



## **Engineering Review**

03/31/2020 9:08:01 AM

*dsdkuehster*

stevekuehster@elpasoco.com

(719) 520-6813

**EPC Planning & Community  
Development Department**

**LSC TRANSPORTATION CONSULTANTS, INC.**

**545 East Pikes Peak Avenue, Suite 210**

**Colorado Springs, CO 80903**

**(719) 633-2868**

**FAX (719) 633-5430**

**E-mail: [lsc@lsctrans.com](mailto:lsc@lsctrans.com)**

**Website: <http://www.lsctrans.com>**

February 19, 2020

Mr. Stan Searle  
2500 East Highway 105  
Monument, CO 80132

Both the ECM Administrator and the County Engineer will not support the deviation to allow for shorter intersection spacing than specified in the ECM, 2.2.5. For safe access reasons. See comments on the Deviation. Therefore this study cannot be used to support the deviations.

RE: Cherry Springs Ranch  
PUD Amendment and Filing 2  
El Paso County, CO  
Traffic Impact Study  
LSC #185111

Dear Mr. Searle,

LSC Transportation Consultants, Inc. has prepared this traffic impact study for the proposed Cherry Springs Ranch single-family residential development in El Paso County, Colorado. The site is located north of the intersection of Highway 105/Appaloosa Road at El Paso County parcel number 6100000498. Currently, the 42.25-acre proposed Filing 2 site is vacant. One access point is proposed to the north side of Highway 105, which would align with Appaloosa Road.

The purpose of this report is to accompany PUD Amendment, plat note amendment, preliminary plat, and final plat submittals to El Paso County.

### **REPORT CONTENTS**

The preparation of this report included the following:

- An inventory the existing adjacent and nearby area roadway system, including roadway surface conditions, functional classifications, roadway widths, lane configurations, traffic controls, posted speed limits, pavement markings, intersection and access spacing, roadway and intersection alignments, auxiliary left- and right-turn lanes, and intersection sight distances
- Review of El Paso County's Highway 105 Corridor Study: Corridor Preservation Plan
- Morning and afternoon peak-hour turning movement traffic counts at the intersection of Highway 105/Appaloosa Road
- Average daily traffic (ADT) volume data for Highway 105 east and west of its Appaloosa Road intersection
- Projections of 20-year background (baseline) traffic volumes on Highway 105 east and west of the Appaloosa Road intersection
- The proposed site land use and access plan

- Estimates of average weekday 24-hour and weekday peak-hour trip generation for the proposed Cherry Springs Ranch residential development and the estimated directional distribution of site-generated vehicle-trips on the roadways and intersections serving the site
- Estimates of the directional distribution of site-generated vehicle-trips on the area roadway system, including the intersection of Highway 105/Appaloosa Road
- Projections of site-generated turning movement traffic volumes and estimated short- and long-term background traffic volumes at the intersection of Highway 105/Appaloosa Road
- Calculations of the total traffic (site traffic plus background traffic) at the intersection of Highway 105/Appaloosa Road for the short and long term
- Level of service analysis at the Highway 105/Appaloosa Road intersection
- Evaluation of existing and long-term projected intersection volumes to determine the requirements for auxiliary right-/left-turn lanes on Highway 105 at Appaloosa Road for the affected turning movements (the turning movements to which this project would add traffic) based on the criteria in the El Paso County Engineering Criteria Manual
- A summary of findings and recommendations

## **PREVIOUS TRAFFIC REPORTS**

### **Cherry Springs Ranch Traffic Reports**

June 27, 2005	Cherry Springs Ranch
August 3, 2005	Cherry Springs Ranch – August 2005 Update
September 30, 2005	Cherry Springs Ranch – September 2005 CDOT Version
December 13, 2006	Cherry Springs Ranch – Phase 1 Tech. Memo
January 24, 2007	Cherry Springs Ranch – Phase 1 Tech. Memo Addendum
April 30, 2007	Cherry Springs Ranch – Response to Comments Memo

### **Other Reports**

January 17, 2020	Monument Academy – Traffic Impact Study
------------------	---

## **LAND USE AND ACCESS**

Figure 1 shows the Filing No. 2 site location relative to the adjacent and nearby roadways. Currently, the 42.25-acre site is vacant. Cherry Springs Ranch PUD allows for a total of 42 single-family dwelling units, with 11 dwelling units to be built in the short-term (Filing No. 2) and a potential for an additional 15 dwelling units north of existing filing 1 and north of the currently proposed Filing No. 2.

Figure 2 contains the proposed site plan showing the PUD plan, Filing 1 (existing), Filing 2 (proposed) and potential future lots, site circulation, and the new proposed public road connection to Highway 105 aligning with Appaloosa Road. A copy of the PUD plan is also attached for reference.

The potential future development (eight lots) that is shown on the PUD plan to access through Filing No. 1 via an extension of Cherry Springs Ranch Drive (eight lots) would need to be analyzed with a future final plat Transportation Memo at the time of development. This report addresses Filing 2 trips, plus the future trips from potential future seven additional lots that may be developed north of Filing 2 with access through Filing 2. This report addresses the intersection of Highway 105/Appaloosa Road. The potential future trips that may be generated by potential future lots west of the creek and north of Filing 1 would be analyzed with a possible future final plat submittal for those lots. These lots would be served by Cherry Crossing Drive. This analysis has not been included at this time, as this potential future development area north of Filing 1 indicated on the PUD plan is not anticipated at this time nor in the foreseeable future.

## **INTERSECTION SIGHT DISTANCE**

### **El Paso County Requirements**

Access points (planned public roadway intersections) must meet El Paso County's *Engineering Criteria Manual* standards for sight distance. The site access point is proposed as a stop sign-controlled, full-movement intersection with Highway 105. With a 50-mph posted speed limit on Highway 105, the field-measured sight distances for both approaches at the proposed site access locations must meet the required 555-foot requirement for passenger vehicles (per *Engineering Criteria Manual* Table 2-21).

All sight distance field measurements utilized a driver's eye height of 3.5 feet and a height of 3.5 feet for an eastbound vehicle approaching from the west, and vice versa. The following analysis corresponds to field-measured sight distances for the proposed Appaloosa Drive site access location.

Looking east from the proposed site access on the north side of Highway 105, the field-measured sight distance is 814 feet. Field-measured sight distance, looking west from the proposed site access, is greater than one-quarter mile. Both of these sight distances would meet the minimum 555-foot sight distance requirement when looking east or west. There is sufficient stopping sight distance as well.

## **ROAD AND TRAFFIC CONDITIONS**

Figure 1 shows the streets and roads adjacent to and in the vicinity of the site. Roads serving the site are identified below followed by a brief description of each:

**Highway 105** is a Principal Arterial adjacent to the site. Locally, Highway 105 extends east from Palmer Lake to State Highway 83. The posted speed limit on Highway 105 is 50 miles per hour (mph) west of State Highway 83. Highway 105 currently has one through lane in each direction adjacent to Appaloosa Road. The Highway 105 Corridor Study Corridor Preservation Plan for El Paso County Department of Public Services dated November 2012 (revised May 2013) shows

Highway 105 expanded to a County-standard roadway with one through lane per direction plus a painted center left-turn median lane in the vicinity of the site.

**Appaloosa Road** is a two-lane Rural Local road extending north-to-south between Saddlewood Road and Highway 105. The posted speed limit on Appaloosa Road is 25 mph, while the roadway surface is gravel. Currently, the intersection of Highway 105/Appaloosa Road is stop sign-controlled (northbound approach). The right-of-way width on Appaloosa Road is 60 feet.

### **2019 Existing Traffic Volumes**

Vehicular turning-movement counts were conducted at the intersection of Highway 105/Appaloosa Road on Thursday, March 7, 2019 from 6:30 - 8:30 a.m. and from 4:00 - 6:00 p.m. Existing morning and evening weekday peak-hour traffic volumes at this intersection, as well as the estimated 2019 annual average daily traffic (AADT) volumes adjacent to the site, are shown in Figure 3. Raw count reports are attached.

### **Crash History**

As of April 2019, there had been no reported traffic crashes within a three-year period at the intersection of Highway 105/Appaloosa Drive.

### **PEDESTRIAN AND BICYCLE FACILITIES**

The proposed subdivision road is to be Rural Local and, as such, no sidewalks are required. Map 15 of the MTCP Multi-Modal Improvements Plan shows a planned bicycle route and a planned primary east-west regional trail along Highway 105 (located just south of this subdivision).

### **TRIP GENERATION**

Estimates of the vehicle-trips projected to be generated by Cherry Springs Ranch residential development have been made using the nationally published trip generation rates from *Trip Generation, 10<sup>th</sup> Edition, 2017* by the Institute of Transportation Engineers (ITE). Land use category “210 – Single-Family Detached Housing,” along with corresponding trip generation rates, have been used to develop the trip generation estimates for the site development. The detailed trip generation estimate for the development, including ITE rates for the proposed land use, is presented in Table 4 (attached).

### **Short-Term**

Table 1 below presents a summary of the estimated short-term site trip generation, which contains 11 single-family dwelling units at buildout.

**Table 1: Estimated Site External Vehicle-Trip Generation (Short-Term)**

Analysis Period	Weekday		
	In	Out	Total
Morning Peak Hour	3	9	12
Afternoon Peak Hour	8	5	13
Daily/24-hour	68	68	136

During the short-term, Cherry Springs Ranch is projected to generate about 136 vehicle-trips on the average weekday during a 24-hour period, with approximately half entering and half exiting the site. During the morning peak hour, approximately 3 entering vehicles and 9 exiting vehicles would be generated by the developed site. Approximately 8 entering vehicles and 5 exiting vehicles would be generated by the site during the afternoon peak hour.

### Long-Term

Table 2 below presents a summary of the estimated long-term site trip generation, which is based on an anticipated 26 (11 lots in Filing 2 + 15 potential future lots) single-family dwelling units at full buildout.

**Table 2: Estimated Site External Vehicle-Trip Generation (Long-Term)**

Analysis Period	Weekday		
	In	Out	Total
Morning Peak Hour	6	17	23
Afternoon Peak Hour	18	10	28
Daily/24-hour	151	151	301

Cherry Springs Ranch is projected to generate about 301 vehicle-trips on the average weekday during a 24-hour period, with approximately half entering and half exiting the site (based on future buildout). During the morning peak hour, approximately 6 entering vehicles and 17 exiting vehicles would be generated by the developed site. Approximately 18 entering vehicles and 10 exiting vehicles would be generated by the site during the afternoon peak hour.

