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Creekside South at Lorson Ranch  
Transportation Memorandum  
(LSC #204090)  
March 9, 2020


**Traffic Engineer's Statement**

This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



**Developer's Statement**

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

  
\_\_\_\_\_

  
\_\_\_\_\_  
Date



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March 9, 2020

Mr. Jeff Mark  
The Landhuis Company  
212 North Wahsatch Avenue, Suite 301  
Colorado Springs, CO 80903

RE: Creekside South at Lorson Ranch  
El Paso County, Colorado  
Transportation Memorandum  
LSC #204090

Dear Mr. Mark:

LSC Transportation Consultants, Inc. has prepared this transportation memorandum to accompany the submittal for the Creekside South at Lorson Ranch residential development to be located within the Lorson Ranch development in El Paso County, Colorado. The site location is shown in Figure 1. This memorandum contains the following:

- The projected average weekday and peak-hour vehicle-trips to be generated by the proposed development.
- The assignment of the projected trips to the existing and planned street system.
- The resulting total traffic volumes on the street system.
- The resulting traffic impacts. The traffic impacts have been quantified by determining the future levels of service at the site access points to Trappe Drive.
- Confirmation that the projected trip generation is consistent with prior estimates for this site studied in the recent Sketch Plan and Lorson Ranch East studies.
- Recommendations for street functional classifications for streets within the development.
- Traffic signal escrow analysis for the intersection of Lorson Boulevard/Marksheffel Road
- The required Countywide Road Impact Fees.

#### **LAND USE AND ACCESS**

The Creekside South at Lorson Ranch site is located south of Lorson Boulevard and west of future Trappe Drive within the Lorson Ranch development. The site is planned to be developed with 200 lots for single family homes. The proposed site plan is shown in Figure 2.

Two full-movement access points are proposed to Trappe Drive. The south access point will align with Horton Drive. The north access point will be located about 470 feet north of Horton Drive and

about 567 feet south of Magothy Drive. Based on Table 2-7 in the *El Paso County Engineering Criteria Manual* (ECM), the minimum spacing of local roadways along an Urban Collector is 330 feet. The proposed access point locations would meet or exceed this criterion.

## **PEDESTRIAN & BICYCLE FACILITIES**

The subdivision streets will include sidewalks and connecting streets within Lorson Ranch also have sidewalks. Trail corridors are planned along the powerline easement, the East Fork of Jimmy Camp Creek, and along Jimmy Camp Creek. Also, Marksheffel Road and Fontaine Boulevard have paved shoulders to accommodate cyclists. Lorson Boulevard has been constructed with wider travel lanes (and a striped left-turn median) to allow for shared lane use with experienced cyclists (the adjacent sidewalk will accommodate children and families, as well as cyclists less experienced at cycling in traffic).

## **RECENT AREA TRAFFIC STUDIES**

Appendix Table 1 includes a list of other recent traffic studies conducted by LSC within the Lorson Ranch development and in the vicinity.

**The currently proposed land use and access are consistent with all the previous studies.** This site was previously included in the *Lorson Ranch Sketch Plan Amendment 2 Traffic Impact and Access Analysis* (TIA) by LSC Transportation Consultants, Inc. dated December 17, 2018 as a portion of traffic analysis zone 327. The sketch plan TIA assumed this parcel would be developed with 215 lots for single family homes. This is 15 more lots than are currently proposed. The trip generation and traffic volumes for this site were also included in the *Lorson Ranch East Updated Traffic Impact and Access Analysis* dated November 9, 2017 and *Lorson Ranch East Filing 4 Transportation Memorandum* dated March 12, 2019.

## **RECENT CHANGES IN THE AREA ROADWAY NETWORK**

As of the date of this report, the Lorson Boulevard bridges over Jimmy Camp Creek and the east tributary have recently opened to the public.

## **TRIP GENERATION**

Estimates of the traffic volumes expected to be generated by the site have been made using the nationally published trip generation rates found in *Trip Generation, 10<sup>th</sup> Edition, 2017* by the Institute of Transportation Engineers (ITE). Table 1 shows the results of the trip generation estimates. Table 1 also shows a comparison to the trip generation estimate for this same parcel assumed in the *Lorson Ranch Sketch Plan Amendment 2 Traffic Impact and Access Analysis* (TIA) by LSC Transportation Consultants, Inc. dated December 17, 2018.

As shown in Table 2, Creekside South at Lorson Ranch is projected to generate about 1,888 new vehicle-trips on the average weekday, with about one-half of the vehicles entering and one-half of the vehicles exiting in a 24-hour period. This is about 142 fewer vehicle trips than was assumed for this parcel in the Sketch Plan TIA. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 37 vehicles would enter and 111 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:30 and 6:30 p.m., about 125 vehicles would enter and 73 vehicles would exit the site.

### TRIP DISTRIBUTION AND ASSIGNMENT

**As stated above, the currently proposed land use and access are consistent with all the previous studies.** The trips to be generated by this development, as well as the site generated traffic volumes, were incorporated into the future total traffic forecasts. In the foreseeable future, most trips are anticipated to turn to and from the west leg of the Lorson Boulevard/Trappe Drive intersection. A minority percentage of site generated trips will turn to/from the east leg of the Lorson Boulevard/Trappe Drive intersection – including trips to/from the Grand Mountain School, local parks, and other residences within Lorson Ranch East. The directional distribution estimate was based on an estimate of internal trips within the entire Lorson Ranch development. Figure 3 shows the directional distribution estimate and the projected site-generated traffic volumes at the site access points to Trappe Drive.

### 2040 BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the roadways without the Creekside South at Lorson Ranch traffic. Figure 4 shows the projected 2040 background traffic volumes. These volumes are estimates by LSC based on previous work completed in the area including the Lorson Ranch Sketch Plan TIA and traffic impact studies and memoranda completed for Lorson Ranch East located just east of the site. The 2040 background traffic volumes assume buildout of the Lorson Ranch Sketch Plan including development of Tract B within the currently proposed site with multi-family residential land uses consistent with those assumed in the Sketch Plan TIA.

### 2040 TOTAL TRAFFIC

Figure 5 shows the 2040 total traffic volumes. These volumes are the sum of the 2040 background traffic volumes (from Figure 4) plus the site-generated traffic volumes (from Figure 3).

### PROJECTED LEVELS OF SERVICE

Level of service (LOS) is a quantitative measure of the level of delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A represents control delay of less than 10 seconds for unsignalized and signalized intersections. LOS F represents control delay of more than 50 seconds for unsignalized intersections. Table 3 shows the level of service delay ranges.

