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Nor'Wood Bible Church
Traffic Impact Study
PCD File No.: PPR2346
(LSC #S234370)
January 17, 2024

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.

1/22/24
Date

Nor'Wood Bible Church
Traffic Impact Study

Prepared for:
Nina Ruiz | Senior Executive Consultant
Vertex Consulting Services
455 East Pikes Peak Avenue, Suite 101
Colorado Springs, CO 80903

JANUARY 17, 2024

LSC Transportation Consultants
Prepared by: Jeffrey C. Hodsdon, P.E.

LSC #S234370
PCD File No.: PPR2346

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Nina Ruiz | Senior Executive Consultant
Vertex Consulting Services
455 East Pikes Peak Avenue, Suite 101
Colorado Springs, CO 80903

RE: Nor'Wood Bible Church
El Paso County, Colorado
Traffic Impact Study
PCD File No.: PPR2346
LSC #S234370

Dear Ms. Ruiz:

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic impact study for the proposed Nor'Wood Bible Church development in El Paso County, Colorado. As shown in Figure 1, the site is located south of Judge Orr Road about one-quarter mile east of Curtis Road in unincorporated El Paso County.

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:

- Existing Sunday morning peak-hour traffic volumes and area road conditions;
- Projections of short-term (2024) and long-term (2044) baseline/background traffic volumes;
- The projected average Sunday and Sunday morning peak-hour vehicle-trips to be generated by the church;
- The assignment of the site's projected trips to the existing and planned adjacent roads and intersections for the short and long term and the resulting total traffic volumes for the short and long term;
- The resulting traffic impacts including level of service analysis at key intersections on key road sections in the vicinity of the site;
- Determination of any needed recommended improvements and/or traffic impact mitigation measures; and
- Recommended lane configuration for the site-access point and study-area intersections.

PREVIOUS TRAFFIC IMPACT STUDIES

The following recent traffic study has been utilized in the preparation of this report:

- *Saddlehorn Ranch Filing No. 3 Traffic Impact Study* April 30, 2023 (w/Minor Revision 10-13-2023) by LSC.

STUDY AREA

Key approaches at the following offsite intersections have been evaluated for potential inclusion in the study area using criteria in the El Paso County *Engineering Criteria Manual* (*ECM*) Appendix B.

- Curtis Road/Stapleton Road/Judge Orr Road
- Barrosito Trail (proposed, future road)/Judge Orr Road

The evaluation is included in Appendix A. Calculations are shown in Appendix Table 1. The most recent available weekday peak-hour traffic counts have been utilized in the percent impact calculation. Those count sheets are also included in Appendix A (note: the "denominator" volumes have undoubtedly increased since 2018/2020, so the evaluation is conservative). The estimated church weekday traffic (estimated in the table) during the same/corresponding peak period has also been utilized in the calculation.

Based on the calculations, the *ECM* threshold of ten-percent impact is not met. Therefore, the intersections have not been added to the study area. Any improvements that have been built or may be required in the future to accommodate **weekday** AM peak-hour traffic, will also be sufficient to accommodate significantly lower Sunday morning peak-hour baseline traffic plus site-generated traffic.

LAND USE AND ACCESS

The Nor'Wood Bible Church site is located south of Judge Orr Road about one-quarter mile east of Curtis Road. The site is within the Saddlehorn Ranch Filing No. 3 planned development. Two single-family residential lots shown as part of the Saddlehorn Ranch Filing No. 3 are proposed to be combined into one lot on which the Nor'Wood Bible Church would be developed. These two lots within Saddlehorn Ranch Filing No. 3 have roadway frontage on the planned Barrosito Trail, a Saddlehorn Ranch Filing No. 3 Rural Local subdivision street that will be extended south from Judge Orr Road into Saddlehorn Ranch. The Barrosito Trail (proposed, future road)/Judge Orr Road intersection will be about one-quarter mile east of the Curtis Road/Stapleton Road/Judge Orr Road intersection.

A 12,000 square-foot church building is proposed. The site plan is shown in Figure 2.

Currently, two Sunday services are held at the main campus. The times are 8:00 to 9:15 a.m. and 10:45 a.m. to 12:00 p.m.

Currently, there are no plans for a weekday operation such as a daycare or preschool. Therefore, this report focuses on the Sunday morning peak-hour analysis time period.

Saddlehorn Ranch Filing No. 3

Saddlehorn Ranch Filing No. 3 is part of the greater 824-acre Saddlehorn Ranch residential development located southeast of the intersection of Curtis Road and Judge Orr Road in El Paso County, Colorado. The development includes 2.5-acre single-family residential lots. Figure 1 also shows the overall boundary of Saddlehorn Ranch.

Access for the Nor'Wood Bible Church

One site-access point is proposed to Barrosito Trail at 575 feet south of Judge Orr Road. The access is shown at 400 feet south of Vaquero Court, the local street to the north (which will extend west from Barrosito Trail). The spacing to the intersection planned to the south (Barrosito Trail/Carrizo Springs Road) would be 350 feet. Both spacing dimensions would meet ECM criteria of 300-feet, minimum. Construction has not begun on Saddlehorn Ranch Filing No. 3.

Sight Distance

Sight Distance Along Roadway

The required "Minimum Sight Distance Along Roadway" *ECM* per Table 2-33 is 200 feet for the presumed 30-mph posted speed limit on Barrosito Trail. This prescribed distance would be met for traffic along Barrosito Trail (proposed, future road) approaching the site-access point. Site improvements such as structures, solid fences, landscaping, parking areas, monument signs, etc. must not impede lines of sight for "Sight Distance Along Roadway." It does not appear from the site plan that this would be problematic.

Entering Sight Distance

Although Barrosito Trail will be a Rural Local roadway, LSC recommends entering sight distance of 300 feet be provided and maintained along Barrosito Trail (*ECM* Table 2-35 in Section 2.4.1.D).

A clear line of sight for a 300-foot entering sight distance is recommended such that site improvements such as structures, solid fences, landscaping, parking areas, monument signs, etc. do not impede lines of sight for 300 feet of sight distance.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The area roadways in the site's vicinity are shown in Figures 1 and 2 and are described below.

Judge Orr Road is a two-lane roadway that extends east from Eastonville Road across most of El Paso County. It is shown on the *El Paso County 2040 Major Transportation Corridors Plan* and the *Preserved Corridor Network Plan* as a four-lane Minor Arterial west of Curtis Road. Posted speed limits range from 45 to 55 miles per hour (mph). West of Curtis Road, the speed limit is 45 miles per hour (mph). The limit increases to 55 mph east of Curtis Road. The intersection of Curtis Road and Judge Orr Road is two-way, stop-sign-controlled with the stop signs on the northbound and southbound approaches. The intersection of US Highway (Hwy) 24/Judge Orr Road is signalized. Due to the oblique angle of this intersection, the eastbound and westbound approaches are split-phased. The *US 24 Access Control Plan/PEL Study* shows future plans to realign Judge Orr at US Hwy 24 to improve the intersection and provide an intersection skew angle closer to 90 degrees.

Curtis Road is a two-lane roadway that extends south from the intersection of US Hwy 24/Stapleton Road intersection to Drennan Road. It is shown as a two-lane, rural Principal Arterial on El Paso County's *2040 Major Transportation Corridors Plan* and a four-lane Principal Arterial on the *Preserved Corridor Network Plan*. Adjacent to the site, the posted speed limit is 45 mph. Both intersections of Curtis Road/Judge Orr Road and Curtis Road/Falcon Highway are two-way, stop-sign-controlled. The newer section north of Judge Orr, which connects to Stapleton Road, was constructed to current *ECM* standards with paved shoulders, etc. Generally, Curtis Road is an "unimproved," two-lane paved road between Judge Orr and Falcon Highway. Roadway construction plans for Curtis Road adjacent to Saddlehorn have been prepared (the plans for the segment adjacent to Filing No. 1 were approved). Please refer to the "deviations" section of this report for a brief discussion of the interim cross section to be constructed.

Barrosito Trail is a planned Rural Local roadway within Saddlehorn Ranch Filing No. 3. The roadway would extend south from Judge Orr Road, curve to the east, and intersect Del Cambre Trail. The roadway will extend east of Del Cambre Trail with Filing No. 4.. The design speed by classification will be 30 mph.

Existing Traffic

Figure 3 shows the current Sunday morning peak-hour traffic volumes at the intersection of Curtis Road/Stapleton Road/Judge Orr Road. These traffic volumes are based on traffic counts conducted by LSC in October 2023. The traffic count reports are attached.

Existing Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A represents control delay of less than 10 seconds for unsignalized and signalized intersections. LOS F represents control delay of more than 50 seconds for unsignalized intersections and more than 80 seconds for signalized intersections. Table 1 shows the level of service delay ranges.

Table 1: Intersection Levels of Service Delay Ranges

Level of Service	Signalized Intersections Average Control Delay (seconds per vehicle)	Unsignalized Intersections Average Control Delay (seconds per vehicle)(1)
A	10.0 sec or less	10.0 sec or less
B	10.1-20.0 sec	10.1-15.0 sec
C	20.1-35.0 sec	15.1-25.0 sec
D	35.1-55.0 sec	25.1-35.0 sec
E	55.1-80.0 sec	35.1-50.0 sec
F	80.1 sec or more	50.1 sec or more
(1) For unsignalized intersections, if V/C ratio is greater than 1.0 the level of service is LOS F, regardless of the projected average control delay per vehicle.		

The intersection of Curtis Road/Stapleton Road/Judge Orr Road has been analyzed to determine the existing Sunday morning peak-hour level of service using the unsignalized method of analysis procedures outlined in the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board.

Figure 3 shows the level of service analysis results. As shown on the figure, all movements at these intersections are level of service C or better during the Sunday peak hour. The level of service (LOS) reports are attached.

TRIP GENERATION

The site-generated vehicle-trips were estimated using the nationally published trip-generation rates from *Trip Generation, 11th Edition, 2021* by the Institute of Transportation Engineers (ITE).

Table 2 (attached) shows the trip-generation estimate for Nor'Wood Bible Church.

Weekdays

As shown in Table 2, the church is expected to generate about 91 vehicle trips on the average weekday, with about half entering and half exiting the site during the average 24-hour weekday

period. During the morning peak hour (of adjacent roadway traffic), which generally occurs for one hour between 6:30 and 8:30 a.m., about 2 vehicles would enter and 1 vehicle would exit the site. During the afternoon peak hour (of adjacent roadway traffic), which generally occurs for one hour between 4:15 and 6:15 p.m., about 3 vehicles would enter and 3 vehicles would exit the site.

Sundays

A church, typically, has the highest trip generation on Sundays. Table 2 shows the trip-generation estimate for the church on an average Sunday. As presented in the table, the church is estimated to generate about 378 vehicle trips on the average Sunday, with about half entering and half exiting the site during a Sunday 24-hour period, based on the church building square footage of 12,000 square feet.

