



# SUMMARY REPORT

## TOWN CENTER CIRCULATION STUDY

CITY OF NORTH SALT LAKE, UTAH

*Prepared for:*  
**City of North Salt Lake**  
10 East Center Street  
North Salt Lake, UT 84054

*Prepared by:*  
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April 2022





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*Working Paper #1 – Current Conditions*  
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## INTRODUCTION

The City of North Salt Lake Town Center Master Plan envisions new development, centered at US-89 and Center Street, North Salt Lake, Utah, consisting of commercial, residential, and recreational uses.

The Town Center Master Plan also proposes to convert Main Street, between US-89 and Center Street to a pedestrian-focused corridor. The intersection of Main Street and Highway 89 would be closed, enabling the new civic and plaza space.

The City Town Center Master Plan describes that:

*“the real focus of the proposed Town Center is at the side streets - Center Street, Main Street and Orchard Drive are envisioned to be transformed into great pedestrian corridors. City Hall and nearby Hatch Park form the core of the Town Center and are the heart of a proposed Civic/Cultural/Arts District.”*

This Town Center Circulation Study recommends improvements needed to accommodate the Town Center development and the associated new traffic patterns throughout the Town Center area. The study also explores the feasibility of closing the intersection of Main Street and US-89. The Town Center study area is shown in **Figure 1**.

This Town Center Circulation Study Summary Report summarizes study findings and recommendations. The previously completed Working Paper #1 and Working Paper #2 are included as Appendices to this report.

## EXISTING TRAFFIC DATA

Traffic count data was collected at study area intersections and segments as listed in **Table 1** and shown in **Figure 2**.

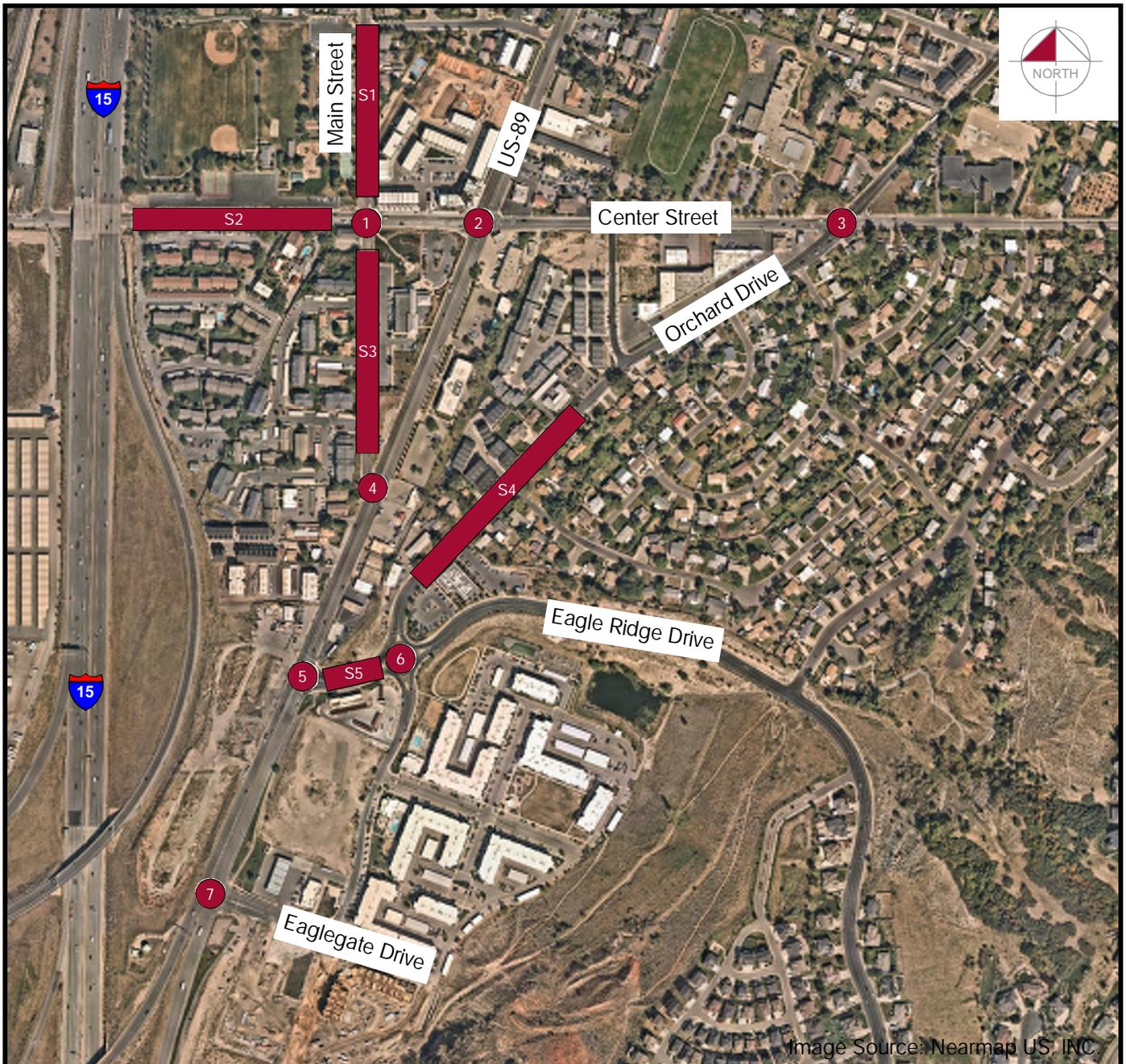
A summary of the collected traffic data is shown in **Figure 3**.

Please refer to Working Paper #1 for detailed information regarding collected traffic data.

**Table 1 – Analysis Intersections**

Intersection	Roadway Segment
• Center St / Main St (#1)	• Main St, North of Center St (S1)
• US-89 / Center St (#2)	• Center St, West of Main St (S2)
• Center St / Orchard Dr (#3)	• Main Street, South of Center St (S3)
• US-89 / Main St (#4)	• Orchard Dr, North of Eagle Ridge Dr (S4)
• US-89 / Eagle Ridge Dr (#5)	• Eagle Ridge Dr, East of Orchard Dr (S5)
• Orchard Dr / Eagle Ridge Dr (#6)	
• US-89 / Eaglegate Dr (#7)	





Study Area Intersections:

1. Center Street / Main Street
2. US-89 / Center Street
3. Center Street / Orchard Drive
4. US-89 / Main Street
5. US-89 / Eagle Ridge Drive
6. Orchard Drive / Eagle Ridge Drive
7. US-89 / Eaglegate Drive

Study Area Roadway Segments:

- S1. Main Street, North of Center Street
- S2. Center Street, West of Main Street
- S3. Main Street, South of Center Street
- S4. Orchard Drive, North of Eagle Ridge Drive
- S5. Eagle Ridge Drive, East of Orchard Drive



<p><b>1</b></p> <p>← 39(25) ← 49(53) ← 13(8)</p> <p>↗ 13(14) ↑ 146(147) ↘ 17(14)</p>	<p><b>2</b></p> <p>↖ 57(69) ← 434(378) ↘ 37(83)</p> <p>↗ 117(102) ← 108(53) ↘ 57(31)</p>	<p><b>3</b></p> <p>↖ 123(61) ← 283(207) ↘ 24(35)</p> <p>↗ 27(35) ← 148(88) ↘ 27(18)</p>	<p><b>4</b></p> <p>↖ 1(6) ← 612(504) ↘ 0(1)</p> <p>↗ 0(1) ↘ 0(2)</p>
<p>↖ 40(77) → 239(351) ↘ 152(179)</p> <p>↖ 146(186) ↗ 52(81) ↘ 18(28)</p>	<p>↖ 91(132) → 137(147) ↘ 72(83)</p> <p>↖ 48(41) ↗ 252(750) ↘ 27(42)</p>	<p>↖ 70(94) → 49(123) ↘ 7(19)</p> <p>↖ 32(18) ↗ 118(340) ↘ 24(30)</p>	<p>↖ 2(0) → 210(332) ↘</p> <p>↖ 217(281) ↗ 328(747) ↘ 1(0)</p>
<p><b>5</b></p> <p>↖ 0(9) ← 754(545) ↘ 88(195)</p> <p>↗ 174(203) ← 0(1) ↘ 693(408)</p>	<p><b>6</b></p> <p>↖ 366(208) ← 15(15) ↘ 13(29)</p> <p>↗ 27(33) ← 439(362) ↘ 16(8)</p>	<p><b>7</b></p> <p>↖ 1424(1015) ↘ 17(33)</p> <p>↗ 40(39) ↘ 59(48)</p>	
<p>↖ 0(9) → 0(6) ↘ 0(3)</p> <p>↖ 0(3) ↗ 358(871) ↘ 152(652)</p>	<p>↖ 60(380) → 149(473) ↘ 28(84)</p> <p>↖ 71(86) ↗ 21(26) ↘ 13(28)</p>	<p>↖ 502(1437) ↘ 51(86)</p>	

LEGEND	
← XX(XX)	AM(PM) PEAK HOUR TRAFFIC VOLUMES
XXXX	AVERAGE DAILY TRAFFIC VOLUMES

## EXISTING CONDITIONS ANALYSIS

Town Center study area intersections were analyzed to determine average delay per vehicle at each intersection. The intersection performance is reported as Level of Service (LOS): LOS A represents free-flow conditions, and LOS F represents high delay. **Table 2** shows the average delay per vehicle associated with each LOS category.

**Table 2 – Level of Service Definitions**

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Stop-Control Intersection Average Total Delay (sec/veh)
A	≤10	10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Existing traffic volumes were analyzed for the following scenarios:

- Scenario #1 – 2021 Existing Conditions: no modifications to the existing intersections, as shown in **Figure 4**.
- Scenario #2 – 2021 Existing Conditions with closure of the intersection of US-89 / Main Street, as shown in **Figure 5**, with vehicular traffic rerouted accordingly.

**Table 3** shows the results for each analysis scenario. Intersections and movements with high delay (LOS F) are bolded.

In Scenario #1, the US-89 / Eaglegate Drive (#7) intersection operates with high delay in the AM and PM peak hour. This can be addressed by signalizing the intersection. All other intersections operate acceptably.

In Scenario #2, the US-89 / Main Street (#4) intersection is closed. Traffic rerouted through the US-89 / Center Street (#2) intersection contributed to the high delay in the PM peak hour. This can be addressed by adding a Center Street eastbound right-turn lane along the length of City Hall property.

In Scenario #2, the US-89 / Eaglegate Drive (#7) intersection continues to experience high delay in the AM and PM peak hour. The intersection meets traffic signal warrants per the *Manual of Uniform Traffic Control Devices*.

**Table 3 – Existing Traffic Conditions Performance Analysis**

Intersection (Control)	Movement	Scenario #1				Scenario #2			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (Sec/Veh)	LOS						
#1 Center St / Main St	Intersection, All-way Stop Control	11.7	B	19.5	C	11.7	B	17.7	C
#2 US-89 / Center St	Intersection, Signal	23.8	C	27.9	C	35.7	D	<b>74.2</b>	<b>E</b>
#3 Center St / Orchard Dr	Intersection, Signal	17.3	B	16.5	B	17.3	B	16.5	B
#4 US-89 / Main St	Eastbound	14.4	B	16.8	C	-	-	-	-
	Northbound Left Turn	10.4	B	10.0	A	-	-	-	-
	Southbound Left Turn	0.0	A	9.4	A	8.7	A	10.7	B
#5 US-89 / Eagle Ridge Dr	Intersection, Signal	25.6	C	18.7	B	25.6	C	18.7	B
#6 Orchard Dr / Eagle Ridge Dr	Intersection, Roundabout	8.1	A	7.9	A	8.1	A	7.9	A
#7 US-89 / Eaglegate Dr	Westbound Left Turn	<b>43.4</b>	<b>E</b>	<b>&gt; 80</b>	<b>F</b>	<b>43.4</b>	<b>E</b>	<b>&gt; 80</b>	<b>F</b>
	Westbound Right	11.3	B	19.4	C	11.3	B	19.4	C
	Southbound Left Turn	11.2	B	28.1	D	11.2	B	28.1	D

## FUTURE CONDITIONS ANALYSIS

### Town Center Development

Town Center development, planned to be completed by 2025 (referred to as Phase 1), includes residential, a recreation center, office, and retail:

- 713 residential units
- 25,000 square foot recreation center
- 57,000 square feet of office space
- 17,000 square feet of retail space

By 2040 (referred to as Phase 2), an additional 325 residential units and 106,000 square feet of retail space are anticipated.

Please refer to Working Paper #2, Appendix B for detailed information on proposed Town Center development.

Town Center new development projected to generate new vehicle trips on the surrounding streets and intersections are summarized in **Table 4**.

- Phase 1, assumed to be constructed by 2025, are estimated to generate 8,102 daily trips.
- Phase 2, assumed to be constructed between 2025 and 2040, are estimated to generate an additional 8,695 daily trips.

- Phase 1 and Phase 2 combined will generate over 16,000 new daily trips with nearly 1,200 trips in the AM peak hour, and 1,800 trips in the PM peak hour.

**Table 4 – Town Center Trip Generation**

Land Use	ITE Land Use	Units	#	Daily Trips	AM Trips			PM Trips		
					Total	In	Out	Total	In	Out
<b>Phase 1</b>										
Multifamily Housing (Low-Rise)	220	DU	713	5,174	403	96	307	470	295	175
Recreational Community Center	495	1,000 SF	25	720	48	32	16	62	29	33
General Office Building	710	1,000 SF	45	629	92	81	11	95	16	79
Small Office Building	712	1,000 SF	12	173	20	17	3	26	9	17
Strip Retail Plaza (<40k)	822	1,000 SF	17	1,406	58	35	23	152	77	75
<i>Subtotal</i>				8,102	621	261	360	805	426	379
<b>Phase 2</b>										
Single-Family Attached Housing	215	DU	8	58	4	1	3	5	3	2
Multifamily Housing (Low-Rise)	220	DU	317	2,785	327	78	249	342	217	125
Strip Retail Plaza (<40k)	822	1,000 SF	106	5,852	239	143	96	668	335	333
<i>Subtotal</i>				8,695	570	222	348	1,015	555	460
<b>Total</b>				<b>16,797</b>	<b>1,191</b>	<b>483</b>	<b>708</b>	<b>1,820</b>	<b>981</b>	<b>839</b>

### Future Conditions Traffic Analysis Scenarios

The Town Center Circulation Study evaluated two future street network scenarios:

- Scenario #1 – No street closures
- Scenario #2 – Close US-89 / Main Street (#4) intersection and reroute vehicular traffic accordingly

The lane configuration and traffic control assumed in the scenario evaluations are shown in **Figure 4** for Scenario #1 and **Figure 5** for Scenario #2.

Future year traffic volumes for each scenario were forecasted by applying an annual growth rate and adding Town Center development traffic to 2021 existing volumes.

**Figure 6** shows the traffic volumes expected to be generated by the Town Center Phase 1(2025).

**Figure 7** shows the traffic volumes expected to be generated by the Town Center Phase 2 (2040).

**Figure 8** shows the Scenario #1 total traffic volumes in the Town Center area in 2025.

**Figure 9** shows the Scenario #1 total traffic volumes in the Town Center in 2040.

**Figure 10** shows the Scenario #2 total traffic volumes on Town Center streets in 2025.

**Figure 11** shows the Scenario #2 total traffic volumes on Town Center streets in 2040.

### Future Conditions Traffic Analysis Results

Results of future conditions analysis are summarized in **Table 5**. **Table 5** lists each evaluation scenario, analyzed intersection, and the projected average delay per vehicle by intersection, for both the AM and PM peak periods.

Note that all scenarios assume:

- A traffic signal is constructed at the Eaglegate Drive/US-89 intersection.
- A Center Street eastbound right turn lane is constructed at Center Street/US-89 intersection.

#### **Scenario #1 (No street closure) 2025 Conditions Operational Analysis**

Analysis results for the 2025 Scenario #1 AM and PM peak hours shows that all intersections operate at acceptable levels of service.

#### **Scenario #2 (Close US-89/Main Street) 2025 Conditions Analysis**

Analysis results for the 2025 Scenario #2 AM and PM peak hours shows that all intersections operate at acceptable levels of service.

#### **Scenario #1 (No street closure) 2040 Conditions Analysis**

Analysis results for the 2040 Scenario #1 AM and PM peak hours shows that the following intersections experience unacceptable delay and congestion (LOS F):

- Center Street / Main Street intersection in the PM peak hour
- US-89 / Main Street intersection in the AM and PM peak hours
- US-89 / Eagle Ridge Drive intersection in the PM peak hour.

#### **Scenario #2 (Close US-89/Main Street) 2040 Conditions Analysis**

Analysis results for the 2040 Scenario #2 AM and PM peak hours shows:

- Center Street / Main Street intersection includes a congested movement (LOS F) in the PM peak hour
- US-89 / Center Street intersection includes one or more failing movements in the PM peak hours
- US-89 / Eagle Ridge Drive intersection includes one or more failing movements in the PM peak hour.

#### **Scenario #2 (Close US-89/Main Street) 2040 Improved Conditions Analysis**

To improve conditions at the intersections with high congestion as shown in 2040 Scenario #2, the following improvements were modeled to improve traffic conditions at study area intersections:

- Center Street / Main Street intersection: convert to two-way stop control with stop signs on the northbound and southbound approaches. Analysis shows that the southbound approach will experience average delay per vehicle of 59 seconds (roughly one minute) per vehicle. All other approaches operate at acceptable levels of service. A second option to reduce the delay at this intersection is to construct a traffic signal.
- US-89 / Center Street: an eastbound right turn lane on Center Street, install an eastbound right-turning overlap traffic signal phase, coordinated with the northbound protected left-turn phasing.
- US-89 / Eagle Ridge Drive: replace westbound split phasing with separate left-turn protected and westbound through / right phases.
- US-89 / Eaglegate Drive: construct a traffic signal.

Each of the above improvements results in a reduction in average delay per vehicle to an acceptable level.

A summary of results from the operational analyses is shown in **Table 5**.

**Table 5 – Analysis Results**

Operational Analysis Results - LOS (Delay) <sup>1</sup>									
Intersection									
Number		1	2	3	4	5	6	7	
Name		Center St / Main St	US-89 / Center St	Center St / Orchard Dr	US-89 / Main St	US-89 / Eagle Ridge Dr	Orchard Dr / Eagle Ridge Dr	US-89 / Eaglegate Dr	
Control		Varies	Signal	Signal	TWSC	Signal	Roundabout	Signal	
Analysis Scenario	Scenario #1 2025	AM	B (14)	C(22)	B (17)	C (17) EB	C (31)	A (9)	A (5)
		PM	C (24)	C (25)	B (18)	C (20) EB	C (27)	A (10)	A (6)
	Scenario #1 2040	AM	D (27)	C (25)	B (18)	F (>50) EB	D (49)	C (15)	A (5)
		PM	F (>50)	D (40)	B (19)	F (>50) EB	E (59)	C (19)	A (6)
	Scenario #2 2025	AM	B (15)	C (33)	B (17)	-	C(31)	A (9)	A (5)
		PM	C (22)	D (53)	B (18)	-	C (27)	A (10)	A (5)
	Scenario #2 2040	AM	D (34)	D (48)	B (18)	-	D (40)	C (15)	A (6)
		PM	F (>50)	F (>80)	B (19)	-	E (59)	C (19)	A (5)
	Scenario #2 2040 Mitigated (TWSC at INT 1)	AM	C (15) NB	D (41)	B (18)	-	D (41)	C (15)	A (6)
		PM	F (>50) SB <sup>2</sup>	D (43)	B (19)	-	D (43)	C (19)	A (5)
	Scenario #2 2040 Mitigated (Signal at INT 1)	AM	A (7)	D (41)	B (18)	-	D (41)	C (15)	A (6)
		PM	A (8)	D (43)	B (19)	-	D (43)	C (19)	A (5)

Notes:  
 1. LOS and delay are shown for overall intersection for signalized, roundabout, and all-way stop intersections and the worst movement for all other intersections. Delay is shown in seconds per vehicle.  
 2. Only SB vehicles are anticipated to experience LOS F. The average delay for a SB vehicle is about 1 minute. NB, EB, and WB are anticipated to experience LOS D and better.

## RECOMMENDATIONS

The Town Center Circulation Study analyzed future traffic conditions associated with proposed Town Center development. The study evaluates the feasibility of closing the intersection of Main Street and US-89.

### Main Street / Center Street

The Main Street / Center Street intersection will require the one of the following two improvement options to accommodate future Town Center development traffic and the closure of Main Street at US-89:

- **Option 1. Two-way stop control**, with stop control on the northbound and southbound approaches to the Main Street / Center Street intersection. Eastbound and westbound movements at the intersection would run free. Under this scenario, the southbound Main Street approach will experience delay of approximately 1 minute per vehicle, due to vehicles desiring to make a left turn onto eastbound Center Street. Vehicle queues are projected to be up to 8 vehicles long during peak periods.
- **Option 2. Signalize the intersection** of Main Street / Center Street to accommodate 2040

traffic volumes. Under this scenario, vehicle delays and queues are reduced to acceptable levels. A traffic signal is advantageous to pedestrians as it provides an opportunity for pedestrians to cross Center Street. If the new South Davis Recreation Center is constructed in Hatch Park, a traffic signal is recommended to accommodate pedestrian crossings of Center Street.

### US-89 / Center Street

The US-89 / Center Street intersection will require the following improvements to accommodate future Town Center development traffic:

- Construct a separate **dedicated eastbound right turn lane**. Currently, there is a shared eastbound thru/right turn lane. The dedicated right turn lane should be extended west approximately 250’.
- Implement **eastbound right-turning overlap phase**, coordinated with the northbound protected left-turn phase. An overlap phase allows eastbound right turning vehicles to receive a “green arrow” simultaneous to vehicles making a northbound to westbound left turn.

### US-89 / Eagle Ridge Drive

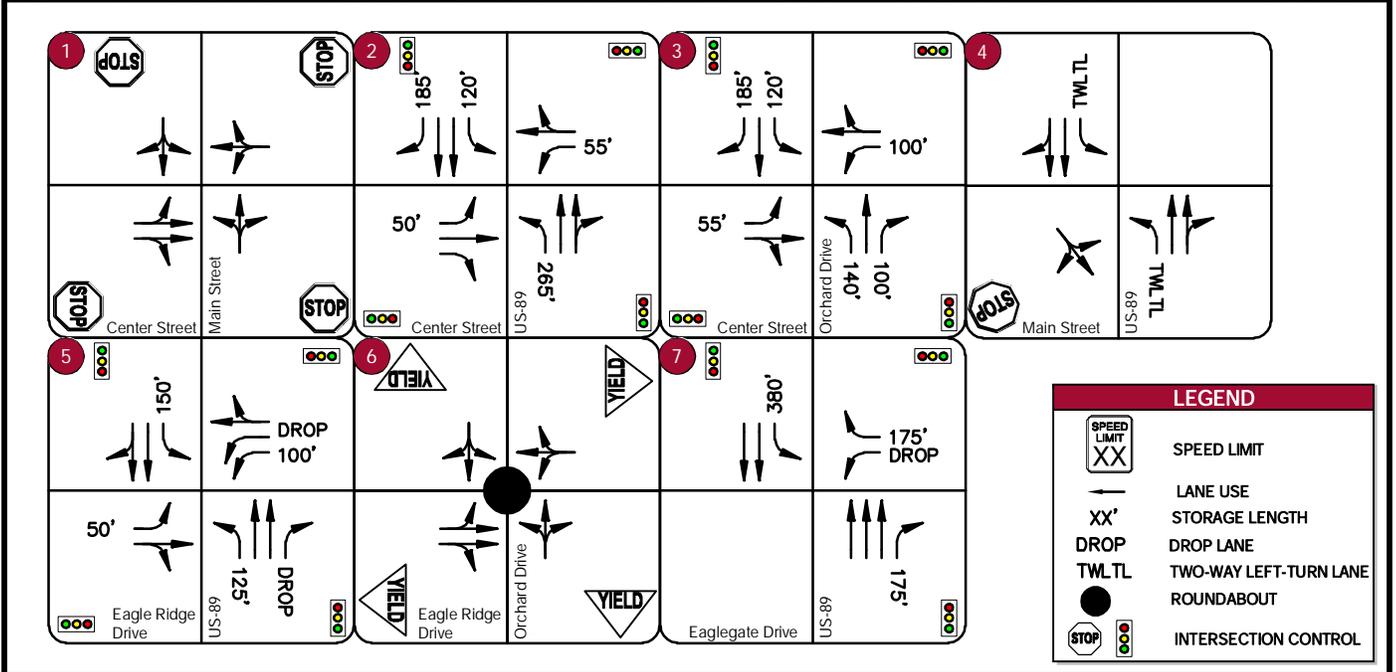
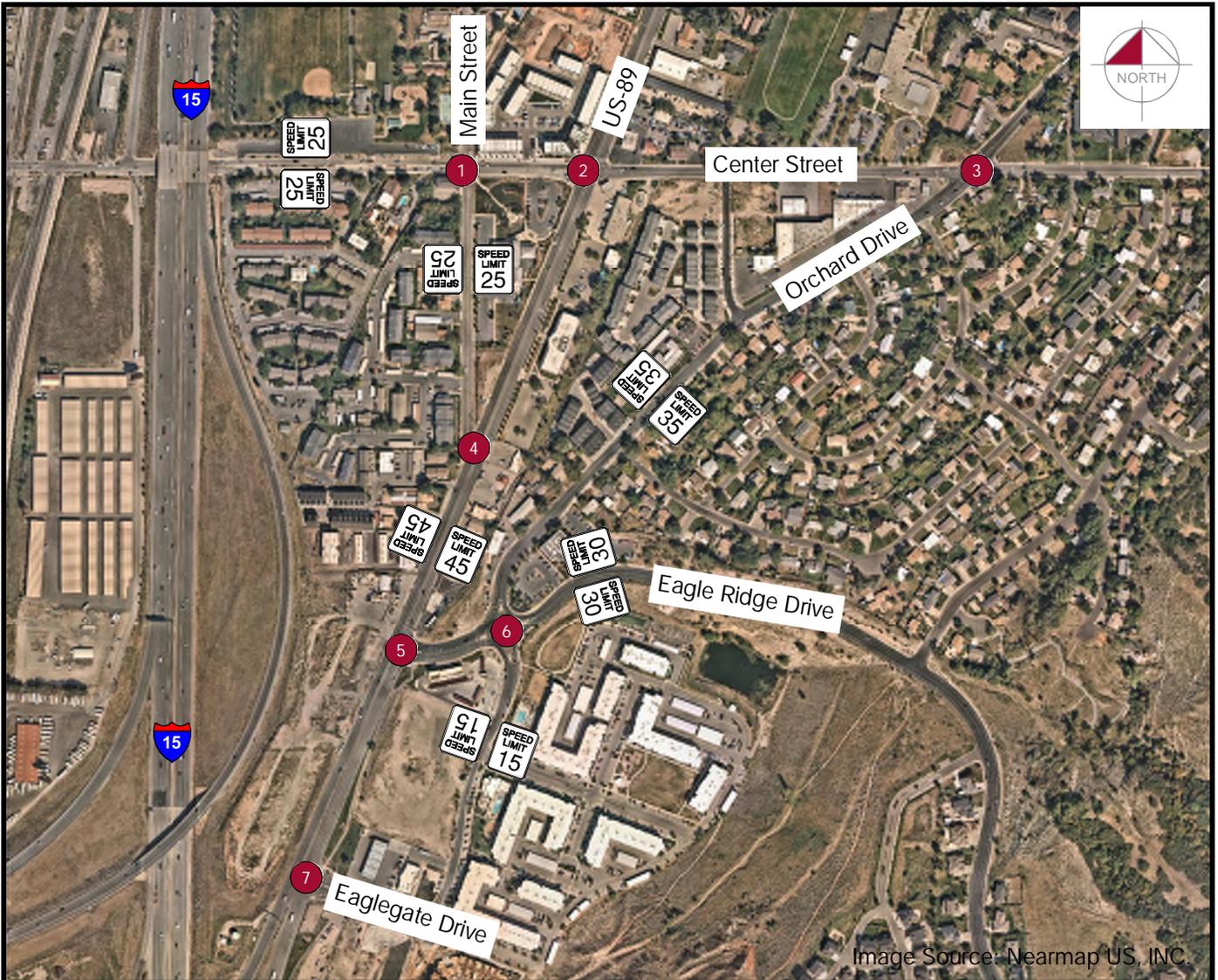
The US-89 / Eagle Ridge Drive intersection will require the following improvements to accommodate future traffic volumes:

- Replace westbound split traffic signal phasing with **separate left-turn protected and westbound through / right turn phases**. This should be implemented upon construction of development west of US-89.

### US-89 / Eaglegate Drive

The analysis shows the US-89 / Eaglegate Drive intersection will require the following improvements:

- Construct a **traffic signal at this intersection**.



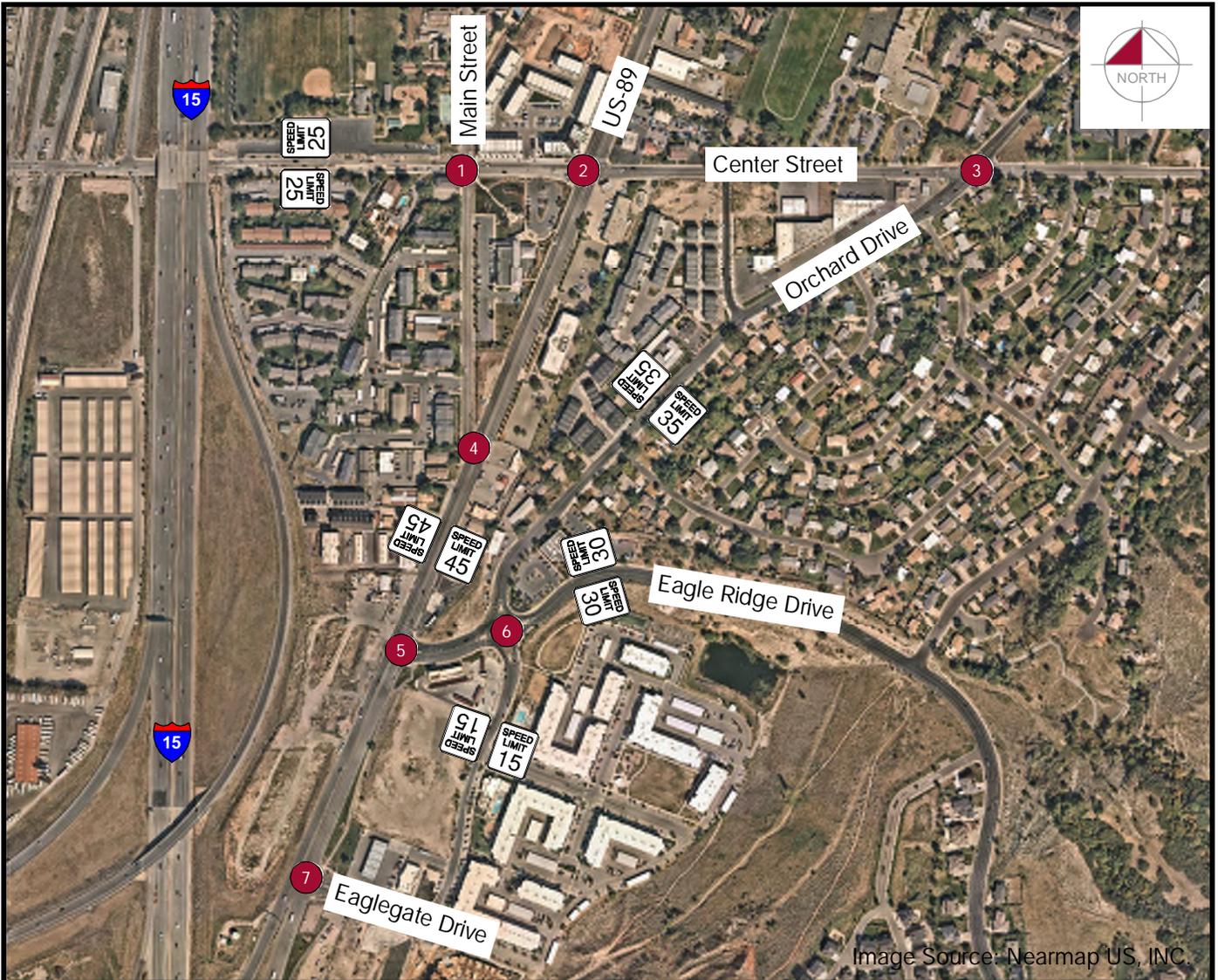
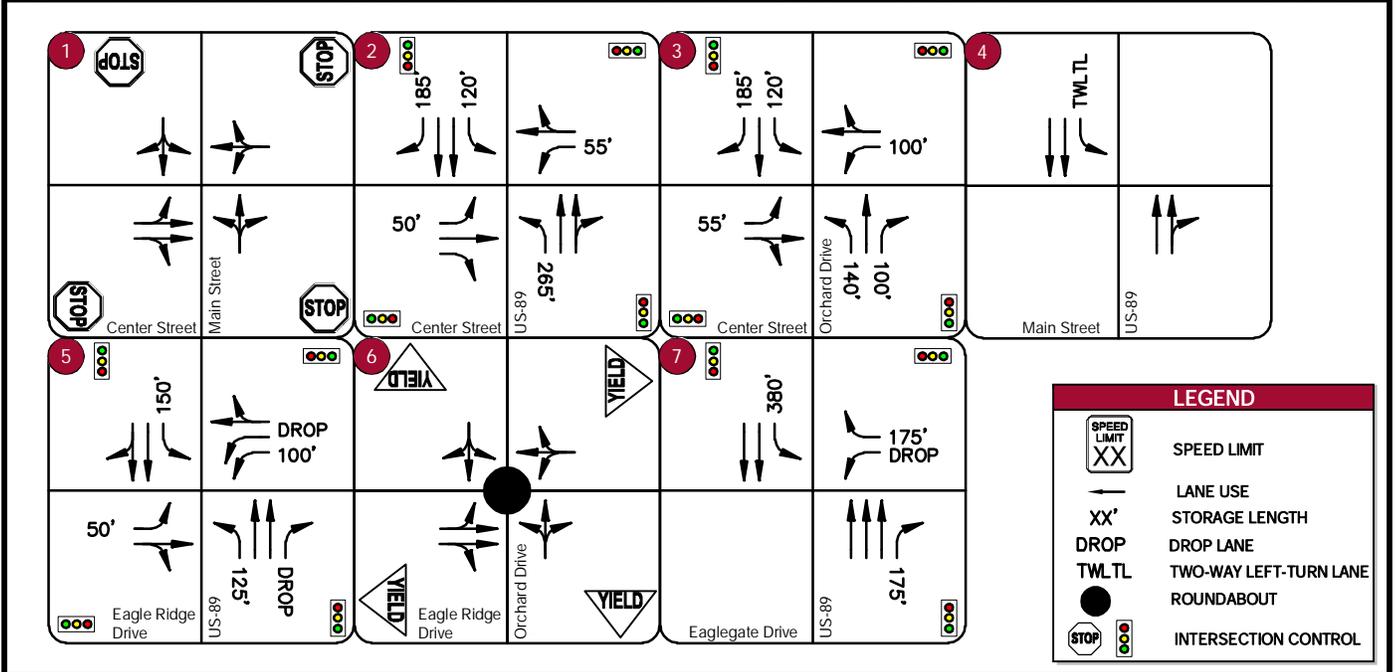
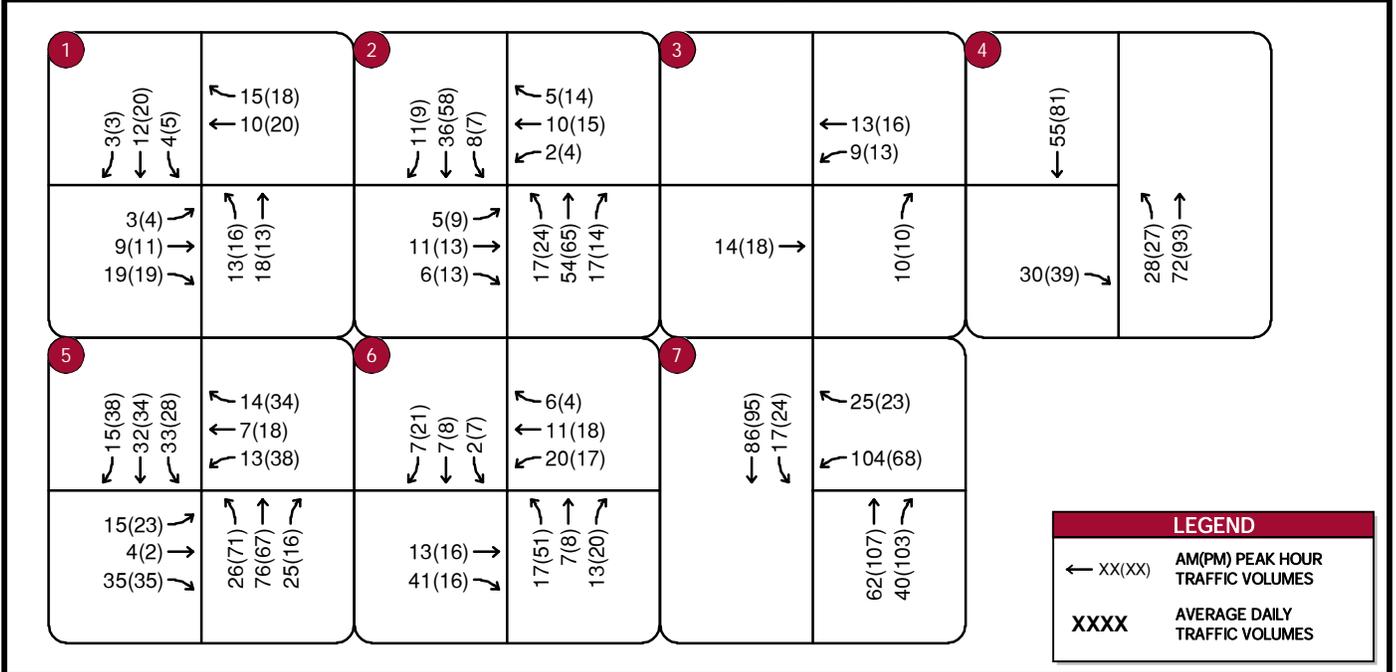


Image Source: Nearmap US, INC.





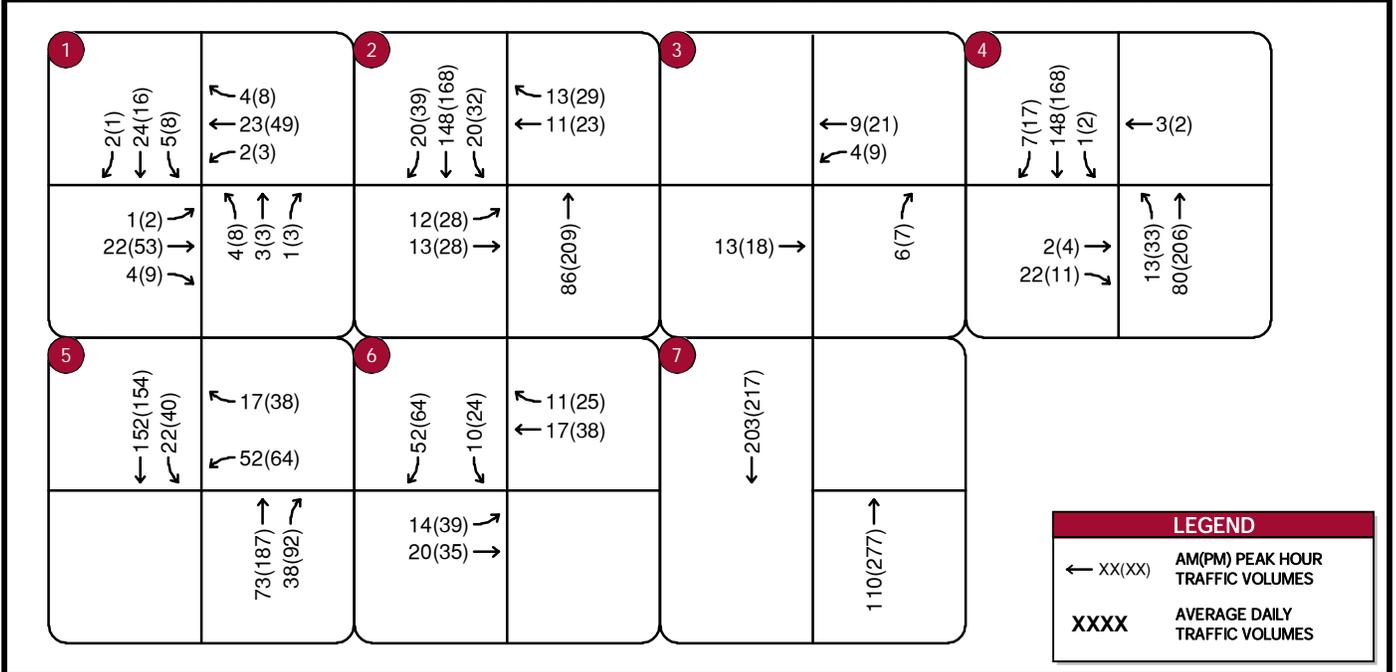




Image Source: Nearmap US, INC.

<p><b>1</b></p> <p>↖ 43(28) ↘ 62(74) ↙ 17(13)</p> <p>↗ 29(33) ↖ 166(177) ↘ 18(15)</p>	<p><b>2</b></p> <p>↖ 71(81) ↘ 491(454) ↙ 47(94)</p> <p>↗ 126(119) ↖ 121(70) ↘ 61(36)</p>	<p><b>3</b></p> <p>↖ 126(63) ↘ 290(212) ↙ 25(36)</p> <p>↗ 28(36) ↖ 165(107) ↘ 37(32)</p>	<p><b>4</b></p> <p>↖ 1(6) ↘ 685(600) ↙ 0(1)</p> <p>↗ 0(1) ↖ 0(2)</p>
<p>↖ 45(86) ↘ 262(383) ↙ 180(209)</p> <p>↗ 166(211) ↖ 72(98) ↘ 19(29)</p>	<p>↖ 102(150) ↘ 157(170) ↙ 83(102)</p> <p>↗ 66(66) ↖ 314(838) ↘ 45(57)</p>	<p>↖ 72(97) ↘ 64(145) ↙ 7(20)</p> <p>↗ 32(18) ↖ 119(342) ↘ 34(40)</p>	<p>↖ 2(0) ↘ 250(387)</p> <p>↗ 253(319) ↖ 413(869) ↘ 1(0)</p>
<p><b>5</b></p> <p>↖ 15(47) ↘ 815(600) ↙ 124(231)</p> <p>↗ 194(244) ↖ 7(19) ↘ 729(459)</p>	<p><b>6</b></p> <p>↖ 375(230) ↘ 22(23) ↙ 15(36)</p> <p>↗ 35(40) ↖ 486(409) ↘ 37(26)</p>	<p><b>7</b></p> <p>↖ 1586(1164) ↘ 35(59)</p> <p>↗ 65(62) ↖ 163(116)</p>	
<p>↖ 15(32) ↘ 4(8) ↙ 35(38)</p> <p>↗ 26(74) ↖ 453(985) ↘ 185(703)</p>	<p>↖ 62(392) ↘ 167(504) ↙ 70(103)</p> <p>↗ 88(137) ↖ 28(34) ↘ 26(48)</p>	<p>↖ 591(1621) ↘ 94(194)</p>	

**LEGEND**

← XX(XX) AM(PM) PEAK HOUR TRAFFIC VOLUMES

XXXX AVERAGE DAILY TRAFFIC VOLUMES



<p><b>1</b></p> <p>↖ 48(31) ↘ 89(94) ↙ 23(22)</p> <p>↗ 37(45) ↖ 232(269) ↘ 25(22)</p>	<p><b>2</b></p> <p>↖ 102(134) ↘ 726(698) ↙ 74(143)</p> <p>↗ 153(160) ↖ 145(99) ↘ 68(40)</p>	<p><b>3</b></p> <p>↖ 138(69) ↘ 318(232) ↙ 27(39)</p> <p>↗ 31(40) ↖ 192(138) ↘ 44(43)</p>	<p><b>4</b></p> <p>↖ 8(24) ↘ 907(829) ↙ 1(3)</p> <p>↗ 0(1) ↖ 3(2) ↘ 0(2)</p>
<p>↖ 57(108) ↘ 346(527) ↙ 223(264)</p> <p>↗ 199(256) ↖ 86(117) ↘ 23(38)</p>	<p>↖ 141(217) ↘ 211(241) ↙ 104(126)</p> <p>↗ 72(71) ↖ 430(1137) ↘ 48(62)</p>	<p>↖ 81(108) ↘ 83(177) ↙ 8(22)</p> <p>↗ 33(18) ↖ 121(349) ↘ 41(48)</p>	<p>↖ 4(4) ↘ 314(465) ↙ 1(0)</p> <p>↗ 301(397) ↖ 545(1195) ↘ 1(0)</p>
<p><b>5</b></p> <p>↖ 15(49) ↘ 1089(842) ↙ 161(302)</p> <p>↗ 234(308) ↖ 7(19) ↘ 872(577)</p>	<p><b>6</b></p> <p>↖ 435(298) ↘ 22(23) ↙ 25(61)</p> <p>↗ 56(77) ↖ 664(580) ↘ 43(29)</p>	<p><b>7</b></p> <p>↖ 2112(1612) ↘ 39(66)</p> <p>↗ 65(62) ↖ 163(116)</p>	
<p>↖ 15(32) ↘ 4(8) ↙ 35(38)</p> <p>↗ 26(75) ↖ 607(1369) ↘ 258(943)</p>	<p>↖ 84(482) ↘ 207(602) ↙ 74(114)</p> <p>↗ 90(139) ↖ 29(35) ↘ 26(49)</p>	<p>↖ 815(2224) ↘ 105(213)</p>	

LEGEND	
← XX(XX)	AM(PM) PEAK HOUR TRAFFIC VOLUMES
XXXX	AVERAGE DAILY TRAFFIC VOLUMES



<p><b>1</b></p> <p>↖ 43(28) ↘ 1(2) ↙ 78(85)</p> <p>↗ 98(130) ↖ 325(364) ↘ 10(28)</p> <p>↗ 45(86) ↘ 440(582) ↙ 2(10)</p> <p>↗ 7(5) ↘ 4(2) ↙ 27(18)</p>	<p><b>2</b></p> <p>↖ 71(81) ↘ 491(454) ↙ 47(94)</p> <p>↗ 126(119) ↖ 121(70) ↘ 69(36)</p> <p>↗ 102(150) ↘ 157(170) ↙ 339(495)</p> <p>↗ 318(383) ↘ 314(838) ↙ 45(69)</p>	<p><b>3</b></p> <p>↖ 126(63) ↘ 290(212) ↙ 25(36)</p> <p>↗ 28(36) ↖ 165(107) ↘ 37(32)</p> <p>↗ 72(97) ↘ 64(145) ↙ 7(20)</p> <p>↗ 32(18) ↘ 119(342) ↙ 34(40)</p>	<p><b>4</b></p> <p>↖ 933(987) ↘ 2(1)</p> <p>↗ 0(1) ↘ 0(2)</p> <p>↗ 666(1188) ↘ 1(0)</p>
<p><b>5</b></p> <p>↖ 15(47) ↘ 815(600) ↙ 124(231)</p> <p>↗ 194(244) ↖ 7(19) ↘ 729(459)</p> <p>↗ 15(32) ↘ 4(8) ↙ 35(38)</p> <p>↗ 26(74) ↘ 453(985) ↙ 185(703)</p>	<p><b>6</b></p> <p>↖ 375(230) ↘ 22(23) ↙ 15(36)</p> <p>↗ 35(40) ↖ 486(409) ↘ 37(26)</p> <p>↗ 62(392) ↘ 167(504) ↙ 70(103)</p> <p>↗ 88(137) ↘ 28(34) ↙ 26(48)</p>	<p><b>7</b></p> <p>↖ 1586(1164) ↘ 35(59)</p> <p>↗ 65(62) ↘ 163(116)</p> <p>↗ 591(1621) ↘ 94(194)</p>	

LEGEND	
← XX(XX)	AM(PM) PEAK HOUR TRAFFIC VOLUMES
XXXX	AVERAGE DAILY TRAFFIC VOLUMES



<p><b>1</b></p> <p>48(31) 2(3) 112(113)</p> <p>122(168) 429(494) 19(52)</p> <p>57(108) 565(776) 5(15)</p> <p>10(9) 6(3) 37(37)</p>	<p><b>2</b></p> <p>102(134) 726(698) 74(143)</p> <p>153(160) 145(99) 79(43)</p> <p>141(217) 211(241) 447(633)</p> <p>363(455) 430(1137) 48(75)</p>	<p><b>3</b></p> <p>138(69) 318(232) 27(39)</p> <p>31(40) 192(138) 44(43)</p> <p>81(108) 83(177) 8(22)</p> <p>33(18) 121(349) 41(48)</p>	<p><b>4</b></p> <p>1209(1285) 5(7)</p> <p>0(1) 0(2)</p> <p>847(1592) 1(0)</p>
<p><b>5</b></p> <p>15(49) 1089(842) 161(302)</p> <p>234(308) 7(19) 872(577)</p> <p>15(32) 4(8) 35(38)</p> <p>26(75) 607(1369) 258(943)</p>	<p><b>6</b></p> <p>435(298) 22(23) 25(61)</p> <p>56(77) 664(580) 43(29)</p> <p>84(482) 207(602) 74(114)</p> <p>90(139) 29(35) 26(49)</p>	<p><b>7</b></p> <p>2112(1612) 39(66)</p> <p>65(62) 163(116)</p> <p>815(2224) 105(213)</p>	

LEGEND	
← XX(XX)	AM(PM) PEAK HOUR TRAFFIC VOLUMES
XXXX	AVERAGE DAILY TRAFFIC VOLUMES

**APPENDIX**

*Working Paper # 1 – Current Conditions*

*Working Paper #2 – Future Conditions*

**APPENDIX A – WORKING PAPER #1**



**EXISTING CONDITIONS MEMORANDUM**

# **TOWN CENTER CIRCULATION STUDY**

**CITY OF NORTH SALT LAKE, UTAH**

*Prepared for:*  
**City of North Salt Lake**  
10 East Center Street  
North Salt Lake, UT 84054

*Prepared by:*  
**Kimley»»Horn**

December 2021  
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## EXISTING CONDITIONS MEMORANDUM

FOR

# TOWN CENTER CIRCULATION STUDY

***Prepared for:***

**City of North Salt Lake**  
10 East Center Street  
North Salt Lake, UT 84054

***Prepared by:***

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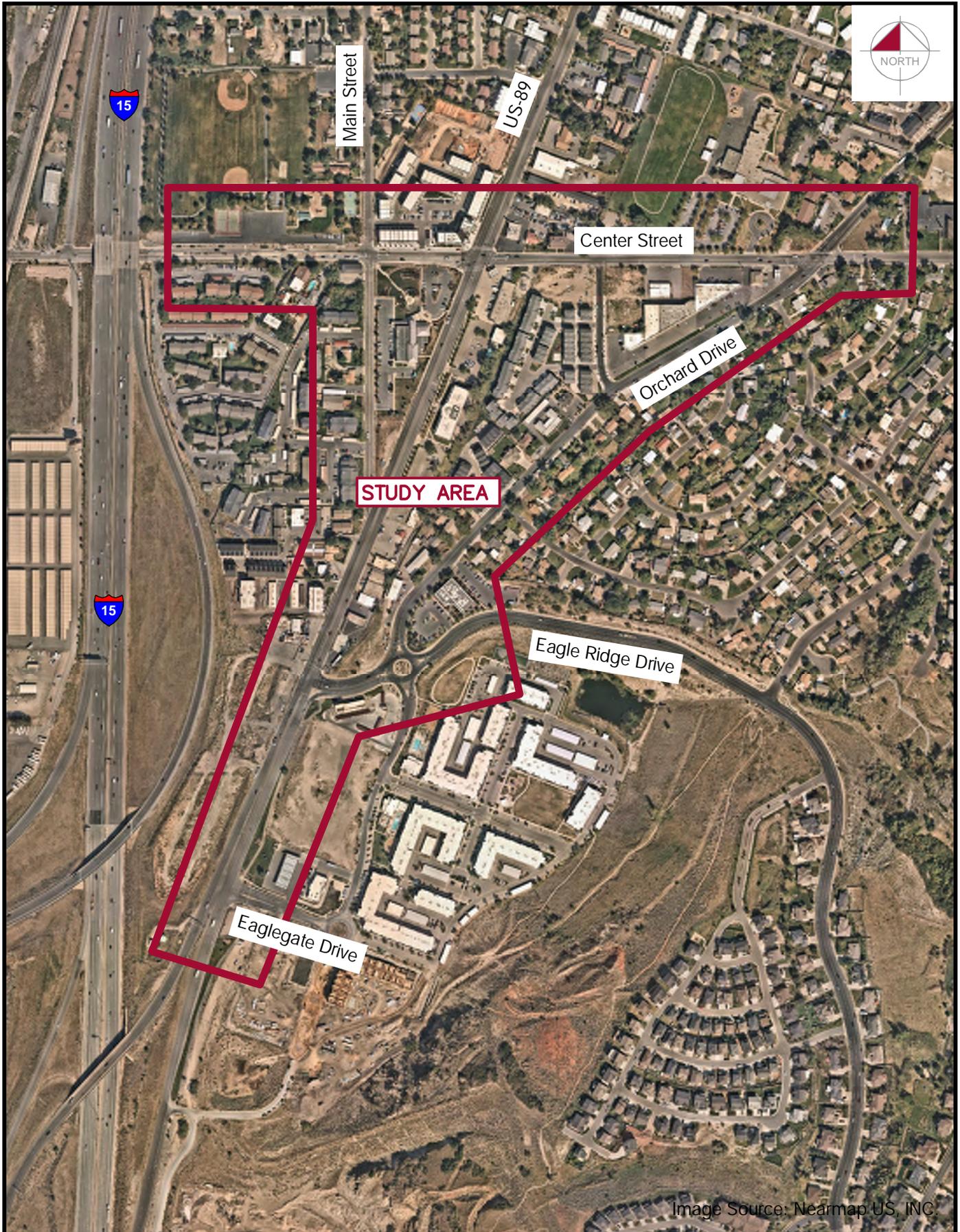
## 1. INTRODUCTION

The City of North Salt Lake (City) has been working for many years to develop a Town Center and has made significant progress. New multi-family development has begun to effectuate the desired changes in the area. As additional projects are considered, including additional Town Center development as well as regional projects such as Davis-Salt Lake City Community Connector, the City recognizes a need to conduct a technical evaluation of current and future traffic operations to confirm the feasibility of roadway network changes considered in the Town Center Master Plan.

