



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>

## MEMORANDUM

DATE: September 25, 2019

TO: Lindsay Darden & Gilbert LaForce – El Paso County Planning & Community Development Department

FROM: Jeff Hodsdon - LSC Transportation Consultants, Inc.

SUBJECT: PCD#: PPR-1921 - Apostolic Christian Church Expansion  
Response to Comments Memorandum  
LSC #184930

Following are the LSC Transportation consultants, Inc. responses to the July 27, 2019 El Paso County Planning & Community Development Department comments regarding the October 26, 2018 Transportation Memorandum by LSC.

### Traffic Study

**The report provided a conclusion of no "No change to the site access is proposed" without providing analysis of the project related impacts. Provide the following analysis/narrative:**

*1. Project related impact to the adjacent road.*

**LSC Response:** The expansion project related impacts have been added to the updated memo. The impacts have been shown on Old Ranch Road between Voyager Parkway and the Church as well as at the intersection of Voyager/Old Ranch.

*The Sunday PkHr is more than doubled.*

**LSC Response:** The Sunday peak hour traffic volume on Old Ranch would not double. Please refer to the updated report.

*What is the PkHr LOS?*

**LSC Response:** The updated report includes church Sunday peak hour levels of service at the intersection of Voyager/Old Ranch. The report also includes the “link” LOS for Old Ranch Road (comparing the ADT to the rural local road design ADT in the ECM).

*Is there an increase in delay for through traffic on Old Ranch Road ( If not within acceptable standards provide recommendation)*

**LSC Response:** The updated report addresses this comment. The delays are within acceptable standards.

1. *Are there potential project-related impact on the adjacent residential neighbors such as speeding or volume concern? If so, provide recommendation.*

**LSC Response:** The project will likely result in additional trips to Old Ranch Road and to the intersection of Old Ranch Road/Voyager. However, projected volume and delay increases would not exceed county standards for acceptable intersection delay and traffic volume on a rural local roadway. The updated traffic report contains the details. I would not expect average or 85<sup>th</sup> percentile vehicle speeds to increase as a result of the expanded church building.

*Add PCD Project No. PPR1921*

**LSC Response:** Added as requested.



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## Apostolic Christian Church Expansion Transportation Memorandum

PCD#: PPR-1921

(LSC #184930)

September 20, 2019

### Traffic Engineer's Statement

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



### Developer's Statement

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

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

10/24/2019

Date



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September 25, 2019

David Weesner  
David Weesner & Associates  
2236 East Pikes Peak Avenue  
Colorado Springs, CO 80909

RE: Apostolic Christian Church Expansion  
El Paso County, CO  
Transportation Memorandum  
LSC #184930

Dear Mr. Weesner,

LSC Transportation Consultants, Inc. has prepared this transportation memorandum for the proposed expansion of the Apostolic Christian Church to accompany a submittal to El Paso County. The site is located at 1275 Old Ranch Road in El Paso County, Colorado. As shown in Figure 1, the site is located approximately 1,600 feet west of the intersection of Voyager Parkway/Old Ranch Road (El Paso County parcel number is 6229005008).

This report presents details of the existing church land use and the plans for expansion. The report also contains the estimated vehicle-trip generation of the existing church and the projected increase in vehicle-trips resulting from the planned expansion.

#### **EXISTING LAND USE, EXPANSION PLANS, AND SITE ACCESS**

The church property is 2.66 acres. The existing church is 4,026 square feet, and the proposed expansion would add 5,500 square feet. Post-expansion, the total building square footage would be 9,526 feet.

Currently, the church has 125 seats, but the plans indicate this number will increase to 220 total seats with the expansion.

Old Ranch Road is a paved, two-lane El Paso County Local road west of Voyager Parkway. The posted speed limit on Old Ranch Road west of Voyager is 30 mph. Sight distance in both directions at the existing access point meets the 400-foot sight distance requirement of for a 30-mile-per-hour speed on Old Ranch Road. No change to the existing access to Old Ranch Road is proposed. The site plan is attached.

## **EXISTING TRAFFIC**

Vehicular turning movement counts were conducted at the intersection of Voyager Parkway/Old Ranch Road on Sunday, September 14, 2019 from 9:30 a.m. to 12:00 p.m. and from 2:30 p.m. to 3:45 p.m. Figure 3 shows these turning movement volumes, as well as the average weekday traffic volumes (estimated based on factored peak-hour count data) on the study area streets. Raw count data is attached. The figure also shows existing level of service (please refer to the Level of Service section of this report for details).

## **TRIP GENERATION ESTIMATE**

Estimates of the vehicle-trips projected to be generated by the planned expansion of the existing church, as well as the change in trip generation relative to the existing church, have been made using the nationally published average trip generation rates from *Trip Generation, 10<sup>th</sup> Edition, 2017* by the Institute of Transportation Engineers (ITE). Table 2 and Table 3 (attached) show a comparison of existing (based on ITE trip generation rates and actual count data) and projected trip generation estimates based on the proposed church expansion from 125 seats to 220 seats (and expansion of the building from 4,026 square feet to 9,526 square feet).

### **Weekday**

#### Average Weekday and Weekday Peak Hours (Based on ITE Trip Generation Rates)

Based on the ITE estimate for the proposed renovation, the new church trip generation would be about 66 vehicle-trips on the average weekday, compared to approximately 28 currently (estimates based on ITE rates). During the weekday morning peak hour, approximately 1 vehicle enters and 1 vehicle currently exits the site, while 2 vehicles would enter and 1 vehicle would exit after renovation. During the weekday evening peak hour, approximately 1 vehicle currently enters and 1 vehicle currently exits the site (estimates based on ITE rates). Approximately 2 vehicles are projected to enter and 3 vehicles are projected to exit the site during the weekday evening peak hour after expansion is complete. This table also shows the projected increase with the expansion.

### **Sunday**

#### Sunday 24-Hour (Based on Adjusted ITE Trip Generation Rates)

After renovations are complete, the 220-seat church is projected to generate about 325 vehicle-trips on the average weekday, which is 150 more than the existing 175 vehicle-trips the 125-seat church currently generates (estimates based on adjusted ITE rates).

#### Average Sunday Peak Hour (Based on ITE Trip Generation Rates)

Calculations based on ITE rates indicate calculated Sunday peak-hour trip generation of currently 39 vehicles entering and 41 vehicles exiting the site during the Sunday peak hour of the generator

(estimates based on ITE rates). These values would increase to approximately 68 vehicles entering and 71 vehicles exiting the site during the Sunday morning peak hour of the generator after 95 new seats are added to the church.

#### Average Sunday Peak Hour (Based on Actual Count Data)

Note: the level of service calculations have been based on the assignment of these estimated trips.

##### *Sunday Morning Entering Peak Hour of the Generator*

Currently, 48 vehicles entered and 1 vehicle exited the site during the Sunday morning entering peak hour of the generator (based on actual count data and estimates by LSC). These volumes would increase by 36 vehicles and 1 vehicle, respectively, to 84 vehicles entering and 2 vehicles exiting during the Sunday morning peak hour of the generator, after 95 new seats are added to the church.

##### *Sunday Morning Exiting Peak Hour of the Generator*

Currently, 1 vehicle entered and 45 vehicles exited the site during the Sunday morning exiting peak hour of the generator (based on actual count data and estimates by LSC). These volumes would increase by 1 vehicle and 34 vehicles, respectively, to 2 vehicles entering and 79 vehicles exiting during the Sunday morning peak hour of the generator after 95 new seats are added to the church.

##### *Sunday Afternoon Entering Peak Hour of the Generator*

Currently, 42 vehicles entered and 1 vehicle exited the site during the Sunday afternoon entering peak hour of the generator (based on actual count data and estimates by LSC). These volumes would increase by 32 vehicles and 1 vehicle, respectively, to 74 vehicles entering and 2 vehicles exiting during the Sunday afternoon peak hour of the generator after 95 new seats are added to the church.

## **CHANGE IN TRIPS**

### **Average Daily Traffic**

Currently, the church generates approximately 235 vehicle-trips on the average weekday and 325 vehicle-trips on the average Sunday. These totals would increase to 289 vehicle-trips on the average weekday and 385 vehicle-trips following church expansion.

## **TRIP DISTRIBUTION AND ASSIGNMENT**

### **Directional Distribution**

Estimating 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 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 updated land use, the area street and road system serving the site, and the site's geographic location relative to the City of Colorado Springs and unincorporated El Paso County.

Additional vehicle-trips generated by the expanded church were assumed to have a similar directional distribution to the existing church. Existing vehicular turning movement counts were analyzed to determine directional splits for entering/exiting vehicles at the intersection of Voyager Parkway/Old Ranch Road at the start/end of morning/afternoon church services. These same existing directional splits were applied to projected additional site-generated traffic following the church expansion.

### **Expansion-Generated Traffic**

Site-generated traffic volumes at the intersection of Voyager Parkway/Old Ranch Road have been calculated by applying the directional distribution percentages estimated by LSC (from Figure 4) to the trip generation estimates (from Table 3). Figure 5 shows the projected site-generated traffic volumes for the weekday morning and evening peak hours

### **Short-Term Total Traffic Volumes**

Figure 6 shows the sum of the existing traffic volumes (from Figure 3) and expansion-generated peak-hour traffic volumes (shown in Figure 5). These volumes represent the projected short-term total traffic following expansion.

