



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>

August 22, 2017

**DRAFT**

Mr. John Jennings  
2030 Tabor Court  
Colorado Springs, CO 80919

RE: Jennings Subdivision  
El Paso County, Colorado  
Transportation Memorandum  
LSC #174140

Dear Mr. Jennings:

In response to your request, we have prepared this Transportation Memorandum for the proposed Jennings Subdivision, to be located generally northwest of the intersection of Judge Orr Road/ Curtis Road in unincorporated El Paso County, Colorado. Access is proposed to Stapleton Road and Judge Orr Road. The site location and vicinity are shown on Figure 1.

This report is being prepared for submittal to El Paso County. The report contains an analysis of the vehicle trips estimated to be generated by the proposed subdivision and estimates of the projected site-generated traffic volumes on the adjacent roadways. This report includes required analysis elements and presents analysis findings.

## REPORT CONTENTS

This report is being prepared as part of a submittal to El Paso County. It identifies the traffic impacts of this development. The report contains the following:

- The traffic count data and street conditions.
- Projections of short-term (2020) baseline/background traffic volumes.
- The projected average weekday and peak-hour vehicle-trips to be generated by the site.
- The assignment of the site's projected traffic volumes to the resulting total traffic volumes at the proposed site access intersections.
- The level of service analysis at the site access intersections and average daily and peak hour traffic volumes on key street sections in the vicinity of the site.
- Access sight distance analysis
- Pedestrian and bicycle analysis
- Street classifications

Add PCD File No: P-17-015  
SP-17-011  
SF-17-021



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Jennings Subdivision  
Transportation Memorandum  
(LSC #174140)  
August 23, 2017

**Traffic Engineer's Statement**

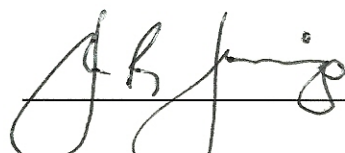
This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.

\_\_\_\_\_  
Jeffrey C. Hodsdon, P.E., #31684

\_\_\_\_\_  
Date

**Developer's Statement**

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

  
\_\_\_\_\_

30 August 2017  
Date

- County Transportation Fee Program requirements
- Summary of findings/conclusions

## LAND USE AND ACCESS

Jennings Subdivision is a proposed single-family residential subdivision consisting of seven lots, each a minimum of 5.0 acres. Figure 1 provides a visual of the site relative to the nearby roadway network. The proposed Jennings subdivision is located northwest of the intersection of Judge Orr Road and Curtis Drive in El Paso County, Colorado. US Highway 24 intersects Stapleton Road about one-half mile north of the site and Judge Orr Road approximately 1.1 miles west of the site. Two of the seven lots are shown to have access to Judge Orr Road (access location will be about 1,290 feet west of Curtis Road and about 790 feet east of Aerostar Drive), while the northern five lots are shown to have interim access to Stapleton Drive (access location will be about 2,530 feet south of US Highway 24).

The access to the north five lots to Stapleton Drive will initially be via a 30-foot access easement which will be vacated upon the creation of a northerly road connection. This access will be closed once the planned future connection to the north (per the Stapleton Access Management Plan) is implemented and permanent access is provided to this subdivision.

## ROADWAY AND TRAFFIC CONDITIONS

### Area Roadways

Figure 1 shows the roadways in the vicinity of the site. The major roadways are identified below followed by a brief description of each:

- **US Highway 24** is a two-lane east/west State Highway extending locally from the City of Colorado Springs to Peyton in a northeasterly direction and then continuing east. US 24 is classified as an Expressway by CDOT in the vicinity of the site and is shown as an Expressway on the MTCP. US 24 is shown on the transportation plans as a future four-lane facility in the vicinity of the site. CDOT is currently conducting a Planning and Environmental Linkage (PEL) study. The posted speed limit on US 24 is 65 miles per hour (mph) in the vicinity of Stapleton.
- **Stapleton Drive** is shown as a four-lane Principal Arterial on the El Paso County MTCP and El Paso County Corridor Preservation Plan (CPP). Stapleton Drive extends east from Towner Drive to US Highway (US) 24. Stapleton continues southeast, then south as Curtis Road. It is planned to ultimately be extended west to connect with the Briargate Parkway extension. Stapleton Drive currently has one through lane in each direction adjacent to the site. There are currently no auxiliary turn lanes along Stapleton Drive in the immediate vicinity of the proposed site access. The posted speed limit is 45 mph.
- **Judge Orr Road** is currently classified as a two-lane Minor Arterial in El Paso County's 2040 *MTCP*. The preserved corridors plan shows a four-lane minor arterial. Judge Orr Road extends west to US 24 then approximately 0.7 miles to the intersection of Eastonville Road/Meridian

Ranch Boulevard. Judge Orr extends east from Curtis Road to North Davenport Road. There are currently no turn lanes at existing driveways along Judge Orr Road within the study area limits. Adjacent to the site, the posted speed limit is 45 mph.

**Existing Traffic Volumes**

Vehicular turning movement counts were conducted at the following locations at the times specified in Table 1.

