot
Protected Phases	3			7	4		1	6			5	2
Permitted Phases			8									
Actuated Green, G (s)	7.0		15.6				0.7	28.3				22.0
Effective Green, g (s)	7.0		15.6				0.7	28.3				22.0
Actuated g/C Ratio	0.13		0.29				0.01	0.52				0.41
Clearance Time (s)	5.6		5.6				5.6	4.6				4.6
Vehicle Extension (s)	2.0		2.0				2.0	2.0				2.0
Lane Grp Cap (vph)	229		456				23	1851				1383
v/s Ratio Prot	c0.06						c0.01	0.07				c0.07
v/s Ratio Perm			c0.00									
v/c Ratio	0.45		0.01				1.00	0.14				0.18
Uniform Delay, d1	21.8		13.7				26.7	6.6				10.3
Progression Factor	1.00		1.00				1.00	1.00				1.00
Incremental Delay, d2	0.5		0.0				187.7	0.0				0.0
Delay (s)	22.3		13.7				214.4	6.6				10.3
Level of Service	C		B				F	A				B
Approach Delay (s)		21.3			0.0			24.1				10.3
Approach LOS		C			A			C				B
Intersection Summary												
HCM Average Control Delay			18.0				HCM Level of Service					B
HCM Volume to Capacity ratio			0.21									
Actuated Cycle Length (s)			54.1				Sum of lost time (s)		15.8			
Intersection Capacity Utilization			27.9%				ICU Level of Service		A			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBR
Lane Configurations	
Volume (vph)	62
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Fr	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.88
Adj. Flow (vph)	70
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
17: Denali Cir & Big Horn Blvd

Existing Weekday Plus Project Conditions
PM Peak Hour

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↕	
Volume (vph)	45	2	4	19	2	103	6	252	18	96	440	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		5.3	5.3		5.3	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.85		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1676		1770	1588		1770	3503		1770	3478	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1676		1770	1588		1770	3503		1770	3478	
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)	49	2	4	21	2	112	7	274	20	104	478	62
RTOR Reduction (vph)	0	3	0	0	95	0	0	3	0	0	5	0
Lane Group Flow (vph)	49	3	0	21	19	0	7	291	0	104	535	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	3.8	12.2		0.8	9.2		0.6	22.1		7.0	28.5	
Effective Green, g (s)	3.8	12.2		0.8	9.2		0.6	22.1		7.0	28.5	
Actuated g/C Ratio	0.06	0.20		0.01	0.15		0.01	0.36		0.11	0.46	
Clearance Time (s)	4.6	4.6		4.6	4.6		5.3	5.3		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)	109	330		23	236		17	1251		200	1601	
v/s Ratio Prot	c0.03	c0.00		0.01	c0.01		0.00	0.08		c0.06	c0.15	
v/s Ratio Perm												
v/c Ratio	0.45	0.01		0.91	0.08		0.41	0.23		0.52	0.33	
Uniform Delay, d1	28.0	20.0		30.5	22.7		30.5	14.0		25.9	10.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.0		145.7	0.1		5.8	0.0		1.1	0.0	
Delay (s)	29.1	20.0		176.3	22.8		36.3	14.0		27.0	10.7	
Level of Service	C	B		F	C		D	B		C	B	
Approach Delay (s)		28.1			46.6			14.5			13.3	
Approach LOS		C			D			B			B	

Intersection Summary

HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	61.9	Sum of lost time (s)	19.1
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Denali Circle & Big Horn Blvd

Existing Weekday Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	44	18	2	2	60	23	59	12	172	62	100	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	5.3
Lane Util. Factor	1.00	1.00			0.97	1.00	0.88	1.00	0.95	1.00	0.97	0.95
Frt	1.00	0.99			1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98
Flt Protected	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1837			3433	1863	2787	1770	3539	1583	3433	3462
Flt Permitted	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1837			3433	1863	2787	1770	3539	1583	3433	3462
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	50	20	2	2	68	26	67	14	195	70	114	352
RTOR Reduction (vph)	0	2	0	0	0	0	52	0	0	45	0	6
Lane Group Flow (vph)	50	20	0	0	70	26	15	14	195	25	114	406
Turn Type	Prot			Prot	Prot		pm+ov	Prot		Perm	Prot	
Protected Phases	3	8		7	7	4	5	1	6		5	2
Permitted Phases							4			6		
Actuated Green, G (s)	4.1	4.8			3.8	6.1	14.6	0.6	23.7	23.7	8.5	31.6
Effective Green, g (s)	4.1	4.8			3.8	6.1	14.6	0.6	23.7	23.7	8.5	31.6
Actuated g/C Ratio	0.06	0.07			0.06	0.09	0.22	0.01	0.36	0.36	0.13	0.48
Clearance Time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	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
Lane Grp Cap (vph)	111	135			200	174	624	16	1286	575	448	1678
v/s Ratio Prot	c0.03	0.01			0.02	c0.01	0.00	0.01	0.06		c0.03	c0.12
v/s Ratio Perm							0.00			0.02		
v/c Ratio	0.45	0.15			0.35	0.15	0.02	0.88	0.15	0.04	0.25	0.24
Uniform Delay, d1	29.5	28.3			29.5	27.2	19.7	32.3	14.0	13.4	25.5	9.8
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	1.1	0.2			0.4	0.1	0.0	158.2	0.0	0.0	0.1	0.0
Delay (s)	30.5	28.5			29.9	27.3	19.7	190.5	14.0	13.4	25.6	9.8
Level of Service	C	C			C	C	B	F	B	B	C	A
Approach Delay (s)		29.9				25.3			22.7			13.3
Approach LOS		C				C			C			B

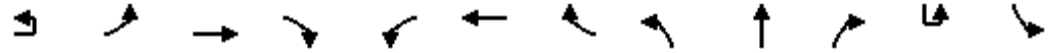
Intersection Summary		
HCM Average Control Delay	18.8	HCM Level of Service B
HCM Volume to Capacity ratio	0.27	
Actuated Cycle Length (s)	65.2	Sum of lost time (s) 22.8
Intersection Capacity Utilization	39.0%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		



Movement	SBR
Lane Configurations	
Volume (vph)	53
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frts	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.88
Adj. Flow (vph)	60
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
19: Lotz Pkwy & Laguna Springs Drive

Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔		↔	
Volume (vph)	17	81	9	6	6	15	16	29	87	6	2	3	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6		5.6	
Lane Util. Factor		0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00		0.97	
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98		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	1.00	0.85	1.00	1.00	0.85		1.00	
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)		3433	3539	1563	3433	3539	1583	3433	3539	1558		3433	
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)		3433	3539	1563	3433	3539	1583	3433	3539	1558		3433	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Adj. Flow (vph)	19	89	10	7	7	16	18	32	96	7	2	3	
RTOR Reduction (vph)	0	0	0	4	0	0	12	0	0	6	0	0	
Lane Group Flow (vph)	0	108	10	3	7	16	6	32	96	1	0	5	
Confl. Peds. (#/hr)										2			
Confl. Bikes (#/hr)				2						2		1	
Turn Type	Prot	Prot		Perm	Prot		Perm	Prot		Perm	Prot	Prot	
Protected Phases	3	3	8		7	4		1	6		5	5	
Permitted Phases				8			4			6			
Actuated Green, G (s)		5.9	25.4	25.4	0.4	19.9	19.9	0.5	7.7	7.7		0.4	
Effective Green, g (s)		5.9	25.4	25.4	0.4	19.9	19.9	0.5	7.7	7.7		0.4	
Actuated g/C Ratio		0.10	0.44	0.44	0.01	0.35	0.35	0.01	0.13	0.13		0.01	
Clearance Time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6		5.6	
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)		353	1569	693	24	1229	550	30	476	209		24	
v/s Ratio Prot		c0.03	c0.00		0.00	c0.00		c0.01	c0.03			0.00	
v/s Ratio Perm				0.00			0.00			0.00			
v/c Ratio		0.31	0.01	0.00	0.29	0.01	0.01	1.07	0.20	0.00		0.21	
Uniform Delay, d1		23.8	8.9	8.9	28.3	12.3	12.3	28.4	22.1	21.5		28.3	
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		0.2	0.0	0.0	2.5	0.0	0.0	185.4	0.1	0.0		1.6	
Delay (s)		24.0	8.9	8.9	30.8	12.3	12.3	213.8	22.1	21.5		29.9	
Level of Service		C	A	A	C	B	B	F	C	C		C	
Approach Delay (s)			21.9			15.4			67.5				
Approach LOS			C			B			E				
Intersection Summary													
HCM Average Control Delay			35.1		HCM Level of Service					D			
HCM Volume to Capacity ratio			0.10										
Actuated Cycle Length (s)			57.3		Sum of lost time (s)					24.4			
Intersection Capacity Utilization			34.3%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													



Movement	SBT	SBR
Lane Configurations	↑↑	↑
Volume (vph)	57	65
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.6	4.6
Lane Util. Factor	0.95	1.00
Frbp, ped/bikes	1.00	0.99
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3539	1561
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3539	1561
Peak-hour factor, PHF	0.91	0.91
Adj. Flow (vph)	63	71
RTOR Reduction (vph)	0	60
Lane Group Flow (vph)	63	11
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		1
Turn Type		Perm
Protected Phases	2	
Permitted Phases		2
Actuated Green, G (s)	8.6	8.6
Effective Green, g (s)	8.6	8.6
Actuated g/C Ratio	0.15	0.15
Clearance Time (s)	4.6	4.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	531	234
v/s Ratio Prot	0.02	
v/s Ratio Perm		0.01
v/c Ratio	0.12	0.05
Uniform Delay, d1	21.1	20.8
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.0
Delay (s)	21.1	20.9
Level of Service	C	C
Approach Delay (s)	21.3	
Approach LOS	C	

Intersection Summary

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

Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↗↘	↕	↗		↗↘	↕	↗		↗↘	↕	↗
Volume (vph)	1	322	194	37	1	131	233	43	21	104	246	52
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	346	209	40	1	141	251	46	23	112	265	56
RTOR Reduction (vph)	0	0	0	30	0	0	0	38	0	0	0	40
Lane Group Flow (vph)	0	347	209	10	0	142	251	8	0	135	265	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)		13.7	19.1	19.1		8.7	14.1	14.1		8.5	22.7	22.7
Effective Green, g (s)		13.7	19.1	19.1		8.7	14.1	14.1		8.5	22.7	22.7
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)		600	862	386		381	636	285		372	1025	458
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	0.04
Uniform Delay, d1		29.7	23.8	22.6		32.3	28.4	26.5		32.4	21.4	20.0
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)		30.5	23.9	22.6		32.5	28.5	26.5		32.7	21.4	20.0
Level of Service		C	C	C		C	C	C		C	C	C
Approach Delay (s)			27.7				29.6				24.6	
Approach LOS			C				C				C	

Intersection Summary

HCM Average Control Delay	26.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	32.3
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing Weekday Plus Project Conditions
PM Peak Hour



Movement	SBU	SBL	SBT	SBR
Lane Configurations		↘ ↙	↑ ↑	↗
Volume (vph)	14	68	402	474
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	0.93	0.93	0.93	0.93
Adj. Flow (vph)	15	73	432	510
RTOR Reduction (vph)	0	0	0	380
Lane Group Flow (vph)	0	88	432	130
Turn Type	Prot	Prot		Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		5.8	20.0	20.0
Effective Green, g (s)		5.8	20.0	20.0
Actuated g/C Ratio		0.07	0.26	0.26
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		254	903	404
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, d ₁		34.5	24.8	23.7
Progression Factor		1.00	1.00	1.00
Incremental Delay, d ₂		0.3	0.1	0.2
Delay (s)		34.8	24.9	23.9
Level of Service		C	C	C
Approach Delay (s)			25.2	
Approach LOS			C	

Intersection Summary

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

Existing Weekday Plus Project Conditions
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↗	↗	↗
Volume (vph)	204	66	124	45	16	265
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)	219	71	133	48	17	285
RTOR Reduction (vph)	0	0	0	38	0	231
Lane Group Flow (vph)	0	290	133	10	17	54
Turn Type	Split			Perm		Perm
Protected Phases	3	3	4		2	
Permitted Phases				4		2
Actuated Green, G (s)		13.5	9.6	9.6	9.0	9.0
Effective Green, g (s)		13.5	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)		509	376	319	335	299
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	0.05	0.18
Uniform Delay, d1		14.6	16.3	15.3	15.8	16.2
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	15.3	15.8	16.3
Level of Service		B	B	B	B	B
Approach Delay (s)		15.4	16.2		16.3	
Approach LOS		B	B		B	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	47.6	Sum of lost time (s)	15.5
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 1: Elk Grove Blvd & I-5 SB On/Off-Ramp






















Existing Saturday Plus Project Conditions
 Saturday Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑	↔		↔↔↔	
Volume (veh/h)	1	1	0	148	488	2
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	1	1	0	170	561	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1123	1123	1124	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1123	1123	1124	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	99	99	100	84	65	
cM capacity (veh/h)	113	135	134	1085	1623	
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	2	1	170	374	189	
Volume Left	1	0	0	374	187	
Volume Right	0	0	170	0	2	
cSH	118	135	1085	1623	1623	
Volume to Capacity	0.01	0.01	0.16	0.35	0.35	
Queue Length 95th (ft)	1	0	14	39	39	
Control Delay (s)	36.0	31.9	8.9	8.4	8.3	
Lane LOS	E	D	A	A	A	
Approach Delay (s)	34.7		8.9	8.4		
Approach LOS	D		A			
Intersection Summary						
Average Delay			8.6			
Intersection Capacity Utilization			29.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 2: Elk Grove Blvd & I-5 NB On-Ramp

Existing Saturday Plus Project Conditions
 Saturday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 				 		 				
Volume (veh/h)	6	479	0	0	145	633	2	0	130	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	6	494	0	0	149	653	2	0	134	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									17			
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	149			494			656	656	247	476	656	149
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	149			494			656	656	247	476	656	149
tC, single (s)	4.4			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	82	100	100	100
cM capacity (veh/h)	1326			1066			350	382	753	387	382	870
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1					
Volume Total	6	247	247	149	326	326	136					
Volume Left	6	0	0	0	0	0	2					
Volume Right	0	0	0	0	326	326	134					
cSH	1326	1700	1700	1700	1700	1700	765					
Volume to Capacity	0.00	0.15	0.15	0.09	0.19	0.19	0.18					
Queue Length 95th (ft)	0	0	0	0	0	0	16					
Control Delay (s)	7.7	0.0	0.0	0.0	0.0	0.0	10.9					
Lane LOS	A						B					
Approach Delay (s)	0.1			0.0			10.9					
Approach LOS							B					
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			38.8%		ICU Level of Service		A					
Analysis Period (min)			15									

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

Existing Saturday Plus Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↘ ↙	↑ ↑ ↑	↗ ↖		↘ ↙	↑ ↑ ↑	↗		↘ ↙	↑ ↑ ↑	↗
Volume (vph)	2	152	801	213	4	51	580	207	58	317	293	97
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	0.98		1.00	1.00	0.98		1.00	1.00	0.97
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	2729		3433	5085	1552		3433	5085	1541
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	2729		3433	5085	1552		3433	5085	1541
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)	2	165	871	232	4	55	630	225	63	345	318	105
RTOR Reduction (vph)	0	0	0	118	0	0	0	124	0	0	0	92
Lane Group Flow (vph)	0	167	871	114	0	59	630	101	0	408	318	13
Confl. Peds. (#/hr)								7				9
Confl. Bikes (#/hr)				1				1				4
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)		10.2	59.2	59.2		5.5	54.1	54.1		18.7	15.4	15.4
Effective Green, g (s)		10.2	59.2	59.2		5.5	54.1	54.1		18.7	15.4	15.4
Actuated g/C Ratio		0.08	0.49	0.49		0.05	0.45	0.45		0.16	0.13	0.13
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)		292	2509	1346		157	2292	700		535	653	198
v/s Ratio Prot		c0.05	c0.17			0.02	0.12			c0.12	c0.06	
v/s Ratio Perm				0.04				0.07				0.01
v/c Ratio		0.57	0.35	0.09		0.38	0.27	0.14		0.76	0.49	0.07
Uniform Delay, d1		52.8	18.6	16.1		55.6	20.7	19.4		48.5	48.6	46.0
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.7	0.4	0.1		0.6	0.3	0.4		5.7	0.2	0.1
Delay (s)		54.5	19.0	16.2		56.1	21.0	19.8		54.3	48.8	46.0
Level of Service		D	B	B		E	C	B		D	D	D
Approach Delay (s)			23.1				22.9				51.2	
Approach LOS			C				C				D	

Intersection Summary		
HCM Average Control Delay	35.0	HCM Level of Service C
HCM Volume to Capacity ratio	0.49	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 25.2
Intersection Capacity Utilization	76.0%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		



Movement	SBU	SBL	SBT	SBR
Lane Configurations		↘ ↙	↑ ↑ ↑	↗
Volume (vph)	5	292	181	137
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	0.97
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	5085	1544
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1544
Peak-hour factor, PHF	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	317	197	149
RTOR Reduction (vph)	0	0	0	134
Lane Group Flow (vph)	0	322	197	15
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				6
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		14.7	12.3	12.3
Effective Green, g (s)		14.7	12.3	12.3
Actuated g/C Ratio		0.12	0.10	0.10
Clearance Time (s)		5.6	6.3	6.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		421	521	158
v/s Ratio Prot		0.09	0.04	
v/s Ratio Perm				0.01
v/c Ratio		0.76	0.38	0.10
Uniform Delay, d1		51.0	50.3	48.8
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		7.3	0.2	0.1
Delay (s)		58.3	50.4	48.9
Level of Service		E	D	D
Approach Delay (s)			53.9	
Approach LOS			D	

Intersection Summary

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

Existing Saturday Plus Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↔	↑↑↑	↗		↔↔	↑↑↑	↗		↔↔	↑↑↑	↗
Volume (vph)	19	300	1052	110	1	376	577	145	3	120	348	246
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	0.98		1.00	1.00	0.99		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	1556		3433	5085	1561		3433	5085	1557
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	1556		3433	5085	1561		3433	5085	1557
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	21	330	1156	121	1	413	634	159	3	132	382	270
RTOR Reduction (vph)	0	0	0	55	0	0	0	90	0	0	0	234
Lane Group Flow (vph)	0	351	1156	66	0	414	634	69	0	135	382	36
Confl. Peds. (#/hr)				3				2				1
Confl. Bikes (#/hr)				4								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)		16.6	49.4	49.4		18.9	51.7	51.7		9.1	16.0	16.0
Effective Green, g (s)		16.6	49.4	49.4		18.9	51.7	51.7		9.1	16.0	16.0
Actuated g/C Ratio		0.14	0.41	0.41		0.16	0.43	0.43		0.08	0.13	0.13
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)		475	2093	641		541	2191	673		260	678	208
v/s Ratio Prot		0.10	c0.23			c0.12	0.12			0.04	0.08	
v/s Ratio Perm				0.04				0.04				0.02
v/c Ratio		0.74	0.55	0.10		0.77	0.29	0.10		0.52	0.56	0.17
Uniform Delay, d1		49.6	26.9	21.7		48.4	22.2	20.3		53.3	48.7	46.1
Progression Factor		1.00	1.00	1.00		1.35	0.37	0.48		1.00	1.00	1.00
Incremental Delay, d2		5.1	1.1	0.3		5.5	0.3	0.3		0.7	0.6	0.1
Delay (s)		54.8	27.9	22.0		71.1	8.4	10.1		54.1	49.4	46.3
Level of Service		D	C	C		E	A	B		D	D	D
Approach Delay (s)			33.3				30.1				49.1	
Approach LOS			C				C				D	

Intersection Summary

HCM Average Control Delay	38.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.9
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing Saturday Plus Project Conditions
Saturday Peak



Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	36	203	495	166
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
Frbp, ped/bikes		1.00	1.00	0.98
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	4775	1339
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	4775	1339
Peak-hour factor, PHF	0.91	0.91	0.91	0.91
Adj. Flow (vph)	40	223	544	182
RTOR Reduction (vph)	0	0	3	134
Lane Group Flow (vph)	0	263	563	26
Confl. Peds. (#/hr)				2
Confl. Bikes (#/hr)				2
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		12.8	19.7	19.7
Effective Green, g (s)		12.8	19.7	19.7
Actuated g/C Ratio		0.11	0.16	0.16
Clearance Time (s)		5.6	5.7	5.7
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		366	784	220
v/s Ratio Prot		c0.08	c0.12	
v/s Ratio Perm				0.02
v/c Ratio		0.72	0.72	0.12
Uniform Delay, d1		51.9	47.5	42.8
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		5.5	2.6	0.1
Delay (s)		57.4	50.1	42.8
Level of Service		E	D	D
Approach Delay (s)			50.9	
Approach LOS			D	
Intersection Summary				

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

Existing Saturday Plus Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↖	↑↑↑	↗		↖	↑↑↑			↖	↗	↘
Volume (vph)	2	9	1493	16	1	18	1091	70	13	7	23	72
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		5.6	6.7			5.6	5.6	5.6
Lane Util. Factor		1.00	0.91	1.00		1.00	0.91			1.00	1.00	0.95
Frbp, ped/bikes		1.00	1.00	0.98		1.00	1.00			1.00	0.99	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	0.99			1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.97	1.00	0.95
Satd. Flow (prot)		1770	5085	1549		1770	5029			1665	1563	1681
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.97	1.00	0.95
Satd. Flow (perm)		1770	5085	1549		1770	5029			1665	1563	1681
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)	2	10	1678	18	1	20	1226	79	15	8	26	81
RTOR Reduction (vph)	0	0	0	4	0	0	3	0	0	0	25	0
Lane Group Flow (vph)	0	12	1678	14	0	21	1302	0	0	23	1	45
Confl. Peds. (#/hr)								5			1	
Confl. Bikes (#/hr)				3								
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	15%	2%	2%	2%
Turn Type	Prot	Prot		Perm	Prot	Prot			Split		Perm	Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				6							3	
Actuated Green, G (s)		2.6	79.0	79.0		2.9	78.2			6.3	6.3	8.3
Effective Green, g (s)		2.6	79.0	79.0		2.9	78.2			6.3	6.3	8.3
Actuated g/C Ratio		0.02	0.66	0.66		0.02	0.65			0.05	0.05	0.07
Clearance Time (s)		6.7	6.7	6.7		5.6	6.7			5.6	5.6	5.6
Vehicle Extension (s)		2.0	3.0	3.0		2.0	3.0			2.0	2.0	2.0
Lane Grp Cap (vph)		38	3348	1020		43	3277			87	82	116
v/s Ratio Prot		0.01	c0.33			c0.01	0.26			c0.01		c0.03
v/s Ratio Perm				0.01							0.00	
v/c Ratio		0.32	0.50	0.01		0.49	0.40			0.26	0.02	0.39
Uniform Delay, d1		57.8	10.5	7.1		57.8	9.8			54.6	53.9	53.4
Progression Factor		0.67	1.69	1.44		1.32	0.33			1.00	1.00	1.00
Incremental Delay, d2		1.5	0.5	0.0		2.9	0.3			0.6	0.0	0.8
Delay (s)		40.4	18.1	10.2		79.0	3.6			55.2	53.9	54.2
Level of Service		D	B	B		E	A			E	D	D
Approach Delay (s)			18.2				4.7			54.5		
Approach LOS			B				A			D		

Intersection Summary

HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	SBT	SBR
Lane Configurations	↕	↗
Volume (vph)	8	23
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.6	5.6
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.96	1.00
Satd. Flow (prot)	1702	1559
Flt Permitted	0.96	1.00
Satd. Flow (perm)	1702	1559
Peak-hour factor, PHF	0.89	0.89
Adj. Flow (vph)	9	26
RTOR Reduction (vph)	0	24
Lane Group Flow (vph)	45	2
Confl. Peds. (#/hr)		3
Confl. Bikes (#/hr)		
Heavy Vehicles (%)	2%	2%
Turn Type		Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	8.3	8.3
Effective Green, g (s)	8.3	8.3
Actuated g/C Ratio	0.07	0.07
Clearance Time (s)	5.6	5.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	118	108
v/s Ratio Prot	0.03	
v/s Ratio Perm		0.00
v/c Ratio	0.38	0.02
Uniform Delay, d1	53.4	52.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.8	0.0
Delay (s)	54.1	52.1
Level of Service	D	D
Approach Delay (s)	53.7	
Approach LOS	D	
Intersection Summary		

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

Existing Saturday Plus Project Conditions
Saturday Peak

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	79	187	1210	128	15	274	933	127	1	92	175	289
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	0.99		1.00	1.00	0.98		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	1563		3433	5085	1556		3433	3539	1553
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	1563		3433	5085	1556		3433	3539	1553
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)	88	208	1344	142	17	304	1037	141	1	102	194	321
RTOR Reduction (vph)	0	0	0	53	0	0	0	65	0	0	0	219
Lane Group Flow (vph)	0	296	1344	89	0	321	1037	76	0	103	194	102
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)				2				1				4
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)		13.7	56.5	56.5		14.2	57.0	57.0		8.0	14.4	14.4
Effective Green, g (s)		13.7	56.5	56.5		14.2	57.0	57.0		8.0	14.4	14.4
Actuated g/C Ratio		0.11	0.47	0.47		0.12	0.48	0.48		0.07	0.12	0.12
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)		392	2394	736		406	2415	739		229	425	186
v/s Ratio Prot		0.09	c0.26			c0.09	0.20			0.03	0.05	
v/s Ratio Perm				0.06				0.05				c0.07
v/c Ratio		0.76	0.56	0.12		0.79	0.43	0.10		0.45	0.46	0.55
Uniform Delay, d1		51.5	22.8	17.8		51.5	20.8	17.4		53.9	49.2	49.7
Progression Factor		1.24	0.75	1.38		1.40	0.35	0.27		1.00	1.00	1.00
Incremental Delay, d2		6.6	0.9	0.3		8.6	0.5	0.3		0.5	0.3	1.8
Delay (s)		70.4	18.0	24.9		80.5	7.8	5.0		54.4	49.4	51.5
Level of Service		E	B	C		F	A	A		D	D	D
Approach Delay (s)			27.3				23.1				51.3	
Approach LOS			C				C				D	
Intersection Summary												
HCM Average Control Delay			31.7				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			29.3		
Intersection Capacity Utilization			74.3%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

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

Existing Saturday Plus Project Conditions
Saturday Peak



Movement	SBU	SBL	SBT	SBR
Lane Configurations		↔↔	↑↑	↗
Volume (vph)	7	161	157	118
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
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	3539	1548
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1548
Peak-hour factor, PHF	0.90	0.90	0.90	0.90
Adj. Flow (vph)	8	179	174	131
RTOR Reduction (vph)	0	0	0	112
Lane Group Flow (vph)	0	187	174	19
Confl. Peds. (#/hr)				4
Confl. Bikes (#/hr)				4
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		10.9	17.3	17.3
Effective Green, g (s)		10.9	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)		312	510	223
v/s Ratio Prot		c0.05	c0.05	
v/s Ratio Perm				0.01
v/c Ratio		0.60	0.34	0.08
Uniform Delay, d1		52.5	46.2	44.5
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		2.1	0.1	0.1
Delay (s)		54.5	46.4	44.5
Level of Service		D	D	D
Approach Delay (s)			49.0	
Approach LOS			D	

Intersection Summary

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

Existing Saturday Plus Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑	↗		↙	↑↑↑		↔	↑	↖	↘
Volume (vph)	10	74	1583	16	8	122	1301	87	6	33	126	64
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	0.98		1.00	1.00		1.00	1.00	0.98	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	1555		3433	5029		1770	1863	2737	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	1555		3433	5029		1770	1863	2737	1770
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)	11	78	1666	17	8	128	1369	92	6	35	133	67
RTOR Reduction (vph)	0	0	0	4	0	0	4	0	0	0	119	0
Lane Group Flow (vph)	0	89	1666	13	0	136	1457	0	6	35	14	67
Confl. Peds. (#/hr)				4				2			3	
Confl. Bikes (#/hr)				2				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)		10.4	68.5	68.5		9.1	67.2		1.2	12.3	12.3	7.9
Effective Green, g (s)		10.4	68.5	68.5		9.1	67.2		1.2	12.3	12.3	7.9
Actuated g/C Ratio		0.09	0.57	0.57		0.08	0.56		0.01	0.10	0.10	0.07
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)		153	2903	888		260	2816		18	191	281	117
v/s Ratio Prot		c0.05	c0.33			0.04	0.29		0.00	c0.02		c0.04
v/s Ratio Perm				0.01							0.00	
v/c Ratio		0.58	0.57	0.01		0.52	0.52		0.33	0.18	0.05	0.57
Uniform Delay, d1		52.7	16.4	11.1		53.4	16.4		59.0	49.3	48.6	54.4
Progression Factor		1.11	0.90	0.42		1.25	0.30		1.00	1.00	1.00	1.00
Incremental Delay, d2		3.1	0.7	0.0		0.7	0.6		3.9	0.2	0.0	4.2
Delay (s)		61.5	15.5	4.7		67.3	5.5		63.0	49.4	48.6	58.6
Level of Service		E	B	A		E	A		E	D	D	E
Approach Delay (s)			17.7			10.8			49.3			
Approach LOS			B			B			D			

Intersection Summary		
HCM Average Control Delay	17.6	HCM Level of Service B
HCM Volume to Capacity ratio	0.50	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 16.5
Intersection Capacity Utilization	64.1%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		



Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	32	60
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	0.90	
Flt Protected	1.00	
Satd. Flow (prot)	3157	
Flt Permitted	1.00	
Satd. Flow (perm)	3157	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	34	63
RTOR Reduction (vph)	53	0
Lane Group Flow (vph)	44	0
Confl. Peds. (#/hr)		4
Confl. Bikes (#/hr)		1
Turn Type		
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	19.0	
Effective Green, g (s)	19.0	
Actuated g/C Ratio	0.16	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	500	
v/s Ratio Prot	0.01	
v/s Ratio Perm		
v/c Ratio	0.09	
Uniform Delay, d1	43.1	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	43.1	
Level of Service	D	
Approach Delay (s)	49.4	
Approach LOS	D	
Intersection Summary		

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

Existing Saturday Plus Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑			↔	↑↑↑		↔	↑		↔
Volume (vph)	5	126	1462	163	99	262	1322	6	131	32	242	168
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
Frbp, ped/bikes		1.00	1.00			1.00	1.00		1.00	0.99		1.00
Flpb, ped/bikes		1.00	1.00			1.00	1.00		1.00	1.00		1.00
Frt		1.00	0.98			1.00	1.00		1.00	0.87		1.00
Flt Protected		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		1770	4995			3433	5081		1770	1596		3433
Flt Permitted		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (perm)		1770	4995			3433	5081		1770	1596		3433
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)	5	133	1539	172	104	276	1392	6	138	34	255	177
RTOR Reduction (vph)	0	0	9	0	0	0	1	0	0	175	0	0
Lane Group Flow (vph)	0	138	1702	0	0	380	1397	0	138	114	0	177
Confl. Peds. (#/hr)				11				6				
Confl. Bikes (#/hr)				1				2			1	
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)		13.7	54.8			16.9	58.0		13.6	12.8		13.7
Effective Green, g (s)		13.7	54.8			16.9	58.0		13.6	12.8		13.7
Actuated g/C Ratio		0.11	0.46			0.14	0.48		0.11	0.11		0.11
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)		202	2281			483	2456		201	170		392
v/s Ratio Prot		0.08	c0.34			c0.11	c0.28		c0.08	0.07		c0.05
v/s Ratio Perm												
v/c Ratio		0.68	0.75			0.79	0.57		0.69	0.67		0.45
Uniform Delay, d1		51.1	26.9			49.8	22.1		51.2	51.6		49.6
Progression Factor		1.42	0.44			0.99	0.95		1.00	1.00		1.00
Incremental Delay, d2		6.5	2.0			4.8	0.6		7.5	7.9		0.3
Delay (s)		78.9	13.7			54.2	21.7		58.7	59.4		49.9
Level of Service		E	B			D	C		E	E		D
Approach Delay (s)			18.6				28.6			59.2		
Approach LOS			B				C			E		
Intersection Summary												
HCM Average Control Delay			28.6			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			22.6			
Intersection Capacity Utilization			84.1%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBT	SBR
Lane Configurations	P	
Volume (vph)	17	66
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frbp, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.88	
Flt Protected	1.00	
Satd. Flow (prot)	1600	
Flt Permitted	1.00	
Satd. Flow (perm)	1600	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	18	69
RTOR Reduction (vph)	62	0
Lane Group Flow (vph)	25	0
Confl. Peds. (#/hr)		16
Confl. Bikes (#/hr)		2
Turn Type		
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	12.9	
Effective Green, g (s)	12.9	
Actuated g/C Ratio	0.11	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	172	
v/s Ratio Prot	0.02	
v/s Ratio Perm		
v/c Ratio	0.15	
Uniform Delay, d1	48.6	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	48.7	
Level of Service	D	
Approach Delay (s)	49.5	
Approach LOS	D	
Intersection Summary		

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

Existing Saturday Plus Project Conditions
 Saturday Peak

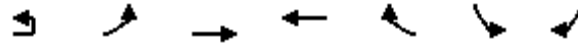


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↖	↑↑↑					↖	↖	↖↖
Volume (vph)	0	1762	236	49	993	0	0	0	0	478	0	1019
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		5.6	5.7					6.7	6.7	6.7
Lane Util. Factor		0.91		1.00	0.91					0.95	0.95	0.88
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	0.99
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)		4978		1736	5085					1681	1681	2748
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4978		1736	5085					1681	1681	2748
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	1958	262	54	1103	0	0	0	0	531	0	1132
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	0	102
Lane Group Flow (vph)	0	2209	0	54	1103	0	0	0	0	265	266	1030
Confl. Peds. (#/hr)			3			2						2
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		56.2		7.2	69.3					38.3	38.3	38.3
Effective Green, g (s)		56.2		7.2	69.3					38.3	38.3	38.3
Actuated g/C Ratio		0.47		0.06	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)		2331		104	2937					537	537	877
v/s Ratio Prot		c0.44		0.03	c0.22					0.16	0.16	
v/s Ratio Perm												c0.37
v/c Ratio		0.95		0.52	0.38					0.49	0.50	1.17
Uniform Delay, d1		30.5		54.7	13.7					33.0	33.0	40.9
Progression Factor		0.67		0.38	1.20					1.00	1.00	1.00
Incremental Delay, d2		7.9		1.6	0.3					0.3	0.3	90.4
Delay (s)		28.3		22.2	16.8					33.3	33.3	131.3
Level of Service		C		C	B					C	C	F
Approach Delay (s)		28.3			17.0			0.0			100.0	
Approach LOS		C			B			A			F	
Intersection Summary												
HCM Average Control Delay			49.4			HCM Level of Service				D		
HCM Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			18.4			
Intersection Capacity Utilization			72.2%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group

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

Existing Saturday Plus Project Conditions
 Saturday Peak

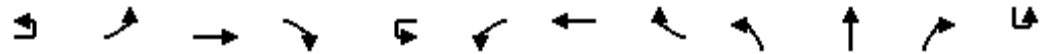


Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↔	↑↑↑	↑↑↑	↔		
Volume (vph)	6	944	1291	1038	462	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.0	5.7	5.7		
Lane Util. Factor		0.97	0.91	0.91	1.00		
Frpb, ped/bikes		1.00	1.00	1.00	0.98		
Flpb, ped/bikes		1.00	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	5085	5085	1559		
Flt Permitted		0.95	1.00	1.00	1.00		
Satd. Flow (perm)		3433	5085	5085	1559		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	1015	1388	1116	497	0	0
RTOR Reduction (vph)	0	0	0	0	42	0	0
Lane Group Flow (vph)	0	1021	1388	1116	455	0	0
Confl. Peds. (#/hr)					1		
Confl. Bikes (#/hr)					2		
Turn Type	Prot	Prot			Perm		
Protected Phases	1	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	640		
v/s Ratio Prot		c0.30	0.27	0.22			
v/s Ratio Perm					c0.29		
v/c Ratio		0.60	0.27	0.53	0.71		
Uniform Delay, d1		21.8	0.0	26.7	29.4		
Progression Factor		0.51	1.00	1.07	1.09		
Incremental Delay, d2		0.2	0.1	0.9	6.0		
Delay (s)		11.3	0.1	29.5	38.0		
Level of Service		B	A	C	D		
Approach Delay (s)			4.8	32.1		0.0	
Approach LOS			A	C		A	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.3
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing Saturday Plus Project Conditions
 Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		
Volume (vph)	11	67	860	254	9	37	838	119	477	79	114	7
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	0.97		1.00	1.00	0.98	1.00	0.99		
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	0.97		
Satd. Flow (prot)		1770	3539	1542		1770	5085	1558	1610	3150		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.97		
Satd. Flow (perm)		1770	3539	1542		1770	5085	1558	1610	3150		
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)	12	72	925	273	10	40	901	128	513	85	123	8
RTOR Reduction (vph)	0	0	0	135	0	0	0	68	0	29	0	0
Lane Group Flow (vph)	0	84	925	138	0	50	901	60	256	436	0	0
Confl. Peds. (#/hr)				2				2			4	
Confl. Bikes (#/hr)				1				3			4	
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)		8.9	57.5	57.5		6.9	55.5	55.5	22.0	22.0		
Effective Green, g (s)		8.9	57.5	57.5		6.9	55.5	55.5	22.0	22.0		
Actuated g/C Ratio		0.07	0.48	0.48		0.06	0.46	0.46	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)		131	1696	739		102	2352	721	295	578		
v/s Ratio Prot		c0.05	c0.26			0.03	0.18		c0.16	0.14		
v/s Ratio Perm				0.09				0.04				
v/c Ratio		0.64	0.55	0.19		0.49	0.38	0.08	0.87	0.76		
Uniform Delay, d1		54.0	22.0	17.9		54.8	21.1	18.0	47.6	46.4		
Progression Factor		0.84	0.93	2.41		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		7.6	1.2	0.5		1.3	0.5	0.2	21.9	5.0		
Delay (s)		53.1	21.8	43.6		56.2	21.5	18.3	69.5	51.4		
Level of Service		D	C	D		E	C	B	E	D		
Approach Delay (s)			28.5				22.8			57.8		
Approach LOS			C				C			E		

Intersection Summary		
HCM Average Control Delay	35.4	HCM Level of Service D
HCM Volume to Capacity ratio	0.61	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 15.8
Intersection Capacity Utilization	65.8%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	134	61	100
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	1561
Flt Permitted	0.95	0.98	1.00
Satd. Flow (perm)	1681	1734	1561
Peak-hour factor, PHF	0.93	0.93	0.93
Adj. Flow (vph)	144	66	108
RTOR Reduction (vph)	0	0	97
Lane Group Flow (vph)	107	111	11
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			1
Turn Type	Split		Perm
Protected Phases	4	4	
Permitted Phases			4
Actuated Green, G (s)	12.1	12.1	12.1
Effective Green, g (s)	12.1	12.1	12.1
Actuated g/C Ratio	0.10	0.10	0.10
Clearance Time (s)	4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	170	175	157
v/s Ratio Prot	0.06	c0.06	
v/s Ratio Perm			0.01
v/c Ratio	0.63	0.63	0.07
Uniform Delay, d1	51.8	51.8	48.9
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	5.2	5.4	0.1
Delay (s)	57.0	57.2	48.9
Level of Service	E	E	D
Approach Delay (s)		54.4	
Approach LOS		D	
Intersection Summary			

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

Existing Saturday Plus Project Conditions
 Saturday Peak

























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	264	22	0	377	334	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	290	24	0	414	367	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	574	367	367			
vC1, stage 1 conf vol	367					
vC2, stage 2 conf vol	207					
vCu, unblocked vol	574	367	367			
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 %	53	96	100			
cM capacity (veh/h)	614	630	1188			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	314	207	207	367
Volume Left	290	0	0	0
Volume Right	24	0	0	0
cSH	640	1700	1700	1700
Volume to Capacity	0.49	0.12	0.12	0.22
Queue Length 95th (ft)	68	0	0	0
Control Delay (s)	15.9	0.0	0.0	0.0
Lane LOS	C			
Approach Delay (s)	15.9	0.0		0.0
Approach LOS	C			

Intersection Summary			
Average Delay		4.6	
Intersection Capacity Utilization		38.9%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
13: Backer Ranch Road & Bruceville Road

Existing Saturday Plus Project Conditions
Saturday Peak



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	51	44	54	43	41	44	16	86	681	87	8	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	4.6	4.6		5.6	5.3	5.3		5.6
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00		1.00	0.95	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98		1.00	1.00	0.97		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	1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1770	1863	1560	3433	1863	1554		1770	3539	1528		1770
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1770	1863	1560	3433	1863	1554		1770	3539	1528		1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	57	49	60	48	46	49	18	96	757	97	9	66
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	57	0	0
Lane Group Flow (vph)	57	49	60	48	46	49	0	114	757	40	0	75
Confl. Peds. (#/hr)							4			8		
Confl. Bikes (#/hr)	1		2			2		1		3		1
Turn Type	Prot		Perm	Prot		Perm	Prot	Prot		Perm	Prot	Prot
Protected Phases	3	8		7	4		1	1	6		5	5
Permitted Phases			8			4				6		
Actuated Green, G (s)	6.0	12.2	12.2	3.3	9.5	9.5		10.9	30.7	30.7		6.7
Effective Green, g (s)	6.0	12.2	12.2	3.3	9.5	9.5		10.9	30.7	30.7		6.7
Actuated g/C Ratio	0.08	0.16	0.16	0.04	0.13	0.13		0.15	0.41	0.41		0.09
Clearance Time (s)	5.6	4.6	4.6	5.6	4.6	4.6		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		2.0
Lane Grp Cap (vph)	144	307	257	153	239	200		261	1468	634		160
v/s Ratio Prot	c0.03	0.03		0.01	0.02			c0.06	c0.21			0.04
v/s Ratio Perm			c0.04			0.03				0.03		
v/c Ratio	0.40	0.16	0.23	0.31	0.19	0.24		0.44	0.52	0.06		0.47
Uniform Delay, d1	32.3	26.5	26.8	34.3	28.8	29.0		28.8	16.1	13.0		32.0
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	0.7	0.1	0.2	0.4	0.1	0.2		0.4	0.1	0.0		0.8
Delay (s)	32.9	26.6	27.0	34.7	29.0	29.3		29.2	16.2	13.0		32.8
Level of Service	C	C	C	C	C	C		C	B	B		C
Approach Delay (s)		28.9			31.0				17.4			
Approach LOS		C			C				B			
Intersection Summary												
HCM Average Control Delay			20.7				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			74.0				Sum of lost time (s)		26.4			
Intersection Capacity Utilization			51.1%				ICU Level of Service		A			
Analysis Period (min)			15									
c	Critical Lane Group											



Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	650	32
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.3	
Lane Util. Factor	0.95	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	3509	
Flt Permitted	1.00	
Satd. Flow (perm)	3509	
Peak-hour factor, PHF	0.90	0.90
Adj. Flow (vph)	722	36
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	756	0
Confl. Peds. (#/hr)		5
Confl. Bikes (#/hr)		3
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	26.5	
Effective Green, g (s)	26.5	
Actuated g/C Ratio	0.36	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1257	
v/s Ratio Prot	c0.22	
v/s Ratio Perm		
v/c Ratio	0.60	
Uniform Delay, d1	19.4	
Progression Factor	1.00	
Incremental Delay, d2	0.6	
Delay (s)	20.0	
Level of Service	B	
Approach Delay (s)	21.1	
Approach LOS	C	
Intersection Summary		

























HCM Unsignalized Intersection Capacity Analysis
 14: Civic Center Drive & Wymark Drive

Existing Saturday Plus Project Conditions
 Saturday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop				Stop			Stop	
Volume (vph)	12	173	6	11	104	9	12	14	26	6	10	10
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	14	199	7	13	120	10	14	16	30	7	11	11
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total (vph)	14	206	13	130	60	30						
Volume Left (vph)	14	0	13	0	14	7						
Volume Right (vph)	0	7	0	10	30	11						
Hadj (s)	0.53	0.01	0.53	-0.02	-0.22	-0.15						
Departure Headway (s)	5.4	4.8	5.4	4.9	4.6	4.7						
Degree Utilization, x	0.02	0.28	0.02	0.18	0.08	0.04						
Capacity (veh/h)	656	724	640	716	728	703						
Control Delay (s)	7.3	8.5	7.3	7.7	7.9	7.9						
Approach Delay (s)	8.4		7.7		7.9	7.9						
Approach LOS	A		A		A	A						
Intersection Summary												
Delay			8.1									
HCM Level of Service			A									
Intersection Capacity Utilization			20.1%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
15: Civic Center Drive & Big Horn Blvd

Existing Saturday Plus Project Conditions
Saturday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	110	2	1	42	3	2	451	11	2	481	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3		6.3	5.3	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.98	
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	1863	1583	1770	1863	1583	1770	3526		1770	3466	
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	1863	1583	1770	1863	1583	1770	3526		1770	3466	
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)	111	116	2	1	44	3	2	475	12	2	506	81
RTOR Reduction (vph)	0	0	1	0	0	3	0	1	0	0	7	0
Lane Group Flow (vph)	111	116	1	1	44	0	2	486	0	2	580	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	7.7	16.7	16.7	0.5	8.5	8.5	0.5	21.3		0.5	21.3	
Effective Green, g (s)	7.7	16.7	16.7	0.5	8.5	8.5	0.5	21.3		0.5	21.3	
Actuated g/C Ratio	0.13	0.27	0.27	0.01	0.14	0.14	0.01	0.35		0.01	0.35	
Clearance Time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3		6.3	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	
Lane Grp Cap (vph)	224	512	435	15	260	221	15	1235		15	1214	
v/s Ratio Prot	c0.06	c0.06		0.00	0.02		c0.00	0.14		0.00	c0.17	
v/s Ratio Perm			0.00			0.00						
v/c Ratio	0.50	0.23	0.00	0.07	0.17	0.00	0.13	0.39		0.13	0.48	
Uniform Delay, d1	24.7	17.1	16.0	29.9	23.0	22.5	29.9	14.9		29.9	15.4	
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	0.6	0.1	0.0	0.7	0.1	0.0	1.5	0.1		1.5	0.1	
Delay (s)	25.4	17.1	16.0	30.6	23.2	22.5	31.4	15.0		31.4	15.5	
Level of Service	C	B	B	C	C	C	C	B		C	B	
Approach Delay (s)		21.1			23.3			15.0			15.6	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			16.6				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			60.8				Sum of lost time (s)		17.2			
Intersection Capacity Utilization			37.0%				ICU Level of Service		A			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 16: Civic Center Drive & Laguna Springs Drive

Existing Saturday Plus Project Conditions
 Saturday Peak
























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations	↖		↗	↖	↗		↖	↕		↘		↗
Volume (vph)	88	0	11	0	0	0	10	87	0	1	0	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6		5.6				5.6	4.6		5.6		4.6
Lane Util. Factor	1.00		1.00				1.00	0.95		1.00		0.95
Frt	1.00		0.85				1.00	1.00		1.00		0.93
Flt Protected	0.95		1.00				0.95	1.00		0.95		1.00
Satd. Flow (prot)	1770		1583				1770	3539		1770		3289
Flt Permitted	0.95		1.00				0.95	1.00		0.95		1.00
Satd. Flow (perm)	1770		1583				1770	3539		1770		3289
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Adj. Flow (vph)	113	0	14	0	0	0	13	112	0	1	0	121
RTOR Reduction (vph)	0	0	8	0	0	0	0	0	0	0	0	84
Lane Group Flow (vph)	113	0	6	0	0	0	13	112	0	1	0	145
Turn Type	Prot		custom	Prot			Prot			Prot		
Protected Phases	3			7	4		1	6		5		2
Permitted Phases			8									
Actuated Green, G (s)	9.3		17.4				0.5	9.7		0.4		9.6
Effective Green, g (s)	9.3		17.4				0.5	9.7		0.4		9.6
Actuated g/C Ratio	0.21		0.40				0.01	0.22		0.01		0.22
Clearance Time (s)	5.6		5.6				5.6	4.6		5.6		4.6
Vehicle Extension (s)	2.0		2.0				2.0	2.0		2.0		2.0
Lane Grp Cap (vph)	380		636				20	793		16		729
v/s Ratio Prot	c0.06						c0.01	0.03		0.00		c0.04
v/s Ratio Perm			c0.00									
v/c Ratio	0.30		0.01				0.65	0.14		0.06		0.20
Uniform Delay, d1	14.3		7.8				21.3	13.5		21.3		13.7
Progression Factor	1.00		1.00				1.00	1.00		1.00		1.00
Incremental Delay, d2	0.2		0.0				45.4	0.0		0.6		0.0
Delay (s)	14.4		7.8				66.7	13.5		21.9		13.8
Level of Service	B		A				E	B		C		B
Approach Delay (s)		13.7			0.0			19.0				13.8
Approach LOS		B			A			B				B

Intersection Summary		
HCM Average Control Delay	15.1	HCM Level of Service B
HCM Volume to Capacity ratio	0.18	
Actuated Cycle Length (s)	43.3	Sum of lost time (s) 15.8
Intersection Capacity Utilization	20.4%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		

Movement	SBR
Lane Configurations	
Volume (vph)	84
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Fr	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.78
Adj. Flow (vph)	108
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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	

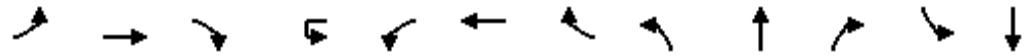
HCM Signalized Intersection Capacity Analysis
17: Denali Cir & Big Horn Blvd

Existing Saturday Plus Project Conditions
Saturday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	4	12	21	2	114	5	289	47	253	208	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		5.3	5.3		5.3	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.85		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1649		1770	1588		1770	3466		1770	3487	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1649		1770	1588		1770	3466		1770	3487	
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)	64	4	13	22	2	120	5	304	49	266	219	24
RTOR Reduction (vph)	0	10	0	0	102	0	0	9	0	0	4	0
Lane Group Flow (vph)	64	7	0	22	20	0	5	344	0	266	239	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	6.3	17.5		0.9	12.1		0.7	18.7		23.9	41.9	
Effective Green, g (s)	6.3	17.5		0.9	12.1		0.7	18.7		23.9	41.9	
Actuated g/C Ratio	0.08	0.22		0.01	0.15		0.01	0.23		0.30	0.52	
Clearance Time (s)	4.6	4.6		4.6	4.6		5.3	5.3		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)	138	357		20	238		15	802		524	1808	
v/s Ratio Prot	c0.04	0.00		0.01	c0.01		0.00	c0.10		c0.15	0.07	
v/s Ratio Perm												
v/c Ratio	0.46	0.02		1.10	0.08		0.33	0.43		0.51	0.13	
Uniform Delay, d1	35.6	24.9		39.9	29.6		39.8	26.5		23.6	10.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.0		234.8	0.1		4.7	0.1		0.3	0.0	
Delay (s)	36.5	24.9		274.7	29.6		44.5	26.6		23.9	10.1	
Level of Service	D	C		F	C		D	C		C	B	
Approach Delay (s)		34.1			67.1			26.9			17.3	
Approach LOS		C			E			C			B	
Intersection Summary												
HCM Average Control Delay	28.2			HCM Level of Service				C				
HCM Volume to Capacity ratio	0.39											
Actuated Cycle Length (s)	80.8			Sum of lost time (s)				19.8				
Intersection Capacity Utilization	46.2%			ICU Level of Service				A				
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
18: Denali Circle & Big Horn Blvd

Existing Saturday Plus Project Conditions
Saturday Peak



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations	↖	↗			↖↗	↖	↖↗	↖	↖↗	↖	↖↗	↖↗	
Volume (vph)	49	10	8	5	30	8	43	6	249	56	67	152	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	5.3	
Lane Util. Factor	1.00	1.00			0.97	1.00	0.88	1.00	0.95	1.00	0.97	0.95	
Frbp, ped/bikes	1.00	0.99			1.00	1.00	0.99	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	1.00	1.00	1.00	1.00	
Frt	1.00	0.93			1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1727			3433	1863	2758	1770	3539	1557	3433	3460	
Flt Permitted	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1727			3433	1863	2758	1770	3539	1557	3433	3460	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	
Adj. Flow (vph)	56	11	9	6	34	9	49	7	286	64	77	175	
RTOR Reduction (vph)	0	9	0	0	0	0	40	0	0	37	0	5	
Lane Group Flow (vph)	56	11	0	0	40	9	9	7	286	27	77	196	
Confl. Peds. (#/hr)			2										
Confl. Bikes (#/hr)							2		9				
Turn Type	Prot			Prot		Prot		pm+ov		Prot		Perm	
Protected Phases	3	8		7	7	4	5	1	6		5	2	
Permitted Phases							4			6			
Actuated Green, G (s)	2.5	3.3			2.2	4.6	10.9	0.5	25.7	25.7	6.3	31.5	
Effective Green, g (s)	2.5	3.3			2.2	4.6	10.9	0.5	25.7	25.7	6.3	31.5	
Actuated g/C Ratio	0.04	0.05			0.04	0.07	0.18	0.01	0.42	0.42	0.10	0.51	
Clearance Time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	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	
Lane Grp Cap (vph)	71	92			122	138	486	14	1469	646	349	1761	
v/s Ratio Prot	c0.03	c0.01			0.01	0.00	0.00	0.00	c0.08		c0.02	c0.06	
v/s Ratio Perm							0.00			0.02			
v/c Ratio	0.79	0.12			0.33	0.07	0.02	0.50	0.19	0.04	0.22	0.11	
Uniform Delay, d1	29.4	27.9			29.1	26.7	21.1	30.6	11.5	10.8	25.5	7.9	
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	40.0	0.2			0.6	0.1	0.0	9.9	0.0	0.0	0.1	0.0	
Delay (s)	69.4	28.1			29.7	26.7	21.1	40.4	11.5	10.8	25.7	7.9	
Level of Service	E	C			C	C	C	D	B	B	C	A	
Approach Delay (s)		58.6			25.1			12.0			12.8		
Approach LOS		E			C			B			B		

Intersection Summary

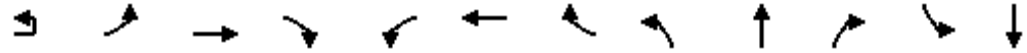
HCM Average Control Delay	18.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	61.9	Sum of lost time (s)	22.5
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR
Lane Configurations	
Volume (vph)	23
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	0.87
Adj. Flow (vph)	26
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	2
Confl. Bikes (#/hr)	3
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
19: Lotz Pkwy & Laguna Springs Drive

Existing Saturday Plus Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↘ ↙	↑↑	↗	↘ ↙	↑↑	↗	↘ ↙	↑↑	↗	↘ ↙	↑↑	
Volume (vph)	8	65	12	5	2	9	2	7	20	1	3	22	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6	5.6	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	
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	0.99	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	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	
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3433	3539	1564	3433	3539	1561	3433	3539	1561	3433	3539	
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3433	3539	1564	3433	3539	1561	3433	3539	1561	3433	3539	
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	
Adj. Flow (vph)	10	83	15	6	3	12	3	9	26	1	4	28	
RTOR Reduction (vph)	0	0	0	3	0	0	2	0	0	1	0	0	
Lane Group Flow (vph)	0	93	15	3	3	12	1	9	26	0	4	28	
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)				1			4			1	1		
Turn Type	Prot	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	3	3	8		7	4		1	6		5	2	
Permitted Phases				8			4			6			
Actuated Green, G (s)		3.9	24.5	24.5	0.4	21.0	21.0	0.4	6.6	6.6	0.4	7.6	
Effective Green, g (s)		3.9	24.5	24.5	0.4	21.0	21.0	0.4	6.6	6.6	0.4	7.6	
Actuated g/C Ratio		0.07	0.44	0.44	0.01	0.38	0.38	0.01	0.12	0.12	0.01	0.14	
Clearance Time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6	5.6	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	
Lane Grp Cap (vph)		242	1568	693	25	1344	593	25	422	186	25	486	
v/s Ratio Prot		c0.03	c0.00		0.00	0.00		c0.00	0.01		0.00	c0.01	
v/s Ratio Perm				0.00			0.00			0.00			
v/c Ratio		0.38	0.01	0.00	0.12	0.01	0.00	0.36	0.06	0.00	0.16	0.06	
Uniform Delay, d1		24.6	8.6	8.6	27.3	10.7	10.6	27.3	21.6	21.4	27.3	20.7	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.4	0.0	0.0	0.8	0.0	0.0	3.2	0.0	0.0	1.1	0.0	
Delay (s)		24.9	8.6	8.6	28.1	10.7	10.6	30.5	21.6	21.4	28.4	20.8	
Level of Service		C	A	A	C	B	B	C	C	C	C	C	
Approach Delay (s)			21.9			13.6			23.8			21.0	
Approach LOS			C			B			C			C	
Intersection Summary													
HCM Average Control Delay			21.3		HCM Level of Service					C			
HCM Volume to Capacity ratio			0.07										
Actuated Cycle Length (s)			55.3		Sum of lost time (s)					22.4			
Intersection Capacity Utilization			33.7%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

Movement	SBR
Lane Configurations	
Volume (vph)	65
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.6
Lane Util. Factor	1.00
Frbp, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1560
Flt Permitted	1.00
Satd. Flow (perm)	1560
Peak-hour factor, PHF	0.78
Adj. Flow (vph)	83
RTOR Reduction (vph)	72
Lane Group Flow (vph)	11
Confl. Peds. (#/hr)	3
Confl. Bikes (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	7.6
Effective Green, g (s)	7.6
Actuated g/C Ratio	0.14
Clearance Time (s)	4.6
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	214
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.05
Uniform Delay, d1	20.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	20.8
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis
20: Whitlock Pkwy & Bruceville Road

Existing Saturday Plus Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↖↗	↕	↗		↖↗	↕	↗		↖↗	↕	↗
Volume (vph)	1	366	292	75	1	55	114	35	45	119	301	71
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
Frbp, ped/bikes		1.00	1.00	0.98		1.00	1.00	0.98		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	3539	1546		3433	3539	1548		3433	3539	1555
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	1546		3433	3539	1548		3433	3539	1555
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1	416	332	85	1	62	130	40	51	135	342	81
RTOR Reduction (vph)	0	0	0	58	0	0	0	33	0	0	0	63
Lane Group Flow (vph)	0	417	332	27	0	63	130	7	0	186	342	18
Confl. Peds. (#/hr)				14				5				7
Confl. Bikes (#/hr)				4				6				1
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)		16.4	24.2	24.2		5.3	13.1	13.1		9.9	16.9	16.9
Effective Green, g (s)		16.4	24.2	24.2		5.3	13.1	13.1		9.9	16.9	16.9
Actuated g/C Ratio		0.21	0.32	0.32		0.07	0.17	0.17		0.13	0.22	0.22
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)		736	1120	489		238	606	265		444	782	344
v/s Ratio Prot		c0.12	c0.09			0.02	0.04			c0.05	c0.10	
v/s Ratio Perm				0.02				0.00				0.01
v/c Ratio		0.57	0.30	0.05		0.26	0.21	0.03		0.42	0.44	0.05
Uniform Delay, d1		26.9	19.7	18.2		33.8	27.3	26.4		30.7	25.7	23.5
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	0.1	0.0		0.2	0.1	0.0		0.2	0.1	0.0
Delay (s)		27.5	19.8	18.2		34.0	27.3	26.4		30.9	25.8	23.5
Level of Service		C	B	B		C	C	C		C	C	C
Approach Delay (s)			23.5				29.0				27.1	
Approach LOS			C				C				C	

Intersection Summary

HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	11.9
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

Existing Saturday Plus Project Conditions
Saturday Peak

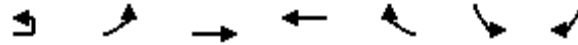


Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	TT	RT
Volume (vph)	12	87	291	288
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00
Frbp, ped/bikes		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1555
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1555
Peak-hour factor, PHF	0.88	0.88	0.88	0.88
Adj. Flow (vph)	14	99	331	327
RTOR Reduction (vph)	0	0	0	263
Lane Group Flow (vph)	0	113	331	64
Confl. Peds. (#/hr)				4
Confl. Bikes (#/hr)				3
Turn Type	Prot	Prot		Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		8.0	15.0	15.0
Effective Green, g (s)		8.0	15.0	15.0
Actuated g/C Ratio		0.10	0.20	0.20
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		359	694	305
v/s Ratio Prot		0.03	0.09	
v/s Ratio Perm				0.04
v/c Ratio		0.31	0.48	0.21
Uniform Delay, d1		31.7	27.3	25.8
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		0.2	0.2	0.1
Delay (s)		31.9	27.5	25.9
Level of Service		C	C	C
Approach Delay (s)			27.5	
Approach LOS			C	

Intersection Summary

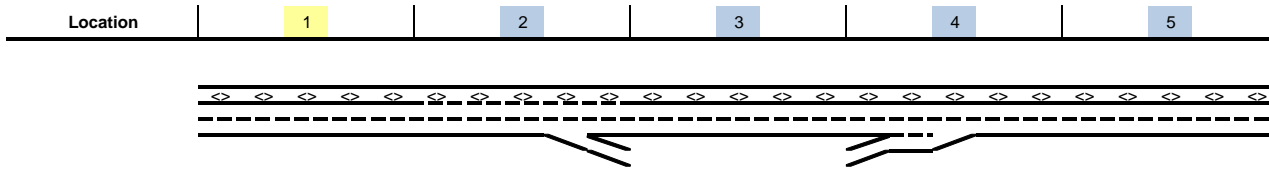
HCM Signalized Intersection Capacity Analysis
 21: Whitelock Pkwy & Big Horn Blvd

Existing Saturday Plus Project Conditions
 Saturday Peak



Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↕	↑	↗	↖	↗
Volume (vph)	3	266	95	55	49	35	147
Ideal Flow (vphpl)	1900	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
Frbp, ped/bikes			1.00	1.00	0.98	1.00	0.98
Flpb, ped/bikes			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)			1796	1863	1545	1770	1559
Flt Permitted			0.96	1.00	1.00	0.95	1.00
Satd. Flow (perm)			1796	1863	1545	1770	1559
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	4	328	117	68	60	43	181
RTOR Reduction (vph)	0	0	0	0	52	0	147
Lane Group Flow (vph)	0	0	449	68	8	43	34
Confl. Peds. (#/hr)					1		
Confl. Bikes (#/hr)					1		3
Turn Type	Split	Split			Perm		Perm
Protected Phases	3	3	3	4		2	
Permitted Phases					4		2
Actuated Green, G (s)			19.7	6.7	6.7	9.6	9.6
Effective Green, g (s)			19.7	6.7	6.7	9.6	9.6
Actuated g/C Ratio			0.38	0.13	0.13	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)			687	242	201	330	291
v/s Ratio Prot			c0.25	c0.04		c0.02	
v/s Ratio Perm					0.01		0.02
v/c Ratio			0.65	0.28	0.04	0.13	0.12
Uniform Delay, d1			13.1	20.2	19.6	17.5	17.4
Progression Factor			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2			1.7	0.2	0.0	0.1	0.1
Delay (s)			14.8	20.5	19.6	17.5	17.5
Level of Service			B	C	B	B	B
Approach Delay (s)			14.8	20.1		17.5	
Approach LOS			B	C		B	
Intersection Summary							
HCM Average Control Delay			16.4		HCM Level of Service		B
HCM Volume to Capacity ratio			0.44				
Actuated Cycle Length (s)			51.5		Sum of lost time (s)		15.5
Intersection Capacity Utilization			44.7%		ICU Level of Service		A
Analysis Period (min)			15				
c Critical Lane Group							

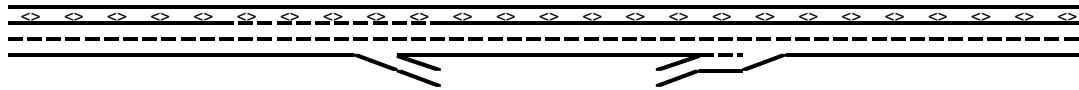
Project: Elk Grove Civic Center
 Freeway Corridor: State Route 99 NB
 Alternative: Existing Plus Project
 Time Period: Wkdy PM Peak Hour



Key

- <> Express Lane (HOV)
- No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	1,050	1,500	2,550	1,500	180
Accel Length				1,200	
Decel Length		170			
Mainline Volume	2,176	2,176	1,893	1,893	3,192
On Ramp Volume				1,299	
Off Ramp Volume		283			
Express Lane Volume	653	653	568	568	958
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	1,523	1,523	1,325	2,624	2,234
PHF	0.93	0.97	0.93	0.93	0.93
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	15.0%	5.0%	10.0%	5.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.930	0.976	0.952	0.976	0.952
f _P	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,761	1,610	1,496	2,892	2,523
GP Flow (pcphpl)	880	805	748	1,446	1,261
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.8	1.8	1.8	1.8	1.8
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	70.1	70.1	70.1	70.1	70.1
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70

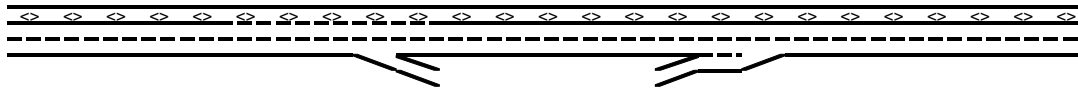


Key

<> Express Lane (HOV)

..... No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Operations in General Purpose Lanes					
v/c ratio	0.37	0.34	0.31	0.60	0.53
Speed (mph)	70.0	70.0	70.0	69.3	70.0
Density (pcphpl)	12.6	11.5	10.7	20.9	18.0
LOS	B	B	A	C	C
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				1,460	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.30	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		1,311			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.27			
Calculate On Ramp Flow Rate					
On Volume (vph)				1,299	
PHF				0.93	
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	
On Flow (pcph)				1,432	
On Flow (pcphpl)				1,432	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.68	



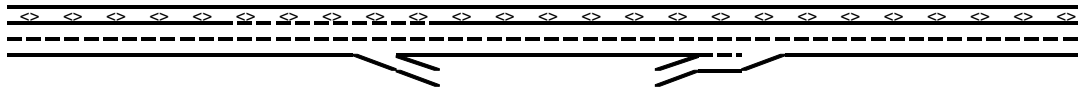
Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Off Ramp Flow Rate					
Off Volume (vph)		283			
PHF		0.97			
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)		299			
Off Flow (pcphpl)		299			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
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)					

Location	1	2	3	4	5
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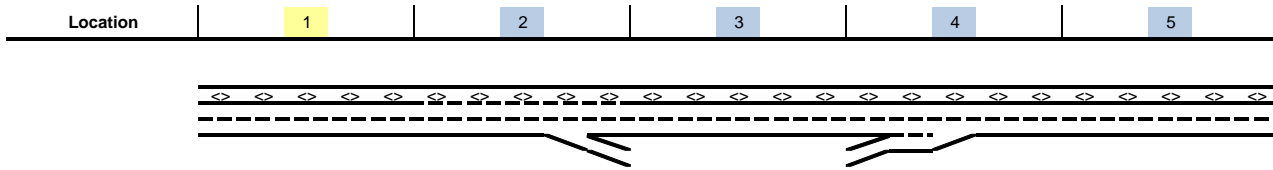


Key

<> Express Lane (HOV)

--- No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Merge Influence Area Operations					
Effective v_F (pcph)				1,460	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.611	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				1,460	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				1,460	
v_{R12a} (pcph)				2,892	
Merge Speed Index				0.28	
Merge Area Speed				62.1	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				62.1	
Merge v/c ratio				0.63	
Merge Density				19.9	
Merge LOS				B	
Calculate Diverge Influence Area Operations					
Effective v_F (pcph)		1,610			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.706			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		1,610			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		1,610			
Diverge Speed Index		0.45			
Diverge Area Speed		57.3			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		57.3			
Diverge v/c ratio		0.37			
Diverge Density		16.6			
Diverge LOS		B			



Key

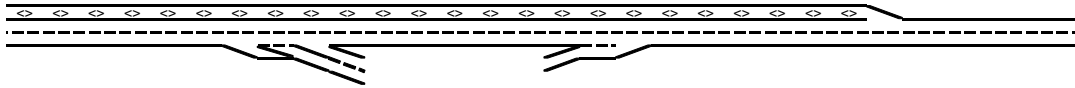
<> Express Lane (HOV)

--- No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Summarize Segment Operations					
Segment v/c ratio	0.37	0.37	0.31	0.63	0.53
Segment Density	12.6	16.6	10.7	19.9	18.0
Segment LOS	B	B	A	B	C
Over Capacity					

Project: Elk Grove Civic Center
Freeway Corridor: State Route 99 SB

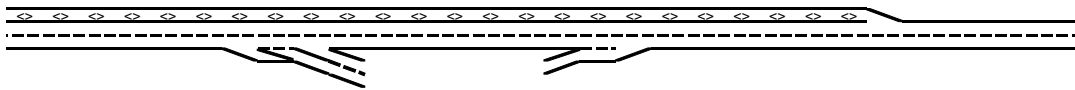
Alternative: Existing Plus Project
Time Period: Wkdy PM Peak Hour



Key
 <> Express Lane (HOV)
 No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Define Freeway Segment						
Type	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	250	1,500	2,250	1,500	400	8,050
Accel Length				300		
Decel Length		1,500				
Mainline Volume	3,684	3,684	1,985	1,985	2,312	2,312
On Ramp Volume				327		
Off Ramp Volume		1,699				
Express Lane Volume	1,105	1,105				
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,579	2,579	1,985	2,312	2,312	2,312
PHF	0.95	0.98	0.95	0.98	0.95	0.95
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 %	10.0%	5.0%	10.0%	5.0%	15.0%	15.0%
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}	0.952	0.976	0.952	0.976	0.930	0.930
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,850	2,697	2,194	2,418	2,616	2,616
GP Flow (pcphpl)	1,425	1,349	1,097	1,209	1,308	1,308
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	1.8	1.8	1.8	1.8	1.8	1.8
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	70.1	70.1	70.1	70.1	70.1	70.1
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70

Location	1	2	3	4	5	6
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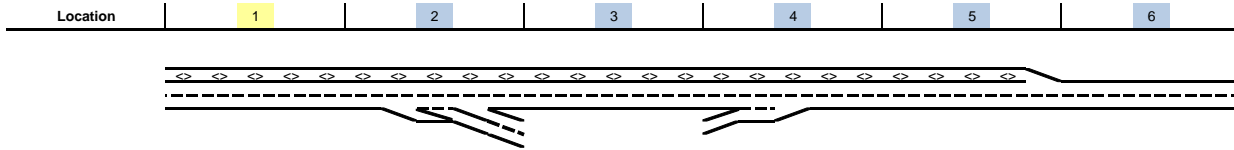


Key

<> Express Lane (HOV)

No Trucks

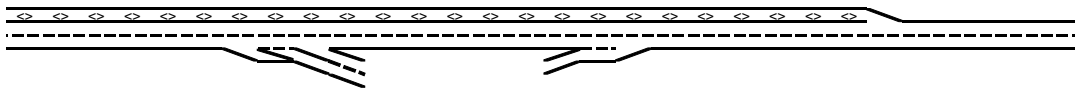
Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Operations in General Purpose Lanes						
v/c ratio	0.59	0.56	0.46	0.50	0.55	0.55
Speed (mph)	69.4	69.7	70.0	70.0	69.9	69.9
Density (pcphpl)	20.5	19.3	15.7	17.3	18.7	18.7
LOS	C	C	B	B	C	C
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)				2,076		
GP _{IN} Cap (pcph)				4,800		
GP _{IN} v/c ratio				0.43		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)		920				
GP _{OUT} Cap (pcph)		4,800				
GP _{OUT} v/c ratio		0.19				
Calculate On Ramp Flow Rate						
On Volume (vph)				327		
PHF				0.98		
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		
On Flow (pcph)				342		
On Flow (pcphpl)				342		
Calculate On Ramp Roadway Operations						
On Ramp Type				Right		
On Ramp Speed (mph)				60		
On Ramp Cap (pcph)				2,200		
On Ramp v/c ratio				0.16		



Key
 <> Express Lane (HOV)
 No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Off Ramp Flow Rate						
Off Volume (vph)		1,699				
PHF		0.98				
Total Lanes		2				
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)		1,777				
Off Flow (pcphpl)		889				
Calculate Off Ramp Roadway Operations						
Off Ramp Type		Right				
Off Ramp Speed		35				
Off Ramp Cap (pcph)		4,000				
Off Ramp v/c ratio		0.44				
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)						

Location	1	2	3	4	5	6
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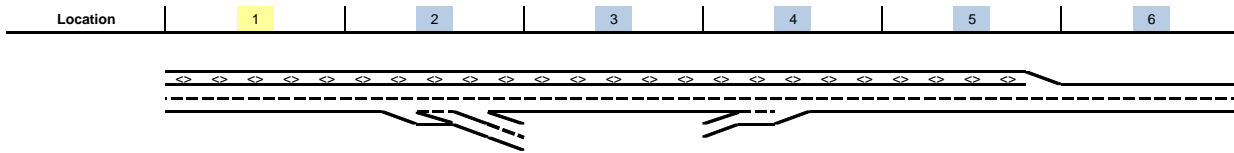


Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Merge Influence Area Operations						
Effective v_p (pcph)				2,076		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)				0.586		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}				1.000		
v_{12} (pcph)				2,076		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)				2,076		
v_{R12a} (pcph)				2,418		
Merge Speed Index				0.33		
Merge Area Speed				60.8		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed				60.8		
Merge v/c ratio				0.53		
Merge Density				22.3		
Merge LOS				C		
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)		2,697				
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)		0.611				
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}		1.000				
v_{12} (pcph)		2,697				
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)		2,697				
Diverge Speed Index		0.59				
Diverge Area Speed		53.5				
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed		53.5				
Diverge v/c ratio		0.61				
Diverge Density		13.9				
Diverge LOS		B				



Key

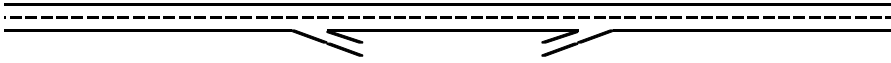
<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Summarize Segment Operations						
Segment v/c ratio	0.59	0.61	0.46	0.53	0.55	0.55
Segment Density	20.5	13.9	15.7	22.3	18.7	18.7
Segment LOS	C	B	B	C	C	C
Over Capacity						

Project: Elk Grove Civic Center
 Freeway Corridor: Interstate 5 NB
 Alternative: Existing Plus Project
 Time Period: Wkdy PM Peak Hour

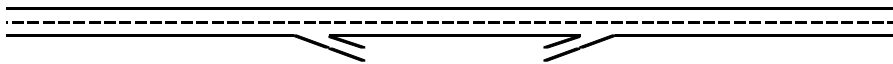
Location	1	2	3	4	5
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Key

<> Express Lane (HOV)
 No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	6,900	1,500	3,100	1,500	500
Accel Length				750	
Decel Length		160			
Mainline Volume	1,958	1,958	1,733	1,733	2,274
On Ramp Volume				541	
Off Ramp Volume		225			
Express Lane Volume					
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	1,958	1,958	1,733	2,274	2,274
PHF	0.89	0.97	0.89	0.97	0.89
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	18.0%	5.0%	18.0%	5.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.917	0.976	0.917	0.976	0.917
f _p	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,398	2,069	2,122	2,403	2,785
GP Flow (pcphpl)	1,199	1,035	1,061	1,201	1,393
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.2	1.2	1.2	1.2	1.2
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	71.7	71.7	71.7	71.7	71.7
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70
Calculate Operations in General Purpose Lanes					
v/c ratio	0.50	0.43	0.44	0.50	0.58
Speed (mph)	70.0	70.0	70.0	70.0	69.6
Density (pcphpl)	17.1	14.8	15.2	17.2	20.0
LOS	B	B	B	B	C
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				1,831	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.38	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		1,831			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.38			



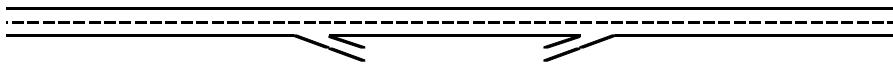
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate On Ramp Flow Rate					
On Volume (vph)				541	
PHF				0.97	
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	
On Flow (pcph)				572	
On Flow (pcphpl)				572	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.27	

Location	1	2	3	4	5
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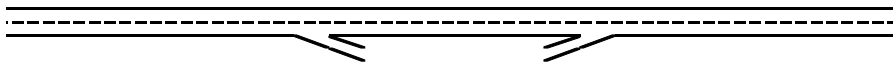


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate Off Ramp Flow Rate					
Off Volume (vph)		225			
PHF		0.97			
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)		238			
Off Flow (pcphpl)		238			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.12			
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)				1,831	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.599	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				1,831	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				1,831	
v_{R12a} (pcph)				2,403	
Merge Speed Index				0.30	
Merge Area Speed				61.7	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				61.7	
Merge v/c ratio				0.52	
Merge Density				19.3	
Merge LOS				B	

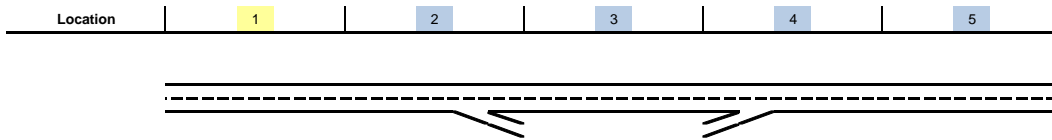


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate Diverge Influence Area Operations					
Effective v_p (pcph)		2,069			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.697			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		2,069			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		2,069			
Diverge Speed Index		0.45			
Diverge Area Speed		57.4			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		57.4			
Diverge v/c ratio		0.47			
Diverge Density		20.6			
Diverge LOS		C			



Key

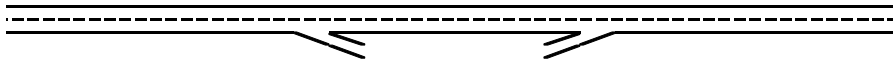
<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Summarize Segment Operations					
Segment v/c ratio	0.50	0.47	0.44	0.52	0.58
Segment Density	17.1	20.6	15.2	19.3	20.0
Segment LOS	B	C	B	B	C
Over Capacity					

Project: Elk Grove Civic Center
 Freeway Corridor: Interstate 5 SB
 Alternative: Existing Plus Project
 Time Period: Weekday PM Peak

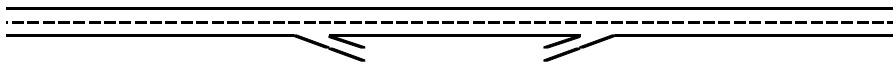
Location	1	2	3	4	5
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Key

<> Express Lane (HOV)
 No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	2,500	1,500	1,450	1,500	7,750
Accel Length				750	
Decel Length		160			
Mainline Volume	3,496	3,496	2,062	2,062	2,169
On Ramp Volume				107	
Off Ramp Volume		1,434			
Express Lane Volume					
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	3,496	3,496	2,062	2,169	2,169
PHF	0.94	0.95	0.94	0.95	0.94
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	18.0%	5.0%	18.0%	5.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.917	0.976	0.917	0.976	0.917
f _p	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,054	3,772	2,391	2,340	2,515
GP Flow (pcphpl)	2,027	1,886	1,196	1,170	1,258
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.2	1.2	1.2	1.2	1.2
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	71.7	71.7	71.7	71.7	71.7
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70
Calculate Operations in General Purpose Lanes					
v/c ratio	0.84	0.79	0.50	0.49	0.52
Speed (mph)	62.1	64.5	70.0	70.0	70.0
Density (pcphpl)	32.7	29.2	17.1	16.7	18.0
LOS	D	D	B	B	B
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				2,225	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.46	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		2,225			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.46			



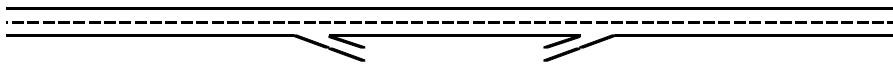
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate On Ramp Flow Rate					
On Volume (vph)				107	
PHF				0.95	
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	
On Flow (pcph)				115	
On Flow (pcphpl)				115	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.05	

Location	1	2	3	4	5
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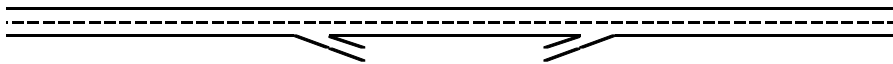
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate Off Ramp Flow Rate					
Off Volume (vph)		1,434			
PHF		0.95			
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)		1,547			
Off Flow (pcphpl)		1,547			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.77			
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)				2,225	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.599	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				2,225	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				2,225	
v_{R12a} (pcph)				2,340	
Merge Speed Index				0.29	
Merge Area Speed				61.8	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				61.8	
Merge v/c ratio				0.51	
Merge Density				19.0	
Merge LOS				B	

Location	1	2	3	4	5
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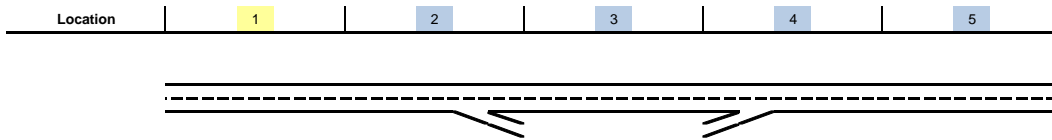


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate Diverge Influence Area Operations					
Effective v_p (pcph)		3,772			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.595			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		3,772			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		3,772			
Diverge Speed Index		0.57			
Diverge Area Speed		54.1			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		54.1			
Diverge v/c ratio		0.86			
Diverge Density		35.3			
Diverge LOS		E			



Key

<> Express Lane (HOV)

No Trucks

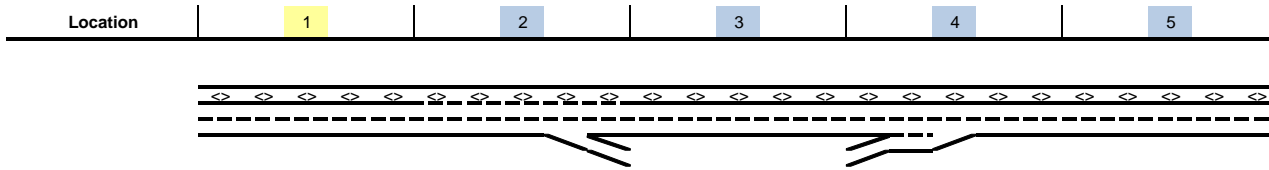
Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Summarize Segment Operations					
Segment v/c ratio	0.84	0.86	0.50	0.51	0.52
Segment Density	32.7	35.3	17.1	19.0	18.0
Segment LOS	D	E	B	B	B
Over Capacity					

Project:
Freeway Corridor:

Elk Grove Civic Center
State Route 99 NB

Alternative:
Time Period:

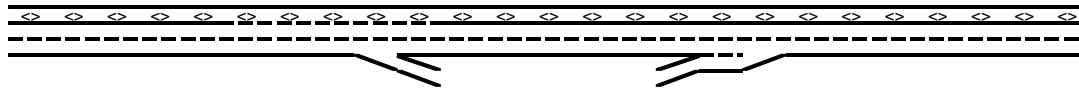
Existing Plus Project
Sat. AM Peak Hour



Key

- <> Express Lane (HOV)
- No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	1,050	1,500	2,550	1,500	180
Accel Length				1,200	
Decel Length		170			
Mainline Volume	2,013	2,013	1,727	1,727	3,133
On Ramp Volume				1,406	
Off Ramp Volume		286			
Express Lane Volume	604	604	518	518	940
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	1,409	1,409	1,209	2,615	2,193
PHF	0.92	0.91	0.92	0.93	0.92
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	15.0%	5.0%	10.0%	5.0%	10.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.930	0.976	0.952	0.976	0.952
f _P	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,647	1,587	1,380	2,882	2,503
GP Flow (pcphpl)	823	794	690	1,441	1,251
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.8	1.8	1.8	1.8	1.8
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	70.1	70.1	70.1	70.1	70.1
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70

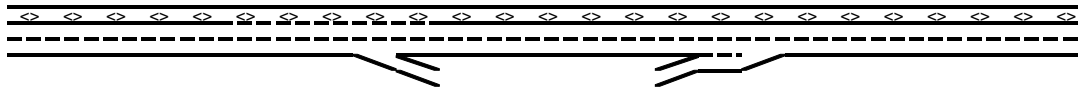


Key

<> Express Lane (HOV)

..... No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Operations in General Purpose Lanes					
v/c ratio	0.34	0.33	0.29	0.60	0.52
Speed (mph)	70.0	70.0	70.0	69.3	70.0
Density (pcphpl)	11.8	11.3	9.9	20.8	17.9
LOS	B	B	A	C	B
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				1,332	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.28	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		1,265			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.26			
Calculate On Ramp Flow Rate					
On Volume (vph)				1,406	
PHF				0.93	
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	
On Flow (pcph)				1,550	
On Flow (pcphpl)				1,550	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.74	



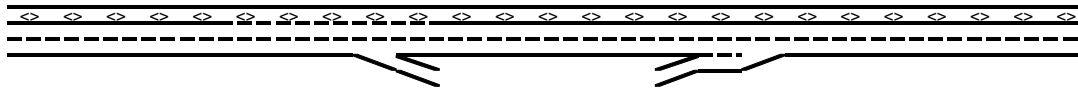
Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Off Ramp Flow Rate					
Off Volume (vph)		286			
PHF		0.91			
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)		322			
Off Flow (pcphpl)		322			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
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)					

Location	1	2	3	4	5
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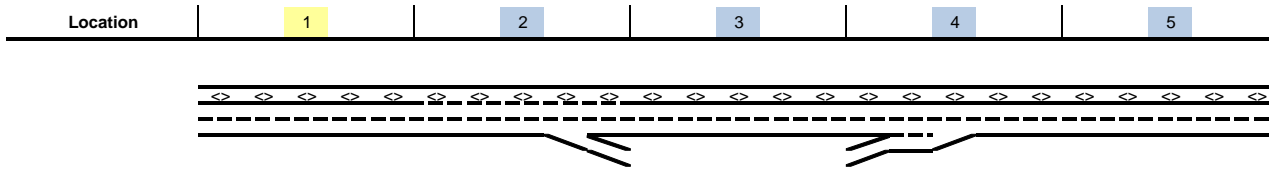


Key

<> Express Lane (HOV)