As mentioned above, ITE trip-generation rates have been used for this report. Regarding the Sunday morning peak hour for churches, ITE trip-generation rates do not specify the number of Sunday services specifically associated with the data points. However, as both the entering and exiting peak-hour trip rates are relatively close in value, this suggests that the rates account for traffic departing a first service and arriving for a second service. The applicant may or may not hold two Sunday morning services at this location, initially. The main campus does hold two services on Sunday morning. Assuming the potential for two Sunday services at this location, both entering and exiting traffic would likely occur during the same hour, but peak during different 15-minute time intervals. The peak hour would potentially occur within the 9:00 to 11:00 a.m. "window of time."

Note: Churches typically prefer to minimize overlap of the highest flow of traffic departing a first service and highest flow of traffic **arriving** for the second service. This is primarily due to the efficient use of parking spaces, but benefits traffic flow as well. Note: While the main campus appears to have a significant stagger of service times, the analysis in this report conservatively assumes a worst-case scenario of minimal stagger by using a low peak-hour factor in the level of service analysis.

During the Sunday morning peak hour, an average of about 60 vehicles are estimated to enter and 65 vehicles are estimated to exit the site.

BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the area roadways and intersections without consideration of the proposed church development.

Short Term

Figure 3 shows the existing traffic volumes plus estimated Saddlehorn Ranch development traffic during the Sunday morning peak-hour time period. Also, a 2.4 percent annual growth rate has been applied to the existing volumes on Judge Orr Road/Curtis Road.

Long Term (2044)

Figure 7 shows the projected background traffic volumes for the long term (2023). These volumes are estimates by LSC and include the estimated Sunday morning peak-hour time period for Saddlehorn Ranch, Davis Ranch, and Esteban Rodriguez. The following are the percent annual growth rates reflected in the future background traffic:

- Judge Orr Road east of Curtis Road: 4.9 percent per year for 20 years.
  Curtis Road: 6.8 percent per year for 20 years.

DIRECTIONAL DISTRIBUTION

The directional distribution of the site-generated traffic volumes on the area roadways is an important factor in determining the site's traffic impacts. Figure 4 shows the short-term and long-term directional-distribution estimates for the site-generated traffic volumes. The estimates have been based on the following factors: current church member zip-code data provided by the applicant, the site's location with respect to nearby communities and neighborhoods and the balance of the Falcon/Peyton area, the overall City of Colorado Springs/Pikes Peak region urbanizing area, and the site's proposed land use.

Localized routing estimates of site-generated trips have been based on the site's proposed access-point locations and the future Saddlehorn Filing No. 3 roadway system relative to the adjacent arterial roadways.

SITE-GENERATED TRAFFIC

Figure 5 shows the projected short-term and long-term site-generated, Sunday morning peak-hour and Sunday (daily/24-hour) traffic volumes, respectively. The site-generated traffic volumes were calculated by applying the directional-distribution percentages (from Figure 4) and local trip-routing estimates to the trip-generation estimate from Table 1.

TOTAL TRAFFIC

Figure 6 shows the projected short-term total Sunday morning peak-hour and Sunday (daily/24-hour) traffic volumes. The short-term total traffic volumes are the sum of the short-term baseline traffic volumes (from Figure 3) plus the short-term site-generated traffic volumes from Figure 5.

Figure 8 shows the projected 2044 total traffic volumes. The 2044 total traffic volumes are the sum of the 2044 background traffic volumes (from Figure 7) plus the long-term site-generated traffic volumes from Figure 5.

PROJECTED LEVELS OF SERVICE

The access-point intersections with Barrosito Trail, and the intersections of Barrosito Trail (proposed, future road)/Judge Orr Road and Curtis Road/Stapleton Road/Judge Orr Road have been analyzed to determine the projected levels of service for the background and total traffic volumes, based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board. Figures 3, 6, 7, 8, and 9 show the level of service analysis results. The level of service reports are attached.

All movements at the study-area intersections, including the site-access intersections on Barrosito Trail are projected to operate at LOS C or better during the Sunday morning peak hour, based on the projected short-term and 2044 total traffic volumes.

PEDESTRIAN FACILITIES

Saddlehorn Ranch Filing No. 3 subdivision roads will be constructed to Rural Local standards, so sidewalks would not be required. No trail connections are shown on the site plan. A Park 'n Ride facility is located approximately 4.5 miles southwest of the site near US Hwy 24/New Meridian Road.

CDOT COMMENTS/REQUIREMENTS

CDOT issued a comment letter on December 7, 2023. The letter indicated the following:

- The letter requested the TIS reports for this project and Saddlehorn Filing No. 4 be provided for CDOT review.
- A new CDOT access permit and modifications may be required, per SHAC (Colorado State Highway Access Code) criteria.
- *Construction of the religious institution may trigger an increase in traffic, collection of escrow may be required for intersection improvements at Judge Orr Rd & US 24G.*
- *Construction of the religious institution may trigger an increase in traffic, collection of escrow for the signal at US 24 & Stapleton may be required. Provide the TIS dated 11/16/2023 for review.*

The need for a future signal at US Highway 24/Stapleton Drive is primarily due to **weekday** peak-hour traffic demand. The projected **weekday** peak-hour church site-generated traffic at the intersection of US Highway 24/Stapleton Drive would be less than one vehicle per hour for the northbound and southbound through movements at this intersection (note: the total estimated

weekday trip generation is shown in Table 1). The site-generated traffic would be below a 20-percent increase over existing approach volumes.

RECOMMENDATIONS

Auxiliary Lanes

The auxiliary turn lanes planned for construction with Saddlehorn Ranch Filing No. 3 will meet the needs of this development. No additional auxiliary turn lanes would be necessary.

Judge Orr Road/Barrosito Trail

The Saddlehorn Ranch Filing No. 3 construction plans show a right-turn deceleration lane at this intersection.

Barrosito Trail/Site Access

At the proposed site-access point, the projected Sunday peak-hour southbound left-turn volume exceeds the *ECM*-threshold 25 vph for which a left-turn lane is generally prescribed in section 2.3.7D. While the Sunday peak-hour turning volume will likely exceed the left-turning volume threshold, the opposing traffic in the northbound direction would be very light. The *Colorado State Highway Access Code* Section 3.5 (5) has a provision stating:

> "*The auxiliary lanes required in the category design standards may be waived when the 20th year predicted roadway volumes conflicting with the turning vehicle are below the following minimum volume thresholds: The left turn deceleration lane may be dropped if the opposing traffic is predicted to be below 100 DHV."*

Moreover, the design speed of Barrosito Trail as a low-volume, Rural Local street is relatively low at 30 mph. A left-turn lane is not necessary to maintain an acceptable level of service at the site-access intersection.

Regarding the on-site, outbound (southwest-bound) approach for traffic exiting, the site plan shows a 36-foot-wide driveway (curb-to-curb) that would allow for separate left- and right-turn lanes for exiting traffic. A two-lane approach is being provided for the convenience of church attendees and would not be **required** to maintain an acceptable TWSC level of service. LSC recommends striping for an 11-foot right-turn lane (13' from stripe to curb), a 10.5-foot left-turn lane, and a 12.5-foot entry/inbound lane (14.5 feet, stripe to curb).

Other Recommendations

- The applicant will need to dedicate the same amount of right-of-way as required with Filing No. 3.
- The access driveways will need to be designed to EPC standards.
- The site-access driveways on Barrosito Trail should be controlled with stop signs.

COUNTY ROAD IMPACT FEE PROGRAM

- The applicant will be required to participate in the County Road Impact Fee Program.
- No PID option is available for this land use.
- The 2019 "full fee" building permit fee associated with the opt-out option is $3,372 per thousand square feet of building area. Based on a 12,000 square foot church, the total "full fee" payable at building permit would be $40,464. Note: program fees are subject to change.

DEVIATIONS

No deviation requests are included with this submittal.

SUMMARY & CONCLUSIONS

Trip Generation

- The Nor'Wood Bible Church is expected to generate about 91 vehicle-trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak hour, about 2 vehicles would enter and 1 vehicle would exit the site. During the afternoon peak hour, about 2 vehicles would enter and 3 vehicles would exit the site.
- On Sundays, the church is expected to generate about 378 vehicle-trips with about half entering and half exiting the site during a 24-hour period. During the Sunday morning peak hour, about 60 vehicles would enter and 65 vehicles would exit the site.

Level of Service

- All movements at the access point and study-area intersections are projected to operate at LOS C or better during the Sunday morning peak hour through 2044.

RECOMMENDATIONS & REQUIREMENTS

- The auxiliary turn laneage planned for construction at Judge Orr Road/Barrosito Trail with Saddlehorn Ranch Filing No. 3 will meet the needs of this development. The Judge Orr Road construction plans for Saddlehorn Ranch Filing No. 3 show construction of an additional eastbound lane and eastbound right-turn deceleration lanes at the access points (one of which is Barrosito Trail). This has been shown on the construction plans to complete the half-section of the ultimate four-lane Minor Arterial cross-section. No additional auxiliary turn lanes would be necessary.
- No auxiliary turn lanes would be necessary at the site-access intersection with Barrosito Trail. Please refer to the "Recommendations-Auxiliary Turn Lanes" section for details.
- Please refer to the additional recommendations in the section above.
- The applicant will be required to participate in the El Paso County Road Improvement Fee Program. Please refer to the section above for details.

* * * * *

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 2
Figures 1-10
Traffic Count Reports
Level of Service Reports

Tables

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Table 1: Trip Generation Estimate

ITE Land Use		Value	Units [1]	Trip Generation Rates [2]					Trips Generated				
Code	Description			Average Daily	A.M. Peak In	A.M. Peak Out	P.M. Peak In	P.M. Peak Out	Average Daily	A.M. Peak In	A.M. Peak Out	P.M. Peak In	P.M. Peak Out
Sundays -- Peak Hour of the Generator													
560	Church (Sunday)	12.0	KSF	31.46	4.97	5.39	-	-	378	60	65	-	-
Weekday -- Daily & Peak Hours of Adjacent Street Traffic													
560	Church (Weekday)	12.0	KSF	7.60	0.20	0.12	0.22	0.27	91	2	1	3	3

[1] KSF = 1,000 square feet of building floor area

[2] Source: *Trip Generation, 11th Edition (2021)* by the Institute of Transportation Engineers (ITE)

Updated: 11/06/2023

Figures

TRANSPORTATION
CONSULTANTS, INC.