## **LEVEL OF SERVICE ANALYSIS**

### **Intersection LOS**

The intersection of Voyager Parkway/Old Ranch Road has been analyzed to determine the projected intersection levels of service for the existing and existing-plus-site-generated traffic scenarios. Three separate periods were analyzed to account for peaks in entering/exiting traffic at the intersection of Voyager Parkway/Old Ranch Road when Sunday church services began/ended:

- 9:30 a.m. to 10:30 a.m. – Sunday morning entering peak hour of the generator traffic
- 11:15 a.m. to 12:15 p.m. – Sunday morning exiting peak hour of the generator traffic
- 2:30 p.m. to 3:30 p.m. – Sunday morning entering peak hour of the generator traffic

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 1 shows the level of service delay ranges for signalized and unsignalized intersections.

**Table 1: 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		

As shown in Figure 3 and Figure 6, all individual turning movements at the intersection of Voyager Parkway/Old Ranch Road are projected to operate at LOS D or better during all three analyzed Sunday peak periods following church expansion.

#### **DAILY TRAFFIC VOLUME IMPACTS**

Following church renovations, the total ADT on Old Ranch would likely increase from 235 vehicles per day (vpd) to 289 vpd (midweek) and 325 vpd to 385 vpd (Sunday). Old Ranch Road is classified as a Rural Local roadway west of Voyager Parkway. Per Table 2-5 of the *Engineering Criteria Manual (ECM)*, Rural Local roadways have a design average daily traffic (ADT) volume of 750 vehicles per day (vpd). Projected Sunday and midweek ADTs on Old Ranch Road are **not** projected to exceed the 750-vpd threshold for a Rural Local roadway following the church expansion.

After renovations are complete, the 220-seat church is projected to generate about 325 vehicle-trips on the average Sunday, which is 150 more than the existing 175 vehicle-trips the 125-seat church currently generates (estimated based on actual count data). During the average weekday, trips generated by the expanded church would increase from approximately 175 to 325 on Sunday and 28 vpd to 66 vpd midweek.

ITE site-generated vehicle-trip estimates for the church expansion are higher on Sunday than midweek, with estimated ADT of 150 vpd and 60 vpd, respectively. LSC estimates the existing residential ADT on Old Ranch Road between Voyager Parkway and the church access is closer to 175 vpd, as actual count data showed more vehicle-trips than ITE rates estimate.

Background traffic on Old Ranch Road adjacent to the church is not projected to increase following the church expansion. The 10 single-family houses on Old Ranch Road near the church have an ADT of approximately 175 vehicle-trips midweek and 150 vehicle-trips on Sunday (based



on LSC estimates). These background volumes would **not** increase following the church expansion.

## SUMMARY/CONCLUSIONS

- This report presents the estimated increase in vehicle-trip generation associated with the proposed 5,500-square-foot church expansion. The projected increase would be about 150 new trips on the average Sunday (75 entering and 75 exiting during a 24-hour period). This report also contains trip generation details for weekday and resulting total Sunday 24-hour daily volumes, as well as peak-hour time periods.
- Access to the church is from Old Ranch Road, which is a paved County Local road with a speed limit of 30 mph. No change to the site access is proposed with this expansion and the access meets County sight distance criteria.
- The intersection of Voyager Parkway/Old Ranch Road would continue to operate at a satisfactory overall LOS during the Sunday peak hours, which meets El Paso County standards.
- Old Ranch Road traffic following the expansion is **not** projected to exceed the design ADT of a Rural Local roadway.

\* \* \* \* \*

Please contact me if you have any questions.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By <Certification Page Signed>  
Jeffrey C. Hodsdon, P.E.  
Principal

JCH/JAB:jas

Enclosures: Table 2 – Table 3  
Figure 1 – Figure 6  
Traffic Counts  
Levels of Service Reports  
Site Plan

# Tables and Figures

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**Table 2: Trip Generation Table (Weekday)**

ITE		Value	Units	Trip Generation Rates <sup>(1)</sup>					Total Trips Generated				
				Avg Weekday	A.M.		P.M.		Avg Weekday	A.M.		P.M.	
Code	Description			Traffic	In	Out	In	Out	Traffic	In	Out	In	Out
<b><u>Existing Site</u></b>													
560	Church	4.026	KSF	6.95	0.20	0.13	0.22	0.27	28	1	1	1	1
<b><u>With Proposed Renovations</u></b>													
560	Church	9.526	KSF	6.95	0.20	0.13	0.22	0.27	66	2	1	2	3
Change in Trip Generation									38	1	1	1	1

ITE		Value	Units	Trip Generation Rates <sup>(1)</sup>			Total Trips Generated		
Code	Description			Avg Sunday Traffic	A.M.		Avg Sunday Traffic	A.M.	
					In	Out		In	Out
<b><u>Existing Church (Based on ITE Rates)</u></b>									
560	Church <sup>1</sup>	125	Seats	1.20	0.26	0.28	150	33	35
<b><u>With LSC Rate Adjustment</u></b>									
<b>560</b>	<b>Church <sup>2</sup></b>	-	-	-	-	-	<b>175</b>	39	41
<b><u>For Comparison Only</u></b>									
560	Church <sup>1</sup>	4.026	KSF	27.63	4.80	5.19	111	19	21
<b><u>Based on Actual Counts (Based on Entering/Exiting Peaks)</u></b>									
Church - Actual Daily Estimate and AM Peak Period (Entering)							175	48	1
Church - Actual Daily Estimate and AM Peak Period (Exiting)							175	1	45
Church - Actual Daily Estimate and PM Peak Period (Entering)							175	42	1
<b><u>Proposed Renovations (Based on ITE Rates)</u></b>									
560	Church <sup>1</sup>	220	Seats	1.21	0.26	0.28	266	58	61
<b><u>With LSC Rate Adjustment</u></b>									
560	Church <sup>2</sup>	-	-	-	-	-	<b>325</b>	68	71
<b><u>For Comparison Only</u></b>									
560	Church <sup>1</sup>	9.526	KSF	27.63	4.80	5.19	263	46	49
<b><u>Based on Actual Counts (Based on Entering/Exiting Peaks)</u></b>									
Church - Actual Daily Estimate and AM Peak Period (Entering)							325	84	2
Church - Actual Daily Estimate and AM Peak Period (Exiting)							325	2	79
Church - Actual Daily Estimate and PM Peak Period (Entering)							325	74	2
<b><u>Increase in Trip Generation (Daily and ITE (Adjusted) Peak)</u></b>							<b>150</b>	29	30
<b><u>Increases Based on Actual Counts (by Entering/Exiting Peaks)</u></b>									
Church - Actual Daily Estimate and AM Peak Period (Entering)								<b>36</b>	<b>1</b>
Church - Actual Daily Estimate and AM Peak Period (Exiting)								<b>1</b>	<b>34</b>
Church - Actual Daily Estimate and PM Peak Period (Entering)								<b>32</b>	<b>1</b>
<sup>1</sup> Based on ITE trip generation rates <sup>2</sup> Adjusted by multiplying ITE trip generation rates by 1.167 to reflect site-specific conditions. This factor has also been applied to the expanded church. However, the factoring of the expanded church trip generation may result in conservative estimates as the existing church may be currently generating an inflated number of trips per seat due to overcrowding (thus the expansion plans).									
Note: The <b>bold</b> values have been used in the figures and the level of service calculations									

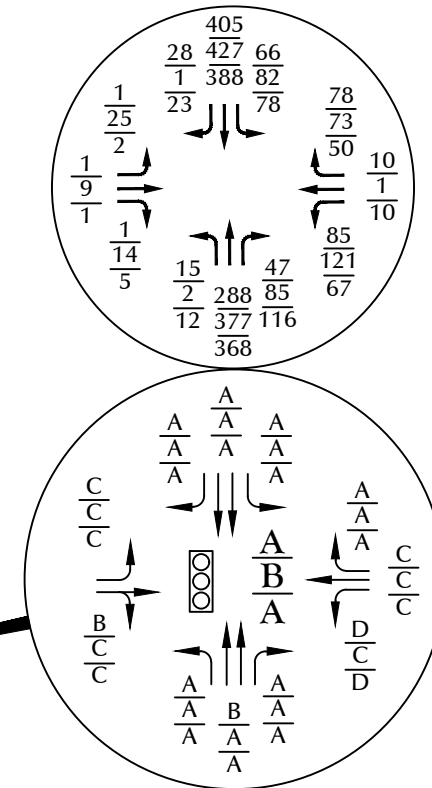


Not to  
scale



# Site Plan

Grandwood Ranch (LSC# 185020)



#### LEGEND:

- XX Sunday Entering AM Peak-Hour of the Generator Traffic (vehicles per hour)  
XX = Sunday Exiting AM Peak-Hour of the Generator Traffic (vehicles per hour)  
XX Sunday Entering PM Peak-Hour of the Generator Traffic (vehicles per hour)  
X Individual Movement LOS (Sunday AM Peak-Hour of the Generator Entering)  
X = Individual Movement LOS (Sunday AM Peak-Hour of the Generator Exiting)  
X Individual Movement LOS (Sunday PM Peak-Hour of the Generator Entering)  
X Entire Intersection LOS (Sunday AM Peak-Hour of the Generator Entering)  
X = Entire Intersection LOS (Sunday AM Peak-Hour of the Generator Exiting)  
X Entire Intersection LOS (Sunday AM Peak-Hour of the Generator Entering)