**Table 3: Intersection Levels of Service Delay Ranges**

<b>Level of Service</b>	<b>Unsignalized Intersections Average Control Delay (seconds per vehicle)<sup>(1)</sup></b>
A	10.0 sec or less
B	10.1-15.0 sec
C	15.1-25.0 sec
D	25.1-35.0 sec
E	35.1-50.0 sec
F	50.1 sec or more

(1) For unsignalized intersections if V/C ratio is greater than 1.0 the level of service is LOS F regardless of the projected average control delay per vehicle.

The intersection of Trappe Drive/Lorson Boulevard and the site access points to Trappe Drive have been analyzed to determine the projected levels of service based on the unsignalized method of analysis procedures outlined in the *Highway Capacity Manual, 6<sup>th</sup> Edition* by the Transportation Research Board. The results of the analysis are shown in Figures 4 and 5. The level of service reports are attached.

The intersection of Trappe/Lorson is projected to operate at LOS B or better for all movements as a two-way, stop sign-controlled intersection based on the projected 2040 background and total traffic volumes.

The proposed access points to Trappe Drive are projected to operate at LOS B or better for all movements during the peak hours as two-way stop sign-controlled intersections.

### **ROADWAY CLASSIFICATIONS**

All streets within Creekside South at Lorson Ranch should be classified as Urban Local. Trappe Drive is classified as an Urban Residential Collector and Lorson Boulevard is classified as a Non-Residential Collector.

### **RECOMMENDED AUXILIARY LANES**

Based on the 2040 total traffic volumes shown in Figure 5, the criteria contained in the *El Paso County Engineering Criteria Manual*, and the classification of Trappe Drive as an Urban Residential Collector, a southbound right-turn deceleration lane is projected to be required on Trappe Drive approaching the north access (Luna Drive). A southbound right-turn deceleration lane is **not** projected to be required approaching the south access (Horton Drive). Based on a

design speed of 40 mph the right-turn deceleration lane approaching Luna Drive should be 155 feet long plus a 160-foot taper.

Northbound left-turn lanes are not projected to be required on Trappe Drive approaching the site access points.

The intersection of Trappe Drive/Lorson Boulevard has been constructed with the previously recommended eastbound right turn deceleration lane and the westbound left-turn lane is incorporated into the cross section.

### **LORSON/MARKSHEFFEL TRAFFIC SIGNAL ESCROW ANALYSIS**

Previous area traffic studies included a traffic signal warrant analysis and traffic signal escrow analysis for a future traffic signal at the intersection of Lorson Boulevard and Marksheffel Road. Table 1 shows an updated analysis based on the contribution amounts previously identified for the Lorson Ranch East subdivisions, Carriage Meadows South developments, and Creekside at Lorson Ranch Filing No. 1. Assuming a total signal cost of \$300,000 the escrow for this improvement has been met and no contributions should be required from Creekside South at Lorson Ranch.

### **ROADWAY IMPROVEMENT FEE PROGRAM**

This project will be required to participate in the El Paso County Road Improvement Fee Program. Creekside South at Lorson Ranch will join the ten-mil PID. The 2019 ten-mil PID building permit fee portion associated with this option is \$1,221 per single-family dwelling unit. Based on 200 dwelling units, the total building permit fee would be \$244,200.

### **UPCOMING FUTURE STUDY**

As of the date of completion of this report, the Lorson Boulevard bridges have recently opened to traffic. Therefore, overall Lorson Ranch traffic patterns have recently changed and may still be in the process of changing. The volumes shown in the prior traffic reports referenced above report were conducted prior to the bridge openings and volumes were based on traffic volume forecasts assuming the bridges open.

LSC will be completing the following:

- Complete new traffic counts to record updated traffic volumes following the opening of the Lorson Boulevard bridges over Jimmy Camp Creek.
- Determine the changes in traffic patterns based on the new counts.
- Refine, as necessary, the Lorson Ranch transportation planning/traffic model accordingly.
- Refine peak-hour traffic forecasts for the intermediate and long term at the key intersections within Lorson Ranch and at the Marksheffel Road intersections.

- Analyze traffic control options for the Old Glory/Fontaine Intersection and the Fontaine/Sting Ray intersection - including level of service, queuing, safety. Traffic control options would include traffic signals, all-way stop sign control, modern roundabouts, directional channelized T-intersections with indirect left-turn capability at nearby intersections, other options.
- Evaluate the intersection of Marksheffel/Lorson Boulevard relative to traffic signal warrants and evaluate the updated turning movements at the intersection of Lorson Boulevard/Old Glory Drive, calculate current levels of service and project future levels of service.
- Provide recommendations for the intermediate and long-term traffic at these intersections within an upcoming traffic report for the new Lorson East development (This TIS is expected to be submitted soon).

\* \* \* \* \*

Please contact me if you have any questions regarding the report.

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

By: Jeffrey C. Hodsdon, P.E.,  
Principal

JCH:KDF:jas

Enclosures: Tables 1-2  
Figures 1-5  
Level of Service  
Reports Appendix  
Table 1 MTCP Maps

# Tables and Figures

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**Table 1  
Trip Generation Estimate  
Creekside South at Lorson Ranch**

Traffic Analysis Zone	Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates <sup>(1)</sup>					Total Trips Generated					
				Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		
					In	Out	In	Out		In	Out	In	Out	
<b>Trip Generation Estimate Based on the Currently Proposed Plan</b>														
327	210	Single Family Detached Housing	200 DU <sup>(2)</sup>	9.44	0.19	0.56	0.62	0.37	1,888	37	111	125	73	
<b>Future Trip Generation Estimate For Track B (not a part of the currently proposed development)</b>														
327	220	Multifamily Housing (Low-Rise)	97 DU	7.32	0.11	0.35	0.35	0.21	710	10	34	34	20	
									<b>2,598</b>	<b>47</b>	<b>145</b>	<b>159</b>	<b>93</b>	
<b>Trip Generation Estimate for the Same Parcel From the Lorson Ranch Sketch Plan Amendment 2 Traffic Impact and Access Analysis by LSC December 17, 2018</b>														
327	210	Single Family Detached Housing	215 DU <sup>(2)</sup>	9.44	0.19	0.56	0.62	0.37	2,030	40	119	134	79	
327	220	Multifamily Housing (Low-Rise)	97 DU	7.32	0.11	0.35	0.35	0.21	710	10	34	34	20	
									<b>2,740</b>	<b>50</b>	<b>153</b>	<b>168</b>	<b>99</b>	
									Change (Decrease) In Trip Generation Estimate	-142	-3	-8	-9	-6

Notes:

(1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)

(2) DU = dwelling unit

Source: LSC Transportation Consultants, Inc.

