

Red Rock Acres

Traffic Impact Study

Prepared for:
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MARCH 22, 2021

LSC Transportation Consultants
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LSC #194970
PCD File No P2010



CONTENTS

REPORT CONTENTS	1
PREVIOUS TRAFFIC STUDIES.....	2
LAND USE AND ACCESS	2
INTERSECTION SIGHT DISTANCE	2
North Subdivision Street Intersections <<(no name shown)>>	2
Driveway Access to Lots 34, 35, & 36	3
ROAD AND TRAFFIC CONDITIONS	3
Area Roads	3
Traffic Volumes	3
TRIP GENERATION.....	3
BACKGROUND TRAFFIC.....	4
TRIP DISTRIBUTION AND ASSIGNMENT.....	5
Trip Directional Distribution.....	5
Site-Generated Traffic.....	5
Short-Term Total Traffic Volumes	5
Long-Term Total Traffic Volumes	5
LEVEL OF SERVICE ANALYSIS	5
RECOMMENDED IMPROVEMENTS.....	6
Auxiliary Turn Lanes	6
Roadway Improvements	7
Rockbrook Road	7
Red Rock Ranch Drive.....	7
VEHICLE QUEUING	7
SUBDIVISION STREET CLASSIFICATIONS	7
MTCP ROADWAY IMPROVEMENTS	8
PEDESTRIAN AND BICYCLE ACCOMMODATION	8
COUNTY ROAD IMPROVEMENT FEE PROGRAM	8
Transportation Impact Fees	8
Reimbursable MTCP Improvements.....	8
DEVIATIONS TO ECM CRITERIA	8

FINDINGS AND CONCLUSIONS	9
Trip Generation	9
Recommendations	9
Enclosures:	10
Tables 4 and 5	
Figures 1-8	
Traffic Counts	
Level of Service Reports	



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March 22, 2021

Ingrid Richter
Olive Real Estate Group, Inc.
102 N Cascade Avenue, Suite 250
Colorado Springs, CO 80903

RE: Red Rock Acres
Traffic Impact Study
El Paso County, Colorado
PCD File No. P2010
LSC #194970

Dear Ms. Richter:

LSC Transportation Consultants, Inc. has prepared this transportation memorandum for the proposed development planned to be located southeast of the intersection of State Highway (SH) 105/Red Rock Ranch Drive in El Paso County, Colorado (parcel numbers 7109000024 and 7109014003). The site is proposed to have 37 single-family homes. This report has been prepared for submittal to El Paso County.

REPORT CONTENTS

The preparation of this report included the following:

- Inventory of the existing adjacent and nearby roadway system. This includes functional classifications, street widths, lane configurations, intersection traffic control, posted speed limits, pavement markings, intersection and access spacing, roadway and intersection alignments, auxiliary left- and right-turn lanes, intersection sight distances, etc.;
- A review of the proposed site land use and access locations;
- Morning and evening peak-hour traffic volumes at the intersections of SH 105/Red Rock Ranch Drive and SH 105/Rockbrook Road;
- Estimates of long-term background traffic volumes and total traffic (site traffic plus background traffic). Forecasts include buildout of the adjacent vacant parcel;
- Estimates of the daily and peak-hour trip generation for the proposed land use;
- The estimated directional distribution of site-generated vehicle trips on the study-area roadway system;

- Projections of peak-hour site-generated turning-movement traffic volumes at the study-area intersections;
- Level of service (LOS) analysis at the study-area intersections;
- Evaluation of the short-term and long-term projected intersection volumes to determine the potential need for any new auxiliary right-/left-turn lanes and/or the adequacy of existing lanes at the site access-point intersections and the other study-area intersections; and
- Findings and recommendations.

PREVIOUS TRAFFIC STUDIES

LSC is not aware of any traffic studies completed in the last five years in the study area.

LAND USE AND ACCESS

Figure 1 shows the site location relative to the adjacent and nearby roadways. The site plan is shown in Figure 2. As shown in Figure 2, the development is proposed to include 37 single-family homes.

Of the 37 proposed homes, 32 will have access to both Red Rock Ranch Drive and Rockbrook Road via an internal local street. The access onto Red Rock Ranch Drive will be located approximately 915 feet south of the SH 105 intersection (centerline to centerline). Three additional homes will have a shared access onto Red Rock Ranch Drive located approximately 1,750 feet further south on Red Rock Ranch Drive from the first access. Lastly, two homes will have access via the existing El Rancho Way.

INTERSECTION SIGHT DISTANCE

North Subdivision Street Intersections <<(no name shown)>>

The required sight distance, per the El Paso County *Engineering Criteria Manual (ECM)* and based on Table 2-21, is 390 feet for the proposed intersection on Red Rock Ranch Drive based on the current posted speed limit (plus 5 miles per hour (mph) for an assumed design speed of 35 mph). Based on an assumed design speed of 50 mph (the *ECM* standard design speed for Major Collector roadways), the required sight distance would be 555 feet. There is sufficient line of sight at the proposed intersection location to meet both of these minimum sight distance requirements. The intersection line of sight “triangles” will need to be kept free of site improvements and landscaping (that would limit the line of sight needed to maintain *ECM* prescribed sight distance).

Driveway Access to Lots 34, 35, & 36

Based on the current posted speed limit, the access point requires an entering sight distance of 300 feet at this location based on *ECM* Table 2-35. Per Table 2-33, the minimum sight distance for the roadway is 200 feet. The curve to the north of the access point will need to be kept clear to maintain sight distance. Additionally, the slope along the east side of the roadway to the north of the access will potentially need to be regraded/shaved-off to provide minimum sight distance.

Note: At this location, application of an *ECM*-standard posted speed for the classification has not been provided. Given the site-specific conditions at this location, it would be impossible to achieve a design speed of 50 mph through the horizontal curve adjacent to this proposed access point.

ROAD AND TRAFFIC CONDITIONS

Area Roads

Figure 1 shows the streets in the vicinity of the site. The streets adjacent to the site are identified below, followed by a brief description of each:

- **SH 105** is a two-lane, Non-Rural Principal Highway (NR-A) that extends west from I-25 to Palmer Lake. After Palmer Lake, the roadway turns to the north and becomes Perry Park Road. The posted speed limit is 50 miles per hour (mph). There are currently no acceleration or deceleration lanes at the unsignalized intersections with Red Rock Ranch Drive or Rockbrook Road.
- **Red Rock Ranch Drive** is a two-lane, Rural Major Collector road that extends south from SH 105. The roadway has a posted speed limit of 30 mph.
- **Rockbrook Road** is a two-lane, Rural Gravel Local road that extends 1,400 feet south of SH 105.

Traffic Volumes

Traffic counts were conducted in November and December 2019 at the study intersections. Figure 3 provides the peak-hour traffic counts. These counts were conducted prior to the COVID-19 pandemic.

TRIP GENERATION

Estimates of the vehicle trips projected to be generated by the proposed development have been made using the nationally published trip-generation rates from *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). The ITE land use Single-Family Detached Housing (ITE Code 210) was used for the analysis. The average rates, rather than the fitted-curve equation, were used to estimate vehicle trips. This is because the proposed residential development is surrounded by a larger residential development that also is accessed via Red Rock

Ranch Road. The fitted-curve equations reflect that as residential developments get larger, the trip-generation rates per unit drop. Analyzing the 37-unit proposed development using the equations when it is actually part of a larger residential community would show higher trip generation than would be expected.

Table 1, below, presents a summary of the estimated site trip generation on a typical weekday. The detailed trip-generation estimate for the development, including ITE rates for the proposed land use, is presented in Table 4.

Approximately 340 total vehicle trips are projected to enter and exit the site at the access point (“driveway trips”) on the average weekday during a 24-hour period. During the morning peak hour, approximately 7 vehicles would enter and 20 vehicles would exit the site. During the evening peak hour, approximately 23 vehicles would enter and 13 vehicles would exit the site.

Table 1: Estimated Site Vehicle-Trip Generation (Vehicles per Hour)

Analysis Period	Total Trips		
	In	Out	Total
A.M. Peak Hour	7	21	28
P.M. Peak Hour	24	13	37
Daily/24-Hour	175	175	350

BACKGROUND TRAFFIC

Background traffic includes growth that is projected to occur on the study roadways due to future development in the area. Background volumes do not include projected traffic to be generated by the proposed development.

Long-term volumes have been projected assuming 1.15 percent growth per year for the through volumes on SH 105. This growth rate was based on CDOT forecasted growth for the roadway in the vicinity of the study area.

There is an undeveloped parcel west of Red Rock Ranch Drive. At this time, there are no known plans to develop the parcel. It was assumed that the parcel would be developed based on the current zoning of RR-5, which would allow for approximately 8 single-family homes. The resulting trips were added to Red Rock Ranch Drive. Additionally, it was assumed that the access to these homes would be located across from the proposed access for Red Rock Acres. It should be noted that these are estimates based on current zoning and are subject to change. Figure 4 shows the projected 20-year background traffic volumes for the year 2040.

TRIP DISTRIBUTION AND ASSIGNMENT

Trip Directional Distribution

Estimation of the directional distribution of site-generated vehicle trips to the study-area roads and intersections is a necessary component in determining the site's traffic impacts. Figure 5 shows the directional distribution estimates for the proposed development. Estimates were based on the following factors: existing traffic counts, existing area development, and the area roadway system. It was assumed that 15 percent of site-generated traffic would travel to/from the west via SH 105 while the remaining 85 percent would travel to/from the east via SH 105. These splits match the existing traffic splits at this location from the existing residential developments.

Site-Generated Traffic

Site-generated traffic volumes at the study intersections have been calculated by applying the directional-distribution percentages estimated by LSC to the trip-generation estimates (from Table 2). Figure 6 provides the site-generated traffic for the site.

Short-Term Total Traffic Volumes

Figure 7 shows the sum of the existing traffic volumes (from Figure 3) and the site-generated peak-hour traffic volumes for the development (shown in Figure 6). These volumes represent the projected short-term total traffic following construction of the development.

Long-Term Total Traffic Volumes

Figure 8 shows the projected 2040 total traffic volumes, which are the sum of 2040 background traffic volumes (from Figure 4) plus the site-generated traffic volumes (from Figure 6).

LEVEL OF SERVICE ANALYSIS

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection and is indicated on a scale from "A" to "F." LOS A is indicative of little congestion or delay. LOS F indicates a high level of congestion or delay. Table 2 shows the level of service delay ranges for signalized and unsignalized intersections.

Table 2: Intersection Levels of Service Delay Ranges

Level of Service	Signalized Intersections	Unsignalized Intersections
	Average Control Delay (seconds per vehicle)	Average Control Delay (seconds per vehicle) ⁽¹⁾
A	10.0 sec or less	10.0 sec or less
B	10.1-20.0 sec	10.1-15.0 sec
C	20.1-35.0 sec	15.1-25.0 sec
D	35.1-55.0 sec	25.1-35.0 sec
E	55.1-80.0 sec	35.1-50.0 sec
F	80.1 sec or more	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 study intersections have been analyzed to determine the projected control delay and corresponding levels of service for turning movements. Figure 3 provides the existing levels of service. Figure 4 provides the background levels of service for the long-term scenarios. Figure 7 and Figure 8 provide the levels of service for the short-term and long-term total traffic scenarios, respectively.

All yielding turning movements at the unsignalized study intersections currently operate at LOS B or better during both peak hours. In all future scenarios, the yielding turning movements are expected to operate at LOS C or better.

RECOMMENDED IMPROVEMENTS

Auxiliary Turn Lanes

Per the CDOT State Highway Access Code, a left-turn deceleration lane is required on an NR-A when the turning volume exceeds 10 vehicles per hour (vph). A right-turn deceleration lane is required when the turning volume exceeds 25 vph and a right-turn acceleration lane is required when the turning volume exceeds 50 vph.

Based on the existing turning volumes, a left-turn deceleration lane and right-turn acceleration lane are required at the intersection of SH 105/Red Rock Ranch Drive. It is anticipated that in the short-term, with the construction of the development, a left-turn deceleration lane will also be required at the intersection of SH 105/Rockbrook Road.

In the long-term total scenario, it is projected that a right-turn deceleration lane will be required at the intersection of SH 105/Red Rock Ranch Drive. It should be noted that the volume threshold for this movement is not shown to be exceeded with the addition of site-generated traffic from the proposed Red Rock Acres. However, the threshold could be exceeded with the assumed

development of the parcel west of Red Rock Ranch Drive and/or other added background traffic. As the turn lane would be warranted with a volume exceeding 25 vph, this movement should be monitored for volume exceeding 25 vph and the turn lane should be reassessed with the development of the parcel west of Red Rock Ranch Drive. Table 3 provides the required turn-lane lengths and timing for each required acceleration/deceleration lane.

Table 3: Acceleration/Deceleration Lanes

Intersection	Lane	Length	Timing
SH 105 / Red Rock Ranch Drive	Westbound Left-Turn Deceleration	100' Storage 500' Decelation including Taper (180' Taper)	Existing need
SH 105 / Red Rock Ranch Drive	Northbound to Eastbound Right-Turn Acceleration	760' Acceleration including Taper (180' Taper)	Existing need
SH 105 / Rockbrook Road	Westbound Left-Turn Deceleration	25' Storage 500' Decelation including Taper (180' Taper)	Short-Term
SH 105 / Red Rock Ranch Drive	Eastbound Right-Turn Deceleration	500' Decelation including Taper (180' Taper)	When the right-turn volume exceeds 25 vph

Source: LSC Transportation Consultants, Inc.

No other auxiliary turn lanes will be required for the proposed development.

Roadway Improvements

Rockbrook Road

Per the ECM, roads must be paved if the average daily volume exceeds 200 vehicles per day (vpd). It is estimated, based on the turning-movement counts, that the current volume on Rockbrook Road is 180 vpd. With the addition of the site-generated traffic, it is expected that this roadway will exceed the 200 vpd threshold. Therefore, it is recommended that Rockbrook Road between the site access and SH 105 be paved.