--- No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Merge Influence Area Operations					
Effective v_F (pcph)				1,332	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.611	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				1,332	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				1,332	
v_{R12a} (pcph)				2,882	
Merge Speed Index				0.28	
Merge Area Speed				62.1	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				62.1	
Merge v/c ratio				0.63	
Merge Density				19.7	
Merge LOS				B	
Calculate Diverge Influence Area Operations					
Effective v_F (pcph)		1,587			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.706			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		1,587			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		1,587			
Diverge Speed Index		0.46			
Diverge Area Speed		57.2			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		57.2			
Diverge v/c ratio		0.36			
Diverge Density		16.4			
Diverge LOS		B			



Key

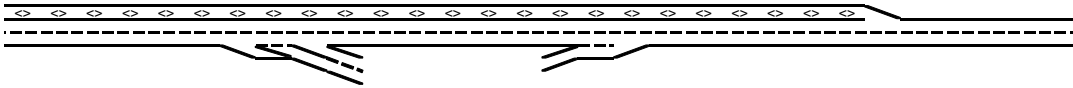
<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Summarize Segment Operations					
Segment v/c ratio	0.34	0.36	0.29	0.63	0.52
Segment Density	11.8	16.4	9.9	19.7	17.9
Segment LOS	B	B	A	B	B
Over Capacity					

Project: Elk Grove Civic Center
Freeway Corridor: State Route 99 SB

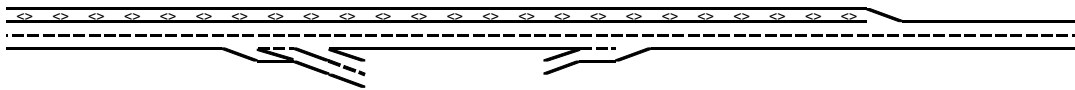
Alternative: Existing Plus Project
Time Period: Sat. AM Peak Hour



Key
 <> Express Lane (HOV)
 No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Define Freeway Segment						
Type	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	250	1,500	2,250	1,500	400	8,050
Accel Length				300		
Decel Length		1,500				
Mainline Volume	3,001	3,001	1,504	1,504	1,789	1,789
On Ramp Volume				285		
Off Ramp Volume		1,497				
Express Lane Volume	900	900				
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,101	2,101	1,504	1,789	1,789	1,789
PHF	0.92	0.9	0.92	0.9	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 %	10.0%	5.0%	10.0%	5.0%	15.0%	15.0%
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}	0.952	0.976	0.952	0.976	0.930	0.930
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,398	2,392	1,717	2,037	2,090	2,090
GP Flow (pcphpl)	1,199	1,196	858	1,019	1,045	1,045
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	1.8	1.8	1.8	1.8	1.8	1.8
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	70.1	70.1	70.1	70.1	70.1	70.1
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70

Location	1	2	3	4	5	6
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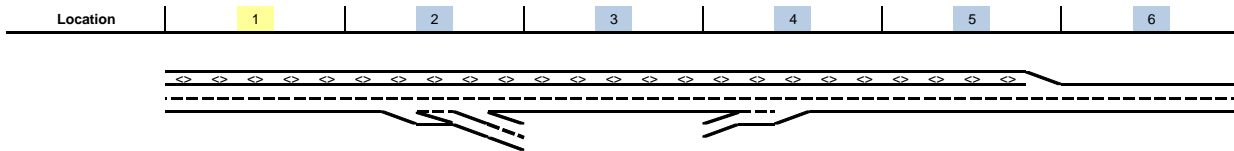


Key

<> Express Lane (HOV)

No Trucks

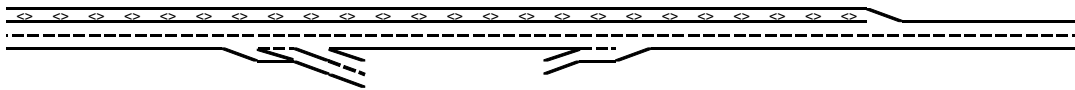
Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Operations in General Purpose Lanes						
v/c ratio	0.50	0.50	0.36	0.42	0.44	0.44
Speed (mph)	70.0	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	17.1	17.1	12.3	14.6	14.9	14.9
LOS	B	B	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)				1,713		
GP _{IN} Cap (pcph)				4,800		
GP _{IN} v/c ratio				0.36		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)		688				
GP _{OUT} Cap (pcph)		4,800				
GP _{OUT} v/c ratio		0.14				
Calculate On Ramp Flow Rate						
On Volume (vph)				285		
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		
On Flow (pcph)				325		
On Flow (pcphpl)				325		
Calculate On Ramp Roadway Operations						
On Ramp Type				Right		
On Ramp Speed (mph)				60		
On Ramp Cap (pcph)				2,200		
On Ramp v/c ratio				0.15		



Key
 \leftrightarrow Express Lane (HOV)
 No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Off Ramp Flow Rate						
Off Volume (vph)		1,497				
PHF		0.9				
Total Lanes		2				
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)		1,705				
Off Flow (pcphpl)		852				
Calculate Off Ramp Roadway Operations						
Off Ramp Type		Right				
Off Ramp Speed		35				
Off Ramp Cap (pcph)		4,000				
Off Ramp v/c ratio		0.43				
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)						

Location	1	2	3	4	5	6
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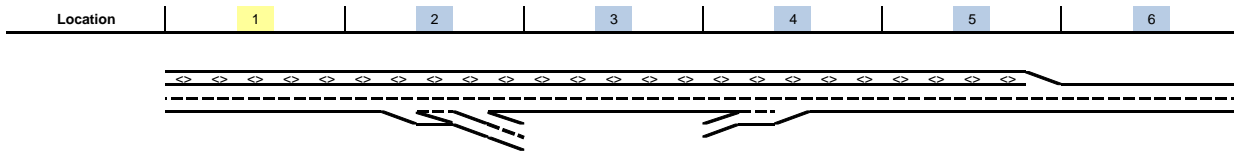


Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Merge Influence Area Operations						
Effective v_p (pcph)				1,713		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)				0.586		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}				1.000		
v_{12} (pcph)				1,713		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)				1,713		
v_{R12a} (pcph)				2,037		
Merge Speed Index				0.31		
Merge Area Speed				61.2		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed				61.2		
Merge v/c ratio				0.44		
Merge Density				19.3		
Merge LOS				B		
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)		2,392				
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)		0.622				
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}		1.000				
v_{12} (pcph)		2,392				
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)		2,392				
Diverge Speed Index		0.58				
Diverge Area Speed		53.7				
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed		53.7				
Diverge v/c ratio		0.54				
Diverge Density		11.3				
Diverge LOS		B				



Key

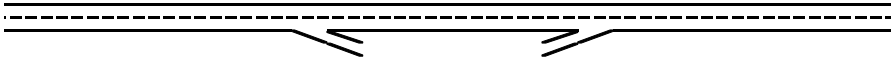
<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Summarize Segment Operations						
Segment v/c ratio	0.50	0.54	0.36	0.44	0.44	0.44
Segment Density	17.1	11.3	12.3	19.3	14.9	14.9
Segment LOS	B	B	B	B	B	B
Over Capacity						

Project: Elk Grove Civic Center
Freeway Corridor: Interstate 5 NB
Alternative: Existing Plus Project
Time Period: Sat. AM Peak Hour

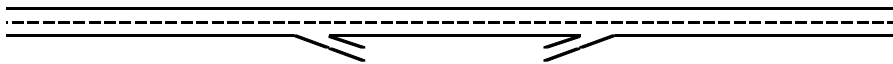
Location	1	2	3	4	5
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Key

<> Express Lane (HOV)
 No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	6,900	1,500	3,100	1,500	500
Accel Length				750	
Decel Length		160			
Mainline Volume	1,641	1,641	1,509	1,509	2,148
On Ramp Volume				639	
Off Ramp Volume		132			
Express Lane Volume					
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	1,641	1,641	1,509	2,148	2,148
PHF	0.92	0.97	0.92	0.97	0.92
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	18.0%	5.0%	18.0%	5.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.917	0.976	0.917	0.976	0.917
f _p	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	1,944	1,734	1,788	2,270	2,545
GP Flow (pcphpl)	972	867	894	1,135	1,272
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.2	1.2	1.2	1.2	1.2
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	71.7	71.7	71.7	71.7	71.7
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70
Calculate Operations in General Purpose Lanes					
v/c ratio	0.41	0.36	0.37	0.47	0.53
Speed (mph)	70.0	70.0	70.0	70.0	69.9
Density (pcphpl)	13.9	12.4	12.8	16.2	18.2
LOS	B	B	B	B	C
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				1,595	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.33	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		1,595			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.33			



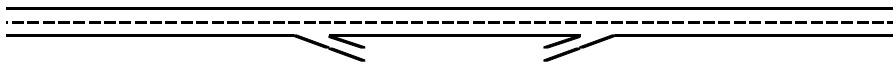
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate On Ramp Flow Rate					
On Volume (vph)				639	
PHF				0.97	
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	
On Flow (pcph)				675	
On Flow (pcphpl)				675	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.32	

Location	1	2	3	4	5
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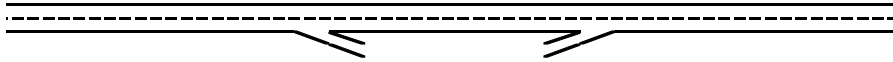
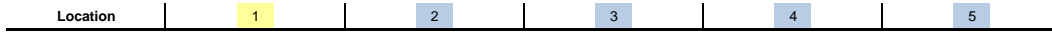


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate Off Ramp Flow Rate					
Off Volume (vph)		132			
PHF		0.97			
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)		139			
Off Flow (pcphpl)		139			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.07			
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)				1,595	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.599	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				1,595	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				1,595	
v_{R12a} (pcph)				2,270	
Merge Speed Index				0.29	
Merge Area Speed				61.8	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				61.8	
Merge v/c ratio				0.49	
Merge Density				18.2	
Merge LOS				B	

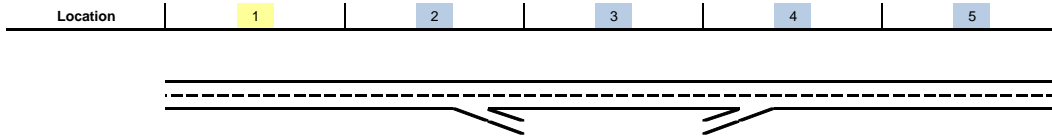


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate Diverge Influence Area Operations					
Effective v_p (pcph)		1,734			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.710			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		1,734			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		1,734			
Diverge Speed Index		0.44			
Diverge Area Speed		57.7			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		57.7			
Diverge v/c ratio		0.39			
Diverge Density		17.7			
Diverge LOS		B			



Key

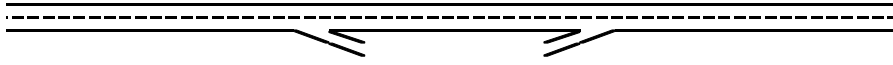
<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Summarize Segment Operations					
Segment v/c ratio	0.41	0.39	0.37	0.49	0.53
Segment Density	13.9	17.7	12.8	18.2	18.2
Segment LOS	B	B	B	B	C
Over Capacity					

Project: Elk Grove Civic Center
Freeway Corridor: Interstate 5 SB
Alternative: Existing Plus Project
Time Period: Sat. AM Peak Hour

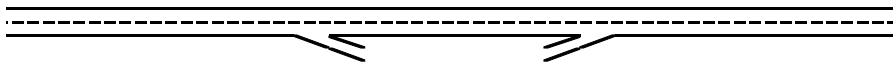
Location	1	2	3	4	5
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Key

<> Express Lane (HOV)
 No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	2,500	1,500	1,450	1,500	7,750
Accel Length				750	
Decel Length		160			
Mainline Volume	1,821	1,821	1,331	1,331	1,480
On Ramp Volume				149	
Off Ramp Volume		490			
Express Lane Volume					
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	1,821	1,821	1,331	1,480	1,480
PHF	0.92	0.87	0.92	0.87	0.92
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	18.0%	5.0%	18.0%	5.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.917	0.976	0.917	0.976	0.917
f _p	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,157	2,145	1,577	1,744	1,753
GP Flow (pcphpl)	1,079	1,073	788	872	877
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.2	1.2	1.2	1.2	1.2
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	71.7	71.7	71.7	71.7	71.7
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70
Calculate Operations in General Purpose Lanes					
v/c ratio	0.45	0.45	0.33	0.36	0.37
Speed (mph)	70.0	70.0	70.0	70.0	70.0
Density (pcphpl)	15.4	15.3	11.3	12.5	12.5
LOS	B	B	B	B	B
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				1,568	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.33	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		1,568			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.33			



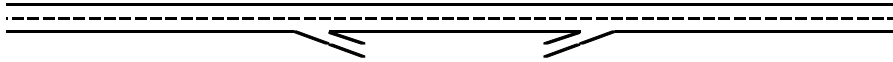
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<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate On Ramp Flow Rate					
On Volume (vph)				149	
PHF				0.87	
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	
On Flow (pcph)				176	
On Flow (pcphpl)				176	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.08	

Location	1	2	3	4	5
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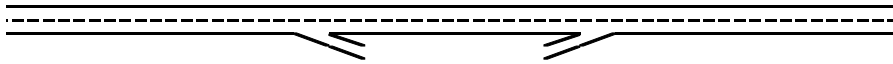
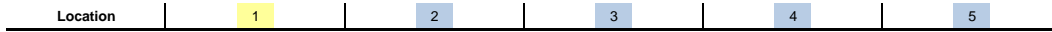


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate Off Ramp Flow Rate					
Off Volume (vph)		490			
PHF		0.87			
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)		577			
Off Flow (pcphpl)		577			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.29			
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)				1,568	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.599	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				1,568	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				1,568	
v_{R12a} (pcph)				1,744	
Merge Speed Index				0.28	
Merge Area Speed				62.3	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				62.3	
Merge v/c ratio				0.38	
Merge Density				14.3	
Merge LOS				B	

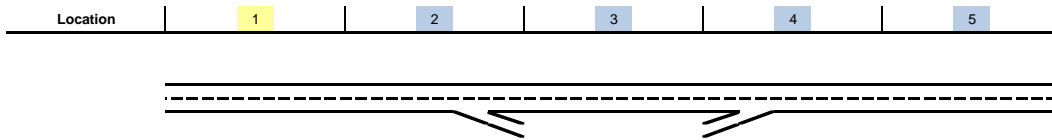


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate Diverge Influence Area Operations					
Effective v_p (pcph)		2,145			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.680			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		2,145			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		2,145			
Diverge Speed Index		0.48			
Diverge Area Speed		56.6			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		56.6			
Diverge v/c ratio		0.49			
Diverge Density		21.3			
Diverge LOS		C			



Key

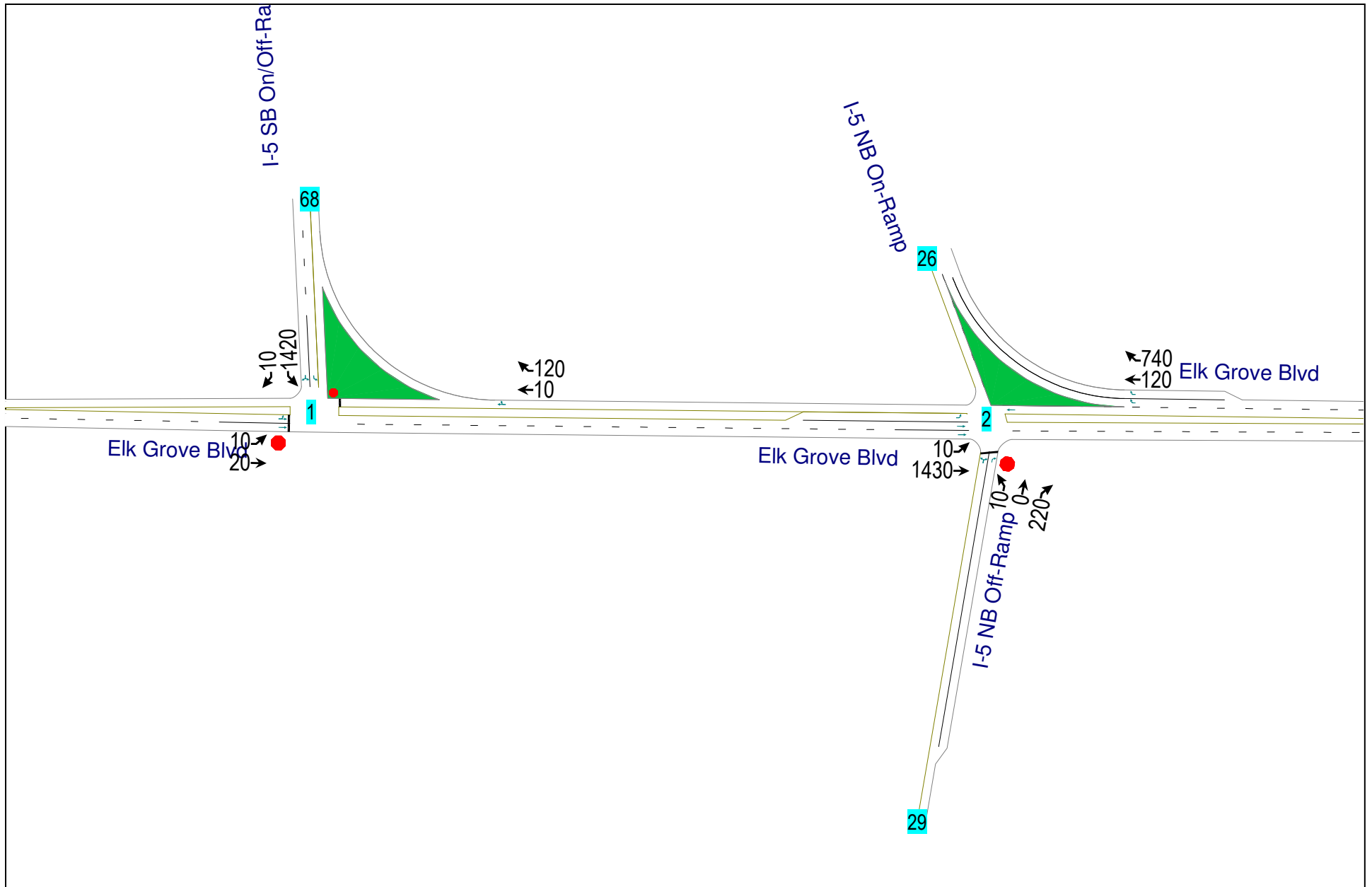
<> Express Lane (HOV)

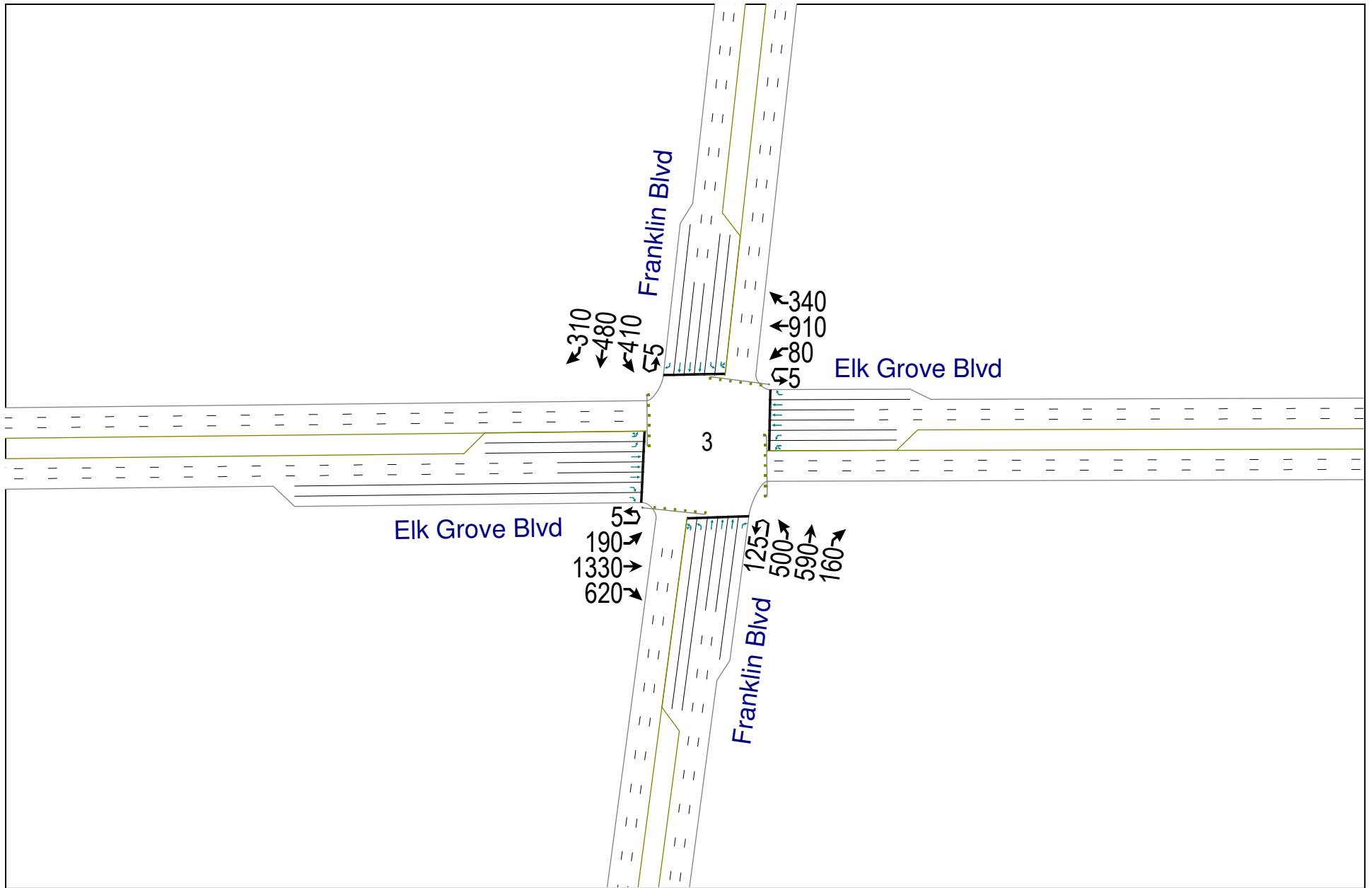
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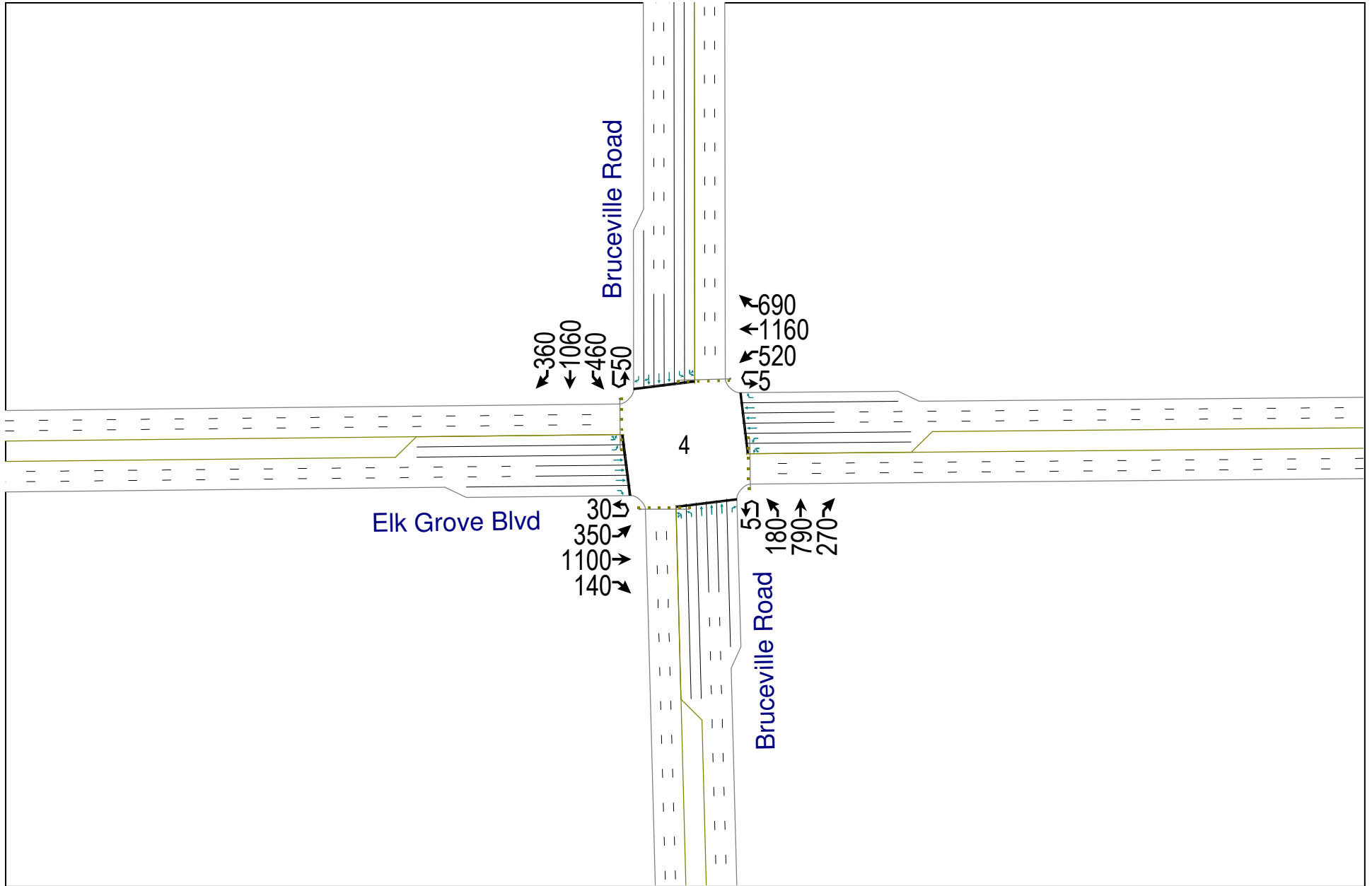
Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Summarize Segment Operations					
Segment v/c ratio	0.45	0.49	0.33	0.38	0.37
Segment Density	15.4	21.3	11.3	14.3	12.5
Segment LOS	B	C	B	B	B
Over Capacity					