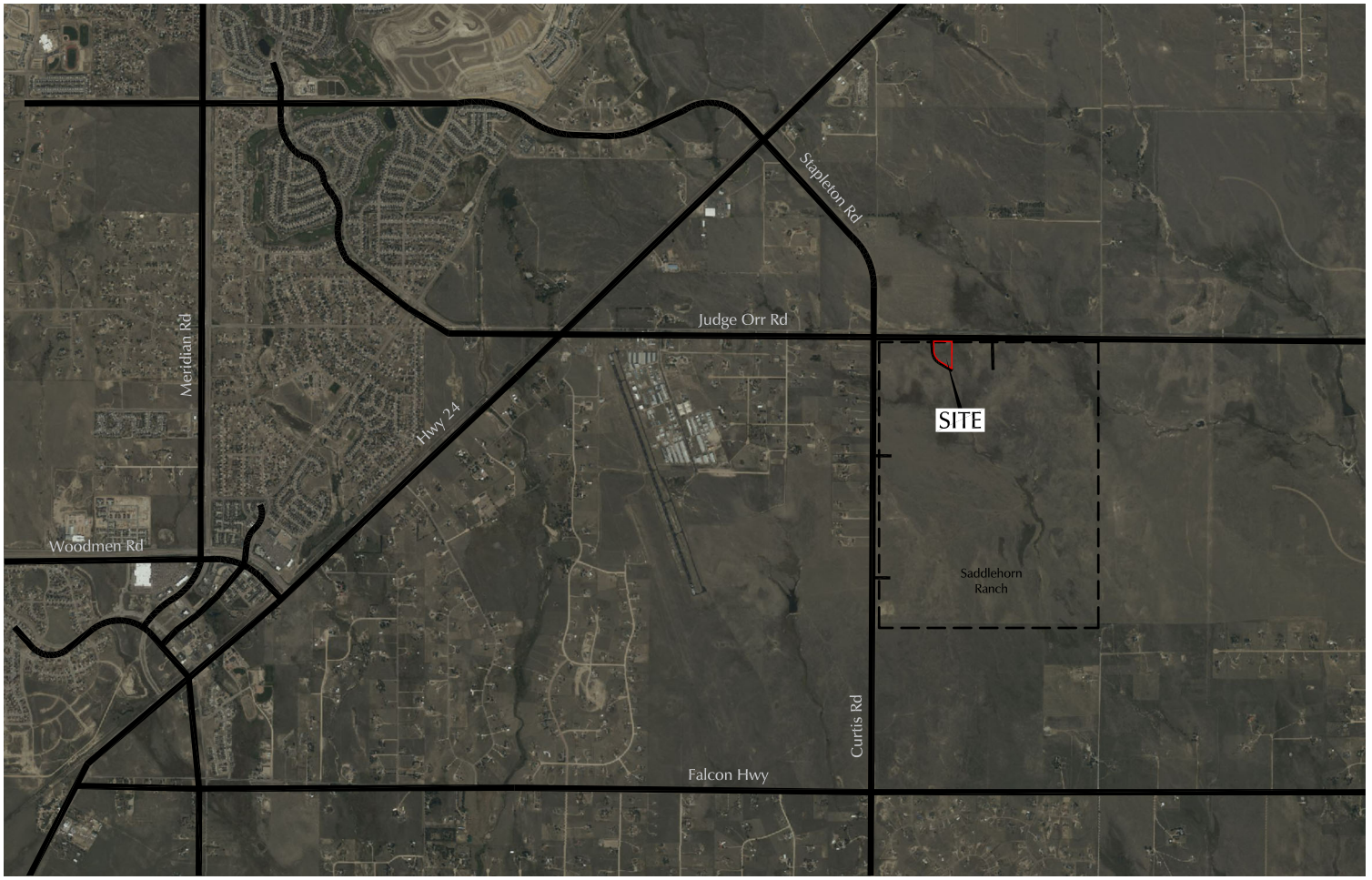

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Figure 1

Vicinity Map

Nor'Wood Bible Church (LSC # S234370)

LSC TRANSPORTATION CONSULTANTS, INC.

Approximate Scale
1" = 100'

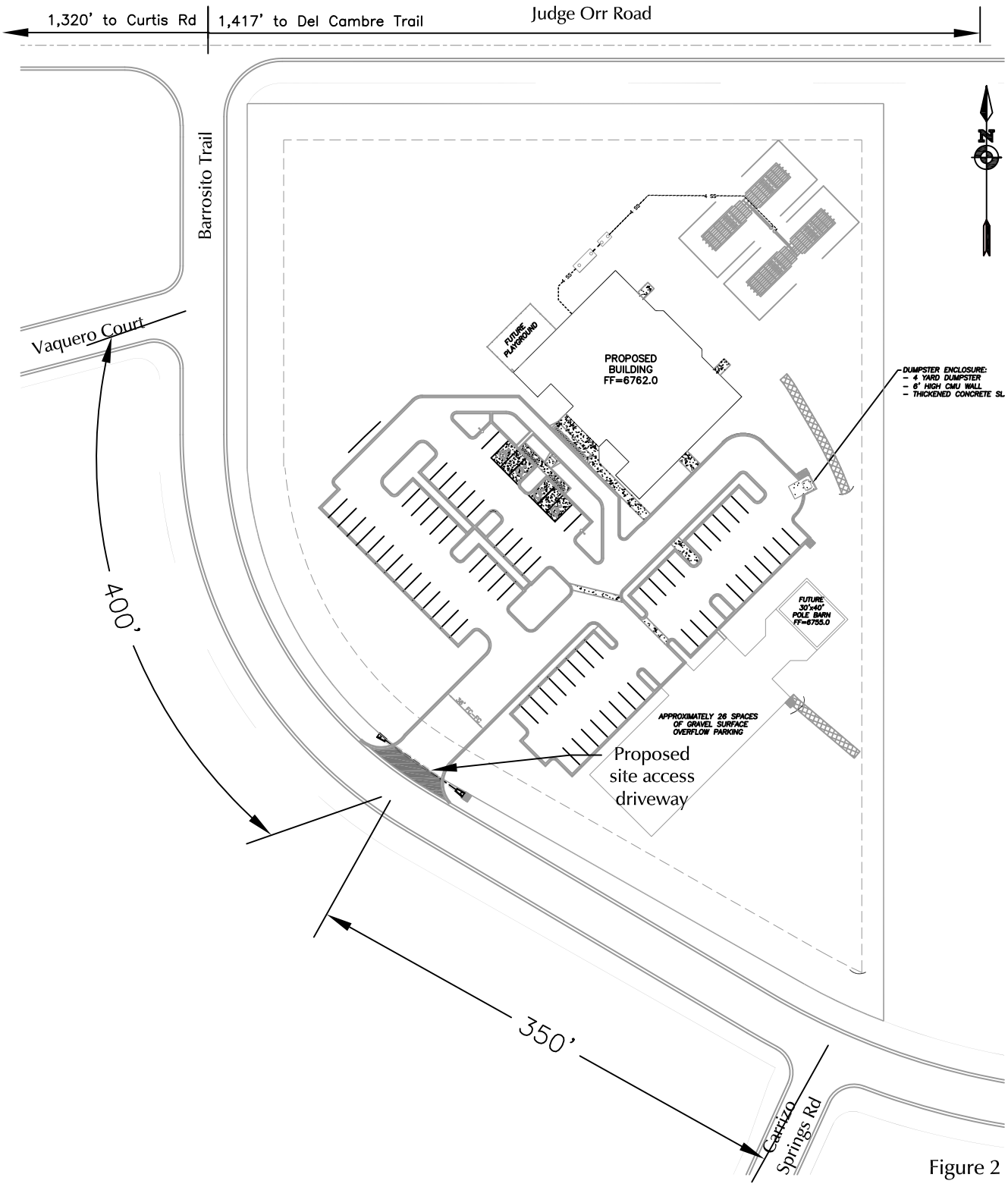
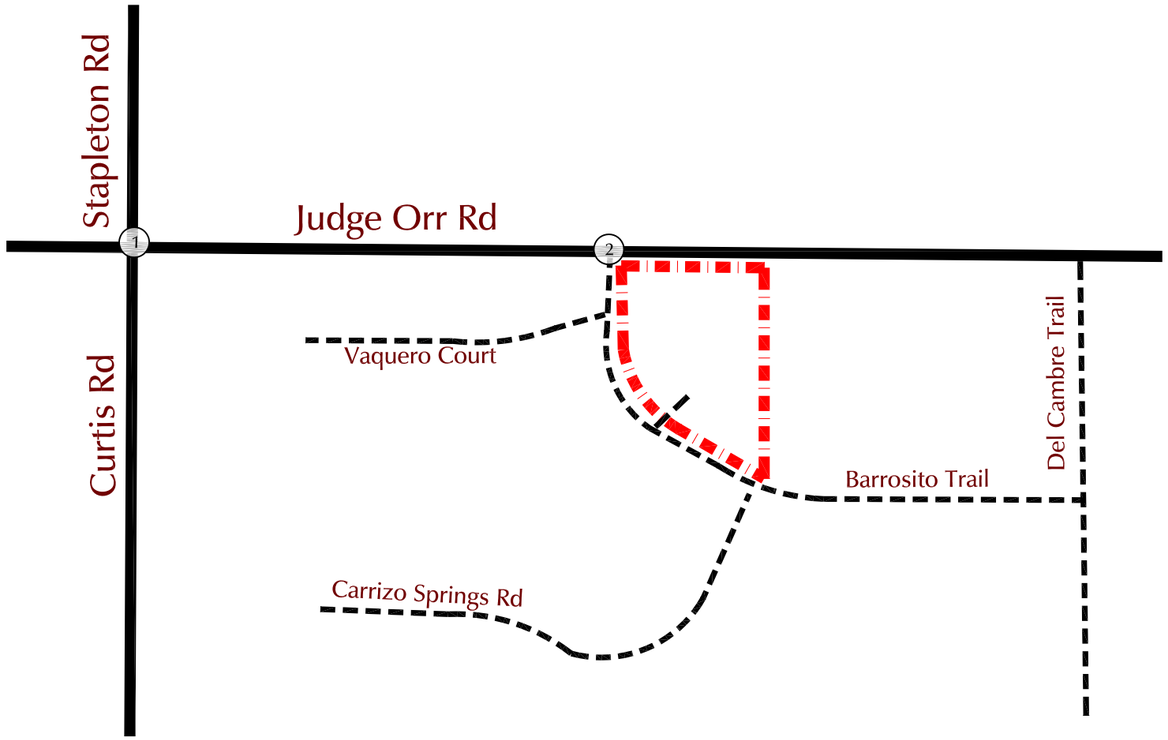


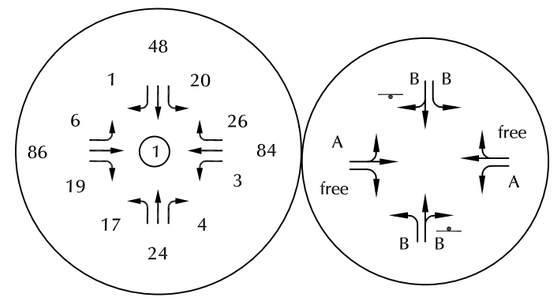
Figure 2

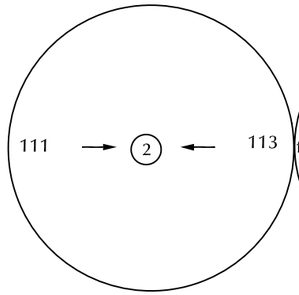
Site Plan

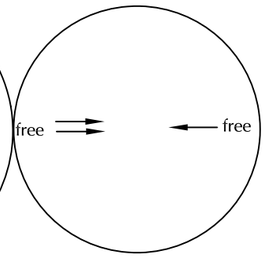
Nor'Wood Bible Church (LSC # S234370)

LSC TRANSPORTATION CONSULTANTS, INC.









