

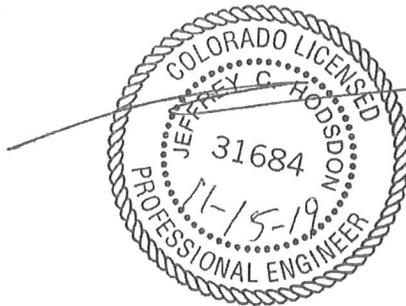


LSC TRANSPORTATION CONSULTANTS, INC.
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Ponderosa at Lorson Ranch Filing No. 3
Transportation Memorandum
(LSC #194890)
November 15, 2019

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.

A handwritten signature in blue ink, appearing to be 'Jan', written over a horizontal line.

A handwritten date '11/18/19' in blue ink, written over a horizontal line.
Date



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November 15, 2019

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

RE: Ponderosa at Lorson Ranch
El Paso County, Colorado
Transportation Memorandum
LSC #194890

Dear Mr. Mark:

LSC Transportation Consultants, Inc. has prepared this transportation memorandum to accompany the submittal for the Ponderosa 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:

- Recent/current street and traffic conditions in the vicinity of the site including the street widths, lane geometries, traffic controls, posted speed limits, street classification, etc.
- 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 short-term 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 Old Glory Drive and at Old Glory/Fontaine.
- Recommendations for street functional classifications for streets within the development.
- The required Countywide Road Impact Fees.

LAND USE AND ACCESS

The Ponderosa at Lorson Ranch site is located north of Fontaine Boulevard and east of Old Glory Drive within the Lorson Ranch development. The site is surrounded by existing residential land uses. This parcel was previously shown in the Lorson Ranch Sketch Plan as a potential elementary school site. It is now planned to be developed with 90 townhome units. The proposed site plan is shown in Figure 2.

Two full-movement access points are proposed to Old Glory Drive aligning with Bearcat Loop and Little Dogie Drive. Bearcat Loop is located about 525 feet north of the southwest intersection of Old Glory Drive/Roundup Butte Street and about 665 feet south of Journey Drive. Little Dogie Drive is located about 330 feet east of Journey Drive and 330 feet west of the northeast intersection of Old Glory Drive/Roundup Butte Street. 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.

Sight Distance

Figure 3 shows a sight distance analysis at the two proposed access points to Old Glory Drive. Based on a design speed of 40 miles per hour (mph) on Old Glory Drive and the criteria contained in Table 2-35 of the ECM, the required sight distance for passenger cars at the two proposed site access points is 350 feet. The required stopping sight distance is also shown in the figure.

What distances are provided? Discuss proposed landscaping, including plant species, and if the landscaping plan needs to be revised.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

Figure 1 shows the roadways in the vicinity of the site. The major roadways are identified below followed by a brief description of each. Copies of Map 14 2040 Roadway Plan (Classification and Lanes) and Map 17 2060 Corridor Preservation Plan from the *El Paso County 2016 Major Transportation Corridors Plan Update* (2016 MTCP) with the site location identified are included in the appendix.

- **Marksheffel Road** extends north from the Link Road/C&S Road intersection in Fountain, Colorado to north of Woodmen Road. Marksheffel Road is shown as a future four-lane Expressway on the County *Major Transportation Corridors Plan* (MTCP). The posted speed limit on Marksheffel Road is 55 miles per hour (mph). The PPRTA has completed the Marksheffel Road upgrade between Mesa Ridge Parkway and Bradley Road. This included intersection improvements at the Fontaine Boulevard intersection.
- **Fontaine Boulevard** is designated as a four-lane Urban Principal Arterial east of Marksheffel Road and it exists as such from Marksheffel Road east to Old Glory Drive/Stingray Lane. An Urban Non-Residential Collector Street has been constructed east of Stingray Lane. The posted speed limit on Fontaine Boulevard is 35 mph just east of (and a short distance west of) Marksheffel Road. The speed limit increases to 45 mph just east of the bridge over Jimmy Camp Creek.
- **Old Glory Drive** is an Urban Residential Collector which extends north from Lorson Boulevard across Fontaine Boulevard and then loops towards the east, intersecting Fontaine Boulevard again about one-half mile to the east. Old Glory Drive has one through lane in each direction plus a center two-way left-turn lane adjacent to the site. The Old Glory/ Fontaine intersection is currently being evaluated by LSC for level of service (This report shows preliminary analysis of existing and existing plus site level of service), traffic

control, signing/stripping and pedestrian/bike accommodation and evaluation of existing conditions and as part of a route to the school. The report will be completed shortly and will include traffic projected to be generated by this development, expanding on the analysis shown in Figures 4 and 7 of this report.

Existing Traffic Volumes

Figure 4 shows the existing traffic volumes at the intersection of Fontaine Boulevard and Old Glory Drive. These volumes are based on manual intersection turning movement counts conducted by LSC in October 2019. The count data sheets are attached for reference. Figure 3 also shows the existing traffic volumes at the intersections of Old Glory/Bearcat Loop and Old Glory/Little Dogie Drive. These volumes are estimates by LSC based traffic estimated to be generated by existing residential developments west and north of the site and the existing traffic volumes at Old Glory/Fontaine.

Existing 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 1 shows the level of service delay ranges.

Table 1	
Intersection Levels of Service Delay Ranges	
Level of Service	Unsignalized Intersections Average Control Delay (seconds per vehicle)⁽¹⁾
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	

Figure 4 presents the results of the existing intersection level of service analysis. Levels of service are based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board. The peak hour factors used for each approach are based on the traffic volumes for the peak fifteen minutes of the entire intersection. If the calculated peak hour factor for an approach is one or greater the peak hour factor for the entire

intersection is used instead. The peak hour factor calculations are included in Appendix Table 1. The level of service reports are attached.

The northbound and southbound left-turn and through movements at the intersection of Fontaine/Old Glory are currently operating at LOS E or F during both the morning and afternoon peak hours.

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, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). Table 2 shows the results of the trip generation estimates. Table 2 also shows a comparison to the trip generation estimate for an elementary school consistent with what was shown in the 2012 Lorson Ranch Sketch plan for this parcel.

Ponderosa Filing 3?

As shown in Table 2, Lorson Ranch is projected to generate about 659 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 286 fewer vehicle trips than if this parcel were to be developed as an elementary school. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 10 vehicles would enter and 32 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 32 vehicles would enter and 19 vehicles would exit the site.

TRIP DISTRIBUTION AND ASSIGNMENT

The directional distribution of the site-generated traffic volumes on the street and roadway system serving the site is one of the most important factors in determining the site's traffic impacts. Figure 5 shows the trip distribution estimates. The directional distribution estimates have been based on the location of the site with respect to the regional residential, employment, commercial, and activity centers; the land use proposed; the access/roadway connections assumed; the roadway network; and the most recent traffic counts conducted at the intersection of Old Glory/Fontaine. In the foreseeable future, most trips are anticipated to travel to and from Fontaine Boulevard west of Old Glory Drive. A small percentage of the projected trips are anticipated to travel to and from the recently opened Grand Mountain School and to and from other existing and future residential areas within Lorson Ranch east of the intersection of Fontaine/Old Glory.

When the distribution percentages (from Figure 5) are applied to the trip generation estimates (from Table 2), the resulting site-generated traffic volumes can be determined. Figure 6 shows the site-generated traffic volume estimate.

EXISTING PLUS SITE-GENERATED TRAFFIC

Figure 7 shows the sum of the existing traffic volumes (from Figure 4) plus the site-generated traffic volumes (from Figure 6).

PROJECTED LEVELS OF SERVICE

The intersection of Old Glory/Fontaine and the site access points to Old Glory have been analyzed to determine the projected levels of service based on the unsignalized method of analysis procedures outlined in the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board. The results of the analysis are shown in Figures 4 and 7. The level of service reports are attached.

The intersection of Old Glory/Fontaine is currently two-way, stop-sign controlled. The northbound and southbound left-turn and through movements are currently operating at LOS E or LOS F during the peak hours. If this intersection were converted to all-way, stop-sign control all movements are projected to operate at LOS C or better during the peak hours. The HCM procedure for all-way Stop-sign-controlled intersections is limited to three approach lanes. As Fontaine Boulevard has four eastbound and westbound approach lanes at Old Glory Drive, this intersection was analyzed using Synchro/SimTraffic. The simulation was run five times and the average stop delay per vehicle for each lane was averaged over the five runs and compared to the control delay listed in Table 1.

The proposed access points to Old Glory 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

Figure 8 shows the recommended roadway classifications for all streets within Ponderosa at Lorson Ranch.

RECOMMENDED AUXILIARY LANES

Based on the short-term total traffic volumes shown in Figure 7, the criteria contained in the *El Paso County Engineering Criteria Manual*, and the classification of Old Glory Drive as an Urban Collector, northeast-bound right-turn deceleration lanes are not projected to be required on Old Glory Drive approaching the site access points. Although a southwest-bound left-turn lane would

also not be required, there is an existing two-way left-turn lane on Old Glory Drive adjacent to the site.

FONTAINE/OLD GLORY INTERSECTION

The Old Glory/ Fontaine intersection is currently being evaluated by LSC for level of service, traffic control, signing/striping and pedestrian/bike accommodation, and evaluation of existing conditions and as part of a route to the school. This report includes a preliminary analysis of existing and existing-plus-site level of service. The Old Glory/Fontaine existing conditions evaluation report will be completed shortly and will expand on the analysis shown in Figures 4 and 7 of this report. The report will contain a set of recommendations for the intersection traffic control, signing, pavement markings, etc.

← Does this analyze a roundabout?

ROADWAY IMPROVEMENT FEE PROGRAM

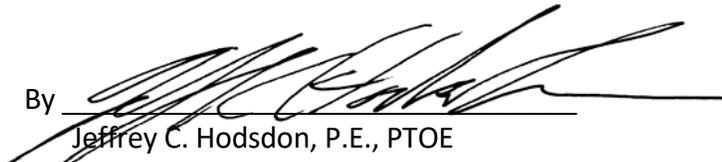
This project will be required to participate in the El Paso County Road Improvement Fee Program. Ponderosa at Lorson Ranch will join the ten-mil PID. The 2019 ten-mil PID building permit fee portion associated with this option is \$1,458 per multi-family dwelling unit. Based on 90 dwelling units, the total building permit fee would be \$131,220.