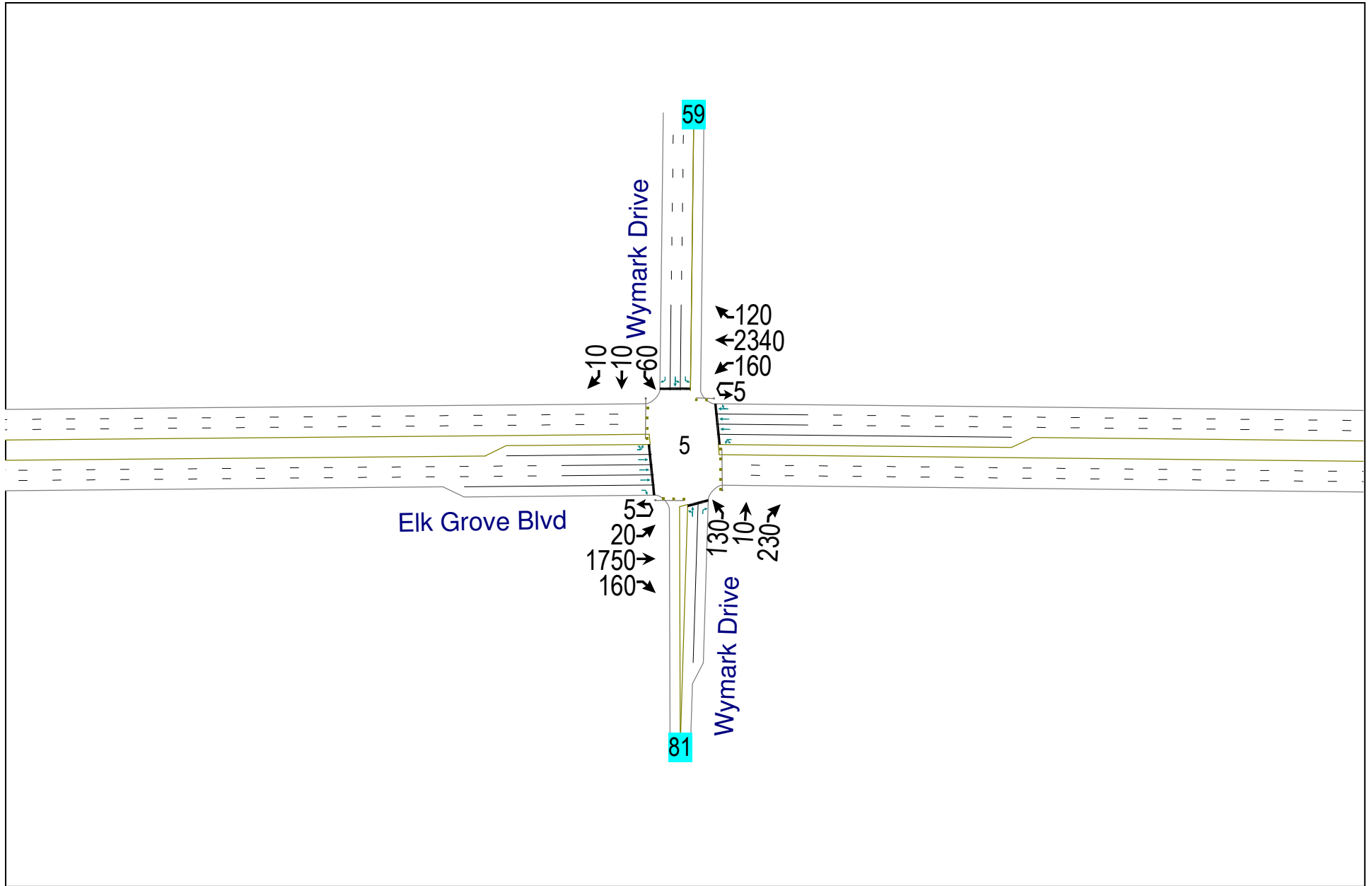
APPENDIX C: CUMULATIVE CONDITIONS

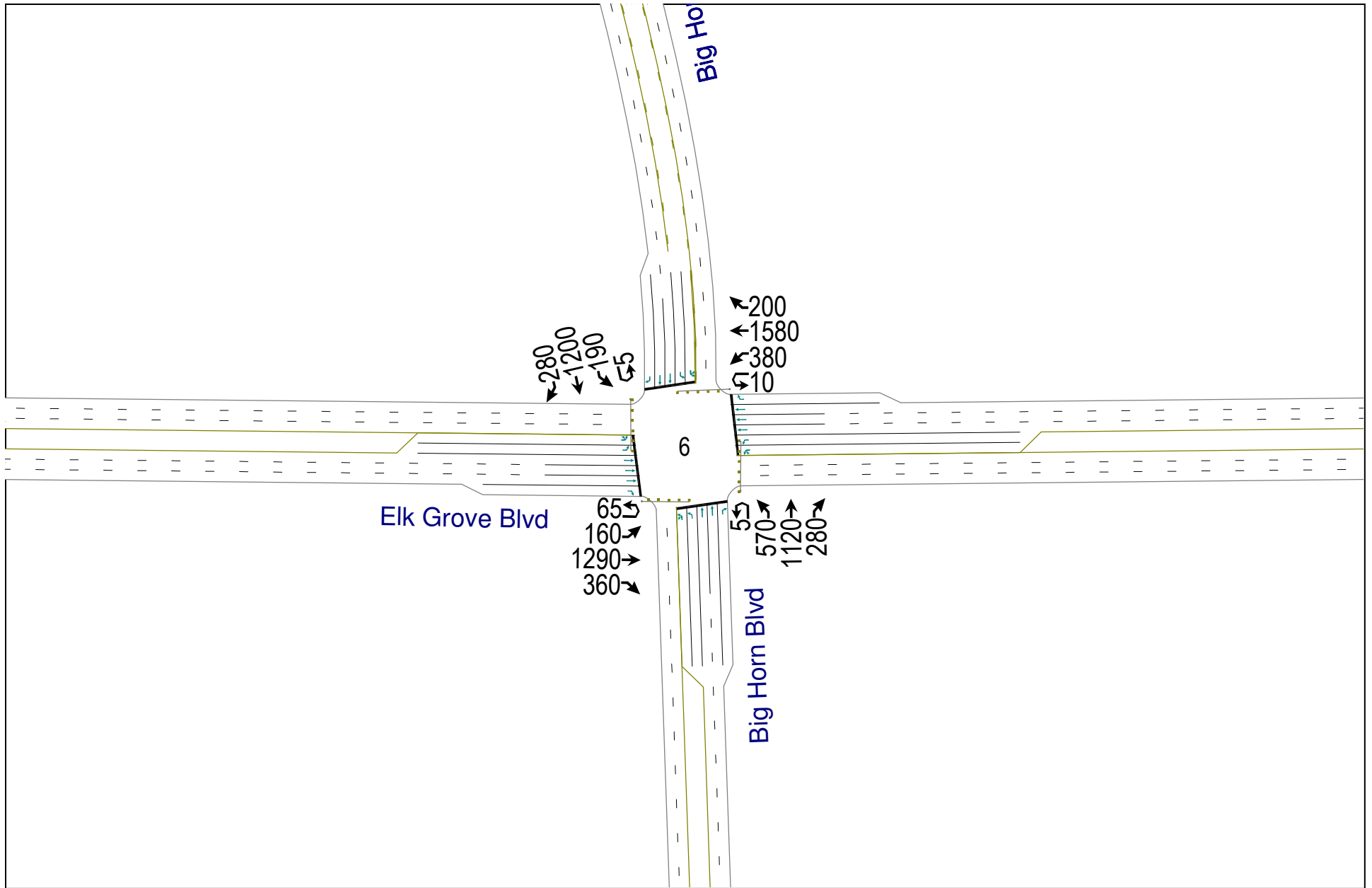


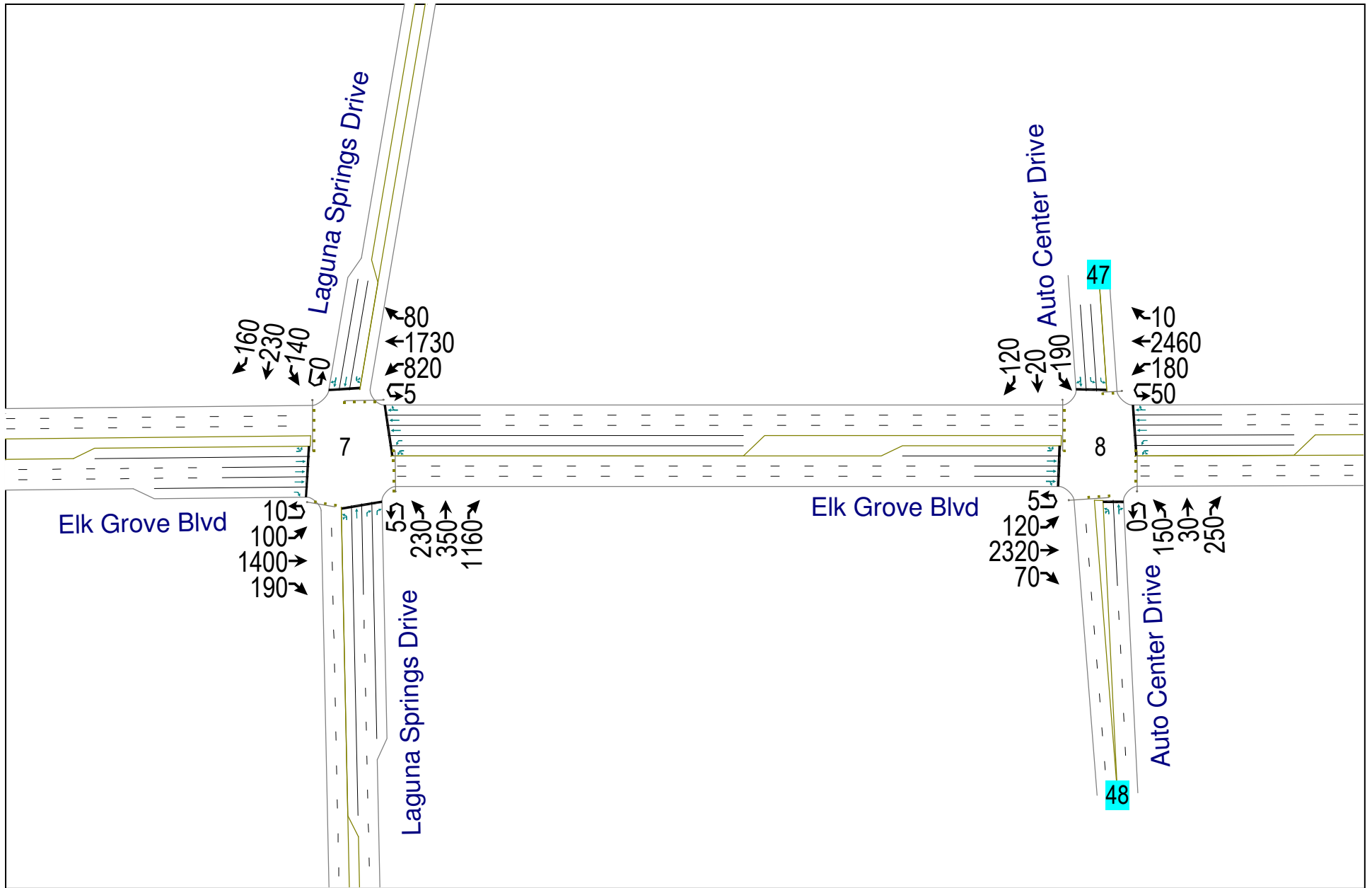


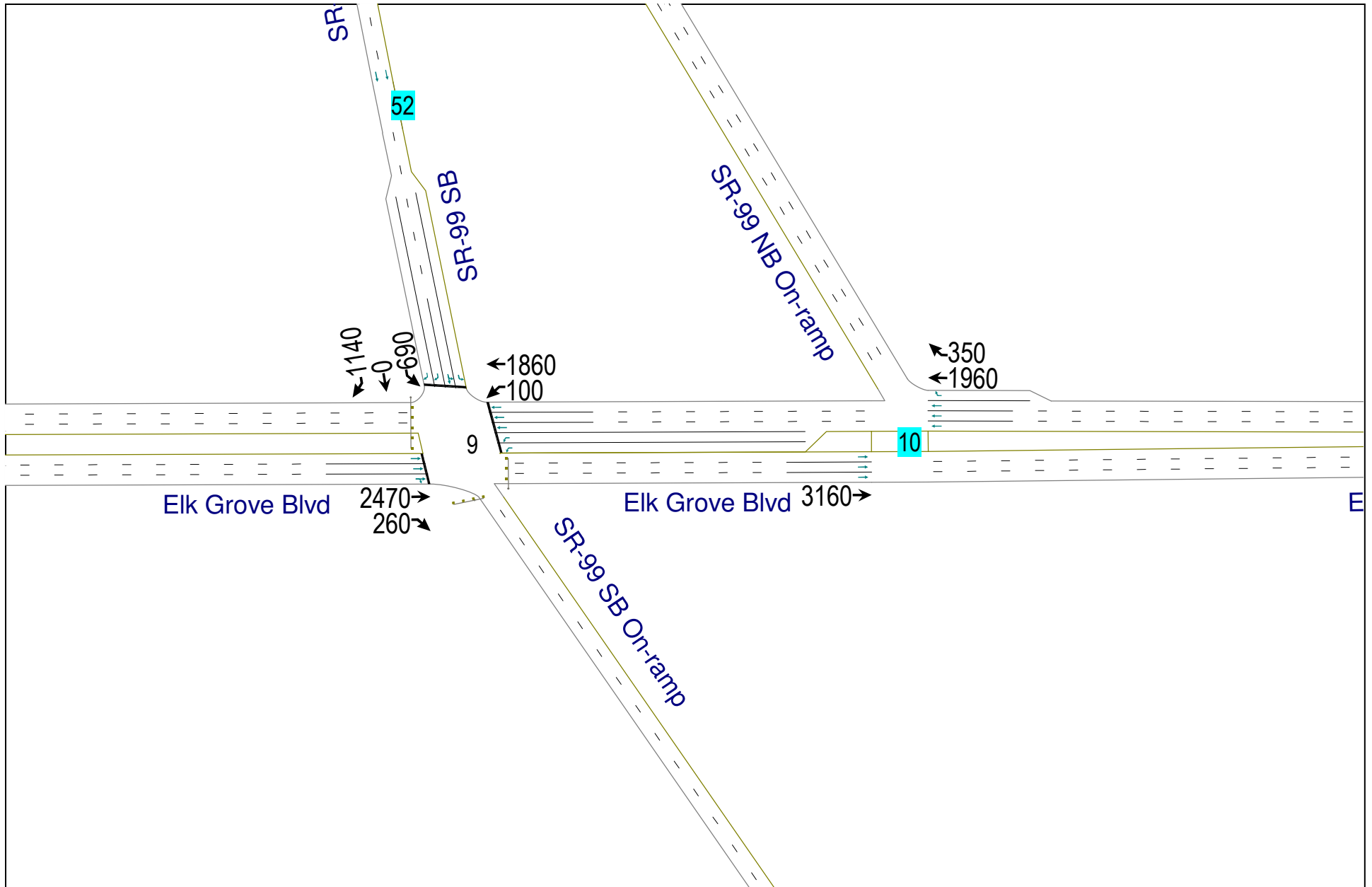


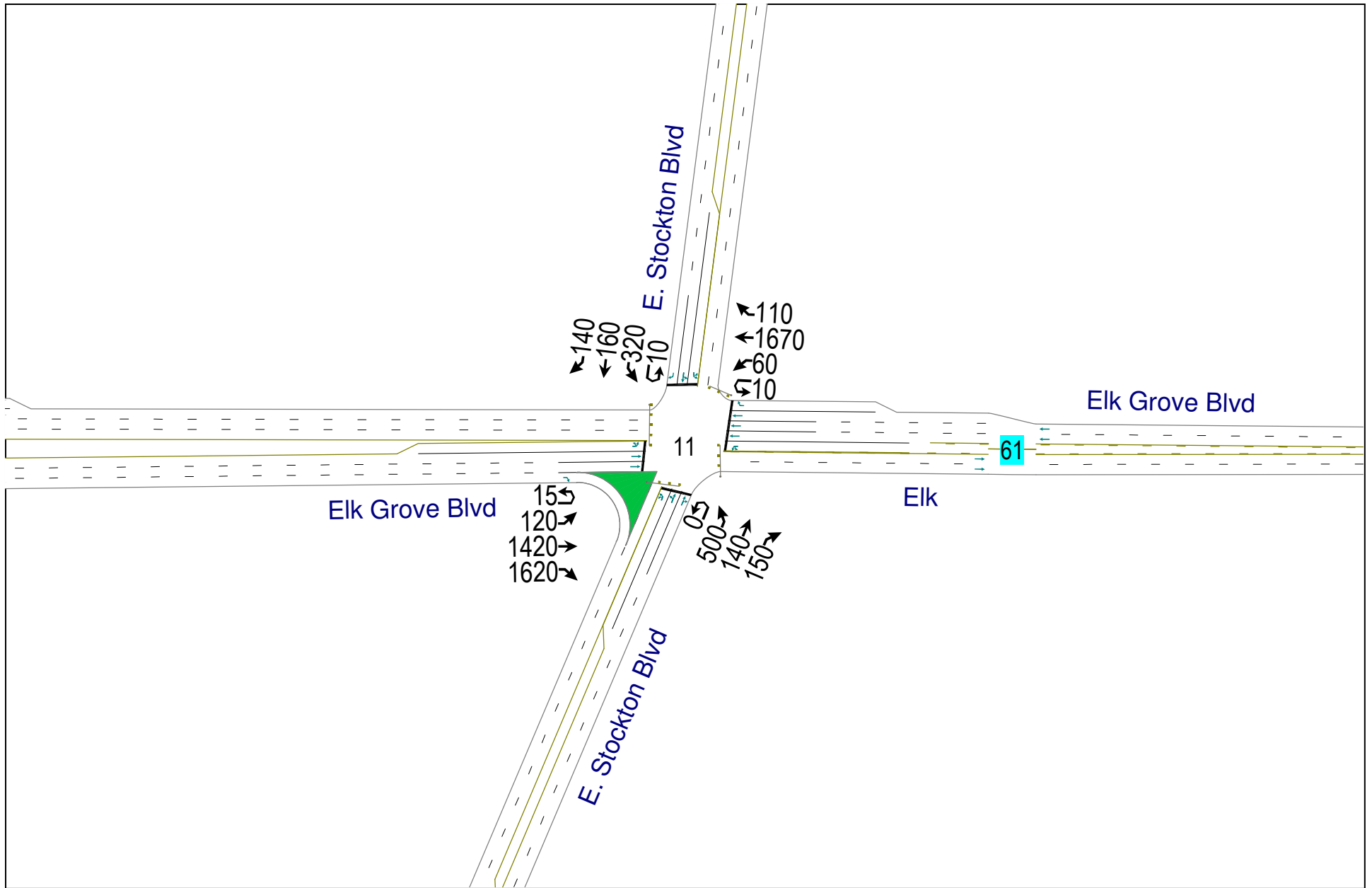


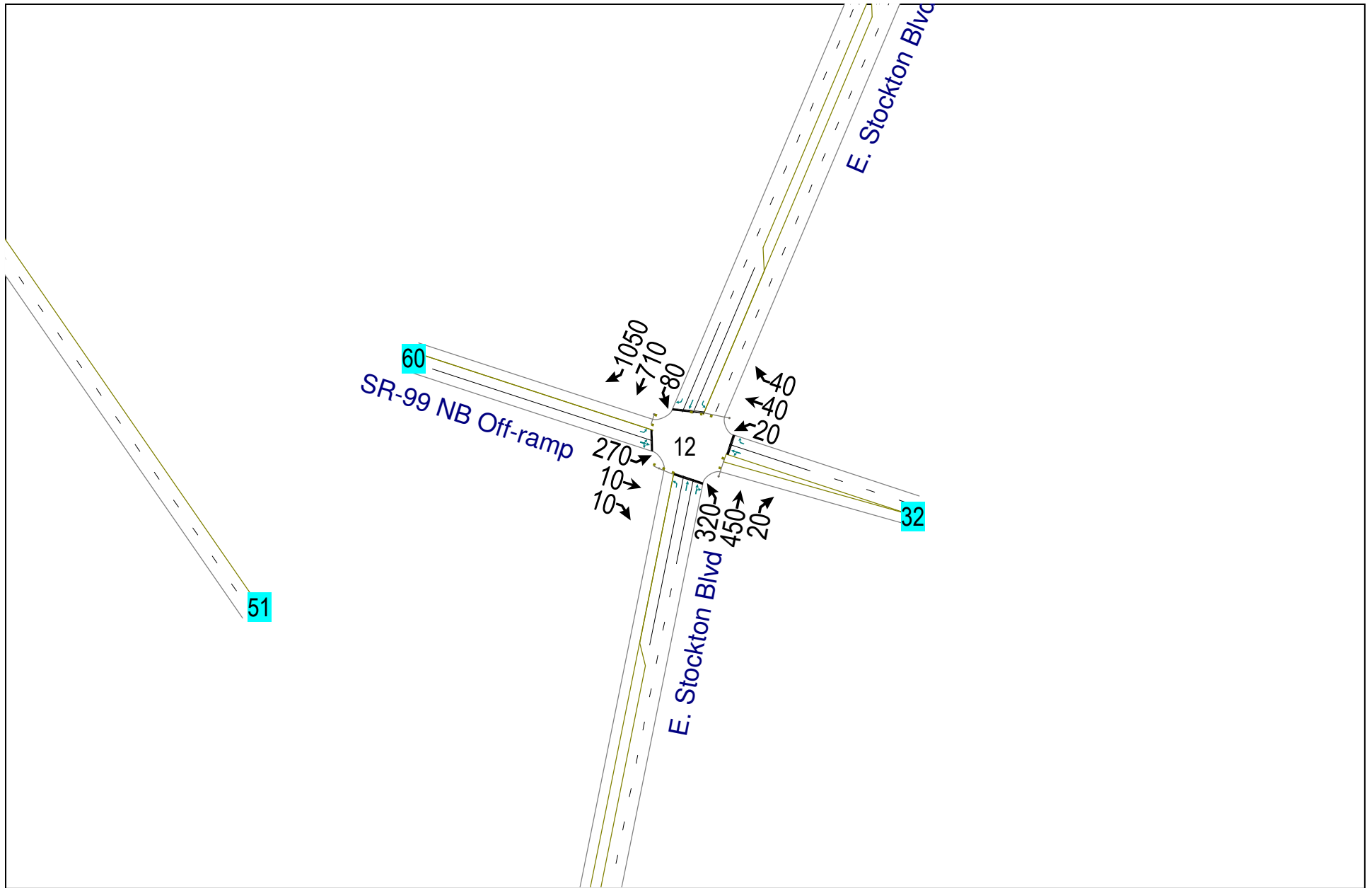


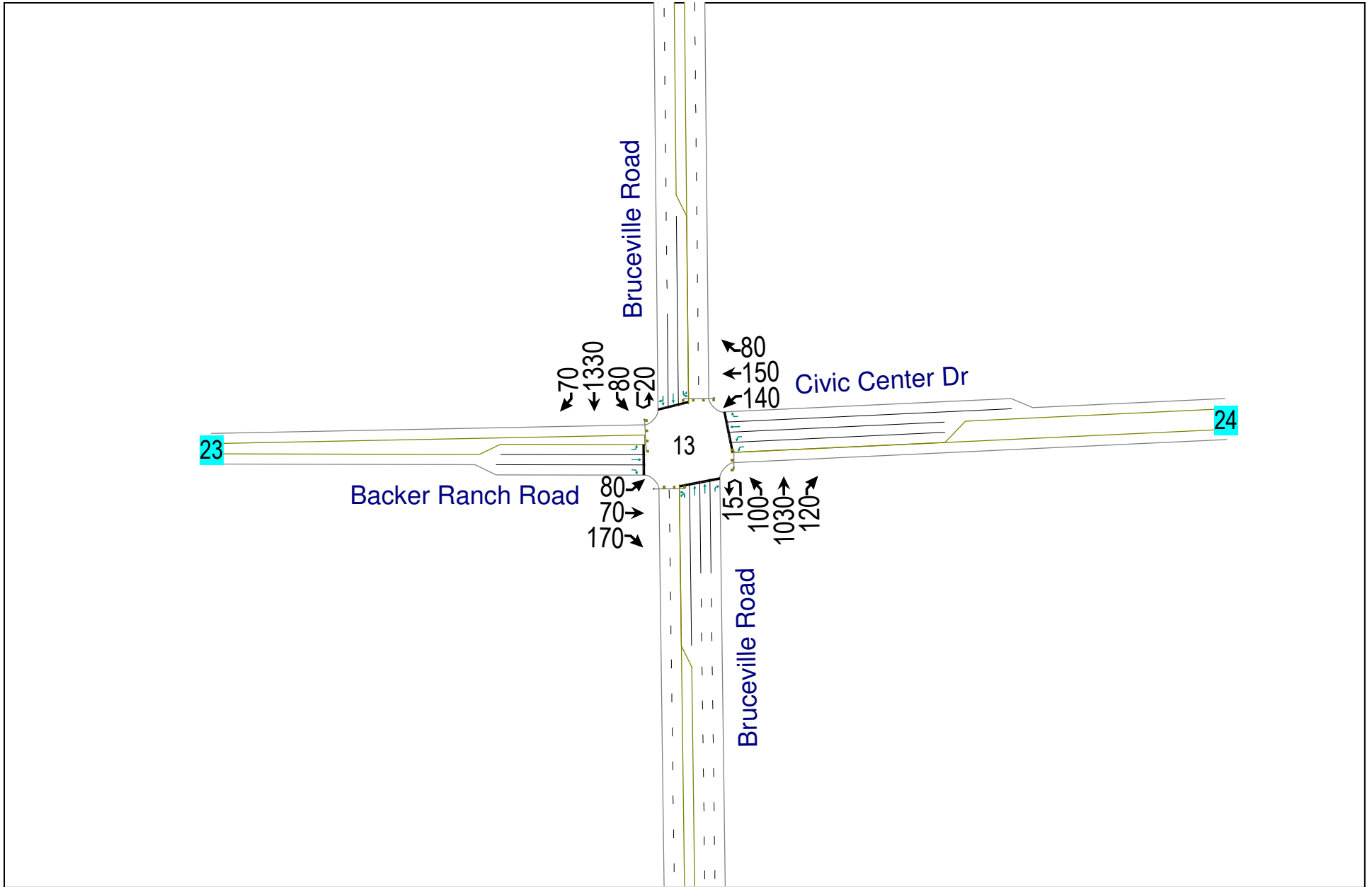


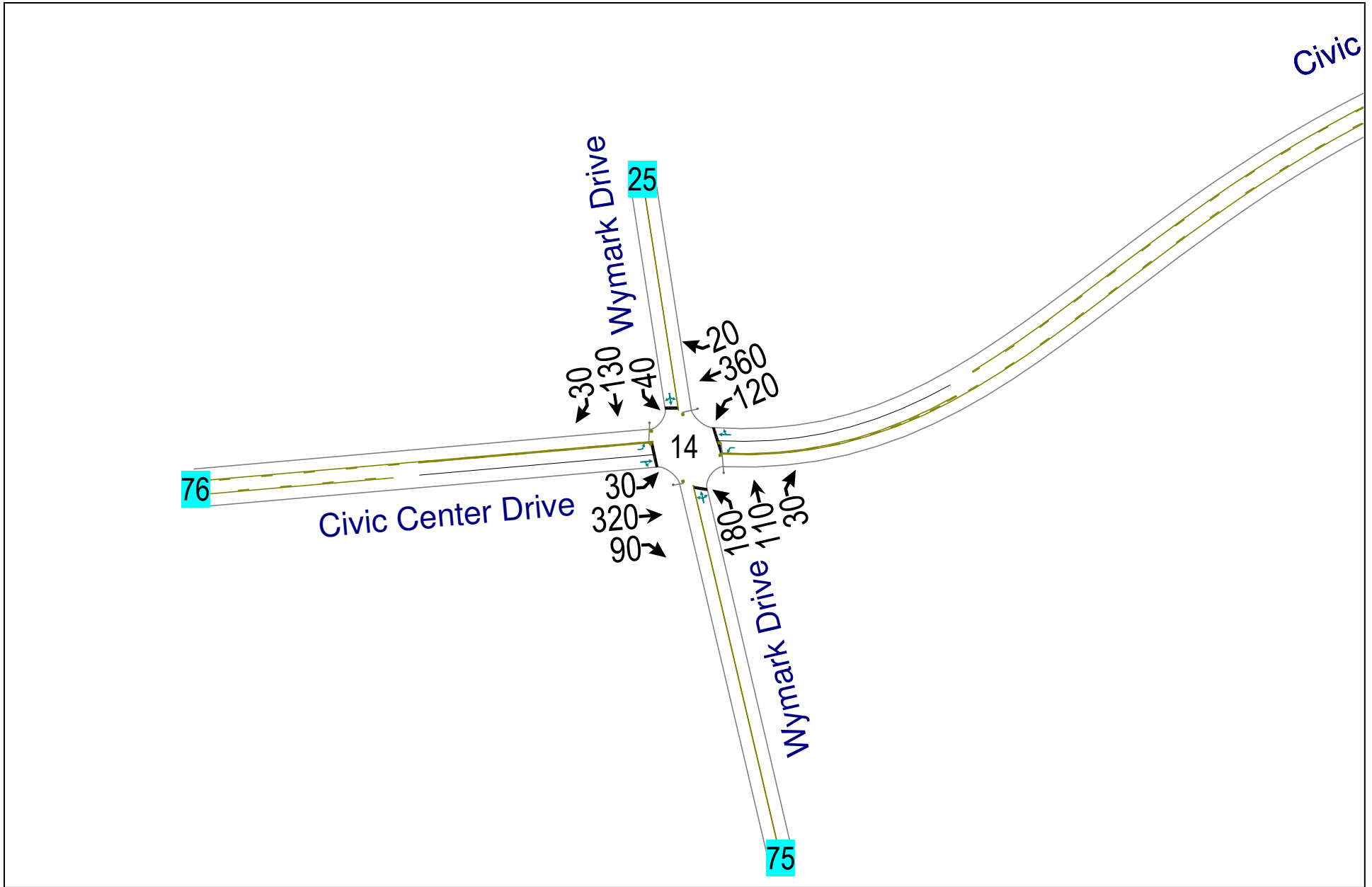


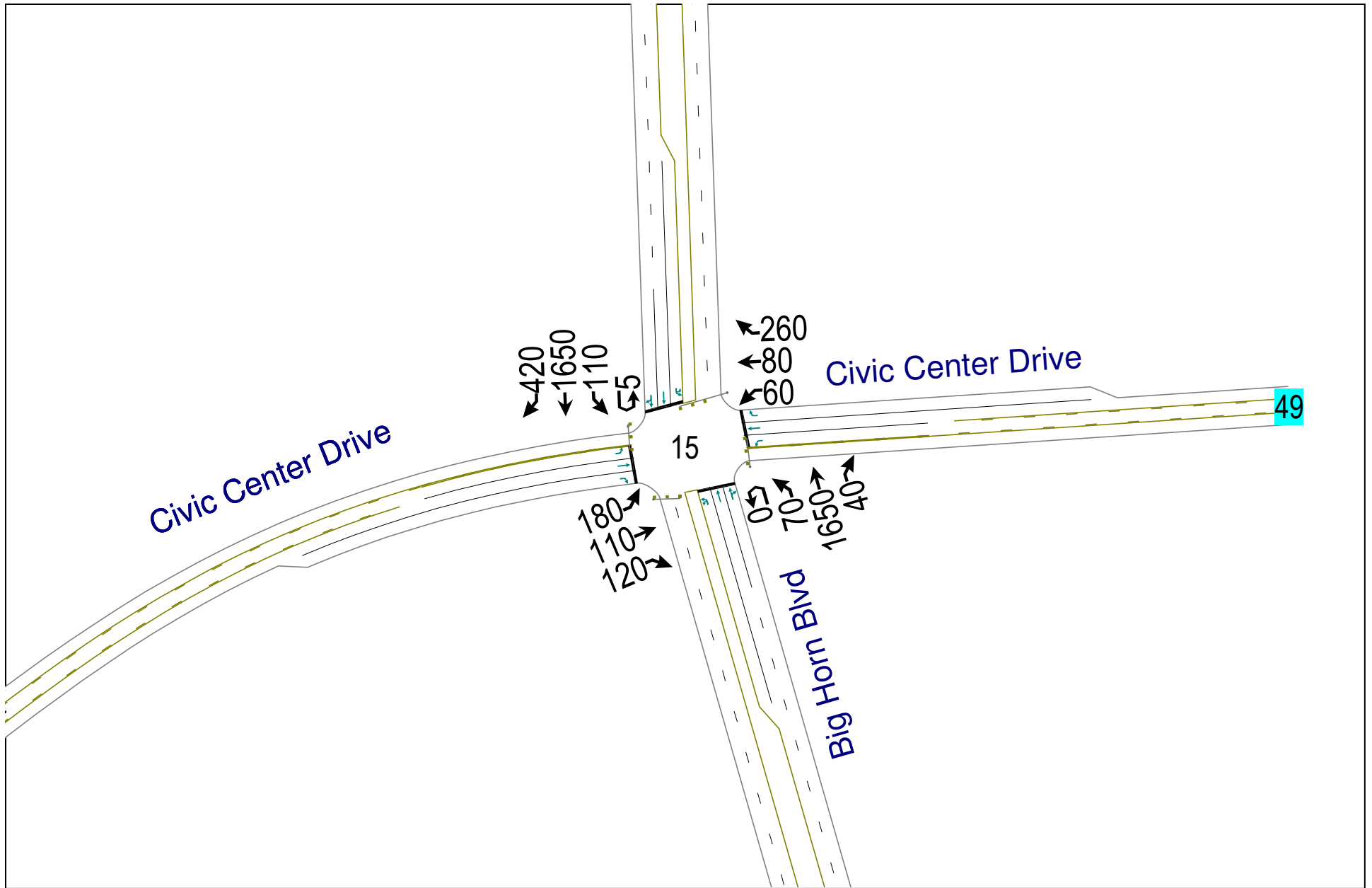


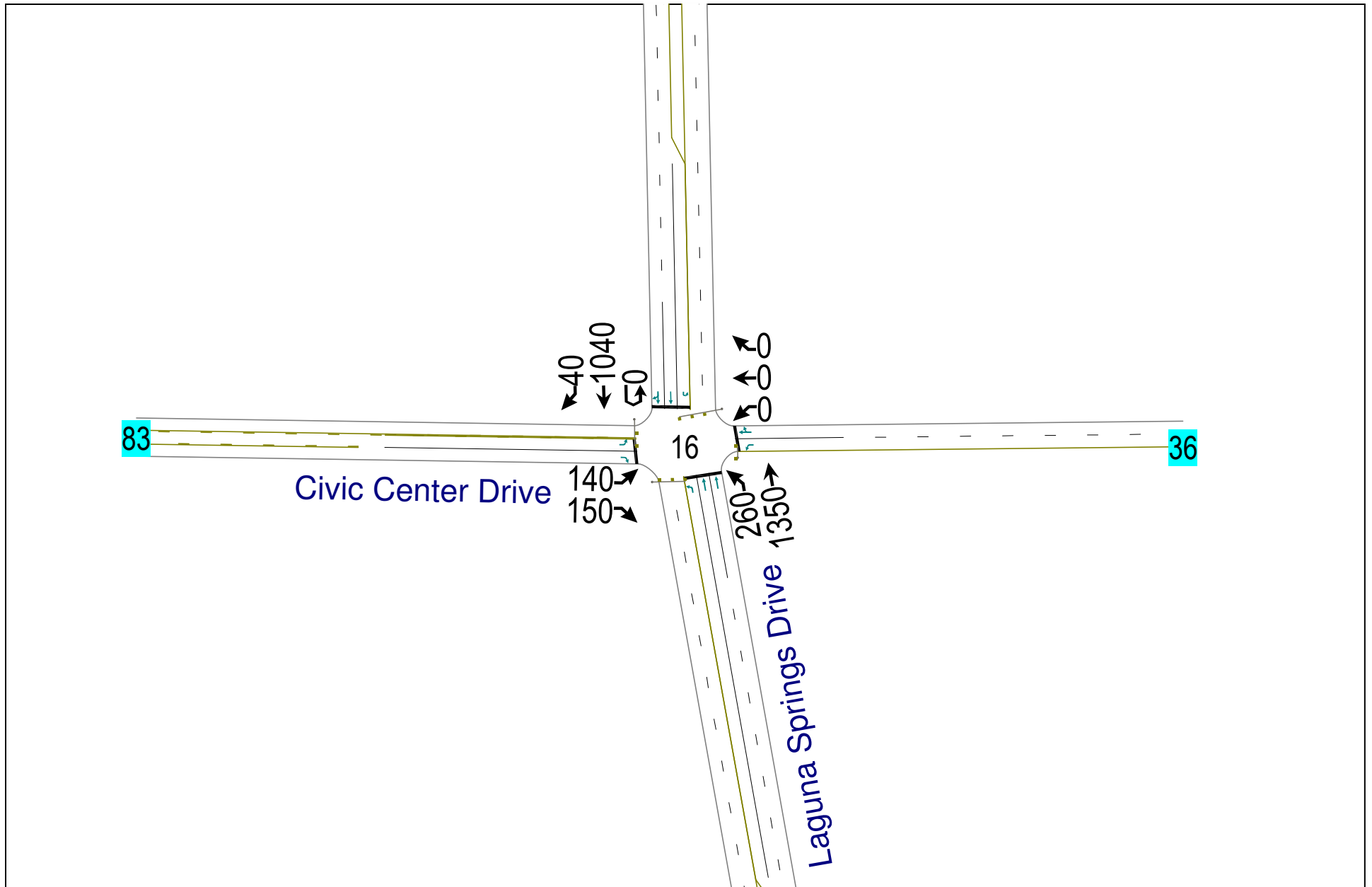


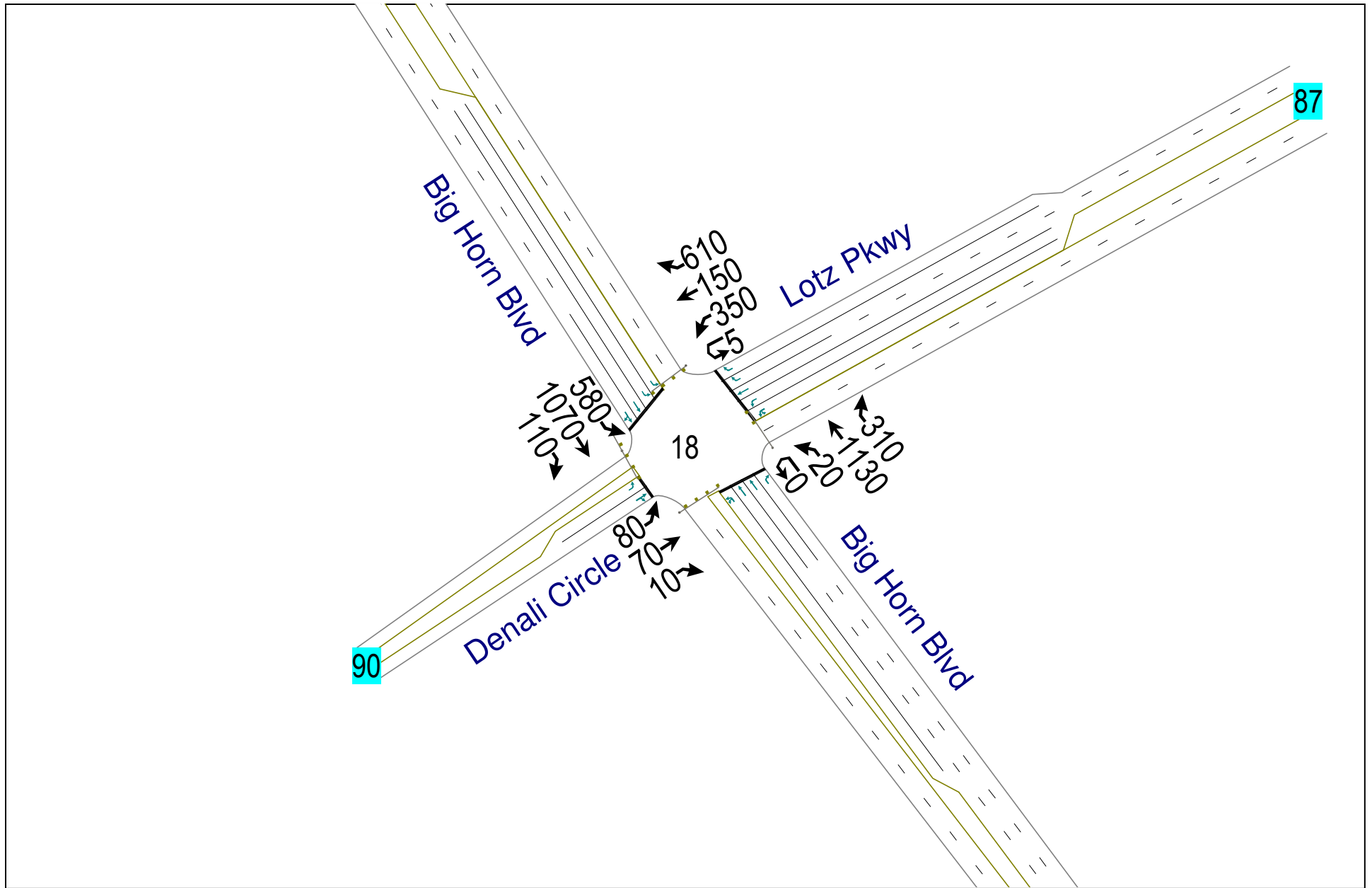


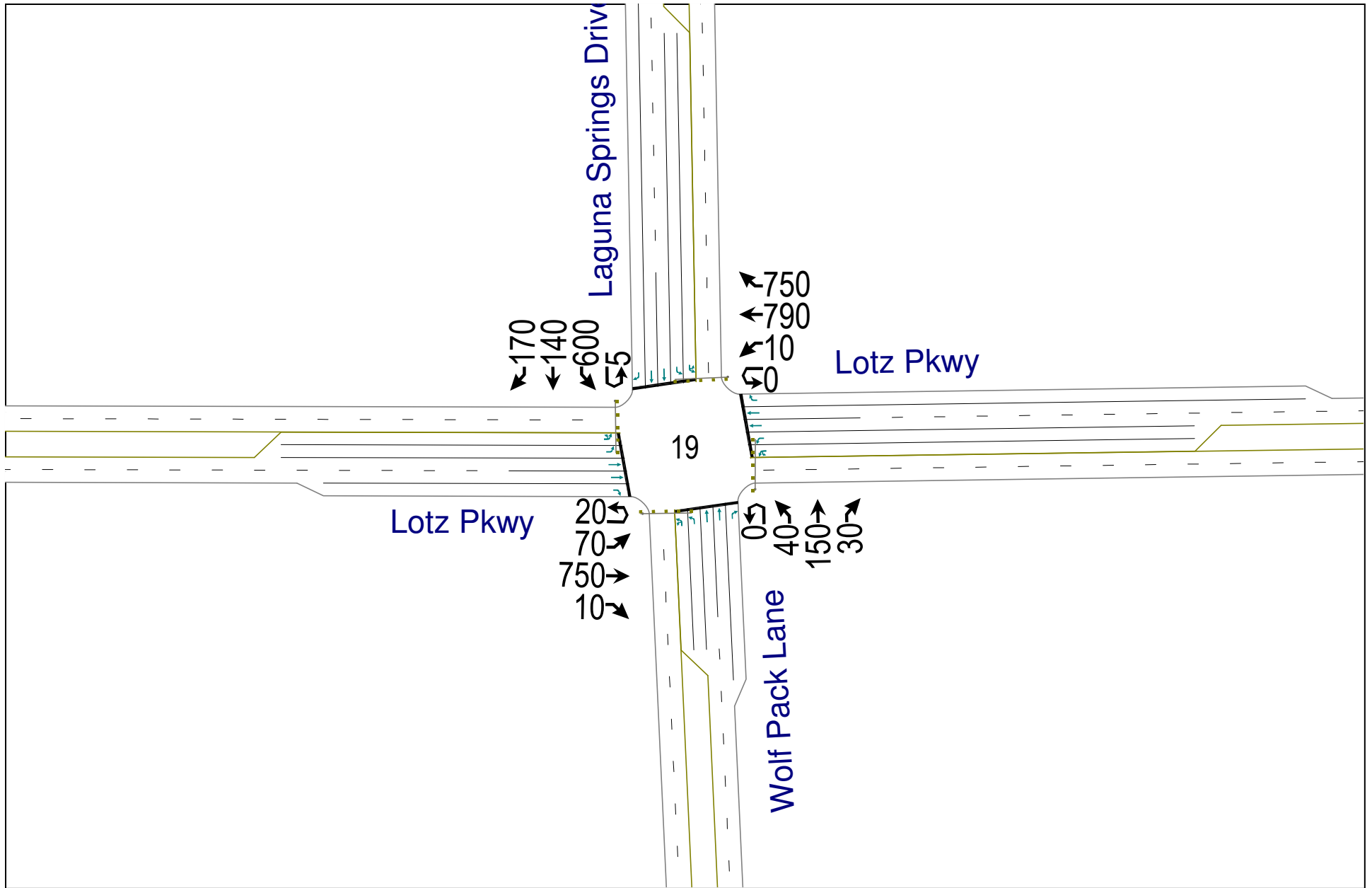


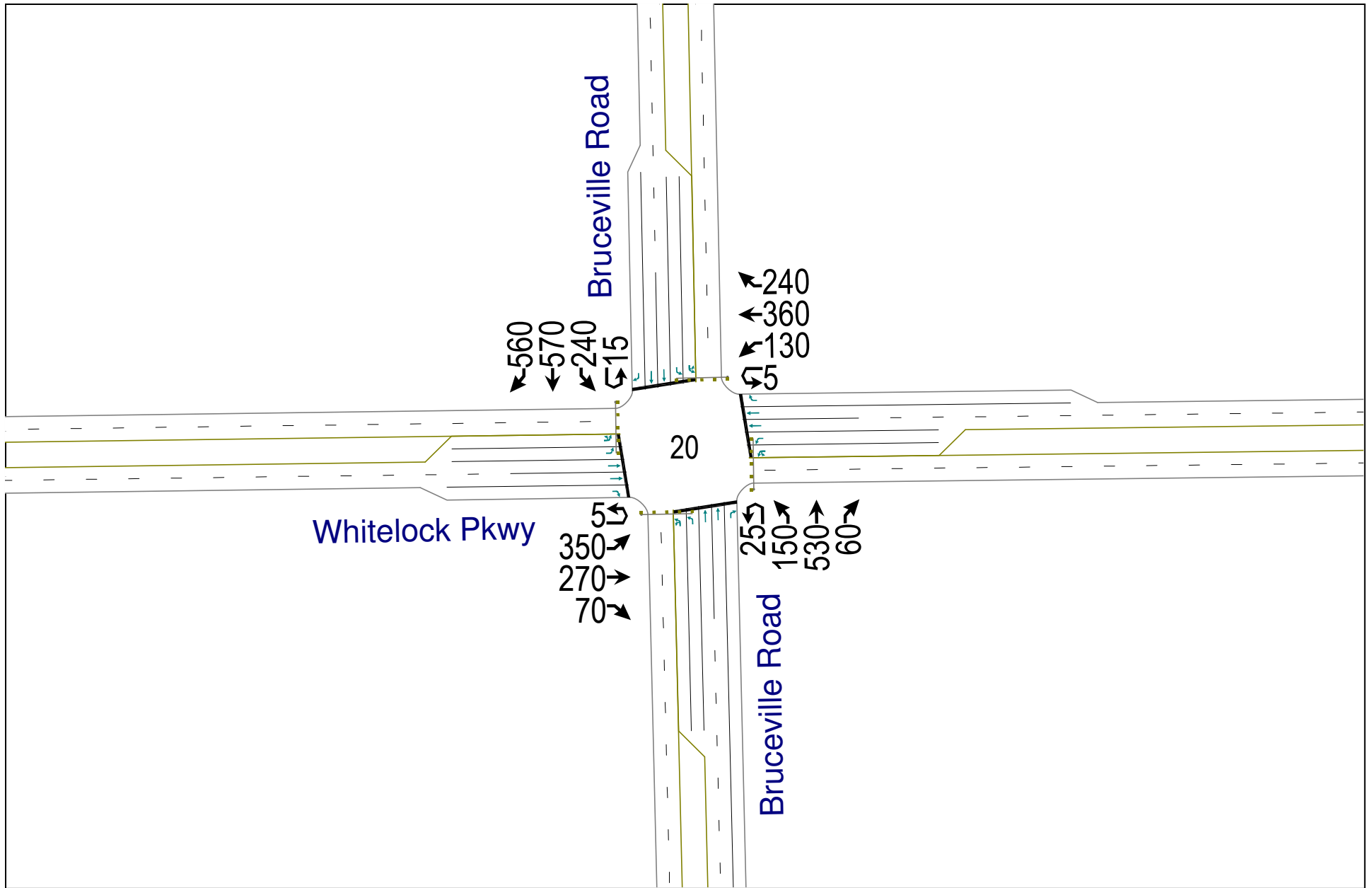


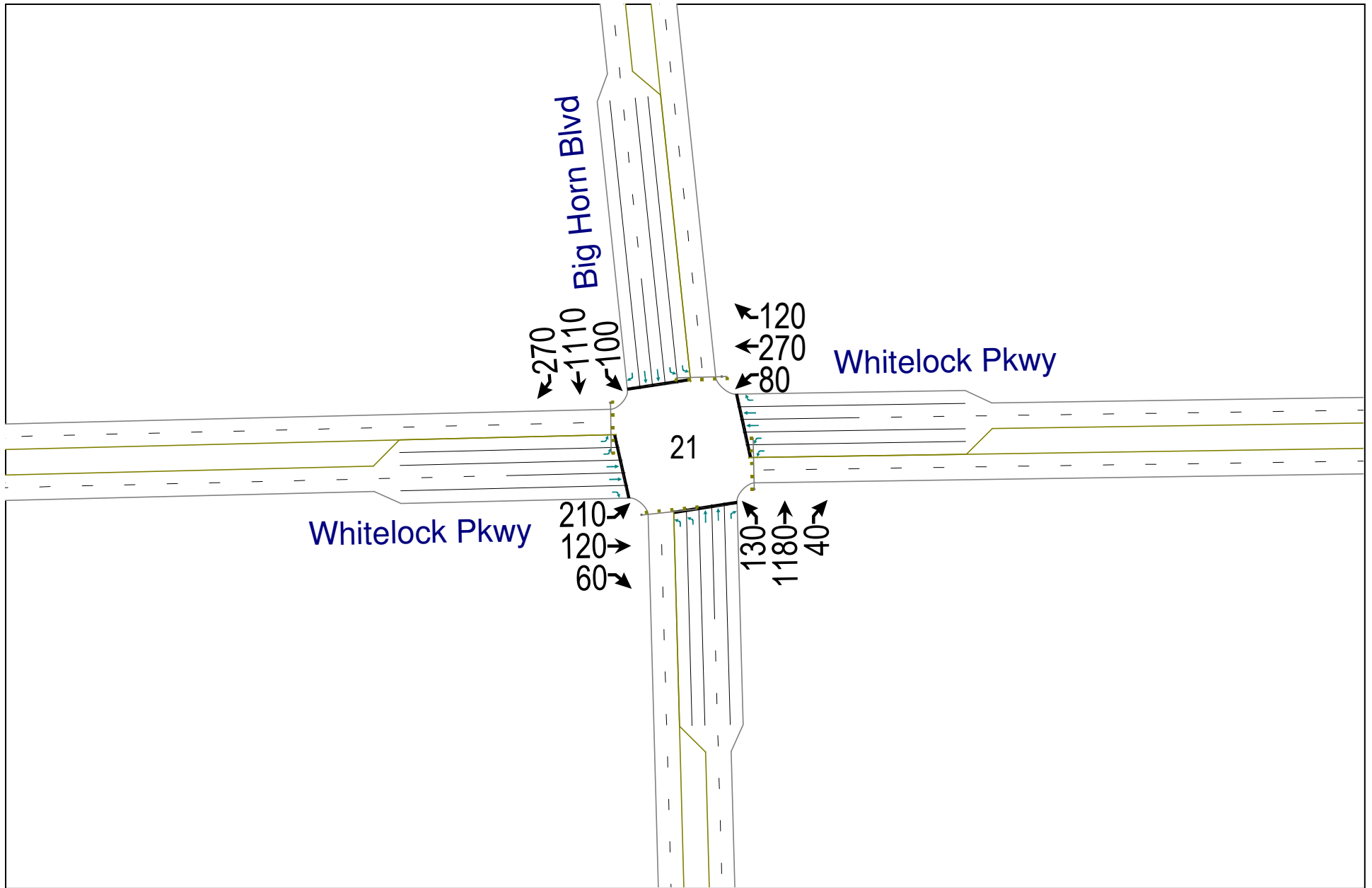


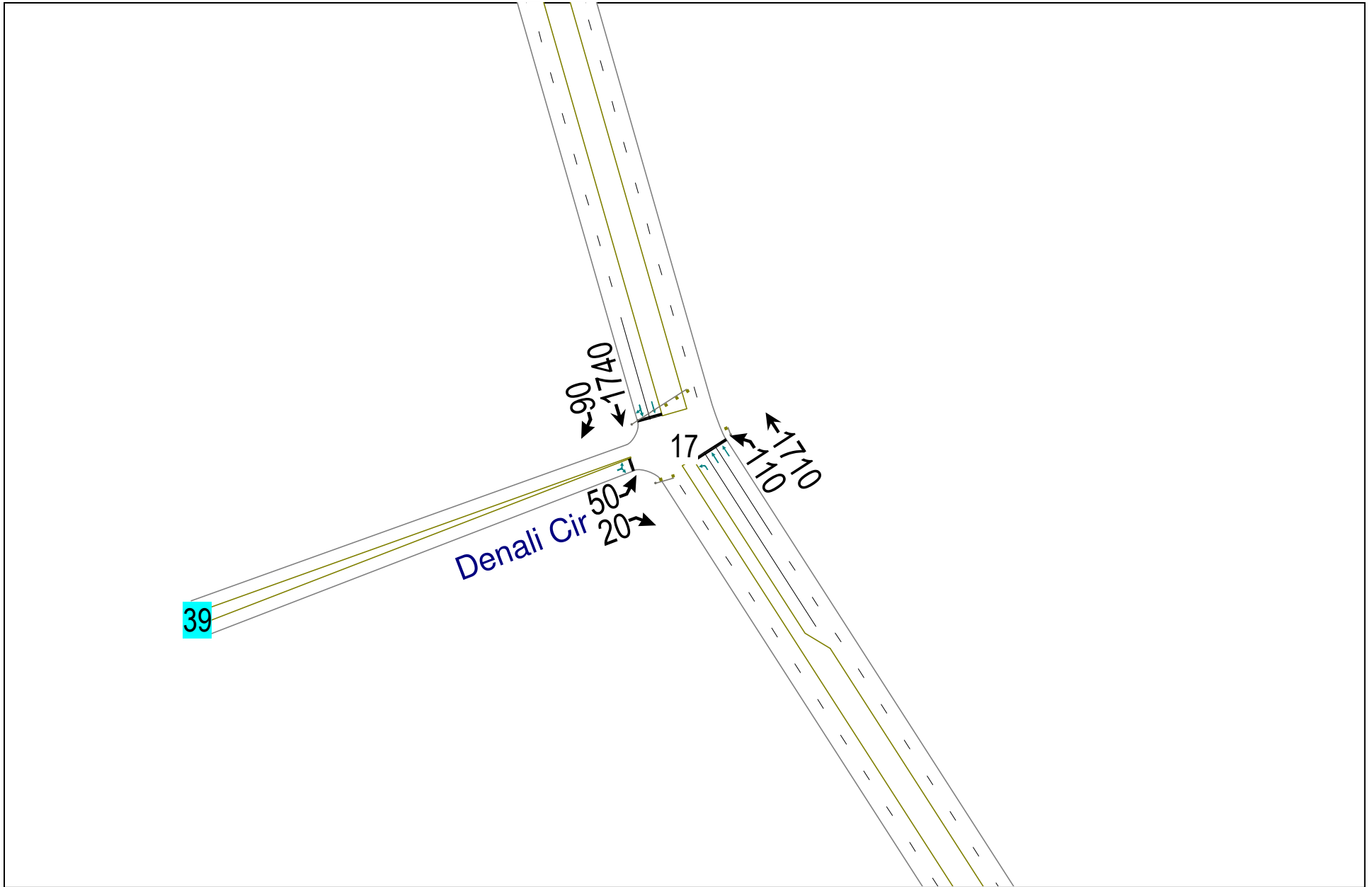


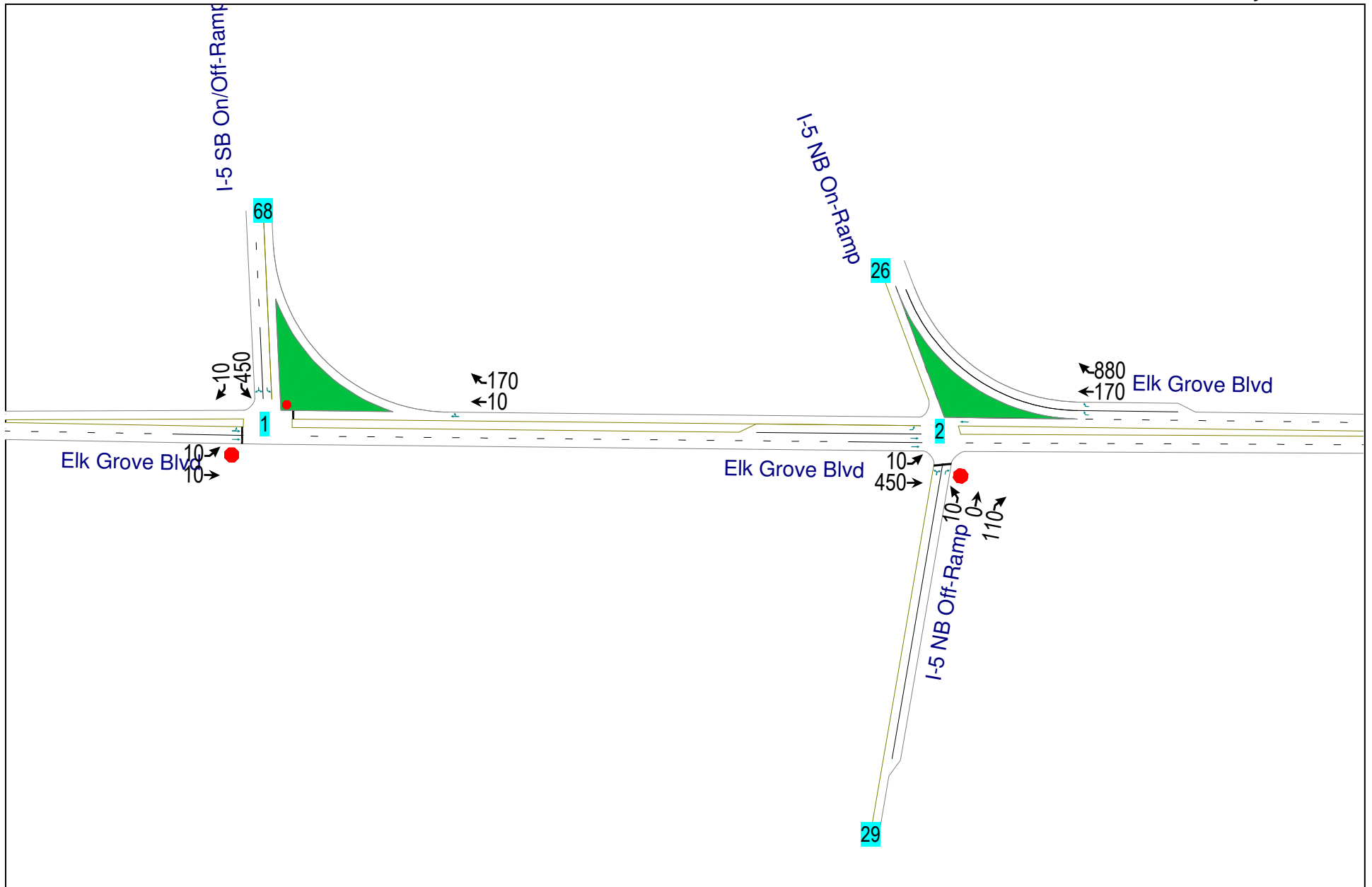


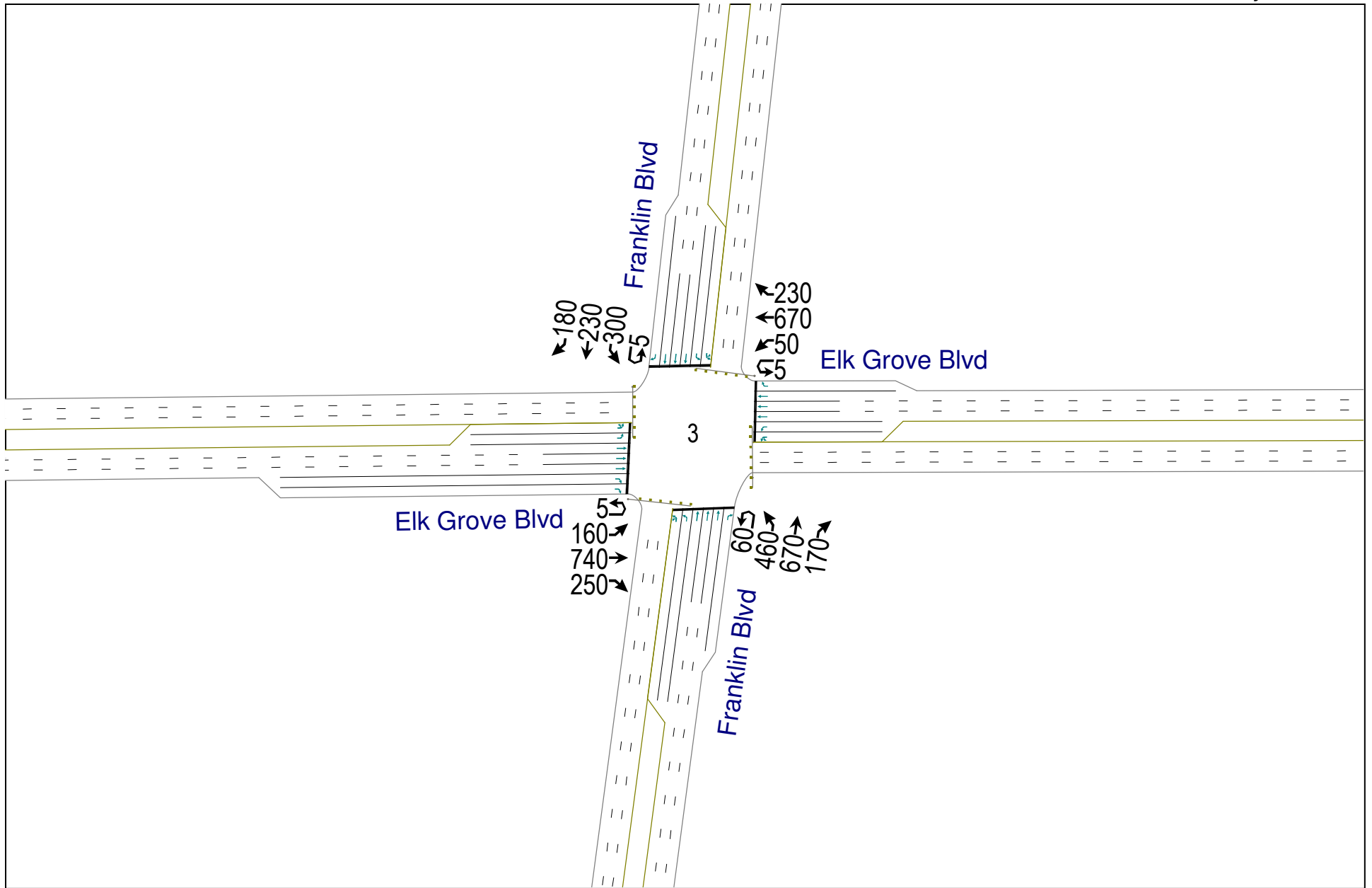


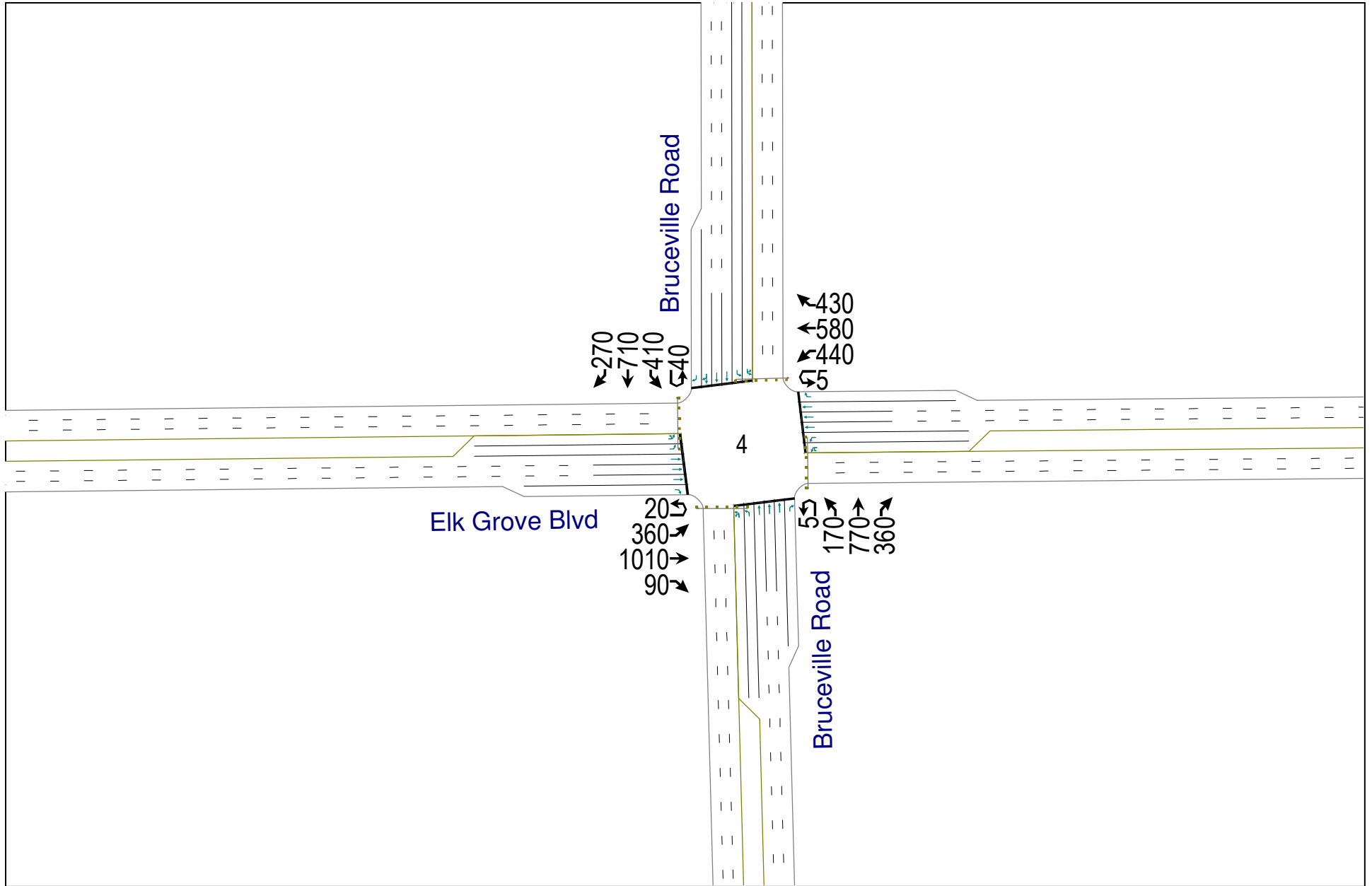


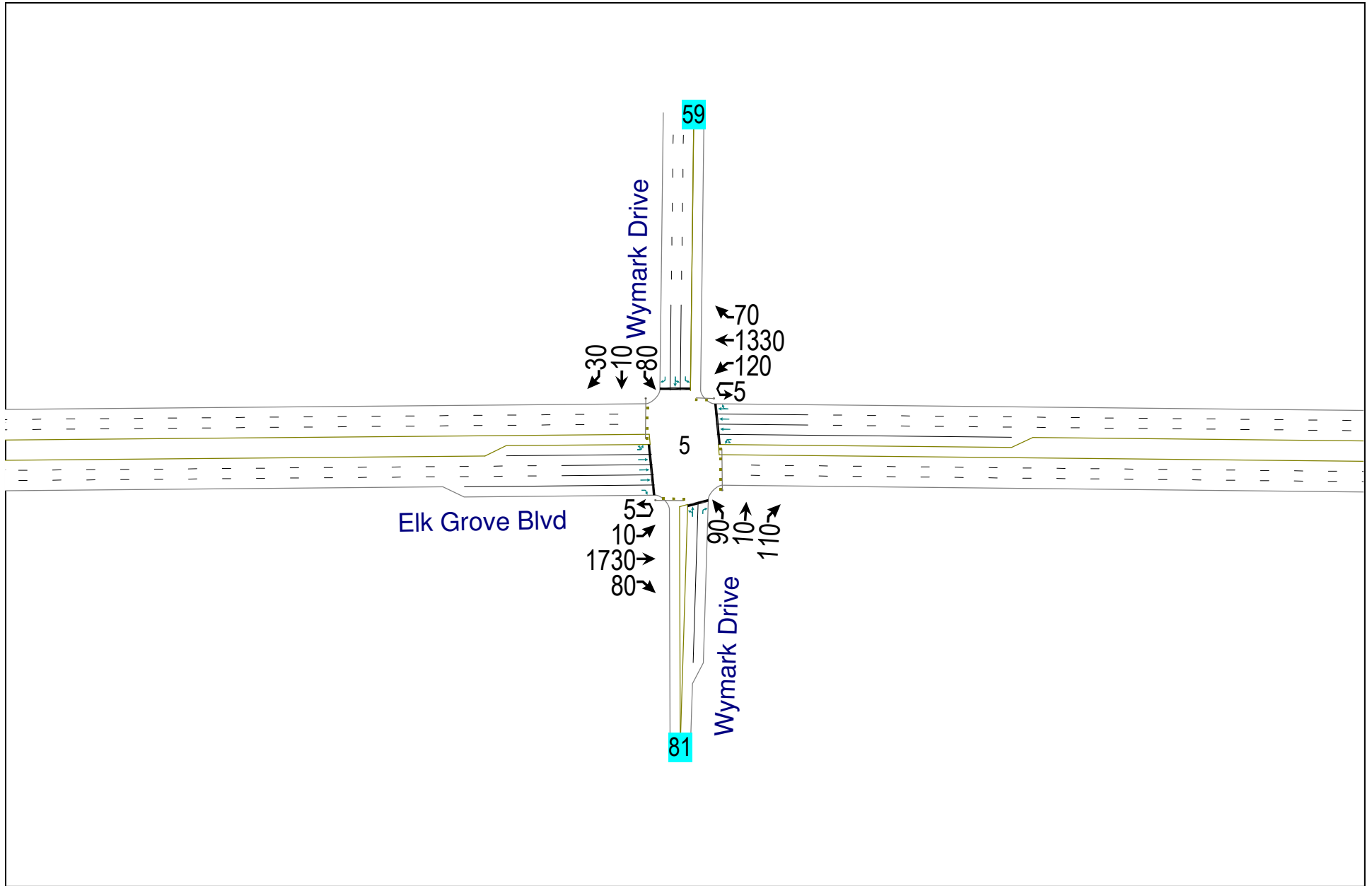


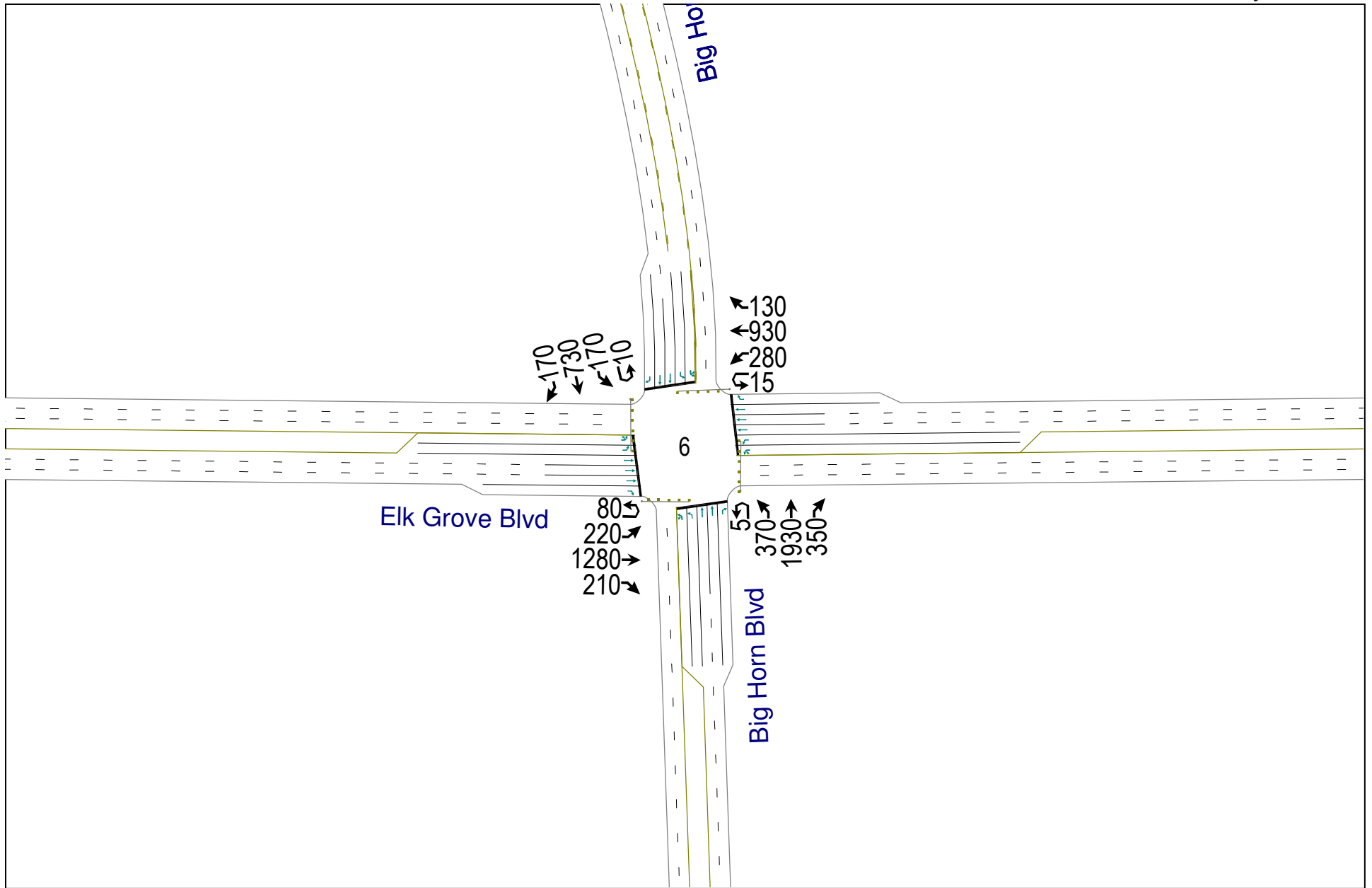


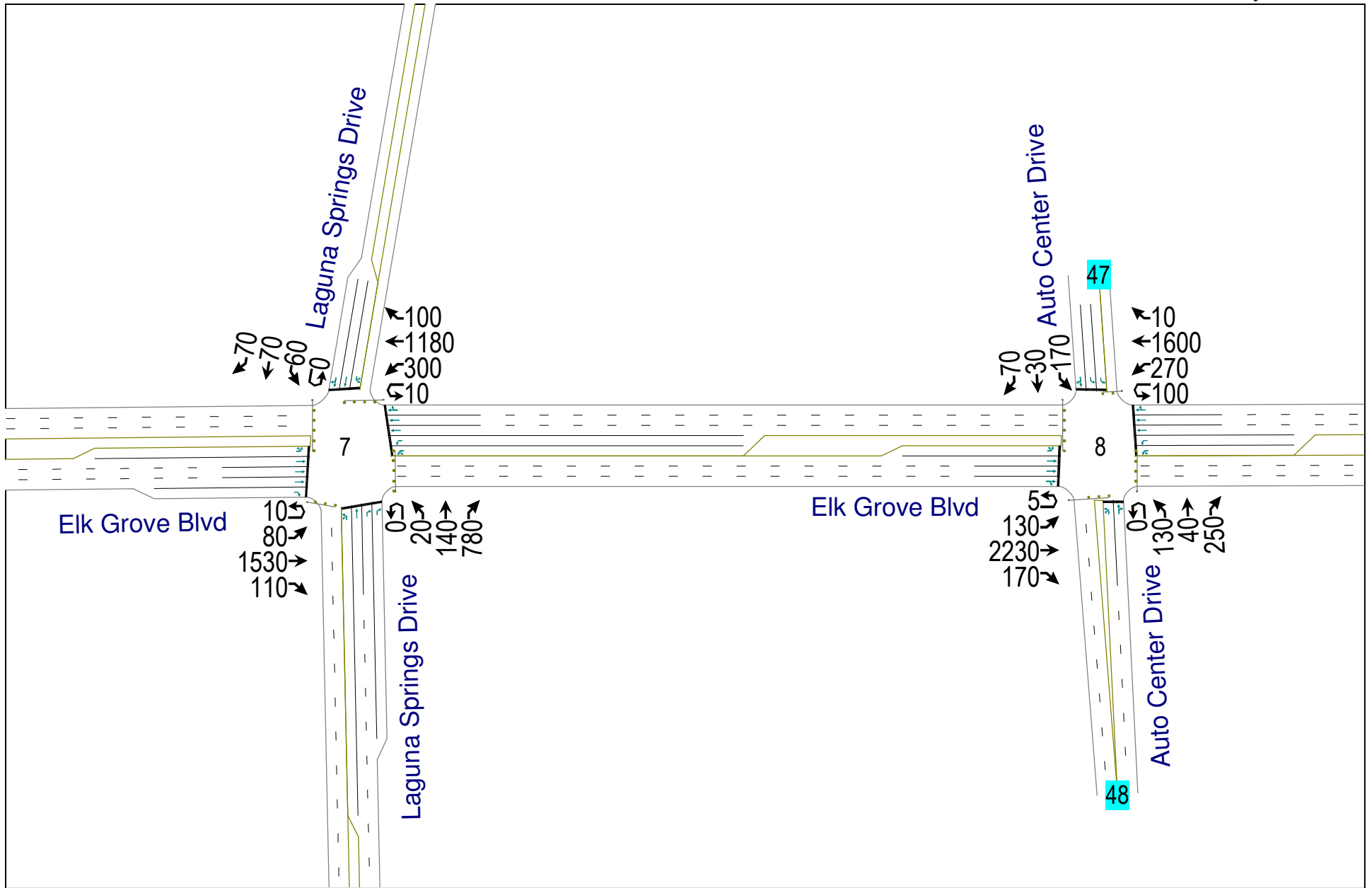


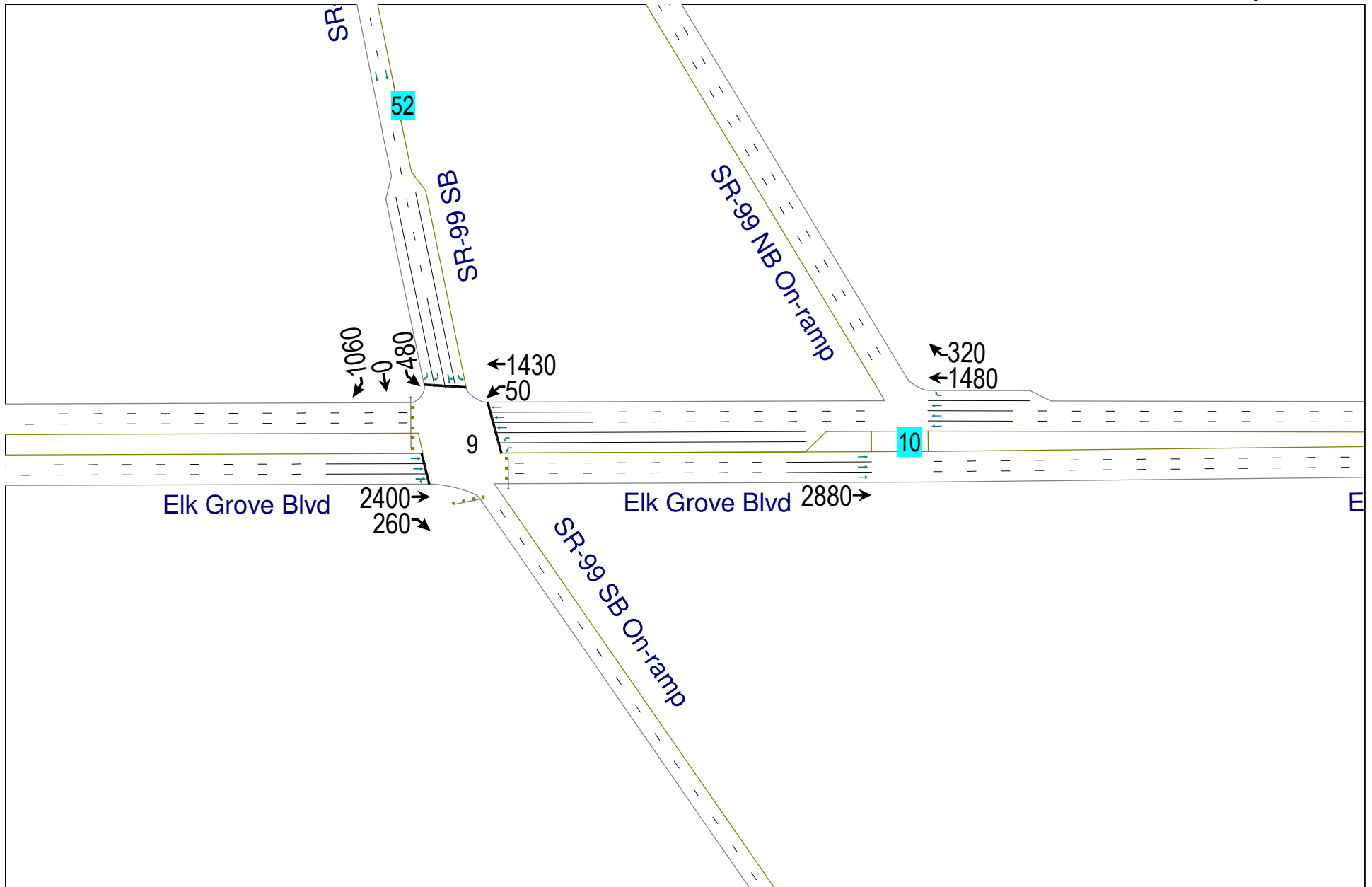


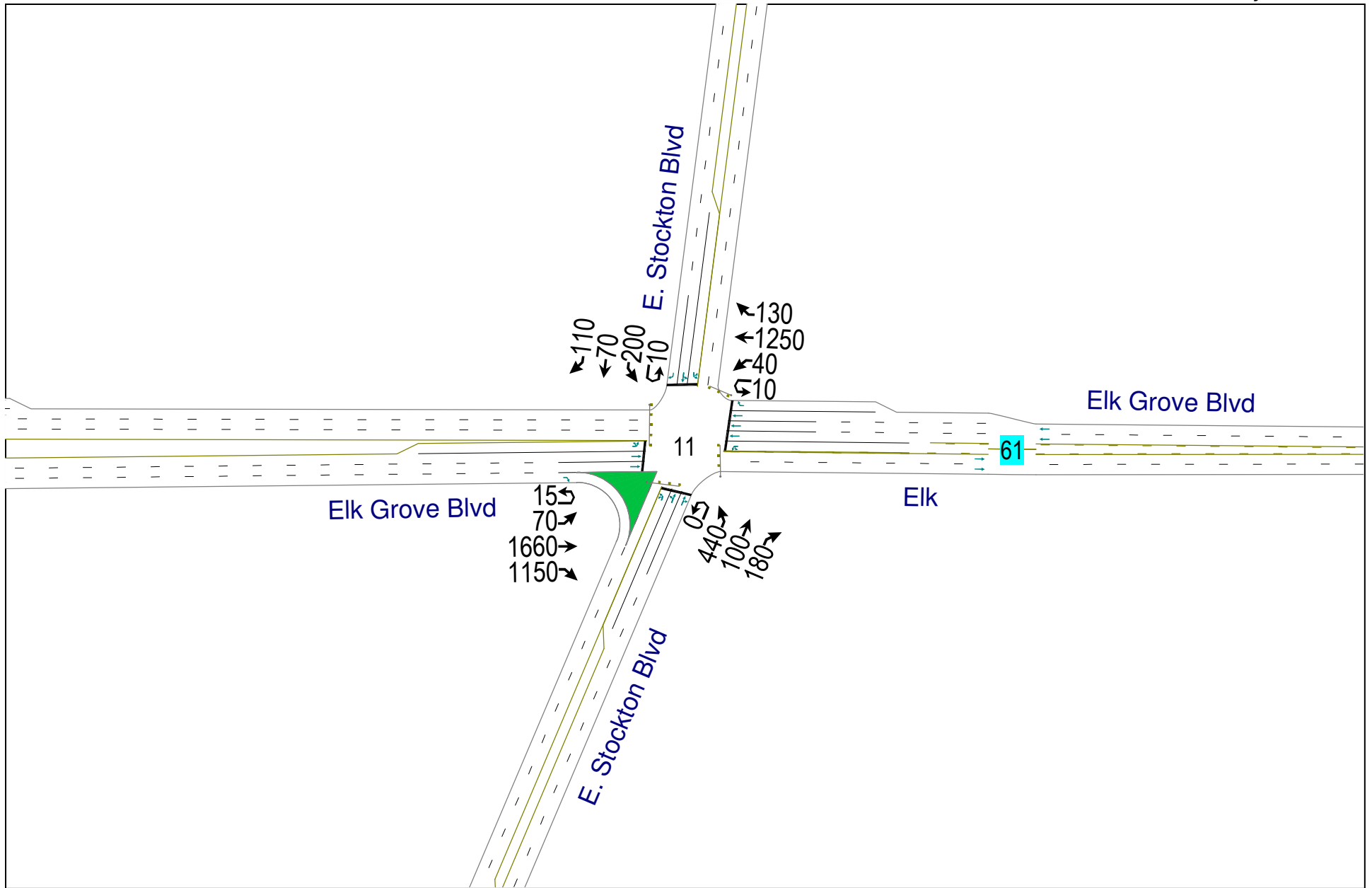


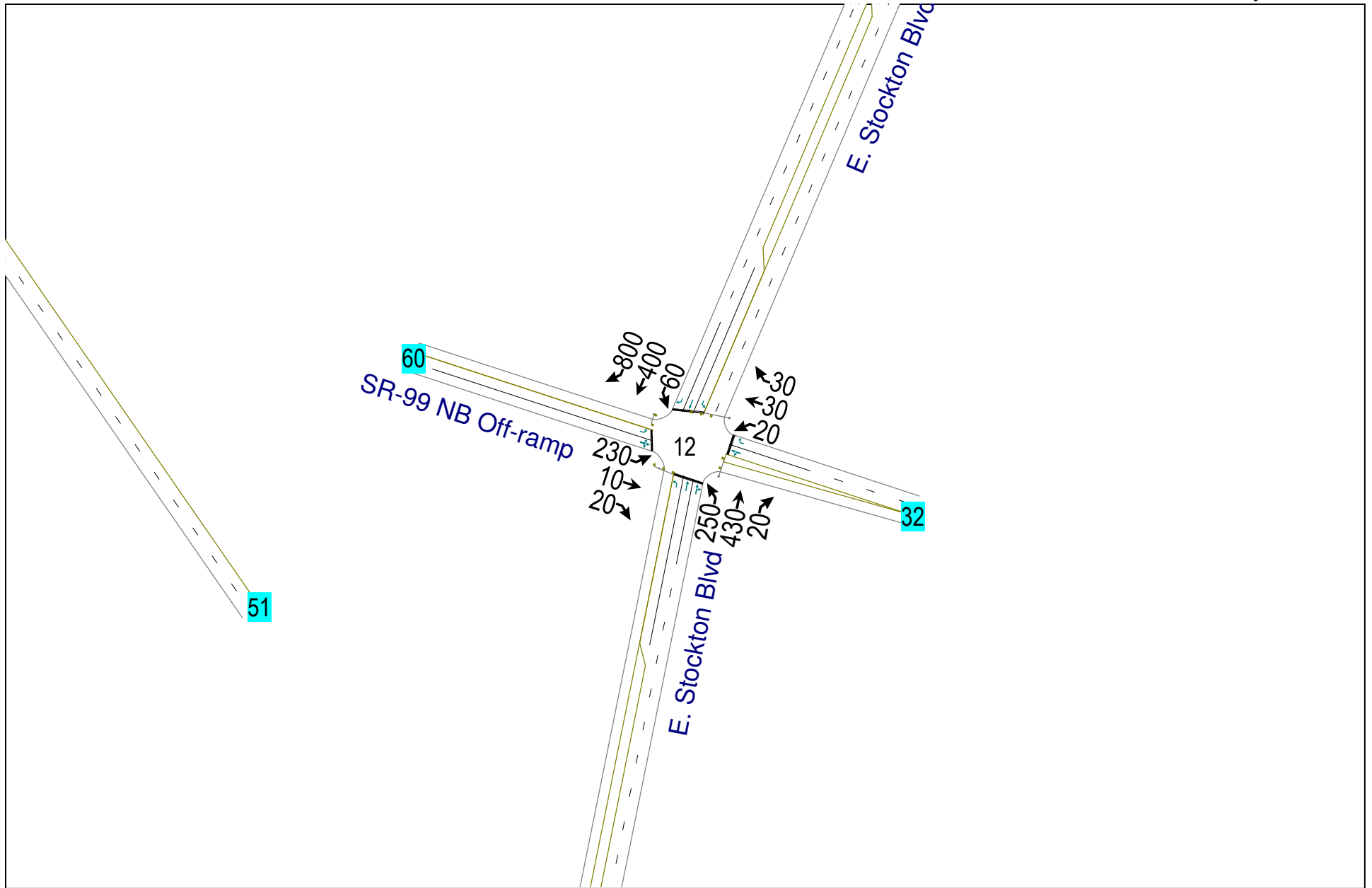


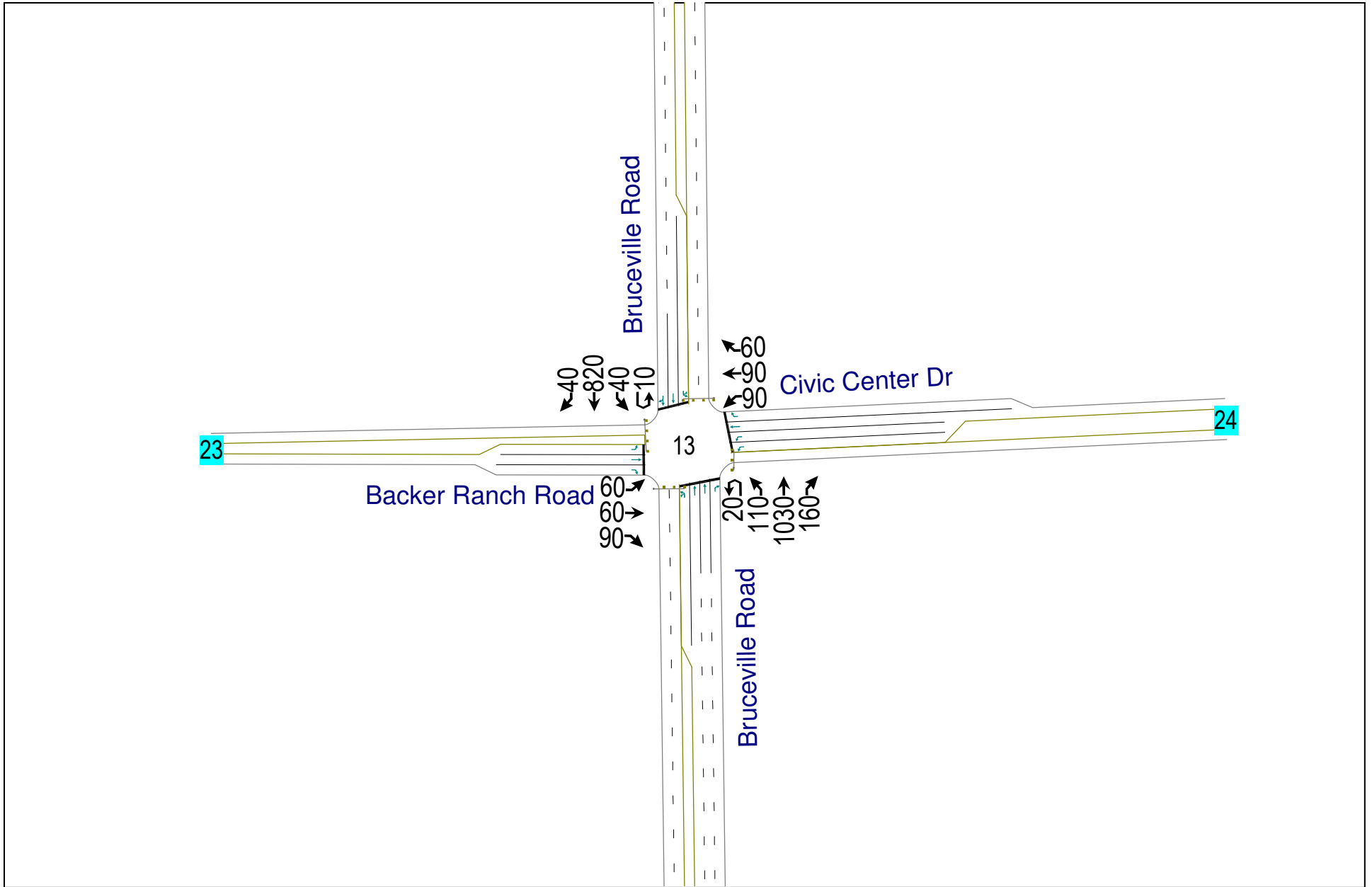


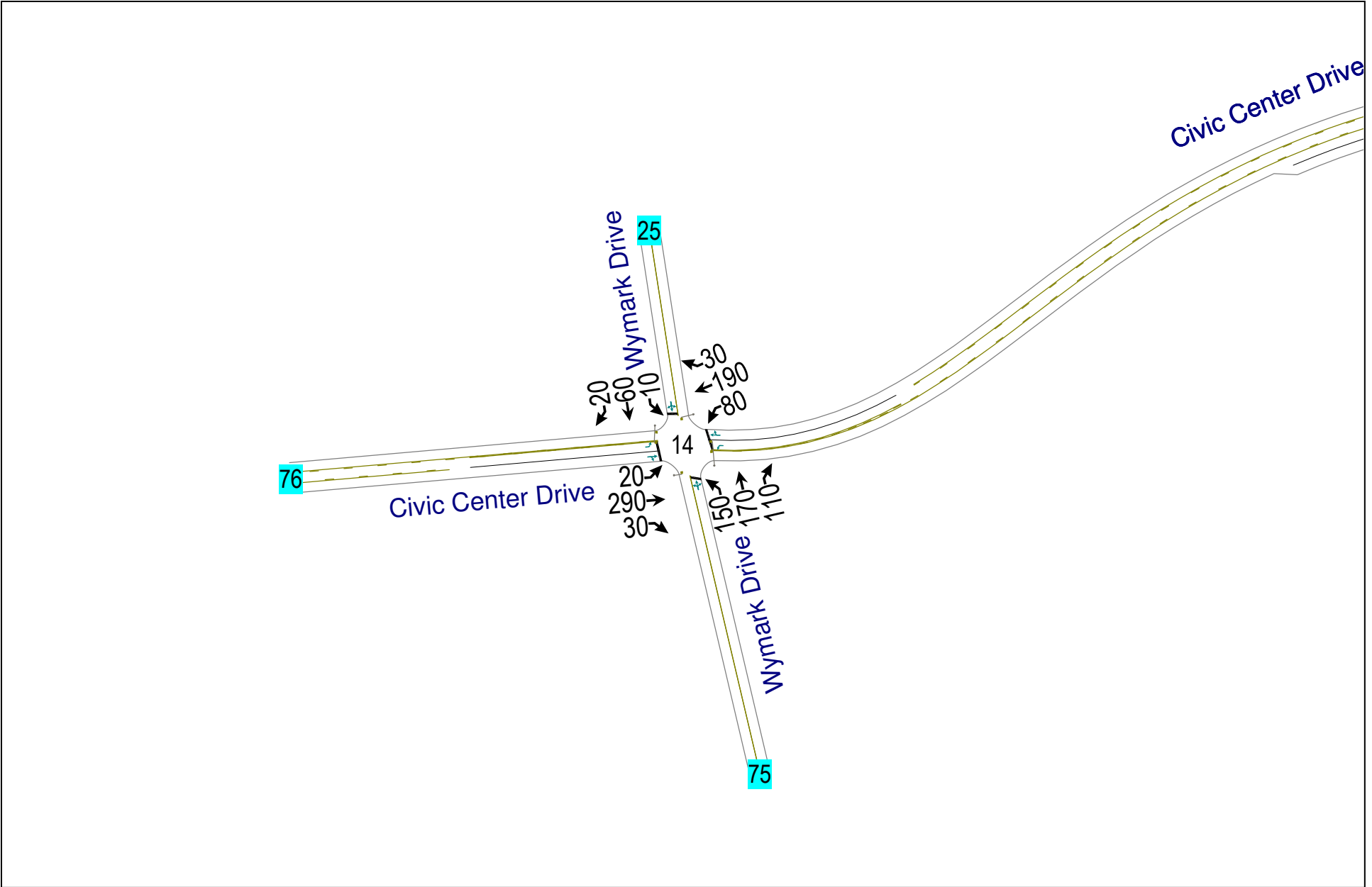


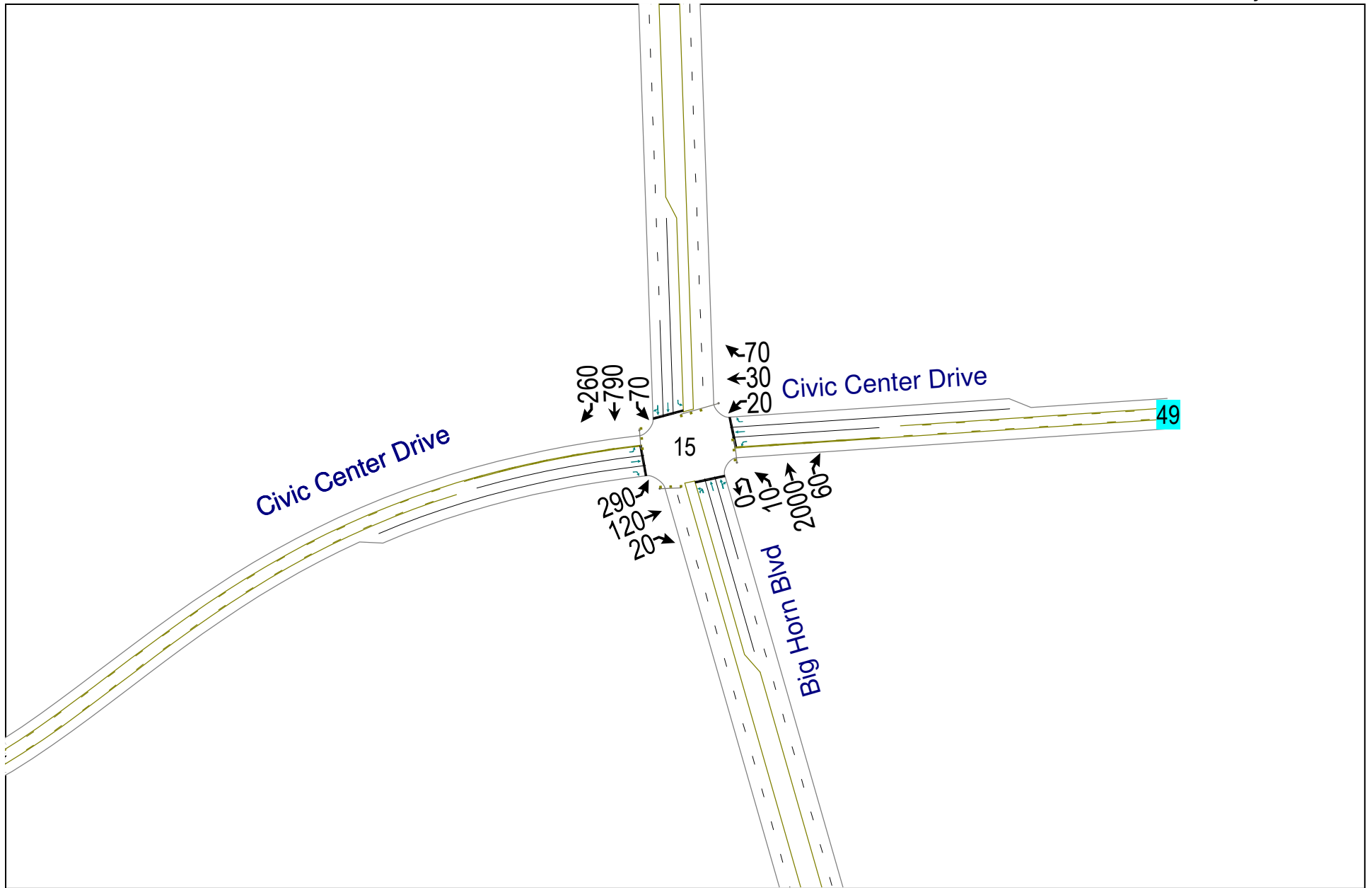


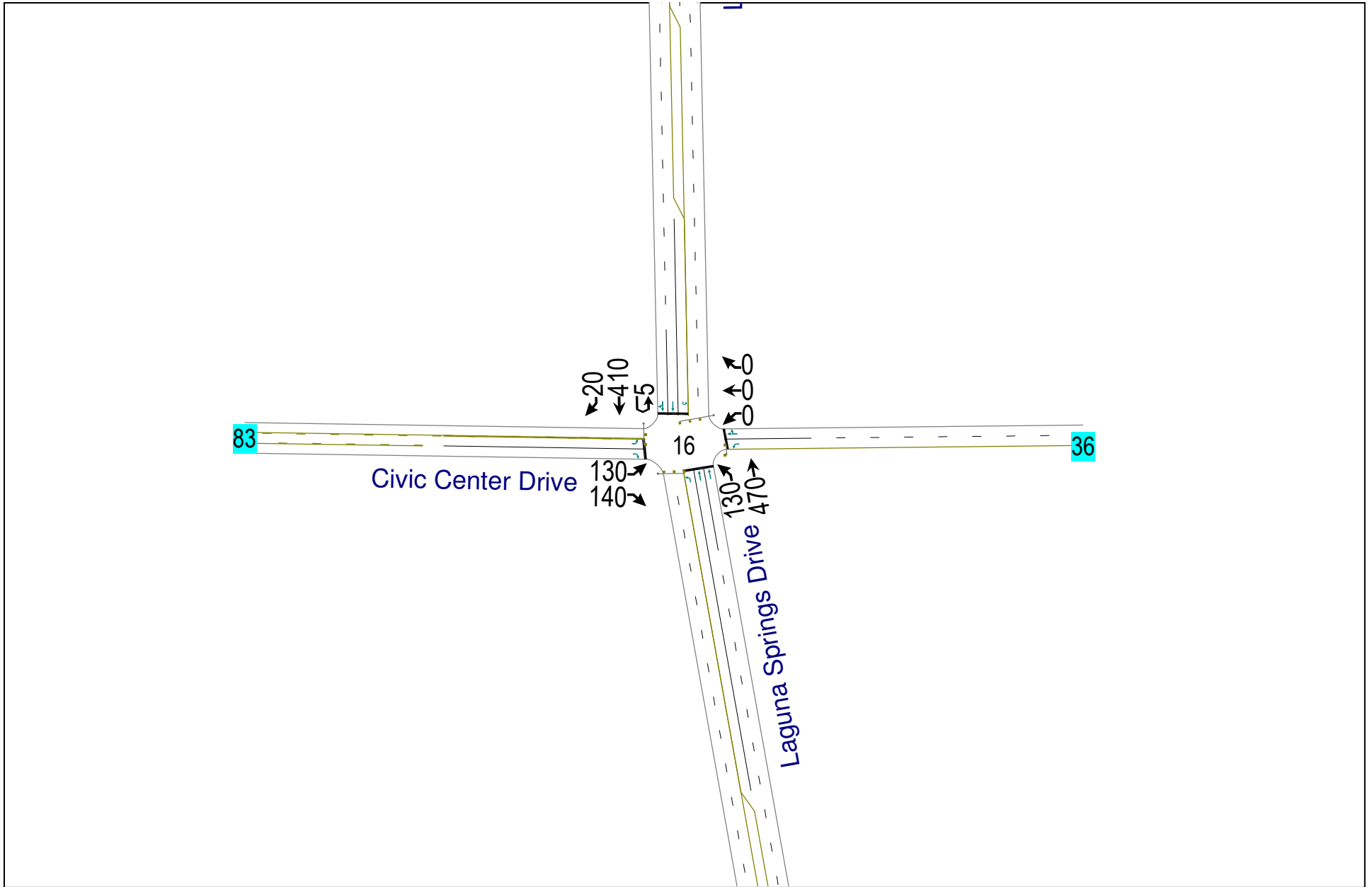


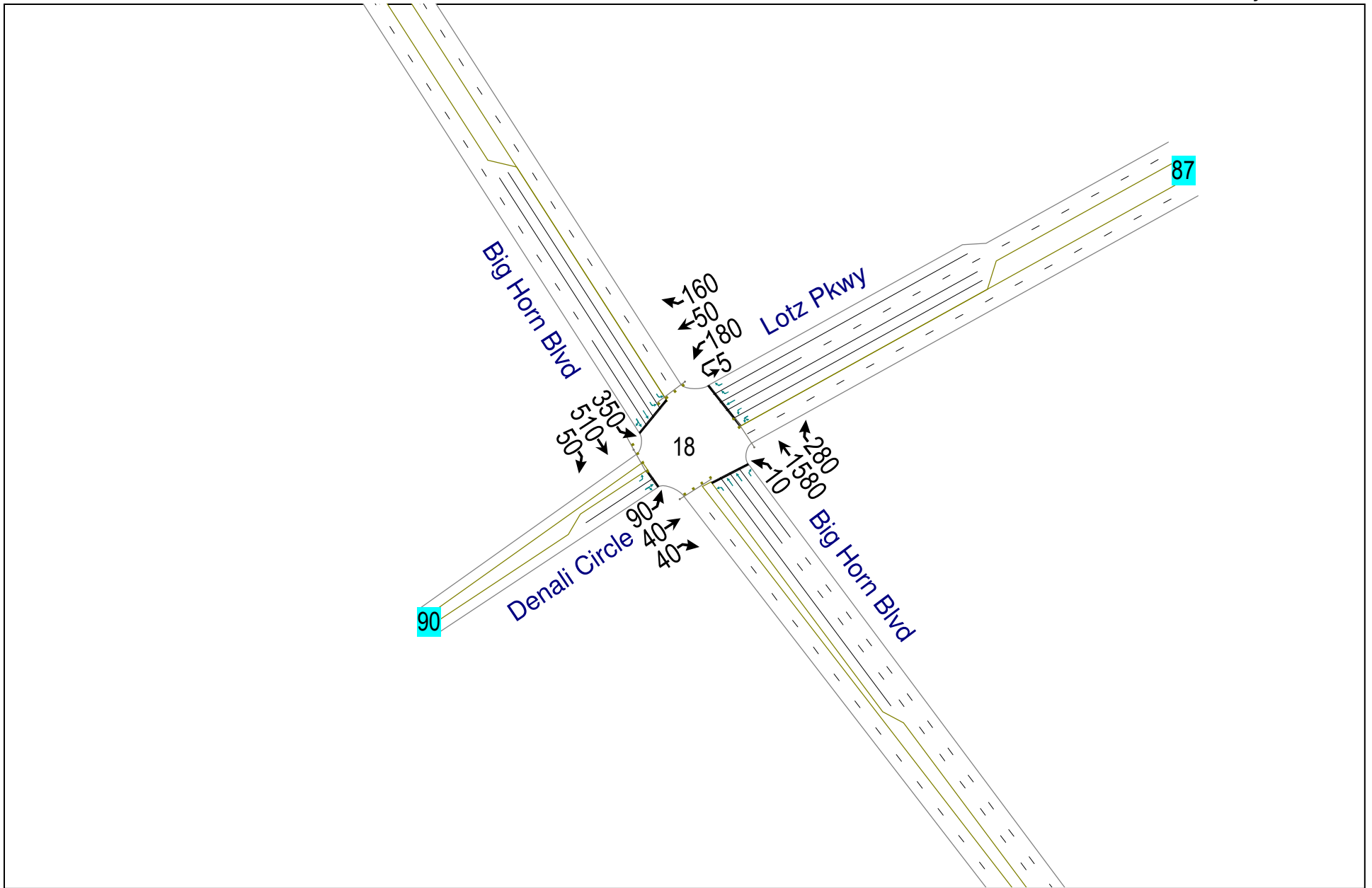


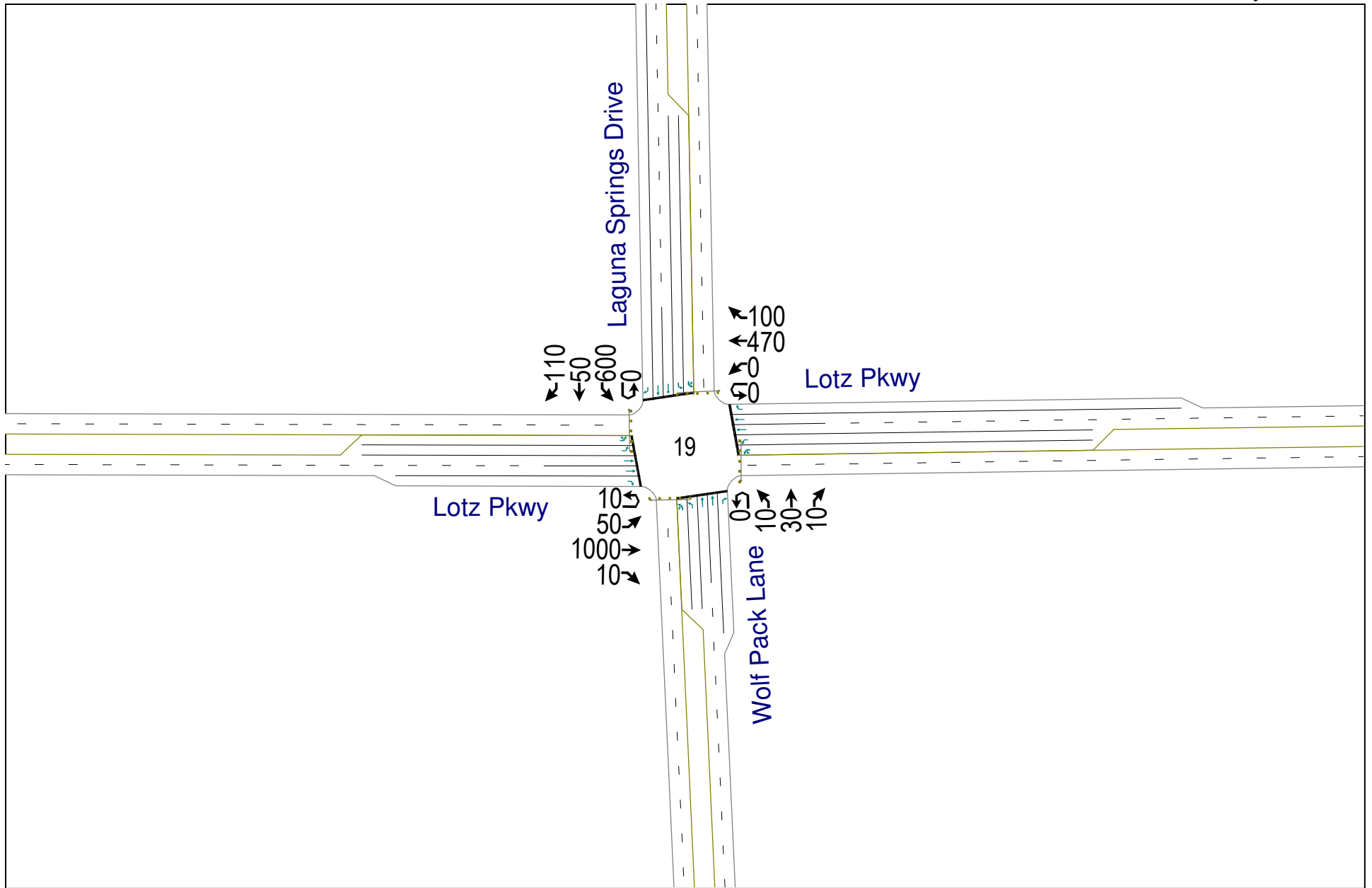


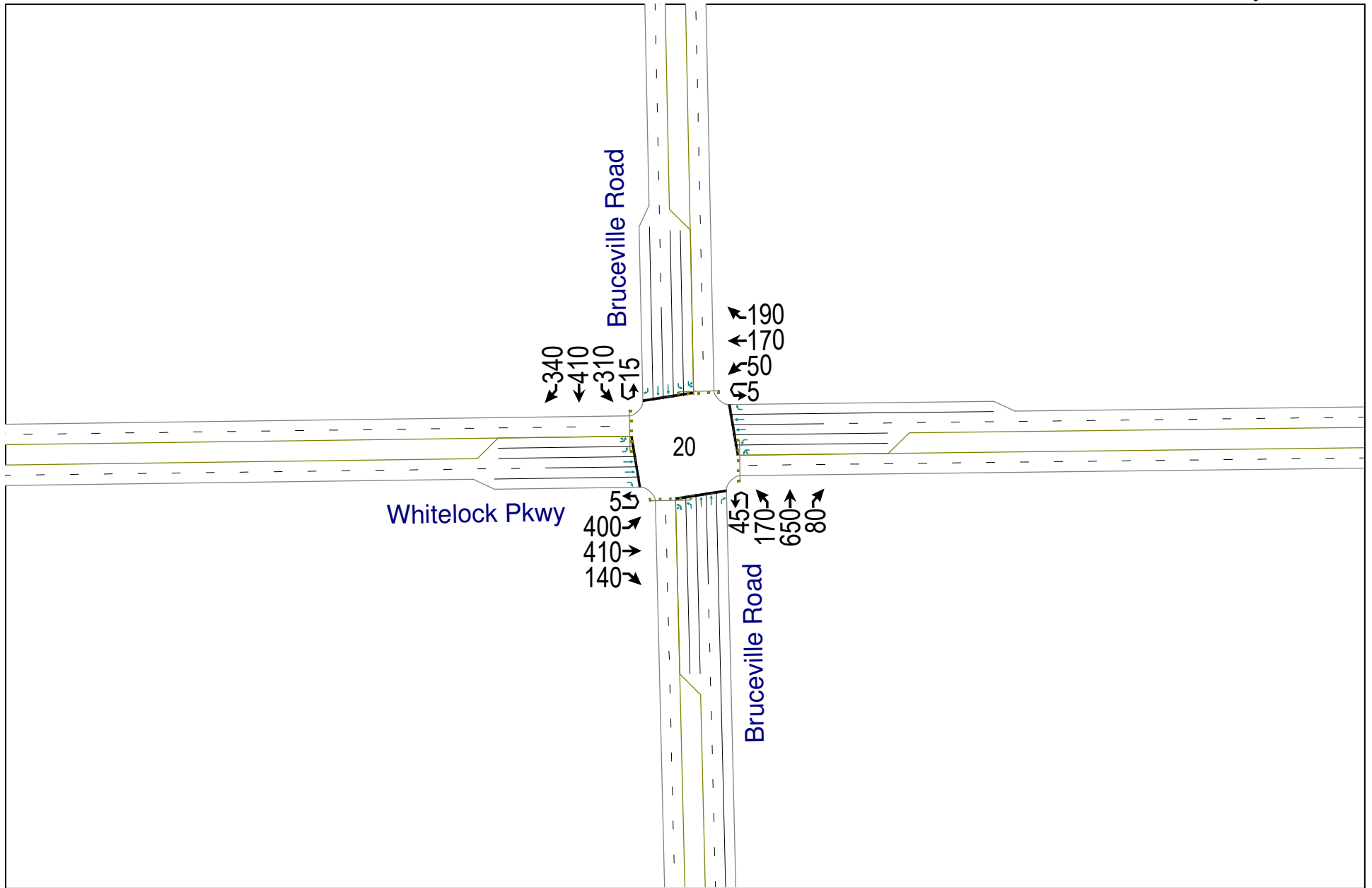


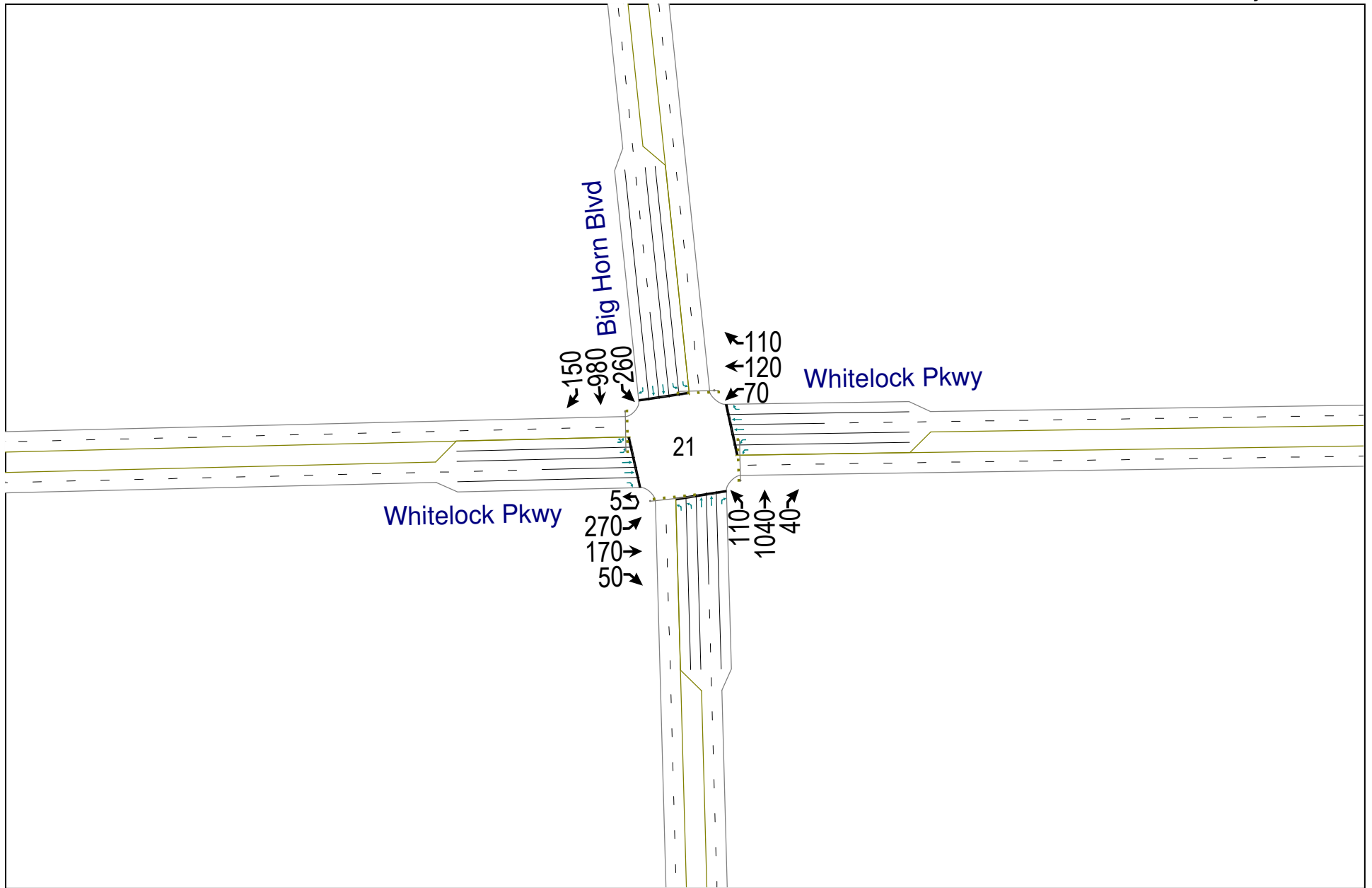


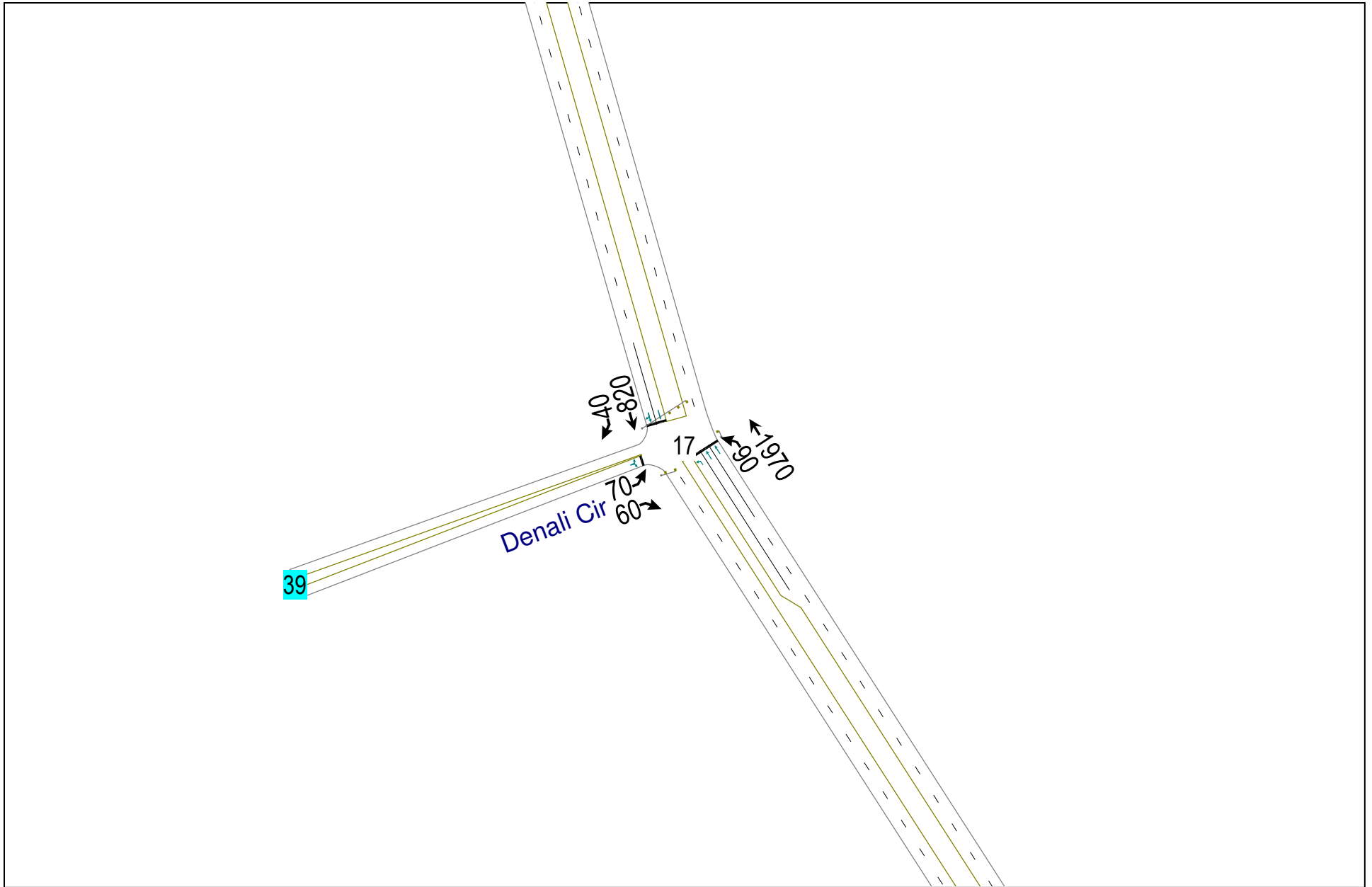


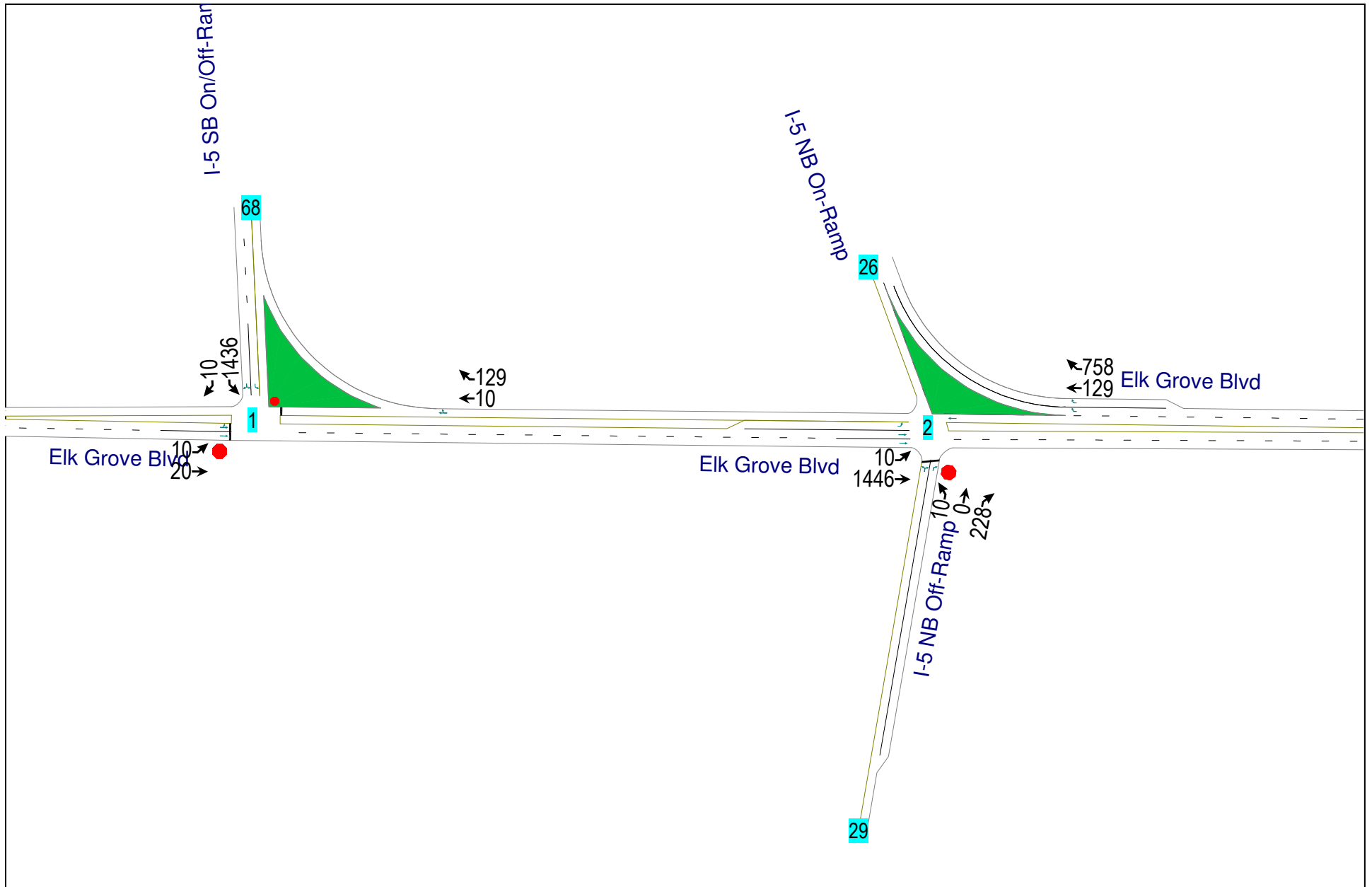


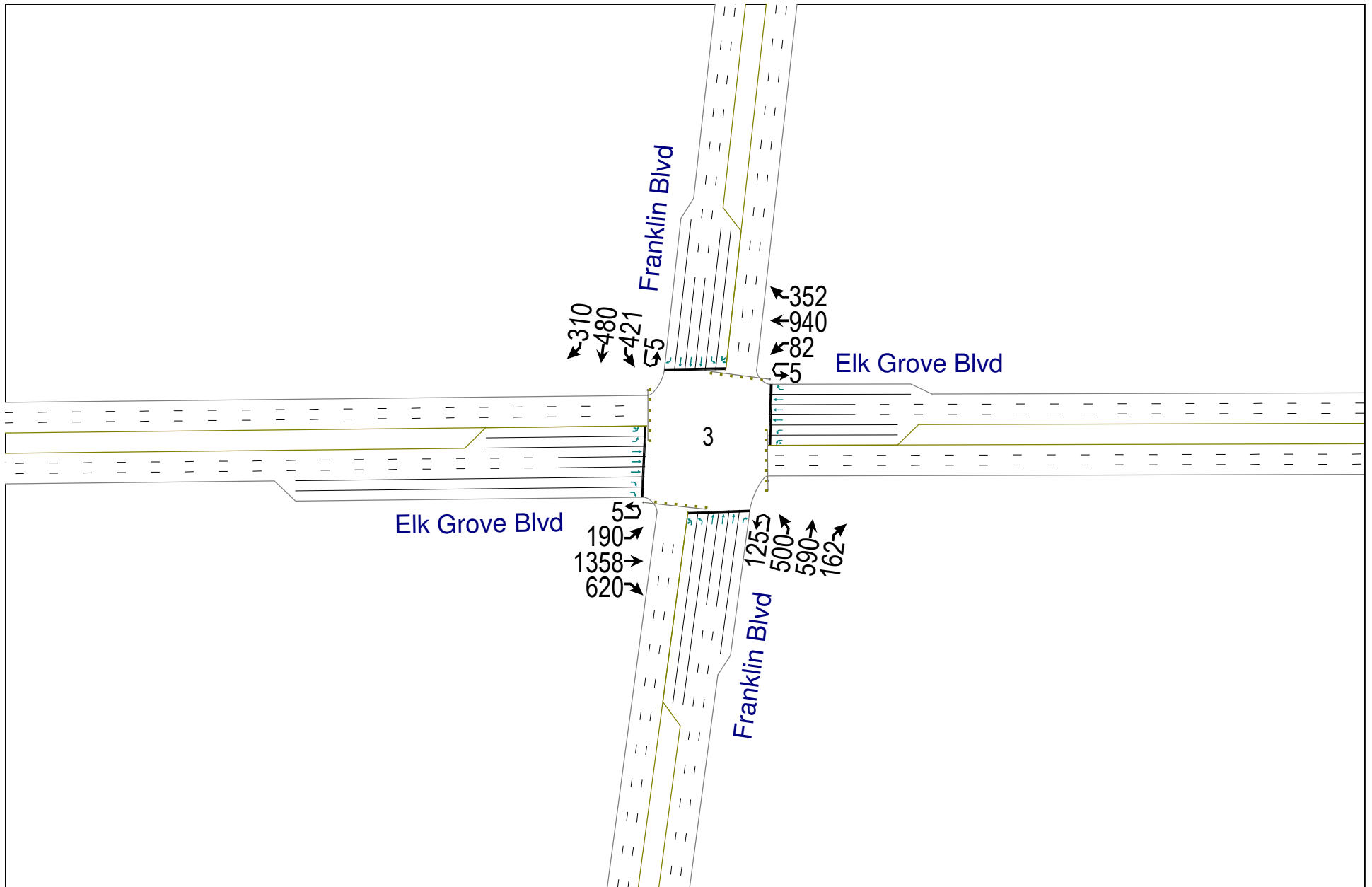


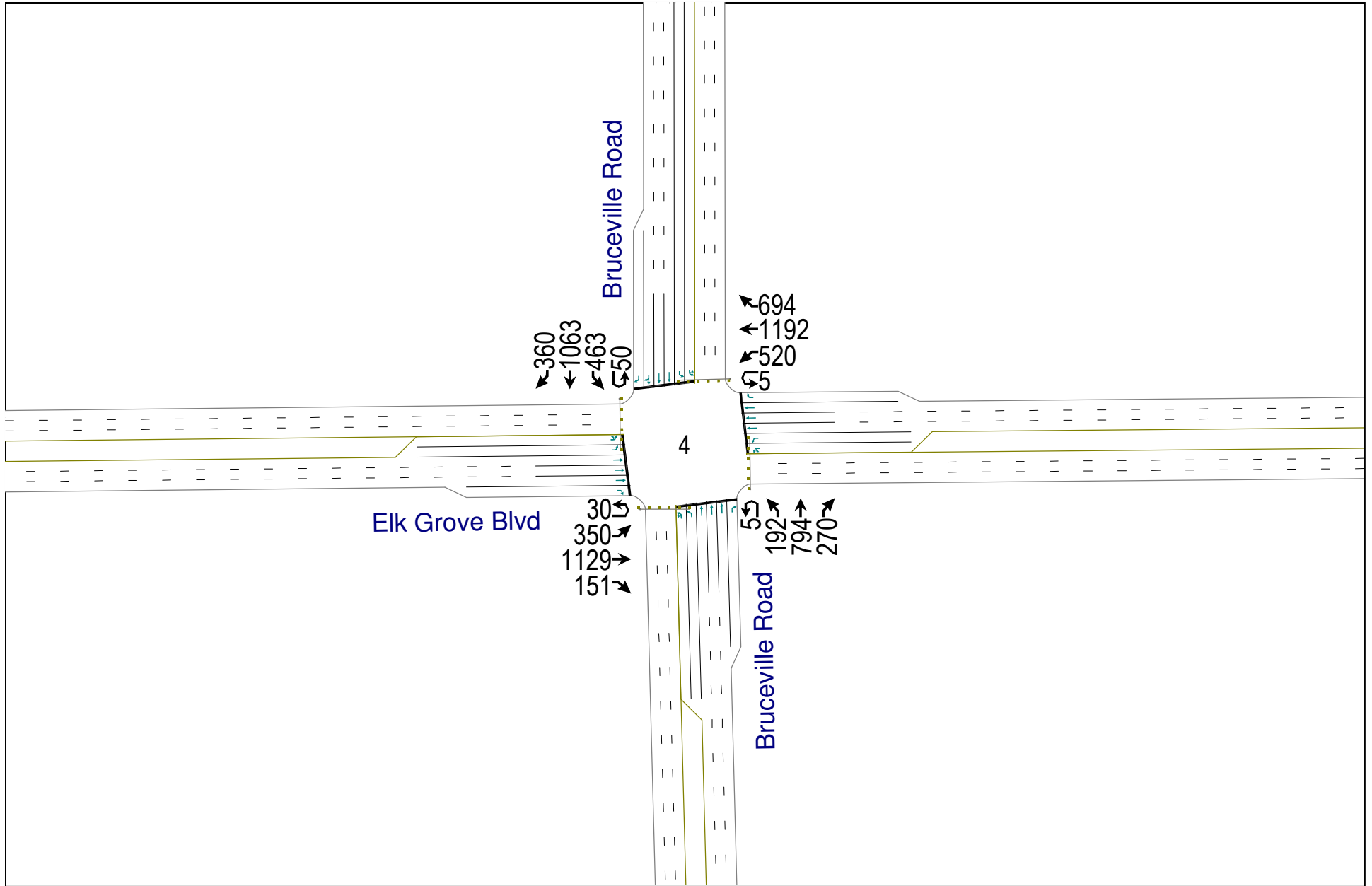


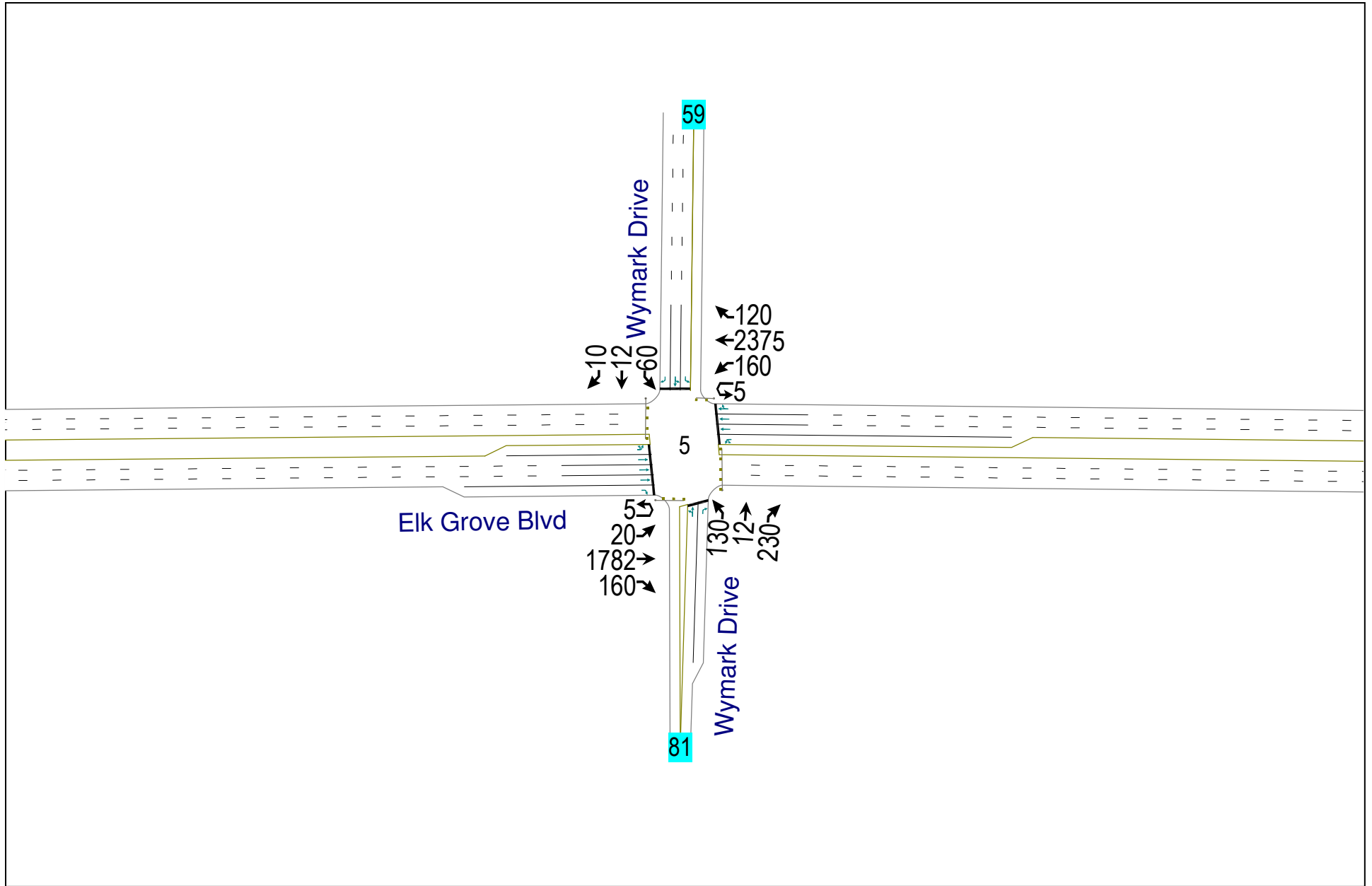


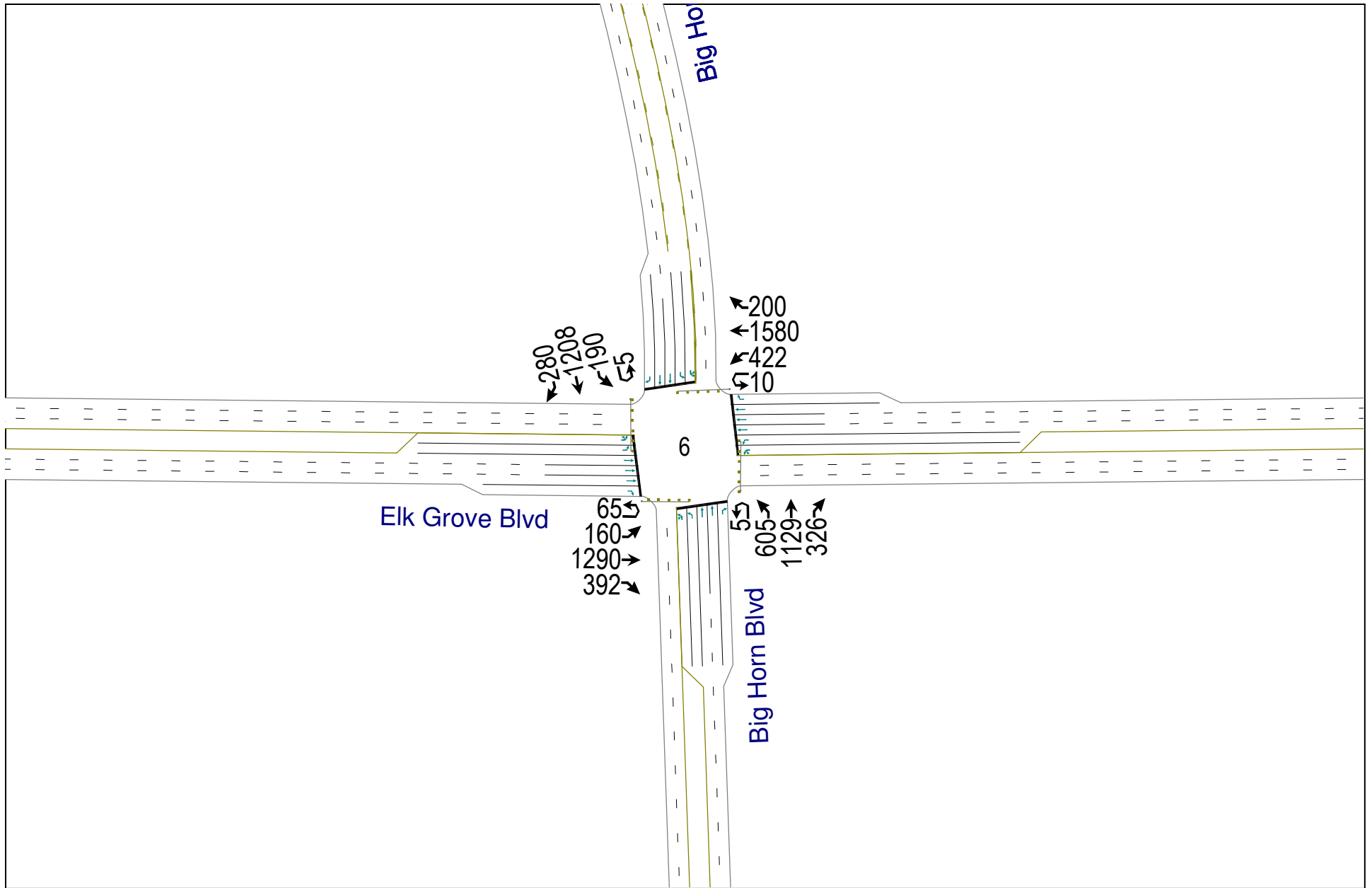


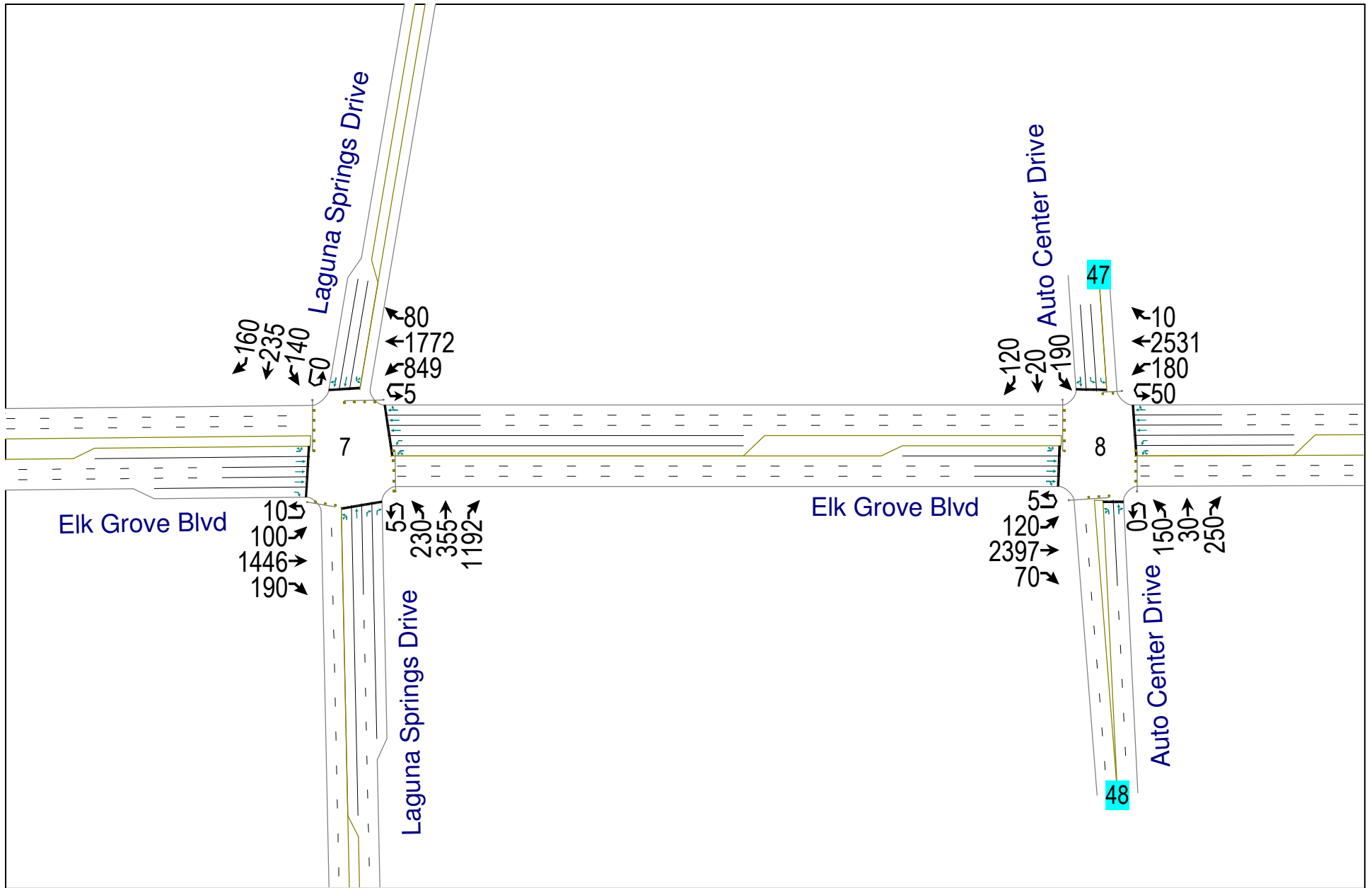


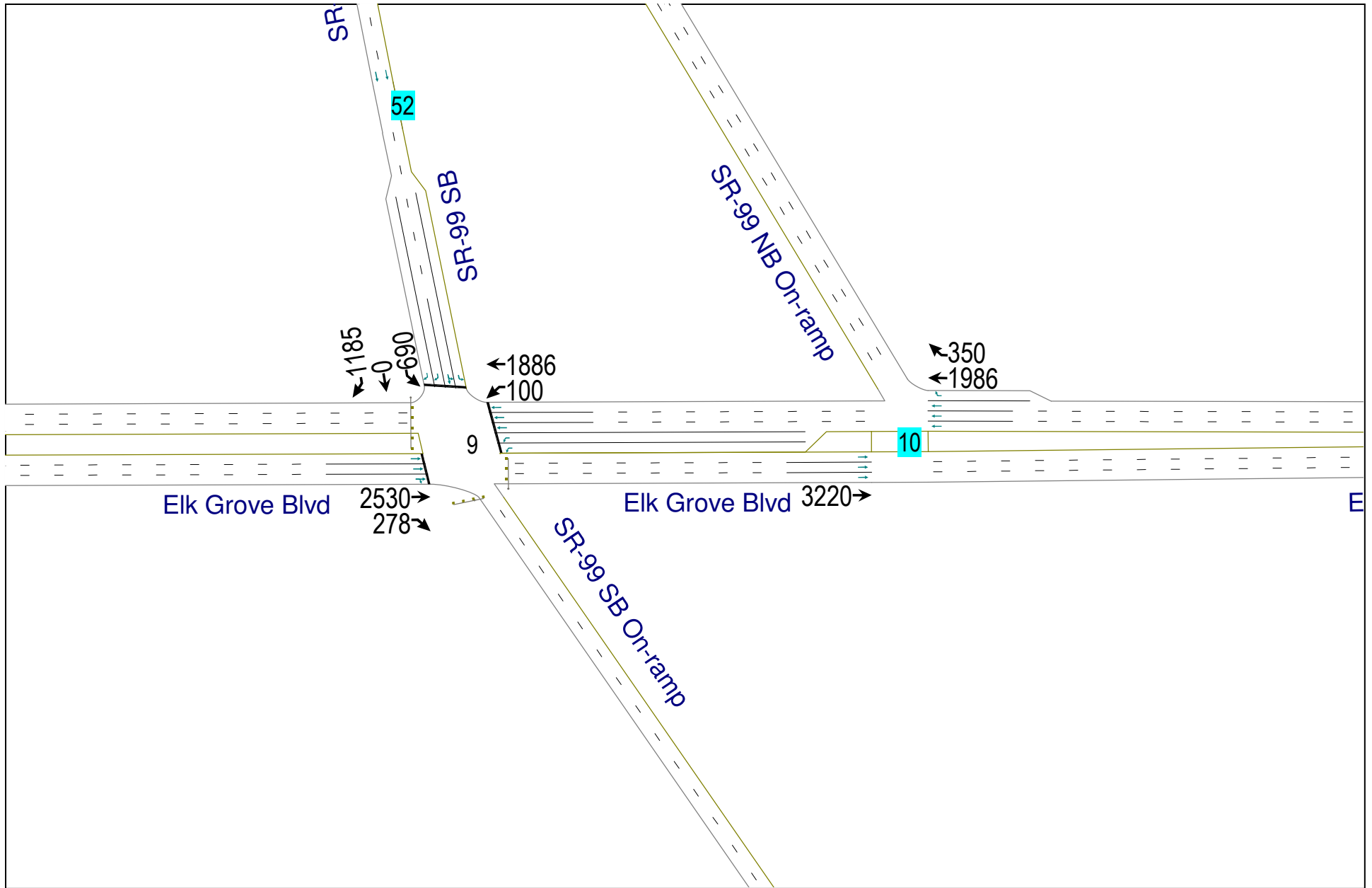


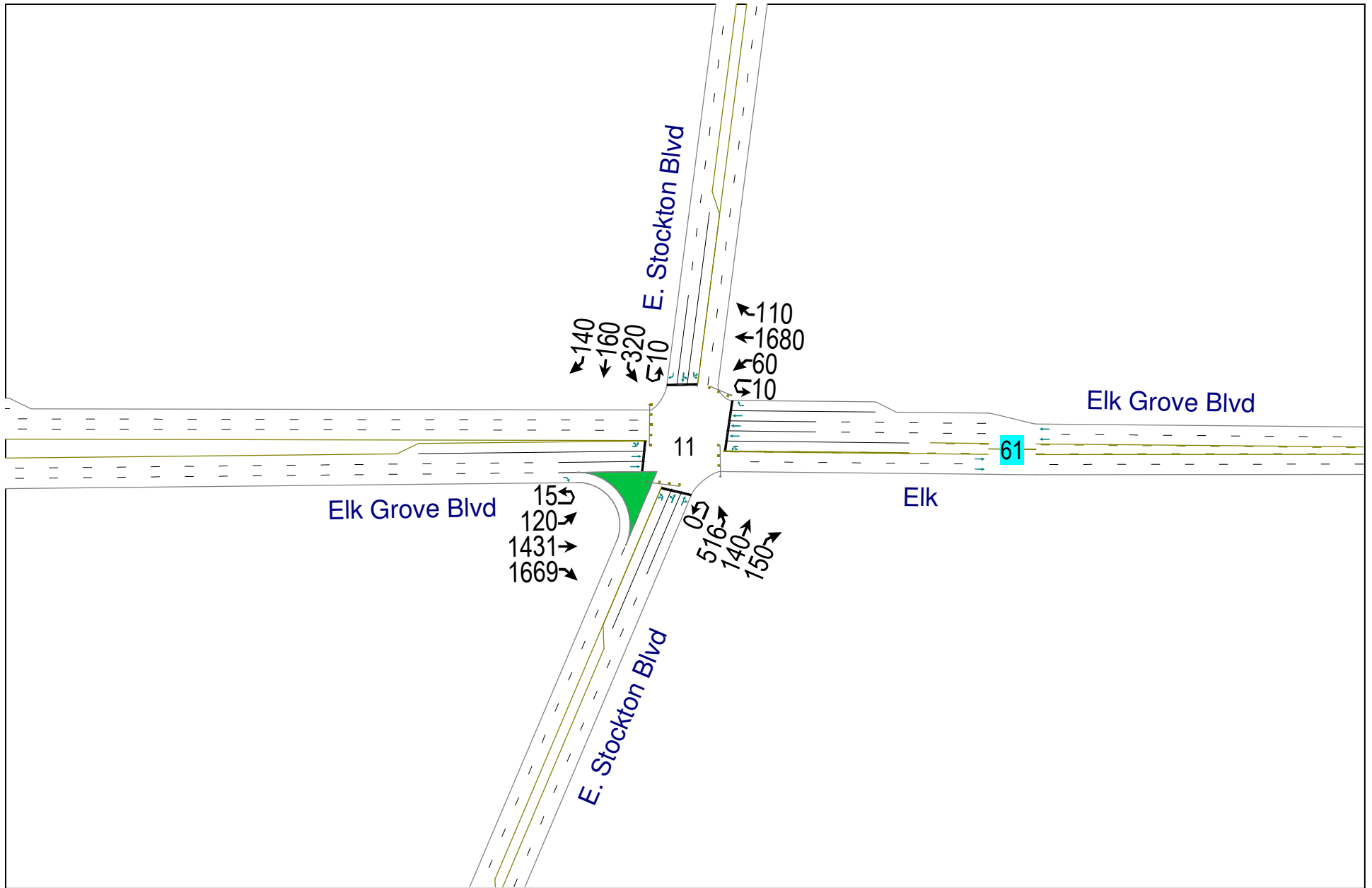


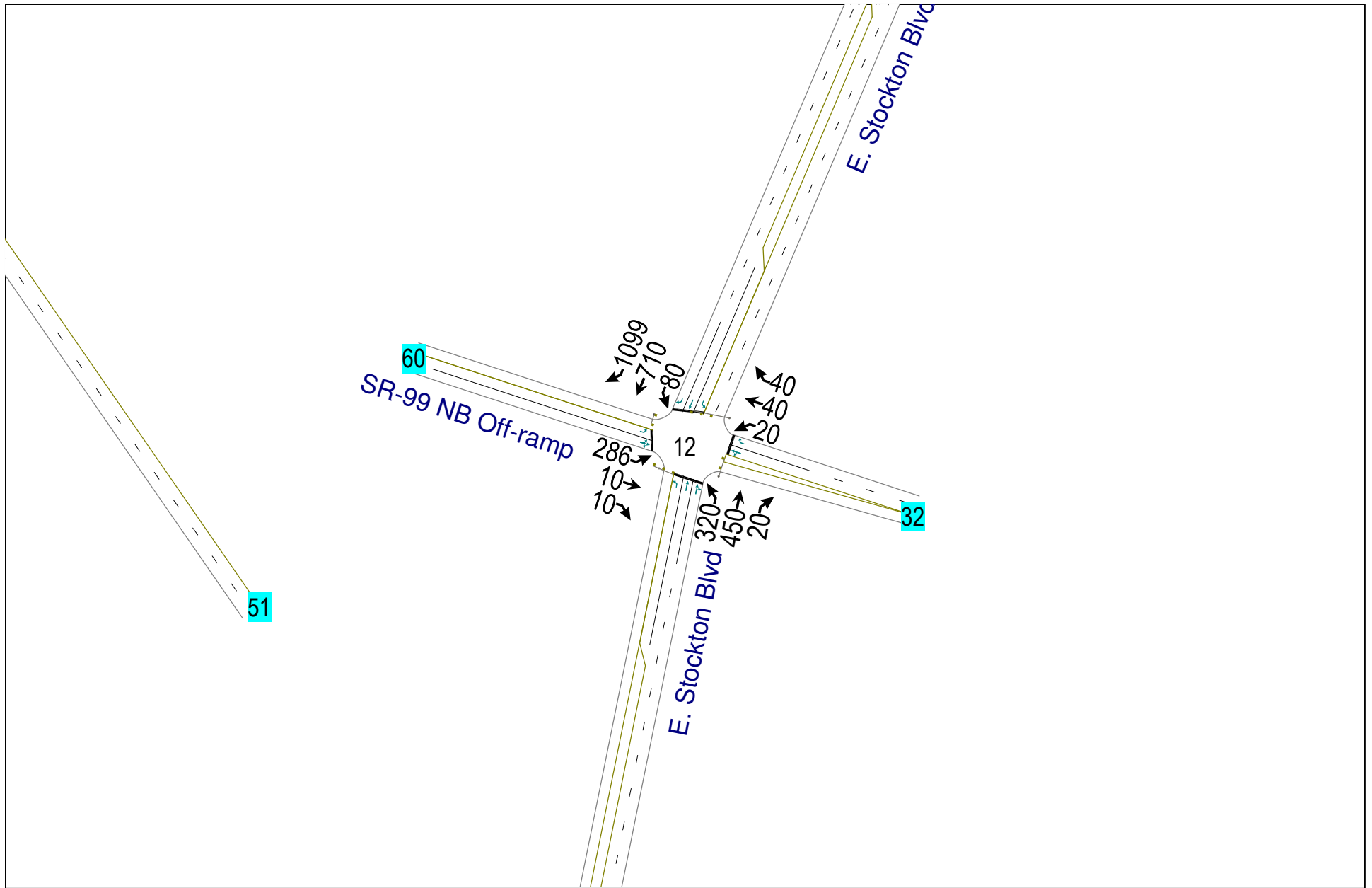


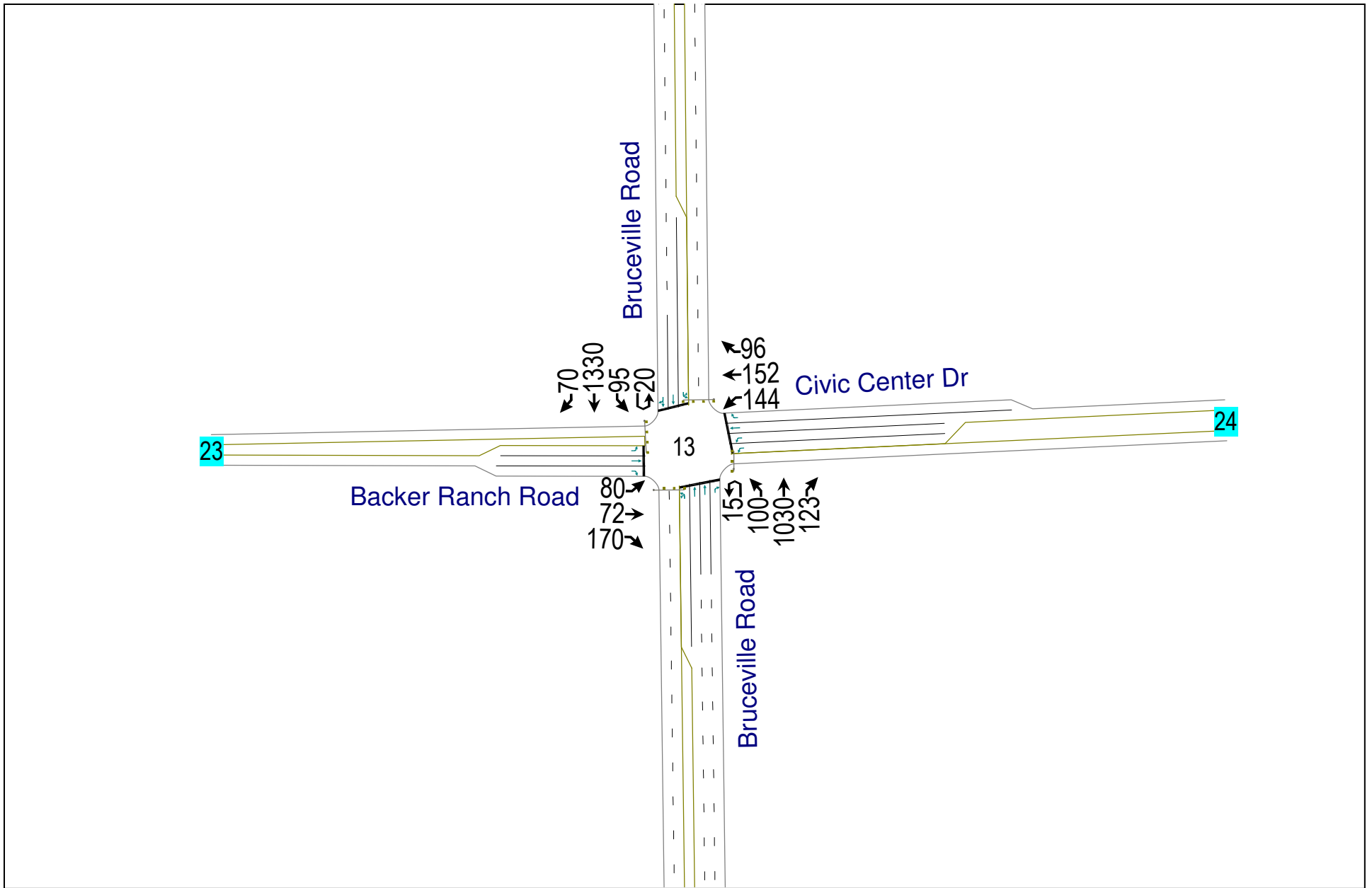


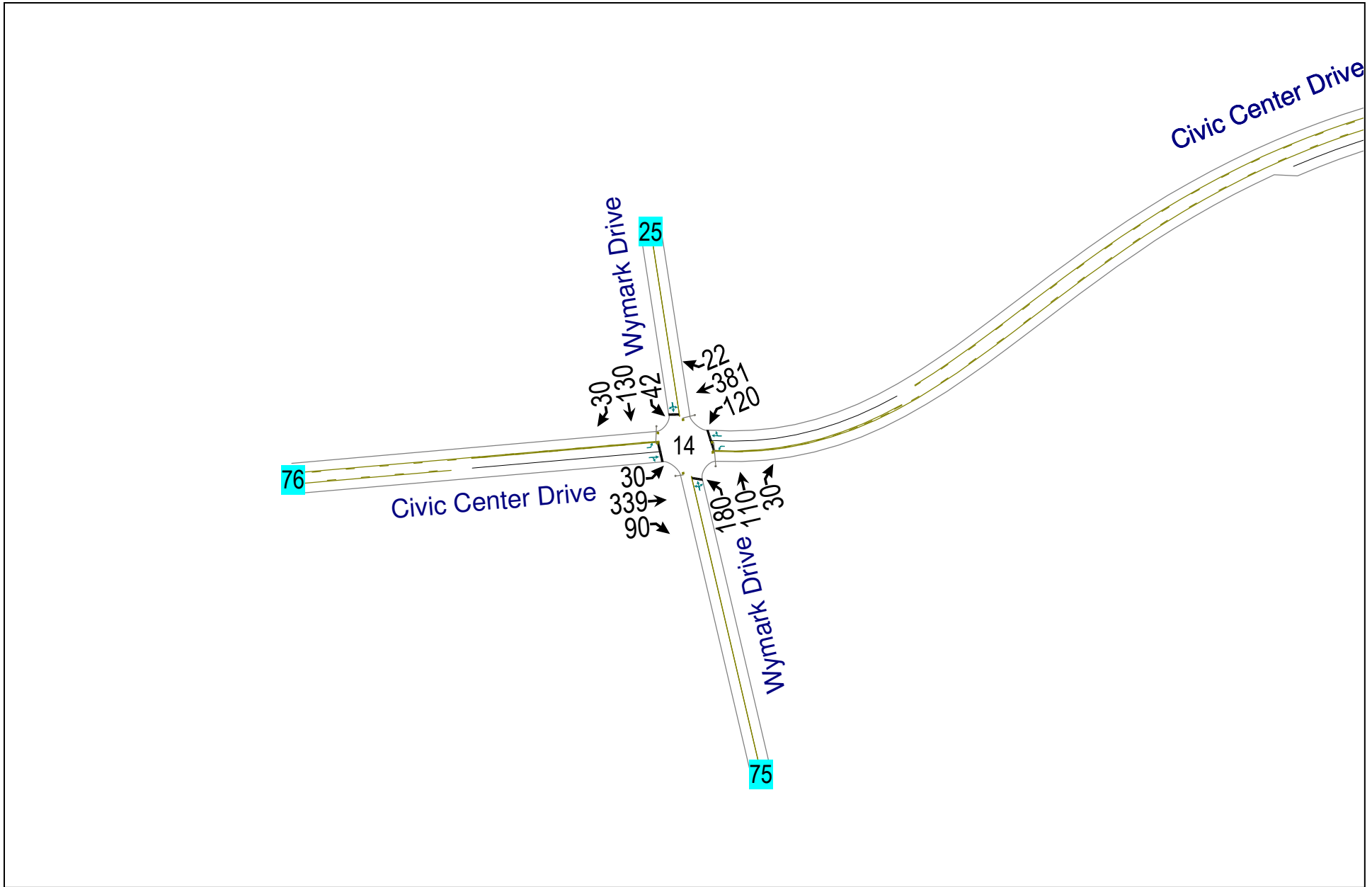


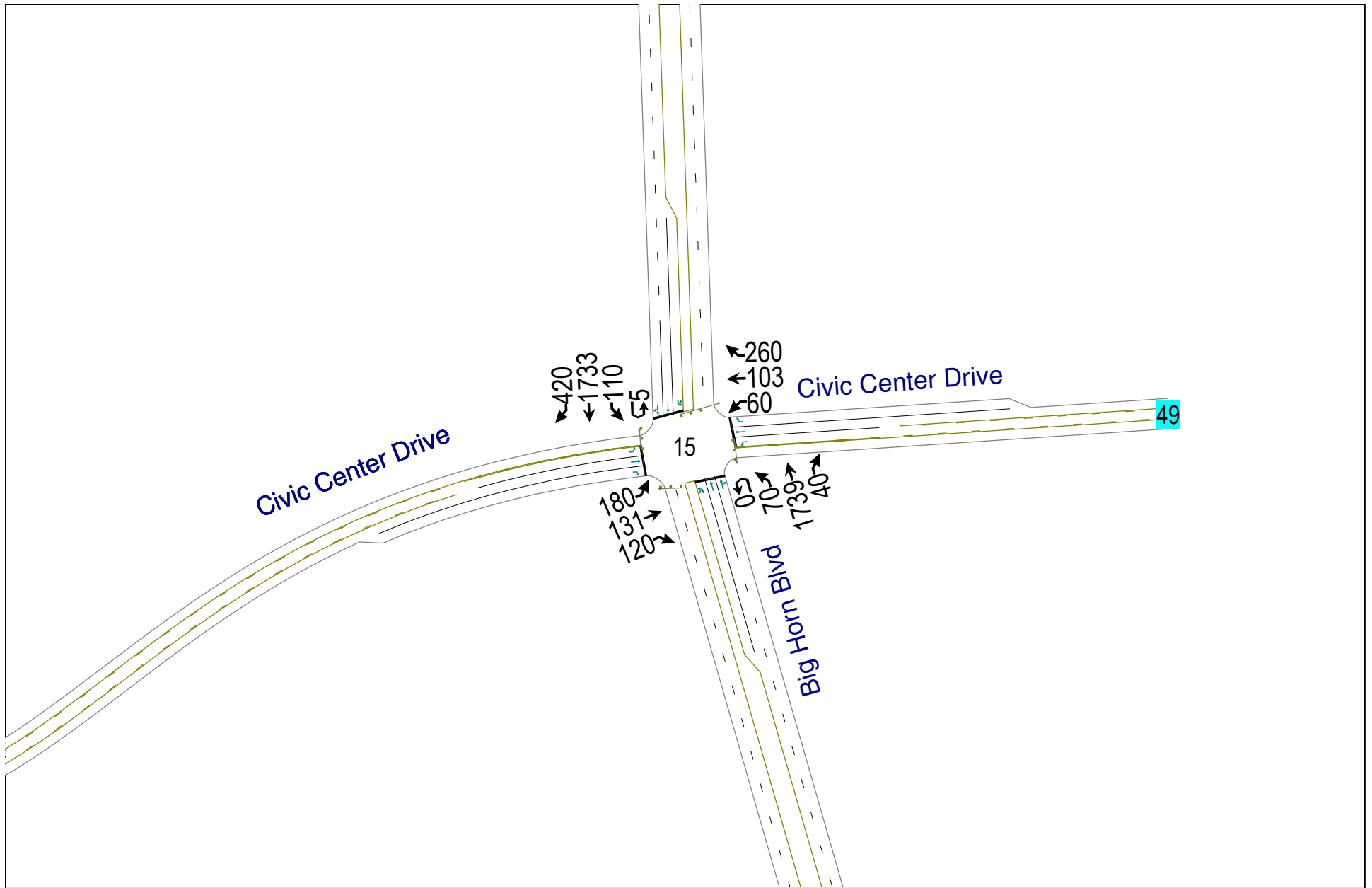


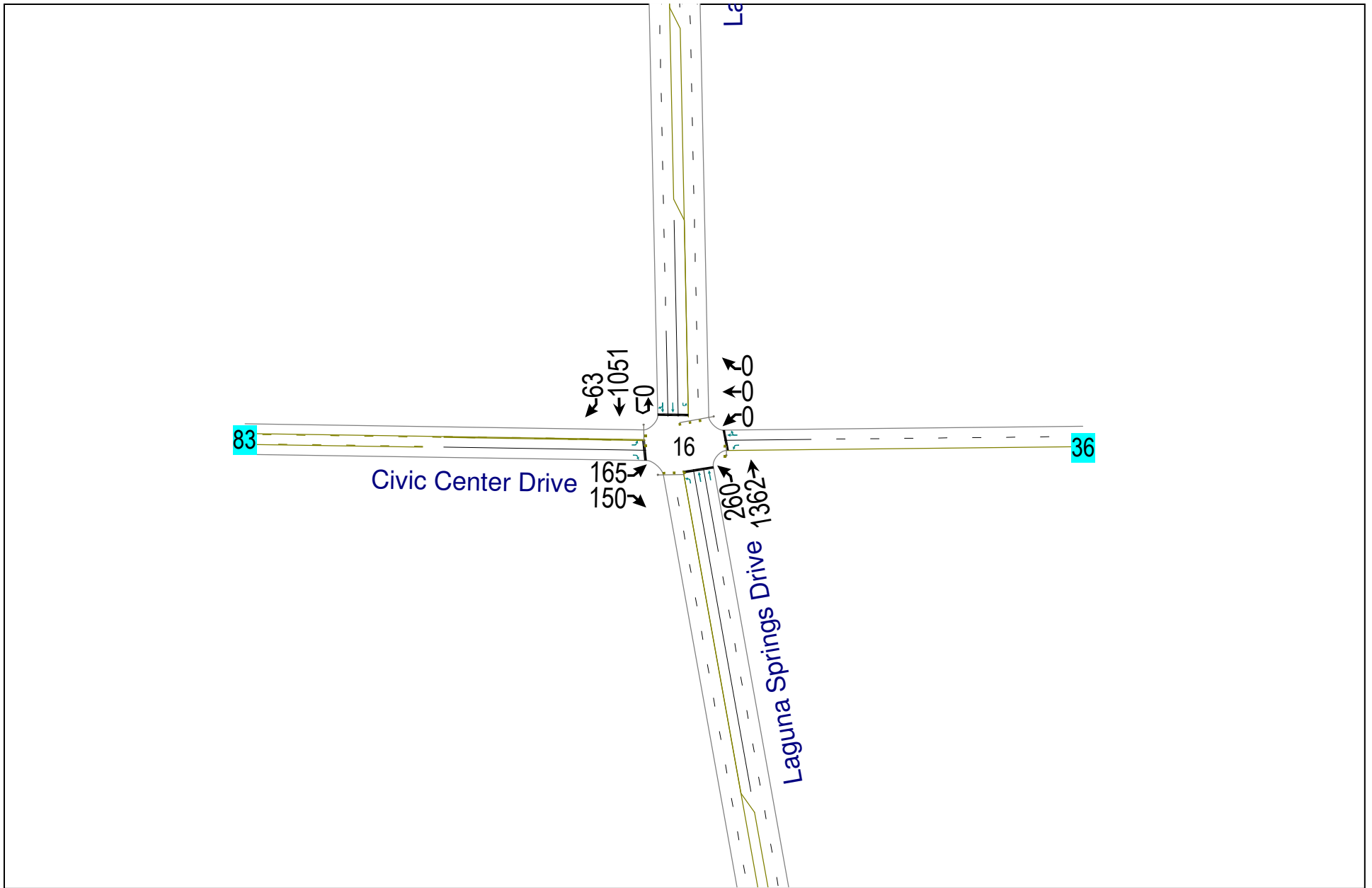


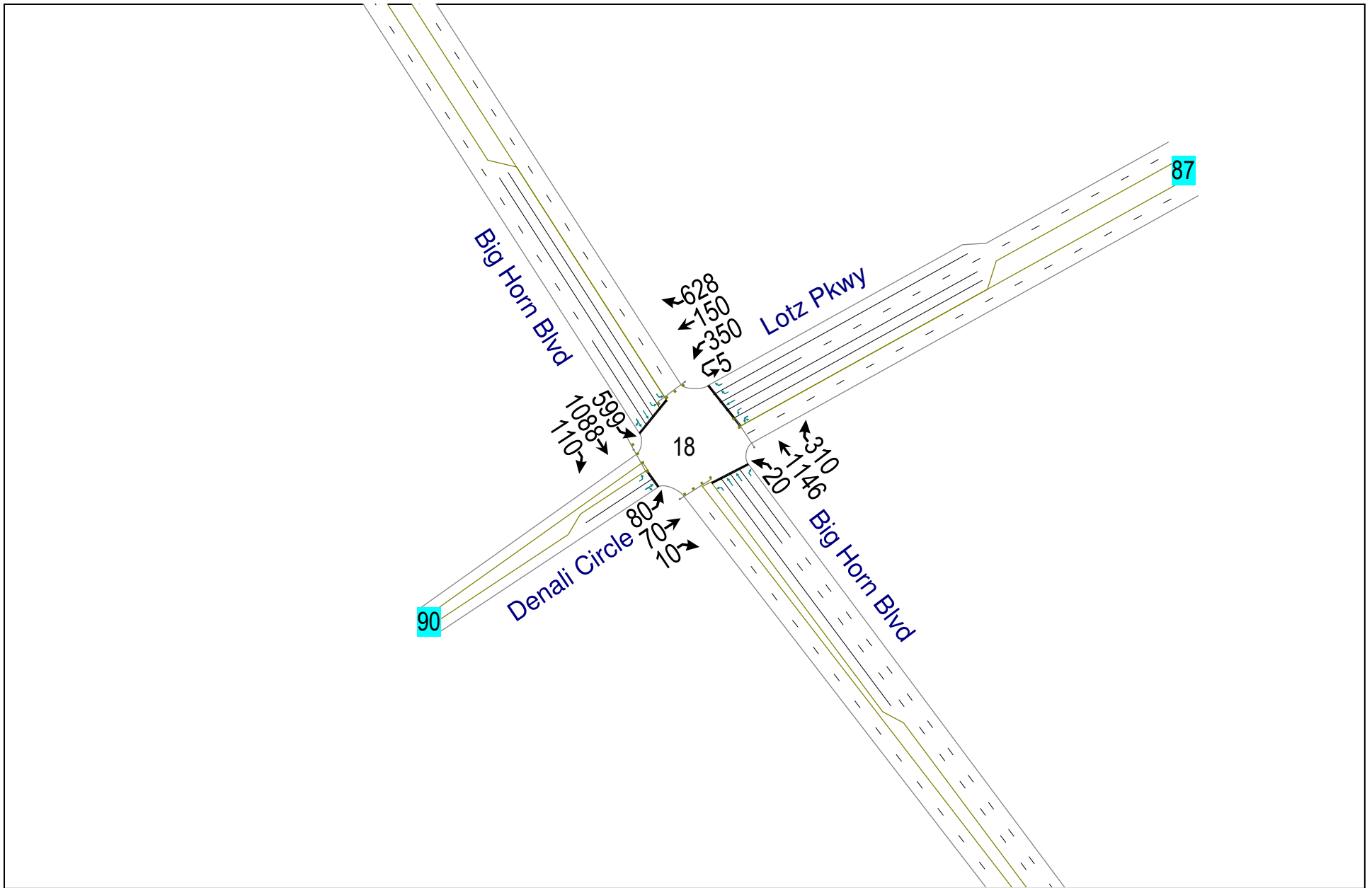


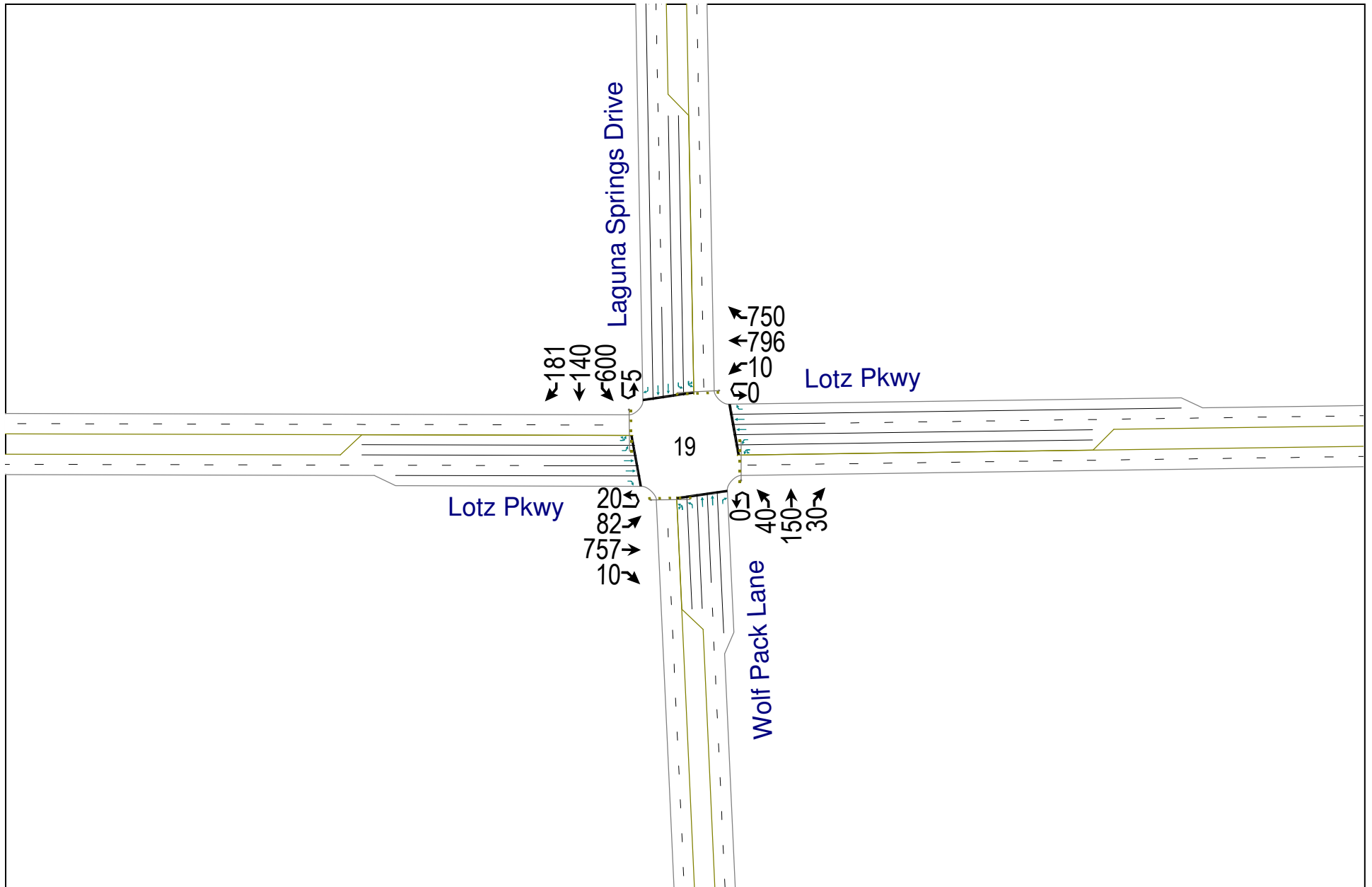


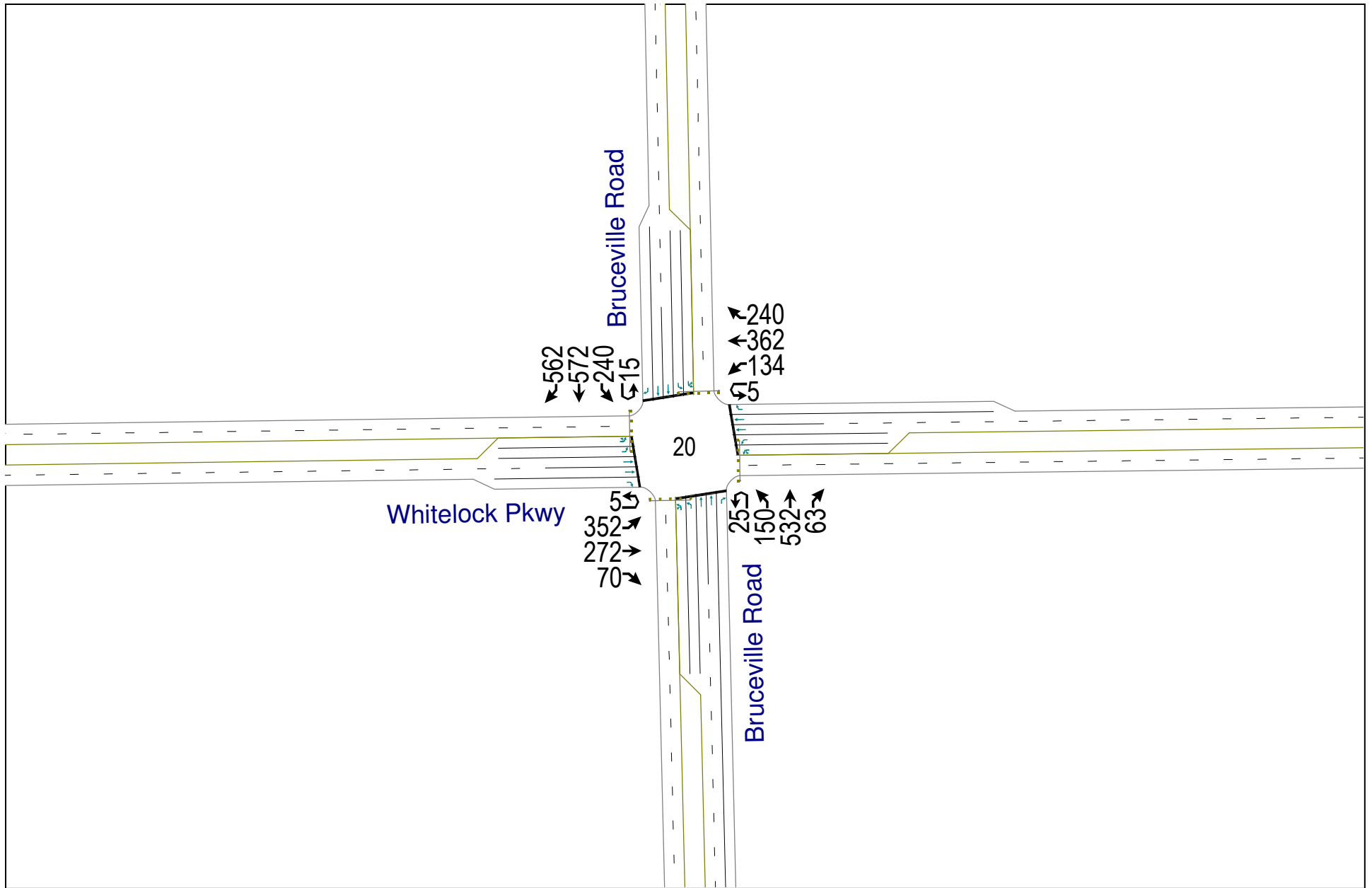


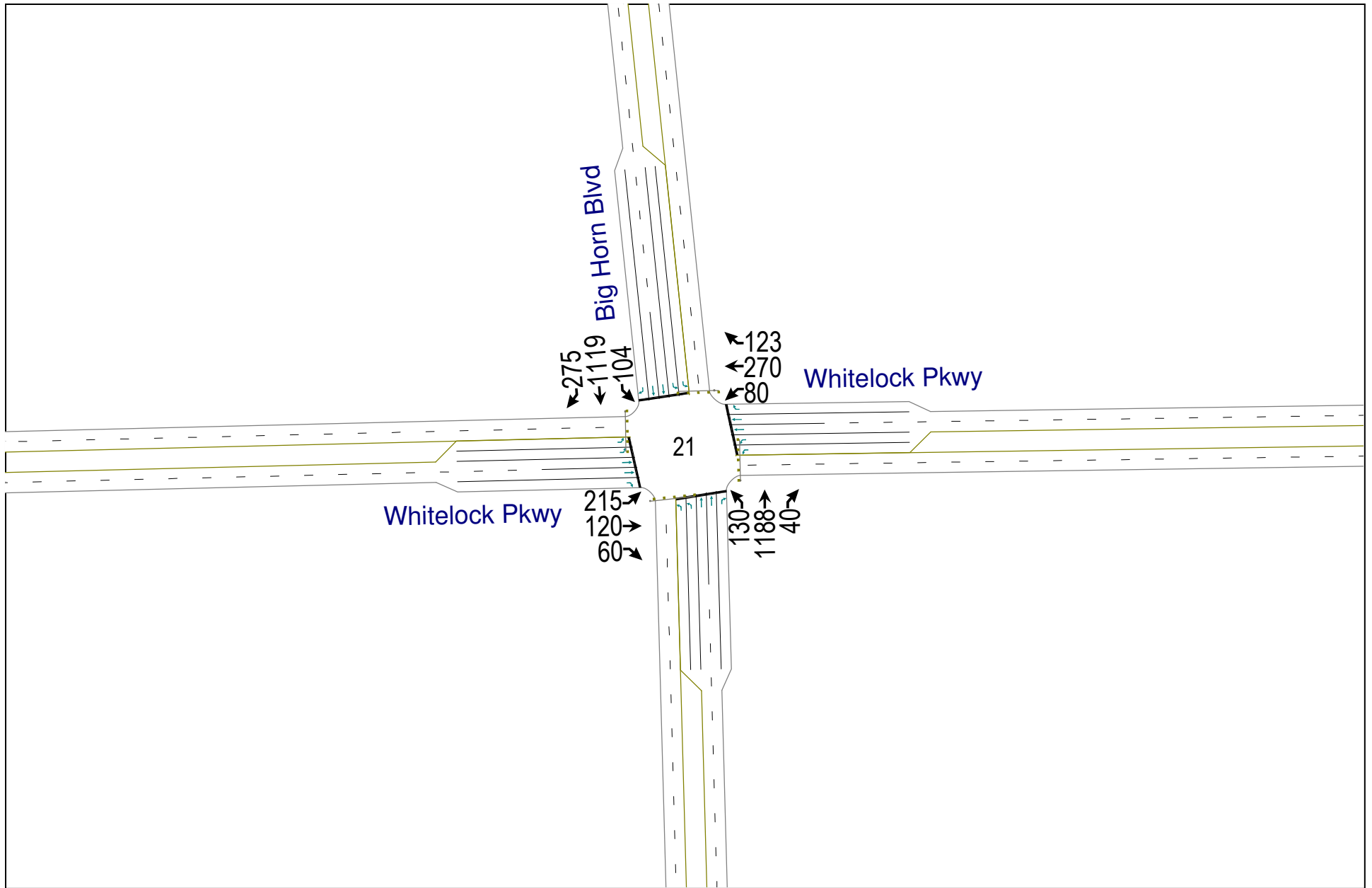


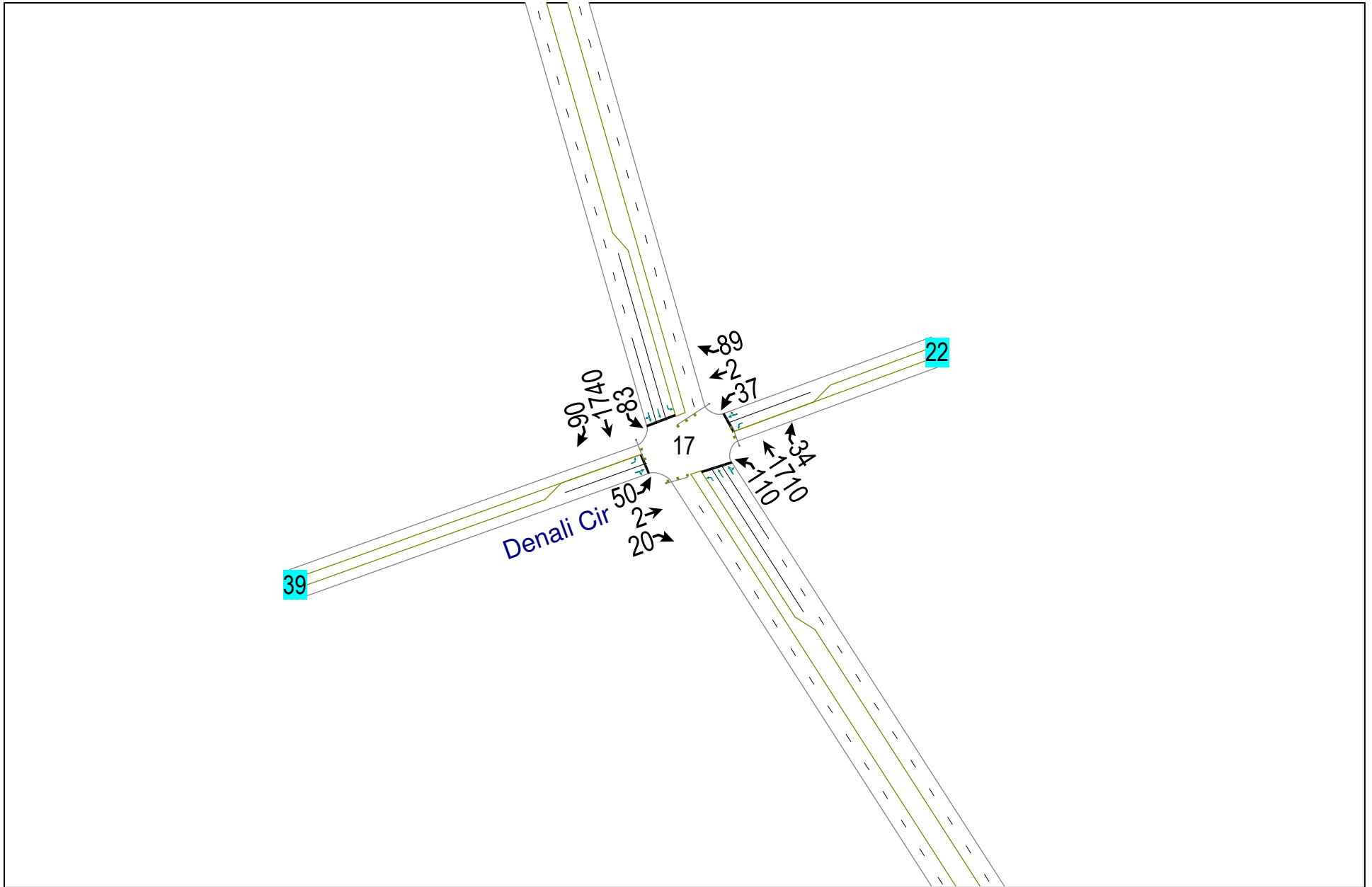


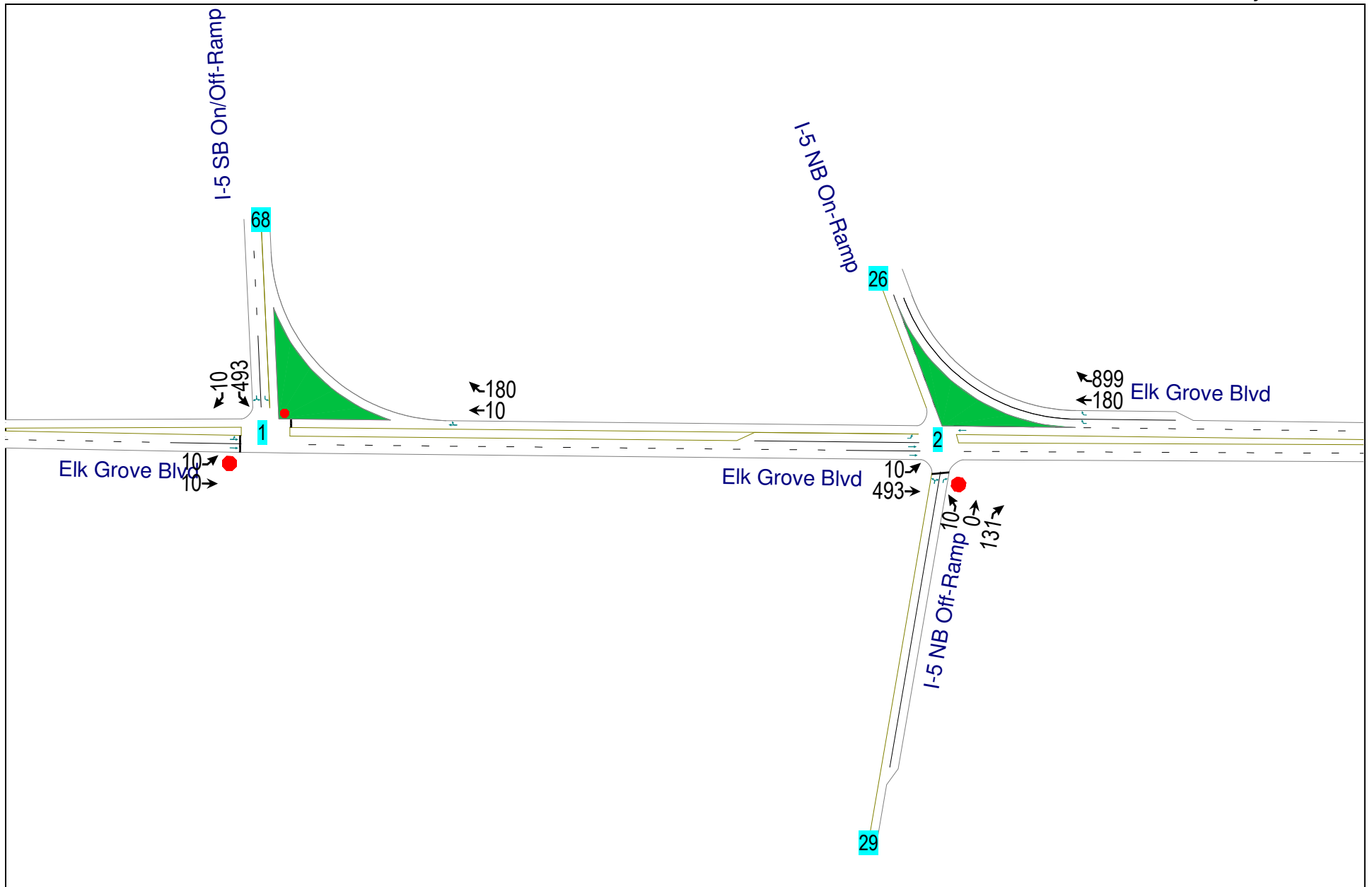


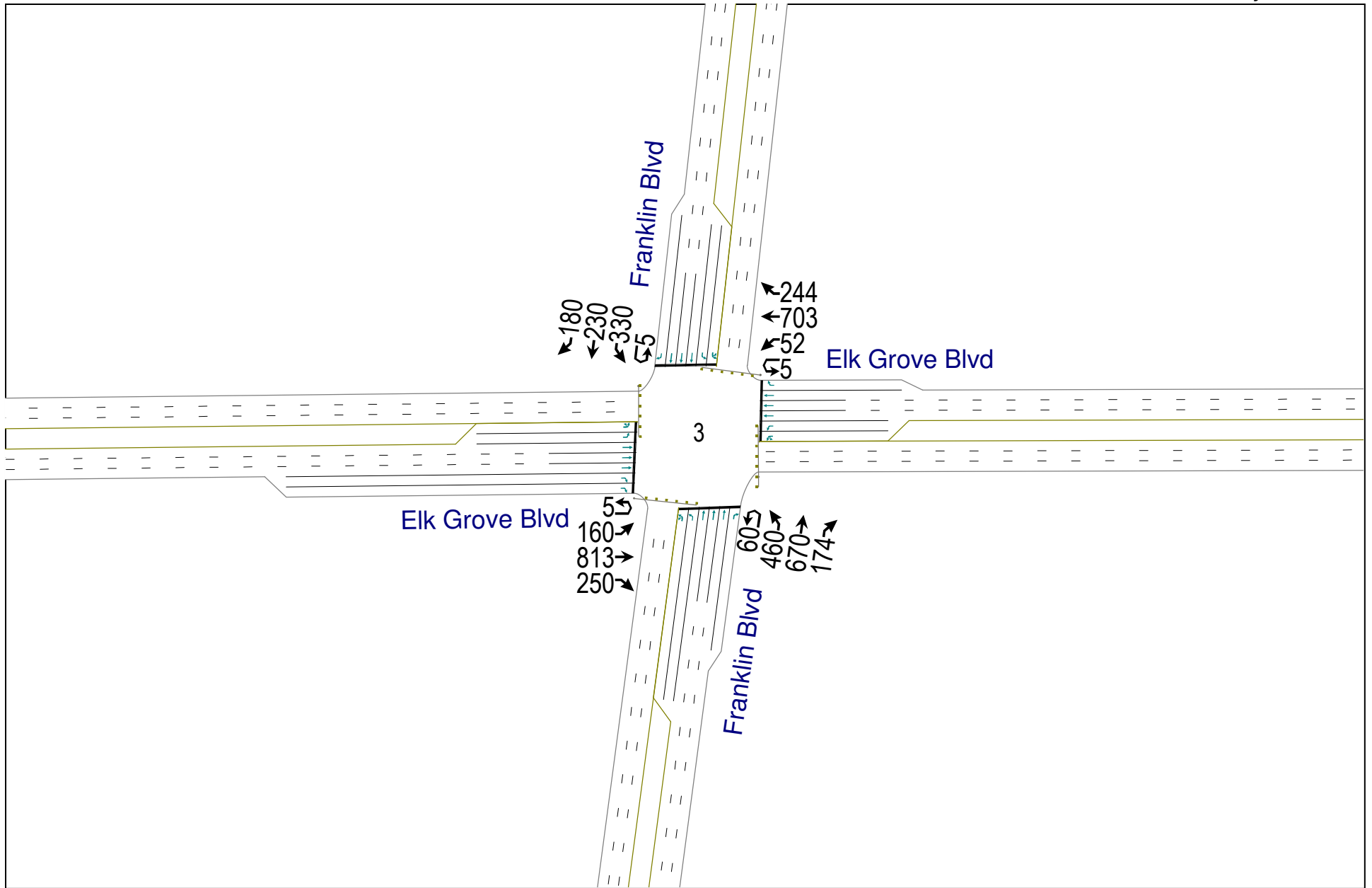


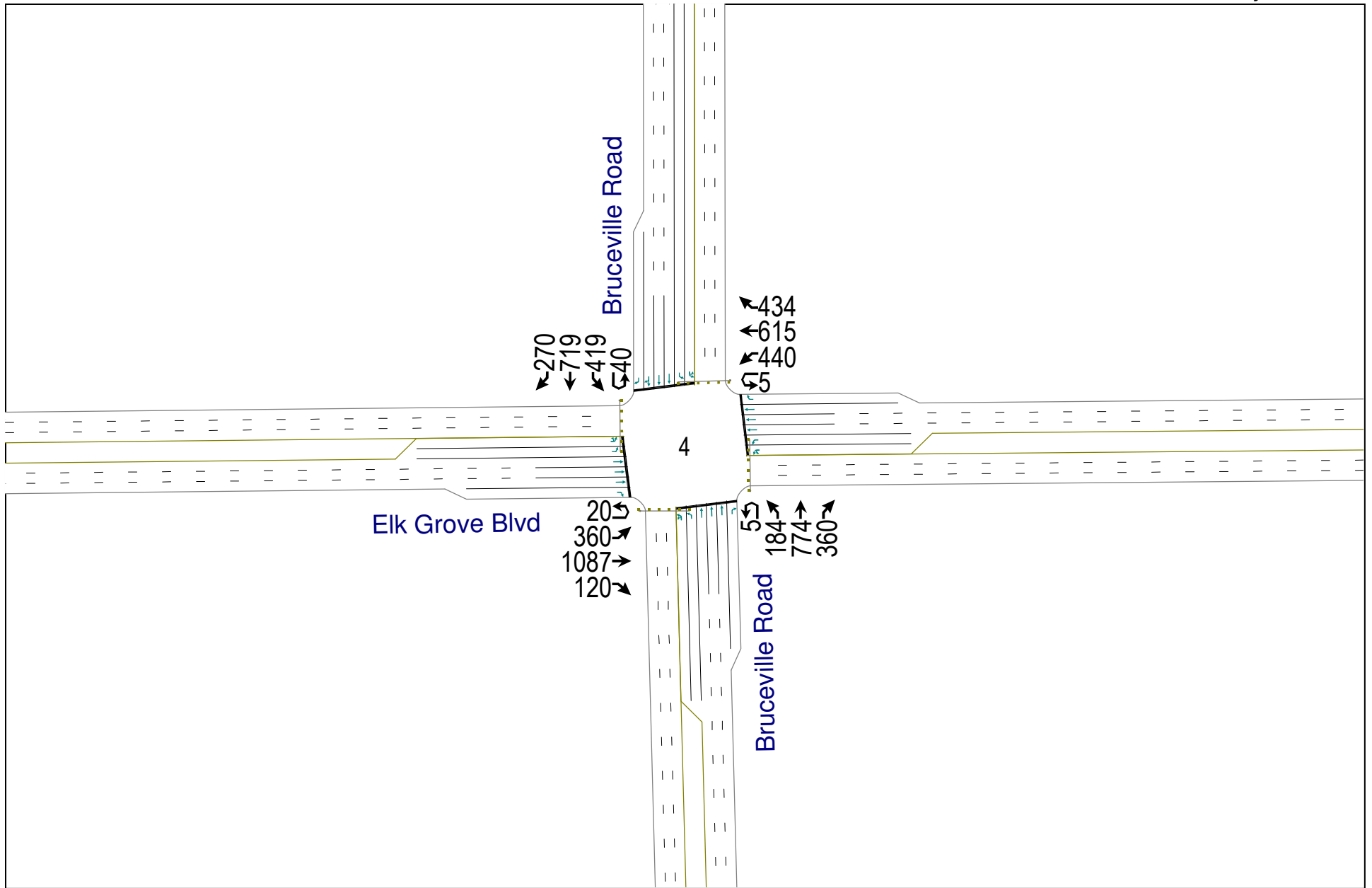


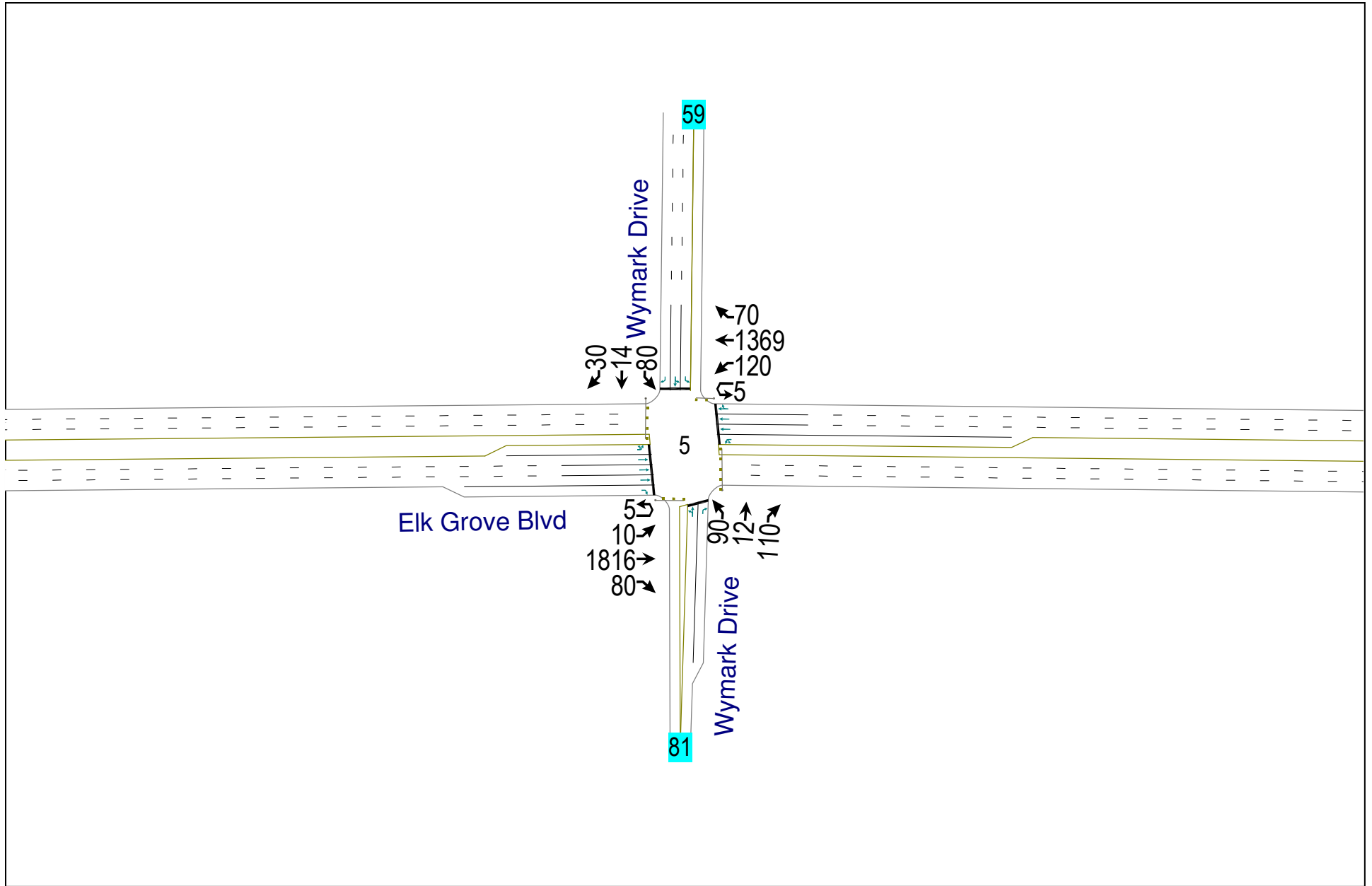


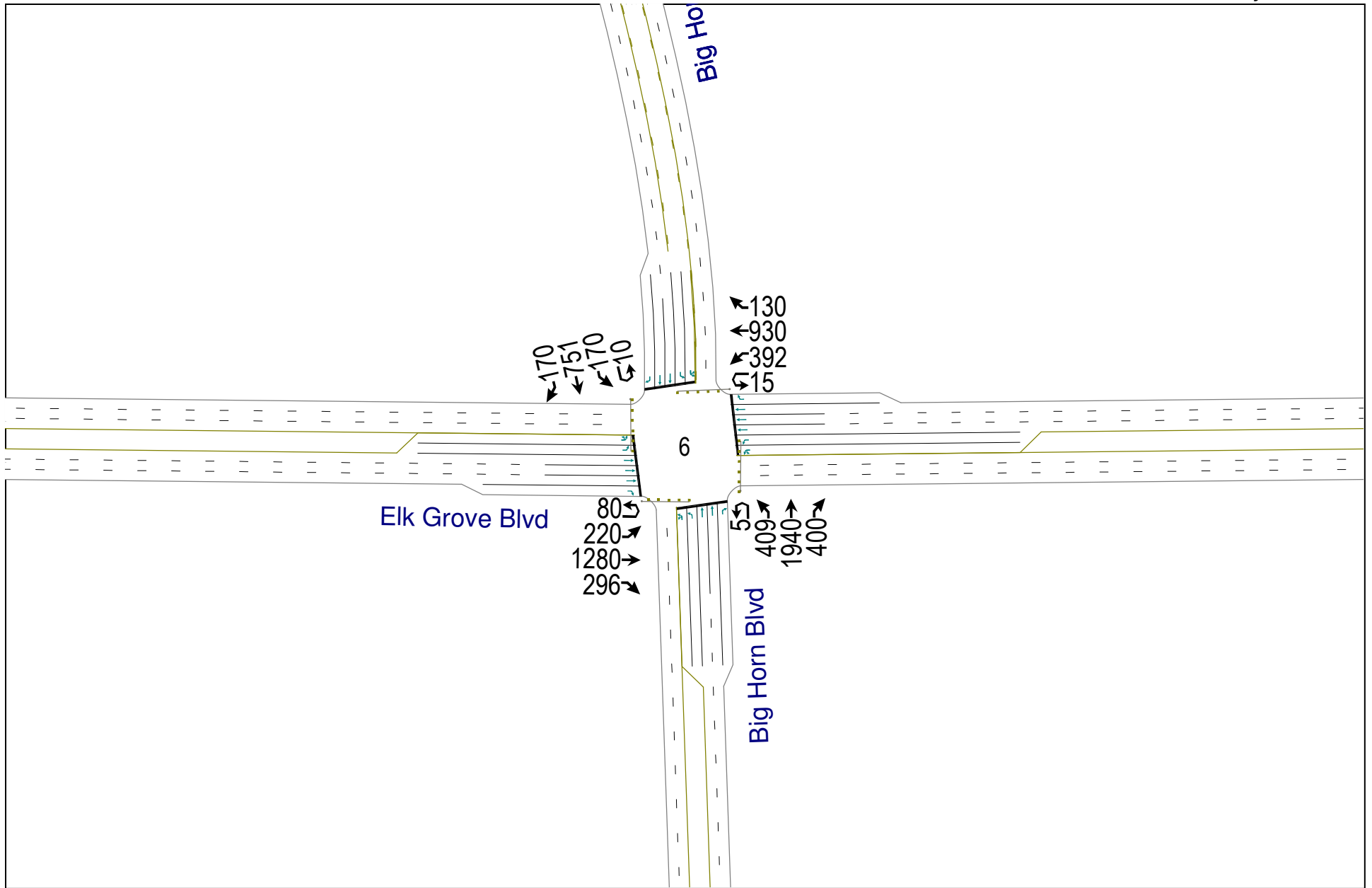


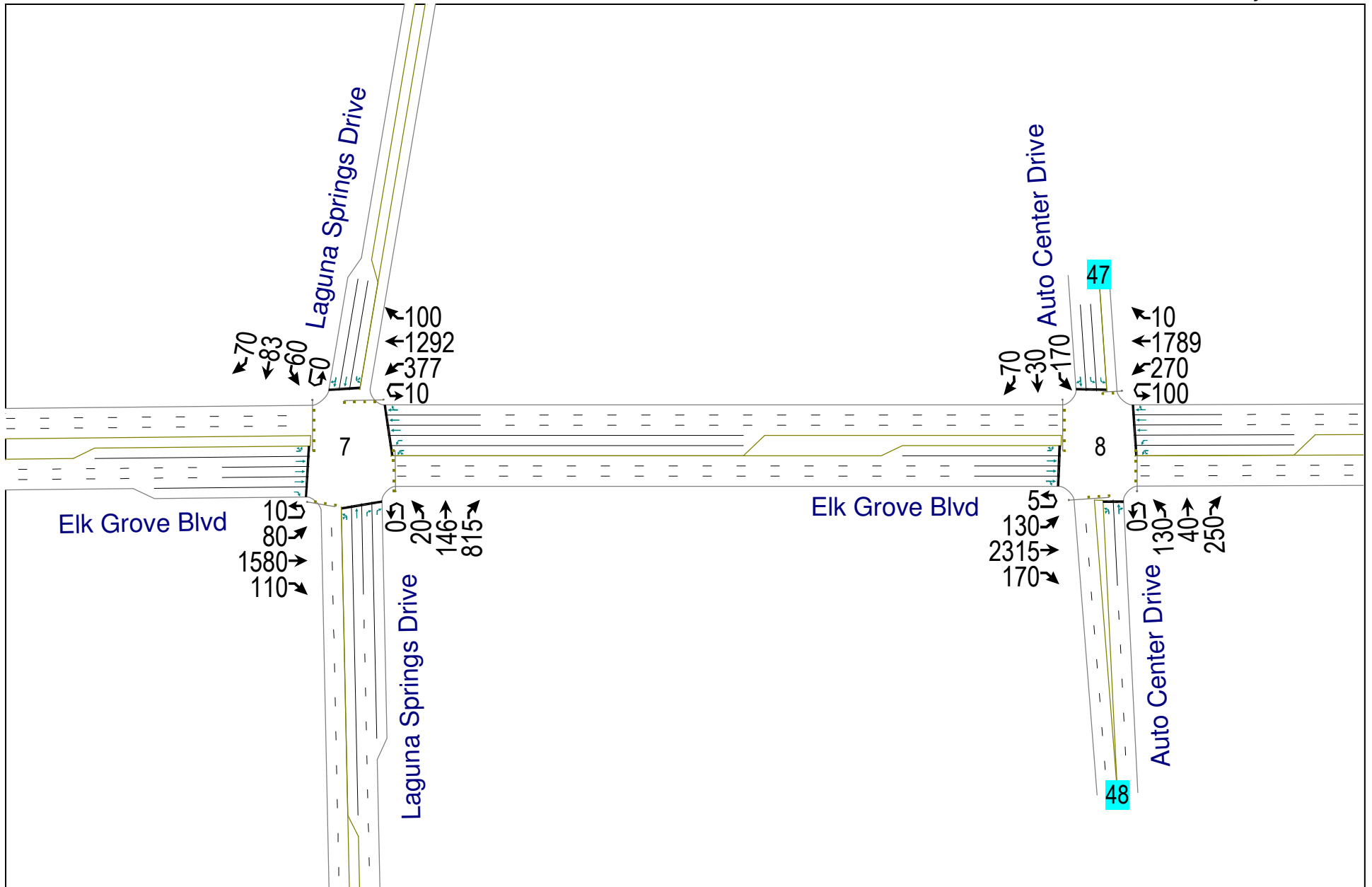


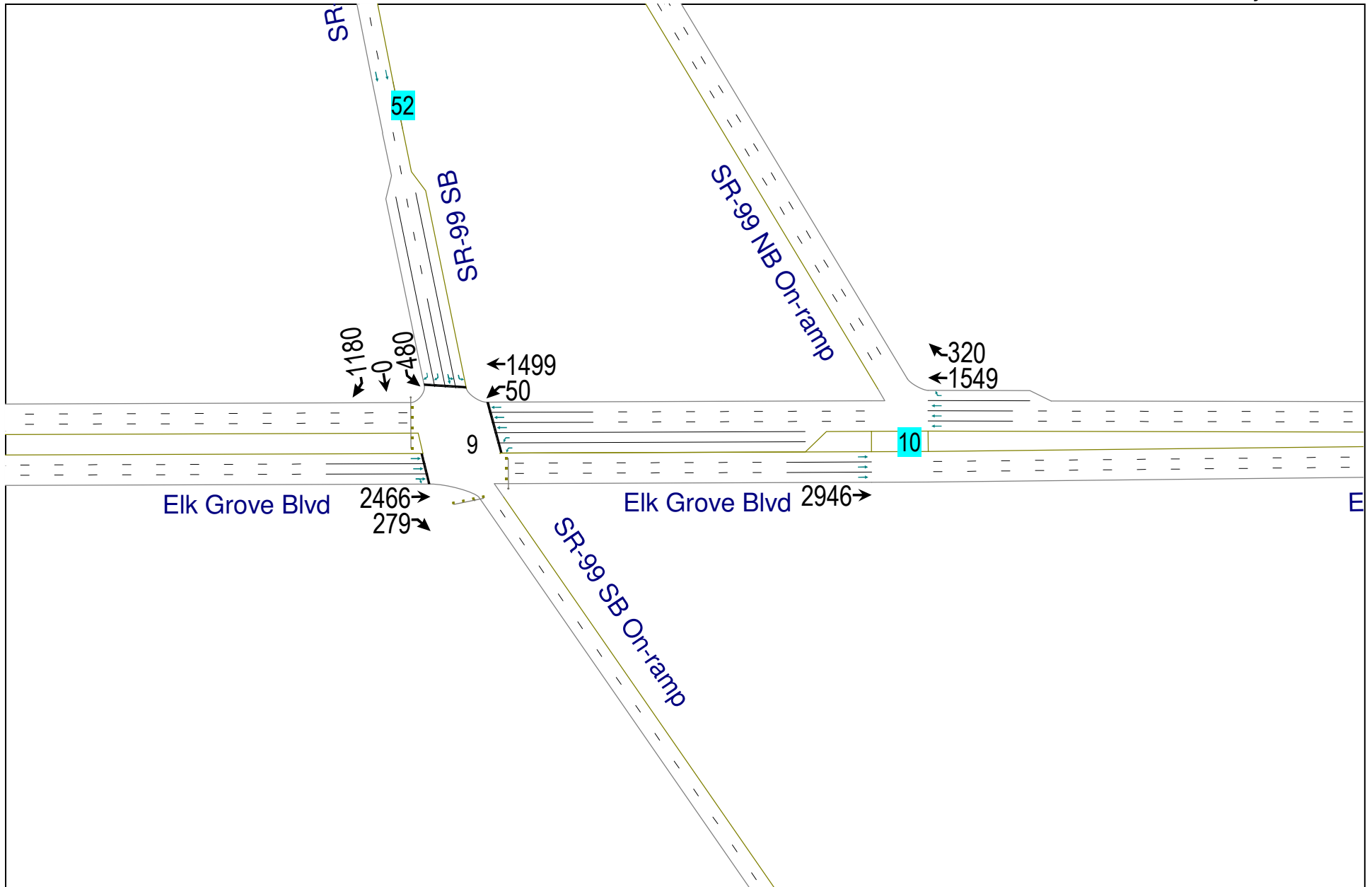


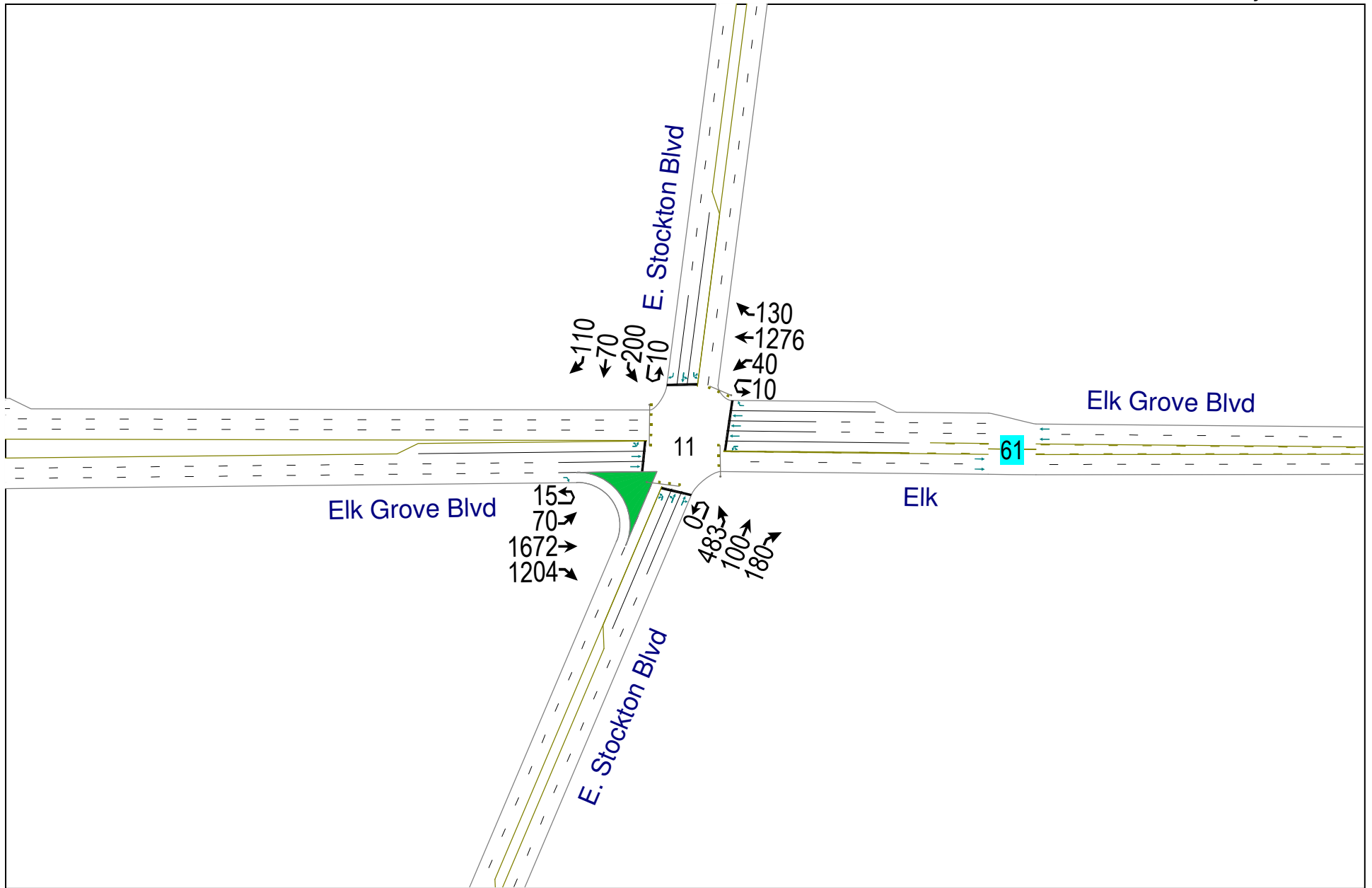


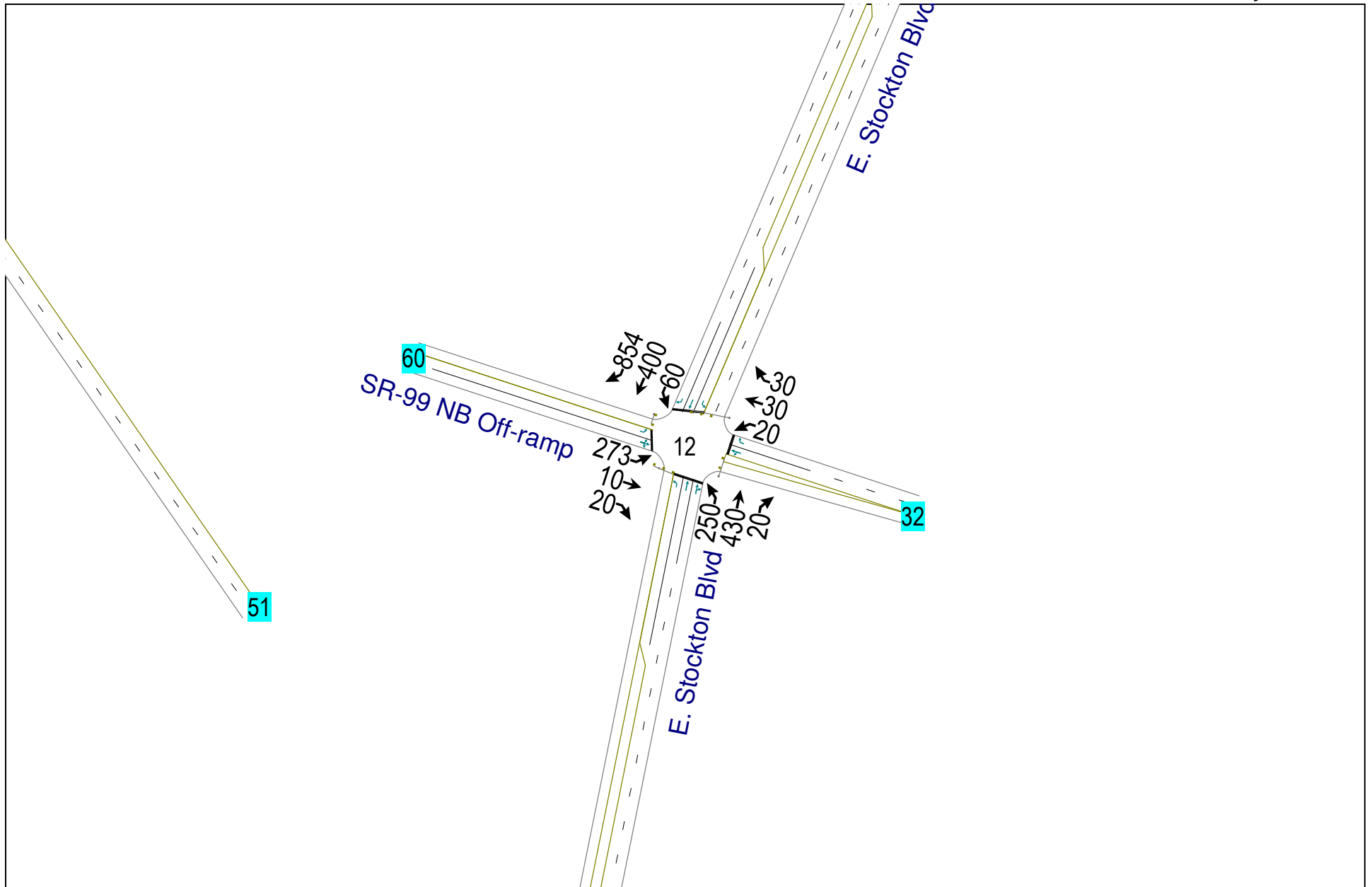


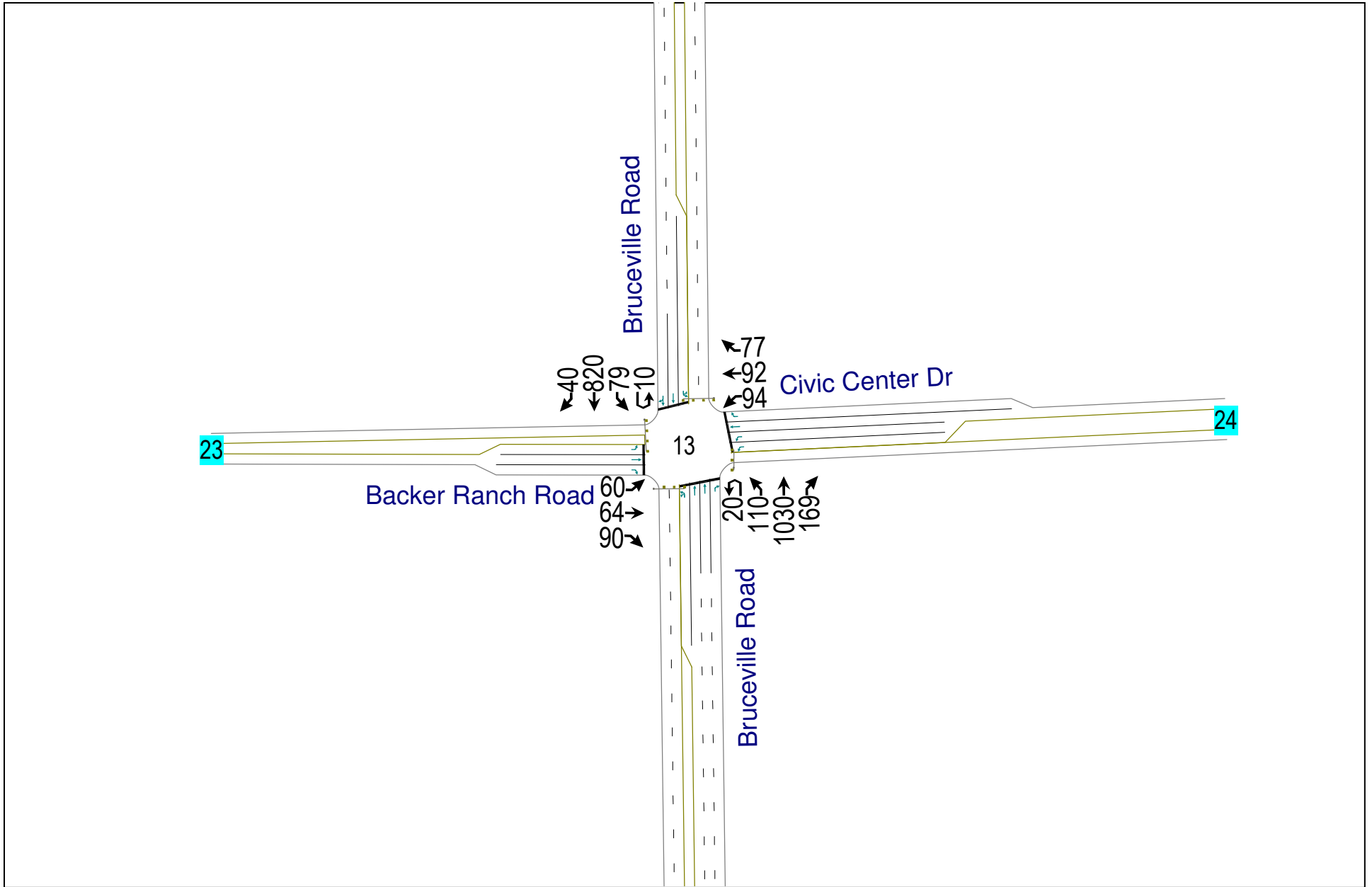


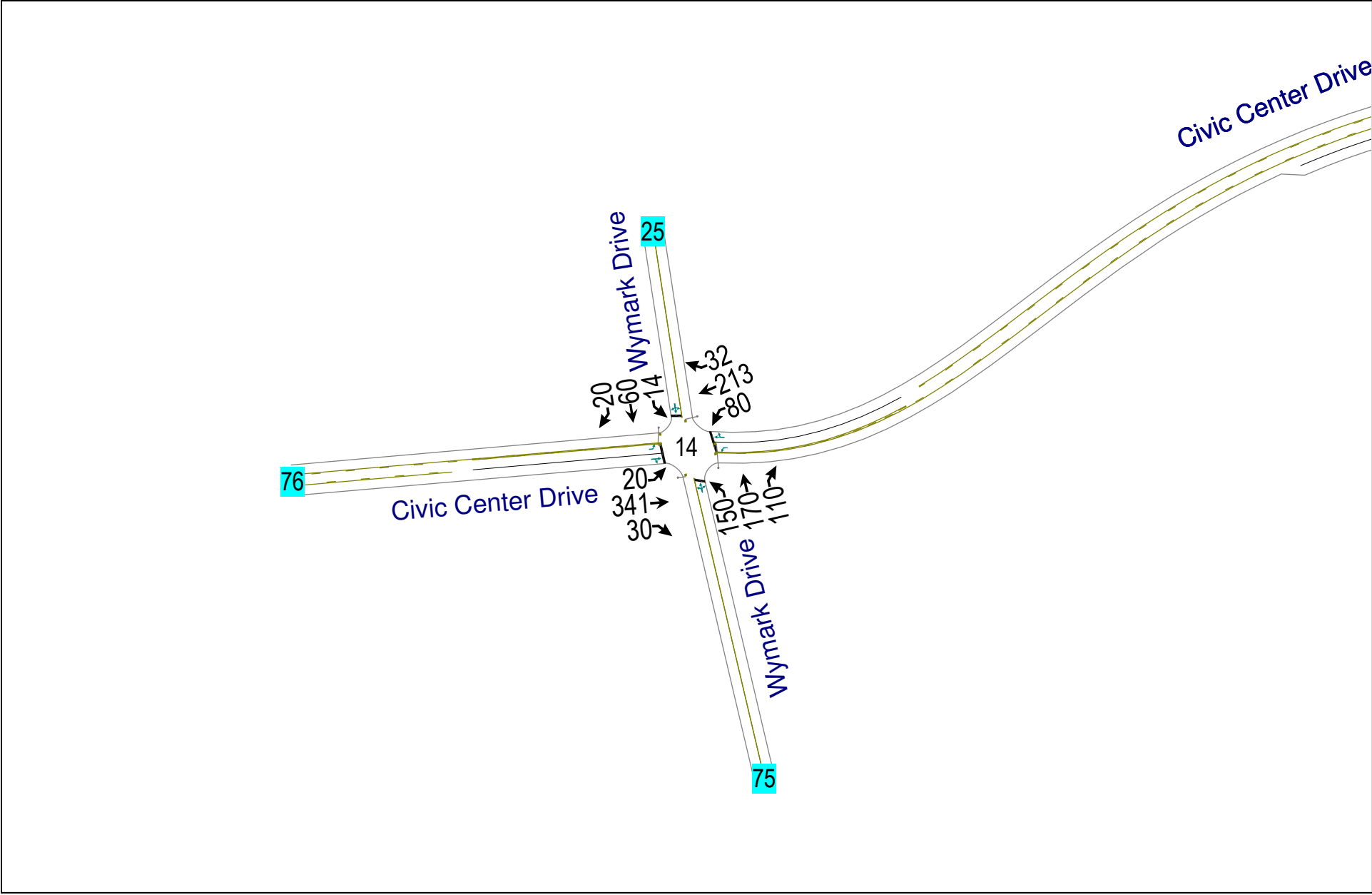


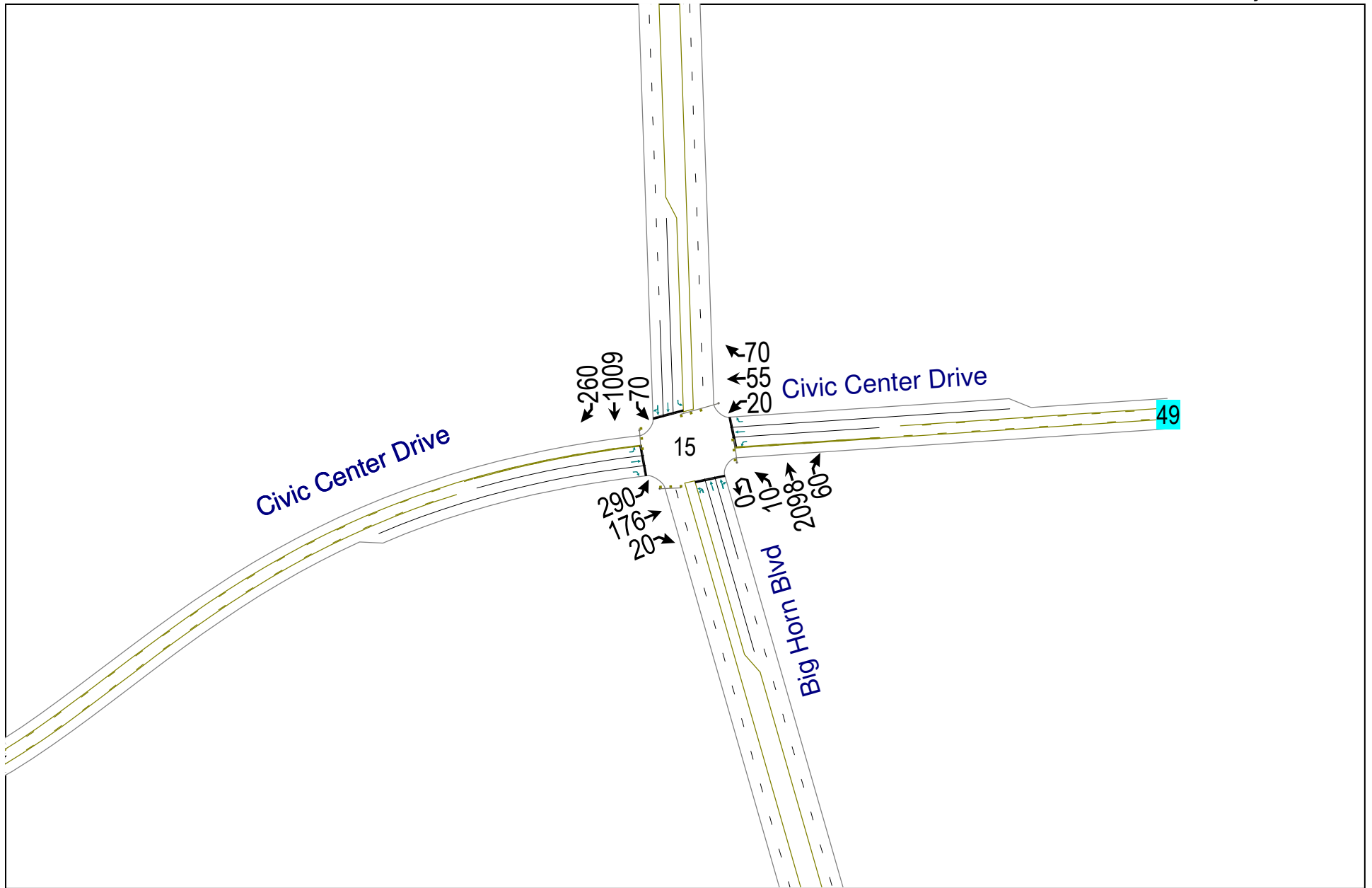


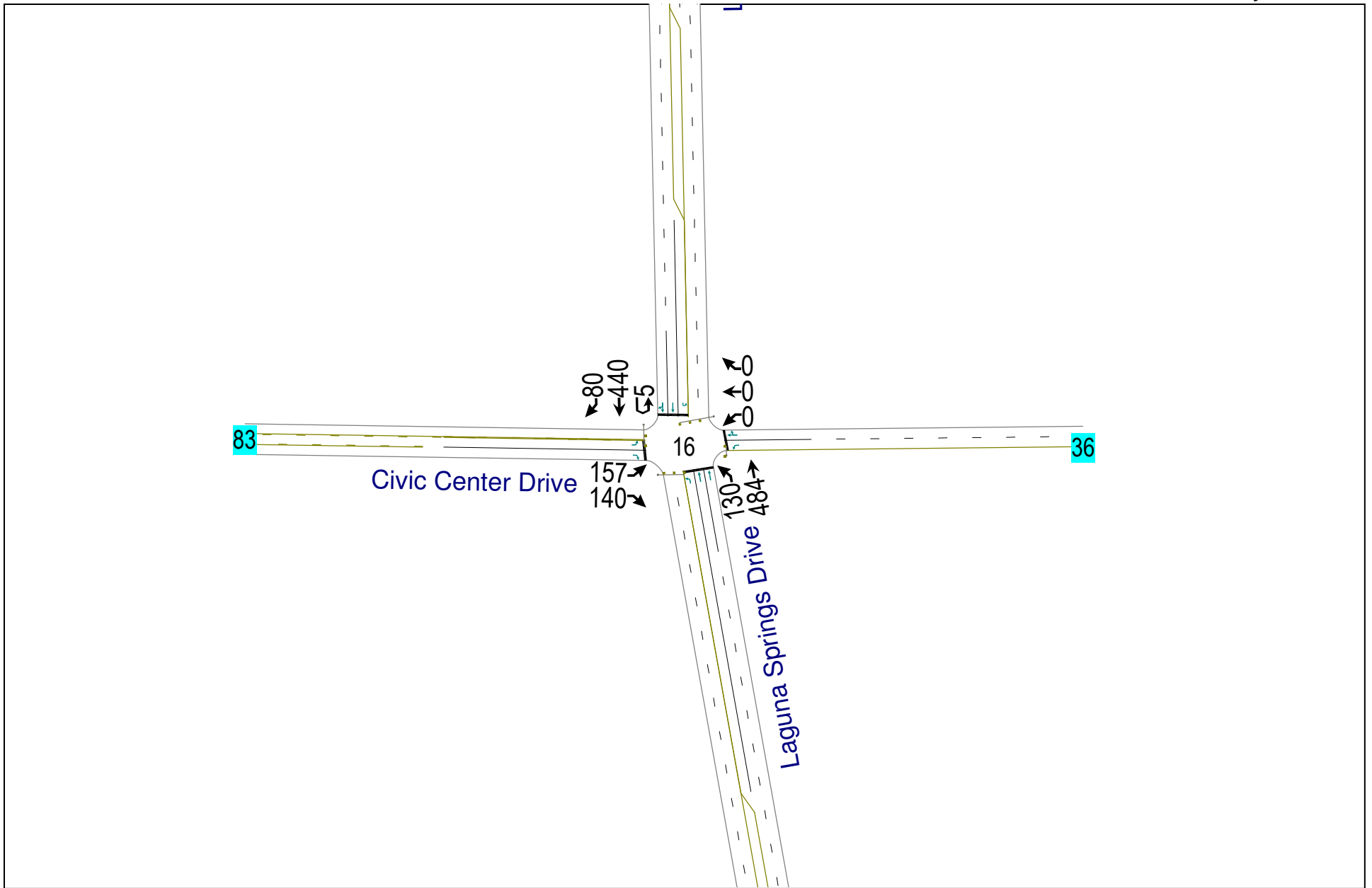


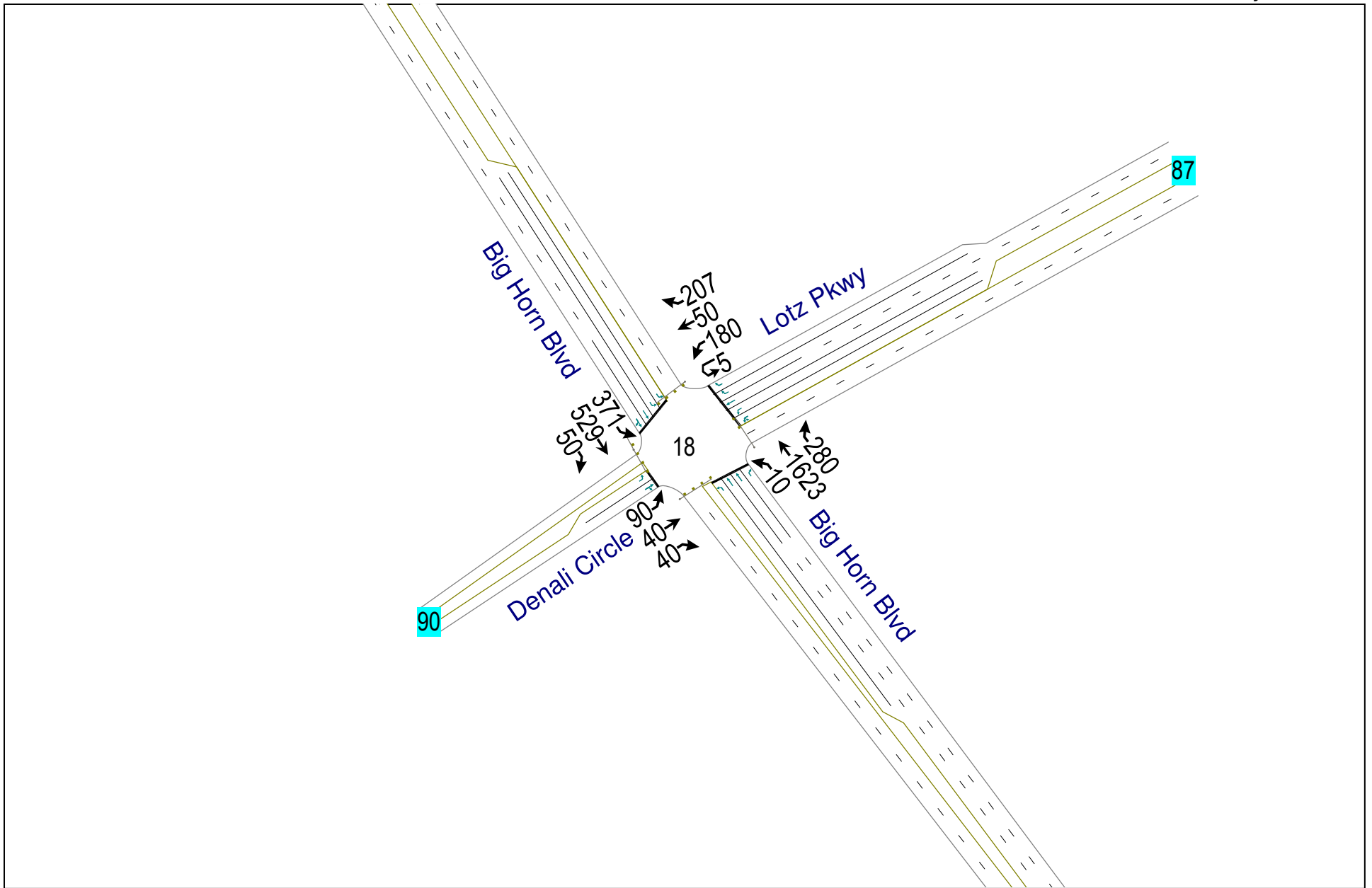


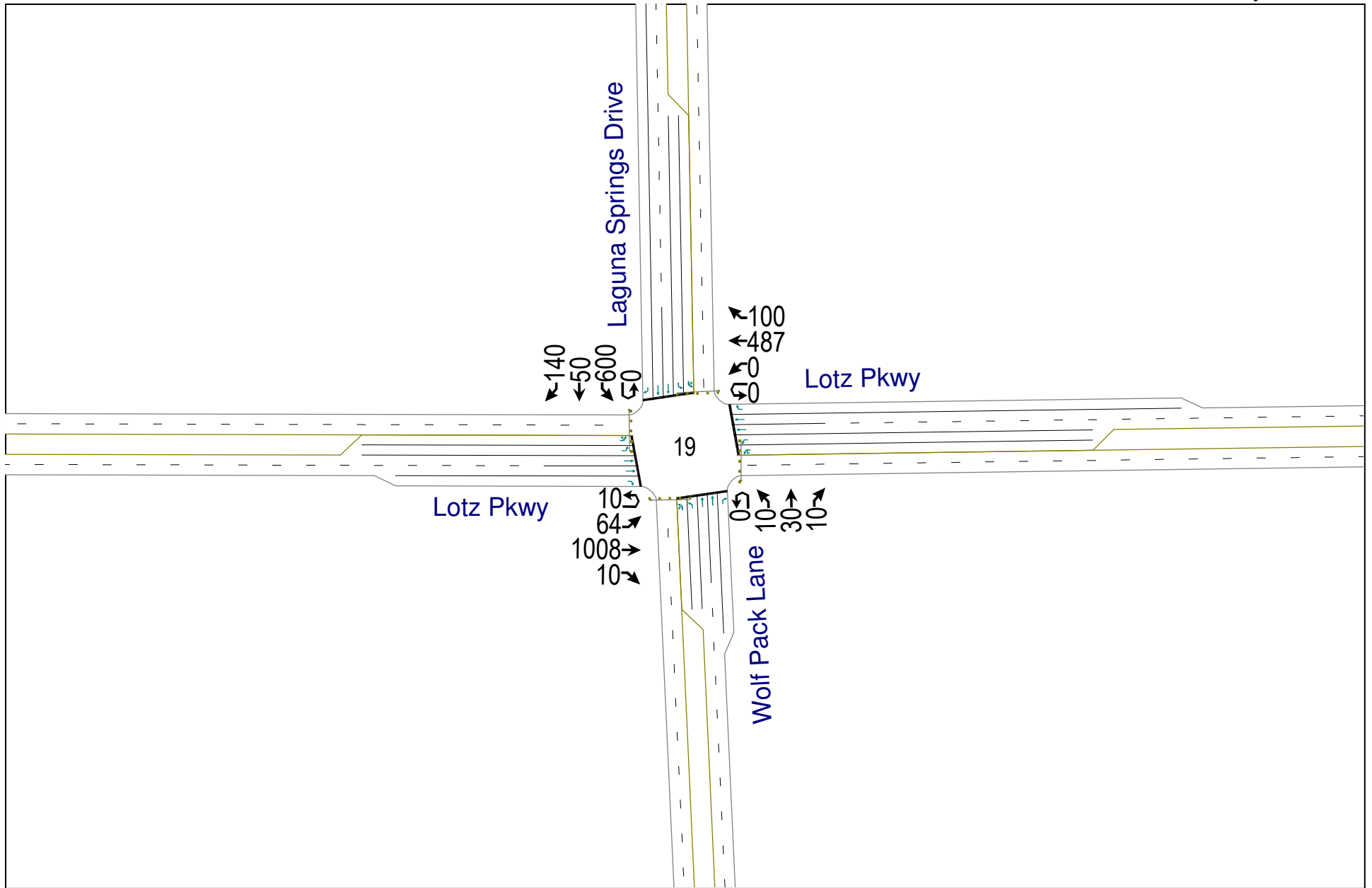


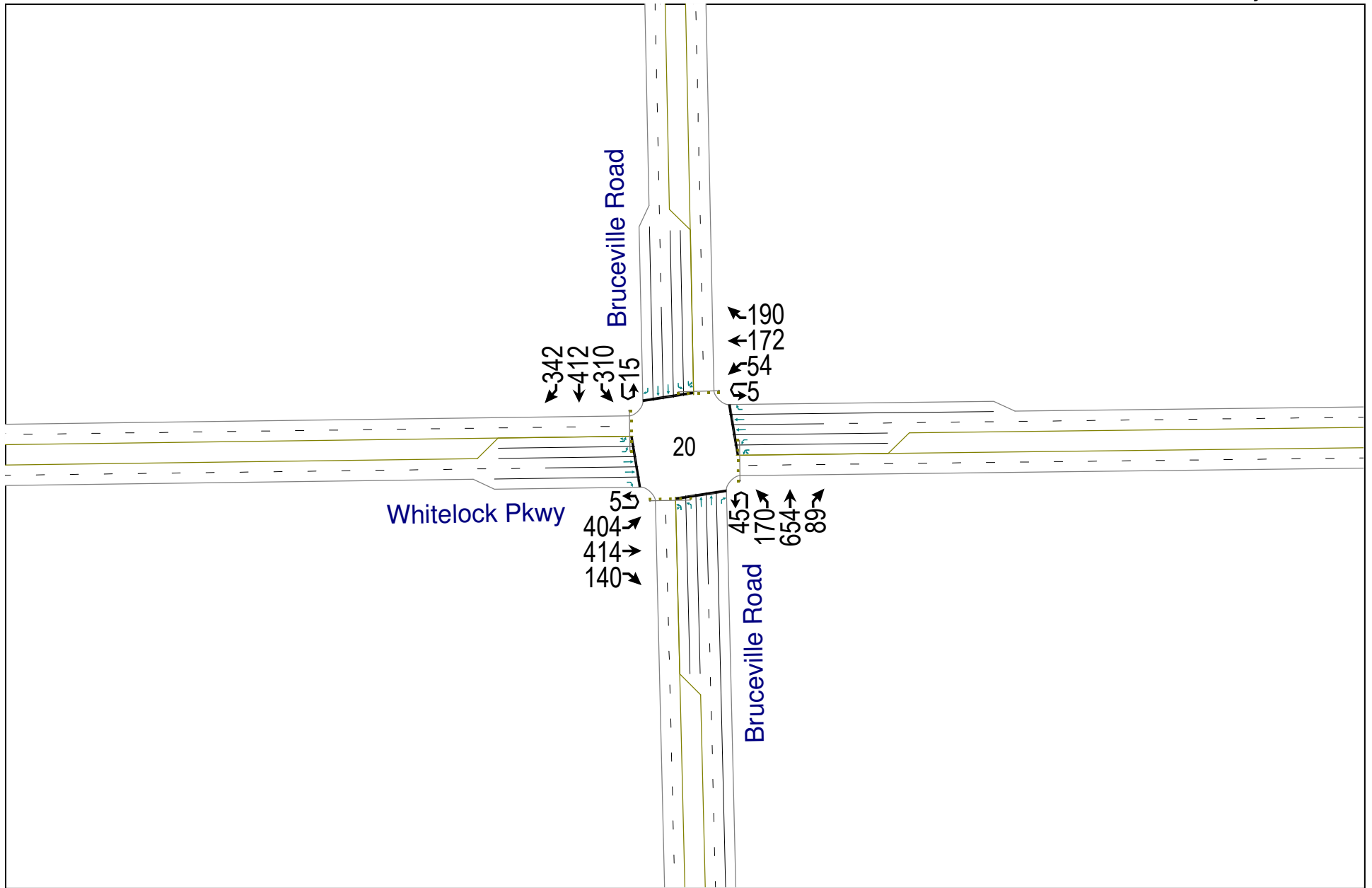


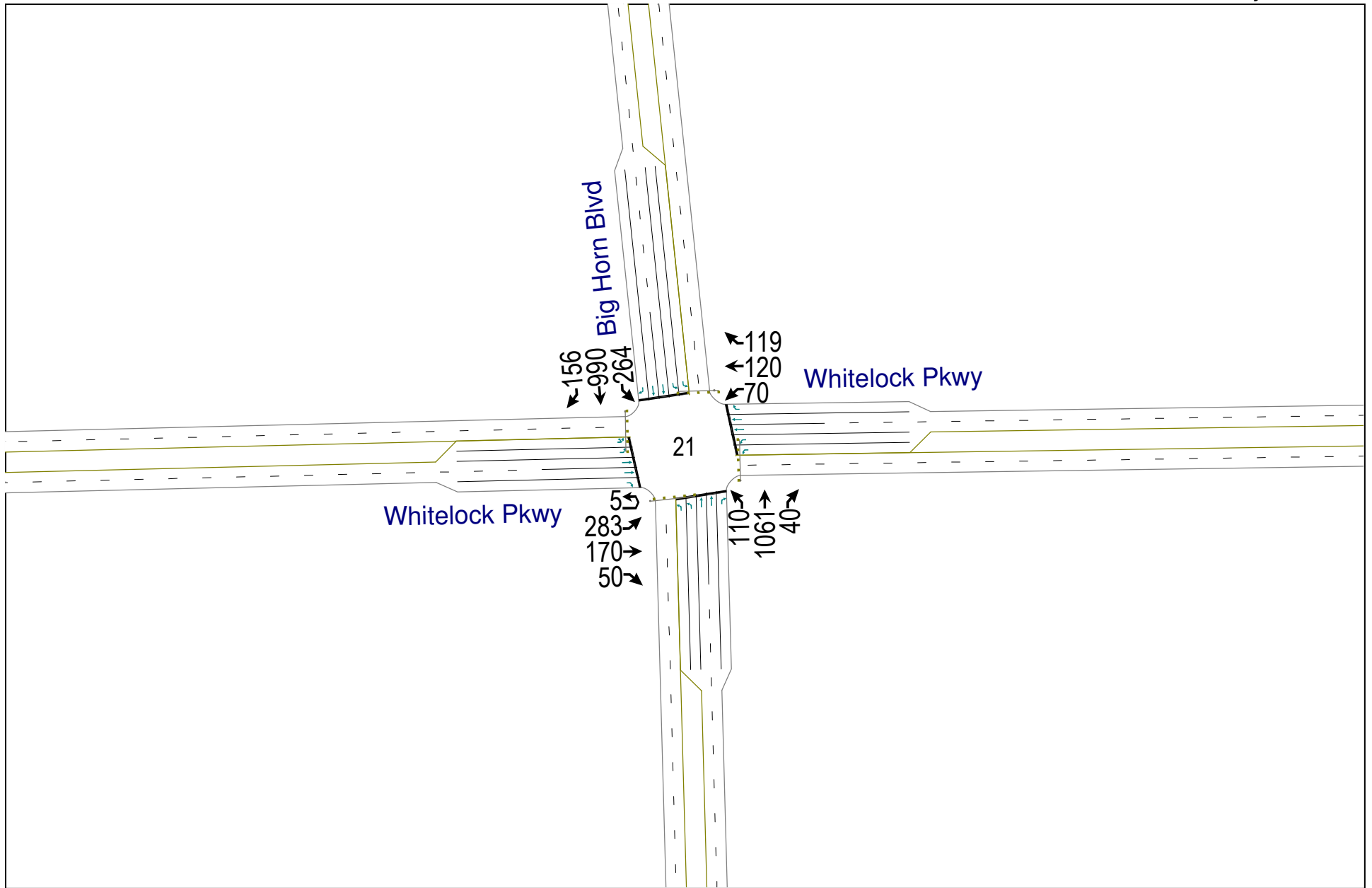




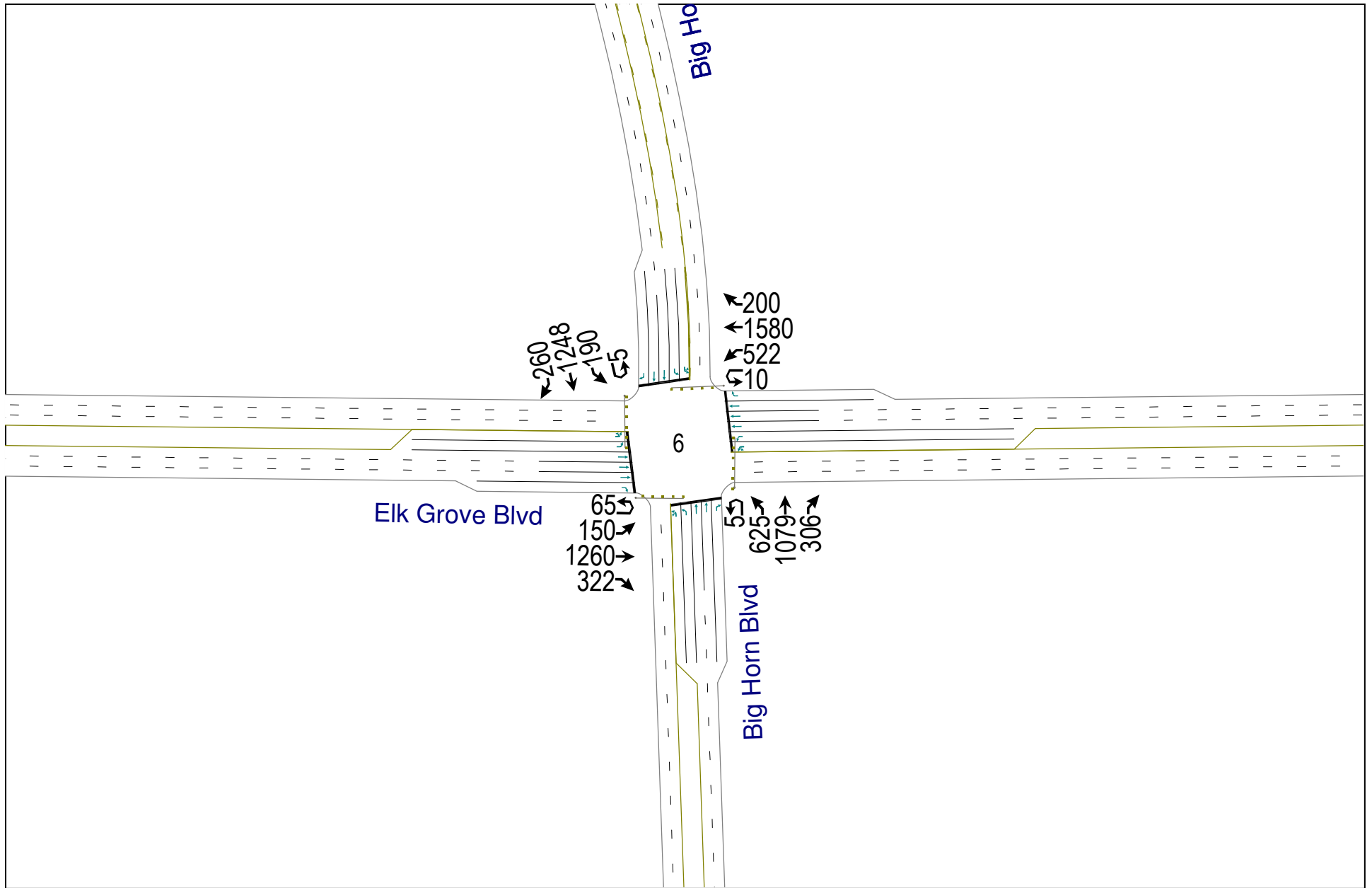


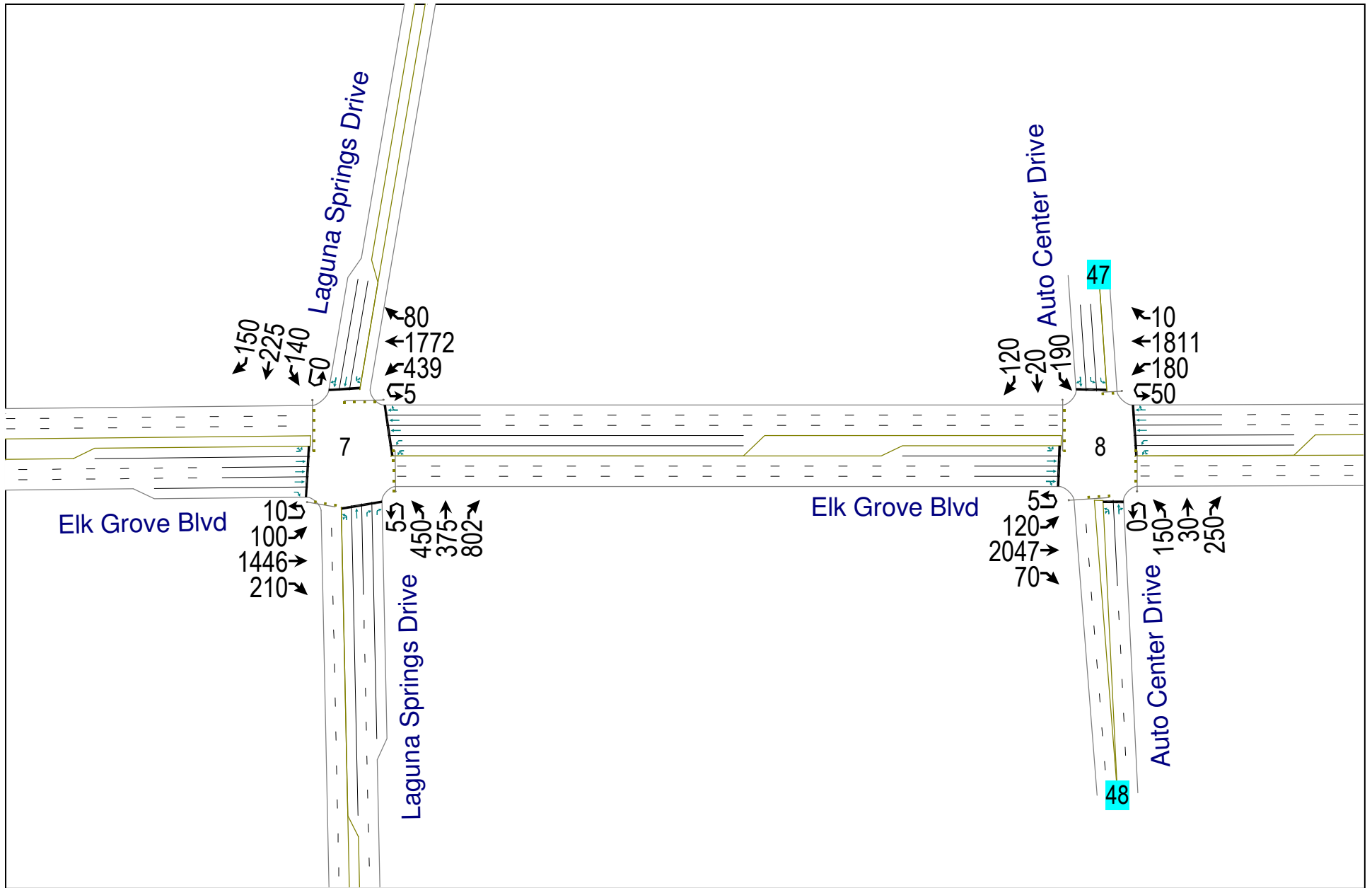


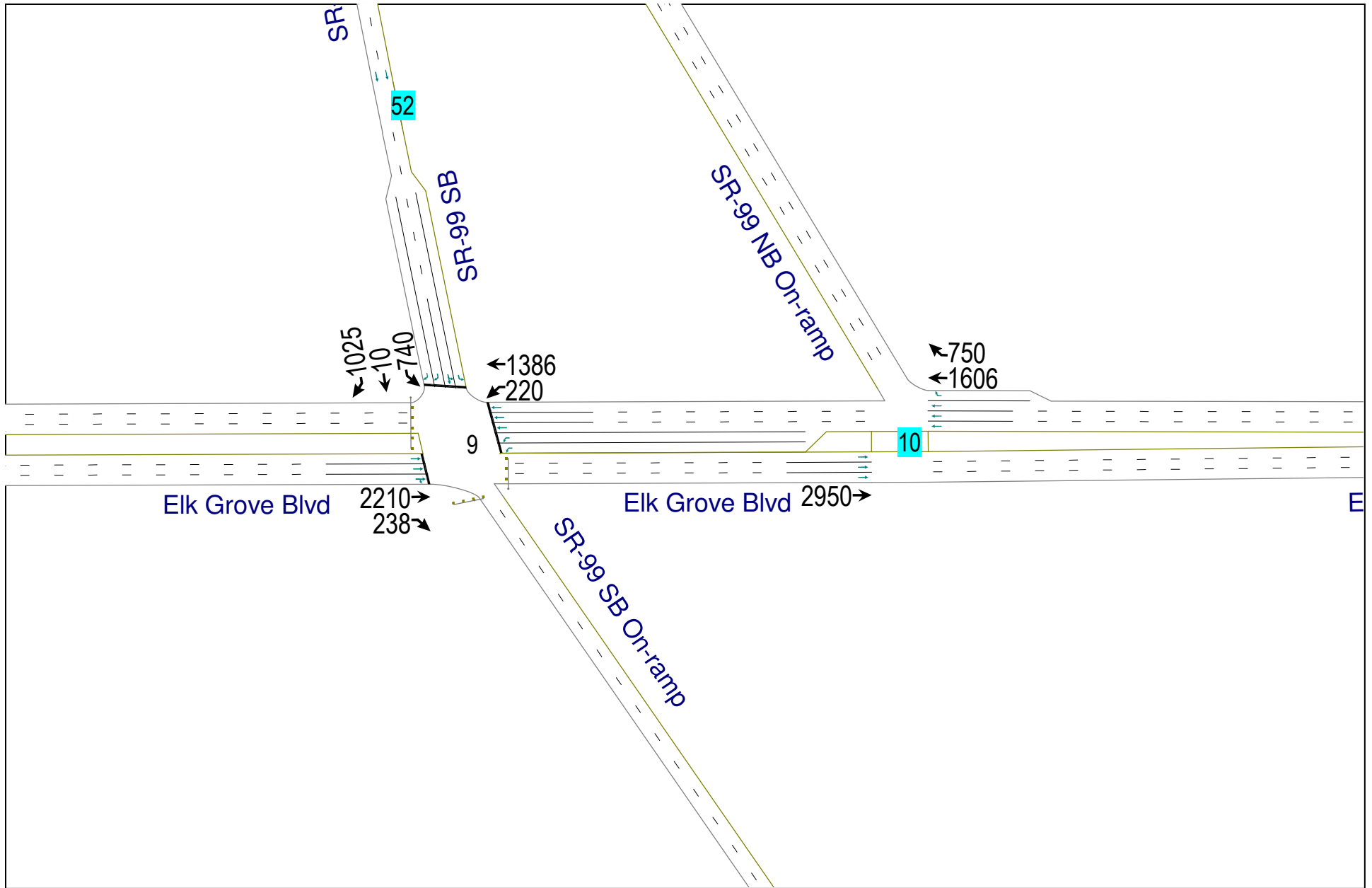


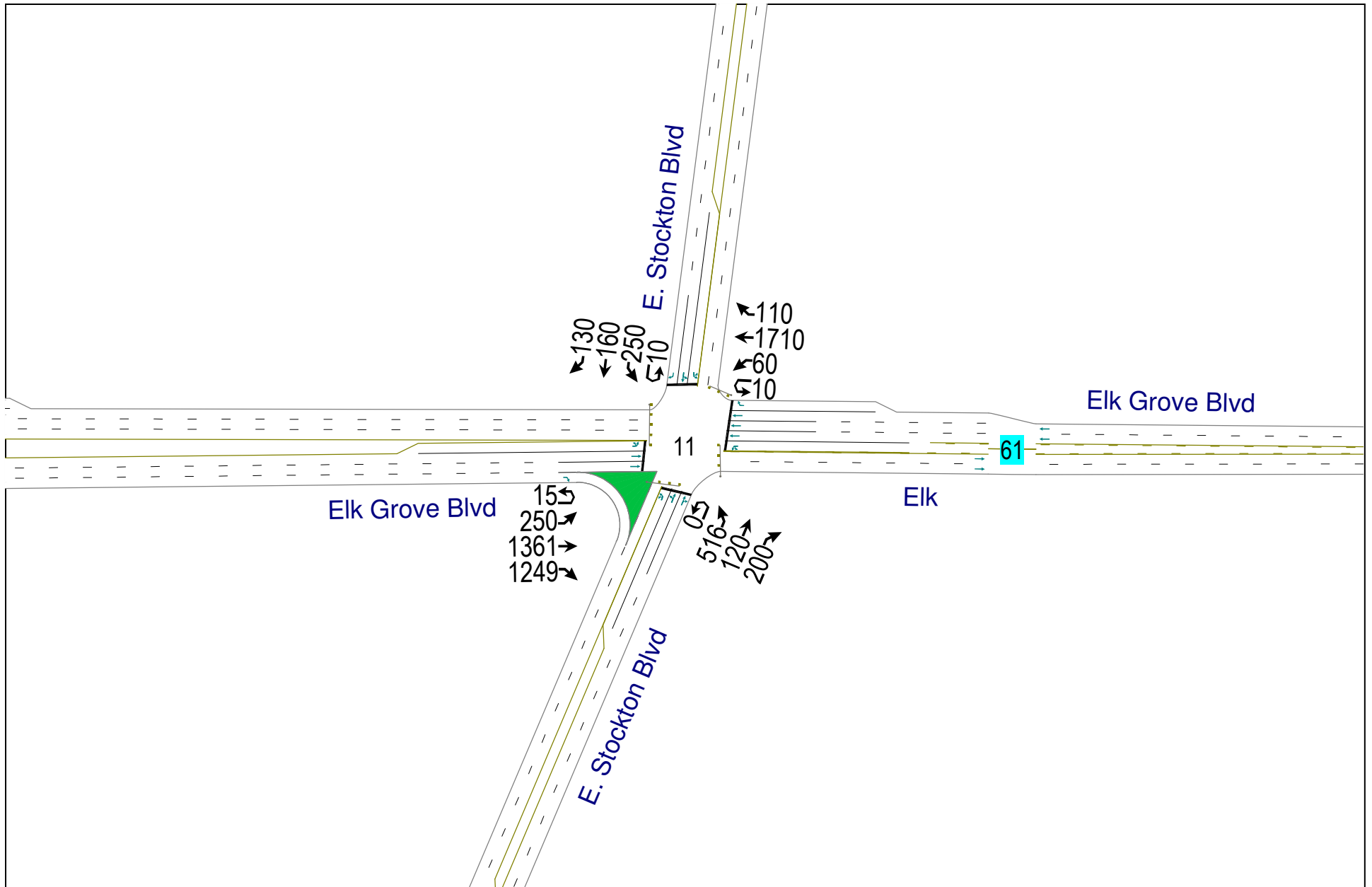


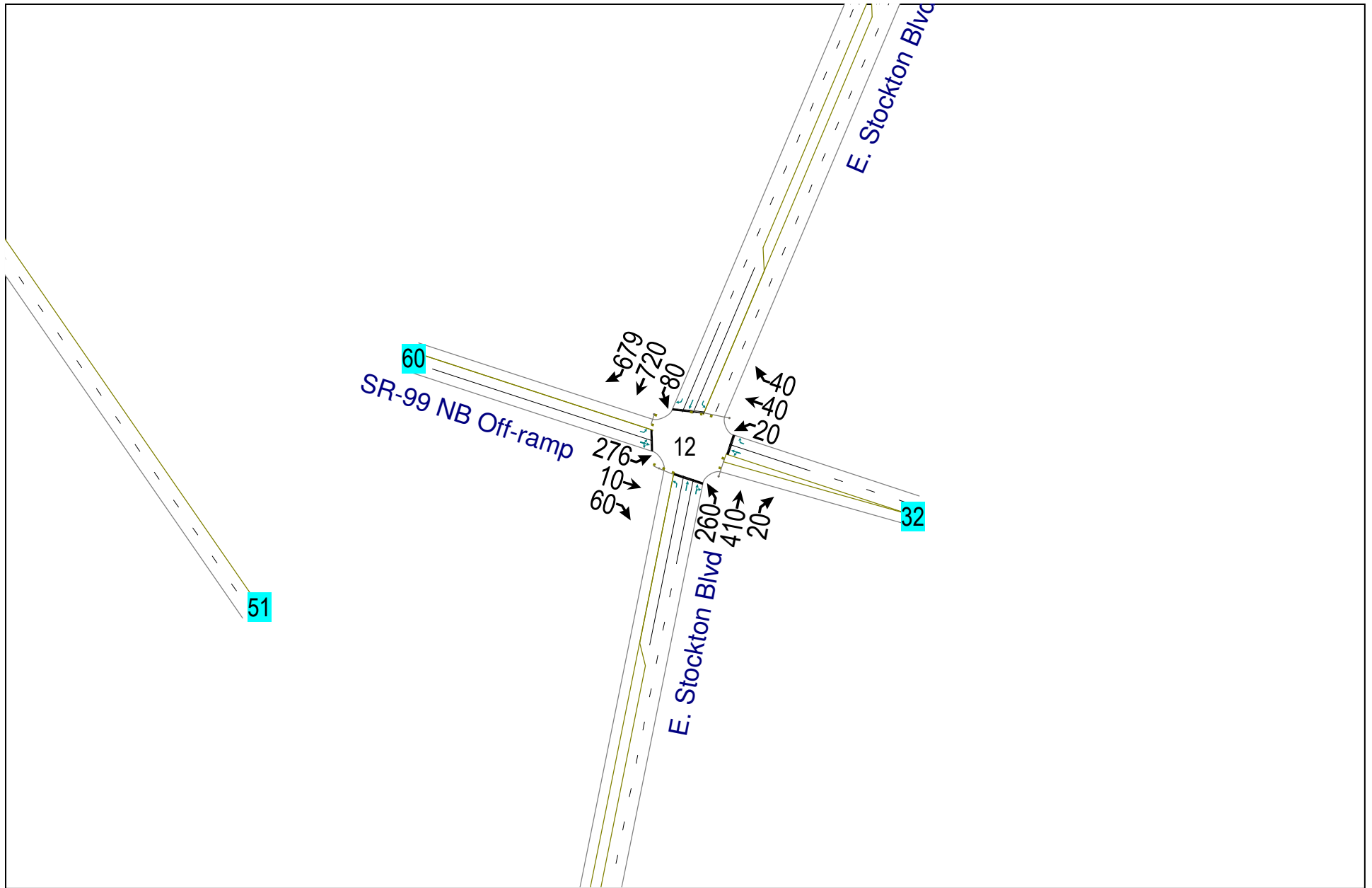
With Whitelock Parkway Interchange

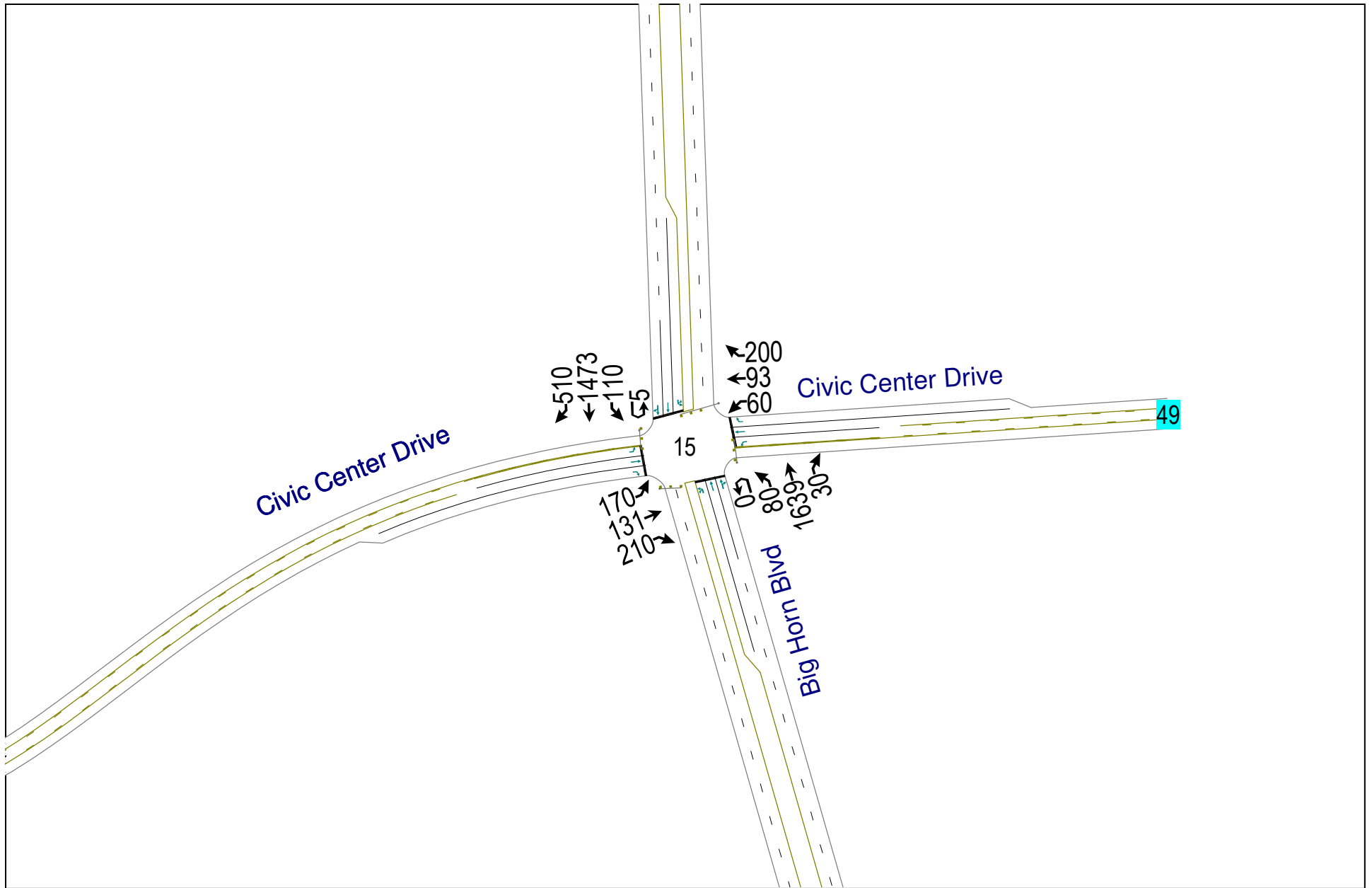


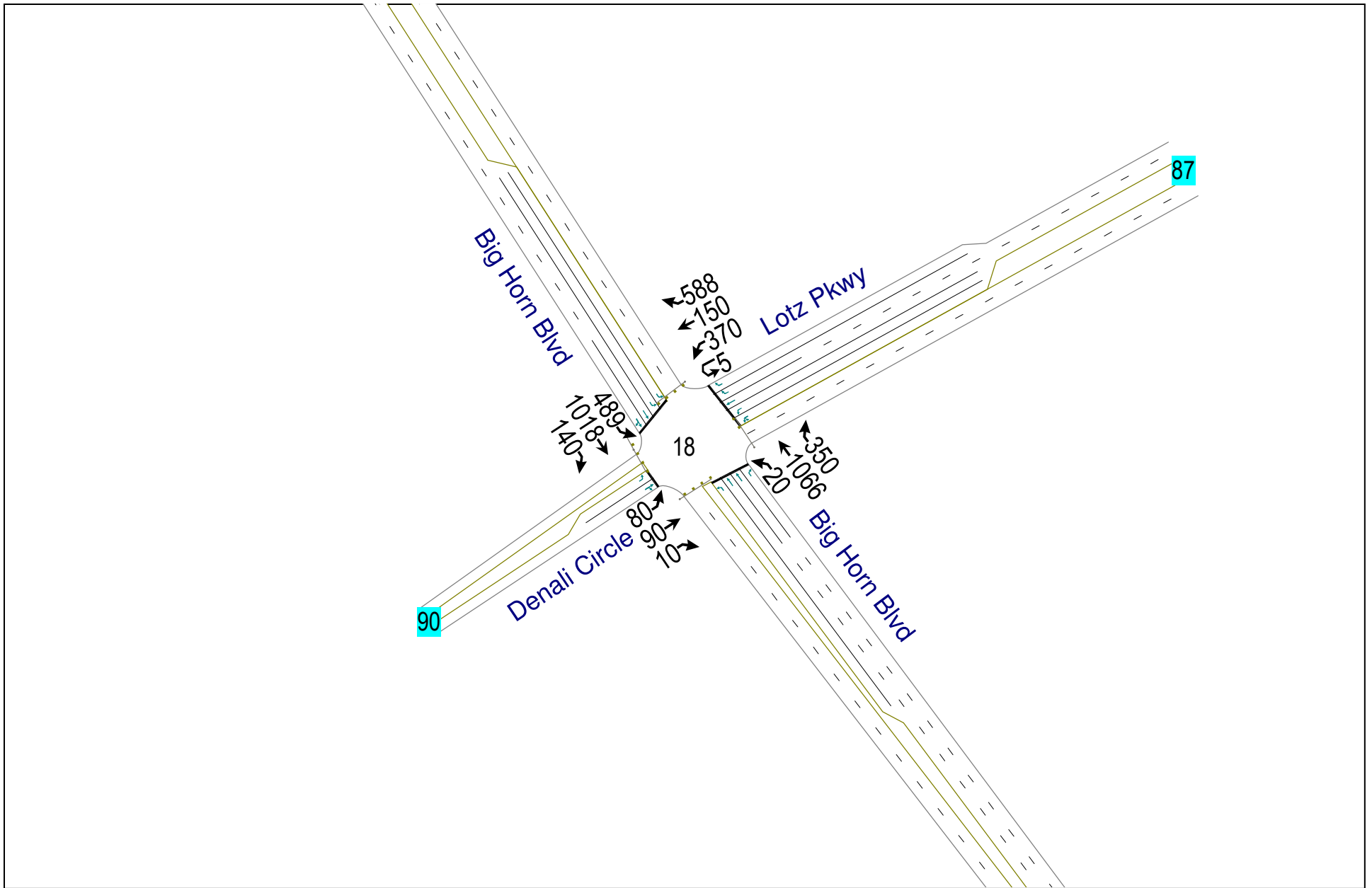


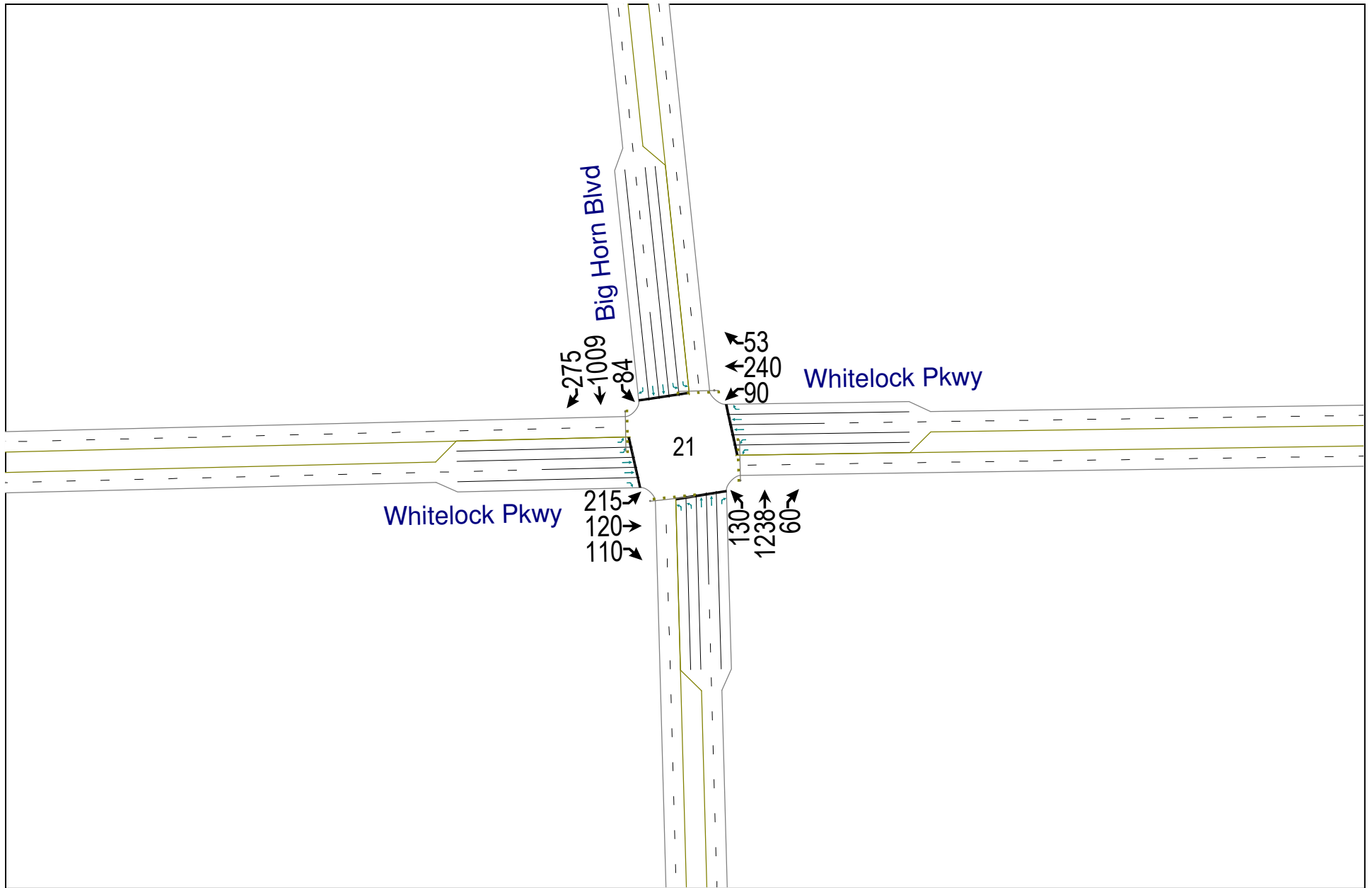


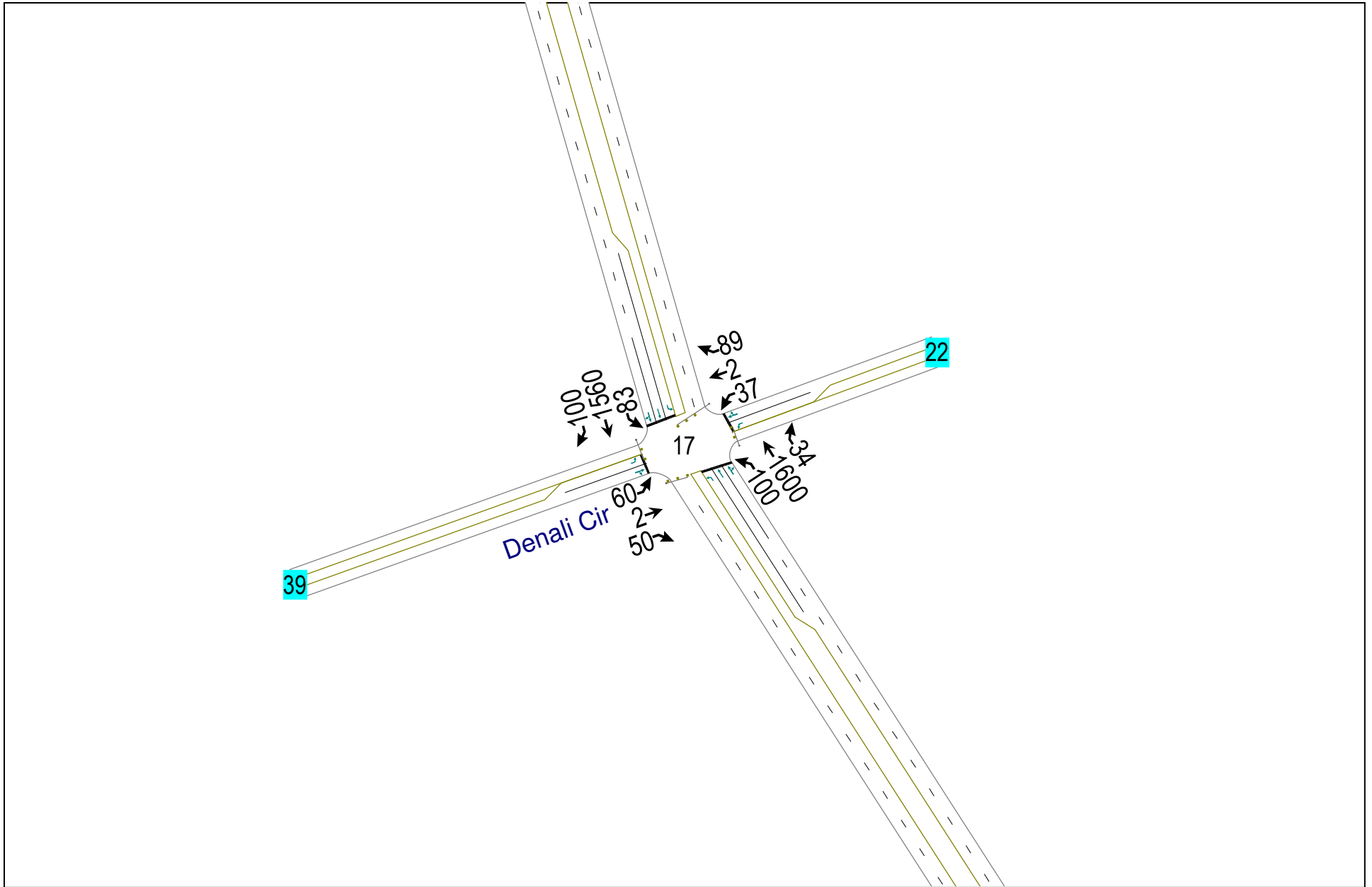




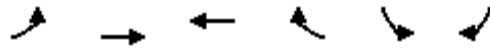








HCM Unsignalized Intersection Capacity Analysis Cumulative Weekday No Project Conditions
 1: Elk Grove Blvd & I-5 SB On/Off-Ramp PM PEAK HOUR
























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑	↔		↔↔↔	
Volume (veh/h)	10	20	10	120	1420	10
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	21	11	126	1495	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3000	2995	3000	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3000	2995	3000	0	0	
tC, single (s)	7.1	6.7	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.2	4.0	3.3	2.2	
p0 queue free %	0	0	0	88	8	
cM capacity (veh/h)	0	1	1	1085	1623	

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	18	14	137	996	509
Volume Left	11	0	0	996	498
Volume Right	0	0	126	0	11
cSH	0	1	14	1623	1623
Volume to Capacity	Err	14.87	9.92	0.92	0.92
Queue Length 95th (ft)	Err	Err	Err	424	424
Control Delay (s)	Err	Err	Err	24.6	24.5
Lane LOS	F	F	F	C	C
Approach Delay (s)	Err		Err	24.6	
Approach LOS	F		F		

Intersection Summary					
Average Delay			Err		
Intersection Capacity Utilization			55.9%	ICU Level of Service	B
Analysis Period (min)			15		

HCM Unsignalized Intersection Capacity Analysis Cumulative Weekday No Project Conditions
 2: Elk Grove Blvd & I-5 NB On-Ramp PM PEAK HOUR

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 				 		 				
Volume (veh/h)	10	1430	0	0	120	740	10	0	220	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	1474	0	0	124	763	10	0	227	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									17			
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	124			1474			1619	1619	737	995	1619	124
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	124			1474			1619	1619	737	995	1619	124
tC, single (s)	4.7			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			85	100	37	100	100	100
cM capacity (veh/h)	1284			453			68	102	361	74	102	904
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1					
Volume Total	10	737	737	124	381	381	237					
Volume Left	10	0	0	0	0	0	10					
Volume Right	0	0	0	0	381	381	227					
cSH	1284	1700	1700	1700	1700	1700	377					
Volume to Capacity	0.01	0.43	0.43	0.07	0.22	0.22	0.63					
Queue Length 95th (ft)	1	0	0	0	0	0	103					
Control Delay (s)	7.8	0.0	0.0	0.0	0.0	0.0	32.0					
Lane LOS	A						D					
Approach Delay (s)	0.1			0.0			32.0					
Approach LOS							D					
Intersection Summary												
Average Delay			2.9									
Intersection Capacity Utilization			55.3%		ICU Level of Service				B			
Analysis Period (min)			15									

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

Cumulative Weekday No Project Conditions
PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↘ ↙	↑ ↑ ↑	↗ ↖		↘ ↙	↑ ↑ ↑	↗		↘ ↙	↑ ↑ ↑	↗
Volume (vph)	5	190	1330	620	5	80	910	340	125	500	590	160
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	0.98		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	2750		3433	5085	1558		3433	5085	1557
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	1558		3433	5085	1557
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)	5	200	1400	653	5	84	958	358	132	526	621	168
RTOR Reduction (vph)	0	0	0	309	0	0	0	163	0	0	0	68
Lane Group Flow (vph)	0	205	1400	344	0	89	958	195	0	658	621	100
Confl. Peds. (#/hr)								3				4
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)		12.9	64.6	64.6		7.4	58.7	58.7		32.4	30.2	30.2
Effective Green, g (s)		12.9	64.6	64.6		7.4	58.7	58.7		32.4	30.2	30.2
Actuated g/C Ratio		0.09	0.43	0.43		0.05	0.39	0.39		0.22	0.20	0.20
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)		295	2190	1184		169	1990	610		742	1024	313
v/s Ratio Prot		0.06	c0.28			0.03	c0.19			c0.19	0.12	
v/s Ratio Perm				0.13				0.13				0.06
v/c Ratio		0.69	0.64	0.29		0.53	0.48	0.32		0.89	0.61	0.32
Uniform Delay, d1		66.6	33.5	27.8		69.6	34.2	31.8		57.0	54.5	51.1
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		5.6	1.4	0.6		1.4	0.8	1.4		12.0	0.7	0.2
Delay (s)		72.3	35.0	28.4		71.0	35.1	33.2		69.1	55.2	51.3
Level of Service		E	C	C		E	D	C		E	E	D
Approach Delay (s)			36.5				36.9				61.1	
Approach LOS			D				D				E	

Intersection Summary		
HCM Average Control Delay	48.4	HCM Level of Service D
HCM Volume to Capacity ratio	0.68	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 12.4
Intersection Capacity Utilization	92.3%	ICU Level of Service F
Analysis Period (min)	15	
c Critical Lane Group		

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

Cumulative Weekday No Project Conditions
PM PEAK HOUR



Movement	SBU	SBL	SBT	SBR
Lane Configurations		←↑	↑↑↑	↑
Volume (vph)	5	410	480	310
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	1557
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1557
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	432	505	326
RTOR Reduction (vph)	0	0	0	175
Lane Group Flow (vph)	0	437	505	151
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				3
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		22.6	21.3	21.3
Effective Green, g (s)		22.6	21.3	21.3
Actuated g/C Ratio		0.15	0.14	0.14
Clearance Time (s)		5.6	6.3	6.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		517	722	221
v/s Ratio Prot		0.13	0.10	
v/s Ratio Perm				0.10
v/c Ratio		0.85	0.70	0.68
Uniform Delay, d1		62.0	61.3	61.1
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		11.6	2.4	6.8
Delay (s)		73.6	63.7	67.9
Level of Service		E	E	E
Approach Delay (s)			68.2	
Approach LOS			E	

Intersection Summary

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

Cumulative Weekday No Project Conditions
PM PEAK HOUR

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	30	350	1100	140	5	520	1160	690	5	180	790	270
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	0.99		1.00	1.00	0.99		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	1562		3433	5085	1562		3433	5085	1544
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	1562		3433	5085	1562		3433	5085	1544
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)	32	368	1158	147	5	547	1221	726	5	189	832	284
RTOR Reduction (vph)	0	0	0	65	0	0	0	114	0	0	0	176
Lane Group Flow (vph)	0	400	1158	82	0	552	1221	612	0	194	832	108
Confl. Peds. (#/hr)				1				1				6
Confl. Bikes (#/hr)								1				5