The City Town Center Master Plan describes that:

*“the real focus of the proposed Town Center is at the side streets - Center Street, Main Street and Orchard Drive are envisioned to be transformed into great pedestrian corridors. City Hall and nearby Hatch Park form the core of the Town Center and are the heart of a proposed Civic/Cultural/Arts District.”*

The study will specifically explore options of closing or dead-ending a number of streets or altering intersections within the Town Center area to improve traffic flow and safety for all road users. The purpose of this existing conditions memorandum is to summarize the findings and deficiencies of the existing conditions found within the study area of the City Town Center related to capacity, level of service (LOS), safety, origin-destination data, and parking. The City Town Center study area is shown in **Figure 1**.

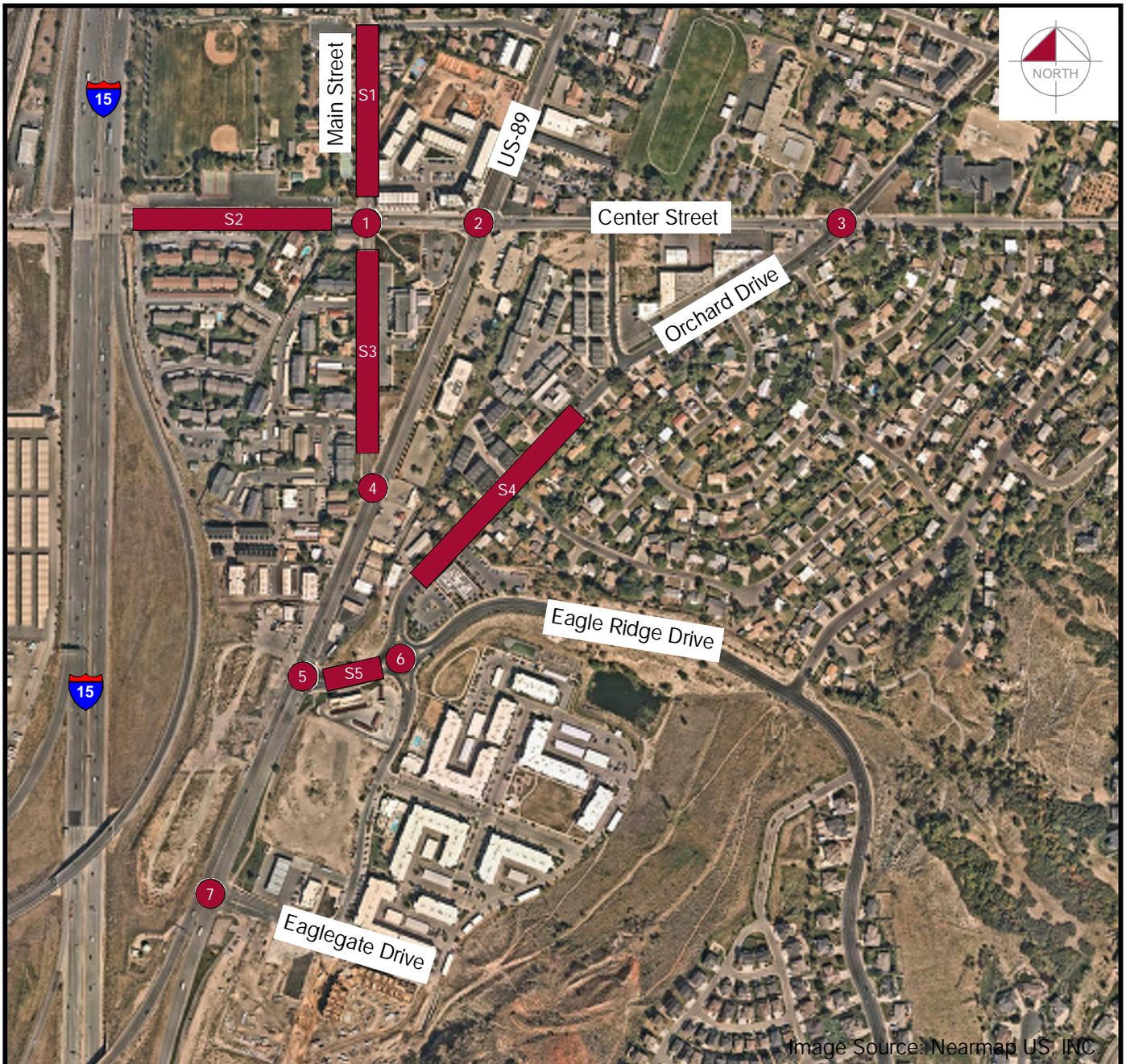


## 2. EXISTING TRAFFIC CONDITIONS

The following section presents the existing traffic conditions for the City Town Center study area. Within the study area the following intersection and roadway segments were identified for data collection and analysis:

- Intersections
  - Center Street / Main Street (#1)
  - US-89 / Center Street (#2)
  - Center Street / Orchard Drive (#3)
  - US-89 / Main Street (#4)
  - US-89 / Eagle Ridge Drive (#5)
  - Orchard Drive / Eagle Ridge Drive (#6)
  - US-89 / Eaglegate Drive (#7)
- Roadway Segments
  - Main Street, North of Center Street (S1)
  - Center Street, West of Main Street (S2)
  - Main Street, South of Center Street (S3)
  - Orchard Drive, North of Eagle Ridge Drive (S4)
  - Eagle Ridge Drive, East of Orchard Drive (S5)

The study area intersections and roadway segments are shown in **Figure 2**.



**Study Area Intersections:**

1. Center Street / Main Street
2. US-89 / Center Street
3. Center Street / Orchard Drive
4. US-89 / Main Street
5. US-89 / Eagle Ridge Drive
6. Orchard Drive / Eagle Ridge Drive
7. US-89 / Eaglegate Drive

**Study Area Roadway Segments:**

- S1. Main Street, North of Center Street
- S2. Center Street, West of Main Street
- S3. Main Street, South of Center Street
- S4. Orchard Drive, North of Eagle Ridge Drive
- S5. Eagle Ridge Drive, East of Orchard Drive

## 2.1. Existing Lane Configurations and Control

Regional access to the City Town Center study area is provided by Interstate 15 and US-89. Direct access to the Town Center study area is provided by Center Street, Main Street, US-89, Orchard Drive, and Eagle Ridge Drive. Existing speed limits, lane configurations, and traffic control at the time of this study are illustrated in **Figure 3**.

## 2.2. Existing Traffic Volumes

Existing AM (7:00-9:00) and PM (4:00-6:00) peak period turning movement count data was field collected for the following intersections on Thursday, September 2, 2021:

- Center Street / Main Street (#1)
- US-89 / Center Street (#2)
- Center Street / Orchard Drive (#3)
- US-89 / Main Street (#4)
- US-89 / Eagle Ridge Drive (#5)
- Orchard Drive / Eagle Ridge Drive (#6)
- US-89 / Eaglegate Drive (#7)

Existing 24-hour roadway count data was field collected for the following roadway segments on Thursday, September 2, 2021:

- Main Street, North of Center Street (S1)
- Center Street, West of Main Street (S2)
- Main Street, South of Center Street (S3)
- Orchard Drive, North of Eagle Ridge Drive (S4)
- Eagle Ridge Drive, East of Orchard Drive (S5)

A summary of the collected traffic data in the study area are shown in **Figure 4**. The field counted data sheets are provided in **Appendix A**.

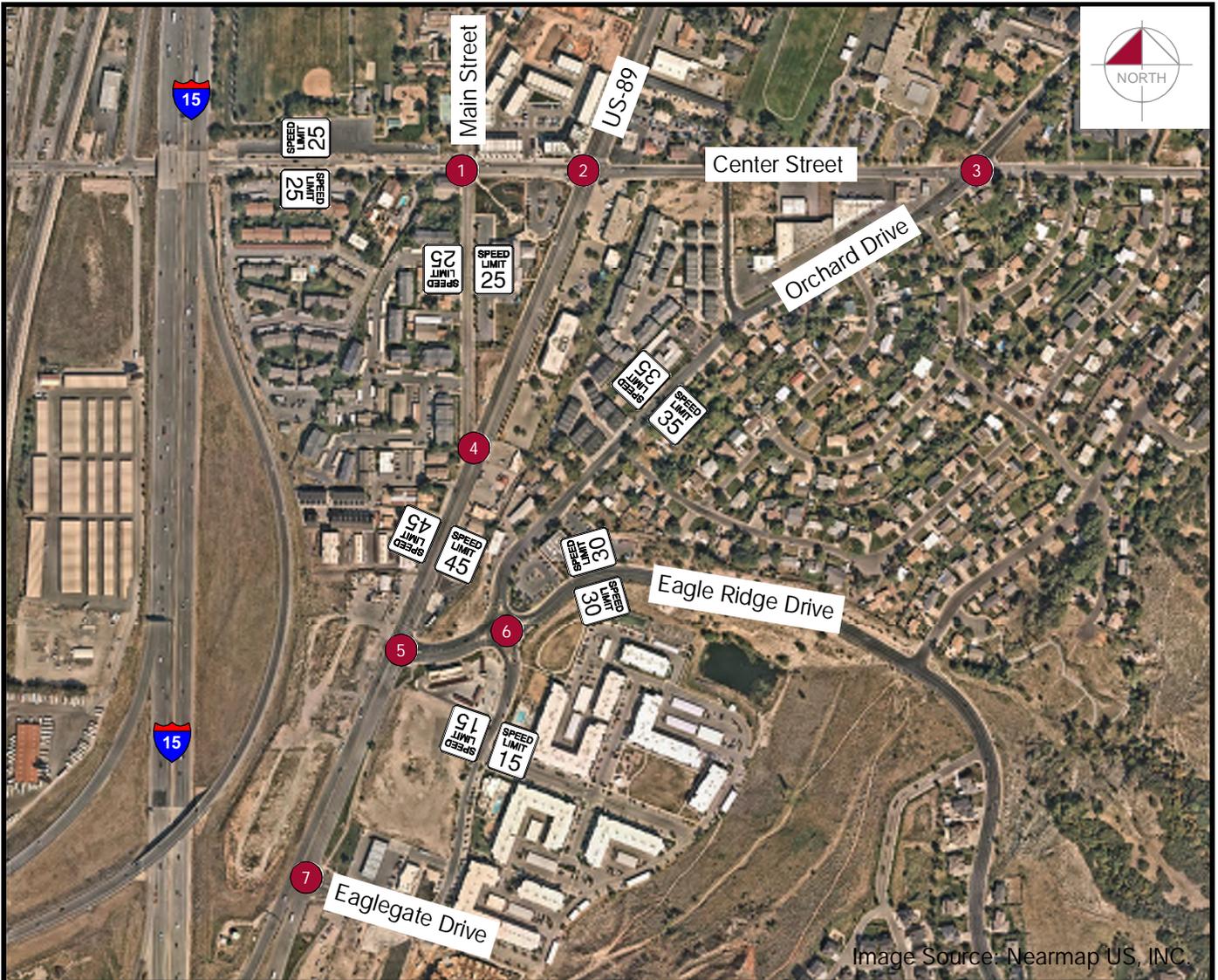
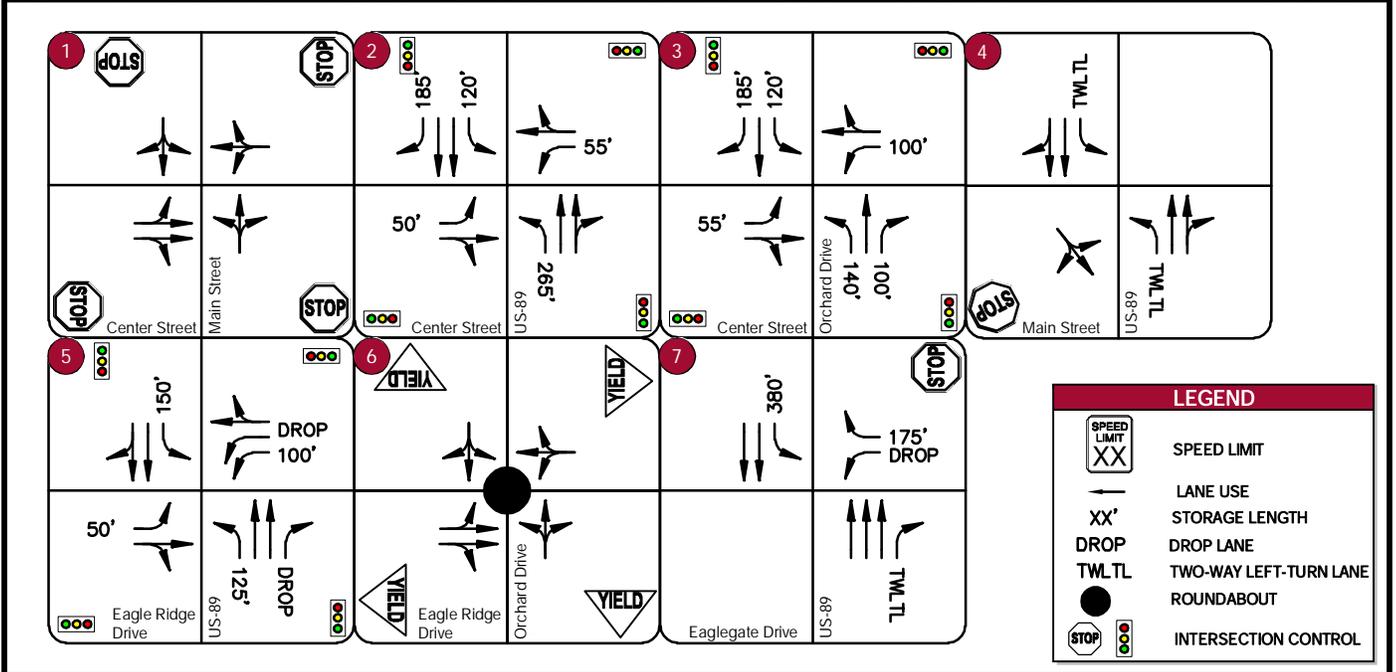


Image Source: Nearmap US, INC.





<p><b>1</b></p> <p>← 39(25) ← 49(53) ← 13(8)</p> <p>↑ 13(14) ↑ 146(147) ↑ 17(14)</p> <p>40(77) → 239(351) → 152(179) →</p> <p>← 146(186) ← 52(81) ← 18(28)</p>	<p><b>2</b></p> <p>← 57(69) ← 434(378) ← 37(83)</p> <p>↑ 117(102) ↑ 108(53) ↑ 57(31)</p> <p>91(132) → 137(147) → 72(83) →</p> <p>← 48(41) ← 252(750) ← 27(42)</p>	<p><b>3</b></p> <p>← 123(61) ← 283(207) ← 24(35)</p> <p>↑ 27(35) ↑ 148(88) ↑ 27(18)</p> <p>70(94) → 49(123) → 7(19) →</p> <p>← 32(18) ← 118(340) ← 24(30)</p>	<p><b>4</b></p> <p>← 1(6) ← 612(504) ← 0(1)</p> <p>↑ 0(1) ↑ 0(2)</p> <p>2(0) → 210(332) →</p> <p>← 217(281) ← 328(747) ← 1(0)</p>
<p><b>5</b></p> <p>← 0(9) ← 754(545) ← 88(195)</p> <p>↑ 174(203) ↑ 0(1) ↑ 693(408)</p> <p>0(9) → 0(6) → 0(3) →</p> <p>← 0(3) ← 358(871) ← 152(652)</p>	<p><b>6</b></p> <p>← 366(208) ← 15(15) ← 13(29)</p> <p>↑ 27(33) ↑ 439(362) ↑ 16(8)</p> <p>60(380) → 149(473) → 28(84) →</p> <p>← 71(86) ← 21(26) ← 13(28)</p>	<p><b>7</b></p> <p>← 1424(1015) ← 17(33)</p> <p>↑ 40(39) ↑ 59(48)</p> <p>502(1437) → 51(86) →</p>	<p><b>LEGEND</b></p> <p>← XX(XX) AM(PM) PEAK HOUR TRAFFIC VOLUMES</p> <p>XXXX AVERAGE DAILY TRAFFIC VOLUMES</p>

### 3. EXISTING TRAFFIC ANALYSIS

This section presents the existing conditions traffic analysis scenarios and analysis results for the identified intersection within the City Town Center study area.

#### 3.1. Traffic Analysis Scenarios

Traffic scenarios analyzed for the existing conditions traffic analysis for the study area were identified as follows:

- Scenario #1 – 2021 Existing Conditions
  - No modifications to the existing intersections or street network
- Scenario #2 – 2021 Existing Conditions with Modifications
  - Closure of the intersection of US-89 / Main Street (#4) with vehicular traffic rerouted accordingly

Scenario #2 does not look at the particular location of roadway changes or closures on Main Street south of Center Street but accounts for the impact that the closure of the intersection of US-89 / Main Street (#4) would have on the surrounding study area intersections. The modified 2021 lane configuration and traffic control is illustrated in **Figure 5** along with the adjusted intersection traffic volumes shown in **Figure 6**.

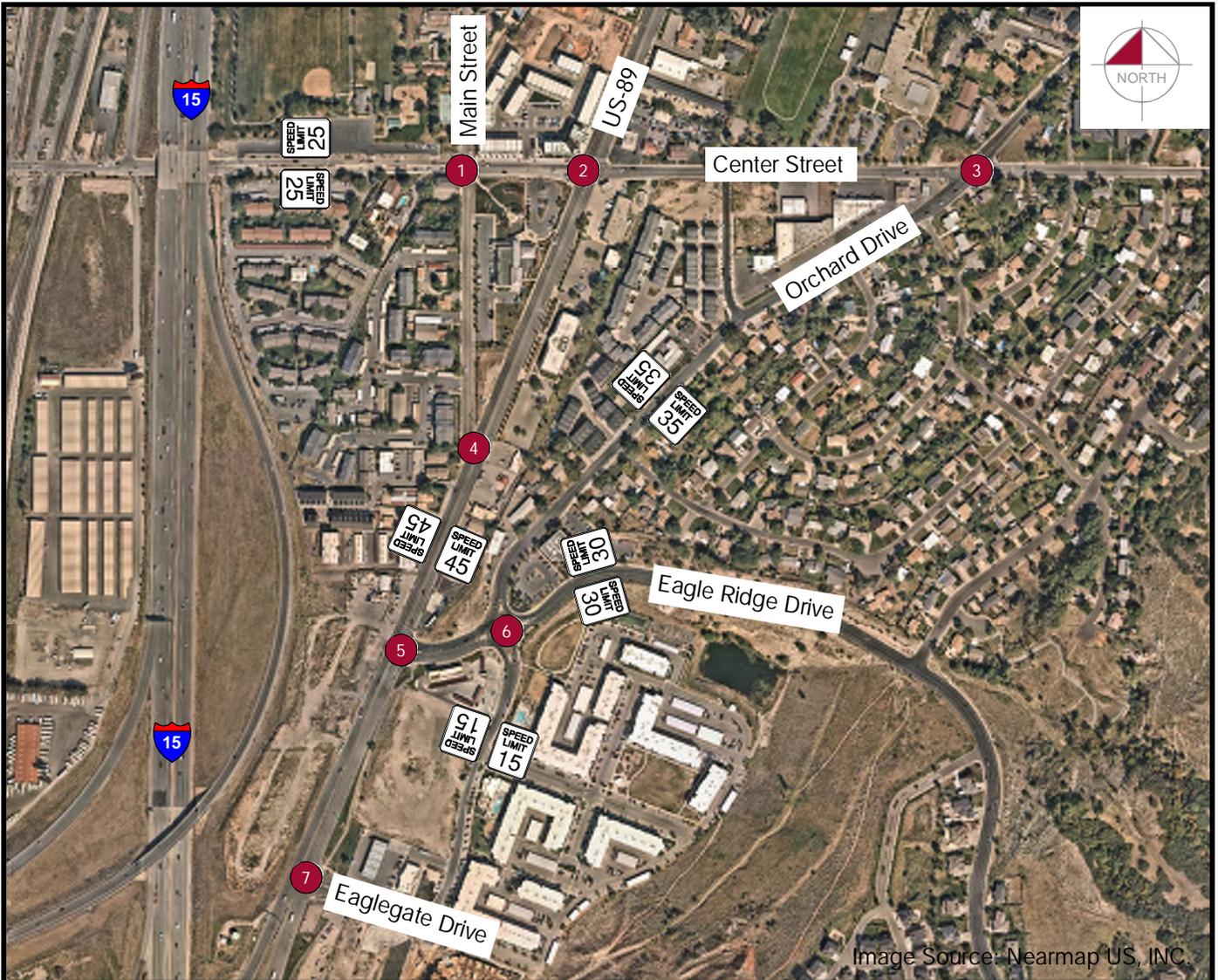
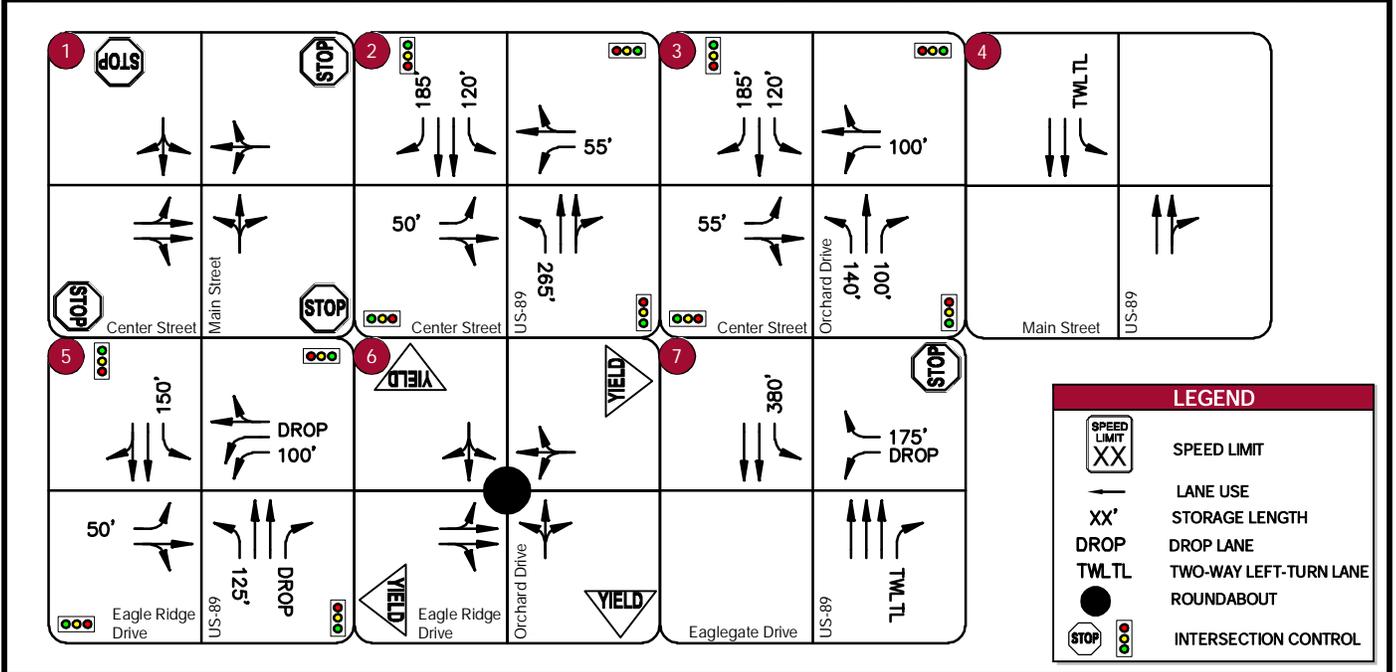
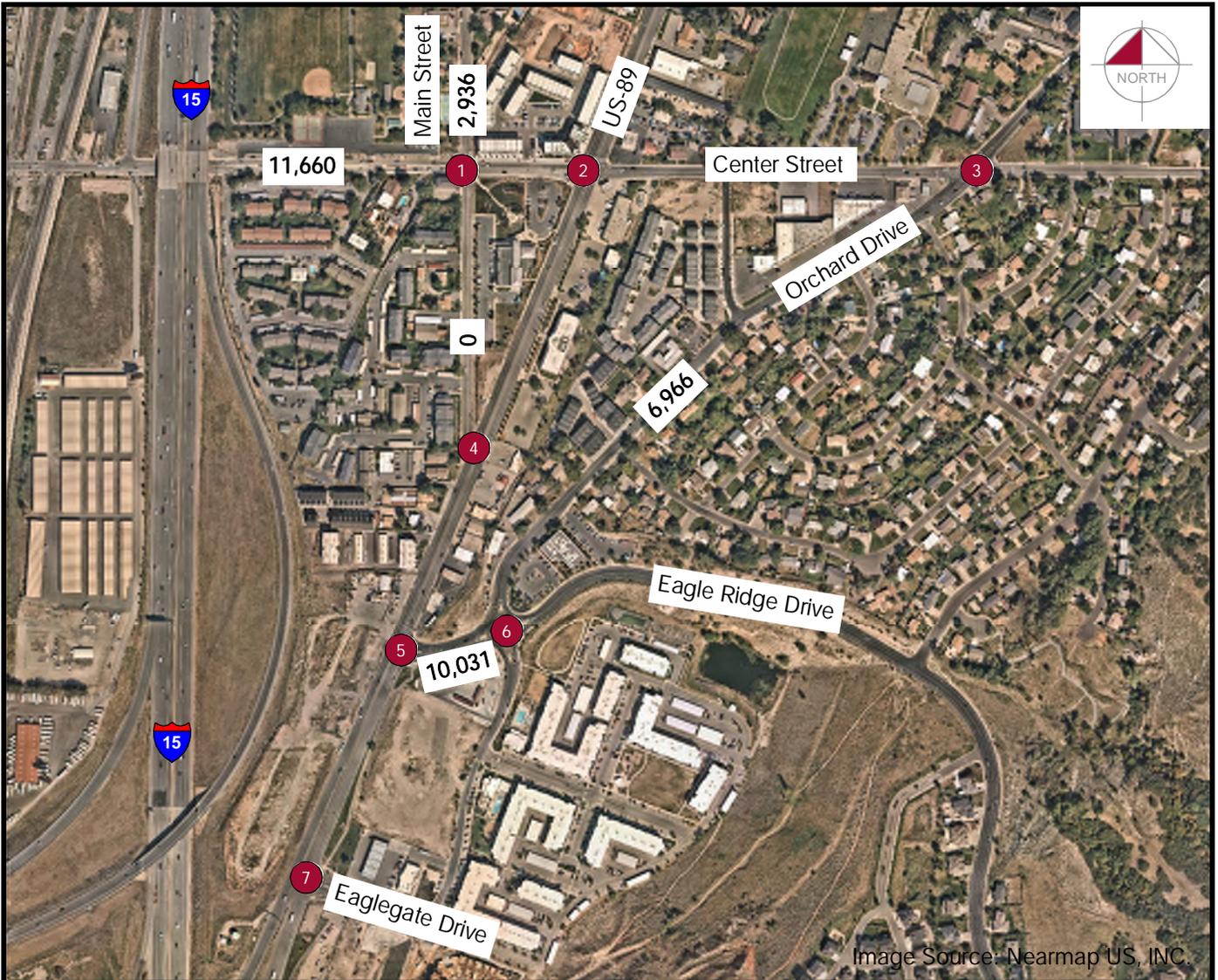


Image Source: Nearmap US, INC.





<p><b>1</b></p> <p>↖ 39(25) ↘ 1(2) ↙ 61(59)</p> <p>↖ 61(93) ↘ 283(307) ↙ 9(26)</p> <p>↖ 40(77) ↘ 389(521) ↙ 2(9)</p> <p>↖ 7(5) ↘ 4(2) ↙ 26(17)</p>	<p><b>2</b></p> <p>↖ 57(69) ↘ 434(378) ↙ 37(83)</p> <p>↖ 117(102) ↘ 108(53) ↙ 65(31)</p> <p>↖ 91(132) ↘ 137(147) ↙ 284(415)</p> <p>↖ 265(322) ↘ 252(750) ↙ 27(53)</p>	<p><b>3</b></p> <p>↖ 123(61) ↘ 283(207) ↙ 24(35)</p> <p>↖ 27(35) ↘ 148(88) ↙ 27(18)</p> <p>↖ 70(94) ↘ 49(123) ↙ 7(19)</p> <p>↖ 32(18) ↘ 118(340) ↙ 24(30)</p>	<p><b>4</b></p> <p>↖ 823(842) ↘ 2(1)</p> <p>↖ 0(1) ↘ 0(2)</p> <p>↖ 545(1028) ↘ 1(0)</p>
<p><b>5</b></p> <p>↖ 0(9) ↘ 754(545) ↙ 88(195)</p> <p>↖ 174(203) ↘ 0(1) ↙ 693(408)</p> <p>↖ 0(9) ↘ 0(6) ↙ 0(3)</p> <p>↖ 0(3) ↘ 358(871) ↙ 152(652)</p>	<p><b>6</b></p> <p>↖ 366(208) ↘ 15(15) ↙ 13(29)</p> <p>↖ 27(33) ↘ 439(362) ↙ 16(8)</p> <p>↖ 60(380) ↘ 149(473) ↙ 28(84)</p> <p>↖ 71(86) ↘ 21(26) ↙ 13(28)</p>	<p><b>7</b></p> <p>↖ 1424(1015) ↘ 17(33)</p> <p>↖ 40(39) ↘ 59(48)</p> <p>↖ 502(1437) ↘ 51(86)</p>	

**LEGEND**

← XX(XX) AM(PM) PEAK HOUR TRAFFIC VOLUMES

### 3.2. Analysis Methodology

Study area intersections were analyzed based on average total delay for signalized and unsignalized intersections as presented in the Transportation Research Board's *Highway Capacity Manual, 6<sup>th</sup> Edition* (HCM 6).

For unsignalized analysis, the level of service (LOS) for a two-way stop-controlled (TWSC) intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for a signalized intersection, four-way stop controlled intersections, or a roundabout is defined for the intersection as a whole. **Table 1** shows the definition of LOS for intersections.

**Table 1 – Level of Service Definitions**

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤10	10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

*Definitions provided from the Highway Capacity Manual, 6<sup>th</sup> Edition, Transportation Research Board.*

*Synchro 11* Analysis and Optimization Software was used to analyze the study area intersections for LOS and total delay. *Synchro 11* utilizes the Highway Capacity Manual (HCM) 6<sup>th</sup> edition methodologies to determine intersection delay and LOS.

### 3.3. Operational Analysis Results

Operational analysis results for the existing conditions analysis scenarios are based on the lane geometry and intersection control shown in **Figure 3** (Scenario #1) and **Figure 5** (Scenario #2). **Table 2** shows the operational analysis results for Scenario #1 and Scenario #2. Failing intersections' and movements' LOS and delay are bolded in the tables. Synchro reports for the operational analyses for each scenario are provided in **Appendix B**.

In Scenario #1 the US-89 / Eaglegate Drive (#7) intersection operates at a failing LOS in the AM and PM peak hour. All other intersections operate acceptably.

In Scenario #2 the additional traffic routed through the US-89 / Center Street (#2) intersection caused the failing LOS in the PM peak hour. The US-89 / Main Street (#4) intersection operates at a failing LOS in the PM peak hour and the US-89 / Eaglegate Drive (#7) intersection operates at a failing LOS in the AM and PM peak hour. All other intersections operate acceptably.

**Table 2 – LOS Analysis**

Intersection (Control)	Movement	Scenario #1				Scenario #2			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS
#1 Center Street / Main Street (AWCS)	Intersection	11.7	B	19.5	C	11.7	B	17.7	C
	EBTL	11.1	B	18.2	C	11.5	B	18.6	C
	EBTR	12.6	B	25.0	C	10.5	B	14.0	B
	WB	11.2	B	14.0	B	13.2	B	21.1	C
	NB	12.4	B	19.3	C	9.2	A	10.0	A
	SB	10.2	B	12.2	B	10.2	B	11.5	B
#2 US-89 / Center Street (Signal)	Intersection	23.8	C	27.9	C	35.7	D	<b>74.2</b>	<b>E</b>
	EBL	26.9	C	29.2	C	23.3	C	23.6	C
	EBTR	31.6	C	36.9	D	<b>73.1</b>	<b>E</b>	<b>220.5</b>	<b>F</b>
	WBL	26.2	C	31.5	C	27.2	C	28.4	C
	WBTR	37.6	D	39.7	D	30.9	C	30.8	C
	NBL	14.3	B	12.7	B	27.4	C	27.1	C
	NBTR	17.4	B	31.9	C	20.4	C	38.2	D
	SBL	14.2	B	14.9	B	20.0	B	21.0	C
	SBT	18.5	B	15.1	B	26.3	C	24.0	C
SBR	16.5	B	14.0	B	23.1	C	22.2	C	
#3 Center Street / Orchard Drive (Signal)	Intersection	17.3	B	16.5	B	17.3	B	16.5	B
	EBL	23.1	C	26.6	C	23.1	C	26.6	C
	EBTR	24.3	C	31.4	C	24.3	C	31.4	C
	WBL	23.1	C	28.2	C	23.1	C	28.2	C
	WBTR	28.4	C	34.6	C	28.4	C	34.6	C
	NBL	10.0	A	6.8	A	10.0	A	6.8	A
	NBTR	11.8	B	9.9	A	11.8	B	9.9	A
	NBR	10.7	B	7.5	A	10.7	B	7.5	A
	SBL	9.8	A	6.7	A	9.8	A	6.7	A
	SBT	14.4	B	8.2	A	14.4	B	8.2	A
SBR	12.5	B	7.3	A	12.5	B	7.3	A	
#4 US-89 / Main Street (TWCS)	EB	14.4	B	16.8	C	-	-	-	-
	NBL	10.4	B	10.0	A	-	-	-	-
	SBL	0.0	A	9.4	A	8.7	A	10.7	B

**Table 2 Continued – LOS Analysis**

Intersection (Control)	Movement	Scenario #1				Scenario #2			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (Sec/Veh)	LOS						
#5 US-89 / Eagle Ridge Drive (Signal)	Intersection	25.6	C	18.7	B	25.6	C	18.7	B
	EBL	0.0	A	42.9	D	0.0	A	42.9	D
	EBTR	0.0	A	36.3	D	0.0	A	36.3	D
	WBL	<b>59.0</b>	<b>E</b>	49.9	D	<b>59.0</b>	<b>E</b>	49.9	D
	WBTR	0.7	A	9.5	A	0.7	A	9.5	A
	NBL	0.0	A	20.7	C	0.0	A	20.7	C
	NBT	17.1	B	26.0	C	17.1	B	26.0	C
	NBR	0.2	A	1.2	A	0.2	A	1.2	A
	SBL	9.2	A	20.5	C	9.2	A	20.5	C
SBTR	12.2	B	7.2	A	12.2	B	7.2	A	
#6 Orchard Drive / Eagle Ridge Drive (Roundabout)	Intersection	8.1	A	7.9	A	8.1	A	7.9	A
	EBLT	3.9	A	6.6	A	3.9	A	6.6	A
	EBTR	3.7	A	6.6	A	3.7	A	6.6	A
	WBLT	7.1	A	10.6	B	7.1	A	10.6	B
	WBR	3.2	A	4.7	A	3.2	A	4.7	A
	NB	4.3	A	10.1	B	4.3	A	10.1	B
	SB	12.8	B	7.7	A	12.8	B	7.7	A
#7 US-89 / Eaglegate Drive (TWCS)	WBL	<b>43.4</b>	<b>E</b>	<b>414.9</b>	<b>F</b>	<b>43.4</b>	<b>E</b>	<b>414.9</b>	<b>F</b>
	WBR	11.3	B	19.4	C	11.3	B	19.4	C
	SBL	11.2	B	28.1	D	11.2	B	28.1	D

In Scenario #2 the failing US-89 / Center Street (#2) intersection in the PM peak hour could be mitigated by adding an eastbound right-turn pocket. There is currently about 60 feet of pavement width on the eastbound approach of the intersection. An eastbound right-turn pocket could potentially be added through re-striping the approach. This would give 50 to 60 feet of storage for eastbound right-turning vehicles. The addition of an eastbound right turning pocket and additional signal timing improvements have the potential to reduce the intersection delay per vehicle to 34.9 seconds (LOS C). The eastbound right movement would also operate acceptably at 54.7 seconds of delay (LOS D). The anticipated 95<sup>th</sup> queue length for the eastbound right turn is 545 feet. The current available storage length would not be adequate.

In Scenario #2 the US-89 / Main Street (#4) intersection is closed. The operational analysis is shown for the delay of vehicles using the private driveways at this location. No potential mitigation is recommended to reduce delay at this driveway location.

The failing operations at the US-89 / Eaglegate Drive (#7) could be mitigated by the construction of a traffic signal, as discussed in the following chapter.

### 3.4. Signal Warrant Analysis

A preliminary traffic signal warrant analysis was conducted for the stop-controlled study area intersections of Center Street / Main Street (#1) and US-89 / Eaglegate Drive (#7). The analysis is based on traffic signal warrants defined in the 2009 *Manual on Uniform Traffic Control Devices* (MUTCD). The signal warrant analysis was conducted for the MUTCD traffic signal warrants using the available turning movement count data that was field collected on Thursday, September 2, 2021. The field counted data sheets are provided in **Appendix A. Table 3** shows results of the preliminary traffic signal warrant. **Appendix C** contains the signal warrant analysis outputs.

**Table 3 – Traffic Signal Warrant Summary**

MUTCD Traffic Signal Warrant	Intersection	
	Center Street / Main Street (#1)	US-89 / Eaglegate Drive (#7)
1 – Eight-hour Vehicular Volume	*	Yes
2 – Four-hour Vehicular Volume	No	Yes
3 – Peak Hour	Yes	Yes

*\*For the intersection of Center Street / Main Street (#1) only peak hour counts were collected resulting in the inability to determine if the eight-hour vehicular volumes warrant a traffic signal.*

## 4. CRASH ANALYSIS

Crash data were obtained for the City Town Center study area for the five-year period from 2016-2020 on the Utah Department of Transportation’s (UDOT) Numetric website. The crash data was utilized to map study area crashes (**Figure 7**), crash density (**Figure 8**), and bicycle and pedestrian crashes (**Figure 9**). A summary of the crash data utilized is provided in **Appendix D**.

The data shows that the US-89 / Center Street intersection and the US-89 / Eagle Ridge Drive intersection had the highest crash frequency of the study intersections. A breakdown of crashes by severity for these intersections, as well as the US-89 / Main Street intersection are shown in **Table 4**. A breakdown of crashes by type for each intersection is shown in **Table 5**.

**Table 4 – Crash Data by Severity**

Intersection	Year	Total Crashes	Crash Severity					
			Property Damage Only		Injury		Fatal	
			#	%	#	%	#	%
(2) US-89 / Center Street	2016	2	1	50%	0	0%	1	50%
	2017	8	2	25%	6	75%	0	0%
	2018	3	3	100%	0	0%	0	0%
	2019	6	2	33%	4	67%	0	0%
	2020	7	5	71%	2	29%	0	0%
<i>Sub-Total</i>		26	13	50%	12	46%	1	4%
(4) US-89 / Main Street	2016	4	4	100%	0	0%	0	0%
	2017	2	2	100%	0	0%	0	0%
	2018	2	2	100%	0	0%	0	0%
	2019	4	4	100%	0	0%	0	0%
	2020	1	0	0%	1	100%	0	0%
<i>Sub-Total</i>		13	12	92%	1	8%	0	0%
(5) US-89 / Eagle Ridge Drive	2016	8	7	88%	1	13%	0	0%
	2017	13	11	85%	2	15%	0	0%
	2018	6	6	100%	0	0%	0	0%
	2019	9	5	56%	4	44%	0	0%
	2020	5	4	80%	1	20%	0	0%
<i>Sub-Total</i>		41	33	80%	8	20%	0	0%
<b>Total</b>		<b>80</b>	<b>58</b>	<b>73%</b>	<b>21</b>	<b>26%</b>	<b>1</b>	<b>1%</b>

A total of 80 crashes were recorded at for the intersections between 2016 and 2020. The 80 crashes resulted in 58 property damage only crashes (73%), 21 injury crashes (26%), and 1 fatal crash (1%). The fatal crash occurred at the US-89/Center Street intersection.

**Table 5 – Crash Data by Type**

Intersection	Year	Total Crashes	Crash Type									
			Angle		Rear-End		Sideswipe		Single-Vehicle		Other	
			#	%	#	%	#	%	#	%	#	%
(2) US-89 / Center Street	2016	2	2	100%	0	0%	0	0%	0	0%	0	0%
	2017	8	3	38%	2	25%	0	0%	3	38%	0	0%
	2018	3	0	0%	2	67%	1	33%	0	0%	0	0%
	2019	6	2	33%	2	33%	0	0%	1	17%	1	17%
	2020	7	2	29%	3	43%	0	0%	2	29%	0	0%
<i>Sub-Total</i>		<b>26</b>	<b>9</b>	<b>35%</b>	<b>9</b>	<b>35%</b>	<b>1</b>	<b>4%</b>	<b>6</b>	<b>23%</b>	<b>1</b>	<b>4%</b>
(4) US-89 / Main Street	2016	4	0	0%	2	50%	2	50%	0	0%	0	0%
	2017	2	0	0%	1	50%	1	50%	0	0%	0	0%
	2018	2	0	0%	2	100%	0	0%	0	0%	0	0%
	2019	4	0	0%	4	100%	0	0%	0	0%	0	0%
	2020	1	0	0%	1	100%	0	0%	0	0%	0	0%
<i>Sub-Total</i>		<b>13</b>	<b>0</b>	<b>0%</b>	<b>10</b>	<b>77%</b>	<b>3</b>	<b>23%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>
(5) US-89 / Eagle Ridge Drive	2016	8	4	50%	2	25%	2	25%	0	0%	0	0%
	2017	13	4	31%	3	23%	1	8%	2	15%	3	23%
	2018	6	2	33%	3	50%	1	17%	0	0%	0	0%
	2019	9	4	44%	1	11%	0	0%	2	22%	2	22%
	2020	5	1	20%	0	0%	1	20%	1	20%	2	40%
<i>Sub-Total</i>		<b>41</b>	<b>15</b>	<b>37%</b>	<b>9</b>	<b>22%</b>	<b>5</b>	<b>12%</b>	<b>5</b>	<b>12%</b>	<b>7</b>	<b>17%</b>
<b>Total</b>		<b>80</b>	<b>24</b>	<b>30%</b>	<b>28</b>	<b>35%</b>	<b>9</b>	<b>11%</b>	<b>11</b>	<b>14%</b>	<b>8</b>	<b>10%</b>

The 80 crashes resulted in 24 angle crashes (30%), 28 rear-end crashes (35%), 9 sideswipe crashes (11%), 11 single-vehicle crashes (14%), and 8 other crashes (10%).

At Eagle Ridge Drive, 37% of the crashes were angle crashes, associated with turning vehicles. 22% of crashes were rear-end crashes, typically associated with congested condition. At the US-89 / Eagle Ridge Drive intersection, 6 of the 7 “other” crashes were head-on crashes.