Red Rock Ranch Drive

It is recommended that the section between SH 105 and the first intersection be upgraded to Rural Major Collector standards. Credit through the fee program may be available for this improvement.

VEHICLE QUEUING

The 95th-percentile queue length at all the study intersection is projected to be 50 feet or less. The projected queue lengths are not expected to impact any adjacent intersections or exceed required storage lengths.

SUBDIVISION STREET CLASSIFICATIONS

The north street that runs through the site between Red Rock Ranch Drive and Rockbrook Road will have a Rural Local classification.

The short stub that connects the southeast lots to El Rancho Way will have a Gravel Local classification. This street currently has 17 lots that use the roadway for access. The additional two lots will result in an estimated 180 vpd, which is below the paving threshold of 200 vpd for El Paso County.

MTCP ROADWAY IMPROVEMENTS

The 2016 El Paso County Major Transportation Corridor Plan does not show any planned improvements in the study area.

PEDESTRIAN AND BICYCLE ACCOMMODATION

No sidewalks are required on the existing or proposed roadways, due to the rural classification. There are no trail connections in the immediate vicinity of the site.

COUNTY ROAD IMPROVEMENT FEE PROGRAM

Transportation Impact Fees

Per ECM Appendix B: *State what the current applicable Transportation Impact Fees are and what option the developer will be selecting for payment.*

The applicant intends to opt out of the PID options and will pay the full-fee amount at the time of building permit. The current “full fee” is \$3,830 per dwelling unit. The total fee amount for the proposed development is \$141,710 for the development.

Reimbursable MTCP Improvements

There may be reimbursable improvements with the upgrading of Red Rock Ranch Drive and the construction of the required auxiliary lanes on SH 105.

DEVIATIONS TO ECM CRITERIA

The following deviations may be required:

- Public street intersection spacing Rural Major Collector for the first intersection back from an arterial roadway
- Access to a Rural Major Collector

FINDINGS AND CONCLUSIONS

Trip Generation

- The development is expected to generate approximately 350 vehicle trips on the average weekday with approximately 28 trips occurring during the morning peak hour and 37 trips during the evening peak hour when first constructed.

Recommendations

- It is recommended that Rockbrook Road be paved between the site access and SH 105.
- It is recommended that Red Rock Ranch Drive be upgraded to meet Rural Major Collector standards
- At the intersection of SH 105/Red Rock Ranch Drive, the westbound left-turn currently exceeds CDOT thresholds for requiring a deceleration lane. The northbound to eastbound right-turn exceeds the threshold for requiring an acceleration lane.
- With the development of the site, the intersection of SH 105/Rockbrook Road will require a left-turn deceleration lane. Any concerns pertaining to design, length of turn lanes, and/or right-of-way impacts will be addressed during the CDOT access permit process.
- With the development of the vacant parcel located southwest of the SH 105/Red Rock Ranch Drive, an eastbound right-turn deceleration lane will be required OR if prior to that development, if the eastbound right-turn volume exceeds 25 vph.
- See Table 3 for additional auxiliary lane details. See Table 5 for all recommended improvements.
- Colorado State Highway Access Permits will likely be required for Red Rock Ranch Drive and Rockbrook Road intersections with SH 105. Any hydraulics and/or stormwater studies pertaining to future improvements will be addressed during the CDOT access permit process and/or preliminary plan/final plat phases.
- Emergency evacuation scenarios will be discussed with Tri-Lakes Monument Fire Protection District during the CDOT access permit process, as the traffic improvements recommended in this report will likely result in improvements to current traffic conditions.

An email was sent to LSC on 2/25/21 regarding impacts the recommended auxiliary turn lanes along hwy 105 will have on the existing driveways in that area. We understand that CDOT will govern any improvements on this HWY. Staff recommends that the impacts to the current driveways be addressed in this report as it is likely to be brought up at the public hearing as it appears that there is much opposition to this rezone.

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

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

By: Colleen Guillotte, P.E., PTOE, RSP
Project Manager

JCH:jas

Enclosures: Tables 4-5
Figures 1-8
Traffic Counts
Level of Service Reports

Tables



Table 4: Detailed Site Trip Generation Estimate

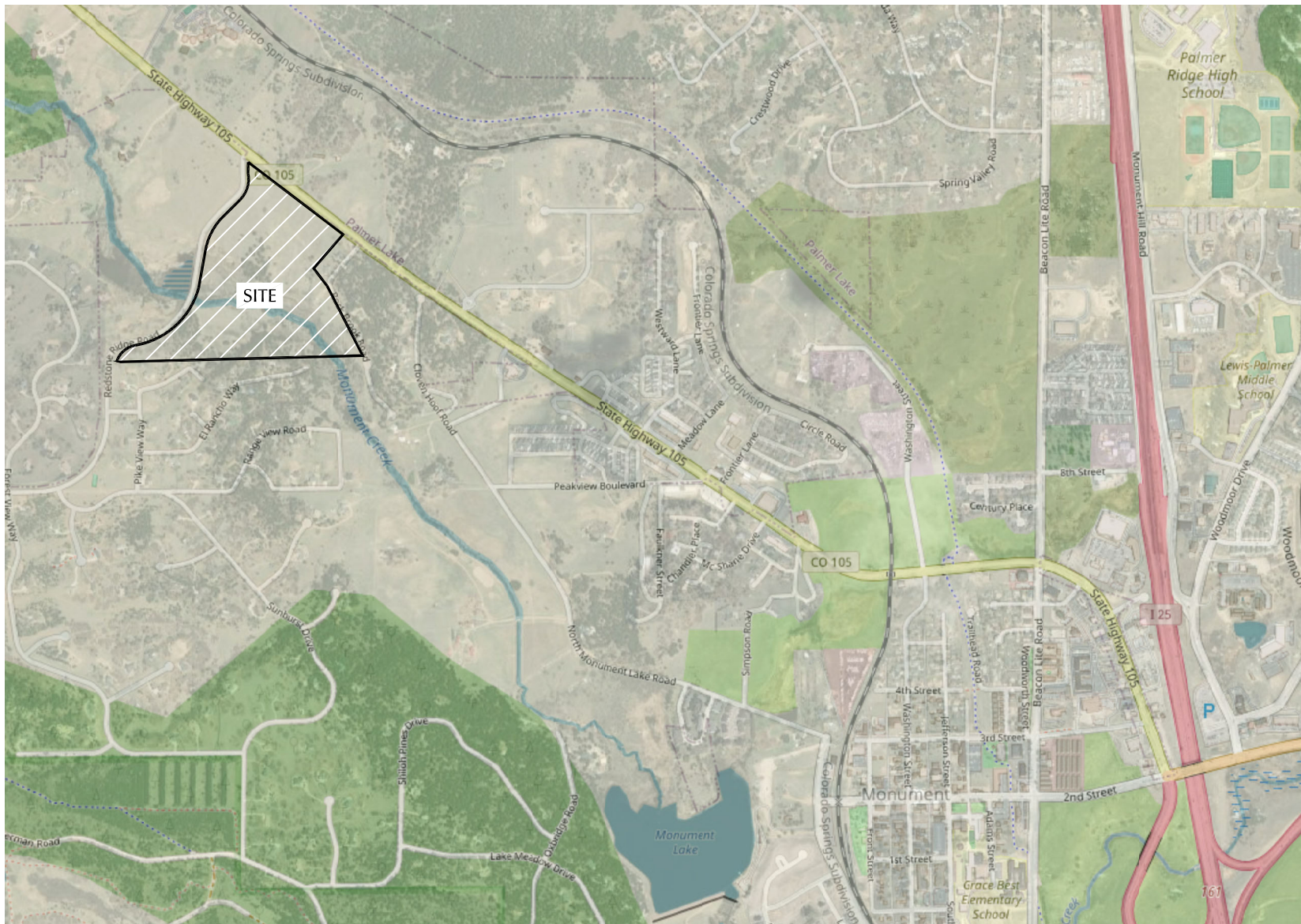
Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾				Total Trips Generated					
			Average Weekday Traffic ⁽²⁾	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour	
				In	Out	In	Out		In	Out	In	Out
210	Single Family Housing	36	9.44	0.20	0.56	0.64	0.36	340	7	20	23	13
<p>Notes:</p> <p>(1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)</p> <p>(2) DU = dwelling unit</p> <p>Source: LSC Transportation Consultants, Inc.</p>												

Table 5: Recommended Improvements

Item #	Location	Improvement	Timing	Responsibility
1	SH 105 / Red Rock Ranch Drive	Westbound Left-Turn Deceleration	Existing need	Red Rock Acres
2	SH 105 / Red Rock Ranch Drive	Northbound to Eastbound Right-Turn Acceleration	Existing need	Red Rock Acres
3	SH 105 / Rockbrook Road	Westbound Left-Turn Deceleration	Short-Term	Red Rock Acres
4	Rockbrook Road	Pave roadway between site access and SH 105	Short-Term	Red Rock Acres
5	SH 105 / Red Rock Ranch Drive	Eastbound Right-Turn Deceleration	When the right-turn volume exceeds 25 vph	Shared responsibility between Red Rock Acres/future developer to the west
6	North Subdivision Street	Construction	Short-Term	Red Rock Acres
7	El Rancho Way	Extension	Short-Term	Red Rock Acres
<i>Source: LSC Transportation Consultants, Inc.</i>				

Figures





Not to scale

Figure 1
Vicinity Map
 Red Rock Acres (LSC# 194970)



Scale:
1"=400'

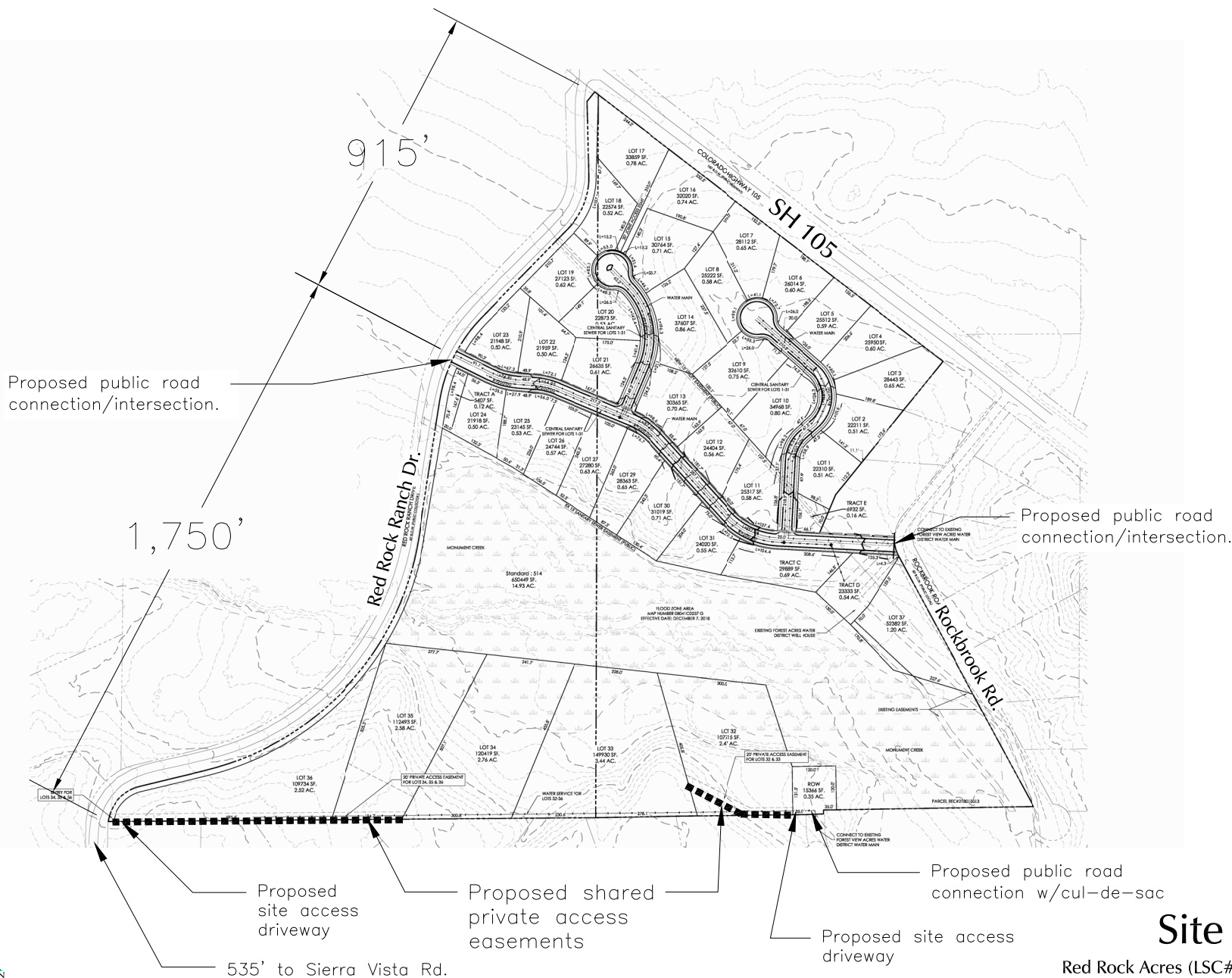
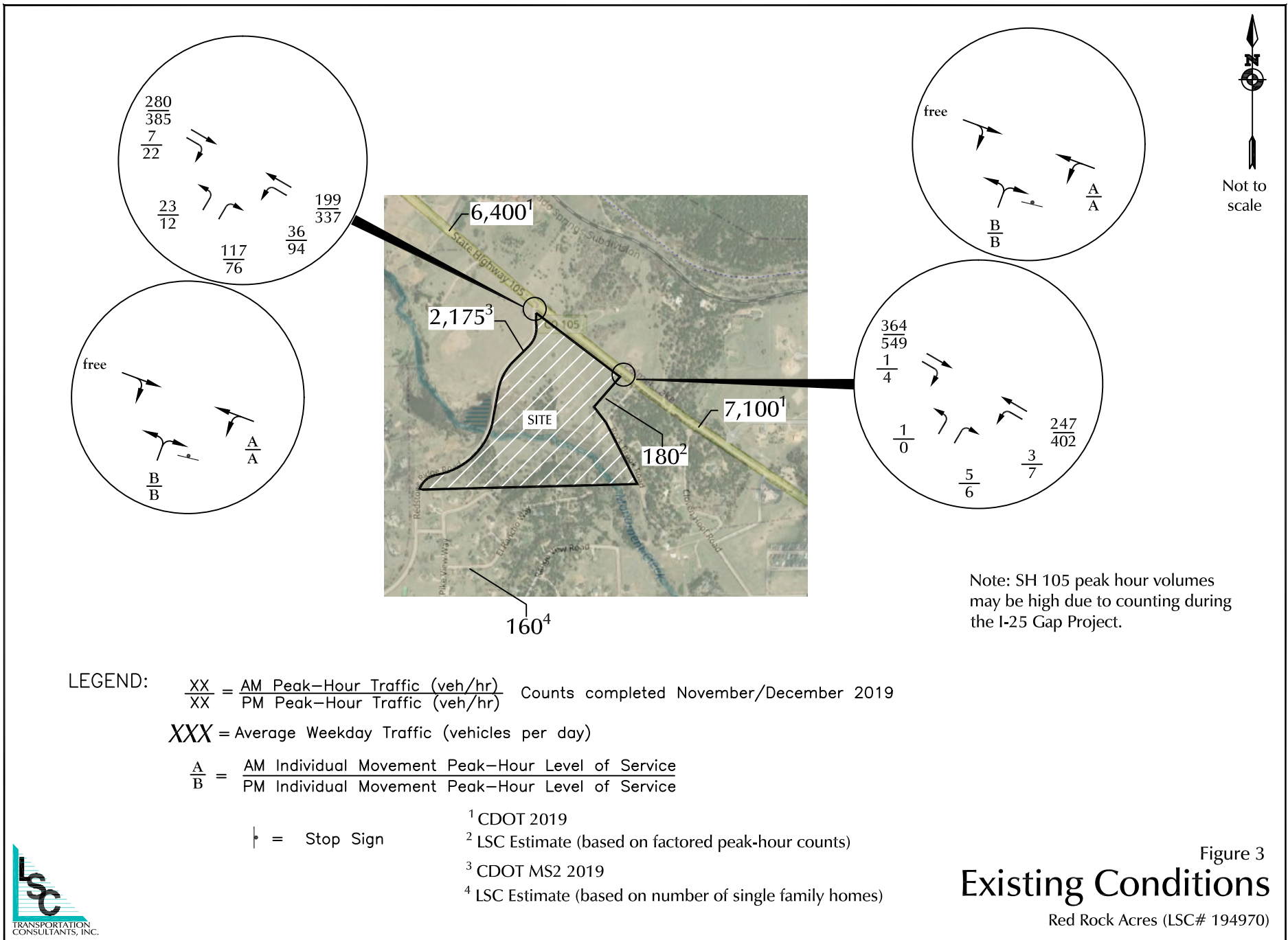


