

FOX CREEK ELEMENTARY TO
COUGAR RUN ELEMENTARY
CONSOLIDATION

Traffic Impact Study

Project Number: 1124175

Prepared For: Douglas County
School District

March 21, 2025



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Project Number: 1124175

Prepared For: Douglas County School District
Planning and Construction
2808 Highway 85, Building B
Castle Rock, Colorado 80109

March 21, 2025



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EXECUTIVE SUMMARY

Douglas County School District is considering options for consolidating schools in Highlands Ranch, Colorado. One option being considered is moving Fox Creek Elementary into Cougar Run Elementary. In addition, the 6th grade students will be moved from the elementary schools to a middle school. This traffic impact study addresses existing traffic patterns and potential traffic challenges at Cougar Run Elementary, while considering the anticipated increase in traffic caused by the school consolidation.

Cougar Run has two parking lots to the west of the building that share a single access point to Venneford Ranch Road. One of the parking lots features a dedicated singular lane drop-off and pick-up lane. Another drop-off and pick-up lane is situated to the east of the school with two access points along Forrest Drive. The intersection of Venneford Ranch Road at Forrest Drive feature pedestrian crosswalks. Another pedestrian crosswalk crosses Venneford Ranch Road directly adjacent to the parking lot access point. School bus service is provided for individuals within Cougar Run's attendance boundary but is restricted to individuals living more than one mile from the school. This bus service will be expanded for Fox Creek students who qualify after relocating to Cougar Run.

The projected 2028-2029 combined enrollment is 806 students. The projected combined enrollment number is 50 percent more than the previous maximum Cougar Run enrollment. When the existing traffic at Fox Creek is relocated to Cougar Run, additional students will be eligible to take the bus. It is anticipated that a little over 1/2 of the Fox Creek students will be newly eligible to take the bus to school. Students who currently walk to Fox Creek are unlikely to walk to Cougar Run due to distance and crossing a major roadway, therefore, it is assumed that these students will now be driven to school and count as a new vehicular trip to Cougar Run. Taking into account the estimated street parking trips, the ingress/egress trips, pedestrians and bicyclists converted to vehicle trips, anticipated carpooling and the subtraction of new bus ridership, the resulting increase in trip demand for Cougar Run is about 270 trips during the morning peak hour and 290 trips during the afternoon peak hour.

Traffic will increase with additional enrollment, but additional bus service will be offered, limiting the impact of the increased enrollment. Consolidating school populations at Cougar Run would cause the school population to more than double its previous historical maximum enrollment. To address existing and potential future traffic challenges the following mitigation measures are recommended:

- Enact/enforce a school policy that prohibits vehicles from parking on eastbound Venneford Ranch Road, west of Meadow Creek Drive, during pick-up and drop-off times
- Coordinate with the Douglas County Sheriff's office to increase speed enforcement along Venneford Ranch Road.
- Analyze the ability to stagger school start and end times for half of the school by at least 10 minutes to decrease the peak pick-up and drop-off demand.

1. INTRODUCTION

1.1 Study Purpose and Scope

The purpose of this Traffic Impact Study (TIS) is to discuss the existing traffic patterns at Cougar Run Elementary (Cougar Run) and potential mitigation measures for current traffic and potential increased traffic due to increased enrollment caused by school consolidations. A potential school consolidation option includes having Fox Creek Elementary (Fox Creek) consolidate into Cougar Run.

The scope of this TIS includes accessing school driveways, nearby intersections, school parking lots, school drop off and pickup locations, traffic flow, bicycle and pedestrian facilities, and general traffic challenges at Cougar Run.

1.2 Study Area

Cougar Run Elementary School is located at 8780 Venneford Ranch Road in the northern region of Highlands Ranch. This school is near the intersection of Venneford Ranch Road and Forrest Drive. The parcel number for the property is 222901402070. A vicinity map showing the school's location is provided as **Figure 1**.



Figure 1 – Vicinity Map

The study area was determined through consultation with Douglas County School District (DCSD) and Douglas County and potentially impacted intersections were identified. Each school access and adjacent streets are included in the TIS study area as well as the following intersections:

- Quebec Street at Collegiate Drive
- Quebec Street at Timberline Road
- University Boulevard and Cresthill Lane
- University Boulevard and Venneford Ranch Road
- Colorado and Venneford Ranch Road

Neighborhood local and collector streets are analyzed for safety challenges, bicycle and pedestrian facilities, parking availability, and queueing lengths. Larger intersections at arterial streets are analyzed for the same items, but also for accident history and traffic signal warrant criteria if a traffic signal is not present.

1.3 School Description

Cougar Run

Cougar Run has a start time of 8:40 AM and an end time of 3:30 PM. The school is located in the neighborhood to the north of the intersection of Colorado Boulevard and University Boulevard. Cougar Run has two parking lots to the west of the building that share a single access point to Venneford Ranch Road. One of the parking lots features a dedicated singular lane drop-off and pick-up lane. Another drop-off and pick-up lane is situated to the east of the school with two access points along Forrest Drive. The intersection of Venneford Ranch Road and Forrest Drive feature pedestrian crosswalks. Another pedestrian crosswalk crosses Venneford Ranch Road directly adjacent to the parking lot access point. Cougar Run has a maximum Capacity of 800 students but the largest enrollment since 2013 is 539 students.

School bus service is provided for individuals within Cougar Run's attendance boundary but is restricted to individuals living more than one mile from the school. **Figure 2** depicts Cougar Run's local attendance boundary in light blue with the orange circle representing the walking radius. As of November 2024, 156 individuals are eligible to receive bus service, and 78 individuals have used the bus service which is a 50 percent rate.

Fox Creek

Fox Creek has a start time of 8:35 AM and an end time of 3:30 PM. The school is located in the neighborhood to the northeast of the intersection S Broadway and E Highlands Ranch Parkway. Fox Creek has a maximum Capacity of 1,000 students but the largest enrollment since 2013 is 743 students.

School bus service is provided for individuals within Fox Creek's attendance boundary but is restricted to individuals living more than one mile from the school. **Figure 3** depicts Fox Creek's local attendance boundary in blue with the orange circle representing the walking radius. As of November 2024, 120 individuals are eligible to receive bus service, and 88 individuals have used the bus service which is a 73 percent rate. Most of the students attending Fox Creek do not live within 1 mile of Cougar Run. Therefore, they would qualify for bus service to Cougar Run.

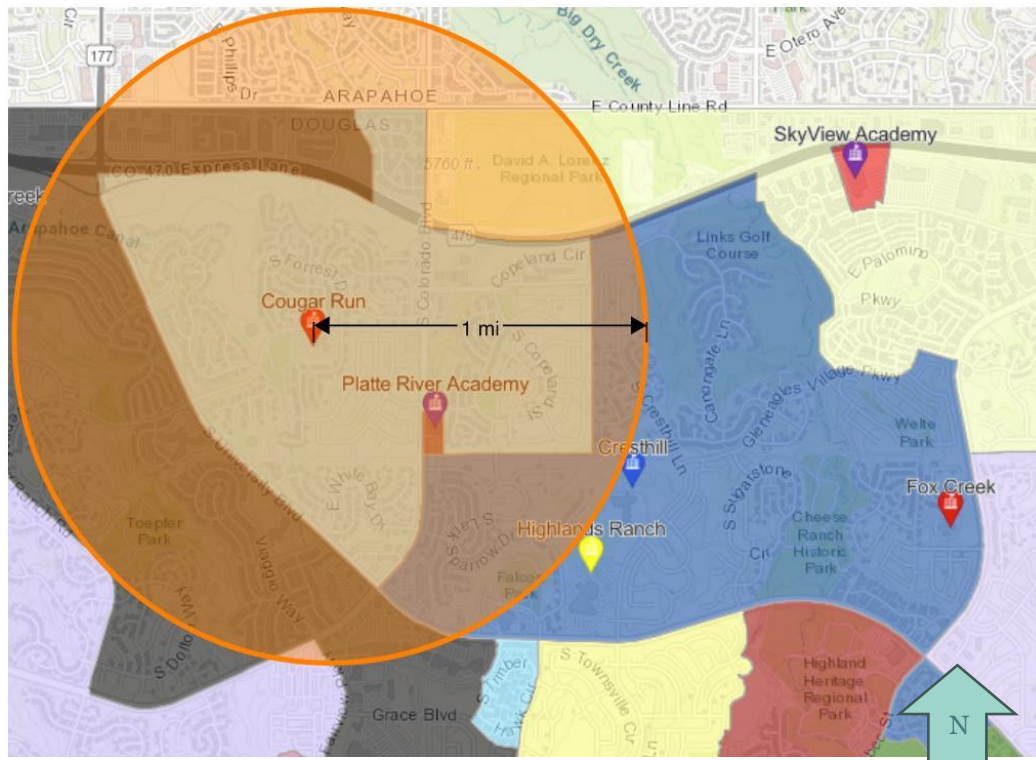


Figure 2 – Cougar Run Bus Service Map

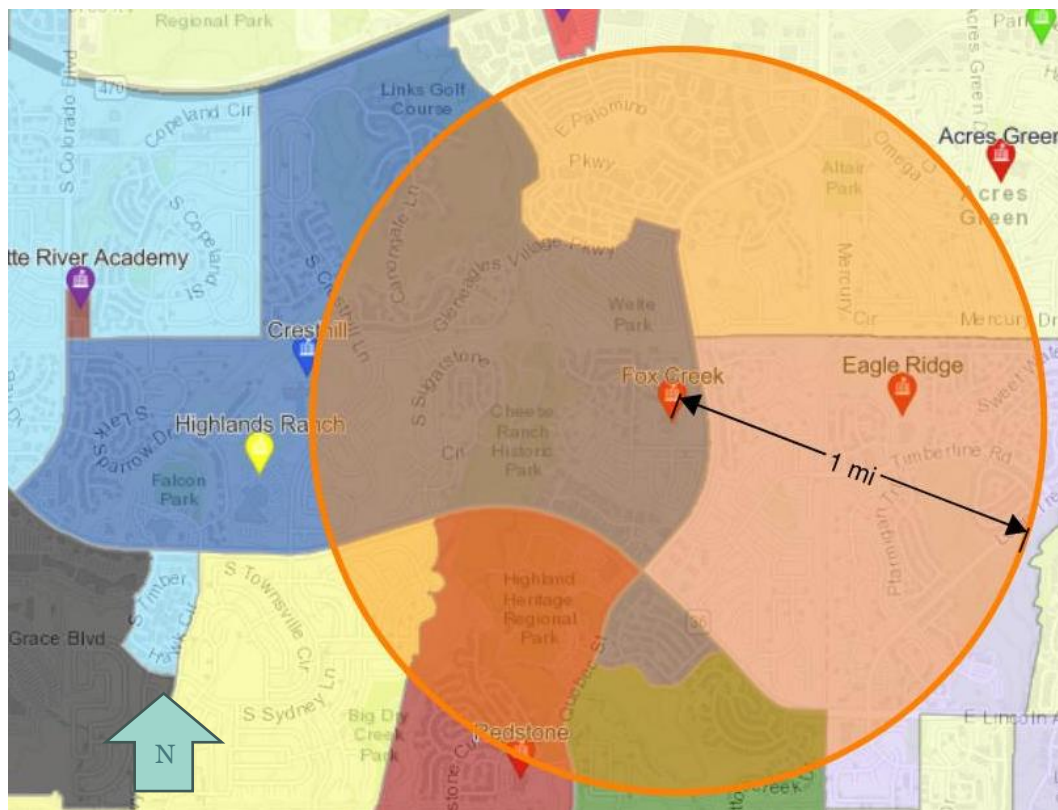


Figure 3 – Fox Creek Bus Service Map

2. EXISTING CONDITIONS

2.1 Site Observation

A site observation was performed at Cougar Run on November 14, 2024. Field notes from the site observation are included in **Appendix A**. The morning site observation was conducted from 7:45 AM through 9:15 AM and the afternoon site observation was conducted from 2:45 PM through 4:15 PM. Key observations included:

- Visibility challenges when exiting the parking lot onto Venneford Ranch Road
- Congestion on Venneford Ranch Road
- Queuing Vehicles blocking the eastbound bike lane

2.2 Roadway Network

The Highlands Ranch roadway network is maintained by Douglas County. Cougar Run is situated within a built-out neighborhood and is surrounded by local and neighborhood collector streets. The main accesses to the neighborhood are Venneford Ranch Road, from either Colorado Boulevard, or University Boulevard. Venneford Ranch Road extends from the school to signalized intersections at both Colorado Boulevard and University Boulevard.

Fox Creek traffic driving to Cougar Run will mainly use University Boulevard and Colorado Boulevard. **Figure 4** depicts the most likely routes that would be taken from Fox Creek to Cougar Run.

School zone flashers operate from 8:10 to 8:50 AM and from 3:20 to 4:00 PM. Two flashers are located on Venneford Ranch Road, each offset approximately 100 feet from the school property line.

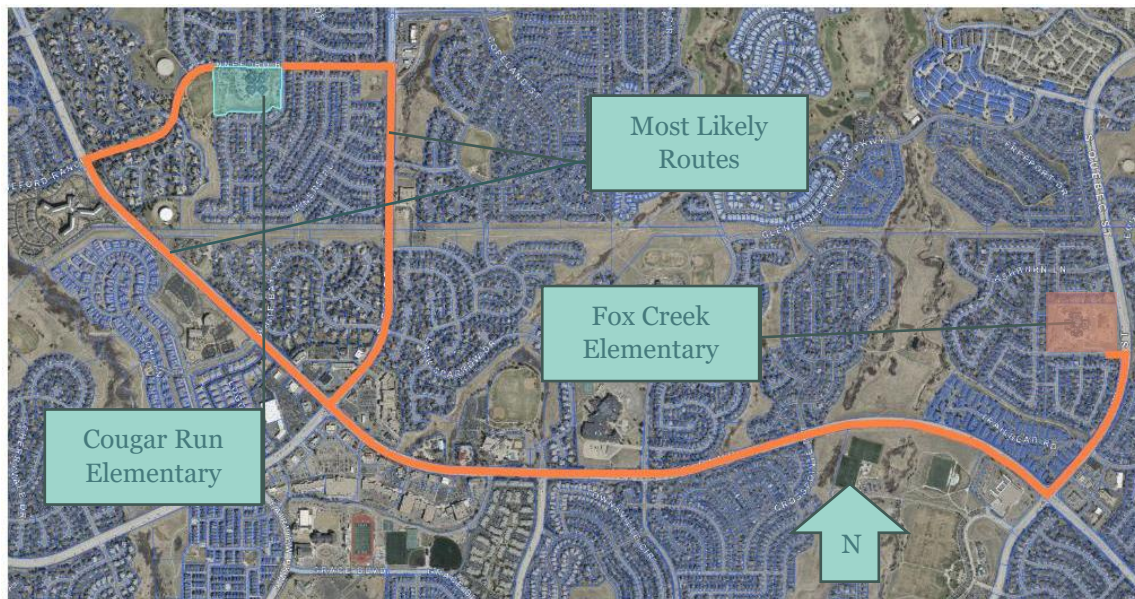


Figure 4 – Routes from Fox Creek to Cougar Run

Quebec Street at Timberline Road/ Silver Spur Lane

The intersection of Quebec Street and Timberline Road is a signalized, four-way intersection that has permissive/protected left-turn lanes/phases for all Quebec Street approaches and permissive left-turn lanes/phases for Timberline Drive approaches. **Figure 5** shows an aerial of the intersection with the current intersection layout.

Northbound Quebec Street has three through lanes and a dedicated left-turn lane. This lane has approximately 120 feet of storage space with a 70-foot taper. There is no dedicated right-turn lane. Southbound Quebec Street also has three through lanes and a dedicated left-turn lane. This lane has approximately 320 feet of storage space with a 330-foot taper. A dedicated right-turn lane is not present. Bike lanes are not present on Quebec Street.

The eastbound approach of Silver Spur Lane contains one through lane and a dedicated left-turn lane, with 50 feet of storage space. A median is present at this approach. There are no bike lanes on Silver Spur Lane.

The westbound approach of Timberline Road contains one through lane and a dedicated left-turn lane, with 180 feet of storage space and an 90-foot taper. Bike lanes are present for both directions of Timberline Road but merge with traffic near the intersection.



Figure 5 – Quebec Street at Timberline Road/Silver Spur Lane

University Boulevard at Cresthill Lane

The intersection of University Boulevard at Cresthill Lane is a signalized, four-way intersection that has protected left-turn lanes/phases for the University Boulevard approaches and protected/permissive lanes/phases for the Cresthill Lane approaches. **Figure 6** shows an aerial of the intersection with the current intersection layout.

Westbound University Boulevard has three through lanes and two dedicated left-turn lanes with approximately 1,000 feet of storage and a 120-foot taper before transitioning to a striped median. There is no dedicated right-turn lane. Westbound University Boulevard also has three through lanes, with a singular dedicated left-turn lane. This lane has approximately 390 feet of storage with a 140-foot taper before transitioning to a striped median. A dedicated right-turn lane is present on this approach, containing 340 feet of storage with a 90-foot taper. Bike lanes are present on both directions of University Boulevard.

The northbound approach of Cresthill Lane contains one through lane, and a dedicated left-turn lane with 90 feet of storage and a 90-foot taper. The southbound approach contains one through lane. A second through lane transitions to a dedicated left-turn lane approximately 130 feet north of the intersection. A dedicated right-turn lane has 140 feet of storage with a 50-foot taper. Bike lanes are not present on Cresthill Lane.



Figure 6 – University Boulevard at Cresthill Lane

University Boulevard at Venneford Ranch Road

The intersection of University Boulevard and Venneford Ranch Road is a signalized, four-way intersection that has protected/permissive left-turn lanes/phases for all approaches. **Figure 7** shows an aerial of the intersection with the current intersection layout.

Northbound University Boulevard has three through lanes and a dedicated left-turn lane with approximately 160 feet of storage and a 180-foot taper before transitioning to a striped median. There is no dedicated right-turn lane. Southbound University Boulevard also has three through lanes, with a dedicated left-turn lane. This lane has approximately 180 feet of storage with a 200-foot taper before transitioning to a striped median. There is no dedicated right-turn lane on this approach either. Bike lanes are present on both directions of University Boulevard.

The westbound approach of Venneford Ranch Road has a dedicated right-turn lane, a dedicated left-turn lane, and a through lane. Each turn lane has approximately 90 feet of storage with a 70-foot taper. The eastbound approach of Venneford Ranch Road also has a dedicated right-turn lane, a dedicated left-turn lane, and a through lane. The left-turn lane has approximately 260 feet of storage with a 120-foot taper. The right-turn lane has approximately 700 feet of storage with a 110-foot taper. This turning lane extends westward past Ranch River Circle. Bike lanes are present on Venneford Ranch Road, but merge with traffic near the intersection.

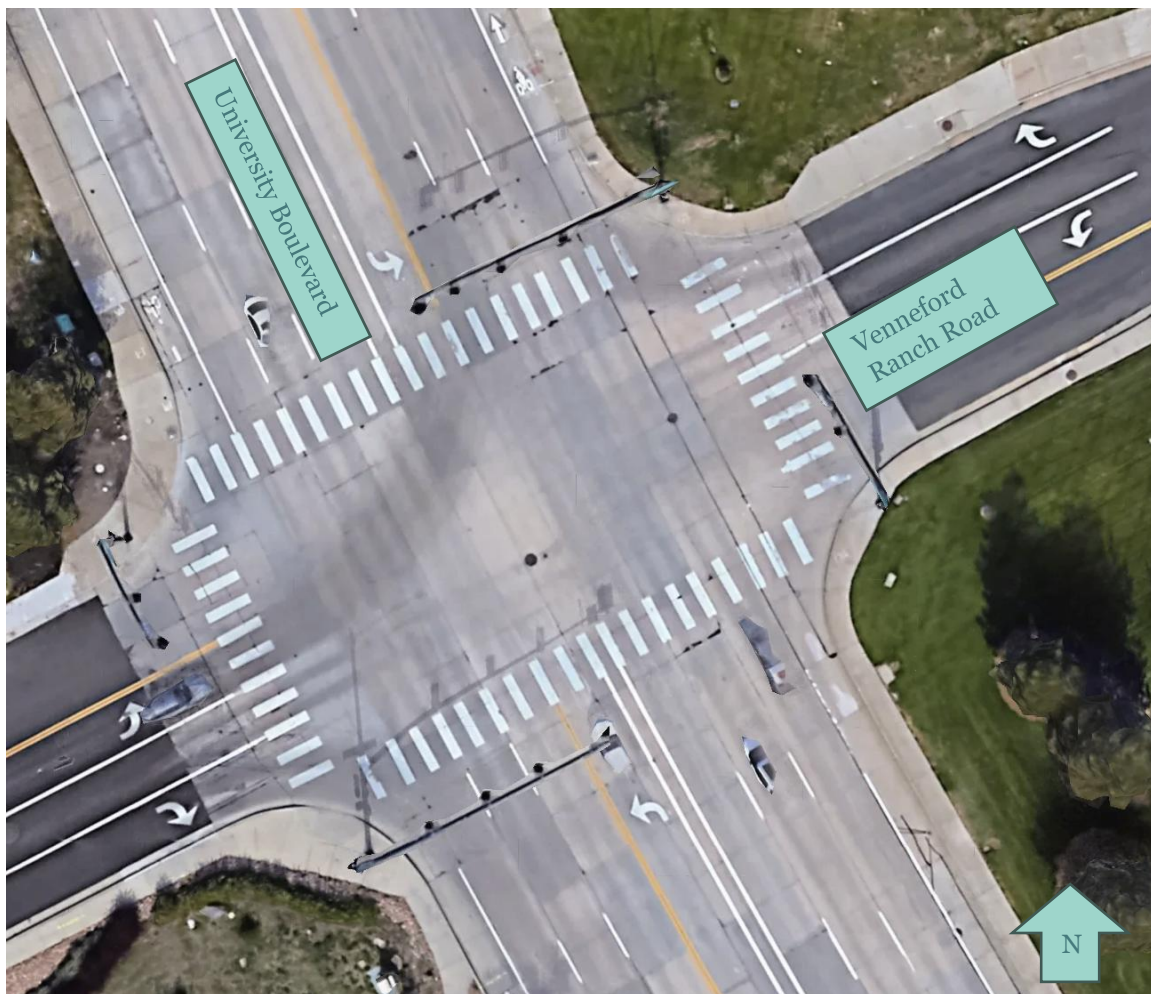


Figure 7 – University Boulevard at Venneford Ranch Road

Colorado Boulevard at Venneford Ranch Road

The intersection of Colorado Boulevard and Venneford Ranch Road is a signalized, four-way intersection that has protected/permissive left-turn lanes/phases for Colorado Boulevard and has permissive left-turn lanes/phases for Venneford Ranch Road and the commercial parking lot exit. **Figure 8** shows an aerial of the intersection with the current intersection layout.

Northbound Colorado Boulevard has two through lanes and a dedicated left-turn lane with approximately 190 feet of storage and a 430-foot taper before transitioning to a striped median. There is no dedicated right-turn lane. Southbound Colorado Boulevard also has two through lanes, with a dedicated left-turn lane. This lane has approximately 110 feet of storage with a 150-foot taper before transitioning to a striped median. There is no dedicated right-turn lane on this approach either. Bike lanes are present on both directions of Colorado Boulevard.

The eastbound approach of Venneford Ranch Road has a dedicated left-turn lane and a shared right-turn lane. The left-turn lane has approximately 130 feet of storage with an 80-foot taper. The westbound approach exiting the parking lot has a dedicated left-turn lane and a shared right-turn lane. These lanes are separated by a stripe approximately 40 feet in length. Bike lanes are present on Venneford Ranch Road, but merge with traffic near the intersection.

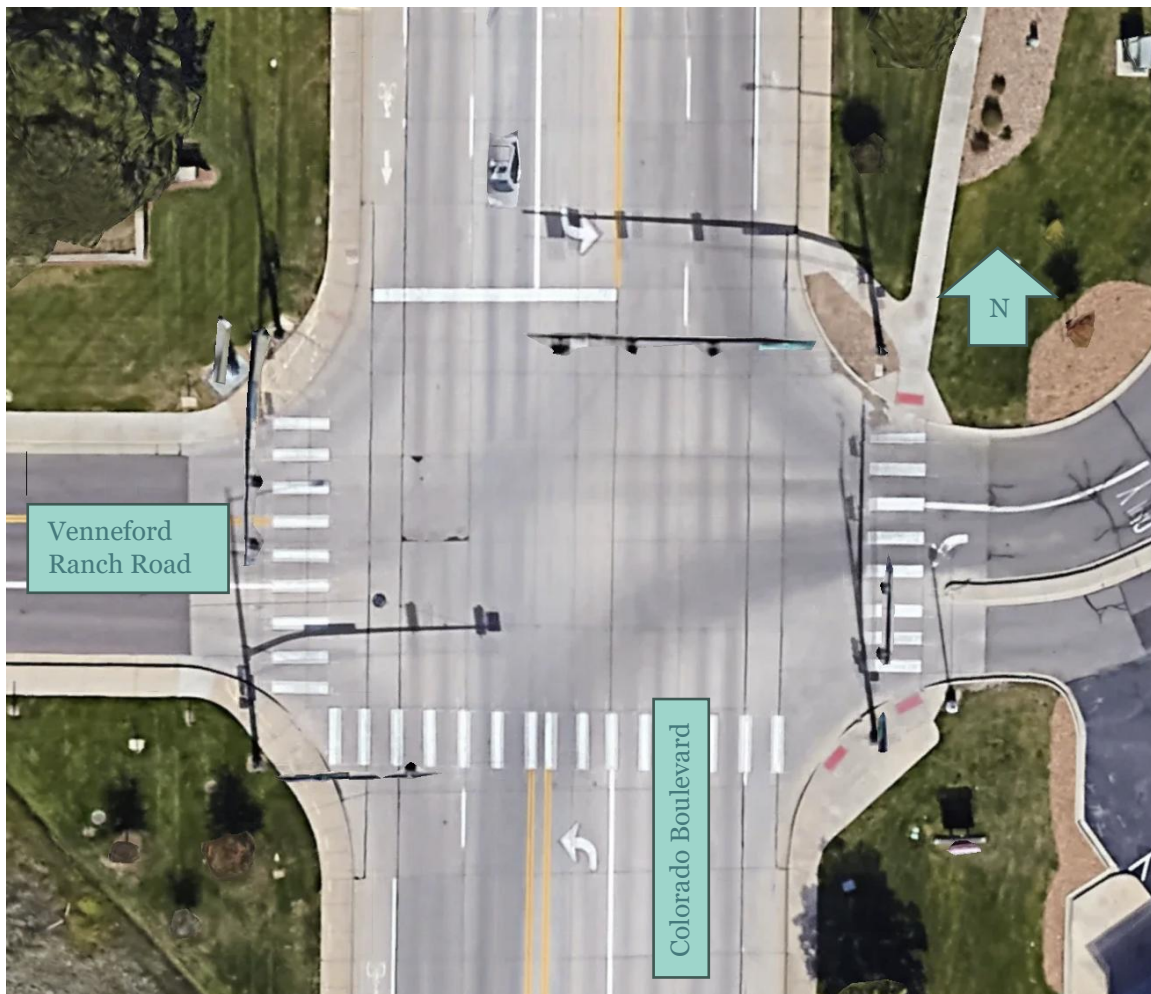


Figure 8 – Colorado Boulevard at Venneford Ranch Road

Quebec Street at Collegiate Drive

The intersection of Quebec Street and Timberline Road is a signalized, three-way intersection that has permissive/protected left-turn lanes/phases for the northbound Quebec Street approaches and permissive left-turn lanes/phases for the Timberline Drive approach. **Figure 9** shows an aerial of the intersection with the current intersection layout.

Northbound Quebec Street has three through lanes and a dedicated left-turn lane. This lane has approximately 120 feet of storage space with a 70-foot taper. There is no dedicated right-turn lane. Southbound Quebec Street also has three through lanes and a dedicated left-turn lane. This lane has approximately 320 feet of storage space with a 330-foot taper. A dedicated right-turn lane is not present. Bike lanes are not present on Quebec Street.

The eastbound approach of Collegiate Drive contains one through dedicated left-turn lane and one dedicated right-turn lane. These Lanes each have approximately 90 feet of storage.



Figure 9 – Quebec Street at Collegiate Drive

Roadway Characteristics

General features of the roadways along the most likely route from Fox Creek to Cougar Run are summarized in **Table 1**.

Table 1 – Roadway Characteristics

Roadway	Cresthill Lane	University Boulevard	Venneford Ranch Road	Colorado Boulevard
Speed Limit	30 mph	45 mph	30 mph	45 mph
Number of Through Lanes	2 NB, 1 SB	6	2	4
Lane Width	12 feet	11 feet	11 feet	12 feet
Bike Lane Width	None	6 feet	5 feet	8 feet
Median	None	Striped	None	Striped
On-Street Parking	None	None	South Side near School	None

2.3 Traffic Volumes

Traffic data collection was conducted by Rekor Systems (All Traffic Data) on Wednesday, November 13, 2024. Traffic volumes were collected at the following applicable intersections:

- Quebec Street at Collegiate Drive
- Quebec Street at Timberline Road
- University Boulevard and Cresthill Lane
- University Boulevard and Venneford Ranch Road
- Venneford Ranch Road at Forrest Drive
- Colorado and Venneford Ranch Road
- Cougar Run Access Points at Forrest Drive

Traffic count data is summarized in **Table 2** below and is included in **Appendix B**. The existing traffic is shown in **Figure 10**.

2.4 Existing Level of Service

The existing capacity analysis for the key intersections included in **Table 2** was evaluated using Synchro 11 Software (Synchro). The resulting level of service (LOS) and delay are summarized in **Table 8** provided in **Section 4** of this report for comparison to the future projected traffic capacity analysis.

Existing traffic signal timing plans provided by Douglas County are included in **Appendix C**.

Level of service reports from Synchro are included in **Appendix D**.

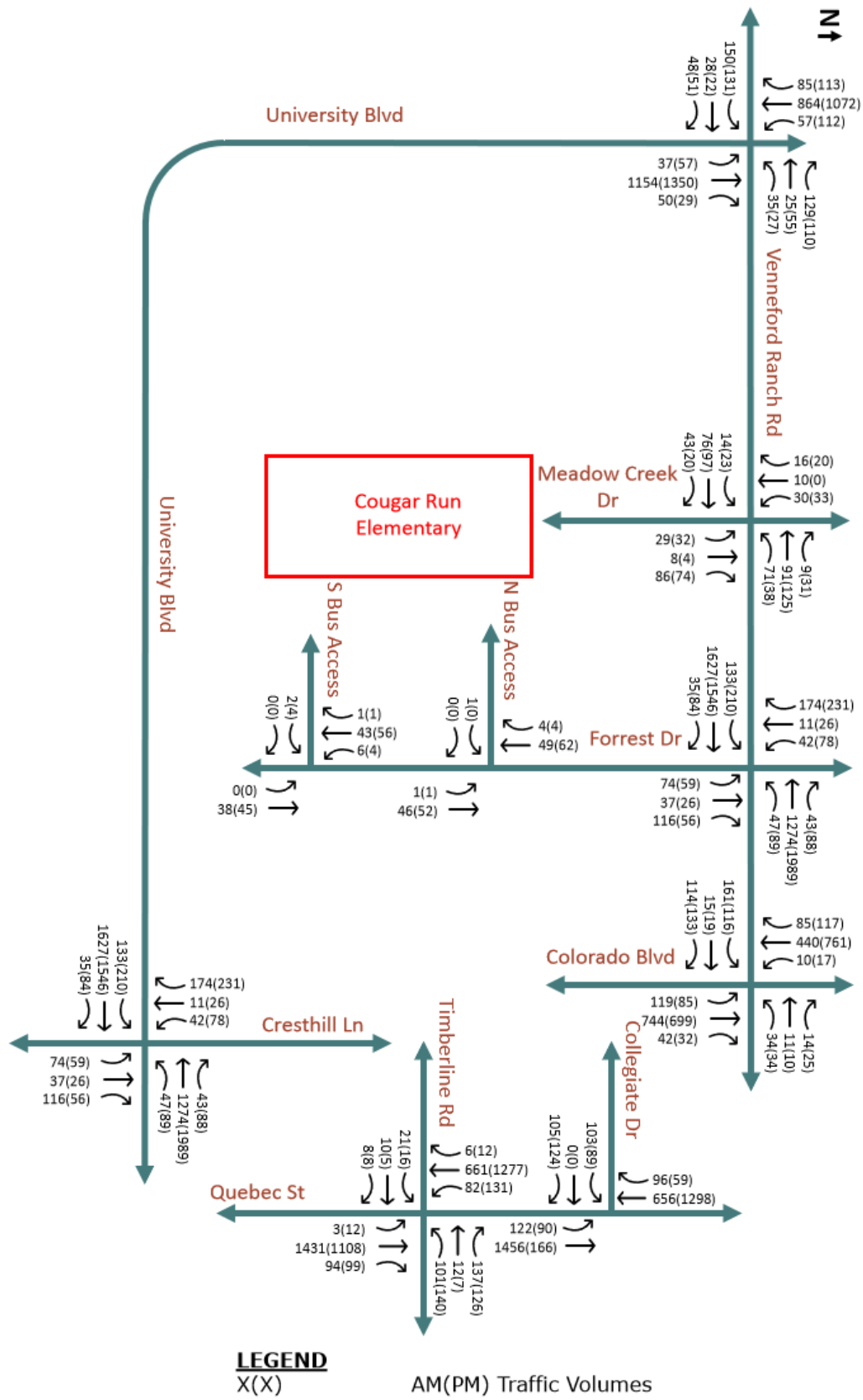


Figure 10 – Existing Traffic

Table 2 – Traffic Volume Summary

Intersection	Peak Hour	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Venneford Ranch Rd & Colorado Blvd	AM	161	15	114	34	11	14	119	744	42	10	440	85
	PM	116	19	133	34	10	25	85	699	32	17	761	117
Venneford Ranch Rd & University Blvd	AM	150	28	48	35	25	129	37	1154	50	57	864	85
	PM	131	22	51	27	55	110	57	1350	29	112	1072	113
Cougar Run & N Bus Access (Forrest Dr)	AM	1	0	0	0	0	0	1	46	0	0	49	4
	PM	0	0	0	0	0	0	1	52	0	0	62	4
Cougar Run & S Bus Access (Forrest Dr)	AM	2	0	0	0	0	0	0	38	0	6	43	1
	PM	4	0	0	0	0	0	0	45	0	4	56	1
Venneford Ranch Rd & Meadow Creek Dr	AM	14	76	43	71	91	9	29	8	86	30	10	16
	PM	23	97	20	38	125	31	32	4	74	33	0	20
University Blvd & Cresthill Ln	AM	133	1627	35	47	1274	43	74	37	116	42	11	174
	PM	210	1546	84	89	1989	88	59	26	56	78	26	231
Collegiate Dr & Quebec St	AM	103	0	105	0	0	0	122	1456	0	0	656	96
	PM	89	0	124	0	0	0	90	166	0	0	1298	59
Timberline Rd & Quebec St	AM	21	10	8	101	12	137	3	1431	94	82	661	6
	PM	16	5	8	140	7	126	12	1108	99	131	1277	12

2.5 Traffic Safety Analysis

Intersection Crash Analysis

Crash history was reviewed at the intersections of Quebec Street at Collegiate Drive, Quebec Street at Timberline Road, University Boulevard at Cresthill Lane, Colorado Boulevard at Venneford Ranch Road, and University Boulevard at Venneford Ranch Road. Crashes were reviewed for the period between 2019 and 2024. **Table 3** Summarizes the year-by-year crash data for the intersections.

Crash diagrams and a listing of crashes are provided in **Appendix E**.

Quebec Street at Collegiate Drive

There was a total of 6 crashes at Quebec Street and Collegiate Drive over the course of the study period. Two of these involved injuries. Of the 25 crashes, 2 involved a left turn, and 2 were at night. None of these accidents involved a 3rd vehicle and none involved a bicycle.

Quebec Street at Timberline Road

There was a total of 25 crashes at Quebec Street and Timberline Road over the course of the study period. Three of these involved injuries. Of the 25 crashes, 10 involved a left turn, and 4 were at night. None of these accidents involved a 3rd vehicle and one involved a bicycle.

University Boulevard and Cresthill Lane

There was a total of 89 crashes at University Boulevard and Cresthill Lane over the course of the study period. 16 of these involved an injury. Of the 89 crashes, 13 involved a left turn, and 10 were at night. 16 of these accidents involved a 3rd vehicle and 2 involved a bicycle. One accident also involved a pedestrian. An overwhelming majority of the accidents at this intersection were rear-ends.