## TRIP DISTRIBUTION AND ASSIGNMENT

### Trip Directional Distribution

An estimate 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 4 shows the directional distribution estimate for the site-generated trips. The figure shows the percentages of the site-generated vehicle-trips projected to be oriented to and from the site's major approaches. Estimates have been based on the following factors: the proposed land use,

the area road system serving the site, and the site's geographic location relative to the Tri-Lakes area, the City of Colorado Springs, and El Paso County.

### **Site-Generated Traffic**

Site-generated traffic volumes at the intersection of Highway 105/Appaloosa Road/proposed site access have been calculated by applying the directional distribution percentages estimated by LSC (from Figure 4) to the trip generation estimates (from Table 4). Figure 5 shows the projected short-term site-generated traffic volumes based on 11 dwelling units proposed for Filing No. 2, while Figure 6 shows the projected long-term site-generated traffic volumes at this intersection (based on Filing 2 trips plus the potential future seven additional lots that may be developed north of Filing 2 with access through Filing 2).

Note: Figure 6 does not depict potential future subdivision traffic associated with potential future development (as indicated on the PUD plan) that is shown on the PUD plan to access through Filing No. 1 via an extension of Cherry Springs Ranch Drive. Trips generated from those eight lots would need to be analyzed with a future final plat Transportation Memo at the time of development.

### **2021 Baseline Traffic Volumes**

Short-term baseline traffic volumes have been based on existing traffic volumes, but include growth anticipated with the Monument Academy charter school to the east. Traffic to be generated by the proposed Cherry Springs Ranch is **not** included in this figure. Please refer to Figure 7 for projected 2021 baseline traffic volumes at the intersection of Highway 105/Appaloosa Road.

### **2021 Baseline Plus-Site-Generated Traffic Volumes**

Figure 8 shows the sum of the short-term baseline traffic volumes (from Figure 3Figure 7) and short-term site-generated peak-hour traffic volumes (shown in Figure 5). These volumes represent the projected short-term total traffic following the completion of Cherry Springs Ranch residential development.

### **Estimated Future 2040 Background Traffic Volumes**

Figure 9 shows the projected 20-year background traffic volumes for the year 2040. Estimated 2040 background/baseline northbound and southbound through traffic volumes on Highway 105 are based on El Paso County's Highway 105 Corridor Study: Corridor Preservation Plan. Traffic from the proposed Cherry Springs Ranch residential development is **not** included in the **background** traffic volumes.

### Future 2040 Total Traffic Volumes

Figure 10 shows the sum of 2040 background traffic volumes (from Figure 9) plus the long-term buildout 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 3 shows the level of service delay ranges for signalized and unsignalized intersections.

**Table 3: 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) <sup>1</sup>
A	≤ 10.0	≤ 10.0
B	10.1 – 20.0	10.1 – 15.0
C	20.1 – 35.0	15.1 – 25.0
D	35.1 – 55.0	25.1 – 35.0
E	55.1 – 80.0	35.1 – 50.0
F	≥ 80.1	≥ 50.1
<sup>1</sup> For unsignalized intersections, if V/C is > 1.00, then LOS is LOS F regardless of the projected average control delay per vehicle		

The intersection of Highway 105/Appaloosa Road has been analyzed to determine the projected levels of service for the key intersection turning movements. A summary of all 2019 and 2040 traffic scenario levels of service during the weekday morning and evening peak hours are shown in the attached figures. Detailed Synchro reports are attached.

All approaches and individual turning movements at the intersection of Highway 105/Appaloosa Road are projected to operate at LOS D or better during the morning and evening peak hours through the 2040 horizon year.

### AUXILIARY TURN LANE ANALYSIS

The following presents analysis of the intersection turning movements to which the proposed development would add traffic. This analysis identifies the need for auxiliary turn lanes for these turning movements to/from the east and west side of Highway 105.

### **Eastbound Left-Turn Deceleration Lane**

Highway 105 is categorized as Principal Arterial in the vicinity of the site. According to the criteria contained in the *Engineering Criteria Manual (ECM)*, exclusive left-turn deceleration lanes shall be provided for accesses with a projected peak-hour ingress left-turning volume of greater than 10 vehicles per hour (vph).

An eastbound left-turn deceleration lane on Highway 105 at the Appaloosa Road intersection would **not** be necessary in the short-term, based on the projected short-term and long-term background plus site-generated volumes and criteria in the *ECM*.

### **Westbound Right-Turn Deceleration Lane**

According to the criteria contained in the *ECM*, exclusive right-turn deceleration lanes shall be provided for accesses with a projected peak-hour ingress right-turning volume of greater than 25 vph. A westbound right-turn deceleration lane is **not** required at the intersection of Highway 105/Appaloosa Road based on projected volumes shown in the figures and criteria in the *ECM*.

### **DEVIATIONS/PUD MODIFICATIONS**

The following deviation to the *ECM* Criteria is associated with this application. Please refer to Exhibit 1 (attached) for a detail of the proposed deviation. Please refer to the deviation request form included with this submittal.

- Spacing of a public road intersection along a Principal Arterial roadway of less than the prescribed one-half mile spacing.

### **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 development will be required to participate in the County Road Impact Fee Program. The specific option the developer will be selecting for payment will be identified at the Preliminary Plan/Final Plat stage.

#### **Reimbursable Improvements**

No MTCP reimbursable improvements will be constructed with this development.



## **MULTI-MODAL TRANSPORTATION & TDM OPPORTUNITIES**

Please refer to the Pedestrian and Bicycle section above. There is a park n' ride facility located about five miles to the west at the intersection of Highway 105/Woodmoor Drive. Regional commuter bus service (Bustang) is available from this location.

## **IMPROVEMENTS SUMMARY TABLE**

An improvements table has not been included, as the only improvement needed is the Filing 1 street and connection to Highway 105 across from Appaloosa.

## **CONCLUSIONS**

- The site is projected to generate about 136 new driveway vehicle-trips on the average weekday during the short-term (Filing No. 2 – 11 dwelling units). Upon long-term buildout (potentially up to 26 dwelling units), the PUD site would generate about 301 new driveway vehicle-trips on the average weekday.
- During the short-term morning peak hour, approximately 3 entering vehicles and 9 exiting vehicles would be generated by the Filing No. 1 site. Approximately 8 entering vehicles and 5 exiting vehicles would be generated during the afternoon peak hour.
- During the long-term morning peak hour, approximately 6 entering vehicles and 17 exiting vehicles could potentially be generated by buildout of the overall PUD site. The afternoon peak-hour trip generation would be approximately 18 entering vehicles and 10 exiting vehicles.
- All approaches at the intersection of Highway 105/Appaloosa Road/site access are projected to operate at LOS D or better through the 2040 horizon year, during the morning and evening peak hours.
- An eastbound left-turn deceleration lane on Highway 105 at the Appaloosa Road intersection would not be required based on the projected site-generated intersection peak-hour turning volumes and criteria in the *Engineering Criteria Manual*.
- Access width, radii, and other elements should be constructed per County standards.
- Note regarding future study: This report addresses Filing 2 trips plus the potential future seven additional lots that may be developed north of Filing 2 with access through Filing 2. This report addresses the intersection of Highway 105/Appaloosa Drive. The potential future trips that may be generated from the future subdivision traffic associated with potential future development (as indicated on the PUD plan) that is shown on the PUD plan to access through Filing No. 1 via an extension of Cherry Springs Ranch Drive (eight

lots) would need to be analyzed with a future final plat Transportation Memo at the time of development. This analysis has not been included at this time, as this potential future development area north of Filing 1 indicated on the PUD plan is not anticipated at this time nor in the foreseeable future.

\* \* \* \* \*

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

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH:JAB:jas

Enclosures: Table 4  
Figure 1 – Figure 10  
Traffic Count Reports  
Level of Service Reports

## Tables and Figures

---

ITE		Value	Units <sup>1</sup>	Trip Generation Rates <sup>2</sup>					Total Trips Generated				
				Average	A.M.		P.M.		Average	A.M.		P.M.	
Code	Description			Weekday	In	Out	In	Out	Weekday	In	Out	In	Out
<b>Short-Term Buildout</b>													
210	Single-Family Detached Housing	11	DU	12.41	0.29	0.86	0.70	0.41	136	3	9	8	5
<b>Long-Term Buildout</b>													
210	Single-Family Detached Housing	26	DU	11.58	0.22	0.67	0.68	0.40	301	6	17	18	10

<sup>1</sup> DU = dwelling units

<sup>2</sup> Source: *Trip Generation*, 10th Edition, 2017, by the Institute of Transportation Engineers (ITE)

<sup>1</sup> DU = dwelling units

<sup>2</sup> Source: *Trip Generation*, 10th Edition, 2017, by the Institute of Transportation Engineers (ITE)