Figure 2
Site Plan
Red Rock Acres (LSC# 194970)



TRANSPORTATION
CONSULTANTS, INC.



Note: SH 105 peak hour volumes may be high due to counting during the I-25 Gap Project.

LEGEND: $\frac{XX}{XX}$ = AM Peak-Hour Traffic (veh/hr) / PM Peak-Hour Traffic (veh/hr) Counts completed November/December 2019

XXX = Average Weekday Traffic (vehicles per day)

$\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

⊥ = Stop Sign

¹ CDOT 2019

² LSC Estimate (based on factored peak-hour counts)

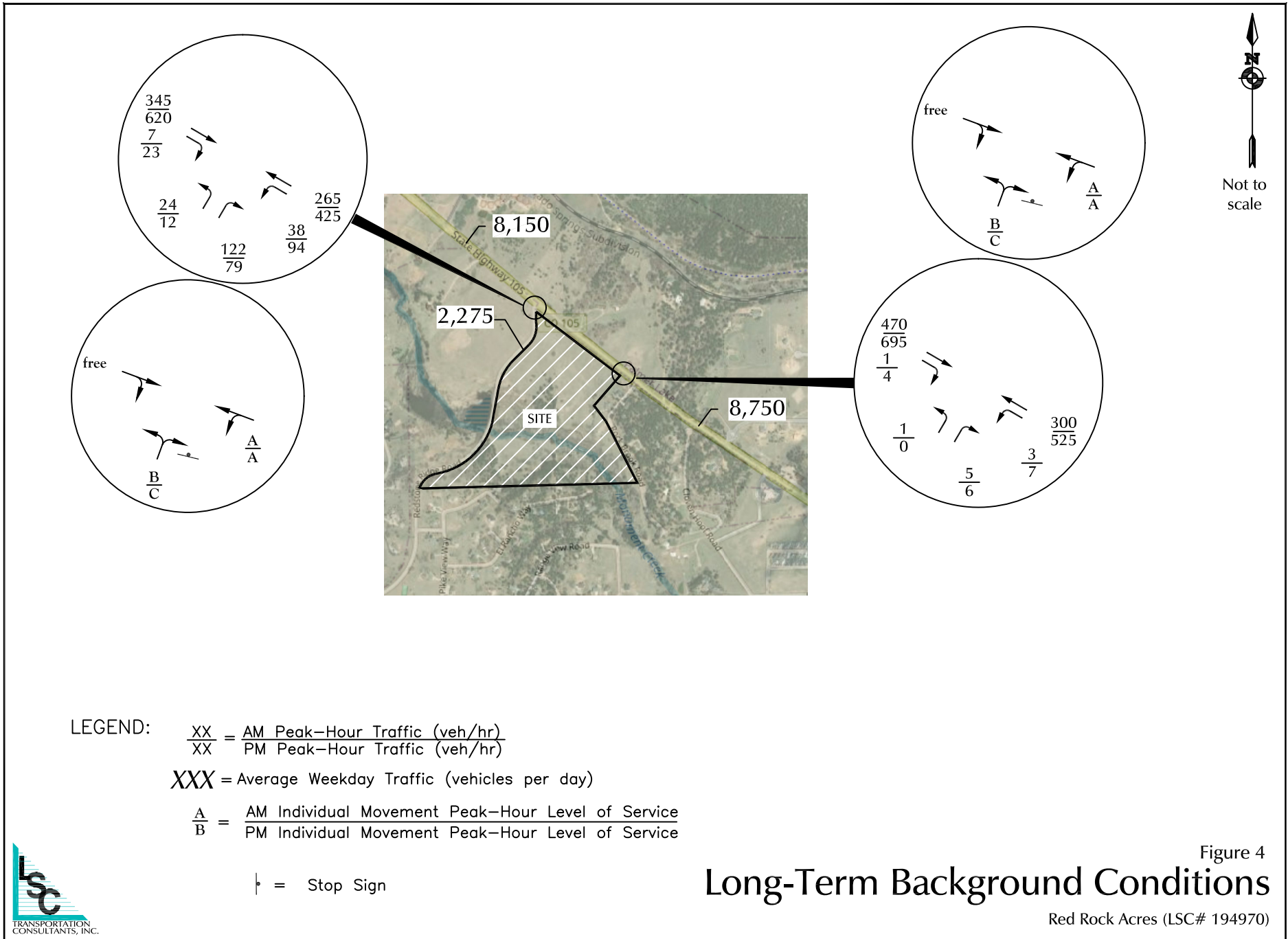
³ CDOT MS2 2019

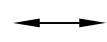
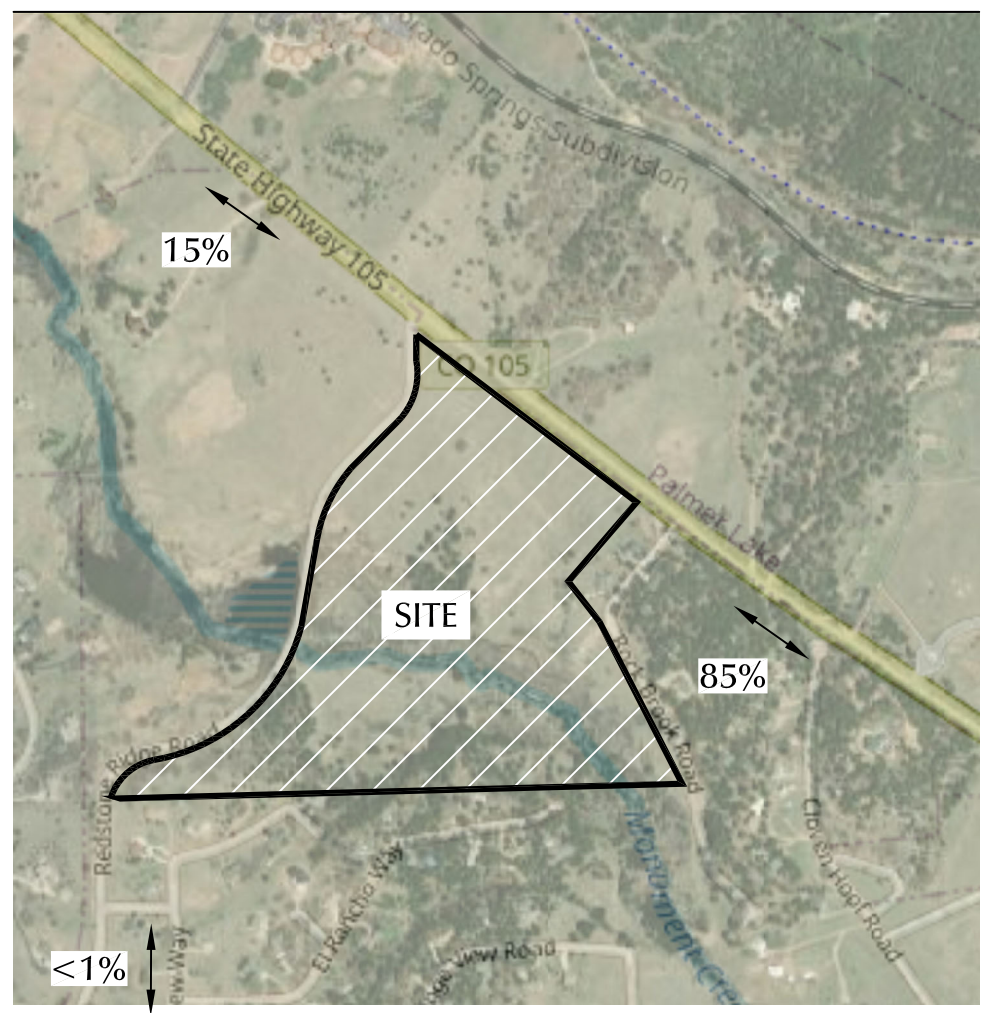
⁴ LSC Estimate (based on number of single family homes)



Figure 3
Existing Conditions

Red Rock Acres (LSC# 194970)





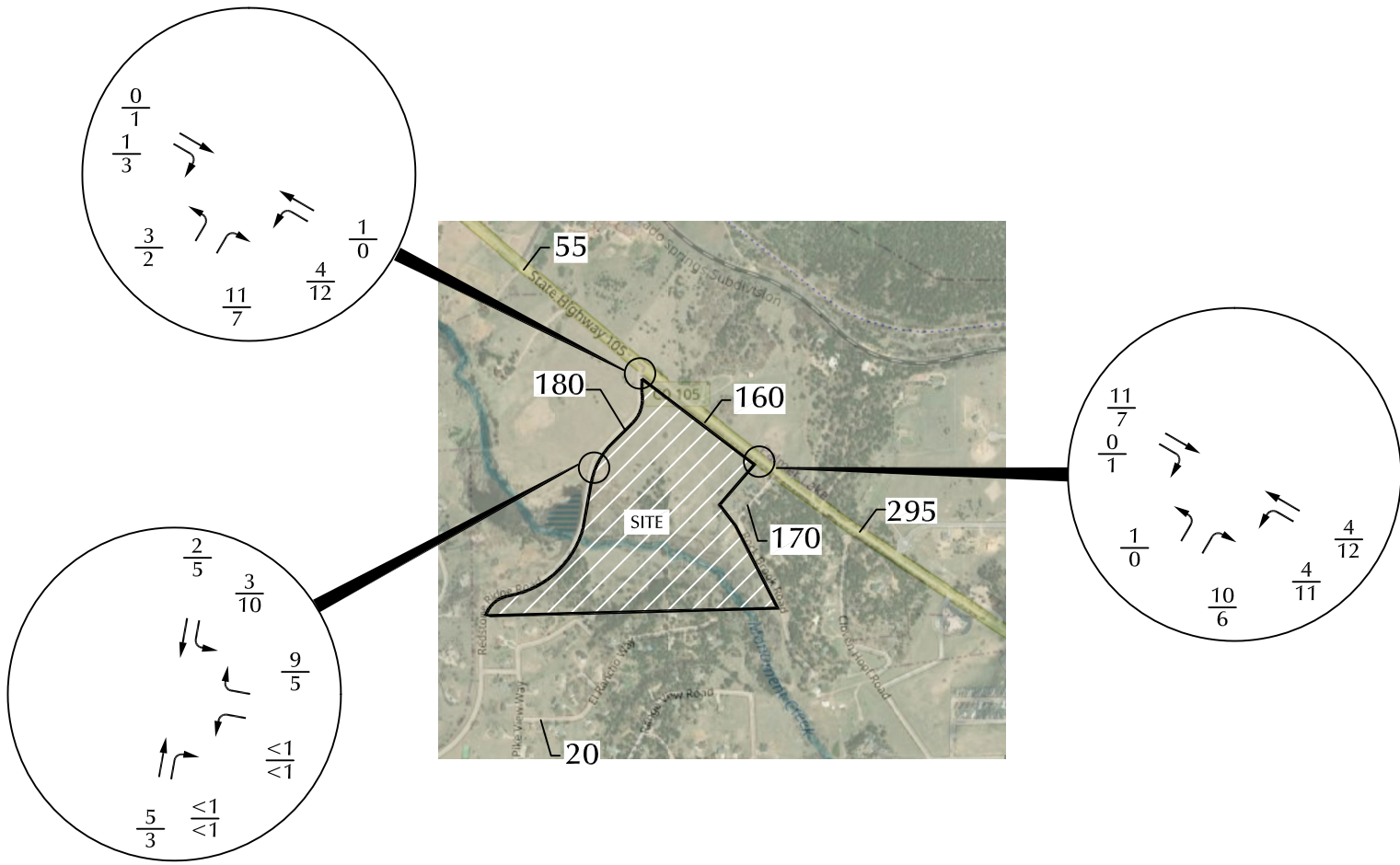
XX% = Percent Directional Distribution



Figure 5
Trip Distribution
Red Rock Acres (LSC# 194970)