University Boulevard and Venneford Ranch Road

There was a total of 33 crashes at University Boulevard and Venneford Ranch Road over the course of the study period. Ten of these involved an injury. Of the 33 crashes, 17 involved a left turn, and 8 were at night. One of these accidents involved a 3rd vehicle and one involved a bicycle.

Colorado Boulevard and Venneford Ranch Road

There was a total of 16 crashes at Colorado Boulevard and Venneford Ranch Road over the course of the study period. Three of these involved an injury. Of the 16 crashes, 6 involved a left turn, and 5 were at night. None of these accidents involved a 3rd vehicle and two involved a bicycle.

Table 3 – Annual Crash Summary

Year	Quebec Street and Collegiate Drive	Quebec Street and Timberline Road	University Boulevard and Cresthill Lane	University Boulevard and Venneford Ranch Road	Colorado Boulevard and Venneford Ranch Road
2019	0	6	21	5	2
2020	1	5	14	2	3
2021	2	3	14	7	1
2022	0	4	14	3	5
2023	2	3	17	7	3
2024	1	4	9	9	2

School Safety

Students are picked up and dropped off primarily via the parking lot to the west of the school building. A one-way drop-off aisle facilitates traffic, as parents enter the parking lot from the Venneford Ranch Road entrance, drop off students in front of the school, and exit through the same entrance from which they entered. On-street parking is provided on the south side of Venneford Ranch Road and is commonly utilized by vehicles dropping off students. Crosswalks are present at the intersection near the school entrance and at the Intersection of Venneford Ranch Road at Forrest Drive. Pedestrians frequently cross at both locations, and both locations have crossing guards.

Cougar Run was provided with a questionnaire to provide any feedback related to traffic and school safety. Responses to the questionnaire are provided in **Appendix G**.

Some of the main concerns from the questionnaire are:

- Traffic that does not stop at the intersection of Venneford Ranch Road at Forrest Drive
- Queue backup onto Venneford Ranch Road
- Speeding in school zones
- U-turns in the parking lot
- Complaints from community regarding parents parking within the neighborhood

3. TRIP PROJECTIONS

3.1 Projected Traffic

Douglas County School District (DCSD) is considering a potential school consolidation option that would consolidate Fox Creek Elementary into Cougar Run. **Table 4** provides data on student enrollment for Fox Creek and Cougar Run.

Table 4 – School Enrollment

School	Ideal Capacity per DCSD	Maximum Historic Enrollment	2023-2024 Enrollment Count*	Projected 2028-2029 Enrollment*
Fox Creek	506	586	450	416
Cougar Run	506	539	360	390
Combined	-	-	-	806

*Enrollment values include Pre-School through 6th Grade.

The projected 2028-2029 combined enrollment is 806 students. The projected combined enrollment number is 50 percent more than the previous maximum Cougar Run enrollment.

3.2 Trip Generation

Trip generation calculations were performed based on the number of additional students that will be transferring from Fox Creek to Cougar Run. For the purposes of this report, it is assumed the existing 2024 Cougar Run traffic and enrollment will see negligible changes by the 2025-2026 school year. Therefore, the trip generation calculations do not focus on the total future enrollment for Cougar Run with the addition of Fox Creek students. The trip generation calculations are therefore only based on the Fox Creek existing traffic and enrollment. The trip generation was calculated multiple ways to account for the transfer of Fox Creek students to Cougar Run. First the Institute of Transportation Engineers (ITE) Trip Generation web-based application was used to calculate the trip generation for three different types of elementary schools or land use codes (LUC) as follows:

- Public Elementary School (LUC 520)
- Private School K-8 (LUC 530)
- Charter School (LUC 536)

The relocation of students from one elementary school to the other has similarities to each of the three land uses evaluated using the ITE Trip Generation approach, however, this is a unique scenario and therefore the three land uses are not entirely representative of this scenario. A unique approach was therefore evaluated using existing traffic data and field observations at Fox Creek to understand the current traffic demand at the school and how that traffic demand is anticipated to change when relocated to Cougar Run. The following considerations were taken into account to determine the anticipated number of trips added to Cougar Run for this scenario:

- Calculate the existing ingress and egress traffic for parent drop-off and pick-up in the designated parking areas (parking lot and bus areas) using the existing traffic data collected
- Field observations of street parking adjacent to the school for drop-off and pick-up of students
- Students walking or riding a bike to/from the school using the existing traffic data collected
- Current bus ridership
- New bus ridership eligibility (outside 1 mile radius)
- Anticipated number of students “carpooling” with siblings or classmates after subtracting trips accounted for with existing traffic data, bus ridership, pedestrians/bicyclists and estimated street parking drop-off/pick-up from the student population.

The results of these considerations are summarized in the following table:

Table 5 – Fox Creek Existing Traffic Considerations

Peak Hour	Enrollment	Existing Bus Riders	Traffic Data Ingress/Egress	Ped & Bike	Estimated Street Parking	Calculated Carpooling
AM	450	100	163	27	29	131
PM			113	64		144

When the existing traffic at Fox Creek is relocated to Cougar Run, additional students will be eligible to take the bus. It is anticipated that a little over **1/2** of the Fox Creek students will be newly eligible to take the bus to school. Assuming the ridership percentage remains the same as it is currently, ridership for these newly eligible students will also be about **63%** which results in an additional **164** students riding the bus to school for a total of **264** students from Fox Creek taking the bus to Cougar Run.

Students who currently walk to Fox Creek are unlikely to walk to Cougar Run due to distance and crossing a major roadway, therefore, it is assumed that these students will now be driven to school and count as a new vehicular trip to Cougar Run. Taking into account the estimated street parking trips, the ingress/egress trips, pedestrians and bicyclists converted to vehicle trips, anticipated carpooling and the subtraction of new bus ridership, the resulting increase in trip demand for Cougar Run is about **242** trips during the morning peak hour and **234** trips during the afternoon peak hour.

A summary of the trip generation comparison is summarized in **Table 6**.

Table 6 – Trip Generation Comparison

ITE LUC	Description	Units	Quant	AM Peak - Generator Peak			PM Peak - Generator Peak		
				Total	Ingress	Egress	Total	Ingress	Egress
-	Existing Data Based Calculation	Students	450	242	121	121	234	117	117
520	Public Elementary School	Students	450	338	182	155	203	93	109
530	Private School (K-8)	Students	450	455	255	200	270	127	143
536	Charter Elementary School	Students	450	482	255	226	324	159	165

3.3 Trip Distribution/Assignment

The trip distribution and assignment was evaluated by first reviewing the attendance boundaries for Fox Creek to get an idea of the population density within the boundary limits. Then the distribution of traffic within the Fox Creek boundary and the directions of approach for arriving at Cougar Run was estimated by percentage. Note, a small percentage of traffic was assumed to come from outside the Fox Creek boundaries based on the existing traffic trends. The resulting Trip Distribution percentages are shown in **Figure 11**.

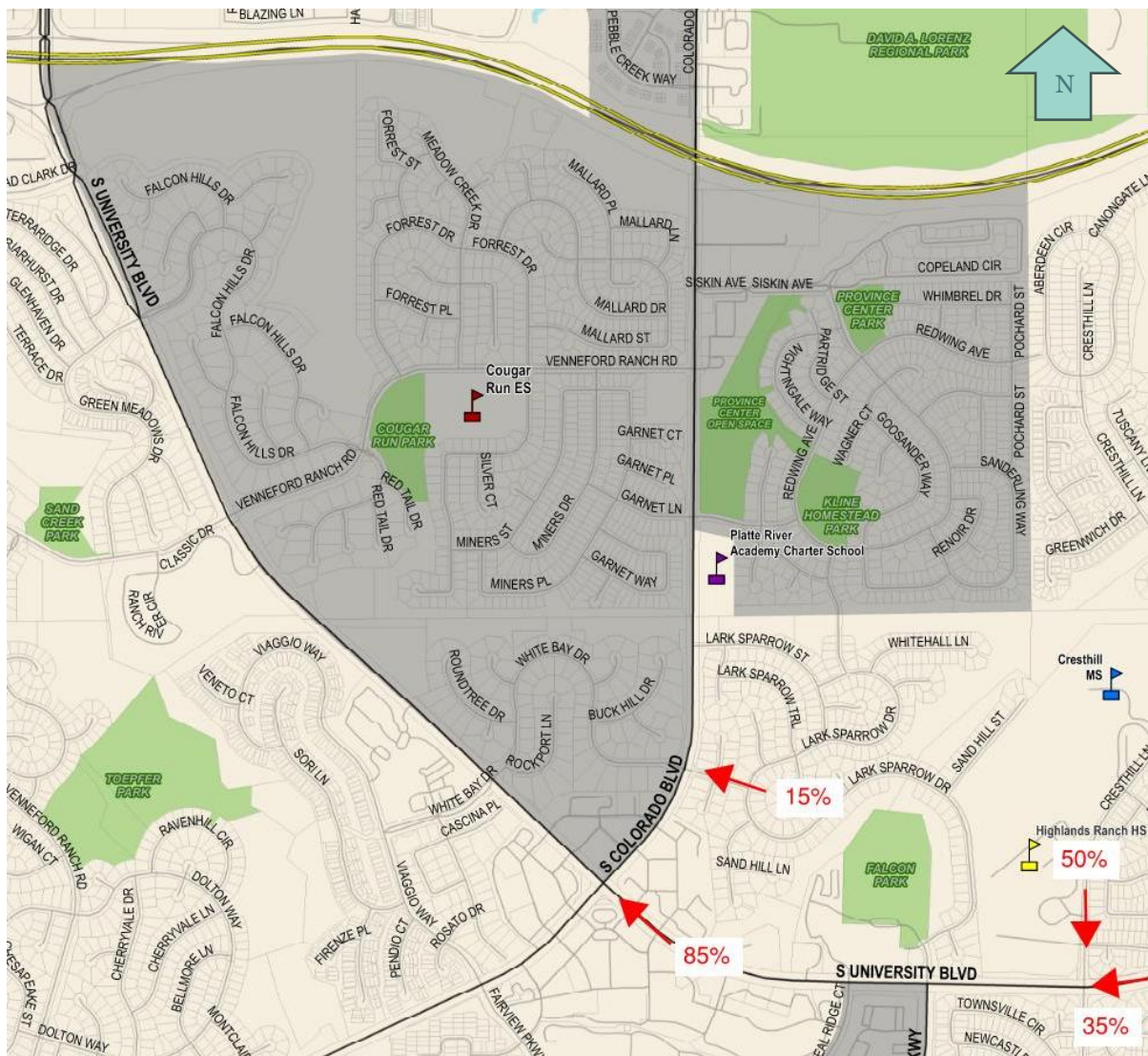


Figure 11 – Trip Distribution

Based on the Trip Distribution, the trips turning movements were then assigned to the key intersections evaluated as a part of this TIS.

- Quebec Street at Collegiate Drive
- Quebec Street at Timberline Road
- University Boulevard and Cresthill Lane
- University Boulevard and Venneford Ranch Road
- Venneford Ranch Road at Forrest Drive
- Colorado and Venneford Ranch Road
- Cougar Run Access Points at Forrest Drive

The resulting trip assignment is shown in **Figure 12**.

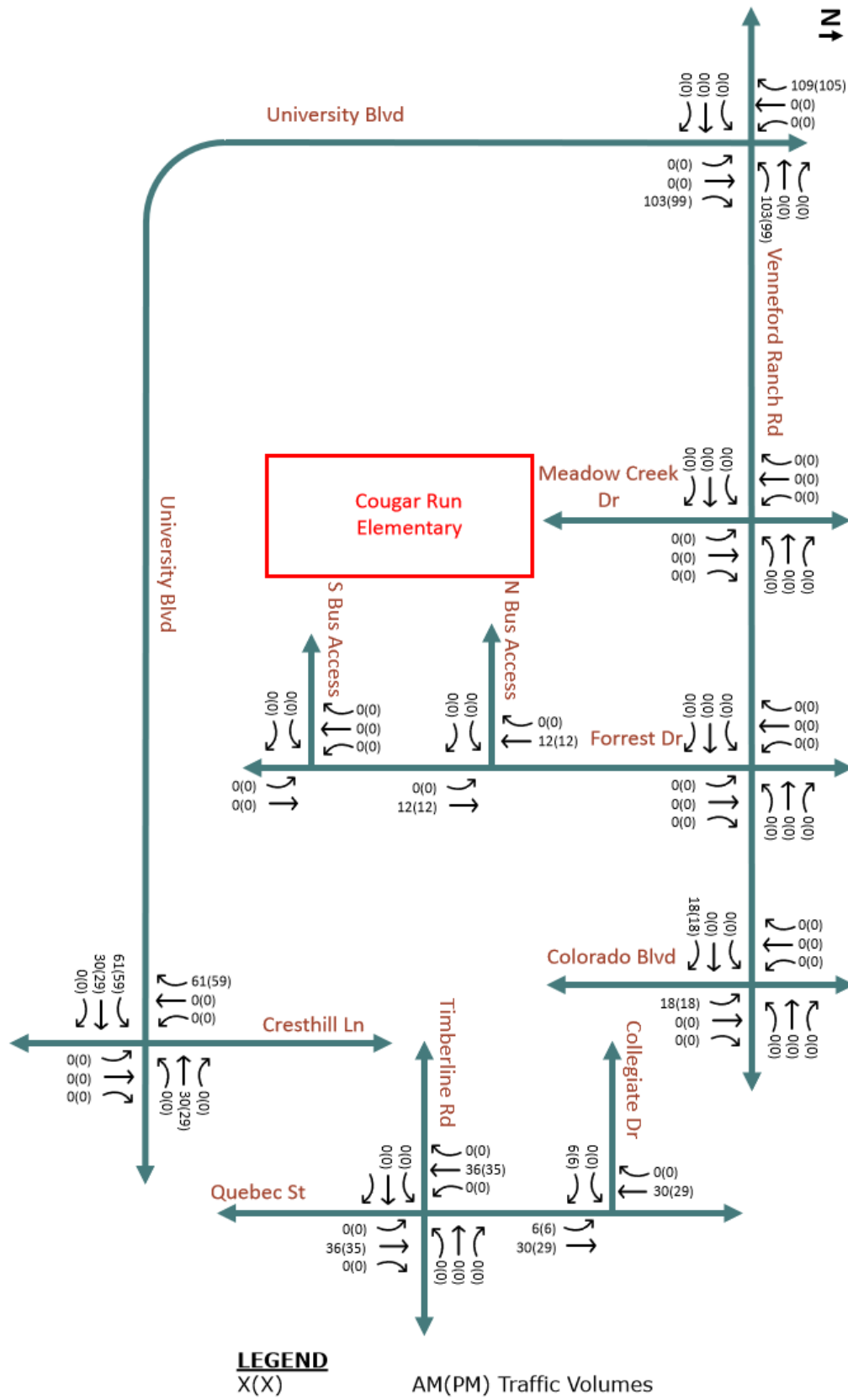


Figure 12 – Trip Assignment

In addition to the new anticipated trips for Fox Creek students transferring to Cougar Run, the existing trips to Fox Creek will also be removed for a few of the key intersections. Certain turning movements accounting for the current arrival of drivers to Fox Creek would be reduced in this new scenario. Using the trip distribution and the existing distribution of ingress and egress trips for Fox Creek, the estimated reduction for certain turning movements was estimated. The resulting reductions are summarized in **Table 7**.

Table 7 – Turning Movement Reductions

Intersection	Peak Hour	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
University Blvd & Cresthill Ln	AM	0	-49	0	0	-25	-17	0	0	0	-33	0	0
	PM	0	-31	0	0	-23	-45	0	0	0	-62	0	0
Collegiate Dr & Quebec St	AM	-33	0	-46	0	0	0	-90	0	0	0	0	-65
	PM	-34	0	-73	0	0	0	-101	0	0	0	0	-47
Timberline Rd & Quebec St	AM	0	0	0	0	0	0	0	-82	0	0	-42	0
	PM	0	0	0	0	0	0	0	-94	0	0	-68	0

4. PROJECTED SITE TRAFFIC IMPACTS

4.1 Total Traffic (2028-2029 School Year)

The total anticipated future traffic for the 2028 to 2029 school year for Cougar Run with the addition of Fox Creek students was calculated by adding the trip assignment to the existing Cougar Run traffic data and then subtracting the anticipated turning movement reductions. The resulting total traffic is shown in **Figure 13**.

4.2 Projected Level of Service

The capacity analysis for the total projected traffic from the transfer of Fox Creek students to Cougar Run was evaluated using Synchro. The resulting LOS and delay are summarized in **Table 8** for both the existing conditions (without Fox Creek traffic) and for the total traffic conditions (with Fox Creek traffic). Project level of service reports from Synchro are included in **Appendix F**.

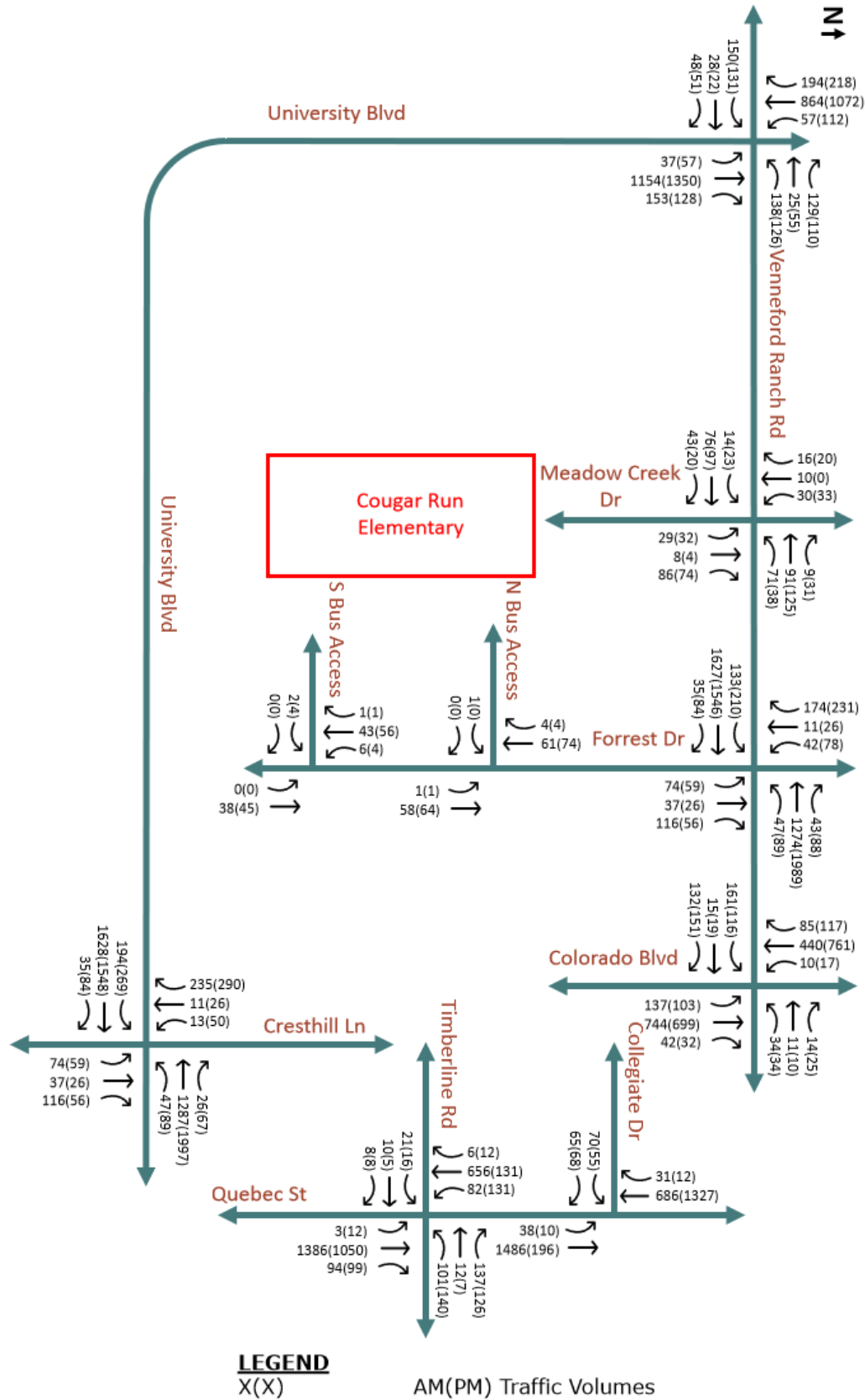


Table 8 – LOS and Delay Results

Intersection	Control	Movement	Existing						Total Traffic							
			LOS		Delay (s)		Queue Length (ft)		LOS		Delay (s)		Delay Delta (s)		Queue Length (ft)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Venneford Ranch Rd & Colorado Blvd	Signal	Overall	A	A			-	-	A	A					-	-
		NBL	A	B	7.6	10.9	49	35	A	B	7.9	12.3	+0.3	+1.4	56	42
		NBT	A	B	9.6	10.8	161	136	A	B	9.6	10.8	0.0	0.0	161	136
		NBR	A	B	9.6	10.8	161	136	A	B	9.6	10.8	0.0	0.0	161	136
		SBL	B	B	17.7	14.6	15	17	B	B	17.7	14.6	0.0	0.0	15	17
		SBT	C	C	20.3	24.3	164	232	C	C	20.3	24.3	0.0	0.0	164	232
		SBR	C	C	20.3	24.3	164	232	C	C	20.3	24.3	0.0	0.0	164	232
		EBL	D	C	40.9	21.1	143	69	D	C	40.9	21.1	0.0	0.0	143	69
		EBT	A	A	7.8	5.6	19	13	A	A	7.6	6.5	-0.2	+0.9	17	18
		EBR	A	A	7.8	5.6	19	13	A	A	7.6	6.5	-0.2	+0.9	17	18
		WBL	C	B	28.3	17.0	41	30	C	B	28.8	17.2	+0.5	+0.2	42	31
		WBT	B	A	15.9	8.6	24	20	B	A	15.9	8.6	0.0	0.0	24	20
		WBR	B	A	15.9	8.6	24	20	B	A	15.9	8.6	0.0	0.0	24	20
Venneford Ranch Rd & University Blvd	Signal	Overall	A	A			-	-	C	C	20.6	25.7	+20.6	+25.7	-	-
		NBL	B	B	15.6	16.8	31	44	B	B	15.6	16.8	0.0	0.0	31	44
		NBT	D	D	36.0	41.3	338	398	D	D	38.7	48.2	+2.7	+6.9	374	473
		NBR	D	D	36.0	41.3	338	398	D	D	38.7	48.2	+2.7	+6.9	374	473
		SBL	B	C	17.1	22.0	45	81	B	C	17.1	22.0	0.0	0.0	45	81
		SBT	C	D	32.7	36.3	264	344	C	D	32.7	36.3	0.0	0.0	264	344
		SBR	C	D	32.7	36.3	264	344	C	D	32.7	36.3	0.0	0.0	264	344
		EBL	B	B	20.0	19.8	112	98	B	B	20.0	19.8	0.0	0.0	112	98
		EBT	C	C	27.8	27.7	37	31	C	C	27.8	27.7	0.0	0.0	37	31
		EBR	A	A	0.4	1.2	0	0	A	A	0.4	1.2	0.0	0.0	0	0
		WBL	B	B	17.5	17.3	34	28	B	B	19.8	19.2	+2.3	+1.9	103	94
		WBT	C	C	27.7	28.5	35	61	C	C	27.7	28.5	0.0	0.0	35	61
		WBR	A	A	6.0	6.4	38	42	A	A	6.0	6.4	0.0	0.0	38	42
Cougar Run & N Bus Access (Forrest Dr)	Unsignalized (TWSC or AWSC)	Overall			-	-	-				-	-	-	-	-	-
		NBL	A	A	7.5	7.4	0	0	A	A	7.5	7.4	0.0	0.0	0	0
		NBT	A	A	0.0	0.0	0	0	A	A	0.0	0.0	0.0	0.0	0	0
		NBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBT	A	A	0.0	0.0	0	0	A	A	0.0	0.0	0.0	0.0	0	0
		SBR	A	A	0.0	0.0	0	0	A	A	0.0	0.0	0.0	0.0	0	0
		EBL	A	A	9.6	0.0	0	0	A	A	9.6	0.0	0.0	0.0	0	0
		EBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBR	A	A	9.6	0.0	0	0	A	A	9.6	0.0	0.0	0.0	0	0
		WBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		WBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		WBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection	Control	Movement	Existing						Total Traffic							
			LOS		Delay (s)		Queue Length (ft)		LOS		Delay (s)		Delay Delta (s)		Queue Length (ft)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Cougar Run & S Bus Access (Forrest Dr)	Unsignalized (TWSC or AWSC)	Overall			-	-	-	-			-	-	-	-	-	-
		NBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		NBT	A	A	0.0	0.0	0	0	A	A	0.0	0.0	0.0	0.0	0	0
		NBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBT	A	A	0.0	0.0	0	0	A	A	0.0	0.0	0.0	0.0	0	0
		SBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBL	A	A	9.2	9.5	0	0	A	A	9.2	9.5	0.0	0.0	0	0
		EBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBR	A	A	9.2	9.5	0	0	A	A	9.2	9.5	0.0	0.0	0	0
		WBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		WBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		WBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Venneford Ranch Rd & Meadow Creek Pl	Unsignalized (TWSC or AWSC)	Overall			-	-	-	-			-	-	-	-	-	-
		NBL	B	A	10.4	9.1	32	18	E	C	36.4	15.4	+26.0	+6.3	204	68
		NBT	B	A	10.4	9.1	32	18	E	C	36.4	15.4	+26.0	+6.3	204	68
		NBR	B	A	10.4	9.1	32	18	E	C	36.4	15.4	+26.0	+6.3	204	68
		SBL	A	A	9.0	8.7	8	6	B	B	11.3	10.1	+2.3	+1.4	10	8
		SBT	A	A	9.0	8.7	8	6	B	B	11.3	10.1	+2.3	+1.4	10	8
		SBR	A	A	9.0	8.7	8	6	B	B	11.3	10.1	+2.3	+1.4	10	8
		EBL	A	A	9.7	9.5	20	20	C	B	17.1	13.7	+7.4	+4.2	72	56
		EBT	A	A	9.7	9.5	20	20	C	B	17.1	13.7	+7.4	+4.2	72	56
		EBR	A	A	9.7	9.5	20	20	C	B	17.1	13.7	+7.4	+4.2	72	56
		WBL	B	A	10.5	9.8	28	26	C	B	15.3	12.6	+4.8	+2.8	48	38
		WBT	B	A	10.5	9.8	28	26	C	B	15.3	12.6	+4.8	+2.8	48	38
		WBR	B	A	10.5	9.8	28	26	C	B	15.3	12.6	+4.8	+2.8	48	38
Collegiate Dr & Quebec St	Signal	Overall			-	-	-	-			-	-	-	-	-	-
		NBL	A	A	3.3	6.2	17	17	A	A	2.5	2.8	-0.8	-3.4	5	2
		NBT	A	A	6.6	3.1	160	10	A	A	7.1	3.3	+0.5	+0.2	180	13
		NBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SBT	B	C	16.5	20.4	137	277	B	C	16.9	20.4	+0.4	0.0	135	273
		SBR	B	C	16.5	20.4	137	277	B	C	16.9	20.4	+0.4	0.0	135	273
		EBL	C	C	33.4	33.1	85	73	C	C	30.5	29.9	-2.9	-3.2	61	49
		EBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		EBR	A	B	6.1	10.6	0	0	A	A	6.4	6.2	+0.3	-4.4	0	0
		WBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		WBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		WBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection	Control	Movement	Existing						Total Traffic							
			LOS		Delay (s)		Queue Length (ft)		LOS		Delay (s)		Delay Delta (s)		Queue Length (ft)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Timberline Rd & Quebec St	Signal	Overall			-	-	-	-			-	-	-	-	-	-
		NBL	A	A	6.3	6.5	4	8	A	A	6.3	6.5	0.0	0.0	4	8
		NBT	D	C	47.6	24.9	675	398	D	C	41.3	23.7	-6.3	-1.2	641	371
		NBR	D	C	47.6	24.9	675	398	D	C	41.3	23.7	-6.3	-1.2	641	371
		SBL	A	B	6.6	11.8	20	37	A	A	6.5	9.1	-0.1	-2.7	18	18
		SBT	B	C	16.7	20.5	164	354	B	C	17.0	21.1	+0.3	+0.6	171	364
		SBR	B	C	16.7	20.5	164	354	B	C	17.0	21.1	+0.3	+0.6	171	364
		EBL	C	C	27.0	26.9	29	23	C	C	27.0	26.9	0.0	0.0	29	23
		EBT	B	B	18.7	17.1	21	16	B	B	18.7	17.1	0.0	0.0	21	16
		EBR	B	B	18.7	17.1	21	16	B	B	18.7	17.1	0.0	0.0	21	16
		WBL	C	D	31.5	35.8	100	131	C	D	31.5	35.8	0.0	0.0	100	131
		WBT	C	C	26.3	26.1	20	13	C	C	26.3	26.1	0.0	0.0	20	13
		WBR	A	A	6.2	6.2	36	24	A	A	6.2	6.2	0.0	0.0	36	24
University Blvd & Cresthill Ln	Signal	Overall			-	-	-	-			-	-	-	-	-	-
		NBL	C	C	24.9	24.2	75	65	C	C	24.9	24.2	0.0	0.0	75	65
		NBT	B	B	19.4	15.3	96	62	B	B	19.4	15.3	0.0	0.0	96	62
		NBR	B	B	19.4	15.3	96	62	B	B	19.4	15.3	0.0	0.0	96	62
		SBL	C	C	23.5	25.6	48	73	C	C	22.7	23.1	-0.8	-2.5	16	21
		SBT	C	C	32.7	33.7	23	36	C	C	32.7	33.7	0.0	0.0	23	36
		SBR	A	A	5.8	9.2	54	0	A	B	5.5	17.7	-0.3	+8.5	61	20
		EBL	E	E	55.5	58.4	95	140	E	E	57.8	61.5	+2.3	+3.1	132	176
		EBT	E	E	68.0	61.9	719	683	E	E	67.1	63.1	-0.9	+1.2	714	690
		EBR	E	E	68.0	61.9	719	683	E	E	67.1	63.1	-0.9	+1.2	714	690
		WBL	E	E	61.9	68.7	88	143	E	E	61.9	68.7	0.0	0.0	88	143
		WBT	D	F	54.2	183.1	512	989	E	F	55.3	188.0	+1.1	+4.9	521	1001
		WBR	A	A	0.3	3.6	0	25	A	A	0.2	0.3	-0.1	-3.3	0	0

Table 9 – Mitigation LOS and Delay Results

Intersection	Control	Movement	Total Traffic						Total Traffic - Mitigation								Mitigation
			LOS		Delay (s)		Queue Length (ft)		LOS		Delay (s)		Delay Delta (s)		Queue Length (ft)		
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
Venneford Ranch Rd & Meadow Creek PI	Unsignalized (TWSC or AWSC)	Overall			-	-	-	-			-	-	-	-	-	-	Stagger Start/End times to increase Peak Hour Factor
		NBL	E	C	36.4	15.4	204	68	B	B	12.3	12.4	-24.1	-3.0	204	68	
		NBT	E	C	36.4	15.4	204	68	B	B	12.3	12.4	-24.1	-3.0	204	68	
		NBR	E	C	36.4	15.4	204	68	B	B	12.3	12.4	-24.1	-3.0	204	68	
		SBL	B	B	11.3	10.1	10	8	A	A	9.8	9.7	-1.5	-0.4	10	8	
		SBT	B	B	11.3	10.1	10	8	A	A	9.8	9.7	-1.5	-0.4	10	8	
		SBR	B	B	11.3	10.1	10	8	A	A	9.8	9.7	-1.5	-0.4	10	8	
		EBL	C	B	17.1	13.7	72	56	B	B	12.4	12.5	-4.7	-1.2	72	56	
		EBT	C	B	17.1	13.7	72	56	B	B	12.4	12.5	-4.7	-1.2	72	56	
		EBR	C	B	17.1	13.7	72	56	B	B	12.4	12.5	-4.7	-1.2	72	56	
		WBL	C	B	15.3	12.6	48	38	B	B	11.9	11.7	-3.4	-0.9	48	38	
		WBT	C	B	15.3	12.6	48	38	B	B	11.9	11.7	-3.4	-0.9	48	38	
WBR	C	B	15.3	12.6	48	38	B	B	11.9	11.7	-3.4	-0.9	48	38			

4.3 Mitigation

Capacity Analysis

The capacity analysis results show that the relocation of Fox Creek to Cougar Run causes an increase in delay and an undesirable level of service for the northbound turning movements at the Cougar Run's main access point. One mitigation option was evaluated in an effort to improve the level of service and delay. The intersection is already all-way stop controlled and there is not enough driveway width to provide a dedicated NBL and shared NBT/NBR turn lanes. Therefore, the option considered staggering the start times by at least 10 minutes for half the school at a time. This change allows for a more even spread of the peak traffic across the peak hour. The significant 15-minute peak is spread across a 30-minute timeframe instead, thus lowering the significant 15-minute peak and resulting in an increased peak hour factor for the traffic. The following changes were made for the peak hour factor by peak hour (PHF):

- AM Peak: PHF of 0.45 increased to 0.9
- PM Peak: PHF of 0.63 to 0.83

This change significantly lowered the delays and vehicle queues for both turning movements as shown in **Table 9**.

Signal Warrant Analysis

The intersection of Venneford Ranch Road at Meadow Creek Place was analyzed for potential signal needs. Warrants 3 (Peak Hour) and 7 (Crash experience) from the Manual on Uniform Traffic Control Devices (MUTCD) were used for this study.

Based on the analysis, it was determined that this intersection did not meet either warrant for signal installation.

Auxiliary Lane Analysis

The intersections of Venneford Ranch Road at Colorado Boulevard, Venneford Ranch Road at University Boulevard, and University Boulevard at Cresthill Lane were analyzed for their need for a right-turn lane. Douglas County Roadway Design Standards refer to the Code of Colorado Regulations, State Highway Access Code for the design and installation recommendations. A right-turn lane is recommended when a threshold of 25 right turning vehicles is exceeded on a Non-Rural Arterial roadway with a posted speed limit greater than 40 miles per hour.

Based on the analysis, it was determined that both approaches of Colorado Boulevard at Venneford Ranch Road, both approaches of University Boulevard at Venneford Ranch Road, and the Eastbound approach of University Boulevard at Cresthill Lane all have right-turn amounts exceeding 25 vehicles per hour, and warrant the construction of a right-turn lane. However, none of these approaches would be affected by the school consolidation.

Site Analysis

Based on site observations and feedback from the Cougar Run administration, Cougar Run faces the following challenges:

- Congestion on Venneford Ranch Road
- Speeding on Venneford Ranch Road

To relieve some congestion on Venneford Ranch and keep the parking lot queue out of the bicycle lane Cougar Run administration could enact a policy for parents not to use street parking on the south side of Venneford Ranch Road between Forrest Drive and Meadow Creek Drive during pick-up and drop-off times. This area is shown below in **Figure 14**. Having this parking lane clear will allow queuing vehicles to use the parking lane, eliminating congestion in the through lane. To address speeding, Cougar Run administration should continue to work with the Douglas County Sheriff to provide additional law enforcement.



Figure 14 – Cougar Run Mitigation

5. CONCLUSIONS/RECOMMENDATIONS

This Traffic Impact Study addresses existing traffic patterns and potential traffic challenges at Cougar Run Elementary, while considering the anticipated increase in traffic due to possible consolidations with Fox Creek Elementary.

Traffic will increase with additional enrollment, but additional bus service will be offered, limiting the impact of the increased enrollment. Consolidating school populations at Cougar Run would cause the school population to more than double its previous historical maximum enrollment. To address existing and potential future traffic challenges the following mitigation measures are recommended:

- Enact/enforce a school policy that prohibits vehicles from parking on eastbound Venneford Ranch Road, west of Meadow Creek Drive, during pick-up and drop-off times
- Coordinate with the Douglas County Sheriff's office to increase speed enforcement along Venneford Ranch Road.
- Analyze the ability to stagger school start and end times for half of the school by at least 10 minutes to decrease the peak pick-up and drop-off demand.



Appendix A Site Observation Notes



TRAFFIC OBSERVATION REPORT

Project Name	DCSD HR TIS	Project No.	1124175
Observer	Derek Williams, EI		
Location	Cougar Run Elementary School		
Time	8:00-9:30	AM	
		DATE	11/14/2024
		M	T
		W	Th
		F	S
		S	

Queueing Data

Start Time: 8:00 AM

End Time: 8:42 AM

Maximum Queueing Length: 950 feet

Total Storage Length Available: 600 feet

Comments:

I arrived at 8:00 and vehicle were already beginning to drop off students and queue in the drop-off loop. Most vehicles arrived between 8:20 and 8:30. At 8:23 the queue reached the available storage length and spilled into the road. Vehicles were queued at the intersection at the parking lot entrance/exit and were mixed with through traffic not turning into the school. At 8:42 the queue cleared. Some late arrivals after this time.