LEGEND:

| = Stop Sign

XX = AM Sunday Peak-Hour Traffic (vehicles per hour) (counts by LSC: 10/2023)

A = AM Sunday Individual Movement Peak-Hour Level of Service

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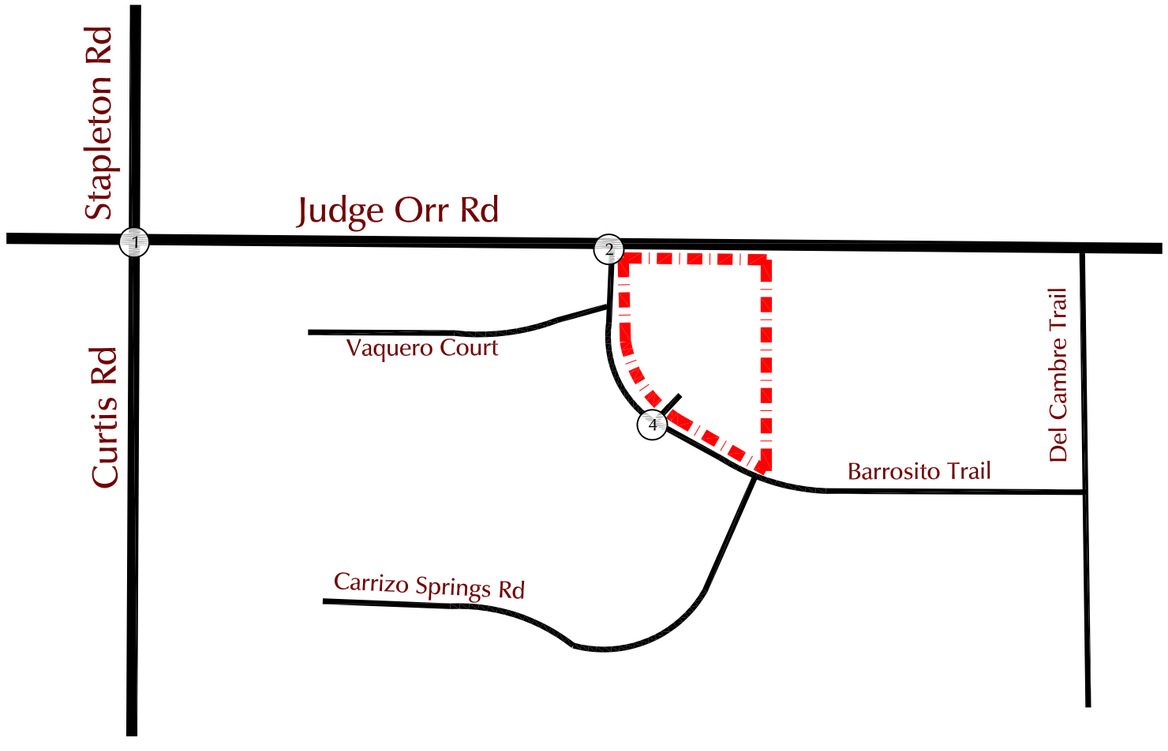
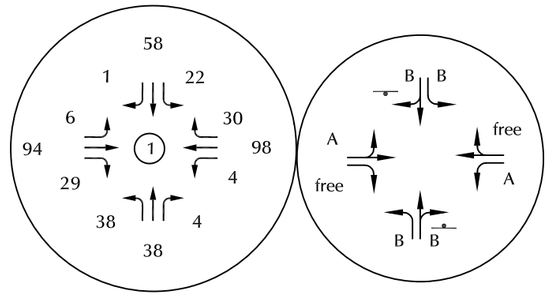
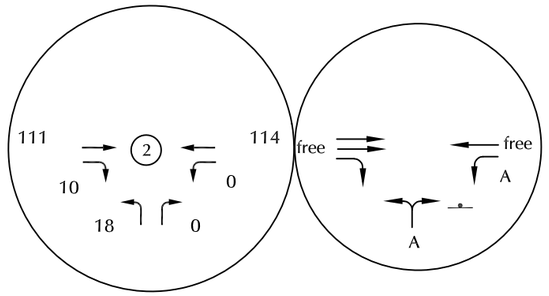
Figure 3

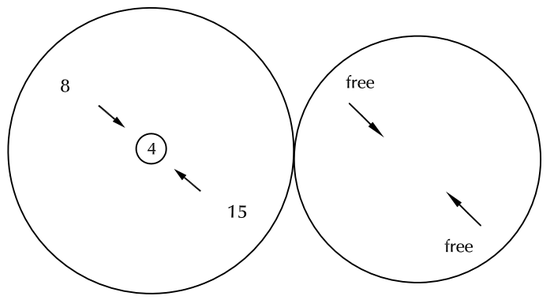
Existing Traffic, Lane Geometry and Traffic Control

Nor'Wood Bible Church (LSC # S234370)









LEGEND:

⊦ = Stop Sign

XX = AM Sunday Peak-Hour Traffic (vehicles per hour)

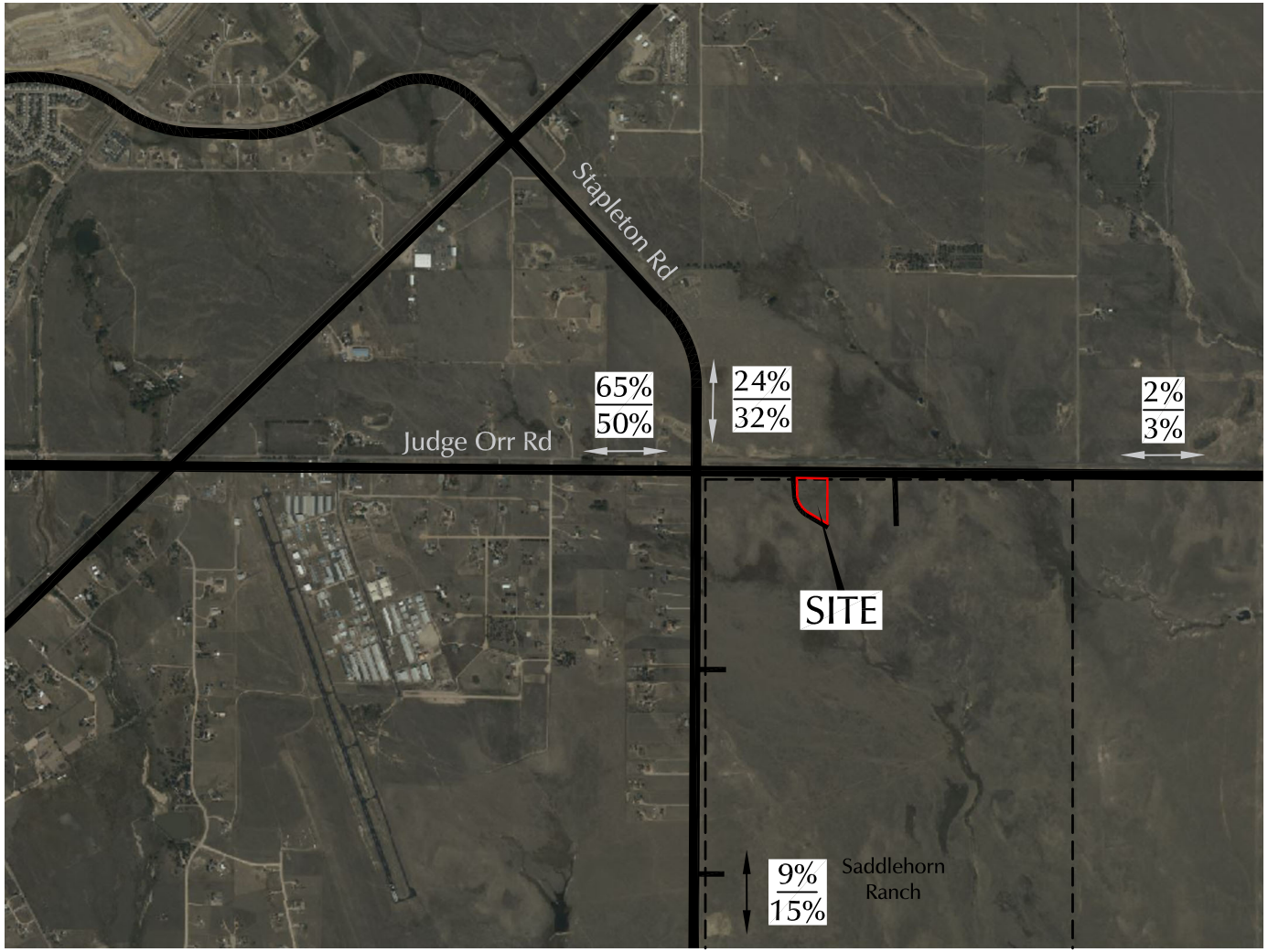
A = AM Sunday Individual Movement Peak-Hour Level of Service

TRANSPORTATION CONSULTANTS, INC.

Figure 4

Short-Term Background Traffic, Lane Geometry and Traffic Control

Nor'Wood Bible Church (LSC # S234370)



NTS

Figure 5

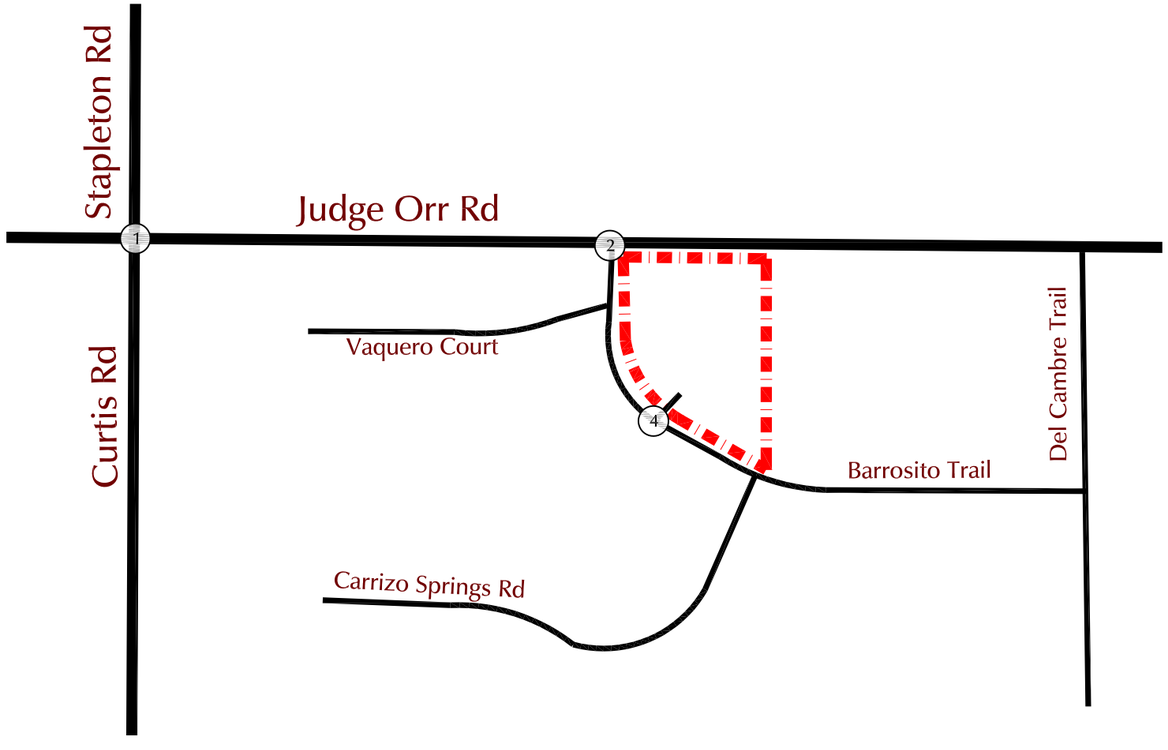
Estimated Directional Distribution of Site-Generated Traffic