Not to scale



LEGEND: $\frac{XX}{XX} = \frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$

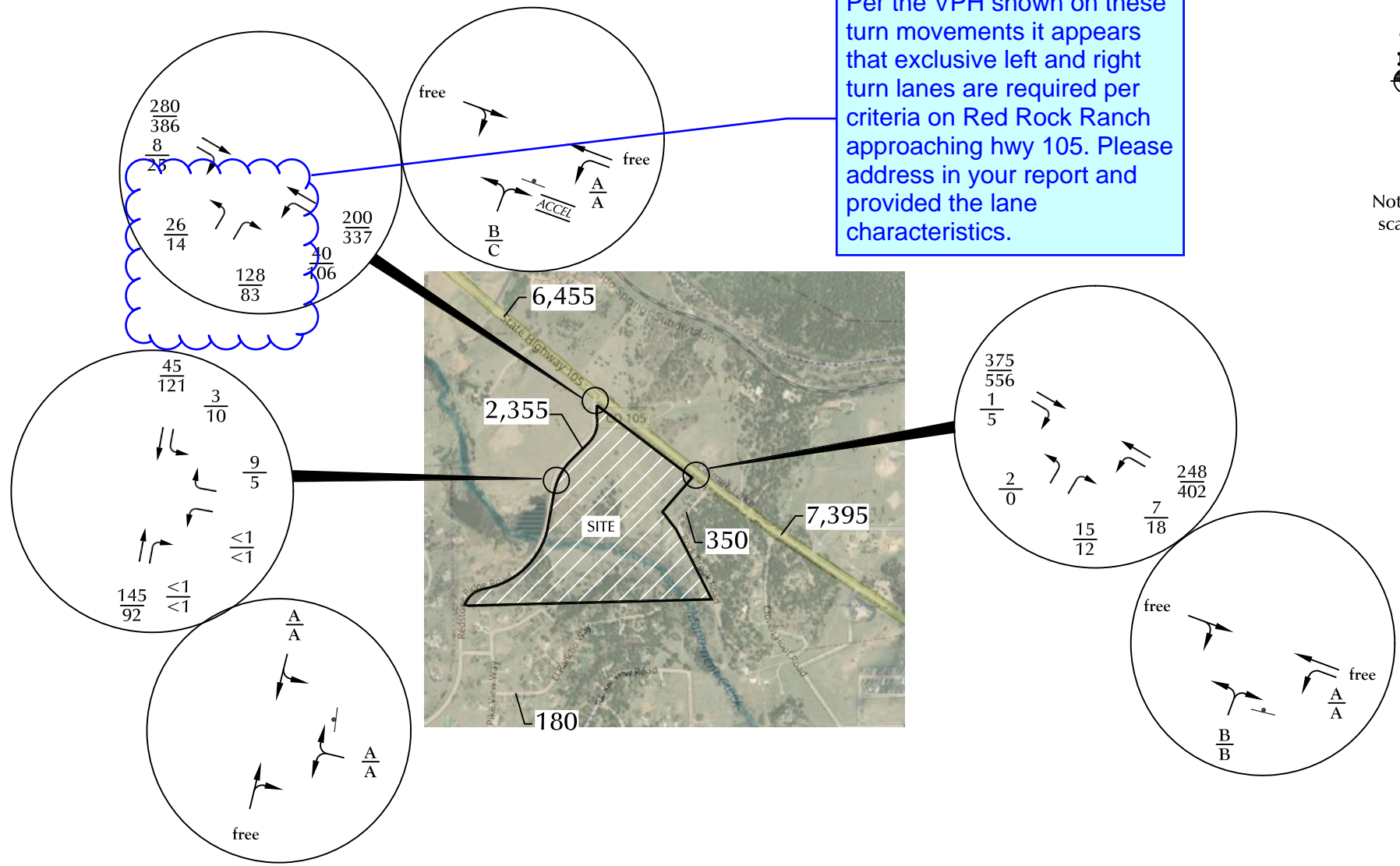
XXX = Average Weekday Traffic (vehicles per day)

Figure 6
Site-Generated Traffic

Red Rock Acres (LSC# 194970)



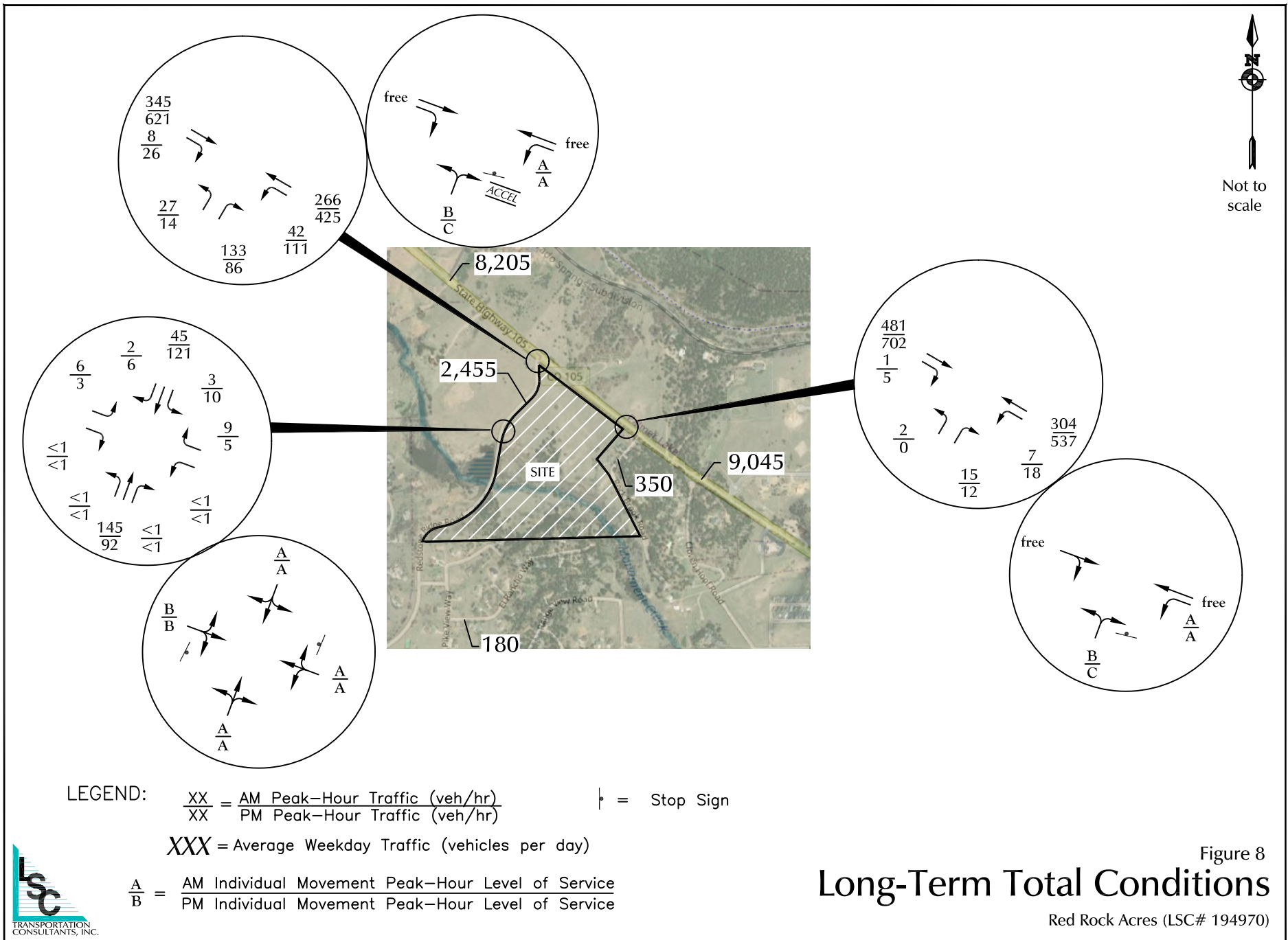
Per the VPH shown on these turn movements it appears that exclusive left and right turn lanes are required per criteria on Red Rock Ranch approaching hwy 105. Please address in your report and provided the lane characteristics.



LEGEND: $\frac{XX}{XX} = \frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$ $\updownarrow = \text{Stop Sign}$
 $XXX = \text{Average Weekday Traffic (vehicles per day)}$
 $\frac{A}{B} = \frac{\text{AM Individual Movement Peak-Hour Level of Service}}{\text{PM Individual Movement Peak-Hour Level of Service}}$

Figure 7
Short-Term Total Conditions
 Red Rock Acres (LSC# 194970)





Traffic Counts





LSC Transportation Consultants, Inc.

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File Name : Red Rock Ranch Dr - Hwy 105 AM
 Site Code : 194970
 Start Date : 11/6/2019
 Page No : 1

Groups Printed- Unshifted

Start Time	Southbound					Hwy 105 Westbound					Red Rock Ranch Dr Northbound					Hwy 105 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	
06:30 AM	0	0	0	0	0	1	28	0	0	29	6	0	14	0	20	0	49	0	0	49	98
06:45 AM	0	0	0	0	0	5	42	0	0	47	5	0	22	0	27	0	57	0	0	57	131
Total	0	0	0	0	0	6	70	0	0	76	11	0	36	0	47	0	106	0	0	106	229
07:00 AM	0	0	0	0	0	6	36	0	0	42	9	0	35	0	44	0	75	1	0	76	162
07:15 AM	0	0	0	0	0	5	35	0	0	40	6	0	36	0	42	0	73	3	0	76	158
07:30 AM	0	0	0	0	0	12	60	0	0	72	5	0	30	0	35	0	67	2	0	69	176
07:45 AM	0	0	0	0	0	13	68	0	0	81	3	0	16	0	19	0	65	1	0	66	166
Total	0	0	0	0	0	36	199	0	0	235	23	0	117	0	140	0	280	7	0	287	662
08:00 AM	0	0	0	0	0	20	43	0	0	63	2	0	17	0	19	0	54	3	0	57	139
08:15 AM	0	0	0	0	0	7	41	0	0	48	3	0	20	0	23	0	53	1	0	54	125
Grand Total	0	0	0	0	0	69	353	0	0	422	39	0	190	0	229	0	493	11	0	504	1155
Apprch %	0	0	0	0		16.4	83.6	0	0		17	0	83	0		0	97.8	2.2	0		
Total %	0	0	0	0	0	6	30.6	0	0	36.5	3.4	0	16.5	0	19.8	0	42.7	1	0	43.6	

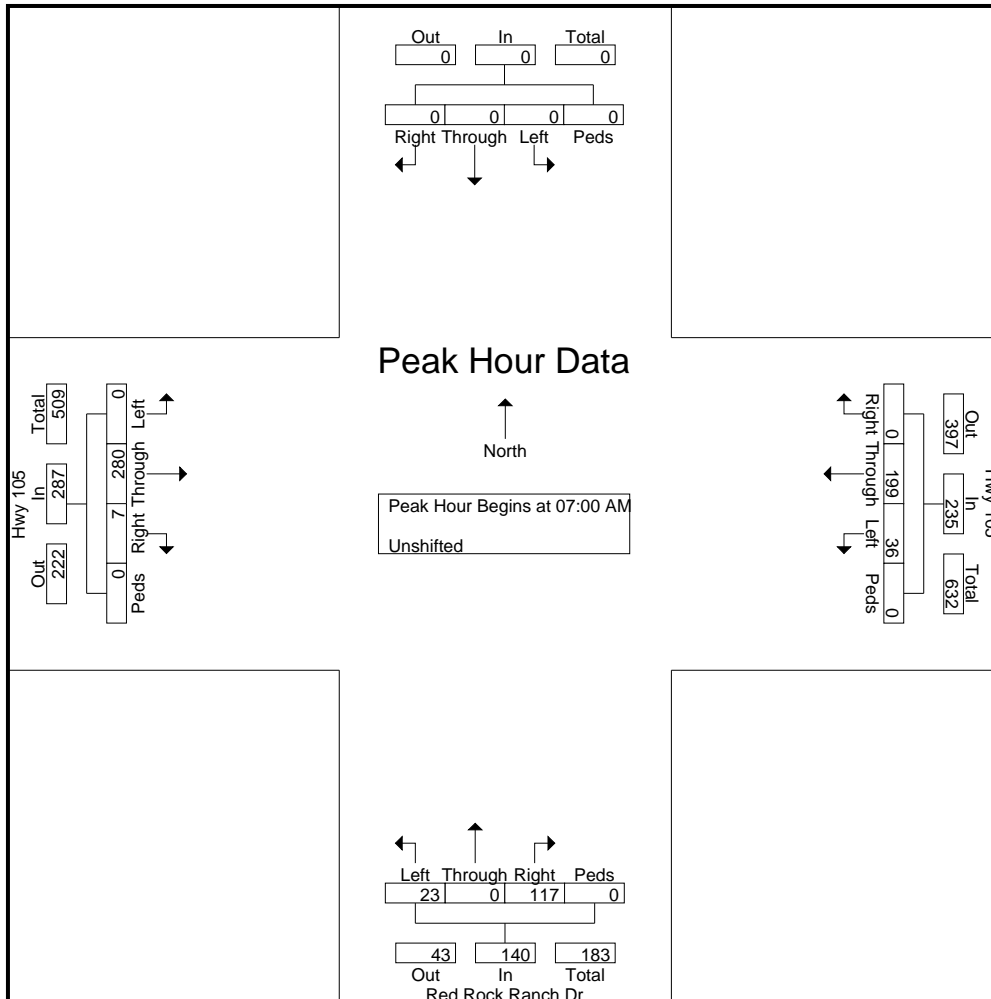


LSC Transportation Consultants, Inc.