**Table 1: Vehicular Turning Movement Count Collection Data**

Intersection		Data Collection			
Major Street	Minor Street	Day	Date	From	To
US 24	Stapleton Drive	Wednesday	March 22, 2017	6:30 a.m.	8:30 a.m.
		Tuesday	March 21, 2017	4:00 p.m.	6:00 p.m.
Judge Orr Drive	Proposed South Access	Tuesday	August 16, 2016	6:30 a.m.	8:30 a.m.
		Thursday	August 11, 2016	4:00 p.m.	6:00 p.m.

Existing weekday morning and evening peak-hour traffic volumes at the intersections of Stapleton Road/US 24 and Judge Orr Road/proposed south site access are shown in Figure 3. Raw count data are attached.

**Existing Level of Service**

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
	Control Delay (seconds per vehicle)	
A	10 sec or less	10 sec or less
B	10-20 sec	10-15 sec
C	20-35 sec	15-25 sec
D	35-55 sec	25-35 sec
E	55-80 sec	35-50 sec
F	80 sec or more	50 sec or more

**SITE TRIP GENERATION**

Estimates of the vehicle-trips projected to be generated by the Jennings Subdivision have been made using the nationally published trip generation rates from *Trip Generation, 9<sup>th</sup> Edition, 2012*

by the Institute of Transportation Engineers (ITE). Land use code 210 – Single-Family Detached Housing was categorized using the *Trip Generation Manual, 9<sup>th</sup> Edition, 2012* by the Institute of Transportation Engineers (ITE) and used for trip generation estimates.

The proposed Jennings Subdivision is projected to generate about 67 total vehicle-trips on the average weekday during a 24-hour period, with about half entering the site and half exiting the site. The peak-hour trip generation is also summarized in Table 3. A detailed trip generation estimate for the development, including ITE rates for the proposed land use, is presented in Table 6 (attached).

**Table 3: Site Vehicle-Trip Generation Summary**

<b>Analysis Period</b>	<b>In</b>	<b>Out</b>	
Morning Peak Hour (vehicle-trips/hour)	1	4	5
Evening Peak Hour (vehicle-trips/hour)	4	3	7
Weekday (vehicle-trips/day)	33	33	67
* Please refer to Table 6 (attached) for detailed trip generation table			

As shown in the table, Jennings Subdivision is expected to generate about 67 vehicle-trips on the average weekday (one-half entering and one-half exiting in a 24-hour period). During the morning peak hour, about one vehicle would enter and four vehicles would exit the site. During the afternoon peak hour, about four vehicles would enter and three vehicles would exit the site. The morning peak hour generally occurs for one hour between 6:30 and 8:30 a.m., and the afternoon peak hour occurs for one hour between 4:00 and 6:00 p.m.

### **Trip Distribution and Assignment**

Distribution of the site-generated vehicle-trips to the study area streets 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 were based on the following factors: the proposed land use and access plan, the area roadway system and the site location with respect to trip attractors in the Falcon area and the greater Colorado Springs metropolitan area.

### **Site-Generated Traffic**

When the directional distribution percentages (from Figure 4) were applied to the trip generation estimates (from Table 6), the site-generated traffic volumes on the adjacent streets were determined. Figure 5 shows the projected site-generated traffic volumes at the site access intersections.

**2020 BACKGROUND TRAFFIC**

Figure 6 shows the projected background traffic volumes for the year 2020. Background traffic is the traffic projected to be on the roadway system without consideration of the proposed Jennings subdivision. Background traffic volumes include through traffic and traffic generated by anticipated area development, but assume zero traffic generated by the site. The 2020 background traffic volumes were based on volume projections contained in the Major Transportation Corridors Plan as well as forecasted traffic volumes from previous work done by LSC in the area.

**2020 TOTAL TRAFFIC**

Figure 7 shows the projected 2020 total traffic volumes. The 2020 total traffic volumes are the sum of the 2020 background traffic volumes (from Figure 6) plus the site-generated traffic volumes from Figure 5.

**PROJECTED LEVELS OF SERVICE**

Both proposed site access driveways have been analyzed to determine the projected 2020 levels of service and control delay for the site access intersections.

**Morning Peak Hour**

Both access minor street approaches are projected to operate at LOS B or better in the 2020 morning and afternoon peak hours. A summary projected 2020 background plus site-generated LOS and control delays during the morning peak hour is shown in Table 4.

**Table 4: Level of Service Analysis (A.M.)**

Scenario	North Access @ Stapleton Dr.		South Access @ Judge Orr	
	NB	EB	EB	SB
<b>LOS</b>				
2017 Existing	-	-	-	-
2020 Background + Site-generated	A	B	A	B
<b>Control Delay (seconds)</b>				
2017 Existing	-	-	-	-
2020 Background + Site-generated	0.0	10.4	0.0	10.1

**Evening Peak Hour**

Both access/minor street approaches are projected to operate at LOS B or better in the 2020 late afternoon/evening peak hour. A summary projected 2020 background plus site-generated LOS and control delays during the morning peak hour is shown in Table 5.