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)		17.4	46.6	46.6		26.5	55.7	55.7		11.0	31.2	31.2
Effective Green, g (s)		17.4	46.6	46.6		26.5	55.7	55.7		11.0	31.2	31.2
Actuated g/C Ratio		0.12	0.31	0.31		0.18	0.37	0.37		0.07	0.21	0.21
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)		398	1580	485		606	1888	580		252	1058	321
v/s Ratio Prot		c0.12	0.23			0.16	0.24			0.06	0.16	
v/s Ratio Perm				0.05				c0.39				0.07
v/c Ratio		1.01	0.73	0.17		0.91	0.65	1.06		0.77	0.79	0.34
Uniform Delay, d1		66.3	46.1	37.6		60.6	39.0	47.1		68.3	56.2	50.6
Progression Factor		1.00	1.00	1.00		0.89	0.38	0.44		1.00	1.00	1.00
Incremental Delay, d2		46.4	3.0	0.7		11.9	1.1	45.0		12.0	3.6	0.2
Delay (s)		112.7	49.2	38.4		66.0	15.8	65.5		80.2	59.9	50.8
Level of Service		F	D	D		E	B	E		F	E	D
Approach Delay (s)			63.2				41.4				60.9	
Approach LOS			E				D				E	
Intersection Summary												
HCM Average Control Delay			56.9									E
HCM Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			150.0								17.2	
Intersection Capacity Utilization			105.1%									G
Analysis Period (min)			15									
c Critical Lane Group												

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

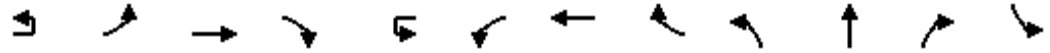
Cumulative Weekday No Project Conditions
PM PEAK HOUR



Movement	SBU	SBL	SBT	SBR
Lane Configurations		57	↑↑↑↓	↑↓
Volume (vph)	50	460	1060	360
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
Frbp, ped/bikes		1.00	1.00	0.98
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	4772	1339
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	4772	1339
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	484	1116	379
RTOR Reduction (vph)	0	0	3	133
Lane Group Flow (vph)	0	537	1162	197
Confl. Peds. (#/hr)				3
Confl. Bikes (#/hr)				1
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		22.8	43.0	43.0
Effective Green, g (s)		22.8	43.0	43.0
Actuated g/C Ratio		0.15	0.29	0.29
Clearance Time (s)		5.6	5.7	5.7
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		522	1368	384
v/s Ratio Prot		c0.16	c0.24	
v/s Ratio Perm				0.15
v/c Ratio		1.03	0.85	0.51
Uniform Delay, d1		63.6	50.4	44.8
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		46.9	4.9	0.5
Delay (s)		110.5	55.4	45.2
Level of Service		F	E	D
Approach Delay (s)			68.3	
Approach LOS			E	

Intersection Summary

HCM Signalized Intersection Capacity Analysis Cumulative Weekday No Project Conditions
 5: Elk Grove Blvd & Wymark Drive PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑	↗		↔	↑↑↑			↖	↗	↖
Volume (vph)	5	20	1750	160	5	160	2340	120	130	10	230	60
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		5.6	6.7			5.6	5.6	5.6
Lane Util. Factor		1.00	0.91	1.00		1.00	0.91			1.00	1.00	0.95
Frbp, ped/bikes		1.00	1.00	0.97		1.00	1.00			1.00	0.99	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	0.99			1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.96	1.00	0.95
Satd. Flow (prot)		1770	5085	1541		1770	5040			1780	1560	1681
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.96	1.00	0.95
Satd. Flow (perm)		1770	5085	1541		1770	5040			1780	1560	1681
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)	5	21	1842	168	5	168	2463	126	137	11	242	63
RTOR Reduction (vph)	0	0	0	38	0	0	2	0	0	0	212	0
Lane Group Flow (vph)	0	26	1842	130	0	173	2587	0	0	148	30	37
Confl. Peds. (#/hr)				1				3			2	
Confl. Bikes (#/hr)				5				5				
Turn Type	Prot	Prot		Perm	Prot	Prot			Split		Perm	Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				6							3	
Actuated Green, G (s)		3.0	83.5	83.5		13.0	92.4			18.6	18.6	11.4
Effective Green, g (s)		3.0	83.5	83.5		13.0	92.4			18.6	18.6	11.4
Actuated g/C Ratio		0.02	0.56	0.56		0.09	0.62			0.12	0.12	0.08
Clearance Time (s)		6.7	6.7	6.7		5.6	6.7			5.6	5.6	5.6
Vehicle Extension (s)		2.0	3.0	3.0		2.0	3.0			2.0	2.0	2.0
Lane Grp Cap (vph)		35	2831	858		153	3105			221	193	128
v/s Ratio Prot		0.01	c0.36			c0.10	c0.51			c0.08		c0.02
v/s Ratio Perm				0.08							0.02	
v/c Ratio		0.74	0.65	0.15		1.13	0.83			0.67	0.16	0.29
Uniform Delay, d1		73.1	23.1	16.1		68.5	22.7			62.8	58.7	65.5
Progression Factor		1.13	0.45	0.37		0.63	0.34			1.00	1.00	1.00
Incremental Delay, d2		38.2	0.8	0.2		79.1	0.8			5.8	0.1	0.5
Delay (s)		120.6	11.2	6.3		122.0	8.5			68.6	58.8	65.9
Level of Service		F	B	A		F	A			E	E	E
Approach Delay (s)			12.2			15.6				62.5		
Approach LOS			B			B				E		

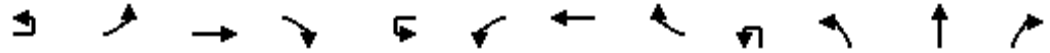
Intersection Summary		
HCM Average Control Delay	18.6	HCM Level of Service B
HCM Volume to Capacity ratio	0.84	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 30.2
Intersection Capacity Utilization	86.5%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		



Movement	SBT	SBR
Lane Configurations	↕	↗
Volume (vph)	10	10
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.6	5.6
Lane Util. Factor	0.95	1.00
Frbp, ped/bikes	1.00	0.98
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.97	1.00
Satd. Flow (prot)	1710	1558
Flt Permitted	0.97	1.00
Satd. Flow (perm)	1710	1558
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	11
RTOR Reduction (vph)	0	10
Lane Group Flow (vph)	37	1
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		1
Turn Type		Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	11.4	11.4
Effective Green, g (s)	11.4	11.4
Actuated g/C Ratio	0.08	0.08
Clearance Time (s)	5.6	5.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	130	118
v/s Ratio Prot	0.02	
v/s Ratio Perm		0.00
v/c Ratio	0.28	0.01
Uniform Delay, d1	65.4	64.1
Progression Factor	1.00	1.00
Incremental Delay, d2	0.4	0.0
Delay (s)	65.9	64.1
Level of Service	E	E
Approach Delay (s)	65.7	
Approach LOS	E	

Intersection Summary

HCM Signalized Intersection Capacity Analysis Cumulative Weekday No Project Conditions
 6: Elk Grove Blvd & Big Horn Blvd PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↔	↑↑↑	↗		↔↔	↑↑↑	↗		↔↔	↑↑	↗
Volume (vph)	65	160	1290	360	10	380	1580	200	5	570	1120	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
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	0.98		1.00	1.00	0.99		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	1557		3433	5085	1560		3433	3539	1549
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	1557		3433	5085	1560		3433	3539	1549
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)	68	168	1358	379	11	400	1663	211	5	600	1179	295
RTOR Reduction (vph)	0	0	0	145	0	0	0	63	0	0	0	95
Lane Group Flow (vph)	0	236	1358	234	0	411	1663	148	0	605	1179	200
Confl. Peds. (#/hr)				2								6
Confl. Bikes (#/hr)				2			4					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)		9.3	39.3	39.3		16.3	46.3	46.3		22.7	59.0	59.0
Effective Green, g (s)		9.3	39.3	39.3		16.3	46.3	46.3		22.7	59.0	59.0
Actuated g/C Ratio		0.06	0.26	0.26		0.11	0.31	0.31		0.15	0.39	0.39
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)		213	1332	408		373	1570	482		520	1392	609
v/s Ratio Prot		0.07	c0.27			0.12	c0.33			c0.18	0.33	
v/s Ratio Perm				0.15				0.09				0.13
v/c Ratio		1.11	1.02	0.57		1.10	1.06	0.31		1.16	0.85	0.33
Uniform Delay, d1		70.3	55.4	48.1		66.8	51.9	39.6		63.6	41.4	31.7
Progression Factor		0.74	0.67	0.62		0.75	0.58	0.29		1.00	1.00	1.00
Incremental Delay, d2		87.7	27.3	4.7		65.8	35.2	0.9		93.0	4.8	0.1
Delay (s)		139.4	64.2	34.5		115.9	65.1	12.5		156.7	46.2	31.8
Level of Service		F	E	C		F	E	B		F	D	C
Approach Delay (s)			67.5				69.4				76.3	
Approach LOS			E				E				E	

Intersection Summary		
HCM Average Control Delay	77.7	HCM Level of Service E
HCM Volume to Capacity ratio	1.07	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 17.3
Intersection Capacity Utilization	106.5%	ICU Level of Service G
Analysis Period (min)	15	
c Critical Lane Group		

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

Cumulative Weekday No Project Conditions
PM PEAK HOUR



Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	LT	RT
Volume (vph)	5	190	1200	280
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
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	3539	1551
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1551
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	200	1263	295
RTOR Reduction (vph)	0	0	0	25
Lane Group Flow (vph)	0	205	1263	270
Confl. Peds. (#/hr)				6
Confl. Bikes (#/hr)				
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		11.4	47.7	47.7
Effective Green, g (s)		11.4	47.7	47.7
Actuated g/C Ratio		0.08	0.32	0.32
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		261	1125	493
v/s Ratio Prot		0.06	0.36	
v/s Ratio Perm				0.17
v/c Ratio		0.79	1.12	0.55
Uniform Delay, d1		68.1	51.1	42.3
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		13.3	67.2	0.7
Delay (s)		81.4	118.4	42.9
Level of Service		F	F	D
Approach Delay (s)			101.5	
Approach LOS			F	
Intersection Summary				

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

Cumulative Weekday No Project Conditions
PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔	↑↑↑	↗		↙	↑↑↑			↔	↑	↗↗
Volume (vph)	10	100	1400	190	5	820	1730	80	5	230	350	1160
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
Frbp, ped/bikes		1.00	1.00	0.98		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
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	1559		3433	5045			1770	1863	2749
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	5085	1559		3433	5045			1770	1863	2749
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)	11	105	1474	200	5	863	1821	84	5	242	368	1221
RTOR Reduction (vph)	0	0	0	73	0	0	3	0	0	0	0	515
Lane Group Flow (vph)	0	116	1474	127	0	868	1902	0	0	247	368	706
Confl. Peds. (#/hr)								3				1
Confl. Bikes (#/hr)				4				2				