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 Colorado Springs, CO 80905
 719-633-2868

File Name : Red Rock Ranch Dr - Hwy 105 AM
 Site Code : 194970
 Start Date : 11/6/2019
 Page No : 2

Start Time	Southbound					Hwy 105 Westbound					Red Rock Ranch Dr Northbound					Hwy 105 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 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	6	36	0	0	42	9	0	35	0	44	0	75	1	0	76	162
07:15 AM	0	0	0	0	0	5	35	0	0	40	6	0	36	0	42	0	73	3	0	76	158
07:30 AM	0	0	0	0	0	12	60	0	0	72	5	0	30	0	35	0	67	2	0	69	176
07:45 AM	0	0	0	0	0	13	68	0	0	81	3	0	16	0	19	0	65	1	0	66	166
Total Volume	0	0	0	0	0	36	199	0	0	235	23	0	117	0	140	0	280	7	0	287	662
% App. Total	0	0	0	0	0	15.3	84.7	0	0		16.4	0	83.6	0		0	97.6	2.4	0		
PHF	.000	.000	.000	.000	.000	.692	.732	.000	.000	.725	.639	.000	.813	.000	.795	.000	.933	.583	.000	.944	.940



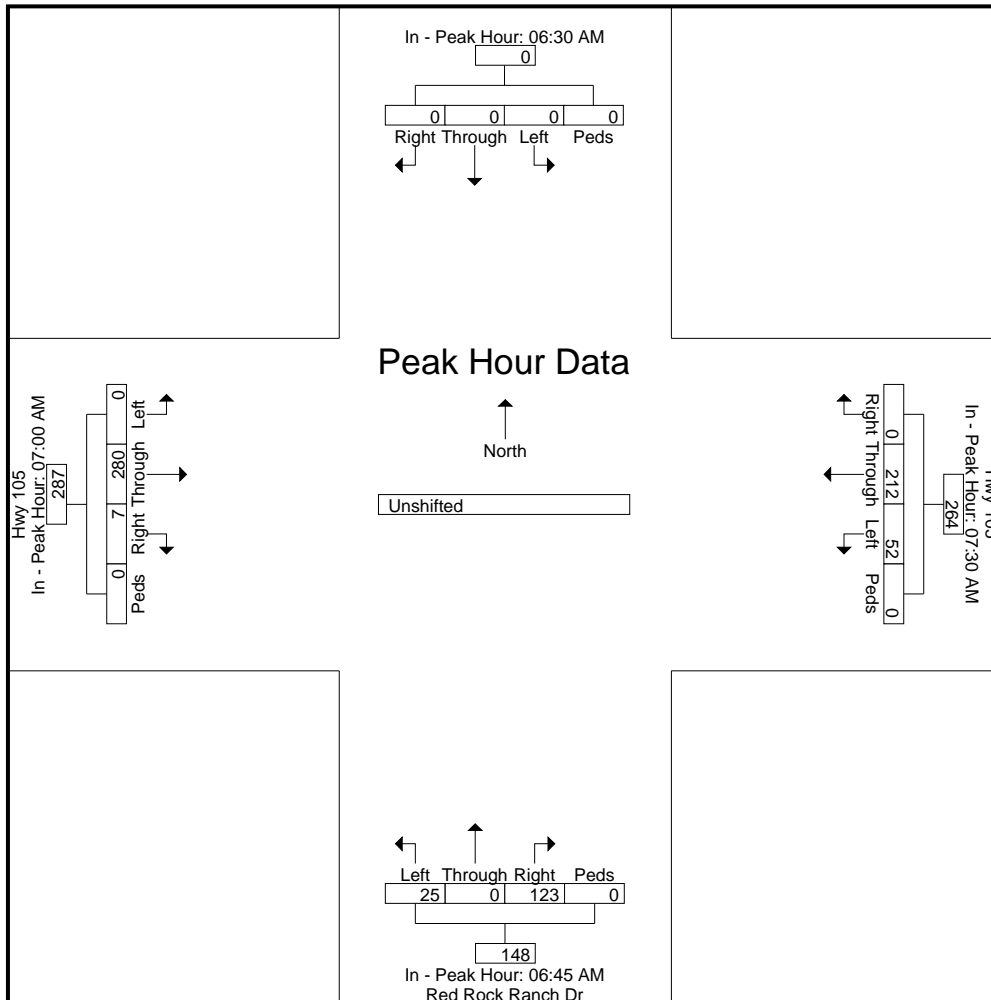


LSC Transportation Consultants, Inc.

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

File Name : Red Rock Ranch Dr - Hwy 105 AM
 Site Code : 194970
 Start Date : 11/6/2019
 Page No : 3

Start Time	Southbound					Hwy 105 Westbound					Red Rock Ranch Dr Northbound					Hwy 105 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 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	06:30 AM					07:30 AM					06:45 AM					07:00 AM					
+0 mins.	0	0	0	0	0	12	60	0	0	72	5	0	22	0	27	0	75	1	0	76	
+15 mins.	0	0	0	0	0	13	68	0	0	81	9	0	35	0	44	0	73	3	0	76	
+30 mins.	0	0	0	0	0	20	43	0	0	63	6	0	36	0	42	0	67	2	0	69	
+45 mins.	0	0	0	0	0	7	41	0	0	48	5	0	30	0	35	0	65	1	0	66	
Total Volume	0	0	0	0	0	52	212	0	0	264	25	0	123	0	148	0	280	7	0	287	
% App. Total	0	0	0	0	0	19.7	80.3	0	0		16.9	0	83.1	0		0	97.6	2.4	0		
PHF	.000	.000	.000	.000	.000	.650	.779	.000	.000	.815	.694	.000	.854	.000	.841	.000	.933	.583	.000	.944	





LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Red Rock Ranch Dr - Hwy 105 PM

Site Code : 00194970

Start Date : 11/14/2019

Page No : 1

Groups Printed- Unshifted

Start Time	Southbound					Hwy 105 Westbound					Red Rock Ranch Dr Northbound					Hwy 105 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	
04:00 PM	0	0	0	0	0	24	80	0	0	104	3	0	13	0	16	0	128	9	0	137	257
04:15 PM	0	0	0	0	0	22	75	0	0	97	2	0	17	0	19	0	91	8	0	99	215
04:30 PM	0	0	0	0	0	19	87	0	0	106	4	0	13	0	17	0	83	1	0	84	207
04:45 PM	0	0	0	0	0	23	80	0	0	103	4	0	16	0	20	0	111	6	0	117	240
Total	0	0	0	0	0	88	322	0	0	410	13	0	59	0	72	0	413	24	0	437	919
05:00 PM	0	0	0	0	0	19	78	0	0	97	3	0	22	0	25	0	103	10	0	113	235
05:15 PM	0	0	0	0	0	33	92	0	0	125	1	0	25	0	26	0	88	5	0	93	244
05:30 PM	0	0	0	0	0	20	74	0	0	94	1	0	14	0	15	0	92	2	0	94	203
05:45 PM	0	0	0	0	0	18	71	0	0	89	1	0	15	0	16	0	87	3	0	90	195
Total	0	0	0	0	0	90	315	0	0	405	6	0	76	0	82	0	370	20	0	390	877
Grand Total	0	0	0	0	0	178	637	0	0	815	19	0	135	0	154	0	783	44	0	827	1796
Apprch %	0	0	0	0		21.8	78.2	0	0		12.3	0	87.7	0		0	94.7	5.3	0		
Total %	0	0	0	0	0	9.9	35.5	0	0	45.4	1.1	0	7.5	0	8.6	0	43.6	2.4	0	46	

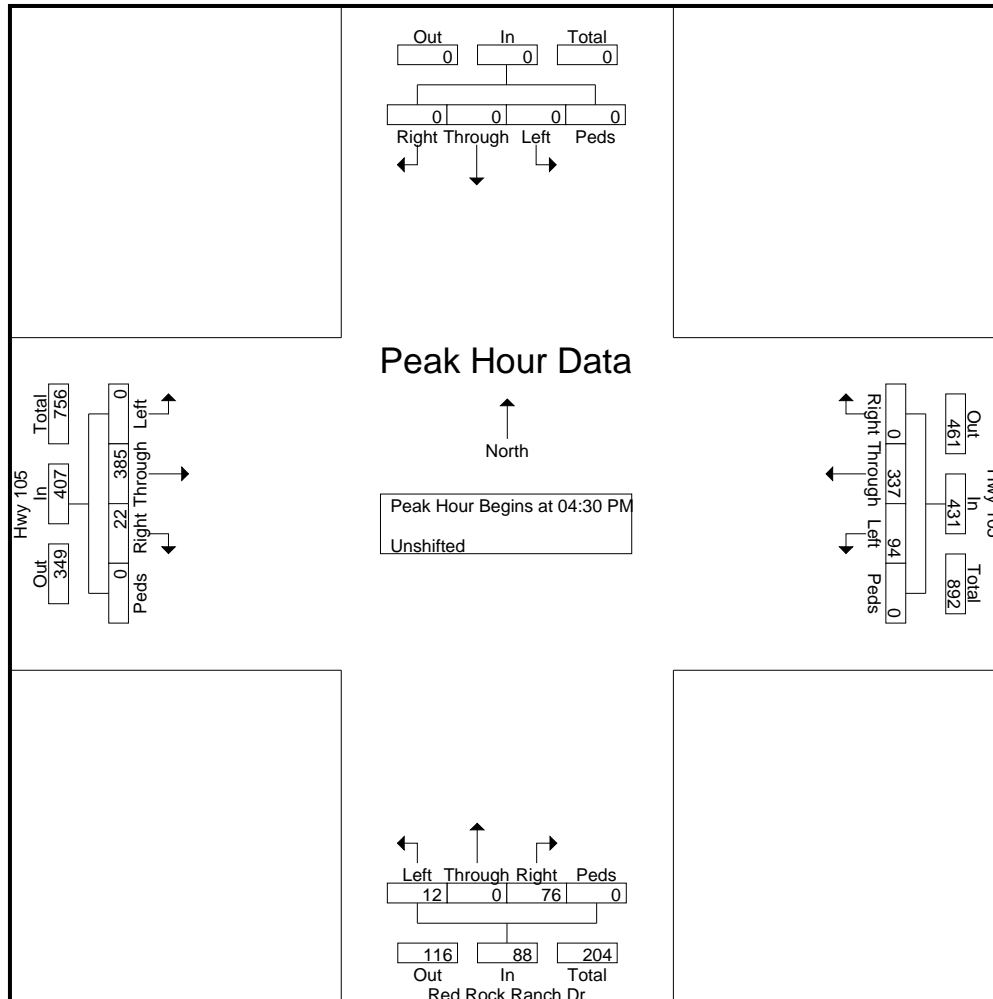


LSC Transportation Consultants, Inc.

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

File Name : Red Rock Ranch Dr - Hwy 105 PM
 Site Code : 00194970
 Start Date : 11/14/2019
 Page No : 2

Start Time	Southbound					Hwy 105 Westbound					Red Rock Ranch Dr Northbound					Hwy 105 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	19	87	0	0	106	4	0	13	0	17	0	83	1	0	84	207
04:45 PM	0	0	0	0	0	23	80	0	0	103	4	0	16	0	20	0	111	6	0	117	240
05:00 PM	0	0	0	0	0	19	78	0	0	97	3	0	22	0	25	0	103	10	0	113	235
05:15 PM	0	0	0	0	0	33	92	0	0	125	1	0	25	0	26	0	88	5	0	93	244
Total Volume	0	0	0	0	0	94	337	0	0	431	12	0	76	0	88	0	385	22	0	407	926
% App. Total	0	0	0	0	0	21.8	78.2	0	0		13.6	0	86.4	0		0	94.6	5.4	0		
PHF	.000	.000	.000	.000	.000	.712	.916	.000	.000	.862	.750	.000	.760	.000	.846	.000	.867	.550	.000	.870	.949



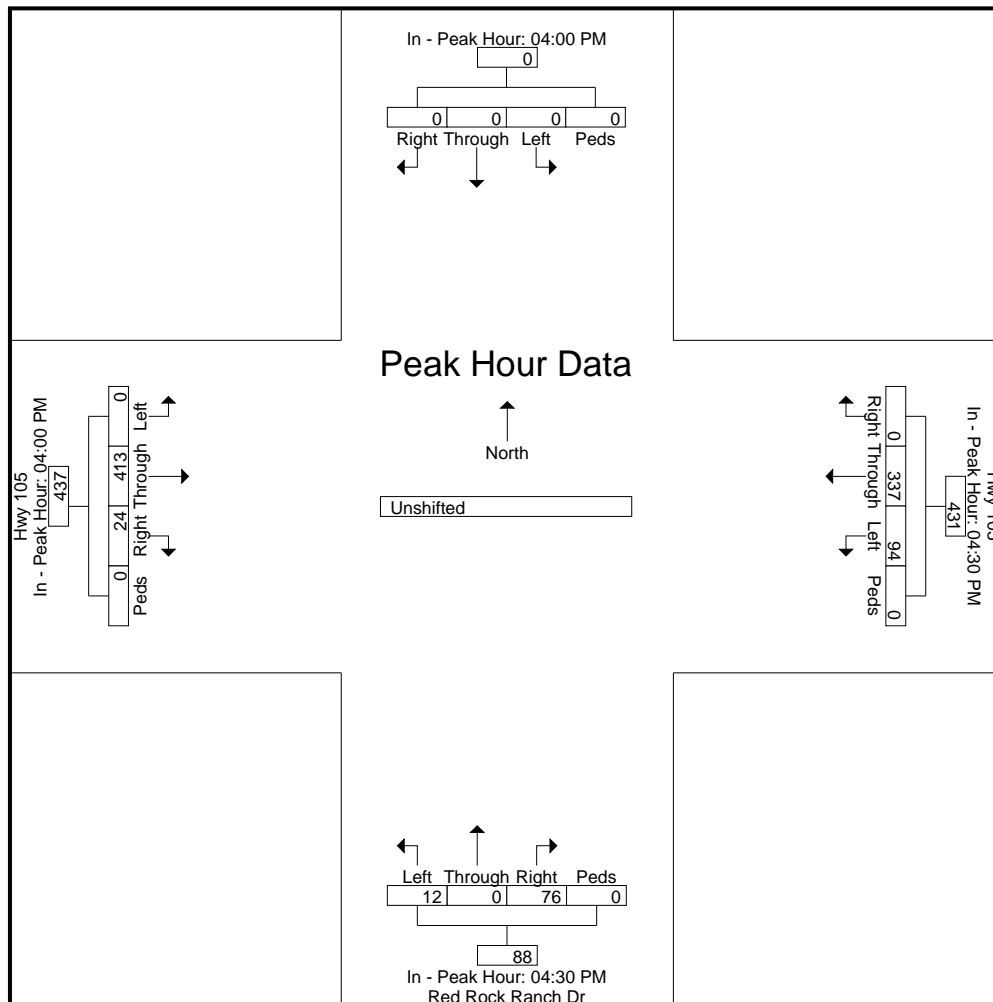


LSC Transportation Consultants, Inc.