* * * * *

Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH:KDF:jas

- Enclosures: Table 2
Figures 1-8
Traffic Count Reports
Level of Service Reports
Appendix Table 1
MTCP Maps

Tables and Figures



**Table 2
Trip Generation Estimate
Ponderosa at Lorson Ranch**

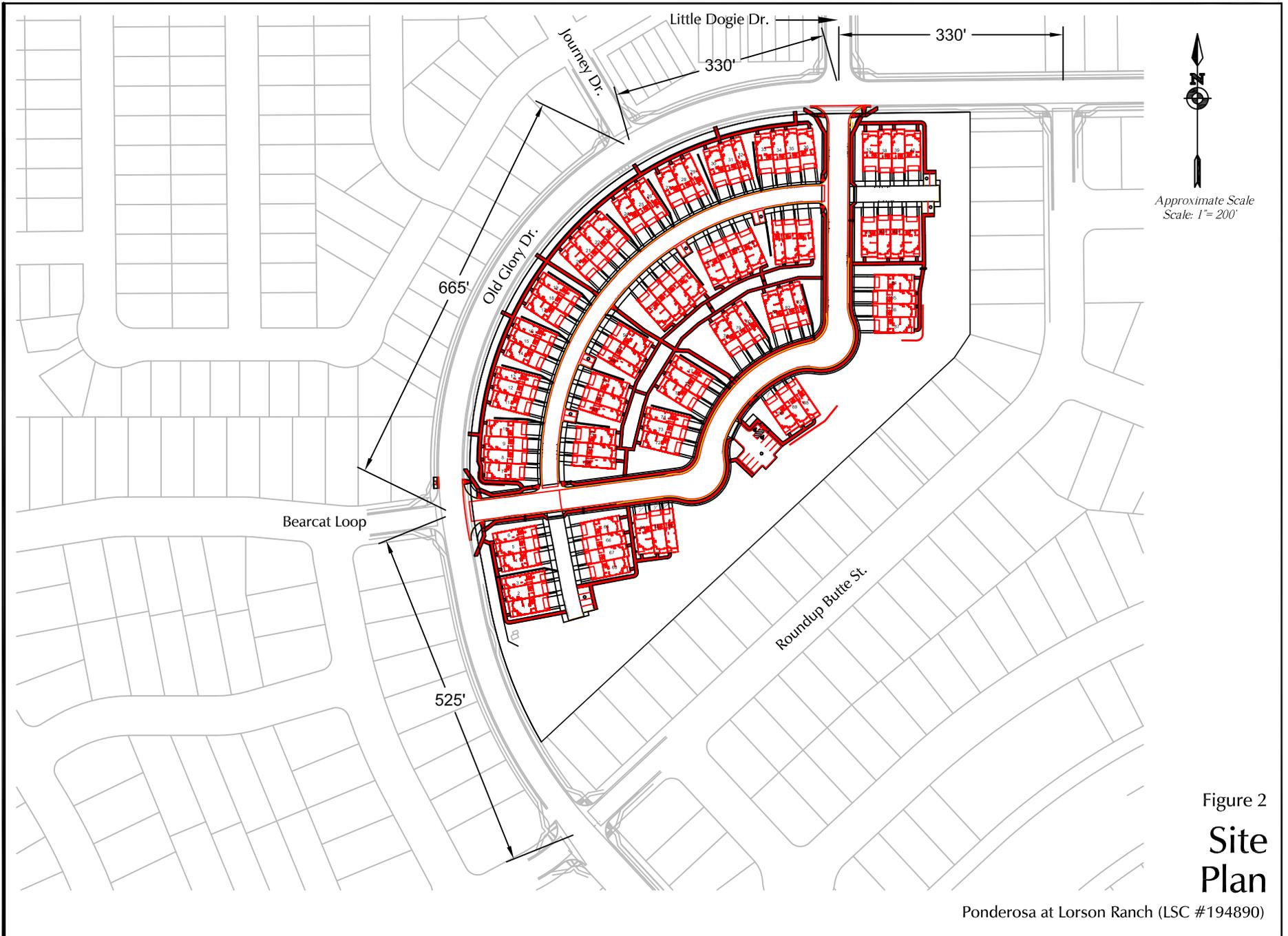
Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾						Total Trips Generated			
			Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour	
				In	Out	In	Out		In	Out	In	Out
Trip Generation Estimate Based on the Currently Proposed Plan												
220	Multifamily Housing (Low-Rise)	90 DU ⁽²⁾	7.32	0.11	0.35	0.35	0.21	659	10	32	32	19
Trip Generation Estimate for the Same Parcel Based on the 2012 Lorson Ranch Sketch Plan												
520	Elementary School	500 Students	1.89	0.36	0.31	0.08	0.09	945	181	154	41	44
Change (Decrease) In Trip Generation Estimate								-286	-171	-122	-9	-25
Notes:												
(1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)												
(2) DU = dwelling unit												
Source: LSC Transportation Consultants, Inc.												



North Arrow
Approximate Scale
Scale: 1" = 3,000'

Figure 1
**Vicinity
Map**

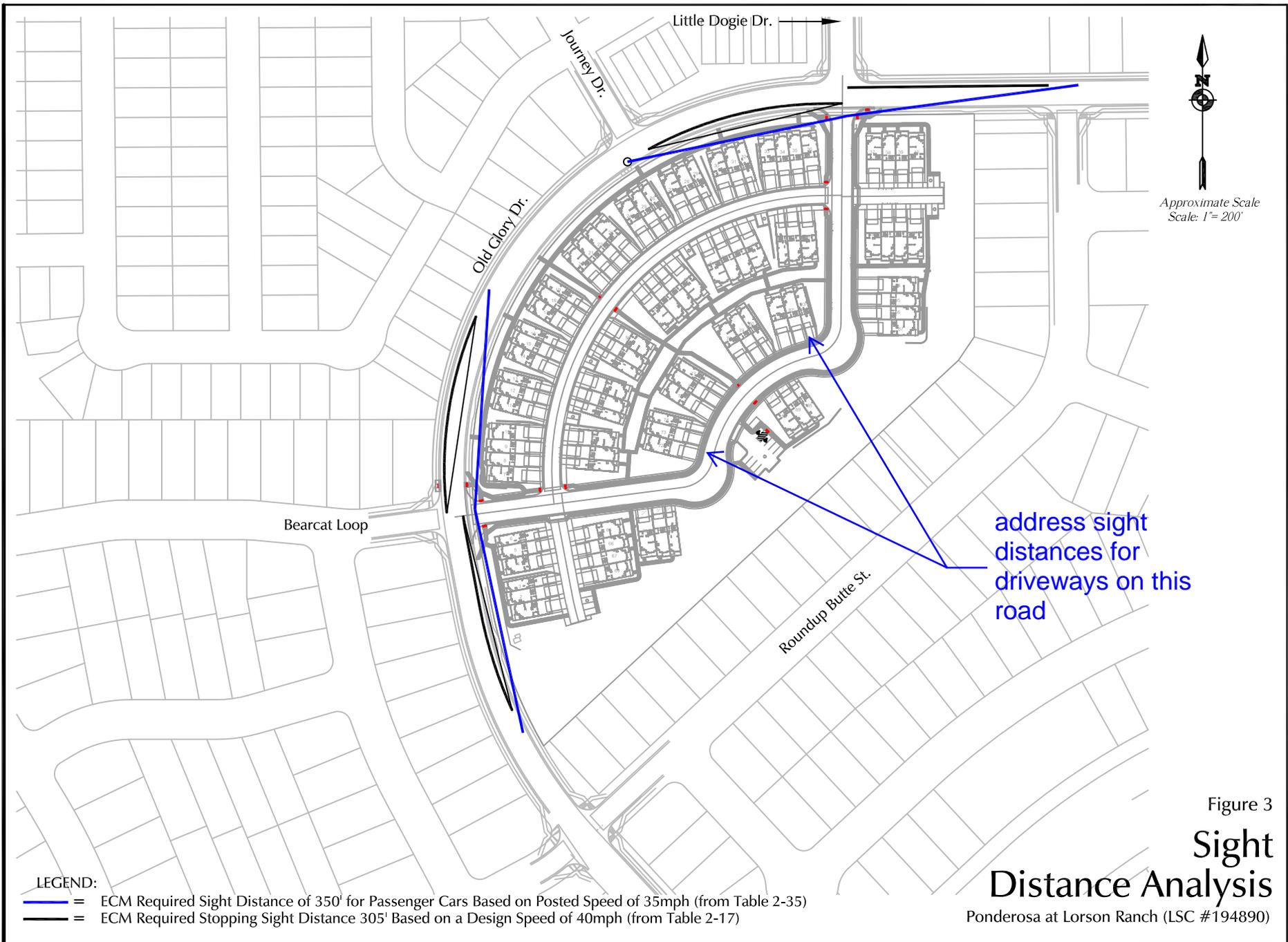
Ponderosa at Lorson Ranch (LSC #194890)

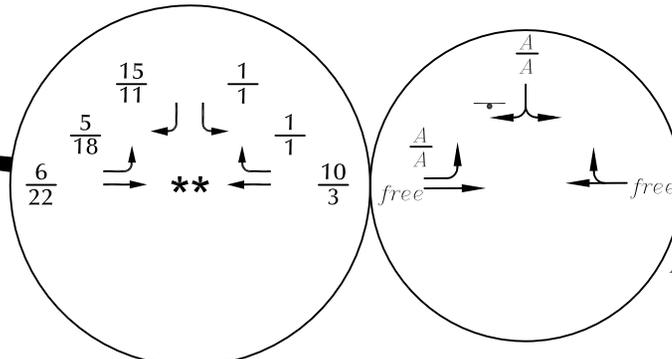
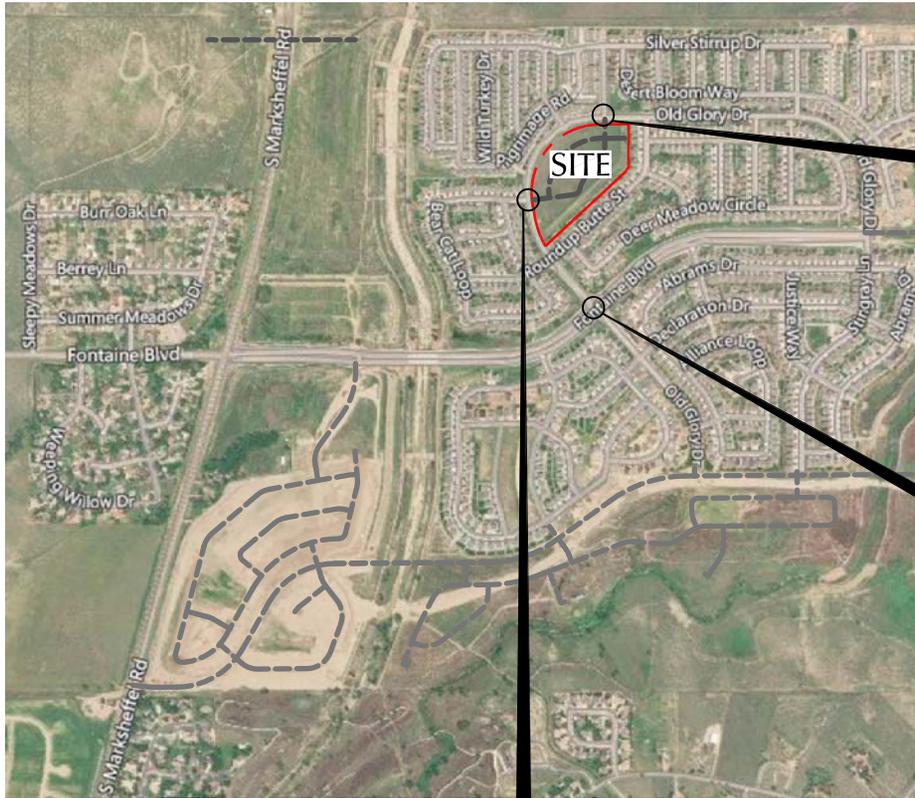