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)		13.8	42.6	42.6		35.4	64.2			30.0	37.0	37.0
Effective Green, g (s)		13.8	42.6	42.6		35.4	64.2			30.0	37.0	37.0
Actuated g/C Ratio		0.09	0.28	0.28		0.24	0.43			0.20	0.25	0.25
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)		163	1444	443		810	2159			354	460	678
v/s Ratio Prot		0.07	c0.29			c0.25	0.38			0.14	0.20	
v/s Ratio Perm				0.08								c0.26
v/c Ratio		0.71	1.02	0.29		1.07	0.88			0.70	0.80	1.04
Uniform Delay, d1		66.2	53.7	41.9		57.3	39.4			55.8	53.0	56.5
Progression Factor		1.14	0.58	0.50		0.78	0.26			1.00	1.00	1.00
Incremental Delay, d2		5.2	21.1	0.7		41.1	2.0			4.8	9.1	46.0
Delay (s)		80.7	52.1	21.8		86.0	12.4			60.6	62.1	102.5
Level of Service		F	D	C		F	B			E	E	F
Approach Delay (s)			50.5			35.5					88.7	
Approach LOS			D			D					F	

Intersection Summary

HCM Average Control Delay	57.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	117.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

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

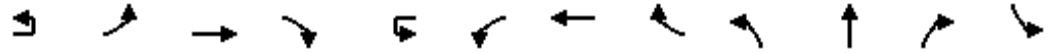
Cumulative Weekday No Project Conditions
PM PEAK HOUR



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	140	230	160
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	5.6	5.3	
Lane Util. Factor	1.00	0.95	
Frpb, ped/bikes	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	
Frt	1.00	0.94	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1770	3303	
Flt Permitted	0.95	1.00	
Satd. Flow (perm)	1770	3303	
Peak-hour factor, PHF	0.95	0.95	0.95
Adj. Flow (vph)	147	242	168
RTOR Reduction (vph)	0	91	0
Lane Group Flow (vph)	147	319	0
Confl. Peds. (#/hr)			1
Confl. Bikes (#/hr)			
Turn Type	Prot		
Protected Phases	7	4	
Permitted Phases			
Actuated Green, G (s)	12.8	19.8	
Effective Green, g (s)	12.8	19.8	
Actuated g/C Ratio	0.09	0.13	
Clearance Time (s)	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	151	436	
v/s Ratio Prot	c0.08	0.10	
v/s Ratio Perm			
v/c Ratio	0.97	0.73	
Uniform Delay, d1	68.4	62.5	
Progression Factor	1.00	1.00	
Incremental Delay, d2	64.6	5.4	
Delay (s)	133.0	67.9	
Level of Service	F	E	
Approach Delay (s)		85.1	
Approach LOS		F	
Intersection Summary			

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

Cumulative Weekday No Project Conditions
PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑			↔	↑↑↑		↔	↑		↔
Volume (vph)	5	120	2320	70	50	180	2460	10	150	30	250	190
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
Frbp, ped/bikes		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
Frt		1.00	1.00			1.00	1.00		1.00	0.87		1.00
Flt Protected		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		1770	5056			3433	5081		1770	1614		3433
Flt Permitted		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (perm)		1770	5056			3433	5081		1770	1614		3433
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)	5	126	2442	74	53	189	2589	11	158	32	263	200
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	0	35	0	0
Lane Group Flow (vph)	0	131	2514	0	0	242	2600	0	158	260	0	200
Confl. Peds. (#/hr)				18				15				
Confl. Bikes (#/hr)				2				4				
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)		10.4	78.2			9.4	77.2		22.5	28.3		12.3
Effective Green, g (s)		10.4	78.2			9.4	77.2		22.5	28.3		12.3
Actuated g/C Ratio		0.07	0.52			0.06	0.51		0.15	0.19		0.08
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)		123	2636			215	2615		266	305		282
v/s Ratio Prot		c0.07	0.50			0.07	c0.51		c0.09	c0.16		0.06
v/s Ratio Perm												
v/c Ratio		1.07	0.95			1.13	0.99		0.59	0.85		0.71
Uniform Delay, d1		69.8	34.2			70.3	36.2		59.5	58.8		67.1
Progression Factor		0.76	0.29			0.86	0.57		1.00	1.00		1.00
Incremental Delay, d2		43.7	1.2			80.0	10.4		2.4	19.3		6.5
Delay (s)		96.7	11.2			140.7	30.9		61.9	78.2		73.6
Level of Service		F	B			F	C		E	E		E
Approach Delay (s)			15.4			40.3			72.5			
Approach LOS			B			D			E			
Intersection Summary												
HCM Average Control Delay			33.6			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			10.3			
Intersection Capacity Utilization			98.2%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												



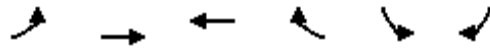
Movement	SBT	SBR
Lane Configurations	T	
Volume (vph)	20	120
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frpb, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.87	
Flt Protected	1.00	
Satd. Flow (prot)	1585	
Flt Permitted	1.00	
Satd. Flow (perm)	1585	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	21	126
RTOR Reduction (vph)	102	0
Lane Group Flow (vph)	45	0
Confl. Peds. (#/hr)	13	
Confl. Bikes (#/hr)		
Turn Type		
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	18.1	
Effective Green, g (s)	18.1	
Actuated g/C Ratio	0.12	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	191	
v/s Ratio Prot	0.03	
v/s Ratio Perm		
v/c Ratio	0.24	
Uniform Delay, d1	59.7	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	59.9	
Level of Service	E	
Approach Delay (s)	67.8	
Approach LOS	E	
Intersection Summary		

HCM Signalized Intersection Capacity Analysis Cumulative Weekday No Project Conditions
 9: Elk Grove Blvd & SR-99 SB Off-ramp 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	0	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
Frbp, ped/bikes		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
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)		5001		3433	5085					1681	1681	2743
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5001		3433	5085					1681	1681	2743
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	2600	274	105	1958	0	0	0	0	726	0	1200
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	0	8
Lane Group Flow (vph)	0	2866	0	105	1958	0	0	0	0	363	363	1192
Confl. Peds. (#/hr)			5			7						3
Confl. Bikes (#/hr)			4			6						
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)		2400		101	2790					620	620	1011
v/s Ratio Prot		c0.57		0.03	c0.39					0.22	0.22	
v/s Ratio Perm												c0.43
v/c Ratio		1.19		1.04	0.70					0.59	0.59	1.18
Uniform Delay, d1		39.0		72.8	24.8					38.1	38.1	47.4
Progression Factor		0.46		0.80	0.33					1.00	1.00	1.00
Incremental Delay, d2		89.1		78.4	0.9					0.9	0.9	90.9
Delay (s)		107.2		136.3	9.2					39.0	39.0	138.2
Level of Service		F		F	A					D	D	F
Approach Delay (s)		107.2			15.6			0.0			100.8	
Approach LOS		F			B			A			F	
Intersection Summary												
HCM Average Control Delay			77.9			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.14									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			12.7			
Intersection Capacity Utilization			92.3%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis Cumulative Weekday No Project Conditions
 10: Elk Grove Blvd & SR-99 NB On-ramp PM PEAK HOUR



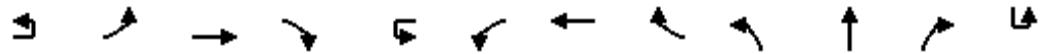
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	3160	1960	350	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	3326	2063	368	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
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	2432				3172	688
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1606				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)	288				685	775

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	1109	1109	1109	688	688	688	368
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	368
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.65	0.65	0.65	0.40	0.40	0.40	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		92.3%	ICU Level of Service F
Analysis Period (min)		15	

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

Cumulative Weekday No Project Conditions
 PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		
Volume (vph)	15	120	1420	1620	10	60	1670	110	500	140	150	10
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		
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	0.99		1.00	1.00	0.97	1.00	0.99		
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	1561		1770	5085	1543	1610	3154		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.98		
Satd. Flow (perm)		1770	3539	1561		1770	5085	1543	1610	3154		
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)	16	126	1495	1705	11	63	1758	116	526	147	158	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	33	0	26	0	0
Lane Group Flow (vph)	0	142	1495	1705	0	74	1758	83	279	526	0	0
Confl. Peds. (#/hr)				4				7			6	
Confl. Bikes (#/hr)				4				2				
Turn Type	Prot	Prot		Free	Prot	Prot		Perm	Split			Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				Free				2				
Actuated Green, G (s)		13.4	69.7	150.0		7.4	63.7	63.7	27.5	27.5		
Effective Green, g (s)		13.4	69.7	150.0		7.4	63.7	63.7	27.5	27.5		
Actuated g/C Ratio		0.09	0.46	1.00		0.05	0.42	0.42	0.18	0.18		
Clearance Time (s)		5.6	5.7			5.6	5.7	5.7	5.6	5.6		
Vehicle Extension (s)		2.0	3.9			2.0	3.9	3.9	2.0	2.0		
Lane Grp Cap (vph)		158	1644	1561		87	2159	655	295	578		
v/s Ratio Prot		0.08	0.42			0.04	0.35		0.17	0.17		
v/s Ratio Perm				c1.09				0.05				
v/c Ratio		0.90	0.91	1.09		0.85	0.81	0.13	0.95	0.91		
Uniform Delay, d1		67.6	37.2	75.0		70.8	37.9	26.2	60.5	60.0		
Progression Factor		0.88	0.81	1.00		1.00	1.00	1.00	0.68	0.66		
Incremental Delay, d2		6.4	1.0	42.7		49.5	3.5	0.4	36.5	17.3		
Delay (s)		66.0	31.2	117.7		120.3	41.5	26.6	77.6	57.0		
Level of Service		E	C	F		F	D	C	E	E		
Approach Delay (s)			76.8				43.6			63.9		
Approach LOS			E				D			E		
Intersection Summary												
HCM Average Control Delay			67.1				HCM Level of Service		E			
HCM Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)		0.0			
Intersection Capacity Utilization			91.7%				ICU Level of Service		F			
Analysis Period (min)			15									
c Critical Lane Group												