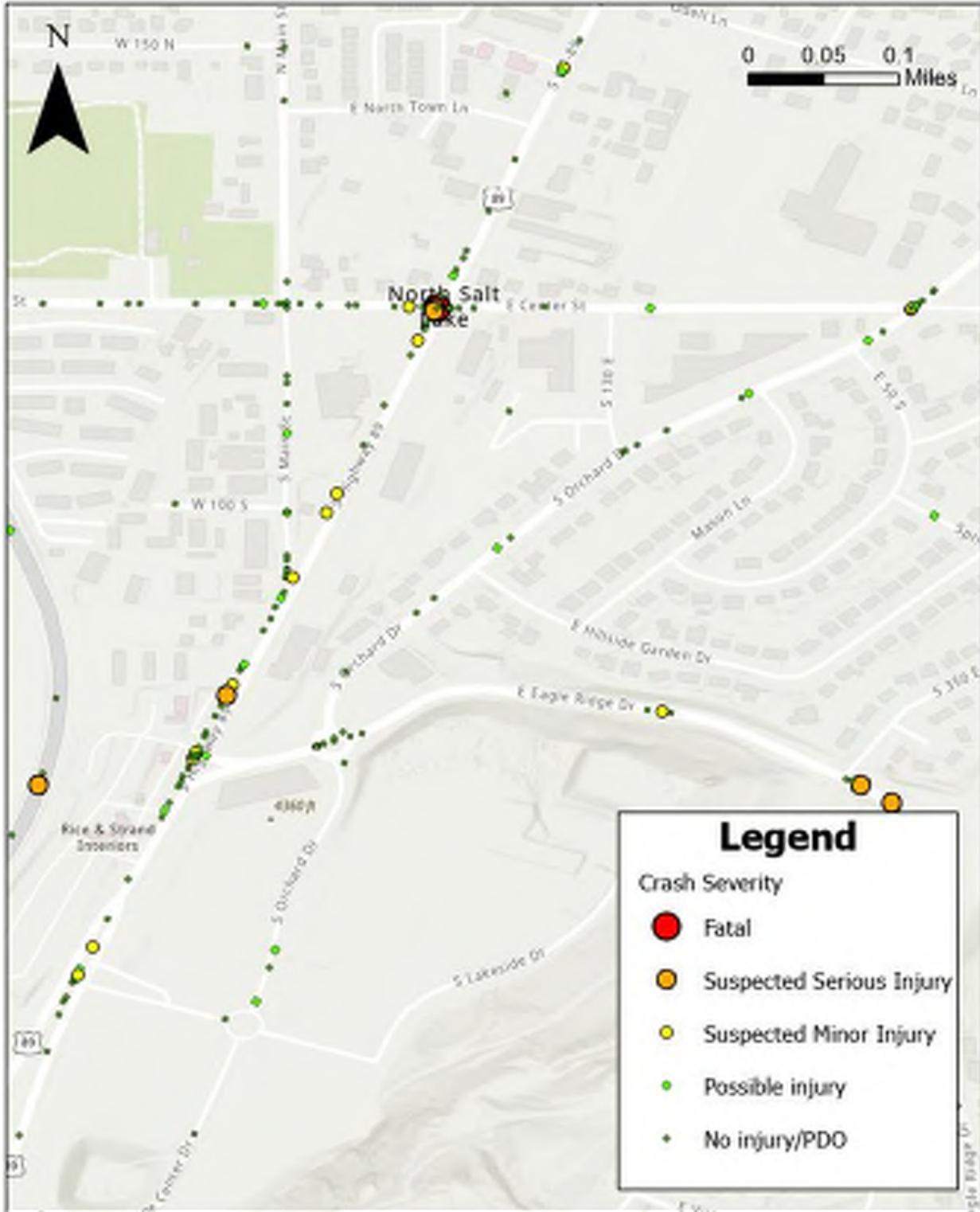


Figure 7 – All Crashes

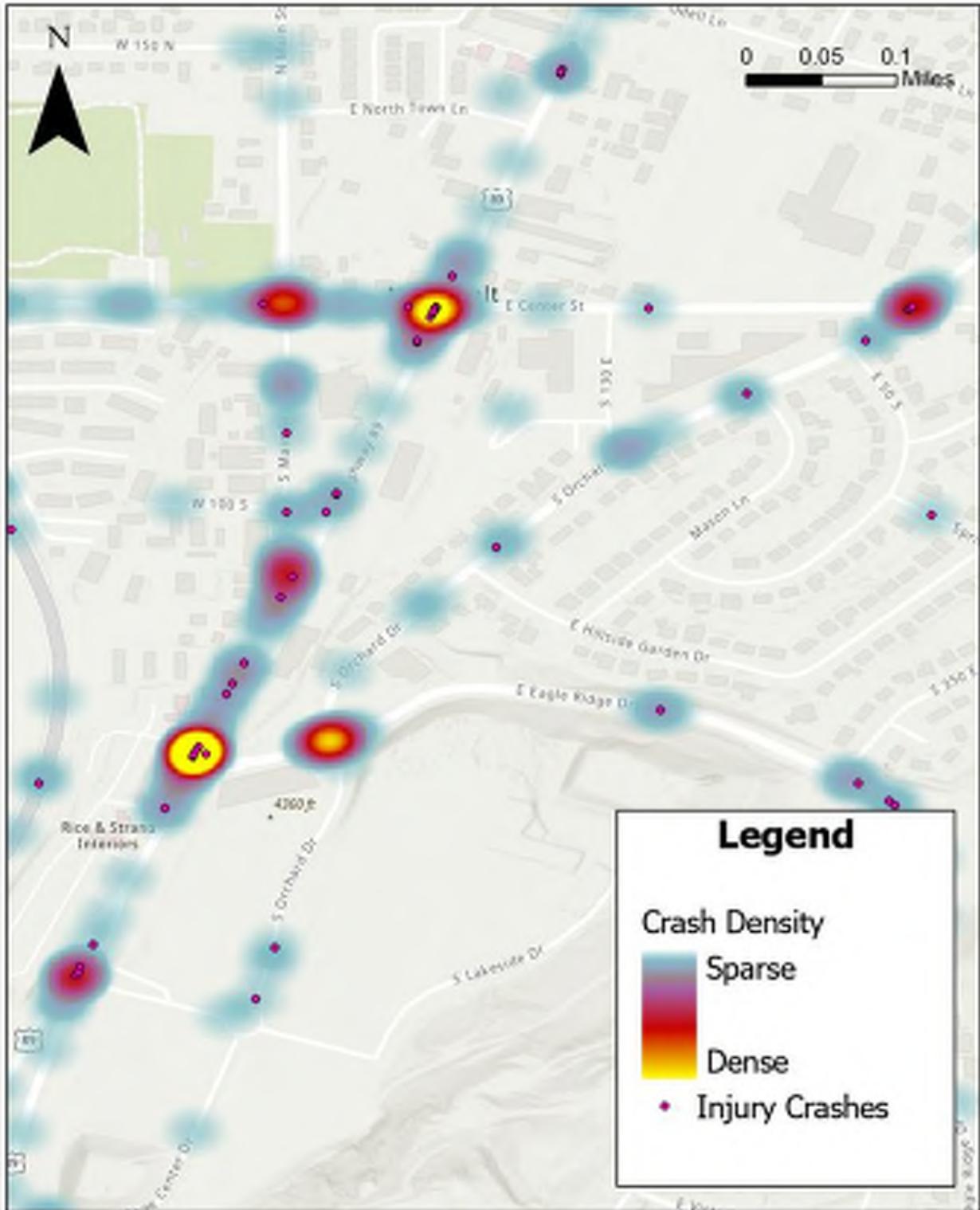


Figure 8 – Crash Density

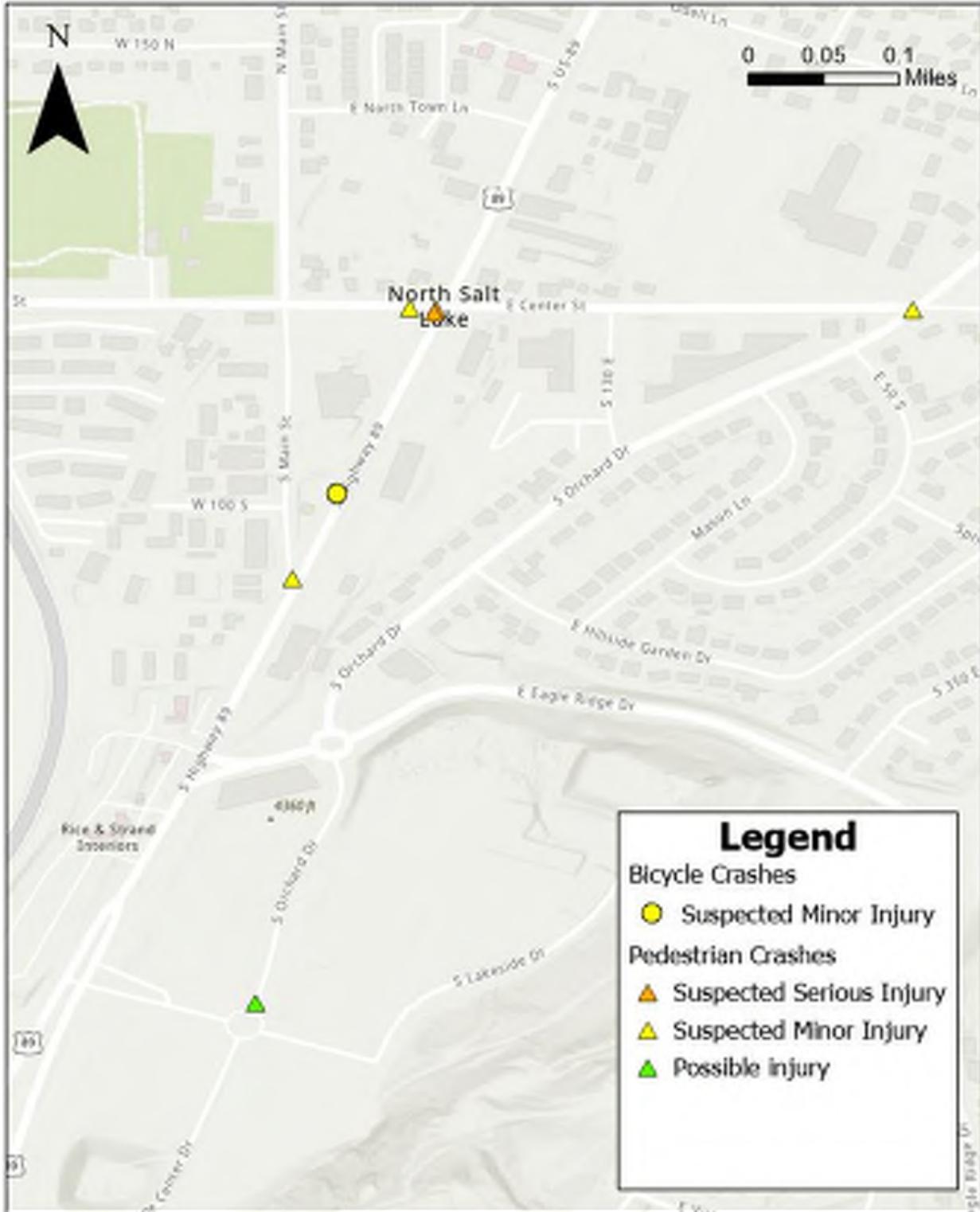


Figure 9 – Bicycle and Pedestrian Crashes

## 5. ORIGIN-DESTINATION ANALYSIS

An origin-destination analysis for Main Street, between Center Street and US-89, was completed using data from StreetLight. StreetLight utilizes mobile phone data to assess travel routes. StreetLight allows zones and gates to be created and then returns origin-destination traffic volumes between zones and gates. A zone tracks trips that started or ended in that zone. A gate tracks any trips that passed through the gate.

Zones and gates created for this analysis are shown in **Figure 10**. Average AM and PM peak hour traffic volumes to and from Main Street Central (Gate 1) from all other zones and gates are shown in **Table 6**.

Traffic volumes shown in **Table 6** are average peak hour traffic volumes for the entire year of 2019. Peak hours are defined as 7:00 am – 8:00 am, and 5:00 pm – 6:00 pm. Data from 2020 and 2021 are omitted due to irregularities in traffic patterns due to the COVID-19 pandemic.

**Table 6 – StreetLight Peak Hour Origin-Destination Data**

Type	Gate / Zone Number	Gate / Zone Name	To Gate 1 (Main Street Central)				From Gate 1 (Main Street Central)			
			NB		SB		NB		SB	
			AM	PM	AM	PM	AM	PM	AM	PM
Gate	2	Main Street North NB	0	0	1	1	61	520	2	11
	2	Main Street North SB	0	0	417	127	2	15	1	0
	3	US-89 North NB	0	0	1	2	10	42	6	10
	3	US-89 North SB	3	3	8	13	1	1	1	0
	4	Center Street East NB	0	0	0	1	1	4	1	1
	4	Center Street East SB	0	0	7	2	0	0	0	1
	5	US-89 South NB	262	752	6	23	0	0	15	10
	5	US-89 South SB	1	0	0	0	1	1	618	337
	6	Center Street West NB	1	2	285	259	5	52	0	1
6	Center Street West SB	0	0	5	5	209	253	2	3	
Zone	1	City Center	0	1	1	8	1	1	4	4
	2	South Central	9	14	2	1	0	1	3	31
	3	Southwest	0	0	3	5	2	9	0	1
	4	Northwest	0	0	50	14	3	22	1	1
	5	Northeast	0	1	1	1	0	1	0	0
	6	Southeast	5	8	3	1	0	1	6	8

The majority of trips to and from Main Street Central (Gate 1) were through trips that originated or ended outside of the study area zones. The majority of trips to and from Main Street, between Center Street and US-89, come from US-89 South (Gate 5) and Center Street West (Gate 6).

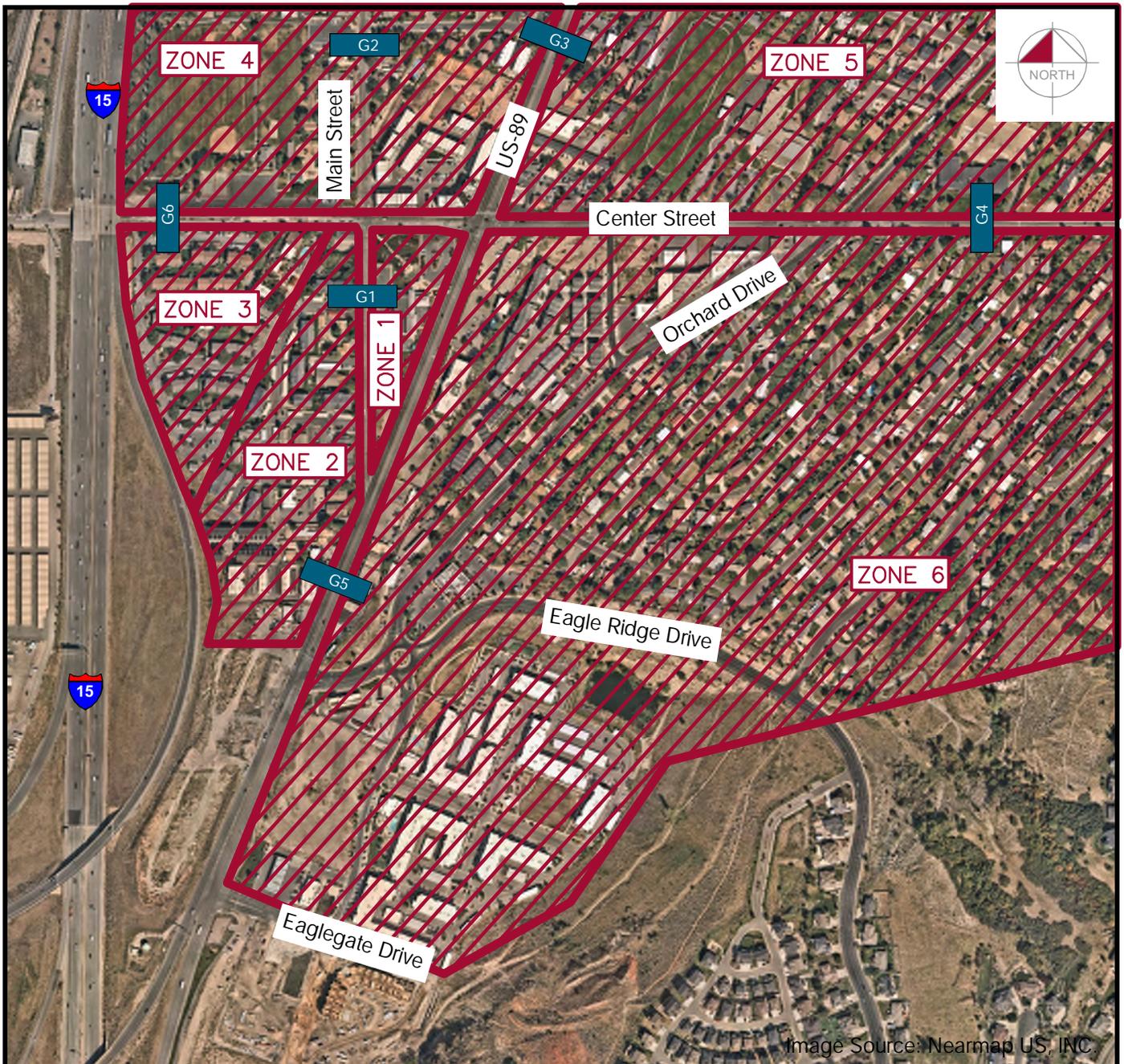


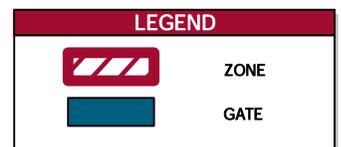
Image Source: Nearmap US, INC

**Zones:**

- 1. City Center
- 2. South Central
- 3. Southwest
- 4. Northwest
- 5. Northeast
- 6. Southeast

**Gates:**

- G1. Main Street Central
- G2. Main Street North
- G3. US-89 North
- G4. Center Street East
- G5. US-89 South
- G6. Center Street West



## 6. ON-STREET PARKING

On-street parking is mainly found at three locations in the City Town Center study area. These three locations don't include on-street parking found on the residential streets. Locations where on-street parking is currently occurring was determined by a combination of site visits and aerial image of the study area. The following streets are currently utilized for on-street parking:

- Center Street (North side between Main Street and US-89)
  - 11 marked on-street parking stalls provided
- 130 East (Between Center Street and Orchard Drive)
  - No marked on-street parking stalls provided
  - Space provided for approximately 18-21 parked vehicles
- Orchard Drive (Between Mason Lane and Eagle Ridge Drive)
  - No marked on-street stalls parking provided
  - Vehicles utilizing marked bicycle lane for parking
  - One small segment signed as a no parking location



**APPENDIX A**  
**TRAFFIC COUNT DATA**



(303) 216-2439  
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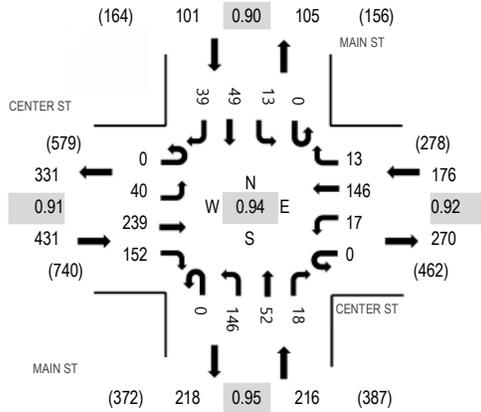
**Location:** 1 MAIN ST & CENTER ST AM

**Date:** Thursday, September 2, 2021

**Peak Hour:** 07:00 AM - 08:00 AM

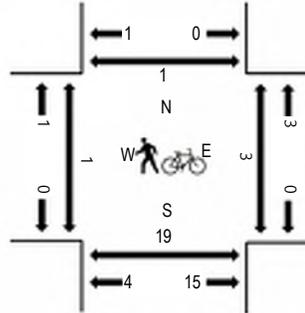
**Peak 15-Minutes:** 07:30 AM - 07:45 AM

**Peak Hour - All Vehicles**



Note: Total study counts contained in parentheses.

**Peak Hour - Pedestrians/Bicycles on Crosswalk**



**Traffic Counts**

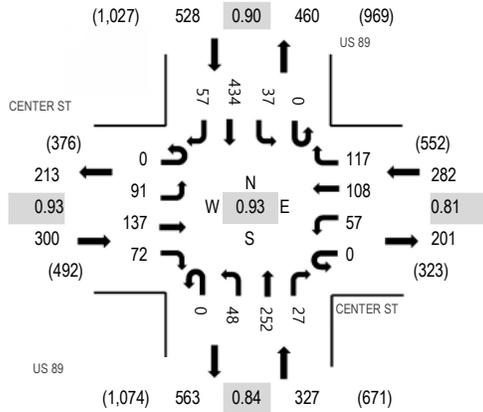
Interval Start Time	CENTER ST Eastbound				CENTER ST Westbound				MAIN ST Northbound			MAIN ST Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru			Right	West	East	South	North
7:00 AM	0	11	68	37	0	5	37	5	0	37	11	3	0	2	9	17	242	924	0	3	12	0
7:15 AM	0	9	58	38	0	4	34	2	0	32	18	7	0	4	14	10	230	864	1	0	1	1
7:30 AM	0	14	67	37	0	5	39	4	0	35	13	5	0	4	16	6	245	796	0	0	4	0
7:45 AM	0	6	46	40	0	3	36	2	0	42	10	3	0	3	10	6	207	696	0	0	2	0
8:00 AM	0	6	53	33	0	1	27	2	0	35	9	2	0	1	6	7	182	645	0	0	0	1
8:15 AM	0	8	37	27	0	4	21	1	0	38	3	6	0	2	9	6	162		0	0	0	0
8:30 AM	0	6	36	25	0	2	19	2	0	30	3	3	0	6	7	6	145		0	0	1	1
8:45 AM	0	7	41	30	0	2	20	1	0	36	3	3	0	2	8	3	156		0	0	0	0
Count Total	0	67	406	267	0	26	233	19	0	285	70	32	0	24	79	61	1,569		1	3	20	3
Peak Hour	0	40	239	152	0	17	146	13	0	146	52	18	0	13	49	39	924		1	3	19	1



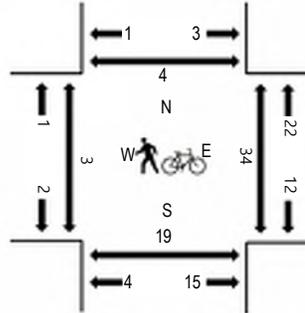
(303) 216-2439  
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**Location:** 2 US 89 & CENTER ST AM  
**Date:** Thursday, September 2, 2021  
**Peak Hour:** 07:45 AM - 08:45 AM  
**Peak 15-Minutes:** 07:45 AM - 08:00 AM

**Peak Hour - All Vehicles**



**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	CENTER ST Eastbound				CENTER ST Westbound				US 89 Northbound			US 89 Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru			Right	West	East	South	North
7:00 AM	0	14	12	12	0	4	14	45	0	6	83	3	0	6	80	12	291	1,359	0	0	0	0
7:15 AM	0	16	13	10	0	8	13	33	0	9	72	1	0	16	118	6	315	1,401	0	0	0	0
7:30 AM	0	26	20	16	0	22	30	20	0	10	52	5	0	4	139	21	365	1,425	0	0	0	0
7:45 AM	0	31	25	14	0	10	43	24	0	13	66	6	0	6	138	12	388	1,437	0	4	4	2
8:00 AM	0	20	45	10	0	15	27	17	0	10	51	6	0	7	112	13	333	1,383	1	14	8	2
8:15 AM	0	23	28	23	0	10	16	32	0	11	71	8	0	13	90	14	339		1	9	5	0
8:30 AM	0	17	39	25	0	22	22	44	0	14	64	7	0	11	94	18	377		1	7	2	0
8:45 AM	0	18	26	9	0	17	24	40	0	10	90	3	0	13	76	8	334		1	4	3	2
Count Total	0	165	208	119	0	108	189	255	0	83	549	39	0	76	847	104	2,742		4	38	22	6
Peak Hour	0	91	137	72	0	57	108	117	0	48	252	27	0	37	434	57	1,437		3	34	19	4



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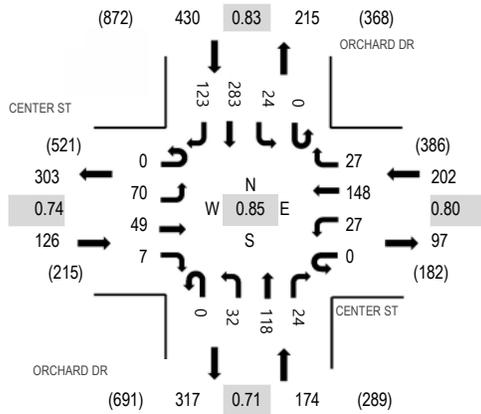
**Location:** 3 ORCHARD DR & CENTER ST AM

**Date:** Thursday, September 2, 2021

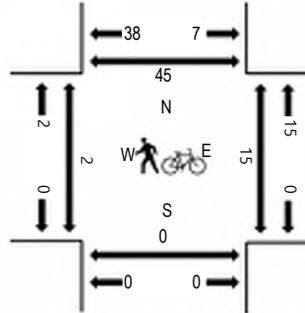
**Peak Hour:** 07:45 AM - 08:45 AM

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

**Peak Hour - All Vehicles**



**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	CENTER ST Eastbound				CENTER ST Westbound				ORCHARD DR Northbound				ORCHARD 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
7:00 AM	0	7	12	0	0	15	43	6	0	6	12	3	0	2	75	9	190	852	1	0	0	0
7:15 AM	0	7	15	0	0	9	27	8	0	3	18	1	0	4	80	16	188	892	0	0	0	1
7:30 AM	0	11	7	0	0	10	26	11	0	4	19	0	0	4	109	35	236	893	0	0	0	0
7:45 AM	0	13	13	0	0	6	32	11	0	3	41	1	0	7	74	37	238	932	0	0	0	0
8:00 AM	0	28	12	4	0	3	21	8	0	3	23	5	0	10	85	28	230	910	0	1	0	1
8:15 AM	0	18	11	2	0	7	28	4	0	4	29	2	0	5	60	19	189		0	3	0	14
8:30 AM	0	11	13	1	0	11	67	4	0	22	25	16	0	2	64	39	275		2	11	0	30
8:45 AM	0	14	15	1	0	6	19	4	0	7	36	6	0	16	69	23	216		0	3	0	4
Count Total	0	109	98	8	0	67	263	56	0	52	203	34	0	50	616	206	1,762		3	18	0	50
Peak Hour	0	70	49	7	0	27	148	27	0	32	118	24	0	24	283	123	932		2	15	0	45



# Traffic Counts

Interval Start Time	Westbound								Northwestbound								Northbound								Northeastbound							
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR
7:00 AM	0	0	0	0	0	0	0	0									0	0	0	43	89	0	0	0								
7:15 AM	0	0	0	0	0	0	0	0									0	0	0	53	83	0	0	0								
7:30 AM	0	0	0	0	0	0	0	0									0	0	1	49	76	0	0	0								
7:45 AM	0	0	0	0	0	0	0	0									0	0	0	70	79	0	0	0								
8:00 AM	0	0	0	0	0	0	0	0									0	0	1	45	78	0	1	0								
8:15 AM	0	0	0	0	0	0	0	0									0	0	1	50	95	0	0	0								
8:30 AM	0	0	0	0	0	0	0	0									0	0	1	45	82	0	1	0								
8:45 AM	0	0	0	0	0	0	0	0									0	0	0	44	75	0	0	0								
Count Total	0	0	0	0	0	0	0	0									0	0	4	399	657	0	2	0								
Peak Hour	0	0	0	0	0	0	0	0									0	0	3	214	328	0	1	0								

Interval Start Time	Eastbound								Southeastbound								Southbound								Southwestbound								Total	Rolling Hour	
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR			
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	33	0	0	0	0	0	0	0	97	1	0	0									264	1,325
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	51	0	0	0	0	0	0	0	134	0	0	0									322	1,382
7:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	2	61	0	0	0	0	0	0	0	174	1	0	0									365	1,386
7:45 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	49	0	1	0	0	0	0	0	166	0	0	0									367	1,357
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	46	0	1	0	0	0	0	0	150	0	0	0									323	1,268
8:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	54	0	3	0	0	0	0	0	122	0	0	0									326	
8:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	57	0	0	0	0	1	0	144	1	0	0									334		
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	59	0	0	0	0	0	0	0	101	0	0	0									280	
Count Total	0	1	0	0	0	0	8	0	0	0	0	0	3	410	0	5	0	0	1	0	1,088	3	0	0									2,581		
Peak Hour	0	1	0	0	0	0	4	0	0	0	0	0	2	210	0	5	0	0	0	0	612	1	0	0									1,381		



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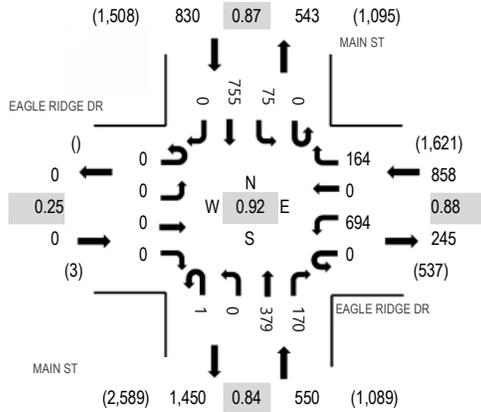
**Location:** 5 MAIN ST & EAGLE RIDGE DR AM

**Date:** Thursday, September 2, 2021

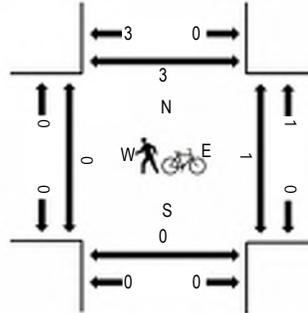
**Peak Hour:** 07:30 AM - 08:30 AM

**Peak 15-Minutes:** 07:30 AM - 07:45 AM

**Peak Hour - All Vehicles**



**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	EAGLE RIDGE DR Eastbound				EAGLE RIDGE DR Westbound				MAIN ST Northbound				MAIN 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
7:00 AM	0	0	0	0	0	134	0	61	0	0	71	31	0	13	121	0	431	2,126	0	0	0	0
7:15 AM	0	0	0	0	0	159	0	52	0	0	80	31	0	24	164	0	510	2,219	0	0	0	0
7:30 AM	0	0	0	0	0	204	0	43	0	0	85	36	0	19	222	0	609	2,238	0	0	0	1
7:45 AM	0	0	0	0	0	166	0	50	0	0	95	45	0	19	201	0	576	2,146	0	1	0	0
8:00 AM	0	0	0	0	0	164	0	29	0	0	98	40	0	26	167	0	524	2,095	0	0	0	2
8:15 AM	0	0	0	0	0	160	0	42	1	0	101	49	0	11	165	0	529		0	0	0	0
8:30 AM	0	0	0	0	0	148	0	36	0	0	96	47	0	30	160	0	517		0	0	0	0
8:45 AM	0	3	0	0	0	126	0	47	0	0	106	77	0	39	127	0	525		0	1	0	0
Count Total	0	3	0	0	0	1,261	0	360	1	0	732	356	0	181	1,327	0	4,221		0	2	0	3
Peak Hour	0	0	0	0	0	694	0	164	1	0	379	170	0	75	755	0	2,238		0	1	0	3



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**Location:** 6 ORCHARD DR & EAGLE RIDGE DR AM

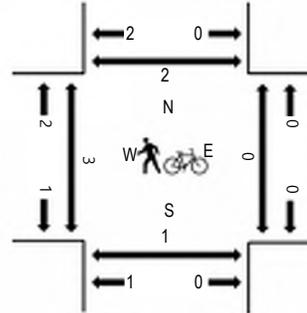
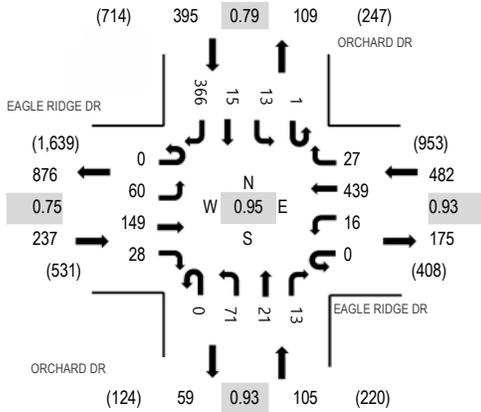
**Date:** Thursday, September 2, 2021

**Peak Hour:** 07:15 AM - 08:15 AM

**Peak 15-Minutes:** 07:30 AM - 07:45 AM

**Peak Hour - All Vehicles**

**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	EAGLE RIDGE DR Eastbound				EAGLE RIDGE DR Westbound				ORCHARD DR Northbound				ORCHARD 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
7:00 AM	0	14	23	8	0	2	108	3	0	19	1	8	0	1	4	83	274	1,204	0	2	0	0
7:15 AM	0	12	32	12	0	5	109	7	0	17	6	5	0	0	3	89	297	1,219	0	0	0	0
7:30 AM	0	9	39	4	0	1	111	4	0	20	6	3	1	3	5	116	322	1,213	0	0	0	0
7:45 AM	0	15	42	7	0	5	116	13	0	16	4	3	0	2	3	85	311	1,199	2	0	0	0
8:00 AM	0	24	36	5	0	5	103	3	0	18	5	2	0	8	4	76	289	1,214	1	0	1	2
8:15 AM	0	19	34	6	0	3	110	17	0	16	4	10	0	5	2	65	291		0	1	0	0
8:30 AM	0	19	49	10	0	4	100	18	0	19	5	5	0	10	1	68	308		0	0	0	1
8:45 AM	1	25	70	16	1	4	94	7	1	16	6	5	0	12	4	64	326		0	0	1	0
Count Total	1	137	325	68	1	29	851	72	1	141	37	41	1	41	26	646	2,418		3	3	2	3
Peak Hour	0	60	149	28	0	16	439	27	0	71	21	13	1	13	15	366	1,219		3	0	1	2



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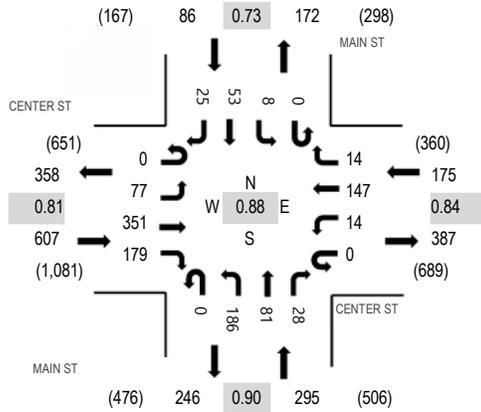
**Location:** 1 MAIN ST & CENTER ST PM

**Date:** Thursday, September 2, 2021

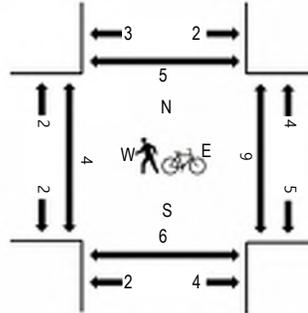
**Peak Hour:** 04:00 PM - 05:00 PM

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

**Peak Hour - All Vehicles**



**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	CENTER ST Eastbound				CENTER ST Westbound				MAIN ST Northbound			MAIN 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
4:00 PM	0	22	80	62	0	1	36	1	0	48	14	2	0	2	11	4	283	1,163	1	0	0	0
4:15 PM	0	23	114	51	0	2	32	2	0	46	20	8	0	2	19	11	330	1,134	1	0	3	0
4:30 PM	0	14	82	36	0	6	46	5	0	43	26	6	0	4	12	5	285	1,066	0	0	0	1
4:45 PM	0	18	75	30	0	5	33	6	0	49	21	12	0	0	11	5	265	1,000	0	0	2	0
5:00 PM	0	17	68	54	0	5	28	3	0	32	14	8	0	9	7	9	254	951	1	0	1	0
5:15 PM	0	10	64	50	0	9	36	10	0	36	23	3	0	6	6	9	262		0	0	1	0
5:30 PM	0	11	63	29	0	10	34	2	0	36	10	8	0	0	10	6	219		0	0	0	0
5:45 PM	0	8	63	37	0	5	37	6	0	21	12	8	0	2	8	9	216		1	0	1	3
Count Total	0	123	609	349	0	43	282	35	0	311	140	55	0	25	84	58	2,114		4	0	8	4
Peak Hour	0	77	351	179	0	14	147	14	0	186	81	28	0	8	53	25	1,163		2	0	5	1



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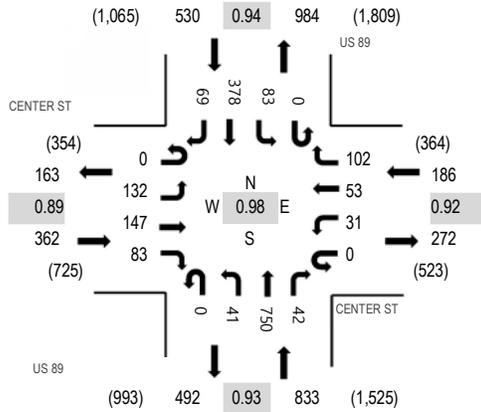
**Location:** 2 US 89 & CENTER ST PM

**Date:** Thursday, September 2, 2021

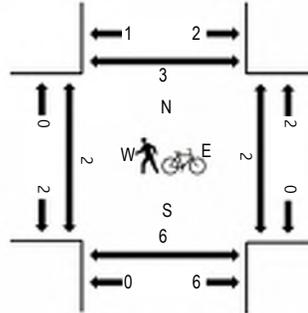
**Peak Hour:** 04:45 PM - 05:45 PM

**Peak 15-Minutes:** 04:45 PM - 05:00 PM

**Peak Hour - All Vehicles**



**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	CENTER ST Eastbound				CENTER ST Westbound				US 89 Northbound			US 89 Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru			Right	West	East	South	North
4:00 PM	0	26	26	21	0	4	13	25	0	14	153	6	0	12	106	25	431	1,800	1	4	0	1
4:15 PM	0	28	40	24	0	10	21	21	0	15	141	12	0	18	93	16	439	1,835	0	0	1	0
4:30 PM	0	30	39	20	0	7	15	17	0	2	176	7	0	16	93	19	441	1,884	0	0	1	0
4:45 PM	0	30	34	18	0	3	14	34	0	17	197	11	0	12	101	18	489	1,911	1	1	1	1
5:00 PM	0	29	40	18	0	10	14	25	0	8	180	10	0	24	89	19	466	1,879	0	1	1	0
5:15 PM	0	35	31	23	0	11	17	24	0	11	200	12	0	24	83	17	488		0	0	0	0
5:30 PM	0	38	42	24	0	7	8	19	0	5	173	9	0	23	105	15	468		1	0	3	2
5:45 PM	0	40	46	23	0	9	17	19	0	6	149	11	0	18	91	28	457		0	0	1	1
Count Total	0	256	298	171	0	61	119	184	0	78	1,369	78	0	147	761	157	3,679		3	6	8	5
Peak Hour	0	132	147	83	0	31	53	102	0	41	750	42	0	83	378	69	1,911		2	2	5	3



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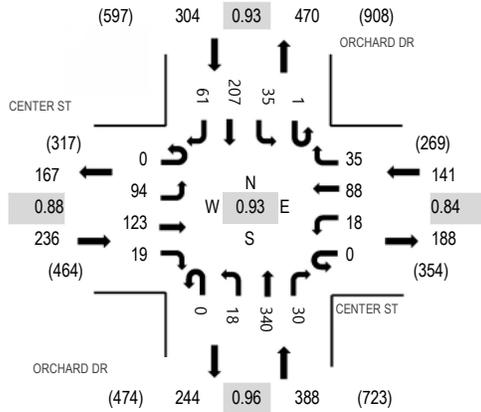
**Location:** 3 ORCHARD DR & CENTER ST PM

**Date:** Thursday, September 2, 2021

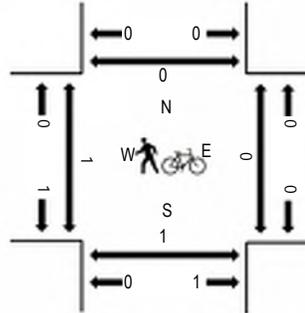
**Peak Hour:** 04:30 PM - 05:30 PM

**Peak 15-Minutes:** 05:00 PM - 05:15 PM

**Peak Hour - All Vehicles**



**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	CENTER ST Eastbound				CENTER ST Westbound				ORCHARD DR Northbound				ORCHARD 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
4:00 PM	0	21	22	1	0	8	14	10	0	3	76	3	0	13	55	13	239	994	0	0	0	0
4:15 PM	0	24	30	2	0	6	20	9	0	2	73	6	0	3	53	18	246	1,041	0	0	0	0
4:30 PM	0	26	29	5	0	2	16	5	0	4	76	9	0	5	57	15	249	1,069	0	0	0	0
4:45 PM	0	24	24	3	0	6	27	11	0	4	89	7	1	7	41	16	260	1,055	0	0	0	0
5:00 PM	0	27	40	5	0	9	20	7	0	6	88	4	0	15	56	9	286	1,059	0	0	0	0
5:15 PM	0	17	30	6	0	1	25	12	0	4	87	10	0	8	53	21	274		1	0	1	0
5:30 PM	0	32	32	3	0	3	19	7	0	2	75	2	0	8	38	14	235		0	0	0	0
5:45 PM	0	22	33	6	0	5	23	4	0	3	85	5	0	9	50	19	264		0	0	0	0
Count Total	0	193	240	31	0	40	164	65	0	28	649	46	1	68	403	125	2,053		1	0	1	0
Peak Hour	0	94	123	19	0	18	88	35	0	18	340	30	1	35	207	61	1,069		1	0	1	0



# Traffic Counts

Interval Start Time	Westbound								Northwestbound								Northbound								Northeastbound							
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR
4:00 PM	0	0	1	0	0	0	0	0									0	0	0	81	171	0	0	0								
4:15 PM	0	0	0	0	0	0	0	0									0	0	0	73	179	0	0	0								
4:30 PM	0	0	1	0	0	0	0	0									0	0	1	56	184	0	0	0								
4:45 PM	0	0	0	0	0	0	1	0									0	0	1	69	213	0	0	0								
5:00 PM	0	0	1	0	0	0	3	0									0	0	0	61	209	0	0	0								
5:15 PM	0	0	0	0	0	0	0	0									0	0	2	64	220	0	0	0								
5:30 PM	0	0	0	0	0	0	0	0									0	0	3	53	183	0	0	0								
5:45 PM	0	0	0	0	0	0	0	0									0	0	1	53	168	0	0	0								
Count Total	0	0	3	0	0	0	4	0									0	0	8	510	1,527	0	0	0								
Peak Hour	0	0	2	0	0	0	1	0									0	0	2	279	747	0	0	0								

Interval Start Time	Eastbound								Southeastbound								Southbound								Southwestbound								Total	Rolling Hour
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR		
4:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	85	0	0	1	0	0	0	134	1	0	0									476	1,885
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	106	0	0	0	0	0	0	126	0	2	0									486	1,876
4:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	79	0	1	0	0	0	0	121	1	0	0									445	1,853
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	61	0	0	0	0	1	0	123	1	1	0									471	1,847
5:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	66	0	2	0	0	0	0	120	1	1	0									466	1,758
5:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	59	0	0	0	0	0	0	112	3	0	0									462	
5:30 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	63	0	0	0	0	0	0	132	1	0	0									437	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	38	0	2	0	0	0	0	121	0	1	0									384	
Count Total	0	0	0	0	0	0	9	0	0	0	0	0	0	557	0	5	1	0	1	0	989	8	5	0									3,627	
Peak Hour	0	0	0	0	0	0	3	0	0	0	0	0	0	331	0	1	1	0	1	0	504	3	3	0									1,878	



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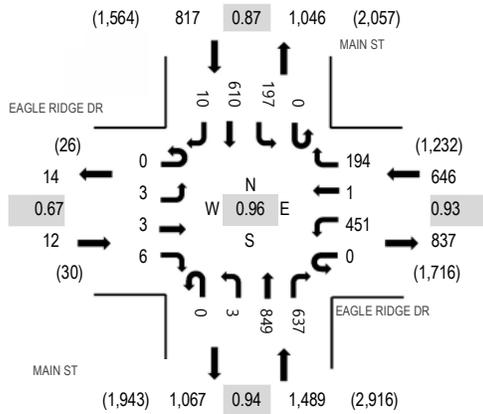
**Location:** 5 MAIN ST & EAGLE RIDGE DR PM

**Date:** Thursday, September 2, 2021

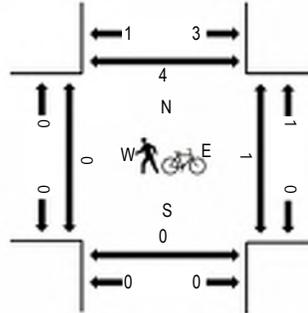
**Peak Hour:** 04:15 PM - 05:15 PM

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

**Peak Hour - All Vehicles**



**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	EAGLE RIDGE DR Eastbound				EAGLE RIDGE DR Westbound				MAIN ST Northbound			MAIN 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
4:00 PM	0	0	0	0	0	120	0	64	0	0	196	139	0	60	156	1	736	2,943	0	0	0	0
4:15 PM	0	0	0	3	0	131	0	43	0	1	207	149	0	54	182	5	775	2,964	0	0	0	0
4:30 PM	0	0	0	0	0	121	0	52	0	0	193	157	0	45	150	2	720	2,905	0	0	0	3
4:45 PM	0	0	3	0	0	94	1	55	0	0	219	152	0	45	140	3	712	2,894	0	1	0	1
5:00 PM	0	3	0	3	0	105	0	44	0	2	230	179	0	53	138	0	757	2,799	0	0	0	0
5:15 PM	0	6	3	0	0	88	0	52	0	1	229	164	0	52	117	4	716		0	0	0	0
5:30 PM	0	3	0	0	0	99	0	36	0	0	200	174	0	70	124	3	709		0	0	0	0
5:45 PM	0	0	6	0	0	74	0	53	0	1	172	151	0	60	98	2	617		0	0	0	0
Count Total	0	12	12	6	0	832	1	399	0	5	1,646	1,265	0	439	1,105	20	5,742		0	1	0	4
Peak Hour	0	3	3	6	0	451	1	194	0	3	849	637	0	197	610	10	2,964		0	1	0	4



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**Location:** 6 ORCHARD DR & EAGLE RIDGE DR PM

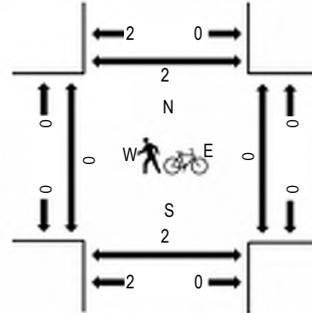
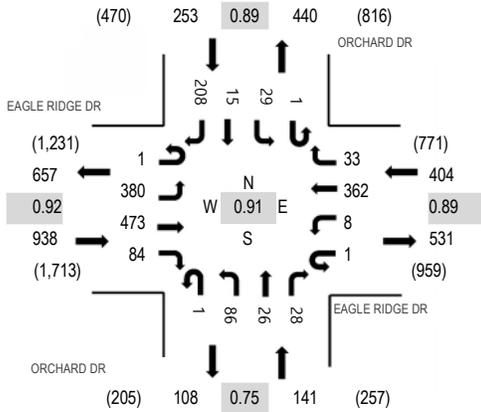
**Date:** Thursday, September 2, 2021

**Peak Hour:** 05:00 PM - 06:00 PM

**Peak 15-Minutes:** 05:00 PM - 05:15 PM

**Peak Hour - All Vehicles**

**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	EAGLE RIDGE DR Eastbound				EAGLE RIDGE DR Westbound				ORCHARD DR Northbound				ORCHARD 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
4:00 PM	0	78	97	15	0	1	81	8	0	26	6	2	0	10	6	37	367	1,475	0	0	0	0
4:15 PM	0	73	94	12	0	3	89	6	0	11	7	2	0	11	3	43	354	1,585	0	0	0	0
4:30 PM	1	86	94	11	0	6	80	10	0	22	5	4	0	3	4	38	364	1,678	0	0	0	1
4:45 PM	1	88	100	25	0	5	76	2	0	20	7	4	0	7	6	49	390	1,705	0	0	0	0
5:00 PM	1	112	124	19	1	1	91	10	0	22	11	14	0	8	6	57	477	1,736	0	0	0	2
5:15 PM	0	99	128	25	0	2	104	7	0	18	6	1	0	7	3	47	447		0	0	0	0
5:30 PM	0	90	99	19	0	3	73	10	1	24	5	5	1	7	1	53	391		0	0	2	0
5:45 PM	0	79	122	21	0	2	94	6	0	22	4	8	0	7	5	51	421		0	0	0	0
Count Total	3	705	858	147	1	23	688	59	1	165	51	40	1	60	34	375	3,211		0	0	2	3
Peak Hour	1	380	473	84	1	8	362	33	1	86	26	28	1	29	15	208	1,736		0	0	2	2



(303) 216-2439  
www.alltrafficdata.net

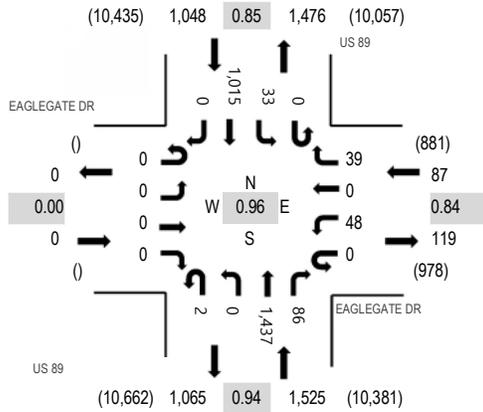
Location: 7 US 89 & EAGLEGATE DR AM

Date: Thursday, September 2, 2021

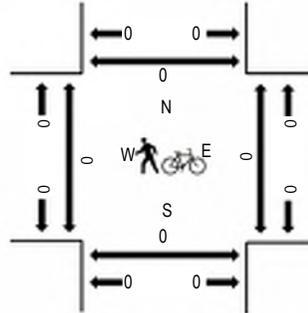
Peak Hour: 04:15 PM - 05:15 PM

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

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	EAGLEGATE DR Eastbound				EAGLEGATE DR Westbound				US 89 Northbound			US 89 Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru			Right	West	East	South	North
7:00 AM	0	0	0	0	0	12	0	8	0	0	92	16	0	2	252	0	382	1,949	0	0	0	0
7:15 AM	0	0	0	0	0	20	0	12	0	0	100	20	0	5	314	0	471	2,054	0	0	0	0
7:30 AM	0	0	0	0	1	18	0	9	0	0	110	9	0	8	415	0	570	2,094	0	0	0	0
7:45 AM	0	0	0	0	0	15	0	10	0	0	126	12	0	3	360	0	526	1,993	0	0	0	0
8:00 AM	0	0	0	0	0	11	0	11	0	0	126	13	0	1	325	0	487	1,930	0	0	0	0
8:15 AM	0	0	0	0	0	15	0	10	0	0	140	17	0	5	324	0	511	1,841	0	0	0	0
8:30 AM	0	0	0	0	1	7	0	14	0	0	129	13	0	8	297	0	469	1,689	0	0	0	0
8:45 AM	0	0	0	0	0	13	0	7	0	0	175	10	0	2	256	0	463	1,561	0	0	0	0
9:00 AM	0	0	0	0	0	17	0	9	0	0	137	8	0	4	223	0	398	1,429	0	0	0	0
9:15 AM	0	0	0	0	0	8	0	7	0	0	125	13	0	4	202	0	359	1,333	0	0	0	0
9:30 AM	0	0	0	0	0	12	0	6	0	0	113	11	0	2	197	0	341	1,298	0	0	0	0
9:45 AM	0	0	0	0	0	7	0	9	0	0	110	6	0	7	192	0	331	1,281	0	0	0	0
10:00 AM	0	0	0	0	0	6	0	7	0	0	117	10	0	3	159	0	302	1,262	0	0	0	0
10:15 AM	0	0	0	0	0	7	0	6	1	0	115	9	0	7	179	0	324	1,288	0	0	0	0
10:30 AM	0	0	0	0	0	8	0	8	0	0	132	9	0	6	161	0	324	1,292	0	0	0	0
10:45 AM	0	0	0	0	0	6	0	6	0	0	140	7	0	2	151	0	312	1,346	0	0	0	0
11:00 AM	0	0	0	0	0	4	0	7	0	0	127	9	0	6	175	0	328	1,399	0	0	0	0
11:15 AM	0	0	0	0	0	6	0	7	0	0	129	11	0	3	172	0	328	1,446	0	0	0	0
11:30 AM	0	0	0	0	0	14	0	6	0	0	147	10	0	7	194	0	378	1,454	0	0	0	0
11:45 AM	0	0	0	0	0	14	0	6	0	0	149	19	0	5	172	0	365	1,444	0	0	0	0
12:00 PM	0	0	0	0	0	8	0	10	1	0	153	15	0	1	187	0	375	1,456	0	0	0	0
12:15 PM	0	0	0	0	1	13	0	5	0	0	149	9	0	3	156	0	336	1,440	0	0	0	0
12:30 PM	0	0	0	0	0	7	0	11	0	0	157	21	0	6	166	0	368	1,487	0	0	0	0
12:45 PM	0	0	0	0	0	11	0	4	0	0	159	12	0	9	182	0	377	1,504	0	0	0	0
1:00 PM	0	0	0	0	0	7	0	11	0	0	167	15	0	9	150	0	359	1,530	0	2	0	0
1:15 PM	0	0	0	0	0	9	0	7	0	0	189	10	0	5	163	0	383	1,568	0	0	0	0
1:30 PM	0	0	0	0	0	8	0	6	0	0	190	8	0	4	169	0	385	1,578	0	0	0	0
1:45 PM	0	0	0	0	0	8	0	4	0	0	200	14	0	5	172	0	403	1,631	0	0	0	0
2:00 PM	0	0	0	0	0	7	0	3	0	0	186	17	0	4	180	0	397	1,657	0	0	0	0
2:15 PM	0	0	0	0	0	9	0	10	0	0	208	14	0	8	144	0	393	1,770	0	0	0	0
2:30 PM	0	0	0	0	0	10	0	9	0	0	217	16	0	4	182	0	438	1,858	0	0	0	0
2:45 PM	0	0	0	0	0	7	0	5	0	0	221	10	0	7	179	0	429	2,004	0	0	0	0
3:00 PM	0	0	0	0	0	11	0	10	0	0	252	11	0	7	219	0	510	2,155	0	0	0	0
3:15 PM	0	0	0	0	0	10	0	2	0	0	261	16	0	10	182	0	481	2,297	0	0	0	0
3:30 PM	0	0	0	0	0	6	0	7	0	0	304	18	0	5	244	0	584	2,508	0	0	0	0

3:45 PM	0	0	0	0	0	7	0	6	0	0	324	15	0	10	218	0	580	2,572	0	0	0	0
4:00 PM	0	0	0	0	0	15	0	8	0	0	327	20	0	7	275	0	652	2,627	0	0	0	0
4:15 PM	0	0	0	0	0	15	0	6	0	0	345	20	0	10	296	0	692	2,660	0	0	0	0
4:30 PM	0	0	0	0	0	10	0	14	0	0	332	19	0	6	267	0	648	2,590	0	0	0	0
4:45 PM	0	0	0	0	0	11	0	9	0	0	359	24	0	11	221	0	635	2,580	0	0	0	0
5:00 PM	0	0	0	0	0	12	0	10	2	0	401	23	0	6	231	0	685	2,473	0	0	0	0
5:15 PM	0	0	0	0	0	4	0	11	0	0	381	22	0	2	202	0	622	2,309	0	0	0	0
5:30 PM	0	0	0	0	2	12	0	8	0	0	370	25	0	4	217	0	638	2,161	0	0	0	0
5:45 PM	0	0	0	0	0	6	0	13	0	0	309	34	0	6	160	0	528	1,999	0	0	0	0
6:00 PM	0	0	0	0	0	10	0	9	0	0	281	14	0	9	198	0	521	1,830	0	0	0	0
6:15 PM	0	0	0	0	0	11	0	7	0	0	261	15	0	7	173	0	474		0	0	0	0
6:30 PM	0	0	0	0	0	11	0	13	0	0	241	16	0	6	189	0	476		0	0	0	0
6:45 PM	0	0	0	0	0	16	0	2	0	0	189	20	0	7	125	0	359		0	0	0	0
Count Total	0	0	0	0	5	491	0	385	4	0	9,672	705	0	268	10,167	0	21,697		0	2	0	0
Peak Hour	0	0	0	0	0	48	0	39	2	0	1,437	86	0	33	1,015	0	2,660		0	0	0	0