**Table 5: Level of Service Comparison by Scenario (P.M.)**

Scenario	North Access @ Stapleton Dr.		South Access @ Judge Orr	
	NB	EB	EB	SB
<b>LOS</b>				
2017 Existing	-	-	-	-
2020 Background + Site-generated	A	B	A	B
<b>Control Delay (seconds)</b>				
2017 Existing	-	-	-	-
2020 Background + Site-generated	0.0	10.3	0.0	10.2

**ACCESS/INTERSECTION SIGHT DISTANCE**

The sight distance Engineering Criteria in the County

Expand the narrative and explain how this conforms/deviates from the Stapleton Access Management Plan. The AMP shows a continuous road however this development is only providing a ROW through the flood plain. What impact does this have with regards to the AMP when the future road from the west connects near the middle of the site.

**PEDESTRIAN ACCESS**

Regarding the connecting roadways adjacent to the site, both to the site, both Stapleton Drive between the site and US Highway 24. The site is bordered by sidewalks which are suitable for road bicyclists. About one-half mile to the northwest, the Rock Island Trail intersects Stapleton Drive on the north side of US Highway 24. This trail provides a connection to the “downtown” Falcon area. A park-n-ride facility is planned near the intersection of Meridian and US 24 in Falcon.

State whether the AMP calls for the construction of this improvement. State whether the improvements are reimbursable under the current MTCP.

**STREET CLASSIFICATIONS**

Both streets within the Jennings Subdivision should be classified as Rural Local.

**TRANSPORTATION IMPACT FEE PROGRAM**

This subdivision will be required to participate in the County Transportation Impact Fee Program. Should the applicant decide to annex into the 10 mil PID. Based on a per-lot, up-front building permit fee of \$609 per dwelling unit, the total building permit fee amount for the 129 lots (both filings) would be \$4,263.

Revise to the 2017 rates.

**CONCLUSIONS AND RECOMMENDATIONS**

**Trip Generation**

Revise to 7 lots per the plat

Based on the information provided by the client, Jennings subdivision is expected to generate about 67 “new” vehicle-trips on the average weekday (one-half entering and one-half exiting in a 24-hour period). During the morning peak hour, about one vehicle would enter and four vehicles

would exit the site. During the afternoon peak hour, about four vehicles would enter and three vehicles would exit the site.

### **Auxiliary Turn Lanes**

Based on projected site-generated turning movement volumes and the criteria contained in the *El Paso County Engineering Criteria Manual (ECM)*, auxiliary turn lanes would not be required on either Stapleton Drive or Judge Orr Road at the site access intersections. Note: the Stapleton access is interim/temporary. This access will be closed once the planned future connection to the north (per the Stapleton Access Management Plan) is implemented and permanent access is provided to this subdivision.

### **Level of Service Analysis**

Minor street approaches at the site access intersections with Stapleton and Judge Orr are projected to operate at LOS B based on projected 2020 morning and evening peak hour traffic volumes.

\* \* \* \* \*

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

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

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

- State what the sight distance is at both access and whether it can be met. If it cannot be met, state the required modifications so that it can be met.

JCH/JAB:bjwb

Enclosures: Table 6  
Figure 1 – Figure 7  
Traffic Count Reports  
Level of Service Reports



**Table 6: Detailed Trip Generation Estimate**

Lots	ITE Land Use Code	Land Use Description	Value	Units	Trip Generation Rates <sup>(1)</sup>					Total Trips Generated									
					Average Weekday Traffic	A.M.		P.M.		Average Weekday Traffic	A.M.		P.M.						
						In	Out	In	Out		In	Out	In	Out					
<b><u>Northern Lots</u></b>																			
1-5	210	Single-Family Detached Housing	5	DU	9.52	0.19	0.56	0.63	0.37	48	1	3	3	2					
<b><u>Southern Lots</u></b>																			
6-7	210	Single-Family Detached Housing	2	DU	9.52	0.19	0.56	0.63	0.37	19	0	1	1	1					
<b>Total</b>										<b>67</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>3</b>					

