LSC TRANSPORTATION CONSULTANTS, INC.
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Rollin' Ridge Filing No. 1
Transportation Memorandum

(LSC #194950)
PCD File No. SF-19-022
January 17, 2020

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.

COLORADO LICENSED
JEFFREY C. HODSDON
31684
1-24-20
PROFESSIONAL ENGINEER

Developer's Statement

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

10-8-2020
Date

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January 17, 2020

TC & C, LLC
c/o Carl Turse
17572 Colonial Park Drive
Monument, CO 80132-2209

RE: Rollin' Ridge Filing No. 1
El Paso County, CO
Transportation Memorandum
LSC #194950

Dear Mr. Turse,

LSC Transportation Consultants, Inc. has prepared this transportation memorandum for the proposed Rollin' Ridge Filing No. 1 single-family residential development planned to be located southwest of the intersection of Hodgen Road/State Highway 83 in Colorado Springs, Colorado. One access to Hodgen Road, located approximately 900 feet west of State Highway (SH) 83 and across from Cherry Crossing Drive, is proposed for the site. No direct access to SH 83 is proposed. This report has been prepared for submittal to El Paso County.

A "master" traffic impact analysis report was prepared for the Rollin' Ridge PUD and Preliminary Plan. That report was dated March 18, 2019. This initial phase of development conforms to the PUD/Preliminary Plan.

REPORT CONTENTS

The preparation of this report included the following:

- An inventory of existing road and traffic conditions near the intersections of Hodgen Road with SH 83 and Cherry Crossing Drive adjacent to the site, including functional classification, traffic control signs, posted speed limits, intersection and access spacing, roadway and intersection alignments, and any auxiliary turn lanes;
- Weekday morning and late afternoon peak-hour turning movement traffic counts at the following intersections:
    - SH 83/Hodgen Road
    - Hodgen Road/Cherry Crossing Drive
- Proposed site land use and access location;

- Estimates of average weekday peak-hour trip generation for the proposed development, including the estimated directional distribution of site-generated vehicle-trips.
- Projected site-generated and resulting total traffic volumes;
- Intersection level of service analysis.
- Auxiliary right-/left-turn lane needs analysis based on the projected volumes and criteria in the El Paso County *Engineering Criteria Manual* (ECM).
- Findings and recommendations;
- A list of associated deviations associated with this submittal.

LAND USE AND ACCESS

Figure 1 shows the site location relative to the adjacent and nearby roadways. Rollin' Ridge Filing 1 is planned to contain 16 lots for single-family homes. The site plan is attached for reference.

Access to Hodgen Road is proposed via a full-movement access located approximately 900 feet west of SH 83 (centerline spacing) and across from Cherry Crossing Drive.
Centerline access spacing along the proposed Cherry Crossing Drive extended south of Hodgen is 360 feet between Hodgen and Prayer Tree Trail.

ROAD AND TRAFFIC CONDITIONS

Area Roads and Streets

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

State Highway (SH) 83 extends from Colorado Springs north to Parker and areas of southeast Denver. In the vicinity of the site, SH 83 is classified as a Regional Highway (R-A). At this location, SH 83 is a two-lane rural highway with two- to four-foot shoulders and a speed limit of 60 miles per hour (mph). The intersection with Hodgen Road is signalized. Per the El Paso County 2040 *Major Transportation Corridors Plan (MTCP)*, SH 83 is projected to be expanded from a two-lane highway to a four-lane highway by 2040. Additionally, the southbound approach is projected to have a dual left-turn lane and an exclusive right-turn lane by 2040. El Paso County's *2060 MTCP* also shows SH 83 as a future six-lane Principal Arterial. This is a CDOT roadway and the requirement for right-of-way dedication will be determined by CDOT.

Hodgen Road is a two-lane paved Rural Principal Arterial that extends west from SH 83 to Roller Coaster Road, where it continues west as Baptist Road. Hodgen also extends east from the intersection of Roller Coaster Road/Baptist Road to Eastonville Road (as a Minor Arterial). The speed limit on Hodgen Road is 40 mph adjacent to the site. El Paso County's *2060 MTCP* shows Hodgen Road as a four-lane Rural Principal Arterial (180 feet of right-of-way per the ECM).

Cherry Crossing Drive, which extends north from Hodgen Road, is a north/south, two-lane local road with a posted speed limit of 30 mph. Cherry Crossing Drive would be extended south of Hodgen Road with this development. Currently a T-intersection, the intersection of Cherry Crossing Drive/Hodgen Road will be converted to a full-movement, two-way stop sign-controlled intersection with this project. The extension of Cherry Crossing Drive south of Hodgen is classified as a Rural Minor Arterial road between Hodgen Road and the south commercial access point and a Rural Local road south of the south commercial access point.

Traffic Volumes

Figure 3,shows the existing/baseline traffic volumes. This figure has been taken from the recently completed "master" study prepared for the PUD/Preliminary Plan. Raw count volume data are attached for reference.

Sight Distance

The following analysis was included in the "master" study prepared for the PUD/Preliminary Plan. Field-measured sight distance to the west from the proposed site access along Hodgen Road is 695 feet, which meets the minimum required 360 feet of stopping sight distance on a 45-mph (design speed/40-mph posted speed) two-lane roadway prescribed in Table 2-17 of the *ECM*.