Site Code: 8  
Station ID:  
MAIN N.O CENTER ST

Latitude: 0' 0.0000 Undefined

Start Time	02-Sep-21 Thu	NB	SB							Total
12:00 AM		8	2							10
01:00		4	4							8
02:00		7	6							13
03:00		13	6							19
04:00		18	29							47
05:00		30	69							99
06:00		66	112							178
07:00		105	101							206
08:00		51	63							114
09:00		65	56							121
10:00		89	67							156
11:00		94	84							178
12:00 PM		89	74							163
01:00		126	82							208
02:00		141	115							256
03:00		145	100							245
04:00		172	86							258
05:00		126	81							207
06:00		75	72							147
07:00		80	54							134
08:00		44	28							72
09:00		41	13							54
10:00		14	9							23
11:00		11	9							20
Total		1614	1322							2936
Percent		55.0%	45.0%							
AM Peak	-	07:00	06:00	-	-	-	-	-	-	07:00
Vol.	-	105	112	-	-	-	-	-	-	206
PM Peak	-	16:00	14:00	-	-	-	-	-	-	16:00
Vol.	-	172	115	-	-	-	-	-	-	258
Grand Total		1614	1322							2936
Percent		55.0%	45.0%							
ADT		ADT 2,936	AADT 2,936							





Site Code: 11  
Station ID:  
ORCHARD DR N.O EAGLE RIDGE DR

Latitude: 0' 0.0000 Undefined

Start Time	02-Sep-21 Thu	NB	SB							Total
12:00 AM		26	10							36
01:00		18	6							24
02:00		7	9							16
03:00		3	14							17
04:00		7	19							26
05:00		10	97							107
06:00		33	232							265
07:00		95	395							490
08:00		152	319							471
09:00		86	247							333
10:00		102	188							290
11:00		143	203							346
12:00 PM		159	181							340
01:00		198	181							379
02:00		221	197							418
03:00		315	258							573
04:00		376	217							593
05:00		440	253							693
06:00		330	193							523
07:00		183	150							333
08:00		190	116							306
09:00		135	69							204
10:00		79	41							120
11:00		45	18							63
Total		3353	3613							6966
Percent		48.1%	51.9%							
AM Peak	-	08:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	152	395	-	-	-	-	-	-	490
PM Peak	-	17:00	15:00	-	-	-	-	-	-	17:00
Vol.	-	440	258	-	-	-	-	-	-	693
Grand Total		3353	3613							6966
Percent		48.1%	51.9%							
ADT		ADT 6,966	AADT 6,966							

Site Code: 12  
Station ID:  
EAGLE RIDGE DR E.O ORCHARD DR  
Latitude: 0' 0.0000 Undefined

Start Time	02-Sep-21 Thu	EB	WB							Total
12:00 AM		17	4							21
01:00		14	7							21
02:00		6	2							8
03:00		6	5							11
04:00		8	15							23
05:00		17	65							82
06:00		102	179							281
07:00		161	484							645
08:00		247	469							716
09:00		223	313							536
10:00		194	269							463
11:00		247	333							580
12:00 PM		283	304							587
01:00		277	268							545
02:00		371	331							702
03:00		417	341							758
04:00		428	367							795
05:00		531	404							935
06:00		432	340							772
07:00		344	245							589
08:00		267	166							433
09:00		177	113							290
10:00		116	44							160
11:00		51	27							78
Total		4936	5095							10031
Percent		49.2%	50.8%							
AM Peak	-	08:00	07:00	-	-	-	-	-	-	08:00
Vol.	-	247	484	-	-	-	-	-	-	716
PM Peak	-	17:00	17:00	-	-	-	-	-	-	17:00
Vol.	-	531	404	-	-	-	-	-	-	935
Grand Total		4936	5095							10031
Percent		49.2%	50.8%							
ADT		ADT 10,031	AADT 10,031							



**APPENDIX B**  
**SYNCHRO REPORTS FOR OPERATIONAL ANALYSES**

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	239	152	17	146	13	146	52	18	13	49	39
Future Vol, veh/h	40	239	152	17	146	13	146	52	18	13	49	39
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	263	167	18	159	14	154	55	19	14	54	43
Number of Lanes	0	2	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	12	11.2	12.4	10.2
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	68%	25%	0%	10%	13%
Vol Thru, %	24%	75%	44%	83%	49%
Vol Right, %	8%	0%	56%	7%	39%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	216	160	272	176	101
LT Vol	146	40	0	17	13
Through Vol	52	120	120	146	49
RT Vol	18	0	152	13	39
Lane Flow Rate	227	175	298	191	112
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.371	0.29	0.45	0.303	0.182
Departure Headway (Hd)	5.88	5.955	5.432	5.699	5.845
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	612	603	662	629	612
Service Time	3.927	3.694	3.17	3.746	3.9
HCM Lane V/C Ratio	0.371	0.29	0.45	0.304	0.183
HCM Control Delay	12.4	11.1	12.6	11.2	10.2
HCM Lane LOS	B	B	B	B	B
HCM 95th-tile Q	1.7	1.2	2.3	1.3	0.7

HCM 6th Signalized Intersection Summary  
2: US-89 & Center Street

Existing (2021) AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	137	72	57	108	117	48	252	27	37	434	57
Future Volume (veh/h)	91	137	72	57	108	117	48	252	27	37	434	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.97	0.99		0.96	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	147	77	70	133	144	57	300	32	41	482	63
Peak Hour Factor	0.93	0.93	0.93	0.81	0.81	0.81	0.84	0.84	0.84	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	256	266	139	297	177	191	428	1355	143	513	1469	628
Arrive On Green	0.06	0.23	0.23	0.05	0.22	0.22	0.04	0.42	0.42	0.04	0.41	0.41
Sat Flow, veh/h	1781	1145	600	1781	809	876	1781	3228	341	1781	3554	1520
Grp Volume(v), veh/h	98	0	224	70	0	277	57	164	168	41	482	63
Grp Sat Flow(s),veh/h/ln	1781	0	1745	1781	0	1685	1781	1777	1792	1781	1777	1520
Q Serve(g_s), s	3.8	0.0	10.2	2.7	0.0	13.8	1.6	5.3	5.4	1.2	8.3	2.3
Cycle Q Clear(g_c), s	3.8	0.0	10.2	2.7	0.0	13.8	1.6	5.3	5.4	1.2	8.3	2.3
Prop In Lane	1.00		0.34	1.00		0.52	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	256	0	405	297	0	368	428	746	752	513	1469	628
V/C Ratio(X)	0.38	0.00	0.55	0.24	0.00	0.75	0.13	0.22	0.22	0.08	0.33	0.10
Avail Cap(c_a), veh/h	325	0	483	390	0	466	533	746	752	630	1469	628
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.91	0.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	0.0	30.5	25.8	0.0	32.9	14.2	16.7	16.7	14.1	17.9	16.2
Incr Delay (d2), s/veh	0.9	0.0	1.2	0.4	0.0	4.7	0.1	0.7	0.7	0.1	0.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	7.8	2.1	0.0	9.9	1.1	3.8	3.9	0.8	5.8	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.9	0.0	31.6	26.2	0.0	37.6	14.3	17.4	17.4	14.2	18.5	16.5
LnGrp LOS	C	A	C	C	A	D	B	B	B	B	B	B
Approach Vol, veh/h		322			347			389			586	
Approach Delay, s/veh		30.2			35.3			16.9			18.0	
Approach LOS		C			D			B			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	1	2	3	4	5	6	7	8				
Change Period (Y+Rc), s	9.1	44.6	9.3	27.0	9.7	44.0	10.5	25.8				
Max Green Setting (Gmax), s	5.9	6.8	* 5.2	* 6.1	5.9	6.8	* 5.2	* 6.1				
Max Q Clear Time (g_c+I), s	23.2	* 8.8	* 25	9.1	23.2	* 8.8	* 25					
Green Ext Time (p_c), s	0.0	7.4	4.7	12.2	3.6	10.3	5.8	15.8				
	0.0	1.5	0.0	1.0	0.0	2.5	0.1	1.1				

Intersection Summary

HCM 6th Ctrl Delay	23.8
HCM 6th LOS	C

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary  
3: Orchard Drive & Center Street

Existing (2021) AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	49	7	27	148	27	32	118	24	24	283	123
Future Volume (veh/h)	70	49	7	27	148	27	32	118	24	24	283	123
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.93		0.90	0.90		1.00	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No										
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	66	9	34	185	0	45	166	34	29	341	148
Peak Hour Factor	0.74	0.74	0.74	0.80	0.80	0.80	0.71	0.71	0.71	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	350	48	377	364		483	894	746	649	875	730
Arrive On Green	0.06	0.22	0.22	0.03	0.19	0.00	0.04	0.48	0.48	0.03	0.47	0.47
Sat Flow, veh/h	1781	1586	216	1781	1870	0	1781	1870	1560	1781	1870	1560
Grp Volume(v), veh/h	95	0	75	34	185	0	45	166	34	29	341	148
Grp Sat Flow(s),veh/h/ln	1781	0	1802	1781	1870	0	1781	1870	1560	1781	1870	1560
Q Serve(g_s), s	3.2	0.0	2.6	1.1	6.7	0.0	1.0	3.9	0.9	0.6	9.0	4.2
Cycle Q Clear(g_c), s	3.2	0.0	2.6	1.1	6.7	0.0	1.0	3.9	0.9	0.6	9.0	4.2
Prop In Lane	1.00		0.12	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	320	0	398	377	364		483	894	746	649	875	730
V/C Ratio(X)	0.30	0.00	0.19	0.09	0.51		0.09	0.19	0.05	0.04	0.39	0.20
Avail Cap(c_a), veh/h	390	0	558	470	555		563	894	746	748	875	730
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.6	0.0	24.0	23.0	27.3	0.0	10.0	11.3	10.6	9.8	13.1	11.9
Incr Delay (d2), s/veh	0.5	0.0	0.2	0.1	1.1	0.0	0.1	0.5	0.1	0.0	1.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.4	0.0	2.0	0.9	5.5	0.0	0.6	2.8	0.6	0.4	6.7	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.1	0.0	24.3	23.1	28.4	0.0	10.0	11.8	10.7	9.8	14.4	12.5
LnGrp LOS	C	A	C	C	C		B	B	B	A	B	B
Approach Vol, veh/h		170			219	A		245			518	
Approach Delay, s/veh		23.6			27.6			11.3			13.6	
Approach LOS		C			C			B			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	1	2	3	4	5	6	7	8				
Change Period (Y+Rc), s	40.8	7.1	21.2	7.6	40.0	9.0	19.3					
Max Green Setting (Gmax), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5					
Max Q Clear Time (g_c+I1), s	35.5	6.5	23.5	6.5	35.5	7.5	22.5					
Green Ext Time (p_c), s	5.9	3.1	4.6	3.0	11.0	5.2	8.7					
	0.0	1.0	0.0	0.3	0.0	2.5	0.0	0.8				

Intersection Summary

HCM 6th Ctrl Delay	17.3
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

**Intersection**

Int Delay, s/veh 3.8

**Movement** EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations												
Traffic Vol, veh/h	0	2	210	0	0	0	217	328	1	0	612	1
Future Vol, veh/h	0	2	210	0	0	0	217	328	1	0	612	1
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	90	90	90	92	92	92	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	226	0	0	0	236	357	1	0	688	1

**Major/Minor** Minor2 Minor1 Major1 Major2

Conflicting Flow All	1342	1521	347	1177	1521	181	690	0	0	359	0	0
Stage 1	690	690	-	831	831	-	-	-	-	-	-	-
Stage 2	652	831	-	346	690	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	110	117	649	146	117	831	900	-	-	1196	-	-
Stage 1	401	444	-	330	383	-	-	-	-	-	-	-
Stage 2	423	383	-	643	444	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	88	86	648	74	86	829	899	-	-	1195	-	-
Mov Cap-2 Maneuver	88	86	-	74	86	-	-	-	-	-	-	-
Stage 1	296	444	-	243	282	-	-	-	-	-	-	-
Stage 2	312	282	-	417	444	-	-	-	-	-	-	-

**Approach** EB WB NB SB

HCM Control Delay, s	14.4	0	4.1	0
HCM LOS	B	A		

**Minor Lane/Major Mvmt** NBL NBT NBR EBLn1WBLn1WBLn2 SBL SBT SBR

Capacity (veh/h)	899	-	-	610	-	-	1195	-	-
HCM Lane V/C Ratio	0.262	-	-	0.374	-	-	-	-	-
HCM Control Delay (s)	10.4	-	-	14.4	0	0	0	-	-
HCM Lane LOS	B	-	-	B	A	A	A	-	-
HCM 95th %tile Q(veh)	1.1	-	-	1.7	-	-	0	-	-

Lanes, Volumes, Timings  
5: US-89 & Chile Amor Access/Eagle Ridge Drive

Existing (2021) AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	693	0	174	0	358	152	88	754	0
Future Volume (vph)	0	0	0	693	0	174	0	358	152	88	754	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		200	125		0	150		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			50			40			90		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor					0.98				0.99	1.00		
Frt					0.850				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	1676	1676	0	3090	1401	0	1676	3185	1425	1593	3185	0
Flt Permitted				0.950						0.440		
Satd. Flow (perm)	1676	1676	0	3090	1401	0	1676	3185	1407	737	3185	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					610				250			
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		337			387			868			678	
Travel Time (s)		7.7			8.8			13.2			10.3	
Confl. Peds. (#/hr)	3						3		1	1		
Peak Hour Factor	0.25	0.25	0.25	0.88	0.88	0.88	0.84	0.84	0.84	0.87	0.87	0.87
Adj. Flow (vph)	0	0	0	788	0	198	0	426	181	101	867	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	788	198	0	0	426	181	101	867	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Right	R NA	L NA	Left	R NA	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					Yes			Yes			Yes	
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Split	NA		Perm	NA	Free	pm+pt	NA	

Lanes, Volumes, Timings  
5: US-89 & Chile Amor Access/Eagle Ridge Drive

Existing (2021) AM

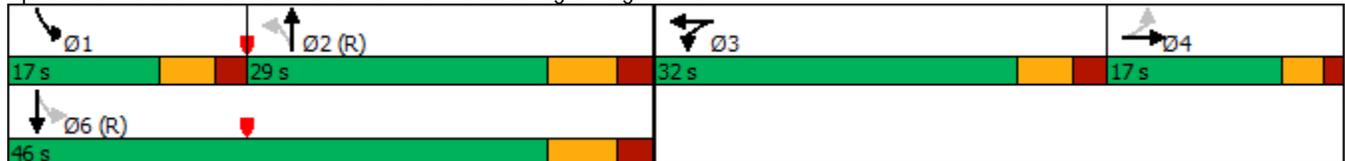
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		3	3			2		1	6	
Permitted Phases	4						2		Free	6		
Detector Phase	4	4		3	3		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	17.0	17.0		24.3	24.3		25.7	25.7		11.3	22.7	
Total Split (s)	17.0	17.0		32.0	32.0		29.0	29.0		17.0	46.0	
Total Split (%)	17.9%	17.9%		33.7%	33.7%		30.5%	30.5%		17.9%	48.4%	
Maximum Green (s)	12.5	12.5		25.7	25.7		21.3	21.3		10.7	38.3	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.9	4.9		4.0	4.9	
All-Red Time (s)	1.5	1.5		2.3	2.3		2.8	2.8		2.3	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		6.3	6.3		7.7	7.7		6.3	7.7	
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	0.6	0.6		0.6	0.6		1.7	1.7		1.8	1.7	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0		7.0	7.0				
Flash Dont Walk (s)				11.0	11.0		11.0	11.0				
Pedestrian Calls (#/hr)				0	0		0	0				
Act Effct Green (s)				25.2	25.2			44.9	95.0	57.2	55.8	
Actuated g/C Ratio				0.27	0.27			0.47	1.00	0.60	0.59	
v/c Ratio				0.96	0.24			0.28	0.13	0.20	0.46	
Control Delay				59.0	0.7			17.1	0.2	9.2	12.2	
Queue Delay				0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay				59.0	0.7			17.1	0.2	9.2	12.2	
LOS				E	A			B	A	A	B	
Approach Delay					47.3			12.1			11.9	
Approach LOS					D			B			B	
90th %ile Green (s)	0.0	0.0		25.7	25.7		39.9	39.9		9.1	55.3	
90th %ile Term Code	Skip	Skip		Max	Max		Coord	Coord		Gap	Coord	
70th %ile Green (s)	0.0	0.0		25.7	25.7		41.3	41.3		7.7	55.3	
70th %ile Term Code	Skip	Skip		Max	Max		Coord	Coord		Gap	Coord	
50th %ile Green (s)	0.0	0.0		25.7	25.7		42.2	42.2		6.8	55.3	
50th %ile Term Code	Skip	Skip		Max	Max		Coord	Coord		Gap	Coord	
30th %ile Green (s)	0.0	0.0		25.7	25.7		43.0	43.0		6.0	55.3	
30th %ile Term Code	Skip	Skip		Max	Max		Coord	Coord		Gap	Coord	
10th %ile Green (s)	0.0	0.0		23.1	23.1		57.9	57.9		0.0	57.9	
10th %ile Term Code	Skip	Skip		Gap	Gap		Coord	Coord		Skip	Coord	
Stops (vph)				619	0			215	0	36	404	
Fuel Used(gal)				14	1			6	1	1	10	
CO Emissions (g/hr)				967	38			415	60	70	714	
NOx Emissions (g/hr)				188	7			81	12	14	139	
VOC Emissions (g/hr)				224	9			96	14	16	166	
Dilemma Vehicles (#)				0	0			19	0	0	40	
Queue Length 50th (ft)				239	0			84	0	24	146	
Queue Length 95th (ft)				#342	0			114	0	45	183	
Internal Link Dist (ft)		257			307			788			598	
Turn Bay Length (ft)				100						150		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)				835	823			1503	1407	540	1871	
Starvation Cap Reductn				0	0			0	0	0	0	
Spillback Cap Reductn				0	0			0	0	0	0	
Storage Cap Reductn				0	0			0	0	0	0	
Reduced v/c Ratio				0.94	0.24			0.28	0.13	0.19	0.46	

**Intersection Summary**

Area Type: CBD  
 Cycle Length: 95  
 Actuated Cycle Length: 95  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 25.6 Intersection LOS: C  
 Intersection Capacity Utilization 75.7% ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 5: US-89 & Chile Amor Access/Eagle Ridge Drive



Intersection						
Intersection Delay, s/veh 8.1						
Intersection LOS A						
Approach	EB		WB		NB	SB
Entry Lanes	2		1		1	1
Conflicting Circle Lanes	2		2		2	2
Adj Approach Flow, veh/h	316		518		113	498
Demand Flow Rate, veh/h	323		528		115	507
Vehicles Circulating, veh/h	52		183		301	576
Vehicles Exiting, veh/h	1031		233		74	105
Ped Vol Crossing Leg, #/h	3		0		1	0
Ped Cap Adj	0.997		1.000		1.000	1.000
Approach Delay, s/veh	3.8		6.9		4.3	12.8
Approach LOS	A		A		A	B
Lane	Left	Right	Left	Bypass	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized	Yield					
Lane Util	0.471	0.529	1.000		1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.535		2.535	2.535
Critical Headway, s	4.645	4.328	4.328	30	4.328	4.328
Entry Flow, veh/h	152	171	498	1240	115	507
Cap Entry Lane, veh/h	1287	1359	1216	0.980	1099	870
Entry HV Adj Factor	0.977	0.979	0.981	29	0.979	0.982
Flow Entry, veh/h	149	167	489	1215	113	498
Cap Entry, veh/h	1253	1326	1192	0.024	1076	854
V/C Ratio	0.119	0.126	0.410	3.2	0.105	0.583
Control Delay, s/veh	3.9	3.7	7.1	A	4.3	12.8
LOS	A	A	A	0	A	B
95th %tile Queue, veh	0	0	2		0	4

**Intersection**

Int Delay, s/veh 1.5

**Movement** WBL WBR NBT NBR SBL SBT

Lane Configurations						
Traffic Vol, veh/h	59	40	502	51	17	1424
Future Vol, veh/h	59	40	502	51	17	1424
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	180	-	160	380	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	44	558	57	19	1582

**Major/Minor** Minor1 Major1 Major2

Conflicting Flow All	1387	279	0	0	615	0
Stage 1	558	-	-	-	-	-
Stage 2	829	-	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	162	612	-	-	598	-
Stage 1	460	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	157	612	-	-	598	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	460	-	-	-	-	-
Stage 2	367	-	-	-	-	-

**Approach** WB NB SB

HCM Control Delay, s 30.4 0 0.1  
HCM LOS D

**Minor Lane/Major Mvmt** NBT NBRWBLn1WBLn2 SBL SBT

Capacity (veh/h)	-	-	157	612	598	-
HCM Lane V/C Ratio	-	-	0.418	0.073	0.032	-
HCM Control Delay (s)	-	-	43.4	11.3	11.2	-
HCM Lane LOS	-	-	E	B	B	-
HCM 95th %tile Q(veh)	-	-	1.9	0.2	0.1	-

Intersection	
Intersection Delay, s/veh	19.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	351	179	14	147	14	186	81	28	8	53	25
Future Vol, veh/h	77	351	179	14	147	14	186	81	28	8	53	25
Peak Hour Factor	0.81	0.81	0.81	0.84	0.84	0.84	0.90	0.90	0.90	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	433	221	17	175	17	207	90	31	11	73	34
Number of Lanes	0	2	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	22.2	14	19.3	12.2
HCM LOS	C	B	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	63%	30%	0%	8%	9%
Vol Thru, %	27%	70%	50%	84%	62%
Vol Right, %	9%	0%	50%	8%	29%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	295	253	355	175	86
LT Vol	186	77	0	14	8
Through Vol	81	176	176	147	53
RT Vol	28	0	179	14	25
Lane Flow Rate	328	312	438	208	118
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.605	0.578	0.749	0.388	0.23
Departure Headway (Hd)	6.649	6.677	6.161	6.703	7.039
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	544	542	591	537	510
Service Time	4.664	4.396	3.88	4.745	5.087
HCM Lane V/C Ratio	0.603	0.576	0.741	0.387	0.231
HCM Control Delay	19.3	18.2	25	14	12.2
HCM Lane LOS	C	C	C	B	B
HCM 95th-tile Q	4	3.6	6.6	1.8	0.9

HCM 6th Signalized Intersection Summary  
2: US-89 & Center Street

Existing (2021) PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	147	83	31	53	102	41	750	42	83	378	69
Future Volume (veh/h)	132	147	83	31	53	102	41	750	42	83	378	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	165	93	34	58	111	44	806	45	88	402	73
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	298	228	128	210	84	161	506	1535	86	318	1638	729
Arrive On Green	0.09	0.20	0.20	0.03	0.15	0.15	0.01	0.15	0.15	0.05	0.46	0.46
Sat Flow, veh/h	1781	1119	631	1781	569	1089	1781	3421	191	1781	3554	1582
Grp Volume(v), veh/h	148	0	258	34	0	169	44	419	432	88	402	73
Grp Sat Flow(s),veh/h/ln	1781	0	1750	1781	0	1658	1781	1777	1835	1781	1777	1582
Q Serve(g_s), s	6.1	0.0	12.4	1.4	0.0	8.7	1.2	19.6	19.6	2.3	6.2	2.3
Cycle Q Clear(g_c), s	6.1	0.0	12.4	1.4	0.0	8.7	1.2	19.6	19.6	2.3	6.2	2.3
Prop In Lane	1.00		0.36	1.00		0.66	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	298	0	356	210	0	245	506	797	823	318	1638	729
V/C Ratio(X)	0.50	0.00	0.72	0.16	0.00	0.69	0.09	0.53	0.53	0.28	0.25	0.10
Avail Cap(c_a), veh/h	316	0	484	327	0	459	620	797	823	410	1638	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.94	0.00	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	0.0	33.5	31.2	0.0	36.4	12.7	29.5	29.5	14.4	14.7	13.7
Incr Delay (d2), s/veh	1.3	0.0	3.5	0.3	0.0	3.3	0.1	2.5	2.4	0.5	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.8	0.0	9.4	1.1	0.0	6.7	0.8	14.8	15.2	1.6	4.2	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.2	0.0	36.9	31.5	0.0	39.7	12.7	31.9	31.9	14.9	15.1	14.0
LnGrp LOS	C	A	D	C	A	D	B	C	C	B	B	B
Approach Vol, veh/h		406			203			895			563	
Approach Delay, s/veh		34.1			38.3			31.0			14.9	
Approach LOS		C			D			C			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	10.3	47.2	8.1	24.4	9.2	48.3	13.1	19.4				
Change Period (Y+Rc), s	5.9	6.8	* 5.2	* 6.1	5.9	6.8	* 5.2	* 6.1				
Max Green Setting (Gmax), s	23.2	* 8.8	* 25	9.1	23.2	* 8.8	* 25					
Max Q Clear Time (g_c+I1),s	21.6	3.4	14.4	3.2	8.2	8.1	10.7					
Green Ext Time (p_c), s	0.1	0.8	0.0	1.1	0.0	2.2	0.0	0.8				

Intersection Summary

HCM 6th Ctrl Delay	27.9
HCM 6th LOS	C

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary

## 3: Orchard Drive & Center Street

Existing (2021) PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	123	19	18	88	35	18	340	30	35	207	61
Future Volume (veh/h)	94	123	19	18	88	35	18	340	30	35	207	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	107	140	22	21	105	0	19	354	31	38	223	66
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.96	0.96	0.96	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	277	219	34	211	170		687	1020	863	606	1048	888
Arrive On Green	0.07	0.14	0.14	0.02	0.09	0.00	0.02	0.55	0.55	0.04	0.56	0.56
Sat Flow, veh/h	1781	1577	248	1781	1870	0	1781	1870	1584	1781	1870	1584
Grp Volume(v), veh/h	107	0	162	21	105	0	19	354	31	38	223	66
Grp Sat Flow(s),veh/h/ln	1781	0	1825	1781	1870	0	1781	1870	1584	1781	1870	1584
Q Serve(g_s), s	3.7	0.0	5.9	0.7	3.8	0.0	0.3	7.5	0.6	0.6	4.2	1.3
Cycle Q Clear(g_c), s	3.7	0.0	5.9	0.7	3.8	0.0	0.3	7.5	0.6	0.6	4.2	1.3
Prop In Lane	1.00		0.14	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	277	0	253	211	170		687	1020	863	606	1048	888
V/C Ratio(X)	0.39	0.00	0.64	0.10	0.62		0.03	0.35	0.04	0.06	0.21	0.07
Avail Cap(c_a), veh/h	364	0	581	308	517		787	1020	863	679	1048	888
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.7	0.0	28.7	28.0	30.9	0.0	6.8	9.0	7.4	6.7	7.7	7.1
Incr Delay (d2), s/veh	0.9	0.0	2.7	0.2	3.6	0.0	0.0	0.9	0.1	0.0	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	0.0	4.9	0.6	3.3	0.0	0.2	5.1	0.4	0.4	2.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	31.4	28.2	34.6	0.0	6.8	9.9	7.5	6.7	8.2	7.3
LnGrp LOS	C	A	C	C	C		A	A	A	A	A	A
Approach Vol, veh/h		269			126	A		404			327	
Approach Delay, s/veh		29.5			33.5			9.6			7.9	
Approach LOS		C			C			A			A	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	7.1	43.0	6.2	14.3	6.1	44.1	9.6	10.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	38.5	5.5	22.5	5.5	38.5	8.5	19.5					
Max Q Clear Time (g_c+I1), s	9.5	2.7	7.9	2.3	6.2	5.7	5.8					
Green Ext Time (p_c), s	0.0	2.3	0.0	0.7	0.0	1.5	0.1	0.4				

### Intersection Summary

HCM 6th Ctrl Delay	16.5
HCM 6th LOS	B

### Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

**Intersection**

Int Delay, s/veh 5.5

**Movement** EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations												
Traffic Vol, veh/h	0	0	332	2	0	1	281	747	0	1	504	6
Future Vol, veh/h	0	0	332	2	0	1	281	747	0	1	504	6
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	38	38	38	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	426	5	0	3	299	795	0	1	536	6

**Major/Minor** Minor2 Minor1 Major1 Major2

Conflicting Flow All	1539	1936	273	1665	1939	400	543	0	0	796	0	0
Stage 1	542	542	-	1394	1394	-	-	-	-	-	-	-
Stage 2	997	1394	-	271	545	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	79	65	725	63	65	600	1022	-	-	822	-	-
Stage 1	492	518	-	149	207	-	-	-	-	-	-	-
Stage 2	262	207	-	712	517	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	61	46	724	20	46	599	1021	-	-	821	-	-
Mov Cap-2 Maneuver	61	46	-	20	46	-	-	-	-	-	-	-
Stage 1	347	517	-	105	146	-	-	-	-	-	-	-
Stage 2	184	146	-	293	516	-	-	-	-	-	-	-

**Approach** EB WB NB SB

HCM Control Delay, s	16.8	163.7	2.7	0
HCM LOS	C	F		

**Minor Lane/Major Mvmt** NBL NBT NBR EBLn1WBLn1WBLn2 SBL SBT SBR

Capacity (veh/h)	1021	-	-	724	20	599	821	-	-
HCM Lane V/C Ratio	0.293	-	-	0.588	0.263	0.004	0.001	-	-
HCM Control Delay (s)	10	-	-	16.8	240.1	11	9.4	-	-
HCM Lane LOS	A	-	-	C	F	B	A	-	-
HCM 95th %tile Q(veh)	1.2	-	-	3.9	0.8	0	0	-	-

Lanes, Volumes, Timings  
5: US-89 & Chile Amor Access/Eagle Ridge Drive

Existing (2021) PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	6	3	408	1	203	3	871	652	195	545	9
Future Volume (vph)	9	6	3	408	1	203	3	871	652	195	545	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		200	125		0	150		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			50			40			90		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00				0.98				0.99			
Frt		0.954			0.851				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1599	0	3090	1401	0	1593	3185	1425	1593	3179	0
Flt Permitted				0.950			0.410			0.177		
Satd. Flow (perm)	1669	1599	0	3090	1401	0	687	3185	1407	297	3179	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			218				626		3	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		337			387			868			678	
Travel Time (s)		7.7			8.8			13.2			10.3	
Confl. Peds. (#/hr)	4					4			1	1		
Peak Hour Factor	0.67	0.67	0.67	0.93	0.93	0.93	0.94	0.94	0.94	0.87	0.87	0.87
Adj. Flow (vph)	13	9	4	439	1	218	3	927	694	224	626	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	13	0	439	219	0	3	927	694	224	636	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Right	R NA	L NA	Left	R NA	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					Yes			Yes			Yes	
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Split	NA		Perm	NA	Free	pm+pt	NA	

Lanes, Volumes, Timings  
 5: US-89 & Chile Amor Access/Eagle Ridge Drive

Existing (2021) PM

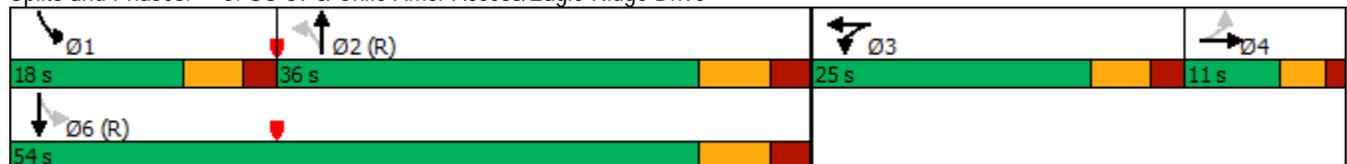
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		3	3			2		1	6	
Permitted Phases	4						2		Free	6		
Detector Phase	4	4		3	3		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	11.0	11.0		24.3	24.3		25.7	25.7		11.3	22.7	
Total Split (s)	11.0	11.0		25.0	25.0		36.0	36.0		18.0	54.0	
Total Split (%)	12.2%	12.2%		27.8%	27.8%		40.0%	40.0%		20.0%	60.0%	
Maximum Green (s)	6.5	6.5		18.7	18.7		28.3	28.3		11.7	46.3	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.9	4.9		4.0	4.9	
All-Red Time (s)	1.5	1.5		2.3	2.3		2.8	2.8		2.3	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		6.3	6.3		7.7	7.7		6.3	7.7	
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	0.6	0.6		0.6	0.6		1.7	1.7		1.8	1.7	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0		7.0	7.0				
Flash Dont Walk (s)				11.0	11.0		11.0	11.0				
Pedestrian Calls (#/hr)				0	0		0	0				
Act Effct Green (s)	5.3	5.3		15.4	15.4		39.5	39.5	90.0	57.9	56.5	
Actuated g/C Ratio	0.06	0.06		0.17	0.17		0.44	0.44	1.00	0.64	0.63	
v/c Ratio	0.13	0.13		0.83	0.52		0.01	0.66	0.49	0.65	0.32	
Control Delay	42.9	36.3		49.9	9.5		20.7	26.0	1.2	20.5	7.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	42.9	36.3		49.9	9.5		20.7	26.0	1.2	20.5	7.2	
LOS	D	D		D	A		C	C	A	C	A	
Approach Delay		39.6			36.4			15.4			10.6	
Approach LOS		D			D			B			B	
90th %ile Green (s)	6.5	6.5		18.7	18.7		28.3	28.3		11.7	46.3	
90th %ile Term Code	Max	Max		Max	Max		Coord	Coord		Max	Coord	
70th %ile Green (s)	5.2	5.2		17.8	17.8		28.3	28.3		13.9	48.5	
70th %ile Term Code	Gap	Gap		Gap	Gap		Coord	Coord		Max	Coord	
50th %ile Green (s)	0.0	0.0		15.8	15.8		42.1	42.1		11.8	60.2	
50th %ile Term Code	Skip	Skip		Gap	Gap		Coord	Coord		Gap	Coord	
30th %ile Green (s)	0.0	0.0		13.8	13.8		46.8	46.8		9.1	62.2	
30th %ile Term Code	Skip	Skip		Gap	Gap		Coord	Coord		Gap	Coord	
10th %ile Green (s)	0.0	0.0		10.9	10.9		51.9	51.9		6.9	65.1	
10th %ile Term Code	Skip	Skip		Gap	Gap		Coord	Coord		Gap	Coord	
Stops (vph)	10	9		382	30		3	641	0	91	210	
Fuel Used(gal)	0	0		7	1		0	17	4	3	6	
CO Emissions (g/hr)	11	10		523	82		5	1222	268	196	409	
NOx Emissions (g/hr)	2	2		102	16		1	238	52	38	80	
VOC Emissions (g/hr)	3	2		121	19		1	283	62	45	95	
Dilemma Vehicles (#)	0	0		0	0		0	47	0	0	18	
Queue Length 50th (ft)	7	5		124	1		1	200	0	32	50	
Queue Length 95th (ft)	19	17		170	59		8	#389	0	#99	85	
Internal Link Dist (ft)		257			307			788			598	
Turn Bay Length (ft)				100			125			150		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	120	119		642	463		301	1397	1407	365	1995	
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	0.11	0.11		0.68	0.47		0.01	0.66	0.49	0.61	0.32	

**Intersection Summary**

Area Type:	CBD
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.83
Intersection Signal Delay:	18.7
Intersection LOS:	B
Intersection Capacity Utilization	75.3%
ICU Level of Service	D
Analysis Period (min)	15
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Splits and Phases: 5: US-89 & Chile Amor Access/Eagle Ridge Drive



Intersection						
Intersection Delay, s/veh 7.9						
Intersection LOS A						
Approach	EB		WB		NB	SB
Entry Lanes	2		1		1	1
Conflicting Circle Lanes	2		2		2	2
Adj Approach Flow, veh/h	1018		453		187	284
Demand Flow Rate, veh/h	1038		462		191	290
Vehicles Circulating, veh/h	60		574		979	541
Vehicles Exiting, veh/h	771		596		119	457
Ped Vol Crossing Leg, #/h	0		0		2	2
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	6.6		10.1		10.1	7.7
Approach LOS	A		B		B	A
Lane	Left	Right	Left	Bypass	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized	Yield					
Lane Util	0.470	0.530	1.000		1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.535		2.535	2.535
Critical Headway, s	4.645	4.328	4.328	38	4.328	4.328
Entry Flow, veh/h	488	550	424	866	191	290
Cap Entry Lane, veh/h	1277	1349	872	0.980	618	897
Entry HV Adj Factor	0.980	0.981	0.981	37	0.981	0.978
Flow Entry, veh/h	478	539	416	849	187	284
Cap Entry, veh/h	1252	1323	855	0.044	606	877
V/C Ratio	0.382	0.408	0.486	4.7	0.309	0.324
Control Delay, s/veh	6.6	6.6	10.6	A	10.1	7.7
LOS	A	A	B	0	B	A
95th %tile Queue, veh	2	2	3		1	1

**Intersection**

Int Delay, s/veh 8.7

**Movement** WBL WBR NBT NBR SBL SBT

Lane Configurations						
Traffic Vol, veh/h	48	39	1437	86	33	1015
Future Vol, veh/h	48	39	1437	86	33	1015
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	180	-	160	380	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	94	94	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	46	1529	91	39	1194

**Major/Minor** Minor1 Major1 Major2

Conflicting Flow All	2204	765	0	0	1620	0
Stage 1	1529	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	~ 52	297	-	-	194	-
Stage 1	115	-	-	-	-	-
Stage 2	454	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 42	297	-	-	194	-
Mov Cap-2 Maneuver	~ 42	-	-	-	-	-
Stage 1	115	-	-	-	-	-
Stage 2	363	-	-	-	-	-

**Approach** WB NB SB

HCM Control Delay, s 237.6 0 0.9  
HCM LOS F

**Minor Lane/Major Mvmt** NBT NBRWBLn1WBLn2 SBL SBT

Capacity (veh/h)	-	-	42	297	194	-
HCM Lane V/C Ratio	-	-	1.361	0.156	0.2	-
HCM Control Delay (s)	-	-	\$ 414.9	19.4	28.1	-
HCM Lane LOS	-	-	F	C	D	-
HCM 95th %tile Q(veh)	-	-	5.7	0.5	0.7	-

**Notes**

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

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	389	2	9	283	61	7	4	26	61	1	39
Future Vol, veh/h	40	389	2	9	283	61	7	4	26	61	1	39
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	427	2	10	308	66	7	4	27	68	1	43
Number of Lanes	0	2	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	11	13.2	9.2	10.2
HCM LOS	B	B	A	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	19%	17%	0%	3%	60%
Vol Thru, %	11%	83%	99%	80%	1%
Vol Right, %	70%	0%	1%	17%	39%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	235	197	353	101
LT Vol	7	40	0	9	61
Through Vol	4	195	195	283	1
RT Vol	26	0	2	61	39
Lane Flow Rate	39	258	216	384	112
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.062	0.385	0.317	0.519	0.182
Departure Headway (Hd)	5.766	5.375	5.282	4.868	5.853
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	624	662	674	733	616
Service Time	3.771	3.167	3.074	2.955	3.855
HCM Lane V/C Ratio	0.063	0.39	0.32	0.524	0.182
HCM Control Delay	9.2	11.5	10.5	13.2	10.2
HCM Lane LOS	A	B	B	B	B
HCM 95th-tile Q	0.2	1.8	1.4	3	0.7

# HCM 6th Signalized Intersection Summary

## 2: US-89 & Center Street

Existing (2021) Modified AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	137	284	65	108	117	265	252	27	37	434	57
Future Volume (veh/h)	91	137	284	65	108	117	265	252	27	37	434	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		0.98	0.99		0.95	0.97		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	147	305	80	133	144	315	300	32	41	482	63
Peak Hour Factor	0.93	0.93	0.93	0.81	0.81	0.81	0.84	0.84	0.84	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	317	148	307	168	217	235	429	1203	127	455	1093	460
Arrive On Green	0.06	0.28	0.28	0.05	0.27	0.27	0.10	0.37	0.37	0.04	0.31	0.31
Sat Flow, veh/h	1781	534	1109	1781	811	878	1781	3226	341	1781	3554	1497
Grp Volume(v), veh/h	98	0	452	80	0	277	315	164	168	41	482	63
Grp Sat Flow(s),veh/h/ln	1781	0	1643	1781	0	1690	1781	1777	1790	1781	1777	1497
Q Serve(g_s), s	3.5	0.0	24.7	2.9	0.0	12.9	9.1	5.7	5.9	1.4	9.8	2.7
Cycle Q Clear(g_c), s	3.5	0.0	24.7	2.9	0.0	12.9	9.1	5.7	5.9	1.4	9.8	2.7
Prop In Lane	1.00		0.67	1.00		0.52	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	317	0	455	168	0	453	429	663	668	455	1093	460
V/C Ratio(X)	0.31	0.00	0.99	0.48	0.00	0.61	0.73	0.25	0.25	0.09	0.44	0.14
Avail Cap(c_a), veh/h	390	0	455	256	0	467	429	663	668	571	1093	460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.91	0.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.7	0.0	32.5	25.3	0.0	28.8	20.9	19.5	19.5	19.9	25.0	22.5
Incr Delay (d2), s/veh	0.5	0.0	40.6	1.9	0.0	2.0	6.4	0.9	0.9	0.1	1.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.7	0.0	21.0	2.3	0.0	9.1	8.4	4.2	4.3	1.0	7.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.3	0.0	73.1	27.2	0.0	30.9	27.4	20.4	20.4	20.0	26.3	23.1
LnGrp LOS	C	A	E	C	A	C	C	C	C	B	C	C
Approach Vol, veh/h		550			357			647			586	
Approach Delay, s/veh		64.2			30.1			23.8			25.5	
Approach LOS		E			C			C			C	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	1	2	3	4	5	6	7	8				
Change Period (Y+Rc), s	9.1	40.4	9.5	31.0	15.0	34.5	10.3	30.2				
Max Green Setting (Gmax), s	5.9	6.8	* 5.2	* 6.1	5.9	6.8	* 5.2	* 6.1				
Max Q Clear Time (g_c+I), s	23.2	* 8.8	* 25	9.1	23.2	* 8.8	* 25					
Green Ext Time (p_c), s	7.9	4.9	26.7	11.1	11.8	5.5	14.9					
	0.0	1.5	0.0	0.0	0.0	2.4	0.1	1.2				

### Intersection Summary

HCM 6th Ctrl Delay	35.7
HCM 6th LOS	D

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary

## 3: Orchard Drive & Center Street

Existing (2021) Modified AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Volume (veh/h)	70	49	7	27	148	27	32	118	24	24	283	123
Future Volume (veh/h)	70	49	7	27	148	27	32	118	24	24	283	123
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.93		0.90	0.90		1.00	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	66	9	34	185	0	45	166	34	29	341	148
Peak Hour Factor	0.74	0.74	0.74	0.80	0.80	0.80	0.71	0.71	0.71	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	350	48	377	364		482	894	746	649	875	730
Arrive On Green	0.06	0.22	0.22	0.03	0.19	0.00	0.04	0.48	0.48	0.03	0.47	0.47
Sat Flow, veh/h	1781	1586	216	1781	1870	0	1781	1870	1560	1781	1870	1560
Grp Volume(v), veh/h	95	0	75	34	185	0	45	166	34	29	341	148
Grp Sat Flow(s),veh/h/ln	1781	0	1802	1781	1870	0	1781	1870	1560	1781	1870	1560
Q Serve(g_s), s	3.2	0.0	2.6	1.1	6.7	0.0	1.0	3.9	0.9	0.6	9.0	4.2
Cycle Q Clear(g_c), s	3.2	0.0	2.6	1.1	6.7	0.0	1.0	3.9	0.9	0.6	9.0	4.2
Prop In Lane	1.00		0.12	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	320	0	398	377	364		482	894	746	649	875	730
V/C Ratio(X)	0.30	0.00	0.19	0.09	0.51		0.09	0.19	0.05	0.04	0.39	0.20
Avail Cap(c_a), veh/h	413	0	606	446	555		540	894	746	724	875	730
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.6	0.0	24.0	23.0	27.3	0.0	10.0	11.3	10.6	9.8	13.1	11.9
Incr Delay (d2), s/veh	0.5	0.0	0.2	0.1	1.1	0.0	0.1	0.5	0.1	0.0	1.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	12.4	0.0	2.0	0.9	5.5	0.0	0.6	2.8	0.6	0.4	6.7	2.7
<b>Unsig. Movement Delay, s/veh</b>												
LnGrp Delay(d),s/veh	23.1	0.0	24.3	23.1	28.4	0.0	10.1	11.8	10.7	9.8	14.4	12.5
LnGrp LOS	C	A	C	C	C		B	B	B	A	B	B
Approach Vol, veh/h		170			219	A		245			518	
Approach Delay, s/veh		23.6			27.6			11.3			13.6	
Approach LOS		C			C			B			B	
<b>Timer - Assigned Phs</b>												
Phs Duration (G+Y+Rc), s	6.8	40.8	7.1	21.2	7.6	40.0	9.0	19.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	35.5	35.5	5.5	25.5	5.5	35.5	8.5	22.5				
Max Q Clear Time (g_c+I1), s	5.9	5.9	3.1	4.6	3.0	11.0	5.2	8.7				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.3	0.0	2.5	0.1	0.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay											17.3	
HCM 6th LOS											B	
<b>Notes</b>												
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.												