On-Street Parking Locations and Availability

Comments:

On-street parking is available on Venneford Ranch Road on the east-bound side. No parking is permitted on the opposite side. Parents used on-street parking on Forrest Drive at the bus lane. A few parents dropping off students used on-street parking at Meadow Creek Drive by the parking lot entrance/exit intersection.

Crosswalk Locations and Usage

Comments:

The intersection at the school entrance serves parents and students crossing from Meadow Creek Drive. A crosswalk through the parking lot crosses the drop-off loop connecting Cougar Run Park to the school, used by some students and staff coming from the park or parking lot. Crosswalks located at Venneford Ranch Road and Forrest Drive used by students mostly crossing Venneford Ranch Drive. Both intersections had crossing guards.

Roadway Characteristics

Speed Limit(s) and Location(s):

Venneford Ranch Road has a posted speed limit of 30 mph with a school zone limit of 15 mph indicated with flashers.

Signage:

Bus lane signed for buses only from 7AM-5PM. One set of button activated flashing beacon pedestrian crossing sign at Venneford Ranch Drive and Forrest Drive. Drop-off loop signed as student drop-off only.

Bike Lanes:

Bike lanes are provided in both directions on Venneford Ranch Road near the school.

Other Comments:

Bike lane/parking lane combination on eastbound side of Venneford Ranch Road.

Sight Visibility Challenges

Comments:

Some vehicles used the combination bike and parking lanes to turn right into the school allowing vehicles go straight at the intersection creating potential visibility challenges for vehicles exiting the school. Vehicles were observed exiting the school and stopping next to each other at the intersection. This could create potential visibility challenges for vehicles at the intersection.

Congestion Areas

Comments:

Congestion on Venneford Ranch Drive was observed from approximately 8:23 to 8:29 until the queue moved up from the school entrance. Most congestion was observed on the westbound lane of Venneford Ranch Drive for vehicles turning left into the queue.

General Traffic Observations

Comments:

Some vehicles turning into the school entrance off Venneford Ranch Drive stuck out into the intersection when the queue was back-up. Vehicles were observed making conflicting movements at the intersection with one vehicle turning left into the school. Vehicles turning left out of the faculty lot creates potential vehicle conflicts or confusion as they have to cross the arriving traffic and turn into the line of exiting vehicles.



TRAFFIC OBSERVATION REPORT

Project Name	DCSD HR TIS	Project No.	1124175
Observer	Derek Williams, EI		
Location	Cougar Run Elementary School		
Time	2:45-4:15	PM	
DATE		11/14/2024	
M	T	W	Th
F	S	S	

Queueing Data

Start Time: 3:15 AM

End Time: 3:37 AM

Maximum Queueing Length:

Total Storage Length Available: 600 feet

Comments:

Parents began queueing in the pick-up loop around 3:00 with arriving traffic increasing around 3:15. At 3:25 the queueing lengthen was the longest. Most students started letting out at this time and the queue began to dissipate. After student let out, vehicles continued to enter the pick-up loop, however arriving vehicle were more spread out. Significantly fewer vehicles queueing in the afternoon.

On-Street Parking Locations and Availability

Comments:

Parents filled up the parking lanes on Venneford Ranch Drive and many parents parked on Forrest Drive by the bus lane. Some also parked on Meadow Creek Drive.

Crosswalk Locations and Usage

Comments:

Most parents and students used the crosswalk at the school parking lot entrance. Many parents and students used the crosswalk within the parking lot/pick-up area to go Cougar Run Park. Some also crossed at the Venneford Ranch Drive/Forrest Drive intersection. Each crossing had a crossing guard.



Roadway Characteristics

Speed Limit(s) and Location(s):

Venneford Ranch Road has a posted speed limit of 30 mph with a school zone limit of 15 mph indicated with flashers.

Signage:

Bus lane signed for buses only from 7AM-5PM. One set of button activated flashing beacon pedestrian crossing sign at Venneford Ranch Drive and Forrest Drive. Drop-off loop signed as student drop-off only.

Bike Lanes:

Bike lanes are provided in both directions on Venneford Ranch Road near the school.

Other Comments:

Bike lane/parking lane combination on eastbound side of Venneford Ranch Road.

Sight Visibility Challenges

Comments:

No sight visibility challenges noted.

Congestion Areas

Comments:

There was no significant congestion.

General Traffic Observations

Comments:

Some vehicles continued to use the bike lane to make a right turn into the parking lot in the afternoon. One vehicle was observed parking in a no parking zone at the parking lot exit. More pedestrians were observed in the afternoon for pick-up.



TRAFFIC OBSERVATION REPORT

Project Name	DCSD HR TIS	Project No.	1124175
Observer	Derek Williams, EI		
Location	Fox Creek Elementary School		
Time	7:45-9:15	AM	
		DATE	11/18/2024
		M	T W Th F S S

Queueing Data

Start Time: 8:00 AM

End Time: 8:37 AM

Maximum Queueing Length: 1400 feet

Total Storage Length Available: 530 feet

Comments:

Parents began queueing at 8:00 with arriving school traffic picking up around 8:10. At 8:15 the queue had reached the available storage length and vehicles started queueing on Collegiate Drive in front of the school. At the maximum queue length, vehicles were backed up to the intersection at Collegiate Drive and Quebec Street. At 8:30, arriving vehicles slowed while the queue diminished to the back into the parking lot. At 8:37 the queue dissipated.

On-Street Parking Locations and Availability

Comments:

Collegiate Drive has parking lanes on both sides between the parking lot entrance and Harvard Drive. Parents used the westbound parking lane to queue when the spilled onto the Collegiate Drive. The eastbound parking lane was not utilized. A few parents parked on Harvard Drive between Yale and Collegiate Drive to drop off students.

Crosswalk Locations and Usage

Comments:

Most parents and students used the two crosswalks at Collegiate Drive and Harvard Drive. Some pedestrians used the crosswalks at Collegiate Drive and the parking lot entrance. No pedestrians were observed crossing at the traffic signal at Collegiate Drive and Quebec Street. Overall, there was little pedestrian traffic going to the school.

Roadway Characteristics

Speed Limit(s) and Location(s):

Collegiate Drive has a posted speed limit of 25 mph. The speed limit is reduced to 15 mph in the school zone when flashers are activated.

Signage:

The drop-off area is signed as no parking. Collegiate Drive parking lanes are signed as loading zone 7:30AM-4:00PM, Mon-Fri between Harvard Drive and the parking lot entrance. No parking signs are present between Quebec Street and Harvard Drive. School zone lights are located on Collegiate Drive.

Bike Lanes:

Bike lanes are not provided on Collegiate Drive. A bike lane is provided in either direction on Quebec Street near the school.

Other Comments:

The bus drop-off lane is located off of Collegiate Drive and is unsigned. A few vehicles used the bus lane to access a reserved parking area. The parking lot entrance is a single lane while the exit is two lanes, unstriped.

Sight Visibility Challenges

Comments:

Vehicles queued along the westbound lane of Collegiate drive could create visibility challenges for vehicles leaving the bus lane.

Congestion Areas

Comments:

Collegiate Drive became congested between 8:15 and 8:35. At one point, arriving vehicles were backed to the intersection at Quebec Street, although this did not have any significant impacts to traffic at the signal. A heavy stream of vehicles were leaving the school between 8:25 and 8:35. During with time Collegiate Drive was heavily congested approaching the Quebec Street signal. At one point, leaving vehicles were backed to the school entrance/exit for a short period of time.

General Traffic Observations

Comments:

Vehicles were observed to turn into the parking lot using the exit when the queue was extended to the road. Most traffic arrived from Quebec Street, turning onto Collegiate Drive from both directions. When leaving, most vehicles turned back onto Quebec Street, with the majority of vehicles making left turn. The left turn arrow was green for approximately 25 seconds, which allowed most vehicles to turn off Collegiate Drive when most congested.



TRAFFIC OBSERVATION REPORT

Project Name	DCSD HR TIS	Project No.	1124175
Observer	Derek Williams, EI		
Location	Fox Creek Elementary School		
Time	2:45-9:15	PM	
		DATE	11/18/2024
		M	T W Th F S S

Queueing Data

Start Time: 3:00 PM

End Time: 3:45 PM

Maximum Queueing Length: 1,400 feet

Total Storage Length Available: 530 feet

Comments:

Parents began queueing at 3:00. School traffic started increasing at 3:05 and by 3:12 the queue reached the available storage length. Arriving vehicles began queueing in the parking lane along Collegiate Drive. At 3:30 the queue backed up to the Quebec Street intersection. Queueing did not extend onto Quebec Street. At 3:30, students were let out and the queue began moving. The queue completely cleared at 3:45.

On-Street Parking Locations and Availability

Comments:

Collegiate Drive has parking lanes on both sides between the parking lot entrance and Harvard Drive. Parents used the westbound parking lane for queueing. Many parents parked in the eastbound parking lane. A few parents parked on Harvard Drive between Yale and Collegiate Drive to drop off students.

Crosswalk Locations and Usage

Comments:

Most parents and students used the two crosswalks at Collegiate Drive and Harvard Drive. Some pedestrians used the crosswalks at Collegiate Drive and the parking lot entrance. A few pedestrians crossed at the traffic signal at Collegiate Drive and Quebec Street. Overall, there was little pedestrian traffic leaving the school as the majority of students used pick-up.

Roadway Characteristics

Speed Limit(s) and Location(s):

Collegiate Drive has a posted speed limit of 25 mph. The speed limit is reduced to 15 mph in the school zone when flashers are activated.

Signage:

The drop-off area is signed as no parking. Collegiate Drive parking lanes are signed as loading zone 7:30AM-4:00PM Mon-Fri between Harvard Drive and the parking lot entrance. No parking signs between Quebec Street and Harvard Drive. School flashers are located on Collegiate Drive.

Bike Lanes:

Bike lanes are not provided on Collegiate Drive. A bike lane is provided in either direction on Quebec Street near the school.

Other Comments:

The bus drop-off lane is located off of Collegiate Drive and is unsigned. A few vehicles used the bus lane to access a reserved parking area. The parking lot entrance is a single lane while the exit is two lanes, unstriped.

Sight Visibility Challenges

Comments:

Vehicles queued along the westbound lane of Collegiate drive could create visibility challenges for vehicles leaving the bus lane.

Congestion Areas

Comments:

Most vehicles were leaving the school between 3:30 and 3:40. During with time Collegiate Drive was heavily congested approaching the Quebec Street signal. At one point, leaving vehicles were backed to the school entrance/exit for a short period of time.

General Traffic Observations

Comments:

Vehicles were observed to make U-turns at the parking lot entrance to park in the eastbound parking lane. Most traffic arrived from Quebec Street, turning onto Collegiate Drive from both directions. When leaving, most vehicles turned back onto Quebec Street, with the majority of vehicles making left turn. When Collegiate Drive was heavily congested, 14 vehicles were counted turning left during the green arrow phase. This had cleared most of the congestion on Collegiate Drive.



Appendix B Traffic Volume Counts



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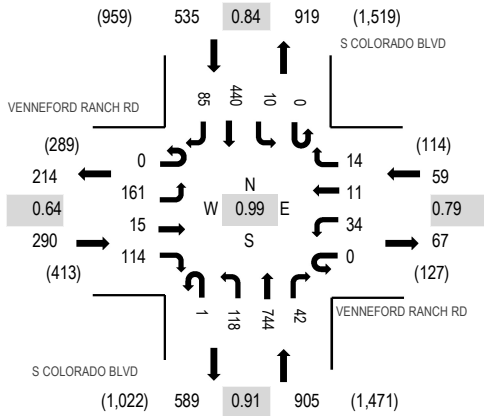
Location: 22 S COLORADO BLVD & VENNEFORD RANCH RD AM

Date: Wednesday, November 13, 2024

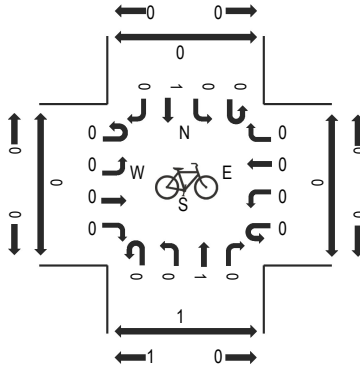
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 08:15 AM - 08:30 AM

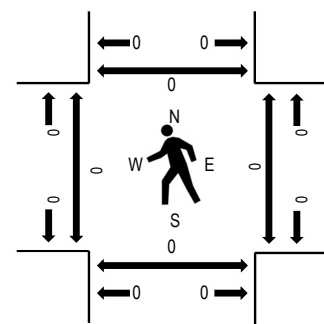
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	VENNEFORD RANCH RD				VENNEFORD RANCH RD				S COLORADO BLVD				S COLORADO BLVD				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
7:45 AM	0	33	3	14	0	9	2	1	1	24	186	13	0	3	144	13	446	1,789	0	0	0	0
8:00 AM	0	36	5	18	0	10	1	8	0	30	204	15	0	2	97	13	439	1,694	0	0	0	0
8:15 AM	0	35	3	29	0	9	5	3	0	38	186	8	0	1	96	41	454	1,585	0	0	0	0
8:30 AM	0	57	4	53	0	6	3	2	0	26	168	6	0	4	103	18	450	1,395	0	0	0	0
8:45 AM	0	24	0	11	0	5	1	7	0	8	174	13	0	8	89	11	351	1,168	0	0	0	0
9:00 AM	0	15	4	10	0	8	0	7	0	9	130	11	0	1	128	7	330		0	0	0	0
9:15 AM	0	16	4	9	0	4	3	6	0	4	103	9	0	3	90	13	264		0	0	0	0
9:30 AM	0	17	1	12	0	5	2	7	0	8	94	3	0	3	62	9	223		0	2	0	0
Count Total	0	233	24	156	0	56	17	41	1	147	1,245	78	0	25	809	125	2,957		0	2	0	0
Peak Hour	0	161	15	114	0	34	11	14	1	118	744	42	0	10	440	85	1,789		0	0	0	0



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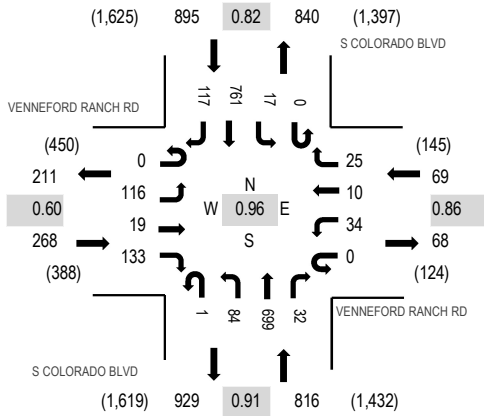
Location: 22 S COLORADO BLVD & VENNEFORD RANCH RD PM

Date: Wednesday, November 13, 2024

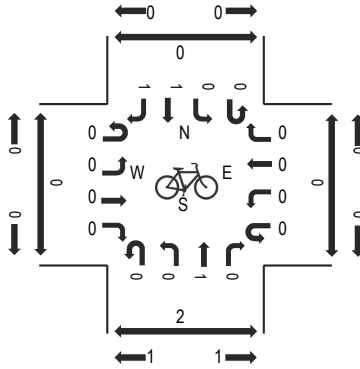
Peak Hour: 03:30 PM - 04:30 PM

Peak 15-Minutes: 04:15 PM - 04:30 PM

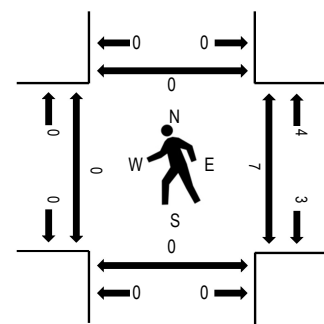
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	VENNEFORD RANCH RD				VENNEFORD RANCH RD				S COLORADO BLVD				S COLORADO BLVD				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
2:30 PM	0	15	3	18	0	5	3	14	0	9	108	8	0	6	144	15	348	1,542	1	2	0	1
2:45 PM	0	17	1	16	0	7	4	6	0	30	104	5	1	5	152	26	374	1,720	3	0	0	0
3:00 PM	0	7	2	13	0	7	3	4	0	29	107	6	0	8	148	29	363	1,856	0	1	0	0
3:15 PM	0	10	2	16	0	12	2	9	0	53	154	3	1	7	152	36	457	1,974	0	1	0	0
3:30 PM	0	49	7	55	0	9	1	7	0	22	164	10	0	6	160	36	526	2,048	0	0	0	0
3:45 PM	0	19	2	24	0	9	4	7	0	28	195	4	0	1	184	33	510		0	4	0	0
4:00 PM	0	22	5	39	0	11	1	7	1	15	170	7	0	6	173	24	481		0	0	0	0
4:15 PM	0	26	5	15	0	5	4	4	0	19	170	11	0	4	244	24	531		0	3	0	0
Count Total	0	165	27	196	0	65	22	58	1	205	1,172	54	2	43	1,357	223	3,590		4	11	0	1
Peak Hour	0	116	19	133	0	34	10	25	1	84	699	32	0	17	761	117	2,048		0	7	0	0



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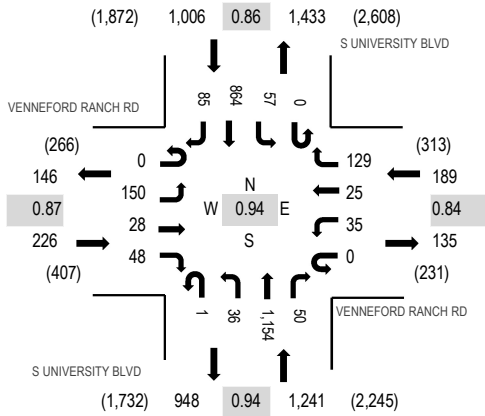
Location: 23 S UNIVERSITY BLVD & VENNEFORD RANCH RD AM

Date: Wednesday, November 13, 2024

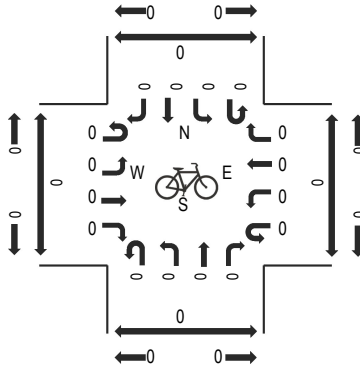
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

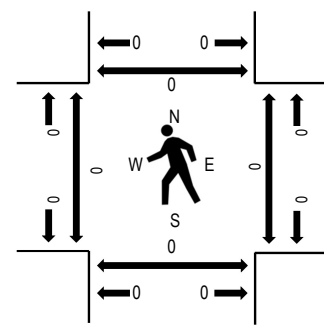
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	VENNEFORD RANCH RD				VENNEFORD RANCH RD				S UNIVERSITY BLVD				S UNIVERSITY BLVD				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
7:45 AM	0	40	8	13	0	10	5	33	1	12	310	6	0	12	244	12	706	2,662	0	0	0	0
8:00 AM	0	30	10	8	0	10	12	34	0	2	275	12	0	13	205	30	641	2,578	0	0	0	0
8:15 AM	0	38	5	9	0	6	1	29	0	17	284	24	0	23	238	30	704	2,487	0	0	0	0
8:30 AM	0	42	5	18	0	9	7	33	0	5	285	8	0	9	177	13	611	2,290	0	0	0	0
8:45 AM	0	37	5	6	0	4	5	25	0	9	287	5	0	18	206	15	622	2,175	0	0	0	0
9:00 AM	0	30	4	8	0	4	6	27	0	7	228	3	0	18	192	23	550		0	0	0	0
9:15 AM	0	31	5	9	0	4	3	15	0	6	216	5	0	10	188	15	507		0	0	0	0
9:30 AM	0	35	5	6	0	1	7	23	0	9	221	8	0	10	156	15	496		0	0	0	0
Count Total	0	283	47	77	0	48	46	219	1	67	2,106	71	0	113	1,606	153	4,837		0	0	0	0
Peak Hour	0	150	28	48	0	35	25	129	1	36	1,154	50	0	57	864	85	2,662		0	0	0	0



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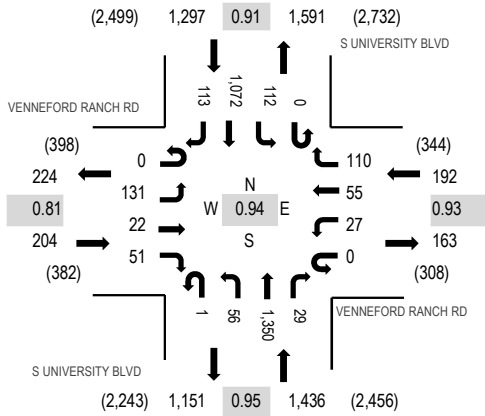
Location: 23 S UNIVERSITY BLVD & VENNEFORD RANCH RD PM

Date: Wednesday, November 13, 2024

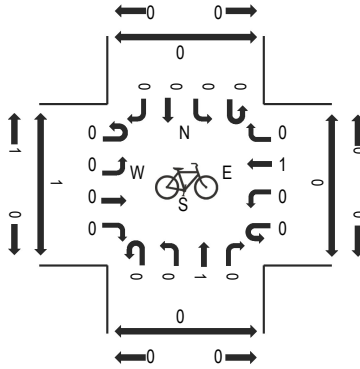
Peak Hour: 03:30 PM - 04:30 PM

Peak 15-Minutes: 04:00 PM - 04:15 PM

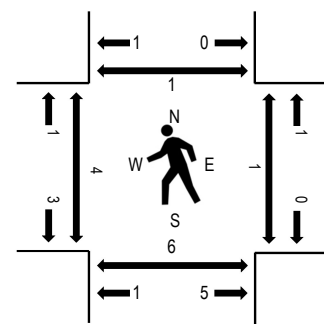
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	VENNEFORD RANCH RD				VENNEFORD RANCH RD				S UNIVERSITY BLVD				S UNIVERSITY BLVD				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
2:30 PM	0	30	1	14	0	6	4	15	0	11	210	5	1	23	243	21	584	2,552	0	0	0	0
2:45 PM	0	31	6	8	0	7	4	22	0	16	214	6	0	23	228	23	588	2,767	0	0	1	0
3:00 PM	0	32	4	15	0	4	8	25	0	9	264	15	0	24	256	22	678	2,926	0	0	0	0
3:15 PM	0	26	2	9	0	9	16	32	0	13	239	18	0	18	293	27	702	3,080	1	0	0	0
3:30 PM	0	43	5	15	0	4	18	23	1	19	348	10	0	30	254	29	799	3,129	2	0	1	0
3:45 PM	0	28	2	8	0	8	13	35	0	9	323	9	0	29	253	30	747		1	1	2	1
4:00 PM	0	33	6	13	0	6	17	35	0	9	345	4	0	31	297	36	832		0	0	1	0
4:15 PM	0	27	9	15	0	9	7	17	0	19	334	6	0	22	268	18	751		1	0	2	0
Count Total	0	250	35	97	0	53	87	204	1	105	2,277	73	1	200	2,092	206	5,681		5	1	7	1
Peak Hour	0	131	22	51	0	27	55	110	1	56	1,350	29	0	112	1,072	113	3,129		4	1	6	1

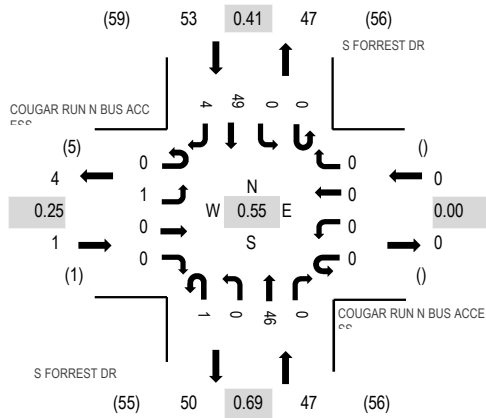
Location: 24 S FORREST DR & COUGAR RUN N BUS ACCESS AM

Date: Wednesday, November 13, 2024

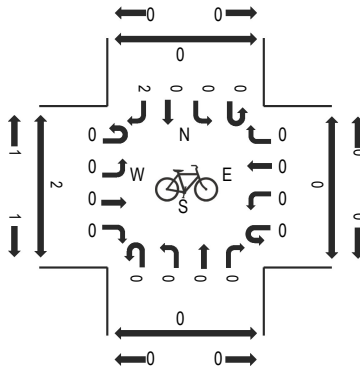
Peak Hour: 08:00 AM - 09:00 AM

Peak 15-Minutes: 08:15 AM - 08:30 AM

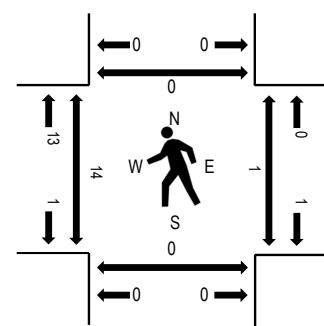
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	COUGAR RUN N BUS Eastbound				COUGAR RUN N BUS Westbound				S FORREST DR Northbound				S FORREST DR Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
8:00 AM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	6	0	14	101	4	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	14	0	0	0	28	4	46	95	5	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	1	0	16	0	0	0	14	0	31	56	4	1	0	0
8:45 AM	0	1	0	0	0	0	0	0	0	0	8	0	0	0	1	0	10		1	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	1	1	8		0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	7		0	2	0	0
Count Total	0	1	0	0	0	0	0	0	1	0	55	0	0	0	54	5	116		14	3	0	0
Peak Hour	0	1	0	0	0	0	0	0	1	0	46	0	0	0	49	4	101		14	1	0	0



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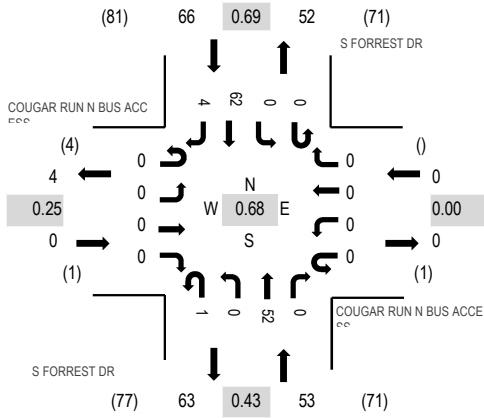
Location: 24 S FORREST DR & COUGAR RUN N BUS ACCESS PM

Date: Wednesday, November 13, 2024

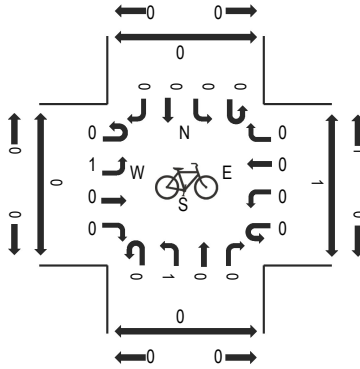
Peak Hour: 02:45 PM - 03:45 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

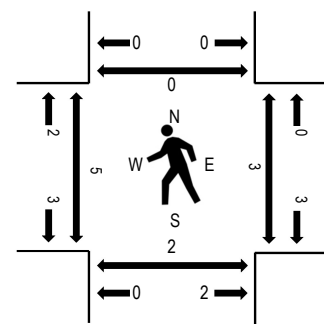
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	COUGAR RUN N BUS Access Eastbound				COUGAR RUN N BUS Access Westbound				S FORREST DR Northbound				S FORREST DR Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:45 PM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	16	0	24	119	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	12	2	22	115	0	1	0	0
3:15 PM	0	0	0	0	0	0	0	0	1	0	4	0	0	0	22	2	29	107	2	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	32	0	0	0	12	0	44		3	2	2	0
3:45 PM	0	1	0	0	0	0	0	0	0	0	9	0	0	0	10	0	20		1	0	1	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	9	0	0	1	4	0	14		0	0	0	0
Count Total	0	1	0	0	0	0	0	0	1	0	70	0	0	1	76	4	153		6	3	3	0
Peak Hour	0	0	0	0	0	0	0	0	1	0	52	0	0	0	62	4	119		5	3	2	0



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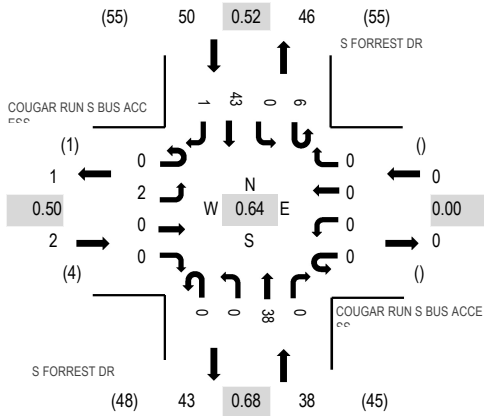
Location: 25 S FORREST DR & COUGAR RUN S BUS ACCESS AM

Date: Wednesday, November 13, 2024

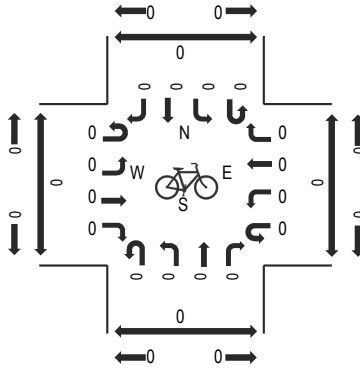
Peak Hour: 08:00 AM - 09:00 AM

Peak 15-Minutes: 08:15 AM - 08:30 AM

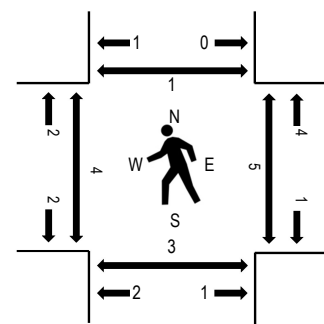
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	COUGAR RUN S BUS Access Eastbound				COUGAR RUN S BUS Access Westbound				S FORREST DR Northbound				S FORREST DR Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
8:00 AM	0	0	0	0	0	0	0	0	0	0	6	0	1	0	5	0	12	90	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	11	0	3	0	21	0	35	85	0	2	3	0
8:30 AM	0	2	0	0	0	0	0	0	0	0	14	0	2	0	16	0	34	57	4	1	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	1	1	9		0	2	0	1
9:00 AM	0	1	0	0	0	0	0	0	0	0	5	0	0	0	1	0	7		0	0	1	0
9:15 AM	0	1	0	0	0	0	0	0	0	0	2	0	0	0	4	0	7		0	2	1	0
Count Total	0	4	0	0	0	0	0	0	0	0	45	0	6	0	48	1	104		4	7	5	1
Peak Hour	0	2	0	0	0	0	0	0	0	0	38	0	6	0	43	1	90		4	5	3	1



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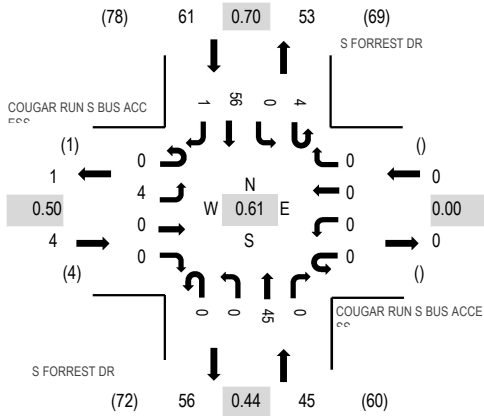
Location: 25 S FORREST DR & COUGAR RUN S BUS ACCESS PM

Date: Wednesday, November 13, 2024

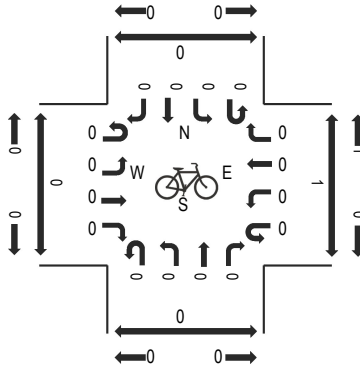
Peak Hour: 03:00 PM - 04:00 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

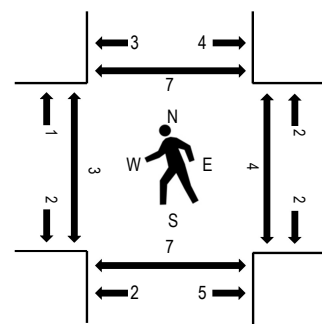
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	COUGAR RUN S BUS Eastbound				COUGAR RUN S BUS Westbound				S FORREST DR Northbound				S FORREST DR Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:45 PM	0	0	0	0	0	0	0	0	0	0	6	0	1	0	12	0	19	109	0	0	3	0
3:00 PM	0	2	0	0	0	0	0	0	0	0	8	0	0	0	9	0	19	110	0	0	0	0
3:15 PM	0	1	0	0	0	0	0	0	0	0	3	0	2	0	20	0	26	104	0	0	2	2
3:30 PM	0	1	0	0	0	0	0	0	0	0	26	0	1	0	17	0	45		1	4	5	3
3:45 PM	0	0	0	0	0	0	0	0	0	0	8	0	1	0	10	1	20		2	0	0	2
4:00 PM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	4	0	13		0	0	0	0
Count Total	0	4	0	0	0	0	0	0	0	0	60	0	5	0	72	1	142		3	4	10	7
Peak Hour	0	4	0	0	0	0	0	0	0	0	45	0	4	0	56	1	110		3	4	7	7



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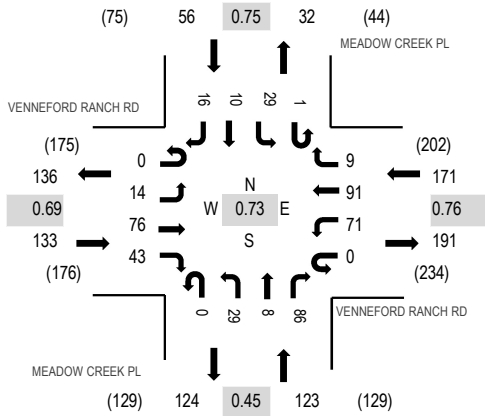
Location: 26 MEADOW CREEK PL & VENNEFORD RANCH RD AM

Date: Wednesday, November 13, 2024

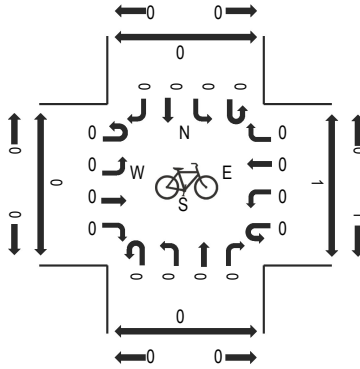
Peak Hour: 08:00 AM - 09:00 AM

Peak 15-Minutes: 08:30 AM - 08:45 AM

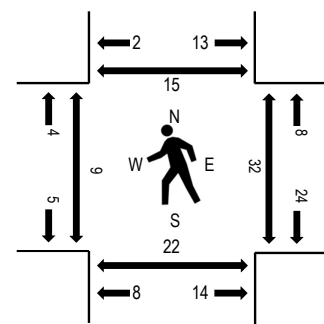
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	VENNEFORD RANCH RD				VENNEFORD RANCH RD				MEADOW CREEK PL				MEADOW CREEK PL				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
8:00 AM	0	4	18	6	0	9	33	3	0	2	1	9	0	5	3	2	95	483	0	0	2	0
8:15 AM	0	2	27	19	0	35	20	1	0	9	3	24	0	11	3	1	155	446	4	12	13	6
8:30 AM	0	1	18	15	0	25	17	2	0	17	4	48	0	7	4	8	166	332	5	20	5	6
8:45 AM	0	7	13	3	0	2	21	3	0	1	0	5	1	6	0	5	67		0	0	2	3
9:00 AM	0	3	20	3	0	0	13	4	0	0	1	3	0	2	0	9	58		0	1	2	2
9:15 AM	0	3	14	0	0	2	12	0	0	0	1	1	0	3	0	5	41		2	1	1	2
Count Total	0	20	110	46	0	73	116	13	0	29	10	90	1	34	10	30	582		11	34	25	19
Peak Hour	0	14	76	43	0	71	91	9	0	29	8	86	1	29	10	16	483		9	32	22	15