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



60 church  
 + 175 residential (non-church)  
 235 Average Daily Traffic\*

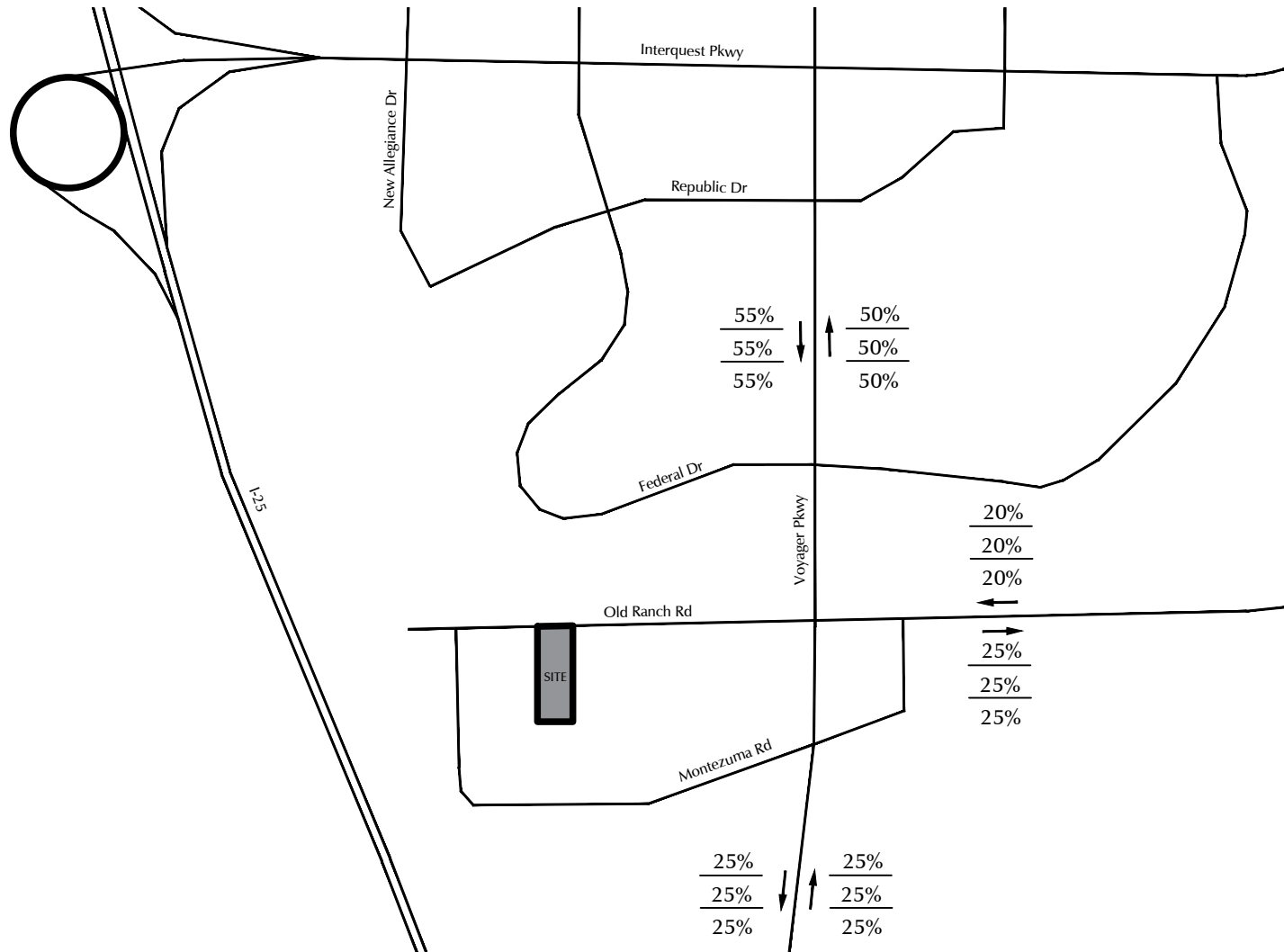
\* 7-day average (estimate by LSC)

175 church  
 + 150 residential (non-church)  
 325 Average Sunday Traffic\*\*

\*\* Sunday-only average (estimate by LSC)

## Figure 3 2019 Existing Traffic, Lane Geometry, Traffic Control, and LOS

Apostolic Christian Church (LSC# 184930)



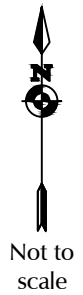
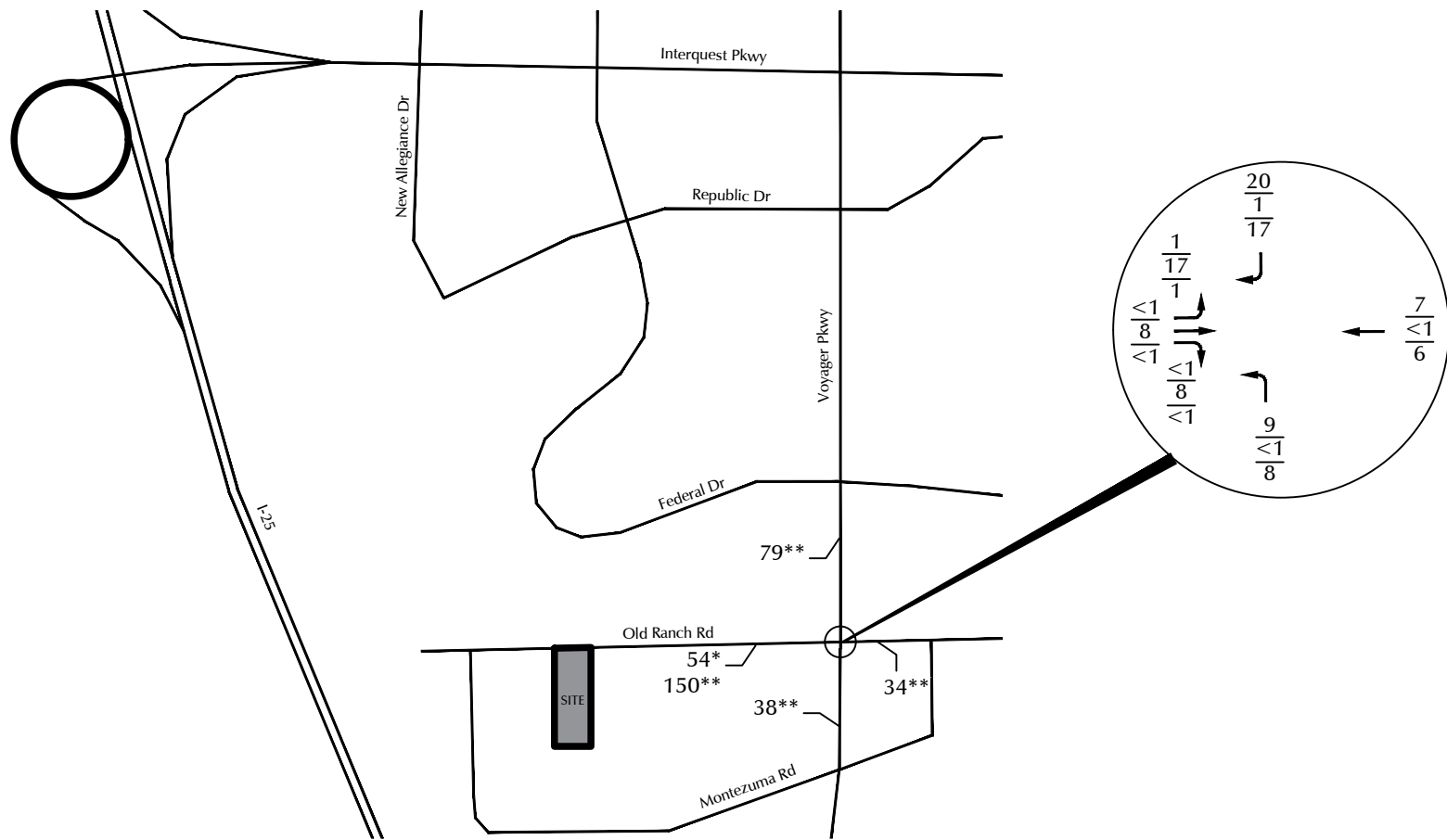
LEGEND:

→	
XX%	% Directional Distribution (Sunday Entering AM Peak Hour of the Generator)
XX%	% Directional Distribution (Sunday Exiting AM Peak Hour of the Generator)
XX%	% Directional Distribution (Sunday Entering PM Peak Hour of the Generator)

Figure 4  
Directional Distribution

Apostolic Christian Church (LSC# 184930)





#### LEGEND:

XX Sunday Entering AM Peak-Hour of the Generator Traffic (vehicles per hour)

XX = Sunday Exiting AM Peak-Hour of the Generator Traffic (vehicles per hour)

XX Sunday Entering PM Peak-Hour of the Generator Traffic (vehicles per hour)