**Intersection**

Int Delay, s/veh 0

**Movement** EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	545	1	2	823	0
Future Vol, veh/h	0	0	0	0	0	0	0	545	1	2	823	0
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	90	90	90	92	92	92	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	592	1	2	925	0

**Major/Minor** Minor2 Minor1 Major1 Major2

Conflicting Flow All	1227	1524	465	1062	1524	299	926	0	0	594	0	0
Stage 1	930	930	-	594	594	-	-	-	-	-	-	-
Stage 2	297	594	-	468	930	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	134	117	544	178	117	697	734	-	-	978	-	-
Stage 1	287	344	-	458	491	-	-	-	-	-	-	-
Stage 2	687	491	-	545	344	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	134	117	543	177	117	696	733	-	-	977	-	-
Mov Cap-2 Maneuver	134	117	-	177	117	-	-	-	-	-	-	-
Stage 1	287	343	-	458	491	-	-	-	-	-	-	-
Stage 2	686	491	-	543	343	-	-	-	-	-	-	-

**Approach** EB WB NB SB

HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

**Minor Lane/Major Mvmt** NBL NBT NBR EBLn1WBLn1WBLn2 SBL SBT SBR

Capacity (veh/h)	733	-	-	-	-	-	977	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	0.002	-	-
HCM Control Delay (s)	0	-	-	0	0	0	8.7	-	-
HCM Lane LOS	A	-	-	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	0	-	-

Lanes, Volumes, Timings  
5: US-89 & Chile Amor Access/Eagle Ridge Drive

Existing (2021) Modified AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	693	0	174	0	358	152	88	754	0
Future Volume (vph)	0	0	0	693	0	174	0	358	152	88	754	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		200	125		0	150		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			50			40			90		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor					0.98				0.99	1.00		
Frt					0.850				0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	1676	1676	0	3090	1401	0	1676	3185	1425	1593	3185	0
Flt Permitted				0.950						0.440		
Satd. Flow (perm)	1676	1676	0	3090	1401	0	1676	3185	1407	737	3185	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					610				250			
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		337			387			868			678	
Travel Time (s)		7.7			8.8			13.2			10.3	
Confl. Peds. (#/hr)	3						3		1	1		
Peak Hour Factor	0.25	0.25	0.25	0.88	0.88	0.88	0.84	0.84	0.84	0.87	0.87	0.87
Adj. Flow (vph)	0	0	0	788	0	198	0	426	181	101	867	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	788	198	0	0	426	181	101	867	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Right	R NA	L NA	Left	R NA	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					Yes			Yes			Yes	
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Split	NA		Perm	NA	Free	pm+pt	NA	

Lanes, Volumes, Timings  
5: US-89 & Chile Amor Access/Eagle Ridge Drive

Existing (2021) Modified AM

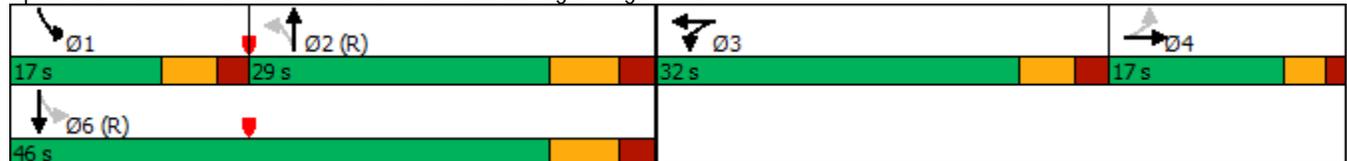
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		3	3			2		1	6	
Permitted Phases	4						2		Free	6		
Detector Phase	4	4		3	3		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	17.0	17.0		24.3	24.3		25.7	25.7		11.3	22.7	
Total Split (s)	17.0	17.0		32.0	32.0		29.0	29.0		17.0	46.0	
Total Split (%)	17.9%	17.9%		33.7%	33.7%		30.5%	30.5%		17.9%	48.4%	
Maximum Green (s)	12.5	12.5		25.7	25.7		21.3	21.3		10.7	38.3	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.9	4.9		4.0	4.9	
All-Red Time (s)	1.5	1.5		2.3	2.3		2.8	2.8		2.3	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		6.3	6.3		7.7	7.7		6.3	7.7	
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	0.6	0.6		0.6	0.6		1.7	1.7		1.8	1.7	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0		7.0	7.0				
Flash Dont Walk (s)				11.0	11.0		11.0	11.0				
Pedestrian Calls (#/hr)				0	0		0	0				
Act Effct Green (s)				25.2	25.2			44.9	95.0	57.2	55.8	
Actuated g/C Ratio				0.27	0.27			0.47	1.00	0.60	0.59	
v/c Ratio				0.96	0.24			0.28	0.13	0.20	0.46	
Control Delay				59.0	0.7			17.1	0.2	9.2	12.2	
Queue Delay				0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay				59.0	0.7			17.1	0.2	9.2	12.2	
LOS				E	A			B	A	A	B	
Approach Delay					47.3			12.1			11.9	
Approach LOS					D			B			B	
90th %ile Green (s)	0.0	0.0		25.7	25.7		39.9	39.9		9.1	55.3	
90th %ile Term Code	Skip	Skip		Max	Max		Coord	Coord		Gap	Coord	
70th %ile Green (s)	0.0	0.0		25.7	25.7		41.3	41.3		7.7	55.3	
70th %ile Term Code	Skip	Skip		Max	Max		Coord	Coord		Gap	Coord	
50th %ile Green (s)	0.0	0.0		25.7	25.7		42.2	42.2		6.8	55.3	
50th %ile Term Code	Skip	Skip		Max	Max		Coord	Coord		Gap	Coord	
30th %ile Green (s)	0.0	0.0		25.7	25.7		43.0	43.0		6.0	55.3	
30th %ile Term Code	Skip	Skip		Max	Max		Coord	Coord		Gap	Coord	
10th %ile Green (s)	0.0	0.0		23.1	23.1		57.9	57.9		0.0	57.9	
10th %ile Term Code	Skip	Skip		Gap	Gap		Coord	Coord		Skip	Coord	
Stops (vph)				619	0			215	0	36	404	
Fuel Used(gal)				14	1			6	1	1	10	
CO Emissions (g/hr)				967	38			415	60	70	714	
NOx Emissions (g/hr)				188	7			81	12	14	139	
VOC Emissions (g/hr)				224	9			96	14	16	166	
Dilemma Vehicles (#)				0	0			19	0	0	40	
Queue Length 50th (ft)				239	0			84	0	24	146	
Queue Length 95th (ft)				#342	0			114	0	45	183	
Internal Link Dist (ft)		257			307			788			598	
Turn Bay Length (ft)				100						150		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)				835	823			1503	1407	540	1871	
Starvation Cap Reductn				0	0			0	0	0	0	
Spillback Cap Reductn				0	0			0	0	0	0	
Storage Cap Reductn				0	0			0	0	0	0	
Reduced v/c Ratio				0.94	0.24			0.28	0.13	0.19	0.46	

**Intersection Summary**

Area Type: CBD  
 Cycle Length: 95  
 Actuated Cycle Length: 95  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 25.6 Intersection LOS: C  
 Intersection Capacity Utilization 75.7% ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 5: US-89 & Chile Amor Access/Eagle Ridge Drive



Intersection						
Intersection Delay, s/veh 8.1						
Intersection LOS A						
Approach	EB		WB		NB	SB
Entry Lanes	2		1		1	1
Conflicting Circle Lanes	2		2		2	2
Adj Approach Flow, veh/h	316		518		113	498
Demand Flow Rate, veh/h	323		528		115	507
Vehicles Circulating, veh/h	52		183		301	576
Vehicles Exiting, veh/h	1031		233		74	105
Ped Vol Crossing Leg, #/h	3		0		1	0
Ped Cap Adj	0.997		1.000		1.000	1.000
Approach Delay, s/veh	3.8		6.9		4.3	12.8
Approach LOS	A		A		A	B
Lane	Left	Right	Left	Bypass	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized	Yield					
Lane Util	0.471	0.529	1.000		1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.535		2.535	2.535
Critical Headway, s	4.645	4.328	4.328	30	4.328	4.328
Entry Flow, veh/h	152	171	498	1240	115	507
Cap Entry Lane, veh/h	1287	1359	1216	0.980	1099	870
Entry HV Adj Factor	0.977	0.979	0.981	29	0.979	0.982
Flow Entry, veh/h	149	167	489	1215	113	498
Cap Entry, veh/h	1253	1326	1192	0.024	1076	854
V/C Ratio	0.119	0.126	0.410	3.2	0.105	0.583
Control Delay, s/veh	3.9	3.7	7.1	A	4.3	12.8
LOS	A	A	A	0	A	B
95th %tile Queue, veh	0	0	2		0	4

**Intersection**

Int Delay, s/veh 1.5

**Movement** WBL WBR NBT NBR SBL SBT

Lane Configurations						
Traffic Vol, veh/h	59	40	502	51	17	1424
Future Vol, veh/h	59	40	502	51	17	1424
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	180	-	160	380	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	44	558	57	19	1582

**Major/Minor** Minor1 Major1 Major2

Conflicting Flow All	1387	279	0	0	615	0
Stage 1	558	-	-	-	-	-
Stage 2	829	-	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	162	612	-	-	598	-
Stage 1	460	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	157	612	-	-	598	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	460	-	-	-	-	-
Stage 2	367	-	-	-	-	-

**Approach** WB NB SB

HCM Control Delay, s 30.4 0 0.1  
HCM LOS D

**Minor Lane/Major Mvmt** NBT NBRWBLn1WBLn2 SBL SBT

Capacity (veh/h)	-	-	157	612	598	-
HCM Lane V/C Ratio	-	-	0.418	0.073	0.032	-
HCM Control Delay (s)	-	-	43.4	11.3	11.2	-
HCM Lane LOS	-	-	E	B	B	-
HCM 95th %tile Q(veh)	-	-	1.9	0.2	0.1	-

Intersection	
Intersection Delay, s/veh	17.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	521	9	26	307	93	5	2	17	59	2	25
Future Vol, veh/h	77	521	9	26	307	93	5	2	17	59	2	25
Peak Hour Factor	0.81	0.81	0.81	0.84	0.84	0.84	0.90	0.90	0.90	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	643	11	31	365	111	6	2	19	81	3	34
Number of Lanes	0	2	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	16.6	21.1	10	11.5
HCM LOS	C	C	A	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	21%	23%	0%	6%	69%
Vol Thru, %	8%	77%	97%	72%	2%
Vol Right, %	71%	0%	3%	22%	29%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	24	338	270	426	86
LT Vol	5	77	0	26	59
Through Vol	2	261	261	307	2
RT Vol	17	0	9	93	25
Lane Flow Rate	27	417	333	507	118
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.049	0.657	0.512	0.732	0.216
Departure Headway (Hd)	6.58	5.675	5.536	5.194	6.593
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	543	637	652	695	544
Service Time	4.633	3.403	3.264	3.221	4.636
HCM Lane V/C Ratio	0.05	0.655	0.511	0.729	0.217
HCM Control Delay	10	18.6	14	21.1	11.5
HCM Lane LOS	A	C	B	C	B
HCM 95th-tile Q	0.2	4.9	2.9	6.4	0.8

HCM 6th Signalized Intersection Summary  
2: US-89 & Center Street

Existing (2021) Modified PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	147	415	31	53	102	322	750	53	83	378	69
Future Volume (veh/h)	132	147	415	31	53	102	322	750	53	83	378	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	165	466	34	58	111	346	806	57	88	402	73
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	394	119	336	137	129	247	478	1264	89	263	1150	512
Arrive On Green	0.08	0.28	0.28	0.03	0.23	0.23	0.03	0.12	0.12	0.05	0.32	0.32
Sat Flow, veh/h	1781	430	1213	1781	571	1093	1781	3366	238	1781	3554	1580
Grp Volume(v), veh/h	148	0	631	34	0	169	346	425	438	88	402	73
Grp Sat Flow(s),veh/h/ln	1781	0	1643	1781	0	1663	1781	1777	1827	1781	1777	1580
Q Serve(g_s), s	5.5	0.0	24.9	1.3	0.0	7.9	9.1	20.5	20.5	2.9	7.8	2.9
Cycle Q Clear(g_c), s	5.5	0.0	24.9	1.3	0.0	7.9	9.1	20.5	20.5	2.9	7.8	2.9
Prop In Lane	1.00		0.74	1.00		0.66	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	394	0	454	137	0	377	478	667	686	263	1150	512
V/C Ratio(X)	0.38	0.00	1.39	0.25	0.00	0.45	0.72	0.64	0.64	0.34	0.35	0.14
Avail Cap(c_a), veh/h	422	0	454	254	0	460	478	667	686	355	1150	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.94	0.00	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.0	0.0	32.6	27.5	0.0	30.0	21.8	33.6	33.6	20.2	23.2	21.6
Incr Delay (d2), s/veh	0.6	0.0	188.0	0.9	0.0	0.8	5.4	4.6	4.5	0.7	0.8	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.2	0.0	50.9	1.0	0.0	5.8	3.2	15.7	16.1	2.1	5.7	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.6	0.0	220.5	28.4	0.0	30.8	27.1	38.2	38.1	21.0	24.0	22.2
LnGrp LOS	C	A	F	C	A	C	C	D	D	C	C	C
Approach Vol, veh/h		779			203			1209			563	
Approach Delay, s/veh		183.1			30.4			35.0			23.3	
Approach LOS		F			C			D			C	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	10.3	40.6	8.1	31.0	15.0	35.9	12.6	26.5				
Change Period (Y+Rc), s	5.9	6.8	* 5.2	* 6.1	5.9	6.8	* 5.2	* 6.1				
Max Green Setting (Gmax), s	23.2	* 8.8	* 25	9.1	23.2	* 8.8	* 25					
Max Q Clear Time (g_c+I1),s	22.5	3.3	26.9	11.1	9.8	7.5	9.9					
Green Ext Time (p_c), s	0.1	0.4	0.0	0.0	0.0	2.1	0.0	0.8				

Intersection Summary

HCM 6th Ctrl Delay	74.2
HCM 6th LOS	E

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary  
3: Orchard Drive & Center Street

Existing (2021) Modified PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	123	19	18	88	35	18	340	30	35	207	61
Future Volume (veh/h)	94	123	19	18	88	35	18	340	30	35	207	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	107	140	22	21	105	0	19	354	31	38	223	66
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.96	0.96	0.96	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	277	219	34	211	170		687	1020	863	606	1048	888
Arrive On Green	0.07	0.14	0.14	0.02	0.09	0.00	0.02	0.55	0.55	0.04	0.56	0.56
Sat Flow, veh/h	1781	1577	248	1781	1870	0	1781	1870	1584	1781	1870	1584
Grp Volume(v), veh/h	107	0	162	21	105	0	19	354	31	38	223	66
Grp Sat Flow(s),veh/h/ln	1781	0	1825	1781	1870	0	1781	1870	1584	1781	1870	1584
Q Serve(g_s), s	3.7	0.0	5.9	0.7	3.8	0.0	0.3	7.5	0.6	0.6	4.2	1.3
Cycle Q Clear(g_c), s	3.7	0.0	5.9	0.7	3.8	0.0	0.3	7.5	0.6	0.6	4.2	1.3
Prop In Lane	1.00		0.14	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	277	0	253	211	170		687	1020	863	606	1048	888
V/C Ratio(X)	0.39	0.00	0.64	0.10	0.62		0.03	0.35	0.04	0.06	0.21	0.07
Avail Cap(c_a), veh/h	364	0	581	308	517		787	1020	863	679	1048	888
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.7	0.0	28.7	28.0	30.9	0.0	6.8	9.0	7.4	6.7	7.7	7.1
Incr Delay (d2), s/veh	0.9	0.0	2.7	0.2	3.6	0.0	0.0	0.9	0.1	0.0	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	0.0	4.9	0.6	3.3	0.0	0.2	5.1	0.4	0.4	2.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	31.4	28.2	34.6	0.0	6.8	9.9	7.5	6.7	8.2	7.3
LnGrp LOS	C	A	C	C	C		A	A	A	A	A	A
Approach Vol, veh/h		269			126	A		404			327	
Approach Delay, s/veh		29.5			33.5			9.6			7.9	
Approach LOS		C			C			A			A	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	7.1	43.0	6.2	14.3	6.1	44.1	9.6	10.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	38.5	5.5	22.5	5.5	38.5	8.5	19.5					
Max Q Clear Time (g_c+I1), s	9.5	2.7	7.9	2.3	6.2	5.7	5.8					
Green Ext Time (p_c), s	0.0	2.3	0.0	0.7	0.0	1.5	0.1	0.4				

Intersection Summary

HCM 6th Ctrl Delay	16.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

**Intersection**

Int Delay, s/veh 0.2

**Movement** EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	0	1	0	1028	0	1	842	0
Future Vol, veh/h	0	0	0	2	0	1	0	1028	0	1	842	0
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	38	38	38	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	0	3	0	1094	0	1	896	0

**Major/Minor** Minor2 Minor1 Major1 Major2

Conflicting Flow All	1447	1994	450	1546	1994	549	897	0	0	1095	0	0
Stage 1	899	899	-	1095	1095	-	-	-	-	-	-	-
Stage 2	548	1095	-	451	899	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	92	60	556	78	60	480	753	-	-	633	-	-
Stage 1	300	356	-	228	288	-	-	-	-	-	-	-
Stage 2	488	288	-	557	356	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	91	60	555	78	60	479	752	-	-	632	-	-
Mov Cap-2 Maneuver	91	60	-	78	60	-	-	-	-	-	-	-
Stage 1	300	355	-	228	288	-	-	-	-	-	-	-
Stage 2	485	288	-	556	355	-	-	-	-	-	-	-

**Approach** EB WB NB SB

HCM Control Delay, s	0	40.5	0	0
HCM LOS	A	E		

**Minor Lane/Major Mvmt** NBL NBT NBR EBLn1WBLn1WBLn2 SBL SBT SBR

Capacity (veh/h)	752	-	-	-	78	479	632	-	-
HCM Lane V/C Ratio	-	-	-	-	0.067	0.005	0.002	-	-
HCM Control Delay (s)	0	-	-	0	54.5	12.6	10.7	-	-
HCM Lane LOS	A	-	-	A	F	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	0	-	-

Lanes, Volumes, Timings  
5: US-89 & Chile Amor Access/Eagle Ridge Drive

Existing (2021) Modified PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	6	3	408	1	203	3	871	652	195	545	9
Future Volume (vph)	9	6	3	408	1	203	3	871	652	195	545	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		200	125		0	150		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			50			40			90		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00				0.98				0.99			
Frt		0.954			0.851				0.850		0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1599	0	3090	1401	0	1593	3185	1425	1593	3179	0
Flt Permitted				0.950			0.410			0.177		
Satd. Flow (perm)	1669	1599	0	3090	1401	0	687	3185	1407	297	3179	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			218				626		3	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		337			387			868			678	
Travel Time (s)		7.7			8.8			13.2			10.3	
Confl. Peds. (#/hr)	4					4			1	1		
Peak Hour Factor	0.67	0.67	0.67	0.93	0.93	0.93	0.94	0.94	0.94	0.87	0.87	0.87
Adj. Flow (vph)	13	9	4	439	1	218	3	927	694	224	626	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	13	0	439	219	0	3	927	694	224	636	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Right	R NA	L NA	Left	R NA	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					Yes			Yes			Yes	
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Split	NA		Perm	NA	Free	pm+pt	NA	

Lanes, Volumes, Timings  
 5: US-89 & Chile Amor Access/Eagle Ridge Drive

Existing (2021) Modified PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		3	3			2		1	6	
Permitted Phases	4						2		Free	6		
Detector Phase	4	4		3	3		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	11.0	11.0		24.3	24.3		25.7	25.7		11.3	22.7	
Total Split (s)	11.0	11.0		25.0	25.0		36.0	36.0		18.0	54.0	
Total Split (%)	12.2%	12.2%		27.8%	27.8%		40.0%	40.0%		20.0%	60.0%	
Maximum Green (s)	6.5	6.5		18.7	18.7		28.3	28.3		11.7	46.3	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.9	4.9		4.0	4.9	
All-Red Time (s)	1.5	1.5		2.3	2.3		2.8	2.8		2.3	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		6.3	6.3		7.7	7.7		6.3	7.7	
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	0.6	0.6		0.6	0.6		1.7	1.7		1.8	1.7	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0		7.0	7.0				
Flash Dont Walk (s)				11.0	11.0		11.0	11.0				
Pedestrian Calls (#/hr)				0	0		0	0				
Act Effct Green (s)	5.3	5.3		15.4	15.4		39.5	39.5	90.0	57.9	56.5	
Actuated g/C Ratio	0.06	0.06		0.17	0.17		0.44	0.44	1.00	0.64	0.63	
v/c Ratio	0.13	0.13		0.83	0.52		0.01	0.66	0.49	0.65	0.32	
Control Delay	42.9	36.3		49.9	9.5		20.7	26.0	1.2	20.5	7.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	42.9	36.3		49.9	9.5		20.7	26.0	1.2	20.5	7.2	
LOS	D	D		D	A		C	C	A	C	A	
Approach Delay		39.6			36.4			15.4			10.6	
Approach LOS		D			D			B			B	
90th %ile Green (s)	6.5	6.5		18.7	18.7		28.3	28.3		11.7	46.3	
90th %ile Term Code	Max	Max		Max	Max		Coord	Coord		Max	Coord	
70th %ile Green (s)	5.2	5.2		17.8	17.8		28.3	28.3		13.9	48.5	
70th %ile Term Code	Gap	Gap		Gap	Gap		Coord	Coord		Max	Coord	
50th %ile Green (s)	0.0	0.0		15.8	15.8		42.1	42.1		11.8	60.2	
50th %ile Term Code	Skip	Skip		Gap	Gap		Coord	Coord		Gap	Coord	
30th %ile Green (s)	0.0	0.0		13.8	13.8		46.8	46.8		9.1	62.2	
30th %ile Term Code	Skip	Skip		Gap	Gap		Coord	Coord		Gap	Coord	
10th %ile Green (s)	0.0	0.0		10.9	10.9		51.9	51.9		6.9	65.1	
10th %ile Term Code	Skip	Skip		Gap	Gap		Coord	Coord		Gap	Coord	
Stops (vph)	10	9		382	30		3	641	0	91	210	
Fuel Used(gal)	0	0		7	1		0	17	4	3	6	
CO Emissions (g/hr)	11	10		523	82		5	1222	268	196	409	
NOx Emissions (g/hr)	2	2		102	16		1	238	52	38	80	
VOC Emissions (g/hr)	3	2		121	19		1	283	62	45	95	
Dilemma Vehicles (#)	0	0		0	0		0	47	0	0	18	
Queue Length 50th (ft)	7	5		124	1		1	200	0	32	50	
Queue Length 95th (ft)	19	17		170	59		8	#389	0	#99	85	
Internal Link Dist (ft)		257			307			788			598	
Turn Bay Length (ft)				100			125			150		

Lanes, Volumes, Timings  
 5: US-89 & Chile Amor Access/Eagle Ridge Drive

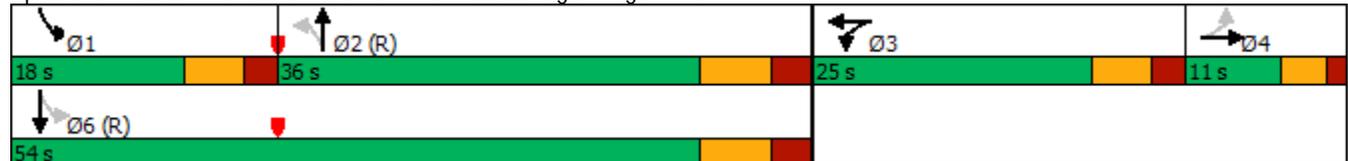
Existing (2021) Modified PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	120	119		642	463		301	1397	1407	365	1995	
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	0.11	0.11		0.68	0.47		0.01	0.66	0.49	0.61	0.32	

Intersection Summary

Area Type:	CBD
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.83
Intersection Signal Delay:	18.7
Intersection LOS:	B
Intersection Capacity Utilization	75.3%
ICU Level of Service	D
Analysis Period (min)	15
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Splits and Phases: 5: US-89 & Chile Amor Access/Eagle Ridge Drive



Intersection						
Intersection Delay, s/veh 7.9						
Intersection LOS A						
Approach	EB		WB		NB	SB
Entry Lanes	2		1		1	1
Conflicting Circle Lanes	2		2		2	2
Adj Approach Flow, veh/h	1018		453		187	284
Demand Flow Rate, veh/h	1038		462		191	290
Vehicles Circulating, veh/h	60		574		979	541
Vehicles Exiting, veh/h	771		596		119	457
Ped Vol Crossing Leg, #/h	0		0		2	2
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	6.6		10.1		10.1	7.7
Approach LOS	A		B		B	A
Lane	Left	Right	Left	Bypass	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized	Yield					
Lane Util	0.470	0.530	1.000		1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.535		2.535	2.535
Critical Headway, s	4.645	4.328	4.328	38	4.328	4.328
Entry Flow, veh/h	488	550	424	866	191	290
Cap Entry Lane, veh/h	1277	1349	872	0.980	618	897
Entry HV Adj Factor	0.980	0.981	0.981	37	0.981	0.978
Flow Entry, veh/h	478	539	416	849	187	284
Cap Entry, veh/h	1252	1323	855	0.044	606	877
V/C Ratio	0.382	0.408	0.486	4.7	0.309	0.324
Control Delay, s/veh	6.6	6.6	10.6	A	10.1	7.7
LOS	A	A	B	0	B	A
95th %tile Queue, veh	2	2	3		1	1

**Intersection**

Int Delay, s/veh 8.7

**Movement** WBL WBR NBT NBR SBL SBT

Lane Configurations						
Traffic Vol, veh/h	48	39	1437	86	33	1015
Future Vol, veh/h	48	39	1437	86	33	1015
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	180	-	160	380	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	94	94	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	46	1529	91	39	1194

**Major/Minor** Minor1 Major1 Major2

Conflicting Flow All	2204	765	0	0	1620	0
Stage 1	1529	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	~ 52	297	-	-	194	-
Stage 1	115	-	-	-	-	-
Stage 2	454	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 42	297	-	-	194	-
Mov Cap-2 Maneuver	~ 42	-	-	-	-	-
Stage 1	115	-	-	-	-	-
Stage 2	363	-	-	-	-	-

**Approach** WB NB SB

HCM Control Delay, s 237.6 0 0.9  
HCM LOS F

**Minor Lane/Major Mvmt** NBT NBRWBLn1WBLn2 SBL SBT

Capacity (veh/h)	-	-	42	297	194	-
HCM Lane V/C Ratio	-	-	1.361	0.156	0.2	-
HCM Control Delay (s)	-	-	\$ 414.9	19.4	28.1	-
HCM Lane LOS	-	-	F	C	D	-
HCM 95th %tile Q(veh)	-	-	5.7	0.5	0.7	-

**Notes**

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

# HCM 6th Signalized Intersection Summary Existing (2021) Modified PM EB Right-turn Pocket 2: US-89 & Center Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	147	415	31	53	102	322	750	53	83	378	69
Future Volume (veh/h)	132	147	415	31	53	102	322	750	53	83	378	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	165	466	34	58	111	346	806	57	88	402	73
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	387	520	437	302	141	270	504	1257	89	263	1020	453
Arrive On Green	0.06	0.28	0.28	0.03	0.25	0.25	0.05	0.12	0.12	0.05	0.29	0.29
Sat Flow, veh/h	1781	1870	1575	1781	571	1093	1781	3366	238	1781	3554	1580
Grp Volume(v), veh/h	148	165	466	34	0	169	346	425	438	88	402	73
Grp Sat Flow(s),veh/h/ln	1781	1870	1575	1781	0	1664	1781	1777	1827	1781	1777	1580
Q Serve(g_s), s	5.6	6.3	25.0	1.3	0.0	7.7	11.4	20.5	20.5	3.1	8.2	3.1
Cycle Q Clear(g_c), s	5.6	6.3	25.0	1.3	0.0	7.7	11.4	20.5	20.5	3.1	8.2	3.1
Prop In Lane	1.00		1.00	1.00		0.66	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	387	520	437	302	0	412	504	663	682	263	1020	453
V/C Ratio(X)	0.38	0.32	1.07	0.11	0.00	0.41	0.69	0.64	0.64	0.33	0.39	0.16
Avail Cap(c_a), veh/h	387	520	437	354	0	460	504	663	682	274	1020	453
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.94	0.00	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	25.7	32.5	23.9	0.0	28.4	19.9	33.7	33.7	21.8	25.8	24.0
Incr Delay (d2), s/veh	0.6	0.3	61.5	0.2	0.0	0.6	3.9	4.7	4.6	0.7	1.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.4	5.1	24.4	1.0	0.0	5.6	9.4	15.8	16.1	2.3	6.1	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.4	26.1	94.0	24.1	0.0	29.0	23.8	38.4	38.3	22.6	26.9	24.7
LnGrp LOS	C	C	F	C	A	C	C	D	D	C	C	C
Approach Vol, veh/h		779			203			1209			563	
Approach Delay, s/veh		66.4			28.2			34.2			26.0	
Approach LOS		E			C			C			C	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	10.4	40.4	8.1	31.1	18.2	32.6	10.8	28.4				
Change Period (Y+Rc), s	5.9	6.8	* 5.2	* 6.1	5.9	6.8	* 5.2	* 6.1				
Max Green Setting (Gmax), s	5.1	30.4	* 5.5	* 25	12.3	23.2	* 5.6	* 25				
Max Q Clear Time (g_c+I1), s	5.1	22.5	3.3	27.0	13.4	10.2	7.6	9.7				
Green Ext Time (p_c), s	0.0	3.0	0.0	0.0	0.0	2.1	0.0	0.8				

## Intersection Summary

HCM 6th Ctrl Delay	41.2
HCM 6th LOS	D

## Notes

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

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary  
 2: US-89 & Center Street

Existing (2021) Modified PM Signal Adjustments

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	147	415	31	53	102	322	750	53	83	378	69
Future Volume (veh/h)	132	147	415	31	53	102	322	750	53	83	378	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	165	466	34	58	111	346	806	57	88	402	73
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	428	602	507	314	156	299	521	1353	96	282	1068	475
Arrive On Green	0.08	0.32	0.32	0.03	0.27	0.27	0.15	0.40	0.40	0.05	0.30	0.30
Sat Flow, veh/h	1781	1870	1576	1781	571	1094	1781	3366	238	1781	3554	1580
Grp Volume(v), veh/h	148	165	466	34	0	169	346	425	438	88	402	73
Grp Sat Flow(s),veh/h/ln	1781	1870	1576	1781	0	1665	1781	1777	1827	1781	1777	1580
Q Serve(g_s), s	6.9	7.9	34.2	1.6	0.0	9.8	15.4	22.6	22.6	4.1	10.7	4.1
Cycle Q Clear(g_c), s	6.9	7.9	34.2	1.6	0.0	9.8	15.4	22.6	22.6	4.1	10.7	4.1
Prop In Lane	1.00		1.00	1.00		0.66	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	428	602	507	314	0	455	521	714	734	282	1068	475
V/C Ratio(X)	0.35	0.27	0.92	0.11	0.00	0.37	0.66	0.60	0.60	0.31	0.38	0.15
Avail Cap(c_a), veh/h	675	778	655	364	0	455	597	714	734	308	1068	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.94	0.00	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	30.3	39.2	29.8	0.0	35.2	22.3	28.2	28.2	27.3	33.1	30.8
Incr Delay (d2), s/veh	0.5	0.2	15.5	0.1	0.0	0.5	2.3	3.6	3.5	0.6	1.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.5	6.6	21.8	1.3	0.0	7.3	10.6	15.0	15.4	3.1	8.1	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.4	30.5	54.7	30.0	0.0	35.7	24.6	31.8	31.8	27.9	34.1	31.5
LnGrp LOS	C	C	D	C	A	D	C	C	C	C	C	C
Approach Vol, veh/h		779			203			1209			563	
Approach Delay, s/veh		44.4			34.8			29.7			32.8	
Approach LOS		D			C			C			C	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	11.7	55.0	8.6	44.7	23.9	42.9	14.4	38.9				
Change Period (Y+Rc), s	5.9	6.8	* 5.2	* 6.1	5.9	6.8	* 5.2	* 6.1				
Max Green Setting (Gmax), s	7.5	31.8	* 6.8	* 50	23.1	16.2	* 26	* 31				
Max Q Clear Time (g_c+I1), s	6.1	24.6	3.6	36.2	17.4	12.7	8.9	11.8				
Green Ext Time (p_c), s	0.0	2.9	0.0	2.4	0.5	0.9	0.3	0.9				

Intersection Summary

HCM 6th Ctrl Delay	34.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.  
 \* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



**APPENDIX C**  
**SIGNAL WARRANT CALCULATIONS**

**TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)**

MAJOR STREET: US 89 NB SB # OF APPROACH LANES:

MINOR STREET: Eaglegate Drive EB WB # OF APPROACH LANES:

CITY, STATE: North Salt Lake City, Ut

COMMENTS: 2021 Existing Traffic Volumes

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N):

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2	WARRANT 3
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	Four-Hour	Peak Hour
<b>THRESHOLD VALUES</b>			<b>420</b>	<b>105</b>		<b>630</b>	<b>53</b>		<b>336</b>	<b>84</b>		<b>504</b>	<b>42</b>			
06:00 AM TO 07:00 AM	0	0				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
07:00 AM TO 08:00 AM	1,844	105	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
08:00 AM TO 09:00 AM	1,841	89	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
09:00 AM TO 10:00 AM	1,357	75	Y			Y	Y	Y	Y			Y	Y	Y	Y	
10:00 AM TO 11:00 AM	1,208	54	Y			Y	Y	Y	Y			Y	Y	Y		
11:00 AM TO 12:00 PM	1,335	65	Y			Y	Y	Y	Y			Y	Y	Y		
12:00 PM TO 01:00 PM	1,386	70	Y			Y	Y	Y	Y			Y	Y	Y		
01:00 PM TO 02:00 PM	1,460	60	Y			Y	Y	Y	Y			Y	Y	Y		
02:00 PM TO 03:00 PM	1,597	60	Y			Y	Y	Y	Y			Y	Y	Y		
03:00 PM TO 04:00 PM	2,096	59	Y			Y	Y	Y	Y			Y	Y	Y		
04:00 PM TO 05:00 PM	2,539	88	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
05:00 PM TO 06:00 PM	2,395	78	Y			Y	Y	Y	Y			Y	Y	Y	Y	
06:00 PM TO 07:00 PM	1,751	79	Y			Y	Y	Y	Y			Y	Y	Y	Y	
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	20,809	882	12	1	1	12	12	12	12	3	3	12	12	12	10	6
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			SATISFIED			NOT SATISFIED						SATISFIED	SATISFIED

**TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)**

MAJOR STREET: Center Street EB WB # OF APPROACH LANES:

MINOR STREET: Main Street NB SB # OF APPROACH LANES:

CITY, STATE: North Salt Lake City, Ut

COMMENTS: 2021 Existing Traffic Volumes

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N):

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2	WARRANT 3
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	Four-Hour	Peak Hour
<b>THRESHOLD VALUES</b>			<b>500</b>	<b>150</b>		<b>750</b>	<b>75</b>		<b>400</b>	<b>120</b>		<b>600</b>	<b>60</b>			
06:00 AM TO 07:00 AM	0	0														
07:00 AM TO 08:00 AM	607	216	Y	Y	Y		Y		Y	Y	Y	Y	Y	Y		
08:00 AM TO 09:00 AM	411	171		Y			Y		Y	Y	Y		Y			
09:00 AM TO 10:00 AM	0	0														
10:00 AM TO 11:00 AM	0	0														
11:00 AM TO 12:00 PM	0	0														
12:00 PM TO 01:00 PM	0	0														
01:00 PM TO 02:00 PM	0	0														
02:00 PM TO 03:00 PM	0	0														
03:00 PM TO 04:00 PM	0	0														
04:00 PM TO 05:00 PM	782	295	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
05:00 PM TO 06:00 PM	659	211	Y	Y	Y		Y		Y	Y	Y	Y	Y	Y	Y	
06:00 PM TO 07:00 PM	0	0														
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	2,459	893	3	4	3	1	4	1	4	4	4	3	4	3	2	1
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			NOT SATISFIED			NOT SATISFIED						NOT SATISFIED	SATISFIED



**APPENDIX D**  
**CRASH SUMMARY REPORT**

# NSL Crashes 2016 - 2021

Created on October 12, 2021

Created by Jacob Farnsworth

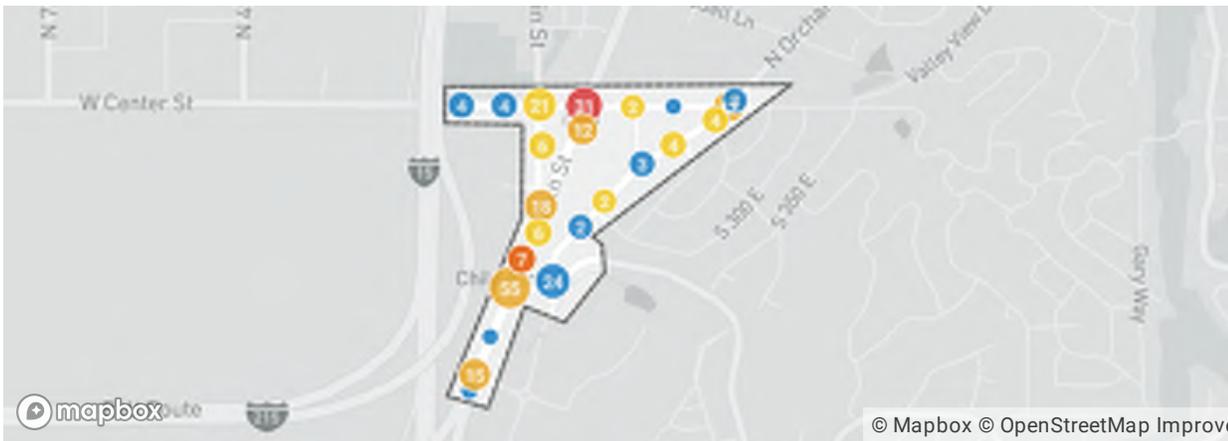
Requested by Mitchell Hadfield

Data extents: January 3, 2016 to October 6, 2021



## Applied Filters

Year ≤ 2016 - 2021    Shape: Polygon



© Mapbox © OpenStreetMap Improve this map

Total Crashes	237	Fatal Crashes	1
---------------	-----	---------------	---

UDOT Crash Summary	Crashes	
Total Crashes	237	100.00%
Intersection Related	163	68.78%
Roadway Departure	29	12.24%
CMV Involved	26	10.97%
Speed Related	20	8.44%
Distracted Driving	16	6.75%
Pedestrian Involved	6	2.53%
Motorcycle Involved	5	2.11%
+ 5 more	13	5.49%

Crash Severity	Crashes	
No injury/PDO	184	77.64%
Possible injury	30	12.66%
Suspected Minor Injury	19	8.02%
Suspected Serious Injury	3	1.27%
Fatal	1	0.42%

Injury Level		People
No injury		465 86.11%
Possible injury		43 7.96%
Suspected Minor Injury		25 4.63%
Suspected Serious Injury		5 0.93%
Fatal		1 0.19%
Unknown		1 0.19%

Manner of Collision		Crashes
Front to Rear		69 29.11%
Angle		67 28.27%
Not Applicable/Single Vehicle		43 18.14%
Sideswipe Same Direction		28 11.81%
Head On (front-to-front)		7 2.95%
Parked Vehicle		7 2.95%
Unknown		6 2.53%
Other*		5 2.11%
+ 3 more		5 2.11%

Crash Date Time (Year)		Crashes
2021		26 10.97%
2020		24 10.13%
2019		52 21.94%
2018		40 16.88%
2017		47 19.83%
2016		48 20.25%
+ 6 more		0 0%

Roadway Surface Condition		Crashes
Dry		202 85.23%
Wet		21 8.86%
Snow		11 4.64%
Ice/Frost		1 0.42%
Oil		1 0.42%
Unknown		1 0.42%
+ 9 more		0 0%

Weather Condition		Crashes
Clear		171 72.15%
		0 0%

Cloudy	37	15.61%
Rain	14	5.91%
Snowing	12	5.06%
Unknown	2	0.84%
Blowing Snow	1	0.42%
+ 5 more	0	0%

Most Harmful Event		Vehicle
Collision With Other Motor Vehicle in Transport	387	87.16%
Traffic Sign Support	9	2.03%
Collision With Parked Motor Vehicle	8	1.80%
Other Fixed Object*	8	1.80%
Pedestrian	7	1.58%
Animal - Wild	4	0.90%
Other Non-Collision*	4	0.90%
Concrete Barrier	3	0.68%
+ 47 more	14	3.20%

Light Condition		Crashes
Daylight	165	69.62%
Dark - Lighted	45	18.99%
Dark - Not Lighted	17	7.17%
Dawn	5	2.11%
Unknown	3	1.27%
Dark - Unknown Lighting	1	0.42%
Dusk	1	0.42%
Other	0	0.00%

**APPENDIX B – WORKING PAPER #2**



## FUTURE CONDITIONS MEMORANDUM

FOR

# TOWN CENTER CIRCULATION STUDY

APRIL 19, 2022

*Prepared for:*

**City of North Salt Lake**  
10 East Center Street  
North Salt Lake, UT 84054

*Prepared by:*

**Kimley-Horn and Associates, Inc.**  
111 East Broadway  
Suite 600  
Salt Lake City, Utah 84111

*This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.*

KH Project #: 093857000

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## 1. INTRODUCTION

The City of North Salt Lake (City) is working to develop a Town Center, centered at Main Street and Center Street, North Salt Lake, Utah.

Recent multi-family projects have contributed to actualizing the Town Center vision. As additional projects are considered, including additional Town Center development and regional projects such as Utah Transit Authority Davis-Salt Lake City Community Connector Study, the City recognizes a need for a technical evaluation of current and future traffic operations to confirm the feasibility of roadway network changes considered in the Town Center Master Plan.

The City Town Center Master Plan describes that:

*“the real focus of the proposed Town Center is at the side streets - Center Street, Main Street and Orchard Drive are envisioned to be transformed into great pedestrian corridors. City Hall and nearby Hatch Park form the core of the Town Center and are the heart of a proposed Civic/Cultural/Arts District.”*

This Town Center Circulation Study explores options to close or dead-end streets, or alter intersections within the Town Center area to improve traffic flow and safety for all road users.

This future condition memorandum summarizes findings and deficiencies of the future conditions found within the study area of the City Town Center related to capacity and level of service (LOS). The City Town Center study area is shown in **Figure 1**.

## 2. EXISTING TRAFFIC CONDITIONS

Analysis of existing conditions is presented in Working Paper #1.

Study area intersections and roadway segments are shown in **Figure 2**.

### 2.1. Existing Traffic Volumes

Existing AM (7:00-9:00) and PM (4:00-6:00) peak period turning movement count data was field collected for the following intersections on Thursday, September 2, 2021:

- Center Street / Main Street (#1)
- US-89 / Center Street (#2)
- Center Street / Orchard Drive (#3)
- US-89 / Main Street (#4)
- US-89 / Eagle Ridge Drive (#5)
- Orchard Drive / Eagle Ridge Drive (#6)
- US-89 / Eaglegate Drive (#7)

Existing 24-hour roadway count data was field collected for the following roadway segments on Thursday, September 2, 2021:

- Main Street, North of Center Street (S1)
- Center Street, West of Main Street (S2)
- Main Street, South of Center Street (S3)
- Orchard Drive, North of Eagle Ridge Drive (S4)
- Eagle Ridge Drive, East of Orchard Drive (S5)

A summary of the collected traffic data in the study area are shown in **Figure 3**. The field counted data sheets are provided in **Appendix A**.



<p><b>1</b></p> <p>← 39(25) ← 49(53) ← 13(8)</p> <p>↖ 13(14) ↑ 146(147) ↘ 17(14)</p>	<p><b>2</b></p> <p>↖ 57(69) ← 434(378) ↘ 37(83)</p> <p>↖ 117(102) ← 108(53) ↘ 57(31)</p>	<p><b>3</b></p> <p>↖ 123(61) ← 283(207) ↘ 24(35)</p> <p>↖ 27(35) ← 148(88) ↘ 27(18)</p>	<p><b>4</b></p> <p>↖ 1(6) ← 612(504) ↘ 0(1)</p> <p>↖ 0(1) ↘ 0(2)</p>
<p>40(77) ↖ 239(351) → 152(179) ↘</p> <p>↖ 146(186) ↖ 52(81) ↖ 18(28)</p>	<p>91(132) ↖ 137(147) → 72(83) ↘</p> <p>↖ 48(41) ↖ 252(750) ↘ 27(42)</p>	<p>70(94) ↖ 49(123) → 7(19) ↘</p> <p>↖ 32(18) ↖ 118(340) ↖ 24(30)</p>	<p>2(0) → 210(332) ↘</p> <p>↖ 217(281) ↖ 328(747) ↖ 1(0)</p>
<p><b>5</b></p> <p>↖ 0(9) ↖ 754(545) ↖ 88(195)</p> <p>↖ 174(203) ↖ 0(1) ↖ 693(408)</p>	<p><b>6</b></p> <p>↖ 366(208) ↖ 15(15) ↖ 13(29)</p> <p>↖ 27(33) ↖ 439(362) ↖ 16(8)</p>	<p><b>7</b></p> <p>↖ 1424(1015) ↖ 17(33)</p> <p>↖ 40(39) ↖ 59(48)</p>	
<p>0(9) ↖ 0(6) → 0(3) ↘</p> <p>↖ 0(3) ↖ 358(871) ↖ 152(652)</p>	<p>60(380) ↖ 149(473) → 28(84) ↘</p> <p>↖ 71(86) ↖ 21(26) ↖ 13(28)</p>	<p>502(1437) ↖ 51(86) ↘</p>	

LEGEND	
← XX(XX)	AM(PM) PEAK HOUR TRAFFIC VOLUMES
XXXX	AVERAGE DAILY TRAFFIC VOLUMES

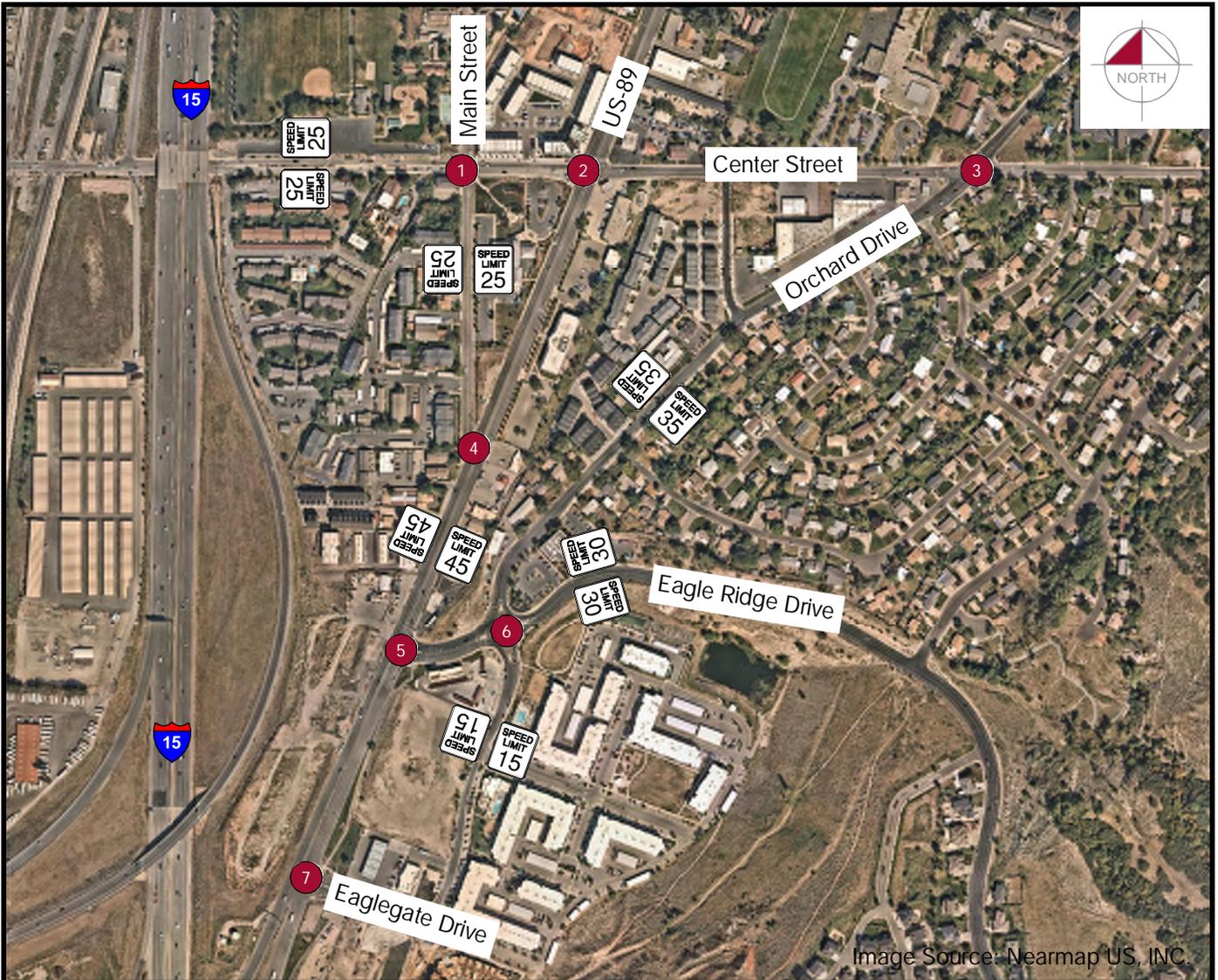
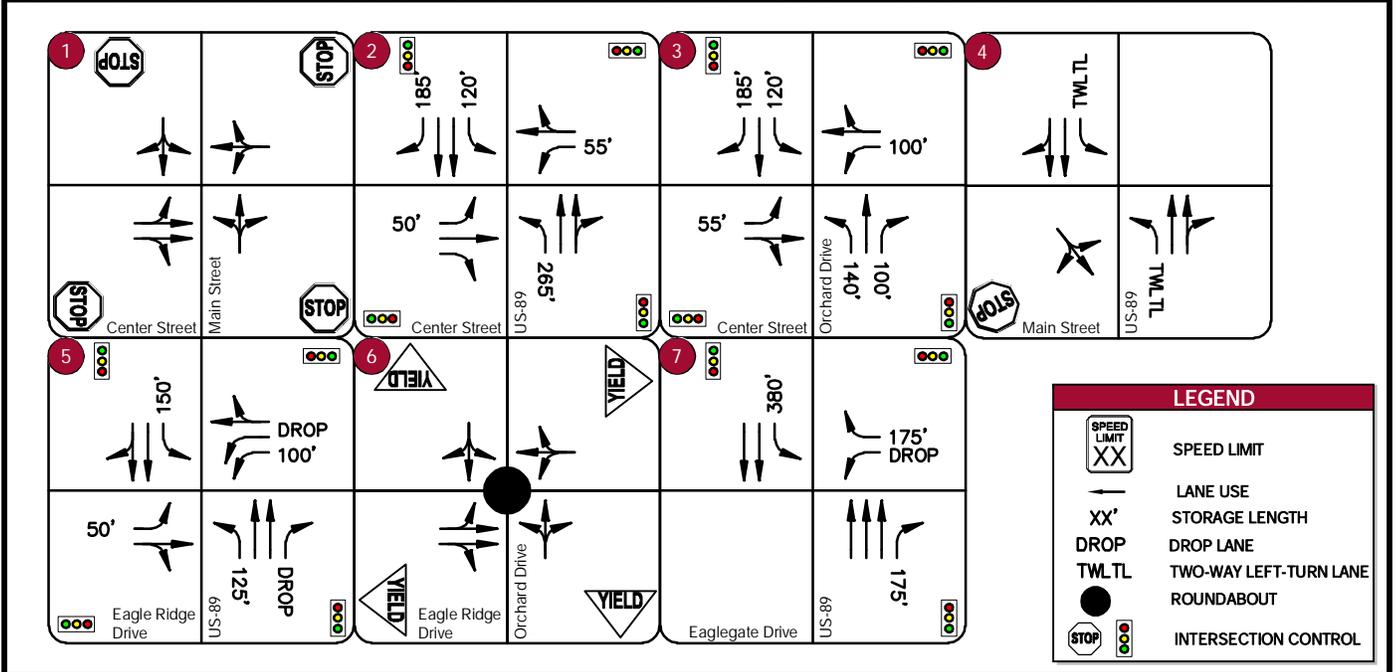


Image Source: Nearmap US, INC.





**LEGEND**

**XX%** Annual Growth Rates



<p><b>1</b></p> <p>↖ 43(27) ↘ 53(58) ↙ 14(9)</p> <p>↗ 18(19) ↖ 199(200) ↘ 23(19)</p>	<p><b>2</b></p> <p>↖ 71(86) ↘ 542(472) ↙ 46(104)</p> <p>↗ 135(117) ↖ 124(61) ↘ 66(36)</p>	<p><b>3</b></p> <p>↖ 138(69) ↘ 318(232) ↙ 27(39)</p> <p>↗ 31(40) ↖ 170(101) ↘ 31(21)</p>	<p><b>4</b></p> <p>↖ 1(7) ↘ 704(580) ↙ 0(1)</p> <p>↗ 0(1) ↖ 0(2) ↘ 0(2)</p>
<p>↖ 53(102) ↘ 315(463) ↙ 200(236)</p> <p>↗ 182(232) ↖ 65(101) ↘ 22(35)</p>	<p>↖ 124(180) ↘ 187(200) ↙ 98(113)</p> <p>↗ 55(47) ↖ 290(863) ↘ 31(48)</p>	<p>↖ 81(108) ↘ 56(141) ↙ 8(22)</p> <p>↗ 33(18) ↖ 121(349) ↘ 25(31)</p>	<p>↖ 2(0) ↘ 262(415) ↙ 1(0)</p> <p>↗ 260(337) ↖ 393(896) ↘ 1(0)</p>
<p><b>5</b></p> <p>↖ 0(11) ↘ 905(654) ↙ 106(234)</p> <p>↗ 203(236) ↖ 0(1) ↘ 807(475)</p>	<p><b>6</b></p> <p>↖ 376(213) ↘ 15(15) ↙ 13(30)</p> <p>↗ 39(48) ↖ 636(524) ↘ 23(12)</p>	<p><b>7</b></p> <p>↖ 1823(1300) ↘ 22(42)</p> <p>↗ 40(39) ↖ 59(48)</p>	
<p>↖ 0(9) ↘ 0(6) ↙ 0(3)</p> <p>↗ 0(4) ↖ 458(1115) ↘ 195(835)</p>	<p>↖ 70(443) ↘ 174(551) ↙ 33(98)</p> <p>↗ 73(88) ↖ 22(27) ↘ 13(29)</p>	<p>↖ 643(1840) ↘ 65(110)</p>	

LEGEND	
← XX(XX)	AM(PM) PEAK HOUR TRAFFIC VOLUMES
XXXX	AVERAGE DAILY TRAFFIC VOLUMES

Trip distribution for residential land uses is shown in **Figure 9**. Trip distribution for the recreation center land use is shown in **Figure 10**. Trip distribution for office and retail land uses are shown in **Figure 11**.



LEGEND	
<b>XX%</b>	DISTRIBUTION OF PROJECT TRIPS

### 3.6. Project Trip Assignment

Trips generated by future development were assigned to the roadway network based on the trip distribution and likely travel patterns to and from the developments. Trips were assigned using the lane geometry and intersection control shown in **Figure 4**.

Phase 1 trip assignment is shown in **Figure 12**. Phase 2 trip assignment is shown in **Figure 13**.

### 3.7. Background Plus Development Traffic Volumes

Phase 1 trip assignment (**Figure 12**) was added to 2025 background traffic volumes (**Figure 7**) to calculate 2025 Scenario #1 traffic volumes (**Figure 14**).

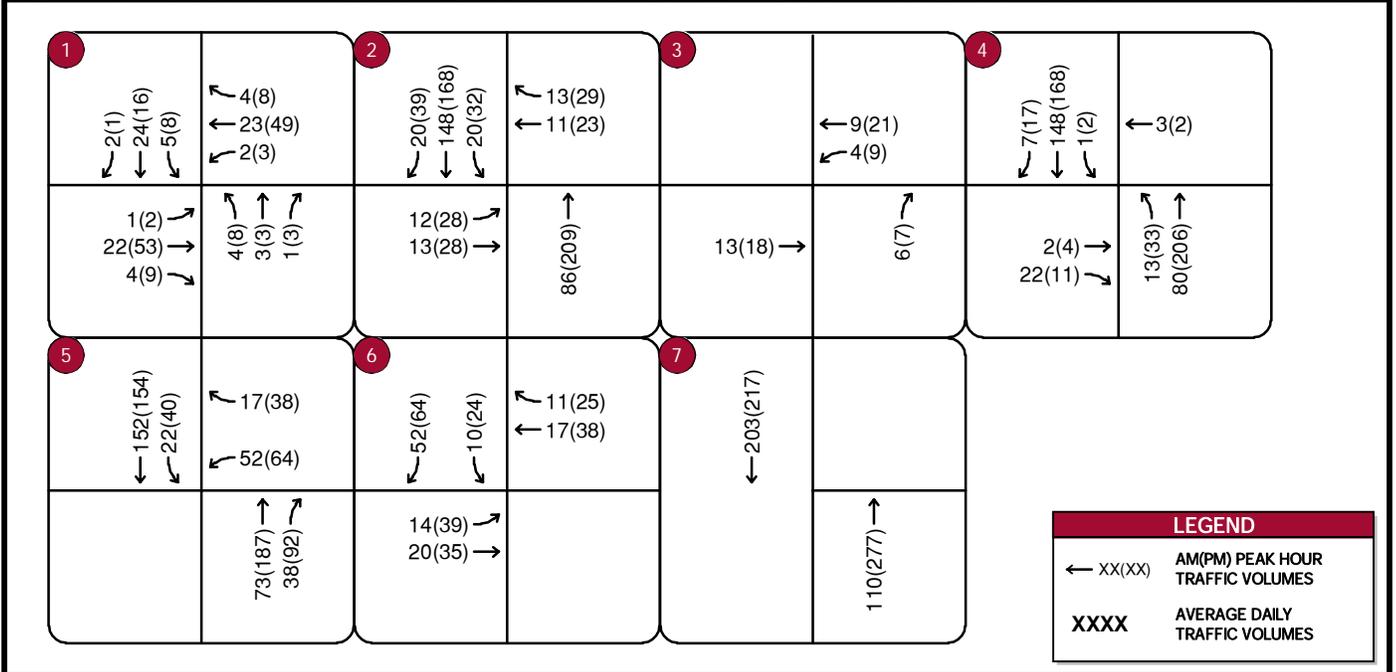
Phase 1 trip assignment (**Figure 12**) and phase 2 trip assignment (**Figure 13**) were added to 2040 background traffic volumes (**Figure 8**) to calculate 2040 Scenario #1 traffic volumes (**Figure 15**).