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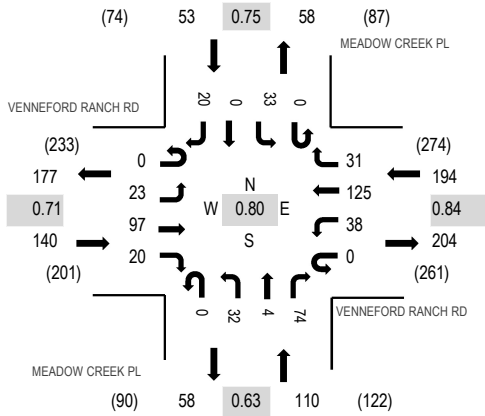
Location: 26 MEADOW CREEK PL & VENNEFORD RANCH RD PM

Date: Wednesday, November 13, 2024

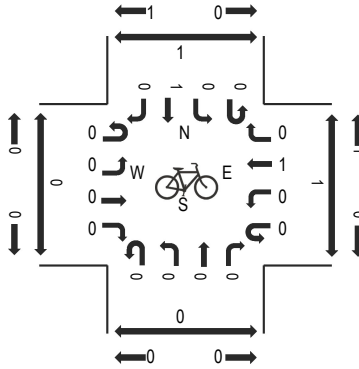
Peak Hour: 03:15 PM - 04:15 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

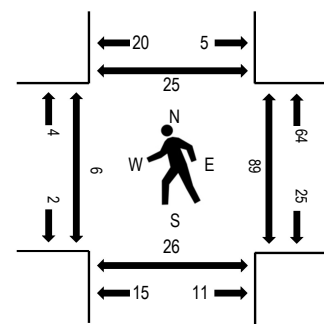
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	VENNEFORD RANCH RD Eastbound				VENNEFORD RANCH RD Westbound				MEADOW CREEK PL Northbound				MEADOW CREEK PL Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:45 PM	0	5	20	7	0	6	20	9	0	0	0	5	0	4	0	3	79	434	0	0	0	0
3:00 PM	0	7	19	3	0	14	23	8	0	4	0	3	0	6	2	6	95	473	0	0	2	4
3:15 PM	0	1	15	8	0	12	36	12	0	6	0	7	0	5	0	3	105	497	0	27	9	7
3:30 PM	0	6	38	5	0	8	31	5	0	8	2	34	0	13	0	5	155		2	42	14	10
3:45 PM	0	8	19	3	0	14	31	8	0	9	2	10	0	6	0	8	118		4	10	1	8
4:00 PM	0	8	25	4	0	4	27	6	0	9	0	23	0	9	0	4	119		0	10	2	0
Count Total	0	35	136	30	0	58	168	48	0	36	4	82	0	43	2	29	671		6	89	28	29
Peak Hour	0	23	97	20	0	38	125	31	0	32	4	74	0	33	0	20	497		6	89	26	25



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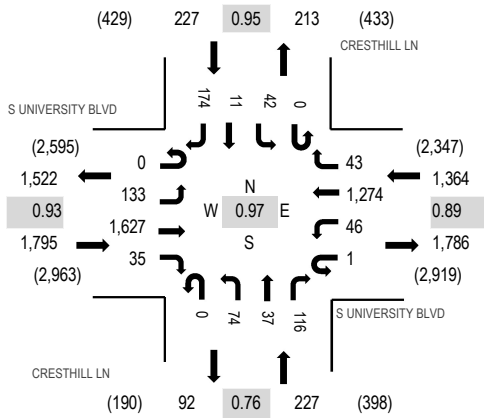
Location: 36 CRESTHILL LN & S UNIVERSITY BLVD AM

Date: Wednesday, November 13, 2024

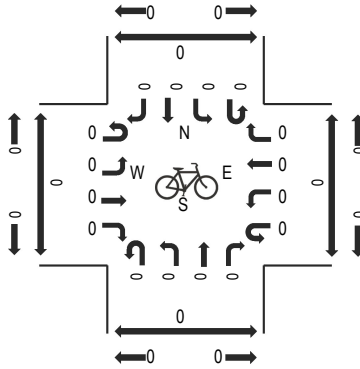
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

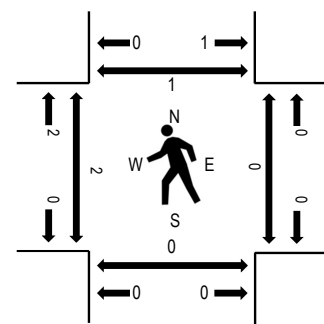
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S UNIVERSITY BLVD Eastbound				S UNIVERSITY BLVD Westbound				CRESTHILL LN Northbound				CRESTHILL LN Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:45 AM	0	29	382	4	1	6	372	6	0	20	13	42	0	11	4	40	930	3,613	1	0	0	0
8:00 AM	0	36	368	12	0	12	312	7	0	21	10	24	0	11	2	43	858	3,477	0	0	0	0
8:15 AM	0	32	440	10	0	14	313	16	0	11	3	29	0	10	1	48	927	3,333	0	0	0	1
8:30 AM	0	36	437	9	0	14	277	14	0	22	11	21	0	10	4	43	898	2,928	1	0	0	0
8:45 AM	0	35	342	17	0	6	270	19	0	18	6	23	0	11	3	44	794	2,524	0	0	0	0
9:00 AM	0	46	258	13	0	16	230	37	0	15	18	19	0	14	6	42	714		0	0	0	0
9:15 AM	0	20	209	5	0	12	181	14	0	18	4	19	0	10	2	28	522		0	0	0	0
9:30 AM	0	18	198	7	0	10	186	2	0	13	1	17	0	13	1	28	494		0	0	0	0
Count Total	0	252	2,634	77	1	90	2,141	115	0	138	66	194	0	90	23	316	6,137		2	0	0	1
Peak Hour	0	133	1,627	35	1	46	1,274	43	0	74	37	116	0	42	11	174	3,613		2	0	0	1



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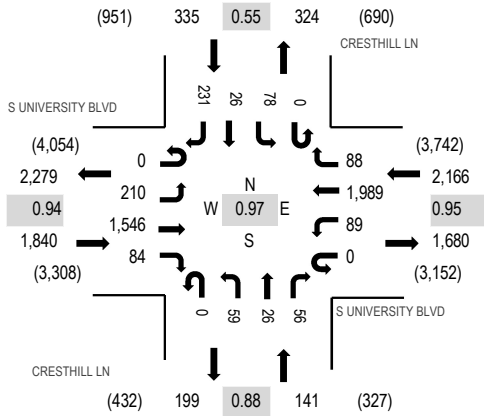
Location: 36 CRESTHILL LN & S UNIVERSITY BLVD PM

Date: Wednesday, November 13, 2024

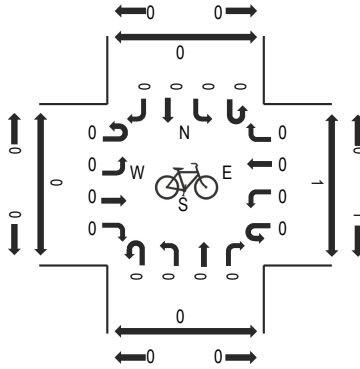
Peak Hour: 03:30 PM - 04:30 PM

Peak 15-Minutes: 04:00 PM - 04:15 PM

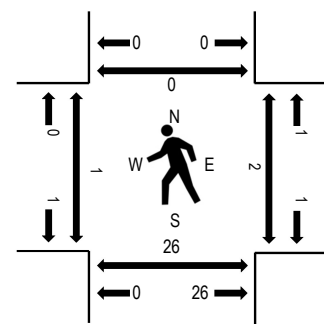
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S UNIVERSITY BLVD Eastbound				S UNIVERSITY BLVD Westbound				CRESTHILL LN Northbound				CRESTHILL LN Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:30 PM	0	64	235	15	0	16	295	45	0	14	15	14	0	17	3	36	769	3,846	2	0	1	0
2:45 PM	0	51	249	10	0	21	331	35	0	13	10	21	0	112	56	118	1,027	4,199	41	11	6	0
3:00 PM	0	49	326	19	0	24	385	14	0	13	13	20	0	52	28	96	1,039	4,310	2	3	1	0
3:15 PM	0	50	379	21	0	11	386	13	0	20	7	26	0	21	9	68	1,011	4,432	2	0	0	0
3:30 PM	0	48	424	22	0	19	482	16	0	12	5	21	0	13	4	56	1,122	4,482	0	1	26	0
3:45 PM	0	49	386	16	0	29	523	16	0	15	6	11	0	24	6	57	1,138		0	0	0	0
4:00 PM	0	49	391	20	0	23	525	16	0	13	9	17	0	26	10	62	1,161		0	1	0	0
4:15 PM	0	64	345	26	0	18	459	40	0	19	6	7	0	15	6	56	1,061		1	0	0	0
Count Total	0	424	2,735	149	0	161	3,386	195	0	119	71	137	0	280	122	549	8,328		48	16	34	0
Peak Hour	0	210	1,546	84	0	89	1,989	88	0	59	26	56	0	78	26	231	4,482		1	2	26	0



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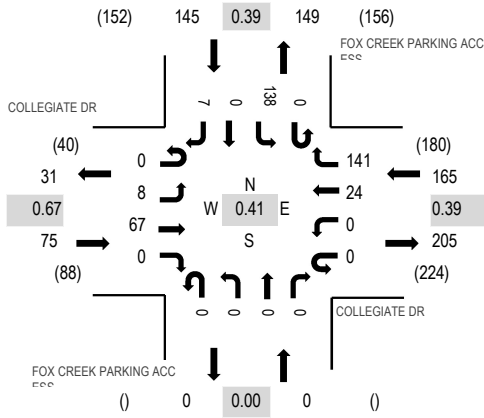
Location: 31 FOX CREEK PARKING ACCESS & COLLEGIATE DR AM

Date: Wednesday, November 13, 2024

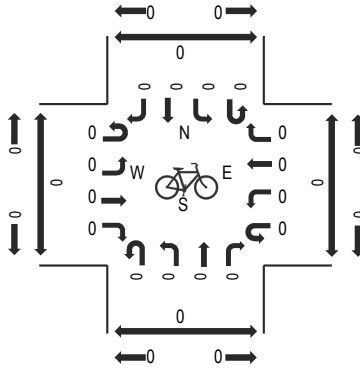
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 08:15 AM - 08:30 AM

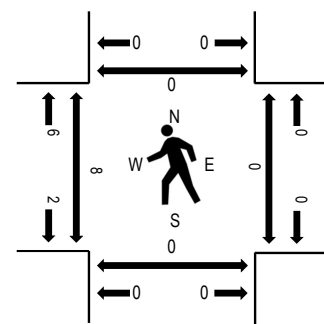
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	COLLEGIATE DR Eastbound				COLLEGIATE DR Westbound				FOX CREEK PARKING ACCESS Northbound				FOX CREEK PARKING ACCESS Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:45 AM	0	0	17	0	0	0	3	6	0	0	0	0	0	0	0	0	26	385	1	0	0	0
8:00 AM	0	1	16	0	0	0	6	22	0	0	0	0	0	3	0	1	49	381	0	0	0	0
8:15 AM	0	5	23	0	0	0	8	99	0	0	0	0	0	93	0	5	233	345	7	0	0	0
8:30 AM	0	2	11	0	0	0	7	14	0	0	0	0	0	42	0	1	77		0	0	0	0
8:45 AM	0	0	7	0	0	0	3	6	0	0	0	0	0	5	0	1	22		0	0	0	1
9:00 AM	0	0	6	0	0	0	5	1	0	0	0	0	0	1	0	0	13		0	0	0	0
Count Total	0	8	80	0	0	0	32	148	0	0	0	0	0	144	0	8	420		8	0	0	1
Peak Hour	0	8	67	0	0	0	24	141	0	0	0	0	0	138	0	7	385		8	0	0	0



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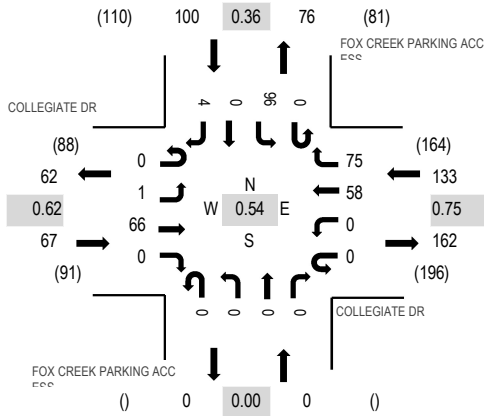
Location: 31 FOX CREEK PARKING ACCESS & COLLEGIATE DR PM

Date: Wednesday, November 13, 2024

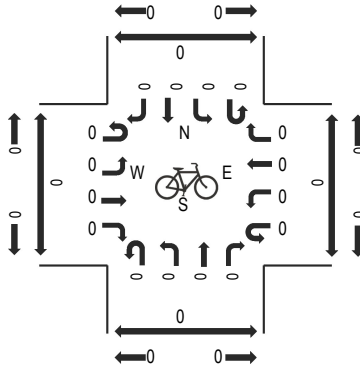
Peak Hour: 03:00 PM - 04:00 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

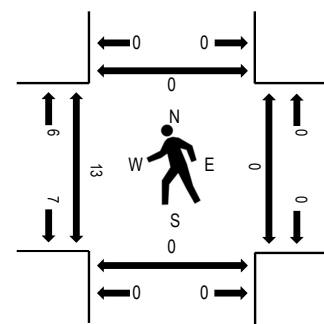
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	COLLEGIATE DR Eastbound				COLLEGIATE DR Westbound				FOX CREEK PARKING ACCESS Northbound				FOX CREEK PARKING ACCESS Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:45 PM	0	0	8	0	0	0	11	5	0	0	0	0	0	3	0	0	27	287	0	0	0	0
3:00 PM	0	1	10	0	0	0	10	28	0	0	0	0	0	5	0	0	54	300	0	0	0	0
3:15 PM	0	0	16	0	0	0	26	20	0	0	0	0	0	6	0	0	68	284	5	0	0	0
3:30 PM	0	0	29	0	0	0	11	27	0	0	0	0	0	68	0	3	138		8	0	0	0
3:45 PM	0	0	11	0	0	0	11	0	0	0	0	0	0	17	0	1	40		0	0	0	0
4:00 PM	0	0	16	0	0	0	15	0	0	0	0	0	0	7	0	0	38		0	0	0	0
Count Total	0	1	90	0	0	0	84	80	0	0	0	0	0	106	0	4	365		13	0	0	0
Peak Hour	0	1	66	0	0	0	58	75	0	0	0	0	0	96	0	4	300		13	0	0	0



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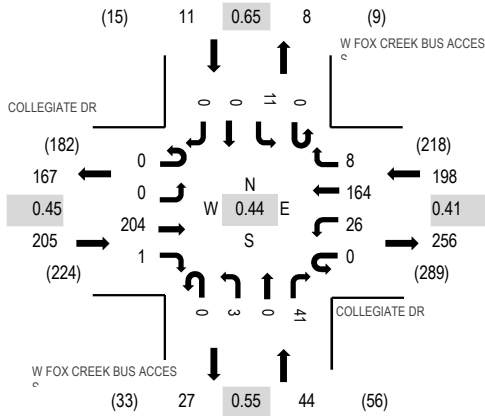
Location: 32 W FOX CREEK BUS ACCESS & COLLEGIATE DR AM

Date: Wednesday, November 13, 2024

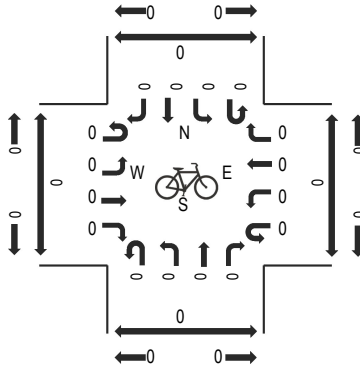
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 08:15 AM - 08:30 AM

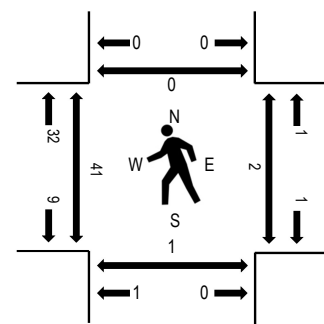
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	COLLEGIATE DR Eastbound				COLLEGIATE DR Westbound				W FOX CREEK BUS ACCESS Northbound				W FOX CREEK BUS ACCESS Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:45 AM	0	0	17	0	0	6	8	4	0	2	0	5	0	1	0	0	43	458	3	0	0	0
8:00 AM	0	0	18	1	0	4	30	1	0	1	0	6	0	3	0	0	64	448	6	2	1	0
8:15 AM	0	0	114	0	0	13	105	2	0	0	0	20	0	5	0	0	259	406	29	0	0	0
8:30 AM	0	0	55	0	0	3	21	1	0	0	0	10	0	2	0	0	92		3	0	0	0
8:45 AM	0	0	11	1	0	4	8	1	0	0	0	5	0	2	0	1	33		1	0	0	0
9:00 AM	0	0	7	0	0	1	6	0	0	0	0	7	0	1	0	0	22		0	0	0	0
Count Total	0	0	222	2	0	31	178	9	0	3	0	53	0	14	0	1	513		42	2	1	0
Peak Hour	0	0	204	1	0	26	164	8	0	3	0	41	0	11	0	0	458		41	2	1	0



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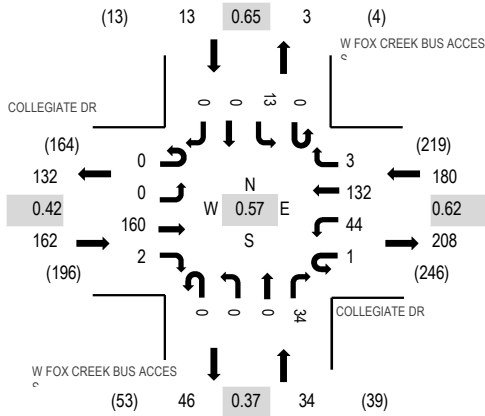
Location: 32 W FOX CREEK BUS ACCESS & COLLEGIATE DR PM

Date: Wednesday, November 13, 2024

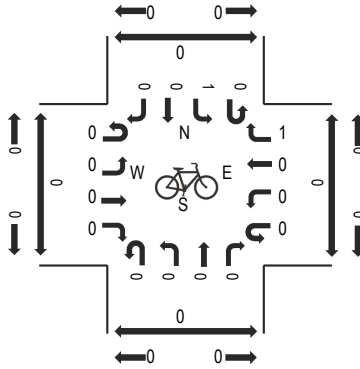
Peak Hour: 03:00 PM - 04:00 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

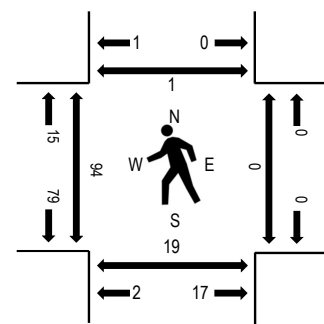
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	COLLEGIATE DR Eastbound				COLLEGIATE DR Westbound				W FOX CREEK BUS ACCESS Northbound				W FOX CREEK BUS ACCESS Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:45 PM	0	0	11	0	0	4	16	1	0	1	0	3	0	0	0	0	36	369	3	0	3	0
3:00 PM	0	0	14	0	0	9	39	1	0	0	0	3	0	2	0	0	68	389	1	0	0	0
3:15 PM	0	0	15	1	1	16	57	1	0	0	0	2	0	1	0	0	94	363	14	0	2	0
3:30 PM	0	0	103	0	0	12	28	0	0	0	0	23	0	5	0	0	171		76	0	17	0
3:45 PM	0	0	28	1	0	7	8	1	0	0	0	6	0	5	0	0	56		3	0	0	1
4:00 PM	0	0	23	0	0	3	15	0	0	0	0	1	0	0	0	0	42		0	0	0	0
Count Total	0	0	194	2	1	51	163	4	0	1	0	38	0	13	0	0	467		97	0	22	1
Peak Hour	0	0	160	2	1	44	132	3	0	0	0	34	0	13	0	0	389		94	0	19	1



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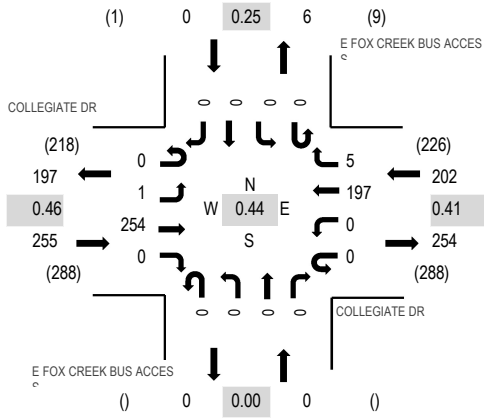
Location: 33 E FOX CREEK BUS ACCESS & COLLEGIATE DR AM

Date: Wednesday, November 13, 2024

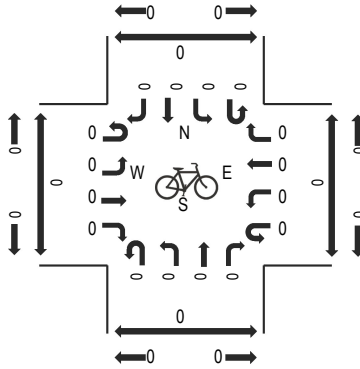
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 08:15 AM - 08:30 AM

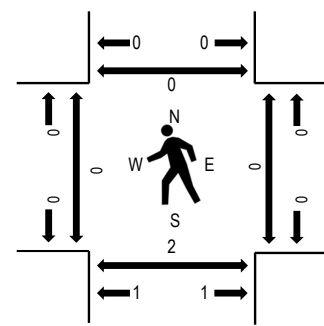
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	COLLEGIATE DR				COLLEGIATE DR				E FOX CREEK BUS ACCESE				FOX CREEK BUS ACCESS				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
7:45 AM	0	0	23	0	0	0	18	0	0	0	0	0	0	0	0	0	41	457	0	0	1	0
8:00 AM	0	0	27	0	0	0	36	1	0	0	0	0	0	0	0	0	64	449	0	0	0	0
8:15 AM	0	1	137	0	0	0	119	4	0	0	0	0	0	0	0	0	261	410	0	0	1	0
8:30 AM	0	0	67	0	0	0	24	0	0	0	0	0	0	0	0	0	91		0	0	0	0
8:45 AM	0	0	18	0	0	0	13	2	0	0	0	0	0	0	0	0	33		0	0	0	0
9:00 AM	0	0	15	0	0	0	8	1	0	0	0	0	0	1	0	0	25		0	0	0	0
Count Total	0	1	287	0	0	0	218	8	0	0	0	0	0	1	0	0	515		0	0	2	0
Peak Hour	0	1	254	0	0	0	197	5	0	0	0	0	0	0	0	0	457		0	0	2	0



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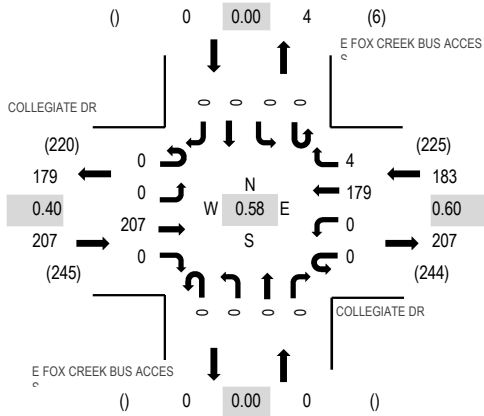
Location: 33 E FOX CREEK BUS ACCESS & COLLEGIATE DR PM

Date: Wednesday, November 13, 2024

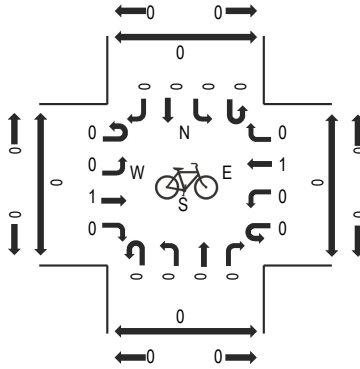
Peak Hour: 03:00 PM - 04:00 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

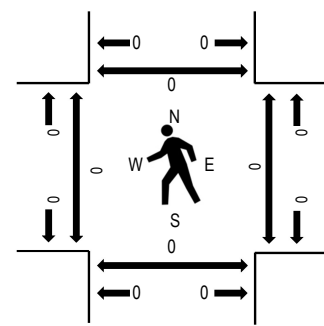
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	COLLEGIATE DR Eastbound				COLLEGIATE DR Westbound				E FOX CREEK BUS ACCESS Northbound				FOX CREEK BUS ACCESS Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:45 PM	0	0	14	0	0	0	22	0	0	0	0	0	0	0	0	0	36	374	0	0	0	0
3:00 PM	0	0	19	0	0	0	51	1	0	0	0	0	0	0	0	0	71	390	0	0	0	0
3:15 PM	0	0	19	0	0	0	78	2	0	0	0	0	0	0	0	0	99	363	0	0	0	0
3:30 PM	0	0	131	0	0	0	36	1	0	0	0	0	0	0	0	0	168		0	0	0	0
3:45 PM	0	0	38	0	0	0	14	0	0	0	0	0	0	0	0	0	52		0	0	0	0
4:00 PM	0	1	23	0	0	0	19	1	0	0	0	0	0	0	0	0	44		0	0	0	0
Count Total	0	1	244	0	0	0	220	5	0	0	0	0	0	0	0	0	470		0	0	0	0
Peak Hour	0	0	207	0	0	0	179	4	0	0	0	0	0	0	0	0	390		0	0	0	0



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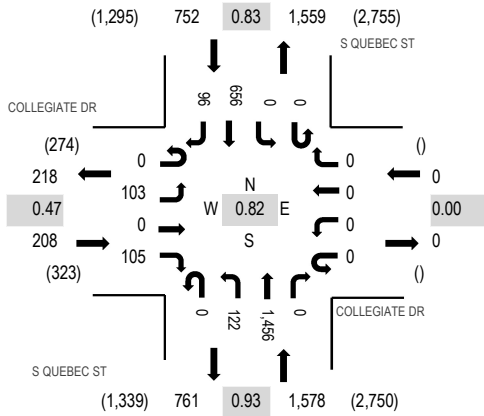
Location: 34 S QUEBEC ST & COLLEGIATE DR AM

Date: Wednesday, November 13, 2024

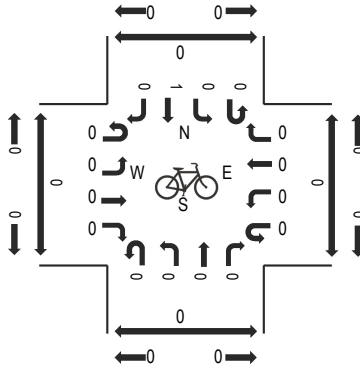
Peak Hour: 07:30 AM - 08:30 AM

Peak 15-Minutes: 08:15 AM - 08:30 AM

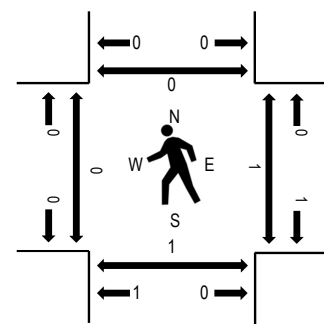
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	COLLEGIATE DR Eastbound				COLLEGIATE DR Westbound				S QUEBEC ST Northbound				S QUEBEC ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:30 AM	0	16	0	8	0	0	0	0	0	28	394	0	0	0	129	12	587	2,538	0	1	1	0
7:45 AM	0	9	0	14	0	0	0	0	0	10	390	0	0	0	181	8	612	2,512	0	0	0	0
8:00 AM	0	11	0	17	0	0	0	0	0	27	319	0	0	0	185	10	569	2,383	0	0	0	0
8:15 AM	0	67	0	66	0	0	0	0	0	57	353	0	0	0	161	66	770	2,234	0	0	0	0
8:30 AM	0	34	0	34	0	0	0	0	0	16	340	0	0	0	129	8	561	1,830	0	0	0	0
8:45 AM	0	10	0	12	0	0	0	0	0	10	317	0	0	0	129	5	483		0	0	0	0
9:00 AM	0	8	0	6	0	0	0	0	0	4	258	0	0	0	139	5	420		0	0	0	0
9:15 AM	0	5	0	6	0	0	0	0	0	3	224	0	0	0	123	5	366		0	0	0	0
Count Total	0	160	0	163	0	0	0	0	0	155	2,595	0	0	0	1,176	119	4,368		0	1	1	0
Peak Hour	0	103	0	105	0	0	0	0	0	122	1,456	0	0	0	656	96	2,538		0	1	1	0



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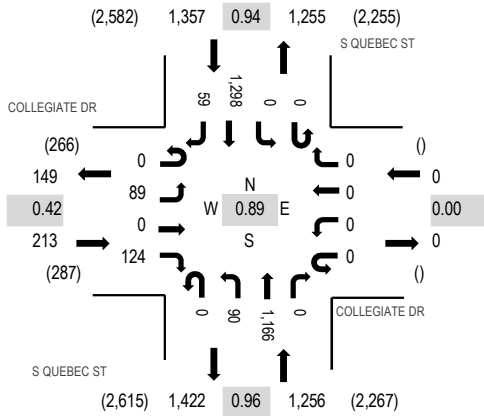
Location: 34 S QUEBEC ST & COLLEGIATE DR PM

Date: Wednesday, November 13, 2024

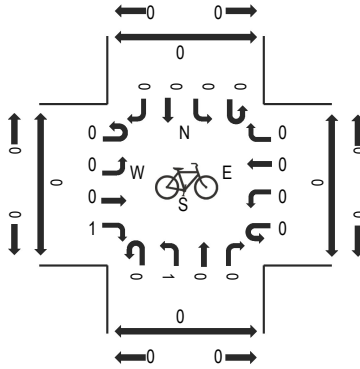
Peak Hour: 03:15 PM - 04:15 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

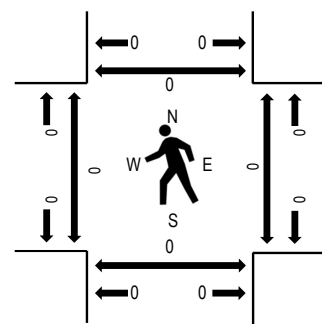
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	COLLEGIATE DR Eastbound				COLLEGIATE DR Westbound				S QUEBEC ST Northbound				S QUEBEC ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:30 PM	0	14	0	5	0	0	0	0	0	7	189	0	0	0	254	9	478	2,378	0	0	0	0
2:45 PM	0	5	0	9	0	0	0	0	0	6	228	0	0	0	305	16	569	2,692	0	0	0	0
3:00 PM	0	5	0	13	0	0	0	0	0	23	271	0	1	0	311	31	655	2,787	0	2	0	0
3:15 PM	0	13	0	8	0	0	0	0	0	47	257	0	0	0	320	31	676	2,826	0	0	0	0
3:30 PM	0	48	0	81	0	0	0	0	0	25	302	0	0	0	324	12	792	2,758	0	0	0	0
3:45 PM	0	17	0	23	0	0	0	0	0	4	310	0	0	0	300	10	664		0	0	0	0
4:00 PM	0	11	0	12	0	0	0	0	0	14	297	0	0	0	354	6	694		0	0	0	0
4:15 PM	0	11	0	12	0	0	0	0	0	11	276	0	0	0	284	14	608		0	0	0	0
Count Total	0	124	0	163	0	0	0	0	0	137	2,130	0	1	0	2,452	129	5,136		0	2	0	0
Peak Hour	0	89	0	124	0	0	0	0	0	90	1,166	0	0	0	1,298	59	2,826		0	0	0	0



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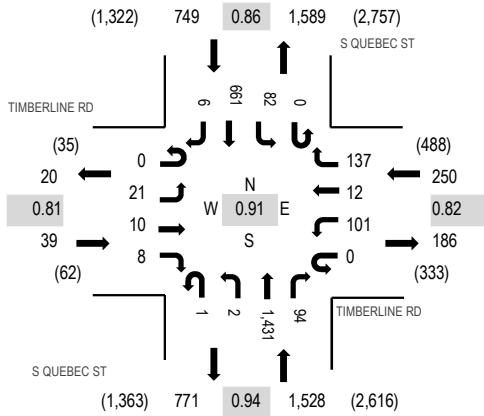
Location: 35 S QUEBEC ST & TIMBERLINE RD AM

Date: Wednesday, November 13, 2024

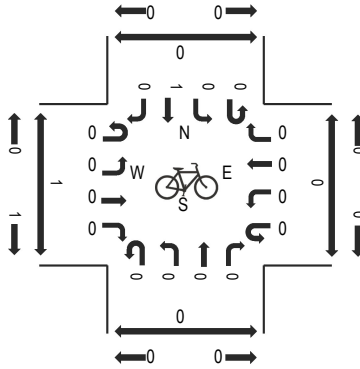
Peak Hour: 07:30 AM - 08:30 AM

Peak 15-Minutes: 08:15 AM - 08:30 AM

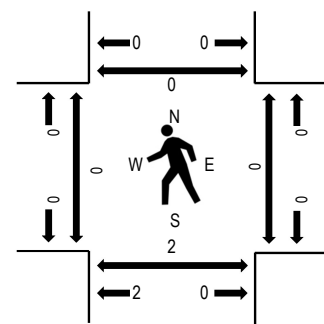
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	TIMBERLINE RD Eastbound				TIMBERLINE RD Westbound				S QUEBEC ST Northbound				S QUEBEC ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:30 AM	0	8	2	2	0	30	4	30	0	0	382	24	0	12	126	0	620	2,566	0	0	0	0
7:45 AM	0	5	2	4	0	17	1	31	0	1	369	16	0	16	169	0	631	2,547	0	0	0	0
8:00 AM	0	5	1	0	0	33	3	30	1	1	309	23	0	21	178	2	607	2,423	0	0	2	0
8:15 AM	0	3	5	2	0	21	4	46	0	0	371	31	0	33	188	4	708	2,203	0	0	0	0
8:30 AM	1	5	2	4	0	33	5	51	0	2	310	24	0	24	139	1	601	1,922	0	0	0	0
8:45 AM	0	5	0	0	0	27	0	38	0	1	279	20	0	13	122	2	507		2	0	0	0
9:00 AM	0	2	0	1	0	23	0	24	1	0	186	11	0	14	123	2	387		0	0	0	0
9:15 AM	0	2	0	1	0	11	0	26	0	0	240	14	0	25	107	1	427		0	0	0	0
Count Total	1	35	12	14	0	195	17	276	2	5	2,446	163	0	158	1,152	12	4,488		2	0	2	0
Peak Hour	0	21	10	8	0	101	12	137	1	2	1,431	94	0	82	661	6	2,566		0	0	2	0



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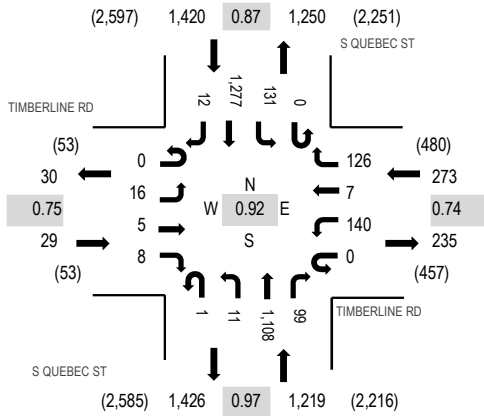
Location: 35 S QUEBEC ST & TIMBERLINE RD PM

Date: Wednesday, November 13, 2024

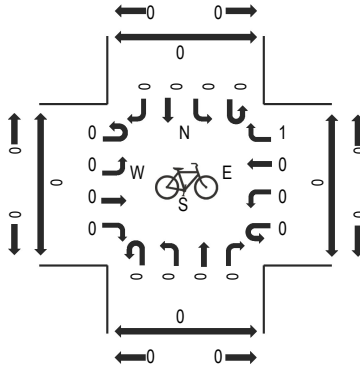
Peak Hour: 03:15 PM - 04:15 PM

Peak 15-Minutes: 03:30 PM - 03:45 PM

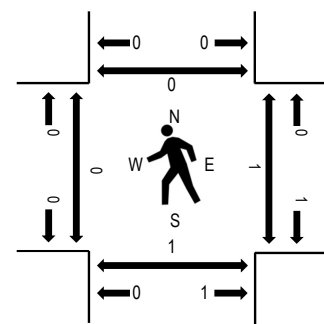
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	TIMBERLINE RD Eastbound				TIMBERLINE RD Westbound				S QUEBEC ST Northbound				S QUEBEC ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:30 PM	0	2	2	2	0	28	1	17	0	1	172	6	0	29	231	1	492	2,478	0	0	0	0
2:45 PM	0	3	2	0	0	28	1	19	1	4	226	25	0	31	269	1	610	2,784	0	0	0	0
3:00 PM	0	7	3	0	0	25	2	24	0	3	248	29	0	41	273	2	657	2,877	0	1	0	0
3:15 PM	0	5	4	2	0	30	2	27	0	4	277	32	0	32	302	2	719	2,941	0	0	1	0
3:30 PM	0	2	0	2	0	30	2	41	1	3	286	23	0	44	359	5	798	2,868	0	0	0	0
3:45 PM	0	4	1	3	0	56	3	35	0	2	267	17	0	24	287	4	703		0	0	0	0
4:00 PM	0	5	0	1	0	24	0	23	0	2	278	27	0	31	329	1	721		0	1	0	0
4:15 PM	0	1	2	0	0	35	2	25	0	3	257	22	0	30	267	2	646		1	0	0	0
Count Total	0	29	14	10	0	256	13	211	2	22	2,011	181	0	262	2,317	18	5,346		1	2	1	0
Peak Hour	0	16	5	8	0	140	7	126	1	11	1,108	99	0	131	1,277	12	2,941		0	1	1	0