**Table 2**  
**Lorson Boulevard/Marksheffel Road Future Traffic Signal Contributions**  
**Creekside South at Lorson Ranch**

Subdivision	Previously Identified Signal Contribution	Remaining Needed (Based on \$300,000 Total Cost)
Carriage Meadows South at Lorson Ranch Filing No. 1 <sup>(1)</sup>	\$115,302	\$184,698
Lorson Ranch East Filing No. 1 <sup>(2)</sup>	\$86,003	\$98,695
Lorson Ranch East Filing No. 2 <sup>(3)</sup>	\$0	\$98,695
Lorson Ranch East Filing No. 3 <sup>(4)</sup>	\$0	\$98,695
Lorson Ranch East Filing No. 4 <sup>(5)</sup>	\$68,801	\$29,894
Carriage Meadows Townhomes <sup>(6)</sup>	\$10,453	\$19,441
Creekside at Lorson Ranch Filing No. 1 <sup>(7)</sup>	\$19,441	\$0
	<b>\$300,000</b>	
Notes:		
(1) <i>Carriage Meadows South at Lorson Ranch Filing No 1 Updated Traffic Impact Analysis</i> by LSC August 14,		
(2) <i>Lorson Ranch East Filing No 1 Transportation Memorandum</i> by LSC May 2, 2018		
(3) <i>Lorson Ranch East Filing No 2 Transportation Memorandum</i> by LSC September 24, 2018		
(4) <i>Lorson Ranch East Filing No 3 Transportation Memorandum</i> by LSC January 22, 2019		
(5) <i>Lorson Ranch East Filing No 4 Transportation Memorandum</i> by LSC March 12, 2019		
(6) <i>Carriage Meadows Townhomes Traffic Impact Analysis</i> by LSC April 10, 2019		
(7) <i>Creekside at Lorson Ranch Filing No. 1 Transportation Memorandum</i> by LSC April 26, 2019		
Source: LSC Transportation Consultants, Inc.		



Approximate Scale  
Scale: 1" = 1,200'

Figure 1

# Vicinity Map

Creekside South at Lorson Ranch Filing No. 1 (LSC #204090)

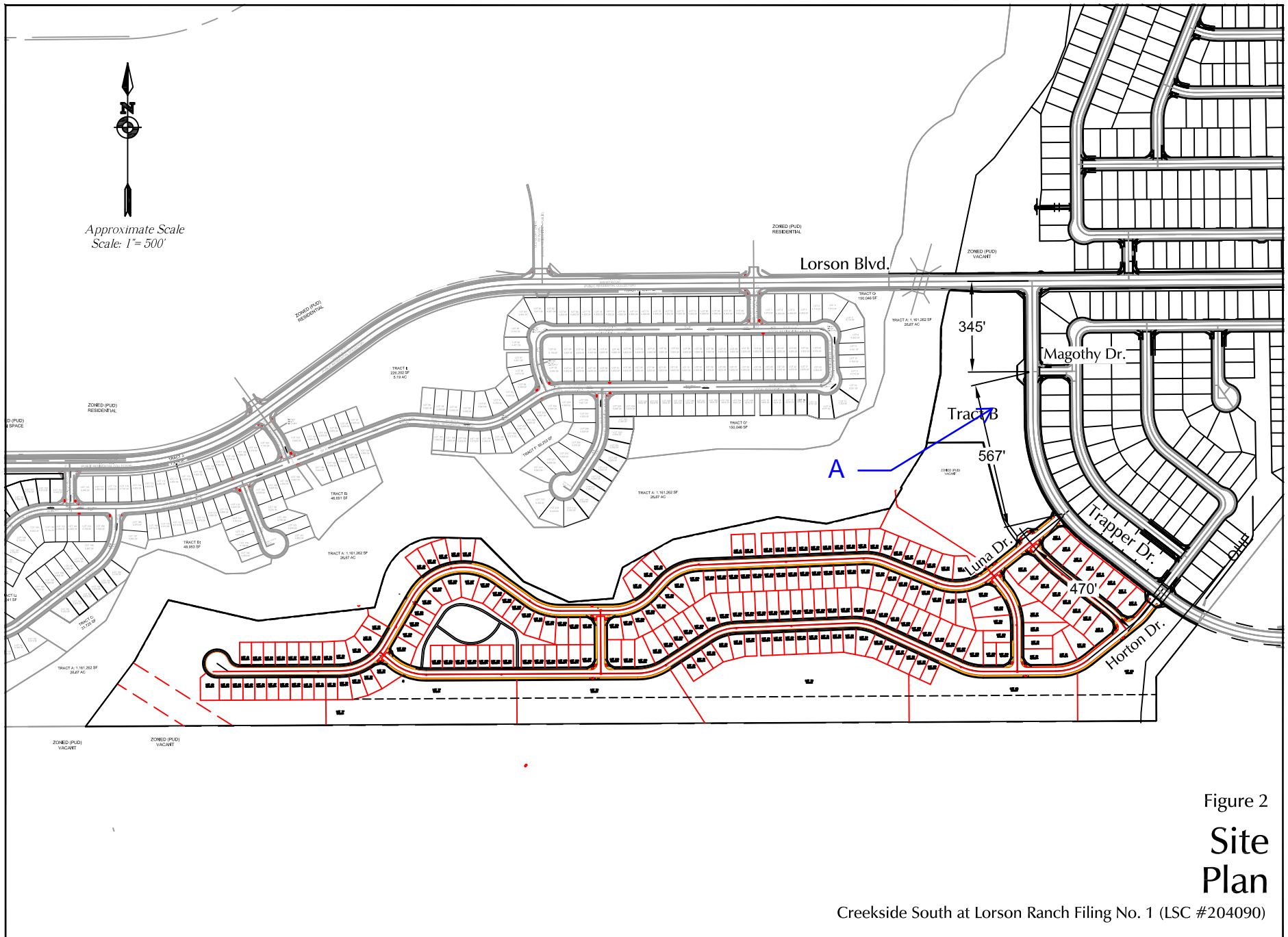
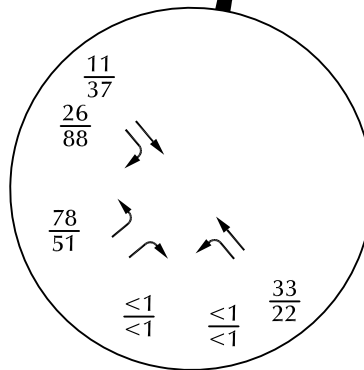
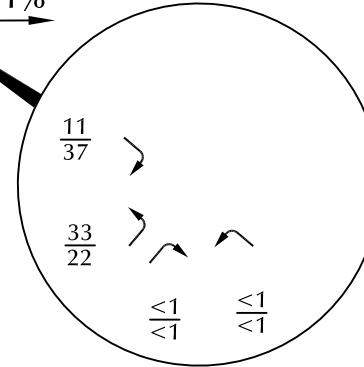
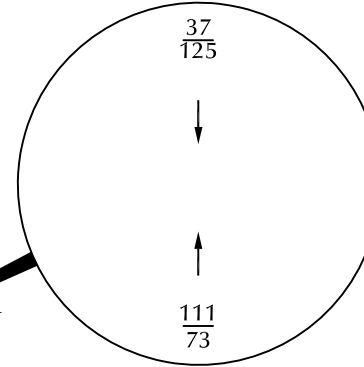
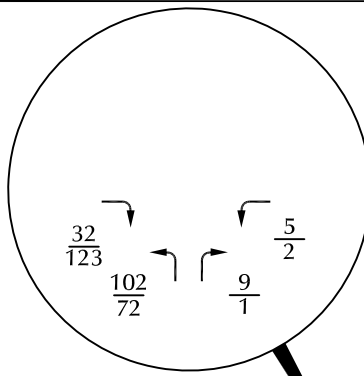
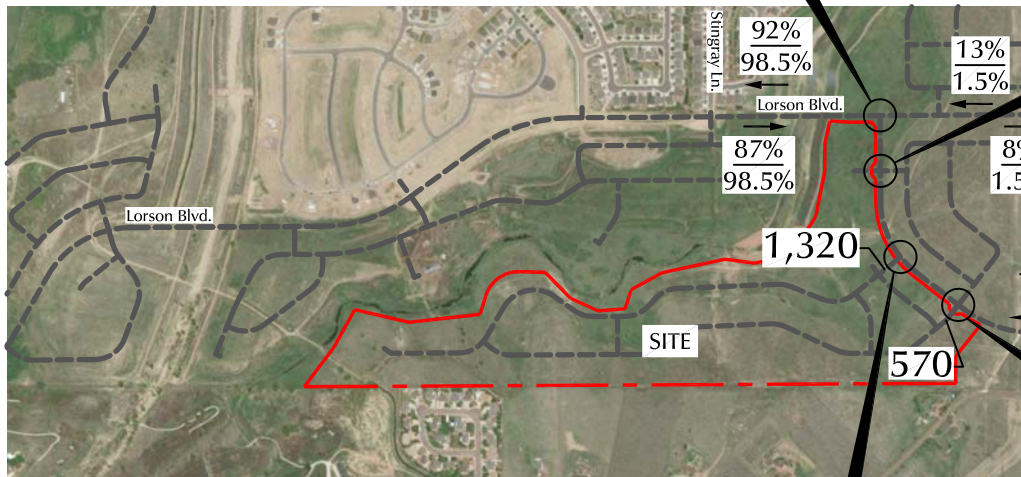