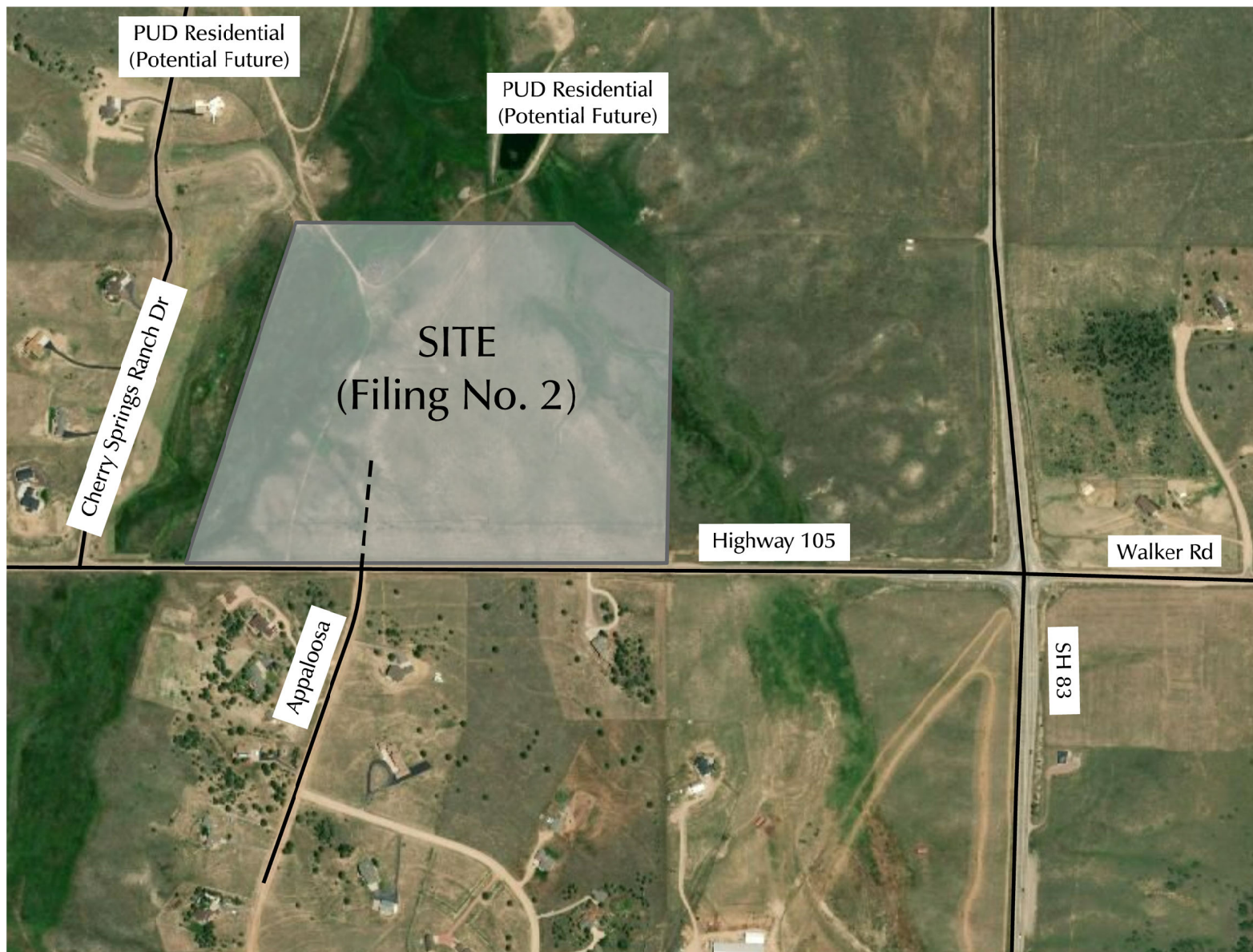


Figure 1

## Vicinity Map

Cherry Springs Ranch PUD Amendment & Filing 2 (LSC# 185111)





Cherry Springs Ranch PUD Amendment &amp; Filing 2 (LSC# 185111)

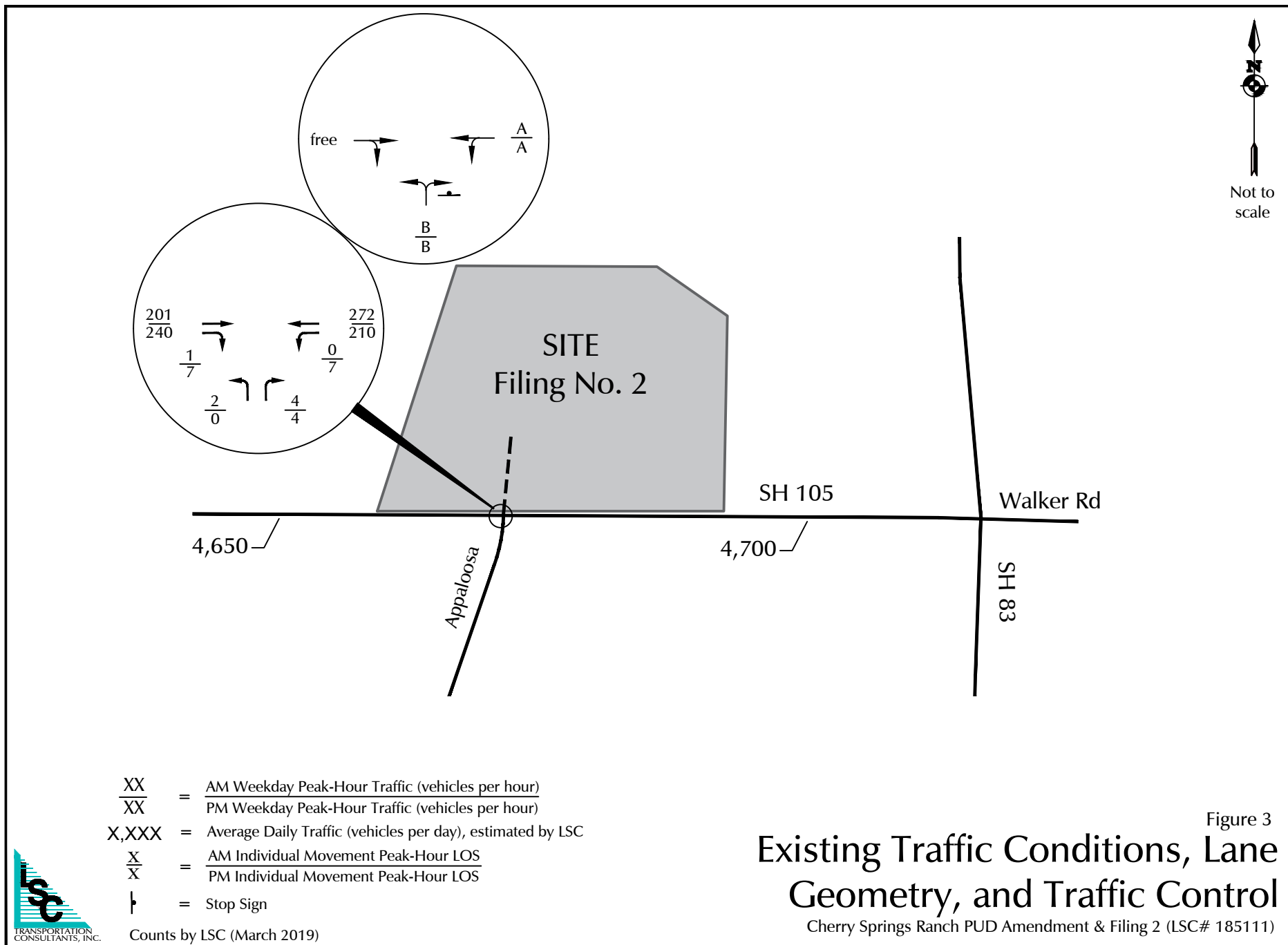




Figure 4  
Estimated Directional Distribution

Cherry Springs Ranch PUD Amendment & Filing 2 (LSC# 185111)





Not to  
scale

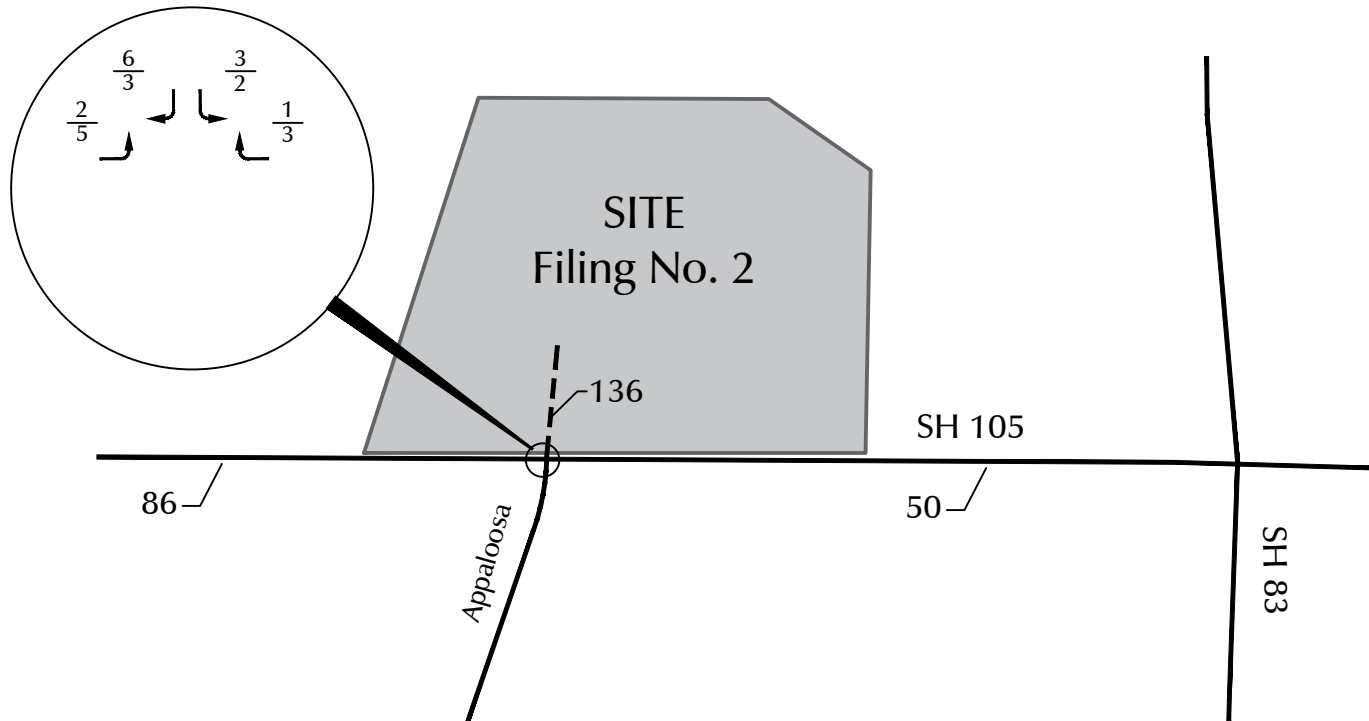


Figure 5  
Short-Term Site-Generated  
Traffic (Filing 2 Only)

Cherry Springs Ranch PUD Amendment & Filing 2 (LSC# 185111)