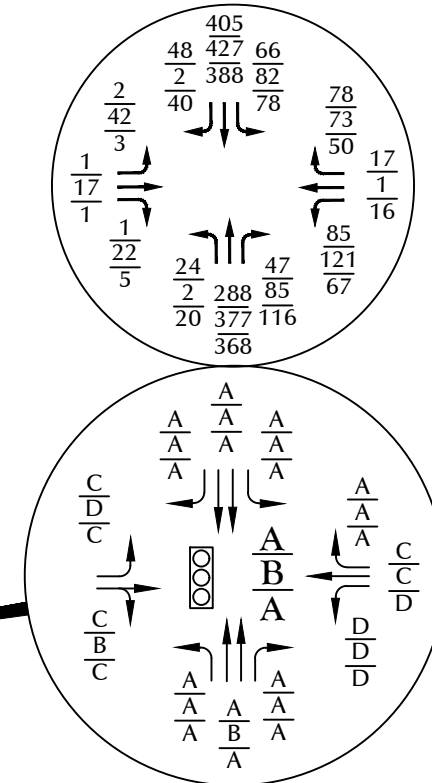
X,XXX= Average Sunday Traffic (vehicles per day)

\* 7-day average (estimate by LSC)

\*\* Sunday-only average (estimate by LSC)

## Expansion-Generated Traffic

Apostolic Christian Church (LSC# 184930)



LEGEND:

- XX = Sunday Entering AM Peak-Hour of the Generator Traffic (vehicles per hour)  
 XX = Sunday Exiting AM Peak-Hour of the Generator Traffic (vehicles per hour)  
 XX = Sunday Entering PM Peak-Hour of the Generator Traffic (vehicles per hour)  
 X = Individual Movement LOS (Sunday AM Peak-Hour of the Generator Entering)  
 X = Individual Movement LOS (Sunday AM Peak-Hour of the Generator Exiting)  
 X = Individual Movement LOS (Sunday PM Peak-Hour of the Generator Entering)  
 X = Entire Intersection LOS (Sunday AM Peak-Hour of the Generator Entering)  
 X = Entire Intersection LOS (Sunday AM Peak-Hour of the Generator Exiting)  
 X = Entire Intersection LOS (Sunday AM Peak-Hour of the Generator Entering)

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

⊞ = Traffic Signal

Figure 6  
 2019 Existing + Expansion-  
 Generated Traffic, Lane Geometry,  
 Traffic Control, and LOS

Apostolic Christian Church (LSC# 184930)

# Traffic Counts

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# LSC Transportation Consultants, Inc.

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

File Name : Voyager Pkwy - Old Ranch Rd AM Sun 9-19

Site Code : 00184930

Start Date : 9/15/2019

Page No : 1

## Groups Printed- Unshifted

Start Time	Voyager Pkwy Southbound					Old Ranch Rd Westbound					Voyager Pkwy Northbound					Old Ranch Rd 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	
09:30 AM	18	60	4	0	82	13	2	11	1	27	4	56	8	0	68	1	1	1	0	3	180
09:45 AM	14	95	16	0	125	24	5	23	0	52	6	54	19	1	80	0	0	0	0	0	257
Total	32	155	20	0	207	37	7	34	1	79	10	110	27	1	148	1	1	1	0	3	437
10:00 AM	14	96	8	0	118	31	3	21	0	55	5	91	9	0	105	1	0	0	0	1	279
10:15 AM	20	154	0	0	174	17	0	23	0	40	0	87	11	1	99	0	0	0	0	0	313
10:30 AM	20	107	0	0	127	27	0	31	0	58	0	116	27	8	151	0	1	0	0	1	337
10:45 AM	42	97	1	1	141	46	0	46	0	92	1	171	27	19	218	0	0	1	0	1	452
Total	96	454	9	1	560	121	3	121	0	245	6	465	74	28	573	1	1	1	0	3	1381
11:00 AM	25	89	0	0	114	24	0	33	0	57	1	113	25	13	152	0	1	1	0	2	325
11:15 AM	24	101	0	0	125	23	0	21	0	44	0	87	20	0	107	3	0	1	0	4	280
11:30 AM	14	94	1	0	109	36	1	21	0	58	0	87	18	1	106	3	0	4	0	7	280
11:45 AM	18	100	0	0	118	31	0	20	0	51	1	102	25	2	130	9	2	5	0	16	315
Total	81	384	1	0	466	114	1	95	0	210	2	389	88	16	495	15	3	11	0	29	1200
12:00 PM	26	132	0	0	158	31	0	11	0	42	1	101	22	2	126	10	7	4	0	21	347
Grand Total	235	1125	30	1	1391	303	11	261	1	576	19	1065	211	47	1342	27	12	17	0	56	3365
Apprch %	16.9	80.9	2.2	0.1		52.6	1.9	45.3	0.2		1.4	79.4	15.7	3.5		48.2	21.4	30.4	0		
Total %	7	33.4	0.9	0	41.3	9	0.3	7.8	0	17.1	0.6	31.6	6.3	1.4	39.9	0.8	0.4	0.5	0	1.7	



# LSC Transportation Consultants, Inc.

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

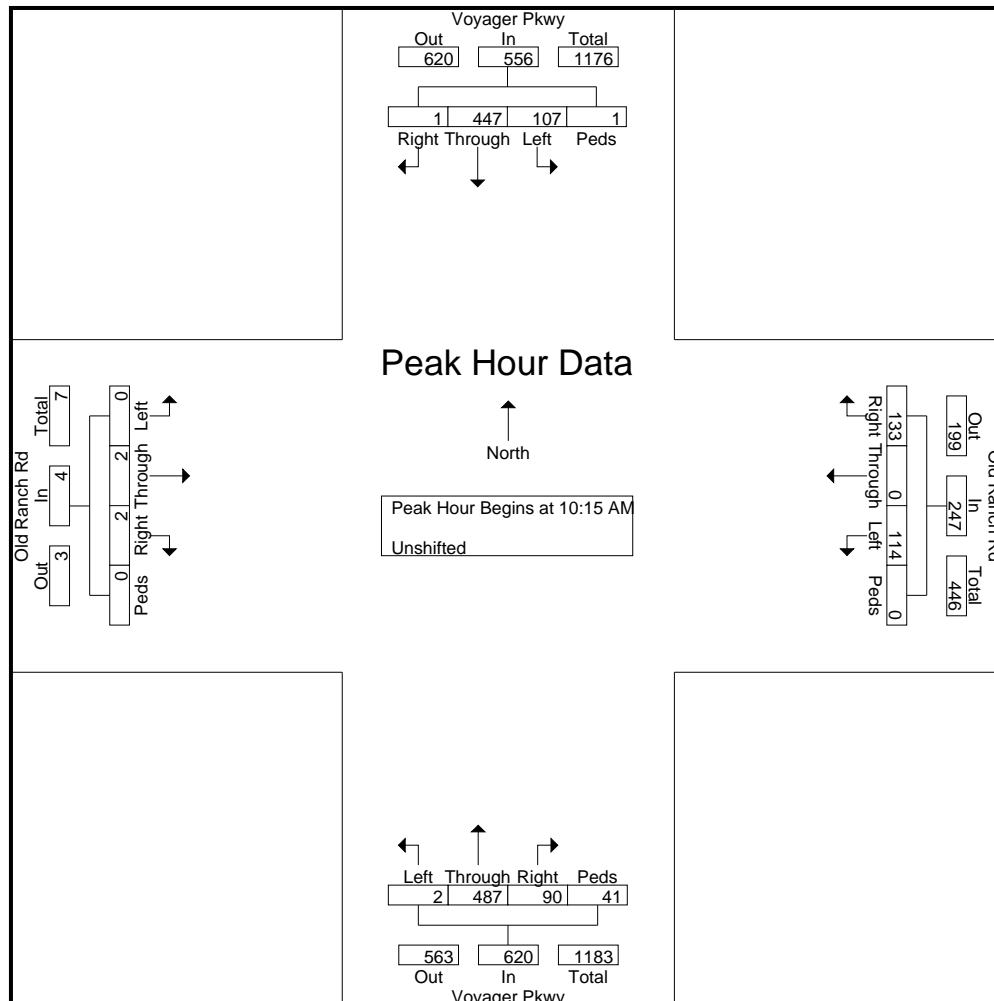
File Name : Voyager Pkwy - Old Ranch Rd AM Sun 9-19

Site Code : 00184930

Start Date : 9/15/2019

Page No : 2

	Voyager Pkwy Southbound					Old Ranch Rd Westbound					Voyager Pkwy Northbound					Old Ranch Rd Eastbound					
Start Time	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Int. Total
<b>Peak Hour Analysis From 09:30 AM to 12:00 PM - Peak 1 of 1</b>																					
Peak Hour for Entire Intersection Begins at 10:15 AM																					
10:15 AM	20	154	0	0	174	17	0	23	0	40	0	87	11	1	99	0	0	0	0	0	313
10:30 AM	20	107	0	0	127	27	0	31	0	58	0	116	27	8	151	0	1	0	0	1	337
10:45 AM	42	97	1	1	141	46	0	46	0	92	1	171	27	19	218	0	0	1	0	1	452
11:00 AM	25	89	0	0	114	24	0	33	0	57	1	113	25	13	152	0	1	1	0	2	325
Total Volume	107	447	1	1	556	114	0	133	0	247	2	487	90	41	620	0	2	2	0	4	1427
% App. Total	19.2	80.4	0.2	0.2		46.2	0	53.8	0		0.3	78.5	14.5	6.6		0	50	50	0		
PHF	.637	.726	.250	.250	.799	.620	.000	.723	.000	.671	.500	.712	.833	.539	.711	.000	.500	.500	.000	.500	.789





# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

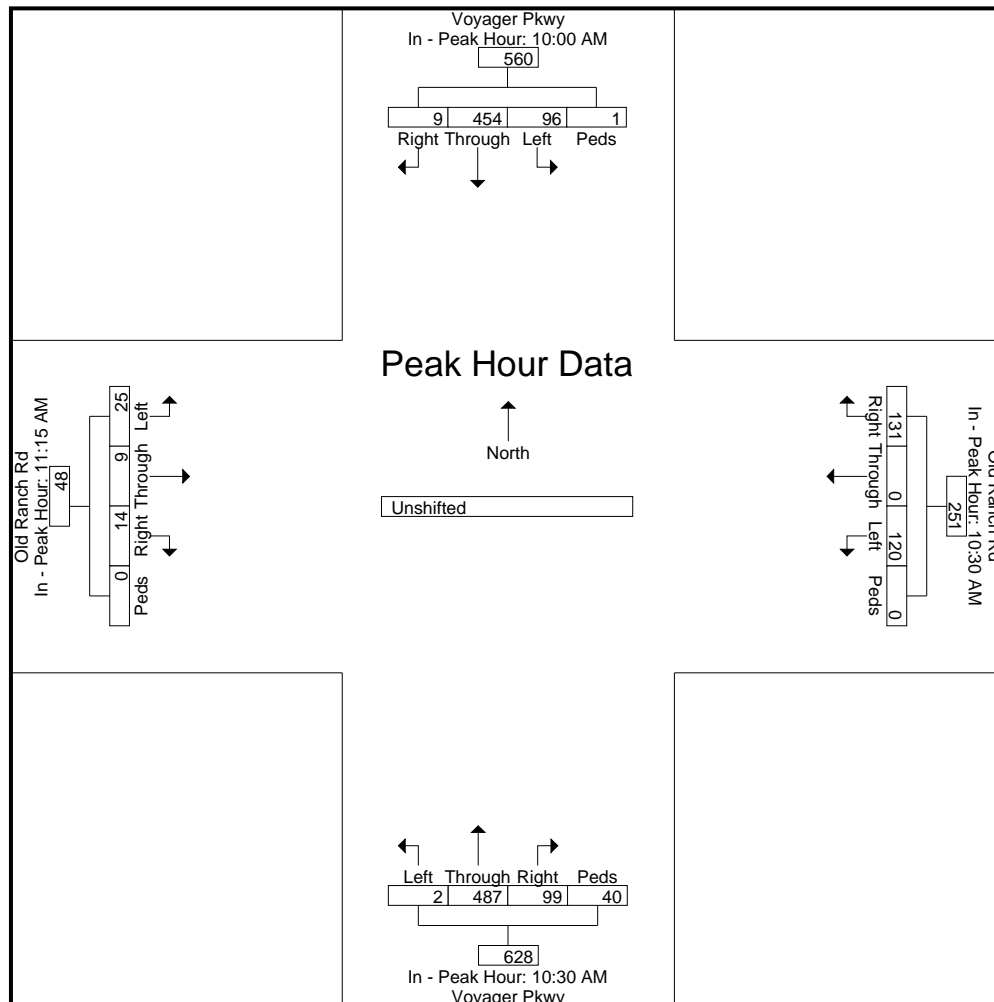
File Name : Voyager Pkwy - Old Ranch Rd AM Sun 9-19

Site Code : 00184930

Start Date : 9/15/2019

Page No : 3

	Voyager Pkwy Southbound					Old Ranch Rd Westbound					Voyager Pkwy Northbound					Old Ranch Rd Eastbound					
Start Time	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Int. Total
<b>Peak Hour Analysis From 09:30 AM to 12:00 PM - Peak 1 of 1</b>																					
Peak Hour for Each Approach Begins at:																					
	10:00 AM					10:30 AM					10:30 AM					11:15 AM					
+0 mins.	14	96	8	0	118	27	0	31	0	58	0	116	27	8	151	3	0	1	0	4	
+15 mins.	20	154	0	0	174	46	0	46	0	92	1	171	27	19	218	3	0	4	0	7	
+30 mins.	20	107	0	0	127	24	0	33	0	57	1	113	25	13	152	9	2	5	0	16	
+45 mins.	42	97	1	1	141	23	0	21	0	44	0	87	20	0	107	10	7	4	0	21	
Total Volume	96	454	9	1	560	120	0	131	0	251	2	487	99	40	628	25	9	14	0	48	
% App. Total	17.1	81.1	1.6	0.2		47.8	0	52.2	0		0.3	77.5	15.8	6.4		52.1	18.8	29.2	0		
PHF	.571	.737	.281	.250	.805	.652	.000	.712	.000	.682	.500	.712	.917	.526	.720	.625	.321	.700	.000	.571	





# LSC Transportation Consultants, Inc.

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

File Name : Voyager Pkwy - Old Ranch Rd PM Sun 9-19  
Site Code : 00184930  
Start Date : 9/15/2019  
Page No : 1

## Groups Printed- Unshifted

Start Time	Voyager Pkwy Southbound					Old Ranch Rd Westbound					Voyager Pkwy Northbound					Old Ranch Rd Eastbound					Int. Total
	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	
02:30 PM	24	81	1	0	106	16	2	10	0	28	1	106	26	1	134	0	0	0	0	0	268
02:45 PM	17	100	15	0	132	15	5	20	0	40	8	88	27	0	123	0	1	0	0	1	296
Total	41	181	16	0	238	31	7	30	0	68	9	194	53	1	257	0	1	0	0	1	564
03:00 PM	15	81	7	0	103	19	2	11	0	32	3	86	27	2	118	1	0	3	0	4	257
03:15 PM	22	76	0	0	98	17	1	9	0	27	0	88	36	1	125	1	0	2	0	3	253
03:30 PM	20	103	2	0	125	16	1	7	0	24	0	83	23	0	106	0	0	1	0	1	256
Grand Total	98	441	25	0	564	83	11	57	0	151	12	451	139	4	606	2	1	6	0	9	1330
Apprch %	17.4	78.2	4.4	0		55	7.3	37.7	0		2	74.4	22.9	0.7		22.2	11.1	66.7	0		
Total %	7.4	33.2	1.9	0	42.4	6.2	0.8	4.3	0	11.4	0.9	33.9	10.5	0.3	45.6	0.2	0.1	0.5	0	0.7	



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Colorado Springs, CO 80905

719-633-2868

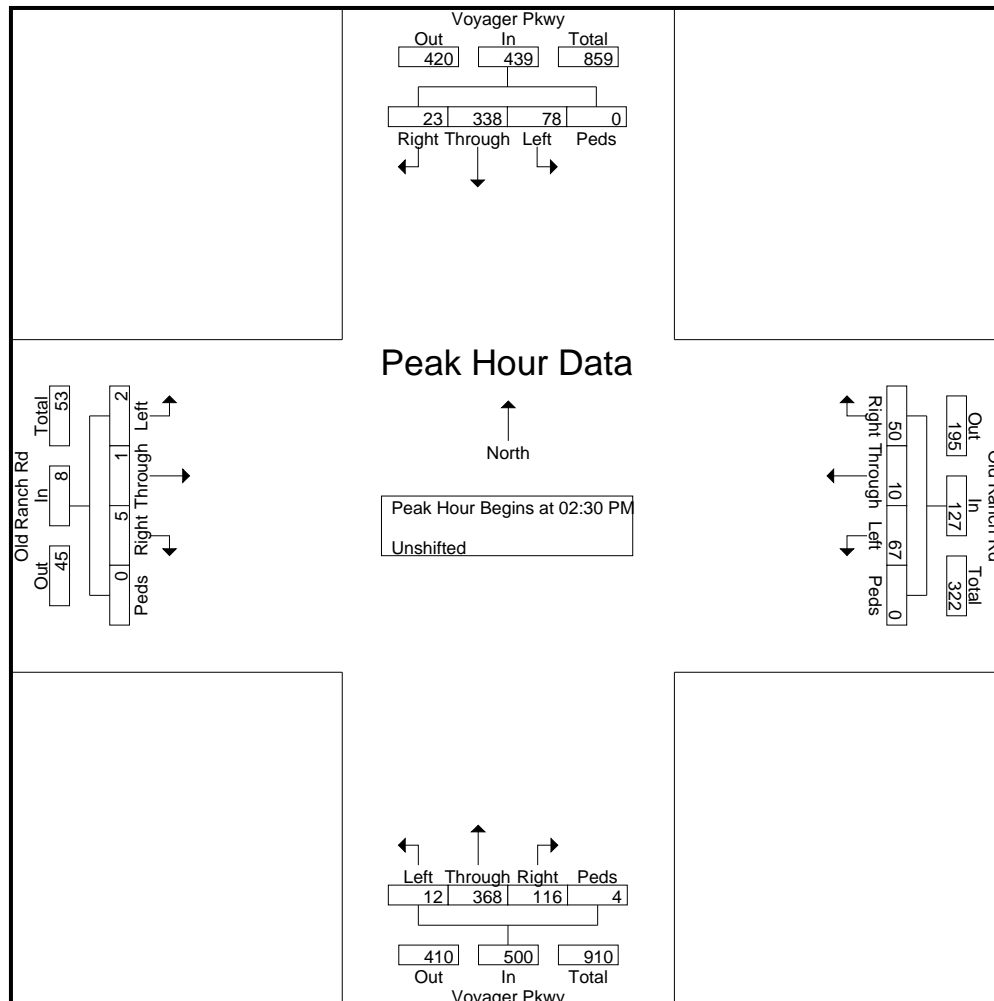
File Name : Voyager Pkwy - Old Ranch Rd PM Sun 9-19