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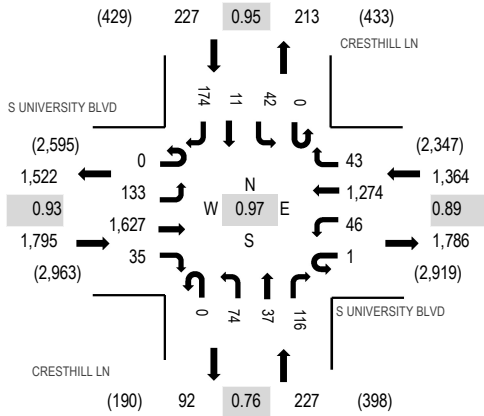
Location: 36 CRESTHILL LN & S UNIVERSITY BLVD AM

Date: Wednesday, November 13, 2024

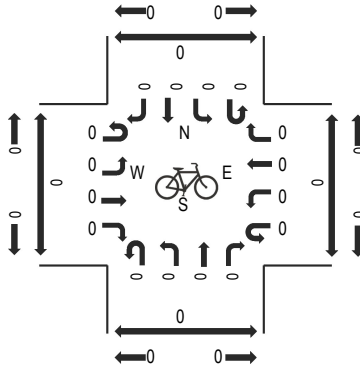
Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

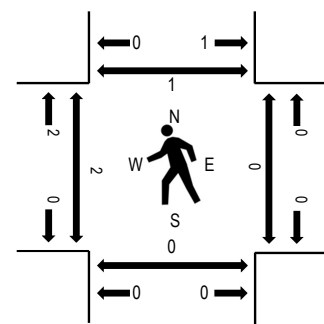
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S UNIVERSITY BLVD Eastbound				S UNIVERSITY BLVD Westbound				CRESTHILL LN Northbound				CRESTHILL LN Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:45 AM	0	29	382	4	1	6	372	6	0	20	13	42	0	11	4	40	930	3,613	1	0	0	0
8:00 AM	0	36	368	12	0	12	312	7	0	21	10	24	0	11	2	43	858	3,477	0	0	0	0
8:15 AM	0	32	440	10	0	14	313	16	0	11	3	29	0	10	1	48	927	3,333	0	0	0	1
8:30 AM	0	36	437	9	0	14	277	14	0	22	11	21	0	10	4	43	898	2,928	1	0	0	0
8:45 AM	0	35	342	17	0	6	270	19	0	18	6	23	0	11	3	44	794	2,524	0	0	0	0
9:00 AM	0	46	258	13	0	16	230	37	0	15	18	19	0	14	6	42	714		0	0	0	0
9:15 AM	0	20	209	5	0	12	181	14	0	18	4	19	0	10	2	28	522		0	0	0	0
9:30 AM	0	18	198	7	0	10	186	2	0	13	1	17	0	13	1	28	494		0	0	0	0
Count Total	0	252	2,634	77	1	90	2,141	115	0	138	66	194	0	90	23	316	6,137		2	0	0	1
Peak Hour	0	133	1,627	35	1	46	1,274	43	0	74	37	116	0	42	11	174	3,613		2	0	0	1



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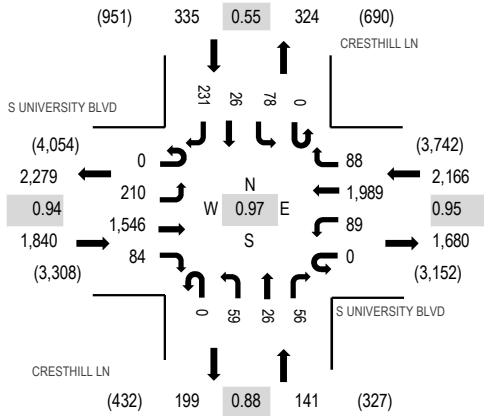
Location: 36 CRESTHILL LN & S UNIVERSITY BLVD PM

Date: Wednesday, November 13, 2024

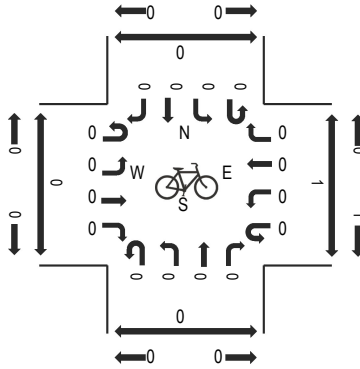
Peak Hour: 03:30 PM - 04:30 PM

Peak 15-Minutes: 04:00 PM - 04:15 PM

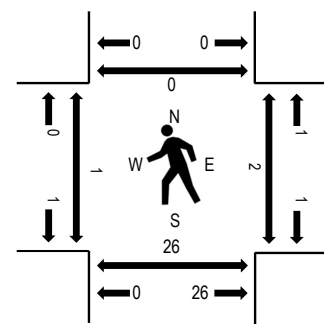
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S UNIVERSITY BLVD Eastbound				S UNIVERSITY BLVD Westbound				CRESTHILL LN Northbound				CRESTHILL LN Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
2:30 PM	0	64	235	15	0	16	295	45	0	14	15	14	0	17	3	36	769	3,846	2	0	1	0
2:45 PM	0	51	249	10	0	21	331	35	0	13	10	21	0	112	56	118	1,027	4,199	41	11	6	0
3:00 PM	0	49	326	19	0	24	385	14	0	13	13	20	0	52	28	96	1,039	4,310	2	3	1	0
3:15 PM	0	50	379	21	0	11	386	13	0	20	7	26	0	21	9	68	1,011	4,432	2	0	0	0
3:30 PM	0	48	424	22	0	19	482	16	0	12	5	21	0	13	4	56	1,122	4,482	0	1	26	0
3:45 PM	0	49	386	16	0	29	523	16	0	15	6	11	0	24	6	57	1,138		0	0	0	0
4:00 PM	0	49	391	20	0	23	525	16	0	13	9	17	0	26	10	62	1,161		0	1	0	0
4:15 PM	0	64	345	26	0	18	459	40	0	19	6	7	0	15	6	56	1,061		1	0	0	0
Count Total	0	424	2,735	149	0	161	3,386	195	0	119	71	137	0	280	122	549	8,328		48	16	34	0
Peak Hour	0	210	1,546	84	0	89	1,989	88	0	59	26	56	0	78	26	231	4,482		1	2	26	0



Appendix C Existing Traffic Signal Timing Plans

Station : 5 - University & Cresthill Ln (Standard File)

Phase [1.1.1]

	φ1 (WL)	φ2 (ET)	φ3 (NL)	φ4 (ST)	φ5 (EL)	φ6 (WT)	φ7 (SL)	φ8 (NT)	φ9	φ10	φ11	φ12	φ13	φ14	φ15	φ16
Walk	0	5	0	5	0	5	0	5	0	0	0	0	0	0	0	0
Ped Clearance	0	13	0	31	0	18	0	33	0	0	0	0	0	0	0	0
Min Green	5	20	5	3	5	20	5	5	0	0	0	0	0	0	0	0
Gap Ext	1.5	3	1.5	2	2	3	1.5	2	0	0	0	0	0	0	0	0
Max1	20	50	15	50	25	50	20	35	0	0	0	0	0	0	0	0
Max2	10	20	8	15	15	20	10	15	0	0	0	0	0	0	0	0
Yellow Clr	3	4	3	3	3	4	3	3	3	3	3	3	3	3	3	3
Red Clr	2	2	1	2	2	2	1	2	2	2	2	2	2	2	2	2
Red Revert	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0
Added Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduce By	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Step	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auto Flash Entry				ON				ON								
Auto Flash Exit		ON				ON										
Non-Actuated 1																
Non-Actuated 2																

Phase Option [1.1.2]

	φ1 (WL)	φ2 (ET)	φ3 (NL)	φ4 (ST)	φ5 (EL)	φ6 (WT)	φ7 (SL)	φ8 (NT)	φ9	φ10	φ11	φ12	φ13	φ14	φ15	φ16
Enable	ON	ON	ON	ON	ON	ON	ON	ON								
Lock Call									ON	ON	ON	ON	ON	ON	ON	ON
Min Recall		ON				ON										
Max Recall																
Ped Recall																
Soft Recall																
Dual Entry		ON		ON		ON		ON								
Sim Gap Enable	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Guar Passage																
Rest In Walk																
Cond Service																
Add Init Calc																

Phase Option+ [1.1.3]/[1.1.5]

	φ1	φ2	φ3	φ4	φ5	φ6	φ7	φ8	φ9	φ10	φ11	φ12	φ13	φ14	φ15	φ16
Reservice																
Ped Clr Thru Yellow																
Skip Red-NoCall																
Red Rest																
Max 2																
Max Inhibit																
Ped Delay																
Red Rest On Gap																
Conflicting P																
Green Ped Delay Time				5												
Omit Yel																
Ped Out																
Start Yel																
Inhibit P1																
Inhibit P2																
Inhibit P3																
Inhibit P4																
Inhibit P5																
Inhibit P6																
Inhibit P7																
Inhibit P8																
Call Phs1																
Call Phs2																
Redirect P Calls From 1				3				7								
Redirect P Calls To 1				8				4								
Redirect P Calls From 2																
Redirect P Calls To 2																
Redirect P Calls From 3																
Redirect P Calls To 3																
Redirect P Calls From 4																
Redirect P Calls To 4																

Prepared By / Date

Reviewed By / Date

Station : 5 - University & Cresthill Ln (Standard File)

Ring Sequence [1.2.4]

Ring	P1	P2	P3	P4	P5	P6	P7	P8
Ring 1	1	2	3	4				
Ring 2	5	6	7	8				
Ring 3								
Ring 4								

Unit Parameters [1.2.1]

StartUp Flash	Auto Ped Clear	Red Revert	Local Flash Start	Allow < 3 sec Yel	Allow Skip Yel	MCE Timeout	Enable Run	Start Red Time	Phase Mode	Startup Calls	Diamond Mode	Stop Time Over Preempt	Free Ring Sequence	Clearance Decide	Min Ped Clear Time	RingAlgo			
	OFF	5	RST	OFF	OFF		ON	6	STD8	OFF	4PH	OFF	1	OFF	OFF				

Alarms, Parameters [1.4.1]

Auto Flash Parameter

Yellow	Red	Mode	Source
	60		

Detector, Vehicle Parameters 1-16 [5.1]

Detector #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Yellow Lock																
Red Lock																
Extend	ON	ON	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON	ON
Added Initial	ON	ON	ON	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON
Call	ON	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON	ON	ON
Call Phase	1	2	2	2	2	2	3	4	4	4	4	4	1	3	5	6
Switch Phase	0	0	0	0	0	0	8	0	0	0	0	0	0	8	0	0
Delay Time	0	0	0	0	0	0	3	0	12	0	0	0	0	0	0	0

Detector, Vehicle Parameters 17-32 [5.1]

Detector #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Yellow Lock																
Red Lock																
Extend	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON				
Added Initial	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON				
Call	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON				
Call Phase	6	6	6	6	7	8	8	8	8	8	5	7	0	0	0	0
Switch Phase	0	0	0	0	4	0	0	0	0	0	0	4	0	0	0	0
Delay Time	0	0	0	0	3	0	7.5	0	0	0	0	0	0	0	0	0

Detector, Ped Detectors 1-16 [5.4]

Detector	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phase	0	2	0	4	0	6	0	8								
No Activity	0	0	0	0	0	0	0	0								
Max Presence	15	15	15	15	15	15	15	15								
Erratic Cnt	0	0	0	0	0	0	0	0								

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Channels/SDLC, Assign to Phases [1.8.1]

Channel/SDLC +, Assign to Phases [1.8.4]

Overlap General Parameters [1.5.1]

Overlap Program Parameters [1.5.2.1]

Overlap Conflict Parameters+ [1.5.2.2]

Overlap Program Parameters+ [1.5.2.3]

[illegible]

[illegible]

Station : 5 - University & Cresthill Ln (Standard File)**Preemption Times[3.1]/Phases[3.2]/Options[3.3]**

Channel	1	2	3	4	5	6
Lock Input	ON	ON	ON	ON	ON	ON
Override Auto Flash	ON	ON				
Override Higher Preempt	ON	ON				
Flash in Dwell						
Link to Preempt	0	0	0	0	0	0
Delay	0	0	0	0	0	0
Min Duration	0	0	5	5	5	5
Min Green	0	0	5	5	5	5
Min Walk	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Track Green	0	0	0	0	0	0
Min Dwell	0	0	0	0	0	0
Max Presence	0	0	120	120	120	120
Track Veh 1	0	0	0	0	0	0
Track Veh 2	0	0	0	0	0	0
Track Veh 3	0	0	0	0	0	0
Track Veh 4	0	0	0	0	0	0
Dwell Cyc Veh 1	0	0	2	4	1	3
Dwell Cyc Veh 2	0	0	5	7	6	8
Dwell Cyc Veh 3	0	0	0	0	0	0
Dwell Cyc Veh 4	0	0	0	0	0	0
Dwell Cyc Veh 5	0	0	0	0	0	0
Dwell Cyc Veh 6	0	0	0	0	0	0
Dwell Cyc Veh 7	0	0	0	0	0	0
Dwell Cyc Veh 8	0	0	0	0	0	0
Dwell Cyc Veh 9	0	0	0	0	0	0
Dwell Cyc Veh 10	0	0	0	0	0	0
Dwell Cyc Veh 11	0	0	0	0	0	0
Dwell Cyc Veh 12	0	0	0	0	0	0
Dwell Cyc Ped1	0	0	0	0	0	0
Dwell Cyc Ped2	0	0	0	0	0	0
Dwell Cyc Ped3	0	0	0	0	0	0
Dwell Cyc Ped4	0	0	0	0	0	0
Dwell Cyc Ped5	0	0	0	0	0	0
Dwell Cyc Ped6	0	0	0	0	0	0
Dwell vPed7	0	0	0	0	0	0
Dwell Cyc Ped8	0	0	0	0	0	0
Exit 1	0	0	3	0	3	0
Exit 2	0	0	7	0	7	0
Exit 3	0	0	0	0	0	0
Exit 4	0	0	0	0	0	0

Preemption Times+[3.4]/Overlaps+[3.5]/Options+[3.6]

Preempt	1	2	3	4	5	6
Enable			ON	ON	ON	ON
Type	RAIL	RAIL	EMERG	EMERG	EMERG	EMERG
Skip Track						
Volt Mon Flash						
Coord in Preempt						
Return Max/Min	MAX	MAX	MAX	MAX	MAX	MAX
Extend Dwell	0	0	0	0	0	0
Pattern	0	0	0	0	0	0
Output Mode	TS2	TS2	TS2	TS2	TS2	TS2
Track Over 1	0	0	0	0	0	0
Track Over 2	0	0	0	0	0	0
Track Over 3	0	0	0	0	0	0
Track Over 4	0	0	0	0	0	0
Track Over 5	0	0	0	0	0	0
Track Over 6	0	0	0	0	0	0
Track Over 7	0	0	0	0	0	0
Track Over 8	0	0	0	0	0	0
Track Over 9	0	0	0	0	0	0
Track Over 10	0	0	0	0	0	0
Track Over 11	0	0	0	0	0	0
Track Over 12	0	0	0	0	0	0
DwellCyc Over 1	0	0	0	0	0	0
DwellCyc Over 2	0	0	0	0	0	0
DwellCyc Over 3	0	0	0	0	0	0
DwellCyc Over 4	0	0	0	0	0	0
DwellCyc Over 5	0	0	0	0	0	0
DwellCyc Over 6	0	0	0	0	0	0
DwellCyc Over 7	0	0	0	0	0	0
DwellCyc Over 8	0	0	0	0	0	0
DwellCyc Over 9	0	0	0	0	0	0
DwellCyc Over 10	0	0	0	0	0	0
DwellCyc Over 11	0	0	0	0	0	0
DwellCyc Over 12	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Yellow	0	0	0	0	0	0
Red	0	0	0	0	0	0
Return Max	0	0	0	0	0	0

Preemption Adv Times[3.8]/Init Dwell [3.9]

Preempt	1	2	3	4	5	6
All Red B4 Preempt						
Reset Ext Dwell						
Reservice Preempt						
End Dwell						
DsblDwellCalls						
Enter Yellow Change	25.5	25.5	25.5	25.5	25.5	25.5
Enter Red Clear	25.5	25.5	25.5	25.5	25.5	25.5
Track Yellow Change	25.5	25.5	25.5	25.5	25.5	25.5
Track Red Clear	25.5	25.5	25.5	25.5	25.5	25.5
Dynamic Exit Threshold	0	0	0	0	0	0
Initial Dwell Phase 1	0	0	0	0	0	0
Initial Dwell Phase 2	0	0	0	0	0	0
Initial Dwell Phase 3	0	0	0	0	0	0
Initial Dwell Phase 4	0	0	0	0	0	0
Ped 1	0	0	0	0	0	0
Ped 2	0	0	0	0	0	0
Ped 3	0	0	0	0	0	0
Ped 4	0	0	0	0	0	0
Initial Dwell Overlap 1	0	0	0	0	0	0
Initial Dwell Overlap 2	0	0	0	0	0	0
Initial Dwell Overlap 3	0	0	0	0	0	0
Initial Dwell Overlap 4	0	0	0	0	0	0
Initial Dwell Overlap 5	0	0	0	0	0	0
Initial Dwell Overlap 6	0	0	0	0	0	0
Initial Dwell Overlap 7	0	0	0	0	0	0
Initial Dwell Overlap 8	0	0	0	0	0	0
Initial Dwell Overlap 9	0	0	0	0	0	0
Initial Dwell Overlap 10	0	0	0	0	0	0
Initial Dwell Overlap 11	0	0	0	0	0	0
Initial Dwell Overlap 12	0	0	0	0	0	0
Initial Dwell Overlap 13	0	0	0	0	0	0
Initial Dwell Overlap 14	0	0	0	0	0	0
Initial Dwell Overlap 15	0	0	0	0	0	0

Coordination, Modes, + [2.1]

Operational	Correct	Maximum	Force-Off
	SHRT/LNG	MAX INH	FLOAT

Coordination, Pattern 1-16 [2.4]

Coordination, Pattern 17-32 [2.4]

Coordination, Pattern+ 1-8 [2.5]

[illegible]

Station : 5 - University & Cresthill Ln (Standard File)

Coordination, Pattern+ 9-16 [2.5]

Pattern	9	10	11	12	13	14	15	16
Short	10	10	10	10	10	10	10	10
Long	34	34	34	34	34	34	34	34
Dwell								
No Short P 1								
No Short P 2								
No Short P 3								
No Short P 4								
Early Yield								
Offset	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN
CNA								
Max 2								
Float								
Min Veh Perm								
Min Ped Perm								
Percentage								
MI								
Ret Hold	ON	ON	ON	ON	ON	ON	ON	ON
ASC								
Ph Opt Table								
Ph Time Table								
Det Grp								
Call Inh								
Olp Off 1								
Olp Off 2								
Olp Off 3								
Olp Off 4								
Olp Off 5								
Olp Off 6								
Olp Off 7								
Olp Off 8								
Dia Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT
Force Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT

Coordination, Pattern+ 17 - 24 [2.5]

Pattern	17	18	19	20	21	22	23	24
Short	10	10	10	10	10	10	10	10
Long	34	34	34	34	34	34	34	34
Dwell								
No Short P 1								
No Short P 2								
No Short P 3								
No Short P 4								
Early Yield								
Offset	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN
CNA								
Max 2								
Float								
Min Veh Perm								
Min Ped Perm								
Percentage								
MI								
Ret Hold	ON	ON	ON	ON	ON	ON	ON	ON
ASC								
Ph Opt Table								
Ph Time Table								
Det Grp								
Call Inh								
Olp Off 1								
Olp Off 2								
Olp Off 3								
Olp Off 4								
Olp Off 5								
Olp Off 6								
Olp Off 7								
Olp Off 8								
Dia Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT
Force Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT

Coordination, Splits [2.7.1]

[illegible]

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TB Coor, Advanced Scheduler [4.3]

TB Coor, Day Plan [4.4]

[illegible]

Station : 5 - University & Cresthill Ln (Standard File)

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[illegible]

Station : 5 - University & Cresthill Ln (Standard File)

TB Coor, Action Table [4.5]

Action	Pattern	Aux 1	Aux 2	Aux 3	Special 1	Special 2	Special 3	Special 4	Special 5	Special 6	Special 7	Special 8
1	1				0	0						
2	2				0	0						
3	3				0	0						
4	4				0	0						
5	5				0	0						
6	6				0	0						
7	7				0	0						
8	8				0	0						
9	9				0	0						
10	10				0	0						
11	11				0	0						
12	12				0	0						
13	13				0	0						
14	14				0	0						
15	15				0	0						
16	16				0	0						
17	17				0	0						
18	18				0	0						
19	19				0	0						
20	20				0	0						
21	21				0	0						
22	22				0	0						
23	23				0	0						
24	24				0	0						
25	25				0	0						
26	26				0	0						
27	27				0	0						
28	28				0	0						
29	29				0	0						
30	30				0	0						
31	31				0	0						
32	32				0	0						
33					0	0						
34					0	0						
35					0	0						
36					0	0						
37					0	0						
38					0	0						
39					0	0						
40					0	0						
41					0	0						
42					0	0						
43					0	0						
44					0	0						
45					0	0						
46					0	0						
47					0	0						
48					0	0						
49					0	0						
50					0	0						
51					0	0						
52					0	0						
53					0	0						
54					0	0						
55					0	0						
56					0	0						
57					0	0						
58					0	0						
59					0	0						
60					0	0						
61					0	0						
62					0	0						
63					0	0						
64					0	0						
99	254				0	0						
100	255				0	0						

Alternate Phase Program 2, Interval Times [1.1.6.1]

[illegible][illegible][illegible][illegible][illegible][illegible]

Detector Alternate Program 1, Vehicle Parameters [5.5.1]

Detector Alternate Program 2, Vehicle Parameters [5.5.1]

User Input map [1.8.9.1]

User Output map [1.8.9.2]

[illegible]

Station : 30 - Quebec & Collegiate Dr (Standard File)

Phase [1.1.1]

	$\phi 1$	$\phi 2$ (NT)	$\phi 3$	$\phi 4$ (ET)	$\phi 5$ (NL)	$\phi 6$ (ST)	$\phi 7$	$\phi 8$	$\phi 9$	$\phi 10$	$\phi 11$	$\phi 12$	$\phi 13$	$\phi 14$	$\phi 15$	$\phi 16$
Walk	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0
Ped Clearance	0	0	0	27	0	16	0	0	0	0	0	0	0	0	0	0
Min Green	0	25	0	5	5	25	0	0	0	0	0	0	0	0	0	0
Gap Ext	0	5	0	2.5	1.5	5	0	0	0	0	0	0	0	0	0	0
Max1	0	50	0	30	15	50	0	0	0	0	0	0	0	0	0	0
Max2	0	20	0	15	15	20	0	0	0	0	0	0	0	0	0	0
Yellow Clr	0	4.5	0	3	3	4.5	0	0	3	3	3	3	3	3	3	3
Red Clr	0	1.5	0	2	1	1.5	0	0	2	2	2	2	2	2	2	2
Red Revert	0	5	0	5	5	5	0	0	0	0	0	0	0	0	0	0
Added Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduce By	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Step	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auto Flash Entry				ON												
Auto Flash Exit		ON				ON										
Non-Actuated 1																
Non-Actuated 2																

Phase Option [1.1.2]

	$\phi 1$	$\phi 2$ (NT)	$\phi 3$	$\phi 4$ (ET)	$\phi 5$ (NL)	$\phi 6$ (ST)	$\phi 7$	$\phi 8$	$\phi 9$	$\phi 10$	$\phi 11$	$\phi 12$	$\phi 13$	$\phi 14$	$\phi 15$	$\phi 16$
Enable		ON		ON	ON	ON										
Lock Call									ON	ON	ON	ON	ON	ON	ON	ON
Min Recall		ON				ON										
Max Recall																
Ped Recall																
Soft Recall																
Dual Entry		ON				ON										
Sim Gap Enable	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Guar Passage																
Rest In Walk		ON				ON										
Cond Service																
Add Init Calc																

Phase Option+ [1.1.3]/[1.1.5]

	$\phi 1$	$\phi 2$	$\phi 3$	$\phi 4$	$\phi 5$	$\phi 6$	$\phi 7$	$\phi 8$	$\phi 9$	$\phi 10$	$\phi 11$	$\phi 12$	$\phi 13$	$\phi 14$	$\phi 15$	$\phi 16$
Reservice																
Ped Clr Thru Yellow																
Skip Red-NoCall																
Red Rest																
Max 2																
Max Inhibit																
Ped Delay																
Red Rest On Gap																
Conflicting P																
Green Ped Delay Time																
Omit Yel																
Ped Out																
Start Yel																
Inhibit P1																
Inhibit P2																
Inhibit P3																
Inhibit P4																
Inhibit P5																
Inhibit P6																
Inhibit P7																
Inhibit P8																
Call Phs1																
Call Phs2																
Redirect P Calls From 1																
Redirect P Calls To 1																
Redirect P Calls From 2																
Redirect P Calls To 2																
Redirect P Calls From 3																
Redirect P Calls To 3																
Redirect P Calls From 4																
Redirect P Calls To 4																

Prepared By / Date

Reviewed By / Date

Station : 30 - Quebec & Collegiate Dr (Standard File)

Ring Sequence [1.2.4]

Ring	P1	P2	P3	P4	P5	P6	P7	P8
Ring 1	1	2	3	4				
Ring 2	5	6	7	8				
Ring 3								
Ring 4								

Unit Parameters [1.2.1]

StartUp Flash	Auto Ped Clear	Red Revert	Local Flash Start	Allow < 3 sec Yel	Allow Skip Yel	MCE Timeout	Enable Run	Start Red Time	Phase Mode	Startup Calls	Diamond Mode	Stop Time Over Preempt	Free Ring Sequence	Clearance Decide	Min Ped Clear Time	RingAlgo			
	OFF	5	RST	OFF	OFF		ON	6	STD8	OFF	4PH	OFF	1	OFF	OFF				

Alarms, Parameters [1.4.1]

Auto Flash Parameter

Yellow	Red	Mode	Source
	60		

Detector, Vehicle Parameters 1-16 [5.1]

Detector #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Yellow Lock																
Red Lock																
Extend	ON	ON	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON	ON
Added Initial																
Call	ON	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON	ON	ON
Call Phase	1	2	2	2	2	2	3	4	4	4	4	4	1	3	5	6
Switch Phase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Time	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0

Detector, Vehicle Parameters 17-32 [5.1]

Detector #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Yellow Lock																
Red Lock																
Extend	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON				
Added Initial																
Call	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON				
Call Phase	6	6	6	6	7	8	8	8	8	8	5	7	0	0	0	0
Switch Phase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Time	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Detector, Ped Detectors 1-16 [5.4]

Detector	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phase	0	2	0	4	0	6	0	8								
No Activity	0	0	0	0	0	0	0	0								
Max Presence	15	15	15	15	15	15	15	15								
Erratic Cnt	0	0	0	0	0	0	0	0								

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Channels/SDLC, Assign to Phases [1.8.1]

Channel/SDLC +, Assign to Phases [1.8.4]

Overlap General Parameters [1.5.1]

Overlap Program Parameters [1.5.2.1]

Overlap Conflict Parameters+ [1.5.2.2]

Overlap Program Parameters+ [1.5.2.3]

[illegible]

[illegible]

Station : 30 - Quebec & Collegiate Dr (Standard File)

Preemption Times[3.1]/Phases[3.2]/Options[3.3]

Channel	1	2	3	4	5	6
Lock Input	ON	ON	ON	ON	ON	ON
Override Auto Flash	ON	ON				
Override Higher Preempt	ON	ON				
Flash in Dwell						
Link to Preempt	0	0	0	0	0	0
Delay	0	0	0	0	0	0
Min Duration	0	0	5	5	5	5
Min Green	0	0	5	5	5	5
Min Walk	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Track Green	0	0	0	0	0	0
Min Dwell	0	0	0	0	0	0
Max Presence	0	0	120	120	120	120
Track Veh 1	0	0	0	0	0	0
Track Veh 2	0	0	0	0	0	0
Track Veh 3	0	0	0	0	0	0
Track Veh 4	0	0	0	0	0	0
Dwell Cyc Veh 1	0	0	2	0	4	0
Dwell Cyc Veh 2	0	0	6	0	0	0
Dwell Cyc Veh 3	0	0	0	0	0	0
Dwell Cyc Veh 4	0	0	0	0	0	0
Dwell Cyc Veh 5	0	0	0	0	0	0
Dwell Cyc Veh 6	0	0	0	0	0	0
Dwell Cyc Veh 7	0	0	0	0	0	0
Dwell Cyc Veh 8	0	0	0	0	0	0
Dwell Cyc Veh 9	0	0	0	0	0	0
Dwell Cyc Veh 10	0	0	0	0	0	0
Dwell Cyc Veh 11	0	0	0	0	0	0
Dwell Cyc Veh 12	0	0	0	0	0	0
Dwell Cyc Ped1	0	0	0	0	0	0
Dwell Cyc Ped2	0	0	0	0	0	0
Dwell Cyc Ped3	0	0	0	0	0	0
Dwell Cyc Ped4	0	0	0	0	0	0
Dwell Cyc Ped5	0	0	0	0	0	0
Dwell Cyc Ped6	0	0	0	0	0	0
Dwell vPed7	0	0	0	0	0	0
Dwell Cyc Ped8	0	0	0	0	0	0
Exit 1	0	0	4	0	4	0
Exit 2	0	0	0	0	0	0
Exit 3	0	0	0	0	0	0
Exit 4	0	0	0	0	0	0

Preemption Times+[3.4]/Overlaps+[3.5]/Options+[3.6]

Preempt	1	2	3	4	5	6
Enable			ON	ON	ON	ON
Type	RAIL	RAIL	EMERG	EMERG	EMERG	EMERG
Skip Track						
Volt Mon Flash						
Coord in Preempt						
Return Max/Min	MAX	MAX	MAX	MAX	MAX	MAX
Extend Dwell	0	0	0	0	0	0
Pattern	0	0	0	0	0	0
Output Mode	TS2	TS2	TS2	TS2	TS2	TS2
Track Over 1	0	0	0	0	0	0
Track Over 2	0	0	0	0	0	0
Track Over 3	0	0	0	0	0	0
Track Over 4	0	0	0	0	0	0
Track Over 5	0	0	0	0	0	0
Track Over 6	0	0	0	0	0	0
Track Over 7	0	0	0	0	0	0
Track Over 8	0	0	0	0	0	0
Track Over 9	0	0	0	0	0	0
Track Over 10	0	0	0	0	0	0
Track Over 11	0	0	0	0	0	0
Track Over 12	0	0	0	0	0	0
DwellCyc Over 1	0	0	0	0	0	0
DwellCyc Over 2	0	0	0	0	0	0
DwellCyc Over 3	0	0	0	0	0	0
DwellCyc Over 4	0	0	0	0	0	0
DwellCyc Over 5	0	0	0	0	0	0
DwellCyc Over 6	0	0	0	0	0	0
DwellCyc Over 7	0	0	0	0	0	0
DwellCyc Over 8	0	0	0	0	0	0
DwellCyc Over 9	0	0	0	0	0	0
DwellCyc Over 10	0	0	0	0	0	0
DwellCyc Over 11	0	0	0	0	0	0
DwellCyc Over 12	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Yellow	0	0	0	0	0	0
Red	0	0	0	0	0	0
Return Max	0	0	0	0	0	0

Preemption Adv Times[3.8]/Init Dwell [3.9]

Preempt	1	2	3	4	5	6
All Red B4 Preempt						
Reset Ext Dwell						
Reservice Preempt						
End Dwell						
DsblDwellCalls						
Enter Yellow Change	25.5	25.5	25.5	25.5	25.5	25.5
Enter Red Clear	25.5	25.5	25.5	25.5	25.5	25.5
Track Yellow Change	25.5	25.5	25.5	25.5	25.5	25.5
Track Red Clear	25.5	25.5	25.5	25.5	25.5	25.5
Dynamic Exit Threshold	0	0	0	0	0	0
Initial Dwell Phase 1	0	0	0	0	0	0
Initial Dwell Phase 2	0	0	0	0	0	0
Initial Dwell Phase 3	0	0	0	0	0	0
Initial Dwell Phase 4	0	0	0	0	0	0
Ped 1	0	0	0	0	0	0
Ped 2	0	0	0	0	0	0
Ped 3	0	0	0	0	0	0
Ped 4	0	0	0	0	0	0
Initial Dwell Overlap 1	0	0	0	0	0	0
Initial Dwell Overlap 2	0	0	0	0	0	0
Initial Dwell Overlap 3	0	0	0	0	0	0
Initial Dwell Overlap 4	0	0	0	0	0	0
Initial Dwell Overlap 5	0	0	0	0	0	0
Initial Dwell Overlap 6	0	0	0	0	0	0
Initial Dwell Overlap 7	0	0	0	0	0	0
Initial Dwell Overlap 8	0	0	0	0	0	0
Initial Dwell Overlap 9	0	0	0	0	0	0
Initial Dwell Overlap 10	0	0	0	0	0	0
Initial Dwell Overlap 11	0	0	0	0	0	0
Initial Dwell Overlap 12	0	0	0	0	0	0
Initial Dwell Overlap 13	0	0	0	0	0	0
Initial Dwell Overlap 14	0	0	0	0	0	0
Initial Dwell Overlap 15	0	0	0	0	0	0

Coordination, Modes, + [2.1]

Operational	Correct	Maximum	Force-Off
	SHRT/LNG	MAX INH	FLOAT

Coordination, Pattern 1-16 [2.4]

Coordination, Pattern 17-32 [2.4]

Coordination, Pattern+ 1-8 [2.5]

[illegible]

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Coordination, Pattern+ 9-16 [2.5]

Pattern	9	10	11	12	13	14	15	16
Short	10	10	10	10	10	10	10	10
Long	34	34	34	34	34	34	34	34
Dwell								
No Short P 1								
No Short P 2								
No Short P 3								
No Short P 4								
Early Yield								
Offset	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN
CNA								
Max 2								
Float								
Min Veh Perm								
Min Ped Perm								
Percentage								
MI								
Ret Hold	ON	ON	ON	ON	ON	ON	ON	ON
ASC								
Ph Opt Table								
Ph Time Table								
Det Grp								
Call Inh								
Olp Off 1								
Olp Off 2								
Olp Off 3								
Olp Off 4								
Olp Off 5								
Olp Off 6								
Olp Off 7								
Olp Off 8								
Dia Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT
Force Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT

Coordination, Pattern+ 17 - 24 [2.5]

Pattern	17	18	19	20	21	22	23	24
Short	10	10	10	10	10	10	10	10
Long	34	34	34	34	34	34	34	34
Dwell								
No Short P 1								
No Short P 2								
No Short P 3								
No Short P 4								
Early Yield								
Offset	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN
CNA								
Max 2								
Float								
Min Veh Perm								
Min Ped Perm								
Percentage								
MI								
Ret Hold	ON	ON	ON	ON	ON	ON	ON	ON
ASC								
Ph Opt Table								
Ph Time Table								
Det Grp								
Call Inh								
Olp Off 1								
Olp Off 2								
Olp Off 3								
Olp Off 4								
Olp Off 5								
Olp Off 6								
Olp Off 7								
Olp Off 8								
Dia Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT
Force Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT

Coordination, Splits [2.7.1]

[illegible]

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[illegible][illegible]

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[illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible]

TB Coor, Advanced Scheduler [4.3]

TB Coor, Day Plan [4.4][illegible]

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[illegible]

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TB Coor, Action Table [4.5]