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

File Name : Red Rock Ranch Dr - Hwy 105 PM
 Site Code : 00194970
 Start Date : 11/14/2019
 Page No : 3

Start Time	Southbound					Hwy 105 Westbound					Red Rock Ranch Dr Northbound					Hwy 105 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	04:00 PM					04:30 PM					04:00 PM					04:00 PM					
+0 mins.	0	0	0	0	0	19	87	0	0	106	4	0	13	0	17	0	128	9	0	137	
+15 mins.	0	0	0	0	0	23	80	0	0	103	4	0	16	0	20	0	91	8	0	99	
+30 mins.	0	0	0	0	0	19	78	0	0	97	3	0	22	0	25	0	83	1	0	84	
+45 mins.	0	0	0	0	0	33	92	0	0	125	1	0	25	0	26	0	111	6	0	117	
Total Volume	0	0	0	0	0	94	337	0	0	431	12	0	76	0	88	0	413	24	0	437	
% App. Total	0	0	0	0	0	21.8	78.2	0	0		13.6	0	86.4	0		0	94.5	5.5	0		
PHF	.000	.000	.000	.000	.000	.712	.916	.000	.000	.862	.750	.000	.760	.000	.846	.000	.807	.667	.000	.797	





LSC Transportation Consultants, Inc.

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

File Name : Rock Brook Rd - Hwy 105 AM
 Site Code : 00194970
 Start Date : 12/12/2019
 Page No : 1

Groups Printed- Unshifted

Start Time	Southbound					Hwy 105 Westbound					Rock Brook Rd Northbound					Hwy 105 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	
06:30 AM	0	0	0	0	0	0	36	0	0	36	0	0	2	0	2	0	79	0	0	79	117
06:45 AM	0	0	0	0	0	0	34	0	0	34	0	0	1	0	1	0	77	0	0	77	112
Total	0	0	0	0	0	0	70	0	0	70	0	0	3	0	3	0	156	0	0	156	229
07:00 AM	0	0	0	0	0	2	46	0	0	48	0	0	0	0	0	0	97	0	0	97	145
07:15 AM	0	0	0	0	0	0	49	0	0	49	0	0	2	0	2	0	88	0	0	88	139
07:30 AM	0	0	0	0	0	0	67	0	0	67	0	0	1	0	1	0	95	0	0	95	163
07:45 AM	0	0	0	0	0	1	85	0	0	86	1	0	2	0	3	0	84	1	0	85	174
Total	0	0	0	0	0	3	247	0	0	250	1	0	5	0	6	0	364	1	0	365	621
08:00 AM	0	0	0	0	0	0	60	0	0	60	0	0	0	0	0	0	76	0	0	76	136
08:15 AM	0	0	0	0	0	0	55	0	0	55	0	0	1	0	1	0	81	1	0	82	138
Grand Total	0	0	0	0	0	3	432	0	0	435	1	0	9	0	10	0	677	2	0	679	1124
Apprch %	0	0	0	0	0	0.7	99.3	0	0	38.7	10	0	90	0	0.9	0	99.7	0.3	0	60.4	
Total %	0	0	0	0	0	0.3	38.4	0	0	38.7	0.1	0	0.8	0	0.9	0	60.2	0.2	0	60.4	

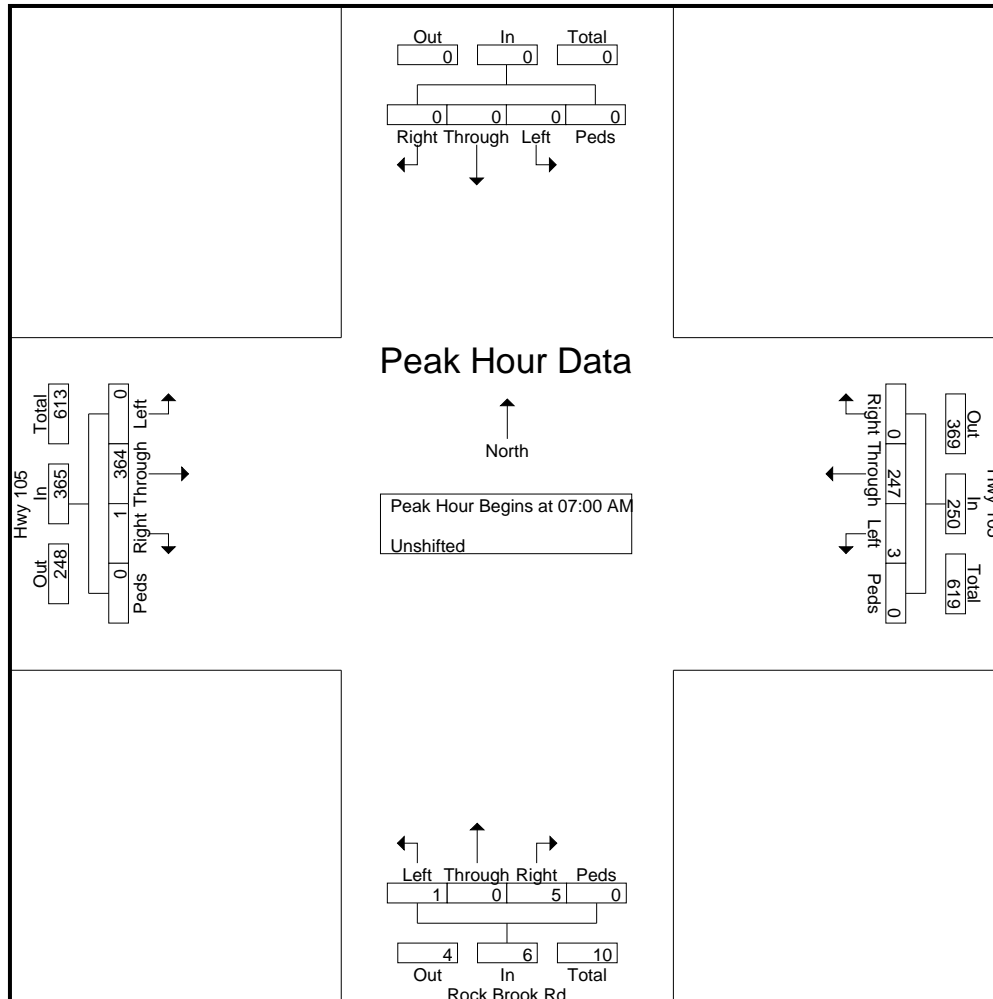


LSC Transportation Consultants, Inc.

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

File Name : Rock Brook Rd - Hwy 105 AM
 Site Code : 00194970
 Start Date : 12/12/2019
 Page No : 2

Start Time	Southbound					Hwy 105 Westbound					Rock Brook Rd Northbound					Hwy 105 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 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	2	46	0	0	48	0	0	0	0	0	0	97	0	0	97	145
07:15 AM	0	0	0	0	0	0	49	0	0	49	0	0	2	0	2	0	88	0	0	88	139
07:30 AM	0	0	0	0	0	0	67	0	0	67	0	0	1	0	1	0	95	0	0	95	163
07:45 AM	0	0	0	0	0	1	85	0	0	86	1	0	2	0	3	0	84	1	0	85	174
Total Volume	0	0	0	0	0	3	247	0	0	250	1	0	5	0	6	0	364	1	0	365	621
% App. Total	0	0	0	0	0	1.2	98.8	0	0		16.7	0	83.3	0		0	99.7	0.3	0		
PHF	.000	.000	.000	.000	.000	.375	.726	.000	.000	.727	.250	.000	.625	.000	.500	.000	.938	.250	.000	.941	.892



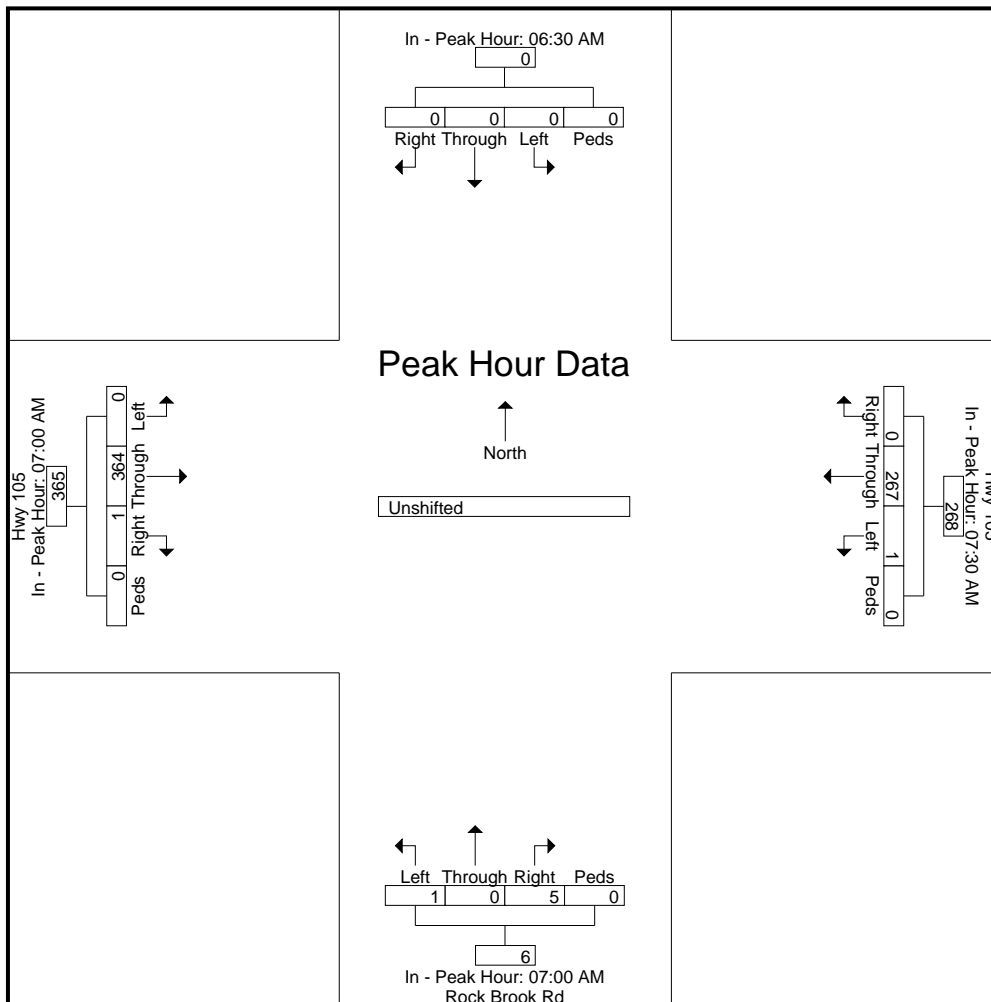


LSC Transportation Consultants, Inc.

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

File Name : Rock Brook Rd - Hwy 105 AM
 Site Code : 00194970
 Start Date : 12/12/2019
 Page No : 3

Start Time	Southbound					Hwy 105 Westbound					Rock Brook Rd Northbound					Hwy 105 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 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	06:30 AM					07:30 AM					07:00 AM					07:00 AM					
+0 mins.	0	0	0	0	0	0	67	0	0	67	0	0	0	0	0	0	97	0	0	97	
+15 mins.	0	0	0	0	0	1	85	0	0	86	0	0	2	0	2	0	88	0	0	88	
+30 mins.	0	0	0	0	0	0	60	0	0	60	0	0	1	0	1	0	95	0	0	95	
+45 mins.	0	0	0	0	0	0	55	0	0	55	1	0	2	0	3	0	84	1	0	85	
Total Volume	0	0	0	0	0	1	267	0	0	268	1	0	5	0	6	0	364	1	0	365	
% App. Total	0	0	0	0	0	0.4	99.6	0	0		16.7	0	83.3	0		0	99.7	0.3	0		
PHF	.000	.000	.000	.000	.000	.250	.785	.000	.000	.779	.250	.000	.625	.000	.500	.000	.938	.250	.000	.941	





LSC Transportation Consultants, Inc.