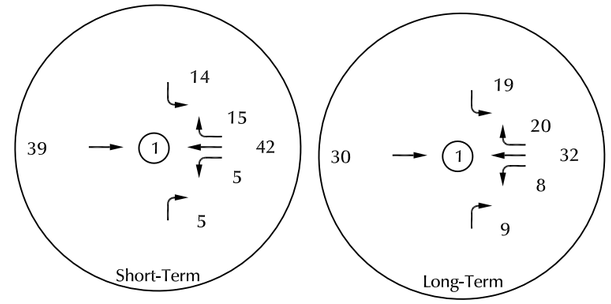
Nor'Wood Bible Church (LSC # S234370)

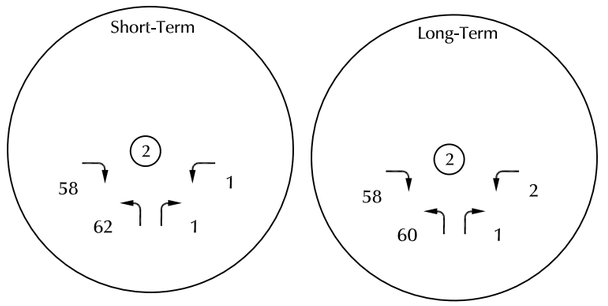
LEGEND:

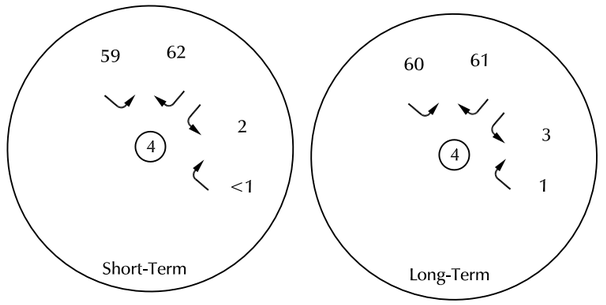
$\frac{XX\%}{XX\%}$ = $\frac{\text{Percent Short-Term Distribution}}{\text{Percent Long-Term Distribution}}$

TRANSPORTATION CONSULTANTS, INC.









NTS

LEGEND:

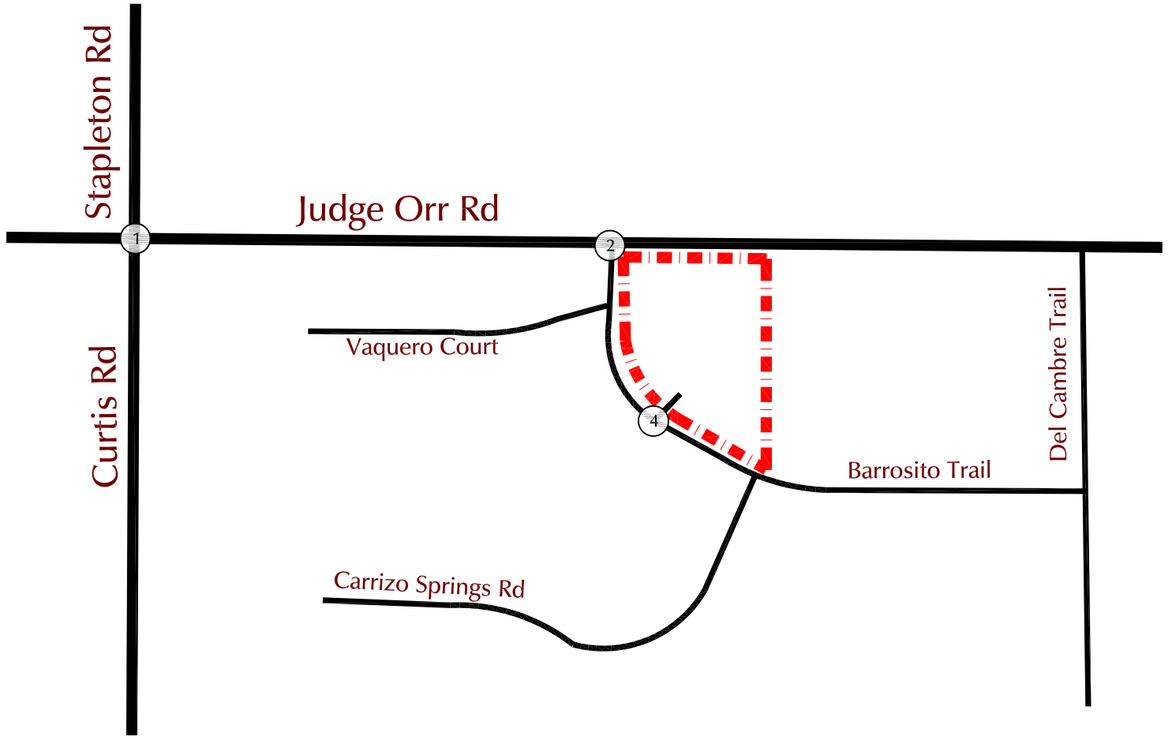
XX = AM Sunday Peak-Hour Traffic (vehicles per hour)

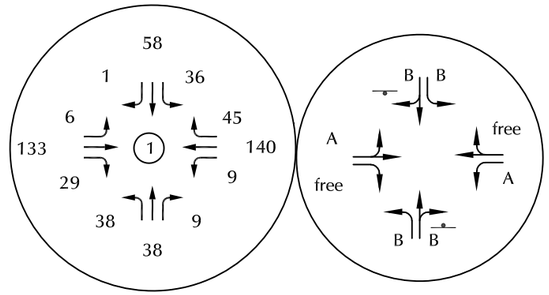
TRANSPORTATION CONSULTANTS, INC.

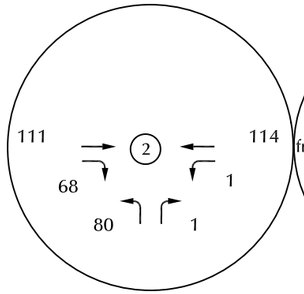
Figure 6

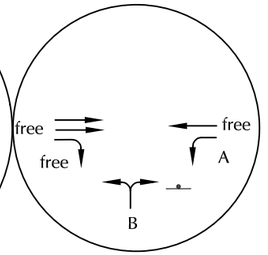
Estimated Site-Generated Traffic

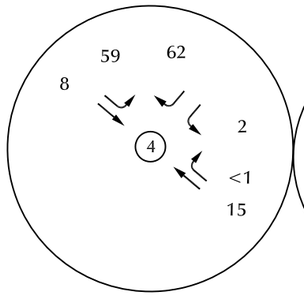
Nor'Wood Bible Church (LSC # S234370)

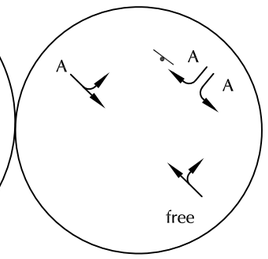












LEGEND:

| = Stop Sign

XX = AM Sunday Peak-Hour Traffic (vehicles per hour)

A = AM Sunday Individual Movement Peak-Hour Level of Service

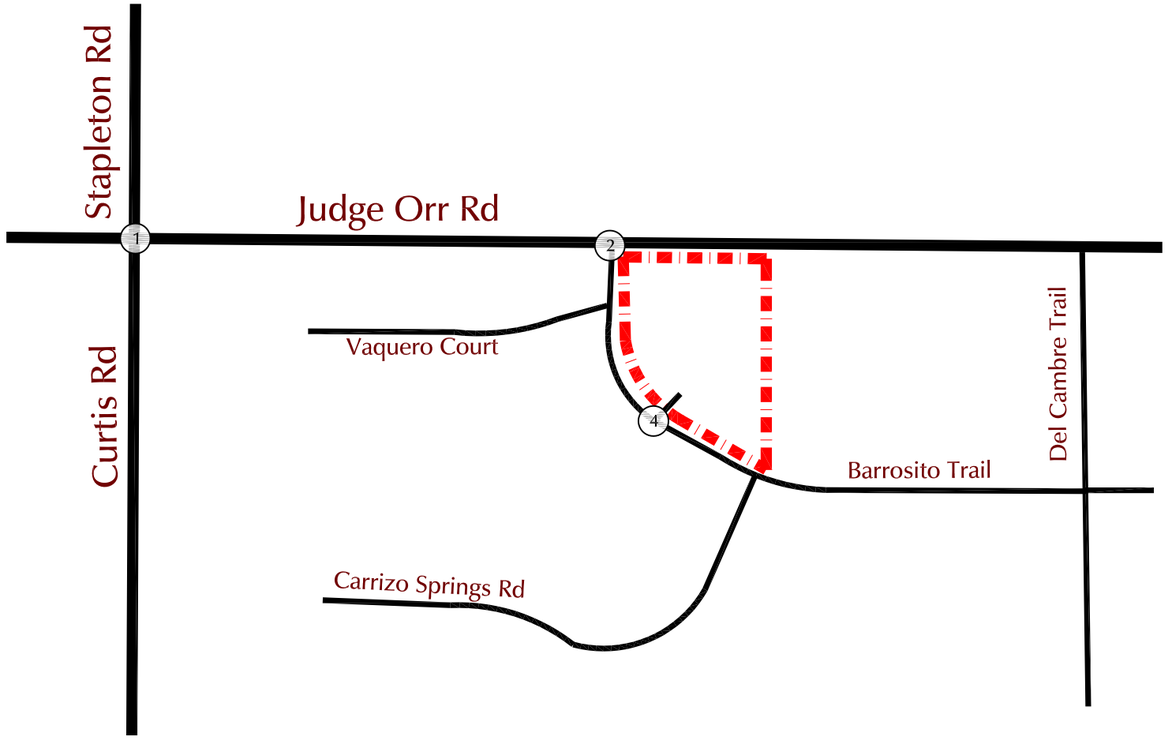
Note: These levels of service conservatively assume a "worst-case scenario" of overlapping entering and exiting church traffic during the Sunday morning peak hour.

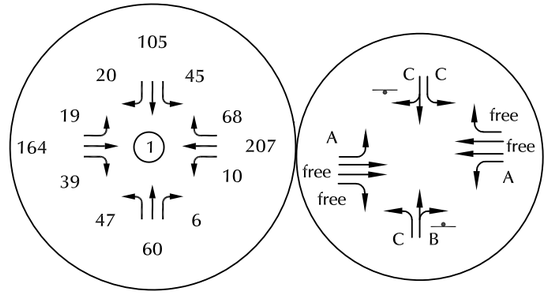
TRANSPORTATION CONSULTANTS, INC.