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

Cumulative Weekday No Project Conditions
 PM PEAK HOUR



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	320	160	140
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	1.00
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	1738	1583
Flt Permitted	0.95	0.98	1.00
Satd. Flow (perm)	1681	1738	1583
Peak-hour factor, PHF	0.95	0.95	0.95
Adj. Flow (vph)	337	168	147
RTOR Reduction (vph)	0	0	106
Lane Group Flow (vph)	254	262	41
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Turn Type	Split		Perm
Protected Phases	4	4	
Permitted Phases			4
Actuated Green, G (s)	23.9	23.9	23.9
Effective Green, g (s)	23.9	23.9	23.9
Actuated g/C Ratio	0.16	0.16	0.16
Clearance Time (s)	4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	268	277	252
v/s Ratio Prot	0.15	0.15	
v/s Ratio Perm			0.03
v/c Ratio	0.95	0.95	0.16
Uniform Delay, d1	62.4	62.4	54.4
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	40.1	39.0	0.1
Delay (s)	102.6	101.4	54.5
Level of Service	F	F	D
Approach Delay (s)		91.4	
Approach LOS		F	

Intersection Summary

HCM Signalized Intersection Capacity Analysis Cumulative Weekday No Project Conditions
 12: SR-99 NB Off-ramp & E. Stockton Blvd 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	1679			1832	1583	1770	3517		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	1679			1832	1583	1770	3517		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)	284	11	11	21	42	42	337	474	21	84	747	1105
RTOR Reduction (vph)	0	2	0	0	0	39	0	3	0	0	0	162
Lane Group Flow (vph)	153	151	0	0	63	3	337	492	0	84	747	943
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			9.9	9.9	24.6	47.4		40.2	63.0	93.5
Effective Green, g (s)	30.5	30.5			9.9	9.9	24.6	47.4		40.2	63.0	93.5
Actuated g/C Ratio	0.20	0.20			0.07	0.07	0.16	0.32		0.27	0.42	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)	342	341			121	104	290	1111		474	782	987
v/s Ratio Prot	0.09	0.09			c0.03		c0.19	0.14		0.05	0.40	c0.19
v/s Ratio Perm						0.00						0.40
v/c Ratio	0.45	0.44			0.52	0.03	1.16	0.44		0.18	0.96	0.96
Uniform Delay, d1	52.4	52.3			67.8	65.5	62.7	40.8		42.2	42.1	26.3
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		0.99	0.90	0.75
Incremental Delay, d2	0.3	0.3			1.9	0.0	104.1	0.1		0.0	3.7	2.8
Delay (s)	52.7	52.7			69.6	65.6	166.8	40.9		41.6	41.8	22.6
Level of Service	D	D			E	E	F	D		D	D	C
Approach Delay (s)		52.7			68.0			91.9			30.9	
Approach LOS		D			E			F			C	

Intersection Summary		
HCM Average Control Delay	50.2	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 Cumulative Weekday No Project Conditions
 13: Backer Ranch Road & Bruceville Road PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	80	70	170	140	150	80	15	100	1030	120	20	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	4.6	4.6		5.6	5.3	5.3		5.6
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00		1.00	0.95	1.00		1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.98		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	1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1770	1863	1583	3433	1863	1560		1770	3539	1549		1770
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1770	1863	1583	3433	1863	1560		1770	3539	1549		1770
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)	84	74	179	147	158	84	16	105	1084	126	21	84
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	64	0	0
Lane Group Flow (vph)	84	74	179	147	158	84	0	121	1084	62	0	105
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)	1					2		1		2		1
Turn Type	Prot		Perm	Prot		Perm	Prot	Prot		Perm	Prot	Prot
Protected Phases	3	8		7	4		1	1	6		5	5
Permitted Phases			8			4				6		
Actuated Green, G (s)	7.0	17.5	17.5	6.1	16.6	16.6		9.2	49.2	49.2		9.5
Effective Green, g (s)	7.0	17.5	17.5	6.1	16.6	16.6		9.2	49.2	49.2		9.5
Actuated g/C Ratio	0.07	0.17	0.17	0.06	0.16	0.16		0.09	0.48	0.48		0.09
Clearance Time (s)	5.6	4.6	4.6	5.6	4.6	4.6		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		2.0
Lane Grp Cap (vph)	120	315	268	203	299	250		157	1684	737		163
v/s Ratio Prot	c0.05	0.04		0.04	0.08			c0.07	0.31			0.06
v/s Ratio Perm			c0.11			0.05				0.04		
v/c Ratio	0.70	0.23	0.67	0.72	0.53	0.34		0.77	0.64	0.08		0.64
Uniform Delay, d1	47.2	37.2	40.2	47.8	39.8	38.5		46.1	20.5	14.8		45.3
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	13.4	0.1	4.8	10.3	0.8	0.3		18.9	0.6	0.0		6.4
Delay (s)	60.6	37.3	45.0	58.1	40.6	38.8		65.0	21.1	14.8		51.7
Level of Service	E	D	D	E	D	D		E	C	B		D
Approach Delay (s)		47.2			46.8				24.5			
Approach LOS		D			D				C			
Intersection Summary												
HCM Average Control Delay			31.8				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			103.4				Sum of lost time (s)		11.2			
Intersection Capacity Utilization			77.7%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 13: Backer Ranch Road & Bruceville Road

Cumulative Weekday No Project Conditions
 PM PEAK HOUR



Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1330	70
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.3	
Lane Util. Factor	0.95	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	3508	
Flt Permitted	1.00	
Satd. Flow (perm)	3508	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	1400	74
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	1471	0
Confl. Peds. (#/hr)		2
Confl. Bikes (#/hr)		1
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	49.5	
Effective Green, g (s)	49.5	
Actuated g/C Ratio	0.48	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1679	
v/s Ratio Prot	c0.42	
v/s Ratio Perm		
v/c Ratio	0.88	
Uniform Delay, d1	24.2	
Progression Factor	1.00	
Incremental Delay, d2	5.3	
Delay (s)	29.5	
Level of Service	C	
Approach Delay (s)	31.0	
Approach LOS	C	
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
 14: Civic Center Drive & Wymark Drive

Cumulative Weekday No Project Conditions
 PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	320	90	120	360	20	180	110	30	40	130	30
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	1.00	0.97		1.00	0.99			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	1801		1770	1848			1789			1807	
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (perm)	1770	1801		1770	1848			1789			1807	
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)	32	337	95	126	379	21	189	116	32	42	137	32
RTOR Reduction (vph)	0	7	0	0	1	0	0	2	0	0	4	0
Lane Group Flow (vph)	32	425	0	126	399	0	0	335	0	0	207	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)	3.6	34.9		12.6	43.9			26.7			17.7	
Effective Green, g (s)	3.6	34.9		12.6	43.9			26.7			17.7	
Actuated g/C Ratio	0.03	0.31		0.11	0.39			0.23			0.16	
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)	56	552		196	712			419			281	
v/s Ratio Prot	0.02	c0.24		c0.07	0.22			c0.19			c0.11	
v/s Ratio Perm												
v/c Ratio	0.57	0.77		0.64	0.56			0.80			0.74	
Uniform Delay, d1	54.4	35.9		48.5	27.4			41.1			45.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	8.5	6.0		5.3	0.6			9.6			8.3	
Delay (s)	62.8	41.8		53.8	28.0			50.6			54.2	
Level of Service	E	D		D	C			D			D	
Approach Delay (s)		43.3			34.2			50.6			54.2	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	43.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	113.9	Sum of lost time (s)	22.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: Civic Center Drive & Big Horn Blvd

Cumulative Weekday No Project Conditions
 PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	180	110	120	60	80	260	70	1650	40	5	110	1650
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3			6.3	5.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95			1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.97
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	1863	1583	1770	1863	1583	1770	3527			1770	3432
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	1863	1583	1770	1863	1583	1770	3527			1770	3432
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	116	126	63	84	274	74	1737	42	5	116	1737
RTOR Reduction (vph)	0	0	100	0	0	62	0	1	0	0	0	14
Lane Group Flow (vph)	189	116	26	63	84	212	74	1778	0	0	121	2165
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot	Prot	
Protected Phases	3	8		7	4		1	6		5	5	2
Permitted Phases			8			4						
Actuated Green, G (s)	12.4	29.3	29.3	7.8	23.7	23.7	5.7	72.3			8.7	75.3
Effective Green, g (s)	12.4	29.3	29.3	7.8	23.7	23.7	5.7	72.3			8.7	75.3
Actuated g/C Ratio	0.09	0.21	0.21	0.06	0.17	0.17	0.04	0.52			0.06	0.54
Clearance Time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3			6.3	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
Lane Grp Cap (vph)	157	390	332	99	316	268	72	1823			110	1847
v/s Ratio Prot	c0.11	c0.06		0.04	0.05		0.04	0.50			c0.07	c0.63
v/s Ratio Perm			0.02			c0.13						
v/c Ratio	1.20	0.30	0.08	0.64	0.27	0.79	1.03	0.98			1.10	1.17
Uniform Delay, d1	63.8	46.6	44.5	64.7	50.5	55.7	67.1	32.9			65.6	32.3
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	137.0	0.2	0.0	9.4	0.2	13.3	114.0	15.4			115.3	83.7
Delay (s)	200.8	46.8	44.5	74.1	50.7	69.0	181.1	48.4			180.9	116.0
Level of Service	F	D	D	E	D	E	F	D			F	F
Approach Delay (s)		113.6			66.1			53.7				119.4
Approach LOS		F			E			D				F

Intersection Summary		
HCM Average Control Delay	90.1	HCM Level of Service F
HCM Volume to Capacity ratio	1.16	
Actuated Cycle Length (s)	139.9	Sum of lost time (s) 27.4
Intersection Capacity Utilization	97.5%	ICU Level of Service F
Analysis Period (min)	15	
c Critical Lane Group		

Movement	SBR
Lane Configurations	
Volume (vph)	420
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frts	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	442
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
 16: Civic Center Drive & Laguna Springs Drive

Cumulative Weekday No Project Conditions
 PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	140	0	150	0	0	0	260	1350	0	0	0	1040
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6		5.6				5.6	4.6				4.6
Lane Util. Factor	1.00		1.00				1.00	0.95				0.95
Frt	1.00		0.85				1.00	1.00				0.99
Flt Protected	0.95		1.00				0.95	1.00				1.00
Satd. Flow (prot)	1770		1583				1770	3539				3520
Flt Permitted	0.95		1.00				0.95	1.00				1.00
Satd. Flow (perm)	1770		1583				1770	3539				3520
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)	147	0	158	0	0	0	274	1421	0	0	0	1095
RTOR Reduction (vph)	0	0	123	0	0	0	0	0	0	0	0	2
Lane Group Flow (vph)	147	0	35	0	0	0	274	1421	0	0	0	1135
Turn Type	Prot		custom	Prot			Prot			Prot		
Protected Phases	3			7	4		1	6		5		2
Permitted Phases			8									
Actuated Green, G (s)	10.9		21.5				19.9	64.1				38.6
Effective Green, g (s)	10.9		21.5				19.9	64.1				38.6
Actuated g/C Ratio	0.11		0.22				0.21	0.67				0.40
Clearance Time (s)	5.6		5.6				5.6	4.6				4.6
Vehicle Extension (s)	2.0		2.0				2.0	2.0				2.0
Lane Grp Cap (vph)	201		355				368	2368				1418
v/s Ratio Prot	c0.08						c0.15	0.40				c0.32
v/s Ratio Perm			c0.02									
v/c Ratio	0.73		0.10				0.74	0.60				0.80
Uniform Delay, d1	41.0		29.5				35.6	8.8				25.2
Progression Factor	1.00		1.00				1.00	1.00				1.00
Incremental Delay, d2	11.2		0.0				7.0	0.3				3.2
Delay (s)	52.2		29.5				42.6	9.1				28.4
Level of Service	D		C				D	A				C
Approach Delay (s)		40.4			0.0			14.5				28.4
Approach LOS		D			A			B				C

Intersection Summary		
HCM Average Control Delay	22.0	HCM Level of Service C
HCM Volume to Capacity ratio	0.68	
Actuated Cycle Length (s)	95.8	Sum of lost time (s) 15.8
Intersection Capacity Utilization	64.0%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

Movement	SBR
Lane Configurations	
Volume (vph)	40
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frnt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	42
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
 17: Denali Cir & Big Horn Blvd

Cumulative Weekday No Project Conditions
 PM PEAK HOUR



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	50	20	110	1710	1740	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6		5.3	5.3	5.3	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frt	0.96		1.00	1.00	0.99	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	1729		1770	3539	3513	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	1729		1770	3539	3513	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	21	116	1800	1832	95
RTOR Reduction (vph)	17	0	0	0	2	0
Lane Group Flow (vph)	57	0	116	1800	1925	0
Turn Type			Prot			
Protected Phases	3		1	6	2	
Permitted Phases						
Actuated Green, G (s)	6.6		8.1	74.8	61.4	
Effective Green, g (s)	6.6		8.1	74.8	61.4	
Actuated g/C Ratio	0.07		0.09	0.82	0.67	
Clearance Time (s)	4.6		5.3	5.3	5.3	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	125		157	2899	2363	
v/s Ratio Prot	c0.03		0.07	c0.51	c0.55	
v/s Ratio Perm						
v/c Ratio	0.46		0.74	0.62	0.81	
Uniform Delay, d1	40.6		40.6	3.0	10.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.0		14.4	0.3	2.1	
Delay (s)	41.6		55.0	3.3	13.0	
Level of Service	D		E	A	B	
Approach Delay (s)	41.6			6.5	13.0	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	91.3	Sum of lost time (s)	15.2
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

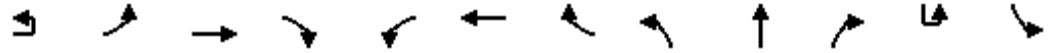
HCM Signalized Intersection Capacity Analysis Cumulative Weekday No Project Conditions
 18: Denali Circle & Big Horn Blvd PM PEAK HOUR

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations													
Volume (vph)	80	70	10	5	350	150	610	20	1130	310	580	1070	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	5.3	
Lane Util. Factor	1.00	1.00			0.97	1.00	0.88	1.00	0.95	1.00	0.97	0.95	
Frt	1.00	0.98			1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1827			3433	1863	2787	1770	3539	1583	3433	3490	
Flt Permitted	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1827			3433	1863	2787	1770	3539	1583	3433	3490	
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)	84	74	11	5	368	158	642	21	1189	326	611	1126	
RTOR Reduction (vph)	0	4	0	0	0	0	103	0	0	119	0	4	
Lane Group Flow (vph)	84	81	0	0	373	158	539	21	1189	207	611	1238	
Turn Type	Prot			Prot	Prot		pm+ov	Prot		Perm	Prot		
Protected Phases	3	8		7	7	4	5	1	6		5	2	
Permitted Phases							4			6			
Actuated Green, G (s)	10.0	14.5			14.5	20.6	43.5	1.9	51.1	51.1	22.9	72.1	
Effective Green, g (s)	10.0	14.5			14.5	20.6	43.5	1.9	51.1	51.1	22.9	72.1	
Actuated g/C Ratio	0.08	0.11			0.11	0.16	0.34	0.01	0.40	0.40	0.18	0.57	
Clearance Time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	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	
Lane Grp Cap (vph)	139	208			391	301	952	26	1419	635	617	1975	
v/s Ratio Prot	0.05	0.04			c0.11	0.08	c0.10	0.01	c0.34		c0.18	0.35	
v/s Ratio Perm							0.09			0.13			
v/c Ratio	0.60	0.39			0.95	0.52	0.57	0.81	0.84	0.33	0.99	0.63	
Uniform Delay, d1	56.8	52.3			56.1	48.9	34.3	62.6	34.4	26.3	52.1	18.6	
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	5.0	0.4			33.3	0.8	0.5	90.8	4.3	0.1	33.6	0.5	
Delay (s)	61.8	52.8			89.4	49.7	34.7	153.4	38.7	26.4	85.7	19.1	
Level of Service	E	D			F	D	C	F	D	C	F	B	
Approach Delay (s)		57.3				54.1			37.7			41.0	
Approach LOS		E				D			D			D	
Intersection Summary													
HCM Average Control Delay			43.8									HCM Level of Service	D
HCM Volume to Capacity ratio			0.86										
Actuated Cycle Length (s)			127.4									Sum of lost time (s)	23.5
Intersection Capacity Utilization			82.5%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Movement	SBR
Lane Configurations	
Volume (vph)	110
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frts	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	116
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
19: Lotz Pkwy & Laguna Springs Drive

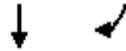
Cumulative Weekday No Project Conditions
PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↘ ↙	↑↑	↗	↘ ↙	↑↑	↗	↘ ↙	↑↑	↗		↘ ↙
Volume (vph)	20	70	750	10	10	790	750	40	150	30	5	600
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6		5.6
Lane Util. Factor		0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00		0.97
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98		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	1.00	0.85	1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95
Satd. Flow (prot)		3433	3539	1563	3433	3539	1583	3433	3539	1557		3433
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95
Satd. Flow (perm)		3433	3539	1563	3433	3539	1583	3433	3539	1557		3433
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)	21	74	789	11	11	832	789	42	158	32	5	632
RTOR Reduction (vph)	0	0	0	7	0	0	382	0	0	27	0	0
Lane Group Flow (vph)	0	95	789	4	11	832	407	42	158	5	0	637
Confl. Peds. (#/hr)										2		
Confl. Bikes (#/hr)				2						2		1
Turn Type	Prot	Prot		Perm	Prot		Perm	Prot		Perm	Prot	Prot
Protected Phases	3	3	8		7	4		1	6		5	5
Permitted Phases				8			4			6		
Actuated Green, G (s)		4.4	38.0	38.0	0.7	34.3	34.3	2.7	15.0	15.0		18.5
Effective Green, g (s)		4.4	38.0	38.0	0.7	34.3	34.3	2.7	15.0	15.0		18.5
Actuated g/C Ratio		0.05	0.40	0.40	0.01	0.36	0.36	0.03	0.16	0.16		0.19
Clearance Time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6		5.6
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)		158	1407	621	25	1270	568	97	555	244		664
v/s Ratio Prot		c0.03	c0.22		0.00	0.24		0.01	c0.04			c0.19
v/s Ratio Perm				0.00			c0.26			0.00		
v/c Ratio		0.60	0.56	0.01	0.44	0.66	0.72	0.43	0.28	0.02		0.96
Uniform Delay, d1		44.7	22.3	17.4	47.3	25.7	26.5	45.7	35.6	34.1		38.2
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		4.4	0.3	0.0	4.4	0.9	3.6	1.1	0.1	0.0		24.7
Delay (s)		49.1	22.6	17.4	51.7	26.6	30.0	46.8	35.7	34.1		62.9
Level of Service		D	C	B	D	C	C	D	D	C		E
Approach Delay (s)			25.4			28.4			37.5			
Approach LOS			C			C			D			
Intersection Summary												
HCM Average Control Delay			33.7			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			95.6			Sum of lost time (s)			30.0			
Intersection Capacity Utilization			92.8%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 19: Lotz Pkwy & Laguna Springs Drive

Cumulative Weekday No Project Conditions
 PM PEAK HOUR

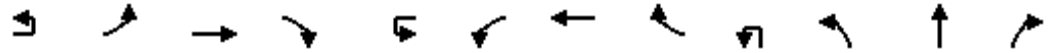


Movement	SBT	SBR
Lane Configurations	↑↑	↑
Volume (vph)	140	170
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.6	4.6
Lane Util. Factor	0.95	1.00
Frbp, ped/bikes	1.00	0.99
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3539	1562
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3539	1562
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	147	179
RTOR Reduction (vph)	0	78
Lane Group Flow (vph)	147	101
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		1
Turn Type		Perm
Protected Phases	2	
Permitted Phases		2
Actuated Green, G (s)	31.8	31.8
Effective Green, g (s)	31.8	31.8
Actuated g/C Ratio	0.33	0.33
Clearance Time (s)	4.6	4.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	1177	520
v/s Ratio Prot	0.04	
v/s Ratio Perm		0.06
v/c Ratio	0.12	0.19
Uniform Delay, d1	22.2	22.8
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.1
Delay (s)	22.2	22.8
Level of Service	C	C
Approach Delay (s)	49.3	
Approach LOS	D	

Intersection Summary

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

Cumulative Weekday No Project Conditions
PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔	↕	↗		↔	↕	↗		↔	↕	↗
Volume (vph)	5	350	270	70	5	130	360	240	25	150	530	60
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	0.95	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)	5	368	284	74	5	137	379	253	26	158	558	63
RTOR Reduction (vph)	0	0	0	54	0	0	0	143	0	0	0	47
Lane Group Flow (vph)	0	373	284	20	0	142	379	110	0	184	558	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)		12.9	21.6	21.6		7.8	16.5	16.5		7.5	20.7	20.7
Effective Green, g (s)		12.9	21.6	21.6		7.8	16.5	16.5		7.5	20.7	20.7
Actuated g/C Ratio		0.16	0.26	0.26		0.10	0.20	0.20		0.09	0.25	0.25
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)		542	936	419		328	715	320		315	897	401
v/s Ratio Prot		c0.11	c0.08			0.04	c0.11			0.05	0.16	
v/s Ratio Perm				0.01				0.07				0.01
v/c Ratio		0.69	0.30	0.05		0.43	0.53	0.34		0.58	0.62	0.04
Uniform Delay, d1		32.5	24.0	22.4		34.9	29.1	28.0		35.6	27.0	23.0
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		2.9	0.1	0.0		0.3	0.4	0.2		1.8	1.0	0.0
Delay (s)		35.4	24.1	22.4		35.2	29.5	28.2		37.4	28.0	23.0
Level of Service		D	C	C		D	C	C		D	C	C
Approach Delay (s)			29.7				30.1				29.8	
Approach LOS			C				C				C	

Intersection Summary		
HCM Average Control Delay	30.4	HCM Level of Service C
HCM Volume to Capacity ratio	0.68	
Actuated Cycle Length (s)	81.7	Sum of lost time (s) 21.7
Intersection Capacity Utilization	77.6%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

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
































Cumulative Weekday No Project Conditions
 PM PEAK HOUR



Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	TT	RT
Volume (vph)	15	240	570	560
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	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	253	600	589
RTOR Reduction (vph)	0	0	0	258
Lane Group Flow (vph)	0	269	600	331
Turn Type	Prot	Prot		Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		9.5	22.7	22.7
Effective Green, g (s)		9.5	22.7	22.7
Actuated g/C Ratio		0.12	0.28	0.28
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		399	983	440
v/s Ratio Prot		0.08	0.17	
v/s Ratio Perm				0.21
v/c Ratio		0.67	0.61	0.75
Uniform Delay, d ₁		34.6	25.7	26.9
Progression Factor		1.00	1.00	1.00
Incremental Delay, d ₂		3.5	0.8	6.4
Delay (s)		38.1	26.4	33.3
Level of Service		D	C	C
Approach Delay (s)			31.4	
Approach LOS			C	

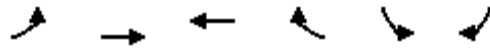
Intersection Summary

HCM Signalized Intersection Capacity Analysis Cumulative Weekday No Project Conditions
 21: Whitelock Pkwy & Big Horn Blvd 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	5.3	5.3	5.6	5.3	5.3	5.6	5.3	5.3	5.6	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	0.95	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)	221	126	63	84	284	126	137	1242	42	105	1168	284
RTOR Reduction (vph)	0	0	50	0	0	103	0	0	18	0	0	167
Lane Group Flow (vph)	221	126	13	84	284	23	137	1242	24	105	1168	117
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)	6.9	17.2	17.2	4.5	14.8	14.8	5.1	35.3	35.3	3.9	34.1	34.1
Effective Green, g (s)	6.9	17.2	17.2	4.5	14.8	14.8	5.1	35.3	35.3	3.9	34.1	34.1
Actuated g/C Ratio	0.08	0.21	0.21	0.05	0.18	0.18	0.06	0.43	0.43	0.05	0.41	0.41
Clearance Time (s)	5.6	5.3	5.3	5.6	5.3	5.3	5.6	5.3	5.3	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	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	286	736	329	187	633	283	212	1511	676	162	1459	653
v/s Ratio Prot	c0.06	0.04		0.02	c0.08		c0.04	c0.35		0.03	0.33	
v/s Ratio Perm			0.01			0.01			0.02			0.07
v/c Ratio	0.77	0.17	0.04	0.45	0.45	0.08	0.65	0.82	0.04	0.65	0.80	0.18
Uniform Delay, d1	37.1	26.9	26.2	37.9	30.3	28.3	37.9	20.9	13.8	38.7	21.3	15.4
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	11.2	0.0	0.0	0.6	0.2	0.0	5.0	3.6	0.0	6.5	3.1	0.0
Delay (s)	48.3	26.9	26.2	38.5	30.5	28.3	42.9	24.5	13.8	45.3	24.4	15.5
Level of Service	D	C	C	D	C	C	D	C	B	D	C	B
Approach Delay (s)		38.3			31.3			25.9			24.2	
Approach LOS		D			C			C			C	






















Intersection Summary		
HCM Average Control Delay	27.2	HCM Level of Service C
HCM Volume to Capacity ratio	0.67	
Actuated Cycle Length (s)	82.7	Sum of lost time (s) 16.5
Intersection Capacity Utilization	68.2%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

HCM Unsignalized Intersection Capacity Analysis Cumulative Saturday No Project Conditions
 1: Elk Grove Blvd & I-5 SB On/Off-Ramp Saturday Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑	↔		↔↔↔	
Volume (veh/h)	10	10	10	170	450	10
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	11	11	179	474	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	958	953	958	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	958	953	958	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	93	94	94	84	71	
cM capacity (veh/h)	147	184	182	1085	1623	
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	14	7	189	316	168	
Volume Left	11	0	0	316	158	
Volume Right	0	0	179	0	11	
cSH	155	184	851	1623	1623	
Volume to Capacity	0.09	0.04	0.22	0.29	0.29	
Queue Length 95th (ft)	7	3	21	31	31	
Control Delay (s)	30.6	25.4	10.4	8.1	7.8	
Lane LOS	D	D	B	A	A	
Approach Delay (s)	28.9		10.4	8.0		
Approach LOS	D		B			
Intersection Summary						
Average Delay			9.3			
Intersection Capacity Utilization			30.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis Cumulative Saturday No Project Conditions
 2: Elk Grove Blvd & I-5 NB On-Ramp Saturday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 				 		 				
Volume (veh/h)	10	450	0	0	170	880	10	0	110	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)	11	474	0	0	179	926	11	0	116	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									17			
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	179			474			674	674	237	495	674	179
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	179			474			674	674	237	495	674	179
tC, single (s)	4.4			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			97	100	85	100	100	100
cM capacity (veh/h)	1291			1085			338	372	765	386	372	833
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1					
Volume Total	11	237	237	179	463	463	126					
Volume Left	11	0	0	0	0	0	11					
Volume Right	0	0	0	0	463	463	116					
cSH	1291	1700	1700	1700	1700	1700	834					
Volume to Capacity	0.01	0.14	0.14	0.11	0.27	0.27	0.15					
Queue Length 95th (ft)	1	0	0	0	0	0	13					
Control Delay (s)	7.8	0.0	0.0	0.0	0.0	0.0	11.0					
Lane LOS	A						B					
Approach Delay (s)	0.2			0.0			11.0					
Approach LOS							B					
Intersection Summary												
Average Delay			0.9									
Intersection Capacity Utilization			47.5%		ICU Level of Service			A				
Analysis Period (min)			15									

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

Cumulative Saturday No Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↔	↑↑↑	↔↔		↔↔	↑↑↑	↔		↔↔	↑↑↑	↔
Volume (vph)	5	160	740	250	5	50	670	230	60	460	670	170
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	0.98		1.00	1.00	0.97
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	1549		3433	5085	1541
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	1549		3433	5085	1541
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)	5	168	779	263	5	53	705	242	63	484	705	179
RTOR Reduction (vph)	0	0	0	138	0	0	0	143	0	0	0	110
Lane Group Flow (vph)	0	173	779	125	0	58	705	99	0	547	705	69
Confl. Peds. (#/hr)								7				9
Confl. Bikes (#/hr)				1				1				4
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)		16.6	71.5	71.5		5.1	59.6	59.6		37.6	29.8	29.8
Effective Green, g (s)		16.6	71.5	71.5		5.1	59.6	59.6		37.6	29.8	29.8
Actuated g/C Ratio		0.11	0.48	0.48		0.03	0.40	0.40		0.25	0.20	0.20
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)		380	2424	1312		117	2020	615		861	1010	306
v/s Ratio Prot		c0.05	0.15			0.02	c0.14			c0.16	c0.14	
v/s Ratio Perm				0.05				0.06				0.04
v/c Ratio		0.46	0.32	0.10		0.50	0.35	0.16		0.64	0.70	0.23
Uniform Delay, d1		62.5	24.3	21.5		71.2	31.6	29.1		50.1	55.9	50.4
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.3	0.4	0.1		1.2	0.5	0.6		1.1	1.7	0.1
Delay (s)		62.8	24.6	21.7		72.4	32.1	29.7		51.2	57.6	50.6
Level of Service		E	C	C		E	C	C		D	E	D
Approach Delay (s)			29.4				33.8				54.3	
Approach LOS			C				C				D	

Intersection Summary

HCM Average Control Delay	45.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	31.2
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

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

Cumulative Saturday No Project Conditions
Saturday Peak



Movement	SBU	SBL	SBT	SBR
Lane Configurations		57	↑↑↑	7
Volume (vph)	5	300	230	180
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	0.97
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	5085	1537
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1537
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	316	242	189
RTOR Reduction (vph)	0	0	0	175
Lane Group Flow (vph)	0	321	242	14
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				6
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		18.4	11.5	11.5
Effective Green, g (s)		18.4	11.5	11.5
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)		421	390	118
v/s Ratio Prot		0.09	0.05	
v/s Ratio Perm				0.01
v/c Ratio		0.76	0.62	0.12
Uniform Delay, d1		63.7	67.1	64.5
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		7.2	2.2	0.2
Delay (s)		70.9	69.3	64.7
Level of Service		E	E	E
Approach Delay (s)			68.8	
Approach LOS			E	

Intersection Summary

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

Cumulative Saturday No Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↔	↑↑↑	↗		↔↔	↑↑↑	↗		↔↔	↑↑↑	↗
Volume (vph)	20	360	1010	90	5	440	580	430	5	170	770	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
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	0.98		1.00	1.00	0.99		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	1554		3433	5085	1561		3433	5085	1559
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	1554		3433	5085	1561		3433	5085	1559
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)	21	379	1063	95	5	463	611	453	5	179	811	379
RTOR Reduction (vph)	0	0	0	44	0	0	0	151	0	0	0	243
Lane Group Flow (vph)	0	400	1063	51	0	468	611	302	0	184	811	136
Confl. Peds. (#/hr)				3				2				1
Confl. Bikes (#/hr)				4								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)		22.4	49.6	49.6		23.7	50.9	50.9		11.9	29.9	29.9
Effective Green, g (s)		22.4	49.6	49.6		23.7	50.9	50.9		11.9	29.9	29.9
Actuated g/C Ratio		0.15	0.33	0.33		0.16	0.34	0.34		0.08	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
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)		513	1681	514		542	1726	530		272	1014	311
v/s Ratio Prot		c0.12	c0.21			c0.14	0.12			0.05	c0.16	
v/s Ratio Perm				0.03				0.19				0.09
v/c Ratio		0.78	0.63	0.10		0.86	0.35	0.57		0.68	0.80	0.44
Uniform Delay, d1		61.4	42.5	34.7		61.6	37.2	40.6		67.2	57.2	52.7
Progression Factor		1.00	1.00	1.00		0.62	0.48	0.65		1.00	1.00	1.00
Incremental Delay, d2		6.7	1.8	0.4		12.1	0.5	4.1		5.2	4.2	0.4
Delay (s)		68.2	44.3	35.1		50.0	18.5	30.5		72.3	61.4	53.0
Level of Service		E	D	D		D	B	C		E	E	D
Approach Delay (s)			49.9				31.7				60.6	
Approach LOS			D				C				E	

Intersection Summary		
HCM Average Control Delay	48.9	HCM Level of Service D
HCM Volume to Capacity ratio	0.81	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 28.5
Intersection Capacity Utilization	96.4%	ICU Level of Service F
Analysis Period (min)	15	
c Critical Lane Group		

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

Cumulative Saturday No Project Conditions
Saturday Peak



Movement	SBU	SBL	SBT	SBR
Lane Configurations		←↑	↑↑↑	↑
Volume (vph)	40	410	710	270
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
Frbp, ped/bikes		1.00	1.00	0.98
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	4752	1340
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	4752	1340
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	432	747	284
RTOR Reduction (vph)	0	0	5	166
Lane Group Flow (vph)	0	474	796	64
Confl. Peds. (#/hr)				2
Confl. Bikes (#/hr)				2
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		23.9	41.9	41.9
Effective Green, g (s)		23.9	41.9	41.9
Actuated g/C Ratio		0.16	0.28	0.28
Clearance Time (s)		5.6	5.7	5.7
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		547	1327	374
v/s Ratio Prot		0.14	0.17	
v/s Ratio Perm				0.05
v/c Ratio		0.87	0.60	0.17
Uniform Delay, d1		61.5	46.8	40.9
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		13.1	0.5	0.1
Delay (s)		74.6	47.3	41.0
Level of Service		E	D	D
Approach Delay (s)			54.9	
Approach LOS			D	

Intersection Summary

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

Cumulative Saturday No Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑	↗		↔	↑↑↑			↖	↗	↘
Volume (vph)	5	10	1730	80	5	120	1330	70	90	10	110	80
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		5.6	6.7			5.6	5.6	5.6
Lane Util. Factor		1.00	0.91	1.00		1.00	0.91			1.00	1.00	0.95
Frbp, ped/bikes		1.00	1.00	0.98		1.00	1.00			1.00	0.99	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	0.99			1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.96	1.00	0.95
Satd. Flow (prot)		1770	5085	1548		1770	5038			1600	1562	1681
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.96	1.00	0.95
Satd. Flow (perm)		1770	5085	1548		1770	5038			1600	1562	1681
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)	5	11	1821	84	5	126	1400	74	95	11	116	84
RTOR Reduction (vph)	0	0	0	19	0	0	2	0	0	0	103	0
Lane Group Flow (vph)	0	16	1821	65	0	131	1472	0	0	106	13	47
Confl. Peds. (#/hr)								5			1	
Confl. Bikes (#/hr)				3								
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	15%	2%	2%	2%
Turn Type	Prot	Prot		Perm	Prot	Prot			Split		Perm	Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				6							3	
Actuated Green, G (s)		2.2	82.8	82.8		15.0	94.5			16.7	16.7	12.0
Effective Green, g (s)		2.2	82.8	82.8		15.0	94.5			16.7	16.7	12.0
Actuated g/C Ratio		0.01	0.55	0.55		0.10	0.63			0.11	0.11	0.08
Clearance Time (s)		6.7	6.7	6.7		5.6	6.7			5.6	5.6	5.6
Vehicle Extension (s)		2.0	3.0	3.0		2.0	3.0			2.0	2.0	2.0
Lane Grp Cap (vph)		26	2807	854		177	3174			178	174	134
v/s Ratio Prot		0.01	c0.36			c0.07	0.29			c0.07		0.03
v/s Ratio Perm				0.04							0.01	
v/c Ratio		0.62	0.65	0.08		0.74	0.46			0.60	0.07	0.35
Uniform Delay, d1		73.5	23.5	15.7		65.6	14.5			63.4	59.7	65.3
Progression Factor		1.18	0.40	0.21		0.57	0.31			1.00	1.00	1.00
Incremental Delay, d2		20.7	0.9	0.1		9.8	0.3			3.5	0.1	0.6
Delay (s)		107.8	10.3	3.4		47.2	4.8			67.0	59.8	65.9
Level of Service		F	B	A		D	A			E	E	E
Approach Delay (s)			10.8				8.3			63.2		
Approach LOS			B				A			E		
Intersection Summary												
HCM Average Control Delay			14.5									B
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			150.0							23.5		
Intersection Capacity Utilization			74.0%									D
Analysis Period (min)			15									

c Critical Lane Group



Movement	SBT	SBR
Lane Configurations	↕	↗
Volume (vph)	10	30
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.6	5.6
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.96	1.00
Satd. Flow (prot)	1704	1558
Flt Permitted	0.96	1.00
Satd. Flow (perm)	1704	1558
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	11	32
RTOR Reduction (vph)	0	29
Lane Group Flow (vph)	48	3
Confl. Peds. (#/hr)		3
Confl. Bikes (#/hr)		
Heavy Vehicles (%)	2%	2%
Turn Type		Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	12.0	12.0
Effective Green, g (s)	12.0	12.0
Actuated g/C Ratio	0.08	0.08
Clearance Time (s)	5.6	5.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	136	125
v/s Ratio Prot	c0.03	
v/s Ratio Perm		0.00
v/c Ratio	0.35	0.02
Uniform Delay, d1	65.3	63.6
Progression Factor	1.00	1.00
Incremental Delay, d2	0.6	0.0
Delay (s)	65.9	63.6
Level of Service	E	E
Approach Delay (s)	65.3	
Approach LOS	E	
Intersection Summary		

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

Cumulative Saturday No Project Conditions
Saturday Peak

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	
Lane Configurations													
Volume (vph)	80	220	1280	210	15	280	930	130	5	370	1930	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	5.7		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	0.99		1.00	1.00	0.98		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	1562		3433	5085	1553		3433	3539	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	1562		3433	5085	1553		3433	3539	1561	
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)	84	232	1347	221	16	295	979	137	5	389	2032	368	
RTOR Reduction (vph)	0	0	0	85	0	0	0	65	0	0	0	70	
Lane Group Flow (vph)	0	316	1347	136	0	311	979	72	0	394	2032	298	
Confl. Peds. (#/hr)								4					
Confl. Bikes (#/hr)				2				1				4	
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)		14.8	37.3	37.3		11.3	33.8	33.8		38.9	69.7	69.7	
Effective Green, g (s)		14.8	37.3	37.3		11.3	33.8	33.8		38.9	69.7	69.7	
Actuated g/C Ratio		0.10	0.25	0.25		0.08	0.23	0.23		0.26	0.46	0.46	
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)		339	1264	388		259	1146	350		890	1644	725	
v/s Ratio Prot		0.09	c0.26			c0.09	0.19			0.11	c0.57		
v/s Ratio Perm				0.09				0.05				0.19	
v/c Ratio		0.93	1.07	0.35		1.20	0.85	0.21		0.44	1.24	0.41	
Uniform Delay, d1		67.1	56.4	46.4		69.3	55.7	47.2		46.5	40.1	26.6	
Progression Factor		0.64	0.58	0.49		0.70	0.53	0.45		1.00	1.00	1.00	
Incremental Delay, d2		27.7	42.8	2.1		119.1	7.5	1.2		0.1	111.7	0.1	
Delay (s)		70.4	75.4	25.0		168.0	37.1	22.5		46.6	151.8	26.7	
Level of Service		E	E	C		F	D	C		D	F	C	
Approach Delay (s)			68.6				64.2				120.5		
Approach LOS			E				E				F		
Intersection Summary													
HCM Average Control Delay			88.7				HCM Level of Service			F			
HCM Volume to Capacity ratio			1.17										
Actuated Cycle Length (s)			150.0				Sum of lost time (s)		23.0				
Intersection Capacity Utilization			111.6%				ICU Level of Service		H				
Analysis Period (min)			15										
c Critical Lane Group													

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

Cumulative Saturday No Project Conditions
Saturday Peak



Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	TT	RT
Volume (vph)	10	170	730	170
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
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	3539	1550
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1550
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	179	768	179
RTOR Reduction (vph)	0	0	0	74
Lane Group Flow (vph)	0	190	768	105
Confl. Peds. (#/hr)				4
Confl. Bikes (#/hr)				4
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		7.7	38.5	38.5
Effective Green, g (s)		7.7	38.5	38.5
Actuated g/C Ratio		0.05	0.26	0.26
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		176	908	398
v/s Ratio Prot		0.06	0.22	
v/s Ratio Perm				0.07
v/c Ratio		1.08	0.85	0.26
Uniform Delay, d1		71.2	52.9	44.5
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		90.6	7.0	0.1
Delay (s)		161.8	60.0	44.6
Level of Service		F	E	D
Approach Delay (s)			74.6	
Approach LOS			E	
Intersection Summary				

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

Cumulative Saturday No Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑	↗		↔	↑↑↑		↔	↑	↗↘	↘
Volume (vph)	10	80	1530	110	10	300	1180	100	20	140	780	60
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	0.98		1.00	1.00		1.00	1.00	0.98	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	1553		3433	5015		1770	1863	2738	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	1553		3433	5015		1770	1863	2738	1770
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)	11	84	1611	116	11	316	1242	105	21	147	821	63
RTOR Reduction (vph)	0	0	0	34	0	0	5	0	0	0	395	0
Lane Group Flow (vph)	0	95	1611	82	0	327	1342	0	21	147	426	63
Confl. Peds. (#/hr)				4				2			3	
Confl. Bikes (#/hr)				2				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)		12.0	71.1	71.1		20.4	79.5		3.6	28.6	28.6	7.7
Effective Green, g (s)		12.0	71.1	71.1		20.4	79.5		3.6	28.6	28.6	7.7
Actuated g/C Ratio		0.08	0.47	0.47		0.14	0.53		0.02	0.19	0.19	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)		142	2410	736		467	2658		42	355	522	91
v/s Ratio Prot		0.05	c0.32			c0.10	0.27		0.01	0.08		c0.04
v/s Ratio Perm				0.05							c0.16	
v/c Ratio		0.67	0.67	0.11		0.70	0.50		0.50	0.41	0.82	0.69
Uniform Delay, d1		67.1	30.4	21.9		61.9	22.6		72.3	53.3	58.2	70.0
Progression Factor		1.05	0.38	0.09		0.63	0.14		1.00	1.00	1.00	1.00
Incremental Delay, d2		3.1	0.5	0.1		2.8	0.5		3.4	0.3	9.1	16.8
Delay (s)		73.8	12.1	2.0		41.9	3.7		75.7	53.6	67.3	86.7
Level of Service		E	B	A		D	A		E	D	E	F
Approach Delay (s)			14.7			11.1			65.4			
Approach LOS			B			B			E			

Intersection Summary

HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

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

Cumulative Saturday No Project Conditions
Saturday Peak



Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	70	70
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	0.93	
Flt Protected	1.00	
Satd. Flow (prot)	3243	
Flt Permitted	1.00	
Satd. Flow (perm)	3243	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	74	74
RTOR Reduction (vph)	58	0
Lane Group Flow (vph)	90	0
Confl. Peds. (#/hr)		4
Confl. Bikes (#/hr)		1
Turn Type		
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	32.7	
Effective Green, g (s)	32.7	
Actuated g/C Ratio	0.22	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	707	
v/s Ratio Prot	c0.03	
v/s Ratio Perm		
v/c Ratio	0.13	
Uniform Delay, d1	47.2	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	47.2	
Level of Service	D	
Approach Delay (s)	59.0	
Approach LOS	E	
Intersection Summary		

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

Cumulative Saturday No Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑			↔	↑↑↑		↔	↑		↔
Volume (vph)	5	130	2230	170	100	270	1600	10	130	40	250	170
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
Frbp, ped/bikes		1.00	1.00			1.00	1.00		1.00	0.99		1.00
Flpb, ped/bikes		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
Flt Protected		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		1770	5020			3433	5079		1770	1603		3433
Flt Permitted		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (perm)		1770	5020			3433	5079		1770	1603		3433
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)	5	137	2347	179	105	284	1684	11	137	42	263	179
RTOR Reduction (vph)	0	0	5	0	0	0	1	0	0	38	0	0
Lane Group Flow (vph)	0	142	2521	0	0	389	1694	0	137	267	0	179
Confl. Peds. (#/hr)				11				6				
Confl. Bikes (#/hr)				1				2			1	
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)		16.3	72.7			14.4	70.8		17.0	28.7		12.4
Effective Green, g (s)		16.3	72.7			14.4	70.8		17.0	28.7		12.4
Actuated g/C Ratio		0.11	0.48			0.10	0.47		0.11	0.19		0.08
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)		192	2433			330	2397		201	307		284
v/s Ratio Prot		0.08	c0.50			c0.11	0.33		c0.08	c0.17		0.05
v/s Ratio Perm												
v/c Ratio		0.74	1.04			1.18	0.71		0.68	0.87		0.63
Uniform Delay, d1		64.8	38.6			67.8	31.4		63.9	58.8		66.6
Progression Factor		0.92	0.51			0.97	0.68		1.00	1.00		1.00
Incremental Delay, d2		9.4	26.3			98.4	1.1		7.4	21.4		3.3
Delay (s)		69.2	46.1			164.4	22.5		71.3	80.3		69.9
Level of Service		E	D			F	C		E	F		E
Approach Delay (s)			47.3				49.0			77.5		
Approach LOS			D				D			E		
Intersection Summary												
HCM Average Control Delay			51.3			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			21.5			
Intersection Capacity Utilization			99.7%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBT	SBR
Lane Configurations	T	
Volume (vph)	30	70
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frbp, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.90	
Flt Protected	1.00	
Satd. Flow (prot)	1628	
Flt Permitted	1.00	
Satd. Flow (perm)	1628	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	32	74
RTOR Reduction (vph)	62	0
Lane Group Flow (vph)	44	0
Confl. Peds. (#/hr)		16
Confl. Bikes (#/hr)		2
Turn Type		
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	24.1	
Effective Green, g (s)	24.1	
Actuated g/C Ratio	0.16	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	262	
v/s Ratio Prot	0.03	
v/s Ratio Perm		
v/c Ratio	0.17	
Uniform Delay, d1	54.3	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	54.4	
Level of Service	D	
Approach Delay (s)	64.1	
Approach LOS	E	
Intersection Summary		

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

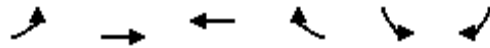
Cumulative Saturday No Project Conditions
 Saturday Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	2400	260	50	1430	0	0	0	0	480	0	1060
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	0.99
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)		5002		3367	5085					1681	1681	2746
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5002		3367	5085					1681	1681	2746
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	2526	274	53	1505	0	0	0	0	505	0	1116
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	0	32
Lane Group Flow (vph)	0	2792	0	53	1505	0	0	0	0	252	253	1084
Confl. Peds. (#/hr)			3			2						2
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		75.0		3.0	83.9					53.7	53.7	53.7
Effective Green, g (s)		75.0		3.0	83.9					53.7	53.7	53.7
Actuated g/C Ratio		0.50		0.02	0.56					0.36	0.36	0.36
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)		2501		67	2844					602	602	983
v/s Ratio Prot		c0.56		0.02	c0.30					0.15	0.15	
v/s Ratio Perm												c0.39
v/c Ratio		1.12		0.79	0.53					0.42	0.42	1.10
Uniform Delay, d1		37.5		73.2	20.7					36.4	36.4	48.1
Progression Factor		0.37		0.81	0.48					1.00	1.00	1.00
Incremental Delay, d2		54.0		36.6	0.6					0.2	0.2	61.1
Delay (s)		67.9		96.2	10.5					36.5	36.6	109.2
Level of Service		E		F	B					D	D	F
Approach Delay (s)		67.9			13.4			0.0			86.6	
Approach LOS		E			B			A			F	
Intersection Summary												
HCM Average Control Delay			58.8			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			12.7			
Intersection Capacity Utilization			85.1%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis Cumulative Saturday No Project Conditions
 10: Elk Grove Blvd & SR-99 NB On-ramp Saturday Peak



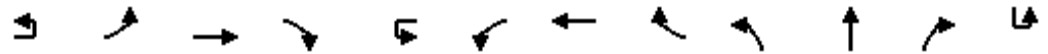
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	2880	1480	320	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	3032	1558	337	0	0
Pedestrians					1	
Lane Width (ft)					0.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		515	937			
pX, platoon unblocked	0.84				0.59	0.84
vC, conflicting volume	1896				2569	520
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1417				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)	403				598	916

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	1011	1011	1011	519	519	519	337
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	337
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.59	0.59	0.59	0.31	0.31	0.31	0.20
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		85.1%	ICU Level of Service E
Analysis Period (min)		15	

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

Cumulative Saturday No Project Conditions
 Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		
Volume (vph)	15	70	1660	1150	10	40	1250	130	440	100	180	10
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		
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	0.99		1.00	1.00	0.98	1.00	0.99		
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	0.94		
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.98		
Satd. Flow (prot)		1770	3539	1563		1770	5085	1557	1610	3105		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.98		
Satd. Flow (perm)		1770	3539	1563		1770	5085	1557	1610	3105		
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)	16	74	1747	1211	11	42	1316	137	463	105	189	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	51	0	53	0	0
Lane Group Flow (vph)	0	90	1747	1211	0	53	1316	86	259	445	0	0
Confl. Peds. (#/hr)				2				2			4	
Confl. Bikes (#/hr)				1				3			4	
Turn Type	Prot	Prot		Free	Prot	Prot		Perm	Split			Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				Free				2				
Actuated Green, G (s)		15.2	81.8	150.0		5.5	72.1	72.1	26.4	26.4		
Effective Green, g (s)		15.2	81.8	150.0		5.5	72.1	72.1	26.4	26.4		
Actuated g/C Ratio		0.10	0.55	1.00		0.04	0.48	0.48	0.18	0.18		
Clearance Time (s)		5.6	5.7			5.6	5.7	5.7	5.6	5.6		
Vehicle Extension (s)		2.0	3.9			2.0	3.9	3.9	2.0	2.0		
Lane Grp Cap (vph)		179	1930	1563		65	2444	748	283	546		
v/s Ratio Prot		0.05	c0.49			0.03	0.26		0.16	0.14		
v/s Ratio Perm				c0.77				0.05				
v/c Ratio		0.50	0.91	0.77		0.82	0.54	0.11	0.92	0.82		
Uniform Delay, d1		63.8	30.6	0.0		71.7	27.3	21.4	60.7	59.5		
Progression Factor		0.66	0.35	1.00		1.00	1.00	1.00	0.72	0.68		
Incremental Delay, d2		0.2	2.0	0.9		50.2	0.9	0.3	31.1	8.5		
Delay (s)		42.0	12.8	0.9		121.9	28.1	21.7	75.1	49.2		
Level of Service		D	B	A		F	C	C	E	D		
Approach Delay (s)			8.9				30.9			58.0		
Approach LOS			A				C			E		

Intersection Summary		
HCM Average Control Delay	27.1	HCM Level of Service C
HCM Volume to Capacity ratio	0.85	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 5.7
Intersection Capacity Utilization	91.1%	ICU Level of Service F
Analysis Period (min)	15	
c Critical Lane Group		

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

Cumulative Saturday No Project Conditions
 Saturday Peak



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	200	70	110
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	1726	1561
Flt Permitted	0.95	0.98	1.00
Satd. Flow (perm)	1681	1726	1561
Peak-hour factor, PHF	0.95	0.95	0.95
Adj. Flow (vph)	211	74	116
RTOR Reduction (vph)	0	0	105
Lane Group Flow (vph)	146	150	11
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			1
Turn Type	Split		Perm
Protected Phases	4	4	
Permitted Phases			4
Actuated Green, G (s)	14.8	14.8	14.8
Effective Green, g (s)	14.8	14.8	14.8
Actuated g/C Ratio	0.10	0.10	0.10
Clearance Time (s)	4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	166	170	154
v/s Ratio Prot	0.09	0.09	
v/s Ratio Perm			0.01
v/c Ratio	0.88	0.88	0.07
Uniform Delay, d1	66.7	66.7	61.4
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	36.3	36.7	0.1
Delay (s)	103.0	103.5	61.5
Level of Service	F	F	E
Approach Delay (s)		91.5	
Approach LOS		F	

Intersection Summary

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

Cumulative Saturday No Project Conditions
 Saturday Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	10	20	20	30	30	250	430	20	60	400	800
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	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	1665			1827	1583	1770	3516		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	1665			1827	1583	1770	3516		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)	242	11	21	21	32	32	263	453	21	63	421	842
RTOR Reduction (vph)	0	5	0	0	0	30	0	2	0	0	0	182
Lane Group Flow (vph)	138	131	0	0	53	2	263	472	0	63	421	660
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)	22.4	22.4			9.5	9.5	25.0	87.9		8.2	71.1	93.5
Effective Green, g (s)	22.4	22.4			9.5	9.5	25.0	87.9		8.2	71.1	93.5
Actuated g/C Ratio	0.15	0.15			0.06	0.06	0.17	0.59		0.05	0.47	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)	251	249			116	100	295	2060		97	883	1045
v/s Ratio Prot	0.08	0.08			c0.03		c0.15	0.13		0.04	0.23	c0.09
v/s Ratio Perm						0.00						0.32
v/c Ratio	0.55	0.53			0.46	0.02	0.89	0.23		0.65	0.48	0.63
Uniform Delay, d1	59.1	58.9			67.8	65.9	61.2	14.9		69.5	26.8	17.5
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		0.90	1.05	1.01
Incremental Delay, d2	1.3	0.9			1.0	0.0	26.2	0.0		6.6	1.1	0.6
Delay (s)	60.4	59.8			68.8	65.9	87.4	14.9		69.2	29.3	18.2
Level of Service	E	E			E	E	F	B		E	C	B
Approach Delay (s)		60.1			67.7			40.7			24.2	
Approach LOS		E			E			D			C	

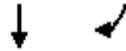
Intersection Summary

HCM Average Control Delay	34.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
13: Backer Ranch Road & Bruceville Road

Cumulative Saturday No Project Conditions
Saturday Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	60	60	90	90	90	60	20	110	1030	160	10	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	4.6	4.6		5.6	5.3	5.3		5.6
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00		1.00	0.95	1.00		1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00	1.00	0.97		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	1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1770	1863	1559	3433	1863	1555		1770	3539	1529		1770
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1770	1863	1559	3433	1863	1555		1770	3539	1529		1770
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)	63	63	95	95	95	63	21	116	1084	168	11	42
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	91	0	0
Lane Group Flow (vph)	63	63	95	95	95	63	0	137	1084	77	0	53
Confl. Peds. (#/hr)							4			8		
Confl. Bikes (#/hr)	1		2			2		1		3		1
Turn Type	Prot		Perm	Prot		Perm	Prot	Prot		Perm	Prot	Prot
Protected Phases	3	8		7	4		1	1	6		5	5
Permitted Phases			8			4				6		
Actuated Green, G (s)	4.6	10.2	10.2	3.7	9.3	9.3		9.8	33.1	33.1		3.7
Effective Green, g (s)	4.6	10.2	10.2	3.7	9.3	9.3		9.8	33.1	33.1		3.7
Actuated g/C Ratio	0.06	0.14	0.14	0.05	0.13	0.13		0.14	0.46	0.46		0.05
Clearance Time (s)	5.6	4.6	4.6	5.6	4.6	4.6		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		2.0
Lane Grp Cap (vph)	113	265	221	177	241	201		242	1631	705		91
v/s Ratio Prot	c0.04	0.03		0.03	0.05			c0.08	c0.31			0.03
v/s Ratio Perm			c0.06			0.04				0.05		
v/c Ratio	0.56	0.24	0.43	0.54	0.39	0.31		0.57	0.66	0.11		0.58
Uniform Delay, d1	32.6	27.3	28.1	33.2	28.7	28.4		29.0	15.0	11.0		33.3
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	3.4	0.2	0.5	1.6	0.4	0.3		1.8	0.8	0.0		6.0
Delay (s)	36.0	27.5	28.6	34.8	29.1	28.7		30.8	15.8	11.0		39.3
Level of Service	D	C	C	C	C	C		C	B	B		D
Approach Delay (s)		30.4			31.1				16.7			
Approach LOS		C			C				B			
Intersection Summary												
HCM Average Control Delay			20.6				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			71.8				Sum of lost time (s)		16.5			
Intersection Capacity Utilization			60.4%				ICU Level of Service		B			
Analysis Period (min)			15									
c	Critical Lane Group											



Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	820	40
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.3	
Lane Util. Factor	0.95	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	3509	
Flt Permitted	1.00	
Satd. Flow (perm)	3509	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	863	42
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	902	0
Confl. Peds. (#/hr)		5
Confl. Bikes (#/hr)		3
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	27.0	
Effective Green, g (s)	27.0	
Actuated g/C Ratio	0.38	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1320	
v/s Ratio Prot	0.26	
v/s Ratio Perm		
v/c Ratio	0.68	
Uniform Delay, d1	18.8	
Progression Factor	1.00	
Incremental Delay, d2	1.2	
Delay (s)	20.0	
Level of Service	B	
Approach Delay (s)	21.1	
Approach LOS	C	
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
 14: Civic Center Drive & Wymark Drive

Cumulative Saturday No Project Conditions
 Saturday Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	290	30	80	190	30	150	170	110	10	60	20
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	1.00	0.99		1.00	0.98			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1770	1836		1770	1824			1768			1797	
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (perm)	1770	1836		1770	1824			1768			1797	
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)	21	305	32	84	200	32	158	179	116	11	63	21
RTOR Reduction (vph)	0	4	0	0	5	0	0	12	0	0	12	0
Lane Group Flow (vph)	21	333	0	84	227	0	0	441	0	0	83	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)	1.7	21.2		4.6	24.1			24.4			7.5	
Effective Green, g (s)	1.7	21.2		4.6	24.1			24.4			7.5	
Actuated g/C Ratio	0.02	0.27		0.06	0.30			0.31			0.09	
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)	38	488		102	552			541			169	
v/s Ratio Prot	0.01	c0.18		c0.05	c0.12			c0.25			c0.05	
v/s Ratio Perm												
v/c Ratio	0.55	0.68		0.82	0.41			0.81			0.49	
Uniform Delay, d1	38.6	26.2		37.1	22.1			25.6			34.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	9.5	3.1		37.7	0.2			8.7			0.8	
Delay (s)	48.1	29.4		74.9	22.3			34.2			35.1	
Level of Service	D	C		E	C			C			D	
Approach Delay (s)		30.5			36.3			34.2			35.1	
Approach LOS		C			D			C			D	

Intersection Summary		
HCM Average Control Delay	33.7	HCM Level of Service C
HCM Volume to Capacity ratio	0.80	
Actuated Cycle Length (s)	79.7	Sum of lost time (s) 27.5
Intersection Capacity Utilization	65.9%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
15: Civic Center Drive & Big Horn Blvd

Cumulative Saturday No Project Conditions
Saturday Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	120	20	20	30	70	10	2000	60	70	790	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3		6.3	5.3	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.96	
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	1863	1583	1770	1863	1583	1770	3524		1770	3408	
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	1863	1583	1770	1863	1583	1770	3524		1770	3408	
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)	305	126	21	21	32	74	11	2105	63	74	832	274
RTOR Reduction (vph)	0	0	16	0	0	66	0	1	0	0	16	0
Lane Group Flow (vph)	305	126	5	21	32	8	11	2167	0	74	1090	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	17.6	28.3	28.3	2.2	11.9	11.9	0.8	71.1		5.8	76.1	
Effective Green, g (s)	17.6	28.3	28.3	2.2	11.9	11.9	0.8	71.1		5.8	76.1	
Actuated g/C Ratio	0.14	0.22	0.22	0.02	0.09	0.09	0.01	0.55		0.04	0.59	
Clearance Time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3		6.3	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	
Lane Grp Cap (vph)	241	408	347	30	172	146	11	1939		79	2007	
v/s Ratio Prot	c0.17	c0.07		0.01	0.02		0.01	c0.61		c0.04	c0.32	
v/s Ratio Perm			0.00			0.00						
v/c Ratio	1.27	0.31	0.01	0.70	0.19	0.05	1.00	1.12		0.94	0.54	
Uniform Delay, d1	55.8	42.3	39.5	63.2	54.2	53.5	64.2	29.0		61.5	16.0	
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	148.2	0.2	0.0	44.4	0.2	0.1	271.4	60.5		78.5	0.2	
Delay (s)	204.0	42.4	39.5	107.6	54.4	53.6	335.6	89.6		140.0	16.2	
Level of Service	F	D	D	F	D	D	F	F		F	B	
Approach Delay (s)		151.3			62.7			90.8			24.0	
Approach LOS		F			E			F			C	

Intersection Summary

HCM Average Control Delay	76.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	129.2	Sum of lost time (s)	22.5
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Civic Center Drive & Laguna Springs Drive

Cumulative Saturday No Project Conditions
 Saturday Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	130	0	140	0	0	0	130	470	0	5	0	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6		5.6				5.6	4.6		5.6		4.6
Lane Util. Factor	1.00		1.00				1.00	0.95		1.00		0.95
Frt	1.00		0.85				1.00	1.00		1.00		0.99
Flt Protected	0.95		1.00				0.95	1.00		0.95		1.00
Satd. Flow (prot)	1770		1583				1770	3539		1770		3515
Flt Permitted	0.95		1.00				0.95	1.00		0.95		1.00
Satd. Flow (perm)	1770		1583				1770	3539		1770		3515
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)	137	0	147	0	0	0	137	495	0	5	0	432
RTOR Reduction (vph)	0	0	102	0	0	0	0	0	0	0	0	4
Lane Group Flow (vph)	137	0	45	0	0	0	137	495	0	5	0	449
Turn Type	Prot		custom	Prot			Prot			Prot		
Protected Phases	3			7	4		1	6		5		2
Permitted Phases			8									
Actuated Green, G (s)	9.6		18.9				9.6	26.9		0.5		17.8
Effective Green, g (s)	9.6		18.9				9.6	26.9		0.5		17.8
Actuated g/C Ratio	0.15		0.30				0.15	0.43		0.01		0.29
Clearance Time (s)	5.6		5.6				5.6	4.6		5.6		4.6
Vehicle Extension (s)	2.0		2.0				2.0	2.0		2.0		2.0
Lane Grp Cap (vph)	274		482				274	1533		14		1008
v/s Ratio Prot	c0.08						c0.08	0.14		0.00		c0.13
v/s Ratio Perm			c0.03									
v/c Ratio	0.50		0.09				0.50	0.32		0.36		0.45
Uniform Delay, d1	24.1		15.5				24.1	11.6		30.6		18.1
Progression Factor	1.00		1.00				1.00	1.00		1.00		1.00
Incremental Delay, d2	0.5		0.0				0.5	0.0		5.6		0.1
Delay (s)	24.6		15.5				24.6	11.6		36.2		18.2
Level of Service	C		B				C	B		D		B
Approach Delay (s)		19.9			0.0			14.4				18.4
Approach LOS		B			A			B				B

Intersection Summary		
HCM Average Control Delay	16.9	HCM Level of Service B
HCM Volume to Capacity ratio	0.39	
Actuated Cycle Length (s)	62.1	Sum of lost time (s) 15.8
Intersection Capacity Utilization	38.2%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		

Movement	SBR
Lane Configurations	
Volume (vph)	20
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frnt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	21
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
 17: Denali Cir & Big Horn Blvd

Cumulative Saturday No Project Conditions
 Saturday Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	70	60	90	1970	820	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6		5.3	5.3	5.3	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frt	0.94		1.00	1.00	0.99	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	1701		1770	3539	3515	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	1701		1770	3539	3515	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	63	95	2074	863	42
RTOR Reduction (vph)	43	0	0	0	3	0
Lane Group Flow (vph)	94	0	95	2074	902	0
Turn Type			Prot			
Protected Phases	3		1	6	2	
Permitted Phases						
Actuated Green, G (s)	11.1		7.0	55.4	43.1	
Effective Green, g (s)	11.1		7.0	55.4	43.1	
Actuated g/C Ratio	0.15		0.09	0.73	0.56	
Clearance Time (s)	4.6		5.3	5.3	5.3	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	247		162	2566	1983	
v/s Ratio Prot	c0.06		0.05	c0.59	0.26	
v/s Ratio Perm						
v/c Ratio	0.38		0.59	0.81	0.46	
Uniform Delay, d1	29.5		33.3	7.0	9.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.4		3.5	1.9	0.1	
Delay (s)	29.9		36.8	8.8	9.8	
Level of Service	C		D	A	A	
Approach Delay (s)	29.9			10.0	9.8	
Approach LOS	C			B	A	

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	76.4	Sum of lost time (s)	9.9
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
18: Denali Circle & Big Horn Blvd

Cumulative Saturday No Project Conditions
Saturday Peak

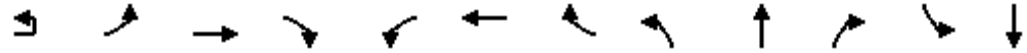
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	90	40	40	5	180	50	160	10	1580	280	350	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	5.3
Lane Util. Factor	1.00	1.00			0.97	1.00	0.88	1.00	0.95	1.00	0.97	0.95
Frbp, ped/bikes	1.00	0.99			1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	0.93			1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99
Flt Protected	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1711			3433	1863	2757	1770	3539	1558	3433	3483
Flt Permitted	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1711			3433	1863	2757	1770	3539	1558	3433	3483
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)	95	42	42	5	189	53	168	11	1663	295	368	537
RTOR Reduction (vph)	0	29	0	0	0	0	38	0	0	72	0	3
Lane Group Flow (vph)	95	55	0	0	194	53	130	11	1663	223	368	587
Confl. Peds. (#/hr)			2									
Confl. Bikes (#/hr)							2			9		
Turn Type	Prot			Prot	Prot		pm+ov	Prot		Perm	Prot	
Protected Phases	3	8		7	7	4	5	1	6		5	2
Permitted Phases							4			6		
Actuated Green, G (s)	12.8	15.1			7.5	11.4	25.2	0.8	68.5	68.5	13.8	81.5
Effective Green, g (s)	12.8	15.1			7.5	11.4	25.2	0.8	68.5	68.5	13.8	81.5
Actuated g/C Ratio	0.10	0.12			0.06	0.09	0.19	0.01	0.53	0.53	0.11	0.63
Clearance Time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	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
Lane Grp Cap (vph)	175	200			199	164	537	11	1875	825	366	2195
v/s Ratio Prot	0.05	c0.03			c0.06	c0.03	0.03	0.01	c0.47		c0.11	0.17
v/s Ratio Perm							0.02			0.14		
v/c Ratio	0.54	0.27			0.97	0.32	0.24	1.00	0.89	0.27	1.01	0.27
Uniform Delay, d1	55.5	52.1			60.8	55.3	44.0	64.2	27.0	16.7	57.8	10.6
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	1.8	0.3			55.9	0.4	0.1	271.4	5.3	0.1	48.4	0.0
Delay (s)	57.3	52.4			116.7	55.7	44.1	335.6	32.3	16.7	106.2	10.6
Level of Service	E	D			F	E	D	F	C	B	F	B
Approach Delay (s)		55.0				79.5			31.7			47.3
Approach LOS		D				E			C			D
Intersection Summary												
HCM Average Control Delay			42.8									HCM Level of Service D
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			129.3									Sum of lost time (s) 30.0
Intersection Capacity Utilization			82.5%									ICU Level of Service E
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBR
Lane Configurations	
Volume (vph)	50
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	0.95
Adj. Flow (vph)	53
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	2
Confl. Bikes (#/hr)	3
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
19: Lotz Pkwy & Laguna Springs Drive

Cumulative Saturday No Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↘ ↙	↑↑	↗	↘ ↙	↑↑	↗	↘ ↙	↑↑	↗	↘ ↙	↑↑	
Volume (vph)	10	50	1000	10	0	470	100	10	30	10	600	50	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.6	6.6	6.6		6.6	6.6	5.6	5.6	5.6	5.6	4.6	
Lane Util. Factor		0.97	0.95	1.00		0.95	1.00	0.97	0.95	1.00	0.97	0.95	
Frbp, ped/bikes		1.00	1.00	0.99		1.00	0.98	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	1.00	1.00	1.00	1.00	
Frt		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3433	3539	1563		3539	1559	3433	3539	1560	3433	3539	
Flt Permitted		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3433	3539	1563		3539	1559	3433	3539	1560	3433	3539	
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)	11	53	1053	11	0	495	105	11	32	11	632	53	
RTOR Reduction (vph)	0	0	0	6	0	0	77	0	0	10	0	0	
Lane Group Flow (vph)	0	64	1053	5	0	495	28	11	32	1	632	53	
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)				1			4			1		1	
Turn Type	Prot	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	3	3	8		7	4		1	6		5	2	
Permitted Phases				8			4			6			
Actuated Green, G (s)		4.6	29.7	29.7		19.5	19.5	0.6	6.3	6.3	19.9	26.6	
Effective Green, g (s)		4.6	29.7	29.7		19.5	19.5	0.6	6.3	6.3	19.9	26.6	
Actuated g/C Ratio		0.06	0.40	0.40		0.26	0.26	0.01	0.09	0.09	0.27	0.36	
Clearance Time (s)		5.6	6.6	6.6		6.6	6.6	5.6	5.6	5.6	5.6	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	
Lane Grp Cap (vph)		214	1426	630		936	412	28	303	133	927	1277	
v/s Ratio Prot		0.02	c0.30			0.14		0.00	0.01		c0.18	0.01	
v/s Ratio Perm				0.00			0.02			0.00			
v/c Ratio		0.30	0.74	0.01		0.53	0.07	0.39	0.11	0.01	0.68	0.04	
Uniform Delay, d1		33.0	18.7	13.2		23.2	20.3	36.4	31.1	30.8	24.1	15.3	
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		0.3	1.8	0.0		0.3	0.0	3.3	0.1	0.0	1.7	0.0	
Delay (s)		33.3	20.5	13.2		23.4	20.3	39.7	31.2	30.8	25.7	15.3	
Level of Service		C	C	B		C	C	D	C	C	C	B	
Approach Delay (s)			21.1			22.9			32.8			23.6	
Approach LOS			C			C			C			C	
Intersection Summary													
HCM Average Control Delay			22.5		HCM Level of Service					C			
HCM Volume to Capacity ratio			0.59										
Actuated Cycle Length (s)			73.7		Sum of lost time (s)					12.2			
Intersection Capacity Utilization			63.8%		ICU Level of Service					B			
Analysis Period (min)			15										
c Critical Lane Group													

Movement	SBR
Lane Configurations	
Volume (vph)	110
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.6
Lane Util. Factor	1.00
Frbp, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1561
Flt Permitted	1.00
Satd. Flow (perm)	1561
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	116
RTOR Reduction (vph)	74
Lane Group Flow (vph)	42
Confl. Peds. (#/hr)	3
Confl. Bikes (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	26.6
Effective Green, g (s)	26.6
Actuated g/C Ratio	0.36
Clearance Time (s)	4.6
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	563
v/s Ratio Prot	
v/s Ratio Perm	c0.03
v/c Ratio	0.07
Uniform Delay, d1	15.5
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	15.5
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

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

Cumulative Saturday No Project Conditions
Saturday Peak

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	5	400	410	140	5	50	170	190	45	170	650	80
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
Frbp, ped/bikes		1.00	1.00	0.98		1.00	1.00	0.98		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	3539	1546		3433	3539	1549		3433	3539	1555
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	1546		3433	3539	1549		3433	3539	1555
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)	5	421	432	147	5	53	179	200	47	179	684	84
RTOR Reduction (vph)	0	0	0	102	0	0	0	150	0	0	0	63
Lane Group Flow (vph)	0	426	432	45	0	58	179	50	0	226	684	21
Confl. Peds. (#/hr)				14				5				7
Confl. Bikes (#/hr)				4				6				1
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)		12.0	24.1	24.1		3.0	15.1	15.1		8.8	19.8	19.8
Effective Green, g (s)		12.0	24.1	24.1		3.0	15.1	15.1		8.8	19.8	19.8
Actuated g/C Ratio		0.15	0.30	0.30		0.04	0.19	0.19		0.11	0.25	0.25
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)		520	1077	470		130	675	295		381	885	389
v/s Ratio Prot		c0.12	c0.12			0.02	0.05			0.07	c0.19	
v/s Ratio Perm				0.03				0.03				0.01
v/c Ratio		0.82	0.40	0.10		0.45	0.27	0.17		0.59	0.77	0.05
Uniform Delay, d1		32.5	21.8	19.7		37.3	27.3	26.8		33.5	27.6	22.6
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		9.3	0.1	0.0		0.9	0.1	0.1		1.7	3.9	0.0
Delay (s)		41.8	21.9	19.8		38.2	27.4	26.9		35.1	31.5	22.6
Level of Service		D	C	B		D	C	C		D	C	C
Approach Delay (s)			30.0				28.6				31.6	
Approach LOS			C				C				C	
Intersection Summary												
HCM Average Control Delay			29.9				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			79.2				Sum of lost time (s)			17.2		
Intersection Capacity Utilization			74.4%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

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

Cumulative Saturday No Project Conditions
Saturday Peak

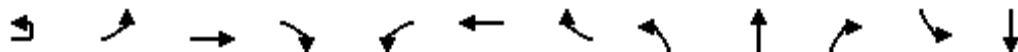


Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	TT	RT
Volume (vph)	15	310	410	340
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00
Frpb, ped/bikes		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1556
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1556
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	326	432	358
RTOR Reduction (vph)	0	0	0	262
Lane Group Flow (vph)	0	342	432	96
Confl. Peds. (#/hr)				4
Confl. Bikes (#/hr)				3
Turn Type	Prot	Prot		Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		10.2	21.2	21.2
Effective Green, g (s)		10.2	21.2	21.2
Actuated g/C Ratio		0.13	0.27	0.27
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		442	947	417
v/s Ratio Prot		0.10	0.12	
v/s Ratio Perm				0.06
v/c Ratio		0.77	0.46	0.23
Uniform Delay, d1		33.4	24.2	22.6
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		7.5	0.1	0.1
Delay (s)		40.9	24.3	22.7
Level of Service		D	C	C
Approach Delay (s)			28.8	
Approach LOS			C	

Intersection Summary

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

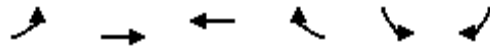
Cumulative Saturday No Project Conditions
Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↘ ↙	↕	↗	↘ ↙	↕	↗	↘ ↙	↕	↗	↘ ↙	↕	
Volume (vph)	5	270	170	50	70	120	110	110	1040	40	260	980	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.6	5.3	5.3	5.6	5.3	5.3	5.6	5.3	5.3	5.6	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	
Frbp, ped/bikes		1.00	1.00	0.98	1.00	1.00	0.99	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	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	
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3433	3539	1546	3433	3539	1561	3433	3539	1583	3433	3539	
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3433	3539	1546	3433	3539	1561	3433	3539	1583	3433	3539	
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)	5	284	179	53	74	126	116	116	1095	42	274	1032	
RTOR Reduction (vph)	0	0	0	43	0	0	98	0	0	21	0	0	
Lane Group Flow (vph)	0	289	179	10	74	126	18	116	1095	21	274	1032	
Confl. Peds. (#/hr)							1						
Confl. Bikes (#/hr)				10			1						
Turn Type	Prot	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	1	1	6		5	2		3	8		7	4	
Permitted Phases				6			2			8			
Actuated Green, G (s)		6.5	14.5	14.5	3.9	11.9	11.9	5.1	30.2	30.2	6.5	31.6	
Effective Green, g (s)		6.5	14.5	14.5	3.9	11.9	11.9	5.1	30.2	30.2	6.5	31.6	
Actuated g/C Ratio		0.08	0.19	0.19	0.05	0.15	0.15	0.07	0.39	0.39	0.08	0.41	
Clearance Time (s)		5.6	5.3	5.3	5.6	5.3	5.3	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	2.0	
Lane Grp Cap (vph)		290	667	292	174	548	242	228	1390	622	290	1454	
v/s Ratio Prot		c0.08	c0.05		0.02	0.04		0.03	c0.31		c0.08	0.29	
v/s Ratio Perm				0.01			0.01			0.01			
v/c Ratio		1.00	0.27	0.03	0.43	0.23	0.07	0.51	0.79	0.03	0.94	0.71	
Uniform Delay, d1		35.2	26.7	25.5	35.4	28.5	27.8	34.7	20.5	14.4	35.0	18.8	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		51.5	0.1	0.0	0.6	0.1	0.0	0.7	2.8	0.0	37.7	1.3	
Delay (s)		86.7	26.7	25.5	36.0	28.6	27.8	35.3	23.3	14.4	72.7	20.2	
Level of Service		F	C	C	D	C	C	D	C	B	E	C	
Approach Delay (s)			59.9			30.0			24.1			29.3	
Approach LOS			E			C			C			C	
Intersection Summary													
HCM Average Control Delay			32.0		HCM Level of Service					C			
HCM Volume to Capacity ratio			0.73										
Actuated Cycle Length (s)			76.9		Sum of lost time (s)					21.8			
Intersection Capacity Utilization			66.8%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													






















Movement	SBR
Lane Configurations	
Volume (vph)	150
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.3
Lane Util. Factor	1.00
Frbp, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1562
Flt Permitted	1.00
Satd. Flow (perm)	1562
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	158
RTOR Reduction (vph)	93
Lane Group Flow (vph)	65
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	3
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	31.6
Effective Green, g (s)	31.6
Actuated g/C Ratio	0.41
Clearance Time (s)	5.3
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	642
v/s Ratio Prot	
v/s Ratio Perm	0.04
v/c Ratio	0.10
Uniform Delay, d1	13.9
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	13.9
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 1: Elk Grove Blvd & I-5 SB On/Off-Ramp PM PEAK HOUR

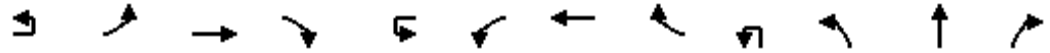


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑	↔		↔↔↔	
Volume (veh/h)	10	20	10	129	1436	10
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	21	11	136	1512	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3034	3028	3034	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3034	3028	3034	0	0	
tC, single (s)	7.1	6.7	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.2	4.0	3.3	2.2	
p0 queue free %	0	0	0	87	7	
cM capacity (veh/h)	0	1	1	1085	1623	
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	18	14	146	1008	514	
Volume Left	11	0	0	1008	504	
Volume Right	0	0	136	0	11	
cSH	0	1	12	1623	1623	
Volume to Capacity	Err	18.04	12.00	0.93	0.93	
Queue Length 95th (ft)	Err	Err	Err	446	446	
Control Delay (s)	Err	Err	Err	25.9	25.9	
Lane LOS	F	F	F	D	D	
Approach Delay (s)	Err		Err	25.9		
Approach LOS	F		F			
Intersection Summary						
Average Delay			Err			
Intersection Capacity Utilization			56.4%	ICU Level of Service		B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 2: Elk Grove Blvd & I-5 NB On-Ramp PM PEAK HOUR

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 				 		 				
Volume (veh/h)	10	1446	0	0	129	758	10	0	228	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	10	1491	0	0	133	781	10	0	235	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									17			
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	133			1491			1644	1644	745	1016	1644	133
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	133			1491			1644	1644	745	1016	1644	133
tC, single (s)	4.7			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			84	100	34	100	100	100
cM capacity (veh/h)	1273			447			65	98	356	65	98	892
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1					
Volume Total	10	745	745	133	391	391	245					
Volume Left	10	0	0	0	0	0	10					
Volume Right	0	0	0	0	391	391	235					
cSH	1273	1700	1700	1700	1700	1700	372					
Volume to Capacity	0.01	0.44	0.44	0.08	0.23	0.23	0.66					
Queue Length 95th (ft)	1	0	0	0	0	0	113					
Control Delay (s)	7.9	0.0	0.0	0.0	0.0	0.0	34.2					
Lane LOS	A						D					
Approach Delay (s)	0.1			0.0			34.2					
Approach LOS							D					
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			56.0%		ICU Level of Service		B					
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 3: Elk Grove Blvd & Franklin Blvd PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↘ ↙	↑ ↑ ↑	↗ ↖		↘ ↙	↑ ↑ ↑	↗		↘ ↙	↑ ↑ ↑	↗
Volume (vph)	5	190	1358	620	5	82	940	352	125	500	590	162
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	0.98		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	2750		3433	5085	1558		3433	5085	1557
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	1558		3433	5085	1557
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)	5	200	1429	653	5	86	989	371	132	526	621	171
RTOR Reduction (vph)	0	0	0	308	0	0	0	163	0	0	0	66
Lane Group Flow (vph)	0	205	1429	345	0	91	989	208	0	658	621	105
Confl. Peds. (#/hr)								3				4
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)		12.9	64.7	64.7		7.4	58.8	58.8		32.3	29.9	29.9
Effective Green, g (s)		12.9	64.7	64.7		7.4	58.8	58.8		32.3	29.9	29.9
Actuated g/C Ratio		0.09	0.43	0.43		0.05	0.39	0.39		0.22	0.20	0.20
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)		295	2193	1186		169	1993	611		739	1014	310
v/s Ratio Prot		0.06	c0.28			0.03	c0.19			c0.19	0.12	
v/s Ratio Perm				0.13				0.13				0.07
v/c Ratio		0.69	0.65	0.29		0.54	0.50	0.34		0.89	0.61	0.34
Uniform Delay, d1		66.6	33.7	27.7		69.6	34.4	32.0		57.1	54.8	51.5
Progression Factor		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	0.6		1.7	0.9	1.5		12.6	0.8	0.2
Delay (s)		72.3	35.3	28.4		71.3	35.3	33.5		69.8	55.5	51.8
Level of Service		E	D	C		E	D	C		E	E	D
Approach Delay (s)			36.6				37.1				61.6	
Approach LOS			D				D				E	
Intersection Summary												
HCM Average Control Delay			48.7				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			12.4		
Intersection Capacity Utilization			92.3%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 3: Elk Grove Blvd & Franklin Blvd PM PEAK HOUR



Movement	SBU	SBL	SBT	SBR
Lane Configurations		←↑	↑↑↑	↑
Volume (vph)	5	421	480	310
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	1557
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1557
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	443	505	326
RTOR Reduction (vph)	0	0	0	174
Lane Group Flow (vph)	0	448	505	152
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				3
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		22.8	21.3	21.3
Effective Green, g (s)		22.8	21.3	21.3
Actuated g/C Ratio		0.15	0.14	0.14
Clearance Time (s)		5.6	6.3	6.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		522	722	221
v/s Ratio Prot		0.13	0.10	
v/s Ratio Perm				0.10
v/c Ratio		0.86	0.70	0.69
Uniform Delay, d1		62.0	61.3	61.2
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		12.7	2.4	6.9
Delay (s)		74.7	63.7	68.1
Level of Service		E	E	E
Approach Delay (s)			68.7	
Approach LOS			E	
Intersection Summary				

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 4: Elk Grove Blvd & Bruceville Road PM PEAK HOUR

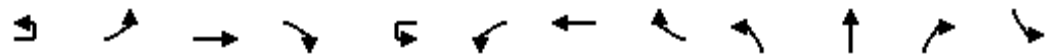
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	30	350	1129	151	5	520	1192	694	5	192	794	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.0	6.0		5.6	6.0	6.0		5.6	5.7	5.7
Lane Util. Factor		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	0.99		1.00	1.00	0.99		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	1562		3433	5085	1562		3433	5085	1544
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	1562		3433	5085	1562		3433	5085	1544
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)	32	368	1188	159	5	547	1255	731	5	202	836	284
RTOR Reduction (vph)	0	0	0	69	0	0	0	114	0	0	0	175
Lane Group Flow (vph)	0	400	1188	90	0	552	1255	617	0	207	836	109
Confl. Peds. (#/hr)				1				1				6
Confl. Bikes (#/hr)								1				5
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)		17.4	46.6	46.6		26.5	55.7	55.7		11.1	31.2	31.2
Effective Green, g (s)		17.4	46.6	46.6		26.5	55.7	55.7		11.1	31.2	31.2
Actuated g/C Ratio		0.12	0.31	0.31		0.18	0.37	0.37		0.07	0.21	0.21
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)		398	1580	485		606	1888	580		254	1058	321
v/s Ratio Prot		c0.12	0.23			0.16	0.25			0.06	0.16	
v/s Ratio Perm				0.06				c0.40				0.07
v/c Ratio		1.01	0.75	0.19		0.91	0.66	1.06		0.81	0.79	0.34
Uniform Delay, d1		66.3	46.5	37.8		60.6	39.4	47.1		68.4	56.3	50.6
Progression Factor		1.00	1.00	1.00		0.89	0.38	0.44		1.00	1.00	1.00
Incremental Delay, d2		46.4	3.4	0.8		11.7	1.1	47.4		17.0	3.8	0.2
Delay (s)		112.7	49.9	38.7		65.4	16.1	68.3		85.5	60.1	50.8
Level of Service		F	D	D		E	B	E		F	E	D
Approach Delay (s)			63.2				41.9				62.1	
Approach LOS			E				D				E	
Intersection Summary												
HCM Average Control Delay			57.5									E
HCM Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			150.0							17.2		
Intersection Capacity Utilization			105.5%									G
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 4: Elk Grove Blvd & Bruceville Road PM PEAK HOUR



Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	50	463	1063	360
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
Frbp, ped/bikes		1.00	1.00	0.98
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	4775	1339
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	4775	1339
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	487	1119	379
RTOR Reduction (vph)	0	0	3	131
Lane Group Flow (vph)	0	540	1161	203
Confl. Peds. (#/hr)				3
Confl. Bikes (#/hr)				1
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		22.8	42.9	42.9
Effective Green, g (s)		22.8	42.9	42.9
Actuated g/C Ratio		0.15	0.29	0.29
Clearance Time (s)		5.6	5.7	5.7
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		522	1366	383
v/s Ratio Prot		c0.16	c0.24	
v/s Ratio Perm				0.15
v/c Ratio		1.03	0.85	0.53
Uniform Delay, d1		63.6	50.5	45.1
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		48.6	5.1	0.6
Delay (s)		112.2	55.6	45.7
Level of Service		F	E	D
Approach Delay (s)			69.0	
Approach LOS			E	
Intersection Summary				