Site Code : 00184930

Start Date : 9/15/2019

Page No : 2

	Voyager Pkwy Southbound					Old Ranch Rd Westbound					Voyager Pkwy Northbound					Old Ranch Rd Eastbound					
Start Time	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Int. Total
<b>Peak Hour Analysis From 02:30 PM to 03:30 PM - Peak 1 of 1</b>																					
Peak Hour for Entire Intersection Begins at 02:30 PM																					
02:30 PM	24	81	1	0	106	16	2	10	0	28	1	106	26	1	134	0	0	0	0	0	268
02:45 PM	17	100	15	0	132	15	5	20	0	40	8	88	27	0	123	0	1	0	0	1	296
03:00 PM	15	81	7	0	103	19	2	11	0	32	3	86	27	2	118	1	0	3	0	4	257
03:15 PM	22	76	0	0	98	17	1	9	0	27	0	88	36	1	125	1	0	2	0	3	253
Total Volume	78	338	23	0	439	67	10	50	0	127	12	368	116	4	500	2	1	5	0	8	1074
% App. Total	17.8	77	5.2	0		52.8	7.9	39.4	0		2.4	73.6	23.2	0.8		25	12.5	62.5	0		
PHF	.813	.845	.383	.000	.831	.882	.500	.625	.000	.794	.375	.868	.806	.500	.933	.500	.250	.417	.000	.500	.907







# LSC Transportation Consultants, Inc.

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

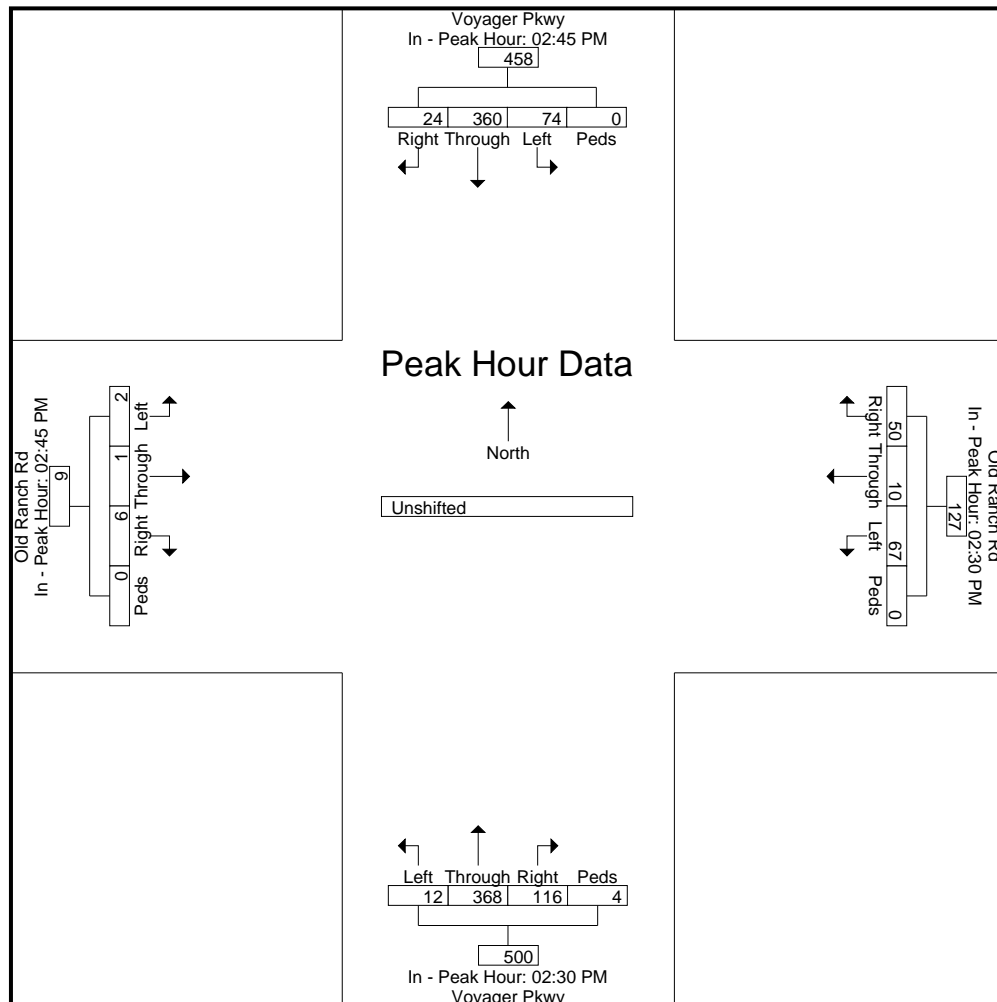
File Name : Voyager Pkwy - Old Ranch Rd PM Sun 9-19

Site Code : 00184930

Start Date : 9/15/2019

Page No : 3

	Voyager Pkwy Southbound					Old Ranch Rd Westbound					Voyager Pkwy Northbound					Old Ranch Rd Eastbound					
Start Time	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Int. Total
<b>Peak Hour Analysis From 02:30 PM to 03:30 PM - Peak 1 of 1</b>																					
Peak Hour for Each Approach Begins at:																					
	02:45 PM					02:30 PM					02:30 PM					02:45 PM					
+0 mins.	17	100	15	0	132	16	2	10	0	28	1	106	26	1	134	0	1	0	0	1	
+15 mins.	15	81	7	0	103	15	5	20	0	40	8	88	27	0	123	1	0	3	0	4	
+30 mins.	22	76	0	0	98	19	2	11	0	32	3	86	27	2	118	1	0	2	0	3	
+45 mins.	20	103	2	0	125	17	1	9	0	27	0	88	36	1	125	0	0	1	0	1	
Total Volume	74	360	24	0	458	67	10	50	0	127	12	368	116	4	500	2	1	6	0	9	
% App. Total	16.2	78.6	5.2	0		52.8	7.9	39.4	0		2.4	73.6	23.2	0.8		22.2	11.1	66.7	0		
PHF	.841	.874	.400	.000	.867	.882	.500	.625	.000	.794	.375	.868	.806	.500	.933	.500	.250	.500	.000	.563	


























# Levels of Service

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Lanes, Volumes, Timings  
3: Voyager Pkwy & Old Ranch Rd

2019 Existing  
9:30am - 10:30am

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1	1	85	10	78	5	288	47	66	405	28
Future Volume (vph)	2	1	1	85	10	78	5	288	47	66	405	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	60		0	185		185	350		0	290		165
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	95			115			100			210		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.925				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1723	0	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.751			0.755			0.441			0.514		
Satd. Flow (perm)	1399	1723	0	1406	1863	1583	821	3539	1583	957	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				115			103			103
Link Speed (mph)		30			45			55			55	
Link Distance (ft)		1020			780			837			1084	
Travel Time (s)		23.2			11.8			10.4			13.4	
Peak Hour Factor	0.50	0.50	0.50	1.00	1.00	1.00	0.89	0.89	0.89	0.72	0.72	0.72
Adj. Flow (vph)	4	2	2	85	10	78	6	324	53	92	563	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	4	0	85	10	78	6	324	53	92	563	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6

Lanes, Volumes, Timings  
3: Voyager Pkwy & Old Ranch Rd

2019 Existing  
9:30am - 10:30am

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	23.0	23.0	4.0	23.0	23.0
Minimum Split (s)	13.5	13.5		13.5	13.5	13.5	9.0	30.5	30.5	9.0	30.5	30.5
Total Split (s)	28.0	28.0		28.0	28.0	28.0	14.0	48.0	48.0	14.0	48.0	48.0
Total Split (%)	31.1%	31.1%		31.1%	31.1%	31.1%	15.6%	53.3%	53.3%	15.6%	53.3%	53.3%
Maximum Green (s)	21.5	21.5		21.5	21.5	21.5	9.0	40.5	40.5	9.0	40.5	40.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5	6.5	5.0	7.5	7.5	5.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	10.7	10.7		10.8	10.8	10.8	65.0	59.5	59.5	69.7	67.1	67.1
Actuated g/C Ratio	0.12	0.12		0.12	0.12	0.12	0.72	0.66	0.66	0.77	0.75	0.75
v/c Ratio	0.02	0.02		0.51	0.04	0.27	0.01	0.14	0.05	0.11	0.21	0.03
Control Delay	32.5	26.5		46.6	33.0	5.1	4.0	8.5	0.4	3.8	5.8	0.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	26.5		46.6	33.0	5.1	4.0	8.5	0.4	3.8	5.8	0.0
LOS	C	C		D	C	A	A	A	A	A	A	A
Approach Delay		29.5			27.1			7.3			5.2	
Approach LOS		C			C			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 9.0