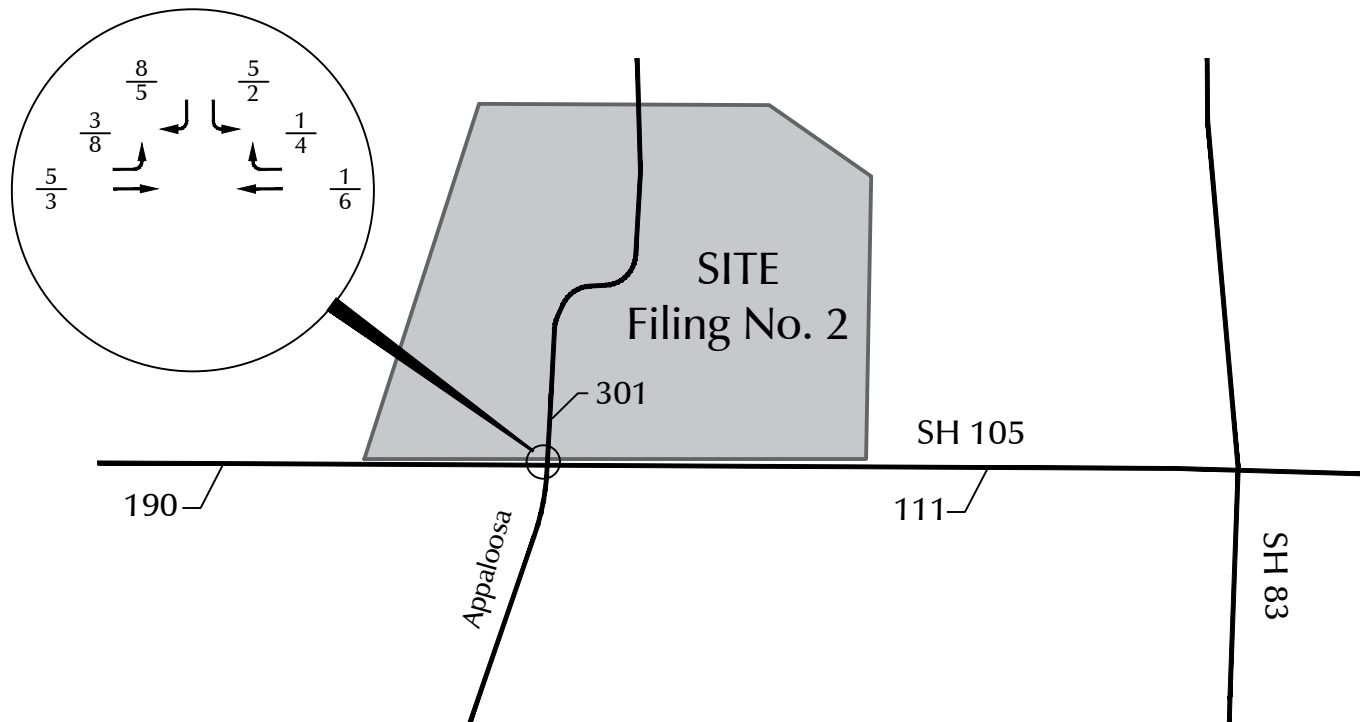
$\frac{XX}{XX}$  =  $\frac{\text{AM Weekday Peak-Hour Traffic (vehicles per hour)}}{\text{PM Weekday Peak-Hour Traffic (vehicles per hour)}}$   
X,XXX = Average Daily Traffic (vehicles per day)

Filing 2 plus the future residential (potentially 7 future lots north of Filing No.2 would access through Filing No. 2.

Note: does not depict site generated for the potential future development that is shown to access through Filing No. 1 (Cherry Springs Ranch Drive). The trips generated from those eight lots would be analyzed with a future final plat transportation memo for the eight future lots accessed by an extension of Cherry Springs Ranch Drive.

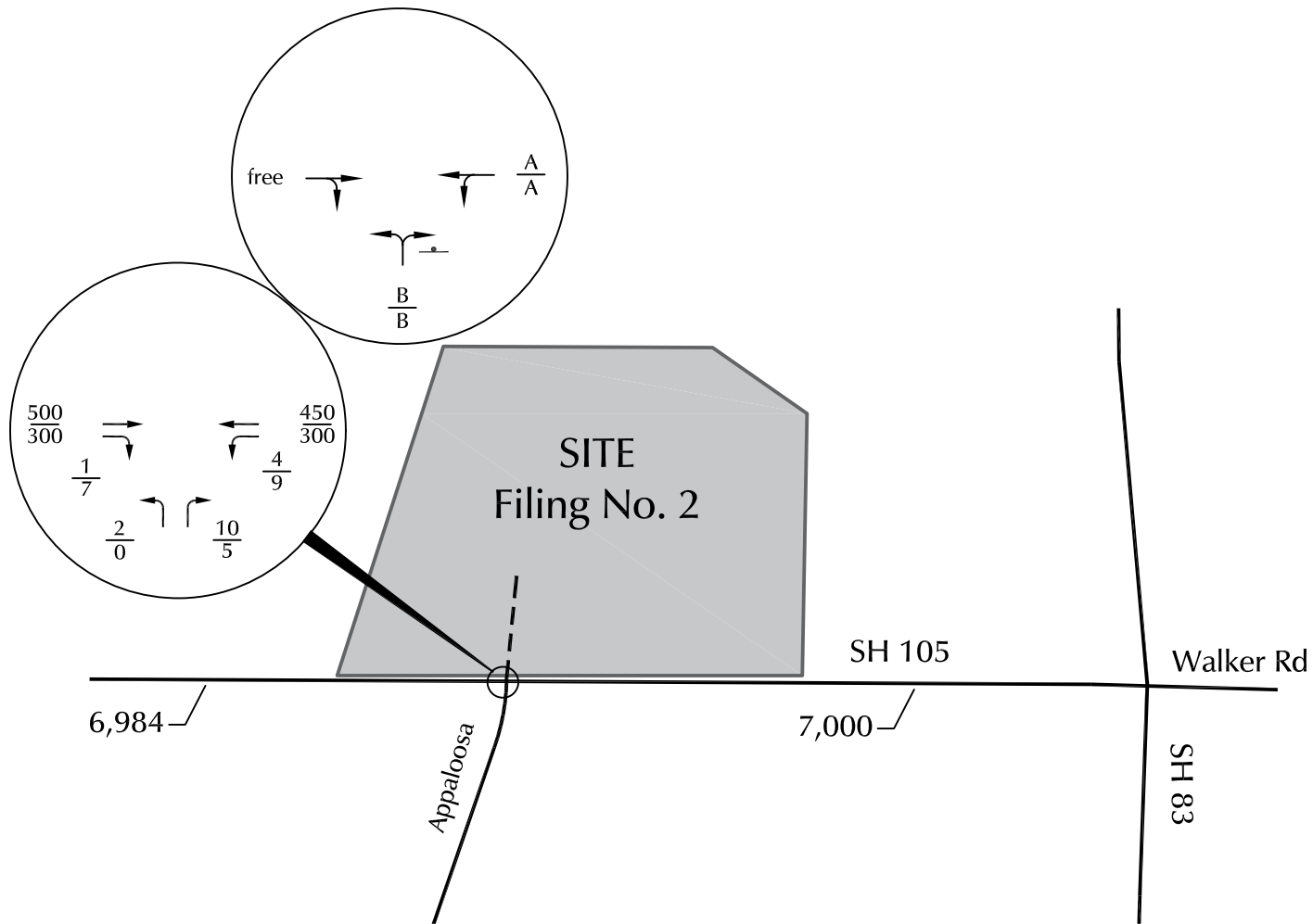


Not to scale



XX  
XX = AM Weekday Peak-Hour Traffic (vehicles per hour)  
PM Weekday Peak-Hour Traffic (vehicles per hour)  
X,XXX = Average Daily Traffic (vehicles per day)

Figure 6  
**Long-Term Site-Generated Traffic**  
Cherry Springs Ranch PUD Amendment & Filing 2 (LSC# 185111)



- $\frac{XX}{XX}$  = 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), estimated by LSC  
 $\frac{X}{X}$  = AM Individual Movement Peak-Hour LOS  
 $\frac{X}{X}$  = PM Individual Movement Peak-Hour LOS  
 + = Stop Sign

Figure 7  
**2021 Baseline Traffic Conditions, Lane  
 Geometry, and Traffic Control**  
 Cherry Springs Ranch PUD Amendment & Filing 2 (LSC# 185111)