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**Figure 1: Vicinity Map**

**Figure 2: Site Plan**

**Figure 3: 2017 Existing Traffic**

**Figure 4: Directional Distribution of Site-generated Traffic**

**Figure 5: Site-generated Traffic**

**Figure 6: 2017 Existing + Site-generated Traffic**

**Figure 7: 2040 Background Traffic**

**Figure 8: 2040 Background + Site-generated Traffic**

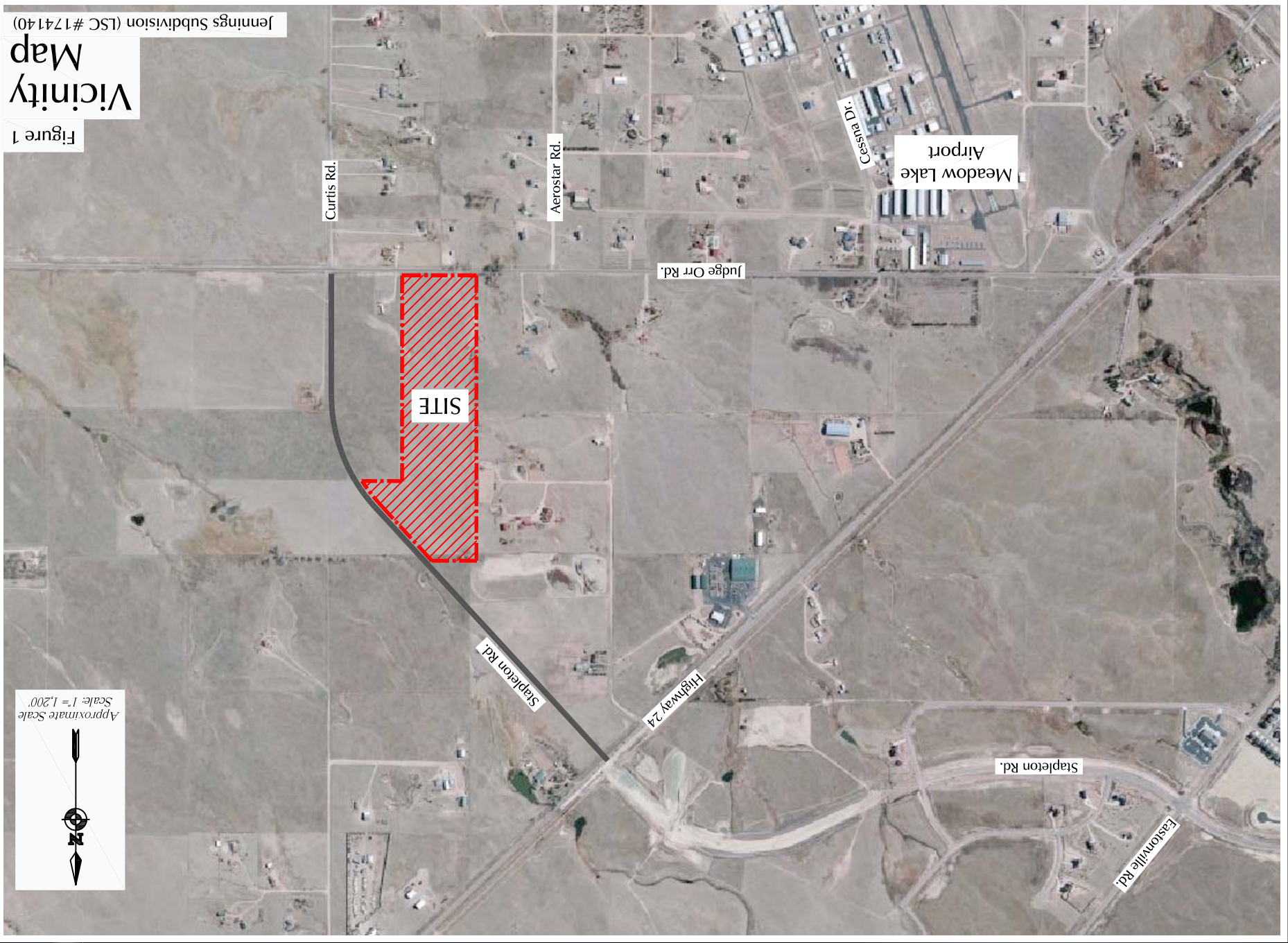


Figure 1  
Vicinity  
Map  
Jennings Subdivision (LSC #174140)



Approximate Scale  
Scale: NTS

30' ACCESS  
TO BE VACATED UPON  
NORTHERLY ROAD  
EXTENSION

Provide recommendation for signage.