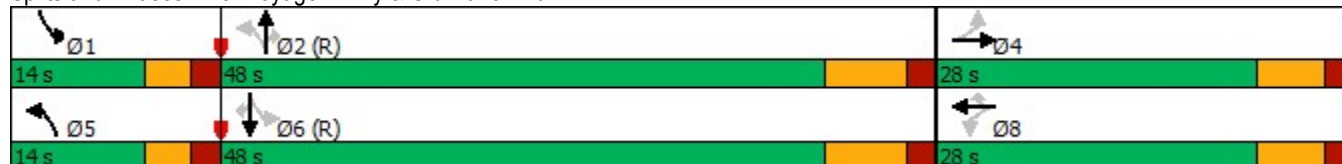
Intersection LOS: A

Intersection Capacity Utilization 50.0%

ICU Level of Service A
























Analysis Period (min) 15

Splits and Phases: 3: Voyager Pkwy & Old Ranch Rd




Lanes, Volumes, Timings  
3: Voyager Pkwy & Old Ranch Rd

2019 Existing  
11:15am - 12:15pm

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	9	14	121	1	73	2	377	85	82	427	1
Future Volume (vph)	25	9	14	121	1	73	2	377	85	82	427	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	60		0	185		185	350		0	290		165
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	95			115			100			210		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.909				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1693	0	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.757			0.730			0.456			0.469		
Satd. Flow (perm)	1410	1693	0	1360	1863	1583	849	3539	1583	874	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				115			103			103
Link Speed (mph)		30			45			55			55	
Link Distance (ft)		1020			780			837			1084	
Travel Time (s)		23.2			11.8			10.4			13.4	
Peak Hour Factor	0.57	0.57	0.57	1.00	1.00	1.00	0.93	0.93	0.93	0.81	0.81	0.81
Adj. Flow (vph)	44	16	25	121	1	73	2	405	91	101	527	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	41	0	121	1	73	2	405	91	101	527	1
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6

Lanes, Volumes, Timings  
3: Voyager Pkwy & Old Ranch Rd

2019 Existing  
11:15am - 12:15pm

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	23.0	23.0	4.0	23.0	23.0
Minimum Split (s)	13.5	13.5		13.5	13.5	13.5	9.0	30.5	30.5	9.0	30.5	30.5
Total Split (s)	28.0	28.0		28.0	28.0	28.0	14.0	48.0	48.0	14.0	48.0	48.0
Total Split (%)	31.1%	31.1%		31.1%	31.1%	31.1%	15.6%	53.3%	53.3%	15.6%	53.3%	53.3%
Maximum Green (s)	21.5	21.5		21.5	21.5	21.5	9.0	40.5	40.5	9.0	40.5	40.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5	6.5	5.0	7.5	7.5	5.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	13.3	13.3		13.3	13.3	13.3	59.7	52.7	52.7	64.9	60.6	60.6
Actuated g/C Ratio	0.15	0.15		0.15	0.15	0.15	0.66	0.59	0.59	0.72	0.67	0.67
v/c Ratio	0.21	0.15		0.60	0.00	0.22	0.00	0.20	0.09	0.14	0.22	0.00
Control Delay	34.2	18.2		47.7	29.0	3.6	5.0	10.6	2.5	4.9	7.2	0.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	18.2		47.7	29.0	3.6	5.0	10.6	2.5	4.9	7.2	0.0
LOS	C	B		D	C	A	A	B	A	A	A	A
Approach Delay		26.5			31.1			9.1			6.8	
Approach LOS		C			C			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 12.2

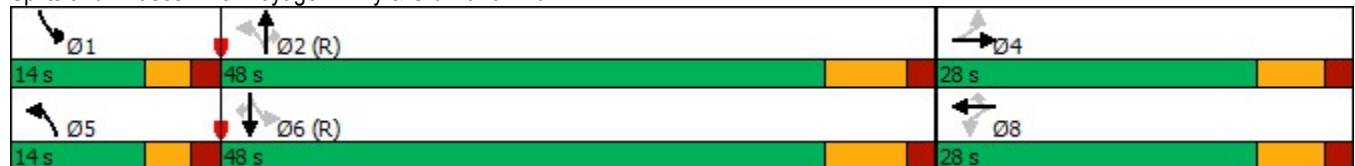
Intersection LOS: B

Intersection Capacity Utilization 52.9%

ICU Level of Service A
























Analysis Period (min) 15

Splits and Phases: 3: Voyager Pkwy & Old Ranch Rd















Lanes, Volumes, Timings  
3: Voyager Pkwy & Old Ranch Rd

2019 Existing  
2:30pm - 3:30pm

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1	5	67	10	50	12	368	116	78	388	23
Future Volume (vph)	2	1	5	67	10	50	12	368	116	78	388	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	60		0	185		185	350		0	290		165
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	95			115			100			210		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.877				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1634	0	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.751			0.750			0.478			0.480		
Satd. Flow (perm)	1399	1634	0	1397	1863	1583	890	3539	1583	894	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				115			125			103
Link Speed (mph)		30			45			55			55	
Link Distance (ft)		1020			780			837			1084	
Travel Time (s)		23.2			11.8			10.4			13.4	
Peak Hour Factor	0.57	0.57	0.57	1.00	1.00	1.00	0.93	0.93	0.93	0.81	0.81	0.81
Adj. Flow (vph)	4	2	9	67	10	50	13	396	125	96	479	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	11	0	67	10	50	13	396	125	96	479	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6

Lanes, Volumes, Timings  
3: Voyager Pkwy & Old Ranch Rd

2019 Existing  
2:30pm - 3:30pm

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	23.0	23.0	4.0	23.0	23.0
Minimum Split (s)	13.5	13.5		13.5	13.5	13.5	9.0	30.5	30.5	9.0	30.5	30.5
Total Split (s)	28.0	28.0		28.0	28.0	28.0	14.0	48.0	48.0	14.0	48.0	48.0
Total Split (%)	31.1%	31.1%		31.1%	31.1%	31.1%	15.6%	53.3%	53.3%	15.6%	53.3%	53.3%
Maximum Green (s)	21.5	21.5		21.5	21.5	21.5	9.0	40.5	40.5	9.0	40.5	40.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5	6.5	5.0	7.5	7.5	5.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	9.7	9.7		9.7	9.7	9.7	66.1	60.5	60.5	70.6	68.0	68.0
Actuated g/C Ratio	0.11	0.11		0.11	0.11	0.11	0.73	0.67	0.67	0.78	0.76	0.76
v/c Ratio	0.03	0.06		0.45	0.05	0.18	0.02	0.17	0.11	0.13	0.18	0.02
Control Delay	34.0	21.3		46.1	34.4	1.5	3.5	8.1	2.1	3.4	5.2	0.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	21.3		46.1	34.4	1.5	3.5	8.1	2.1	3.4	5.2	0.0
LOS	C	C		D	C	A	A	A	A	A	A	A
Approach Delay		24.7			27.6			6.6			4.7	
Approach LOS		C			C			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 8.0

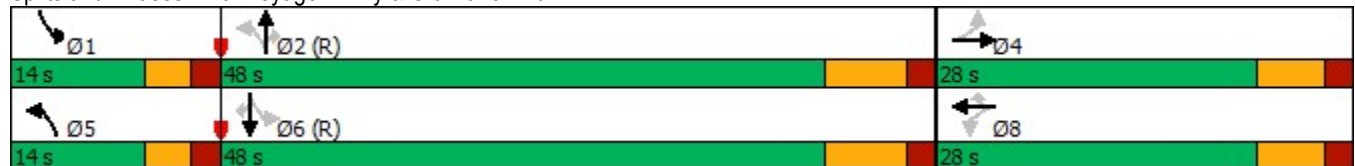
Intersection LOS: A

Intersection Capacity Utilization 49.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Voyager Pkwy & Old Ranch Rd




























Lanes, Volumes, Timings  
3: Voyager Pkwy & Old Ranch Rd













2019 Existing + Site

9:30am - 10:30am

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1	1	85	17	78	24	288	47	66	405	48
Future Volume (vph)	2	1	1	85	17	78	24	288	47	66	405	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	60		0	185		185	350		0	290		165
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	95			115			100			210		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.925				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1723	0	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.746			0.755			0.441			0.526		
Satd. Flow (perm)	1390	1723	0	1406	1863	1583	821	3539	1583	980	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				115			103			103
Link Speed (mph)		30			45			55			55	
Link Distance (ft)		1020			780			837			1084	
Travel Time (s)		23.2			11.8			10.4			13.4	
Peak Hour Factor	0.50	0.50	0.50	1.00	1.00	1.00	0.89	0.89	0.89	0.72	0.72	0.72
Adj. Flow (vph)	4	2	2	85	17	78	27	324	53	92	563	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	4	0	85	17	78	27	324	53	92	563	67
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6