Approximate Scale
Scale: 1" = 200'

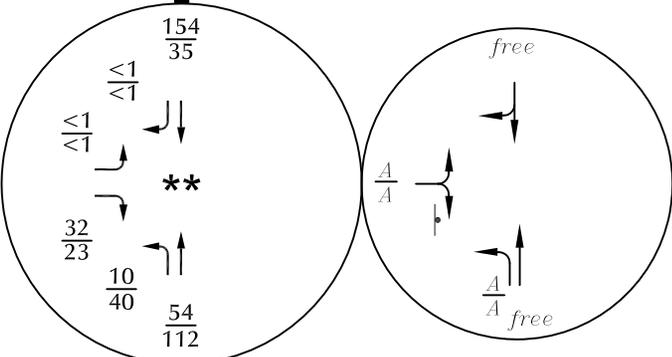
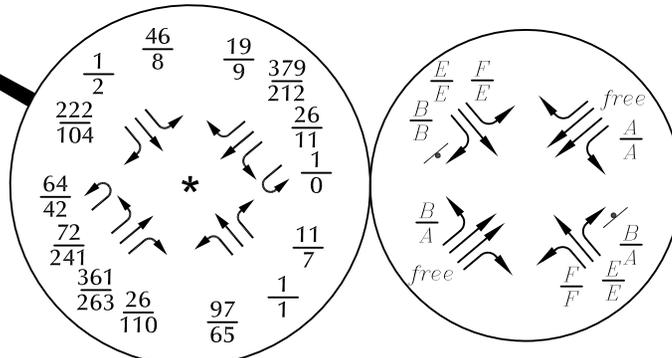
Figure 2
Site Plan

Ponderosa at Lorson Ranch (LSC #194890)





Approximate Scale
Scale: 1" = 1,500'



* Based on counts by LSC Oct 2019
** Estimates by LSC

LEGEND:
 ↓ = Stop Sign
 $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
 $\frac{A}{B}$ = PM Individual Movement Peak-Hour Level of Service
 X,XXX = Average Daily Traffic (vehicles per day) (Estimates by LSC)

Figure 4
Existing Traffic, Lane Geometry, Traffic Control and Level of Service
 Ponderosa at Lorson Ranch (LSC #194890)



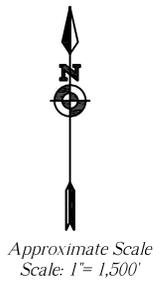
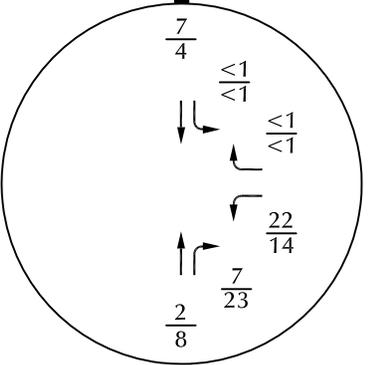
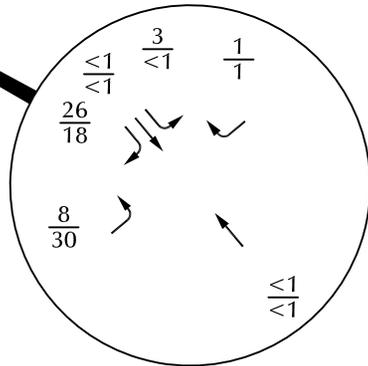
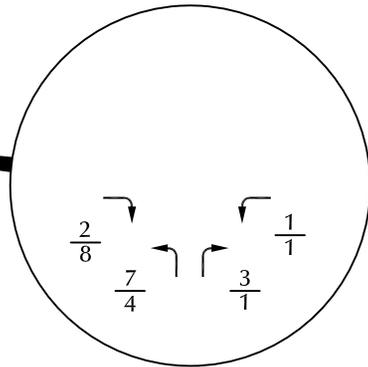
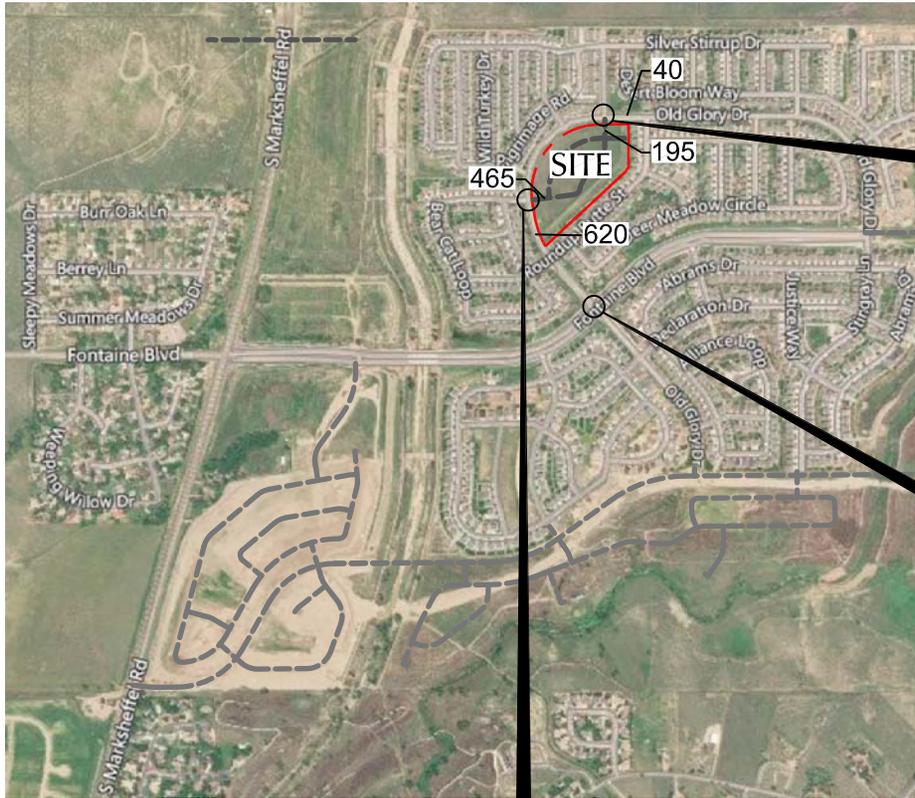
Approximate Scale
Scale: 1" = 1,500'



18% seems high

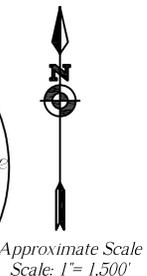
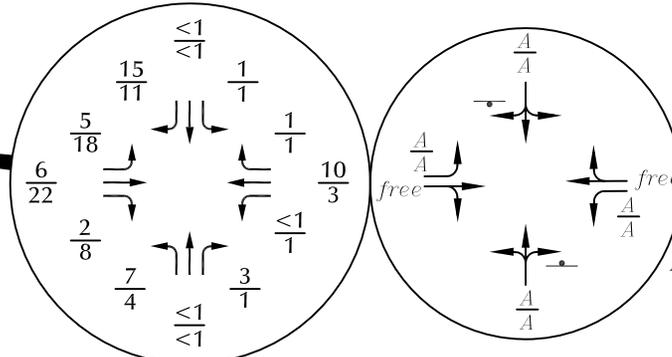
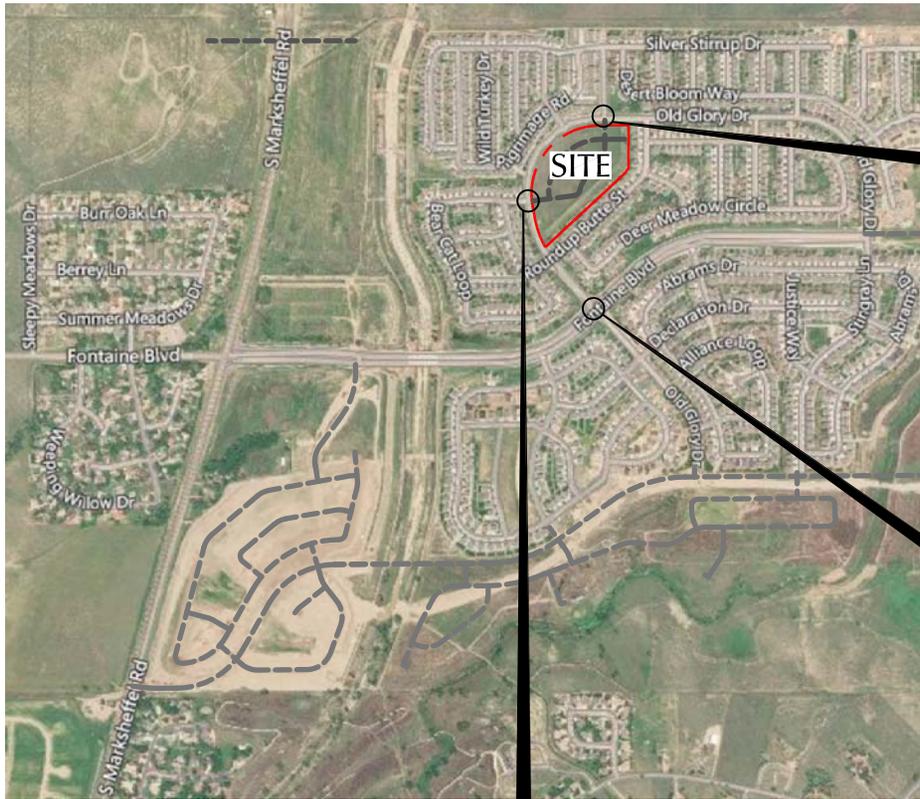
LEGEND:
←→
XX%
XX% = AM Percent Directional Distribution
PM Percent Directional Distribution

Figure 5
**Directional Distribution
of Site-Generated Traffic**
Ponderosa at Lorson Ranch (LSC #194890)