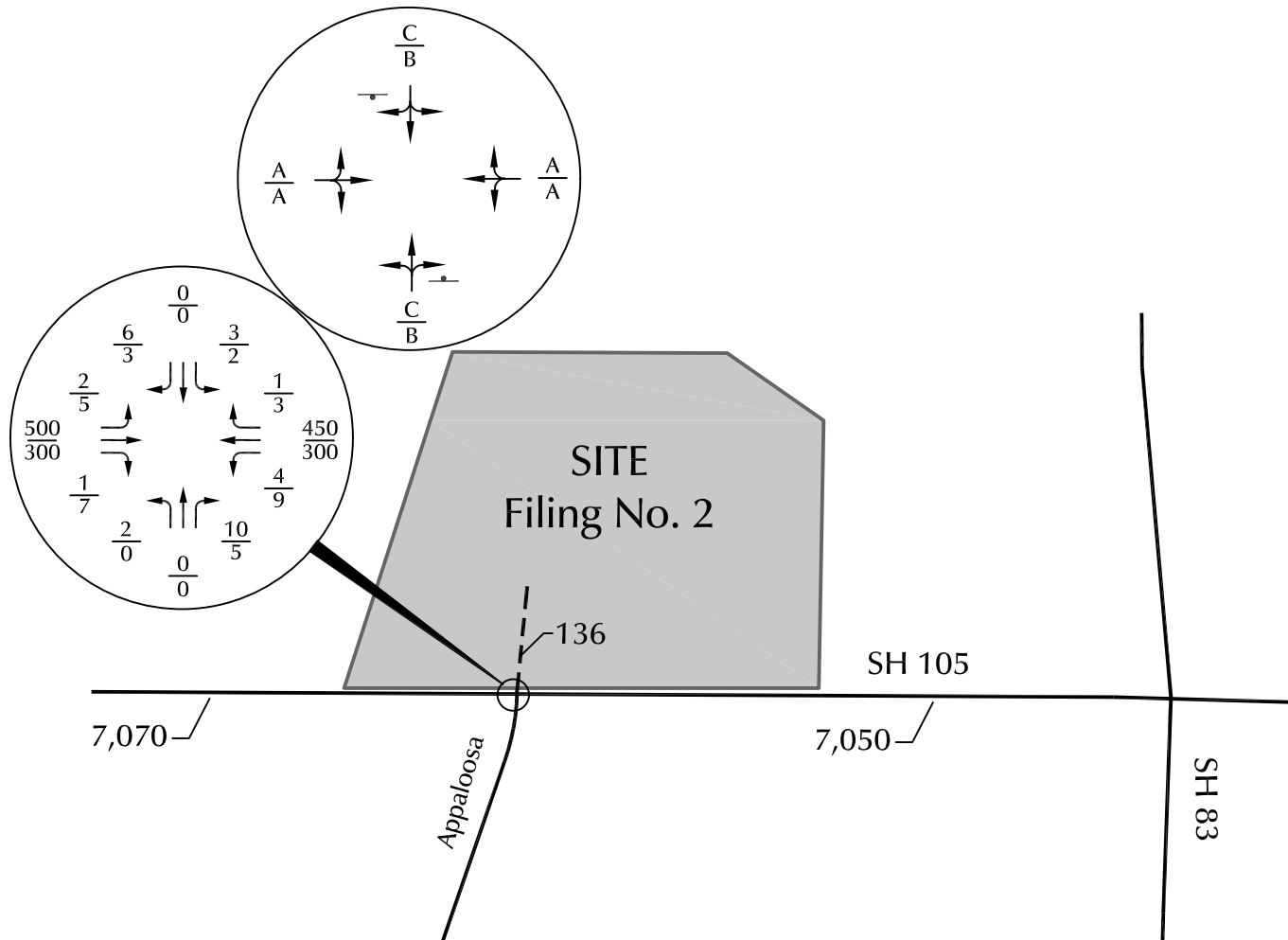
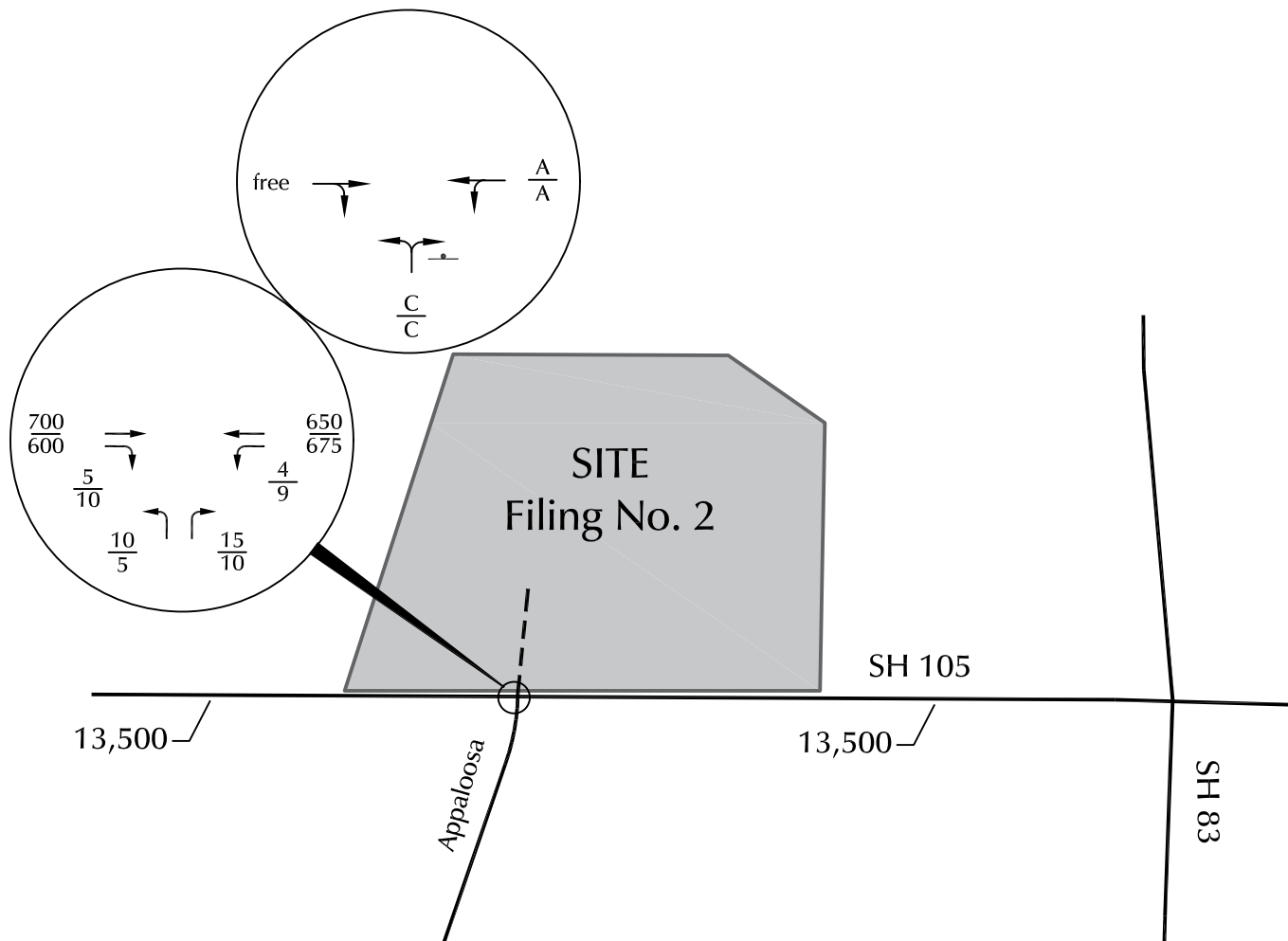


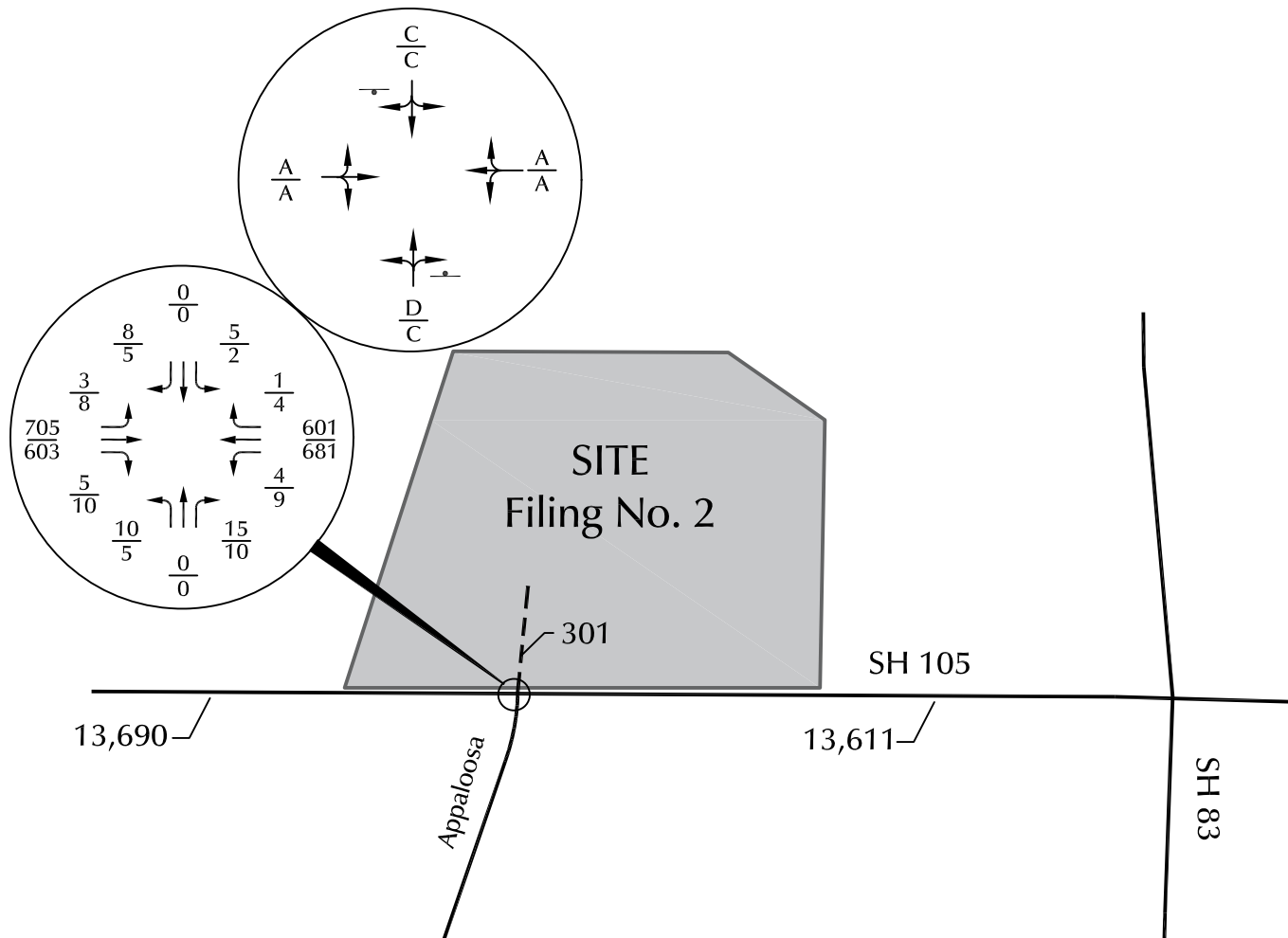
Figure 8  
 2021 Baseline Plus Site Traffic, Lane  
 Geometry, and Traffic Control  
 Cherry Springs Ranch PUD Amendment & Filing 2 (LSC# 185111)



- $\frac{XX}{XX}$  = 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)  
 $\frac{X}{X}$  = AM Individual Movement Peak-Hour LOS  
 $\frac{X}{X}$  = PM Individual Movement Peak-Hour LOS  
 T = Stop Sign

Note: The Highway 105 Corridor Study shows future improvements to include separate left-turn lanes at intersections along Highway 105.

Figure 9  
 2040 Background Traffic, Lane  
 Geometry, and Traffic Control  
 Cherry Springs Ranch PUD Amendment & Filing 2 (LSC# 185111)



\* Note: see site-generated traffic notes on Figure 6

- $\frac{XX}{XX}$  = AM Weekday Peak-Hour Traffic (vehicles per hour)  
 = PM Weekday Peak-Hour Traffic (vehicles per hour)  
 X,XXX = Average Daily Traffic (vehicles per day)  
 $\frac{X}{X}$  = AM Individual Movement Peak-Hour LOS  
 = PM Individual Movement Peak-Hour LOS  
 | = Stop Sign

Note: The Highway 105 Corridor Study shows future improvements to include separate left-turn lanes at intersections along Highway 105.