Figure 2  
**Site Plan**

Creekside South at Lorson Ranch Filing No. 1 (LSC #204090)



LEGEND:

$\frac{XX\%}{XX\%}$  = Percent Directional Distribution

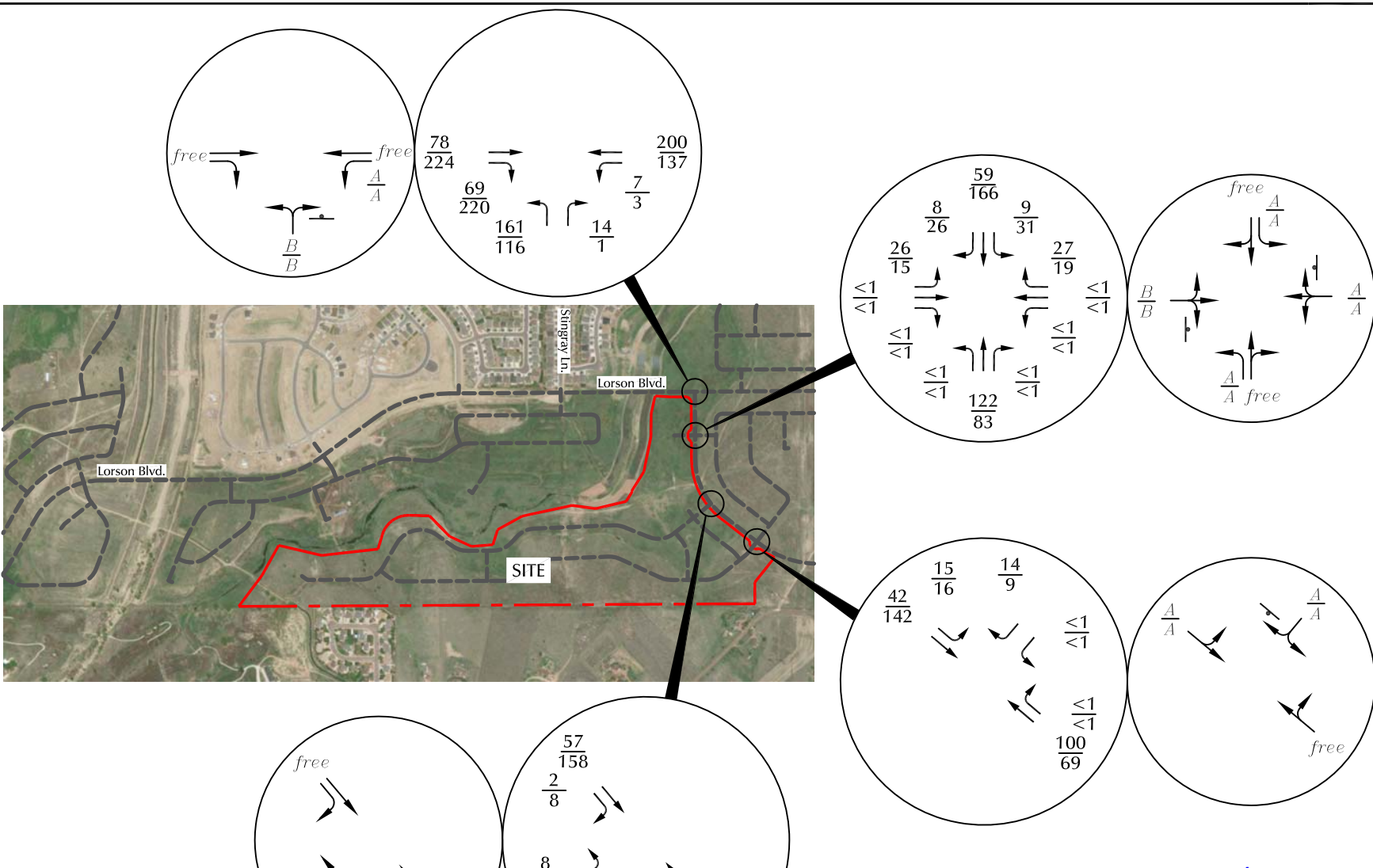
$\frac{XX}{XX}$  = AM Weekday Peak-Hour Traffic (vehicles per hour)  
 PM Weekday Peak-Hour Traffic (vehicles per hour)