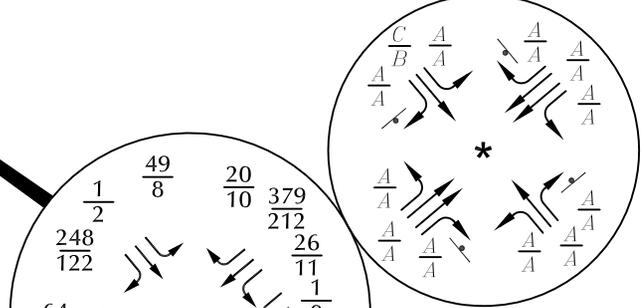


LEGEND:
 $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 X,XXX = Average Daily Traffic (vehicles per day) (Estimates by LSC)

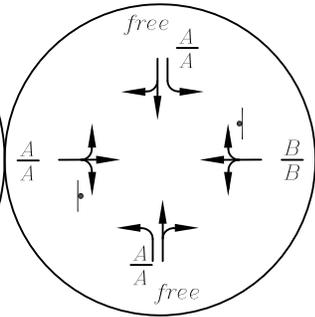
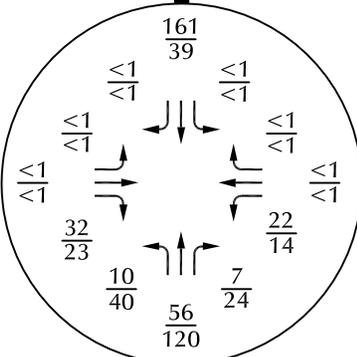
Figure 6
**Assignment of
 Site-Generated Traffic**
 Ponderosa at Lorson Ranch (LSC #194890)



All-Way Stop-Sign Control



Two-Way Stop-Sign Control



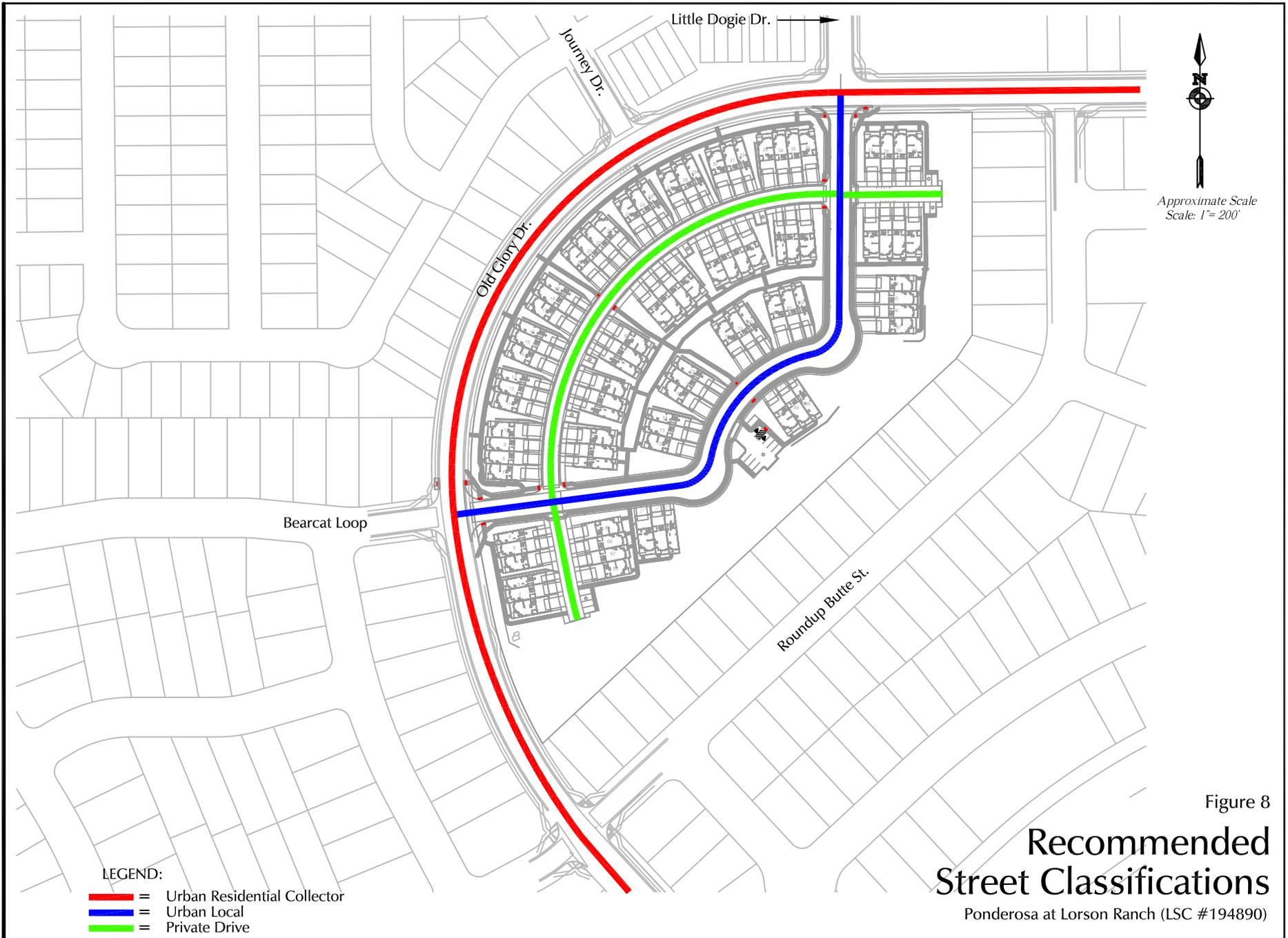
* Based on SimTraffic simulation stopped vehicle delay.

- LEGEND:
- ⊥ = Stop Sign
 - $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 - $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 - $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
 - $\frac{A}{B}$ = PM Individual Movement Peak-Hour Level of Service
 - X,XXX = Average Daily Traffic (vehicles per day) (Estimates by LSC)

Existing plus Site-Generated Traffic, Lane Geometry, Traffic Control and Level of Service

Ponderosa at Lorson Ranch (LSC #194890)

Figure 7



Traffic Counts





LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Old Glory Dr - Fountain Blvd AM

Site Code : 184181

Start Date : 10/9/2019

Page No : 1

Groups Printed- Unshifted

Start Time	Old Glory Dr Southbound					Fountain Blvd Westbound					Old Glory Dr Northbound					Fountain Blvd Eastbound					Int. Total
	Left	Through	Right	Peds	App. Total	Left	Through	Right	U-Turn	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	U-Turn	App. Total	
06:30 AM	0	0	14	0	14	0	14	0	0	14	5	0	0	0	5	6	3	1	0	10	43
06:35 AM	1	0	23	0	24	0	13	0	0	13	13	0	1	0	14	5	8	2	7	22	73
06:40 AM	0	0	28	0	28	1	21	0	0	22	10	0	1	0	11	4	8	2	8	22	83
06:45 AM	0	0	25	0	25	0	14	0	0	14	12	0	0	0	12	3	11	2	8	24	75
06:50 AM	0	0	19	0	19	0	23	0	0	23	15	1	0	0	16	3	20	1	10	34	92
06:55 AM	0	0	30	0	30	0	24	0	0	24	8	0	0	0	8	4	29	3	5	41	103
Total	1	0	139	0	140	1	109	0	0	110	63	1	2	0	66	25	79	11	38	153	469
07:00 AM	1	0	24	0	25	0	19	0	0	19	10	0	1	0	11	6	26	1	10	43	98
07:05 AM	1	0	21	0	22	0	28	0	0	28	11	0	0	0	11	4	31	1	4	40	101
07:10 AM	1	0	15	10	26	0	42	0	0	42	5	0	0	3	8	7	16	1	8	32	108
07:15 AM	2	0	16	4	22	0	17	0	0	17	13	0	1	1	15	7	16	0	7	30	84
07:20 AM	9	0	18	2	29	0	19	0	0	19	1	0	2	2	5	5	55	2	2	64	117
07:25 AM	13	0	21	1	35	4	35	2	1	42	7	0	2	1	10	7	67	1	1	76	163
07:30 AM	15	1	15	0	31	6	43	2	0	51	11	0	0	0	11	5	44	3	5	57	150
07:35 AM	4	0	19	0	23	8	54	0	0	62	6	0	3	0	9	8	28	2	5	43	137
07:40 AM	0	0	10	0	10	5	38	10	0	53	4	0	1	0	5	10	15	3	3	31	99
07:45 AM	0	0	14	1	15	3	37	5	0	45	6	0	1	0	7	6	14	8	4	32	99
07:50 AM	0	0	14	0	14	3	15	0	0	18	3	0	1	0	4	10	13	0	5	28	64
07:55 AM	0	0	11	0	11	0	12	0	0	12	5	0	0	0	5	6	21	1	1	29	57
Total	46	1	198	18	263	29	359	19	1	408	82	0	12	7	101	81	346	23	55	505	1277
08:00 AM	1	0	12	0	13	2	16	1	0	19	3	0	0	0	3	3	13	1	5	22	57
08:05 AM	0	0	13	1	14	0	17	0	0	17	0	0	0	0	0	7	19	1	5	32	63
08:10 AM	0	0	12	0	12	0	10	0	0	10	8	0	0	0	8	6	17	1	1	25	55
08:15 AM	1	0	20	0	21	0	17	1	0	18	9	0	0	0	9	11	9	1	2	23	71
08:20 AM	0	0	19	0	19	0	27	0	0	27	7	0	0	0	7	6	10	4	7	27	80
08:25 AM	0	0	18	0	18	0	17	1	0	18	9	0	0	0	9	8	7	4	2	21	66
Grand Total	49	1	431	19	500	32	572	22	1	627	181	1	14	7	203	147	500	46	115	808	2138
Apprch %	9.8	0.2	86.2	3.8		5.1	91.2	3.5	0.2		89.2	0.5	6.9	3.4		18.2	61.9	5.7	14.2		
Total %	2.3	0	20.2	0.9	23.4	1.5	26.8	1	0	29.3	8.5	0	0.7	0.3	9.5	6.9	23.4	2.2	5.4	37.8	