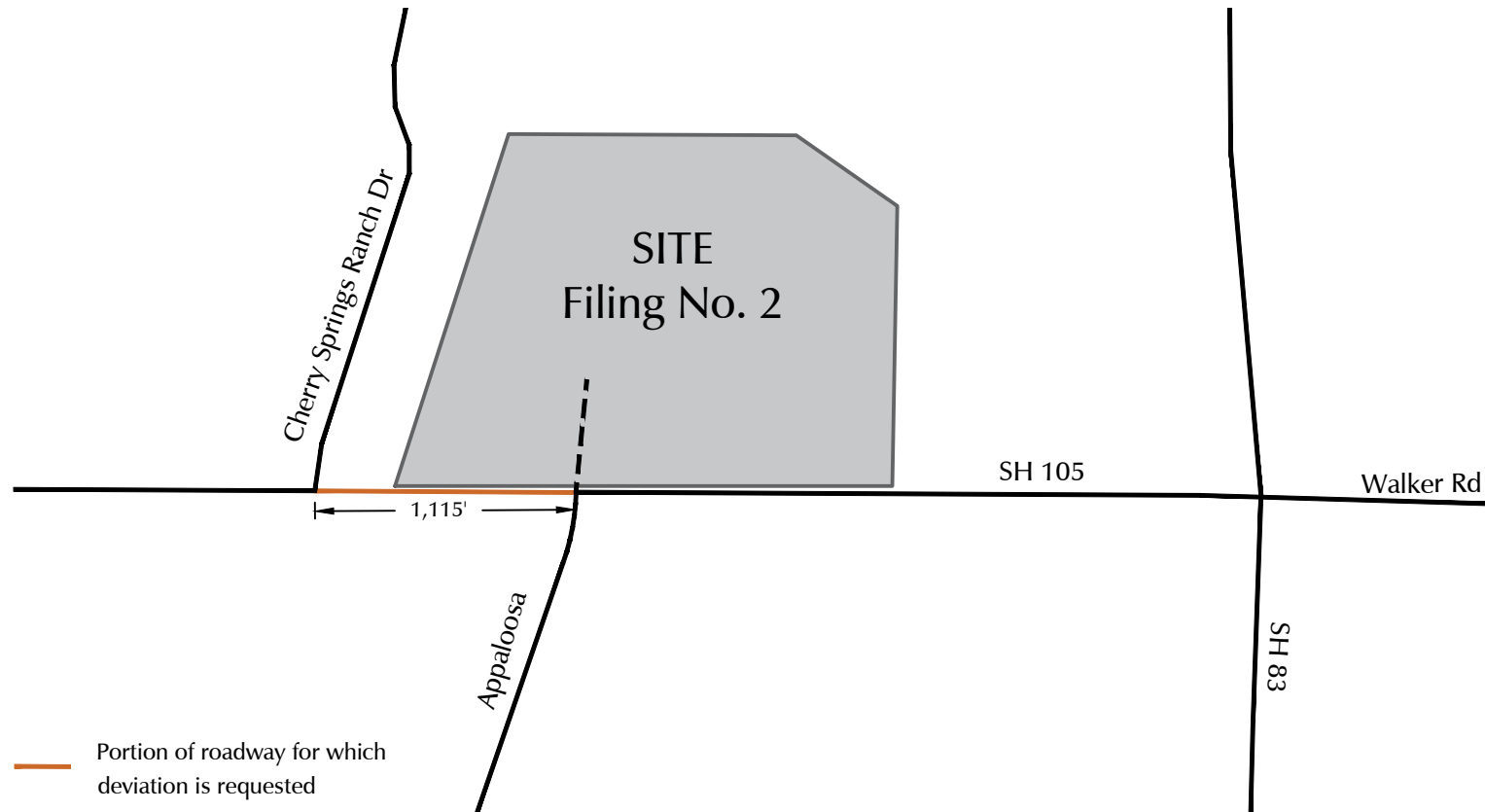
## 2040 Background + Site Traffic\*, Lane Geometry, and Traffic Control

Figure 10

Cherry Springs Ranch PUD Amendment & Filing 2 (LSC# 185111)



Not to  
scale



Deviation Requested:

2.3.2 Design Standards by Functional Classification

Deviation Criteria Requested:

Table 2-5 - Intersection spacing along a Rural Principal Arterial

Deviation Comparison:

The proposed centerline intersection spacing along Highway 105 between State Highway 83 and the proposed public street intersection leg (north leg of the Highway 105/Appaloosa Road intersection) would be 1,115 feet. This spacing is 1,525 feet short of the ECM standard intersection spacing of one-half mile.



## Deviation Exhibit (Intersection Spacing)

Exhibit 1

Cherry Springs Ranch PUD Amendment & Filing 2 (LSC# 185111)

# Traffic Counts

---



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Appaloosa Rd- Hwy 105 AM

Site Code : 185111

Start Date : 3/7/2019

Page No : 1

## Groups Printed- Unshifted

	Southbound				Hwy 105 Westbound				Appaloosa Rd Northbound				Hwy 105 Eastbound				Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:30	0	0	0	0	0	40	0	0	3	0	0	0	0	27	1	0	71
06:45	0	0	0	0	0	63	0	0	2	0	0	0	0	33	0	0	98
Total	0	0	0	0	0	103	0	0	5	0	0	0	0	60	1	0	169
07:00	0	0	0	0	0	86	0	0	0	0	2	0	0	33	0	0	121
07:15	0	0	0	0	0	58	0	0	0	0	0	0	0	62	0	0	120
07:30	0	0	0	0	0	67	0	0	1	0	0	0	0	61	0	0	129
07:45	0	0	0	0	0	61	0	0	1	0	2	0	0	45	1	0	110
Total	0	0	0	0	0	272	0	0	2	0	4	0	0	201	1	0	480
08:00	0	0	0	0	1	49	0	0	2	0	1	0	0	18	0	0	71
08:15	0	0	0	0	1	45	0	0	2	0	0	0	0	42	0	0	90
Grand Total	0	0	0	0	2	469	0	0	11	0	5	0	0	321	2	0	810
Apprch %	0	0	0	0	0.4	99.6	0	0	68.8	0	31.2	0	0	99.4	0.6	0	
Total %	0	0	0	0	0.2	57.9	0	0	1.4	0	0.6	0	0	39.6	0.2	0	

# LSC Transportation Consultants, Inc.

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

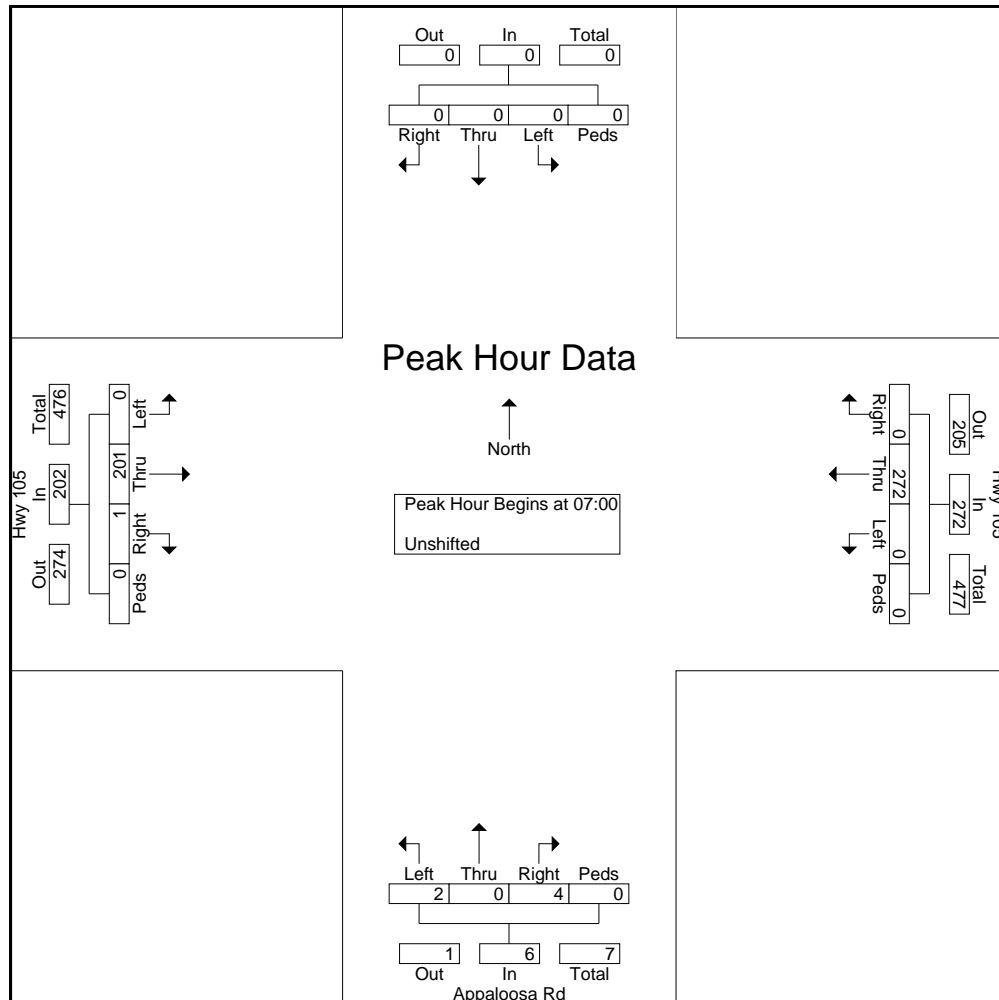
File Name : Appaloosa Rd- Hwy 105 AM

Site Code : 185111

Start Date : 3/7/2019

Page No : 2

	Southbound					Hwy 105 Westbound					Appaloosa Rd Northbound					Hwy 105 Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	0	0	0	0	0	0	86	0	0	86	0	0	2	0	2	0	33	0	0	33	121
07:15	0	0	0	0	0	0	58	0	0	58	0	0	0	0	0	0	62	0	0	62	120
07:30	0	0	0	0	0	0	67	0	0	67	1	0	0	0	1	0	61	0	0	61	129
07:45	0	0	0	0	0	0	61	0	0	61	1	0	2	0	3	0	45	1	0	46	110
Total Volume	0	0	0	0	0	0	272	0	0	272	2	0	4	0	6	0	201	1	0	202	480
% App. Total	0	0	0	0	0	0	100	0	0	100	33.3	0	66.7	0	100	0	99.5	0.5	0	100	100
PHF	.000	.000	.000	.000	.000	.000	.791	.000	.000	.791	.500	.000	.500	.000	.500	.000	.810	.250	.000	.815	.930