Scenario #1 does not include any street closures.

Scenario #2 includes closing the intersection of US-89 / Main Street (#4).

2025 Scenario #1 traffic volumes (**Figure 14**) were rerouted to calculate 2025 Scenario #2 traffic volumes (**Figure 16**).

2040 Scenario #1 traffic volumes (**Figure 15**) were rerouted to calculate 2040 Scenario #2 traffic volumes (**Figure 17**).





<p><b>1</b></p> <p>↖ 48(31) ↘ 89(94) ↙ 23(22)</p> <p>↗ 37(45) ↖ 232(269) ↘ 25(22)</p>	<p><b>2</b></p> <p>↖ 102(134) ↘ 726(698) ↙ 74(143)</p> <p>↗ 153(160) ↖ 145(99) ↘ 68(40)</p>	<p><b>3</b></p> <p>↖ 138(69) ↘ 318(232) ↙ 27(39)</p> <p>↗ 31(40) ↖ 192(138) ↘ 44(43)</p>	<p><b>4</b></p> <p>↖ 8(24) ↘ 907(829) ↙ 1(3)</p> <p>↗ 0(1) ↖ 3(2) ↘ 0(2)</p>
<p>↖ 57(108) ↘ 346(527) ↙ 223(264)</p> <p>↗ 199(256) ↖ 86(117) ↘ 23(38)</p>	<p>↖ 141(217) ↘ 211(241) ↙ 104(126)</p> <p>↗ 72(71) ↖ 430(1137) ↘ 48(62)</p>	<p>↖ 81(108) ↘ 83(177) ↙ 8(22)</p> <p>↗ 33(18) ↖ 121(349) ↘ 41(48)</p>	<p>↖ 4(4) ↘ 314(465) ↙ 1(0)</p> <p>↗ 301(397) ↖ 545(1195) ↘ 1(0)</p>
<p><b>5</b></p> <p>↖ 15(49) ↘ 1089(842) ↙ 161(302)</p> <p>↗ 234(308) ↖ 7(19) ↘ 872(577)</p>	<p><b>6</b></p> <p>↖ 435(298) ↘ 22(23) ↙ 25(61)</p> <p>↗ 56(77) ↖ 664(580) ↘ 43(29)</p>	<p><b>7</b></p> <p>↖ 2112(1612) ↘ 39(66)</p> <p>↗ 65(62) ↖ 163(116)</p>	
<p>↖ 15(32) ↘ 4(8) ↙ 35(38)</p> <p>↗ 26(75) ↖ 607(1369) ↘ 258(943)</p>	<p>↖ 84(482) ↘ 207(602) ↙ 74(114)</p> <p>↗ 90(139) ↖ 29(35) ↘ 26(49)</p>	<p>↖ 815(2224) ↘ 105(213)</p>	

LEGEND	
← XX(XX)	AM(PM) PEAK HOUR TRAFFIC VOLUMES
XXXX	AVERAGE DAILY TRAFFIC VOLUMES



<p><b>1</b></p> <p>↖ 48(31) ↘ 2(3) ↙ 112(113)</p> <p>↖ 122(168) ↘ 429(494) ↙ 19(52)</p> <p>↖ 57(108) ↘ 565(776) ↙ 5(15)</p> <p>↖ 10(9) ↘ 6(3) ↙ 37(37)</p>	<p><b>2</b></p> <p>↖ 102(134) ↘ 726(698) ↙ 74(143)</p> <p>↖ 153(160) ↘ 145(99) ↙ 79(43)</p> <p>↖ 141(217) ↘ 211(241) ↙ 447(633)</p> <p>↖ 363(455) ↘ 430(1137) ↙ 48(75)</p>	<p><b>3</b></p> <p>↖ 138(69) ↘ 318(232) ↙ 27(39)</p> <p>↖ 31(40) ↘ 192(138) ↙ 44(43)</p> <p>↖ 81(108) ↘ 83(177) ↙ 8(22)</p> <p>↖ 33(18) ↘ 121(349) ↙ 41(48)</p>	<p><b>4</b></p> <p>↖ 1209(1285) ↘ 5(7)</p> <p>↖ 0(1) ↘ 0(2)</p> <p>↖ 847(1592) ↘ 1(0)</p>
<p><b>5</b></p> <p>↖ 15(49) ↘ 1089(842) ↙ 161(302)</p> <p>↖ 234(308) ↘ 7(19) ↙ 872(577)</p> <p>↖ 15(32) ↘ 4(8) ↙ 35(38)</p> <p>↖ 26(75) ↘ 607(1369) ↙ 258(943)</p>	<p><b>6</b></p> <p>↖ 435(298) ↘ 22(23) ↙ 25(61)</p> <p>↖ 56(77) ↘ 664(580) ↙ 43(29)</p> <p>↖ 84(482) ↘ 207(602) ↙ 74(114)</p> <p>↖ 90(139) ↘ 29(35) ↙ 26(49)</p>	<p><b>7</b></p> <p>↖ 2112(1612) ↘ 39(66)</p> <p>↖ 65(62) ↘ 163(116)</p> <p>↖ 815(2224) ↘ 105(213)</p>	

LEGEND	
← XX(XX)	AM(PM) PEAK HOUR TRAFFIC VOLUMES
XXXX	AVERAGE DAILY TRAFFIC VOLUMES

## 4.2. Traffic Analysis Scenarios

Scenarios analyzed for the future conditions traffic analysis were identified as follows:

- Scenario #1 – No street closures (lane configuration shown in **Figure 4**)
  - 2025 Conditions (traffic volume shown in **Figure 14**)
  - 2040 Conditions (traffic volume shown in **Figure 15**)
- Scenario #2 – Closure of the intersection of US-89 / Main Street (#4) with vehicular traffic rerouted accordingly (lane configuration shown in **Figure 5**)
  - 2025 Conditions (traffic volume shown in **Figure 16**)
  - 2040 Conditions (traffic volume shown in **Figure 17**)

Scenario #2 reflects closure of the intersection of US-89 / Main Street (#4), and the impact it would have on the surrounding study area intersections.

## 4.3. Operational Analysis Results

A summary of results from the operational analyses is shown in **Table 3**. Detailed operational analysis results are given in the following sections. Synchro reports are included in **Appendix D**.

**Table 3 – Operational Analysis Results**

Operational Analysis Results - LOS (Delay) <sup>1</sup>										
Intersection										
Number		1	2	3	4	5	6	7		
Name		Center St / Main St	US-89 / Center St	Center St / Orchard Dr	US-89 / Main St	US-89 / Eagle Ridge Dr	Orchard Dr / Eagle Ridge Dr	US-89 / Eaglegate Dr		
Control		Varies	Signal	Signal	TWSC	Signal	Roundabout	Signal		
Analysis Scenario	Scenario #1 2025	AM	B (14)	C(22)	B (17)	C (17) EB	C (31)	A (9)	A (5)	
		PM	C (24)	C (25)	B (18)	C (20) EB	C (27)	A(10)	A (6)	
	Scenario #1 2040	AM	D (27)	C (25)	B (18)	F (>50) EB	D (49)	C (15)	A (5)	
		PM	F (>50)	D (40)	B (19)	F (>50) EB	E (59)	C (19)	A (6)	
	Scenario #2 2025	AM	B (15)	C (33)	B (17)	-	C(31)	A (9)	A (5)	
		PM	C (22)	D (53)	B (18)	-	C (27)	A(10)	A (5)	
	Scenario #2 2040	AM	D (34)	D (48)	B (18)	-	D (40)	C (15)	A (6)	
		PM	F (>50)	F (>80)	B (19)	-	E (59)	C (19)	A (5)	
	Scenario #2 2040 Mitigated (TWSC at INT 1)	AM	C (15) NB	D (41)	B (18)	-	D (41)	C (15)	A (6)	
		PM	F (>50) SB <sup>2</sup>	D (43)	B (19)	-	D (43)	C (19)	A (5)	
	Scenario #2 2040 Mitigated (Signal at INT 1)	AM	A (7)	D (41)	B (18)	-	D (41)	C (15)	A (6)	
		PM	A (8)	D (43)	B (19)	-	D (43)	C (19)	A (5)	

Notes:

1. LOS and delay are shown for overall intersection for signalized, roundabout, and all-way stop intersections and the worst movement for all other intersections. Delay is shown in seconds per vehicle.
2. Only SB vehicles are anticipated to experience LOS F. The average delay for a SB vehicle is about 1 minute. NB, EB, and WB are anticipated to experience LOS D and better.

**Table 5 – 2025 Scenario #1 PM LOS Analysis**

Intersection	Eastbound			Westbound			Northbound			Southbound			Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
<b>1. Center Street / Main Street</b>													
LOS	C	-	D	C			D			B			C
Delay (s)	20	-	32	17			26			13			24
95th % Queue (ft)	100	-	200	68			148			28			-
<b>2. US-89 / Center Street</b>													
LOS	D	D	D	C	D	B	C		B	B	B	C	
Delay (s)	42	37	35	33	44	12	21		15	16	14	25	
95th % Queue (ft)	175	190	110	38	223	35	323		50	148	53	-	
<b>3. Center Street / Orchard Drive</b>													
LOS	C	C		C	C	A	B	A	A	A	A	B	
Delay (s)	27	34		28	34	7	11	8	7	9	8	18	
95th % Queue (ft)	75	145		25	95	5	145	15	10	78	23	-	
<b>4. US-89 / Main Street</b>													
LOS	C			-			B	-		-		-	
Delay (s)	20			-			11	-		-		-	
95th % Queue (ft)	123			-			48	-		-		-	
<b>5. US-89 / Eagle Ridge Drive</b>													
LOS	F	C		E	B	C	C		D	B		C	
Delay (s)	85	33		72	13	27	33		40	12		27	
95th % Queue (ft)	74	48		290	99	88	496		225	179		-	
<b>6. Orchard Drive / Eagle Ridge Drive</b>													
LOS	A	-	A	B	A	B			A			A	
Delay (s)	7	-	8	14	5	13			10			10	
95th % Queue (ft)	50	-	50	100	0	50			50			-	
<b>7. US-89 / Eaglegate Drive</b>													
LOS	-			D	-	D	-	A	A	A	A	-	A
Delay (s)	-			52	-	45	-	3	2	9	3	-	6
95th % Queue (ft)	-			155	-	78	-	73	23	25	80	-	-

**Table 7 – 2040 Scenario #1 PM LOS Analysis**

Intersection	Eastbound			Westbound			Northbound			Southbound			Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
<b>1. Center Street / Main Street</b>													
LOS	F	-	F	E			F			C			F
Delay (s)	68	-	176	41			69			19			91
95th % Queue (ft)	298	-	643	200			318			48			-
<b>2. US-89 / Center Street</b>													
LOS	D	C	C	C	E		B	D	D	C	B	D	
Delay (s)	45	32	30	31	58		18	52	41	24	20	40	
95th % Queue (ft)	245	240	125	38	328		48	650	135	270	108	-	
<b>3. Center Street / Orchard Drive</b>													
LOS	C	C		C	C	A	B	A	A	A	A	B	
Delay (s)	26	34		27	34	8	12	9	8	10	9	19	
95th % Queue (ft)	83	178		33	123	5	165	20	13	95	28	-	
<b>4. US-89 / Main Street</b>													
LOS	F			-			C	-		-		-	
Delay (s)	530			-			18	-		-		-	
95th % Queue (ft)	970			-			108	-		-		-	
<b>5. US-89 / Eagle Ridge Drive</b>													
LOS	F	D		F	D	C	D		F	B		E	
Delay (s)	140	50		94	39	28	54		338	15		59	
95th % Queue (ft)	100	67		438	314	93	879		596	290		-	
<b>6. Orchard Drive / Eagle Ridge Drive</b>													
LOS	A	-	A	E	A	C			C			C	
Delay (s)	9	-	9	39	6	19			17			19	
95th % Queue (ft)	75	-	100	300	0	75			100			-	
<b>7. US-89 / Eaglegate Drive</b>													
LOS	-			D	-	D	-	A	A	C	A	-	A
Delay (s)	-			52	-	45	-	4	2	28	4	-	6
95th % Queue (ft)	-			155	-	78	-	125	25	83	135	-	-

**Table 9 – 2025 Scenario #2 PM LOS Analysis**

Intersection	Eastbound			Westbound			Northbound			Southbound			Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
<b>1. Center Street / Main Street</b>													
LOS	C	-	B	D			B			B			C
Delay (s)	20	-	15	30			10			12			22
95th % Queue (ft)	130	-	78	240			5			23			-
<b>2. US-89 / Center Street</b>													
LOS	C	D	F	D	D	B	A	C	C	C	D		
Delay (s)	34	37	202	36	45	19	7	26	35	31	53		
95th % Queue (ft)	173	205	1,153	43	245	233	103	90	248	93	-		
<b>3. Center Street / Orchard Drive</b>													
LOS	C	C		C	C	A	B	A	A	A	A	B	
Delay (s)	27	34		28	34	7	11	8	7	9	8	18	
95th % Queue (ft)	75	145		25	95	5	145	15	10	78	23	-	
<b>5. US-89 / Eagle Ridge Drive</b>													
LOS	F	C		E	B	C	C	D	A		C		
Delay (s)	85	33		72	13	27	33	54	7		27		
95th % Queue (ft)	74	48		290	99	88	496	232	114		-		
<b>6. Orchard Drive / Eagle Ridge Drive</b>													
LOS	A	-	A	B	A	B		A			A		
Delay (s)	7	-	8	14	5	13		10			10		
95th % Queue (ft)	50	-	50	100	0	50		50			-		
<b>7. US-89 / Eaglegate Drive</b>													
LOS	-			E	-	D	-	A	A	A	A	-	A
Delay (s)	-			62	-	54	-	3	2	4	0	-	5
95th % Queue (ft)	-			190	-	95	-	88	28	8	8	-	-

**Table 11 – 2040 Scenario #2 PM LOS Analysis**

Intersection	Eastbound			Westbound			Northbound			Southbound			Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
<b>1. Center Street / Main Street</b>													
LOS	F	-	D	F			B			B			F
Delay (s)	54	-	27	155			12			15			84
95th % Queue (ft)	318	-	170	770			10			35			-
<b>2. US-89 / Center Street</b>													
LOS	F	D	F	D	E	D	B	C	D	D		F	
Delay (s)	86	41	404	38	67	44	16	29	46	36		95	
95th % Queue (ft)	225	290	2,008	53	380	355	213	148	410	170		-	
<b>3. Center Street / Orchard Drive</b>													
LOS	C		C	C	C	A	B	A	A	A	A	B	
Delay (s)	26		34	27	34	8	12	9	8	10	9	19	
95th % Queue (ft)	83		178	33	123	5	165	20	13	95	28	-	
<b>5. US-89 / Eagle Ridge Drive</b>													
LOS	F		C	F	C	C	F	F	B			E	
Delay (s)	85		33	112	21	27	101	119	11			59	
95th % Queue (ft)	73		48	406	175	55	868	385	220			-	
<b>6. Orchard Drive / Eagle Ridge Drive</b>													
LOS	A	-	A	E	A	C			C			C	
Delay (s)	9	-	9	39	6	19			17			19	
95th % Queue (ft)	75	-	100	300	0	75			100			-	
<b>7. US-89 / Eaglegate Drive</b>													
LOS		-		E	-	D	-	A	A	B	A	-	A
Delay (s)		-		62	-	54	-	4	2	19	1	-	5
95th % Queue (ft)		-		190	-	95	-	153	30	53	10	-	-

**Table 12 – 2040 Scenario #2 Mitigated AM LOS Analysis**

Intersection	Eastbound			Westbound			Northbound			Southbound			Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
<b>1. Center Street / Main Street (TWSC)</b>													
LOS	A	-		A	-		C			B			-
Delay (s)	9	-		9	-		15			15			-
95th % Queue (ft)	5	-		3	-		13			35			-
<b>1. Center Street / Main Street (Signal)</b>													
LOS	A	A		A	A		B	B		B	B		A
Delay (s)	9	6		9	6		12	11		13	12		7
95th % Queue (ft)	13	80		5	78		3	13		33	13		-
<b>2. US-89 / Center Street</b>													
LOS	E	D	C	D	E		E	A		C	D	C	D
Delay (s)	63	44	29	36	79		60	2		28	45	34	41
95th % Queue (ft)	218	265	438	95	460		415	23		73	423	123	-
<b>5. US-89 / Eagle Ridge Drive</b>													
LOS	E	E		E	C		B	C		C	B		C
Delay (s)	76	60		59	30		17	21		23	13		30
95th % Queue (ft)	30	60		580	253		18	190		130	148		-

**Table 13 – 2040 Scenario #2 Mitigated PM LOS Analysis**

Intersection	Eastbound			Westbound			Northbound			Southbound			Intersection
	L	T	R	L	T	R	L	T	R	L	T	R	
<b>1. Center Street / Main Street (TWSC)</b>													
LOS	A	-		B	-		D			F			-
Delay (s)	9	-		10	-		32			59			-
95th % Queue (ft)	10	-		5	-		30			128			-
<b>1. Center Street / Main Street (Signal)</b>													
LOS	B	A		B	A		B	B		B	B		A
Delay (s)	12	7		13	6		17	17		19	17		8
95th % Queue (ft)	38	180		20	135		5	18		55	15		-
<b>2. US-89 / Center Street</b>													
LOS	F	D	C	D	E		E	B		C	E	D	D
Delay (s)	121	43	33	38	68		66	12		33	57	41	43
95th % Queue (ft)	303	298	648	53	383		508	163		160	453	180	-
<b>5. US-89 / Eagle Ridge Drive</b>													
LOS	F	F		E	F		B	C		F	A		D
Delay (s)	81	97		65	94		19	35		141	9		49
95th % Queue (ft)	63	103		415	553		63	668		625	215		-

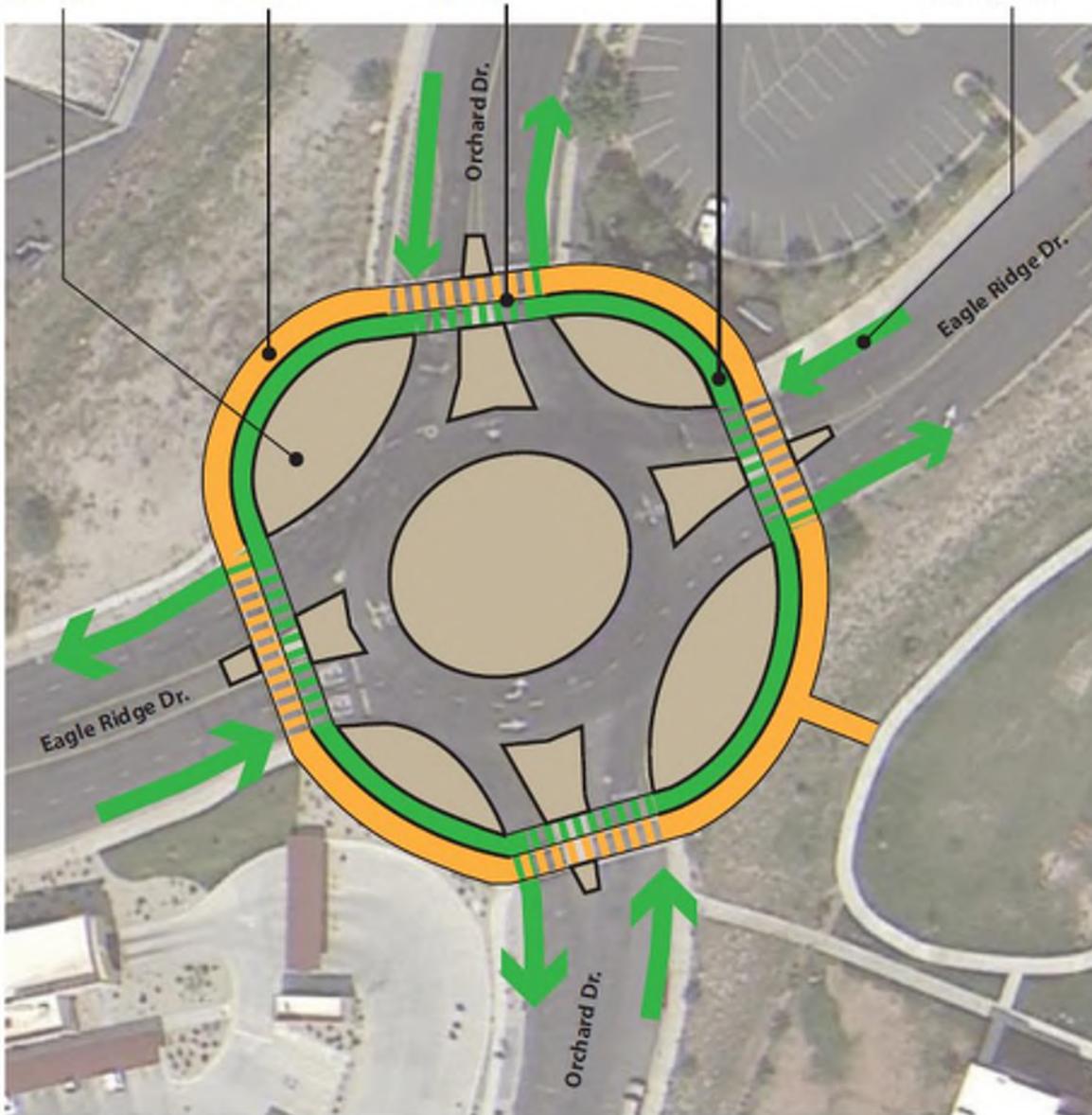
Roundabout islands can be landscaped, have public art, and create community gateway.

Wide sidewalk alongside bike lane. Potential for redevelopment to front onto the sidewalk.

Marked crossings for both pedestrians and cyclists. People cross at an angle that maximizes visibility by motorists.

Bike roundabout lane separated from traffic, with protective curb island.

Bike lane approaches roundabout. If possible, separate bike lane from roadway lane.



1" = 50'

Figure 19 – Roundabout with Separated Bicycle Lanes Concept at Orchard Drive / Eagle Ridge Drive intersection



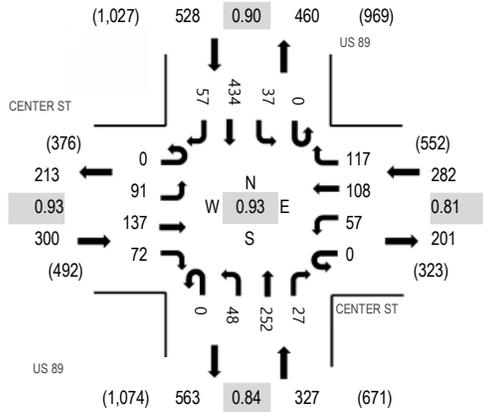
**APPENDIX A**  
**TRAFFIC COUNT DATA**



(303) 216-2439  
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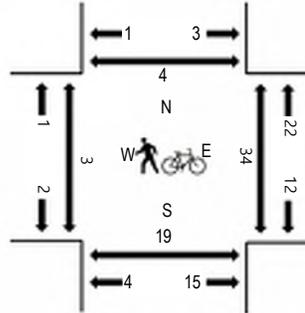
**Location:** 2 US 89 & CENTER ST AM  
**Date:** Thursday, September 2, 2021  
**Peak Hour:** 07:45 AM - 08:45 AM  
**Peak 15-Minutes:** 07:45 AM - 08:00 AM

**Peak Hour - All Vehicles**



Note: Total study counts contained in parentheses.

**Peak Hour - Pedestrians/Bicycles on Crosswalk**



**Traffic Counts**

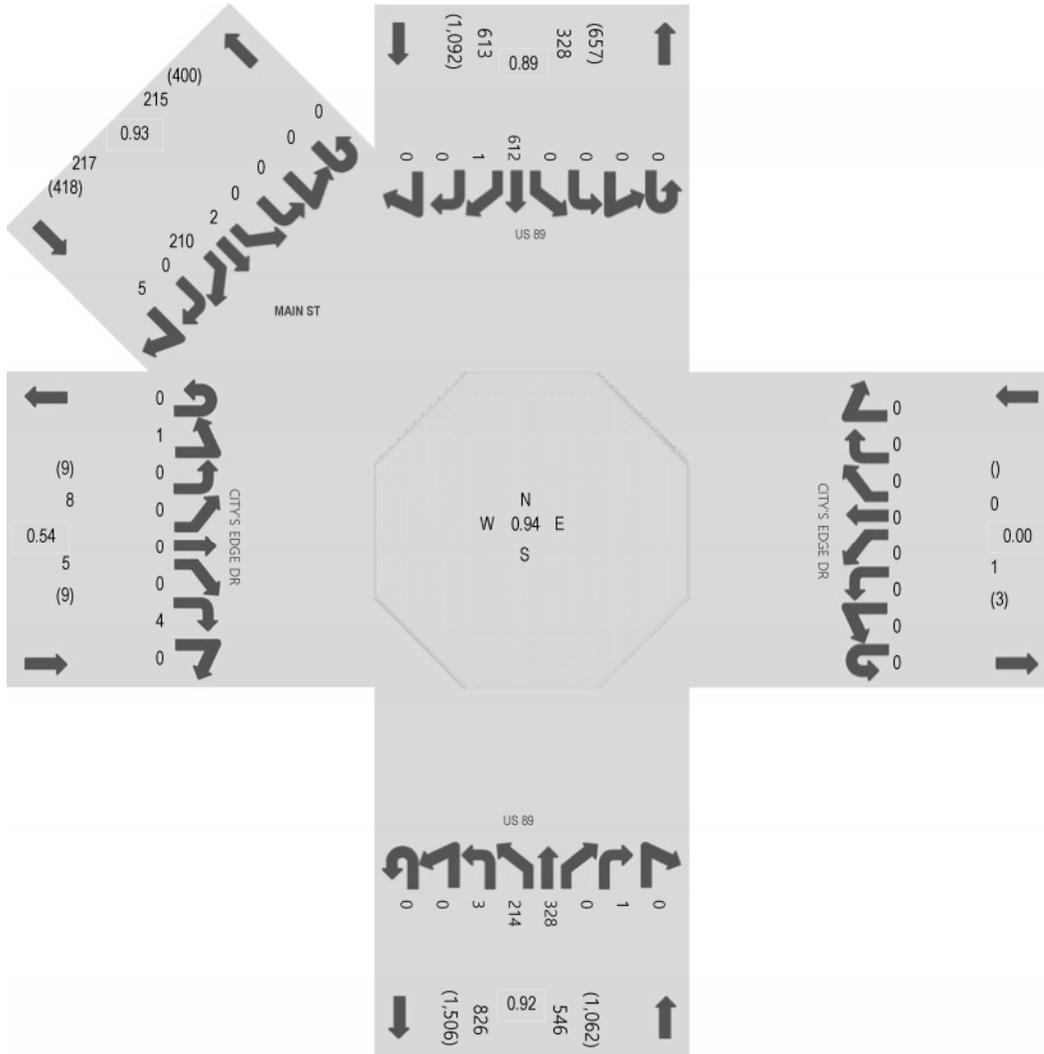
Interval Start Time	CENTER ST Eastbound				CENTER ST Westbound				US 89 Northbound			US 89 Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru			Right	West	East	South	North
7:00 AM	0	14	12	12	0	4	14	45	0	6	83	3	0	6	80	12	291	1,359	0	0	0	0
7:15 AM	0	16	13	10	0	8	13	33	0	9	72	1	0	16	118	6	315	1,401	0	0	0	0
7:30 AM	0	26	20	16	0	22	30	20	0	10	52	5	0	4	139	21	365	1,425	0	0	0	0
7:45 AM	0	31	25	14	0	10	43	24	0	13	66	6	0	6	138	12	388	1,437	0	4	4	2
8:00 AM	0	20	45	10	0	15	27	17	0	10	51	6	0	7	112	13	333	1,383	1	14	8	2
8:15 AM	0	23	28	23	0	10	16	32	0	11	71	8	0	13	90	14	339		1	9	5	0
8:30 AM	0	17	39	25	0	22	22	44	0	14	64	7	0	11	94	18	377		1	7	2	0
8:45 AM	0	18	26	9	0	17	24	40	0	10	90	3	0	13	76	8	334		1	4	3	2
Count Total	0	165	208	119	0	108	189	255	0	83	549	39	0	76	847	104	2,742		4	38	22	6
Peak Hour	0	91	137	72	0	57	108	117	0	48	252	27	0	37	434	57	1,437		3	34	19	4



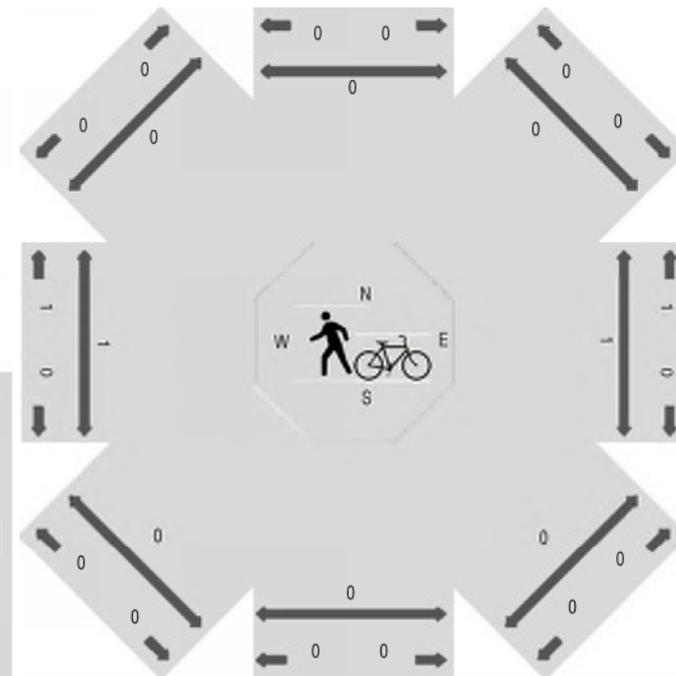
(303) 216-2439  
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**Location:** 4 US 89 & CITY'S EDGE DR AM  
**Date:** Thursday, September 2, 2021  
**Peak Hour:** 07:30 AM - 08:30 AM  
**Peak 15-Minutes:** 07:45 AM - 08:00 AM

**Peak Hour - All Vehicles**



**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.



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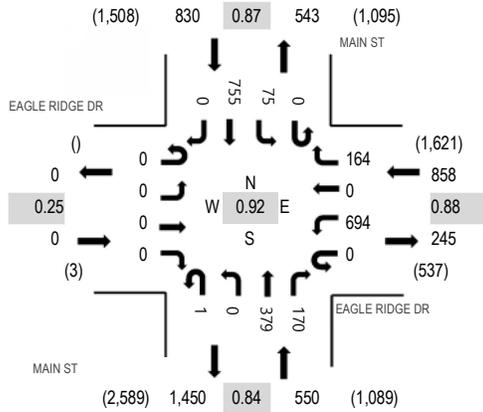
**Location:** 5 MAIN ST & EAGLE RIDGE DR AM

**Date:** Thursday, September 2, 2021

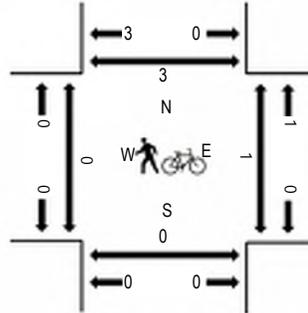
**Peak Hour:** 07:30 AM - 08:30 AM

**Peak 15-Minutes:** 07:30 AM - 07:45 AM

**Peak Hour - All Vehicles**



**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	EAGLE RIDGE DR Eastbound				EAGLE RIDGE DR Westbound				MAIN ST Northbound				MAIN 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
7:00 AM	0	0	0	0	0	134	0	61	0	0	71	31	0	13	121	0	431	2,126	0	0	0	0
7:15 AM	0	0	0	0	0	159	0	52	0	0	80	31	0	24	164	0	510	2,219	0	0	0	0
7:30 AM	0	0	0	0	0	204	0	43	0	0	85	36	0	19	222	0	609	2,238	0	0	0	1
7:45 AM	0	0	0	0	0	166	0	50	0	0	95	45	0	19	201	0	576	2,146	0	1	0	0
8:00 AM	0	0	0	0	0	164	0	29	0	0	98	40	0	26	167	0	524	2,095	0	0	0	2
8:15 AM	0	0	0	0	0	160	0	42	1	0	101	49	0	11	165	0	529		0	0	0	0
8:30 AM	0	0	0	0	0	148	0	36	0	0	96	47	0	30	160	0	517		0	0	0	0
8:45 AM	0	3	0	0	0	126	0	47	0	0	106	77	0	39	127	0	525		0	1	0	0
Count Total	0	3	0	0	0	1,261	0	360	1	0	732	356	0	181	1,327	0	4,221		0	2	0	3
Peak Hour	0	0	0	0	0	694	0	164	1	0	379	170	0	75	755	0	2,238		0	1	0	3



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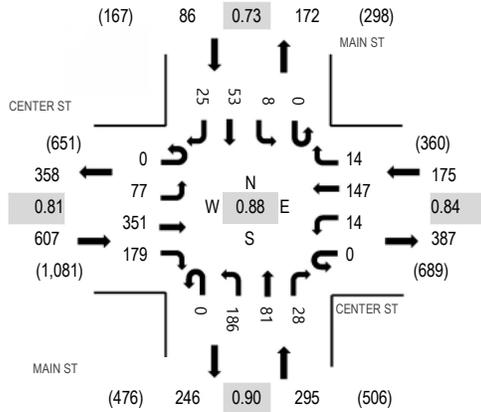
**Location:** 1 MAIN ST & CENTER ST PM

**Date:** Thursday, September 2, 2021

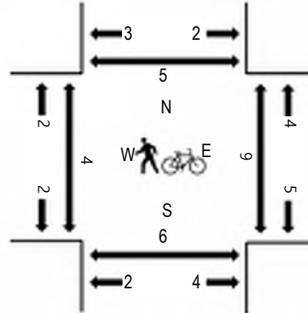
**Peak Hour:** 04:00 PM - 05:00 PM

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

**Peak Hour - All Vehicles**



**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	CENTER ST Eastbound				CENTER ST Westbound				MAIN ST Northbound			MAIN 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
4:00 PM	0	22	80	62	0	1	36	1	0	48	14	2	0	2	11	4	283	1,163	1	0	0	0
4:15 PM	0	23	114	51	0	2	32	2	0	46	20	8	0	2	19	11	330	1,134	1	0	3	0
4:30 PM	0	14	82	36	0	6	46	5	0	43	26	6	0	4	12	5	285	1,066	0	0	0	1
4:45 PM	0	18	75	30	0	5	33	6	0	49	21	12	0	0	11	5	265	1,000	0	0	2	0
5:00 PM	0	17	68	54	0	5	28	3	0	32	14	8	0	9	7	9	254	951	1	0	1	0
5:15 PM	0	10	64	50	0	9	36	10	0	36	23	3	0	6	6	9	262		0	0	1	0
5:30 PM	0	11	63	29	0	10	34	2	0	36	10	8	0	0	10	6	219		0	0	0	0
5:45 PM	0	8	63	37	0	5	37	6	0	21	12	8	0	2	8	9	216		1	0	1	3
Count Total	0	123	609	349	0	43	282	35	0	311	140	55	0	25	84	58	2,114		4	0	8	4
Peak Hour	0	77	351	179	0	14	147	14	0	186	81	28	0	8	53	25	1,163		2	0	5	1



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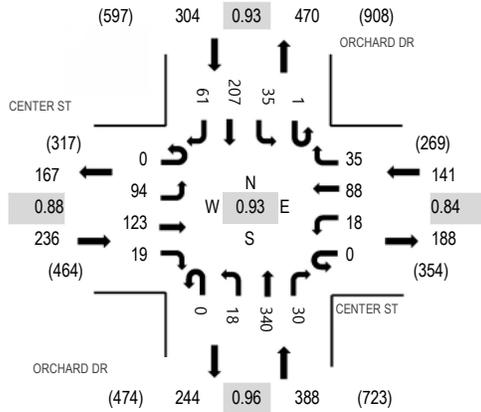
**Location:** 3 ORCHARD DR & CENTER ST PM

**Date:** Thursday, September 2, 2021

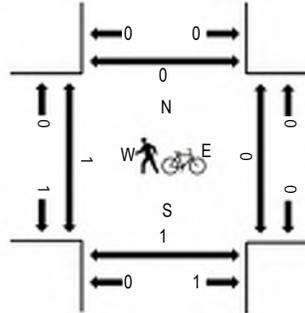
**Peak Hour:** 04:30 PM - 05:30 PM

**Peak 15-Minutes:** 05:00 PM - 05:15 PM

**Peak Hour - All Vehicles**



**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	CENTER ST Eastbound				CENTER ST Westbound				ORCHARD DR Northbound				ORCHARD 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
4:00 PM	0	21	22	1	0	8	14	10	0	3	76	3	0	13	55	13	239	994	0	0	0	0
4:15 PM	0	24	30	2	0	6	20	9	0	2	73	6	0	3	53	18	246	1,041	0	0	0	0
4:30 PM	0	26	29	5	0	2	16	5	0	4	76	9	0	5	57	15	249	1,069	0	0	0	0
4:45 PM	0	24	24	3	0	6	27	11	0	4	89	7	1	7	41	16	260	1,055	0	0	0	0
5:00 PM	0	27	40	5	0	9	20	7	0	6	88	4	0	15	56	9	286	1,059	0	0	0	0
5:15 PM	0	17	30	6	0	1	25	12	0	4	87	10	0	8	53	21	274		1	0	1	0
5:30 PM	0	32	32	3	0	3	19	7	0	2	75	2	0	8	38	14	235		0	0	0	0
5:45 PM	0	22	33	6	0	5	23	4	0	3	85	5	0	9	50	19	264		0	0	0	0
Count Total	0	193	240	31	0	40	164	65	0	28	649	46	1	68	403	125	2,053		1	0	1	0
Peak Hour	0	94	123	19	0	18	88	35	0	18	340	30	1	35	207	61	1,069		1	0	1	0

# Traffic Counts

Interval Start Time	Westbound								Northwestbound								Northbound								Northeastbound							
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR
4:00 PM	0	0	1	0	0	0	0	0									0	0	0	81	171	0	0	0								
4:15 PM	0	0	0	0	0	0	0	0									0	0	0	73	179	0	0	0								
4:30 PM	0	0	1	0	0	0	0	0									0	0	1	56	184	0	0	0								
4:45 PM	0	0	0	0	0	0	1	0									0	0	1	69	213	0	0	0								
5:00 PM	0	0	1	0	0	0	3	0									0	0	0	61	209	0	0	0								
5:15 PM	0	0	0	0	0	0	0	0									0	0	2	64	220	0	0	0								
5:30 PM	0	0	0	0	0	0	0	0									0	0	3	53	183	0	0	0								
5:45 PM	0	0	0	0	0	0	0	0									0	0	1	53	168	0	0	0								
Count Total	0	0	3	0	0	0	4	0									0	0	8	510	1,527	0	0	0								
Peak Hour	0	0	2	0	0	0	1	0									0	0	2	279	747	0	0	0								

Interval Start Time	Eastbound								Southeastbound								Southbound								Southwestbound								Total	Rolling Hour
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR		
4:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	85	0	0	1	0	0	0	134	1	0	0									476	1,885
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	106	0	0	0	0	0	0	126	0	2	0									486	1,876
4:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	79	0	1	0	0	0	0	121	1	0	0									445	1,853
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	61	0	0	0	0	1	0	123	1	1	0									471	1,847
5:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	66	0	2	0	0	0	0	120	1	1	0									466	1,758
5:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	59	0	0	0	0	0	0	112	3	0	0									462	
5:30 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	63	0	0	0	0	0	0	132	1	0	0									437	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	38	0	2	0	0	0	0	121	0	1	0									384	
Count Total	0	0	0	0	0	0	9	0	0	0	0	0	0	557	0	5	1	0	1	0	989	8	5	0									3,627	
Peak Hour	0	0	0	0	0	0	3	0	0	0	0	0	0	331	0	1	1	0	1	0	504	3	3	0									1,878	



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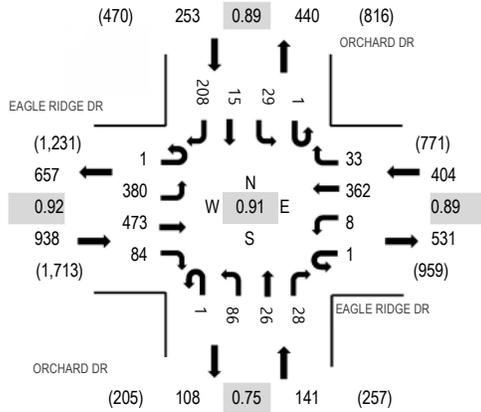
**Location:** 6 ORCHARD DR & EAGLE RIDGE DR PM

**Date:** Thursday, September 2, 2021

**Peak Hour:** 05:00 PM - 06:00 PM

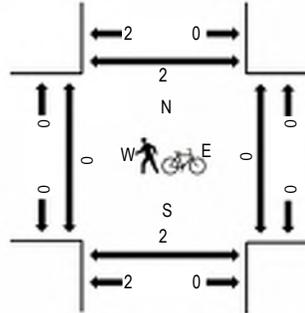
**Peak 15-Minutes:** 05:00 PM - 05:15 PM

**Peak Hour - All Vehicles**



Note: Total study counts contained in parentheses.

**Peak Hour - Pedestrians/Bicycles on Crosswalk**



**Traffic Counts**

Interval Start Time	EAGLE RIDGE DR Eastbound				EAGLE RIDGE DR Westbound				ORCHARD DR Northbound				ORCHARD 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
4:00 PM	0	78	97	15	0	1	81	8	0	26	6	2	0	10	6	37	367	1,475	0	0	0	0
4:15 PM	0	73	94	12	0	3	89	6	0	11	7	2	0	11	3	43	354	1,585	0	0	0	0
4:30 PM	1	86	94	11	0	6	80	10	0	22	5	4	0	3	4	38	364	1,678	0	0	0	1
4:45 PM	1	88	100	25	0	5	76	2	0	20	7	4	0	7	6	49	390	1,705	0	0	0	0
5:00 PM	1	112	124	19	1	1	91	10	0	22	11	14	0	8	6	57	477	1,736	0	0	0	2
5:15 PM	0	99	128	25	0	2	104	7	0	18	6	1	0	7	3	47	447		0	0	0	0
5:30 PM	0	90	99	19	0	3	73	10	1	24	5	5	1	7	1	53	391		0	0	2	0
5:45 PM	0	79	122	21	0	2	94	6	0	22	4	8	0	7	5	51	421		0	0	0	0
Count Total	3	705	858	147	1	23	688	59	1	165	51	40	1	60	34	375	3,211		0	0	2	3
Peak Hour	1	380	473	84	1	8	362	33	1	86	26	28	1	29	15	208	1,736		0	0	2	2

3:45 PM	0	0	0	0	0	7	0	6	0	0	324	15	0	10	218	0	580	2,572	0	0	0	0
4:00 PM	0	0	0	0	0	15	0	8	0	0	327	20	0	7	275	0	652	2,627	0	0	0	0
4:15 PM	0	0	0	0	0	15	0	6	0	0	345	20	0	10	296	0	692	2,660	0	0	0	0
4:30 PM	0	0	0	0	0	10	0	14	0	0	332	19	0	6	267	0	648	2,590	0	0	0	0
4:45 PM	0	0	0	0	0	11	0	9	0	0	359	24	0	11	221	0	635	2,580	0	0	0	0
5:00 PM	0	0	0	0	0	12	0	10	2	0	401	23	0	6	231	0	685	2,473	0	0	0	0
5:15 PM	0	0	0	0	0	4	0	11	0	0	381	22	0	2	202	0	622	2,309	0	0	0	0
5:30 PM	0	0	0	0	2	12	0	8	0	0	370	25	0	4	217	0	638	2,161	0	0	0	0
5:45 PM	0	0	0	0	0	6	0	13	0	0	309	34	0	6	160	0	528	1,999	0	0	0	0
6:00 PM	0	0	0	0	0	10	0	9	0	0	281	14	0	9	198	0	521	1,830	0	0	0	0
6:15 PM	0	0	0	0	0	11	0	7	0	0	261	15	0	7	173	0	474		0	0	0	0
6:30 PM	0	0	0	0	0	11	0	13	0	0	241	16	0	6	189	0	476		0	0	0	0
6:45 PM	0	0	0	0	0	16	0	2	0	0	189	20	0	7	125	0	359		0	0	0	0
Count Total	0	0	0	0	5	491	0	385	4	0	9,672	705	0	268	10,167	0	21,697		0	2	0	0
Peak Hour	0	0	0	0	0	48	0	39	2	0	1,437	86	0	33	1,015	0	2,660		0	0	0	0





**APPENDIX B**

**PLANNED AND ANTICIPATED FUTURE DEVELOPMENT EXHIBIT**



**APPENDIX C**  
**ITE TRIP GENERATION INFORMATION**

# Land Use: 215

## Single-Family Attached Housing

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### Description

Single-family attached housing includes any single-family housing unit that shares a wall with an adjoining dwelling unit, whether the walls are for living space, a vehicle garage, or storage space.

### Additional Data

The database for this land use includes duplexes (defined as a single structure with two distinct dwelling units, typically joined side-by-side and each with at least one outside entrance) and townhouses/rowhouses (defined as a single structure with three or more distinct dwelling units, joined side-by-side in a row and each with an outside entrance).

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in British Columbia (CAN), California, Georgia, Illinois, Maryland, Massachusetts, Minnesota, New Jersey, Ontario (CAN), Oregon, Pennsylvania, South Dakota, Utah, Virginia, and Wisconsin.

### Source Numbers

168, 204, 211, 237, 305, 306, 319, 321, 357, 390, 418, 525, 571, 583, 638, 735, 868, 869, 870, 896, 912, 959, 1009, 1046, 1056, 1058, 1077

# Single-Family Attached Housing (215)

## Vehicle Trip Ends vs: Dwelling Units

On a: **Weekday,**

**Peak Hour of Adjacent Street Traffic,**

**One Hour Between 7 and 9 a.m.**

**Setting/Location: General Urban/Suburban**

Number of Studies: 46

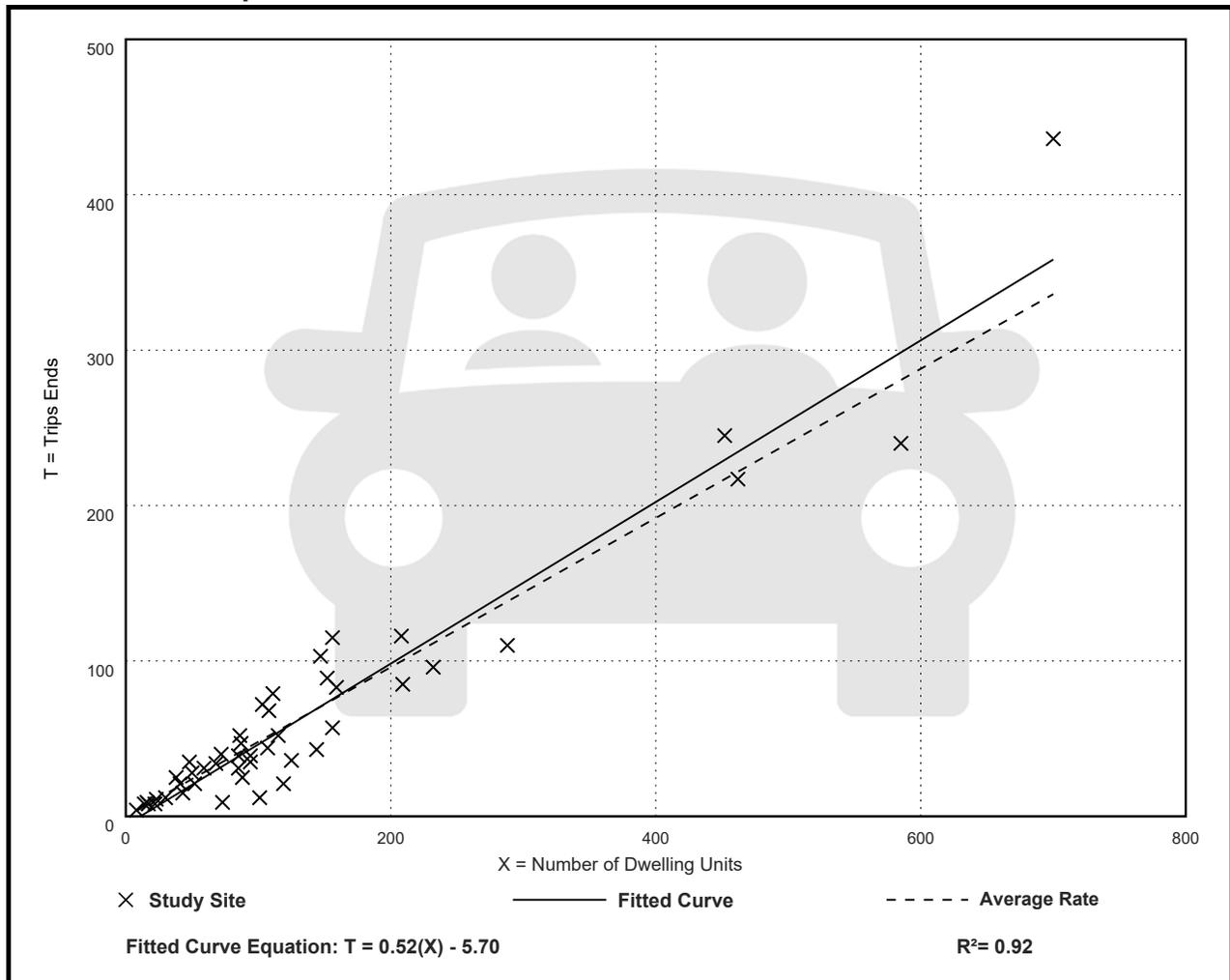
Avg. Num. of Dwelling Units: 135

Directional Distribution: 31% entering, 69% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.12 - 0.74	0.14

## Data Plot and Equation



# Land Use: 220

## Multifamily Housing (Low-Rise)

---

### Description

Low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have two or three floors (levels). Various configurations fit this description, including walkup apartment, mansion apartment, and stacked townhouse.

- A walkup apartment typically is two or three floors in height with dwelling units that are accessed by a single or multiple entrances with stairways and hallways.
- A mansion apartment is a single structure that contains several apartments within what appears to be a single-family dwelling unit.
- A fourplex is a single two-story structure with two matching dwelling units on the ground and second floors. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.
- A stacked townhouse is designed to match the external appearance of a townhouse. But, unlike a townhouse dwelling unit that only shares walls with an adjoining unit, the stacked townhouse units share both floors and walls. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.

Multifamily housing (mid-rise) (Land Use 221), multifamily housing (high-rise) (Land Use 222), affordable housing (Land Use 223), and off-campus student apartment (low-rise) (Land Use 225) are related land uses.

### Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is ½ mile or less.

### Additional Data

For the three sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.72 residents per occupied dwelling unit.