Action	Pattern	Aux 1	Aux 2	Aux 3	Special 1	Special 2	Special 3	Special 4	Special 5	Special 6	Special 7	Special 8
1	1				0	0						
2	2				0	0						
3	3				0	0						
4	4				0	0						
5	5				0	0						
6	6				0	0						
7	7				0	0						
8	8				0	0						
9	9				0	0						
10	10				0	0						
11	11				0	0						
12	12				0	0						
13	13				0	0						
14	14				0	0						
15	15				0	0						
16	16				0	0						
17	17				0	0						
18	18				0	0						
19	19				0	0						
20	20				0	0						
21	21				0	0						
22	22				0	0						
23	23				0	0						
24	24				0	0						
25	25				0	0						
26	26				0	0						
27	27				0	0						
28	28				0	0						
29	29				0	0						
30	30				0	0						
31	31				0	0						
32	32				0	0						
33					0	0						
34					0	0						
35					0	0						
36					0	0						
37					0	0						
38					0	0						
39					0	0						
40					0	0						
41					0	0						
42					0	0						
43					0	0						
44					0	0						
45					0	0						
46					0	0						
47					0	0						
48					0	0						
49					0	0						
50					0	0						
51					0	0						
52					0	0						
53					0	0						
54					0	0						
55					0	0						
56					0	0						
57					0	0						
58					0	0						
59					0	0						
60					0	0						
61					0	0						
62					0	0						
63					0	0						
64					0	0						
99	254				0	0						
100	255				0	0						

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Alternate Phase Program 1, Interval Times [1.1.6.1]

[illegible]

Alternate Phase Program 2, Interval Times [1.1.6.1]

[illegible]

Alternate Phase Program 1, >Phase Options [1.1.6.2]

[illegible]

Alternate Phase Program 2, Phase Options [1.1.6.2]

[illegible]

Alternate Phase Program 3, Phase Options [1.1.6.2]

[illegible]

Alternate Phase Program 1, Calls and Redirection [1.1.6.3]

[illegible]

Alternate Phase Program 2, Calls and Redirection [1.1.6.3]

[illegible]

Detector Alternate Program 1, Vehicle Parameters [5.5.1]

Detector Alternate Program 2, Vehicle Parameters [5.5.1]

User Input map [1.8.9.1]

User Output map [1.8.9.2]

[illegible]

Station : 71 - Quebec & Timberline/Trailhead (Standard File)

Phase [1.1.1]

	φ1 (SL)	φ2 (NT)	φ3	φ4 (ET)	φ5 (NL)	φ6 (ST)	φ7	φ8 (WT)	φ9	φ10	φ11	φ12	φ13	φ14	φ15	φ16
Walk	0	5	0	5	0	5	0	0	0	0	0	0	0	0	0	0
Ped Clearance	0	15	0	30	0	15	0	0	0	0	0	0	0	0	0	0
Min Green	5	25	0	5	5	25	0	5	0	0	0	0	0	0	0	0
Gap Ext	1.5	5	0	2	1.5	5	0	2	0	0	0	0	0	0	0	0
Max1	15	50	0	30	15	50	0	30	0	0	0	0	0	0	0	0
Max2	15	25	0	15	15	25	0	15	0	0	0	0	0	0	0	0
Yellow Clr	3	4.5	0	3	3	4.5	0	3	3	3	3	3	3	3	3	3
Red Clr	1	1.5	0	2	1	1.5	0	2	2	2	2	2	2	2	2	2
Red Revert	5	5	0	5	5	5	0	5	0	0	0	0	0	0	0	0
Added Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduce By	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Step	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auto Flash Entry				ON				ON								
Auto Flash Exit		ON				ON										
Non-Actuated 1																
Non-Actuated 2																

Phase Option [1.1.2]

	φ1 (SL)	φ2 (NT)	φ3	φ4 (ET)	φ5 (NL)	φ6 (ST)	φ7	φ8 (WT)	φ9	φ10	φ11	φ12	φ13	φ14	φ15	φ16
Enable	ON	ON		ON	ON	ON		ON								
Lock Call									ON	ON	ON	ON	ON	ON	ON	ON
Min Recall		ON				ON										
Max Recall																
Ped Recall																
Soft Recall																
Dual Entry		ON		ON		ON		ON								
Sim Gap Enable	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Guar Passage																
Rest In Walk		ON				ON										
Cond Service																
Add Init Calc																

Phase Option+ [1.1.3]/[1.1.5]

	φ1	φ2	φ3	φ4	φ5	φ6	φ7	φ8	φ9	φ10	φ11	φ12	φ13	φ14	φ15	φ16
Reservice																
Ped Clr Thru Yellow																
Skip Red-NoCall																
Red Rest																
Max 2																
Max Inhibit																
Ped Delay																
Red Rest On Gap																
Conflicting P																
Green Ped Delay Time																
Omit Yel																
Ped Out																
Start Yel																
Inhibit P1		ON														
Inhibit P2																
Inhibit P3																
Inhibit P4																
Inhibit P5						ON										
Inhibit P6																
Inhibit P7																
Inhibit P8																
Call Phs1																
Call Phs2																
Redirect P Calls From 1																
Redirect P Calls To 1																
Redirect P Calls From 2																
Redirect P Calls To 2																
Redirect P Calls From 3																
Redirect P Calls To 3																
Redirect P Calls From 4																
Redirect P Calls To 4																

Prepared By / Date

Reviewed By / Date

Station : 71 - Quebec & Timberline/Trailhead (Standard File)

Ring Sequence [1.2.4]

Ring	P1	P2	P3	P4	P5	P6	P7	P8
Ring 1	1	2	3	4				
Ring 2	5	6	7	8				
Ring 3								
Ring 4								

Unit Parameters [1.2.1]

StartUp Flash	Auto Ped Clear	Red Revert	Local Flash Start	Allow < 3 sec Yel	Allow Skip Yel	MCE Timeout	Enable Run	Start Red Time	Phase Mode	Startup Calls	Diamond Mode	Stop Time Over Preempt	Free Ring Sequence	Clearance Decide	Min Ped Clear Time	RingAlgo			
	OFF	5	RST	OFF	OFF		ON	6	STD8	OFF	4PH	OFF	1	OFF	OFF				

Alarms, Parameters [1.4.1]

Auto Flash Parameter

Yellow	Red	Mode	Source
	60		

Detector, Vehicle Parameters 1-16 [5.1]

Detector #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Yellow Lock																
Red Lock																
Extend	ON	ON	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON	ON
Added Initial																
Call	ON	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON	ON	ON
Call Phase	1	2	2	2	2	2	3	4	4	4	4	4	1	3	5	6
Switch Phase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Time	0	0	0	0	0	0	0	0	7.5	0	0	0	0	0	0	0

Detector, Vehicle Parameters 17-32 [5.1]

Detector #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Yellow Lock																
Red Lock																
Extend	ON	ON	ON		ON	ON	ON	ON	ON		ON	ON				
Added Initial																
Call	ON	ON		ON	ON	ON	ON	ON		ON	ON	ON				
Call Phase	6	6	6	6	7	8	8	8	8	8	5	7	0	0	0	0
Switch Phase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Time	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0

Detector, Ped Detectors 1-16 [5.4]

Detector	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phase	0	2	0	4	0	6	0	8								
No Activity	0	0	0	0	0	0	0	0								
Max Presence	15	15	15	15	15	15	15	15								
Erratic Cnt	0	0	0	0	0	0	0	0								

Channels/SDLC, Assign to Phases [1.8.1]

Channel/SDLC +, Assign to Phases [1.8.4]

Overlap General Parameters [1.5.1]

Overlap Program Parameters [1.5.2.1]

Overlap Conflict Parameters+ [1.5.2.2]

Overlap Program Parameters+ [1.5.2.3]

[illegible]

Station : 71 - Quebec & Timberline/Trailhead (Standard File)

Preemption Times[3.1]/Phases[3.2]/Options[3.3]

Channel	1	2	3	4	5	6
Lock Input	ON	ON	ON	ON	ON	ON
Override Auto Flash	ON	ON				
Override Higher Preempt	ON	ON				
Flash in Dwell						
Link to Preempt	0	0	0	0	0	0
Delay	0	0	0	0	0	0
Min Duration	0	0	5	5	5	5
Min Green	0	0	5	5	5	5
Min Walk	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Track Green	0	0	0	0	0	0
Min Dwell	0	0	0	0	0	0
Max Presence	0	0	120	120	120	120
Track Veh 1	0	0	0	0	0	0
Track Veh 2	0	0	0	0	0	0
Track Veh 3	0	0	0	0	0	0
Track Veh 4	0	0	0	0	0	0
Dwell Cyc Veh 1	0	0	2	4	1	8
Dwell Cyc Veh 2	0	0	5	0	6	0
Dwell Cyc Veh 3	0	0	0	0	0	0
Dwell Cyc Veh 4	0	0	0	0	0	0
Dwell Cyc Veh 5	0	0	0	0	0	0
Dwell Cyc Veh 6	0	0	0	0	0	0
Dwell Cyc Veh 7	0	0	0	0	0	0
Dwell Cyc Veh 8	0	0	0	0	0	0
Dwell Cyc Veh 9	0	0	0	0	0	0
Dwell Cyc Veh 10	0	0	0	0	0	0
Dwell Cyc Veh 11	0	0	0	0	0	0
Dwell Cyc Veh 12	0	0	0	0	0	0
Dwell Cyc Ped1	0	0	0	0	0	0
Dwell Cyc Ped2	0	0	0	0	0	0
Dwell Cyc Ped3	0	0	0	0	0	0
Dwell Cyc Ped4	0	0	0	0	0	0
Dwell Cyc Ped5	0	0	0	0	0	0
Dwell Cyc Ped6	0	0	0	0	0	0
Dwell vPed7	0	0	0	0	0	0
Dwell Cyc Ped8	0	0	0	0	0	0
Exit 1	0	0	4	0	4	0
Exit 2	0	0	8	0	8	0
Exit 3	0	0	0	0	0	0
Exit 4	0	0	0	0	0	0

Preemption Times+[3.4]/Overlaps+[3.5]/Options+[3.6]

Preempt	1	2	3	4	5	6
Enable			ON	ON	ON	ON
Type	RAIL	RAIL	EMERG	EMERG	EMERG	EMERG
Skip Track						
Volt Mon Flash						
Coord in Preempt						
Return Max/Min	MAX	MAX	MAX	MAX	MAX	MAX
Extend Dwell	0	0	0	0	0	0
Pattern	0	0	0	0	0	0
Output Mode	TS2	TS2	TS2	TS2	TS2	TS2
Track Over 1	0	0	0	0	0	0
Track Over 2	0	0	0	0	0	0
Track Over 3	0	0	0	0	0	0
Track Over 4	0	0	0	0	0	0
Track Over 5	0	0	0	0	0	0
Track Over 6	0	0	0	0	0	0
Track Over 7	0	0	0	0	0	0
Track Over 8	0	0	0	0	0	0
Track Over 9	0	0	0	0	0	0
Track Over 10	0	0	0	0	0	0
Track Over 11	0	0	0	0	0	0
Track Over 12	0	0	0	0	0	0
DwellCyc Over 1	0	0	0	0	0	0
DwellCyc Over 2	0	0	0	0	0	0
DwellCyc Over 3	0	0	0	0	0	0
DwellCyc Over 4	0	0	0	0	0	0
DwellCyc Over 5	0	0	0	0	0	0
DwellCyc Over 6	0	0	0	0	0	0
DwellCyc Over 7	0	0	0	0	0	0
DwellCyc Over 8	0	0	0	0	0	0
DwellCyc Over 9	0	0	0	0	0	0
DwellCyc Over 10	0	0	0	0	0	0
DwellCyc Over 11	0	0	0	0	0	0
DwellCyc Over 12	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Yellow	0	0	0	0	0	0
Red	0	0	0	0	0	0
Return Max	0	0	0	0	0	0

Preemption Adv Times[3.8]/Init Dwell [3.9]

Preempt	1	2	3	4	5	6
All Red B4 Preempt						
Reset Ext Dwell						
Reservice Preempt						
End Dwell						
DsblDwellCalls						
Enter Yellow Change	25.5	25.5	25.5	25.5	25.5	25.5
Enter Red Clear	25.5	25.5	25.5	25.5	25.5	25.5
Track Yellow Change	25.5	25.5	25.5	25.5	25.5	25.5
Track Red Clear	25.5	25.5	25.5	25.5	25.5	25.5
Dynamic Exit Threshold	0	0	0	0	0	0
Initial Dwell Phase 1	0	0	0	0	0	0
Initial Dwell Phase 2	0	0	0	0	0	0
Initial Dwell Phase 3	0	0	0	0	0	0
Initial Dwell Phase 4	0	0	0	0	0	0
Ped 1	0	0	0	0	0	0
Ped 2	0	0	0	0	0	0
Ped 3	0	0	0	0	0	0
Ped 4	0	0	0	0	0	0
Initial Dwell Overlap 1	0	0	0	0	0	0
Initial Dwell Overlap 2	0	0	0	0	0	0
Initial Dwell Overlap 3	0	0	0	0	0	0
Initial Dwell Overlap 4	0	0	0	0	0	0
Initial Dwell Overlap 5	0	0	0	0	0	0
Initial Dwell Overlap 6	0	0	0	0	0	0
Initial Dwell Overlap 7	0	0	0	0	0	0
Initial Dwell Overlap 8	0	0	0	0	0	0
Initial Dwell Overlap 9	0	0	0	0	0	0
Initial Dwell Overlap 10	0	0	0	0	0	0
Initial Dwell Overlap 11	0	0	0	0	0	0
Initial Dwell Overlap 12	0	0	0	0	0	0
Initial Dwell Overlap 13	0	0	0	0	0	0
Initial Dwell Overlap 14	0	0	0	0	0	0
Initial Dwell Overlap 15	0	0	0	0	0	0

Coordination, Modes, + [2.1]
Modes

Operational	Correct	Maximum	Force-Off
	SHRT/LNG	MAX INH	FLOAT

Coordination, Pattern 1-16 [2.4]

Coordination, Pattern 17-32 [2.4]

Coordination, Pattern+ 1-8 [2.5]

[illegible]

Station : 71 - Quebec & Timberline/Trailhead (Standard File)

Coordination, Pattern+ 9-16 [2.5]

Pattern	9	10	11	12	13	14	15	16
Short	10	10	10	10	10	10	10	10
Long	34	34	34	34	34	34	34	34
Dwell								
No Short P 1								
No Short P 2								
No Short P 3								
No Short P 4								
Early Yield								
Offset	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN
CNA								
Max 2								
Float								
Min Veh Perm								
Min Ped Perm								
Percentage								
MI								
Ret Hold	ON	ON	ON	ON	ON	ON	ON	ON
ASC								
Ph Opt Table								
Ph Time Table								
Det Grp								
Call Inh								
Olp Off 1								
Olp Off 2								
Olp Off 3								
Olp Off 4								
Olp Off 5								
Olp Off 6								
Olp Off 7								
Olp Off 8								
Dia Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT
Force Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT

Coordination, Pattern+ 17 - 24 [2.5]

Pattern	17	18	19	20	21	22	23	24
Short	10	10	10	10	10	10	10	10
Long	34	34	34	34	34	34	34	34
Dwell								
No Short P 1								
No Short P 2								
No Short P 3								
No Short P 4								
Early Yield								
Offset	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN	ENDGRN
CNA								
Max 2								
Float								
Min Veh Perm								
Min Ped Perm								
Percentage								
MI								
Ret Hold	ON	ON	ON	ON	ON	ON	ON	ON
ASC								
Ph Opt Table								
Ph Time Table								
Det Grp								
Call Inh								
Olp Off 1								
Olp Off 2								
Olp Off 3								
Olp Off 4								
Olp Off 5								
Olp Off 6								
Olp Off 7								
Olp Off 8								
Dia Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT
Force Mode	DFT	DFT	DFT	DFT	DFT	DFT	DFT	DFT

Coordination, Splits [2.7.1]

[illegible]

Station : 71 - Quebec & Timberline/Trailhead (Standard File)

11/27/2024 11:05:05 AM

[illegible]

11/27/2024 11:05:05 AM

[illegible][illegible][illegible][illegible][illegible][illegible]

TB Coor, Advanced Scheduler [4.3]

TB Coor, Day Plan [4.4][illegible]

Station : 71 - Quebec & Timberline/Trailhead (Standard File)

11/27/2024 11:05:05 AM

[illegible]

Station : 71 - Quebec & Timberline/Trailhead (Standard File)

TB Coor, Action Table [4.5]

Action	Pattern	Aux 1	Aux 2	Aux 3	Special 1	Special 2	Special 3	Special 4	Special 5	Special 6	Special 7	Special 8
1	1				0	0						
2	2				0	0						
3	3				0	0						
4	4				0	0						
5	5				0	0						
6	6				0	0						
7	7				0	0						
8	8				0	0						
9	9				0	0						
10	10				0	0						
11	11				0	0						
12	12				0	0						
13	13				0	0						
14	14				0	0						
15	15				0	0						
16	16				0	0						
17	17				0	0						
18	18				0	0						
19	19				0	0						
20	20				0	0						
21	21				0	0						
22	22				0	0						
23	23				0	0						
24	24				0	0						
25	25				0	0						
26	26				0	0						
27	27				0	0						
28	28				0	0						
29	29				0	0						
30	30				0	0						
31	31				0	0						
32	32				0	0						
33					0	0						
34					0	0						
35					0	0						
36					0	0						
37					0	0						
38					0	0						
39					0	0						
40					0	0						
41					0	0						
42					0	0						
43					0	0						
44					0	0						
45					0	0						
46					0	0						
47					0	0						
48					0	0						
49					0	0						
50					0	0						
51					0	0						
52					0	0						
53					0	0						
54					0	0						
55					0	0						
56					0	0						
57					0	0						
58					0	0						
59					0	0						
60					0	0						
61					0	0						
62					0	0						
63					0	0						
64					0	0						
99	254				0	0						
100	255				0	0						

Alternate Phase Program 1, Interval Times [1.1.6.1]

Alternate Phase Program 2, Interval Times [1.1.6.1]

[illegible]

Detector Alternate Program 1, Vehicle Parameters [5.5.1]

Detector Alternate Program 2, Vehicle Parameters [5.5.1]

User Input map [1.8.9.1]

User Output map [1.8.9.2]

[illegible]



Appendix D Existing Level of Service Reports

Lanes, Volumes, Timings

157: University Blvd & Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	28	48	35	25	129	37	1154	50	57	864	85
Future Volume (vph)	150	28	48	35	25	129	37	1154	50	57	864	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	265		0	90		90	165		0	175		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850			0.850		0.994			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5055	0	1770	5019	0
Flt Permitted	0.738			0.736			0.141			0.118		
Satd. Flow (perm)	1375	1863	1583	1371	1863	1583	263	5055	0	220	5019	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			114			154		6			16	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		132			1887			1051			708	
Travel Time (s)		3.0			42.9			23.9			16.1	
Peak Hour Factor	0.87	0.87	0.87	0.84	0.84	0.84	0.94	0.94	0.94	0.86	0.86	0.86
Adj. Flow (vph)	172	32	55	42	30	154	39	1228	53	66	1005	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	32	55	42	30	154	39	1281	0	66	1104	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	9.5	38.0	38.0	9.5	37.0	37.0	9.5	31.0		9.5	31.0	
Total Split (s)	15.0	35.0	35.0	15.0	30.0	30.0	15.0	40.0		15.0	40.0	
Total Split (%)	14.3%	33.3%	33.3%	14.3%	28.6%	28.6%	14.3%	38.1%		14.3%	38.1%	
Maximum Green (s)	11.0	30.0	30.0	11.0	25.0	25.0	11.0	34.0		11.0	34.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		28.0	28.0		27.0	27.0		10.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	42.0	30.0	30.0	42.0	30.0	30.0	47.0	34.0		47.0	34.0	
Actuated g/C Ratio	0.40	0.29	0.29	0.40	0.29	0.29	0.45	0.32		0.45	0.32	
v/c Ratio	0.29	0.06	0.10	0.07	0.06	0.27	0.14	0.78		0.25	0.67	

Lanes, Volumes, Timings

157: University Blvd & Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	20.0	27.8	0.4	17.5	27.7	6.0	15.6	36.0		17.1	32.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	20.0	27.8	0.4	17.5	27.7	6.0	15.6	36.0		17.1	32.7	
LOS	C	C	A	B	C	A	B	D		B	C	
Approach Delay	16.8			11.0			35.4			31.8		
Approach LOS	B			B			D			C		
Queue Length 50th (ft)	70	16	0	16	15	0	13	282		23	230	
Queue Length 95th (ft)	112	37	0	34	35	38	31	338		45	264	
Internal Link Dist (ft)	52			1807			971			628		
Turn Bay Length (ft)	265			90			165			175		
Base Capacity (vph)	591	532	533	590	532	562	275	1640		260	1636	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.29	0.06	0.10	0.07	0.06	0.27	0.14	0.78		0.25	0.67	

Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 54.5 (52%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 30.5

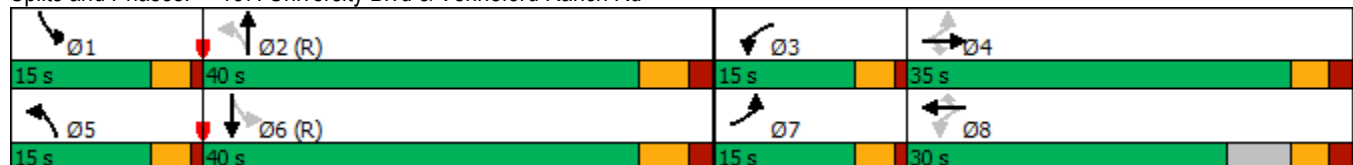
Intersection LOS: C

Intersection Capacity Utilization 55.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 157: University Blvd & Venneford Ranch Rd



Lanes, Volumes, Timings
170: Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	15	114	34	11	14	119	744	42	10	440	85
Future Volume (vph)	161	15	114	34	11	14	119	744	42	10	440	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	40		0	190		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.867			0.916			0.992			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1615	0	1770	1706	0	1770	3511	0	1770	3454	0
Flt Permitted	0.736			0.518			0.313			0.328		
Satd. Flow (perm)	1371	1615	0	965	1706	0	583	3511	0	611	3454	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		178			18			11			28	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1826			89			580			433	
Travel Time (s)		41.5			2.0			13.2			9.8	
Peak Hour Factor	0.64	0.64	0.64	0.79	0.79	0.79	0.91	0.91	0.91	0.84	0.84	0.84
Adj. Flow (vph)	252	23	178	43	14	18	131	818	46	12	524	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	252	201	0	43	32	0	131	864	0	12	625	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	26.5	26.5		22.5	22.5		9.5	31.0		31.0	31.0	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		45.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		47.4%	47.4%	
Maximum Green (s)	26.0	26.0		26.0	26.0		16.0	39.0		39.0	39.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.5		4.5	4.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	6.0		6.0	6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Walk Time (s)	5.0	5.0						5.0		5.0	5.0	
Flash Dont Walk (s)	17.0	17.0						8.5		5.5	5.5	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)	26.0	26.0		26.0	26.0		61.0	59.0		39.0	39.0	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.64	0.62		0.41	0.41	
v/c Ratio	0.67	0.35		0.16	0.07		0.23	0.40		0.05	0.44	

Lanes, Volumes, Timings

170: Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	40.9	7.8		28.3	15.9		7.6	9.6		17.7	20.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.9	7.8		28.3	15.9		7.6	9.6		17.7	20.3	
LOS	D	A		C	B		A	A		B	C	
Approach Delay		26.2			23.0			9.3			20.2	
Approach LOS		C			C			A			C	
Queue Length 50th (ft)	135	10		20	6		28	124		4	132	
Queue Length 95th (ft)	143	19		41	24		49	161		15	164	
Internal Link Dist (ft)		1746			9			500			353	
Turn Bay Length (ft)	150			40			190			100		
Base Capacity (vph)	375	571		264	479		574	2184		250	1434	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.67	0.35		0.16	0.07		0.23	0.40		0.05	0.44	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 16.6

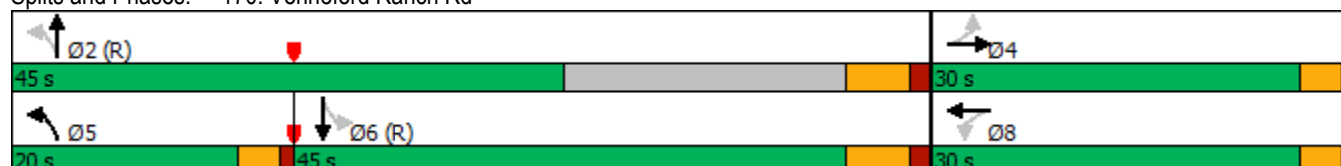
Intersection LOS: B

Intersection Capacity Utilization 72.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 170: Venneford Ranch Rd



Lanes, Volumes, Timings
190: Quebec St & Timberline

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	10	8	101	12	137	3	1431	94	82	661	6
Future Volume (vph)	21	10	8	101	12	137	3	1431	94	82	661	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500		0	370		0	235		0	305		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Frt		0.932				0.850		0.991			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1736	0	1770	1863	1583	1770	3507	0	1770	5080	0
Flt Permitted	0.748			0.743			0.318			0.091		
Satd. Flow (perm)	1393	1736	0	1384	1863	1583	592	3507	0	170	5080	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				167		9			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2804			191			257			979	
Travel Time (s)		63.7			4.3			5.8			22.3	
Peak Hour Factor	0.81	0.81	0.81	0.82	0.82	0.82	0.94	0.94	0.94	0.86	0.86	0.86
Adj. Flow (vph)	26	12	10	123	15	167	3	1522	100	95	769	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	22	0	123	15	167	3	1622	0	95	776	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	37.0	37.0		10.0	10.0	10.0	9.0	31.0		9.0	31.0	
Total Split (s)	30.0	30.0		30.0	30.0	30.0	15.0	50.0		15.0	50.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%	31.6%	15.8%	52.6%		15.8%	52.6%	
Maximum Green (s)	25.0	25.0		25.0	25.0	25.0	11.0	44.0		11.0	44.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.5		3.0	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	1.5		1.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Walk Time (s)	5.0	5.0						5.0			5.0	
Flash Dont Walk (s)	27.0	27.0						11.5			11.5	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	25.0	25.0		25.0	25.0	25.0	57.0	44.0		57.0	44.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26	0.26	0.60	0.46		0.60	0.46	
v/c Ratio	0.07	0.05		0.34	0.03	0.31	0.01	1.00		0.33	0.33	

Lanes, Volumes, Timings
190: Quebec St & Timberline

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	27.0	18.7		31.5	26.3	6.2	6.3	47.6		6.6	16.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	27.0	18.7		31.5	26.3	6.2	6.3	47.6		6.6	16.7	
LOS	C	B		C	C	A	A	D		A	B	
Approach Delay	23.2			17.4			47.5			15.6		
Approach LOS	C			B			D			B		
Queue Length 50th (ft)	12	5		60	7	0	1	493		13	143	
Queue Length 95th (ft)	29	21		100	20	36	4	#675		20	164	
Internal Link Dist (ft)	2724			111			177			899		
Turn Bay Length (ft)	500			370			235			305		
Base Capacity (vph)	366	464		364	490	539	491	1629		287	2353	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.07	0.05		0.34	0.03	0.31	0.01	1.00		0.33	0.33	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 45 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 34.1

Intersection LOS: C

Intersection Capacity Utilization 71.9%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 190: Quebec St & Timberline



Lanes, Volumes, Timings
196: Quebec St & Collegiate Dr

12/19/2024

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	103	105	122	1456	656	96
Future Volume (vph)	103	105	122	1456	656	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	90	0	320			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Frt		0.850			0.981	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	4989	0
Flt Permitted	0.950		0.242			
Satd. Flow (perm)	1770	1583	451	5085	4989	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		223			38	
Link Speed (mph)	30			30	30	
Link Distance (ft)	245			979	2909	
Travel Time (s)	5.6			22.3	66.1	
Peak Hour Factor	0.47	0.47	0.93	0.93	0.83	0.83
Adj. Flow (vph)	219	223	131	1566	790	116
Shared Lane Traffic (%)						
Lane Group Flow (vph)	219	223	131	1566	906	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60	60	60			60
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Minimum Split (s)	34.0	34.0	9.0	31.0	31.0	
Total Split (s)	30.0	30.0	15.0	65.0	50.0	
Total Split (%)	31.6%	31.6%	15.8%	68.4%	52.6%	
Maximum Green (s)	25.0	25.0	11.0	59.0	44.0	
Yellow Time (s)	3.0	3.0	3.0	4.5	4.5	
All-Red Time (s)	2.0	2.0	1.0	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Walk Time (s)	5.0	5.0			5.0	
Flash Dont Walk (s)	24.0	24.0			11.5	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	25.0	25.0	61.0	59.0	44.0	
Actuated g/C Ratio	0.26	0.26	0.64	0.62	0.46	
v/c Ratio	0.47	0.38	0.30	0.50	0.39	

Lanes, Volumes, Timings
196: Quebec St & Collegiate Dr

12/19/2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	33.4	6.1	3.3	6.6	16.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.4	6.1	3.3	6.6	16.5	
LOS	C	A	A	A	B	
Approach Delay	19.6			6.3	16.5	
Approach LOS	B			A	B	
Queue Length 50th (ft)	111	0	17	169	120	
Queue Length 95th (ft)	85	0	m17	m160	137	
Internal Link Dist (ft)	165			899	2829	
Turn Bay Length (ft)	90		320			
Base Capacity (vph)	465	580	442	3158	2331	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.47	0.38	0.30	0.50	0.39	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 75

Control Type: Pretimed

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 11.3

Intersection LOS: B

Intersection Capacity Utilization 45.8%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 196: Quebec St & Collegiate Dr



Lanes, Volumes, Timings

157: University Blvd & Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	22	51	27	55	110	57	1350	29	112	1072	113
Future Volume (vph)	131	22	51	27	55	110	57	1350	29	112	1072	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	265		0	90		90	165		0	175		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850			0.850		0.997			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5070	0	1770	5014	0
Flt Permitted	0.719			0.740			0.118			0.118		
Satd. Flow (perm)	1339	1863	1583	1378	1863	1583	220	5070	0	220	5014	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			114			118		3			18	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		132			1887			1051			708	
Travel Time (s)		3.0			42.9			23.9			16.1	
Peak Hour Factor	0.81	0.81	0.81	0.93	0.93	0.93	0.95	0.95	0.95	0.91	0.91	0.91
Adj. Flow (vph)	162	27	63	29	59	118	60	1421	31	123	1178	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	162	27	63	29	59	118	60	1452	0	123	1302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	9.0	40.0	40.0	9.0	39.0	39.0	9.0	31.0		9.0	31.0	
Total Split (s)	15.0	35.0	35.0	15.0	30.0	30.0	15.0	40.0		15.0	40.0	
Total Split (%)	14.3%	33.3%	33.3%	14.3%	28.6%	28.6%	14.3%	38.1%		14.3%	38.1%	
Maximum Green (s)	11.0	30.0	30.0	11.0	25.0	25.0	11.0	34.0		11.0	34.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		28.0	28.0		27.0	27.0		10.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	42.0	30.0	30.0	42.0	30.0	30.0	47.0	34.0		47.0	34.0	
Actuated g/C Ratio	0.40	0.29	0.29	0.40	0.29	0.29	0.45	0.32		0.45	0.32	
v/c Ratio	0.28	0.05	0.12	0.05	0.11	0.22	0.23	0.88		0.47	0.80	

Existing PM 4:45 pm 11/05/2024

Synchro 11 Report

Page 1

Lanes, Volumes, Timings

157: University Blvd & Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	19.8	27.7	1.2	17.3	28.5	6.4	16.8	41.3		22.0	36.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	19.8	27.7	1.2	17.3	28.5	6.4	16.8	41.3		22.0	36.3	
LOS	B	C	A	B	C	A	B	D		C	D	
Approach Delay	16.0			14.3			40.3			35.0		
Approach LOS	B			B			D			D		
Queue Length 50th (ft)	66	13	0	11	29	0	21	335		44	286	
Queue Length 95th (ft)	98	31	0	28	61	42	44	398		81	344	
Internal Link Dist (ft)	52			1807			971			628		
Turn Bay Length (ft)	265			90			165			175		
Base Capacity (vph)	580	532	533	592	532	536	260	1643		260	1635	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.28	0.05	0.12	0.05	0.11	0.22	0.23	0.88		0.47	0.80	

Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 54.5 (52%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 34.7

Intersection LOS: C

Intersection Capacity Utilization 59.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 157: University Blvd & Venneford Ranch Rd

			
Ø1	Ø2 (R)	Ø3	Ø4
15 s	40 s	15 s	35 s
			
Ø5	Ø6 (R)	Ø7	Ø8
15 s	40 s	15 s	30 s

Lanes, Volumes, Timings
170: Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	19	133	34	10	25	85	699	32	17	761	117
Future Volume (vph)	116	19	133	34	10	25	85	699	32	17	761	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	40		0	190		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.869			0.894			0.993			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1619	0	1770	1665	0	1770	3514	0	1770	3468	0
Flt Permitted	0.730			0.511			0.138			0.348		
Satd. Flow (perm)	1360	1619	0	952	1665	0	257	3514	0	648	3468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		222			29			10			29	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1826			89			580			433	
Travel Time (s)		41.5			2.0			13.2			9.8	
Peak Hour Factor	0.60	0.60	0.60	0.86	0.86	0.86	0.91	0.91	0.91	0.82	0.82	0.82
Adj. Flow (vph)	193	32	222	40	12	29	93	768	35	21	928	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	193	254	0	40	41	0	93	803	0	21	1071	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	26.0	26.0		22.5	22.5		9.5	31.0		31.0	31.0	
Total Split (s)	26.0	26.0		22.5	22.5		9.5	31.0		31.0	31.0	
Total Split (%)	39.1%	39.1%		33.8%	33.8%		14.3%	46.6%		46.6%	46.6%	
Maximum Green (s)	22.0	22.0		18.5	18.5		5.5	25.0		25.0	25.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.5		4.5	4.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	6.0		6.0	6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Walk Time (s)	5.0	5.0						5.0		5.0	5.0	
Flash Dont Walk (s)	17.0	17.0						8.5		5.5	5.5	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)	22.0	22.0		22.0	22.0		36.5	34.5		25.0	25.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.55	0.52		0.38	0.38	
v/c Ratio	0.43	0.37		0.13	0.07		0.35	0.44		0.09	0.81	

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Lanes, Volumes, Timings
170: Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	21.1	5.6		17.0	8.6		10.9	10.8		14.6	24.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.1	5.6		17.0	8.6		10.9	10.8		14.6	24.3	
LOS	C	A		B	A		B	B		B	C	
Approach Delay		12.2			12.7			10.8			24.1	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	60	9		11	3		16	97		5	195	
Queue Length 95th (ft)	69	13		30	20		35	136		17	232	
Internal Link Dist (ft)		1746			9			500			353	
Turn Bay Length (ft)	150			40			190			100		
Base Capacity (vph)	449	684		314	570		266	1827		243	1321	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.43	0.37		0.13	0.07		0.35	0.44		0.09	0.81	

Intersection Summary

Area Type: Other

Cycle Length: 66.5

Actuated Cycle Length: 66.5

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

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 16.9

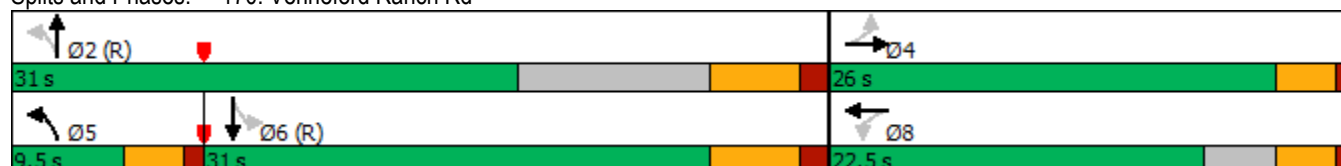
Intersection LOS: B

Intersection Capacity Utilization 71.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 170: Venneford Ranch Rd



Lanes, Volumes, Timings
190: Quebec St & Timberline

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	8	140	7	126	12	1108	99	131	1277	12
Future Volume (vph)	16	5	8	140	7	126	12	1108	99	131	1277	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500		0	370		0	235		0	305		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Frt		0.908				0.850		0.988			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1691	0	1770	1863	1583	1770	3497	0	1770	5080	0
Flt Permitted	0.752			0.746			0.105			0.106		
Satd. Flow (perm)	1401	1691	0	1390	1863	1583	196	3497	0	197	5080	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				170		13			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2804			191			257			979	
Travel Time (s)		63.7			4.3			5.8			22.3	
Peak Hour Factor	0.75	0.75	0.75	0.74	0.74	0.74	0.97	0.97	0.97	0.87	0.87	0.87
Adj. Flow (vph)	21	7	11	189	9	170	12	1142	102	151	1468	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	18	0	189	9	170	12	1244	0	151	1482	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	37.0	37.0		10.0	10.0	10.0	9.0	31.0		9.5	31.0	
Total Split (s)	30.0	30.0		30.0	30.0	30.0	15.0	50.0		15.0	50.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%	31.6%	15.8%	52.6%		15.8%	52.6%	
Maximum Green (s)	25.0	25.0		25.0	25.0	25.0	11.0	44.0		11.0	44.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.5		3.0	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	1.5		1.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Walk Time (s)	5.0	5.0						5.0			5.0	
Flash Dont Walk (s)	27.0	27.0						11.5			11.5	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	25.0	25.0		25.0	25.0	25.0	57.0	44.0		57.0	44.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26	0.26	0.60	0.46		0.60	0.46	
v/c Ratio	0.06	0.04		0.52	0.02	0.31	0.04	0.77		0.50	0.63	