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

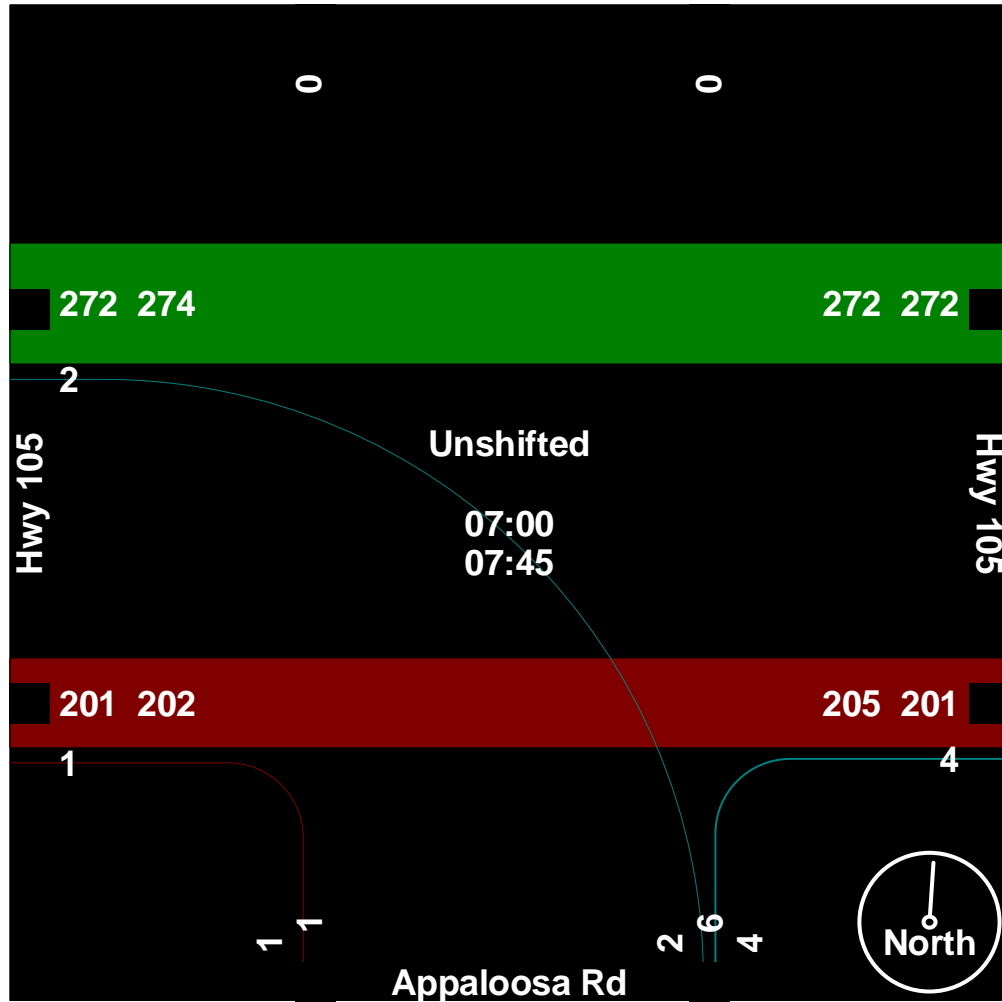
719-633-2868

File Name : Appaloosa Rd- Hwy 105 AM

Site Code : 185111

Start Date : 3/7/2019

Page No : 3



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Appaloosa Rd- Hwy 105 PM

Site Code : 185111

Start Date : 3/7/2019

Page No : 1

## Groups Printed- Unshifted

Start Time	Southbound				Hwy 105 Westbound				Appaloosa Rd Northbound				Hwy 105 Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
16:00	0	0	0	0	0	48	0	0	1	0	2	0	0	59	2	0	112
16:15	0	0	0	0	0	51	0	0	1	0	3	0	0	61	0	0	116
16:30	0	0	0	0	0	50	0	0	0	0	1	0	0	48	1	0	100
16:45	0	0	0	0	2	42	0	0	1	0	1	0	0	45	0	0	91
Total	0	0	0	0	2	191	0	0	3	0	7	0	0	213	3	0	419
17:00	0	0	0	0	2	72	0	0	0	0	0	0	0	63	1	0	138
17:15	0	0	0	0	1	38	0	0	0	0	1	0	0	74	3	0	117
17:30	0	0	0	0	2	53	0	0	0	0	2	0	0	55	2	0	114
17:45	0	0	0	0	2	47	0	0	0	0	1	0	0	48	1	0	99
Total	0	0	0	0	7	210	0	0	0	0	4	0	0	240	7	0	468
Grand Total	0	0	0	0	9	401	0	0	3	0	11	0	0	453	10	0	887
Apprch %	0	0	0	0	2.2	97.8	0	0	21.4	0	78.6	0	0	97.8	2.2	0	
Total %	0	0	0	0	1	45.2	0	0	0.3	0	1.2	0	0	51.1	1.1	0	

# LSC Transportation Consultants, Inc.

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

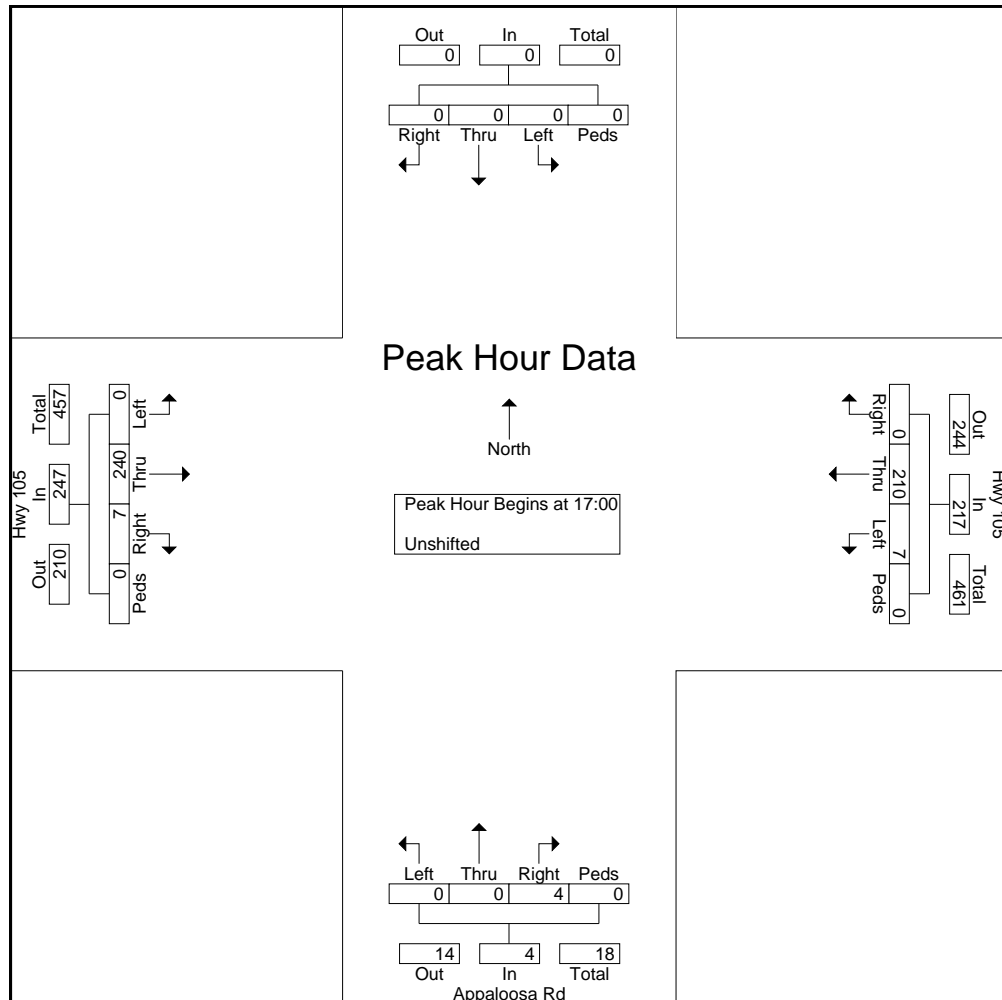
File Name : Appaloosa Rd- Hwy 105 PM

Site Code : 185111

Start Date : 3/7/2019

Page No : 2

	Southbound					Hwy 105 Westbound					Appaloosa Rd Northbound					Hwy 105 Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	0	0	0	0	0	2	72	0	0	74	0	0	0	0	0	0	63	1	0	64	138
17:15	0	0	0	0	0	1	38	0	0	39	0	0	1	0	1	0	74	3	0	77	117
17:30	0	0	0	0	0	2	53	0	0	55	0	0	2	0	2	0	55	2	0	57	114
17:45	0	0	0	0	0	2	47	0	0	49	0	0	1	0	1	0	48	1	0	49	99
Total Volume	0	0	0	0	0	7	210	0	0	217	0	0	4	0	4	0	240	7	0	247	468
% App. Total	0	0	0	0	0	3.2	96.8	0	0		0	0	100	0		0	97.2	2.8	0		
PHF	.000	.000	.000	.000	.000	.875	.729	.000	.000	.733	.000	.000	.500	.000	.500	.000	.811	.583	.000	.802	.848



# LSC Transportation Consultants, Inc.

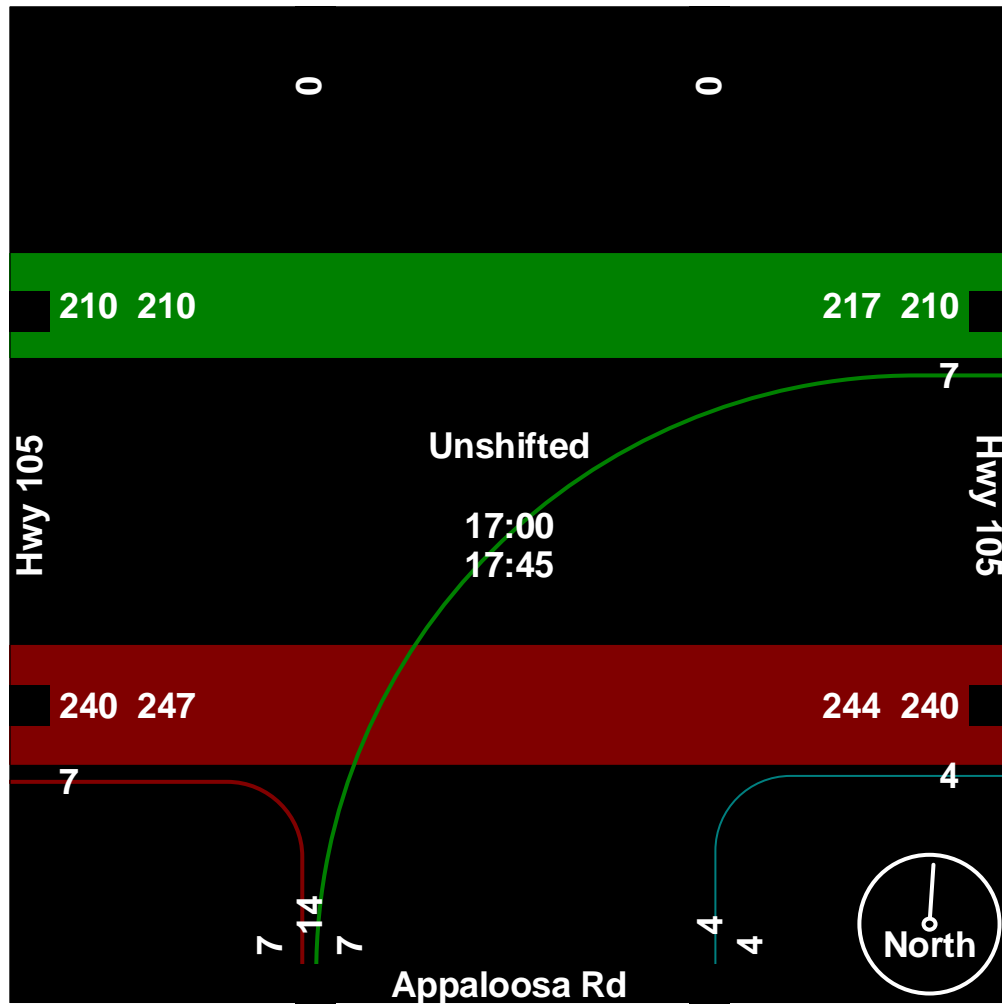
545 E Pikes Peak Ave, Suite 210  
Colorado Springs, CO 80905  
719-633-2868