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

File Name : Rock Brook Rd - Hwy 105 PM
 Site Code : 00194970
 Start Date : 12/19/2019
 Page No : 1

Groups Printed- Unshifted

Start Time	Southbound					Hwy 105 Westbound					Rock Brook Rd Northbound					hwy 105 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	
04:00 PM	0	0	0	0	0	0	104	0	0	104	0	0	1	0	1	0	164	2	0	166	271
04:15 PM	0	0	0	0	0	3	103	0	0	106	0	0	0	0	0	0	124	1	0	125	231
04:30 PM	0	0	0	0	0	2	99	0	0	101	0	0	0	0	0	0	136	1	0	137	238
04:45 PM	0	0	0	0	0	2	96	0	0	98	0	0	5	0	5	0	125	0	0	125	228
Total	0	0	0	0	0	7	402	0	0	409	0	0	6	0	6	0	549	4	0	553	968
05:00 PM	0	0	0	0	0	1	91	0	0	92	0	0	2	0	2	0	143	0	0	143	237
05:15 PM	0	0	0	0	0	1	107	0	0	108	0	0	0	0	0	0	113	0	0	113	221
05:30 PM	0	0	0	0	0	1	87	0	0	88	0	0	1	0	1	0	81	1	0	82	171
05:45 PM	0	0	0	0	0	1	83	0	0	84	0	0	0	0	0	0	84	0	0	84	168
Total	0	0	0	0	0	4	368	0	0	372	0	0	3	0	3	0	421	1	0	422	797
Grand Total	0	0	0	0	0	11	770	0	0	781	0	0	9	0	9	0	970	5	0	975	1765
Apprch %	0	0	0	0		1.4	98.6	0	0		0	0	100	0		0	99.5	0.5	0		
Total %	0	0	0	0	0	0.6	43.6	0	0	44.2	0	0	0.5	0	0.5	0	55	0.3	0	55.2	

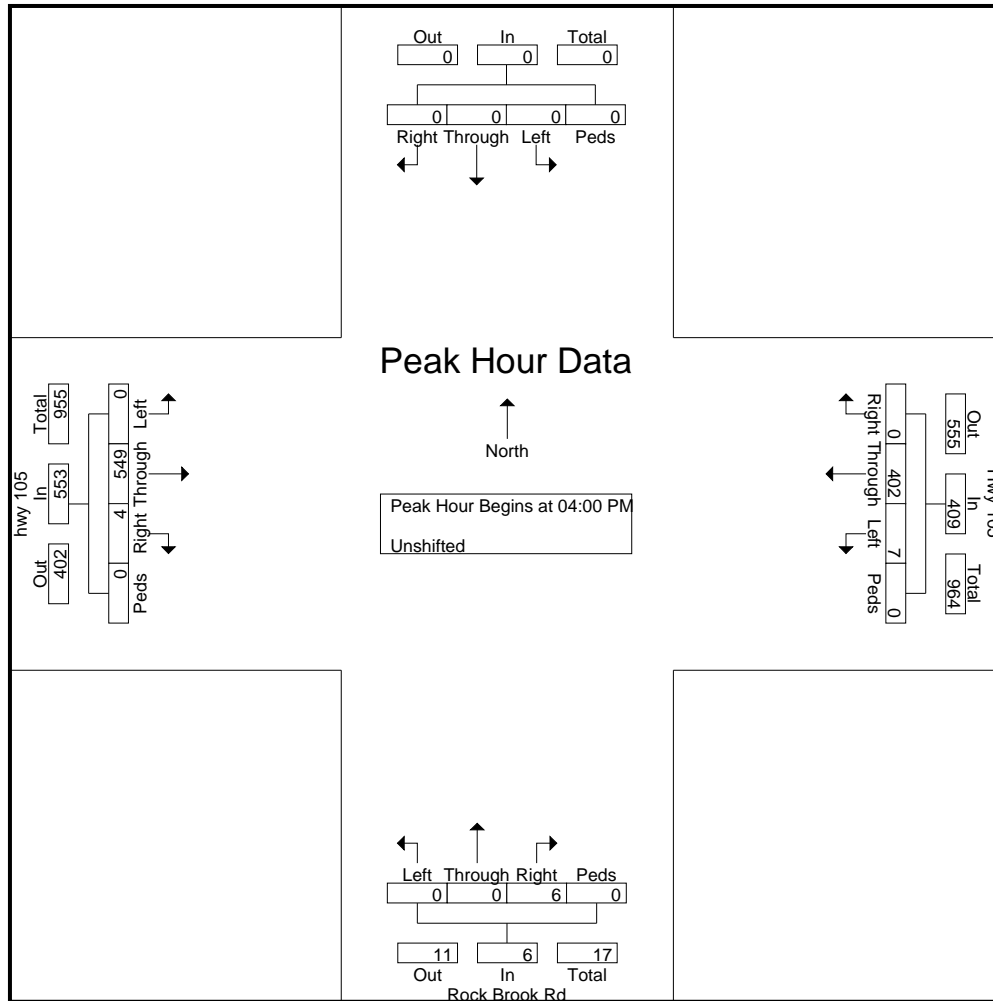


LSC Transportation Consultants, Inc.

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

File Name : Rock Brook Rd - Hwy 105 PM
 Site Code : 00194970
 Start Date : 12/19/2019
 Page No : 2

Start Time	Southbound					Hwy 105 Westbound					Rock Brook Rd Northbound					hwy 105 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	104	0	0	104	0	0	1	0	1	0	164	2	0	166	271
04:15 PM	0	0	0	0	0	3	103	0	0	106	0	0	0	0	0	0	124	1	0	125	231
04:30 PM	0	0	0	0	0	2	99	0	0	101	0	0	0	0	0	0	136	1	0	137	238
04:45 PM	0	0	0	0	0	2	96	0	0	98	0	0	5	0	5	0	125	0	0	125	228
Total Volume	0	0	0	0	0	7	402	0	0	409	0	0	6	0	6	0	549	4	0	553	968
% App. Total	0	0	0	0	0	1.7	98.3	0	0		0	0	100	0		0	99.3	0.7	0		
PHF	.000	.000	.000	.000	.000	.583	.966	.000	.000	.965	.000	.000	.300	.000	.300	.000	.837	.500	.000	.833	.893



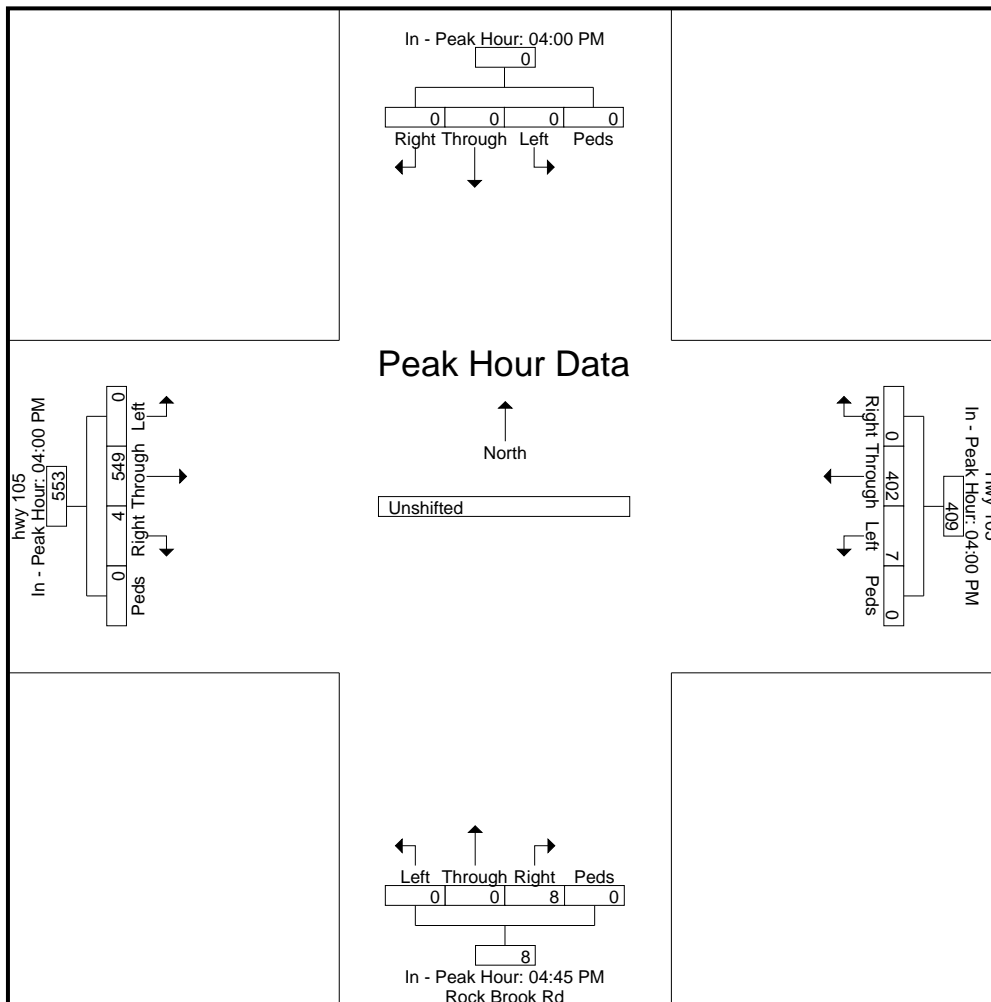


LSC Transportation Consultants, Inc.

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

File Name : Rock Brook Rd - Hwy 105 PM
 Site Code : 00194970
 Start Date : 12/19/2019
 Page No : 3

Start Time	Southbound					Hwy 105 Westbound					Rock Brook Rd Northbound					hwy 105 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	04:00 PM					04:00 PM					04:45 PM					04:00 PM					
+0 mins.	0	0	0	0	0	0	104	0	0	104	0	0	5	0	5	0	164	2	0	166	
+15 mins.	0	0	0	0	0	3	103	0	0	106	0	0	2	0	2	0	124	1	0	125	
+30 mins.	0	0	0	0	0	2	99	0	0	101	0	0	0	0	0	0	136	1	0	137	
+45 mins.	0	0	0	0	0	2	96	0	0	98	0	0	1	0	1	0	125	0	0	125	
Total Volume	0	0	0	0	0	7	402	0	0	409	0	0	8	0	8	0	549	4	0	553	
% App. Total	0	0	0	0	0	1.7	98.3	0	0		0	0	100	0		0	99.3	0.7	0		
PHF	.000	.000	.000	.000	.000	.583	.966	.000	.000	.965	.000	.000	.400	.000	.400	.000	.837	.500	.000	.833	



Levels of Service



Intersection						
Int Delay, s/veh	3.2					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	23	117	280	7	36	199
Future Vol, veh/h	23	117	280	7	36	199
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	80	80	92	92	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	146	304	8	49	273

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	679	308	0	0	312
Stage 1	308	-	-	-	-
Stage 2	371	-	-	-	-
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	417	732	-	-	1248
Stage 1	745	-	-	-	-
Stage 2	698	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	398	732	-	-	1248
Mov Cap-2 Maneuver	398	-	-	-	-
Stage 1	745	-	-	-	-
Stage 2	666	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	12.7	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	643	1248	-	-	-
HCM Lane V/C Ratio	0.272	0.04	-	-	-
HCM Control Delay (s)	12.7	8	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	1.1	0.1	-	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	364	1	3	247	1	5
Future Vol, veh/h	364	1	3	247	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	73	73	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	396	1	4	338	2	10

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	397	0	743	397
Stage 1	-	-	-	-	397	-
Stage 2	-	-	-	-	346	-
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	-	-	1162	-	383	652
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1162	-	381	652
Mov Cap-2 Maneuver	-	-	-	-	381	-
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	713	-

Approach	SE	NW	NE
HCM Control Delay, s	0	0.1	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	583	1162	-	-	-
HCM Lane V/C Ratio	0.021	0.004	-	-	-
HCM Control Delay (s)	11.3	8.1	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	0	-	-	-

Intersection						
Int Delay, s/veh	2.3					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	12	76	385	22	94	337
Future Vol, veh/h	12	76	385	22	94	337
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	85	85	87	87	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	89	443	25	109	392

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1066	456	0	0	468
Stage 1	456	-	-	-	-
Stage 2	610	-	-	-	-
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	246	604	-	-	1094
Stage 1	638	-	-	-	-
Stage 2	542	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	215	604	-	-	1094
Mov Cap-2 Maneuver	215	-	-	-	-
Stage 1	638	-	-	-	-
Stage 2	473	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	14.5	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	484	1094	-	-	-
HCM Lane V/C Ratio	0.214	0.1	-	-	-
HCM Control Delay (s)	14.5	8.7	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	0.8	0.3	-	-	-

Intersection						
Int Delay, s/veh	0.3					
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	549	4	7	402	0	6
Future Vol, veh/h	549	4	7	402	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	92	92	30	30
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	661	5	8	437	0	20

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	666	0	1117
Stage 1	-	-	-	-	664
Stage 2	-	-	-	-	453
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	-	-	923	-	229
Stage 1	-	-	-	-	512
Stage 2	-	-	-	-	640
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	923	-	226
Mov Cap-2 Maneuver	-	-	-	-	226
Stage 1	-	-	-	-	512
Stage 2	-	-	-	-	633

Approach	SE	NW	NE
HCM Control Delay, s	0	0.2	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	461	923	-	-	-
HCM Lane V/C Ratio	0.043	0.008	-	-	-
HCM Control Delay (s)	13.2	8.9	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	0	-	-	-

Intersection						
Int Delay, s/veh	3.1					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	24	122	345	7	38	265
Future Vol, veh/h	24	122	345	7	38	265
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	80	80	92	92	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	153	375	8	52	363