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Lanes, Volumes, Timings
190: Quebec St & Timberline

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	26.9	17.1		35.8	26.1	6.2	6.5	24.9		11.8	20.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	26.9	17.1		35.8	26.1	6.2	6.5	24.9		11.8	20.5	
LOS	C	B		D	C	A	A	C		B	C	
Approach Delay	22.4			21.9			24.7			19.7		
Approach LOS	C			C			C			B		
Queue Length 50th (ft)	10	3		97	4	0	2	313		13	326	
Queue Length 95th (ft)	23	16		131	13	24	8	398		37	354	
Internal Link Dist (ft)	2724			111			177			899		
Turn Bay Length (ft)	500			370			235			305		
Base Capacity (vph)	368	453		365	490	541	299	1626		300	2353	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.06	0.04		0.52	0.02	0.31	0.04	0.77		0.50	0.63	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 45 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Pretimed

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 21.9

Intersection LOS: C

Intersection Capacity Utilization 68.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 190: Quebec St & Timberline



Lanes, Volumes, Timings
196: Quebec St & Collegiate Dr

12/19/2024

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	124	90	166	1298	59
Future Volume (vph)	89	124	90	166	1298	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	90	0	320			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Frt		0.850			0.993	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	5050	0
Flt Permitted	0.950		0.103			
Satd. Flow (perm)	1770	1583	192	5085	5050	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		233			10	
Link Speed (mph)	30			30	30	
Link Distance (ft)	245			979	2909	
Travel Time (s)	5.6			22.3	66.1	
Peak Hour Factor	0.42	0.42	0.96	0.96	0.94	0.94
Adj. Flow (vph)	212	295	94	173	1381	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	212	295	94	173	1444	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60	60	60			60
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Minimum Split (s)	34.0	34.0	9.5	31.0	31.0	
Total Split (s)	30.0	30.0	15.0	65.0	50.0	
Total Split (%)	31.6%	31.6%	15.8%	68.4%	52.6%	
Maximum Green (s)	25.0	25.0	11.0	59.0	44.0	
Yellow Time (s)	3.0	3.0	3.0	4.5	4.5	
All-Red Time (s)	2.0	2.0	1.0	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Walk Time (s)	5.0	5.0			5.0	
Flash Dont Walk (s)	24.0	24.0			11.5	
Pedestrian Calls (#/hr)	0	0			0	
Act Effect Green (s)	25.0	25.0	61.0	59.0	44.0	
Actuated g/C Ratio	0.26	0.26	0.64	0.62	0.46	
v/c Ratio	0.46	0.50	0.31	0.05	0.62	

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Lanes, Volumes, Timings
196: Quebec St & Collegiate Dr

12/19/2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	33.1	10.6	6.2	3.1	20.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.1	10.6	6.2	3.1	20.4	
LOS	C	B	A	A	C	
Approach Delay	20.0			4.2	20.4	
Approach LOS	C			A	C	
Queue Length 50th (ft)	107	29	15	9	229	
Queue Length 95th (ft)	73	0	m17	m10	277	
Internal Link Dist (ft)	165			899	2829	
Turn Bay Length (ft)	90		320			
Base Capacity (vph)	465	588	306	3158	2344	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.46	0.50	0.31	0.05	0.62	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 75

Control Type: Pretimed

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 18.4

Intersection LOS: B

Intersection Capacity Utilization 48.8%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 196: Quebec St & Collegiate Dr



Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	0	0	38	43	0
Future Vol, veh/h	2	0	0	38	43	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	50	68	68	52	52
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	0	56	83	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	139	83	-	0	-	0
Stage 1	83	-	-	-	-	-
Stage 2	56	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	854	976	0	-	-	0
Stage 1	940	-	0	-	-	0
Stage 2	967	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	854	976	-	-	-	-
Mov Cap-2 Maneuver	854	-	-	-	-	-
Stage 1	940	-	-	-	-	-
Stage 2	967	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.2	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT			
Capacity (veh/h)	-	854	-			
HCM Lane V/C Ratio	-	0.005	-			
HCM Control Delay (s)	-	9.2	-			
HCM Lane LOS	-	A	-			
HCM 95th %tile Q(veh)	-	0	-			

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	1	46	49	4
Future Vol, veh/h	1	0	1	46	49	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	25	69	69	41	41
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	1	67	120	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	194	125	130	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	69	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	795	926	1455	-	-	-
Stage 1	901	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	794	926	1455	-	-	-
Mov Cap-2 Maneuver	794	-	-	-	-	-
Stage 1	900	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.6	0.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1455	-	794	-	-	
HCM Lane V/C Ratio	0.001	-	0.005	-	-	
HCM Control Delay (s)	7.5	0	9.6	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	0	0	45	56	0
Future Vol, veh/h	4	0	0	45	56	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	50	44	44	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	0	0	102	80	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	182	80	-	0	-	0
Stage 1	80	-	-	-	-	-
Stage 2	102	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	807	980	0	-	-	0
Stage 1	943	-	0	-	-	0
Stage 2	922	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	807	980	-	-	-	-
Mov Cap-2 Maneuver	807	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.5	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT			
Capacity (veh/h)	-		807	-		
HCM Lane V/C Ratio	-		0.01	-		
HCM Control Delay (s)	-		9.5	-		
HCM Lane LOS	-		A	-		
HCM 95th %tile Q(veh)	-		0	-		

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	1	52	62	4
Future Vol, veh/h	0	0	1	52	62	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	25	43	43	69	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2	121	90	6
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	218	93	96	0	-	0
Stage 1	93	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	770	964	1498	-	-	-
Stage 1	931	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	769	964	1498	-	-	-
Mov Cap-2 Maneuver	769	-	-	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0.1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1498	-	-	-	-	
HCM Lane V/C Ratio	0.002	-	-	-	-	
HCM Control Delay (s)	7.4	0	0	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Intersection

Intersection Delay, s/veh 10.1

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	76	43	71	91	9	29	8	86	30	10	16
Future Vol, veh/h	14	76	43	71	91	9	29	8	86	30	10	16
Peak Hour Factor	0.69	0.69	0.69	0.76	0.76	0.76	0.45	0.45	0.45	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	110	62	93	120	12	64	18	191	40	13	21
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	10.5	10.4	9
HCM LOS	A	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	11%	42%	54%
Vol Thru, %	7%	57%	53%	18%
Vol Right, %	70%	32%	5%	29%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	123	133	171	56
LT Vol	29	14	71	30
Through Vol	8	76	91	10
RT Vol	86	43	9	16
Lane Flow Rate	273	193	225	75
Geometry Grp	1	1	1	1
Degree of Util (X)	0.355	0.262	0.316	0.111
Departure Headway (Hd)	4.682	4.89	5.061	5.358
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	760	725	702	673
Service Time	2.763	2.985	3.154	3.358
HCM Lane V/C Ratio	0.359	0.266	0.321	0.111
HCM Control Delay	10.4	9.7	10.5	9
HCM Lane LOS	B	A	B	A
HCM 95th-tile Q	1.6	1	1.4	0.4

Intersection

Intersection Delay, s/veh 9.4

Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	97	20	38	125	31	32	4	74	33	0	20
Future Vol, veh/h	23	97	20	38	125	31	32	4	74	33	0	20
Peak Hour Factor	0.71	0.71	0.71	0.84	0.84	0.84	0.63	0.63	0.63	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	137	28	45	149	37	51	6	117	44	0	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.5	9.8	9.1	8.7
HCM LOS	A	A	A	A

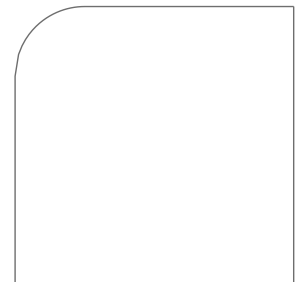
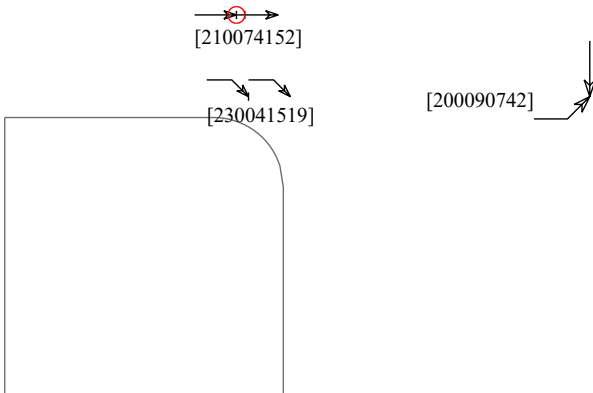
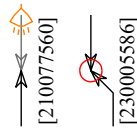
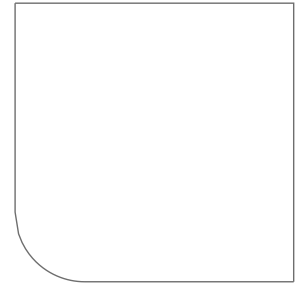
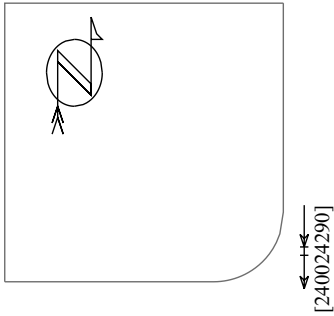
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	16%	20%	62%
Vol Thru, %	4%	69%	64%	0%
Vol Right, %	67%	14%	16%	38%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	140	194	53
LT Vol	32	23	38	33
Through Vol	4	97	125	0
RT Vol	74	20	31	20
Lane Flow Rate	175	197	231	71
Geometry Grp	1	1	1	1
Degree of Util (X)	0.227	0.26	0.302	0.099
Departure Headway (Hd)	4.684	4.745	4.702	5.066
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	761	751	760	702
Service Time	2.747	2.805	2.76	3.14
HCM Lane V/C Ratio	0.23	0.262	0.304	0.101
HCM Control Delay	9.1	9.5	9.8	8.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	1	1.3	0.3



Appendix E Crash Diagrams and Listings

6 Crashes

Clear



- ← Straight
- ←+ Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↗ Weaving
- ↗ Changing Ln
- ↘ Right turn
- ↙ Left turn
- ↪ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- 💡 Nighttime
- 🚫 DUI

- ◀ 3rd Vehicle
- ←M- Motorcycle
- ←○ Overturn

- Fixed objects:
- ☐ General
 - ☐ Public Obj
 - ☐ Animal
 - ☐ Private Obj

QUEBEC ST & COLLEGIATE DR

2019 - 2024

6 Crashes

Clear

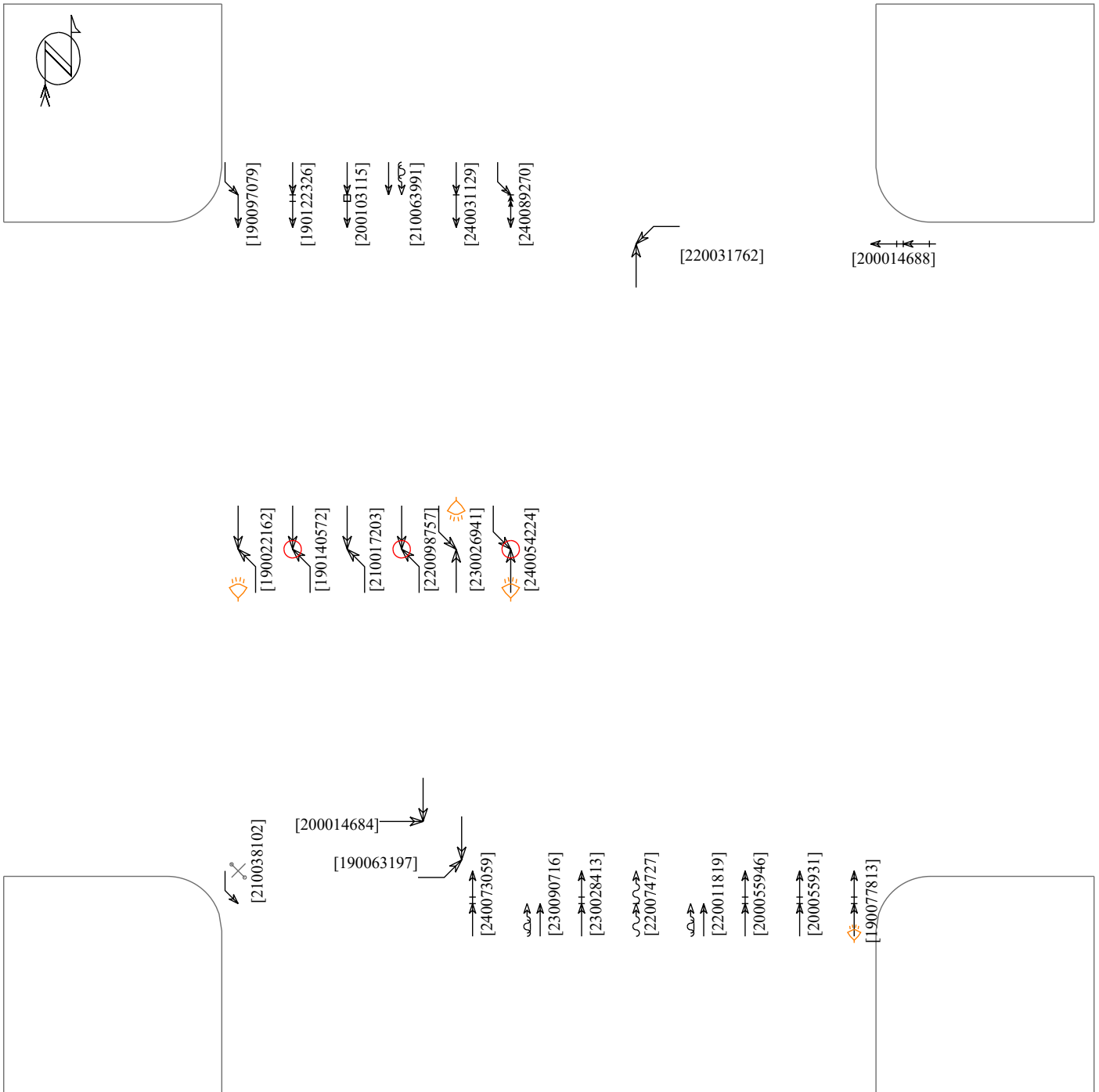
Casetrackingid	Accidenttime	Accidentdate	Primarystreet	Crossstreet	Onroadaddress	Numberinjured	Numberkilled	Harmfuleventl
200090742	3:55 pm	10/4/2020	QUEBEC ST	COLLEGIATE DR		0	0	Front to Side
210074152	7:20 am	9/12/2021	COLLEGIATE DR	QUEBEC ST		1	0	Front to Rear
210077560	11:00 pm	9/23/2021	QUEBEC ST	COLLEGIATE DR		0	0	Front to Front
230005586	3:14 pm	1/23/2023	QUEBEC ST	COLLEGIATE DR		1	0	Front to Front
230041519	3:54 pm	5/16/2023	COLLEGIATE DR	QUEBEC ST		0	0	Front to Rear
240024290	11:55 am	3/12/2024	QUEBEC ST	COLLEGIATE DR		0	0	Front to Rear

QUEBEC ST & TIMBERLINE RD

2019 - 2024

25 Crashes

Clear



← Straight
 ←+ Stopped
 ← Unknown
 ↔ Backing
 ↔ Overtaking
 ← Sideswipe

▭ Parked
 ← Weaving
 ← Changing Ln
 ↗ Right turn
 ↖ Left turn
 ↻ U-turn

× Pedestrian
 ⊗ Bicycle
 ○ Injury
 ● Fatality
 ☀ Nighttime
 ♪ DUI

◀ 3rd Vehicle
 ←-M- Motorcycle
 ←○ Overturn

Fixed objects:
 □ General ☒ Animal
 ☑ Public Obj ☒ Private Obj

Crash Magic Online 11/13/2024

QUEBEC ST & TIMBERLINE RD

2019 - 2024

25 Crashes

Clear

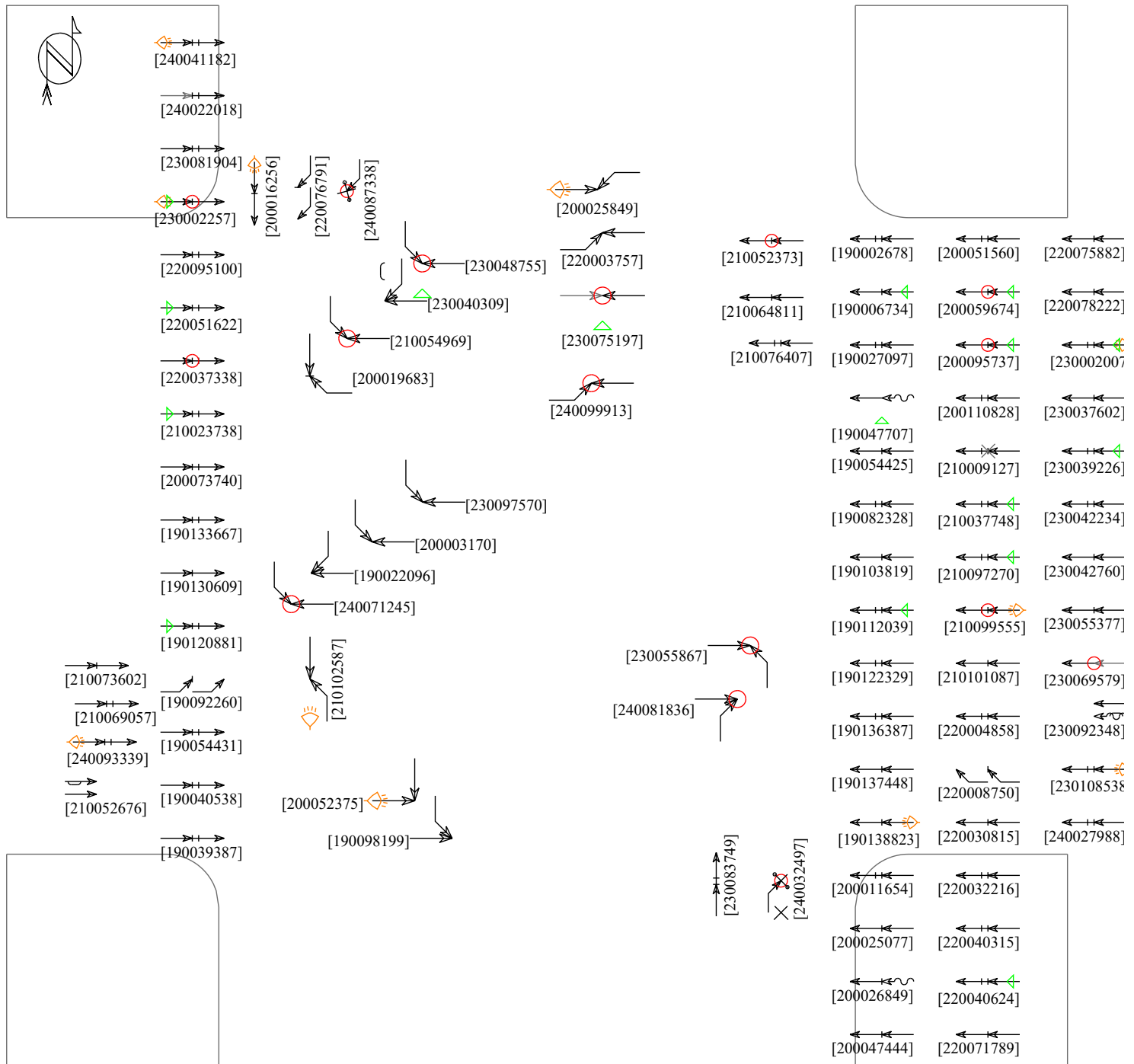
Casetrackingid	Accidenttime	Accidentdate	Primarystreet	Crossstreet	Onroadaddress	Numberinjured	Numberkilled	Harmfulevent1
190022162	5:46 pm	2/20/2019	QUEBEC ST	TRAILHEAD RD		0	0	Front to Side
190063197	7:35 am	5/30/2019	QUEBEC ST	TRAILHEAD RD		0	0	Front to Side
190077813	10:13 pm	7/4/2019	QUEBEC ST	TIMBERLINE RD		0	0	Front to Rear
190097079	3:04 pm	8/26/2019	QUEBEC ST	TIMBERLINE RD		0	0	Front to Side
190122326	5:20 pm	10/30/2019	QUEBEC ST	TIMBERLINE RD		0	0	Front to Rear
190140572	11:02 am	12/18/2019	QUEBEC ST	TRAILHEAD RD		1	0	Front to Side
200014684	12:30 pm	2/7/2020	QUEBEC ST	TIMBERLINE RD		0	0	Front to Front
200014688	12:59 pm	2/7/2020	TIMBERLINE RD	QUEBEC ST		0	0	Front to Rear
200055931	1:47 pm	6/11/2020	QUEBEC ST	TIMBERLINE RD		0	0	Front to Rear
200055946	1:47 pm	6/11/2020	QUEBEC ST	TIMBERLINE RD		0	0	Front to Rear
200103115	3:21 pm	11/17/2020	QUEBEC ST	TRAILHEAD RD		0	0	Curb
210017203	10:19 am	3/1/2021	QUEBEC ST	TRAILHEAD RD		0	0	Front to Side
210038102	6:18 pm	5/14/2021	QUEBEC ST	TRAILHEAD RD		0	0	Bicycle / Motorized Bicycle
210063991	3:40 pm	8/7/2021	QUEBEC ST	TIMBERLINE RD		0	0	Side to Side - Same Direction
220011819	12:35 pm	2/14/2022	QUEBEC ST	TIMBERLINE RD		0	0	Side to Side - Same Direction
220031762	5:31 pm	4/24/2022	TIMBERLINE RD	QUEBEC ST		0	0	Front to Side
220074727	3:40 pm	9/19/2022	QUEBEC ST	TIMBERLINE RD		0	0	Front to Rear
220098757	4:30 pm	12/16/2022	QUEBEC ST	TIMBERLINE RD		0	0	Front to Front
230026941	8:32 pm	3/30/2023	QUEBEC ST	TIMBERLINE RD		0	0	Front to Side
230028413	7:58 am	4/4/2023	QUEBEC ST	TIMBERLINE RD		0	0	Front to Rear
230090716	11:37 am	10/20/2023	QUEBEC ST	TIMBERLINE RD		0	0	Side to Side - Same Direction
240031129	2:25 pm	4/4/2024	QUEBEC ST	TIMBERLINE RD		0	0	Front to Rear
240054224	9:56 pm	6/10/2024	QUEBEC ST	TIMBERLINE RD		3	0	Front to Front
240073059	12:41 pm	8/5/2024	QUEBEC ST	TIMBERLINE RD		0	0	Front to Rear
240089270	12:25 pm	9/24/2024	QUEBEC ST	TIMBERLINE RD		0	0	Front to Rear

UNIVERSITY BLVD & CRESTHILL LN

2019 - 2024

89 Crashes

Clear



← Straight
 ←+ Stopped
 ← Unknown
 ↔ Backing
 ↔ Overtaking
 ← Sideswipe

▭ Parked
 ←~ Weaving
 ←~ Changing Ln
 ↘ Right turn
 ↙ Left turn
 ↻ U-turn

× Pedestrian
 ⊗ Bicycle
 ○ Injury
 ● Fatality
 ⚡ Nighttime
 🚔 DUI

◀ 3rd Vehicle
 ←M- Motorcycle
 ←○ Overturn

Fixed objects:
 □ General ☒ Animal
 ☑ Public Obj ☒ Private Obj

Crash Magic Online 11/14/2024

UNIVERSITY BLVD & CRESTHILL LN

2019 - 2024

89 Crashes

[Clear](#)

Casetrackingid	Accidenttime	Accidentdate	Primarystreet	Crossstreet	Onroadaddress	Numberinjured	Numberkilled	Harmfulevent1
190002678	2:49 pm	1/7/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190006734	3:20 pm	1/16/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190022096	2:54 pm	2/20/2019	CRESTHILL LN	UNIVERSITY BLVD		0	0	Front to Side
190027097	7:52 am	3/4/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190039387	7:25 am	4/2/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190040538	3:01 pm	4/4/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190047707	8:37 am	4/22/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Side
190054425	6:41 am	5/8/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190054431	7:24 am	5/8/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190082328	12:17 pm	7/17/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190092260	7:15 am	8/14/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190098199	7:10 pm	8/28/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Side
190103819	7:15 am	9/13/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190112039	5:35 pm	10/4/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190120881	11:10 am	10/26/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190122329	5:36 pm	10/30/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190130609	3:29 pm	11/21/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190133667	9:44 am	11/30/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190136387	12:40 pm	12/7/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190137448	3:57 pm	12/10/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
190138823	4:57 pm	12/13/2019	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
200003170	2:04 pm	1/9/2020	CRESTHILL LN	UNIVERSITY BLVD		0	0	Front to Side
200011654	2:55 pm	1/30/2020	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
200016256	5:47 pm	2/11/2020	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
200019683	3:23 pm	2/19/2020	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
200025077	7:14 am	3/4/2020	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
200025849	7:00 pm	3/5/2020	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Front

Casetrackingid	Accidenttime	Accidentdate	Primarystreet	Crossstreet	Onroadaddress	Numberinjured	Numberkilled	Harmfuleventl
200026849	4:24 pm	3/8/2020	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
200047444	5:34 pm	5/15/2020	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
200051560	12:00 pm	5/29/2020	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
200052375	9:00 pm	5/31/2020	CRESTHILL LN	UNIVERSITY BLVD		0	0	Front to Side
200059674	12:25 pm	6/23/2020	UNIVERSITY BLVD	CRESTHILL LN		1	0	Front to Rear
200073740	11:32 am	8/8/2020	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
200095737	8:40 am	10/21/2020	UNIVERSITY BLVD	CRESTHILL LN		1	0	Front to Rear
200110828	1:03 pm	12/15/2020	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
210009127	4:15 pm	2/1/2021	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
210023738	7:10 am	3/25/2021	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
210037748	2:50 pm	5/13/2021	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
210052373	11:10 am	6/29/2021	UNIVERSITY BLVD	CRESTHILL LN		2	0	Front to Rear
210052676	12:28 pm	6/30/2021	UNIVERSITY BLVD	CRESTHILL LN		0	0	Side to Side - Same Direction
210054969	1:30 pm	7/7/2021	CRESTHILL LN	UNIVERSITY BLVD		0	0	Front to Side
210064811	2:50 pm	8/10/2021	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
210069057	3:38 pm	8/25/2021	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
210073602	3:31 pm	9/10/2021	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
210076407	2:32 pm	9/20/2021	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
210097270	7:37 am	12/6/2021	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
210099555	5:11 pm	12/14/2021	UNIVERSITY BLVD	CRESTHILL LN		1	0	Front to Rear
210101087	4:27 pm	12/20/2021	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
210102587	9:46 pm	12/26/2021	CRESTHILL LN	UNIVERSITY BLVD		0	0	Front to Side
220003757	4:37 pm	1/16/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Side
220004858	4:37 pm	1/20/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
220008750	7:25 am	2/4/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
220030815	7:19 am	4/21/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
220032216	11:40 am	4/26/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
220037338	2:57 pm	5/13/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
220040315	3:14 pm	5/23/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
220040624	4:59 pm	5/24/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear

Casetrackingid	Accidenttime	Accidentdate	Primarystreet	Crossstreet	Onroadaddress	Numberinjured	Numberkilled	Harmfuleventl
220051622	8:35 am	6/30/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
220071789	5:15 pm	9/8/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
220075882	8:05 am	9/23/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
220076791	2:50 pm	9/26/2022	CRESTHILL LN	UNIVERSITY BLVD		0	0	Front to Rear
220078222	4:26 pm	9/30/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
220095100	4:08 pm	12/2/2022	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
230002007	5:41 pm	1/9/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
230002257	5:24 pm	1/10/2023	UNIVERSITY BLVD	CRESTHILL LN		1	0	Front to Rear
230037602	3:47 pm	5/3/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
230039226	5:12 pm	5/8/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
230040309	9:18 am	5/12/2023	CRESTHILL LN	UNIVERSITY BLVD		0	0	Side to Side - Same Direction
230042234	5:54 pm	5/18/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
230042760	1:53 pm	5/20/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
230048755	1:26 pm	6/8/2023	UNIVERSITY BLVD	CRESTHILL LN		1	0	Front to Side
230055377	6:50 pm	6/28/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
230055867	8:51 am	6/30/2023	UNIVERSITY BLVD	CRESTHILL LN		1	0	Front to Side
230069579	11:55 am	8/11/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Side
230075197	3:17 pm	8/29/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Side
230081904	12:57 pm	9/21/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
230083749	1:45 pm	9/27/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
230092348	7:48 am	10/26/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Side to Side - Same Direction
230097570	9:27 am	11/13/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Side
230108538	5:10 pm	12/20/2023	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
240022018	12:00 pm	3/5/2024	CRESTHILL LN	UNIVERSITY BLVD		0	0	Front to Rear
240027988	8:57 am	3/26/2024	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
240032497	3:30 pm	4/8/2024	CRESTHILL LN	UNIVERSITY BLVD		1	0	Bicycle / Motorized Bicycle
240041182	8:53 pm	5/3/2024	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
240071245	7:50 pm	7/30/2024	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Side
240081836	9:08 am	8/31/2024	CRESTHILL LN	UNIVERSITY BLVD		2	0	Front to Side
240087338	4:53 pm	9/17/2024	CRESTHILL LN	UNIVERSITY BLVD		1	0	Bicycle / Motorized Bicycle

Casetrackingid	Accidenttime	Accidentdate	Primarystreet	Crossstreet	Onroadaddress	Numberinjured	Numberkilled	Harmfuleventl
240093339	9:32 pm	10/7/2024	UNIVERSITY BLVD	CRESTHILL LN		0	0	Front to Rear
240099913	1:46 pm	10/29/2024	UNIVERSITY BLVD	CRESTHILL LN		1	0	Front to Front



Appendix F Projected Level of Service Reports

Lanes, Volumes, Timings

157: University Blvd & Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	28	48	138	25	129	37	1154	153	57	864	85
Future Volume (vph)	150	28	48	138	25	129	37	1154	153	57	864	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	265		0	90		90	165		0	175		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850			0.850		0.982			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	4994	0	1770	5019	0
Flt Permitted	0.738			0.736			0.141			0.118		
Satd. Flow (perm)	1375	1863	1583	1371	1863	1583	263	4994	0	220	5019	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			114			154		24			16	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		132			1887			1051			708	
Travel Time (s)		3.0			42.9			23.9			16.1	
Peak Hour Factor	0.87	0.87	0.87	0.84	0.84	0.84	0.94	0.94	0.94	0.86	0.86	0.86
Adj. Flow (vph)	172	32	55	164	30	154	39	1228	163	66	1005	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	32	55	164	30	154	39	1391	0	66	1104	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	9.5	38.0	38.0	9.5	37.0	37.0	9.5	31.0		9.5	31.0	
Total Split (s)	15.0	35.0	35.0	15.0	30.0	30.0	15.0	40.0		15.0	40.0	
Total Split (%)	14.3%	33.3%	33.3%	14.3%	28.6%	28.6%	14.3%	38.1%		14.3%	38.1%	
Maximum Green (s)	11.0	30.0	30.0	11.0	25.0	25.0	11.0	34.0		11.0	34.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		28.0	28.0		27.0	27.0		10.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	42.0	30.0	30.0	42.0	30.0	30.0	47.0	34.0		47.0	34.0	
Actuated g/C Ratio	0.40	0.29	0.29	0.40	0.29	0.29	0.45	0.32		0.45	0.32	
v/c Ratio	0.29	0.06	0.10	0.28	0.06	0.27	0.14	0.85		0.25	0.67	

Total AM 10:36 am 02/12/2024 Baseline

Synchro 11 Report

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Lanes, Volumes, Timings

157: University Blvd & Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	20.0	27.8	0.4	19.8	27.7	6.0	15.6	38.7		17.1	32.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	20.0	27.8	0.4	19.8	27.7	6.0	15.6	38.7		17.1	32.7	
LOS	C	C	A	B	C	A	B	D		B	C	
Approach Delay	16.8			14.4			38.1			31.8		
Approach LOS	B			B			D			C		
Queue Length 50th (ft)	70	16	0	67	15	0	13	312		23	230	
Queue Length 95th (ft)	112	37	0	103	35	38	31	374		45	264	
Internal Link Dist (ft)	52			1807			971			628		
Turn Bay Length (ft)	265			90			165			175		
Base Capacity (vph)	591	532	533	590	532	562	275	1633		260	1636	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.29	0.06	0.10	0.28	0.06	0.27	0.14	0.85		0.25	0.67	

Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 54.5 (52%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 31.5

Intersection LOS: C

Intersection Capacity Utilization 57.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 157: University Blvd & Venneford Ranch Rd

 Ø1	 Ø2 (R)	 Ø3	 Ø4
15 s	40 s	15 s	35 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
15 s	40 s	15 s	30 s

Lanes, Volumes, Timings
170: Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	15	132	34	11	14	137	744	42	10	440	85
Future Volume (vph)	161	15	132	34	11	14	137	744	42	10	440	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	40		0	190		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.865			0.916			0.992			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1611	0	1770	1706	0	1770	3511	0	1770	3454	0
Flt Permitted	0.736			0.472			0.313			0.328		
Satd. Flow (perm)	1371	1611	0	879	1706	0	583	3511	0	611	3454	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		206			18			11			28	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1826			89			580			433	
Travel Time (s)		41.5			2.0			13.2			9.8	
Peak Hour Factor	0.64	0.64	0.64	0.79	0.79	0.79	0.91	0.91	0.91	0.84	0.84	0.84
Adj. Flow (vph)	252	23	206	43	14	18	151	818	46	12	524	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	252	229	0	43	32	0	151	864	0	12	625	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	26.5	26.5		22.5	22.5		9.5	31.0		31.0	31.0	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	45.0		45.0	45.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%		21.1%	47.4%		47.4%	47.4%	
Maximum Green (s)	26.0	26.0		26.0	26.0		16.0	39.0		39.0	39.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.5		4.5	4.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	6.0		6.0	6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Walk Time (s)	5.0	5.0						5.0		5.0	5.0	
Flash Dont Walk (s)	17.0	17.0						8.5		5.5	5.5	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)	26.0	26.0		26.0	26.0		61.0	59.0		39.0	39.0	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.64	0.62		0.41	0.41	
v/c Ratio	0.67	0.39		0.18	0.07		0.26	0.40		0.05	0.44	

Lanes, Volumes, Timings
170: Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	40.9	7.6		28.8	15.9		7.9	9.6		17.7	20.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.9	7.6		28.8	15.9		7.9	9.6		17.7	20.3	
LOS	D	A		C	B		A	A		B	C	
Approach Delay		25.0			23.3			9.3			20.2	
Approach LOS		C			C			A			C	
Queue Length 50th (ft)	135	10		20	6		32	124		4	132	
Queue Length 95th (ft)	143	17		42	24		56	161		15	164	
Internal Link Dist (ft)		1746			9			500			353	
Turn Bay Length (ft)	150			40			190			100		
Base Capacity (vph)	375	590		240	479		574	2184		250	1434	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.67	0.39		0.18	0.07		0.26	0.40		0.05	0.44	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 16.4

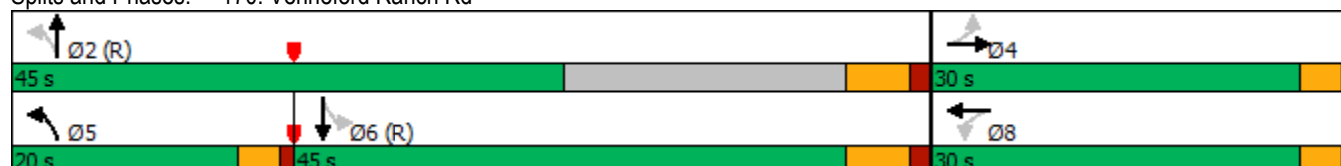
Intersection LOS: B

Intersection Capacity Utilization 72.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 170: Venneford Ranch Rd