Lanes, Volumes, Timings  
3: Voyager Pkwy & Old Ranch Rd

2019 Existing + Site  
9:30am - 10:30am

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	23.0	23.0	4.0	23.0	23.0
Minimum Split (s)	13.5	13.5		13.5	13.5	13.5	9.0	30.5	30.5	9.0	30.5	30.5
Total Split (s)	28.0	28.0		28.0	28.0	28.0	14.0	48.0	48.0	14.0	48.0	48.0
Total Split (%)	31.1%	31.1%		31.1%	31.1%	31.1%	15.6%	53.3%	53.3%	15.6%	53.3%	53.3%
Maximum Green (s)	21.5	21.5		21.5	21.5	21.5	9.0	40.5	40.5	9.0	40.5	40.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5	6.5	5.0	7.5	7.5	5.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	10.7	10.7		10.8	10.8	10.8	65.3	59.5	59.5	68.8	64.7	64.7
Actuated g/C Ratio	0.12	0.12		0.12	0.12	0.12	0.73	0.66	0.66	0.76	0.72	0.72
v/c Ratio	0.02	0.02		0.51	0.08	0.27	0.04	0.14	0.05	0.11	0.22	0.06
Control Delay	32.5	26.5		46.6	33.7	5.1	3.9	8.5	0.4	3.8	7.0	0.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	26.5		46.6	33.7	5.1	3.9	8.5	0.4	3.8	7.0	0.9
LOS	C	C		D	C	A	A	A	A	A	A	A
Approach Delay		29.5			27.4			7.2			6.0	
Approach LOS		C			C			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 9.4

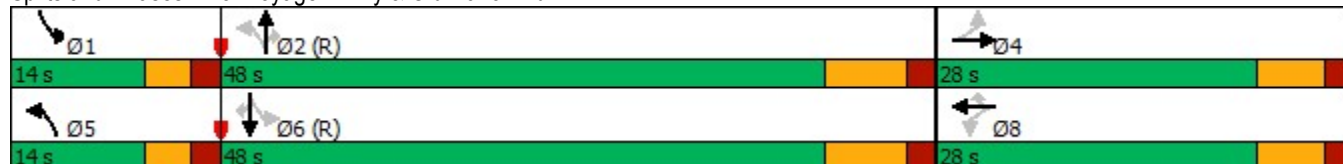
Intersection LOS: A

Intersection Capacity Utilization 50.0%

ICU Level of Service A

Analysis Period (min) 15
























Splits and Phases: 3: Voyager Pkwy & Old Ranch Rd



Lanes, Volumes, Timings  
3: Voyager Pkwy & Old Ranch Rd

2019 Existing + Site













11:15am - 12:15pm

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	17	22	121	1	73	2	377	85	82	427	2
Future Volume (vph)	42	17	22	121	1	73	2	377	85	82	427	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	60		0	185		185	350		0	290		165
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	95			115			100			210		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.915				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1704	0	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.757			0.712			0.456			0.469		
Satd. Flow (perm)	1410	1704	0	1326	1863	1583	849	3539	1583	874	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39				115			103			103
Link Speed (mph)		30			45			55			55	
Link Distance (ft)		1020			780			837			1084	
Travel Time (s)		23.2			11.8			10.4			13.4	
Peak Hour Factor	0.57	0.57	0.57	1.00	1.00	1.00	0.93	0.93	0.93	0.81	0.81	0.81
Adj. Flow (vph)	74	30	39	121	1	73	2	405	91	101	527	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	69	0	121	1	73	2	405	91	101	527	2
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6

Lanes, Volumes, Timings  
3: Voyager Pkwy & Old Ranch Rd

2019 Existing + Site

11:15am - 12:15pm

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	23.0	23.0	4.0	23.0	23.0
Minimum Split (s)	13.5	13.5		13.5	13.5	13.5	9.0	30.5	30.5	9.0	30.5	30.5
Total Split (s)	28.0	28.0		28.0	28.0	28.0	14.0	48.0	48.0	14.0	48.0	48.0
Total Split (%)	31.1%	31.1%		31.1%	31.1%	31.1%	15.6%	53.3%	53.3%	15.6%	53.3%	53.3%
Maximum Green (s)	21.5	21.5		21.5	21.5	21.5	9.0	40.5	40.5	9.0	40.5	40.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5	6.5	5.0	7.5	7.5	5.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	13.5	13.5		13.5	13.5	13.5	59.5	52.5	52.5	64.7	60.4	60.4
Actuated g/C Ratio	0.15	0.15		0.15	0.15	0.15	0.66	0.58	0.58	0.72	0.67	0.67
v/c Ratio	0.35	0.24		0.61	0.00	0.22	0.00	0.20	0.09	0.14	0.22	0.00
Control Delay	37.4	18.6		48.1	29.0	3.6	5.0	10.7	2.5	5.0	7.3	0.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	18.6		48.1	29.0	3.6	5.0	10.7	2.5	5.0	7.3	0.0
LOS	D	B		D	C	A	A	B	A	A	A	A
Approach Delay		28.3			31.4			9.2			6.9	
Approach LOS		C			C			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 13.0

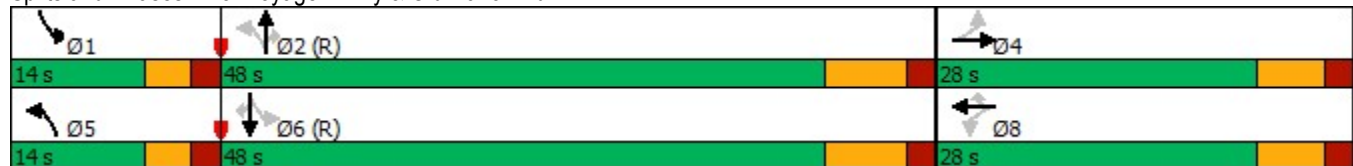
Intersection LOS: B

Intersection Capacity Utilization 52.9%

ICU Level of Service A
























Analysis Period (min) 15

Splits and Phases: 3: Voyager Pkwy & Old Ranch Rd



Lanes, Volumes, Timings  
3: Voyager Pkwy & Old Ranch Rd













2019 Existing + Site  
2:30pm - 3:30pm

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1	5	67	16	50	20	368	116	78	388	40
Future Volume (vph)	3	1	5	67	16	50	20	368	116	78	388	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	60		0	185		185	350		0	290		165
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	95			115			100			210		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.877				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1634	0	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.747			0.750			0.478			0.491		
Satd. Flow (perm)	1391	1634	0	1397	1863	1583	890	3539	1583	915	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				115			125			103
Link Speed (mph)		30			45			55			55	
Link Distance (ft)		1020			780			837			1084	
Travel Time (s)		23.2			11.8			10.4			13.4	
Peak Hour Factor	0.57	0.57	0.57	1.00	1.00	1.00	0.93	0.93	0.93	0.81	0.81	0.81
Adj. Flow (vph)	5	2	9	67	16	50	22	396	125	96	479	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	11	0	67	16	50	22	396	125	96	479	49
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6

Lanes, Volumes, Timings  
3: Voyager Pkwy & Old Ranch Rd

2019 Existing + Site

2:30pm - 3:30pm

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	23.0	23.0	4.0	23.0	23.0
Minimum Split (s)	13.5	13.5		13.5	13.5	13.5	9.0	30.5	30.5	9.0	30.5	30.5
Total Split (s)	28.0	28.0		28.0	28.0	28.0	14.0	48.0	48.0	14.0	48.0	48.0
Total Split (%)	31.1%	31.1%		31.1%	31.1%	31.1%	15.6%	53.3%	53.3%	15.6%	53.3%	53.3%
Maximum Green (s)	21.5	21.5		21.5	21.5	21.5	9.0	40.5	40.5	9.0	40.5	40.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5		6.5	6.5	6.5	5.0	7.5	7.5	5.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	9.7	9.7		9.7	9.7	9.7	66.2	60.5	60.5	69.9	65.8	65.8
Actuated g/C Ratio	0.11	0.11		0.11	0.11	0.11	0.74	0.67	0.67	0.78	0.73	0.73
v/c Ratio	0.03	0.06		0.45	0.08	0.18	0.03	0.17	0.11	0.12	0.19	0.04
Control Delay	34.0	21.3		46.1	35.1	1.5	3.5	8.1	2.1	3.5	6.3	0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	21.3		46.1	35.1	1.5	3.5	8.1	2.1	3.5	6.3	0.2
LOS	C	C		D	D	A	A	A	A	A	A	A
Approach Delay		25.3			28.0			6.5			5.3	
Approach LOS		C			C			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 8.4

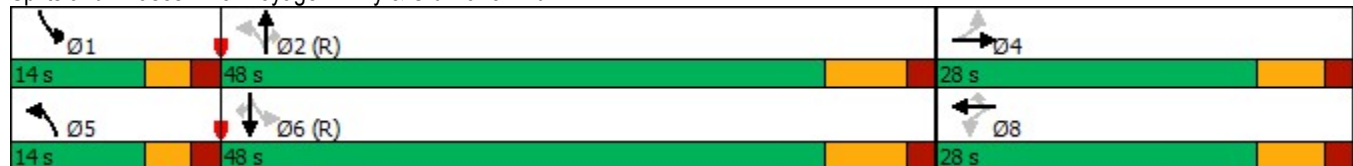
Intersection LOS: A

Intersection Capacity Utilization 49.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Voyager Pkwy & Old Ranch Rd



# Site Plan

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