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 5: Elk Grove Blvd & Wymark Drive PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑	↗		↔	↑↑↑			↖	↗	↘
Volume (vph)	5	20	1782	160	5	160	2375	120	130	12	230	60
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		5.6	6.7			5.6	5.6	5.6
Lane Util. Factor		1.00	0.91	1.00		1.00	0.91			1.00	1.00	0.95
Frbp, ped/bikes		1.00	1.00	0.97		1.00	1.00			1.00	0.99	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	0.99			1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.96	1.00	0.95
Satd. Flow (prot)		1770	5085	1541		1770	5041			1781	1560	1681
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.96	1.00	0.95
Satd. Flow (perm)		1770	5085	1541		1770	5041			1781	1560	1681
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)	5	21	1876	168	5	168	2500	126	137	13	242	63
RTOR Reduction (vph)	0	0	0	38	0	0	2	0	0	0	212	0
Lane Group Flow (vph)	0	26	1876	130	0	173	2624	0	0	150	30	38
Confl. Peds. (#/hr)				1				3			2	
Confl. Bikes (#/hr)				5				5				
Turn Type	Prot	Prot		Perm	Prot	Prot			Split		Perm	Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				6							3	
Actuated Green, G (s)		3.0	83.2	83.2		13.1	92.2			18.7	18.7	11.5
Effective Green, g (s)		3.0	83.2	83.2		13.1	92.2			18.7	18.7	11.5
Actuated g/C Ratio		0.02	0.55	0.55		0.09	0.61			0.12	0.12	0.08
Clearance Time (s)		6.7	6.7	6.7		5.6	6.7			5.6	5.6	5.6
Vehicle Extension (s)		2.0	3.0	3.0		2.0	3.0			2.0	2.0	2.0
Lane Grp Cap (vph)		35	2820	855		155	3099			222	194	129
v/s Ratio Prot		0.01	c0.37			c0.10	c0.52			c0.08		c0.02
v/s Ratio Perm				0.08							0.02	
v/c Ratio		0.74	0.67	0.15		1.12	0.85			0.68	0.16	0.29
Uniform Delay, d1		73.1	23.6	16.2		68.5	23.2			62.8	58.6	65.4
Progression Factor		1.11	0.45	0.37		0.63	0.33			1.00	1.00	1.00
Incremental Delay, d2		37.5	0.8	0.2		71.0	0.7			6.3	0.1	0.5
Delay (s)		119.0	11.4	6.2		114.2	8.5			69.0	58.7	65.9
Level of Service		F	B	A		F	A			E	E	E
Approach Delay (s)			12.4			15.0				62.7		
Approach LOS			B			B				E		

Intersection Summary		
HCM Average Control Delay	18.3	HCM Level of Service B
HCM Volume to Capacity ratio	0.85	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 30.2
Intersection Capacity Utilization	87.2%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 5: Elk Grove Blvd & Wymark Drive PM PEAK HOUR



Movement	SBT	SBR
Lane Configurations	↕	↗
Volume (vph)	12	10
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.6	5.6
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.97	1.00
Satd. Flow (prot)	1713	1558
Flt Permitted	0.97	1.00
Satd. Flow (perm)	1713	1558
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	13	11
RTOR Reduction (vph)	0	10
Lane Group Flow (vph)	38	1
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		1
Turn Type		Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	11.5	11.5
Effective Green, g (s)	11.5	11.5
Actuated g/C Ratio	0.08	0.08
Clearance Time (s)	5.6	5.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	131	119
v/s Ratio Prot	0.02	
v/s Ratio Perm		0.00
v/c Ratio	0.29	0.01
Uniform Delay, d1	65.4	64.0
Progression Factor	1.00	1.00
Incremental Delay, d2	0.4	0.0
Delay (s)	65.8	64.0
Level of Service	E	E
Approach Delay (s)	65.6	
Approach LOS	E	

Intersection Summary

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 6: Elk Grove Blvd & Big Horn Blvd PM PEAK HOUR

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	65	160	1290	392	10	422	1580	200	5	605	1129	326
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	0.98		1.00	1.00	0.99		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	1557		3433	5085	1560		3433	3539	1549
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	1557		3433	5085	1560		3433	3539	1549
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)	68	168	1358	413	11	444	1663	211	5	637	1188	343
RTOR Reduction (vph)	0	0	0	158	0	0	0	63	0	0	0	110
Lane Group Flow (vph)	0	236	1358	255	0	455	1663	148	0	642	1188	233
Confl. Peds. (#/hr)				2								6
Confl. Bikes (#/hr)				2			4					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)		9.3	39.3	39.3		16.3	46.3	46.3		22.7	59.0	59.0
Effective Green, g (s)		9.3	39.3	39.3		16.3	46.3	46.3		22.7	59.0	59.0
Actuated g/C Ratio		0.06	0.26	0.26		0.11	0.31	0.31		0.15	0.39	0.39
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)		213	1332	408		373	1570	482		520	1392	609
v/s Ratio Prot		0.07	c0.27			0.13	c0.33			c0.19	0.34	
v/s Ratio Perm				0.16				0.09				0.15
v/c Ratio		1.11	1.02	0.63		1.22	1.06	0.31		1.23	0.85	0.38
Uniform Delay, d1		70.3	55.4	48.8		66.8	51.9	39.6		63.6	41.6	32.5
Progression Factor		0.73	0.66	0.63		0.76	0.57	0.28		1.00	1.00	1.00
Incremental Delay, d2		87.3	27.1	5.7		111.3	34.8	0.9		121.4	5.1	0.1
Delay (s)		138.8	63.8	36.4		162.1	64.3	12.1		185.1	46.7	32.6
Level of Service		F	E	D		F	E	B		F	D	C
Approach Delay (s)			67.0				78.7				85.3	
Approach LOS			E				E				F	
Intersection Summary												
HCM Average Control Delay			83.0				HCM Level of Service			F		
HCM Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)		17.3			
Intersection Capacity Utilization			108.1%				ICU Level of Service		G			
Analysis Period (min)			15									
c Critical Lane Group												

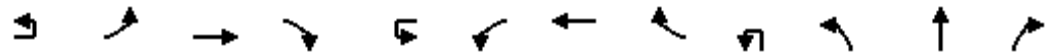
HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 6: Elk Grove Blvd & Big Horn Blvd PM PEAK HOUR



Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	TT	RT
Volume (vph)	5	190	1208	280
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
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	3539	1551
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1551
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	200	1272	295
RTOR Reduction (vph)	0	0	0	24
Lane Group Flow (vph)	0	205	1272	271
Confl. Peds. (#/hr)				6
Confl. Bikes (#/hr)				
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		11.4	47.7	47.7
Effective Green, g (s)		11.4	47.7	47.7
Actuated g/C Ratio		0.08	0.32	0.32
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		261	1125	493
v/s Ratio Prot		0.06	0.36	
v/s Ratio Perm				0.17
v/c Ratio		0.79	1.13	0.55
Uniform Delay, d1		68.1	51.1	42.3
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		13.3	70.4	0.7
Delay (s)		81.4	121.5	43.0
Level of Service		F	F	D
Approach Delay (s)			103.8	
Approach LOS			F	

Intersection Summary

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 7: Elk Grove Blvd & Laguna Springs Drive PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔	↑↑↑	↗		↙	↑↑↑			↔	↑	↗↗
Volume (vph)	10	100	1446	190	5	849	1772	80	5	230	355	1192
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
Frbp, ped/bikes		1.00	1.00	0.98		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
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	1559		3433	5046			1770	1863	2749
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	5085	1559		3433	5046			1770	1863	2749
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)	11	105	1522	200	5	894	1865	84	5	242	374	1255
RTOR Reduction (vph)	0	0	0	71	0	0	3	0	0	0	0	515
Lane Group Flow (vph)	0	116	1522	129	0	899	1946	0	0	247	374	740
Confl. Peds. (#/hr)								3				1
Confl. Bikes (#/hr)				4				2				
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)		13.8	42.6	42.6		35.4	64.2			29.7	37.0	37.0
Effective Green, g (s)		13.8	42.6	42.6		35.4	64.2			29.7	37.0	37.0
Actuated g/C Ratio		0.09	0.28	0.28		0.24	0.43			0.20	0.25	0.25
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)		163	1444	443		810	2160			350	460	678
v/s Ratio Prot		0.07	c0.30			c0.26	0.39			0.14	0.20	
v/s Ratio Perm				0.08								c0.27
v/c Ratio		0.71	1.05	0.29		1.11	0.90			0.71	0.81	1.09
Uniform Delay, d1		66.2	53.7	41.9		57.3	39.9			56.1	53.2	56.5
Progression Factor		1.13	0.60	0.48		0.78	0.26			1.00	1.00	1.00
Incremental Delay, d2		5.2	32.3	0.7		55.2	2.1			5.2	10.0	62.4
Delay (s)		80.0	64.3	20.8		99.9	12.7			61.3	63.2	118.9
Level of Service		E	E	C		F	B			E	E	F
Approach Delay (s)			60.6			40.2					100.2	
Approach LOS			E			D					F	
Intersection Summary												
HCM Average Control Delay			64.8			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			22.2			
Intersection Capacity Utilization			120.4%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

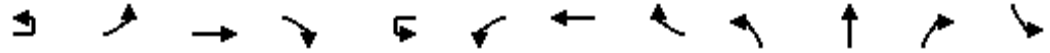
HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 7: Elk Grove Blvd & Laguna Springs Drive PM PEAK HOUR



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	140	235	160
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	5.6	5.3	
Lane Util. Factor	1.00	0.95	
Frbp, ped/bikes	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	
Frt	1.00	0.94	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1770	3306	
Flt Permitted	0.95	1.00	
Satd. Flow (perm)	1770	3306	
Peak-hour factor, PHF	0.95	0.95	0.95
Adj. Flow (vph)	147	247	168
RTOR Reduction (vph)	0	87	0
Lane Group Flow (vph)	147	328	0
Confl. Peds. (#/hr)			1
Confl. Bikes (#/hr)			
Turn Type	Prot		
Protected Phases	7	4	
Permitted Phases			
Actuated Green, G (s)	12.8	20.1	
Effective Green, g (s)	12.8	20.1	
Actuated g/C Ratio	0.09	0.13	
Clearance Time (s)	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	151	443	
v/s Ratio Prot	c0.08	0.10	
v/s Ratio Perm			
v/c Ratio	0.97	0.74	
Uniform Delay, d1	68.4	62.4	
Progression Factor	1.00	1.00	
Incremental Delay, d2	64.6	5.5	
Delay (s)	133.0	67.9	
Level of Service	F	E	
Approach Delay (s)		85.0	
Approach LOS		F	

Intersection Summary

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 8: Elk Grove Blvd & Auto Center Drive PM PEAK HOUR















Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑			↔	↑↑↑		↔	↑		↔
Volume (vph)	5	120	2397	70	50	180	2531	10	150	30	250	190
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
Frbp, ped/bikes		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
Frt		1.00	1.00			1.00	1.00		1.00	0.87		1.00
Flt Protected		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		1770	5057			3433	5081		1770	1614		3433
Flt Permitted		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (perm)		1770	5057			3433	5081		1770	1614		3433
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)	5	126	2523	74	53	189	2664	11	158	32	263	200
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	0	35	0	0
Lane Group Flow (vph)	0	131	2595	0	0	242	2675	0	158	260	0	200
Confl. Peds. (#/hr)				18				15				
Confl. Bikes (#/hr)				2				4				
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)		10.4	78.2			9.4	77.2		22.5	28.3		12.3
Effective Green, g (s)		10.4	78.2			9.4	77.2		22.5	28.3		12.3
Actuated g/C Ratio		0.07	0.52			0.06	0.51		0.15	0.19		0.08
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)		123	2636			215	2615		266	305		282
v/s Ratio Prot		c0.07	0.51			0.07	c0.53		c0.09	c0.16		0.06
v/s Ratio Perm												
v/c Ratio		1.07	0.98			1.13	1.02		0.59	0.85		0.71
Uniform Delay, d1		69.8	35.3			70.3	36.4		59.5	58.8		67.1
Progression Factor		0.76	0.31			0.86	0.58		1.00	1.00		1.00
Incremental Delay, d2		43.7	2.8			78.1	17.5		2.4	19.3		6.5
Delay (s)		96.5	13.6			138.9	38.4		61.9	78.2		73.6
Level of Service		F	B			F	D		E	E		E
Approach Delay (s)			17.5			46.7			72.5			
Approach LOS			B			D			E			
Intersection Summary												
HCM Average Control Delay			37.3			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			10.3			
Intersection Capacity Utilization			99.6%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 8: Elk Grove Blvd & Auto Center Drive PM PEAK HOUR

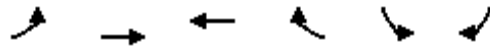


Movement	SBT	SBR
Lane Configurations	T	
Volume (vph)	20	120
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frbp, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.87	
Flt Protected	1.00	
Satd. Flow (prot)	1585	
Flt Permitted	1.00	
Satd. Flow (perm)	1585	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	21	126
RTOR Reduction (vph)	102	0
Lane Group Flow (vph)	45	0
Confl. Peds. (#/hr)		13
Confl. Bikes (#/hr)		
Turn Type		
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	18.1	
Effective Green, g (s)	18.1	
Actuated g/C Ratio	0.12	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	191	
v/s Ratio Prot	0.03	
v/s Ratio Perm		
v/c Ratio	0.24	
Uniform Delay, d1	59.7	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	59.9	
Level of Service	E	
Approach Delay (s)	67.8	
Approach LOS	E	
Intersection Summary		

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 9: Elk Grove Blvd & SR-99 SB Off-ramp PM PEAK HOUR

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	2530	278	100	1886	0	0	0	0	690	0	1185
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	0.98
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)		4998		3433	5085					1681	1681	2743
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4998		3433	5085					1681	1681	2743
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	2663	293	105	1985	0	0	0	0	726	0	1247
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	0	8
Lane Group Flow (vph)	0	2947	0	105	1985	0	0	0	0	363	363	1239
Confl. Peds. (#/hr)			5			7						3
Confl. Bikes (#/hr)			4			6						
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)		2399		101	2790					620	620	1011
v/s Ratio Prot		c0.59		0.03	c0.39					0.22	0.22	
v/s Ratio Perm												c0.45
v/c Ratio		1.23		1.04	0.71					0.59	0.59	1.23
Uniform Delay, d1		39.0		72.8	25.1					38.1	38.1	47.4
Progression Factor		0.47		0.80	0.34					1.00	1.00	1.00
Incremental Delay, d2		104.2		77.3	0.9					0.9	0.9	110.3
Delay (s)		122.5		135.3	9.3					39.0	39.0	157.6
Level of Service		F		F	A					D	D	F
Approach Delay (s)		122.5			15.7			0.0			114.0	
Approach LOS		F			B			A			F	
Intersection Summary												
HCM Average Control Delay			88.3			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.17									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			12.7			
Intersection Capacity Utilization			93.9%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 10: Elk Grove Blvd & SR-99 NB On-ramp PM PEAK HOUR

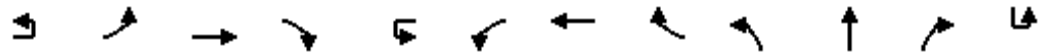


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	3220	1986	350	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	3389	2091	368	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
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	2459				3220	697
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1626				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)	281				688	770

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	1130	1130	1130	697	697	697	368
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	368
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.66	0.66	0.66	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		93.9%	ICU Level of Service F
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 11: Elk Grove Blvd & E. Stockton Blvd PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		
Volume (vph)	15	120	1431	1669	10	60	1680	110	516	140	150	10
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		
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	0.99		1.00	1.00	0.97	1.00	0.99		
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	1561		1770	5085	1543	1610	3155		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.98		
Satd. Flow (perm)		1770	3539	1561		1770	5085	1543	1610	3155		
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)	16	126	1506	1757	11	63	1768	116	543	147	158	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	33	0	25	0	0
Lane Group Flow (vph)	0	142	1506	1757	0	74	1768	83	288	535	0	0
Confl. Peds. (#/hr)				4				7			6	
Confl. Bikes (#/hr)				4				2				
Turn Type	Prot	Prot		Free	Prot	Prot		Perm	Split			Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				Free				2				
Actuated Green, G (s)		13.4	69.3	150.0		7.4	63.3	63.3	27.9	27.9		
Effective Green, g (s)		13.4	69.3	150.0		7.4	63.3	63.3	27.9	27.9		
Actuated g/C Ratio		0.09	0.46	1.00		0.05	0.42	0.42	0.19	0.19		
Clearance Time (s)		5.6	5.7			5.6	5.7	5.7	5.6	5.6		
Vehicle Extension (s)		2.0	3.9			2.0	3.9	3.9	2.0	2.0		
Lane Grp Cap (vph)		158	1635	1561		87	2146	651	299	587		
v/s Ratio Prot		0.08	0.43			0.04	0.35		0.18	0.17		
v/s Ratio Perm				c1.13				0.05				
v/c Ratio		0.90	0.92	1.13		0.85	0.82	0.13	0.96	0.91		
Uniform Delay, d1		67.6	37.8	75.0		70.8	38.4	26.5	60.5	59.8		
Progression Factor		0.88	0.81	1.00		1.00	1.00	1.00	0.68	0.66		
Incremental Delay, d2		6.4	1.1	57.4		49.5	3.7	0.4	40.6	17.5		
Delay (s)		65.8	31.6	132.4		120.3	42.2	26.9	81.5	57.1		
Level of Service		E	C	F		F	D	C	F	E		
Approach Delay (s)			85.1				44.2			65.4		
Approach LOS			F				D			E		
Intersection Summary												
HCM Average Control Delay			71.6				HCM Level of Service		E			
HCM Volume to Capacity ratio			1.13									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)		0.0			
Intersection Capacity Utilization			92.2%				ICU Level of Service		F			
Analysis Period (min)			15									
c Critical Lane Group												

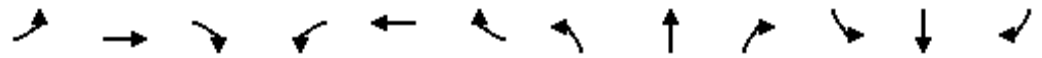
HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 11: Elk Grove Blvd & E. Stockton Blvd PM PEAK HOUR



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	320	160	140
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
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	0.98	1.00
Satd. Flow (prot)	1681	1738	1583
Flt Permitted	0.95	0.98	1.00
Satd. Flow (perm)	1681	1738	1583
Peak-hour factor, PHF	0.95	0.95	0.95
Adj. Flow (vph)	337	168	147
RTOR Reduction (vph)	0	0	105
Lane Group Flow (vph)	254	262	42
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Turn Type	Split		Perm
Protected Phases	4	4	
Permitted Phases			4
Actuated Green, G (s)	23.9	23.9	23.9
Effective Green, g (s)	23.9	23.9	23.9
Actuated g/C Ratio	0.16	0.16	0.16
Clearance Time (s)	4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	268	277	252
v/s Ratio Prot	0.15	0.15	
v/s Ratio Perm			0.03
v/c Ratio	0.95	0.95	0.17
Uniform Delay, d1	62.4	62.4	54.4
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	40.1	39.0	0.1
Delay (s)	102.6	101.4	54.6
Level of Service	F	F	D
Approach Delay (s)		91.5	
Approach LOS		F	

Intersection Summary























HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 12: SR-99 NB Off-ramp & E. Stockton Blvd PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	286	10	10	20	40	40	320	450	20	80	710	1099
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	1679			1832	1583	1770	3517		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	1679			1832	1583	1770	3517		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)	301	11	11	21	42	42	337	474	21	84	747	1157
RTOR Reduction (vph)	0	2	0	0	0	39	0	3	0	0	0	162
Lane Group Flow (vph)	163	158	0	0	63	3	337	492	0	84	747	995
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			9.9	9.9	24.6	47.4		40.2	63.0	93.5
Effective Green, g (s)	30.5	30.5			9.9	9.9	24.6	47.4		40.2	63.0	93.5
Actuated g/C Ratio	0.20	0.20			0.07	0.07	0.16	0.32		0.27	0.42	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)	342	341			121	104	290	1111		474	782	987
v/s Ratio Prot	0.10	0.09			c0.03		c0.19	0.14		0.05	0.40	c0.21
v/s Ratio Perm						0.00						0.42
v/c Ratio	0.48	0.46			0.52	0.03	1.16	0.44		0.18	0.96	1.01
Uniform Delay, d1	52.7	52.6			67.8	65.5	62.7	40.8		42.2	42.1	28.2
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		0.99	0.91	0.76
Incremental Delay, d2	0.4	0.4			1.9	0.0	104.1	0.1		0.0	3.7	10.8
Delay (s)	53.1	52.9			69.6	65.6	166.8	40.9		41.7	42.2	32.2
Level of Service	D	D			E	E	F	D		D	D	C
Approach Delay (s)		53.0			68.0			91.9			36.4	
Approach LOS		D			E			F			D	

Intersection Summary		
HCM Average Control Delay	53.3	HCM Level of Service D
HCM Volume to Capacity ratio	1.00	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 22.0
Intersection Capacity Utilization	103.7%	ICU Level of Service G
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 13: Backer Ranch Road & Bruceville Road PM PEAK HOUR

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	80	72	170	144	152	96	15	100	1030	123	20	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	4.6	4.6		5.6	5.3	5.3		5.6
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00		1.00	0.95	1.00		1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.98		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	1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1770	1863	1583	3433	1863	1560		1770	3539	1549		1770
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1770	1863	1583	3433	1863	1560		1770	3539	1549		1770
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)	84	76	179	152	160	101	16	105	1084	129	21	100
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	67	0	0
Lane Group Flow (vph)	84	76	179	152	160	101	0	121	1084	62	0	121
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)	1					2		1		2		1
Turn Type	Prot		Perm	Prot		Perm	Prot	Prot		Perm	Prot	Prot
Protected Phases	3	8		7	4		1	1	6		5	5
Permitted Phases			8			4				6		
Actuated Green, G (s)	7.0	17.5	17.5	6.1	16.6	16.6		9.2	48.7	48.7		10.0
Effective Green, g (s)	7.0	17.5	17.5	6.1	16.6	16.6		9.2	48.7	48.7		10.0
Actuated g/C Ratio	0.07	0.17	0.17	0.06	0.16	0.16		0.09	0.47	0.47		0.10
Clearance Time (s)	5.6	4.6	4.6	5.6	4.6	4.6		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		2.0
Lane Grp Cap (vph)	120	315	268	203	299	250		157	1667	730		171
v/s Ratio Prot	c0.05	0.04		0.04	0.09			c0.07	0.31			0.07
v/s Ratio Perm			c0.11			0.06				0.04		
v/c Ratio	0.70	0.24	0.67	0.75	0.54	0.40		0.77	0.65	0.09		0.71
Uniform Delay, d1	47.2	37.2	40.2	47.9	39.9	39.0		46.1	20.9	15.1		45.3
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	13.4	0.1	4.8	12.4	0.9	0.4		18.9	0.7	0.0		10.4
Delay (s)	60.6	37.3	45.0	60.3	40.8	39.3		65.0	21.6	15.1		55.7
Level of Service	E	D	D	E	D	D		E	C	B		E
Approach Delay (s)		47.2			47.6				24.9			
Approach LOS		D			D				C			
Intersection Summary												
HCM Average Control Delay			32.3				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			103.4				Sum of lost time (s)		11.2			
Intersection Capacity Utilization			77.7%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 13: Backer Ranch Road & Bruceville Road PM PEAK HOUR



Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1330	70
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.3	
Lane Util. Factor	0.95	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	3508	
Flt Permitted	1.00	
Satd. Flow (perm)	3508	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	1400	74
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	1471	0
Confl. Peds. (#/hr)		2
Confl. Bikes (#/hr)		1
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	49.5	
Effective Green, g (s)	49.5	
Actuated g/C Ratio	0.48	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1679	
v/s Ratio Prot	c0.42	
v/s Ratio Perm		
v/c Ratio	0.88	
Uniform Delay, d1	24.2	
Progression Factor	1.00	
Incremental Delay, d2	5.3	
Delay (s)	29.5	
Level of Service	C	
Approach Delay (s)	31.5	
Approach LOS	C	
Intersection Summary		

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 14: Civic Center Drive & Wymark Drive PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	339	90	120	381	22	180	110	30	42	130	30
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	1.00	0.97		1.00	0.99			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	1804		1770	1848			1789			1806	
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (perm)	1770	1804		1770	1848			1789			1806	
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)	32	357	95	126	401	23	189	116	32	44	137	32
RTOR Reduction (vph)	0	6	0	0	1	0	0	2	0	0	4	0
Lane Group Flow (vph)	32	446	0	126	423	0	0	335	0	0	209	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)	3.6	36.8		12.6	45.8			27.2			18.1	
Effective Green, g (s)	3.6	36.8		12.6	45.8			27.2			18.1	
Actuated g/C Ratio	0.03	0.32		0.11	0.39			0.23			0.16	
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)	55	569		191	725			417			280	
v/s Ratio Prot	0.02	c0.25		c0.07	0.23			c0.19			c0.12	
v/s Ratio Perm												
v/c Ratio	0.58	0.78		0.66	0.58			0.80			0.75	
Uniform Delay, d1	55.8	36.3		50.0	27.9			42.2			47.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	9.7	6.4		6.1	0.8			10.1			9.1	
Delay (s)	65.5	42.8		56.1	28.7			52.3			56.2	
Level of Service	E	D		E	C			D			E	
Approach Delay (s)		44.3			35.0			52.3			56.2	
Approach LOS		D			C			D			E	

Intersection Summary

HCM Average Control Delay	44.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	116.7	Sum of lost time (s)	22.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 15: Civic Center Drive & Big Horn Blvd PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	180	131	120	60	103	260	70	1739	40	5	110	1733
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3			6.3	5.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95			1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.97
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	1863	1583	1770	1863	1583	1770	3527			1770	3436
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	1863	1583	1770	1863	1583	1770	3527			1770	3436
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	138	126	63	108	274	74	1831	42	5	116	1824
RTOR Reduction (vph)	0	0	99	0	0	61	0	1	0	0	0	13
Lane Group Flow (vph)	189	138	27	63	108	213	74	1872	0	0	121	2253
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot	Prot	
Protected Phases	3	8		7	4		1	6		5	5	2
Permitted Phases			8			4						
Actuated Green, G (s)	12.4	29.5	29.5	7.8	23.9	23.9	5.7	72.3			8.7	75.3
Effective Green, g (s)	12.4	29.5	29.5	7.8	23.9	23.9	5.7	72.3			8.7	75.3
Actuated g/C Ratio	0.09	0.21	0.21	0.06	0.17	0.17	0.04	0.52			0.06	0.54
Clearance Time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3			6.3	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
Lane Grp Cap (vph)	157	392	333	99	318	270	72	1820			110	1847
v/s Ratio Prot	c0.11	c0.07		0.04	0.06		0.04	0.53			c0.07	c0.66
v/s Ratio Perm			0.02			c0.13						
v/c Ratio	1.20	0.35	0.08	0.64	0.34	0.79	1.03	1.03			1.10	1.22
Uniform Delay, d1	63.8	47.2	44.4	64.8	51.2	55.7	67.2	33.9			65.7	32.4
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	137.0	0.2	0.0	9.4	0.2	13.6	114.0	28.8			115.3	104.1
Delay (s)	200.9	47.4	44.4	74.2	51.4	69.3	181.2	62.7			181.0	136.5
Level of Service	F	D	D	E	D	E	F	E			F	F
Approach Delay (s)		110.6			65.7			67.2				138.7
Approach LOS		F			E			E				F

Intersection Summary

HCM Average Control Delay	103.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	140.1	Sum of lost time (s)	27.4
Intersection Capacity Utilization	100.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR
Lane Configurations	
Volume (vph)	420
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	442
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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 Cumulative Weekday Plus Project Conditions
 16: Civic Center Drive & Laguna Springs Drive PM PEAK HOUR

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	165	0	150	0	0	0	260	1362	0	0	0	1051
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6		5.6				5.6	4.6				4.6
Lane Util. Factor	1.00		1.00				1.00	0.95				0.95
Frt	1.00		0.85				1.00	1.00				0.99
Flt Protected	0.95		1.00				0.95	1.00				1.00
Satd. Flow (prot)	1770		1583				1770	3539				3509
Flt Permitted	0.95		1.00				0.95	1.00				1.00
Satd. Flow (perm)	1770		1583				1770	3539				3509
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)	174	0	158	0	0	0	274	1434	0	0	0	1106
RTOR Reduction (vph)	0	0	123	0	0	0	0	0	0	0	0	3
Lane Group Flow (vph)	174	0	35	0	0	0	274	1434	0	0	0	1169
Turn Type	Prot		custom	Prot			Prot			Prot		
Protected Phases	3			7	4		1	6		5		2
Permitted Phases			8									
Actuated Green, G (s)	10.8		21.5				19.9	66.1				40.6
Effective Green, g (s)	10.8		21.5				19.9	66.1				40.6
Actuated g/C Ratio	0.11		0.22				0.20	0.68				0.42
Clearance Time (s)	5.6		5.6				5.6	4.6				4.6
Vehicle Extension (s)	2.0		2.0				2.0	2.0				2.0
Lane Grp Cap (vph)	195		348				360	2392				1457
v/s Ratio Prot	c0.10						c0.15	0.41				c0.33
v/s Ratio Perm			c0.02									
v/c Ratio	0.89		0.10				0.76	0.60				0.80
Uniform Delay, d1	42.9		30.4				36.7	8.6				25.1
Progression Factor	1.00		1.00				1.00	1.00				1.00
Incremental Delay, d2	35.4		0.0				8.3	0.3				3.1
Delay (s)	78.4		30.5				45.0	8.9				28.2
Level of Service	E		C				D	A				C
Approach Delay (s)		55.6			0.0			14.7				28.2
Approach LOS		E			A			B				C

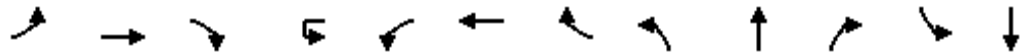
Intersection Summary		
HCM Average Control Delay	23.8	HCM Level of Service C
HCM Volume to Capacity ratio	0.71	
Actuated Cycle Length (s)	97.8	Sum of lost time (s) 15.8
Intersection Capacity Utilization	66.4%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

Movement	SBR
Lane Configurations	
Volume (vph)	63
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frnt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	66
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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 Cumulative Weekday Plus Project Conditions
 17: Denali Cir & Big Horn Blvd PM PEAK HOUR

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	2	20	37	2	89	110	1710	34	83	1740	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		5.3	5.3		5.3	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.86		1.00	0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1608		1770	1589		1770	3529		1770	3513	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1608		1770	1589		1770	3529		1770	3513	
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)	53	2	21	39	2	94	116	1800	36	87	1832	95
RTOR Reduction (vph)	0	19	0	0	85	0	0	1	0	0	2	0
Lane Group Flow (vph)	53	4	0	39	11	0	116	1835	0	87	1925	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	5.4	11.1		6.4	12.1		10.6	79.5		8.5	77.4	
Effective Green, g (s)	5.4	11.1		6.4	12.1		10.6	79.5		8.5	77.4	
Actuated g/C Ratio	0.04	0.09		0.05	0.10		0.08	0.63		0.07	0.62	
Clearance Time (s)	4.6	4.6		4.6	4.6		5.3	5.3		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)	76	142		90	153		150	2239		120	2170	
v/s Ratio Prot	c0.03	0.00		0.02	c0.01		c0.07	0.52		0.05	c0.55	
v/s Ratio Perm												
v/c Ratio	0.70	0.03		0.43	0.07		0.77	0.82		0.72	0.89	
Uniform Delay, d1	59.1	52.2		57.7	51.5		56.2	17.4		57.3	20.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.1	0.0		1.2	0.1		19.9	2.3		16.7	4.7	
Delay (s)	79.2	52.2		58.9	51.6		76.0	19.8		74.0	24.9	
Level of Service	E	D		E	D		E	B		E	C	
Approach Delay (s)		71.0			53.7			23.1			27.1	
Approach LOS		E			D			C			C	
Intersection Summary												
HCM Average Control Delay			26.9			HCM Level of Service					C	
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			125.3			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			79.2%			ICU Level of Service					D	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 18: Denali Circle & Big Horn Blvd PM PEAK HOUR



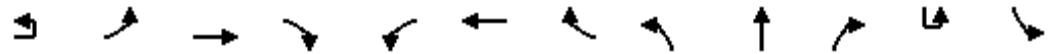
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗			↖↗	↖	↖↗	↖	↖↗	↖	↖↗	↖↗
Volume (vph)	80	70	10	5	350	150	628	20	1146	310	599	1088
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	5.3
Lane Util. Factor	1.00	1.00			0.97	1.00	0.88	1.00	0.95	1.00	0.97	0.95
Frt	1.00	0.98			1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99
Flt Protected	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1827			3433	1863	2787	1770	3539	1583	3433	3490
Flt Permitted	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1827			3433	1863	2787	1770	3539	1583	3433	3490
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)	84	74	11	5	368	158	661	21	1206	326	631	1145
RTOR Reduction (vph)	0	4	0	0	0	0	102	0	0	117	0	4
Lane Group Flow (vph)	84	81	0	0	373	158	559	21	1206	209	631	1257
Turn Type	Prot			Prot	Prot		pm+ov	Prot		Perm	Prot	
Protected Phases	3	8		7	7	4	5	1	6		5	2
Permitted Phases							4			6		
Actuated Green, G (s)	10.0	14.5			14.5	20.6	43.5	1.9	51.1	51.1	22.9	72.1
Effective Green, g (s)	10.0	14.5			14.5	20.6	43.5	1.9	51.1	51.1	22.9	72.1
Actuated g/C Ratio	0.08	0.11			0.11	0.16	0.34	0.01	0.40	0.40	0.18	0.57
Clearance Time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	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
Lane Grp Cap (vph)	139	208			391	301	952	26	1419	635	617	1975
v/s Ratio Prot	0.05	0.04			c0.11	0.08	c0.11	0.01	c0.34		c0.18	0.36
v/s Ratio Perm							0.09			0.13		
v/c Ratio	0.60	0.39			0.95	0.52	0.59	0.81	0.85	0.33	1.02	0.64
Uniform Delay, d1	56.8	52.3			56.1	48.9	34.6	62.6	34.7	26.3	52.2	18.8
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	5.0	0.4			33.3	0.8	0.6	90.8	4.8	0.1	42.1	0.5
Delay (s)	61.8	52.8			89.4	49.7	35.2	153.4	39.4	26.4	94.4	19.3
Level of Service	E	D			F	D	D	F	D	C	F	B
Approach Delay (s)		57.3				54.1			38.2			44.3
Approach LOS		E				D			D			D

Intersection Summary		
HCM Average Control Delay	45.2	HCM Level of Service D
HCM Volume to Capacity ratio	0.88	
Actuated Cycle Length (s)	127.4	Sum of lost time (s) 23.5
Intersection Capacity Utilization	83.5%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		



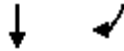
Movement	SBR
Lane Configurations	
Volume (vph)	110
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	116
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected 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 Cumulative Weekday Plus Project Conditions
 19: Lotz Pkwy & Laguna Springs Drive PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL		
Lane Configurations		↔	↕	↗	↔	↕	↗	↔	↕	↗		↔		
Volume (vph)	20	82	757	10	10	796	750	40	150	30	5	600		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6		5.6		
Lane Util. Factor		0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00		0.97		
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98		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	1.00	0.85	1.00	1.00	0.85		1.00		
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95		
Satd. Flow (prot)		3433	3539	1563	3433	3539	1583	3433	3539	1557		3433		
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95		
Satd. Flow (perm)		3433	3539	1563	3433	3539	1583	3433	3539	1557		3433		
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)	21	86	797	11	11	838	789	42	158	32	5	632		
RTOR Reduction (vph)	0	0	0	6	0	0	376	0	0	27	0	0		
Lane Group Flow (vph)	0	107	797	5	11	838	413	42	158	5	0	637		
Confl. Peds. (#/hr)										2				
Confl. Bikes (#/hr)				2						2		1		
Turn Type	Prot	Prot		Perm	Prot		Perm	Prot		Perm	Prot	Prot		
Protected Phases	3	3	8		7	4		1	6		5	5		
Permitted Phases				8			4			6				
Actuated Green, G (s)		5.9	41.1	41.1	0.7	35.9	35.9	2.8	14.9	14.9		18.1		
Effective Green, g (s)		5.9	41.1	41.1	0.7	35.9	35.9	2.8	14.9	14.9		18.1		
Actuated g/C Ratio		0.06	0.42	0.42	0.01	0.37	0.37	0.03	0.15	0.15		0.18		
Clearance Time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6		5.6		
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)		206	1481	654	24	1294	579	98	537	236		633		
v/s Ratio Prot		c0.03	c0.23		0.00	0.24		0.01	c0.04			c0.19		
v/s Ratio Perm				0.00			c0.26			0.00				
v/c Ratio		0.52	0.54	0.01	0.46	0.65	0.71	0.43	0.29	0.02		1.01		
Uniform Delay, d1		44.8	21.4	16.6	48.6	25.9	26.7	46.9	37.0	35.4		40.0		
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		0.9	0.2	0.0	5.0	0.8	3.5	1.1	0.1	0.0		37.3		
Delay (s)		45.7	21.6	16.7	53.5	26.7	30.2	48.0	37.1	35.5		77.4		
Level of Service		D	C	B	D	C	C	D	D	D		E		
Approach Delay (s)			24.4			28.6			38.8					
Approach LOS			C			C			D					
Intersection Summary														
HCM Average Control Delay			36.1									HCM Level of Service	D	
HCM Volume to Capacity ratio			0.76											
Actuated Cycle Length (s)			98.2							30.0				
Intersection Capacity Utilization			92.8%										ICU Level of Service	F
Analysis Period (min)			15											
c	Critical Lane Group													

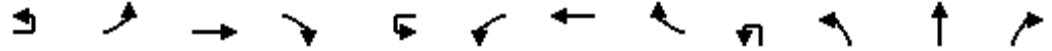
HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 19: Lotz Pkwy & Laguna Springs Drive PM PEAK HOUR



Movement	SBT	SBR
Lane Configurations	↑↑	↑
Volume (vph)	140	181
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.6	4.6
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.99
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3539	1562
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3539	1562
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	147	191
RTOR Reduction (vph)	0	79
Lane Group Flow (vph)	147	112
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		1
Turn Type		Perm
Protected Phases	2	
Permitted Phases		2
Actuated Green, G (s)	31.2	31.2
Effective Green, g (s)	31.2	31.2
Actuated g/C Ratio	0.32	0.32
Clearance Time (s)	4.6	4.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	1124	496
v/s Ratio Prot	0.04	
v/s Ratio Perm		0.07
v/c Ratio	0.13	0.23
Uniform Delay, d1	23.8	24.6
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.1
Delay (s)	23.9	24.7
Level of Service	C	C
Approach Delay (s)	59.0	
Approach LOS	E	

Intersection Summary

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 20: Whitelock Pkwy & Bruceville Road PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↔	↑↑	↗		↔↔	↑↑	↗		↔↔	↑↑	↗
Volume (vph)	5	352	272	70	5	134	362	240	25	150	532	63
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	0.95	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)	5	371	286	74	5	141	381	253	26	158	560	66
RTOR Reduction (vph)	0	0	0	55	0	0	0	142	0	0	0	49
Lane Group Flow (vph)	0	376	286	19	0	146	381	111	0	184	560	17
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)		12.9	21.6	21.6		7.8	16.5	16.5		7.5	21.0	21.0
Effective Green, g (s)		12.9	21.6	21.6		7.8	16.5	16.5		7.5	21.0	21.0
Actuated g/C Ratio		0.16	0.26	0.26		0.10	0.20	0.20		0.09	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
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)		540	932	417		327	712	319		314	906	405
v/s Ratio Prot		c0.11	c0.08			0.04	c0.11			0.05	0.16	
v/s Ratio Perm				0.01				0.07				0.01
v/c Ratio		0.70	0.31	0.05		0.45	0.54	0.35		0.59	0.62	0.04
Uniform Delay, d1		32.7	24.2	22.5		35.1	29.3	28.1		35.8	27.0	22.9
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		3.2	0.1	0.0		0.4	0.4	0.2		1.8	0.9	0.0
Delay (s)		35.8	24.3	22.5		35.4	29.7	28.4		37.6	27.8	22.9
Level of Service		D	C	C		D	C	C		D	C	C
Approach Delay (s)			30.0				30.3				29.7	
Approach LOS			C				C				C	

Intersection Summary		
HCM Average Control Delay	30.5	HCM Level of Service C
HCM Volume to Capacity ratio	0.68	
Actuated Cycle Length (s)	82.0	Sum of lost time (s) 21.7
Intersection Capacity Utilization	77.8%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

































HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 20: Whitelock Pkwy & Bruceville Road PM PEAK HOUR



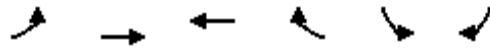
Movement	SBU	SBL	SBT	SBR
Lane Configurations		←↑	↑↑	↑
Volume (vph)	15	240	572	562
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		6.3	5.3	5.3
Lane Util. Factor		0.97	0.95	1.00
Fr _t		1.00	1.00	0.85
Fl _t Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1583
Fl _t Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	253	602	592
RTOR Reduction (vph)	0	0	0	255
Lane Group Flow (vph)	0	269	602	337
Turn Type	Prot	Prot		Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		9.5	23.0	23.0
Effective Green, g (s)		9.5	23.0	23.0
Actuated g/C Ratio		0.12	0.28	0.28
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		398	993	444
v/s Ratio Prot		c0.08	0.17	
v/s Ratio Perm				c0.21
v/c Ratio		0.68	0.61	0.76
Uniform Delay, d ₁		34.8	25.6	27.0
Progression Factor		1.00	1.00	1.00
Incremental Delay, d ₂		3.6	0.7	6.5
Delay (s)		38.3	26.3	33.4
Level of Service		D	C	C
Approach Delay (s)			31.4	
Approach LOS			C	

Intersection Summary

HCM Signalized Intersection Capacity Analysis Cumulative Weekday Plus Project Conditions
 21: Whitelock Pkwy & Big Horn Blvd PM PEAK HOUR

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	215	120	60	80	270	123	130	1188	40	104	1119	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.3	5.3	5.6	5.3	5.3	5.6	5.3	5.3	5.6	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	0.95	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)	226	126	63	84	284	129	137	1251	42	109	1178	289
RTOR Reduction (vph)	0	0	50	0	0	106	0	0	18	0	0	169
Lane Group Flow (vph)	226	126	13	84	284	23	137	1251	24	109	1178	120
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)	6.9	17.1	17.1	4.5	14.7	14.7	5.1	35.6	35.6	3.9	34.4	34.4
Effective Green, g (s)	6.9	17.1	17.1	4.5	14.7	14.7	5.1	35.6	35.6	3.9	34.4	34.4
Actuated g/C Ratio	0.08	0.21	0.21	0.05	0.18	0.18	0.06	0.43	0.43	0.05	0.41	0.41
Clearance Time (s)	5.6	5.3	5.3	5.6	5.3	5.3	5.6	5.3	5.3	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	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	286	730	327	186	628	281	211	1520	680	162	1469	657
v/s Ratio Prot	c0.07	0.04		0.02	c0.08		c0.04	c0.35		0.03	0.33	
v/s Ratio Perm			0.01			0.01			0.02			0.08
v/c Ratio	0.79	0.17	0.04	0.45	0.45	0.08	0.65	0.82	0.04	0.67	0.80	0.18
Uniform Delay, d1	37.3	27.1	26.3	38.0	30.5	28.5	38.0	20.9	13.7	38.9	21.3	15.3
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	12.9	0.0	0.0	0.6	0.2	0.0	5.1	3.6	0.0	8.3	3.1	0.0
Delay (s)	50.2	27.1	26.3	38.6	30.7	28.5	43.1	24.4	13.7	47.2	24.3	15.4
Level of Service	D	C	C	D	C	C	D	C	B	D	C	B
Approach Delay (s)		39.6			31.5			25.9			24.3	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM Average Control Delay			27.4				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			82.9				Sum of lost time (s)		16.5			
Intersection Capacity Utilization			68.5%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 1: Elk Grove Blvd & I-5 SB On/Off-Ramp Saturday Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑	↔		↔↔↔	
Volume (veh/h)	10	10	10	180	493	10
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	11	11	189	519	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1048	1043	1048	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1048	1043	1048	0	0	
tC, single (s)	7.1	6.5	6.5	6.2	4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.2	
p0 queue free %	91	93	93	83	68	
cM capacity (veh/h)	121	156	155	1085	1623	
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	14	7	200	346	184	
Volume Left	11	0	0	346	173	
Volume Right	0	0	189	0	11	
cSH	129	156	824	1623	1623	
Volume to Capacity	0.11	0.04	0.24	0.32	0.32	
Queue Length 95th (ft)	9	4	24	35	35	
Control Delay (s)	36.4	29.2	10.8	8.3	7.9	
Lane LOS	E	D	B	A	A	
Approach Delay (s)	34.0		10.8	8.1		
Approach LOS	D		B			
Intersection Summary						
Average Delay			9.6			
Intersection Capacity Utilization			32.7%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions

2: Elk Grove Blvd & I-5 NB On-Ramp

Saturday Peak



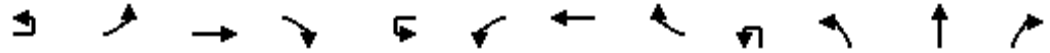
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑	↗↗		↕	↗			
Volume (veh/h)	10	493	0	0	180	899	10	0	131	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	519	0	0	189	946	11	0	138	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									17			
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	189			519			729	729	259	539	729	189
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	189			519			729	729	259	539	729	189
tC, single (s)	4.4			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			97	100	81	100	100	100
cM capacity (veh/h)	1279			1043			308	345	739	344	345	820

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	11	259	259	189	473	473	148
Volume Left	11	0	0	0	0	0	11
Volume Right	0	0	0	0	473	473	138
cSH	1279	1700	1700	1700	1700	1700	796
Volume to Capacity	0.01	0.15	0.15	0.11	0.28	0.28	0.19
Queue Length 95th (ft)	1	0	0	0	0	0	17
Control Delay (s)	7.8	0.0	0.0	0.0	0.0	0.0	11.4
Lane LOS	A						B
Approach Delay (s)	0.2			0.0			11.4
Approach LOS							B

Intersection Summary

Average Delay		1.0	
Intersection Capacity Utilization	48.1%		ICU Level of Service
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 3: Elk Grove Blvd & Franklin Blvd Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔	↑↑↑	↔		↔	↑↑↑	↔		↔	↑↑↑	↔
Volume (vph)	5	160	813	250	5	52	703	244	60	460	670	174
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	0.98		1.00	1.00	0.97
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	1549		3433	5085	1541
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	1549		3433	5085	1541
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)	5	168	856	263	5	55	740	257	63	484	705	183
RTOR Reduction (vph)	0	0	0	140	0	0	0	147	0	0	0	99
Lane Group Flow (vph)	0	173	856	123	0	60	740	110	0	547	705	84
Confl. Peds. (#/hr)								7				9
Confl. Bikes (#/hr)				1				1				4
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)		16.5	70.3	70.3		5.1	58.5	58.5		38.8	29.8	29.8
Effective Green, g (s)		16.5	70.3	70.3		5.1	58.5	58.5		38.8	29.8	29.8
Actuated g/C Ratio		0.11	0.47	0.47		0.03	0.39	0.39		0.26	0.20	0.20
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)		378	2383	1290		117	1983	604		888	1010	306
v/s Ratio Prot		c0.05	c0.17			0.02	c0.15			c0.16	c0.14	
v/s Ratio Perm				0.04				0.07				0.05
v/c Ratio		0.46	0.36	0.10		0.51	0.37	0.18		0.62	0.70	0.28
Uniform Delay, d1		62.6	25.5	22.2		71.2	32.7	30.0		49.0	55.9	51.0
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		0.3	0.4	0.1		1.6	0.5	0.7		0.9	1.7	0.2
Delay (s)		62.9	25.9	22.3		72.8	33.2	30.7		49.9	57.6	51.1
Level of Service		E	C	C		E	C	C		D	E	D
Approach Delay (s)			30.1				34.8				53.9	
Approach LOS			C				C				D	

Intersection Summary		
HCM Average Control Delay	45.3	HCM Level of Service D
HCM Volume to Capacity ratio	0.59	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 38.0
Intersection Capacity Utilization	82.8%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

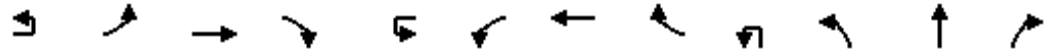
HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 3: Elk Grove Blvd & Franklin Blvd Saturday Peak



Movement	SBU	SBL	SBT	SBR
Lane Configurations		57	↑↑↑	7
Volume (vph)	5	330	230	180
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	0.97
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	5085	1537
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	5085	1537
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	347	242	189
RTOR Reduction (vph)	0	0	0	175
Lane Group Flow (vph)	0	352	242	14
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				6
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		19.6	11.5	11.5
Effective Green, g (s)		19.6	11.5	11.5
Actuated g/C Ratio		0.13	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)		449	390	118
v/s Ratio Prot		0.10	0.05	
v/s Ratio Perm				0.01
v/c Ratio		0.78	0.62	0.12
Uniform Delay, d1		63.1	67.1	64.5
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		8.1	2.2	0.2
Delay (s)		71.2	69.3	64.7
Level of Service		E	E	E
Approach Delay (s)			69.1	
Approach LOS			E	

Intersection Summary

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 4: Elk Grove Blvd & Bruceville Road Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↔	↑↑↑	↗		↔↔	↑↑↑	↗		↔↔	↑↑↑	↗
Volume (vph)	20	360	1087	120	5	440	615	434	5	184	774	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
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	0.98		1.00	1.00	0.99		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	1554		3433	5085	1561		3433	5085	1559
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	1554		3433	5085	1561		3433	5085	1559
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)	21	379	1144	126	5	463	647	457	5	194	815	379
RTOR Reduction (vph)	0	0	0	54	0	0	0	152	0	0	0	242
Lane Group Flow (vph)	0	400	1144	72	0	468	647	305	0	199	815	137
Confl. Peds. (#/hr)				3				2				1
Confl. Bikes (#/hr)				4								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)		22.4	49.2	49.2		23.7	50.5	50.5		12.3	30.0	30.0
Effective Green, g (s)		22.4	49.2	49.2		23.7	50.5	50.5		12.3	30.0	30.0
Actuated g/C Ratio		0.15	0.33	0.33		0.16	0.34	0.34		0.08	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
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)		513	1668	510		542	1712	526		282	1017	312
v/s Ratio Prot		c0.12	c0.22			c0.14	0.13			0.06	c0.16	
v/s Ratio Perm				0.05				0.20				0.09
v/c Ratio		0.78	0.69	0.14		0.86	0.38	0.58		0.71	0.80	0.44
Uniform Delay, d1		61.4	43.7	35.5		61.6	37.8	41.0		67.1	57.2	52.6
Progression Factor		1.00	1.00	1.00		0.60	0.49	0.68		1.00	1.00	1.00
Incremental Delay, d2		6.7	2.3	0.6		12.0	0.6	4.2		6.4	4.4	0.4
Delay (s)		68.2	46.0	36.1		49.0	19.2	31.9		73.5	61.5	53.0
Level of Service		E	D	D		D	B	C		E	E	D
Approach Delay (s)			50.6				31.8				60.9	
Approach LOS			D				C				E	

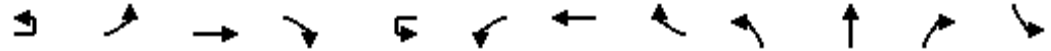
Intersection Summary		
HCM Average Control Delay	49.3	HCM Level of Service D
HCM Volume to Capacity ratio	0.82	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 28.5
Intersection Capacity Utilization	96.7%	ICU Level of Service F
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 4: Elk Grove Blvd & Bruceville Road Saturday Peak



Movement	SBU	SBL	SBT	SBR
Lane Configurations		←↑↑	↑↑↑	↑
Volume (vph)	40	419	719	270
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
Frbp, ped/bikes		1.00	1.00	0.98
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	4753	1340
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	4753	1340
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	441	757	284
RTOR Reduction (vph)	0	0	5	166
Lane Group Flow (vph)	0	483	806	64
Confl. Peds. (#/hr)				2
Confl. Bikes (#/hr)				2
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		24.2	41.9	41.9
Effective Green, g (s)		24.2	41.9	41.9
Actuated g/C Ratio		0.16	0.28	0.28
Clearance Time (s)		5.6	5.7	5.7
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		554	1328	374
v/s Ratio Prot		0.14	0.17	
v/s Ratio Perm				0.05
v/c Ratio		0.87	0.61	0.17
Uniform Delay, d1		61.4	46.9	40.9
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		13.7	0.5	0.1
Delay (s)		75.1	47.4	41.0
Level of Service		E	D	D
Approach Delay (s)			55.2	
Approach LOS			E	
Intersection Summary				

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 5: Elk Grove Blvd & Wymark Drive Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↕	↑↑↑	↗		↕	↑↑↑			↖	↗	↘
Volume (vph)	5	10	1816	80	5	120	1369	70	90	12	110	80
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		5.6	6.7			5.6	5.6	5.6
Lane Util. Factor		1.00	0.91	1.00		1.00	0.91			1.00	1.00	0.95
Frbp, ped/bikes		1.00	1.00	0.98		1.00	1.00			1.00	0.99	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	0.99			1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.96	1.00	0.95
Satd. Flow (prot)		1770	5085	1548		1770	5039			1604	1562	1681
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.96	1.00	0.95
Satd. Flow (perm)		1770	5085	1548		1770	5039			1604	1562	1681
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)	5	11	1912	84	5	126	1441	74	95	13	116	84
RTOR Reduction (vph)	0	0	0	18	0	0	2	0	0	0	103	0
Lane Group Flow (vph)	0	16	1912	66	0	131	1513	0	0	108	13	50
Confl. Peds. (#/hr)								5			1	
Confl. Bikes (#/hr)				3								
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	15%	2%	2%	2%
Turn Type	Prot	Prot		Perm	Prot	Prot			Split		Perm	Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				6							3	
Actuated Green, G (s)		2.2	82.6	82.6		15.0	94.3			16.8	16.8	12.1
Effective Green, g (s)		2.2	82.6	82.6		15.0	94.3			16.8	16.8	12.1
Actuated g/C Ratio		0.01	0.55	0.55		0.10	0.63			0.11	0.11	0.08
Clearance Time (s)		6.7	6.7	6.7		5.6	6.7			5.6	5.6	5.6
Vehicle Extension (s)		2.0	3.0	3.0		2.0	3.0			2.0	2.0	2.0
Lane Grp Cap (vph)		26	2800	852		177	3168			180	175	136
v/s Ratio Prot		0.01	c0.38			c0.07	0.30			c0.07		c0.03
v/s Ratio Perm				0.04							0.01	
v/c Ratio		0.62	0.68	0.08		0.74	0.48			0.60	0.07	0.37
Uniform Delay, d1		73.5	24.3	15.8		65.6	14.8			63.4	59.6	65.3
Progression Factor		1.21	0.38	0.20		0.57	0.30			1.00	1.00	1.00
Incremental Delay, d2		19.8	1.0	0.1		9.6	0.4			3.6	0.1	0.6
Delay (s)		108.5	10.2	3.2		47.3	4.8			67.0	59.7	65.9
Level of Service		F	B	A		D	A			E	E	E
Approach Delay (s)			10.7				8.2			63.2		
Approach LOS			B				A			E		

Intersection Summary		
HCM Average Control Delay	14.4	HCM Level of Service B
HCM Volume to Capacity ratio	0.65	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 23.5
Intersection Capacity Utilization	75.6%	ICU Level of Service D
Analysis Period (min)	15	

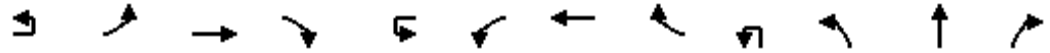
c Critical Lane Group

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 5: Elk Grove Blvd & Wymark Drive Saturday Peak



Movement	SBT	SBR
Lane Configurations	↕	↗
Volume (vph)	14	30
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.6	5.6
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.97	1.00
Satd. Flow (prot)	1710	1558
Flt Permitted	0.97	1.00
Satd. Flow (perm)	1710	1558
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	15	32
RTOR Reduction (vph)	0	29
Lane Group Flow (vph)	49	3
Confl. Peds. (#/hr)		3
Confl. Bikes (#/hr)		
Heavy Vehicles (%)	2%	2%
Turn Type		Perm
Protected Phases	4	
Permitted Phases		4
Actuated Green, G (s)	12.1	12.1
Effective Green, g (s)	12.1	12.1
Actuated g/C Ratio	0.08	0.08
Clearance Time (s)	5.6	5.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	138	126
v/s Ratio Prot	0.03	
v/s Ratio Perm		0.00
v/c Ratio	0.36	0.02
Uniform Delay, d1	65.3	63.5
Progression Factor	1.00	1.00
Incremental Delay, d2	0.6	0.0
Delay (s)	65.8	63.5
Level of Service	E	E
Approach Delay (s)	65.3	
Approach LOS	E	
Intersection Summary		

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 6: Elk Grove Blvd & Big Horn Blvd Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↔	↑↑↑	↗		↔↔	↑↑↑	↗		↔↔	↑↑	↗
Volume (vph)	80	220	1280	296	15	392	930	130	5	409	1940	400
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	0.99		1.00	1.00	0.98		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	1562		3433	5085	1553		3433	3539	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	1562		3433	5085	1553		3433	3539	1561
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)	84	232	1347	312	16	413	979	137	5	431	2042	421
RTOR Reduction (vph)	0	0	0	120	0	0	0	65	0	0	0	79
Lane Group Flow (vph)	0	316	1347	192	0	429	979	72	0	436	2042	342
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)				2				1				4
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)		14.8	37.3	37.3		11.3	33.8	33.8		37.8	69.7	69.7
Effective Green, g (s)		14.8	37.3	37.3		11.3	33.8	33.8		37.8	69.7	69.7
Actuated g/C Ratio		0.10	0.25	0.25		0.08	0.23	0.23		0.25	0.46	0.46
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)		339	1264	388		259	1146	350		865	1644	725
v/s Ratio Prot		0.09	c0.26			c0.12	0.19			0.13	c0.58	
v/s Ratio Perm				0.12				0.05				0.22
v/c Ratio		0.93	1.07	0.49		1.66	0.85	0.21		0.50	1.24	0.47
Uniform Delay, d1		67.1	56.4	48.3		69.3	55.7	47.2		48.1	40.1	27.5
Progression Factor		0.63	0.57	0.53		0.74	0.49	0.40		1.00	1.00	1.00
Incremental Delay, d2		27.1	42.4	3.6		310.1	7.3	1.2		0.2	114.3	0.2
Delay (s)		69.2	74.5	29.0		361.2	34.6	20.2		48.2	154.4	27.7
Level of Service		E	E	C		F	C	C		D	F	C
Approach Delay (s)			66.5				124.0				120.1	
Approach LOS			E				F				F	

Intersection Summary		
HCM Average Control Delay	99.8	HCM Level of Service F
HCM Volume to Capacity ratio	1.22	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 23.0
Intersection Capacity Utilization	115.1%	ICU Level of Service H
Analysis Period (min)	15	
c Critical Lane Group		

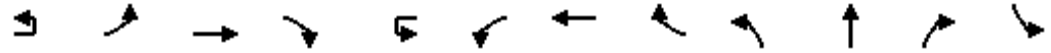
HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 6: Elk Grove Blvd & Big Horn Blvd Saturday Peak



Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	TT	RT
Volume (vph)	10	170	751	170
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
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	3539	1550
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1550
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	179	791	179
RTOR Reduction (vph)	0	0	0	69
Lane Group Flow (vph)	0	190	791	110
Confl. Peds. (#/hr)				4
Confl. Bikes (#/hr)				4
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		7.7	39.6	39.6
Effective Green, g (s)		7.7	39.6	39.6
Actuated g/C Ratio		0.05	0.26	0.26
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		176	934	409
v/s Ratio Prot		0.06	0.22	
v/s Ratio Perm				0.07
v/c Ratio		1.08	0.85	0.27
Uniform Delay, d1		71.2	52.3	43.7
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		90.6	6.9	0.1
Delay (s)		161.8	59.2	43.9
Level of Service		F	E	D
Approach Delay (s)			73.7	
Approach LOS			E	

Intersection Summary

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 7: Elk Grove Blvd & Laguna Springs Drive Saturday Peak



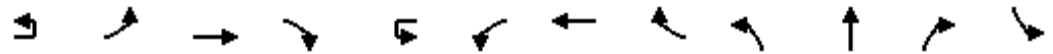
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑	↗		↔	↑↑↑		↔	↑	↗	↘
Volume (vph)	10	80	1580	110	10	377	1292	100	20	146	815	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7	5.7		5.6	5.7		5.6	5.3	5.3	5.6
Lane 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	0.98		1.00	1.00		1.00	1.00	0.98	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	1553		3433	5021		1770	1863	2738	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	1553		3433	5021		1770	1863	2738	1770
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)	11	84	1663	116	11	397	1360	105	21	154	858	63
RTOR Reduction (vph)	0	0	0	33	0	0	5	0	0	0	389	0
Lane Group Flow (vph)	0	95	1663	83	0	408	1460	0	21	154	469	63
Confl. Peds. (#/hr)				4				2			3	
Confl. Bikes (#/hr)				2				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)		12.0	69.2	69.2		20.4	77.6		3.6	30.5	30.5	7.7
Effective Green, g (s)		12.0	69.2	69.2		20.4	77.6		3.6	30.5	30.5	7.7
Actuated g/C Ratio		0.08	0.46	0.46		0.14	0.52		0.02	0.20	0.20	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)		142	2346	716		467	2598		42	379	557	91
v/s Ratio Prot		0.05	c0.33			c0.12	0.29		0.01	0.08		c0.04
v/s Ratio Perm				0.05								c0.17
v/c Ratio		0.67	0.71	0.12		0.87	0.56		0.50	0.41	0.84	0.69
Uniform Delay, d1		67.1	32.3	23.0		63.5	24.6		72.3	51.9	57.4	70.0
Progression Factor		1.02	0.44	0.11		0.61	0.13		1.00	1.00	1.00	1.00
Incremental Delay, d2		3.1	0.6	0.1		10.6	0.5		3.4	0.3	10.7	16.8
Delay (s)		71.5	15.0	2.5		49.4	3.6		75.7	52.1	68.1	86.7
Level of Service		E	B	A		D	A		E	D	E	F
Approach Delay (s)			17.1			13.6			65.9			
Approach LOS			B			B			E			
Intersection Summary												
HCM Average Control Delay			27.7			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			27.5			
Intersection Capacity Utilization			93.1%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 7: Elk Grove Blvd & Laguna Springs Drive Saturday Peak



Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	83	70
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	0.93	
Flt Protected	1.00	
Satd. Flow (prot)	3267	
Flt Permitted	1.00	
Satd. Flow (perm)	3267	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	87	74
RTOR Reduction (vph)	57	0
Lane Group Flow (vph)	104	0
Confl. Peds. (#/hr)		4
Confl. Bikes (#/hr)		1
Turn Type		
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	34.6	
Effective Green, g (s)	34.6	
Actuated g/C Ratio	0.23	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	754	
v/s Ratio Prot	c0.03	
v/s Ratio Perm		
v/c Ratio	0.14	
Uniform Delay, d1	45.9	
Progression Factor	1.00	
Incremental Delay, d2	0.0	
Delay (s)	45.9	
Level of Service	D	
Approach Delay (s)	57.4	
Approach LOS	E	
Intersection Summary		

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 8: Elk Grove Blvd & Auto Center Drive Saturday Peak



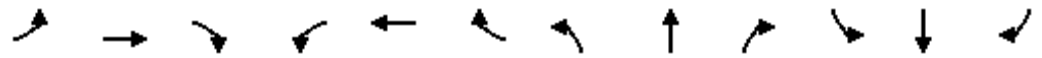
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑			↔	↑↑↑		↔	↑		↔
Volume (vph)	5	130	2315	170	100	270	1789	10	130	40	250	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.7			5.6	5.7		5.6	4.6		5.9
Lane Util. Factor		1.00	0.91			0.97	0.91		1.00	1.00		0.97
Frbp, ped/bikes		1.00	1.00			1.00	1.00		1.00	0.99		1.00
Flpb, ped/bikes		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
Flt Protected		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		1770	5022			3433	5080		1770	1603		3433
Flt Permitted		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (perm)		1770	5022			3433	5080		1770	1603		3433
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)	5	137	2437	179	105	284	1883	11	137	42	263	179
RTOR Reduction (vph)	0	0	5	0	0	0	1	0	0	51	0	0
Lane Group Flow (vph)	0	142	2611	0	0	389	1893	0	137	254	0	179
Confl. Peds. (#/hr)				11				6				
Confl. Bikes (#/hr)				1				2			1	
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)		18.4	72.5			16.5	70.6		15.1	27.2		12.0
Effective Green, g (s)		18.4	72.5			16.5	70.6		15.1	27.2		12.0
Actuated g/C Ratio		0.12	0.48			0.11	0.47		0.10	0.18		0.08
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)		217	2427			378	2391		178	291		275
v/s Ratio Prot		0.08	c0.52			c0.11	0.37		c0.08	c0.16		0.05
v/s Ratio Perm												
v/c Ratio		0.65	1.08			1.03	0.79		0.77	0.87		0.65
Uniform Delay, d1		62.8	38.8			66.8	33.5		65.8	59.7		67.0
Progression Factor		0.93	0.51			1.00	0.70		1.00	1.00		1.00
Incremental Delay, d2		3.9	40.5			40.2	1.4		16.3	23.3		4.2
Delay (s)		62.2	60.1			106.7	24.8		82.1	83.0		71.1
Level of Service		E	E			F	C		F	F		E
Approach Delay (s)			60.2				38.8			82.7		
Approach LOS			E				D			F		
Intersection Summary												
HCM Average Control Delay			53.7			HCM Level of Service				D		
HCM Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			21.5			
Intersection Capacity Utilization			101.4%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 8: Elk Grove Blvd & Auto Center Drive Saturday Peak



Movement	SBT	SBR
Lane Configurations	T	
Volume (vph)	30	70
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frbp, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.90	
Flt Protected	1.00	
Satd. Flow (prot)	1628	
Flt Permitted	1.00	
Satd. Flow (perm)	1628	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	32	74
RTOR Reduction (vph)	62	0
Lane Group Flow (vph)	44	0
Confl. Peds. (#/hr)		16
Confl. Bikes (#/hr)		2
Turn Type		
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	24.1	
Effective Green, g (s)	24.1	
Actuated g/C Ratio	0.16	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	262	
v/s Ratio Prot	0.03	
v/s Ratio Perm		
v/c Ratio	0.17	
Uniform Delay, d1	54.3	
Progression Factor	1.00	
Incremental Delay, d2	0.1	
Delay (s)	54.4	
Level of Service	D	
Approach Delay (s)	64.9	
Approach LOS	E	
Intersection Summary		

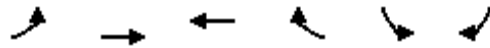
HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 9: Elk Grove Blvd & SR-99 SB Off-ramp Saturday Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	2466	279	50	1499	0	0	0	0	480	0	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		0.97	0.91					0.95	0.95	0.88
Frbp, ped/bikes		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
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)		4998		3367	5085					1681	1681	2746
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4998		3367	5085					1681	1681	2746
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	2596	294	53	1578	0	0	0	0	505	0	1242
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	0	26
Lane Group Flow (vph)	0	2881	0	53	1578	0	0	0	0	252	253	1216
Confl. Peds. (#/hr)			3			2						2
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		75.0		3.0	83.9					53.7	53.7	53.7
Effective Green, g (s)		75.0		3.0	83.9					53.7	53.7	53.7
Actuated g/C Ratio		0.50		0.02	0.56					0.36	0.36	0.36
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)		2499		67	2844					602	602	983
v/s Ratio Prot		c0.58		0.02	c0.31					0.15	0.15	
v/s Ratio Perm												c0.44
v/c Ratio		1.15		0.79	0.55					0.42	0.42	1.24
Uniform Delay, d1		37.5		73.2	21.1					36.4	36.4	48.1
Progression Factor		0.34		0.82	0.49					1.00	1.00	1.00
Incremental Delay, d2		69.3		35.7	0.6					0.2	0.2	115.4
Delay (s)		82.0		95.6	10.9					36.5	36.6	163.5
Level of Service		F		F	B					D	D	F
Approach Delay (s)		82.0			13.7			0.0			126.8	
Approach LOS		F			B			A			F	
Intersection Summary												
HCM Average Control Delay			76.7			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.14									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			12.7			
Intersection Capacity Utilization			86.8%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 10: Elk Grove Blvd & SR-99 NB On-ramp Saturday Peak

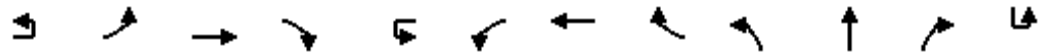


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	2946	1549	320	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	3101	1631	337	0	0
Pedestrians					1	
Lane Width (ft)					0.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		515	937			
pX, platoon unblocked	0.84				0.59	0.84
vC, conflicting volume	1968				2665	545
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1473				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)	379				603	907

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	1034	1034	1034	544	544	544	337
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	337
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.61	0.61	0.61	0.32	0.32	0.32	0.20
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	86.8%		ICU Level of Service E
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 11: Elk Grove Blvd & E. Stockton Blvd Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		
Volume (vph)	15	70	1672	1204	10	40	1276	130	483	100	180	10
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		
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	0.99		1.00	1.00	0.98	1.00	0.99		
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	0.95		
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.98		
Satd. Flow (prot)		1770	3539	1563		1770	5085	1557	1610	3113		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.98		
Satd. Flow (perm)		1770	3539	1563		1770	5085	1557	1610	3113		
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)	16	74	1760	1267	11	42	1343	137	508	105	189	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	51	0	45	0	0
Lane Group Flow (vph)	0	90	1760	1267	0	53	1343	86	274	483	0	0
Confl. Peds. (#/hr)				2				2			4	
Confl. Bikes (#/hr)				1				3			4	
Turn Type	Prot	Prot		Free	Prot	Prot		Perm	Split			Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				Free				2				
Actuated Green, G (s)		15.2	80.9	150.0		5.5	71.2	71.2	27.3	27.3		
Effective Green, g (s)		15.2	80.9	150.0		5.5	71.2	71.2	27.3	27.3		
Actuated g/C Ratio		0.10	0.54	1.00		0.04	0.47	0.47	0.18	0.18		
Clearance Time (s)		5.6	5.7			5.6	5.7	5.7	5.6	5.6		
Vehicle Extension (s)		2.0	3.9			2.0	3.9	3.9	2.0	2.0		
Lane Grp Cap (vph)		179	1909	1563		65	2414	739	293	567		
v/s Ratio Prot		0.05	c0.50			0.03	0.26		0.17	0.16		
v/s Ratio Perm				c0.81				0.06				
v/c Ratio		0.50	0.92	0.81		0.82	0.56	0.12	0.94	0.85		
Uniform Delay, d1		63.8	31.7	0.0		71.7	28.1	21.9	60.5	59.4		
Progression Factor		0.65	0.35	1.00		1.00	1.00	1.00	0.71	0.67		
Incremental Delay, d2		0.1	1.0	0.4		50.2	0.9	0.3	34.6	11.2		
Delay (s)		41.7	12.1	0.4		121.9	29.1	22.2	77.4	51.2		
Level of Service		D	B	A		F	C	C	E	D		
Approach Delay (s)			8.2				31.7			60.2		
Approach LOS			A				C			E		
Intersection Summary												
HCM Average Control Delay			27.3				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)		5.7			
Intersection Capacity Utilization			92.1%				ICU Level of Service		F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 11: Elk Grove Blvd & E. Stockton Blvd Saturday Peak



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	200	70	110
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
Frbp, 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	1726	1561
Flt Permitted	0.95	0.98	1.00
Satd. Flow (perm)	1681	1726	1561
Peak-hour factor, PHF	0.95	0.95	0.95
Adj. Flow (vph)	211	74	116
RTOR Reduction (vph)	0	0	105
Lane Group Flow (vph)	146	150	11
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			1
Turn Type	Split		Perm
Protected Phases	4	4	
Permitted Phases			4
Actuated Green, G (s)	14.8	14.8	14.8
Effective Green, g (s)	14.8	14.8	14.8
Actuated g/C Ratio	0.10	0.10	0.10
Clearance Time (s)	4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	166	170	154
v/s Ratio Prot	0.09	0.09	
v/s Ratio Perm			0.01
v/c Ratio	0.88	0.88	0.07
Uniform Delay, d1	66.7	66.7	61.4
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	36.3	36.7	0.1
Delay (s)	103.0	103.5	61.5
Level of Service	F	F	E
Approach Delay (s)		91.5	
Approach LOS		F	

Intersection Summary























HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 12: SR-99 NB Off-ramp & E. Stockton Blvd Saturday Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	273	10	20	20	30	30	250	430	20	60	400	854
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	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	1668			1827	1583	1770	3516		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	1668			1827	1583	1770	3516		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)	287	11	21	21	32	32	263	453	21	63	421	899
RTOR Reduction (vph)	0	4	0	0	0	30	0	2	0	0	0	182
Lane Group Flow (vph)	161	154	0	0	53	2	263	472	0	63	421	717
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)	26.0	26.0			9.5	9.5	25.0	84.3		8.2	67.5	93.5
Effective Green, g (s)	26.0	26.0			9.5	9.5	25.0	84.3		8.2	67.5	93.5
Actuated g/C Ratio	0.17	0.17			0.06	0.06	0.17	0.56		0.05	0.45	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)	291	289			116	100	295	1976		97	838	1045
v/s Ratio Prot	0.10	0.09			c0.03		c0.15	0.13		0.04	0.23	c0.12
v/s Ratio Perm						0.00						0.33
v/c Ratio	0.55	0.53			0.46	0.02	0.89	0.24		0.65	0.50	0.69
Uniform Delay, d1	56.7	56.5			67.8	65.9	61.2	16.6		69.5	29.3	18.6
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		0.90	1.05	1.05
Incremental Delay, d2	1.3	0.9			1.0	0.0	26.2	0.0		6.1	1.2	0.8
Delay (s)	58.0	57.4			68.8	65.9	87.4	16.6		68.6	32.0	20.4
Level of Service	E	E			E	E	F	B		E	C	C
Approach Delay (s)		57.7			67.7			41.9			26.2	
Approach LOS		E			E			D			C	

Intersection Summary		
HCM Average Control Delay	36.1	HCM Level of Service D
HCM Volume to Capacity ratio	0.71	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 16.5
Intersection Capacity Utilization	84.6%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 13: Backer Ranch Road & Bruceville Road Saturday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	60	64	90	94	92	77	20	110	1030	169	10	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	4.6	4.6		5.6	5.3	5.3		5.6
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00		1.00	0.95	1.00		1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00	1.00	0.97		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	1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1770	1863	1560	3433	1863	1555		1770	3539	1530		1770
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1770	1863	1560	3433	1863	1555		1770	3539	1530		1770
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)	63	67	95	99	97	81	21	116	1084	178	11	83
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	106	0	0
Lane Group Flow (vph)	63	67	95	99	97	81	0	137	1084	72	0	94
Confl. Peds. (#/hr)						4				8		
Confl. Bikes (#/hr)	1		2			2		1		3		1
Turn Type	Prot		Perm	Prot		Perm	Prot	Prot		Perm	Prot	Prot
Protected Phases	3	8		7	4		1	1	6		5	5
Permitted Phases			8			4				6		
Actuated Green, G (s)	4.6	10.1	10.1	3.6	9.1	9.1		10.0	27.6	27.6		5.9
Effective Green, g (s)	4.6	10.1	10.1	3.6	9.1	9.1		10.0	27.6	27.6		5.9
Actuated g/C Ratio	0.07	0.15	0.15	0.05	0.13	0.13		0.15	0.40	0.40		0.09
Clearance Time (s)	5.6	4.6	4.6	5.6	4.6	4.6		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		2.0
Lane Grp Cap (vph)	119	275	231	181	248	207		259	1430	618		153
v/s Ratio Prot	c0.04	0.04		0.03	0.05			c0.08	c0.31			0.05
v/s Ratio Perm			c0.06			0.05				0.05		
v/c Ratio	0.53	0.24	0.41	0.55	0.39	0.39		0.53	0.76	0.12		0.61
Uniform Delay, d1	30.8	25.7	26.4	31.6	27.1	27.1		27.0	17.5	12.7		30.1
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	2.0	0.2	0.4	1.8	0.4	0.4		0.9	2.1	0.0		5.1
Delay (s)	32.8	25.9	26.8	33.4	27.4	27.5		27.9	19.6	12.8		35.2
Level of Service	C	C	C	C	C	C		C	B	B		D
Approach Delay (s)		28.2			29.6				19.5			
Approach LOS		C			C				B			
Intersection Summary												
HCM Average Control Delay			22.4				HCM Level of Service		C			
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			68.3				Sum of lost time (s)		16.5			
Intersection Capacity Utilization			62.1%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 13: Backer Ranch Road & Bruceville Road

Cumulative Saturday Plus Project Conditions

Saturday Peak



Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	820	40
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.3	
Lane Util. Factor	0.95	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	3509	
Flt Permitted	1.00	
Satd. Flow (perm)	3509	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	863	42
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	902	0
Confl. Peds. (#/hr)		5
Confl. Bikes (#/hr)		3
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	23.5	
Effective Green, g (s)	23.5	
Actuated g/C Ratio	0.34	
Clearance Time (s)	5.3	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1207	
v/s Ratio Prot	0.26	
v/s Ratio Perm		
v/c Ratio	0.75	
Uniform Delay, d1	19.8	
Progression Factor	1.00	
Incremental Delay, d2	2.2	
Delay (s)	22.0	
Level of Service	C	
Approach Delay (s)	23.3	
Approach LOS	C	
Intersection Summary		

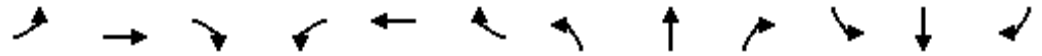
HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 14: Civic Center Drive & Wymark Drive Saturday Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	341	30	80	213	32	150	170	110	14	60	20
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	1.00	0.99		1.00	0.98			0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1770	1840		1770	1826			1768			1796	
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (perm)	1770	1840		1770	1826			1768			1796	
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)	21	359	32	84	224	34	158	179	116	15	63	21
RTOR Reduction (vph)	0	3	0	0	5	0	0	13	0	0	11	0
Lane Group Flow (vph)	21	388	0	84	253	0	0	440	0	0	88	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)	1.8	24.4		4.7	27.3			24.1			7.9	
Effective Green, g (s)	1.8	24.4		4.7	27.3			24.1			7.9	
Actuated g/C Ratio	0.02	0.29		0.06	0.33			0.29			0.10	
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)	38	540		100	600			513			171	
v/s Ratio Prot	0.01	c0.21		c0.05	c0.14			c0.25			c0.05	
v/s Ratio Perm												
v/c Ratio	0.55	0.72		0.84	0.42			0.86			0.52	
Uniform Delay, d1	40.3	26.3		38.8	21.8			27.9			35.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	9.5	3.8		41.6	0.2			12.9			1.1	
Delay (s)	49.8	30.1		80.4	21.9			40.8			36.9	
Level of Service	D	C		F	C			D			D	
Approach Delay (s)		31.1			36.3			40.8			36.9	
Approach LOS		C			D			D			D	

Intersection Summary		
HCM Average Control Delay	36.2	HCM Level of Service D
HCM Volume to Capacity ratio	0.83	
Actuated Cycle Length (s)	83.1	Sum of lost time (s) 27.5
Intersection Capacity Utilization	68.6%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 15: Civic Center Drive & Big Horn Blvd Saturday Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	176	20	20	55	70	10	2098	60	70	1009	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3		6.3	5.3	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
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	1863	1583	1770	1863	1583	1770	3524		1770	3430	
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	1863	1583	1770	1863	1583	1770	3524		1770	3430	
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)	305	185	21	21	58	74	11	2208	63	74	1062	274
RTOR Reduction (vph)	0	0	16	0	0	64	0	1	0	0	12	0
Lane Group Flow (vph)	305	185	5	21	58	10	11	2270	0	74	1324	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	17.5	31.7	31.7	2.3	15.5	15.5	0.9	70.9		5.7	75.7	
Effective Green, g (s)	17.5	31.7	31.7	2.3	15.5	15.5	0.9	70.9		5.7	75.7	
Actuated g/C Ratio	0.13	0.24	0.24	0.02	0.12	0.12	0.01	0.54		0.04	0.57	
Clearance Time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3		6.3	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	
Lane Grp Cap (vph)	234	446	379	31	218	185	12	1887		76	1961	
v/s Ratio Prot	c0.17	c0.10		0.01	0.03		0.01	c0.64		c0.04	c0.39	
v/s Ratio Perm			0.00			0.01						
v/c Ratio	1.30	0.41	0.01	0.68	0.27	0.06	0.92	1.20		0.97	0.67	
Uniform Delay, d1	57.5	42.5	38.4	64.7	53.3	52.0	65.7	30.8		63.3	19.8	
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	164.0	0.2	0.0	37.4	0.2	0.0	209.7	96.6		93.3	0.7	
Delay (s)	221.5	42.7	38.4	102.1	53.5	52.0	275.4	127.3		156.6	20.5	
Level of Service	F	D	D	F	D	D	F	F		F	C	
Approach Delay (s)		149.3			59.4			128.1			27.6	
Approach LOS		F			E			F			C	

Intersection Summary		
HCM Average Control Delay	95.6	HCM Level of Service F
HCM Volume to Capacity ratio	1.11	
Actuated Cycle Length (s)	132.4	Sum of lost time (s) 22.5
Intersection Capacity Utilization	93.2%	ICU Level of Service F
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 16: Civic Center Drive & Laguna Springs Drive Saturday Peak

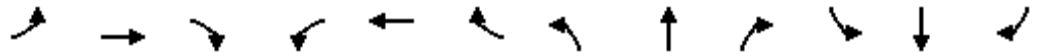


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	157	0	140	0	0	0	130	484	0	5	0	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6		5.6				5.6	4.6		5.6		4.6
Lane Util. Factor	1.00		1.00				1.00	0.95		1.00		0.95
Frt	1.00		0.85				1.00	1.00		1.00		0.98
Flt Protected	0.95		1.00				0.95	1.00		0.95		1.00
Satd. Flow (prot)	1770		1583				1770	3539		1770		3458
Flt Permitted	0.95		1.00				0.95	1.00		0.95		1.00
Satd. Flow (perm)	1770		1583				1770	3539		1770		3458
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)	165	0	147	0	0	0	137	509	0	5	0	463
RTOR Reduction (vph)	0	0	101	0	0	0	0	0	0	0	0	14
Lane Group Flow (vph)	165	0	46	0	0	0	137	509	0	5	0	533
Turn Type	Prot		custom	Prot			Prot			Prot		
Protected Phases	3			7	4		1	6		5		2
Permitted Phases			8									
Actuated Green, G (s)	10.5		19.9				9.6	27.9		0.6		18.9
Effective Green, g (s)	10.5		19.9				9.6	27.9		0.6		18.9
Actuated g/C Ratio	0.16		0.31				0.15	0.43		0.01		0.29
Clearance Time (s)	5.6		5.6				5.6	4.6		5.6		4.6
Vehicle Extension (s)	2.0		2.0				2.0	2.0		2.0		2.0
Lane Grp Cap (vph)	289		491				265	1538		17		1018
v/s Ratio Prot	c0.09						c0.08	0.14		0.00		c0.15
v/s Ratio Perm			c0.03									
v/c Ratio	0.57		0.09				0.52	0.33		0.29		0.52
Uniform Delay, d1	24.8		15.7				25.2	12.0		31.6		18.9
Progression Factor	1.00		1.00				1.00	1.00		1.00		1.00
Incremental Delay, d2	1.7		0.0				0.7	0.0		3.5		0.2
Delay (s)	26.5		15.8				25.9	12.0		35.1		19.1
Level of Service	C		B				C	B		D		B
Approach Delay (s)		21.4			0.0			15.0				19.3
Approach LOS		C			A			B				B

Intersection Summary		
HCM Average Control Delay	17.9	HCM Level of Service B
HCM Volume to Capacity ratio	0.44	
Actuated Cycle Length (s)	64.2	Sum of lost time (s) 15.8
Intersection Capacity Utilization	42.4%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		

Movement	SBR
Lane Configurations	
Volume (vph)	80
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frnt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	84
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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 Cumulative Saturday Plus Project Conditions
 17: Denali Cir & Big Horn Blvd Saturday Peak

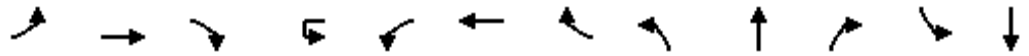


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	4	60	41	2	98	90	1970	90	219	820	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		5.3	5.3		5.3	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.86		1.00	0.85		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1600		1770	1589		1770	3516		1770	3515	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1600		1770	1589		1770	3516		1770	3515	
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)	74	4	63	43	2	103	95	2074	95	231	863	42
RTOR Reduction (vph)	0	57	0	0	94	0	0	2	0	0	2	0
Lane Group Flow (vph)	74	10	0	43	11	0	95	2167	0	231	903	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	5.4	12.6		4.0	11.2		10.9	76.6		15.8	81.5	
Effective Green, g (s)	5.4	12.6		4.0	11.2		10.9	76.6		15.8	81.5	
Actuated g/C Ratio	0.04	0.10		0.03	0.09		0.08	0.59		0.12	0.63	
Clearance Time (s)	4.6	4.6		4.6	4.6		5.3	5.3		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)	74	157		55	138		150	2091		217	2224	
v/s Ratio Prot	c0.04	0.01		0.02	c0.01		0.05	c0.62		c0.13	c0.26	
v/s Ratio Perm												
v/c Ratio	1.00	0.06		0.78	0.08		0.63	1.04		1.06	0.41	
Uniform Delay, d1	61.7	52.8		62.0	54.1		57.0	26.1		56.5	11.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	104.6	0.1		47.4	0.1		6.3	29.9		79.2	0.0	
Delay (s)	166.3	52.8		109.4	54.2		63.3	56.0		135.7	11.7	
Level of Service	F	D		F	D		E	E		F	B	
Approach Delay (s)		112.4			70.2			56.3			36.9	
Approach LOS		F			E			E			D	

Intersection Summary

HCM Average Control Delay	53.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	128.8	Sum of lost time (s)	25.1
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 18: Denali Circle & Big Horn Blvd Saturday Peak