Lanes, Volumes, Timings
190: Quebec St & Timberline

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	10	8	101	12	137	3	1386	94	82	656	6
Future Volume (vph)	21	10	8	101	12	137	3	1386	94	82	656	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500		0	370		0	235		0	305		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Frt		0.932				0.850		0.990			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1736	0	1770	1863	1583	1770	3504	0	1770	5080	0
Flt Permitted	0.748			0.743			0.321			0.091		
Satd. Flow (perm)	1393	1736	0	1384	1863	1583	598	3504	0	170	5080	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				167		10			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2804			191			257			979	
Travel Time (s)		63.7			4.3			5.8			22.3	
Peak Hour Factor	0.81	0.81	0.81	0.82	0.82	0.82	0.94	0.94	0.94	0.86	0.86	0.86
Adj. Flow (vph)	26	12	10	123	15	167	3	1474	100	95	763	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	22	0	123	15	167	3	1574	0	95	770	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	37.0	37.0		10.0	10.0	10.0	9.0	31.0		9.0	31.0	
Total Split (s)	30.0	30.0		30.0	30.0	30.0	15.0	50.0		15.0	50.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%	31.6%	15.8%	52.6%		15.8%	52.6%	
Maximum Green (s)	25.0	25.0		25.0	25.0	25.0	11.0	44.0		11.0	44.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.5		3.0	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	1.5		1.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Walk Time (s)	5.0	5.0						5.0			5.0	
Flash Dont Walk (s)	27.0	27.0						11.5			11.5	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	25.0	25.0		25.0	25.0	25.0	57.0	44.0		57.0	44.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26	0.26	0.60	0.46		0.60	0.46	
v/c Ratio	0.07	0.05		0.34	0.03	0.31	0.01	0.97		0.33	0.33	

Lanes, Volumes, Timings
190: Quebec St & Timberline

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	27.0	18.7		31.5	26.3	6.2	6.3	41.3		6.5	17.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	27.0	18.7		31.5	26.3	6.2	6.3	41.3		6.5	17.0	
LOS	C	B		C	C	A	A	D		A	B	
Approach Delay	23.2			17.4			41.2			15.9		
Approach LOS	C			B			D			B		
Queue Length 50th (ft)	12	5		60	7	0	1	467		12	147	
Queue Length 95th (ft)	29	21		100	20	36	4	#641		18	171	
Internal Link Dist (ft)	2724			111			177			899		
Turn Bay Length (ft)	500			370			235			305		
Base Capacity (vph)	366	464		364	490	539	494	1628		287	2353	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.07	0.05		0.34	0.03	0.31	0.01	0.97		0.33	0.33	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 45 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 30.5

Intersection LOS: C

Intersection Capacity Utilization 70.6%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 190: Quebec St & Timberline



Lanes, Volumes, Timings
193: Cresthill Ln & University Blvd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	1620	35	47	1291	26	74	37	116	9	11	235
Future Volume (vph)	194	1620	35	47	1291	26	74	37	116	9	11	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	620		0	390		0	90		0	0		150
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997				0.850		0.886				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5070	0	1770	5085	1583	1770	1650	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.750			0.464		
Satd. Flow (perm)	3433	5070	0	1770	5085	1583	1397	1650	0	864	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				117		112				247
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		382			3033			406			729	
Travel Time (s)		8.7			68.9			9.2			16.6	
Peak Hour Factor	0.93	0.93	0.93	0.89	0.89	0.89	0.76	0.76	0.76	0.95	0.95	0.95
Parking (#/hr)			0									
Adj. Flow (vph)	209	1742	38	53	1451	29	97	49	153	9	12	247
Shared Lane Traffic (%)												
Lane Group Flow (vph)	209	1780	0	53	1451	29	97	202	0	9	12	247
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Prot	NA		Prot	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6	8			4		4
Minimum Split (s)	10.0	26.0		10.0	26.0	26.0	9.0	40.0		9.0	38.0	38.0
Total Split (s)	25.0	50.0		20.0	50.0	50.0	15.0	35.0		20.0	50.0	50.0
Total Split (%)	17.9%	35.7%		14.3%	35.7%	35.7%	10.7%	25.0%		14.3%	35.7%	35.7%
Maximum Green (s)	20.0	44.0		15.0	44.0	44.0	11.0	30.0		16.0	45.0	45.0
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0		5.0	6.0	6.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	5.0
Flash Dont Walk (s)		9.0			14.0	14.0		30.0			28.0	28.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	20.0	49.0		15.0	44.0	44.0	52.0	40.0		61.0	45.0	45.0
Actuated g/C Ratio	0.14	0.35		0.11	0.31	0.31	0.37	0.29		0.44	0.32	0.32

Lanes, Volumes, Timings
193: Cresthill Ln & University Blvd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.43	1.00		0.28	0.91	0.05	0.18	0.37		0.02	0.02	0.37
Control Delay	57.8	67.1		61.9	55.3	0.2	24.9	19.4		22.7	32.7	5.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	57.8	67.1		61.9	55.3	0.2	24.9	19.4		22.7	32.7	5.5
LOS	E	E		E	E	A	C	B		C	C	A
Approach Delay		66.2			54.5			21.2			7.3	
Approach LOS		E			D			C			A	
Queue Length 50th (ft)	90	~595		45	464	0	52	62		5	7	0
Queue Length 95th (ft)	132	#714		88	521	0	75	96		16	23	61
Internal Link Dist (ft)		302			2953			326			649	
Turn Bay Length (ft)	620			390			90					150
Base Capacity (vph)	490	1775		189	1598	577	548	551		480	598	676
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.43	1.00		0.28	0.91	0.05	0.18	0.37		0.02	0.02	0.37

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

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

Natural Cycle: 95

Control Type: Pretimed

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 54.6

Intersection LOS: D

Intersection Capacity Utilization 60.3%

ICU Level of Service B

Analysis Period (min) 15

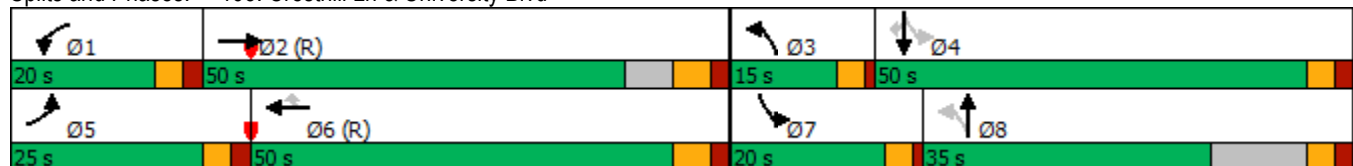
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 193: Cresthill Ln & University Blvd



Lanes, Volumes, Timings
196: Quebec St & Collegiate Dr

12/19/2024

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	70	65	38	1486	686	31
Future Volume (vph)	70	65	38	1486	686	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	90	0	320			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Frt		0.850			0.994	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	5055	0
Flt Permitted	0.950		0.257			
Satd. Flow (perm)	1770	1583	479	5085	5055	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		138			9	
Link Speed (mph)	30			30	30	
Link Distance (ft)	123			979	2909	
Travel Time (s)	2.8			22.3	66.1	
Peak Hour Factor	0.47	0.47	0.93	0.93	0.83	0.83
Adj. Flow (vph)	149	138	41	1598	827	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	149	138	41	1598	864	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60	60	60			60
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Minimum Split (s)	34.0	34.0	9.0	31.0	31.0	
Total Split (s)	30.0	30.0	15.0	65.0	50.0	
Total Split (%)	31.6%	31.6%	15.8%	68.4%	52.6%	
Maximum Green (s)	25.0	25.0	11.0	59.0	44.0	
Yellow Time (s)	3.0	3.0	3.0	4.5	4.5	
All-Red Time (s)	2.0	2.0	1.0	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Walk Time (s)	5.0	5.0			5.0	
Flash Dont Walk (s)	24.0	24.0			11.5	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	25.0	25.0	61.0	59.0	44.0	
Actuated g/C Ratio	0.26	0.26	0.64	0.62	0.46	
v/c Ratio	0.32	0.27	0.09	0.51	0.37	

Total AM 10:36 am 02/12/2024 Baseline

Synchro 11 Report
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Lanes, Volumes, Timings
196: Quebec St & Collegiate Dr

12/19/2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	30.5	6.4	2.5	7.1	16.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.5	6.4	2.5	7.1	16.9	
LOS	C	A	A	A	B	
Approach Delay	18.9			7.0	16.9	
Approach LOS	B			A	B	
Queue Length 50th (ft)	72	0	5	191	117	
Queue Length 95th (ft)	61	0	m5	m180	135	
Internal Link Dist (ft)	43			899	2829	
Turn Bay Length (ft)	90		320			
Base Capacity (vph)	465	518	457	3158	2346	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.32	0.27	0.09	0.51	0.37	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 75

Control Type: Pretimed

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 11.3

Intersection LOS: B

Intersection Capacity Utilization 42.0%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 196: Quebec St & Collegiate Dr



Lanes, Volumes, Timings

157: University Blvd & Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	22	51	126	55	110	57	1350	128	112	1072	113
Future Volume (vph)	131	22	51	126	55	110	57	1350	128	112	1072	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	265		0	90		90	165		0	175		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850			0.850		0.987			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5019	0	1770	5014	0
Flt Permitted	0.719			0.740			0.118			0.118		
Satd. Flow (perm)	1339	1863	1583	1378	1863	1583	220	5019	0	220	5014	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			114			118		16			18	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		132			1887			1051			708	
Travel Time (s)		3.0			42.9			23.9			16.1	
Peak Hour Factor	0.81	0.81	0.81	0.93	0.93	0.93	0.95	0.95	0.95	0.91	0.91	0.91
Adj. Flow (vph)	162	27	63	135	59	118	60	1421	135	123	1178	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	162	27	63	135	59	118	60	1556	0	123	1302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	9.0	40.0	40.0	9.0	39.0	39.0	9.0	31.0		9.0	31.0	
Total Split (s)	15.0	35.0	35.0	15.0	30.0	30.0	15.0	40.0		15.0	40.0	
Total Split (%)	14.3%	33.3%	33.3%	14.3%	28.6%	28.6%	14.3%	38.1%		14.3%	38.1%	
Maximum Green (s)	11.0	30.0	30.0	11.0	25.0	25.0	11.0	34.0		11.0	34.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	6.0		4.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		28.0	28.0		27.0	27.0		10.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	42.0	30.0	30.0	42.0	30.0	30.0	47.0	34.0		47.0	34.0	
Actuated g/C Ratio	0.40	0.29	0.29	0.40	0.29	0.29	0.45	0.32		0.45	0.32	
v/c Ratio	0.28	0.05	0.12	0.23	0.11	0.22	0.23	0.95		0.47	0.80	

Total PM 4:45 pm 11/05/2024

Synchro 11 Report
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Lanes, Volumes, Timings

157: University Blvd & Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	19.8	27.7	1.2	19.2	28.5	6.4	16.8	48.2		22.0	36.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	19.8	27.7	1.2	19.2	28.5	6.4	16.8	48.2		22.0	36.3	
LOS	B	C	A	B	C	A	B	D		C	D	
Approach Delay	16.0			16.1			47.0			35.0		
Approach LOS	B			B			D			D		
Queue Length 50th (ft)	66	13	0	54	29	0	21	368		44	286	
Queue Length 95th (ft)	98	31	0	94	61	42	44	#473		81	344	
Internal Link Dist (ft)	52			1807			971			628		
Turn Bay Length (ft)	265			90			165			175		
Base Capacity (vph)	580	532	533	592	532	536	260	1636		260	1635	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.28	0.05	0.12	0.23	0.11	0.22	0.23	0.95		0.47	0.80	

Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 54.5 (52%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 37.4

Intersection LOS: D

Intersection Capacity Utilization 61.6%

ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 157: University Blvd & Venneford Ranch Rd

			
Ø1	Ø2 (R)	Ø3	Ø4
15 s	40 s	15 s	35 s
			
Ø5	Ø6 (R)	Ø7	Ø8
15 s	40 s	15 s	30 s

Lanes, Volumes, Timings
170: Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	19	151	34	10	25	103	699	32	17	761	117
Future Volume (vph)	116	19	151	34	10	25	103	699	32	17	761	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	40		0	190		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.867			0.894			0.993			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1615	0	1770	1665	0	1770	3514	0	1770	3468	0
Flt Permitted	0.730			0.470			0.138			0.348		
Satd. Flow (perm)	1360	1615	0	875	1665	0	257	3514	0	648	3468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		229			29			10			29	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1826			89			580			433	
Travel Time (s)		41.5			2.0			13.2			9.8	
Peak Hour Factor	0.60	0.60	0.60	0.86	0.86	0.86	0.91	0.91	0.91	0.82	0.82	0.82
Adj. Flow (vph)	193	32	252	40	12	29	113	768	35	21	928	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	193	284	0	40	41	0	113	803	0	21	1071	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	26.0	26.0		22.5	22.5		9.5	31.0		31.0	31.0	
Total Split (s)	26.0	26.0		22.5	22.5		9.5	31.0		31.0	31.0	
Total Split (%)	39.1%	39.1%		33.8%	33.8%		14.3%	46.6%		46.6%	46.6%	
Maximum Green (s)	22.0	22.0		18.5	18.5		5.5	25.0		25.0	25.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.5		4.5	4.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	6.0		6.0	6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Walk Time (s)	5.0	5.0						5.0		5.0	5.0	
Flash Dont Walk (s)	17.0	17.0						8.5		5.5	5.5	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)	22.0	22.0		22.0	22.0		36.5	34.5		25.0	25.0	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.55	0.52		0.38	0.38	
v/c Ratio	0.43	0.41		0.14	0.07		0.42	0.44		0.09	0.81	

Total PM 4:45 pm 11/05/2024

Synchro 11 Report
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Lanes, Volumes, Timings
170: Venneford Ranch Rd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	21.1	6.5		17.2	8.6		12.3	10.8		14.6	24.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.1	6.5		17.2	8.6		12.3	10.8		14.6	24.3	
LOS	C	A		B	A		B	B		B	C	
Approach Delay	12.4			12.8			11.0			24.1		
Approach LOS	B			B			B			C		
Queue Length 50th (ft)	60	15		11	3		20	97		5	195	
Queue Length 95th (ft)	69	18		31	20		42	136		17	232	
Internal Link Dist (ft)	1746			9			500			353		
Turn Bay Length (ft)	150			40			190			100		
Base Capacity (vph)	449	687		289	570		266	1827		243	1321	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.43	0.41		0.14	0.07		0.42	0.44		0.09	0.81	

Intersection Summary

Area Type: Other

Cycle Length: 66.5

Actuated Cycle Length: 66.5

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

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 16.9

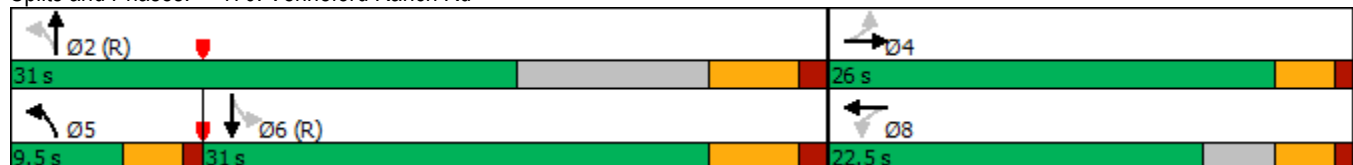
Intersection LOS: B

Intersection Capacity Utilization 72.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 170: Venneford Ranch Rd



Lanes, Volumes, Timings
190: Quebec St & Timberline

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	5	8	140	7	126	12	1050	99	131	1244	12
Future Volume (vph)	16	5	8	140	7	126	12	1050	99	131	1244	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500		0	370		0	235		0	305		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Frt		0.908				0.850		0.987			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1691	0	1770	1863	1583	1770	3493	0	1770	5080	0
Flt Permitted	0.752			0.746			0.113			0.125		
Satd. Flow (perm)	1401	1691	0	1390	1863	1583	210	3493	0	233	5080	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				170		14			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2804			191			257			979	
Travel Time (s)		63.7			4.3			5.8			22.3	
Peak Hour Factor	0.75	0.75	0.75	0.74	0.74	0.74	0.97	0.97	0.97	0.87	0.87	0.87
Adj. Flow (vph)	21	7	11	189	9	170	12	1082	102	151	1430	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	18	0	189	9	170	12	1184	0	151	1444	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Minimum Split (s)	37.0	37.0		10.0	10.0	10.0	9.0	31.0		9.5	31.0	
Total Split (s)	30.0	30.0		30.0	30.0	30.0	15.0	50.0		15.0	50.0	
Total Split (%)	31.6%	31.6%		31.6%	31.6%	31.6%	15.8%	52.6%		15.8%	52.6%	
Maximum Green (s)	25.0	25.0		25.0	25.0	25.0	11.0	44.0		11.0	44.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.5		3.0	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	1.5		1.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	6.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Walk Time (s)	5.0	5.0						5.0			5.0	
Flash Dont Walk (s)	27.0	27.0						11.5			11.5	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	25.0	25.0		25.0	25.0	25.0	57.0	44.0		57.0	44.0	
Actuated g/C Ratio	0.26	0.26		0.26	0.26	0.26	0.60	0.46		0.60	0.46	
v/c Ratio	0.06	0.04		0.52	0.02	0.31	0.04	0.73		0.48	0.61	

Total PM 4:45 pm 11/05/2024

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Lanes, Volumes, Timings
190: Quebec St & Timberline

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	26.9	17.1		35.8	26.1	6.2	6.5	23.7		9.1	21.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	26.9	17.1		35.8	26.1	6.2	6.5	23.7		9.1	21.1	
LOS	C	B		D	C	A	A	C		A	C	
Approach Delay	22.4			21.9			23.5			20.0		
Approach LOS	C			C			C			B		
Queue Length 50th (ft)	10	3		97	4	0	2	291		13	334	
Queue Length 95th (ft)	23	16		131	13	24	8	371		18	364	
Internal Link Dist (ft)	2724			111			177			899		
Turn Bay Length (ft)	500				370				235			
Base Capacity (vph)	368	453		365	490	541	306	1625		317	2353	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.06	0.04		0.52	0.02	0.31	0.04	0.73		0.48	0.61	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 45 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Pretimed

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 21.6

Intersection LOS: C

Intersection Capacity Utilization 66.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 190: Quebec St & Timberline



Lanes, Volumes, Timings
193: Cresthill Ln & University Blvd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  							
Traffic Volume (vph)	269	1556	84	89	2007	43	59	26	56	16	26	290
Future Volume (vph)	269	1556	84	89	2007	43	59	26	56	16	26	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	620		0	390		0	90		0	0		150
Storage Lanes	2		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850		0.898				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5045	0	1770	5085	1583	1770	1673	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.726			0.625		
Satd. Flow (perm)	3433	5045	0	1770	5085	1583	1352	1673	0	1164	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				117		64				363
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		382			3033			406			729	
Travel Time (s)		8.7			68.9			9.2			16.6	
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.88	0.88	0.88	0.55	0.55	0.55
Adj. Flow (vph)	286	1655	89	94	2113	45	67	30	64	29	47	527
Shared Lane Traffic (%)												
Lane Group Flow (vph)	286	1744	0	94	2113	45	67	94	0	29	47	527
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Prot	NA		Prot	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6	8			4		4
Minimum Split (s)	10.0	26.0		10.0	26.0	26.0	9.5	40.0		9.5	38.0	38.0
Total Split (s)	25.0	50.0		20.0	50.0	50.0	15.0	35.0		20.0	50.0	50.0
Total Split (%)	17.9%	35.7%		14.3%	35.7%	35.7%	10.7%	25.0%		14.3%	35.7%	35.7%
Maximum Green (s)	20.0	44.0		15.0	44.0	44.0	11.0	30.0		16.0	45.0	45.0
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0		5.0	6.0	6.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Walk Time (s)		5.0			5.0	5.0		5.0			5.0	5.0
Flash Dont Walk (s)		9.0			14.0	14.0		30.0			28.0	28.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	20.0	49.0		15.0	44.0	44.0	52.0	40.0		61.0	45.0	45.0
Actuated g/C Ratio	0.14	0.35		0.11	0.31	0.31	0.37	0.29		0.44	0.32	0.32
v/c Ratio	0.58	0.99		0.50	1.32	0.08	0.13	0.18		0.05	0.08	0.70

Total PM 4:45 pm 11/05/2024

Synchro 11 Report
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Lanes, Volumes, Timings
193: Cresthill Ln & University Blvd

12/19/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	61.5	63.1		68.7	188.0	0.3	24.2	15.3		23.1	33.7	17.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	61.5	63.1		68.7	188.0	0.3	24.2	15.3		23.1	33.7	17.7
LOS	E	E		E	F	A	C	B		C	C	B
Approach Delay	62.9			179.3			19.0			19.2		
Approach LOS	E			F			B			B		
Queue Length 50th (ft)	127	574		82	~909	0	35	20		15	30	129
Queue Length 95th (ft)	176	#690		143	#1001	0	65	62		21	36	20
Internal Link Dist (ft)	302			2953			326			649		
Turn Bay Length (ft)	620			390			90					150
Base Capacity (vph)	490	1769		189	1598	577	535	523		576	598	755
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.58	0.99		0.50	1.32	0.08	0.13	0.18		0.05	0.08	0.70

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

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

Natural Cycle: 120

Control Type: Pretimed

Maximum v/c Ratio: 1.32

Intersection Signal Delay: 108.2

Intersection LOS: F

Intersection Capacity Utilization 73.4%

ICU Level of Service D

Analysis Period (min) 15

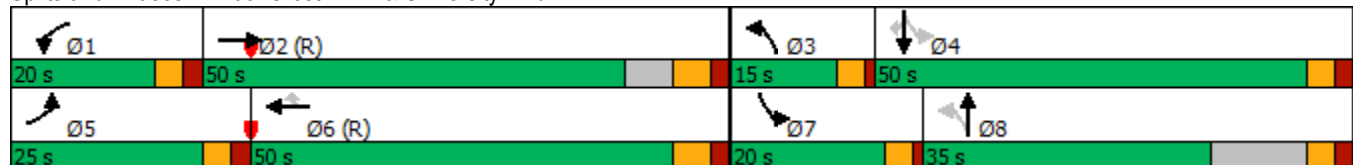
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 193: Cresthill Ln & University Blvd



Lanes, Volumes, Timings
196: Quebec St & Collegiate Dr

12/19/2024

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	55	68	10	195	1327	12
Future Volume (vph)	55	68	10	195	1327	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	90	0	320			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Frt		0.850			0.999	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	5080	0
Flt Permitted	0.950		0.107			
Satd. Flow (perm)	1770	1583	199	5085	5080	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		162			2	
Link Speed (mph)	30			30	30	
Link Distance (ft)	123			979	2909	
Travel Time (s)	2.8			22.3	66.1	
Peak Hour Factor	0.42	0.42	0.96	0.96	0.94	0.94
Adj. Flow (vph)	131	162	10	203	1412	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	131	162	10	203	1425	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60	60	60			60
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Minimum Split (s)	34.0	34.0	9.5	31.0	31.0	
Total Split (s)	30.0	30.0	15.0	65.0	50.0	
Total Split (%)	31.6%	31.6%	15.8%	68.4%	52.6%	
Maximum Green (s)	25.0	25.0	11.0	59.0	44.0	
Yellow Time (s)	3.0	3.0	3.0	4.5	4.5	
All-Red Time (s)	2.0	2.0	1.0	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Walk Time (s)	5.0	5.0			5.0	
Flash Dont Walk (s)	24.0	24.0			11.5	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	25.0	25.0	61.0	59.0	44.0	
Actuated g/C Ratio	0.26	0.26	0.64	0.62	0.46	
v/c Ratio	0.28	0.30	0.03	0.06	0.61	

Total PM 4:45 pm 11/05/2024

Synchro 11 Report
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Lanes, Volumes, Timings
196: Quebec St & Collegiate Dr

12/19/2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	29.9	6.2	2.8	3.3	20.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	29.9	6.2	2.8	3.3	20.4	
LOS	C	A	A	A	C	
Approach Delay	16.8			3.2	20.4	
Approach LOS	B			A	C	
Queue Length 50th (ft)	63	0	1	12	226	
Queue Length 95th (ft)	49	0	m2	m13	273	
Internal Link Dist (ft)	43			899	2829	
Turn Bay Length (ft)	90		320			
Base Capacity (vph)	465	535	309	3158	2353	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.28	0.30	0.03	0.06	0.61	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

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

Natural Cycle: 75

Control Type: Pretimed

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 17.9

Intersection LOS: B

Intersection Capacity Utilization 39.3%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 196: Quebec St & Collegiate Dr



Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	0	0	38	43	0
Future Vol, veh/h	2	0	0	38	43	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	50	68	68	52	52
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	0	56	83	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	139	83	0
Stage 1	83	-	-
Stage 2	56	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	854	976	0
Stage 1	940	-	0
Stage 2	967	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	854	976	-
Mov Cap-2 Maneuver	854	-	-
Stage 1	940	-	-
Stage 2	967	-	-

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

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 854	-
HCM Lane V/C Ratio	- 0.005	-
HCM Control Delay (s)	- 9.2	-
HCM Lane LOS	- A	-
HCM 95th %tile Q(veh)	- 0	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	1	46	49	4
Future Vol, veh/h	1	0	1	46	49	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	25	69	69	41	41
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	1	67	120	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	194	125	130	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	69	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	795	926	1455	-	-	-
Stage 1	901	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	794	926	1455	-	-	-
Mov Cap-2 Maneuver	794	-	-	-	-	-
Stage 1	900	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.6	0.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1455	-	794	-	-	
HCM Lane V/C Ratio	0.001	-	0.005	-	-	
HCM Control Delay (s)	7.5	0	9.6	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	0	0	45	56	0
Future Vol, veh/h	4	0	0	45	56	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	50	44	44	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	0	0	102	80	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	182	80	-	0	-	0
Stage 1	80	-	-	-	-	-
Stage 2	102	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	807	980	0	-	-	0
Stage 1	943	-	0	-	-	0
Stage 2	922	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	807	980	-	-	-	-
Mov Cap-2 Maneuver	807	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.5	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT			
Capacity (veh/h)	-		807	-		
HCM Lane V/C Ratio	-		0.01	-		
HCM Control Delay (s)	-		9.5	-		
HCM Lane LOS	-		A	-		
HCM 95th %tile Q(veh)	-		0	-		

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	1	52	62	4
Future Vol, veh/h	0	0	1	52	62	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	25	43	43	69	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2	121	90	6

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	218	93	96
Stage 1	93	-	-
Stage 2	125	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	770	964	1498
Stage 1	931	-	-
Stage 2	901	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	769	964	1498
Mov Cap-2 Maneuver	769	-	-
Stage 1	930	-	-
Stage 2	901	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1498	-	-	-	-
HCM Lane V/C Ratio	0.002	-	-	-	-
HCM Control Delay (s)	7.4	0	0	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection

Intersection Delay, s/veh 25

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	76	146	89	91	9	132	8	104	30	10	16
Future Vol, veh/h	14	76	146	89	91	9	132	8	104	30	10	16
Peak Hour Factor	0.69	0.69	0.69	0.76	0.76	0.76	0.45	0.45	0.45	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	110	212	117	120	12	293	18	231	40	13	21
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	17.1	15.3	36.4	11.3
HCM LOS	C	C	E	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	6%	47%	54%
Vol Thru, %	3%	32%	48%	18%
Vol Right, %	43%	62%	5%	29%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	244	236	189	56
LT Vol	132	14	89	30
Through Vol	8	76	91	10
RT Vol	104	146	9	16
Lane Flow Rate	542	342	249	75
Geometry Grp	1	1	1	1
Degree of Util (X)	0.875	0.576	0.46	0.145
Departure Headway (Hd)	5.811	6.067	6.66	6.985
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	624	592	540	511
Service Time	3.855	4.122	4.72	5.063
HCM Lane V/C Ratio	0.869	0.578	0.461	0.147
HCM Control Delay	36.4	17.1	15.3	11.3
HCM Lane LOS	E	C	C	B
HCM 95th-tile Q	10.2	3.6	2.4	0.5

Intersection	
Intersection Delay, s/veh	13.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	23	97	119	56	125	31	131	4	92	33	0	20
Future Vol, veh/h	23	97	119	56	125	31	131	4	92	33	0	20
Peak Hour Factor	0.71	0.71	0.71	0.84	0.84	0.84	0.63	0.63	0.63	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	137	168	67	149	37	208	6	146	44	0	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.7	12.6	15.4	10.1
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	58%	10%	26%	62%
Vol Thru, %	2%	41%	59%	0%
Vol Right, %	41%	50%	15%	38%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	227	239	212	53
LT Vol	131	23	56	33
Through Vol	4	97	125	0
RT Vol	92	119	31	20
Lane Flow Rate	360	337	252	71
Geometry Grp	1	1	1	1
Degree of Util (X)	0.555	0.499	0.4	0.121
Departure Headway (Hd)	5.541	5.34	5.703	6.151
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	649	670	628	578
Service Time	3.6	3.406	3.773	4.241
HCM Lane V/C Ratio	0.555	0.503	0.401	0.123
HCM Control Delay	15.4	13.7	12.6	10.1
HCM Lane LOS	C	B	B	B
HCM 95th-tile Q	3.4	2.8	1.9	0.4

Mitigation Scenario

Intersection

Intersection Delay, s/veh 12

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	76	146	89	91	9	132	8	104	30	10	16
Future Vol, veh/h	14	76	146	89	91	9	132	8	104	30	10	16
Peak Hour Factor	0.69	0.69	0.69	0.76	0.76	0.76	0.90	0.90	0.90	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	110	212	117	120	12	147	9	116	40	13	21
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.4	11.9	12.3	9.8
HCM LOS	B	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	6%	47%	54%
Vol Thru, %	3%	32%	48%	18%
Vol Right, %	43%	62%	5%	29%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	244	236	189	56
LT Vol	132	14	89	30
Through Vol	8	76	91	10
RT Vol	104	146	9	16
Lane Flow Rate	271	342	249	75
Geometry Grp	1	1	1	1
Degree of Util (X)	0.411	0.471	0.379	0.123
Departure Headway (Hd)	5.452	4.96	5.49	5.916
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	659	725	654	603
Service Time	3.497	3.004	3.538	3.977
HCM Lane V/C Ratio	0.411	0.472	0.381	0.124
HCM Control Delay	12.3	12.4	11.9	9.8
HCM Lane LOS	B	B	B	A
HCM 95th-tile Q	2	2.5	1.8	0.4

Intersection

Intersection Delay, s/veh 12

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	23	97	119	56	125	31	131	4	92	33	0	20
Future Vol, veh/h	23	97	119	56	125	31	131	4	92	33	0	20
Peak Hour Factor	0.71	0.71	0.71	0.84	0.84	0.84	0.83	0.83	0.83	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	137	168	67	149	37	158	5	111	44	0	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.5	11.7	12.4	9.7
HCM LOS	B	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	58%	10%	26%	62%
Vol Thru, %	2%	41%	59%	0%
Vol Right, %	41%	50%	15%	38%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	227	239	212	53
LT Vol	131	23	56	33
Through Vol	4	97	125	0
RT Vol	92	119	31	20
Lane Flow Rate	273	337	252	71
Geometry Grp	1	1	1	1
Degree of Util (X)	0.415	0.471	0.378	0.115
Departure Headway (Hd)	5.459	5.036	5.385	5.881
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	659	714	666	607
Service Time	3.504	3.077	3.428	3.942
HCM Lane V/C Ratio	0.414	0.472	0.378	0.117
HCM Control Delay	12.4	12.5	11.7	9.7
HCM Lane LOS	B	B	B	A
HCM 95th-tile Q	2	2.5	1.8	0.4



Appendix G School Questionnaire

Review: DCSD Traffic and Pedestrian Safety Questionnaire

Respondent

7

Anonymous

1740:09

Time to complete

1. What school do you represent?

Score / 0 pts

Cougar Run Elementary

2. Please provide your name.

Score / 0 pts

Shannon McPherson

3. Please provide your email.

Score / 0 pts

semcpherson@dcsdk12.org

4. Please provide feedback on crosswalks. Are crosswalks provided in adequate locations? Do families in general abide by crosswalk locations? Are additional crosswalk locations desired?

Score / 0 pts

Our designated crosswalk at Meadows is a 4 way stop and our families generally abide by it. We would like an additional crosswalk at Venneford Ranch Road and Forrest Drive. We have many students who cross there and it is very unsafe as traffic does not stop.

5. Please provide feedback on pickup/drop-off. Where are your schools pickup and drop-off locations? Is there adequate length or do vehicle queues extend on to public roadways?

Score / 0 pts

Our pick up and drop off locations are at the front, the north side on Venneford Ranch and back of our school on Forrest. It backs up onto Venneford Ranch road at drop off and pick up times. We have attempted to mitigate this by having a 15 minute "Soft Start" at the start of the day, but with nearly 400 students K-6 and an additional 40 preschoolers, it is just busy.

6. If available, can you provide your school's written pickup and drop-off procedures? Please send to nick.westphal@dibblecorp.com.

Score / 0 pts

Parents pull into either the front car loop and drop kids on the front sidewalk. On the north side of the school, parents pull up to the sidewalk and drop kids on the Venneford Ranch side of our school. On the backside of the school on Forrest drive, parents pull up to the sidewalk and drop students there.

7. Please provide feedback on parking lot safety. Is there an adequate number of parking spaces? Are there any sight visibility challenges when exiting a parking lot (e.g. parked vehicles blocking views)? If so, where?

Score / 0 pts

We do not have enough parking spaces and our community complains about it often. We have had safety issues with people crossing from our car loop sidewalk to the northwest parking lot. We had the district safety team install stop signs and white lines to help slow down traffic.

8. Please provide feedback on roadway safety. Do vehicles in general follow traffic laws such as speed limits, stop signs, no parking zones, etc.?

Score / 0 pts

We have issues with cars making U-Turns in our crosswalk often. We have contacted SRO and they have had a presence to try to help with this. We have also had speeding in school zones and DCSO has helped with that as well.

9. Does your school have a designated bus drop-off area? Are there any conflicts between buses and other vehicles?

Score / 0 pts

Our bus loop works just fine.

10. Please provide any general information related to vehicle and pedestrian safety at or around your school that you would like to share.

Score / 0 pts

Our school has grown and that has just created more congestion in the neighborhood. The neighbors complain at times and we attempt to work with them but is tough when parking is an issue with limited spots so folks park in the neighborhood.

Review: DCSD Traffic and Pedestrian Safety Questionnaire

Respondent

4

Anonymous

05:27

Time to complete

1. What school do you represent?

Score / 0 pts

Fox Creek

2. Please provide your name.

Score / 0 pts

Cheryl Fullmer

3. Please provide your email.

Score / 0 pts

cfullmer1@dcsdk12.org

4. Please provide feedback on crosswalks. Are crosswalks provided in adequate locations? Do families in general abide by crosswalk locations? Are additional crosswalk locations desired?

Score / 0 pts

yes they are in the right locations. Families use the one on Collegiate and at the entrance to our parking lot but not always the ones in the parking lot.

5. Please provide feedback on pickup/drop-off.

Score / 0 pts

Where are your schools pickup and drop-off locations? Is there adequate length or do vehicle queues extend on to public roadways?

Pick up and drop off is in our main parking lot. Vehicles queues extend on the Collegiate and sometimes go all the way up to to the bus loop.

6. If available, can you provide your school's written pickup and drop-off procedures? Please send to nick.westphal@dibblecorp.com.

Score / 0 pts

yes

7. Please provide feedback on parking lot safety. Is there an adequate number of parking spaces? Are there any sight visibility challenges when exiting a parking lot (e.g. parked vehicles blocking views)? If so, where?

Score / 0 pts

Our parking lot is fine in terms of parking spaces.

8. Please provide feedback on roadway safety. Do vehicles in general follow traffic laws such as speed limits, stop signs, no parking zones, etc.?

Score / 0 pts

yes, we could use a blinking light to remind them of the school hours. We also could use a possible way to exit the lot when the light on Quebec is slow.

9. Does your school have a designated bus drop-off area? Are there any conflicts between buses and other vehicles?

Score / 0 pts

yes we have a designated spot. not really.

10. Please provide any general information related to vehicle and pedestrian safety at or around your school that you would like to share.

Score / 0 pts

We could use some support in looking at the entrance and exit of the parking lot (when a car is in the entrance -waiting for the line to move - and another car comes in to park it is very very tight). Also it is sometimes difficult for a car to make a left hand turn out of the lot when there is a lot of traffic or when the light on quebec is slow to change. Doesn't happen often but when it does it is not fun.