For the two sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96.2 percent of the total dwelling units were occupied.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip

# Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 22

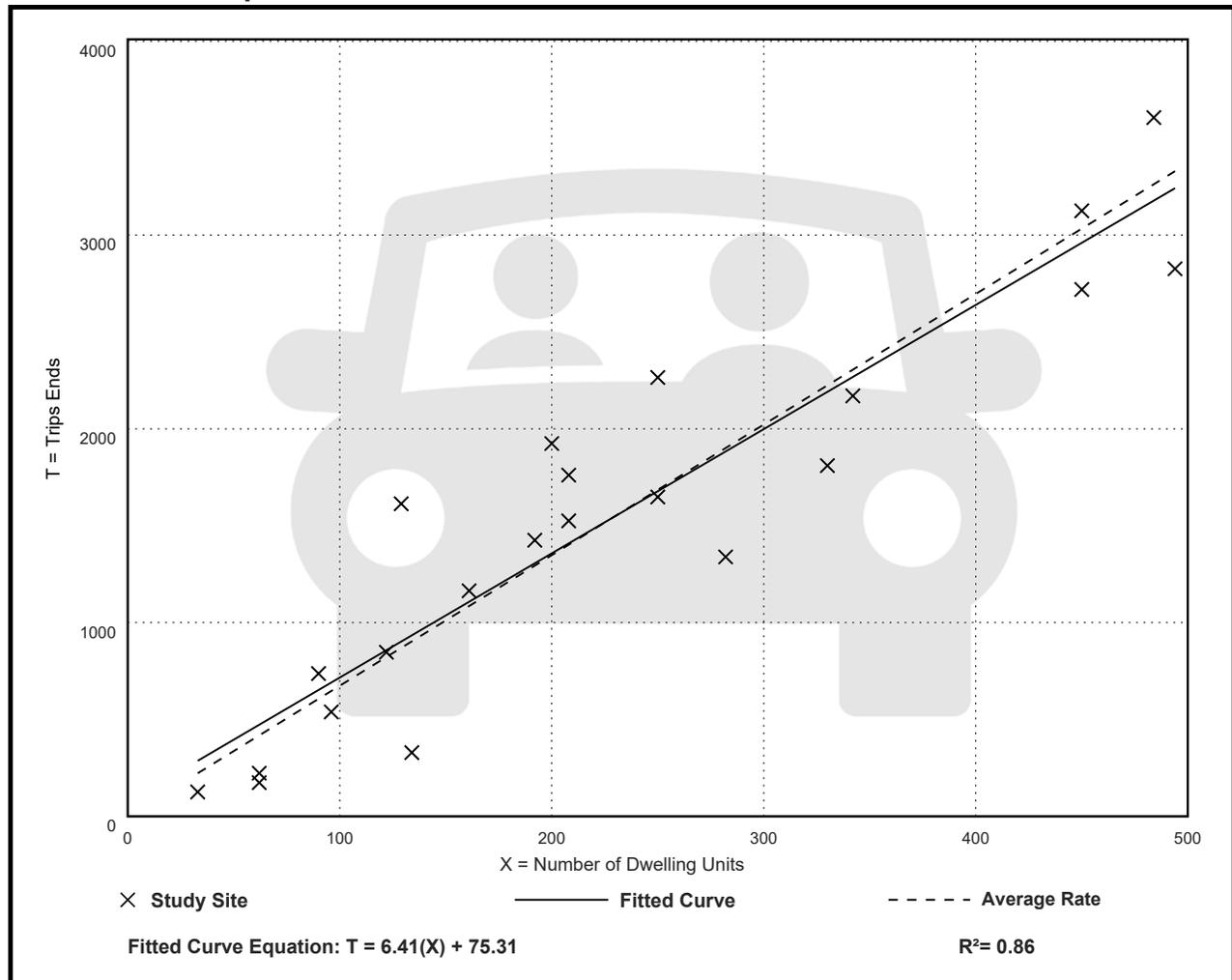
Avg. Num. of Dwelling Units: 229

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

## Data Plot and Equation



# Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

## Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 59

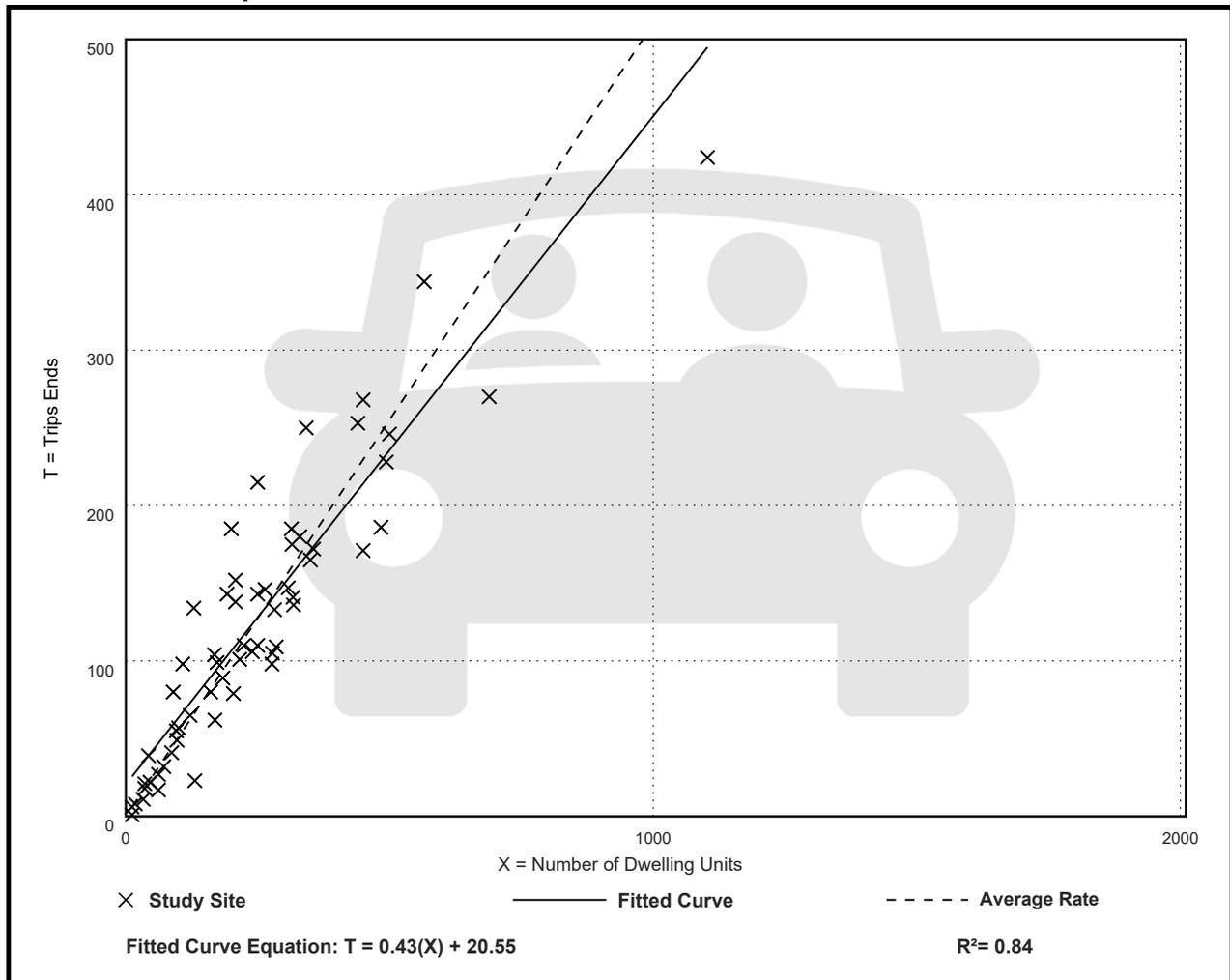
Avg. Num. of Dwelling Units: 241

Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

## Data Plot and Equation



The average numbers of person trips per vehicle trip at the 18 dense multi-use urban sites at which both person trip and vehicle trip data were collected are as follows:

- 1.5 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.5 during Weekday, AM Peak Hour of Generator
- 1.5 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.5 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 23 general urban/suburban sites at which both person trip and vehicle trip data were collected are as follows:

- 1.3 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.3 during Weekday, AM Peak Hour of Generator
- 1.3 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.4 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, the 2010s, and the 2020s in Alberta (CAN), California, Colorado, Connecticut, Georgia, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Michigan, Minnesota, Missouri, Montana, New Hampshire, New Jersey, New York, Ontario (CAN) Pennsylvania, Texas, Utah, Virginia, and Washington.

### **Source Numbers**

161, 175, 183, 184, 185, 207, 212, 217, 247, 253, 257, 260, 262, 273, 279, 297, 298, 300, 301, 302, 303, 304, 321, 322, 323, 324, 327, 404, 407, 408, 419, 423, 562, 734, 850, 859, 862, 867, 869, 883, 884, 890, 891, 904, 940, 944, 946, 964, 965, 972, 1009, 1030, 1058, 1061

# General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 221

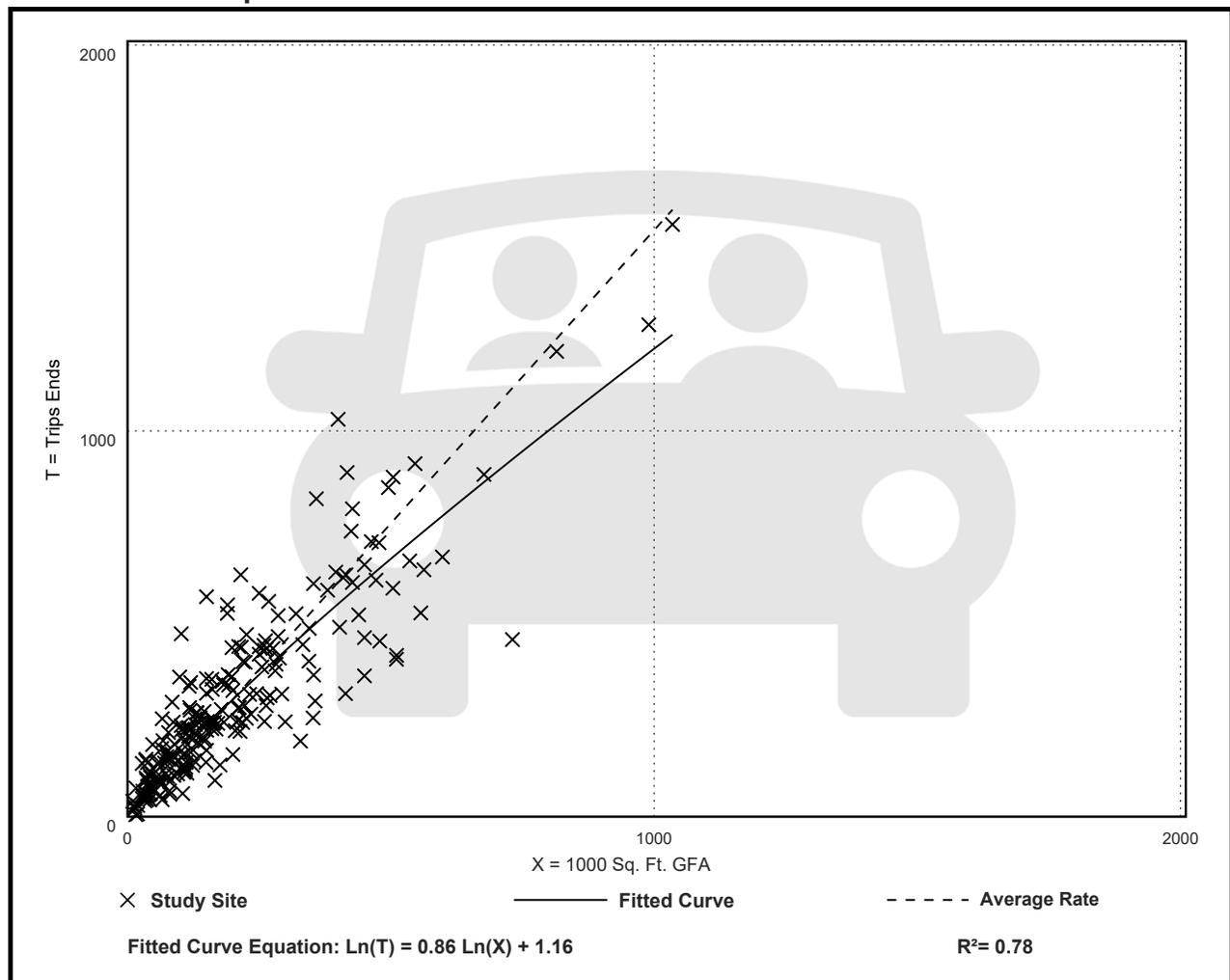
Avg. 1000 Sq. Ft. GFA: 201

Directional Distribution: 88% entering, 12% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.52	0.32 - 4.93	0.58

## Data Plot and Equation



# Land Use: 712

## Small Office Building

---

### Description

A small office building is the same as a general office building (Land Use 710) but with less than or equal to 10,000 square feet of gross floor area. The building typically houses a single tenant. It is a location where affairs of a business, commercial or industrial organization, or professional person or firm are conducted. General office building (Land Use 710) is a related use.

### Additional Data

Attorney office, mortgage company, financial advisor, insurance agency, home health care provider, and real estate company are examples of tenants included in the small office building database. The diversity of employer types results in a wide range in employee density in the database. Densities range from a high of 1,300 to a low of 240 square feet per employee with an overall average of nearly 600 square feet per employee (a value much larger than the average observed in a general office building study sites).

In addition to the significant difference in employee density, small office buildings tend to be dominated by a single tenant (or very few) that are more service-oriented than a typical general office building. The result is more frequent and regular visitors and higher trip generation rates.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s and the 2010s in Alberta (CAN), California, Texas, and Wisconsin.

### Source Numbers

418, 890, 891, 959, 976

# Small Office Building (712)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 21

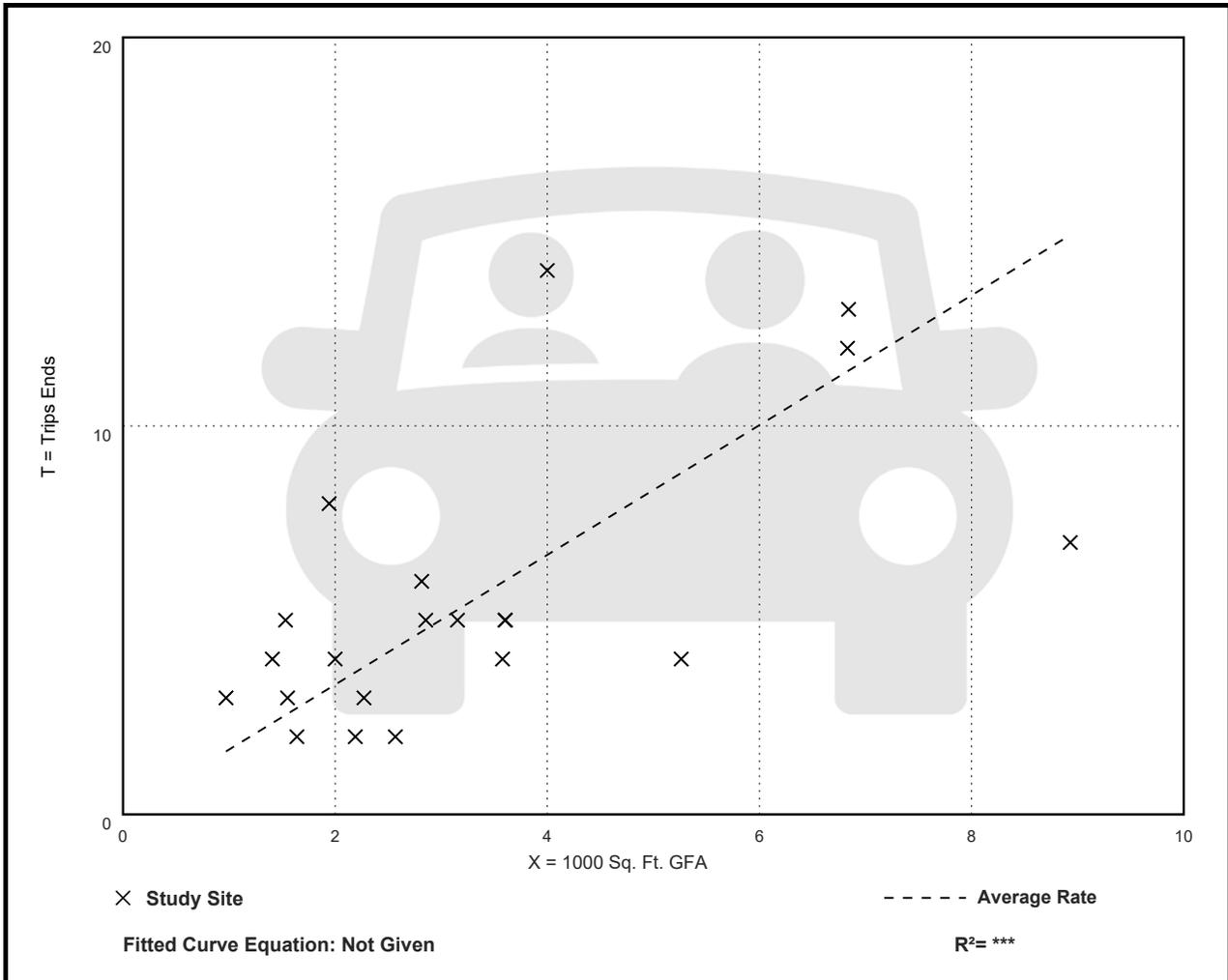
Avg. 1000 Sq. Ft. GFA: 3

Directional Distribution: 82% entering, 18% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.67	0.76 - 4.12	0.88

## Data Plot and Equation



# Land Use: 822

## Strip Retail Plaza (<40k)

---

### Description

A strip retail plaza is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. Each study site in this land use has less than 40,000 square feet of gross leasable area (GLA). Because a strip retail plaza is open-air, the GLA is the same as the gross floor area of the building.

The 40,000 square feet GFA threshold between strip retail plaza and shopping plaza (Land Use 821) was selected based on an examination of the overall shopping center/plaza database. No shopping plaza with a supermarket as its anchor is smaller than 40,000 square feet GLA.

Shopping center (>150k) (Land use 820), shopping plaza (40-150k) (Land Use 821), and factory outlet center (Land Use 823) are related uses.

### Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Delaware, Florida, New Jersey, Ontario (CAN), South Dakota, Vermont, Washington, and Wisconsin.

### Source Numbers

304, 358, 423, 428, 437, 507, 715, 728, 936, 960, 961, 974, 1009

# Strip Retail Plaza (<40k) (822)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**

**On a: Weekday,**

**Peak Hour of Adjacent Street Traffic,**

**One Hour Between 7 and 9 a.m.**

**Setting/Location: General Urban/Suburban**

Number of Studies: 5

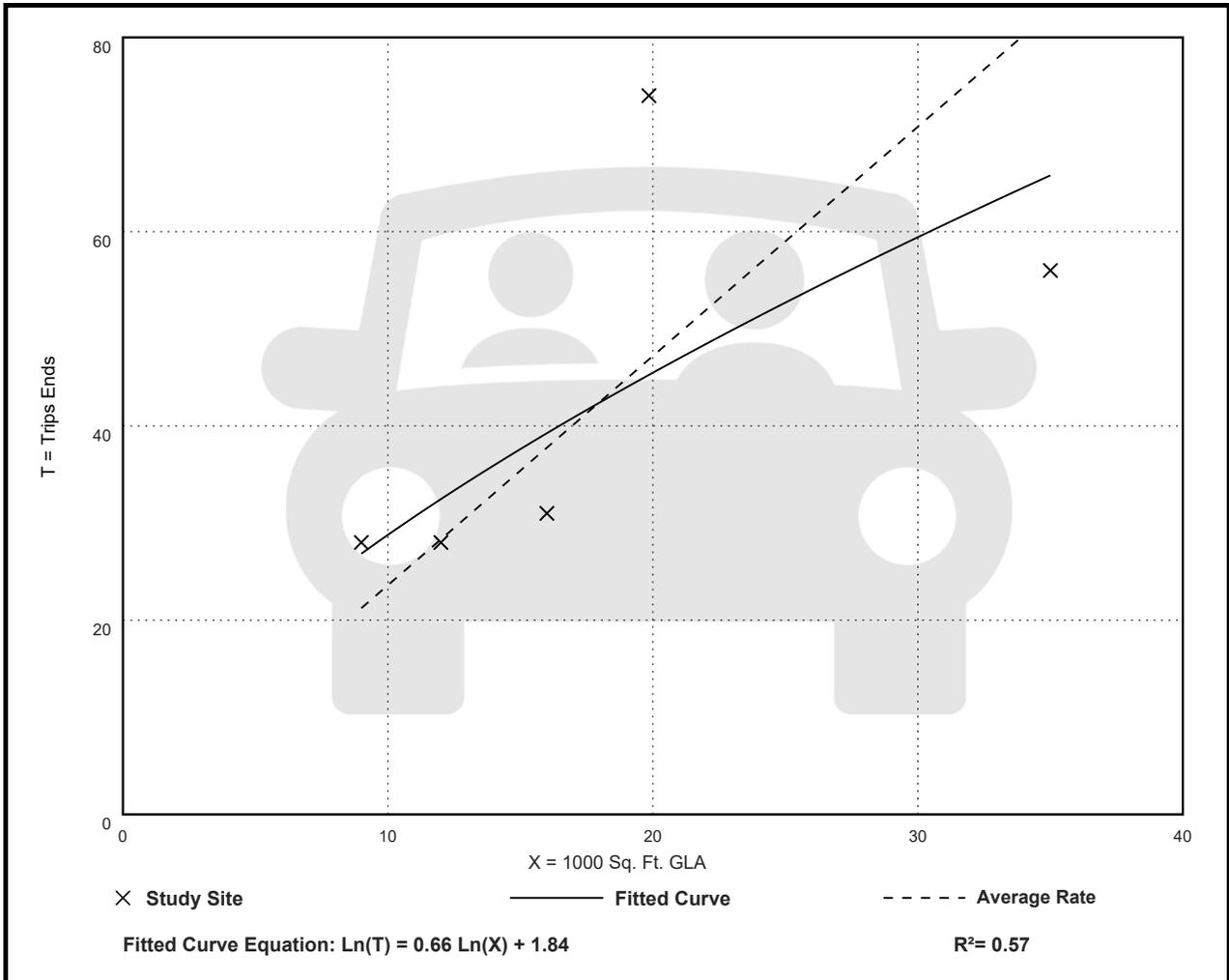
Avg. 1000 Sq. Ft. GLA: 18

Directional Distribution: 60% entering, 40% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.36	1.60 - 3.73	0.94

## Data Plot and Equation



**APPENDIX D**  
**SYNCHRO REPORTS FOR OPERATIONAL ANALYSES**

Intersection	
Intersection Delay, s/veh	14.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	262	180	18	166	29	166	72	19	17	62	43
Future Vol, veh/h	45	262	180	18	166	29	166	72	19	17	62	43
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	291	200	20	184	32	184	80	21	19	69	48
Number of Lanes	0	2	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	14.8	13.6	15.7	11.7
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	65%	26%	0%	8%	14%
Vol Thru, %	28%	74%	42%	78%	51%
Vol Right, %	7%	0%	58%	14%	35%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	257	176	311	213	122
LT Vol	166	45	0	18	17
Through Vol	72	131	131	166	62
RT Vol	19	0	180	29	43
Lane Flow Rate	286	196	346	237	136
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.5	0.348	0.563	0.412	0.246
Departure Headway (Hd)	6.412	6.409	5.867	6.268	6.535
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	565	555	608	577	552
Service Time	4.412	4.206	3.664	4.268	4.55
HCM Lane V/C Ratio	0.506	0.353	0.569	0.411	0.246
HCM Control Delay	15.7	12.6	16.1	13.6	11.7
HCM Lane LOS	C	B	C	B	B
HCM 95th-tile Q	2.8	1.5	3.5	2	1

HCM 6th Signalized Intersection Summary  
3: Orchard Drive & Center Street

Scenario #1 2025 AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	64	7	37	165	28	32	119	34	25	290	126
Future Volume (veh/h)	72	64	7	37	165	28	32	119	34	25	290	126
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.93		0.89	0.90		1.00	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	80	71	8	41	183	0	36	132	38	28	322	140
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	314	345	39	374	366		497	898	749	678	887	740
Arrive On Green	0.05	0.21	0.21	0.04	0.20	0.00	0.04	0.48	0.48	0.03	0.47	0.47
Sat Flow, veh/h	1781	1628	183	1781	1870	0	1781	1870	1560	1781	1870	1560
Grp Volume(v), veh/h	80	0	79	41	183	0	36	132	38	28	322	140
Grp Sat Flow(s),veh/h/ln	1781	0	1812	1781	1870	0	1781	1870	1560	1781	1870	1560
Q Serve(g_s), s	2.6	0.0	2.7	1.4	6.5	0.0	0.8	3.0	1.0	0.6	8.2	3.9
Cycle Q Clear(g_c), s	2.6	0.0	2.7	1.4	6.5	0.0	0.8	3.0	1.0	0.6	8.2	3.9
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	314	0	383	374	366		497	898	749	678	887	740
V/C Ratio(X)	0.25	0.00	0.21	0.11	0.50		0.07	0.15	0.05	0.04	0.36	0.19
Avail Cap(c_a), veh/h	396	0	569	460	562		589	898	749	780	887	740
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	24.3	22.5	26.8	0.0	9.7	10.9	10.4	9.4	12.5	11.4
Incr Delay (d2), s/veh	0.4	0.0	0.3	0.1	1.1	0.0	0.1	0.3	0.1	0.0	1.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	2.1	1.0	5.3	0.0	0.5	2.1	0.6	0.4	6.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	0.0	24.6	22.6	27.9	0.0	9.7	11.2	10.5	9.4	13.6	11.9
LnGrp LOS	C	A	C	C	C		A	B	B	A	B	B
Approach Vol, veh/h		159			224	A		206			490	
Approach Delay, s/veh		23.7			26.9			10.8			12.9	
Approach LOS		C			C			B			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	1	2	3	4	5	6	7	8				
Change Period (Y+Rc), s	40.4	7.4	20.3	7.1	40.0	8.6	19.2					
Max Green Setting (Gmax), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5					
Max Q Clear Time (g_c+I1), s	35.5	6.5	23.5	6.5	35.5	7.5	22.5					
Green Ext Time (p_c), s	5.0	3.4	4.7	2.8	10.2	4.6	8.5					
	0.0	0.8	0.0	0.3	0.0	2.4	0.0	0.8				

Intersection Summary

HCM 6th Ctrl Delay	17.0
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
 5: US-89 & Chile Amor Access/Eagle Ridge Drive

Scenario #1 2025 AM

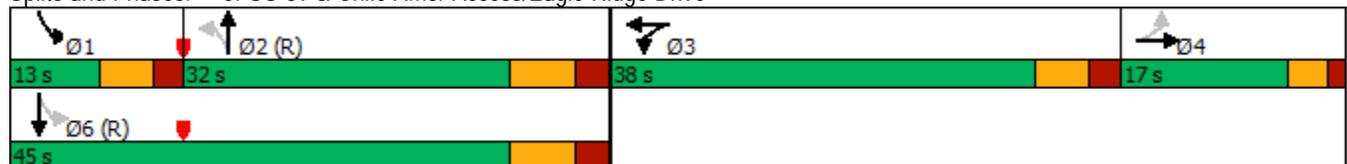
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	4	35	729	7	194	26	453	185	124	815	15
Future Volume (vph)	15	4	35	729	7	194	26	453	185	124	815	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		200	125		0	150		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			50			40			90		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00				0.98				0.99	1.00		
Frt		0.864			0.855				0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1448	0	3090	1410	0	1593	3185	1425	1593	3176	0
Flt Permitted	0.851			0.950			0.309			0.345		
Satd. Flow (perm)	1421	1448	0	3090	1410	0	518	3185	1407	578	3176	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			216				238			2
Link Speed (mph)		30			30			45				45
Link Distance (ft)		337			387			868				678
Travel Time (s)		7.7			8.8			13.2				10.3
Confl. Peds. (#/hr)	3					3			1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	4	39	810	8	216	29	503	206	138	906	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	43	0	810	224	0	29	503	206	138	923	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Right	R NA	L NA	Left	R NA	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					Yes			Yes				Yes
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1		2
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20		100
Trailing Detector (ft)	0	0		0	0		0	0	0	0		0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0		0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20		6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA		Split	NA		Perm	NA	Free	pm+pt		NA

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	177	214		979	594		173	1067	1407	382	1549	
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	0.10	0.20		0.83	0.38		0.17	0.47	0.15	0.36	0.60	

**Intersection Summary**

Area Type: CBD  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 30.7 Intersection LOS: C  
 Intersection Capacity Utilization 85.9% ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 5: US-89 & Chile Amor Access/Eagle Ridge Drive



HCM 6th Signalized Intersection Summary  
7: US-89 & Eagle Gate Drive

Scenario #1 2025 AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
<b>Lane Configurations</b>						
Traffic Volume (veh/h)	163	65	591	94	35	1586
Future Volume (veh/h)	163	65	591	94	35	1586
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	181	72	657	104	39	1762
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	221	196	4014	1246	604	2794
Arrive On Green	0.12	0.12	0.79	0.79	1.00	1.00
Sat Flow, veh/h	1781	1585	5274	1585	705	3647
Grp Volume(v), veh/h	181	72	657	104	39	1762
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1585	705	1777
Q Serve(g_s), s	9.9	4.2	3.2	1.5	0.2	0.0
Cycle Q Clear(g_c), s	9.9	4.2	3.2	1.5	3.4	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	221	196	4014	1246	604	2794
V/C Ratio(X)	0.82	0.37	0.16	0.08	0.06	0.63
Avail Cap(c_a), veh/h	365	325	4014	1246	604	2794
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.59	0.59
Uniform Delay (d), s/veh	42.7	40.2	2.6	2.4	0.1	0.0
Incr Delay (d2), s/veh	7.4	1.1	0.1	0.1	0.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.4	3.1	1.1	0.6	0.0	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.1	41.3	2.7	2.6	0.2	0.6
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	253		761			1801
Approach Delay, s/veh	47.6		2.7			0.6
Approach LOS	D		A			A
<b>Timer - Assigned Phs</b>		<b>2</b>			<b>6</b>	<b>8</b>
Phs Duration (G+Y+Rc), s		83.1			83.1	16.9
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		70.5			70.5	20.5
Max Q Clear Time (g_c+l1), s		5.2			5.4	11.9
Green Ext Time (p_c), s		5.1			23.4	0.5
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			5.4			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
 2: US-89 & Center Street

Scenario #1 2025 PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	170	102	36	70	119	66	838	57	94	454	81
Future Volume (veh/h)	150	170	102	36	70	119	66	838	57	94	454	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	167	189	113	40	78	132	73	931	63	104	504	90
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	245	372	313	249	101	172	477	1621	110	316	1720	765
Arrive On Green	0.07	0.20	0.20	0.03	0.16	0.16	0.04	0.48	0.48	0.05	0.48	0.48
Sat Flow, veh/h	1781	1870	1571	1781	620	1048	1781	3377	229	1781	3554	1582
Grp Volume(v), veh/h	167	189	113	40	0	210	73	490	504	104	504	90
Grp Sat Flow(s),veh/h/ln	1781	1870	1571	1781	0	1668	1781	1777	1829	1781	1777	1582
Q Serve(g_s), s	6.9	9.0	6.2	1.8	0.0	12.0	2.0	19.8	19.8	2.9	8.5	3.1
Cycle Q Clear(g_c), s	6.9	9.0	6.2	1.8	0.0	12.0	2.0	19.8	19.8	2.9	8.5	3.1
Prop In Lane	1.00		1.00	1.00		0.63	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	245	372	313	249	0	273	477	853	878	316	1720	765
V/C Ratio(X)	0.68	0.51	0.36	0.16	0.00	0.77	0.15	0.57	0.57	0.33	0.29	0.12
Avail Cap(c_a), veh/h	245	490	412	289	0	415	500	853	878	358	1720	765
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.93	0.00	0.93	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.5	35.7	34.6	33.1	0.0	40.0	12.2	18.7	18.7	14.3	15.5	14.1
Incr Delay (d2), s/veh	7.4	1.1	0.7	0.3	0.0	4.4	0.1	2.8	2.7	0.6	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	7.6	4.4	1.5	0.0	8.9	1.4	12.7	12.9	2.0	5.9	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.0	36.7	35.3	33.4	0.0	44.4	12.3	21.5	21.4	14.9	15.9	14.4
LnGrp LOS	D	D	D	C	A	D	B	C	C	B	B	B
Approach Vol, veh/h		469			250			1067			698	
Approach Delay, s/veh		38.2			42.7			20.8			15.6	
Approach LOS		D			D			C			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	10.6	54.8	8.6	26.0	10.2	55.2	12.1	22.5				
Change Period (Y+Rc), s	5.9	6.8	* 5.2	* 6.1	5.9	6.8	* 5.2	* 6.1				
Max Green Setting (Gmax), s	37.1	* 5.6	* 26	5.6	38.6	* 6.9	* 25					
Max Q Clear Time (g_c+I1),s	21.8	3.8	11.0	4.0	10.5	8.9	14.0					
Green Ext Time (p_c), s	0.0	5.2	0.0	1.3	0.0	3.5	0.0	0.9				

Intersection Summary

HCM 6th Ctrl Delay	24.8
HCM 6th LOS	C

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

**Intersection**

Int Delay, s/veh 5.8

**Movement** EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations												
Traffic Vol, veh/h	0	0	387	2	0	1	319	869	0	1	600	6
Future Vol, veh/h	0	0	387	2	0	1	319	869	0	1	600	6
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	430	2	0	1	354	966	0	1	667	7

**Major/Minor** Minor2 Minor1 Major1 Major2

Conflicting Flow All	1866	2349	339	2012	2352	485	675	0	0	967	0	0
Stage 1	674	674	-	1675	1675	-	-	-	-	-	-	-
Stage 2	1192	1675	-	337	677	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	45	36	657	35	35	528	912	-	-	708	-	-
Stage 1	410	452	-	99	150	-	-	-	-	-	-	-
Stage 2	199	150	-	651	450	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	31	22	656	8	21	527	911	-	-	707	-	-
Mov Cap-2 Maneuver	31	22	-	8	21	-	-	-	-	-	-	-
Stage 1	251	451	-	60	92	-	-	-	-	-	-	-
Stage 2	121	92	-	224	449	-	-	-	-	-	-	-

**Approach** EB WB NB SB

HCM Control Delay, s	20.3	\$ 390.6	3.1	0
HCM LOS	C	F		

**Minor Lane/Major Mvmt** NBL NBT NBR EBLn1WBLn1WBLn2 SBL SBT SBR

Capacity (veh/h)	911	-	-	656	8	527	707	-	-
HCM Lane V/C Ratio	0.389	-	-	0.655	0.278	0.002	0.002	-	-
HCM Control Delay (s)	11.4	-	-	20.3	\$ 580	11.8	10.1	-	-
HCM Lane LOS	B	-	-	C	F	B	B	-	-
HCM 95th %tile Q(veh)	1.9	-	-	4.9	0.6	0	0	-	-

**Notes**

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

Lanes, Volumes, Timings  
 5: US-89 & Chile Amor Access/Eagle Ridge Drive

Scenario #1 2025 PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		3	3			2		1	6	
Permitted Phases	4						2		Free	6		
Detector Phase	4	4		3	3		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	11.0	11.0		24.3	24.3		25.7	25.7		11.3	22.7	
Total Split (s)	11.0	11.0		29.0	29.0		56.0	56.0		24.0	80.0	
Total Split (%)	9.2%	9.2%		24.2%	24.2%		46.7%	46.7%		20.0%	66.7%	
Maximum Green (s)	6.5	6.5		22.7	22.7		48.3	48.3		17.7	72.3	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.9	4.9		4.0	4.9	
All-Red Time (s)	1.5	1.5		2.3	2.3		2.8	2.8		2.3	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		6.3	6.3		7.7	7.7		6.3	7.7	
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	0.6	0.6		0.6	0.6		1.7	1.7		1.8	1.7	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0		7.0	7.0				
Flash Dont Walk (s)				11.0	11.0		11.0	11.0				
Pedestrian Calls (#/hr)				0	0		0	0				
Act Effct Green (s)	6.1	6.1		21.4	21.4		54.5	54.5	120.0	77.3	75.9	
Actuated g/C Ratio	0.05	0.05		0.18	0.18		0.45	0.45	1.00	0.64	0.63	
v/c Ratio	0.55	0.45		0.93	0.61		0.28	0.76	0.56	0.82	0.36	
Control Delay	84.8	33.4		72.3	12.8		27.2	33.3	1.6	39.8	11.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	84.8	33.4		72.3	12.8		27.2	33.3	1.6	39.8	11.6	
LOS	F	C		E	B		C	C	A	D	B	
Approach Delay		54.7			50.6			20.4			19.0	
Approach LOS		D			D			C			B	
90th %ile Green (s)	6.5	6.5		22.7	22.7		48.3	48.3		17.7	72.3	
90th %ile Term Code	Max	Max		Max	Max		Coord	Coord		Max	Coord	
70th %ile Green (s)	6.5	6.5		22.7	22.7		48.3	48.3		17.7	72.3	
70th %ile Term Code	Max	Max		Max	Max		Coord	Coord		Max	Coord	
50th %ile Green (s)	6.5	6.5		22.7	22.7		48.3	48.3		17.7	72.3	
50th %ile Term Code	Max	Max		Max	Max		Coord	Coord		Max	Coord	
30th %ile Green (s)	6.1	6.1		21.3	21.3		54.1	54.1		13.7	74.1	
30th %ile Term Code	Gap	Gap		Gap	Gap		Coord	Coord		Gap	Coord	
10th %ile Green (s)	0.0	0.0		17.7	17.7		73.7	73.7		8.3	88.3	
10th %ile Term Code	Skip	Skip		Gap	Gap		Coord	Coord		Gap	Coord	
Stops (vph)	31	17		427	41		50	806	0	120	294	
Fuel Used(gal)	1	1		11	2		1	22	4	4	8	
CO Emissions (g/hr)	56	37		734	119		101	1555	293	306	562	
NOx Emissions (g/hr)	11	7		143	23		20	303	57	60	109	
VOC Emissions (g/hr)	13	9		170	28		23	360	68	71	130	
Dilemma Vehicles (#)	0	0		0	0		0	41	0	0	27	
Queue Length 50th (ft)	28	7		199	14		43	400	0	103	138	
Queue Length 95th (ft)	#74	48		#290	99		88	496	0	#225	179	
Internal Link Dist (ft)		257			307			788			598	
Turn Bay Length (ft)				100			125			150		

Intersection						
Intersection Delay, s/veh 9.7						
Intersection LOS A						
Approach	EB		WB		NB	SB
Entry Lanes	2		1		1	1
Conflicting Circle Lanes	2		2		2	2
Adj Approach Flow, veh/h	1110		527		243	322
Demand Flow Rate, veh/h	1132		538		248	329
Vehicles Circulating, veh/h	98		639		1057	648
Vehicles Exiting, veh/h	879		666		173	484
Ped Vol Crossing Leg, #/h	0		0		2	2
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	7.4		13.1		13.2	9.5
Approach LOS	A		B		B	A
Lane	Left	Right	Left	Bypass	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized	Yield					
Lane Util	0.470	0.530	1.000		1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.535		2.535	2.535
Critical Headway, s	4.645	4.328	4.328	45	4.328	4.328
Entry Flow, veh/h	532	600	493	842	248	329
Cap Entry Lane, veh/h	1233	1307	825	0.980	578	819
Entry HV Adj Factor	0.980	0.980	0.980	44	0.981	0.980
Flow Entry, veh/h	522	588	483	826	243	322
Cap Entry, veh/h	1209	1281	808	0.053	567	802
V/C Ratio	0.431	0.459	0.598	4.9	0.429	0.402
Control Delay, s/veh	7.4	7.5	13.8	A	13.2	9.5
LOS	A	A	B	0	B	A
95th %tile Queue, veh	2	2	4		2	2

# 2040 Scenario #1

HCM 6th Signalized Intersection Summary  
 2: US-89 & Center Street

Scenario #1 2040 AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	211	104	68	145	153	72	430	48	74	726	102
Future Volume (veh/h)	141	211	104	68	145	153	72	430	48	74	726	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.97	1.00		0.96	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	157	234	116	76	161	170	80	478	53	82	807	113
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	499	414	319	187	197	289	1291	142	462	1430	611
Arrive On Green	0.09	0.27	0.27	0.05	0.23	0.23	0.09	0.80	0.80	0.04	0.40	0.40
Sat Flow, veh/h	1781	1870	1551	1781	821	867	1781	3211	354	1781	3554	1518
Grp Volume(v), veh/h	157	234	116	76	0	331	80	263	268	82	807	113
Grp Sat Flow(s),veh/h/ln	1781	1870	1551	1781	0	1688	1781	1777	1788	1781	1777	1518
Q Serve(g_s), s	6.6	10.5	5.9	3.2	0.0	18.8	2.6	4.1	4.2	2.7	17.6	4.8
Cycle Q Clear(g_c), s	6.6	10.5	5.9	3.2	0.0	18.8	2.6	4.1	4.2	2.7	17.6	4.8
Prop In Lane	1.00		1.00	1.00		0.51	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	265	499	414	319	0	385	289	715	719	462	1430	611
V/C Ratio(X)	0.59	0.47	0.28	0.24	0.00	0.86	0.28	0.37	0.37	0.18	0.56	0.18
Avail Cap(c_a), veh/h	291	585	486	337	0	454	323	715	719	483	1430	611
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.89	0.00	0.89	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.6	30.7	29.0	27.8	0.0	37.1	17.0	6.3	6.3	16.1	23.1	19.3
Incr Delay (d2), s/veh	2.7	0.7	0.4	0.3	0.0	12.4	0.5	1.5	1.5	0.2	1.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	15.4	8.4	4.1	2.6	0.0	13.7	1.8	2.6	2.7	1.9	11.5	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.3	31.4	29.4	28.1	0.0	49.5	17.5	7.7	7.7	16.3	24.7	20.0
LnGrp LOS	C	C	C	C	A	D	B	A	A	B	C	B
Approach Vol, veh/h		507			407			611			1002	
Approach Delay, s/veh		30.6			45.5			9.0			23.5	
Approach LOS		C			D			A			C	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	10.4	47.0	9.8	32.8	10.4	47.0	13.7	28.9				
Change Period (Y+Rc), s	5.9	6.8	* 5.2	* 6.1	5.9	6.8	* 5.2	* 6.1				
Max Green Setting (Gmax), s	33.4	* 5.6	* 31	6.4	32.7	* 10	* 27					
Max Q Clear Time (g_c+I1),s	6.2	5.2	12.5	4.6	19.6	8.6	20.8					
Green Ext Time (p_c), s	0.0	3.0	0.0	1.7	0.0	4.5	0.1	1.1				

Intersection Summary

HCM 6th Ctrl Delay	25.0
HCM 6th LOS	C

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

**Intersection**

Int Delay, s/veh 11.6

**Movement** EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations

Traffic Vol, veh/h	0	4	314	0	3	0	301	545	1	1	907	8
Future Vol, veh/h	0	4	314	0	3	0	301	545	1	1	907	8
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	4	349	0	3	0	334	606	1	1	1008	9

**Major/Minor** Minor2 Minor1 Major1 Major2

Conflicting Flow All	1990	2292	511	1785	2296	306	1018	0	0	608	0	0
Stage 1	1016	1016	-	1276	1276	-	-	-	-	-	-	-
Stage 2	974	1276	-	509	1020	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	36	39	508	51	38	690	677	-	-	966	-	-
Stage 1	255	314	-	176	236	-	-	-	-	-	-	-
Stage 2	270	236	-	515	312	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	19	20	507	8	19	689	676	-	-	965	-	-
Mov Cap-2 Maneuver	19	20	-	8	19	-	-	-	-	-	-	-
Stage 1	129	313	-	89	119	-	-	-	-	-	-	-
Stage 2	133	119	-	158	311	-	-	-	-	-	-	-

**Approach** EB WB NB SB

HCM Control Delay, s	59	231.2	5.5	0
HCM LOS	F	F		

**Minor Lane/Major Mvmt** NBL NBT NBR EBLn1WBLn1WBLn2 SBL SBT SBR

Capacity (veh/h)	676	-	-	388	19	-	965	-	-
HCM Lane V/C Ratio	0.495	-	-	0.911	0.175	-	0.001	-	-
HCM Control Delay (s)	15.4	-	-	59	231.2	0	8.7	-	-
HCM Lane LOS	C	-	-	F	F	A	A	-	-
HCM 95th %tile Q(veh)	2.8	-	-	9.5	0.5	-	0	-	-

Lanes, Volumes, Timings  
5: US-89 & Chile Amor Access/Eagle Ridge Drive

Scenario #1 2040 AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		3	3			2		1	6	
Permitted Phases	4						2		Free	6		
Detector Phase	4	4		3	3		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	17.0	17.0		24.3	24.3		25.7	25.7		11.3	22.7	
Total Split (s)	17.0	17.0		37.2	37.2		32.4	32.4		13.4	45.8	
Total Split (%)	17.0%	17.0%		37.2%	37.2%		32.4%	32.4%		13.4%	45.8%	
Maximum Green (s)	12.5	12.5		30.9	30.9		24.7	24.7		7.1	38.1	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.9	4.9		4.0	4.9	
All-Red Time (s)	1.5	1.5		2.3	2.3		2.8	2.8		2.3	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		6.3	6.3		7.7	7.7		6.3	7.7	
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	0.6	0.6		0.6	0.6		1.7	1.7		1.8	1.7	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0		7.0	7.0				
Flash Dont Walk (s)				11.0	11.0		11.0	11.0				
Pedestrian Calls (#/hr)				0	0		0	0				
Act Effct Green (s)	6.0	6.0		30.9	30.9		28.9	28.9	100.0	47.9	46.5	
Actuated g/C Ratio	0.06	0.06		0.31	0.31		0.29	0.29	1.00	0.48	0.46	
v/c Ratio	0.22	0.43		1.02	0.44		0.32	0.73	0.20	0.58	0.83	
Control Delay	50.3	45.5		68.4	6.2		39.0	35.7	0.5	39.3	44.4	
Queue Delay	0.0	0.0		25.4	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	50.3	45.5		93.7	6.2		39.0	35.7	0.5	39.3	44.4	
LOS	D	D		F	A		D	D	A	D	D	
Approach Delay		46.9			74.8			25.6			43.7	
Approach LOS		D			E			C			D	
90th %ile Green (s)	8.5	8.5		30.9	30.9		24.7	24.7		11.1	42.1	
90th %ile Term Code	Gap	Gap		Max	Max		Coord	Coord		Max	Coord	
70th %ile Green (s)	6.5	6.5		30.9	30.9		24.7	24.7		13.1	44.1	
70th %ile Term Code	Gap	Gap		Max	Max		Coord	Coord		Max	Coord	
50th %ile Green (s)	5.0	5.0		30.9	30.9		26.3	26.3		13.0	45.6	
50th %ile Term Code	Min	Min		Max	Max		Coord	Coord		Gap	Coord	
30th %ile Green (s)	5.0	5.0		30.9	30.9		28.1	28.1		11.2	45.6	
30th %ile Term Code	Min	Min		Max	Max		Coord	Coord		Gap	Coord	
10th %ile Green (s)	0.0	0.0		30.9	30.9		40.5	40.5		8.3	55.1	
10th %ile Term Code	Skip	Skip		Max	Max		Coord	Coord		Gap	Coord	
Stops (vph)	17	27		765	30		17	478	7	129	927	
Fuel Used(gal)	0	1		19	1		1	14	2	4	26	
CO Emissions (g/hr)	20	43		1328	84		39	963	109	252	1843	
NOx Emissions (g/hr)	4	8		258	16		8	187	21	49	359	
VOC Emissions (g/hr)	5	10		308	19		9	223	25	58	427	
Dilemma Vehicles (#)	0	0		0	0		0	29	0	0	77	
Queue Length 50th (ft)	11	18		~326	4		12	147	0	98	414	
Queue Length 95th (ft)	32	52		#461	62		31	#306	7	168	#538	
Internal Link Dist (ft)		257			307			788			598	
Turn Bay Length (ft)				100			125			150		

Intersection						
Intersection Delay, s/veh15.2						
Intersection LOS C						
Approach	EB		WB		NB	SB
Entry Lanes	2		1		1	1
Conflicting Circle Lanes	2		2		2	2
Adj Approach Flow, veh/h	405		848		161	535
Demand Flow Rate, veh/h	414		865		165	546
Vehicles Circulating, veh/h	102		230		359	904
Vehicles Exiting, veh/h	1348		294		157	128
Ped Vol Crossing Leg, #/h	3		0		1	0
Ped Cap Adj	0.997		1.000		1.000	1.000
Approach Delay, s/veh	4.3		12.5		5.0	31.0
Approach LOS	A		B		A	D
Lane	Left	Right	Left	Bypass	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized	Yield					
Lane Util	0.471	0.529	1.000		1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.535		2.535	2.535
Critical Headway, s	4.645	4.328	4.328	63	4.328	4.328
Entry Flow, veh/h	195	219	802	1211	165	546
Cap Entry Lane, veh/h	1229	1302	1168	0.980	1047	659
Entry HV Adj Factor	0.977	0.981	0.980	62	0.978	0.979
Flow Entry, veh/h	191	215	786	1187	161	535
Cap Entry, veh/h	1197	1273	1145	0.052	1023	645
V/C Ratio	0.159	0.169	0.687	3.5	0.158	0.829
Control Delay, s/veh	4.4	4.2	13.2	A	5.0	31.0
LOS	A	A	B	0	A	D
95th %tile Queue, veh	1	1	6		1	9

Intersection	
Intersection Delay, s/veh	91
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	108	527	264	22	269	45	256	117	38	22	94	31
Future Vol, veh/h	108	527	264	22	269	45	256	117	38	22	94	31
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	120	586	293	24	299	50	284	130	42	24	104	34
Number of Lanes	0	2	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	131.5	41.2	68.9	18.5
HCM LOS	F	E	F	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	62%	29%	0%	7%	15%
Vol Thru, %	28%	71%	50%	80%	64%
Vol Right, %	9%	0%	50%	13%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	411	372	528	336	147
LT Vol	256	108	0	22	22
Through Vol	117	264	264	269	94
RT Vol	38	0	264	45	31
Lane Flow Rate	457	413	586	373	163
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.991	0.978	1.305	0.835	0.408
Departure Headway (Hd)	8.033	8.528	8.014	8.299	9.292
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	457	429	457	441	390
Service Time	6.033	6.228	5.714	6.299	7.292
HCM Lane V/C Ratio	1	0.963	1.282	0.846	0.418
HCM Control Delay	68.9	67.7	176.4	41.2	18.5
HCM Lane LOS	F	F	F	E	C
HCM 95th-tile Q	12.7	11.9	25.7	8	1.9

HCM 6th Signalized Intersection Summary  
3: Orchard Drive & Center Street

Scenario #1 2040 PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	177	22	43	138	40	18	349	48	39	232	69
Future Volume (veh/h)	108	177	22	43	138	40	18	349	48	39	232	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	197	24	48	153	0	20	388	53	43	258	77
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	259	32	224	229		614	959	812	535	991	839
Arrive On Green	0.08	0.16	0.16	0.04	0.12	0.00	0.02	0.51	0.51	0.04	0.53	0.53
Sat Flow, veh/h	1781	1635	199	1781	1870	0	1781	1870	1584	1781	1870	1584
Grp Volume(v), veh/h	120	0	221	48	153	0	20	388	53	43	258	77
Grp Sat Flow(s),veh/h/ln	1781	0	1834	1781	1870	0	1781	1870	1584	1781	1870	1584
Q Serve(g_s), s	4.2	0.0	8.4	1.7	5.7	0.0	0.4	9.3	1.2	0.8	5.5	1.8
Cycle Q Clear(g_c), s	4.2	0.0	8.4	1.7	5.7	0.0	0.4	9.3	1.2	0.8	5.5	1.8
Prop In Lane	1.00		0.11	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	293	0	290	224	229		614	959	812	535	991	839
V/C Ratio(X)	0.41	0.00	0.76	0.21	0.67		0.03	0.40	0.07	0.08	0.26	0.09
Avail Cap(c_a), veh/h	360	0	590	282	525		708	959	812	598	991	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	29.4	26.4	30.6	0.0	8.1	10.9	9.0	8.1	9.4	8.5
Incr Delay (d2), s/veh	0.9	0.0	4.1	0.5	3.3	0.0	0.0	1.3	0.2	0.1	0.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/l	3.3	0.0	7.1	1.3	4.9	0.0	0.2	6.6	0.8	0.5	3.8	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.1	0.0	33.6	26.9	34.0	0.0	8.1	12.2	9.1	8.2	10.0	8.7
LnGrp LOS	C	A	C	C	C		A	B	A	A	B	A
Approach Vol, veh/h		341			201	A		461			378	
Approach Delay, s/veh		30.9			32.3			11.7			9.5	
Approach LOS		C			C			B			A	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	7.4	42.0	7.6	16.1	6.2	43.2	10.2	13.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	37.5	37.5	5.5	23.5	5.5	37.5	8.5	20.5				
Max Q Clear Time (g_c+I), s	11.3	11.3	3.7	10.4	2.4	7.5	6.2	7.7				
Green Ext Time (p_c), s	0.0	2.5	0.0	1.0	0.0	1.7	0.1	0.6				