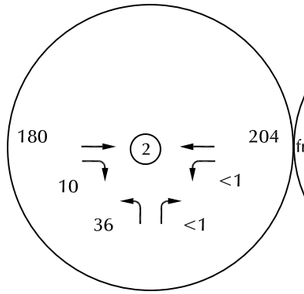
Figure 7

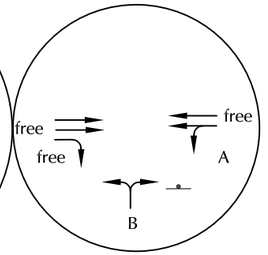
Short-Term Total Traffic, Lane Geometry and Traffic Control

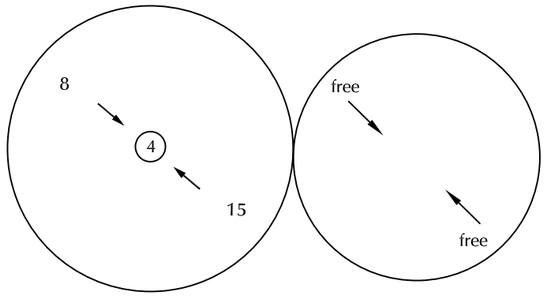
Nor'Wood Bible Church (LSC # S234370)











LEGEND:

= Stop Sign

= Roundabout

XX = AM Sunday Peak-Hour Traffic (vehicles per hour)

A = AM Sunday Individual Movement Peak-Hour Level of Service

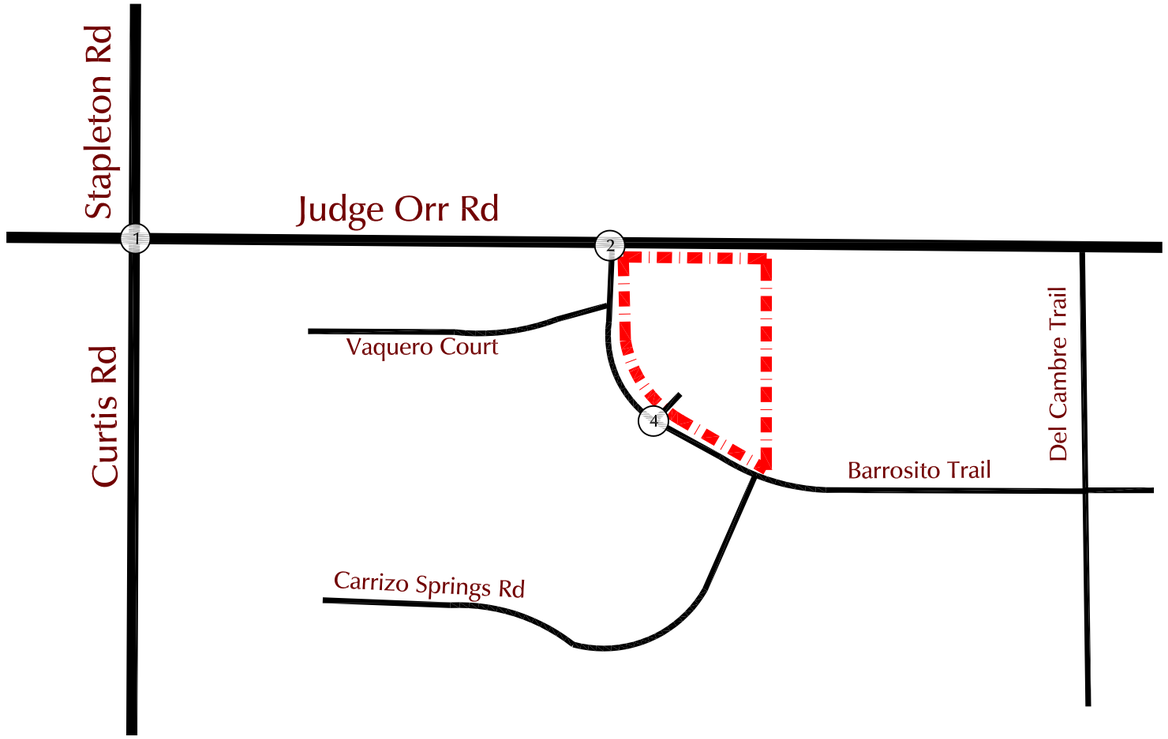
C = AM Entire Intersection Sunday Peak-Hour Level of Service

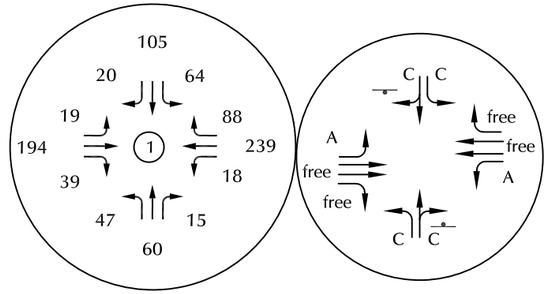
TRANSPORTATION CONSULTANTS, INC.

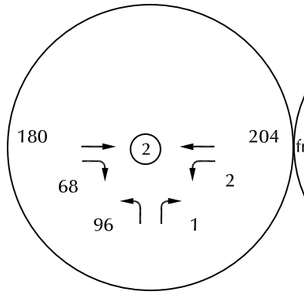
Figure 8

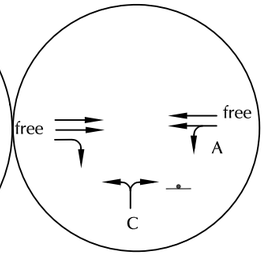
2044 Background Traffic, Lane Geometry and Traffic Control

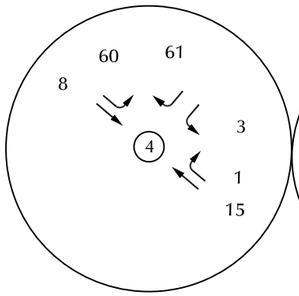
Nor'Wood Bible Church (LSC # S234370)

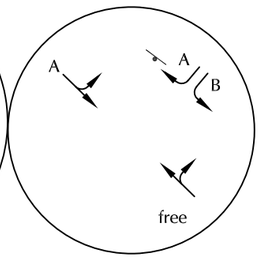












LEGEND:

= Stop Sign

XX = AM Sunday Peak-Hour Traffic (vehicles per hour)

= Roundabout

A = AM Sunday Individual Movement Peak-Hour Level of Service

C = AM Entire Intersection Sunday Peak-Hour Level of Service

Note: These levels of service conservatively assume a "worst-case scenario" of overlapping entering and exiting church traffic during the Sunday morning peak hour.

TRANSPORTATION CONSULTANTS, INC.

Figure 9

2044 Total Traffic, Lane Geometry and Traffic Control

Nor'Wood Bible Church (LSC # S234370)

Traffic Counts

TRANSPORTATION
CONSULTANTS, INC.

LSC Transportation Consultants, Inc.

2504 E. Pikes Peak Ave, Suite 304
Colorado Springs, CO 80909
719-633-2868

File Name : Curtis Rd - Judge Orr Rd Sun V
Site Code : S234310
Start Date : 10/21/2023
Page No : 1

Groups Printed- Unshifted

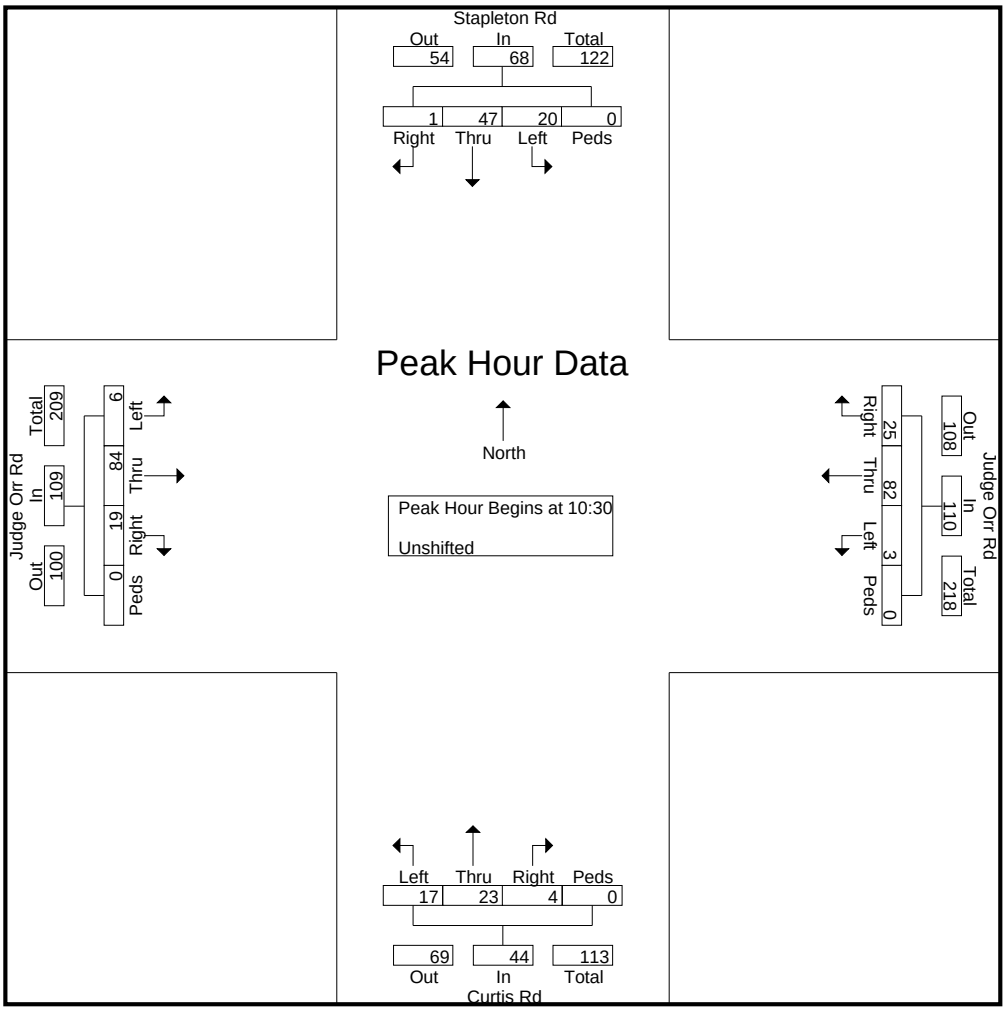
	Stapleton Rd Southbound					Judge Orr Rd Westbound					Curtis Rd Northbound					Judge Orr Rd Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
09:30	1	6	4	0	11	3	14	0	0	17	1	4	4	0	9	1	14	2	0	17	54
09:45	0	10	3	0	13	5	19	4	0	28	0	10	7	0	17	5	14	0	0	19	77
Total	1	16	7	0	24	8	33	4	0	45	1	14	11	0	26	6	28	2	0	36	131
10:00	0	8	5	0	13	0	5	0	0	5	1	8	1	0	10	2	9	1	0	12	40
10:15	0	10	8	0	18	4	14	1	0	19	1	10	2	0	13	3	16	2	0	21	71
10:30	0	8	9	0	17	9	27	1	0	37	2	5	4	0	11	3	15	0	0	18	83
10:45	0	17	3	0	20	5	23	2	0	30	1	4	2	0	7	6	18	1	0	25	82
Total	0	43	25	0	68	18	69	4	0	91	5	27	9	0	41	14	58	4	0	76	276
11:00	0	11	3	0	14	5	17	0	0	22	0	9	1	0	10	6	21	2	0	29	75
11:15	1	11	5	0	17	6	15	0	0	21	1	5	10	0	16	4	30	3	0	37	91
11:30	0	15	2	0	17	3	17	0	0	20	1	9	1	0	11	3	12	1	0	16	64
11:45	1	6	7	0	14	2	16	1	0	19	2	13	2	0	17	4	23	2	0	29	79
Total	2	43	17	0	62	16	65	1	0	82	4	36	14	0	54	17	86	8	0	111	309
Grand Total	3	102	49	0	154	42	167	9	0	218	10	77	34	0	121	37	172	14	0	223	716
Apprch %	1.9	66.2	31.8	0		19.3	76.6	4.1	0		8.3	63.6	28.1	0		16.6	77.1	6.3	0		
Total %	0.4	14.2	6.8	0	21.5	5.9	23.3	1.3	0	30.4	1.4	10.8	4.7	0	16.9	5.2	24	2	0	31.1	

LSC Transportation Consultants, Inc.