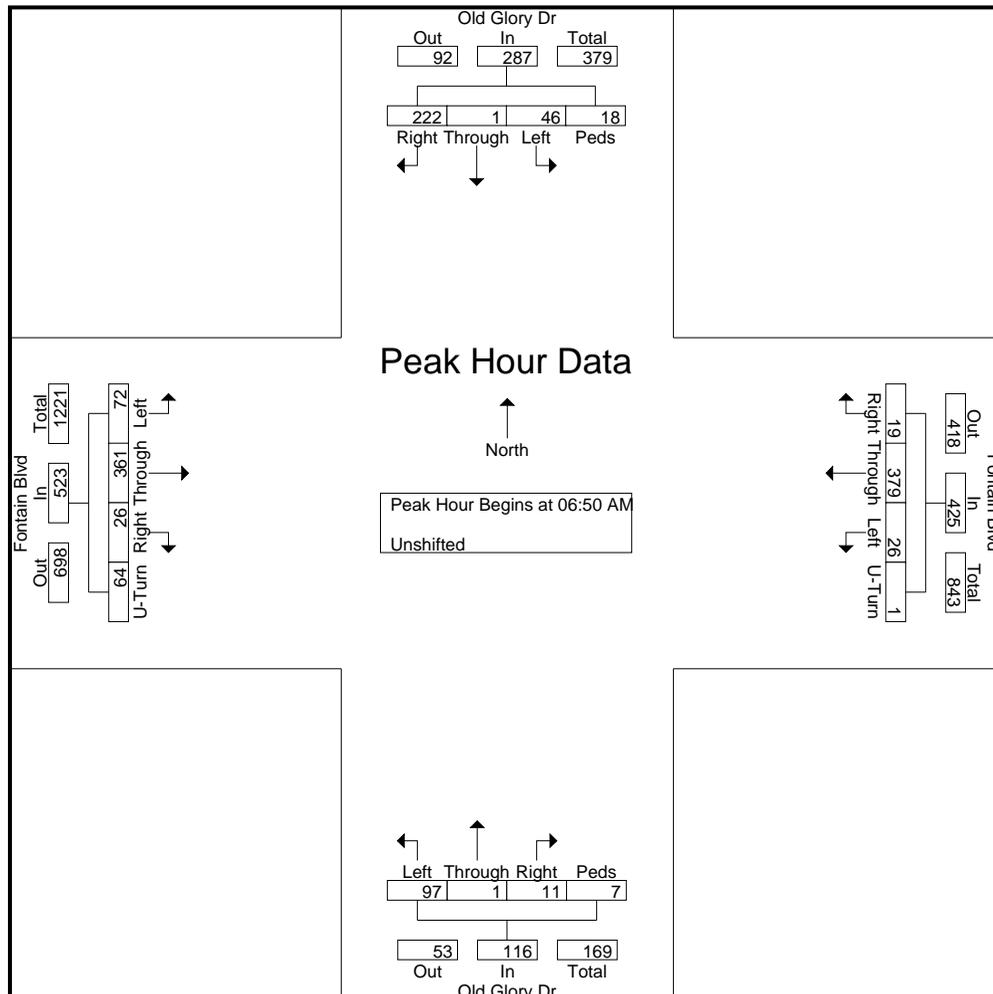


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 Site Code : 184181
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	Left	Through	Right	Peds	App. Total	Left	Through	Right	U-Turn	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	U-Turn	App. Total	
Peak Hour Analysis From 06:30 AM to 08:25 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 06:50 AM																					
06:50 AM	0	0	19	0	19	0	23	0	0	23	15	1	0	0	16	3	20	1	10	34	92
06:55 AM	0	0	30	0	30	0	24	0	0	24	8	0	0	0	8	4	29	3	5	41	103
07:00 AM	1	0	24	0	25	0	19	0	0	19	10	0	1	0	11	6	26	1	10	43	98
07:05 AM	1	0	21	0	22	0	28	0	0	28	11	0	0	0	11	4	31	1	4	40	101
07:10 AM	1	0	15	10	26	0	42	0	0	42	5	0	0	3	8	7	16	1	8	32	108
07:15 AM	2	0	16	4	22	0	17	0	0	17	13	0	1	1	15	7	16	0	7	30	84
07:20 AM	9	0	18	2	29	0	19	0	0	19	1	0	2	2	5	5	55	2	2	64	117
07:25 AM	13	0	21	1	35	4	35	2	1	42	7	0	2	1	10	7	67	1	1	76	163
07:30 AM	15	1	15	0	31	6	43	2	0	51	11	0	0	0	11	5	44	3	5	57	150
07:35 AM	4	0	19	0	23	8	54	0	0	62	6	0	3	0	9	8	28	2	5	43	137
07:40 AM	0	0	10	0	10	5	38	10	0	53	4	0	1	0	5	10	15	3	3	31	99
07:45 AM	0	0	14	1	15	3	37	5	0	45	6	0	1	0	7	6	14	8	4	32	99
Total Volume	46	1	222	18	287	26	379	19	1	425	97	1	11	7	116	72	361	26	64	523	1351
% App. Total	16	0.3	77.4	6.3		6.1	89.2	4.5	0.2		83.6	0.9	9.5	6		13.8	69	5	12.2		
PHF	.256	.083	.617	.150	.683	.271	.585	.158	.083	.571	.539	.083	.306	.194	.604	.600	.449	.271	.533	.573	.691





LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Old Glory Dr - Fontain Blvd Mid-PM

Site Code : 184181

Start Date : 10/16/2019

Page No : 1

Groups Printed- Unshifted

Start Time	Old Glory Dr Southbound					Fontain Blvd Westbound					Old Glory Dr Northbound					Fontain Blvd Eastbound					Int. Total
	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	
02:00 PM	0	0	21	0	21	0	27	1	0	28	8	0	0	0	8	19	31	14	4	68	125
02:15 PM	3	0	24	0	27	0	20	0	0	20	13	0	3	0	16	22	49	8	5	84	147
02:30 PM	7	1	15	0	23	1	30	1	0	32	13	0	1	0	14	22	62	9	8	101	170
02:45 PM	10	1	22	0	33	0	24	0	0	24	17	2	5	0	24	31	84	15	5	135	216
Total	20	2	82	0	104	1	101	2	0	104	51	2	9	0	62	94	226	46	22	388	658
03:00 PM	6	0	20	0	26	12	65	13	0	90	12	0	5	0	17	42	61	16	4	123	256
03:15 PM	1	0	28	0	29	16	97	19	0	132	15	0	0	0	15	40	45	15	3	103	279
03:30 PM	1	2	19	0	22	2	52	1	0	55	13	0	1	0	14	52	41	16	8	117	208
03:45 PM	2	1	19	0	22	3	41	2	0	46	15	0	1	0	16	56	50	14	7	127	211
Total	10	3	86	0	99	33	255	35	0	323	55	0	7	0	62	190	197	61	22	470	954
04:00 PM	3	0	32	0	35	2	25	1	0	28	14	1	2	0	17	53	45	19	14	131	211
04:15 PM	0	0	26	0	26	2	39	1	0	42	11	0	0	0	11	60	69	18	7	154	233
04:30 PM	1	2	19	0	22	3	32	0	0	35	11	3	1	0	15	54	50	14	3	121	193
04:45 PM	2	1	27	0	30	2	35	1	0	38	13	0	4	0	17	69	77	26	4	176	261
Total	6	3	104	0	113	9	131	3	0	143	49	4	7	0	60	236	241	77	28	582	898
05:00 PM	3	0	25	0	28	7	86	6	0	99	19	1	3	0	23	59	87	34	9	189	339
05:15 PM	1	0	27	0	28	1	52	1	0	54	21	0	0	0	21	54	39	26	14	133	236
05:30 PM	2	1	25	0	28	1	39	1	0	41	12	0	0	0	12	59	60	24	15	158	239
05:45 PM	0	1	27	0	28	2	57	1	0	60	13	0	0	0	13	56	70	27	6	159	260
Total	6	2	104	0	112	11	234	9	0	254	65	1	3	0	69	228	256	111	44	639	1074
Grand Total	42	10	376	0	428	54	721	49	0	824	220	7	26	0	253	748	920	295	116	2079	3584
Apprch %	9.8	2.3	87.9	0		6.6	87.5	5.9	0		87	2.8	10.3	0		36	44.3	14.2	5.6		
Total %	1.2	0.3	10.5	0	11.9	1.5	20.1	1.4	0	23	6.1	0.2	0.7	0	7.1	20.9	25.7	8.2	3.2	58	

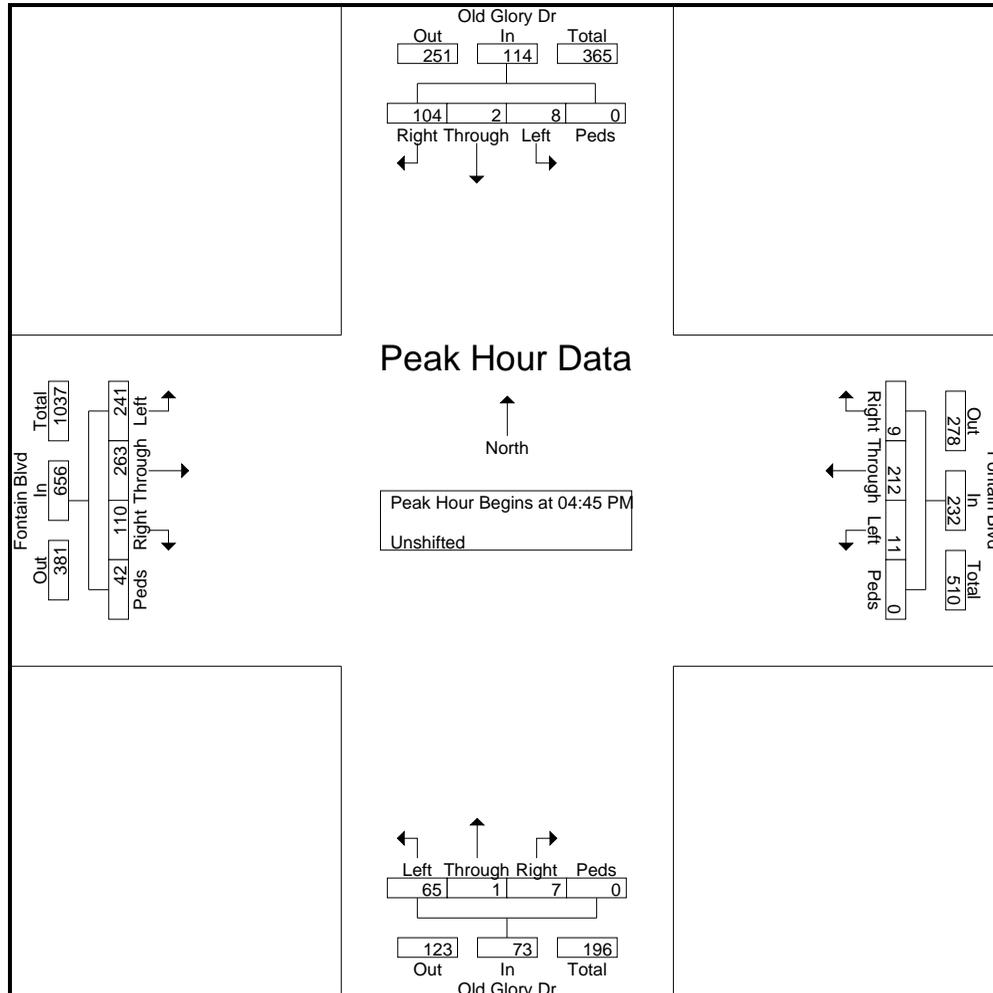


LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210
 Colorado Springs, CO 80905
 719-633-2868