X,XXX= Average Weekday Traffic (vehicles per day)

# Directional Distribution and Assignment of Site-Generated Traffic

Creekside South at Lorson Ranch Filing No. 1 (LSC #204090)

Figure 3



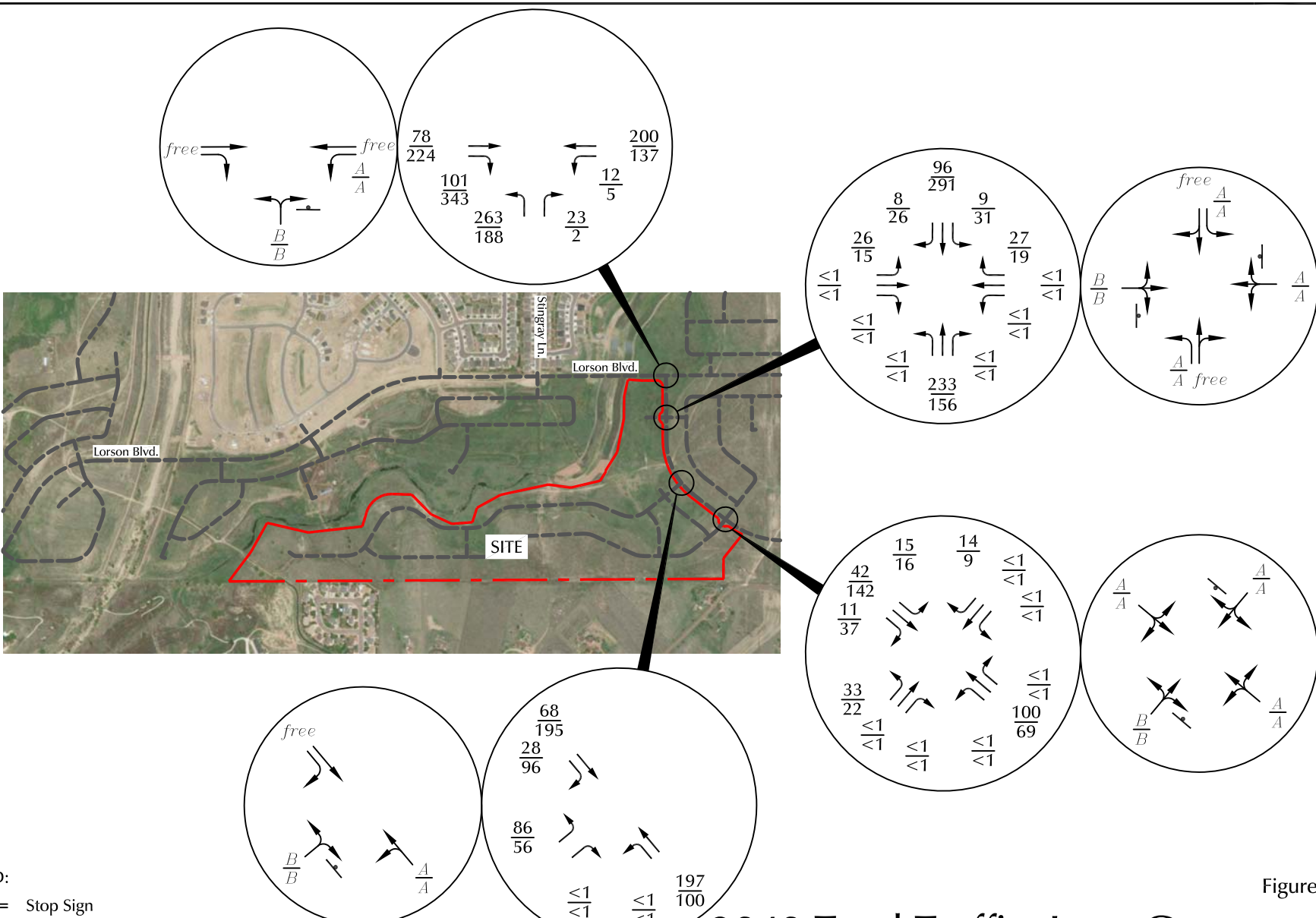
LEGEND:

- = Stop Sign
- $\frac{XX}{XX}$  = AM Weekday Peak-Hour Traffic (vehicles per hour)  
PM Weekday Peak-Hour Traffic (vehicles per hour)
- $\frac{A}{B}$  = AM Individual Movement Peak-Hour Level of Service  
PM Individual Movement Peak-Hour Level of Service

# 2040 Background Traffic, Lane Geometry, Traffic Control and Level of Service

Creekside South at Lorson Ranch Filing No. 1 (LSC #204090)

4



LEGEND:

- ⊥ = Stop Sign
- $\frac{XX}{XX}$  = AM Weekday Peak-Hour Traffic (vehicles per hour)  
PM Weekday Peak-Hour Traffic (vehicles per hour)
- $\frac{A}{B}$  = AM Individual Movement Peak-Hour Level of Service  
PM Individual Movement Peak-Hour Level of Service

Figure 5

# 2040 Total Traffic, Lane Geometry, Traffic Control and Level of Service

Creekside South at Lorson Ranch Filing No. 1 (LSC #204090)