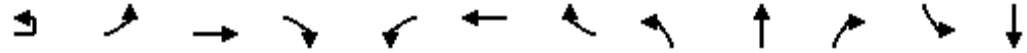
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗			↖↗	↑	↖↗	↖	↑↑	↖	↖↗	↖↗
Volume (vph)	90	40	40	5	180	50	207	10	1623	280	371	529
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	5.3
Lane Util. Factor	1.00	1.00			0.97	1.00	0.88	1.00	0.95	1.00	0.97	0.95
Frbp, ped/bikes	1.00	0.99			1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	0.93			1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99
Flt Protected	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1711			3433	1863	2757	1770	3539	1558	3433	3485
Flt Permitted	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1711			3433	1863	2757	1770	3539	1558	3433	3485
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)	95	42	42	5	189	53	218	11	1708	295	391	557
RTOR Reduction (vph)	0	29	0	0	0	0	37	0	0	70	0	3
Lane Group Flow (vph)	95	55	0	0	194	53	181	11	1708	225	391	607
Confl. Peds. (#/hr)			2									
Confl. Bikes (#/hr)							2			9		
Turn Type	Prot			Prot	Prot		pm+ov	Prot		Perm	Prot	
Protected Phases	3	8		7	7	4	5	1	6		5	2
Permitted Phases							4			6		
Actuated Green, G (s)	12.8	15.1			7.5	11.4	25.2	0.8	68.5	68.5	13.8	81.5
Effective Green, g (s)	12.8	15.1			7.5	11.4	25.2	0.8	68.5	68.5	13.8	81.5
Actuated g/C Ratio	0.10	0.12			0.06	0.09	0.19	0.01	0.53	0.53	0.11	0.63
Clearance Time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	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
Lane Grp Cap (vph)	175	200			199	164	537	11	1875	825	366	2197
v/s Ratio Prot	0.05	c0.03			c0.06	0.03	c0.04	0.01	c0.48		c0.11	0.17
v/s Ratio Perm							0.03			0.14		
v/c Ratio	0.54	0.27			0.97	0.32	0.34	1.00	0.91	0.27	1.07	0.28
Uniform Delay, d1	55.5	52.1			60.8	55.3	44.9	64.2	27.6	16.7	57.8	10.7
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	1.8	0.3			55.9	0.4	0.1	271.4	7.0	0.1	66.4	0.0
Delay (s)	57.3	52.4			116.7	55.7	45.0	335.6	34.6	16.8	124.1	10.7
Level of Service	E	D			F	E	D	F	C	B	F	B
Approach Delay (s)		55.0				76.1			33.7			55.0
Approach LOS		D				E			C			E

Intersection Summary		
HCM Average Control Delay	45.9	HCM Level of Service D
HCM Volume to Capacity ratio	0.90	
Actuated Cycle Length (s)	129.3	Sum of lost time (s) 30.7
Intersection Capacity Utilization	84.3%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		



Movement	SBR
Lane Configurations	
Volume (vph)	50
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	0.95
Adj. Flow (vph)	53
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	2
Confl. Bikes (#/hr)	3
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 Cumulative Saturday Plus Project Conditions
 19: Lotz Pkwy & Laguna Springs Drive Saturday Peak

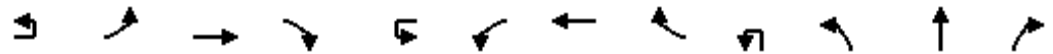


Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↘ ↙	↑↑	↗	↘ ↙	↑↑	↗	↘ ↙	↑↑	↗	↘ ↙	↑↑
Volume (vph)	10	64	1008	10	0	487	100	10	30	10	600	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	6.6	6.6		6.6	6.6	5.6	5.6	5.6	5.6	4.6
Lane Util. Factor		0.97	0.95	1.00		0.95	1.00	0.97	0.95	1.00	0.97	0.95
Frbp, ped/bikes		1.00	1.00	0.99		1.00	0.98	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	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00
Flt Protected		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3433	3539	1563		3539	1559	3433	3539	1561	3433	3539
Flt Permitted		0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3433	3539	1563		3539	1559	3433	3539	1561	3433	3539
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)	11	67	1061	11	0	513	105	11	32	11	632	53
RTOR Reduction (vph)	0	0	0	6	0	0	78	0	0	10	0	0
Lane Group Flow (vph)	0	78	1061	5	0	513	27	11	32	1	632	53
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)				1			4			1	1	
Turn Type	Prot	Prot		Perm	Prot		Perm	Prot		Perm	Prot	
Protected Phases	3	3	8		7	4		1	6		5	2
Permitted Phases				8			4			6		
Actuated Green, G (s)		4.7	30.1	30.1		19.8	19.8	0.6	9.0	9.0	19.8	29.2
Effective Green, g (s)		4.7	30.1	30.1		19.8	19.8	0.6	9.0	9.0	19.8	29.2
Actuated g/C Ratio		0.06	0.39	0.39		0.26	0.26	0.01	0.12	0.12	0.26	0.38
Clearance Time (s)		5.6	6.6	6.6		6.6	6.6	5.6	5.6	5.6	5.6	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
Lane Grp Cap (vph)		210	1389	613		914	402	27	415	183	886	1347
v/s Ratio Prot		0.02	c0.30			0.14		0.00	0.01		c0.18	0.01
v/s Ratio Perm				0.00			0.02			0.00		
v/c Ratio		0.37	0.76	0.01		0.56	0.07	0.41	0.08	0.01	0.71	0.04
Uniform Delay, d1		34.6	20.2	14.2		24.7	21.5	37.9	30.2	29.9	25.9	14.9
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		0.4	2.3	0.0		0.5	0.0	3.6	0.0	0.0	2.3	0.0
Delay (s)		35.0	22.5	14.2		25.2	21.5	41.5	30.2	29.9	28.2	14.9
Level of Service		C	C	B		C	C	D	C	C	C	B
Approach Delay (s)			23.3			24.5			32.4			25.0
Approach LOS			C			C			C			C

Intersection Summary			
HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	76.7	Sum of lost time (s)	12.2
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	140
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.6
Lane Util. Factor	1.00
Frbp, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1560
Flt Permitted	1.00
Satd. Flow (perm)	1560
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	147
RTOR Reduction (vph)	91
Lane Group Flow (vph)	56
Confl. Peds. (#/hr)	3
Confl. Bikes (#/hr)	1
Turn Type	Perm
Protected Phases	
Permitted Phases	2
Actuated Green, G (s)	29.2
Effective Green, g (s)	29.2
Actuated g/C Ratio	0.38
Clearance Time (s)	4.6
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	594
v/s Ratio Prot	
v/s Ratio Perm	c0.04
v/c Ratio	0.09
Uniform Delay, d1	15.3
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	15.3
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 20: Whitelock Pkwy & Bruceville Road Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔↗	↕↗	↗		↔↗	↕↗	↗		↔↗	↕↗	↗
Volume (vph)	5	404	414	140	5	54	172	190	45	170	654	89
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
Frbp, ped/bikes		1.00	1.00	0.98		1.00	1.00	0.98		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	3539	1546		3433	3539	1548		3433	3539	1555
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	1546		3433	3539	1548		3433	3539	1555
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)	5	425	436	147	5	57	181	200	47	179	688	94
RTOR Reduction (vph)	0	0	0	106	0	0	0	151	0	0	0	70
Lane Group Flow (vph)	0	430	436	41	0	62	181	49	0	226	688	24
Confl. Peds. (#/hr)				14				5				7
Confl. Bikes (#/hr)				4				6				1
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)		11.9	21.6	21.6		4.2	13.9	13.9		8.8	20.1	20.1
Effective Green, g (s)		11.9	21.6	21.6		4.2	13.9	13.9		8.8	20.1	20.1
Actuated g/C Ratio		0.15	0.28	0.28		0.05	0.18	0.18		0.11	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
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)		522	978	427		184	629	275		386	910	400
v/s Ratio Prot		c0.13	c0.12			0.02	0.05			0.07	c0.19	
v/s Ratio Perm				0.03				0.03				0.02
v/c Ratio		0.82	0.45	0.10		0.34	0.29	0.18		0.59	0.76	0.06
Uniform Delay, d1		32.1	23.4	21.0		35.7	27.9	27.3		33.0	26.8	21.9
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		9.7	0.1	0.0		0.4	0.1	0.1		1.5	3.2	0.0
Delay (s)		41.8	23.5	21.1		36.1	28.0	27.4		34.4	30.0	21.9
Level of Service		D	C	C		D	C	C		C	C	C
Approach Delay (s)			30.9				28.8				30.2	
Approach LOS			C				C				C	

Intersection Summary		
HCM Average Control Delay	29.5	HCM Level of Service C
HCM Volume to Capacity ratio	0.66	
Actuated Cycle Length (s)	78.2	Sum of lost time (s) 17.2
Intersection Capacity Utilization	74.6%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

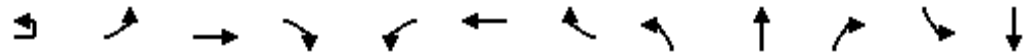
HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 20: Whitelock Pkwy & Bruceville Road Saturday Peak



Movement	SBU	SBL	SBT	SBR
Lane Configurations		↘ ↙	↑ ↑	↗
Volume (vph)	15	310	412	342
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
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	3539	1556
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1556
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	326	434	360
RTOR Reduction (vph)	0	0	0	261
Lane Group Flow (vph)	0	342	434	99
Confl. Peds. (#/hr)				4
Confl. Bikes (#/hr)				3
Turn Type	Prot	Prot		Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		10.2	21.5	21.5
Effective Green, g (s)		10.2	21.5	21.5
Actuated g/C Ratio		0.13	0.27	0.27
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		448	973	428
v/s Ratio Prot		0.10	0.12	
v/s Ratio Perm				0.06
v/c Ratio		0.76	0.45	0.23
Uniform Delay, d1		32.8	23.4	22.0
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		6.8	0.1	0.1
Delay (s)		39.7	23.5	22.1
Level of Service		D	C	C
Approach Delay (s)			27.9	
Approach LOS			C	

Intersection Summary

HCM Signalized Intersection Capacity Analysis Cumulative Saturday Plus Project Conditions
 21: Whitelock Pkwy & Big Horn Blvd Saturday Peak



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↘ ↙	↑↑	↗	↘ ↙	↑↑	↗	↘ ↙	↑↑	↗	↘ ↙	↑↑	
Volume (vph)	5	283	170	50	70	120	119	110	1061	40	264	990	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.6	5.3	5.3	5.6	5.3	5.3	5.6	5.3	5.3	5.6	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	
Frbp, ped/bikes		1.00	1.00	0.98	1.00	1.00	0.99	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	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	
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3433	3539	1545	3433	3539	1561	3433	3539	1583	3433	3539	
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		3433	3539	1545	3433	3539	1561	3433	3539	1583	3433	3539	
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)	5	298	179	53	74	126	125	116	1117	42	278	1042	
RTOR Reduction (vph)	0	0	0	43	0	0	106	0	0	20	0	0	
Lane Group Flow (vph)	0	303	179	10	74	126	19	116	1117	22	278	1042	
Confl. Peds. (#/hr)							1						
Confl. Bikes (#/hr)				10			1						
Turn Type	Prot	Prot		Perm	Prot		Perm	Prot		Perm	Prot		
Protected Phases	1	1	6		5	2		3	8		7	4	
Permitted Phases				6			2			8			
Actuated Green, G (s)		6.5	14.5	14.5	3.9	11.9	11.9	5.1	31.3	31.3	6.5	32.7	
Effective Green, g (s)		6.5	14.5	14.5	3.9	11.9	11.9	5.1	31.3	31.3	6.5	32.7	
Actuated g/C Ratio		0.08	0.19	0.19	0.05	0.15	0.15	0.07	0.40	0.40	0.08	0.42	
Clearance Time (s)		5.6	5.3	5.3	5.6	5.3	5.3	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	2.0	
Lane Grp Cap (vph)		286	658	287	172	540	238	224	1420	635	286	1484	
v/s Ratio Prot		c0.09	c0.05		0.02	0.04		0.03	c0.32		c0.08	0.29	
v/s Ratio Perm				0.01			0.01			0.01			
v/c Ratio		1.06	0.27	0.03	0.43	0.23	0.08	0.52	0.79	0.03	0.97	0.70	
Uniform Delay, d1		35.8	27.2	26.0	36.0	29.0	28.4	35.3	20.4	14.2	35.7	18.6	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		69.8	0.1	0.0	0.6	0.1	0.1	0.8	2.7	0.0	45.1	1.2	
Delay (s)		105.5	27.3	26.0	36.6	29.1	28.4	36.1	23.2	14.2	80.8	19.9	
Level of Service		F	C	C	D	C	C	D	C	B	F	B	
Approach Delay (s)			71.5			30.6			24.0			30.6	
Approach LOS			E			C			C			C	
Intersection Summary													
HCM Average Control Delay			34.3		HCM Level of Service					C			
HCM Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			78.0		Sum of lost time (s)					21.8			
Intersection Capacity Utilization			67.9%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													



Movement	SBR
Lane Configurations	
Volume (vph)	156
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.3
Lane Util. Factor	1.00
Frbp, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1562
Flt Permitted	1.00
Satd. Flow (perm)	1562
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	164
RTOR Reduction (vph)	95
Lane Group Flow (vph)	69
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	3
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	32.7
Effective Green, g (s)	32.7
Actuated g/C Ratio	0.42
Clearance Time (s)	5.3
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	655
v/s Ratio Prot	
v/s Ratio Perm	0.04
v/c Ratio	0.10
Uniform Delay, d1	13.8
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	13.8
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

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

C Plus Project with Whitelock Conditions
PM PEAK HOUR

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	65	150	1260	322	10	522	1580	200	5	625	1079	306
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	0.98		1.00	1.00	0.99		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	1557		3433	5085	1560		3433	3539	1549
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	1557		3433	5085	1560		3433	3539	1549
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)	68	158	1326	339	11	549	1663	211	5	658	1136	322
RTOR Reduction (vph)	0	0	0	133	0	0	0	63	0	0	0	108
Lane Group Flow (vph)	0	226	1326	206	0	560	1663	148	0	663	1136	214
Confl. Peds. (#/hr)				2								6
Confl. Bikes (#/hr)				2			4					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)		8.3	36.3	36.3		19.3	47.3	47.3		22.7	59.0	59.0
Effective Green, g (s)		8.3	36.3	36.3		19.3	47.3	47.3		22.7	59.0	59.0
Actuated g/C Ratio		0.06	0.24	0.24		0.13	0.32	0.32		0.15	0.39	0.39
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)		190	1231	377		442	1603	492		520	1392	609
v/s Ratio Prot		0.07	c0.26			c0.16	0.33			c0.19	0.32	
v/s Ratio Perm				0.13				0.09				0.14
v/c Ratio		1.19	1.08	0.55		1.27	1.04	0.30		1.27	0.82	0.35
Uniform Delay, d1		70.8	56.9	49.7		65.3	51.4	38.8		63.6	40.7	32.0
Progression Factor		0.73	0.67	0.62		0.73	0.75	0.44		1.00	1.00	1.00
Incremental Delay, d2		119.4	46.9	4.5		126.6	24.5	0.6		138.1	3.6	0.1
Delay (s)		171.4	85.2	35.3		174.3	62.7	17.7		201.8	44.3	32.2
Level of Service		F	F	D		F	E	B		F	D	C
Approach Delay (s)			86.6				84.5				91.7	
Approach LOS			F				F				F	
Intersection Summary												
HCM Average Control Delay			93.6				HCM Level of Service				F	
HCM Volume to Capacity ratio			1.18									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			24.0		
Intersection Capacity Utilization			112.6%				ICU Level of Service			H		
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBU	SBL	SBT	SBR
Lane Configurations		LT	LT	RT
Volume (vph)	5	190	1248	260
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
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	3539	1551
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1551
Peak-hour factor, PHF	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	200	1314	274
RTOR Reduction (vph)	0	0	0	18
Lane Group Flow (vph)	0	205	1314	256
Confl. Peds. (#/hr)				6
Confl. Bikes (#/hr)				
Turn Type	Prot	Prot		Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		11.4	47.7	47.7
Effective Green, g (s)		11.4	47.7	47.7
Actuated g/C Ratio		0.08	0.32	0.32
Clearance Time (s)		6.3	5.3	5.3
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		261	1125	493
v/s Ratio Prot		0.06	0.37	
v/s Ratio Perm				0.16
v/c Ratio		0.79	1.17	0.52
Uniform Delay, d1		68.1	51.1	41.8
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		13.3	85.4	0.4
Delay (s)		81.4	136.6	42.2
Level of Service		F	F	D
Approach Delay (s)			115.9	
Approach LOS			F	
Intersection Summary				

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

C Plus Project with Whitelock Conditions
PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations		↔	↑↑↑	↗		↙	↑↑↑			↔	↑	↗↗
Volume (vph)	10	100	1446	210	5	439	1772	80	5	450	375	802
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
Frbp, ped/bikes		1.00	1.00	0.99		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
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	1560		3433	5046			1770	1863	2749
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	5085	1560		3433	5046			1770	1863	2749
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)	11	105	1522	221	5	462	1865	84	5	474	395	844
RTOR Reduction (vph)	0	0	0	71	0	0	3	0	0	0	0	386
Lane Group Flow (vph)	0	116	1522	150	0	467	1946	0	0	479	395	458
Confl. Peds. (#/hr)								3				1
Confl. Bikes (#/hr)				4				2				
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)		9.4	53.4	53.4		18.4	62.4			36.4	41.0	41.0
Effective Green, g (s)		9.4	53.4	53.4		18.4	62.4			36.4	41.0	41.0
Actuated g/C Ratio		0.06	0.36	0.36		0.12	0.42			0.24	0.27	0.27
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)		111	1810	555		421	2099			430	509	751
v/s Ratio Prot		0.07	c0.30			c0.14	c0.39			c0.27	c0.21	
v/s Ratio Perm				0.10								0.17
v/c Ratio		1.05	0.84	0.27		1.11	0.93			1.11	0.78	0.61
Uniform Delay, d1		70.3	44.4	34.4		65.8	41.6			56.8	50.3	47.5
Progression Factor		1.14	0.40	0.12		0.63	0.41			1.00	1.00	1.00
Incremental Delay, d2		63.8	1.9	0.4		71.7	6.8			78.1	6.7	1.0
Delay (s)		143.8	19.5	4.7		113.3	24.0			134.9	56.9	48.6
Level of Service		F	B	A		F	C			F	E	D
Approach Delay (s)			25.5				41.2				74.6	
Approach LOS			C				D				E	

Intersection Summary

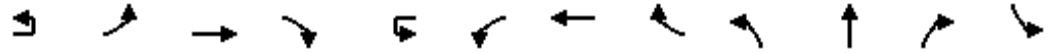
HCM Average Control Delay	48.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	33.2
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	140	225	150
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	5.6	5.3	
Lane Util. Factor	1.00	0.95	
Frpb, ped/bikes	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	
Frt	1.00	0.94	
Flt Protected	0.95	1.00	
Satd. Flow (prot)	1770	3309	
Flt Permitted	0.95	1.00	
Satd. Flow (perm)	1770	3309	
Peak-hour factor, PHF	0.95	0.95	0.95
Adj. Flow (vph)	147	237	158
RTOR Reduction (vph)	0	83	0
Lane Group Flow (vph)	147	312	0
Confl. Peds. (#/hr)			1
Confl. Bikes (#/hr)			
Turn Type	Prot		
Protected Phases	7	4	
Permitted Phases			
Actuated Green, G (s)	15.0	19.6	
Effective Green, g (s)	15.0	19.6	
Actuated g/C Ratio	0.10	0.13	
Clearance Time (s)	5.6	5.3	
Vehicle Extension (s)	2.0	2.0	
Lane Grp Cap (vph)	177	432	
v/s Ratio Prot	0.08	c0.09	
v/s Ratio Perm			
v/c Ratio	0.83	0.72	
Uniform Delay, d1	66.3	62.6	
Progression Factor	1.00	1.00	
Incremental Delay, d2	25.8	5.0	
Delay (s)	92.1	67.6	
Level of Service	F	E	
Approach Delay (s)		74.3	
Approach LOS		E	
Intersection Summary			

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

C Plus Project with Whitelock Conditions
PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↑↑↑			↔	↑↑↑		↔	↑		↔
Volume (vph)	5	120	2047	70	50	180	1811	10	150	30	250	190
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
Frbp, ped/bikes		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
Frt		1.00	1.00			1.00	1.00		1.00	0.87		1.00
Flt Protected		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		1770	5052			3433	5079		1770	1614		3433
Flt Permitted		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (perm)		1770	5052			3433	5079		1770	1614		3433
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)	5	126	2155	74	53	189	1906	11	158	32	263	200
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	0	53	0	0
Lane Group Flow (vph)	0	131	2227	0	0	242	1917	0	158	242	0	200
Confl. Peds. (#/hr)				18				15				
Confl. Bikes (#/hr)				2				4				
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	76.4			11.4	75.2		22.5	26.8		13.6
Effective Green, g (s)		12.6	76.4			11.4	75.2		22.5	26.8		13.6
Actuated g/C Ratio		0.08	0.51			0.08	0.50		0.15	0.18		0.09
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)		149	2573			261	2546		266	288		311
v/s Ratio Prot		c0.07	c0.44			0.07	0.38		c0.09	c0.15		0.06
v/s Ratio Perm												
v/c Ratio		0.88	0.87			0.93	0.75		0.59	0.84		0.64
Uniform Delay, d1		67.9	32.3			68.9	30.0		59.5	59.6		65.9
Progression Factor		0.86	0.35			0.97	0.53		1.00	1.00		1.00
Incremental Delay, d2		27.1	2.6			26.4	1.3		2.4	18.7		3.4
Delay (s)		85.4	14.0			93.4	17.2		61.9	78.3		69.2
Level of Service		F	B			F	B		E	E		E
Approach Delay (s)			18.0				25.7			72.6		
Approach LOS			B				C			E		
Intersection Summary												
HCM Average Control Delay			28.9			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			10.3			
Intersection Capacity Utilization			91.3%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBT	SBR
Lane Configurations	T	
Volume (vph)	20	120
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.9	
Lane Util. Factor	1.00	
Frbp, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.87	
Flt Protected	1.00	
Satd. Flow (prot)	1585	
Flt Permitted	1.00	
Satd. Flow (perm)	1585	
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	21	126
RTOR Reduction (vph)	111	0
Lane Group Flow (vph)	36	0
Confl. Peds. (#/hr)		13
Confl. Bikes (#/hr)		
Turn Type		
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	17.9	
Effective Green, g (s)	17.9	
Actuated g/C Ratio	0.12	
Clearance Time (s)	4.9	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	189	
v/s Ratio Prot	0.02	
v/s Ratio Perm		
v/c Ratio	0.19	
Uniform Delay, d1	59.5	
Progression Factor	1.00	
Incremental Delay, d2	0.2	
Delay (s)	59.7	
Level of Service	E	
Approach Delay (s)	65.2	
Approach LOS	E	
Intersection Summary		

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

C Plus Project with Whitelock Conditions
 PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑					↑	↑	↑↑
Volume (vph)	0	2210	238	220	1386	0	0	0	0	740	10	1025
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	0.98
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)		4999		3433	5085					1681	1688	2743
Flt Permitted		1.00		0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4999		3433	5085					1681	1688	2743
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	2326	251	232	1459	0	0	0	0	779	11	1079
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	0	40
Lane Group Flow (vph)	0	2568	0	232	1459	0	0	0	0	397	393	1039
Confl. Peds. (#/hr)			5			7						3
Confl. Bikes (#/hr)			4			6						
Turn Type				Prot						Split		Perm
Protected Phases		2		1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		71.0		9.4	86.3					51.3	51.3	51.3
Effective Green, g (s)		71.0		9.4	86.3					51.3	51.3	51.3
Actuated g/C Ratio		0.47		0.06	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)		2366		215	2926					575	577	938
v/s Ratio Prot		c0.51		c0.07	0.29					0.24	0.23	
v/s Ratio Perm												c0.38
v/c Ratio		1.09		1.08	0.50					0.69	0.68	1.11
Uniform Delay, d1		39.5		70.3	19.0					42.5	42.3	49.4
Progression Factor		0.43		0.88	0.34					1.00	1.00	1.00
Incremental Delay, d2		43.1		60.6	0.2					2.9	2.6	63.5
Delay (s)		60.2		122.8	6.8					45.4	45.0	112.8
Level of Service		E		F	A					D	D	F
Approach Delay (s)		60.2			22.7			0.0			84.2	
Approach LOS		E			C			A			F	
Intersection Summary												
HCM Average Control Delay			57.2			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			18.3			
Intersection Capacity Utilization			91.2%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

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

C Plus Project with Whitelock Conditions
 PM PEAK HOUR



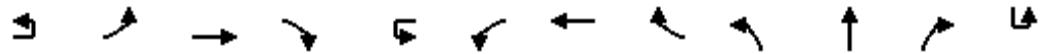
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑	↗		
Volume (veh/h)	0	2950	1606	750	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	3105	1691	789	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		515	937			
pX, platoon unblocked	0.71				0.68	0.71
vC, conflicting volume	2480				2726	564
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1656				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				695	770

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4
Volume Total	1035	1035	1035	564	564	564	789
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	789
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.61	0.61	0.61	0.33	0.33	0.33	0.46
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		91.2%	ICU Level of Service F
Analysis Period (min)		15	

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

C Plus Project with Whitelock Conditions
 PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Lane Configurations		↔	↕	↗		↔	↕	↗	↔	↕		
Volume (vph)	15	250	1361	1249	10	60	1710	110	516	120	200	10
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		
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	0.99		1.00	1.00	0.97	1.00	0.99		
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	0.95		
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.98		
Satd. Flow (prot)		1770	3539	1561		1770	5085	1543	1610	3115		
Flt Permitted		0.95	1.00	1.00		0.95	1.00	1.00	0.95	0.98		
Satd. Flow (perm)		1770	3539	1561		1770	5085	1543	1610	3115		
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)	16	263	1433	1315	11	63	1800	116	543	126	211	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	33	0	47	0	0
Lane Group Flow (vph)	0	279	1433	1315	0	74	1800	83	299	534	0	0
Confl. Peds. (#/hr)				4				7			6	
Confl. Bikes (#/hr)				4				2				
Turn Type	Prot	Prot		Free	Prot	Prot		Perm	Split			Split
Protected Phases	1	1	6		5	5	2		3	3		4
Permitted Phases				Free				2				
Actuated Green, G (s)		24.6	70.8	150.0		8.7	54.9	54.9	28.7	28.7		
Effective Green, g (s)		24.6	70.8	150.0		8.7	54.9	54.9	28.7	28.7		
Actuated g/C Ratio		0.16	0.47	1.00		0.06	0.37	0.37	0.19	0.19		
Clearance Time (s)		5.6	5.7			5.6	5.7	5.7	5.6	5.6		
Vehicle Extension (s)		2.0	3.9			2.0	3.9	3.9	2.0	2.0		
Lane Grp Cap (vph)		290	1670	1561		103	1861	565	308	596		
v/s Ratio Prot		0.16	0.40			0.04	0.35		0.19	0.17		
v/s Ratio Perm				0.84				0.05				
v/c Ratio		0.96	0.86	0.84		0.72	0.97	0.15	0.97	0.90		
Uniform Delay, d1		62.2	35.1	0.0		69.4	46.7	31.9	60.2	59.2		
Progression Factor		0.85	0.77	1.00		1.00	1.00	1.00	0.58	0.54		
Incremental Delay, d2		18.0	1.6	1.5		18.0	14.4	0.5	41.3	14.8		
Delay (s)		70.9	28.8	1.5		87.4	61.1	32.4	76.5	46.8		
Level of Service		E	C	A		F	E	C	E	D		
Approach Delay (s)			20.8				60.4			56.9		
Approach LOS			C				E			E		
Intersection Summary												
HCM Average Control Delay			44.8				HCM Level of Service		D			
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)		0.0			
Intersection Capacity Utilization			94.9%				ICU Level of Service		F			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBL	SBT	SBR
Lane Configurations			
Volume (vph)	250	160	130
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	1.00
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00
Satd. Flow (prot)	1681	1747	1583
Flt Permitted	0.95	0.99	1.00
Satd. Flow (perm)	1681	1747	1583
Peak-hour factor, PHF	0.95	0.95	0.95
Adj. Flow (vph)	263	168	137
RTOR Reduction (vph)	0	0	118
Lane Group Flow (vph)	216	226	19
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Turn Type	Split		Perm
Protected Phases	4	4	
Permitted Phases			4
Actuated Green, G (s)	20.3	20.3	20.3
Effective Green, g (s)	20.3	20.3	20.3
Actuated g/C Ratio	0.14	0.14	0.14
Clearance Time (s)	4.6	4.6	4.6
Vehicle Extension (s)	2.0	2.0	2.0
Lane Grp Cap (vph)	227	236	214
v/s Ratio Prot	0.13	0.13	
v/s Ratio Perm			0.01
v/c Ratio	0.95	0.96	0.09
Uniform Delay, d1	64.4	64.4	56.7
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	45.7	46.0	0.1
Delay (s)	110.1	110.4	56.8
Level of Service	F	F	E
Approach Delay (s)		97.6	
Approach LOS		F	

Intersection Summary

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

C Plus Project with Whitelock Conditions
 PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	276	10	60	20	40	40	260	410	20	80	720	679
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	0.95			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	1628			1832	1583	1770	3515		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	1628			1832	1583	1770	3515		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)	291	11	63	21	42	42	274	432	21	84	758	715
RTOR Reduction (vph)	0	13	0	0	0	39	0	3	0	0	0	170
Lane Group Flow (vph)	186	166	0	0	63	3	274	450	0	84	758	545
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)	18.4	18.4			9.9	9.9	25.3	49.0		50.7	74.4	92.8
Effective Green, g (s)	18.4	18.4			9.9	9.9	25.3	49.0		50.7	74.4	92.8
Actuated g/C Ratio	0.12	0.12			0.07	0.07	0.17	0.33		0.34	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	200			121	104	299	1148		598	924	979
v/s Ratio Prot	c0.11	0.10			c0.03		c0.15	0.13		0.05	c0.41	0.07
v/s Ratio Perm						0.00						0.28
v/c Ratio	0.90	0.83			0.52	0.03	0.92	0.39		0.14	0.82	0.56
Uniform Delay, d1	64.9	64.3			67.8	65.5	61.3	39.0		34.5	32.1	16.6
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.03	0.72	0.54
Incremental Delay, d2	36.4	22.8			1.9	0.0	30.5	0.1		0.0	4.3	0.2
Delay (s)	101.3	87.0			69.6	65.6	91.8	39.1		35.6	27.6	9.2
Level of Service	F	F			E	E	F	D		D	C	A
Approach Delay (s)		94.3			68.0			59.0			19.6	
Approach LOS		F			E			E			B	

Intersection Summary		
HCM Average Control Delay	41.7	HCM Level of Service D
HCM Volume to Capacity ratio	0.83	
Actuated Cycle Length (s)	150.0	Sum of lost time (s) 22.0
Intersection Capacity Utilization	82.5%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
15: Civic Center Drive & Big Horn Blvd

C Plus Project with Whitelock Conditions
PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	170	131	210	60	93	200	80	1639	30	5	110	1473
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3			6.3	5.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95			1.00	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00			1.00	0.96
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	1863	1583	1770	1863	1583	1770	3530			1770	3403
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	1863	1583	1770	1863	1583	1770	3530			1770	3403
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	138	221	63	98	211	84	1725	32	5	116	1551
RTOR Reduction (vph)	0	0	118	0	0	76	0	1	0	0	0	20
Lane Group Flow (vph)	179	138	103	63	98	135	84	1756	0	0	121	2068
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot	Prot	
Protected Phases	3	8		7	4		1	6		5	5	2
Permitted Phases			8			4						
Actuated Green, G (s)	12.5	23.9	23.9	7.6	18.0	18.0	6.7	71.2			9.9	74.4
Effective Green, g (s)	12.5	23.9	23.9	7.6	18.0	18.0	6.7	71.2			9.9	74.4
Actuated g/C Ratio	0.09	0.18	0.18	0.06	0.13	0.13	0.05	0.53			0.07	0.55
Clearance Time (s)	5.6	4.6	4.6	5.6	5.6	5.6	6.3	5.3			6.3	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
Lane Grp Cap (vph)	165	331	282	100	250	212	88	1870			130	1884
v/s Ratio Prot	c0.10	c0.07		0.04	0.05		0.05	0.50			c0.07	c0.61
v/s Ratio Perm			0.07			c0.09						
v/c Ratio	1.08	0.42	0.37	0.63	0.39	0.64	0.95	0.94			0.93	1.10
Uniform Delay, d1	61.0	49.1	48.6	62.0	53.2	55.1	63.7	29.6			61.9	30.0
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	94.5	0.3	0.3	9.1	0.4	4.5	79.8	9.6			57.3	52.9
Delay (s)	155.5	49.4	48.9	71.1	53.6	59.6	143.5	39.2			119.2	82.9
Level of Service	F	D	D	E	D	E	F	D			F	F
Approach Delay (s)		84.5			60.0			43.9				84.8
Approach LOS		F			E			D				F

Intersection Summary		
HCM Average Control Delay	67.8	HCM Level of Service E
HCM Volume to Capacity ratio	1.07	
Actuated Cycle Length (s)	134.4	Sum of lost time (s) 27.4
Intersection Capacity Utilization	96.8%	ICU Level of Service F
Analysis Period (min)	15	
c Critical Lane Group		

Movement	SBR
Lane Configurations	
Volume (vph)	510
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frts	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	537
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
17: Denali Cir & Big Horn Blvd

C Plus Project with Whitelock Conditions
PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	2	50	37	2	89	100	1600	34	83	1560	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		5.3	5.3		5.3	5.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.86		1.00	0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1593		1770	1589		1770	3528		1770	3507	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1593		1770	1589		1770	3528		1770	3507	
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)	63	2	53	39	2	94	105	1684	36	87	1642	105
RTOR Reduction (vph)	0	47	0	0	85	0	0	1	0	0	3	0
Lane Group Flow (vph)	63	8	0	39	11	0	105	1719	0	87	1744	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	6.8	12.9		4.8	10.9		10.3	63.6		8.7	62.0	
Effective Green, g (s)	6.8	12.9		4.8	10.9		10.3	63.6		8.7	62.0	
Actuated g/C Ratio	0.06	0.12		0.04	0.10		0.09	0.58		0.08	0.56	
Clearance Time (s)	4.6	4.6		4.6	4.6		5.3	5.3		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)	110	187		77	158		166	2044		140	1980	
v/s Ratio Prot	c0.04	0.01		0.02	c0.01		c0.06	0.49		0.05	c0.50	
v/s Ratio Perm												
v/c Ratio	0.57	0.04		0.51	0.07		0.63	0.84		0.62	0.88	
Uniform Delay, d1	50.1	43.0		51.3	44.9		47.9	19.0		49.0	20.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.4	0.0		1.9	0.1		5.7	3.2		6.0	4.8	
Delay (s)	54.5	43.0		53.2	44.9		53.6	22.1		55.0	25.5	
Level of Service	D	D		D	D		D	C		D	C	
Approach Delay (s)		49.1			47.3			23.9			26.9	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			26.9			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			109.8			Sum of lost time (s)			19.8			
Intersection Capacity Utilization			74.5%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
18: Denali Circle & Big Horn Blvd

C Plus Project with Whitelock Conditions
PM PEAK HOUR

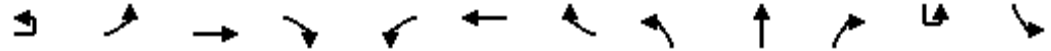
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	80	90	10	5	370	150	588	20	1066	350	489	1018
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	5.3
Lane Util. Factor	1.00	1.00			0.97	1.00	0.88	1.00	0.95	1.00	0.97	0.95
Frt	1.00	0.98			1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98
Flt Protected	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1834			3433	1863	2787	1770	3539	1583	3433	3475
Flt Permitted	0.95	1.00			0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1834			3433	1863	2787	1770	3539	1583	3433	3475
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)	84	95	11	5	389	158	619	21	1122	368	515	1072
RTOR Reduction (vph)	0	4	0	0	0	0	104	0	0	144	0	5
Lane Group Flow (vph)	84	102	0	0	394	158	515	21	1122	224	515	1214
Turn Type	Prot			Prot	Prot		pm+ov	Prot		Perm	Prot	
Protected Phases	3	8		7	7	4	5	1	6		5	2
Permitted Phases							4			6		
Actuated Green, G (s)	10.0	15.3			16.7	23.6	45.5	1.9	49.9	49.9	21.9	69.9
Effective Green, g (s)	10.0	15.3			16.7	23.6	45.5	1.9	49.9	49.9	21.9	69.9
Actuated g/C Ratio	0.08	0.12			0.13	0.18	0.35	0.01	0.39	0.39	0.17	0.55
Clearance Time (s)	5.6	7.2			5.6	5.6	6.3	6.3	5.3	5.3	6.3	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
Lane Grp Cap (vph)	138	219			447	343	989	26	1378	616	586	1895
v/s Ratio Prot	0.05	0.06			c0.11	0.08	c0.09	0.01	c0.32		c0.15	0.35
v/s Ratio Perm							0.10			0.14		
v/c Ratio	0.61	0.47			0.88	0.46	0.52	0.81	0.81	0.36	0.88	0.64
Uniform Delay, d1	57.2	52.7			54.8	46.6	32.7	63.0	35.0	27.9	51.9	20.4
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	5.1	0.6			17.6	0.4	0.2	90.8	3.6	0.1	13.6	0.6
Delay (s)	62.3	53.2			72.4	47.0	33.0	153.8	38.6	28.0	65.5	20.9
Level of Service	E	D			E	D	C	F	D	C	E	C
Approach Delay (s)		57.3				48.1			37.6			34.2
Approach LOS		E				D			D			C
Intersection Summary												
HCM Average Control Delay			39.8		HCM Level of Service					D		
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			128.2		Sum of lost time (s)					17.2		
Intersection Capacity Utilization			79.8%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												



Movement	SBR
Lane Configurations	
Volume (vph)	140
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frts	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	147
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
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
19: Lotz Pkwy & Laguna Springs Drive

C Plus Project with Whitelock Conditions
PM PEAK HOUR



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL		
Lane Configurations		↔	↕	↗	↔	↕	↗	↔	↕	↗		↔		
Volume (vph)	20	82	757	10	10	796	750	40	150	30	5	600		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6		5.6		
Lane Util. Factor		0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00		0.97		
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98		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	1.00	0.85	1.00	1.00	0.85		1.00		
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95		
Satd. Flow (prot)		3433	3539	1563	3433	3539	1583	3433	3539	1557		3433		
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95		
Satd. Flow (perm)		3433	3539	1563	3433	3539	1583	3433	3539	1557		3433		
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)	21	86	797	11	11	838	789	42	158	32	5	632		
RTOR Reduction (vph)	0	0	0	6	0	0	376	0	0	27	0	0		
Lane Group Flow (vph)	0	107	797	5	11	838	413	42	158	5	0	637		
Confl. Peds. (#/hr)										2				
Confl. Bikes (#/hr)				2						2		1		
Turn Type	Prot	Prot		Perm	Prot		Perm	Prot		Perm	Prot	Prot		
Protected Phases	3	3	8		7	4		1	6		5	5		
Permitted Phases				8			4			6				
Actuated Green, G (s)		5.9	41.1	41.1	0.7	35.9	35.9	2.8	14.9	14.9		18.1		
Effective Green, g (s)		5.9	41.1	41.1	0.7	35.9	35.9	2.8	14.9	14.9		18.1		
Actuated g/C Ratio		0.06	0.42	0.42	0.01	0.37	0.37	0.03	0.15	0.15		0.18		
Clearance Time (s)		5.6	6.6	6.6	5.6	6.6	6.6	5.6	5.6	5.6		5.6		
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)		206	1481	654	24	1294	579	98	537	236		633		
v/s Ratio Prot		c0.03	c0.23		0.00	0.24		0.01	c0.04			c0.19		
v/s Ratio Perm				0.00			c0.26			0.00				
v/c Ratio		0.52	0.54	0.01	0.46	0.65	0.71	0.43	0.29	0.02		1.01		
Uniform Delay, d1		44.8	21.4	16.6	48.6	25.9	26.7	46.9	37.0	35.4		40.0		
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		0.9	0.2	0.0	5.0	0.8	3.5	1.1	0.1	0.0		37.3		
Delay (s)		45.7	21.6	16.7	53.5	26.7	30.2	48.0	37.1	35.5		77.4		
Level of Service		D	C	B	D	C	C	D	D	D		E		
Approach Delay (s)			24.4			28.6			38.8					
Approach LOS			C			C			D					
Intersection Summary														
HCM Average Control Delay			36.1									HCM Level of Service	D	
HCM Volume to Capacity ratio			0.76											
Actuated Cycle Length (s)			98.2							30.0				
Intersection Capacity Utilization			92.8%										ICU Level of Service	F
Analysis Period (min)			15											
c Critical Lane Group														



































Movement	SBT	SBR
Lane Configurations	↑↑	↑
Volume (vph)	140	181
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.6	4.6
Lane Util. Factor	0.95	1.00
Frbp, ped/bikes	1.00	0.99
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3539	1562
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3539	1562
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	147	191
RTOR Reduction (vph)	0	79
Lane Group Flow (vph)	147	112
Confl. Peds. (#/hr)		1
Confl. Bikes (#/hr)		1
Turn Type		Perm
Protected Phases	2	
Permitted Phases		2
Actuated Green, G (s)	31.2	31.2
Effective Green, g (s)	31.2	31.2
Actuated g/C Ratio	0.32	0.32
Clearance Time (s)	4.6	4.6
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	1124	496
v/s Ratio Prot	0.04	
v/s Ratio Perm		0.07
v/c Ratio	0.13	0.23
Uniform Delay, d1	23.8	24.6
Progression Factor	1.00	1.00
Incremental Delay, d2	0.0	0.1
Delay (s)	23.9	24.7
Level of Service	C	C
Approach Delay (s)	59.0	
Approach LOS	E	

Intersection Summary

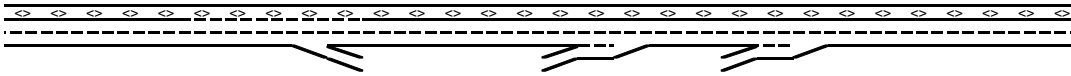
HCM Signalized Intersection Capacity Analysis
21: Whitelock Pkwy & Big Horn Blvd

C Plus Project with Whitelock Conditions
PM PEAK HOUR

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Volume (vph)	215	120	110	90	240	53	130	1238	60	84	1009	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.3	5.3	5.6	5.3	5.3	5.6	5.3	5.3	5.6	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	0.95	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)	226	126	116	95	253	56	137	1303	63	88	1062	289
RTOR Reduction (vph)	0	0	93	0	0	46	0	0	26	0	0	170
Lane Group Flow (vph)	226	126	23	95	253	10	137	1303	37	88	1062	119
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)	7.0	16.4	16.4	4.9	14.3	14.3	5.1	34.8	34.8	3.9	33.6	33.6
Effective Green, g (s)	7.0	16.4	16.4	4.9	14.3	14.3	5.1	34.8	34.8	3.9	33.6	33.6
Actuated g/C Ratio	0.09	0.20	0.20	0.06	0.17	0.17	0.06	0.43	0.43	0.05	0.41	0.41
Clearance Time (s)	5.6	5.3	5.3	5.6	5.3	5.3	5.6	5.3	5.3	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	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	294	710	317	206	619	277	214	1506	673	164	1454	650
v/s Ratio Prot	c0.07	0.04		0.03	c0.07		c0.04	c0.37		0.03	0.30	
v/s Ratio Perm			0.01			0.01			0.02			0.07
v/c Ratio	0.77	0.18	0.07	0.46	0.41	0.04	0.64	0.87	0.06	0.54	0.73	0.18
Uniform Delay, d1	36.6	27.1	26.5	37.2	30.0	28.0	37.5	21.4	13.8	38.1	20.3	15.4
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	10.4	0.0	0.0	0.6	0.2	0.0	4.8	5.3	0.0	1.7	1.7	0.0
Delay (s)	47.0	27.2	26.6	37.8	30.2	28.0	42.3	26.6	13.8	39.8	21.9	15.4
Level of Service	D	C	C	D	C	C	D	C	B	D	C	B
Approach Delay (s)		36.6			31.7			27.5			21.7	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM Average Control Delay			26.9				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			81.8				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			69.1%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

Project: Elk Grove Civic Center
Freeway Corridor: State Route 99 NB

Alternative: Cumulative + Project
Time Period: Wkdy PM Peak Hour

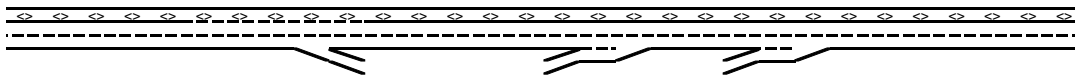


Key

- <> Express Lane (HOV)
- No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Loop On-Ramp	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Define Freeway Segment						
Type	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	1,050	1,500	1,700	850	1,500	180
Accel Length				175	1,200	
Decel Length		170				
Mainline Volume	3,296	3,296	2,990	2,990	4,449	4,799
On Ramp Volume				1,459	350	
Off Ramp Volume		306				
Express Lane Volume	989	989	897	897	1,335	1,440
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,307	2,307	2,093	3,552	3,464	3,359
PHF	0.93	0.97	0.93	0.97	0.93	0.93
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 %	15.0%	5.0%	10.0%	5.0%	5.0%	10.0%
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}	0.930	0.976	0.952	0.976	0.976	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,667	2,438	2,363	3,753	3,818	3,793
GP Flow (pcphpl)	1,333	1,219	1,182	1,877	1,909	1,896
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	1.8	1.8	1.8	1.8	1.8	1.8
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	70.1	70.1	70.1	70.1	70.1	70.1
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70

Location	1	2	3	4	5	6
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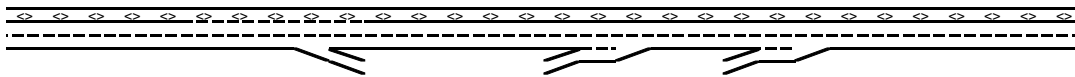
Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Loop On-Ramp	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Operations in General Purpose Lanes						
v/c ratio	0.56	0.51	0.49	0.78	0.80	0.79
Speed (mph)	69.8	70.0	70.0	64.7	64.2	64.4
Density (pcphpl)	19.1	17.4	16.9	29.0	29.8	29.5
LOS	C	B	B	D	D	D
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)				2,212	3,432	
GP _{IN} Cap (pcph)				4,800	4,800	
GP _{IN} v/c ratio				0.46	0.72	
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)		2,115				
GP _{OUT} Cap (pcph)		4,800				
GP _{OUT} v/c ratio		0.44				
Calculate On Ramp Flow Rate						
On Volume (vph)				1,459	350	
PHF				0.97	0.93	
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)				1,542	386	
On Flow (pcphpl)				1,542	386	
Calculate On Ramp Roadway Operations						
On Ramp Type				Right	Right	
On Ramp Speed (mph)				45	45	
On Ramp Cap (pcph)				2,100	2,100	
On Ramp v/c ratio				0.73	0.18	

Location	1	2	3	4	5	6
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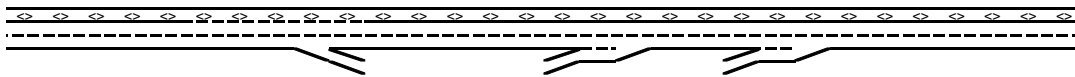
Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Loop On-Ramp	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Off Ramp Flow Rate						
Off Volume (vph)		306				
PHF		0.97				
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)		323				
Off Flow (pcphpl)		323				
Calculate Off Ramp Roadway Operations						
Off Ramp Type		Right				
Off Ramp Speed		35				
Off Ramp Cap (pcph)		2,000				
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)						

Location	1	2	3	4	5	6
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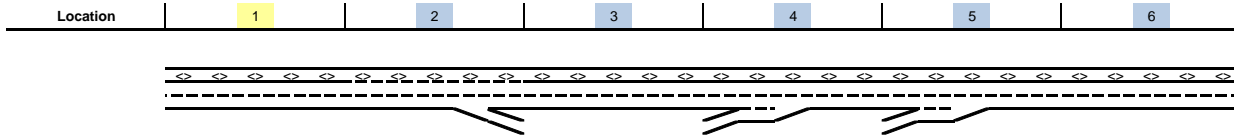


Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Loop On-Ramp	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Merge Influence Area Operations						
Effective v_p (pcph)				2,212	3,432	
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)				0.582	0.611	
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}				1.000	1.000	
v_{12} (pcph)				2,212	3,432	
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)				2,212	3,432	
v_{R12a} (pcph)				3,753	3,818	
Merge Speed Index				0.47	0.39	
Merge Area Speed				56.8	59.1	
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed				56.8	59.1	
Merge v/c ratio				0.82	0.83	
Merge Density				32.9	27.6	
Merge LOS				D	C	
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)		2,438				
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)		2,438				
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)		2,438				
Diverge Speed Index		0.46				
Diverge Area Speed		57.2				
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed		57.2				
Diverge v/c ratio		0.55				
Diverge Density		23.7				
Diverge LOS		C				



Key

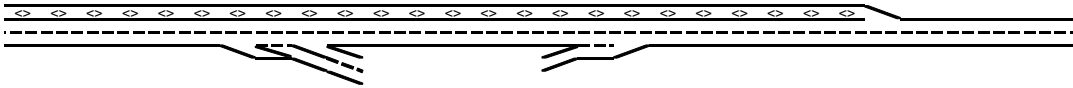
<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Loop On-Ramp	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Summarize Segment Operations						
Segment v/c ratio	0.56	0.55	0.49	0.82	0.83	0.79
Segment Density	19.1	23.7	16.9	32.9	27.6	29.5
Segment LOS	C	C	B	D	C	D
Over Capacity						

Project: Elk Grove Civic Center
Freeway Corridor: State Route 99 SB

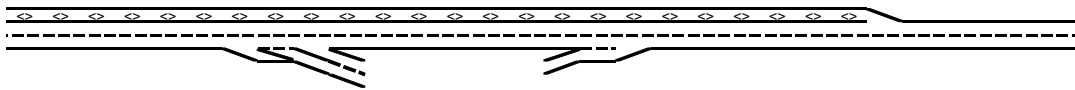
Alternative: Cumulative + Project
Time Period: Wkdy PM Peak Hour



Key
 <> Express Lane (HOV)
 No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Define Freeway Segment						
Type	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	250	1,500	2,250	1,500	400	8,050
Accel Length				300		
Decel Length		1,500				
Mainline Volume	4,245	4,245	2,370	2,370	2,748	2,748
On Ramp Volume				378		
Off Ramp Volume		1,875				
Express Lane Volume	1,274	1,274				
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,972	2,972	2,370	2,748	2,748	2,748
PHF	0.95	0.98	0.95	0.98	0.95	0.95
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 %	10.0%	5.0%	10.0%	5.0%	15.0%	15.0%
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}	0.952	0.976	0.952	0.976	0.930	0.930
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,284	3,108	2,619	2,874	3,110	3,110
GP Flow (pcphpl)	1,642	1,554	1,310	1,437	1,555	1,555
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	1.8	1.8	1.8	1.8	1.8	1.8
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	70.1	70.1	70.1	70.1	70.1	70.1
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70

Location	1	2	3	4	5	6
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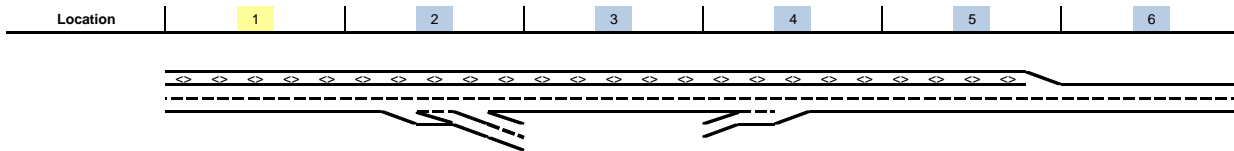


Key

<> Express Lane (HOV)

No Trucks

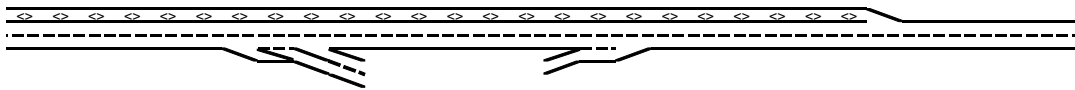
Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Operations in General Purpose Lanes						
v/c ratio	0.68	0.65	0.55	0.60	0.65	0.65
Speed (mph)	67.7	68.5	69.9	69.3	68.5	68.5
Density (pcphpl)	24.2	22.7	18.7	20.7	22.7	22.7
LOS	C	C	C	C	C	C
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)				2,479		
GP _{IN} Cap (pcph)				4,800		
GP _{IN} v/c ratio				0.52		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)		1,147				
GP _{OUT} Cap (pcph)		4,800				
GP _{OUT} v/c ratio		0.24				
Calculate On Ramp Flow Rate						
On Volume (vph)				378		
PHF				0.98		
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		
On Flow (pcph)				395		
On Flow (pcphpl)				395		
Calculate On Ramp Roadway Operations						
On Ramp Type				Right		
On Ramp Speed (mph)				60		
On Ramp Cap (pcph)				2,200		
On Ramp v/c ratio				0.18		



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

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Off Ramp Flow Rate						
Off Volume (vph)		1,875				
PHF		0.98				
Total Lanes		2				
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)		1,961				
Off Flow (pcphpl)		981				
Calculate Off Ramp Roadway Operations						
Off Ramp Type		Right				
Off Ramp Speed		35				
Off Ramp Cap (pcph)		4,000				
Off Ramp v/c ratio		0.49				
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)						

Location	1	2	3	4	5	6
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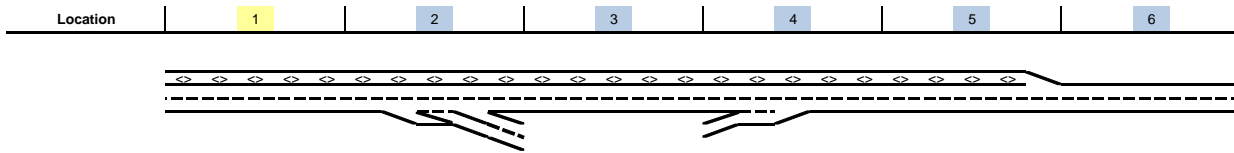


Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Merge Influence Area Operations						
Effective v_p (pcph)				2,479		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)				0.586		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}				1.000		
v_{12} (pcph)				2,479		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)				2,479		
v_{R12a} (pcph)				2,874		
Merge Speed Index				0.35		
Merge Area Speed				60.1		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed				60.1		
Merge v/c ratio				0.62		
Merge Density				25.8		
Merge LOS				C		
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)		3,108				
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)		0.592				
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}		1.000				
v_{12} (pcph)		3,108				
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)		3,108				
Diverge Speed Index		0.60				
Diverge Area Speed		53.1				
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed		53.1				
Diverge v/c ratio		0.71				
Diverge Density		17.5				
Diverge LOS		B				



Key

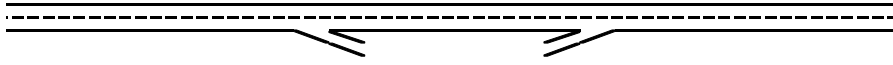
<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Summarize Segment Operations						
Segment v/c ratio	0.68	0.71	0.55	0.62	0.65	0.65
Segment Density	24.2	17.5	18.7	25.8	22.7	22.7
Segment LOS	C	B	C	C	C	C
Over Capacity						

Project: Elk Grove Civic Center
Freeway Corridor: Interstate 5 NB
Alternative: Cumulative + Project
Time Period: Wkdy PM Peak Hour

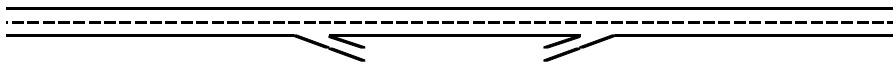
Location	1	2	3	4	5
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Key

<> Express Lane (HOV)
 No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	6,900	1,500	3,100	1,500	500
Accel Length				750	
Decel Length		160			
Mainline Volume	2,598	2,598	2,360	2,360	3,128
On Ramp Volume				768	
Off Ramp Volume		238			
Express Lane Volume					
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	2,598	2,598	2,360	3,128	3,128
PHF	0.92	0.97	0.92	0.97	0.92
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	18.0%	5.0%	18.0%	5.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.917	0.976	0.917	0.976	0.917
f _P	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,078	2,745	2,796	3,305	3,706
GP Flow (pcphpl)	1,539	1,373	1,398	1,653	1,853
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.2	1.2	1.2	1.2	1.2
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	71.7	71.7	71.7	71.7	71.7
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70
Calculate Operations in General Purpose Lanes					
v/c ratio	0.64	0.57	0.58	0.69	0.77
Speed (mph)	68.7	69.7	69.5	67.6	65.1
Density (pcphpl)	22.4	19.7	20.1	24.4	28.5
LOS	C	C	C	C	D
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				2,494	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.52	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		2,494			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.52			



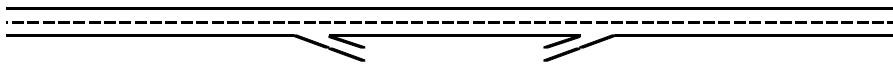
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate On Ramp Flow Rate					
On Volume (vph)				768	
PHF				0.97	
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	
On Flow (pcph)				812	
On Flow (pcphpl)				812	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.39	

Location	1	2	3	4	5
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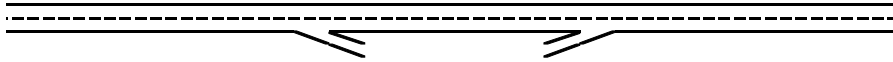
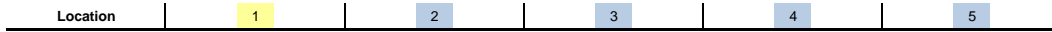


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate Off Ramp Flow Rate					
Off Volume (vph)		238			
PHF		0.97			
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)		251			
Off Flow (pcphpl)		251			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.13			
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)				2,494	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.599	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				2,494	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				2,494	
v_{R12a} (pcph)				3,305	
Merge Speed Index				0.36	
Merge Area Speed				59.9	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				59.9	
Merge v/c ratio				0.72	
Merge Density				26.2	
Merge LOS				C	

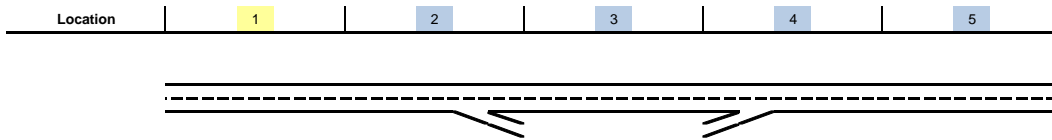


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate Diverge Influence Area Operations					
Effective v_p (pcph)		2,745			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.680			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		2,745			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		2,745			
Diverge Speed Index		0.45			
Diverge Area Speed		57.4			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		57.4			
Diverge v/c ratio		0.62			
Diverge Density		26.4			
Diverge LOS		C			



Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Summarize Segment Operations					
Segment v/c ratio	0.64	0.62	0.58	0.72	0.77
Segment Density	22.4	26.4	20.1	26.2	28.5
Segment LOS	C	C	C	C	D
Over Capacity					

Project: Elk Grove Civic Center
Freeway Corridor: Interstate 5 SB
Alternative: Cumulative + Project
Time Period: Wkdy PM Peak Hour

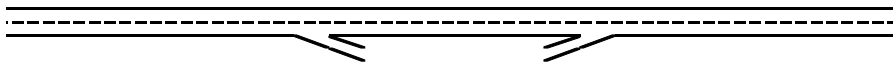
Location	1	2	3	4	5
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Key

<> Express Lane (HOV)
 No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	2,500	1,500	1,450	1,500	7,750
Accel Length				750	
Decel Length		160			
Mainline Volume	4,436	4,436	2,990	2,990	3,129
On Ramp Volume				139	
Off Ramp Volume		1,446			
Express Lane Volume					
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	4,436	4,436	2,990	3,129	3,129
PHF	0.94	0.95	0.94	0.95	0.94
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	18.0%	5.0%	18.0%	5.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.917	0.976	0.917	0.976	0.917
f _p	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	5,144	4,786	3,467	3,376	3,628
GP Flow (pcphpl)	2,572	2,393	1,734	1,688	1,814
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.2	1.2	1.2	1.2	1.2
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	71.7	71.7	71.7	71.7	71.7
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70
Calculate Operations in General Purpose Lanes					
v/c ratio	1.07	1.00	0.72	0.70	0.76
Speed (mph)	-	53.5	66.7	67.2	65.6
Density (pcphpl)	-	44.7	26.0	25.1	27.6
LOS	F	E	C	C	D
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				3,226	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.67	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		3,226			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.67			



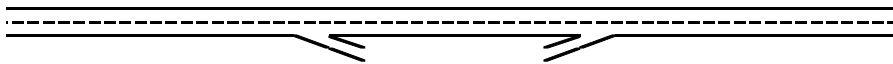
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate On Ramp Flow Rate					
On Volume (vph)				139	
PHF				0.95	
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	
On Flow (pcph)				150	
On Flow (pcphpl)				150	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.07	

Location	1	2	3	4	5
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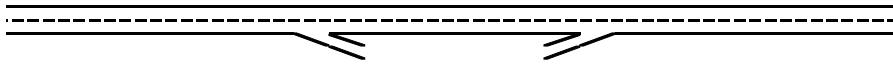
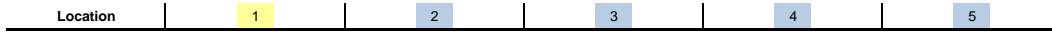


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate Off Ramp Flow Rate					
Off Volume (vph)		1,446			
PHF		0.95			
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)		1,560			
Off Flow (pcphpl)		1,560			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.78			
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)				3,226	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.599	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				3,226	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				3,226	
v_{R12a} (pcph)				3,376	
Merge Speed Index				0.37	
Merge Area Speed				59.7	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				59.7	
Merge v/c ratio				0.73	
Merge Density				27.0	
Merge LOS				C	

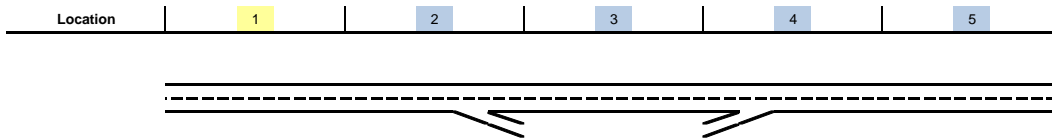


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate Diverge Influence Area Operations					
Effective v_p (pcph)		4,786			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.569			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		4,786			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		4,786			
Diverge Speed Index		0.57			
Diverge Area Speed		54.1			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		54.1			
Diverge v/c ratio		1.09			
Diverge Density		44.0			
Diverge LOS		F			



Key

<> Express Lane (HOV)

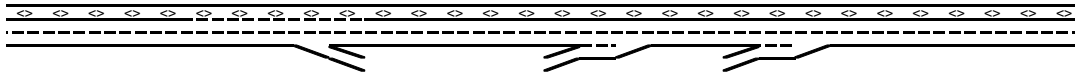
No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Summarize Segment Operations					
Segment v/c ratio	1.07	1.09	0.72	0.73	0.76
Segment Density	-	-	26.0	27.0	27.6
Segment LOS	F	F	C	C	D
Over Capacity	Segment GP Lanes	Diverge			

Project: Elk Grove Civic Center
Freeway Corridor: State Route 99 NB

Alternative: Cumulative + Project
Time Period: Sat. AM Peak Hour

Location	1	2	3	4	5	6
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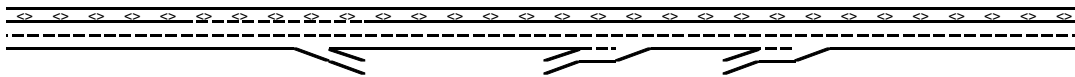


Key

- <> Express Lane (HOV)
- No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Loop On-Ramp	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Define Freeway Segment						
Type	Basic	Diverge	Basic	Merge	Merge	Basic
Length (ft)	1,050	1,500	1,700	850	1,500	180
Accel Length				175	1,200	
Decel Length		170				
Mainline Volume	3,033	3,033	2,730	2,730	3,864	4,184
On Ramp Volume				1,134	320	
Off Ramp Volume		303				
Express Lane Volume	910	910	819	819	1,159	1,255
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,123	2,123	1,911	3,045	3,025	2,929
PHF	0.92	0.92	0.92	0.92	0.93	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 %	15.0%	5.0%	10.0%	5.0%	5.0%	10.0%
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}	0.930	0.976	0.952	0.976	0.976	0.952
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,481	2,365	2,181	3,393	3,334	3,343
GP Flow (pcphpl)	1,240	1,183	1,091	1,696	1,667	1,671
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	1.8	1.8	1.8	1.8	1.8	1.8
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	70.1	70.1	70.1	70.1	70.1	70.1
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70

Location	1	2	3	4	5	6
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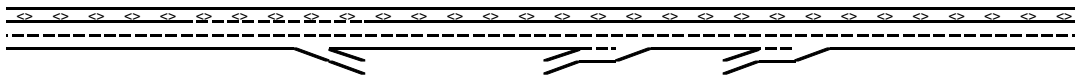
Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Loop On-Ramp	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Operations in General Purpose Lanes						
v/c ratio	0.52	0.49	0.45	0.71	0.69	0.70
Speed (mph)	70.0	70.0	70.0	67.1	67.5	67.4
Density (pcphpl)	17.7	16.9	15.6	25.3	24.7	24.8
LOS	B	B	B	C	C	C
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)				2,129	2,981	
GP _{IN} Cap (pcph)				4,800	4,800	
GP _{IN} v/c ratio				0.44	0.62	
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)		2,028				
GP _{OUT} Cap (pcph)		4,800				
GP _{OUT} v/c ratio		0.42				
Calculate On Ramp Flow Rate						
On Volume (vph)				1,134	320	
PHF				0.92	0.93	
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)				1,263	353	
On Flow (pcphpl)				1,263	353	
Calculate On Ramp Roadway Operations						
On Ramp Type				Right	Right	
On Ramp Speed (mph)				45	45	
On Ramp Cap (pcph)				2,100	2,100	
On Ramp v/c ratio				0.60	0.17	

Location	1	2	3	4	5	6
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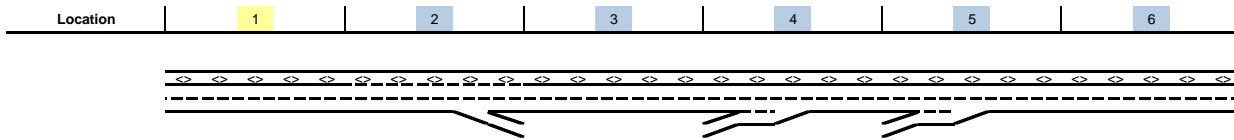


Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Loop On-Ramp	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Off Ramp Flow Rate						
Off Volume (vph)		303				
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)		338				
Off Flow (pcphpl)		338				
Calculate Off Ramp Roadway Operations						
Off Ramp Type		Right				
Off Ramp Speed		35				
Off Ramp Cap (pcph)		2,000				
Off Ramp v/c ratio		0.17				
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)						

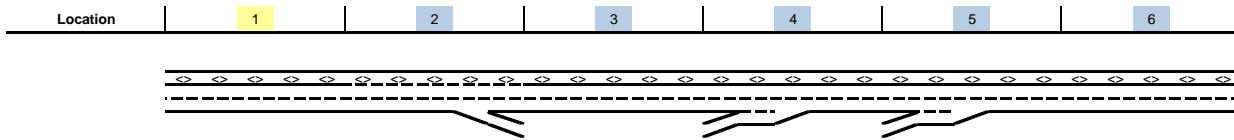


Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Loop On-Ramp	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Calculate Merge Influence Area Operations						
Effective v_p (pcph)				2,129	2,981	
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)				0.582	0.611	
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}				1.000	1.000	
v_{12} (pcph)				2,129	2,981	
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)				2,129	2,981	
v_{R12a} (pcph)				3,393	3,334	
Merge Speed Index				0.42	0.32	
Merge Area Speed				58.2	61.0	
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed				58.2	61.0	
Merge v/c ratio				0.74	0.72	
Merge Density				30.3	23.8	
Merge LOS				D	C	
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)		2,365				
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)		0.685				
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}		1.000				
v_{12} (pcph)		2,365				
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)		2,365				
Diverge Speed Index		0.46				
Diverge Area Speed		57.2				
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed		57.2				
Diverge v/c ratio		0.54				
Diverge Density		23.1				
Diverge LOS		C				



Key

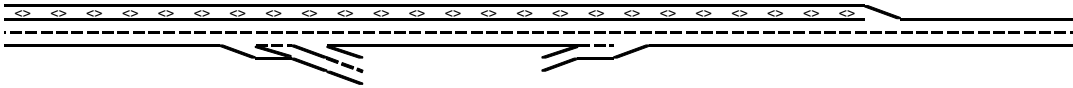
<> Express Lane (HOV)

No Trucks

Name	SR 99 south of Elk Grove Blvd	East Stockton Loop Off-Ramp	E. Stockton Off to Elk Grove On	Elk Grove Loop On-Ramp	Elk Grove Blvd On-Ramp	SR 99 north of Elk Grove
Summarize Segment Operations						
Segment v/c ratio	0.52	0.54	0.45	0.74	0.72	0.70
Segment Density	17.7	23.1	15.6	30.3	23.8	24.8
Segment LOS	B	C	B	D	C	C
Over Capacity						

Project: Elk Grove Civic Center
Freeway Corridor: State Route 99 SB

Alternative: Cumulative + Project
Time Period: Sat. AM Peak Hour

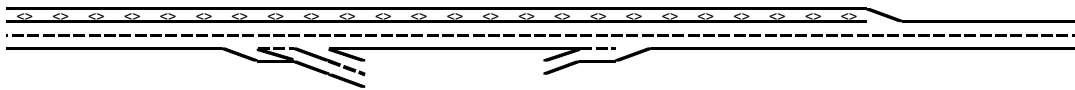


Key

- <> Express Lane (HOV)
- No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Define Freeway Segment						
Type	Basic	Diverge	Basic	Merge	Basic	Basic
Length (ft)	250	1,500	2,250	1,500	400	8,050
Accel Length				300		
Decel Length		1,500				
Mainline Volume	3,430	3,430	1,770	1,770	2,099	2,099
On Ramp Volume				329		
Off Ramp Volume		1,660				
Express Lane Volume	1,029	1,029				
EL On Ramp Volume						
EL Off Ramp Volume						
Calculate Flow Rate in General Purpose Lanes (GP)						
GP Volume (vph)	2,401	2,401	1,770	2,099	2,099	2,099
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 %	10.0%	5.0%	10.0%	5.0%	15.0%	15.0%
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}	0.952	0.976	0.952	0.976	0.930	0.930
f _p	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,740	2,675	2,020	2,339	2,453	2,453
GP Flow (pcphpl)	1,370	1,338	1,010	1,169	1,226	1,226
Calculate Speed in General Purpose Lanes						
Lane Width (ft)	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6
TRD	1.8	1.8	1.8	1.8	1.8	1.8
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	70.1	70.1	70.1	70.1	70.1	70.1
Measured FFS	70.0	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70	70

Location	1	2	3	4	5	6
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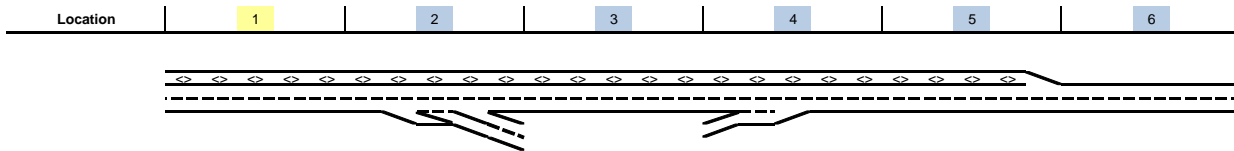


Key

<> Express Lane (HOV)

No Trucks

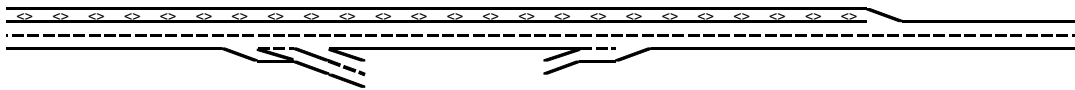
Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Operations in General Purpose Lanes						
v/c ratio	0.57	0.56	0.42	0.49	0.51	0.51
Speed (mph)	69.7	69.8	70.0	70.0	70.0	70.0
Density (pcphpl)	19.7	19.2	14.4	16.7	17.5	17.5
LOS	C	C	B	B	B	B
Calculate Operations for Entering GP Lanes						
GP _{IN} Vol (pcph)				1,972		
GP _{IN} Cap (pcph)				4,800		
GP _{IN} v/c ratio				0.41		
Calculate Operations for Exiting GP Lanes						
GP _{OUT} Vol (pcph)		826				
GP _{OUT} Cap (pcph)		4,800				
GP _{OUT} v/c ratio		0.17				
Calculate On Ramp Flow Rate						
On Volume (vph)				329		
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		
On Flow (pcph)				367		
On Flow (pcphpl)				367		
Calculate On Ramp Roadway Operations						
On Ramp Type				Right		
On Ramp Speed (mph)				60		
On Ramp Cap (pcph)				2,200		
On Ramp v/c ratio				0.17		



Key
 <> Express Lane (HOV)
 No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Off Ramp Flow Rate						
Off Volume (vph)		1,660				
PHF		0.92				
Total Lanes		2				
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)		1,849				
Off Flow (pcphpl)		925				
Calculate Off Ramp Roadway Operations						
Off Ramp Type		Right				
Off Ramp Speed		35				
Off Ramp Cap (pcph)		4,000				
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)						

Location	1	2	3	4	5	6
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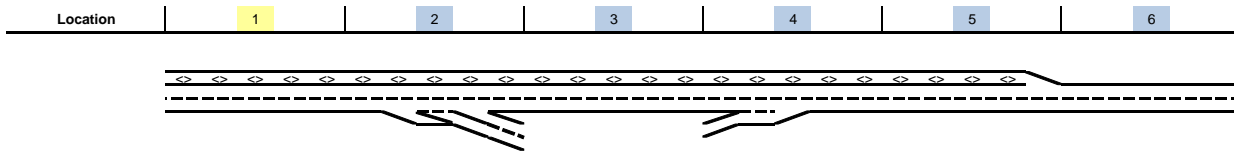


Key

<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Calculate Merge Influence Area Operations						
Effective v_p (pcph)				1,972		
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FM} (Eqn 13-3)				0.586		
P_{FM} (Eqn 13-4)						
P_{FM} (Eqn 13-5)						
P_{FM}				1.000		
v_{12} (pcph)				1,972		
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)				1,972		
v_{R12a} (pcph)				2,339		
Merge Speed Index				0.33		
Merge Area Speed				60.9		
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed				60.9		
Merge v/c ratio				0.51		
Merge Density				21.7		
Merge LOS				C		
Calculate Diverge Influence Area Operations						
Effective v_p (pcph)		2,675				
Up Ramp L_{EQ}						
Down Ramp L_{EQ}						
P_{FD} (Eqn 13-9)		0.608				
P_{FD} (Eqn 13-10)						
P_{FD} (Eqn 13-11)						
P_{FD}		1.000				
v_{12} (pcph)		2,675				
v_3 (pcph)						
v_{34} (pcph)						
v_{12a} (pcph)		2,675				
Diverge Speed Index		0.59				
Diverge Area Speed		53.4				
Outer Lanes Volume						
Outer Lanes Speed						
Segment Speed		53.4				
Diverge v/c ratio		0.61				
Diverge Density		13.8				
Diverge LOS		B				



Key

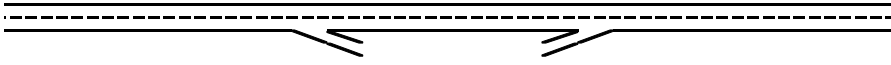
<> Express Lane (HOV)

No Trucks

Name	SR 99 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	SR 99 south of Elk Grove Blvd	SR 99 south of Elk Grove Blvd
Summarize Segment Operations						
Segment v/c ratio	0.57	0.61	0.42	0.51	0.51	0.51
Segment Density	19.7	13.8	14.4	21.7	17.5	17.5
Segment LOS	C	B	B	C	B	B
Over Capacity						

Project: Elk Grove Civic Center
Freeway Corridor: Interstate 5 NB
Alternative: Cumulative + Project
Time Period: Sat. AM Peak Hour

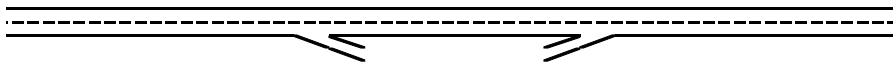
Location	1	2	3	4	5
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Key

<> Express Lane (HOV)
 No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	6,900	1,500	3,100	1,500	500
Accel Length				750	
Decel Length		160			
Mainline Volume	2,171	2,171	2,030	2,030	2,939
On Ramp Volume				909	
Off Ramp Volume		141			
Express Lane Volume					
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	2,171	2,171	2,030	2,939	2,939
PHF	0.92	0.97	0.92	0.97	0.92
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	18.0%	5.0%	18.0%	5.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.917	0.976	0.917	0.976	0.917
f _p	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,572	2,294	2,405	3,106	3,482
GP Flow (pcphpl)	1,286	1,147	1,203	1,553	1,741
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.2	1.2	1.2	1.2	1.2
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	71.7	71.7	71.7	71.7	71.7
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70
Calculate Operations in General Purpose Lanes					
v/c ratio	0.54	0.48	0.50	0.65	0.73
Speed (mph)	69.9	70.0	70.0	68.6	66.6
Density (pcphpl)	18.4	16.4	17.2	22.7	26.1
LOS	C	B	B	C	D
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				2,145	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.45	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		2,145			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.45			



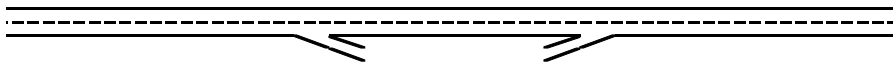
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate On Ramp Flow Rate					
On Volume (vph)				909	
PHF				0.97	
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	
On Flow (pcph)				961	
On Flow (pcphpl)				961	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.46	

Location	1	2	3	4	5
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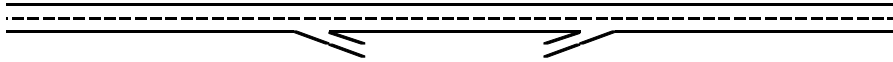
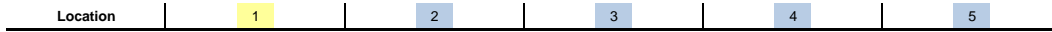


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate Off Ramp Flow Rate					
Off Volume (vph)		141			
PHF		0.97			
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)		149			
Off Flow (pcphpl)		149			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.07			
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)				2,145	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.599	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				2,145	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				2,145	
v_{R12a} (pcph)				3,106	
Merge Speed Index				0.34	
Merge Area Speed				60.5	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				60.5	
Merge v/c ratio				0.68	
Merge Density				24.6	
Merge LOS				C	

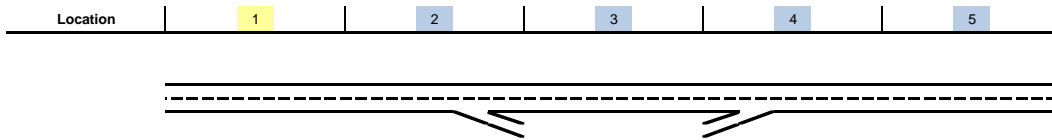


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Calculate Diverge Influence Area Operations					
Effective v_p (pcph)		2,294			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.696			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		2,294			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		2,294			
Diverge Speed Index		0.44			
Diverge Area Speed		57.6			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		57.6			
Diverge v/c ratio		0.52			
Diverge Density		22.5			
Diverge LOS		C			



Key

<> Express Lane (HOV)

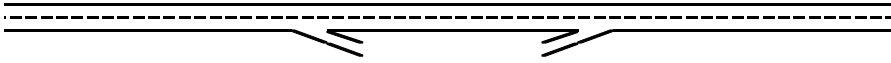
No Trucks

Name	I-5 south of Elk Grove Blvd	Elk Grove Blvd Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove On-Ramp	I-5 north of Elk Grove Blvd
Summarize Segment Operations					
Segment v/c ratio	0.54	0.52	0.50	0.68	0.73
Segment Density	18.4	22.5	17.2	24.6	26.1
Segment LOS	C	C	B	C	D
Over Capacity					

Project: Elk Grove Civic Center
Freeway Corridor: Interstate 5 SB

Alternative: Cumulative + Project
Time Period: Sat. AM Peak Hour

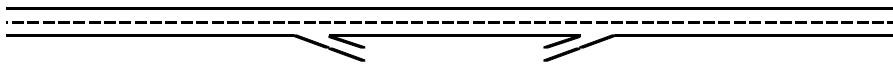
Location	1	2	3	4	5
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Key

- <> Express Lane (HOV)
- No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Define Freeway Segment					
Type	Basic	Diverge	Basic	Merge	Basic
Length (ft)	2,500	1,500	1,450	1,500	7,750
Accel Length				750	
Decel Length		160			
Mainline Volume	2,443	2,443	1,940	1,940	2,130
On Ramp Volume				190	
Off Ramp Volume		503			
Express Lane Volume					
EL On Ramp Volume					
EL Off Ramp Volume					
Calculate Flow Rate in General Purpose Lanes (GP)					
GP Volume (vph)	2,443	2,443	1,940	2,130	2,130
PHF	0.92	0.92	0.92	0.92	0.92
GP Lanes	2	2	2	2	2
Terrain	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	18.0%	5.0%	18.0%	5.0%	18.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%
E _T	1.5	1.5	1.5	1.5	1.5
E _R	1.2	1.2	1.2	1.2	1.2
f _{HV}	0.917	0.976	0.917	0.976	0.917
f _p	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	2,894	2,722	2,298	2,373	2,524
GP Flow (pcphpl)	1,447	1,361	1,149	1,187	1,262
Calculate Speed in General Purpose Lanes					
Lane Width (ft)	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6
TRD	1.2	1.2	1.2	1.2	1.2
f _{LW}	0.0	0.0	0.0	0.0	0.0
f _{LC}	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	71.7	71.7	71.7	71.7	71.7
Measured FFS	70.0	70.0	70.0	70.0	70.0
FFS	70	70	70	70	70
Calculate Operations in General Purpose Lanes					
v/c ratio	0.60	0.57	0.48	0.49	0.53
Speed (mph)	69.3	69.7	70.0	70.0	70.0
Density (pcphpl)	20.9	19.5	16.4	17.0	18.0
LOS	C	C	B	B	C
Calculate Operations for Entering GP Lanes					
GP _{IN} Vol (pcph)				2,161	
GP _{IN} Cap (pcph)				4,800	
GP _{IN} v/c ratio				0.45	
Calculate Operations for Exiting GP Lanes					
GP _{OUT} Vol (pcph)		2,161			
GP _{OUT} Cap (pcph)		4,800			
GP _{OUT} v/c ratio		0.45			



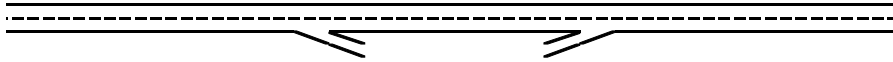
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate On Ramp Flow Rate					
On Volume (vph)				190	
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	
On Flow (pcph)				212	
On Flow (pcphpl)				212	
Calculate On Ramp Roadway Operations					
On Ramp Type				Right	
On Ramp Speed (mph)				45	
On Ramp Cap (pcph)				2,100	
On Ramp v/c ratio				0.10	

Location	1	2	3	4	5
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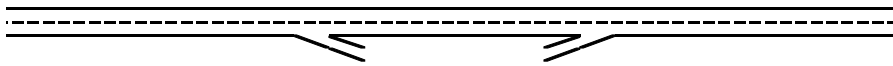
Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate Off Ramp Flow Rate					
Off Volume (vph)		503			
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)		560			
Off Flow (pcphpl)		560			
Calculate Off Ramp Roadway Operations					
Off Ramp Type		Right			
Off Ramp Speed		35			
Off Ramp Cap (pcph)		2,000			
Off Ramp v/c ratio		0.28			
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)				2,161	
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FM} (Eqn 13-3)				0.599	
P_{FM} (Eqn 13-4)					
P_{FM} (Eqn 13-5)					
P_{FM}				1.000	
v_{12} (pcph)				2,161	
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)				2,161	
v_{R12a} (pcph)				2,373	
Merge Speed Index				0.30	
Merge Area Speed				61.7	
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed				61.7	
Merge v/c ratio				0.52	
Merge Density				19.2	
Merge LOS				B	

Location	1	2	3	4	5
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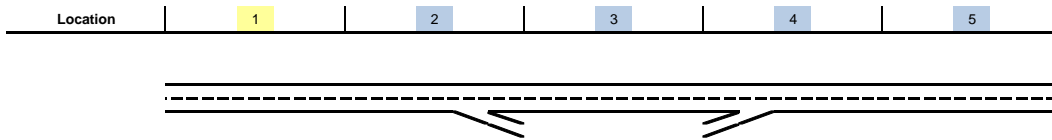


Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Calculate Diverge Influence Area Operations					
Effective v_p (pcph)		2,722			
Up Ramp L_{EQ}					
Down Ramp L_{EQ}					
P_{FD} (Eqn 13-9)		0.666			
P_{FD} (Eqn 13-10)					
P_{FD} (Eqn 13-11)					
P_{FD}		1.000			
v_{12} (pcph)		2,722			
v_3 (pcph)					
v_{34} (pcph)					
v_{12a} (pcph)		2,722			
Diverge Speed Index		0.48			
Diverge Area Speed		56.6			
Outer Lanes Volume					
Outer Lanes Speed					
Segment Speed		56.6			
Diverge v/c ratio		0.62			
Diverge Density		26.2			
Diverge LOS		C			



Key

<> Express Lane (HOV)

No Trucks

Name	I-5 north of Elk Grove Blvd	Elk Grove Off-Ramp	Elk Grove Off-Ramp to On-Ramp	Elk Grove Loop On-Ramp	I-5 south of Elk Grove Blvd
Summarize Segment Operations					
Segment v/c ratio	0.60	0.62	0.48	0.52	0.53
Segment Density	20.9	26.2	16.4	19.2	18.0
Segment LOS	C	C	B	B	C
Over Capacity					