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	846	379	0	0	383
Stage 1	379	-	-	-	-
Stage 2	467	-	-	-	-
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	333	668	-	-	1175
Stage 1	692	-	-	-	-
Stage 2	631	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	315	668	-	-	1175
Mov Cap-2 Maneuver	315	-	-	-	-
Stage 1	692	-	-	-	-
Stage 2	596	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	14.4	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	564	1175	-	-	-
HCM Lane V/C Ratio	0.324	0.044	-	-	-
HCM Control Delay (s)	14.4	8.2	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	1.4	0.1	-	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	470	1	3	300	1	5
Future Vol, veh/h	470	1	3	300	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	73	73	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	511	1	4	411	2	10

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	512	0	931	512
Stage 1	-	-	-	-	512	-
Stage 2	-	-	-	-	419	-
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	-	-	1053	-	296	562
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	664	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1053	-	295	562
Mov Cap-2 Maneuver	-	-	-	-	295	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	661	-

Approach	SE	NW	NE
HCM Control Delay, s	0	0.1	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	488	1053	-	-	-
HCM Lane V/C Ratio	0.025	0.004	-	-	-
HCM Control Delay (s)	12.6	8.4	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	0	-	-	-

Intersection						
Int Delay, s/veh	2.4					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations	W		T			T
Traffic Vol, veh/h	12	79	620	23	99	425
Future Vol, veh/h	12	79	620	23	99	425
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	85	85	87	87	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	93	713	26	115	494

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1450	726	0	0	739
Stage 1	726	-	-	-	-
Stage 2	724	-	-	-	-
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	144	425	-	-	867
Stage 1	479	-	-	-	-
Stage 2	480	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	118	425	-	-	867
Mov Cap-2 Maneuver	118	-	-	-	-
Stage 1	479	-	-	-	-
Stage 2	392	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	22.1	0	1.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	316	867	-	-	-
HCM Lane V/C Ratio	0.339	0.133	-	-	-
HCM Control Delay (s)	22.1	9.8	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	1.5	0.5	-	-	-

Intersection						
Int Delay, s/veh	0.3					
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	695	4	7	525	0	6
Future Vol, veh/h	695	4	7	525	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	92	92	30	30
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	837	5	8	571	0	20

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	842	0	1427 840
Stage 1	-	-	-	-	840 -
Stage 2	-	-	-	-	587 -
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	-	-	794	-	149 365
Stage 1	-	-	-	-	424 -
Stage 2	-	-	-	-	556 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	794	-	147 365
Mov Cap-2 Maneuver	-	-	-	-	147 -
Stage 1	-	-	-	-	424 -
Stage 2	-	-	-	-	548 -

Approach	SE	NW	NE
HCM Control Delay, s	0	0.1	15.4
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	365	794	-	-	-
HCM Lane V/C Ratio	0.055	0.01	-	-	-
HCM Control Delay (s)	15.4	9.6	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	0	-	-	-

Intersection						
Int Delay, s/veh	3.5					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations	Y		P		Y	↑
Traffic Vol, veh/h	26	128	280	8	40	200
Future Vol, veh/h	26	128	280	8	40	200
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	-	-	-	500	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	92	92	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	160	304	9	55	274

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	693	309	0	0	313
Stage 1	309	-	-	-	-
Stage 2	384	-	-	-	-
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	409	731	-	-	1247
Stage 1	745	-	-	-	-
Stage 2	688	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	391	731	-	-	1247
Mov Cap-2 Maneuver	391	-	-	-	-
Stage 1	745	-	-	-	-
Stage 2	658	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	13.1	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	637	1247	-	-	-
HCM Lane V/C Ratio	0.302	0.044	-	-	-
HCM Control Delay (s)	13.1	8	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	1.3	0.1	-	-	-

Intersection						
Int Delay, s/veh	0.6					
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↔		↔	↔	↔	↔
Traffic Vol, veh/h	375	1	7	248	2	15
Future Vol, veh/h	375	1	7	248	2	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	-	-	500	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	73	73	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	408	1	10	340	4	30

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	409	0	769 409
Stage 1	-	-	-	-	409 -
Stage 2	-	-	-	-	360 -
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	-	-	1150	-	369 642
Stage 1	-	-	-	-	671 -
Stage 2	-	-	-	-	706 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1150	-	366 642
Mov Cap-2 Maneuver	-	-	-	-	366 -
Stage 1	-	-	-	-	671 -
Stage 2	-	-	-	-	700 -

Approach	SE	NW	NE
HCM Control Delay, s	0	0.2	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	590	1150	-	-	-
HCM Lane V/C Ratio	0.058	0.008	-	-	-
HCM Control Delay (s)	11.5	8.2	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.2	0	-	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	145	0	3	45
Future Vol, veh/h	0	9	145	0	3	45
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	158	0	3	49

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	213	158	0	0	158
Stage 1	158	-	-	-	-
Stage 2	55	-	-	-	-
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	775	887	-	-	1422
Stage 1	871	-	-	-	-
Stage 2	968	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	773	887	-	-	1422
Mov Cap-2 Maneuver	773	-	-	-	-
Stage 1	871	-	-	-	-
Stage 2	966	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	887	1422
HCM Lane V/C Ratio	-	-	0.011	0.002
HCM Control Delay (s)	-	-	9.1	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	2.5					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations	Y		P		Y	↑
Traffic Vol, veh/h	14	83	386	25	106	337
Future Vol, veh/h	14	83	386	25	106	337
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	-	-	-	500	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	87	87	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	98	444	29	123	392

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1097	459	0	0	473
Stage 1	459	-	-	-	-
Stage 2	638	-	-	-	-
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	236	602	-	-	1089
Stage 1	636	-	-	-	-
Stage 2	526	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	209	602	-	-	1089
Mov Cap-2 Maneuver	209	-	-	-	-
Stage 1	636	-	-	-	-
Stage 2	467	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	15	0	2.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	473	1089	-	-	-
HCM Lane V/C Ratio	0.241	0.113	-	-	-
HCM Control Delay (s)	15	8.7	-	-	-
HCM Lane LOS	C	A	-	-	-
HCM 95th %tile Q(veh)	0.9	0.4	-	-	-

Intersection						
Int Delay, s/veh	0.6					
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↔		↔	↔	↔	↔
Traffic Vol, veh/h	556	5	18	402	0	12
Future Vol, veh/h	556	5	18	402	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	500	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	92	92	30	30
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	670	6	20	437	0	40

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	676	0	1150
Stage 1	-	-	-	-	673
Stage 2	-	-	-	-	477
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	-	-	915	-	219
Stage 1	-	-	-	-	507
Stage 2	-	-	-	-	624
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	915	-	214
Mov Cap-2 Maneuver	-	-	-	-	214
Stage 1	-	-	-	-	507
Stage 2	-	-	-	-	610

Approach	SE	NW	NE
HCM Control Delay, s	0	0.4	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	455	915	-	-	-
HCM Lane V/C Ratio	0.088	0.021	-	-	-
HCM Control Delay (s)	13.7	9	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.3	0.1	-	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	92	0	10	121	0	5
Future Vol, veh/h	92	0	10	121	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	100	0	11	132	0	5

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	100	0	254
Stage 1	-	-	-	-	100
Stage 2	-	-	-	-	154
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	-	-	1493	-	735
Stage 1	-	-	-	-	924
Stage 2	-	-	-	-	874
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1493	-	729
Mov Cap-2 Maneuver	-	-	-	-	729
Stage 1	-	-	-	-	924
Stage 2	-	-	-	-	867

Approach	NB	SB	NW
HCM Control Delay, s	0	0.6	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBT	NBRNWLn1	SBL	SBT
Capacity (veh/h)	-	-	956	1493
HCM Lane V/C Ratio	-	-	0.006	0.007
HCM Control Delay (s)	-	-	8.8	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	3.4					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations	Y		↑	↑	↑	↑
Traffic Vol, veh/h	27	133	345	8	42	266
Future Vol, veh/h	27	133	345	8	42	266
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	-	-	500	500	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	92	92	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	166	375	9	58	364

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	855	375	0	0	384	0
Stage 1	375	-	-	-	-	-
Stage 2	480	-	-	-	-	-
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	329	671	-	-	1174	-
Stage 1	695	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	313	671	-	-	1174	-
Mov Cap-2 Maneuver	313	-	-	-	-	-
Stage 1	695	-	-	-	-	-
Stage 2	592	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	14.9	0	1.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	562	1174	-	-	-
HCM Lane V/C Ratio	0.356	0.049	-	-	-
HCM Control Delay (s)	14.9	8.2	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	1.6	0.2	-	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations	↑		↑	↑	↑	↑
Traffic Vol, veh/h	481	1	7	304	2	15
Future Vol, veh/h	481	1	7	304	2	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	-	-	500	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	73	73	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	523	1	10	416	4	30

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	524	0	960 524
Stage 1	-	-	-	-	524 -
Stage 2	-	-	-	-	436 -
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	-	-	1043	-	285 553
Stage 1	-	-	-	-	594 -
Stage 2	-	-	-	-	652 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1043	-	282 553
Mov Cap-2 Maneuver	-	-	-	-	282 -
Stage 1	-	-	-	-	594 -
Stage 2	-	-	-	-	645 -

Approach	SE	NW	NE
HCM Control Delay, s	0	0.2	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	497	1043	-	-	-
HCM Lane V/C Ratio	0.068	0.009	-	-	-
HCM Control Delay (s)	12.8	8.5	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.2	0	-	-	-

HCM 6th TWSC
7: Red Rock Ranch & Access

Long Term Total
AM Peak Hour

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	0	0	0	9	0	145	0	3	45	2
Future Vol, veh/h	6	0	0	0	0	9	0	145	0	3	45	2
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	7	0	0	0	0	10	0	158	0	3	49	2

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	219	214	50	214	215	158	51	0	0	158	0	0
Stage 1	56	56	-	158	158	-	-	-	-	-	-	-
Stage 2	163	158	-	56	57	-	-	-	-	-	-	-
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	737	684	1018	743	683	887	1555	-	-	1422	-	-
Stage 1	956	848	-	844	767	-	-	-	-	-	-	-
Stage 2	839	767	-	956	847	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	727	683	1018	742	682	887	1555	-	-	1422	-	-
Mov Cap-2 Maneuver	727	683	-	742	682	-	-	-	-	-	-	-
Stage 1	956	846	-	844	767	-	-	-	-	-	-	-
Stage 2	830	767	-	954	845	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10		9.1		0		0.5	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1555	-	-	727	887	1422	-	-
HCM Lane V/C Ratio	-	-	-	0.009	0.011	0.002	-	-
HCM Control Delay (s)	0	-	-	10	9.1	7.5	0	-
HCM Lane LOS	A	-	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection						
Int Delay, s/veh	2.7					
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations	↘		↑	↗	↘	↑
Traffic Vol, veh/h	14	86	621	26	111	425
Future Vol, veh/h	14	86	621	26	111	425
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	-	-	500	500	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	87	87	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	101	714	30	129	494

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1466	714	0	0	744
Stage 1	714	-	-	-	-
Stage 2	752	-	-	-	-
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	141	431	-	-	864
Stage 1	485	-	-	-	-
Stage 2	466	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	120	431	-	-	864
Mov Cap-2 Maneuver	120	-	-	-	-
Stage 1	485	-	-	-	-
Stage 2	397	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	23	0	2
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	316	864	-	-	-
HCM Lane V/C Ratio	0.372	0.149	-	-	-
HCM Control Delay (s)	23	9.9	-	-	-
HCM Lane LOS	C	A	-	-	-
HCM 95th %tile Q(veh)	1.7	0.5	-	-	-

Intersection						
Int Delay, s/veh	0.6					
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	702	5	18	537	0	12
Future Vol, veh/h	702	5	18	537	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	500	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	92	92	30	30
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	846	6	20	584	0	40

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	852	0	1473 849
Stage 1	-	-	-	-	849 -
Stage 2	-	-	-	-	624 -
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	-	-	787	-	140 361
Stage 1	-	-	-	-	419 -
Stage 2	-	-	-	-	534 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	787	-	137 361
Mov Cap-2 Maneuver	-	-	-	-	137 -
Stage 1	-	-	-	-	419 -
Stage 2	-	-	-	-	521 -

Approach	SE	NW	NE
HCM Control Delay, s	0	0.3	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	361	787	-	-	-
HCM Lane V/C Ratio	0.111	0.025	-	-	-
HCM Control Delay (s)	16.2	9.7	-	-	-
HCM Lane LOS	C	A	-	-	-
HCM 95th %tile Q(veh)	0.4	0.1	-	-	-

HCM 6th TWSC
7: Red Rock Ranch & Access

Long Term Total
PM Peak Hour

Intersection												
Int Delay, s/veh	0.6											
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	92	0	10	121	6	3	0	0	0	0	5
Future Vol, veh/h	0	92	0	10	121	6	3	0	0	0	0	5
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	-	-	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	0	100	0	11	132	7	3	0	0	0	0	5

Major/Minor	Major1		Major2		Minor2			Minor1				
Conflicting Flow All	139	0	0	100	0	0	261	258	136	258	261	100
Stage 1	-	-	-	-	-	-	158	158	-	100	100	-
Stage 2	-	-	-	-	-	-	103	100	-	158	161	-
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	1445	-	-	1493	-	-	692	646	913	695	644	956
Stage 1	-	-	-	-	-	-	844	767	-	906	812	-
Stage 2	-	-	-	-	-	-	903	812	-	844	765	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1445	-	-	1493	-	-	684	641	913	691	639	956
Mov Cap-2 Maneuver	-	-	-	-	-	-	684	641	-	691	639	-
Stage 1	-	-	-	-	-	-	844	761	-	906	812	-
Stage 2	-	-	-	-	-	-	898	812	-	837	759	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	0	0.5	10.3	8.8
HCM LOS			B	A

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	SELn1	SBL	SBT	SBR
Capacity (veh/h)	1445	-	-	956	684	1493	-	-
HCM Lane V/C Ratio	-	-	-	0.006	0.005	0.007	-	-
HCM Control Delay (s)	0	-	-	8.8	10.3	7.4	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-