# Levels of Service

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Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	26	0	0	0	0	27	0	122	0	9	59	8
Future Vol, veh/h	26	0	0	0	0	27	0	122	0	9	59	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	0	0	0	0	29	0	133	0	10	64	9

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	237	222	69	222	226	133	73	0	0	133	0	0
Stage 1	89	89	-	133	133	-	-	-	-	-	-	-
Stage 2	148	133	-	89	93	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	717	677	994	734	673	916	1527	-	-	1452	-	-
Stage 1	918	821	-	870	786	-	-	-	-	-	-	-
Stage 2	855	786	-	918	818	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	690	672	994	730	668	916	1527	-	-	1452	-	-
Mov Cap-2 Maneuver	690	672	-	730	668	-	-	-	-	-	-	-
Stage 1	918	815	-	870	786	-	-	-	-	-	-	-
Stage 2	828	786	-	912	812	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.4		9.1		0		0.9	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1527	-	-	690	916	1452	-	-
HCM Lane V/C Ratio	-	-	-	0.041	0.032	0.007	-	-
HCM Control Delay (s)	0	-	-	10.4	9.1	7.5	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			Y	Y	Y
Traffic Vol, veh/h	8	0	0	114	57	2
Future Vol, veh/h	8	0	0	114	57	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	0	0	124	62	2

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	186	62	64	0	0
Stage 1	62	-	-	-	-
Stage 2	124	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	803	1003	1538	-	-
Stage 1	961	-	-	-	-
Stage 2	902	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	803	1003	1538	-	-
Mov Cap-2 Maneuver	803	-	-	-	-
Stage 1	961	-	-	-	-
Stage 2	902	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1538	-	803	-	-
HCM Lane V/C Ratio	-	-	0.011	-	-
HCM Control Delay (s)	0	-	9.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	14	100	0	15	42
Future Vol, veh/h	0	14	100	0	15	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	15	109	0	16	46

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	187	109	0	0	109	0
Stage 1	109	-	-	-	-	-
Stage 2	78	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	802	945	-	-	1481	-
Stage 1	916	-	-	-	-	-
Stage 2	945	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	793	945	-	-	1481	-
Mov Cap-2 Maneuver	793	-	-	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	945	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	945	1481
HCM Lane V/C Ratio	-	-	0.016	0.011
HCM Control Delay (s)	-	-	8.9	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↑	↘	
Traffic Vol, veh/h	78	69	7	200	161	14
Future Vol, veh/h	78	69	7	200	161	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	73	7	211	169	15

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	155	0	307
Stage 1	-	-	-	-	82
Stage 2	-	-	-	-	225
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1425	-	685
Stage 1	-	-	-	-	941
Stage 2	-	-	-	-	812
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1425	-	681
Mov Cap-2 Maneuver	-	-	-	-	698
Stage 1	-	-	-	-	935
Stage 2	-	-	-	-	812

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	714	-	-	1425	-
HCM Lane V/C Ratio	0.258	-	-	0.005	-
HCM Control Delay (s)	11.8	-	-	7.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	1	-	-	0	-

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	15	0	0	0	0	19	0	83	0	31	166	26
Future Vol, veh/h	15	0	0	0	0	19	0	83	0	31	166	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	0	0	0	0	21	0	90	0	34	180	28

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	363	352	194	352	366	90	208	0	0	90	0	0
Stage 1	262	262	-	90	90	-	-	-	-	-	-	-
Stage 2	101	90	-	262	276	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	593	573	847	603	562	968	1363	-	-	1505	-	-
Stage 1	743	691	-	917	820	-	-	-	-	-	-	-
Stage 2	905	820	-	743	682	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	570	560	847	593	549	968	1363	-	-	1505	-	-
Mov Cap-2 Maneuver	570	560	-	593	549	-	-	-	-	-	-	-
Stage 1	743	675	-	917	820	-	-	-	-	-	-	-
Stage 2	886	820	-	726	666	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.5		8.8		0		1	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1363	-	-	570	968	1505	-	-
HCM Lane V/C Ratio	-	-	-	0.029	0.021	0.022	-	-
HCM Control Delay (s)	0	-	-	11.5	8.8	7.4	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗			↙↘	↗↘	↗
Traffic Vol, veh/h	5	0	0	78	158	8
Future Vol, veh/h	5	0	0	78	158	8
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	-	-	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	0	85	172	9

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	257	172	181	0	-	0
Stage 1	172	-	-	-	-	-
Stage 2	85	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	732	872	1394	-	-	-
Stage 1	858	-	-	-	-	-
Stage 2	938	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	732	872	1394	-	-	-
Mov Cap-2 Maneuver	732	-	-	-	-	-
Stage 1	858	-	-	-	-	-
Stage 2	938	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1394	-	732	-	-
HCM Lane V/C Ratio	-	-	0.007	-	-
HCM Control Delay (s)	0	-	10	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	69	0	16	142
Future Vol, veh/h	0	9	69	0	16	142
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	75	0	17	154

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	263	75	0	0	75
Stage 1	75	-	-	-	-
Stage 2	188	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	726	986	-	-	1524
Stage 1	948	-	-	-	-
Stage 2	844	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	717	986	-	-	1524
Mov Cap-2 Maneuver	717	-	-	-	-
Stage 1	937	-	-	-	-
Stage 2	844	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	986	1524
HCM Lane V/C Ratio	-	-	0.01	0.011
HCM Control Delay (s)	-	-	8.7	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↑	↘	
Traffic Vol, veh/h	224	220	3	137	116	1
Future Vol, veh/h	224	220	3	137	116	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	236	232	3	144	122	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	468	0	386
Stage 1	-	-	-	-	236
Stage 2	-	-	-	-	150
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1094	-	617
Stage 1	-	-	-	-	803
Stage 2	-	-	-	-	878
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1094	-	615
Mov Cap-2 Maneuver	-	-	-	-	660
Stage 1	-	-	-	-	801
Stage 2	-	-	-	-	878

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	661	-	-	1094	-
HCM Lane V/C Ratio	0.186	-	-	0.003	-
HCM Control Delay (s)	11.7	-	-	8.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0	-



Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↔			↕↔		↕	↔		↕	↔	
Traffic Vol, veh/h	26	0	0	0	0	27	0	233	0	9	96	8
Future Vol, veh/h	26	0	0	0	0	27	0	233	0	9	96	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	0	0	0	0	29	0	253	0	10	104	9