2504 E. Pikes Peak Ave, Suite 304
Colorado Springs, CO 80909
719-633-2868

File Name : Curtis Rd - Judge Orr Rd Sun V
Site Code : S234310
Start Date : 10/21/2023
Page No : 2

	Stapleton Rd Southbound					Judge Orr Rd Westbound					Curtis Rd Northbound					Judge Orr Rd Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 09:30 to 11:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 10:30																					
10:30	0	8	**9**	0	17	**9**	**27**	1	0	**37**	**2**	5	4	0	11	3	15	0	0	18	83
10:45	0	**17**	3	0	**20**	5	23	**2**	0	30	1	4	2	0	7	**6**	18	1	0	25	82
11:00	0	11	3	0	14	5	17	0	0	22	0	**9**	1	0	10	6	21	2	0	29	75
11:15	**1**	11	5	0	17	6	15	0	0	21	1	5	**10**	0	**16**	4	**30**	**3**	0	**37**	**91**
Total Volume	1	47	20	0	68	25	82	3	0	110	4	23	17	0	44	19	84	6	0	109	331
% App. Total	1.5	69.1	29.4	0		22.7	74.5	2.7	0		9.1	52.3	38.6	0		17.4	77.1	5.5	0		
PHF	.250	.691	.556	.000	.850	.694	.759	.375	.000	.743	.500	.639	.425	.000	.688	.792	.700	.500	.000	.736	.909

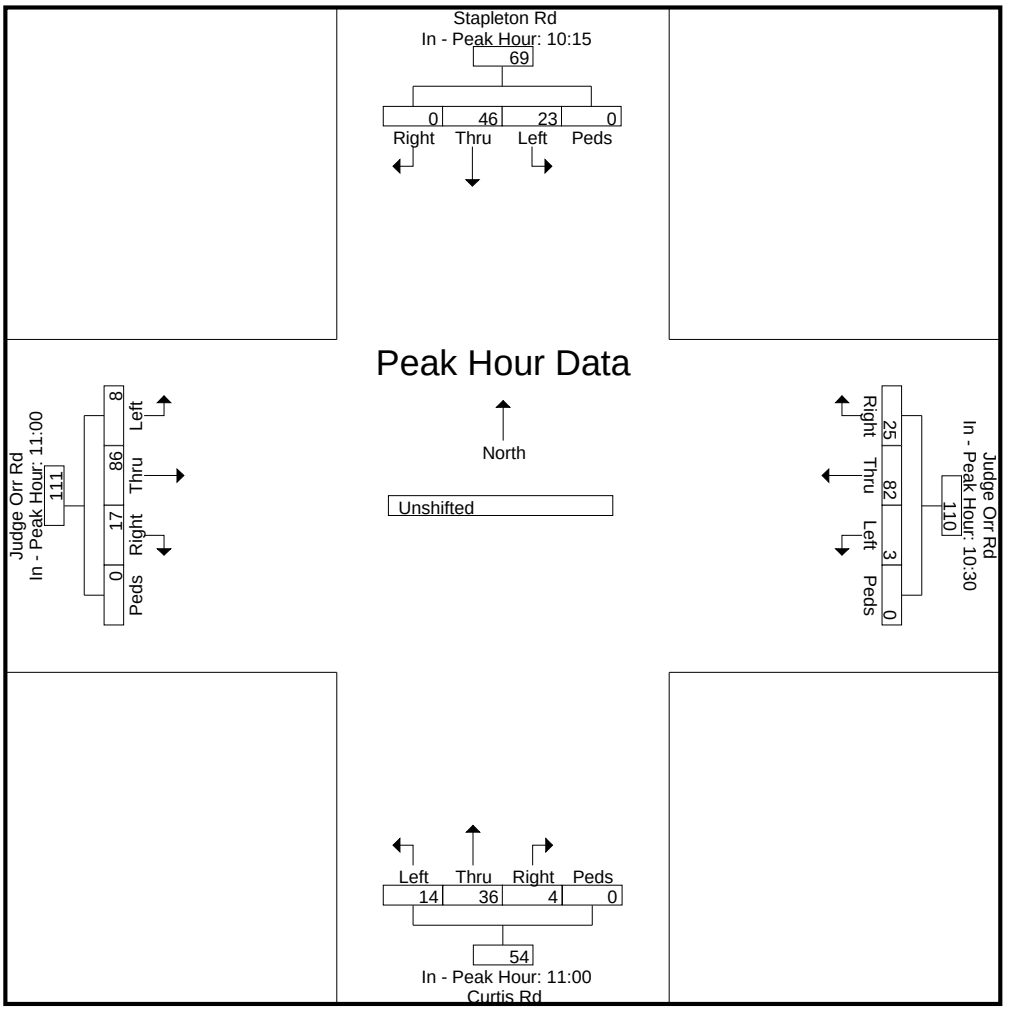


LSC Transportation Consultants, Inc.

2504 E. Pikes Peak Ave, Suite 304
Colorado Springs, CO 80909
719-633-2868

File Name : Curtis Rd - Judge Orr Rd Sun V
Site Code : S234310
Start Date : 10/21/2023
Page No : 3

	Stapleton Rd Southbound					Judge Orr Rd Westbound					Curtis Rd Northbound					Judge Orr Rd Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 09:30 to 11:45 - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	10:15					10:30					11:00					11:00					
+0 mins.	0	10	8	0	18	**9**	**27**	1	0	**37**	0	9	1	0	10	**6**	21	2	0	29	
+15 mins.	0	8	**9**	0	17	5	23	**2**	0	30	1	5	**10**	0	16	4	**30**	**3**	0	**37**	
+30 mins.	0	**17**	3	0	**20**	5	17	0	0	22	1	9	1	0	11	3	12	1	0	16	
+45 mins.	0	11	3	0	14	6	15	0	0	21	**2**	**13**	2	0	**17**	4	23	2	0	29	
Total Volume	0	46	23	0	69	25	82	3	0	110	4	36	14	0	54	17	86	8	0	111	
% App. Total	0	66.7	33.3	0		22.7	74.5	2.7	0		7.4	66.7	25.9	0		15.3	77.5	7.2	0		
PHF	.000	.676	.639	.000	.863	.694	.759	.375	.000	.743	.500	.692	.350	.000	.794	.708	.717	.667	.000	.750	



Level of Service Reports

TRANSPORTATION
CONSULTANTS, INC.

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	86	19	3	84	26	17	24	4	20	48	1
Future Vol, veh/h	6	86	19	3	84	26	17	24	4	20	48	1
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	245	-	0	235	-	-	265	-	-	265	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	78	78	78	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	104	23	4	101	31	22	31	5	24	58	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	132	0	0	127	0	0	272	258	104	273	266	117
Stage 1	-	-	-	-	-	-	118	118	-	125	125	-
Stage 2	-	-	-	-	-	-	154	140	-	148	141	-
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	1453	-	-	1459	-	-	680	646	951	679	640	935
Stage 1	-	-	-	-	-	-	887	798	-	879	792	-
Stage 2	-	-	-	-	-	-	848	781	-	855	780	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1453	-	-	1459	-	-	628	641	951	647	635	935
Mov Cap-2 Maneuver	-	-	-	-	-	-	628	641	-	647	635	-
Stage 1	-	-	-	-	-	-	883	794	-	875	790	-
Stage 2	-	-	-	-	-	-	783	779	-	813	776	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.2	10.8	11.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	628	672	1453	-	-	1459	-	-	647	639
HCM Lane V/C Ratio	0.035	0.053	0.005	-	-	0.002	-	-	0.037	0.092
HCM Control Delay (s)	10.9	10.7	7.5	0	-	7.5	-	-	10.8	11.2
HCM Lane LOS	B	B	A	A	-	A	-	-	B	B
HCM 95th %tile Q(veh)	0.1	0.2	0	-	-	0	-	-	0.1	0.3

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	94	29	4	98	30	38	38	4	22	58	1
Future Vol, veh/h	6	94	29	4	98	30	38	38	4	22	58	1
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	245	-	0	235	-	-	265	-	-	265	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	113	35	5	118	36	46	46	5	27	70	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	154	0	0	148	0	0	309	291	113	316	308	136
Stage 1	-	-	-	-	-	-	127	127	-	146	146	-
Stage 2	-	-	-	-	-	-	182	164	-	170	162	-
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	1426	-	-	1434	-	-	643	619	940	637	606	913
Stage 1	-	-	-	-	-	-	877	791	-	857	776	-
Stage 2	-	-	-	-	-	-	820	762	-	832	764	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1426	-	-	1434	-	-	581	614	940	594	601	913
Mov Cap-2 Maneuver	-	-	-	-	-	-	581	614	-	594	601	-
Stage 1	-	-	-	-	-	-	873	787	-	853	774	-
Stage 2	-	-	-	-	-	-	742	760	-	776	760	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.2	11.4	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	581	635	1426	-	-	1434	-	-	594	605
HCM Lane V/C Ratio	0.079	0.08	0.005	-	-	0.003	-	-	0.045	0.117
HCM Control Delay (s)	11.7	11.2	7.5	0	-	7.5	-	-	11.3	11.7
HCM Lane LOS	B	B	A	A	-	A	-	-	B	B
HCM 95th %tile Q(veh)	0.3	0.3	0	-	-	0	-	-	0.1	0.4

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	111	10	0	114	18	0
Future Vol, veh/h	111	10	0	114	18	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	12	0	137	23	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	146	0	277	140
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	137	-
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	-	-	1436	-	713	908
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	890	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1436	-	713	908
Mov Cap-2 Maneuver	-	-	-	-	713	-
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	890	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	713	-	-	1436	-
HCM Lane V/C Ratio	0.032	-	-	-	-
HCM Control Delay (s)	10.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	15	0	0	8
Future Vol, veh/h	0	0	15	0	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	78	50	50	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	19	0	0	10