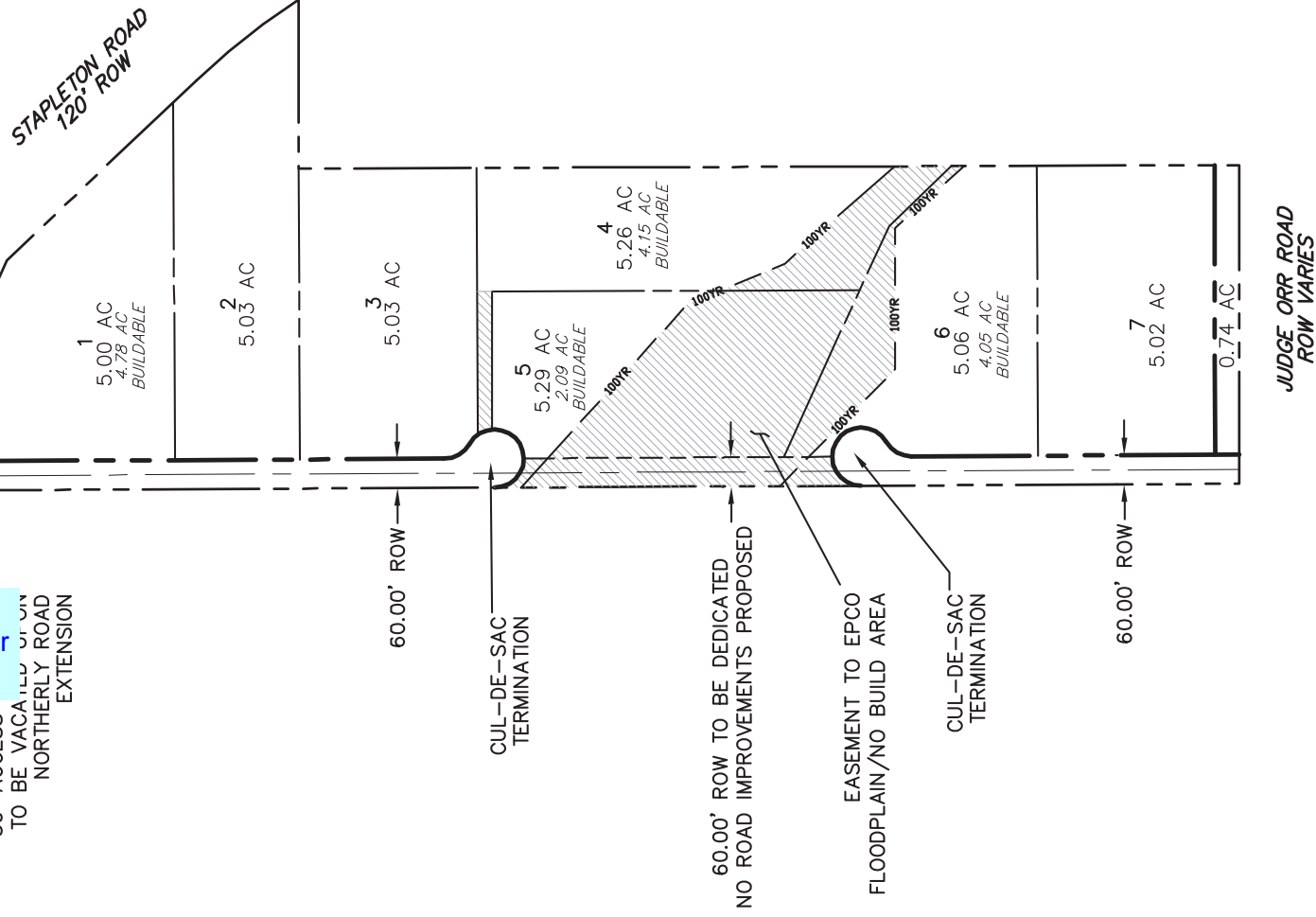


Figure 2  
**Site Plan**

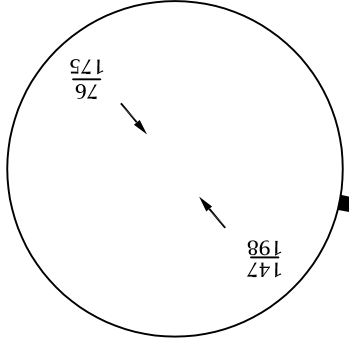
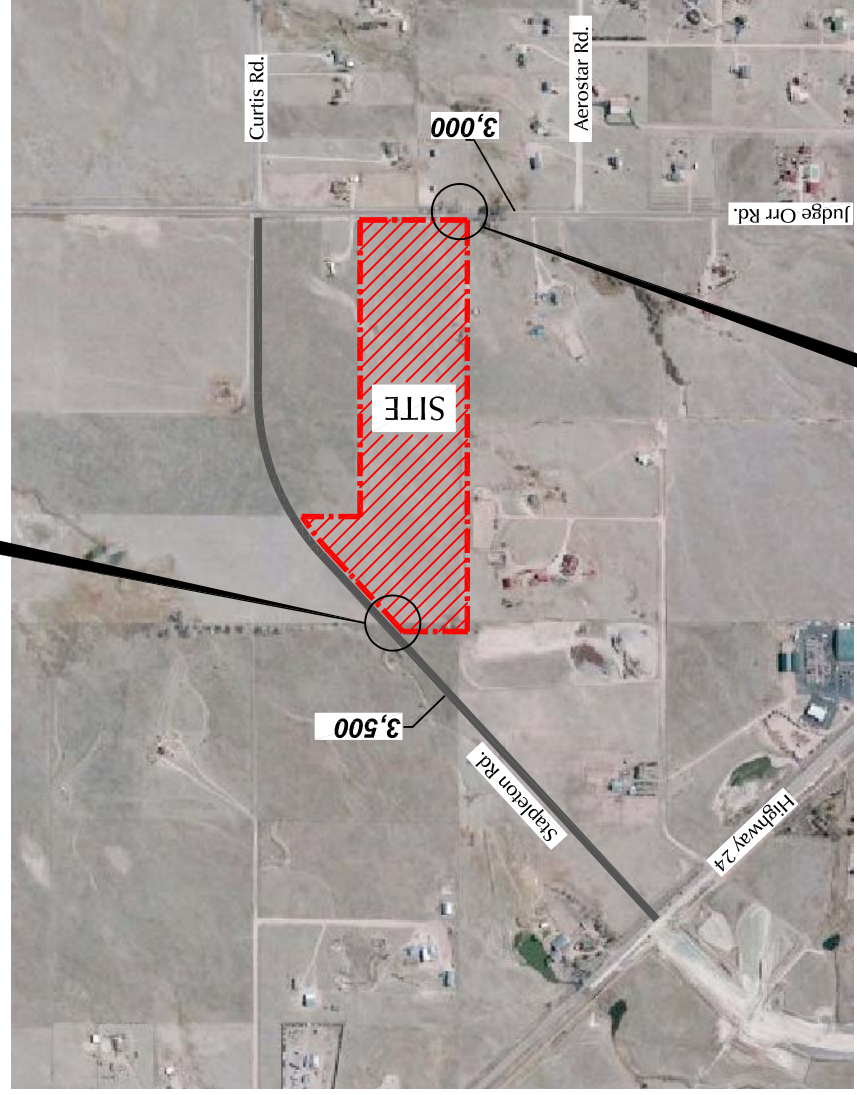
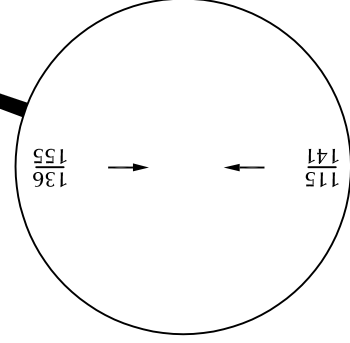
Jennings Subdivision (LSC #174140)