File Name : Old Glory Dr - Fontain Blvd Mid-PM
 Site Code : 184181
 Start Date : 10/16/2019
 Page No : 2

Start Time	Old Glory Dr Southbound					Fontain Blvd Westbound					Old Glory Dr Northbound					Fontain Blvd Eastbound					Int. Total
	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	
Peak Hour Analysis From 2:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 4:45:00 PM																					
4:45:00 PM	2	1	27	0	30	2	35	1	0	38	13	0	4	0	17	69	77	26	4	176	261
5:00:00 PM	3	0	25	0	28	7	86	6	0	99	19	1	3	0	23	59	87	34	9	189	339
5:15:00 PM	1	0	27	0	28	1	52	1	0	54	21	0	0	0	21	54	39	26	14	133	236
5:30:00 PM	2	1	25	0	28	1	39	1	0	41	12	0	0	0	12	59	60	24	15	158	239
Total Volume	8	2	104	0	114	11	212	9	0	232	65	1	7	0	73	241	263	110	42	656	1075
% App. Total	7	1.8	91.2	0		4.7	91.4	3.9	0		89	1.4	9.6	0		36.7	40.1	16.8	6.4		
PHF	.667	.500	.963	.000	.950	.393	.616	.375	.000	.586	.774	.250	.438	.000	.793	.873	.756	.809	.700	.868	.793



Levels of Service



HCM 6th TWSC
1: Old Glory Dr & Fontaine Blvd

Existing Traffic
AM Peak Hour

Intersection

Int Delay, s/veh 43.2

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↑↑	↗	↔	↑↑	↗	↔	↑	↗	↔	↑	↗
Traffic Vol, veh/h	64	72	361	26	26	379	19	97	1	11	46	1	222
Future Vol, veh/h	64	72	361	26	26	379	19	97	1	11	46	1	222
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Stop	Stop	Stop	Stop	Stop	Stop						
RT Channelized	-	-	-	None									
Storage Length	-	815	-	0	425	-	330	100	-	100	180	-	335
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	95	95	95	79	79	79	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	109	547	39	27	399	20	123	1	14	63	1	304

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	399	419	0	0	586	0	0	1213	1432	274	1139	1451	200
Stage 1	-	-	-	-	-	-	-	959	959	-	453	453	-
Stage 2	-	-	-	-	-	-	-	254	473	-	686	998	-
Critical Hdwy	6.44	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.52	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	802	1137	-	-	985	-	-	138	133	724	156	130	808
Stage 1	-	-	-	-	-	-	-	276	334	-	556	568	-
Stage 2	-	-	-	-	-	-	-	728	557	-	404	320	-
Platoon blocked, %			-	-			-						
Mov Cap-1 Maneuver	785	785	-	-	985	-	-	~ 67	95	724	118	93	808
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 67	95	-	118	93	-
Stage 1	-	-	-	-	-	-	-	204	246	-	410	553	-
Stage 2	-	-	-	-	-	-	-	440	542	-	291	236	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.9	0.5	\$ 471.2	21.4
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	67	95	724	785	-	-	985	-	-	118	93	808
HCM Lane V/C Ratio	1.833	0.013	0.019	0.262	-	-	0.028	-	-	0.534	0.015	0.376
HCM Control Delay (s)	\$ 527.9	43.4	10.1	11.2	-	-	8.8	-	-	66	44.3	12.1
HCM Lane LOS	F	E	B	B	-	-	A	-	-	F	E	B
HCM 95th %tile Q(veh)	11.1	0	0.1	1.1	-	-	0.1	-	-	2.5	0	1.8

Notes

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

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	32	10	54	154	0
Future Vol, veh/h	0	32	10	54	154	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	38	12	64	181	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	269	181	181	0	0
Stage 1	181	-	-	-	-
Stage 2	88	-	-	-	-
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	720	862	1394	-	-
Stage 1	850	-	-	-	-
Stage 2	935	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	714	862	1394	-	-
Mov Cap-2 Maneuver	724	-	-	-	-
Stage 1	842	-	-	-	-
Stage 2	935	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	1.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1394	-	862	-	-
HCM Lane V/C Ratio	0.008	-	0.044	-	-
HCM Control Delay (s)	7.6	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	4.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	6	10	1	1	15
Future Vol, veh/h	5	6	10	1	1	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	7	12	1	1	18

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	13	0	-	0	32
Stage 1	-	-	-	-	13
Stage 2	-	-	-	-	19
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	1606	-	-	-	982
Stage 1	-	-	-	-	1010
Stage 2	-	-	-	-	1004
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1606	-	-	-	978
Mov Cap-2 Maneuver	-	-	-	-	904
Stage 1	-	-	-	-	1006
Stage 2	-	-	-	-	1004

Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1606	-	-	-	1055
HCM Lane V/C Ratio	0.004	-	-	-	0.018
HCM Control Delay (s)	7.2	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection													
Int Delay, s/veh	12.5												
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↕	↕	↔	↕	↕	↔	↕	↕	↔	↕	↕
Traffic Vol, veh/h	42	241	263	110	11	212	9	65	1	7	8	2	104
Future Vol, veh/h	42	241	263	110	11	212	9	65	1	7	8	2	104
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Stop	Stop	Stop	Stop	Stop	Stop						
RT Channelized	-	-	-	None									
Storage Length	-	815	-	0	425	-	330	100	-	100	180	-	335
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	59	59	59	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	277	302	126	19	359	15	82	1	9	10	3	132

Major/Minor	Major1				Major2				Minor1				Minor2			
Conflicting Flow All	359	374	0	0	428	0	0	1171	1364	151	1199	1475	180			
Stage 1	-	-	-	-	-	-	-	952	952	-	397	397	-			
Stage 2	-	-	-	-	-	-	-	219	412	-	802	1078	-			
Critical Hdwy	6.44	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94			
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	2.52	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32			
Pot Cap-1 Maneuver	850	1181	-	-	1128	-	-	148	146	868	141	125	832			
Stage 1	-	-	-	-	-	-	-	279	336	-	600	602	-			
Stage 2	-	-	-	-	-	-	-	763	593	-	344	293	-			
Platoon blocked, %			-	-			-									
Mov Cap-1 Maneuver	1086	1086	-	-	1128	-	-	93	101	868	105	86	832			
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	93	101	-	105	86	-			
Stage 1	-	-	-	-	-	-	-	196	236	-	421	592	-			
Stage 2	-	-	-	-	-	-	-	629	583	-	237	205	-			

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.2	0.4	130.2	13.1
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	93	101	868	1086	-	-	1128	-	-	105	86	832
HCM Lane V/C Ratio	0.885	0.013	0.01	0.3	-	-	0.017	-	-	0.096	0.029	0.158
HCM Control Delay (s)	144.6	41.1	9.2	9.7	-	-	8.2	-	-	42.9	48.1	10.1
HCM Lane LOS	F	E	A	A	-	-	A	-	-	E	E	B
HCM 95th %tile Q(veh)	4.9	0	0	1.3	-	-	0.1	-	-	0.3	0.1	0.6

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	23	40	112	35	0
Future Vol, veh/h	0	23	40	112	35	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	27	47	132	41	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	267	41	41	0	0
Stage 1	41	-	-	-	-
Stage 2	226	-	-	-	-
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	722	1030	1568	-	-
Stage 1	981	-	-	-	-
Stage 2	812	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	700	1030	1568	-	-
Mov Cap-2 Maneuver	686	-	-	-	-
Stage 1	952	-	-	-	-
Stage 2	812	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	1.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1568	-	1030	-	-
HCM Lane V/C Ratio	0.03	-	0.026	-	-
HCM Control Delay (s)	7.4	-	8.6	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection						
Int Delay, s/veh	4.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	22	3	1	1	11
Future Vol, veh/h	18	22	3	1	1	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	26	4	1	1	13

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	5	0	-	0	73
Stage 1	-	-	-	-	5
Stage 2	-	-	-	-	68
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	1616	-	-	-	931
Stage 1	-	-	-	-	1018
Stage 2	-	-	-	-	955
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1616	-	-	-	919
Mov Cap-2 Maneuver	-	-	-	-	851
Stage 1	-	-	-	-	1005
Stage 2	-	-	-	-	955

Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1616	-	-	-	1055
HCM Lane V/C Ratio	0.013	-	-	-	0.013
HCM Control Delay (s)	7.3	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC
1: Old Glory Dr & Fontaine Blvd

Existing + Site-Generated Traffic
AM Peak Hour

Intersection														
Int Delay, s/veh	52.6													
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↕	↕		↔	↕	↕	↔	↕	↕	↔	↕	↕
Traffic Vol, veh/h	64	80	361	26	1	26	379	20	97	1	11	49	1	248
Future Vol, veh/h	64	80	361	26	1	26	379	20	97	1	11	49	1	248
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Stop	Stop	Stop	Stop	Stop	Stop							
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	815	-	0	-	425	-	330	100	-	100	180	-	335
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	95	95	95	95	79	79	79	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	121	547	39	1	27	399	21	123	1	14	67	1	340

Major/Minor	Major1			Major2			Minor1			Minor2				
Conflicting Flow All	399	420	0	0	547	586	0	0	1239	1459	274	1165	1477	200
Stage 1	-	-	-	-	-	-	-	-	983	983	-	455	455	-
Stage 2	-	-	-	-	-	-	-	-	256	476	-	710	1022	-
Critical Hdwy	6.44	4.14	-	-	6.44	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.52	2.22	-	-	2.52	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	802	1136	-	-	646	985	-	-	132	128	724	149	125	808
Stage 1	-	-	-	-	-	-	-	-	267	325	-	554	567	-
Stage 2	-	-	-	-	-	-	-	-	726	555	-	391	312	-
Platoon blocked, %			-	-			-	-						
Mov Cap-1 Maneuver	776	776	-	-	965	965	-	-	~ 58	89	724	111	87	808
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	~ 58	89	-	111	87	-
Stage 1	-	-	-	-	-	-	-	-	192	234	-	398	551	-
Stage 2	-	-	-	-	-	-	-	-	408	539	-	274	224	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.1	0.6	\$ 596	23.5
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	58	89	724	776	-	-	965	-	-	111	87	808
HCM Lane V/C Ratio	2.117	0.014	0.019	0.281	-	-	0.029	-	-	0.605	0.016	0.42
HCM Control Delay (s)	\$ 668.1	46	10.1	11.4	-	-	8.8	-	-	77.9	47	12.6
HCM Lane LOS	F	E	B	B	-	-	A	-	-	F	E	B
HCM 95th %tile Q(veh)	12	0	0.1	1.2	-	-	0.1	-	-	3	0	2.1

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

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #1 6:50

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	UL	T	T	R	UL	T	T	R	L	T	R	L
Stop Del/Veh (s)	3.6	3.5	3.4	1.9	3.7	4.7	3.7	2.6	4.7		3.7	5.2