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	29	19	0	0	19	0
Stage 1	19	-	-	-	-	-
Stage 2	10	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	986	1059	-	-	1597	-
Stage 1	1004	-	-	-	-	-
Stage 2	1013	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	986	1059	-	-	1597	-
Mov Cap-2 Maneuver	986	-	-	-	-	-
Stage 1	1004	-	-	-	-	-
Stage 2	1013	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1597	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	133	29	9	140	45	38	38	9	36	58	1
Future Vol, veh/h	6	133	29	9	140	45	38	38	9	36	58	1
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	245	-	0	235	-	-	265	-	-	265	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	160	35	11	169	54	46	46	11	43	70	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	223	0	0	195	0	0	428	419	160	438	427	196
Stage 1	-	-	-	-	-	-	174	174	-	218	218	-
Stage 2	-	-	-	-	-	-	254	245	-	220	209	-
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	1346	-	-	1378	-	-	537	525	885	529	520	845
Stage 1	-	-	-	-	-	-	828	755	-	784	723	-
Stage 2	-	-	-	-	-	-	750	703	-	782	729	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1346	-	-	1378	-	-	475	518	885	482	513	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	475	518	-	482	513	-
Stage 1	-	-	-	-	-	-	823	750	-	779	717	-
Stage 2	-	-	-	-	-	-	671	697	-	721	725	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	12.7	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	475	563	1346	-	-	1378	-	-	482	516
HCM Lane V/C Ratio	0.096	0.101	0.005	-	-	0.008	-	-	0.09	0.138
HCM Control Delay (s)	13.4	12.1	7.7	0	-	7.6	-	-	13.2	13.1
HCM Lane LOS	B	B	A	A	-	A	-	-	B	B
HCM 95th %tile Q(veh)	0.3	0.3	0	-	-	0	-	-	0.3	0.5

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	111	68	1	114	80	1
Future Vol, veh/h	111	68	1	114	80	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	50	50	83	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	136	2	137	160	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	270	0	343	202
Stage 1	-	-	-	-	202	-
Stage 2	-	-	-	-	141	-
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	-	-	1293	-	653	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	886	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1293	-	652	839
Mov Cap-2 Maneuver	-	-	-	-	652	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	884	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	654	-	-	1293	-
HCM Lane V/C Ratio	0.248	-	-	0.002	-
HCM Control Delay (s)	12.3	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0	-

Intersection	
Int Delay, s/veh	7.3

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	59	8	15	0	2	62
Future Vol, veh/h	59	8	15	0	2	62
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	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	78	78	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	118	10	19	0	4	124

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	19	0	-	0	265	19
Stage 1	-	-	-	-	19	-
Stage 2	-	-	-	-	246	-
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	1597	-	-	-	724	1059
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	795	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1597	-	-	-	670	1059
Mov Cap-2 Maneuver	-	-	-	-	670	-
Stage 1	-	-	-	-	930	-
Stage 2	-	-	-	-	795	-

Approach	SE	NW	SW
HCM Control Delay, s	6.8	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1	SWLn2
Capacity (veh/h)	-	-	1597	-	670	1059
HCM Lane V/C Ratio	-	-	0.074	-	0.006	0.117
HCM Control Delay (s)	-	-	7.4	0	10.4	8.9
HCM Lane LOS	-	-	A	A	B	A
HCM 95th %tile Q(veh)	-	-	0.2	-	0	0.4

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	164	39	10	207	68	47	60	6	45	105	20
Future Vol, veh/h	19	164	39	10	207	68	47	60	6	45	105	20
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	245	-	0	235	-	-	265	-	-	265	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	92	92	92	83	83	83	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	189	45	11	225	74	57	72	7	52	121	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	299	0	0	234	0	0	589	554	189	579	562	262
Stage 1	-	-	-	-	-	-	233	233	-	284	284	-
Stage 2	-	-	-	-	-	-	356	321	-	295	278	-
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	1262	-	-	1333	-	-	420	440	853	426	436	777
Stage 1	-	-	-	-	-	-	770	712	-	723	676	-
Stage 2	-	-	-	-	-	-	661	652	-	713	680	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1262	-	-	1333	-	-	311	428	853	360	424	777
Mov Cap-2 Maneuver	-	-	-	-	-	-	311	428	-	360	424	-
Stage 1	-	-	-	-	-	-	755	698	-	709	671	-
Stage 2	-	-	-	-	-	-	522	647	-	621	666	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.3	16.6	16.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	311	448	1262	-	-	1333	-	-	360	457
HCM Lane V/C Ratio	0.182	0.177	0.017	-	-	0.008	-	-	0.144	0.314
HCM Control Delay (s)	19.1	14.8	7.9	0	-	7.7	-	-	16.7	16.4
HCM Lane LOS	C	B	A	A	-	A	-	-	C	C
HCM 95th %tile Q(veh)	0.7	0.6	0.1	-	-	0	-	-	0.5	1.3

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	180	10	0	204	36	0
Future Vol, veh/h	180	10	0	204	36	0
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	87	87	87	87	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	207	11	0	234	46	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	218	0	447	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	234	-
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	-	-	1352	-	569	827
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	805	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1352	-	569	827
Mov Cap-2 Maneuver	-	-	-	-	569	-
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	805	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	569	-	-	1352	-
HCM Lane V/C Ratio	0.081	-	-	-	-
HCM Control Delay (s)	11.9	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	0	8	15	0	0	0
Future Vol, veh/h	0	8	15	0	0	0
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	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	78	78	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	19	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	19	0	-	0	29	19
Stage 1	-	-	-	-	19	-
Stage 2	-	-	-	-	10	-
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	1597	-	-	-	986	1059
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	1013	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1597	-	-	-	986	1059
Mov Cap-2 Maneuver	-	-	-	-	986	-
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	1013	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1	SWLn2
Capacity (veh/h)	-	-	1597	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0	0
HCM Lane LOS	-	-	A	-	A	A
HCM 95th %tile Q(veh)	-	-	0	-	-	-

Intersection	
Intersection Delay, s/veh	4.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	256	310	136	196
Demand Flow Rate, veh/h	261	316	138	199
Vehicles Circulating, veh/h	187	153	268	298
Vehicles Exiting, veh/h	310	253	180	170
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.1	4.1	3.9	4.3
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR
RT Channelized								
Lane Util	0.471	0.529	0.472	0.528	0.471	0.529	0.472	0.528
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	123	138	149	167	65	73	94	105
Cap Entry Lane, veh/h	1137	1211	1173	1247	1055	1131	1026	1102
Entry HV Adj Factor	0.979	0.984	0.979	0.985	0.980	0.984	0.978	0.987
Flow Entry, veh/h	120	136	146	165	64	72	92	104
Cap Entry, veh/h	1113	1192	1148	1229	1034	1113	1004	1088
V/C Ratio	0.108	0.114	0.127	0.134	0.062	0.065	0.092	0.095
Control Delay, s/veh	4.2	4.0	4.2	4.1	4.0	3.8	4.4	4.1
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	0	0	0	0	0

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	194	39	18	239	88	47	60	15	64	105	20
Future Vol, veh/h	19	194	39	18	239	88	47	60	15	64	105	20
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	245	-	0	235	-	-	265	-	-	265	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	92	92	92	83	83	83	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	223	45	20	260	96	57	72	18	74	121	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	356	0	0	268	0	0	687	663	223	683	660	308
Stage 1	-	-	-	-	-	-	267	267	-	348	348	-
Stage 2	-	-	-	-	-	-	420	396	-	335	312	-
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	1203	-	-	1296	-	-	361	382	817	363	383	732
Stage 1	-	-	-	-	-	-	738	688	-	668	634	-
Stage 2	-	-	-	-	-	-	611	604	-	679	658	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1203	-	-	1296	-	-	254	368	817	293	369	732
Mov Cap-2 Maneuver	-	-	-	-	-	-	254	368	-	293	369	-
Stage 1	-	-	-	-	-	-	722	673	-	653	624	-
Stage 2	-	-	-	-	-	-	470	595	-	580	644	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.4	18.8	19.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	254	413	1203	-	-	1296	-	-	293	401
HCM Lane V/C Ratio	0.223	0.219	0.018	-	-	0.015	-	-	0.251	0.358
HCM Control Delay (s)	23.2	16.1	8	0	-	7.8	-	-	21.4	18.9
HCM Lane LOS	C	C	A	A	-	A	-	-	C	C
HCM 95th %tile Q(veh)	0.8	0.8	0.1	-	-	0	-	-	1	1.6

Intersection	
Int Delay, s/veh	4.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	180	68	2	204	96	1
Future Vol, veh/h	180	68	2	204	96	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	50	50	83	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	217	136	4	246	192	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	353	0	539	285
Stage 1	-	-	-	-	285	-
Stage 2	-	-	-	-	254	-
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	-	-	1206	-	503	754
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	788	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1206	-	501	754
Mov Cap-2 Maneuver	-	-	-	-	501	-
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	785	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	503	-	-	1206	-
HCM Lane V/C Ratio	0.386	-	-	0.003	-
HCM Control Delay (s)	16.6	-	-	8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0	-

Intersection	
Int Delay, s/veh	7.3

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	60	8	15	1	3	61
Future Vol, veh/h	60	8	15	1	3	61
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	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	78	78	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	120	10	19	2	6	122

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	21	0	-	0	270	20
Stage 1	-	-	-	-	20	-
Stage 2	-	-	-	-	250	-
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	1595	-	-	-	719	1058
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	792	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1595	-	-	-	664	1058
Mov Cap-2 Maneuver	-	-	-	-	664	-
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	792	-

Approach	SE	NW	SW
HCM Control Delay, s	6.9	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1	SWLn2
Capacity (veh/h)	-	-	1595	-	664	1058
HCM Lane V/C Ratio	-	-	0.075	-	0.009	0.115
HCM Control Delay (s)	-	-	7.4	0	10.5	8.8
HCM Lane LOS	-	-	A	A	B	A
HCM 95th %tile Q(veh)	-	-	0.2	-	0	0.4

Intersection	
Intersection Delay, s/veh	4.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	290	376	147	218
Demand Flow Rate, veh/h	295	383	149	221
Vehicles Circulating, veh/h	218	153	324	343
Vehicles Exiting, veh/h	346	320	189	193
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.3	4.4	4.1	4.5
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	TR	LT	TR
RT Channelized								
Lane Util	0.471	0.529	0.470	0.530	0.470	0.530	0.471	0.529
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	139	156	180	203	70	79	104	117
Cap Entry Lane, veh/h	1105	1180	1173	1247	1002	1078	985	1061
Entry HV Adj Factor	0.979	0.984	0.981	0.981	0.984	0.983	0.983	0.986
Flow Entry, veh/h	136	153	177	199	69	78	102	115
Cap Entry, veh/h	1081	1161	1151	1223	986	1060	968	1046
V/C Ratio	0.126	0.132	0.154	0.163	0.070	0.073	0.106	0.110
Control Delay, s/veh	4.4	4.2	4.5	4.3	4.3	4.0	4.7	4.4
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	0	0	0	0