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

| = Stop Sign  
 | = Stop Sign

LEGEND:



Approximate Scale  
Scale: 1 = 1,200'



# Existing Traffic and Level of Service

upside down

Figure 3







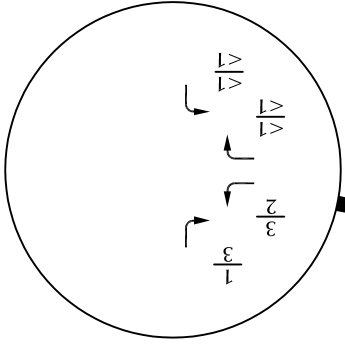
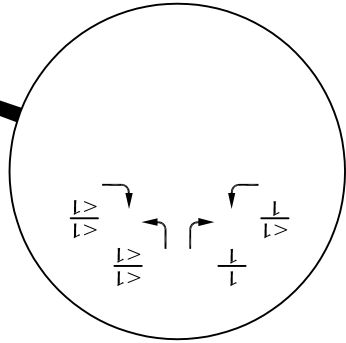
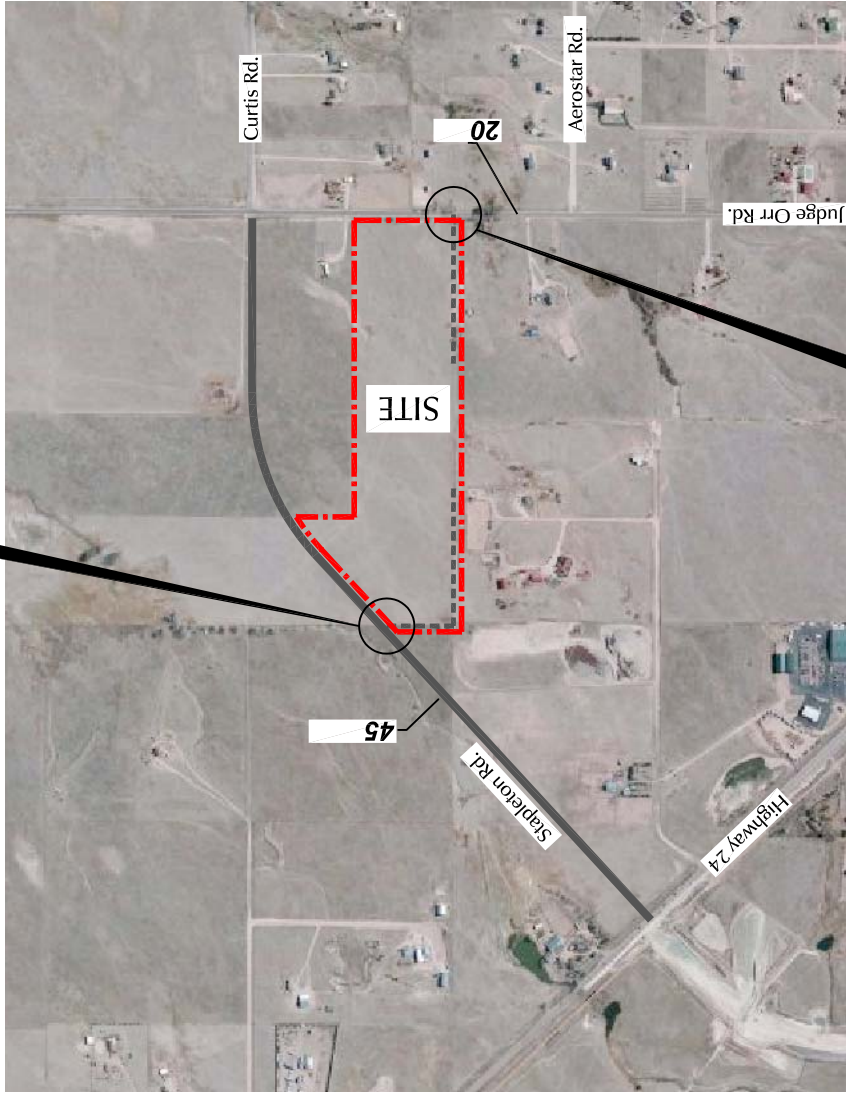
LEGEND:  
 $\frac{XX}{XX}$  = AM Weekday Peak-Hour Traffic (vehicles per hour)  
 $\frac{XX}{XXX}$  = PM Weekday Peak-Hour Traffic (vehicles per hour)  
 $\frac{X,XXX}{XXX}$  = Average Weekday Traffic (vehicles per day)  
 Estimates by LSC

upside  
down

# Assignment of Site-Generated Traffic

Jennings Subdivision (LSC #174140)