Intersection Summary

HCM 6th Ctrl Delay	18.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
5: US-89 & Chile Amor Access/Eagle Ridge Drive

Scenario #1 2040 PM

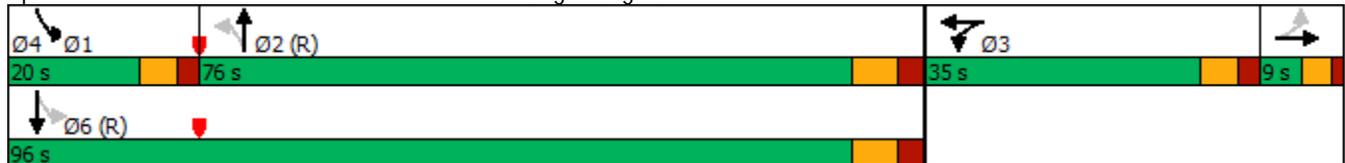
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	8	38	577	19	308	75	1369	943	302	842	49
Future Volume (vph)	32	8	38	577	19	308	75	1369	943	302	842	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		200	125		0	150		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			50			40			90		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99				0.98				0.99			
Frt		0.876			0.859				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1469	0	3090	1411	0	1593	3185	1425	1593	3160	0
Flt Permitted	0.889			0.950			0.289			0.054		
Satd. Flow (perm)	1482	1469	0	3090	1411	0	485	3185	1407	91	3160	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			198				370			8
Link Speed (mph)		30			30			45				45
Link Distance (ft)		337			387			868				678
Travel Time (s)		7.7			8.8			13.2				10.3
Confl. Peds. (#/hr)	4					4			1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	36	9	42	641	21	342	83	1521	1048	336	936	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	51	0	641	363	0	83	1521	1048	336	990	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Right	R NA	L NA	Left	R NA	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					Yes			Yes				Yes
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1		2
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20		100
Trailing Detector (ft)	0	0		0	0		0	0	0	0		0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0		0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20		6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA		Split	NA		Perm	NA	Free	pm+pt		NA

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	47	87		633	446		236	1553	1407	205	1996	
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	0.77	0.59		1.01	0.81		0.35	0.98	0.74	1.64	0.50	

**Intersection Summary**

Area Type: CBD  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.64  
 Intersection Signal Delay: 58.7 Intersection LOS: E  
 Intersection Capacity Utilization 105.6% ICU Level of Service G  
 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: 5: US-89 & Chile Amor Access/Eagle Ridge Drive



HCM 6th Signalized Intersection Summary  
7: US-89 & Eagle Gate Drive

Scenario #1 2040 PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	116	62	2224	213	66	1612
Future Volume (veh/h)	116	62	2224	213	66	1612
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	129	69	2471	237	73	1791
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	168	149	4166	1293	141	2900
Arrive On Green	0.09	0.09	0.82	0.82	0.82	0.82
Sat Flow, veh/h	1781	1585	5274	1585	107	3647
Grp Volume(v), veh/h	129	69	2471	237	73	1791
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1585	107	1777
Q Serve(g_s), s	7.1	4.1	17.3	3.2	64.3	18.7
Cycle Q Clear(g_c), s	7.1	4.1	17.3	3.2	81.6	18.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	168	149	4166	1293	141	2900
V/C Ratio(X)	0.77	0.46	0.59	0.18	0.52	0.62
Avail Cap(c_a), veh/h	322	287	4166	1293	141	2900
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.65	0.65
Uniform Delay (d), s/veh	44.2	42.9	3.3	2.0	19.8	3.4
Incr Delay (d2), s/veh	7.3	2.2	0.6	0.3	8.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.2	3.1	5.0	1.0	3.3	5.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	51.5	45.1	3.9	2.3	28.4	4.1
LnGrp LOS	D	D	A	A	C	A
Approach Vol, veh/h	198		2708			1864
Approach Delay, s/veh	49.3		3.8			5.0
Approach LOS	D		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		86.1			86.1	13.9
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		72.9			72.9	18.1
Max Q Clear Time (g_c+l1), s		19.3			83.6	9.1
Green Ext Time (p_c), s		36.8			0.0	0.4
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			6.1			
HCM 6th LOS			A			

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	440	2	10	325	98	7	4	27	78	1	43
Future Vol, veh/h	45	440	2	10	325	98	7	4	27	78	1	43
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	489	2	11	361	109	8	4	30	87	1	48
Number of Lanes	0	2	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	12.7	18.6	9.8	11.3
HCM LOS	B	C	A	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	18%	17%	0%	2%	64%
Vol Thru, %	11%	83%	99%	75%	1%
Vol Right, %	71%	0%	1%	23%	35%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	38	265	222	433	122
LT Vol	7	45	0	10	78
Through Vol	4	220	220	325	1
RT Vol	27	0	2	98	43
Lane Flow Rate	42	294	247	481	136
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.073	0.467	0.385	0.685	0.236
Departure Headway (Hd)	6.254	5.714	5.621	5.128	6.273
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	571	630	641	707	572
Service Time	4.31	3.444	3.352	3.156	4.317
HCM Lane V/C Ratio	0.074	0.467	0.385	0.68	0.238
HCM Control Delay	9.8	13.4	11.8	18.6	11.3
HCM Lane LOS	A	B	B	C	B
HCM 95th-tile Q	0.2	2.5	1.8	5.4	0.9

HCM 6th Signalized Intersection Summary  
3: Orchard Drive & Center Street

Scenario #2 2025 AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	64	7	37	165	28	32	119	34	25	290	126
Future Volume (veh/h)	72	64	7	37	165	28	32	119	34	25	290	126
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.93		0.89	0.90		1.00	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No										
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	80	71	8	41	183	0	36	132	38	28	322	140
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	314	345	39	374	366		497	898	749	678	887	740
Arrive On Green	0.05	0.21	0.21	0.04	0.20	0.00	0.04	0.48	0.48	0.03	0.47	0.47
Sat Flow, veh/h	1781	1628	183	1781	1870	0	1781	1870	1560	1781	1870	1560
Grp Volume(v), veh/h	80	0	79	41	183	0	36	132	38	28	322	140
Grp Sat Flow(s),veh/h/ln	1781	0	1812	1781	1870	0	1781	1870	1560	1781	1870	1560
Q Serve(g_s), s	2.6	0.0	2.7	1.4	6.5	0.0	0.8	3.0	1.0	0.6	8.2	3.9
Cycle Q Clear(g_c), s	2.6	0.0	2.7	1.4	6.5	0.0	0.8	3.0	1.0	0.6	8.2	3.9
Prop In Lane	1.00		0.10	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	314	0	383	374	366		497	898	749	678	887	740
V/C Ratio(X)	0.25	0.00	0.21	0.11	0.50		0.07	0.15	0.05	0.04	0.36	0.19
Avail Cap(c_a), veh/h	396	0	569	460	562		589	898	749	780	887	740
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	24.3	22.5	26.8	0.0	9.7	10.9	10.4	9.4	12.5	11.4
Incr Delay (d2), s/veh	0.4	0.0	0.3	0.1	1.1	0.0	0.1	0.3	0.1	0.0	1.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	2.1	1.0	5.3	0.0	0.5	2.1	0.6	0.4	6.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	0.0	24.6	22.6	27.9	0.0	9.7	11.2	10.5	9.4	13.6	11.9
LnGrp LOS	C	A	C	C	C		A	B	B	A	B	B
Approach Vol, veh/h		159			224	A		206			490	
Approach Delay, s/veh		23.7			26.9			10.8			12.9	
Approach LOS		C			C			B			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	1	2	3	4	5	6	7	8				
Change Period (Y+Rc), s	40.4	7.4	20.3	7.1	40.0	8.6	19.2					
Max Green Setting (Gmax), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Q Clear Time (g_c+I1), s	35.5	6.5	23.5	6.5	35.5	7.5	22.5					
Green Ext Time (p_c), s	5.0	3.4	4.7	2.8	10.2	4.6	8.5					
	0.0	0.8	0.0	0.3	0.0	2.4	0.0	0.8				

Intersection Summary

HCM 6th Ctrl Delay	17.0
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
5: US-89 & Chile Amor Access/Eagle Ridge Drive

Scenario #2 2025 AM

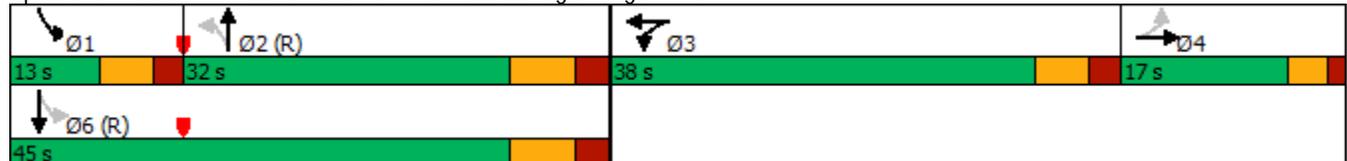
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	4	35	729	7	194	26	453	185	124	815	15
Future Volume (vph)	15	4	35	729	7	194	26	453	185	124	815	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		200	125		0	150		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			50			40			90		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00				0.98				0.99	1.00		
Frt		0.864			0.855				0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1448	0	3090	1410	0	1593	3185	1425	1593	3176	0
Flt Permitted	0.851			0.950			0.309			0.345		
Satd. Flow (perm)	1421	1448	0	3090	1410	0	518	3185	1407	578	3176	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			216				238			2
Link Speed (mph)		30			30			45				45
Link Distance (ft)		337			387			868				678
Travel Time (s)		7.7			8.8			13.2				10.3
Confl. Peds. (#/hr)	3					3			1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	4	39	810	8	216	29	503	206	138	906	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	43	0	810	224	0	29	503	206	138	923	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Right	R NA	L NA	Left	R NA	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					Yes			Yes				Yes
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1		2
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20		100
Trailing Detector (ft)	0	0		0	0		0	0	0	0		0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0		0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20		6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA		Split	NA		Perm	NA	Free	pm+pt		NA

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	177	214		979	594		173	1067	1407	382	1549	
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	0.10	0.20		0.83	0.38		0.17	0.47	0.15	0.36	0.60	

**Intersection Summary**

Area Type: CBD  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 30.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 85.9%  
 ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 5: US-89 & Chile Amor Access/Eagle Ridge Drive



HCM 6th Signalized Intersection Summary  
7: US-89 & Eagle Gate Drive

Scenario #2 2025 AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	163	65	591	94	35	1586
Future Volume (veh/h)	163	65	591	94	35	1586
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	181	72	657	104	39	1762
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	225	200	4001	1242	602	2785
Arrive On Green	0.13	0.13	0.78	0.78	1.00	1.00
Sat Flow, veh/h	1781	1585	5274	1585	705	3647
Grp Volume(v), veh/h	181	72	657	104	39	1762
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1585	705	1777
Q Serve(g_s), s	9.9	4.2	3.2	1.5	0.2	0.0
Cycle Q Clear(g_c), s	9.9	4.2	3.2	1.5	3.4	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	225	200	4001	1242	602	2785
V/C Ratio(X)	0.80	0.36	0.16	0.08	0.06	0.63
Avail Cap(c_a), veh/h	721	642	4001	1242	602	2785
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.59	0.59
Uniform Delay (d), s/veh	42.5	40.0	2.7	2.5	0.1	0.0
Incr Delay (d2), s/veh	6.6	1.1	0.1	0.1	0.1	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.3	3.0	1.2	0.6	0.0	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	49.0	41.1	2.8	2.6	0.2	0.7
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	253		761			1801
Approach Delay, s/veh	46.8		2.8			0.6
Approach LOS	D		A			A
<b>Timer - Assigned Phs</b>		<b>2</b>			<b>6</b>	<b>8</b>
Phs Duration (G+Y+Rc), s		82.9			82.9	17.1
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		50.5			50.5	40.5
Max Q Clear Time (g_c+l1), s		5.2			5.4	11.9
Green Ext Time (p_c), s		5.0			20.6	0.8
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			5.4			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary  
2: US-89 & Center Street

Scenario #2 2025 PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	170	495	36	70	119	383	838	69	94	454	81
Future Volume (veh/h)	150	170	495	36	70	119	383	838	69	94	454	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	167	189	550	40	78	132	426	931	77	104	504	90
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	327	497	419	246	130	220	565	1491	123	331	1106	492
Arrive On Green	0.09	0.27	0.27	0.03	0.21	0.21	0.38	0.90	0.90	0.05	0.31	0.31
Sat Flow, veh/h	1781	1870	1574	1781	621	1050	1781	3322	275	1781	3554	1580
Grp Volume(v), veh/h	167	189	550	40	0	210	426	498	510	104	504	90
Grp Sat Flow(s),veh/h/ln	1781	1870	1574	1781	0	1671	1781	1777	1820	1781	1777	1580
Q Serve(g_s), s	8.5	9.9	31.9	2.1	0.0	13.6	20.1	7.8	7.8	4.7	13.7	5.0
Cycle Q Clear(g_c), s	8.5	9.9	31.9	2.1	0.0	13.6	20.1	7.8	7.8	4.7	13.7	5.0
Prop In Lane	1.00		1.00	1.00		0.63	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	327	497	419	246	0	349	565	798	817	331	1106	492
V/C Ratio(X)	0.51	0.38	1.31	0.16	0.00	0.60	0.75	0.62	0.62	0.31	0.46	0.18
Avail Cap(c_a), veh/h	329	497	419	275	0	374	699	798	817	370	1106	492
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.93	0.00	0.93	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.4	36.0	44.0	35.5	0.0	42.9	15.5	3.8	3.8	25.6	33.2	30.2
Incr Delay (d2), s/veh	1.3	0.5	157.5	0.3	0.0	2.2	3.7	3.7	3.6	0.5	1.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.9	8.2	46.1	1.7	0.0	9.8	9.3	4.1	4.1	3.6	9.9	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.7	36.5	201.6	35.8	0.0	45.1	19.2	7.5	7.4	26.2	34.5	31.0
LnGrp LOS	C	D	F	D	A	D	B	A	A	C	C	C
Approach Vol, veh/h		906			250			1434			698	
Approach Delay, s/veh		136.2			43.7			10.9			32.8	
Approach LOS		F			D			B			C	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	12.5	60.7	8.9	38.0	29.0	44.1	15.7	31.2				
Change Period (Y+Rc), s	5.9	6.8	* 5.2	* 6.1	5.9	6.8	* 5.2	* 6.1				
Max Green Setting (Gmax), s	49.3	* 5.6	* 32	32.1	26.4	* 11	* 27					
Max Q Clear Time (g_c+I),s	9.8	4.1	33.9	22.1	15.7	10.5	15.6					
Green Ext Time (p_c), s	0.0	7.0	0.0	0.0	1.0	2.5	0.0	0.9				

Intersection Summary

HCM 6th Ctrl Delay	52.6
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.  
\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

**Intersection**

Int Delay, s/veh 0.1

**Movement** EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	0	1	0	1188	0	1	987	0
Future Vol, veh/h	0	0	0	2	0	1	0	1188	0	1	987	0
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	2	0	1	0	1320	0	1	1097	0

**Major/Minor** Minor2 Minor1 Major1 Major2

Conflicting Flow All	1761	2421	551	1873	2421	662	1098	0	0	1321	0	0
Stage 1	1100	1100	-	1321	1321	-	-	-	-	-	-	-
Stage 2	661	1321	-	552	1100	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	54	32	478	44	32	404	631	-	-	519	-	-
Stage 1	226	286	-	165	224	-	-	-	-	-	-	-
Stage 2	418	224	-	486	286	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	54	32	477	44	32	403	630	-	-	519	-	-
Mov Cap-2 Maneuver	54	32	-	44	32	-	-	-	-	-	-	-
Stage 1	226	285	-	165	224	-	-	-	-	-	-	-
Stage 2	416	224	-	485	285	-	-	-	-	-	-	-

**Approach** EB WB NB SB

HCM Control Delay, s	0	65.4	0	0
HCM LOS	A	F		

**Minor Lane/Major Mvmt** NBL NBT NBR EBLn1WBLn1WBLn2 SBL SBT SBR

Capacity (veh/h)	630	-	-	-	44	403	519	-	-
HCM Lane V/C Ratio	-	-	-	-	0.051	0.003	0.002	-	-
HCM Control Delay (s)	0	-	-	0	91.1	14	12	-	-
HCM Lane LOS	A	-	-	A	F	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	0	-	-

Lanes, Volumes, Timings  
5: US-89 & Chile Amor Access/Eagle Ridge Drive

Scenario #2 2025 PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		3	3			2		1	6	
Permitted Phases	4						2		Free	6		
Detector Phase	4	4		3	3		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	11.0	11.0		24.3	24.3		25.7	25.7		11.3	22.7	
Total Split (s)	11.0	11.0		29.0	29.0		56.0	56.0		24.0	80.0	
Total Split (%)	9.2%	9.2%		24.2%	24.2%		46.7%	46.7%		20.0%	66.7%	
Maximum Green (s)	6.5	6.5		22.7	22.7		48.3	48.3		17.7	72.3	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.9	4.9		4.0	4.9	
All-Red Time (s)	1.5	1.5		2.3	2.3		2.8	2.8		2.3	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		6.3	6.3		7.7	7.7		6.3	7.7	
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	0.6	0.6		0.6	0.6		1.7	1.7		1.8	1.7	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0		7.0	7.0				
Flash Dont Walk (s)				11.0	11.0		11.0	11.0				
Pedestrian Calls (#/hr)				0	0		0	0				
Act Effct Green (s)	6.1	6.1		21.4	21.4		54.5	54.5	120.0	77.3	75.9	
Actuated g/C Ratio	0.05	0.05		0.18	0.18		0.45	0.45	1.00	0.64	0.63	
v/c Ratio	0.55	0.45		0.93	0.61		0.28	0.76	0.56	0.82	0.36	
Control Delay	84.8	33.4		72.3	12.8		27.2	33.3	1.6	54.4	6.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	84.8	33.4		72.3	12.8		27.2	33.3	1.6	54.4	6.9	
LOS	F	C		E	B		C	C	A	D	A	
Approach Delay		54.7			50.6			20.4			19.4	
Approach LOS		D			D			C			B	
90th %ile Green (s)	6.5	6.5		22.7	22.7		48.3	48.3		17.7	72.3	
90th %ile Term Code	Max	Max		Max	Max		Coord	Coord		Max	Coord	
70th %ile Green (s)	6.5	6.5		22.7	22.7		48.3	48.3		17.7	72.3	
70th %ile Term Code	Max	Max		Max	Max		Coord	Coord		Max	Coord	
50th %ile Green (s)	6.5	6.5		22.7	22.7		48.3	48.3		17.7	72.3	
50th %ile Term Code	Max	Max		Max	Max		Coord	Coord		Max	Coord	
30th %ile Green (s)	6.1	6.1		21.3	21.3		54.1	54.1		13.7	74.1	
30th %ile Term Code	Gap	Gap		Gap	Gap		Coord	Coord		Gap	Coord	
10th %ile Green (s)	0.0	0.0		17.7	17.7		73.7	73.7		8.3	88.3	
10th %ile Term Code	Skip	Skip		Gap	Gap		Coord	Coord		Gap	Coord	
Stops (vph)	31	17		427	41		50	806	0	230	161	
Fuel Used(gal)	1	1		11	2		1	22	4	6	6	
CO Emissions (g/hr)	56	37		734	119		101	1555	293	450	403	
NOx Emissions (g/hr)	11	7		143	23		20	303	57	88	78	
VOC Emissions (g/hr)	13	9		170	28		23	360	68	104	93	
Dilemma Vehicles (#)	0	0		0	0		0	41	0	0	27	
Queue Length 50th (ft)	28	7		199	14		43	400	0	121	64	
Queue Length 95th (ft)	#74	48		#290	99		88	496	0	#232	114	
Internal Link Dist (ft)		257			307			788			598	
Turn Bay Length (ft)				100			125			150		

Intersection						
Intersection Delay, s/veh 9.7						
Intersection LOS A						
Approach	EB		WB		NB	SB
Entry Lanes	2		1		1	1
Conflicting Circle Lanes	2		2		2	2
Adj Approach Flow, veh/h	1110		527		243	322
Demand Flow Rate, veh/h	1132		538		248	329
Vehicles Circulating, veh/h	98		639		1057	648
Vehicles Exiting, veh/h	879		666		173	484
Ped Vol Crossing Leg, #/h	0		0		2	2
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	7.4		13.1		13.2	9.5
Approach LOS	A		B		B	A
Lane	Left	Right	Left	Bypass	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized	Yield					
Lane Util	0.470	0.530	1.000		1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.535		2.535	2.535
Critical Headway, s	4.645	4.328	4.328	45	4.328	4.328
Entry Flow, veh/h	532	600	493	842	248	329
Cap Entry Lane, veh/h	1233	1307	825	0.980	578	819
Entry HV Adj Factor	0.980	0.980	0.980	44	0.981	0.980
Flow Entry, veh/h	522	588	483	826	243	322
Cap Entry, veh/h	1209	1281	808	0.053	567	802
V/C Ratio	0.431	0.459	0.598	4.9	0.429	0.402
Control Delay, s/veh	7.4	7.5	13.8	A	13.2	9.5
LOS	A	A	B	0	B	A
95th %tile Queue, veh	2	2	4		2	2

# 2040 Scenario #2

HCM 6th Signalized Intersection Summary  
2: US-89 & Center Street

Scenario #2 2040 AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	211	447	79	145	153	363	430	48	74	726	102
Future Volume (veh/h)	141	211	447	79	145	153	363	430	48	74	726	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.98	1.00		0.96	0.97		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	157	234	497	88	161	170	403	478	53	82	807	113
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	298	560	465	292	220	233	425	1298	143	364	928	387
Arrive On Green	0.08	0.30	0.30	0.05	0.27	0.27	0.38	0.81	0.81	0.05	0.26	0.26
Sat Flow, veh/h	1781	1870	1555	1781	823	869	1781	3211	354	1781	3554	1482
Grp Volume(v), veh/h	157	234	497	88	0	331	403	263	268	82	807	113
Grp Sat Flow(s),veh/h/ln	1781	1870	1555	1781	0	1692	1781	1777	1788	1781	1777	1482
Q Serve(g_s), s	7.5	12.0	35.9	4.3	0.0	21.4	20.2	4.8	4.9	4.0	26.0	7.3
Cycle Q Clear(g_c), s	7.5	12.0	35.9	4.3	0.0	21.4	20.2	4.8	4.9	4.0	26.0	7.3
Prop In Lane	1.00		1.00	1.00		0.51	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	298	560	465	292	0	453	425	718	723	364	928	387
V/C Ratio(X)	0.53	0.42	1.07	0.30	0.00	0.73	0.95	0.37	0.37	0.23	0.87	0.29
Avail Cap(c_a), veh/h	463	560	465	349	0	453	489	718	723	367	928	387
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.89	0.00	0.89	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.8	33.7	42.0	29.7	0.0	40.0	20.5	7.3	7.3	30.1	42.4	35.5
Incr Delay (d2), s/veh	1.4	0.5	61.2	0.5	0.0	5.3	26.3	1.4	1.5	0.3	10.9	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	9.5	30.5	3.4	0.0	14.4	13.1	3.1	3.2	3.1	18.2	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.3	34.2	103.3	30.2	0.0	45.3	46.8	8.8	8.8	30.4	53.3	37.4
LnGrp LOS	C	C	F	C	A	D	D	A	A	C	D	D
Approach Vol, veh/h		888			419			934			1002	
Approach Delay, s/veh		72.3			42.2			25.2			49.6	
Approach LOS		E			D			C			D	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	15.5	55.3	11.2	42.0	28.7	38.1	14.9	38.2				
Change Period (Y+Rc), s	5.9	6.8	* 5.2	* 6.1	5.9	6.8	* 5.2	* 6.1				
Max Green Setting (Gmax), s	44.5	* 9.8	* 36	27.1	23.2	* 21	* 25					
Max Q Clear Time (g_c+I), s	6.9	6.3	37.9	22.2	28.0	9.5	23.4					
Green Ext Time (p_c), s	0.0	3.1	0.1	0.0	0.6	0.0	0.3	0.3				

Intersection Summary

HCM 6th Ctrl Delay	47.8
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.  
\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

**Intersection**

Int Delay, s/veh 0

**Movement** EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	847	1	5	1209	0
Future Vol, veh/h	0	0	0	0	0	0	0	847	1	5	1209	0
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	941	1	6	1343	0

**Major/Minor** Minor2 Minor1 Major1 Major2

Conflicting Flow All	1828	2299	674	1628	2299	473	1344	0	0	943	0	0
Stage 1	1356	1356	-	943	943	-	-	-	-	-	-	-
Stage 2	472	943	-	685	1356	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	48	38	397	68	38	538	509	-	-	723	-	-
Stage 1	157	216	-	282	339	-	-	-	-	-	-	-
Stage 2	542	339	-	404	216	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	48	38	396	67	38	537	509	-	-	722	-	-
Mov Cap-2 Maneuver	48	38	-	67	38	-	-	-	-	-	-	-
Stage 1	157	214	-	282	339	-	-	-	-	-	-	-
Stage 2	541	339	-	400	214	-	-	-	-	-	-	-

**Approach** EB WB NB SB

HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

**Minor Lane/Major Mvmt** NBL NBT NBR EBLn1WBLn1WBLn2 SBL SBT SBR

Capacity (veh/h)	509	-	-	-	-	-	722	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	0.008	-	-
HCM Control Delay (s)	0	-	-	0	0	0	10	-	-
HCM Lane LOS	A	-	-	A	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	0	-	-

Lanes, Volumes, Timings  
5: US-89 & Chile Amor Access/Eagle Ridge Drive

Scenario #2 2040 AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		3	3			2		1	6	
Permitted Phases	4						2		Free	6		
Detector Phase	4	4		3	3		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	17.0	17.0		24.3	24.3		25.7	25.7		11.3	22.7	
Total Split (s)	17.0	17.0		46.0	46.0		40.3	40.3		16.7	57.0	
Total Split (%)	14.2%	14.2%		38.3%	38.3%		33.6%	33.6%		13.9%	47.5%	
Maximum Green (s)	12.5	12.5		39.7	39.7		32.6	32.6		10.4	49.3	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.9	4.9		4.0	4.9	
All-Red Time (s)	1.5	1.5		2.3	2.3		2.8	2.8		2.3	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		6.3	6.3		7.7	7.7		6.3	7.7	
Lead/Lag	Lag	Lag		Lead	Lead		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		
Vehicle Extension (s)	0.6	0.6		0.6	0.6		1.7	1.7		1.8	1.7	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0		7.0	7.0				
Flash Dont Walk (s)				11.0	11.0		11.0	11.0				
Pedestrian Calls (#/hr)				0	0		0	0				
Act Effct Green (s)	6.1	6.1		39.0	39.0		40.0	40.0	120.0	59.7	58.3	
Actuated g/C Ratio	0.05	0.05		0.32	0.32		0.33	0.33	1.00	0.50	0.49	
v/c Ratio	0.26	0.47		0.97	0.42		0.30	0.63	0.20	0.57	0.79	
Control Delay	63.5	50.8		61.3	6.2		41.7	35.8	0.4	39.1	42.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	63.5	50.8		61.3	6.2		41.7	35.8	0.4	39.1	42.0	
LOS	E	D		E	A		D	D	A	D	D	
Approach Delay		54.4			49.4			25.7			41.6	
Approach LOS		D			D			C			D	
90th %ile Green (s)	8.8	8.8		39.7	39.7		32.6	32.6		14.1	53.0	
90th %ile Term Code	Gap	Gap		Max	Max		Coord	Coord		Max	Coord	
70th %ile Green (s)	6.6	6.6		39.7	39.7		34.1	34.1		14.8	55.2	
70th %ile Term Code	Gap	Gap		Max	Max		Coord	Coord		Gap	Coord	
50th %ile Green (s)	5.1	5.1		39.7	39.7		37.7	37.7		12.7	56.7	
50th %ile Term Code	Gap	Gap		Max	Max		Coord	Coord		Gap	Coord	
30th %ile Green (s)	5.0	5.0		39.7	39.7		39.7	39.7		10.8	56.8	
30th %ile Term Code	Min	Min		Max	Max		Coord	Coord		Gap	Coord	
10th %ile Green (s)	0.0	0.0		36.1	36.1		56.1	56.1		7.5	69.9	
10th %ile Term Code	Skip	Skip		Gap	Gap		Coord	Coord		Gap	Coord	
Stops (vph)	16	24		788	26		20	457	5	110	774	
Fuel Used(gal)	0	1		18	1		1	14	2	3	24	
CO Emissions (g/hr)	22	45		1249	82		43	945	108	235	1672	
NOx Emissions (g/hr)	4	9		243	16		8	184	21	46	325	
VOC Emissions (g/hr)	5	10		290	19		10	219	25	54	388	
Dilemma Vehicles (#)	0	0		0	0		0	25	0	0	123	
Queue Length 50th (ft)	13	18		375	4		15	182	0	102	413	
Queue Length 95th (ft)	37	55		#509	66		37	328	5	m162	538	
Internal Link Dist (ft)		257			307			788			598	
Turn Bay Length (ft)				100			125			150		

Intersection						
Intersection Delay, s/veh15.2						
Intersection LOS C						
Approach	EB		WB		NB	SB
Entry Lanes	2		1		1	1
Conflicting Circle Lanes	2		2		2	2
Adj Approach Flow, veh/h	405		848		161	535
Demand Flow Rate, veh/h	414		865		165	546
Vehicles Circulating, veh/h	102		230		359	904
Vehicles Exiting, veh/h	1348		294		157	128
Ped Vol Crossing Leg, #/h	3		0		1	0
Ped Cap Adj	0.997		1.000		1.000	1.000
Approach Delay, s/veh	4.3		12.5		5.0	31.0
Approach LOS	A		B		A	D
Lane	Left	Right	Left	Bypass	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized	Yield					
Lane Util	0.471	0.529	1.000		1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.535		2.535	2.535
Critical Headway, s	4.645	4.328	4.328	63	4.328	4.328
Entry Flow, veh/h	195	219	802	1211	165	546
Cap Entry Lane, veh/h	1229	1302	1168	0.980	1047	659
Entry HV Adj Factor	0.977	0.981	0.980	62	0.978	0.979
Flow Entry, veh/h	191	215	786	1187	161	535
Cap Entry, veh/h	1197	1273	1145	0.052	1023	645
V/C Ratio	0.159	0.169	0.687	3.5	0.158	0.829
Control Delay, s/veh	4.4	4.2	13.2	A	5.0	31.0
LOS	A	A	B	0	A	D
95th %tile Queue, veh	1	1	6		1	9

Intersection	
Intersection Delay, s/veh	83.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	108	776	15	52	494	168	9	3	37	113	3	31
Future Vol, veh/h	108	776	15	52	494	168	9	3	37	113	3	31
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	120	862	17	58	549	187	10	3	41	126	3	34
Number of Lanes	0	2	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	42.1	154.9	12.1	14.8
HCM LOS	E	F	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	18%	22%	0%	7%	77%
Vol Thru, %	6%	78%	96%	69%	2%
Vol Right, %	76%	0%	4%	24%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	49	496	403	714	147
LT Vol	9	108	0	52	113
Through Vol	3	388	388	494	3
RT Vol	37	0	15	168	31
Lane Flow Rate	54	551	448	793	163
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.113	0.959	0.762	1.274	0.333
Departure Headway (Hd)	8.084	6.612	6.474	5.782	7.877
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	446	551	564	635	459
Service Time	6.084	4.312	4.174	3.808	5.877
HCM Lane V/C Ratio	0.121	1	0.794	1.249	0.355
HCM Control Delay	12.1	54.3	27	154.9	14.8
HCM Lane LOS	B	F	D	F	B
HCM 95th-tile Q	0.4	12.7	6.8	30.8	1.4

HCM 6th Signalized Intersection Summary  
 3: Orchard Drive & Center Street

Scenario #2 2040 PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	177	22	43	138	40	18	349	48	39	232	69
Future Volume (veh/h)	108	177	22	43	138	40	18	349	48	39	232	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	197	24	48	153	0	20	388	53	43	258	77
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	259	32	224	229		614	959	812	535	991	839
Arrive On Green	0.08	0.16	0.16	0.04	0.12	0.00	0.02	0.51	0.51	0.04	0.53	0.53
Sat Flow, veh/h	1781	1635	199	1781	1870	0	1781	1870	1584	1781	1870	1584
Grp Volume(v), veh/h	120	0	221	48	153	0	20	388	53	43	258	77
Grp Sat Flow(s),veh/h/ln	1781	0	1834	1781	1870	0	1781	1870	1584	1781	1870	1584
Q Serve(g_s), s	4.2	0.0	8.4	1.7	5.7	0.0	0.4	9.3	1.2	0.8	5.5	1.8
Cycle Q Clear(g_c), s	4.2	0.0	8.4	1.7	5.7	0.0	0.4	9.3	1.2	0.8	5.5	1.8
Prop In Lane	1.00		0.11	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	293	0	290	224	229		614	959	812	535	991	839
V/C Ratio(X)	0.41	0.00	0.76	0.21	0.67		0.03	0.40	0.07	0.08	0.26	0.09
Avail Cap(c_a), veh/h	360	0	590	282	525		708	959	812	598	991	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	29.4	26.4	30.6	0.0	8.1	10.9	9.0	8.1	9.4	8.5
Incr Delay (d2), s/veh	0.9	0.0	4.1	0.5	3.3	0.0	0.0	1.3	0.2	0.1	0.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/l	3.3	0.0	7.1	1.3	4.9	0.0	0.2	6.6	0.8	0.5	3.8	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.1	0.0	33.6	26.9	34.0	0.0	8.1	12.2	9.1	8.2	10.0	8.7
LnGrp LOS	C	A	C	C	C		A	B	A	A	B	A
Approach Vol, veh/h		341			201	A		461			378	
Approach Delay, s/veh		30.9			32.3			11.7			9.5	
Approach LOS		C			C			B			A	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	7.4	42.0	7.6	16.1	6.2	43.2	10.2	13.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	37.5	37.5	5.5	23.5	5.5	37.5	8.5	20.5				
Max Q Clear Time (g_c+I), s	11.3	11.3	3.7	10.4	2.4	7.5	6.2	7.7				
Green Ext Time (p_c), s	0.0	2.5	0.0	1.0	0.0	1.7	0.1	0.6				

Intersection Summary

HCM 6th Ctrl Delay	18.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings  
5: US-89 & Chile Amor Access/Eagle Ridge Drive

Scenario #2 2040 PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	8	38	577	19	308	75	1369	943	302	842	49
Future Volume (vph)	32	8	38	577	19	308	75	1369	943	302	842	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		200	125		0	150		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			50			40			90		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00				0.98				0.99			
Frt		0.876			0.859				0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1469	0	3090	1413	0	1593	3185	1425	1593	3160	0
Flt Permitted	0.784			0.950			0.289			0.072		
Satd. Flow (perm)	1308	1469	0	3090	1413	0	485	3185	1407	121	3160	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			282				432			9
Link Speed (mph)		30			30			45				45
Link Distance (ft)		337			387			868				678
Travel Time (s)		7.7			8.8			13.2				10.3
Confl. Peds. (#/hr)	4					4			1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	36	9	42	641	21	342	83	1521	1048	336	936	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	51	0	641	363	0	83	1521	1048	336	990	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Right	R NA	L NA	Left	R NA	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					Yes			Yes				Yes
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1		2
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20		100
Trailing Detector (ft)	0	0		0	0		0	0	0	0		0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0		0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20		6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA		Split	NA		Perm	NA	Free	pm+pt		NA

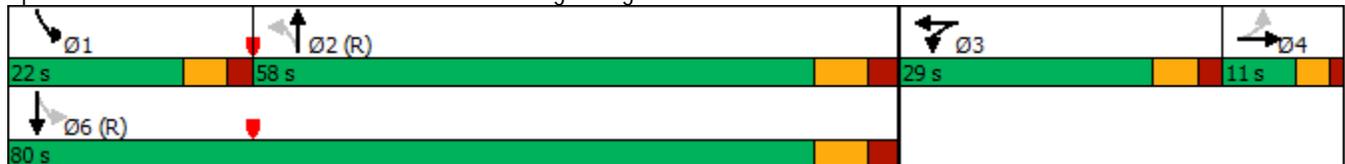
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	70	119		584	495		203	1335	1407	296	1967	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.51	0.43		1.10	0.73		0.41	1.14	0.74	1.14	0.50	

**Intersection Summary**

Area Type: CBD  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.14  
 Intersection Signal Delay: 59.2 Intersection LOS: E  
 Intersection Capacity Utilization 105.6% ICU Level of Service G  
 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.
- m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: US-89 & Chile Amor Access/Eagle Ridge Drive



HCM 6th Signalized Intersection Summary  
 7: US-89 & Eagle Gate Drive

Scenario #2 2040 PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
<b>Lane Configurations</b>						
Traffic Volume (veh/h)	116	62	2224	213	66	1612
Future Volume (veh/h)	116	62	2224	213	66	1612
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	129	69	2471	237	73	1791
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	163	145	4256	1321	132	2962
Arrive On Green	0.09	0.09	0.83	0.83	1.00	1.00
Sat Flow, veh/h	1781	1585	5274	1585	107	3647
Grp Volume(v), veh/h	129	69	2471	237	73	1791
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1585	107	1777
Q Serve(g_s), s	8.5	5.0	18.7	3.5	81.3	0.0
Cycle Q Clear(g_c), s	8.5	5.0	18.7	3.5	100.0	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	163	145	4256	1321	132	2962
V/C Ratio(X)	0.79	0.48	0.58	0.18	0.55	0.60
Avail Cap(c_a), veh/h	379	337	4256	1321	132	2962
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.60	0.60
Uniform Delay (d), s/veh	53.4	51.8	3.2	2.0	9.8	0.0
Incr Delay (d2), s/veh	8.3	2.4	0.6	0.3	9.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.6	3.8	6.1	1.2	2.1	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	61.7	54.2	3.8	2.3	19.4	0.6
LnGrp LOS	E	D	A	A	B	A
Approach Vol, veh/h	198		2708			1864
Approach Delay, s/veh	59.1		3.7			1.3
Approach LOS	E		A			A
<b>Timer - Assigned Phs</b>		<b>2</b>			<b>6</b>	<b>8</b>
Phs Duration (G+Y+Rc), s		104.5			104.5	15.5
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		85.5			85.5	25.5
Max Q Clear Time (g_c+l1), s		20.7			102.0	10.5
Green Ext Time (p_c), s		41.5			0.0	0.5
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			5.0			
HCM 6th LOS			A			

**Intersection**

Int Delay, s/veh 2.8

**Movement** EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations												
Traffic Vol, veh/h	57	565	5	19	429	122	10	6	37	112	2	48
Future Vol, veh/h	57	565	5	19	429	122	10	6	37	112	2	48
Conflicting Peds, #/hr	1	0	19	19	0	1	1	0	3	3	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	120	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	628	6	21	477	136	11	7	41	124	2	53

**Major/Minor** Major1 Major2 Minor1 Minor2

Conflicting Flow All	614	0	0	653	0	0	1392	1432	339	1035	1367	547
Stage 1	-	-	-	-	-	-	776	776	-	588	588	-
Stage 2	-	-	-	-	-	-	616	656	-	447	779	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	*1084	-	-	932	-	-	*268	*258	658	*621	*292	*724
Stage 1	-	-	-	-	-	-	*357	*407	-	*684	*599	-
Stage 2	-	-	-	-	-	-	*684	*599	-	*561	*405	-
Platoon blocked, %	1	-	-	-	-	-	1	1	-	1	1	1
Mov Cap-1 Maneuver	*1083	-	-	915	-	-	*219	*222	644	*513	*252	*723
Mov Cap-2 Maneuver	-	-	-	-	-	-	*219	*222	-	*513	*252	-
Stage 1	-	-	-	-	-	-	*319	*364	-	*621	*576	-
Stage 2	-	-	-	-	-	-	*607	*576	-	*468	*362	-

**Approach** EB WB NB SB

HCM Control Delay, s	1	0.3	15.3	14.6
HCM LOS			C	B

**Minor Lane/Major Mvmt** NBLn1 EBL EBT EBR WBL WBT WBR SBLn1

Capacity (veh/h)	407	* 1083	-	-	915	-	-	554
HCM Lane V/C Ratio	0.145	0.058	-	-	0.023	-	-	0.325
HCM Control Delay (s)	15.3	8.5	0.3	-	9	0	-	14.6
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0.1	-	-	1.4

**Notes**

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

HCM 6th Signalized Intersection Summary  
 5: US-89 & Chile Amor Access/Eagle Ridge Drive

Scenario #2 2040 AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	4	35	872	7	234	26	607	258	161	1089	15
Future Volume (veh/h)	15	4	35	872	7	234	26	607	258	161	1089	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683
Adj Flow Rate, veh/h	17	4	39	969	8	260	29	674	0	179	1210	17
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	29	6	60	1007	16	509	191	1028		331	1487	21
Arrive On Green	0.02	0.05	0.05	0.32	0.37	0.37	0.64	0.64	0.00	0.17	0.92	0.92
Sat Flow, veh/h	1603	132	1289	3110	43	1387	409	3198	1427	1603	3229	45
Grp Volume(v), veh/h	17	0	43	969	0	268	29	674	0	179	599	628
Grp Sat Flow(s),veh/h/ln	1603	0	1421	1555	0	1430	409	1599	1427	1603	1599	1675
Q Serve(g_s), s	1.3	0.0	3.6	36.7	0.0	17.5	3.5	15.6	0.0	9.0	14.2	14.2
Cycle Q Clear(g_c), s	1.3	0.0	3.6	36.7	0.0	17.5	3.5	15.6	0.0	9.0	14.2	14.2
Prop In Lane	1.00		0.91	1.00		0.97	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	29	0	66	1007	0	525	191	1028		331	736	771
V/C Ratio(X)	0.59	0.00	0.65	0.96	0.00	0.51	0.15	0.66		0.54	0.81	0.81
Avail Cap(c_a), veh/h	79	0	148	1029	0	552	191	1028		331	736	771
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	0.98	0.98	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.5	0.0	56.2	39.9	0.0	29.6	15.2	17.3	0.0	21.8	3.1	3.1
Incr Delay (d2), s/veh	17.6	0.0	3.9	19.2	0.0	0.3	1.6	3.2	0.0	1.0	9.6	9.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	2.4	23.2	0.0	10.1	0.7	7.6	0.0	5.2	5.9	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.0	0.0	60.2	59.0	0.0	29.8	16.8	20.5	0.0	22.8	12.7	12.3
LnGrp LOS	E	A	E	E	A	C	B	C		C	B	B
Approach Vol, veh/h		60			1237			703	A		1406	
Approach Delay, s/veh		64.7			52.7			20.4			13.8	
Approach LOS		E			D			C			B	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	16.7	46.3	45.1	11.9		63.0	6.7	50.4				
Change Period (Y+Rc), s	* 6.3	* 7.7	* 6.3	* 6.3		* 7.7	4.5	* 6.3				
Max Green Setting (Gmax), s	* 10	* 33	* 40	* 13		* 49	5.9	* 46				
Max Q Clear Time (g_c+l1), s	11.0	17.6	38.7	5.6		16.2	3.3	19.5				
Green Ext Time (p_c), s	0.0	2.4	0.1	0.0		4.1	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	30.2
HCM 6th LOS	C

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.  
 Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary  
2: US-89 & Center Street

Scenario #2 2040 PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	241	633	43	99	160	455	1137	75	143	698	134
Future Volume (veh/h)	217	241	633	43	99	160	455	1137	75	143	698	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	241	268	703	48	110	178	506	1263	83	159	776	149
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	225	444	824	183	124	201	506	1552	102	286	871	387
Arrive On Green	0.08	0.24	0.24	0.03	0.19	0.19	0.57	0.92	0.92	0.07	0.25	0.25
Sat Flow, veh/h	1781	1870	1573	1781	639	1034	1781	3385	222	1781	3554	1579
Grp Volume(v), veh/h	241	268	703	48	0	288	506	662	684	159	776	149
Grp Sat Flow(s),veh/h/ln	1781	1870	1573	1781	0	1673	1781	1777	1830	1781	1777	1579
Q Serve(g_s), s	9.2	15.3	28.5	2.6	0.0	20.1	34.1	14.6	14.8	8.0	25.3	9.4
Cycle Q Clear(g_c), s	9.2	15.3	28.5	2.6	0.0	20.1	34.1	14.6	14.8	8.0	25.3	9.4
Prop In Lane	1.00		1.00	1.00		0.62	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	225	444	824	183	0	325	506	815	839	286	871	387
V/C Ratio(X)	1.07	0.60	0.85	0.26	0.00	0.89	1.00	0.81	0.82	0.56	0.89	0.39
Avail Cap(c_a), veh/h	225	444	824	207	0	347	506	815	839	286	871	387
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.90	0.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	40.7	24.8	37.3	0.0	47.1	25.9	3.3	3.3	30.8	43.7	37.8
Incr Delay (d2), s/veh	79.5	2.3	8.6	0.7	0.0	20.5	39.9	8.7	8.6	2.4	13.3	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	12.1	11.9	25.9	2.1	0.0	15.3	20.3	6.3	6.5	6.4	18.1	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	121.2	43.0	33.4	38.0	0.0	67.5	65.8	12.0	11.9	33.2	57.0	40.6
LnGrp LOS	F	D	C	D	A	E	E	B	B	C	E	D
Approach Vol, veh/h		1212			336			1852			1084	
Approach Delay, s/veh		53.0			63.3			26.7			51.3	
Approach LOS		D			E			C			D	
Timer - Assigned Phs												
Phs Duration (G+Y+Rc), s	14.4	61.8	9.2	34.6	40.0	36.2	14.4	29.4				
Change Period (Y+Rc), s	5.9	6.8	* 5.2	* 6.1	5.9	6.8	* 5.2	* 6.1				
Max Green Setting (Gmax), s	8.5	53.4	* 5.6	* 29	34.1	27.8	* 9.2	* 25				
Max Q Clear Time (g_c+l1), s	10.0	16.8	4.6	30.5	36.1	27.3	11.2	22.1				
Green Ext Time (p_c), s	0.0	10.8	0.0	0.0	0.0	0.3	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	42.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.  
\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary  
 1: Main Street & Center Street

Scenario #2 2040 AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	565	5	19	429	122	10	6	37	112	2	48
Future Volume (veh/h)	57	565	5	19	429	122	10	6	37	112	2	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	628	6	21	477	136	11	7	41	124	2	53
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	451	990	9	449	746	213	439	46	270	446	11	299
Arrive On Green	0.54	0.54	0.54	0.54	0.54	0.54	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	804	1849	18	789	1393	397	1340	235	1375	1348	58	1525
Grp Volume(v), veh/h	63	0	634	21	0	613	11	0	48	124	0	55
Grp Sat Flow(s),veh/h/ln	804	0	1867	789	0	1790	1340	0	1610	1348	0	1582
Q Serve(g_s), s	2.0	0.0	8.0	0.6	0.0	8.1	0.2	0.0	0.8	2.8	0.0	1.0
Cycle Q Clear(g_c), s	10.1	0.0	8.0	8.7	0.0	8.1	1.2	0.0	0.8	3.6	0.0	1.0
Prop In Lane	1.00		0.01	1.00		0.22	1.00		0.85	1.00		0.96
Lane Grp Cap(c), veh/h	451	0	1000	449	0	959	439	0	316	446	0	310
V/C Ratio(X)	0.14	0.00	0.63	0.05	0.00	0.64	0.03	0.00	0.15	0.28	0.00	0.18
Avail Cap(c_a), veh/h	1159	0	2644	1143	0	2536	1115	0	1128	1126	0	1109
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.1	0.0	5.5	8.5	0.0	5.5	11.7	0.0	11.2	12.7	0.0	11.2
Incr Delay (d2), s/veh	0.1	0.0	0.7	0.0	0.0	0.7	0.0	0.0	0.2	0.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	0.0	3.2	0.2	0.0	3.1	0.1	0.0	0.5	1.3	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.2	0.0	6.1	8.6	0.0	6.2	11.8	0.0	11.4	13.0	0.0	11.5
LnGrp LOS	A	A	A	A	A	A	B	A	B	B	A	B
Approach Vol, veh/h		697			634			59				179
Approach Delay, s/veh		6.4			6.3			11.5				12.5
Approach LOS		A			A			B				B
Timer - Assigned Phs												
		2		4		6		8				
Phs Duration (G+Y+Rc), s		11.1		22.5		11.1		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		23.5		47.5		23.5		47.5				
Max Q Clear Time (g_c+I1), s		3.2		12.1		5.6		10.7				
Green Ext Time (p_c), s		0.2		5.8		0.6		5.4				
Intersection Summary												
HCM 6th Ctrl Delay				7.3								
HCM 6th LOS				A								



**APPENDIX E**  
**SIGNAL WARRANT**

**TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS (2009 MUTCD)**

MAJOR STREET: Center Street EB WB # OF APPROACH LANES:

MINOR STREET: Main Street NB SB # OF APPROACH LANES:

CITY, STATE: North Salt Lake City, Ut

COMMENTS: 2040 Scenario #2 Traffic Volumes

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N):

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N):

	MAJOR ST TWO-WAY TRAFFIC	MINOR ST TRAFFIC HEAVY LEG	WARRANT 1 - Condition A, Part 1			WARRANT 1 - Condition B, Part 1			WARRANT 1 - Condition A, Part 2			WARRANT 1 - Condition B, Part 2			WARRANT 2	WARRANT 3
			MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	MAIN LINE	SIDE STREET	BOTH MET	Four-Hour	Peak Hour
<b>THRESHOLD VALUES</b>	→		500	150		750	75		400	120		600	60			
06:00 AM TO 07:00 AM	0	0														
07:00 AM TO 08:00 AM	0	0														
08:00 AM TO 09:00 AM	1,197	162	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
09:00 AM TO 10:00 AM	0	0														
10:00 AM TO 11:00 AM	0	0														
11:00 AM TO 12:00 PM	0	0														
12:00 PM TO 01:00 PM	0	0														
01:00 PM TO 02:00 PM	0	0														
02:00 PM TO 03:00 PM	0	0														
03:00 PM TO 04:00 PM	0	0														
04:00 PM TO 05:00 PM	0	0														
05:00 PM TO 06:00 PM	1,613	147	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
06:00 PM TO 07:00 PM	0	0														
07:00 PM TO 08:00 PM	0	0														
08:00 PM TO 09:00 PM	0	0														
09:00 PM TO 10:00 PM	0	0														
	2,810	309	2	1	1	2	2	2	2	2	2	2	2	2	2	
			8 HOURS NEEDED			8 HOURS NEEDED			8 HOURS NEEDED for both Condition A & B						4 HRS NEEDED	1 HR NEEDED
			NOT SATISFIED			NOT SATISFIED			NOT SATISFIED						NOT SATISFIED	SATISFIED