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #1 6:50

Lane	SB	SB	All
Movements Served	T	R	
Stop Del/Veh (s)	2.6	3.8	3.9

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #2 7:05

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	UL	T	T	R	UL	T	T	R	L	T	R	L
Stop Del/Veh (s)	4.1	3.0	3.3	2.2	2.8	4.4	4.3	2.7	4.9	2.5	2.6	4.6

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #2 7:05

Lane	SB	SB	All
Movements Served	T	R	
Stop Del/Veh (s)	2.7	3.6	3.8

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #3 7:20

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	UL	T	T	R	UL	T	T	R	L	T	R	L
Stop Del/Veh (s)	7.5	4.4	4.1	2.8	5.1	7.1	4.7	3.7	6.4	1.6	3.5	7.0

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #3 7:20

Lane	SB	SB	All
Movements Served	T	R	
Stop Del/Veh (s)	22.9	5.4	5.6

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #4 7:35

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	UL	T	T	R	UL	T	T	R	L	T	R	L
Stop Del/Veh (s)	4.7	3.4	3.3	1.7	3.3	4.5	3.8	2.5	5.3		3.0	5.1

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #4 7:35

Lane	SB	SB	All
Movements Served	T	R	
Stop Del/Veh (s)	2.7	3.7	4.0

1: Old Glory Dr & Fontaine Blvd Performance by lane Entire Run

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	UL	T	T	R	UL	T	T	R	L	T	R	L
Stop Del/Veh (s)	5.5	3.7	3.7	2.3	3.9	5.3	4.4	3.0	5.4	4.8	3.6	5.6

1: Old Glory Dr & Fontaine Blvd Performance by lane Entire Run

Lane	SB	SB	All
Movements Served	T	R	
Stop Del/Veh (s)	3.6	4.3	4.5

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	0	32	22	0	0	10	56	7	0	161	0
Future Vol, veh/h	0	0	32	22	0	0	10	56	7	0	161	0
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									
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	38	26	0	0	12	66	8	0	189	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	283	287	189	302	283	70	189	0	0	74	0	0
Stage 1	189	189	-	94	94	-	-	-	-	-	-	-
Stage 2	94	98	-	208	189	-	-	-	-	-	-	-
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	669	623	853	650	626	993	1385	-	-	1526	-	-
Stage 1	813	744	-	913	817	-	-	-	-	-	-	-
Stage 2	913	814	-	794	744	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	664	617	853	618	620	993	1385	-	-	1526	-	-
Mov Cap-2 Maneuver	664	617	-	618	620	-	-	-	-	-	-	-
Stage 1	806	744	-	905	810	-	-	-	-	-	-	-
Stage 2	905	807	-	759	744	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	11.1	1	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1385	-	-	853	618	1526	-	-
HCM Lane V/C Ratio	0.008	-	-	0.044	0.042	-	-	-
HCM Control Delay (s)	7.6	-	-	9.4	11.1	0	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	5	6	2	1	10	1	7	0	3	1	0	15
Future Vol, veh/h	5	6	2	1	10	1	7	0	3	1	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	7	2	1	12	1	8	0	4	1	0	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	13	0	0	9	0	0	44	35	8	37	36	13
Stage 1	-	-	-	-	-	-	20	20	-	15	15	-
Stage 2	-	-	-	-	-	-	24	15	-	22	21	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1606	-	-	1611	-	-	958	857	1074	968	856	1067
Stage 1	-	-	-	-	-	-	999	879	-	1005	883	-
Stage 2	-	-	-	-	-	-	994	883	-	996	878	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1606	-	-	1611	-	-	939	853	1074	961	852	1067
Mov Cap-2 Maneuver	-	-	-	-	-	-	939	853	-	961	852	-
Stage 1	-	-	-	-	-	-	995	875	-	1001	882	-
Stage 2	-	-	-	-	-	-	977	882	-	989	874	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.8			0.6			8.7			8.5		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	976	1606	-	-	1611	-	-	1060
HCM Lane V/C Ratio	0.012	0.004	-	-	0.001	-	-	0.018
HCM Control Delay (s)	8.7	7.2	-	-	7.2	-	-	8.5
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection													
Int Delay, s/veh	16.6												
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↕	↕	↔	↕	↕	↔	↕	↕	↔	↕	↕
Traffic Vol, veh/h	42	271	263	110	11	212	10	65	1	7	8	2	122
Future Vol, veh/h	42	271	263	110	11	212	10	65	1	7	8	2	122
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Stop	Stop	Stop	Stop	Stop	Stop						
RT Channelized	-	-	-	None									
Storage Length	-	815	-	0	425	-	330	100	-	100	180	-	335
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	59	59	59	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	311	302	126	19	359	17	82	1	9	10	3	154

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	359	376	0	0	428	0	0	1239	1434	151	1267	1543	180
Stage 1	-	-	-	-	-	-	-	1020	1020	-	397	397	-
Stage 2	-	-	-	-	-	-	-	219	414	-	870	1146	-
Critical Hdwy	6.44	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.52	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	850	1179	-	-	1128	-	-	132	133	868	126	114	832
Stage 1	-	-	-	-	-	-	-	253	312	-	600	602	-
Stage 2	-	-	-	-	-	-	-	763	591	-	313	272	-
Platoon blocked, %			-	-			-						
Mov Cap-1 Maneuver	1088	1088	-	-	1128	-	-	~ 77	88	868	91	75	832
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 77	88	-	91	75	-
Stage 1	-	-	-	-	-	-	-	169	209	-	401	592	-
Stage 2	-	-	-	-	-	-	-	608	581	-	206	182	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.5	0.4	195.5	13.3
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	77	88	868	1088	-	-	1128	-	-	91	75	832
HCM Lane V/C Ratio	1.069	0.014	0.01	0.331	-	-	0.017	-	-	0.111	0.034	0.186
HCM Control Delay (s)	217.9	46.5	9.2	9.9	-	-	8.2	-	-	49.5	54.7	10.3
HCM Lane LOS	F	E	A	A	-	-	A	-	-	E	F	B
HCM 95th %tile Q(veh)	5.9	0	0	1.5	-	-	0.1	-	-	0.4	0.1	0.7

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

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #1 4:45

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	UL	T	T	R	UL	T	T	R	L	T	R	L
Stop Del/Veh (s)	3.5	2.8	2.9	2.0	3.4	3.4	3.4	3.6	4.3		5.7	3.6

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #1 4:45

Lane	SB	SB	All
Movements Served	T	R	
Stop Del/Veh (s)	4.6	3.0	3.2

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #2 5:00

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	UL	T	T	R	UL	T	T	R	L	T	R	L
Stop Del/Veh (s)	7.5	3.3	3.4	2.2	2.6	6.5	5.1	4.1	7.0		4.6	4.3

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #2 5:00

Lane	SB	SB	All
Movements Served	T	R	
Stop Del/Veh (s)	12.2	4.7	5.4

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #3 5:15

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	UL	T	T	R	UL	T	T	R	L	T	R	L
Stop Del/Veh (s)	3.7	2.5	2.5	2.1	2.7	3.5	5.5	2.7	4.2	2.1	2.7	3.4

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #3 5:15

Lane	SB	SB	All
Movements Served	T	R	
Stop Del/Veh (s)	3.2	2.8	3.1

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #4 5:30

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	UL	T	T	R	UL	T	T	R	L	T	R	L
Stop Del/Veh (s)	3.4	2.5	2.9	1.8	2.4	3.4	3.5	3.0	3.8		1.8	1.9

1: Old Glory Dr & Fontaine Blvd Performance by lane Interval #4 5:30

Lane	SB	SB	All
Movements Served	T	R	
Stop Del/Veh (s)	3.3	3.1	3.0

1: Old Glory Dr & Fontaine Blvd Performance by lane Entire Run

Lane	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Movements Served	UL	T	T	R	UL	T	T	R	L	T	R	L
Stop Del/Veh (s)	4.7	2.8	3.1	2.1	2.7	4.8	5.0	3.4	5.2	3.8	3.3	3.5

1: Old Glory Dr & Fontaine Blvd Performance by lane Entire Run

Lane	SB	SB	All
Movements Served	T	R	
Stop Del/Veh (s)	4.7	3.5	3.9

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	0	23	14	0	0	40	120	23	0	39	0
Future Vol, veh/h	0	0	23	14	0	0	40	120	23	0	39	0
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									
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	27	16	0	0	47	141	27	0	46	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	295	308	46	309	295	155	46	0	0	168	0	0
Stage 1	46	46	-	249	249	-	-	-	-	-	-	-
Stage 2	249	262	-	60	46	-	-	-	-	-	-	-
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	657	606	1023	643	616	891	1562	-	-	1410	-	-
Stage 1	968	857	-	755	701	-	-	-	-	-	-	-
Stage 2	755	691	-	951	857	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	642	588	1023	611	598	891	1562	-	-	1410	-	-
Mov Cap-2 Maneuver	642	588	-	611	598	-	-	-	-	-	-	-
Stage 1	939	857	-	732	680	-	-	-	-	-	-	-
Stage 2	732	670	-	926	857	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	11.1	1.6	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1562	-	-	1023	611	1410	-	-
HCM Lane V/C Ratio	0.03	-	-	0.026	0.027	-	-	-
HCM Control Delay (s)	7.4	-	-	8.6	11.1	0	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	18	22	8	1	3	1	4	0	1	1	0	11
Future Vol, veh/h	18	22	8	1	3	1	4	0	1	1	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	26	9	1	4	1	5	0	1	1	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	5	0	0	35	0	0	86	80	31	80	84	5
Stage 1	-	-	-	-	-	-	73	73	-	7	7	-
Stage 2	-	-	-	-	-	-	13	7	-	73	77	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1616	-	-	1576	-	-	900	810	1043	908	806	1078
Stage 1	-	-	-	-	-	-	937	834	-	1015	890	-
Stage 2	-	-	-	-	-	-	1007	890	-	937	831	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1616	-	-	1576	-	-	880	799	1043	897	795	1078
Mov Cap-2 Maneuver	-	-	-	-	-	-	880	799	-	897	795	-
Stage 1	-	-	-	-	-	-	925	823	-	1002	889	-
Stage 2	-	-	-	-	-	-	994	889	-	924	820	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.7	1.5	9	8.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	908	1616	-	-	1576	-	-	1060
HCM Lane V/C Ratio	0.006	0.013	-	-	0.001	-	-	0.013
HCM Control Delay (s)	9	7.3	-	-	7.3	-	-	8.4
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Appendix Table 1