Figure 5



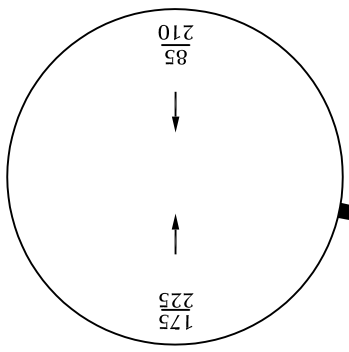
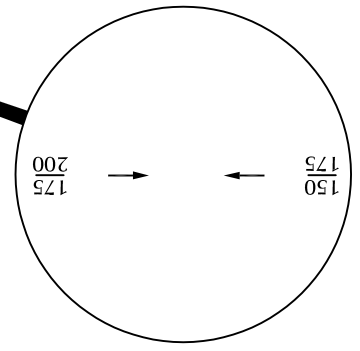
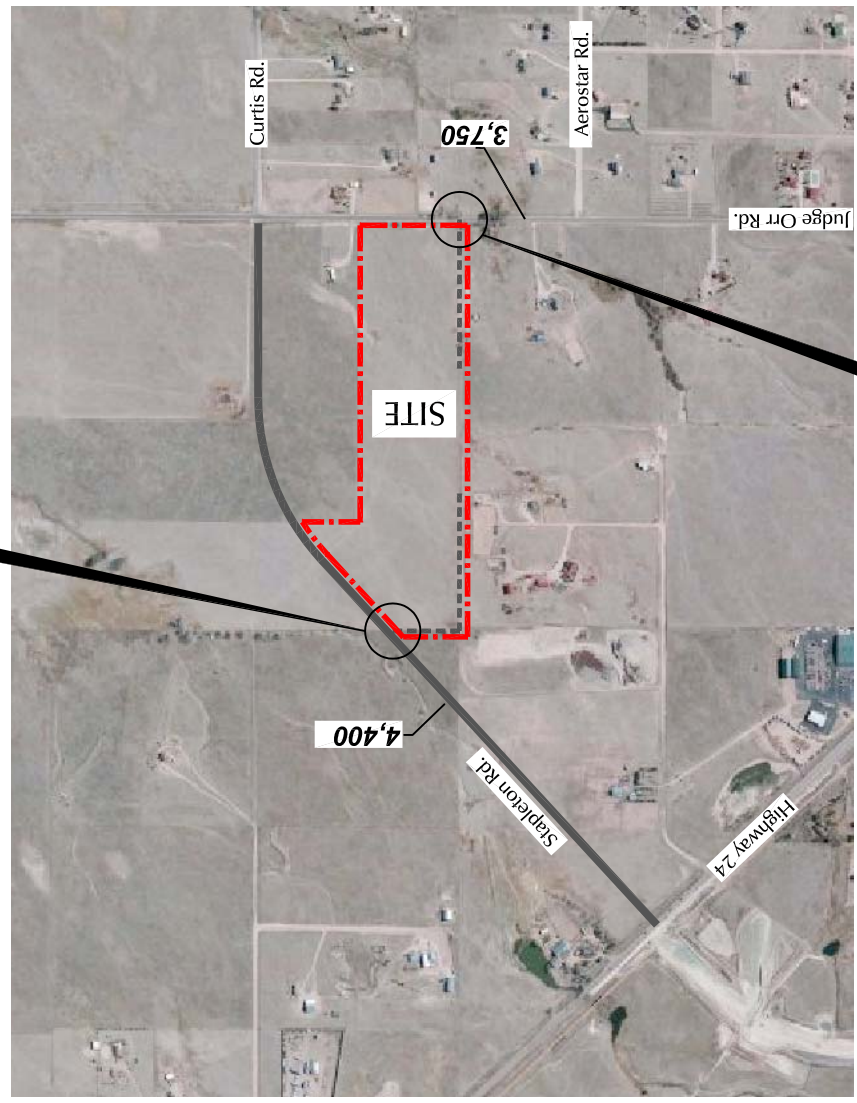
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 Scale 1 = 1,200'



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

LEGEND:

⊥ = Stop Sign



upside  
down

# 2020 Background Traffic

Figure 6

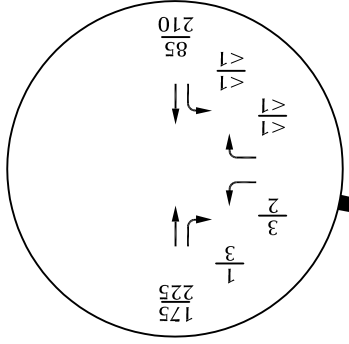
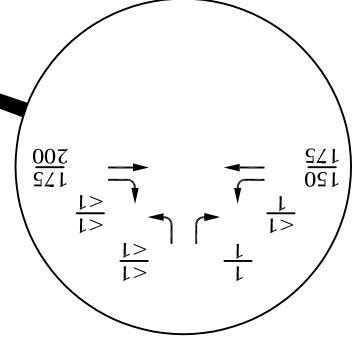
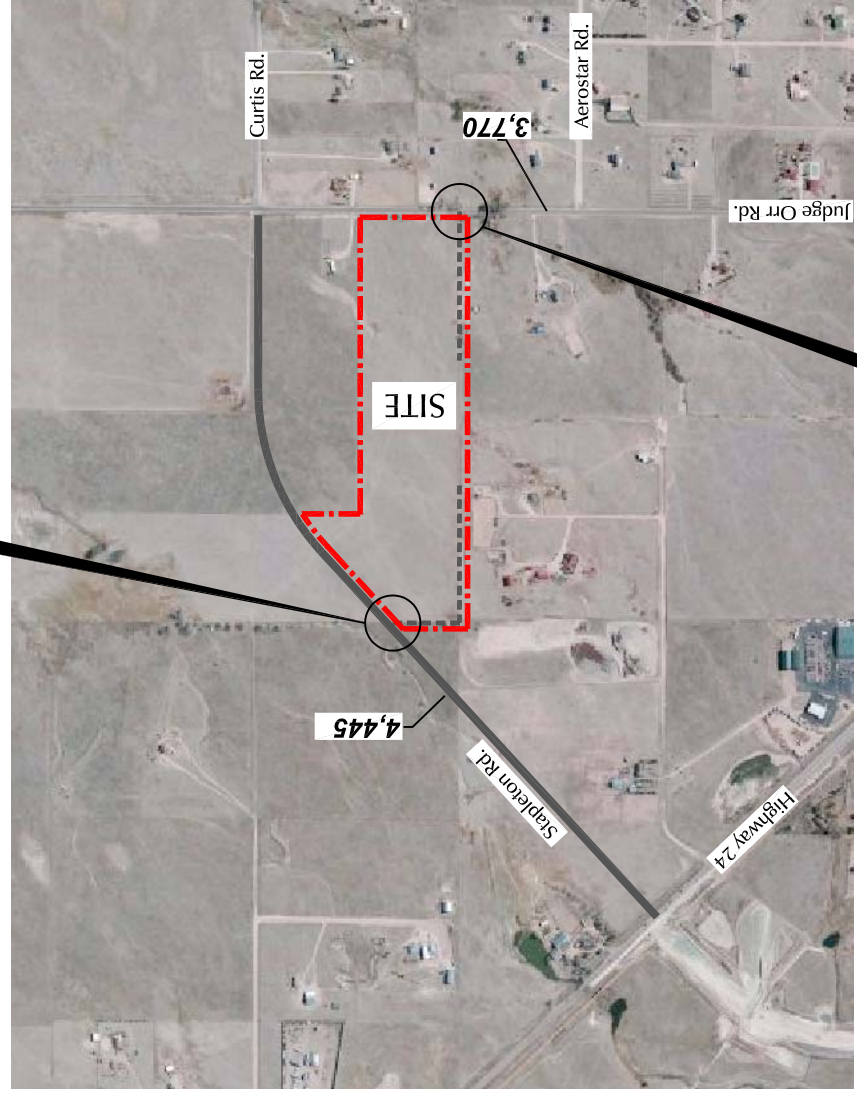
Approximate Scale  
Scale: 1 = 1,200'





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

LEGEND:  
 | = Stop Sign



Approximate Scale  
 Scale 1 = 1,200'



# 2020 Background Plus Site-Generated Traffic

upside  
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Figure 7

# Markup Summary

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## dsdlaforce (7)

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sections and average daily and peak hour of the site.

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SP-17-011  
SF-17-021

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**Author:** dsdlaforce

Add PCD File No: P-17-015  
SP-17-011  
SF-17-021

d on a per-lot, up-front building  
ze amount for the 129 lots (both

Revise to 7 lots per the  
plat

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**Author:** dsdlaforce

Revise to 7 lots per the plat

sion is expected to generate about



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Expand the narrative and explain how this conforms/deviates from the Stapleton Access Management Plan.  
The AMP shows a continuous road however this development is only providing a ROW through the flood plain. What impact does this have with regards to the AMP when the future road from the west connects near the middle of the site.



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State whether the AMP calls for the construction of this improvement. State whether the improvements are reimbursable under the current MTCP.

This subdivision will be 1  
Should the applicant dec  
permit fee of \$600 per d  
filings) would be \$4,263.

Revise to the 2017  
rates.

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Revise to the 2017 rates.



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**Author:** dsdlaforce

- State what the sight distance is at both access and whether it can be met. If it cannot be met, state the required modifications so that it can be met.



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**Author:** dsdlaforce

Provide recommendation for signage.

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## dsdruiz (6)

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jchodsdon (1)

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