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	397	382	109	382	386	253	113	0	0	253	0	0
Stage 1	129	129	-	253	253	-	-	-	-	-	-	-
Stage 2	268	253	-	129	133	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	563	551	945	576	548	786	1476	-	-	1312	-	-
Stage 1	875	789	-	751	698	-	-	-	-	-	-	-
Stage 2	738	698	-	875	786	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	539	547	945	573	544	786	1476	-	-	1312	-	-
Mov Cap-2 Maneuver	539	547	-	573	544	-	-	-	-	-	-	-
Stage 1	875	783	-	751	698	-	-	-	-	-	-	-
Stage 2	710	698	-	868	780	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	9.8	0	0.6
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1476	-	-	539	786	1312	-	-
HCM Lane V/C Ratio	-	-	-	0.052	0.037	0.007	-	-
HCM Control Delay (s)	0	-	-	12	9.8	7.8	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	86	0	0	147	68	28
Future Vol, veh/h	86	0	0	147	68	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	0	0	160	74	30

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	234	74	104	0	0
Stage 1	74	-	-	-	-
Stage 2	160	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	754	988	1488	-	-
Stage 1	949	-	-	-	-
Stage 2	869	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	754	988	1488	-	-
Mov Cap-2 Maneuver	754	-	-	-	-
Stage 1	949	-	-	-	-
Stage 2	869	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1488	-	754	-	-
HCM Lane V/C Ratio	-	-	0.124	-	-
HCM Control Delay (s)	0	-	10.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	33	0	0	0	0	14	0	100	0	15	42	11
Future Vol, veh/h	33	0	0	0	0	14	0	100	0	15	42	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	0	0	0	0	15	0	109	0	16	46	12

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	201	193	52	193	199	109	58	0	0	109	0	0
Stage 1	84	84	-	109	109	-	-	-	-	-	-	-
Stage 2	117	109	-	84	90	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	757	702	1016	767	697	945	1546	-	-	1481	-	-
Stage 1	924	825	-	896	805	-	-	-	-	-	-	-
Stage 2	888	805	-	924	820	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	739	694	1016	761	689	945	1546	-	-	1481	-	-
Mov Cap-2 Maneuver	739	694	-	761	689	-	-	-	-	-	-	-
Stage 1	924	816	-	896	805	-	-	-	-	-	-	-
Stage 2	874	805	-	914	811	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.1		8.9		0		1.6	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1546	-	-	739	945	1481	-	-
HCM Lane V/C Ratio	-	-	-	0.049	0.016	0.011	-	-
HCM Control Delay (s)	0	-	-	10.1	8.9	7.5	0	-
HCM Lane LOS	A	-	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

Intersection						
Int Delay, s/veh	6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↑	↘	
Traffic Vol, veh/h	78	101	12	200	263	23
Future Vol, veh/h	78	101	12	200	263	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	106	13	211	277	24

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	188	0	319
Stage 1	-	-	-	-	82
Stage 2	-	-	-	-	237
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1386	-	674
Stage 1	-	-	-	-	941
Stage 2	-	-	-	-	802
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1386	-	667
Mov Cap-2 Maneuver	-	-	-	-	685
Stage 1	-	-	-	-	931
Stage 2	-	-	-	-	802

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	702	-	-	1386	-
HCM Lane V/C Ratio	0.429	-	-	0.009	-
HCM Control Delay (s)	13.9	-	-	7.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	2.2	-	-	0	-

HCM 6th TWSC  
 1: Trappe Dr & Tract B Access/Magothy Dr

2040 Total Traffic  
 PM Peak Hour

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	15	0	0	0	0	19	0	156	0	31	291	26
Future Vol, veh/h	15	0	0	0	0	19	0	156	0	31	291	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	0	0	0	0	21	0	170	0	34	316	28

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	579	568	330	568	582	170	344	0	0	170	0	0
Stage 1	398	398	-	170	170	-	-	-	-	-	-	-
Stage 2	181	170	-	398	412	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	426	432	712	434	425	874	1215	-	-	1407	-	-
Stage 1	628	603	-	832	758	-	-	-	-	-	-	-
Stage 2	821	758	-	628	594	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	408	422	712	426	415	874	1215	-	-	1407	-	-
Mov Cap-2 Maneuver	408	422	-	426	415	-	-	-	-	-	-	-
Stage 1	628	589	-	832	758	-	-	-	-	-	-	-
Stage 2	802	758	-	613	580	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.2	9.2	0	0.7
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1215	-	-	408	874	1407	-
HCM Lane V/C Ratio	-	-	-	0.04	0.024	0.024	-
HCM Control Delay (s)	0	-	-	14.2	9.2	7.6	-
HCM Lane LOS	A	-	-	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	0	0	100	195	96
Future Vol, veh/h	56	0	0	100	195	96
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	-	-	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	0	0	109	212	104

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	321	212	316	0	-	0
Stage 1	212	-	-	-	-	-
Stage 2	109	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	673	828	1244	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	673	828	1244	-	-	-
Mov Cap-2 Maneuver	673	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	916	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1244	-	673	-	-
HCM Lane V/C Ratio	-	-	0.09	-	-
HCM Control Delay (s)	0	-	10.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	0	0	0	0	9	0	69	0	16	142	37
Future Vol, veh/h	22	0	0	0	0	9	0	69	0	16	142	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	0	0	0	0	10	0	75	0	17	154	40

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	288	283	174	283	303	75	194	0	0	75	0	0
Stage 1	208	208	-	75	75	-	-	-	-	-	-	-
Stage 2	80	75	-	208	228	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	664	626	869	669	610	986	1379	-	-	1524	-	-
Stage 1	794	730	-	934	833	-	-	-	-	-	-	-
Stage 2	929	833	-	794	715	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	651	618	869	662	602	986	1379	-	-	1524	-	-
Mov Cap-2 Maneuver	651	618	-	662	602	-	-	-	-	-	-	-
Stage 1	794	721	-	934	833	-	-	-	-	-	-	-
Stage 2	920	833	-	784	706	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	8.7	0	0.6
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1379	-	-	651	986	1524	-	-
HCM Lane V/C Ratio	-	-	-	0.037	0.01	0.011	-	-
HCM Control Delay (s)	0	-	-	10.7	8.7	7.4	0	-
HCM Lane LOS	A	-	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection						
Int Delay, s/veh	2.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↑	↘	
Traffic Vol, veh/h	224	343	5	137	188	2
Future Vol, veh/h	224	343	5	137	188	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	236	361	5	144	198	2