**Appendix Table 1
Peak Hour Factor Calculations
Old Glory Dr and Fontaine Blvd
Ponderosa at Lorson Ranch**

**Existing Traffic Volumes⁽¹⁾
(vehicles per hour)**

AM Peak Hour																					
Time	Southbound					Westbound					Northbound					Eastbound					Total
	SBL	SBT	SBR	SBU	SB Total	WBL	WBT	WBR	WBU	WB Total	NBL	NBT	NBR	NBU	NB Total	EBL	EBT	EBR	EBU	EB Total	
6:50 AM	1	0	73	0	74	0	66	0	0	66	33	1	1	0	35	13	75	5	25	118	293
7:05 AM	4	0	52	0	70	0	87	0	0	87	29	0	1	0	34	18	63	2	19	102	293
7:20 AM	37	1	54	0	95	10	97	4	1	112	19	0	4	0	26	17	166	6	8	197	430
7:35 AM	4	0	43	0	48	16	129	15	0	160	16	0	5	0	21	24	57	13	12	106	335
TOTAL	46	1	222	0	287	26	379	19	1	425	97	1	11	0	116	72	361	26	64	523	1351
Peak-15			92					112					23					197			430
4x Peak-15			368					448					92					788			1720
60 Total			269					425					109					523			1351
PHF			0.73					0.95					1.18					0.66			0.79
Approach			SB					WB					NB					EB			
PHF -- USE⁽²⁾			0.73					0.95					0.79					0.66			
PM Peak Hour																					
Time	Southbound					Westbound					Northbound					Eastbound					Total
	SBL	SBT	SBR	SBU	SB Total	WBL	WBT	WBR	WBU	WB Total	NBL	NBT	NBR	NBU	NB Total	EBL	EBT	EBR	EBU	EB Total	
4:45 AM	2	1	27	0	30	2	35	1	0	38	13	0	4	0	17	69	77	26	4	176	261
5:00 AM	3	0	25	0	28	7	86	6	0	99	19	1	3	0	23	59	87	34	9	189	339
5:15 AM	1	0	27	0	28	1	52	1	0	54	21	0	0	0	21	54	39	26	14	133	236
5:30 AM	2	1	25	0	28	1	39	1	0	41	12	0	0	0	12	59	60	24	15	158	239
TOTAL	8	2	104	0	114	11	212	9	0	232	65	1	7	0	73	241	263	110	42	656	1075
Peak-15			28					99					23					189			339
4x Peak-15			112					396					92					756			1356
60 Total			114					232					73					656			1075
PHF			1.02					0.59					0.79					0.87			0.79
Approach			SB					WB					NB					EB			
PHF -- USE			0.79					0.59					0.79					0.87			

Notes:

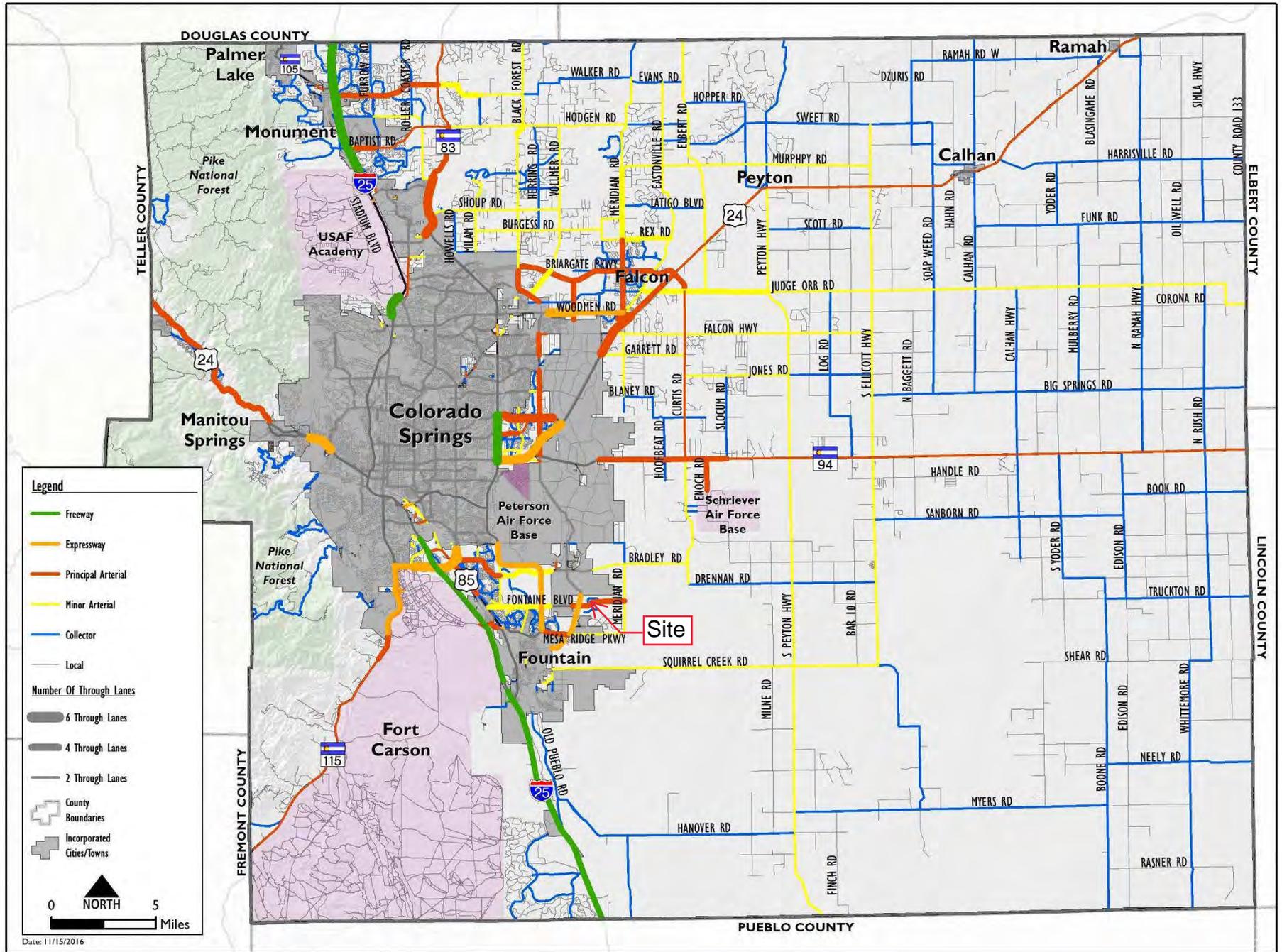
(1) Based on manual turning movement counts by LSC in October 2019

(2) The calculated peak hour factor for each approach is for the peak 15 minutes of the entire intersection. If the calculated peak hour factor is greater than or equal to one then the peak hour factor for the entire intersection is used in the analysis

Source: LSC Transportation Consultants, Inc.

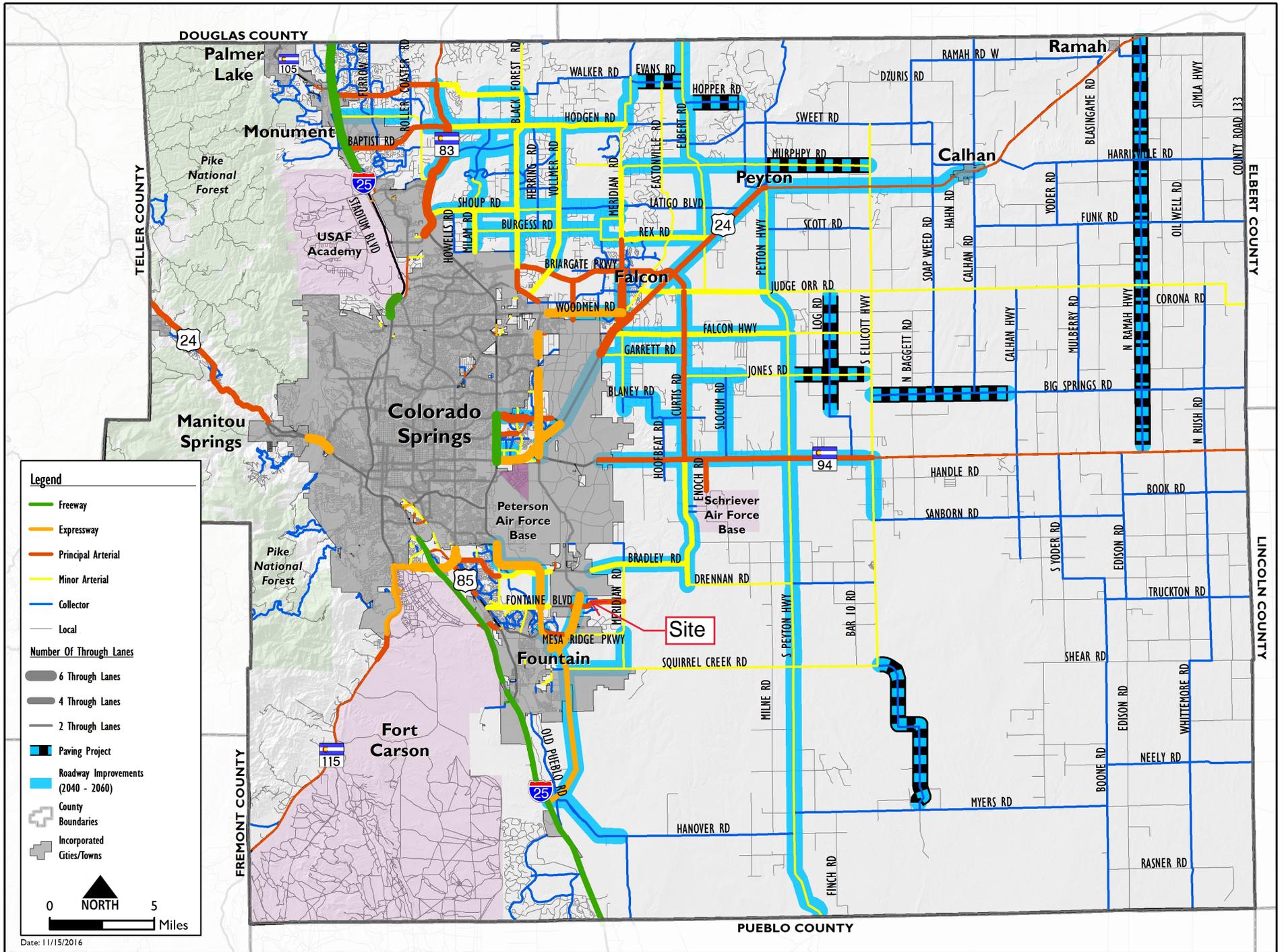
MTCP Maps





Map 14: 2040 Roadway Plan (Classification and Lanes)

Map 17: 2060 Corridor Preservation



Legend

- Freeway
- Expressway
- Principal Arterial
- Minor Arterial
- Collector
- Local

Number Of Through Lanes

- 6 Through Lanes
- 4 Through Lanes
- 2 Through Lanes

- Paving Project
- Roadway Improvements (2040 - 2060)

- County Boundaries
- Incorporated Cities/Towns

0 **NORTH** 5
Miles