File Name : Appaloosa Rd- Hwy 105 PM

Site Code : 185111

Start Date : 3/7/2019

Page No : 3






# Levels of Service

---

HCM 6th TWSC  
3: Appaloosa Rd & Highway 105




2019 Existing  
AM




Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	201	1	0	272	2	4
Future Vol, veh/h	201	1	0	272	2	4
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	82	82	79	79	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	245	1	0	344	4	8
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	246	0	590	246
Stage 1	-	-	-	-	246	-
Stage 2	-	-	-	-	344	-
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	-	-	1320	-	470	793
Stage 1	-	-	-	-	795	-
Stage 2	-	-	-	-	718	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1320	-	470	793
Mov Cap-2 Maneuver	-	-	-	-	470	-
Stage 1	-	-	-	-	795	-
Stage 2	-	-	-	-	718	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		10.7	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	645	-	-	1320	-	
HCM Lane V/C Ratio	0.019	-	-	-	-	
HCM Control Delay (s)	10.7	-	-	0	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	






HCM 6th TWSC  
3: Appaloosa Rd & Highway 105

2019 Existing  
PM





Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	240	7	7	210	0	4
Future Vol, veh/h	240	7	7	210	0	4
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	80	80	73	73	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	300	9	10	288	0	8
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	309	0	613	305
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	308	-
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	-	-	1252	-	456	735
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	745	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1252	-	451	735
Mov Cap-2 Maneuver	-	-	-	-	451	-
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	738	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.3		10	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	735	-	-	1252	-	
HCM Lane V/C Ratio	0.011	-	-	0.008	-	
HCM Control Delay (s)	10	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	500	1	4	450	2	10
Future Vol, veh/h	500	1	4	450	2	10
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	82	82	79	79	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	610	1	5	570	4	20
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	611	0	1191	611
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	580	-
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	-	-	968	-	207	494
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	560	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	968	-	205	494
Mov Cap-2 Maneuver	-	-	-	-	205	-
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	560	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		14.6	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	400	-	-	968	-	
HCM Lane V/C Ratio	0.06	-	-	0.005	-	
HCM Control Delay (s)	14.6	-	-	8.7	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0	-	

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	300	7	9	300	0	5
Future Vol, veh/h	300	7	9	300	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	80	80	73	73	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	375	9	12	411	0	10
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	384	0	815	380
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	435	-
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	-	-	1174	-	347	667
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	653	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1174	-	342	667
Mov Cap-2 Maneuver	-	-	-	-	342	-
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	653	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		10.5	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	667	-	-	1174	-	
HCM Lane V/C Ratio	0.015	-	-	0.011	-	
HCM Control Delay (s)	10.5	-	-	8.1	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

HCM 6th TWSC  
3: Appaloosa Rd/Site Access & Highway 105

2021 Baseline + Site  
AM

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	500	1	4	450	1	2	0	10	3	0	6
Future Vol, veh/h	2	500	1	4	450	1	2	0	10	3	0	6
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	82	82	79	79	92	50	92	50	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	610	1	5	570	1	4	0	20	3	0	7
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	571	0	0	611	0	0	1199	1196	611	1206	1196	571
Stage 1	-	-	-	-	-	-	615	615	-	581	581	-
Stage 2	-	-	-	-	-	-	584	581	-	625	615	-
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	1002	-	-	968	-	-	162	186	494	160	186	520
Stage 1	-	-	-	-	-	-	479	482	-	499	500	-
Stage 2	-	-	-	-	-	-	498	500	-	473	482	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1002	-	-	968	-	-	159	184	494	152	184	520
Mov Cap-2 Maneuver	-	-	-	-	-	-	159	184	-	152	184	-
Stage 1	-	-	-	-	-	-	478	481	-	498	496	-
Stage 2	-	-	-	-	-	-	488	496	-	452	481	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			15.5			17.9		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	366	1002	-	-	968	-	-	288				
HCM Lane V/C Ratio	0.066	0.002	-	-	0.005	-	-	0.034				
HCM Control Delay (s)	15.5	8.6	0	-	8.7	0	-	17.9				
HCM Lane LOS	C	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				






HCM 6th TWSC  
3: Appaloosa Rd/Site Access & Highway 105






2021 Baseline + Site  
PM

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	300	7	9	300	3	0	0	5	2	0	3
Future Vol, veh/h	5	300	7	9	300	3	0	0	5	2	0	3
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	80	80	73	73	92	50	92	50	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	375	9	12	411	3	0	0	10	2	0	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	414	0	0	384	0	0	828	828	380	832	831	413
Stage 1	-	-	-	-	-	-	390	390	-	437	437	-
Stage 2	-	-	-	-	-	-	438	438	-	395	394	-
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	1145	-	-	1174	-	-	290	306	667	288	305	639
Stage 1	-	-	-	-	-	-	634	608	-	598	579	-
Stage 2	-	-	-	-	-	-	597	579	-	630	605	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1145	-	-	1174	-	-	284	300	667	280	299	639
Mov Cap-2 Maneuver	-	-	-	-	-	-	284	300	-	280	299	-
Stage 1	-	-	-	-	-	-	630	604	-	594	571	-
Stage 2	-	-	-	-	-	-	586	571	-	617	601	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.2			10.5			13.6		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	667	1145	-	-	1174	-	-	422				
HCM Lane V/C Ratio	0.015	0.005	-	-	0.011	-	-	0.013				
HCM Control Delay (s)	10.5	8.2	0	-	8.1	0	-	13.6				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0				

HCM 6th TWSC  
3: Appaloosa Rd & Highway 105

2040 Background  
AM

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	700	5	4	650	10	15
Future Vol, veh/h	700	5	4	650	10	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	-	-	260	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	737	5	4	684	12	18
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	742	0	1432	740
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	692	-
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	-	-	865	-	148	417
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	497	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	865	-	147	417
Mov Cap-2 Maneuver	-	-	-	-	147	-
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	497	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		22.1	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	240	-	-	865	-	
HCM Lane V/C Ratio	0.123	-	-	0.005	-	
HCM Control Delay (s)	22.1	-	-	9.2	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	0.4	-	-	0	-	

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	600	10	9	675	5	10
Future Vol, veh/h	600	10	9	675	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	260	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	632	11	9	711	6	12
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	643	0	1367	638
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	729	-
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	-	-	942	-	162	477
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	477	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	942	-	160	477
Mov Cap-2 Maneuver	-	-	-	-	160	-
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	477	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		18.4	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	287	-	-	942	-	
HCM Lane V/C Ratio	0.061	-	-	0.01	-	
HCM Control Delay (s)	18.4	-	-	8.9	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	0.2	-	-	0	-	

HCM 6th TWSC  
3: Appaloosa Rd/Site Access & Highway 105

2040 Background + Site  
AM

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	3	705	5	4	601	1	10	0	15	5	0	8
Future Vol, veh/h	3	705	5	4	601	1	10	0	15	5	0	8
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	95	95	95	95	95	95	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	742	5	4	633	1	12	0	18	6	0	9
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	634	0	0	747	0	0	1397	1393	745	1402	1395	634
Stage 1	-	-	-	-	-	-	751	751	-	642	642	-
Stage 2	-	-	-	-	-	-	646	642	-	760	753	-
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	949	-	-	861	-	-	118	142	414	117	141	479
Stage 1	-	-	-	-	-	-	403	418	-	463	469	-
Stage 2	-	-	-	-	-	-	460	469	-	398	417	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	949	-	-	861	-	-	115	140	414	111	139	479
Mov Cap-2 Maneuver	-	-	-	-	-	-	115	140	-	111	139	-
Stage 1	-	-	-	-	-	-	401	416	-	461	466	-
Stage 2	-	-	-	-	-	-	448	466	-	379	415	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			25.7			23.4		
HCM LOS							D			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	203	949	-	-	861	-	-	211				
HCM Lane V/C Ratio	0.145	0.003	-	-	0.005	-	-	0.072				
HCM Control Delay (s)	25.7	8.8	0	-	9.2	0	-	23.4				
HCM Lane LOS	D	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.2				



HCM 6th TWSC  
3: Appaloosa Rd/Site Access & Highway 105

2040 Background + Site  
PM

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	603	10	9	681	4	5	0	10	2	0	5
Future Vol, veh/h	8	603	10	9	681	4	5	0	10	2	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	95	95	95	95	95	95	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	635	11	9	717	4	6	0	12	2	0	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	721	0	0	646	0	0	1397	1396	641	1400	1399	719
Stage 1	-	-	-	-	-	-	657	657	-	737	737	-
Stage 2	-	-	-	-	-	-	740	739	-	663	662	-
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	881	-	-	939	-	-	118	141	475	118	141	428
Stage 1	-	-	-	-	-	-	454	462	-	410	425	-
Stage 2	-	-	-	-	-	-	409	424	-	450	459	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	881	-	-	939	-	-	114	137	475	112	137	428
Mov Cap-2 Maneuver	-	-	-	-	-	-	114	137	-	112	137	-
Stage 1	-	-	-	-	-	-	448	456	-	404	418	-
Stage 2	-	-	-	-	-	-	397	417	-	433	453	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.1			21.9			20.7		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	231	881	-	-	939	-	-	237				
HCM Lane V/C Ratio	0.076	0.01	-	-	0.01	-	-	0.035				
HCM Control Delay (s)	21.9	9.1	0	-	8.9	0	-	20.7				
HCM Lane LOS	C	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				