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	597	0	390 236
Stage 1	-	-	-	-	236 -
Stage 2	-	-	-	-	154 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	980	-	614 803
Stage 1	-	-	-	-	803 -
Stage 2	-	-	-	-	874 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	980	-	610 803
Mov Cap-2 Maneuver	-	-	-	-	656 -
Stage 1	-	-	-	-	798 -
Stage 2	-	-	-	-	874 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	657	-	-	980	-
HCM Lane V/C Ratio	0.304	-	-	0.005	-
HCM Control Delay (s)	12.9	-	-	8.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	1.3	-	-	0	-



# Appendix Table 1



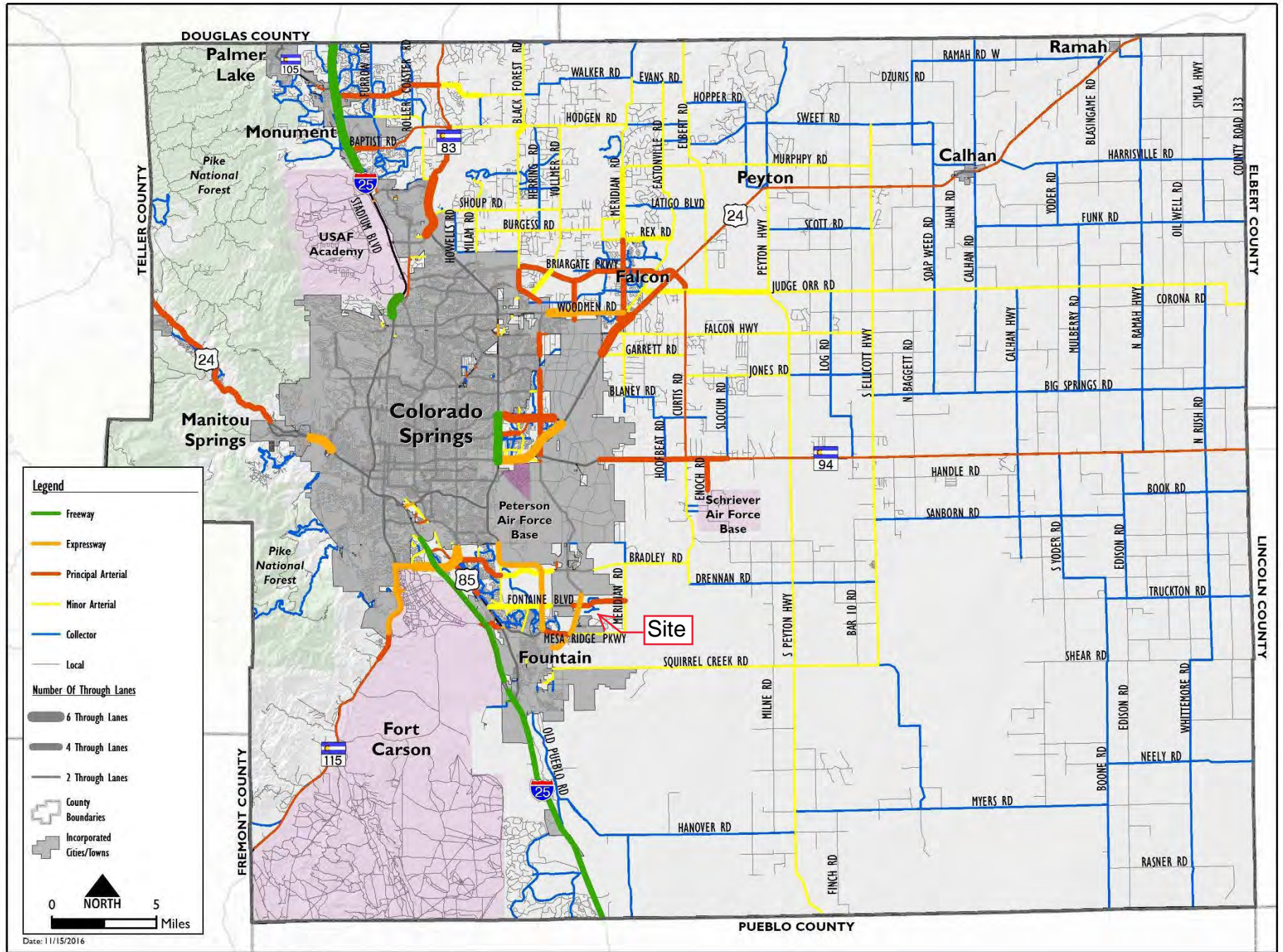
**Appendix Table 1**  
**Area Traffic Impact Studies by LSC**  
**Creekside South at Lorson Ranch**

<b>Study</b>	<b>Date</b>
Lorson Ranch Sketch Plan Amendment 2 Traffic Impact and Access Analysis	December 17, 2018
Carriage Meadows South at Lorson Ranch Filing No. 1 Updated Traffic Impact Analysis	August 14, 2017
Carriage Meadows North at Lorson Ranch Filing No. 1 Updated Traffic Impact Analysis	January 29, 2017
Lorson Ranch East Updated Traffic Impact and Access Analysis	November 9, 2017
Lorson Ranch East Filing No. 1 Transportation Memorandum	May 2, 2018
Lorson Ranch East Filing No. 2 Transportation Memorandum	September 24, 2018
Lorson Ranch East Filing No. 3 Transportation Memorandum	January 22, 2019
Lorson Ranch East Filing No. 4 Transportation Memorandum	March 12, 2019
Lorson Ranch PK-8 School Traffic Impact and Access Analysis	October 4, 2018
Creekside at Lorson Ranch Filing No. 1 Traffic Impact and Access Analysis	October 28, 2018
Creekside at Lorson Ranch Filing No. 1 Transportation Memorandum	April 26, 2019
Carriage Meadows Townhomes Traffic Impact Analysis	February 25, 2020
Fontaine/Old Glory Intersection Analysis	February 27, 2020
Ponderosa at Lorson Ranch Filing No. 3 Transportation Memorandum	February 27, 2020
The Glen at Widefield Filing Nos. 11 & 12	
<i>Source: LSC Transportation Consultants, Inc. (3/8/2020)</i>	

# MTCP Maps

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Map 14: 2040 Roadway Plan (Classification and Lanes)

# Map 17: 2060 Corridor Preservation