The required intersection sight distance for passenger vehicles is 500 feet. This distance is met. The required intersection sight distance for trucks is 775 feet. However, given the driver's eye for trucks is significantly higher than for passenger cars, this distance requirement is also met.

The sight distance to the east extends about 950 feet to the east side of the intersection of Hodgen and SH 83.

TRIP GENERATION

Estimates of the vehicle-trips projected to be generated by the proposed residential development have been made using the nationally-published trip generation rates for land use "210 – Single-Family (Detached) Housing" from *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE).

Table 1, below, presents a summary of the estimated Filing No. 1 site trip generation. The detailed trip generation estimate for the development, including ITE rates for the proposed land use, is presented in Table 3 (attached).

Table 1: Summary of Estimated Peak-Hour Vehicle-Trips Generated

Analysis Period	Weekday Peak-Hour Trips		
	In	Out	Total
A.M. Peak Hour (Driveway Trips)	4	12	16
P.M. Peak Hour (Driveway Trips)	11	6	17

The proposed residential development (Filing 1 only) is projected to generate about 193 total vehicle-trips on the average weekday during a 24-hour period. During the morning peak hour, approximately 4 vehicles would enter and 12 vehicles would exit the site. During the evening peak hour, approximately 11 vehicles would enter and 6 vehicles would exit the site.

TRIP DISTRIBUTION AND ASSIGNMENT

Trip Directional Distribution

An estimate of the directional distribution of Filing No. 1 site-generated vehicle-trips to the study area roads and intersections is a necessary component in determining the site's traffic impacts. Figure 4 shows the directional distribution estimate for the site-generated trips. The figure shows the percentages of the site-generated vehicle-trips projected to be oriented to and from the site's major approaches. This distribution estimate is from the "master" study prepared for the PUD/Preliminary Plan .

Site-Generated Traffic

Site-generated traffic volumes at the intersection of Hodgen/Cherry Crossing Drive and the intersection of SH 83/Hodgen have been calculated by applying the directional distribution percentages from Figure 4 to the trip generation estimates (from Table 1). Figure 5 shows the projected site-generated traffic volumes for the weekday morning and evening peak hours.

FUTURE TRAFFIC VOLUMES

Existing Plus Site-Generated Traffic

Figure 6 shows the sum of the existing background traffic volumes (from Figure 3) and site-generated peak-hour traffic volumes (shown in Figure 5). These volumes represent the projected

short-term total traffic following residential site buildout (Filing 1 only). Lane geometry and traffic control at the Hodgen/Cherry Crossing Drive intersection are also shown in this figure.

Long-Term Background and Total Traffic (2040)

Long-term traffic is addressed in the "master" Preliminary Plan/PUD TIS report dated March 18, 2019. Please refer to this report for details.

LEVEL OF SERVICE ANALYSIS

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

Table 2 shows the level of service delay ranges for signalized and unsignalized intersections.

Table 2: Intersection Levels of Service Delay Ranges

Level of Service	Signalized Intersections	Unsignalized Intersections
	Average Control Delay (seconds per vehicle)	Average Control Delay (seconds per vehicle)[1]
A	≤ 10.0	≤ 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

[1] For unsignalized intersections, if V/C is > 1.00, then LOS is LOS F regardless of the projected average control delay per vehicle

The Cherry Crossing Drive/Hodgen Road and the SH 83/Hodgen intersections have been analyzed to determine the projected control delay and corresponding levels of service and for the key intersection approaches (or for specific individual turning movements as applicable). As the proposed site access (Cherry Crossing Drive) intersection with Hodgen Road will be two-way stop sign-controlled (TWSC), traffic on the northbound and southbound approaches incur delay given the stop sign control. The major street left-turn movements also incur delay.

<u>Cherry Crossing Drive/Hodgen Road</u>

All turning movements at this intersection are projected to operate at LOS B or better for all short-term morning and late-afternoon peak-hour traffic conditions.

State Highway 83/Hodgen Road

All turning movements at this intersection are projected operate at LOS B or better in the short during both the weekday and late-afternoon morning peak hour.

CONCLUSIONS AND RECOMMENDATIONS

- The 16 residential dwelling units in Filing No. 1 are projected to generate about 193 vehicle-trips on the average weekday.

- Approximately 4 vehicles would enter the site during the weekday morning peak hour, while 12 vehicles are projected to exit. During the weekday evening peak hour of adjacent street traffic, 11 vehicles would enter the site while 6 vehicles would exit.

- The Colorado Department of Transportation (CDOT) indicated during the PUD/Preliminary Plan process that an Access Permit would not be required for the Filing 1 development only. No state highway intersection improvements to the SH 83/Hodgen intersection identified in the PUD/Preliminary Plan "master" TIS would be required with Filing 1 only.

- All approaches at the site access intersection with Hodgen Road and at the intersection of SH 83/Hodgen will operate at LOS B or better during the short term during the weekday morning peak hour and evening peak hour following the addition of this Filing No. 1 development.

- **Signing and Striping Plan**: Please refer to the attached Filing 1 Preliminary Signage and Pavement Marking Plan (Exhibit 1) for detailed signing and striping recommendations. The plan includes the recommended restriping for the westbound left turn lane on Hodgen Road at Cherry Crossing Drive. The plan also shows striping for Cherry Crossing Drive between Hodgen Road and Prayer Tree Court. The applicant will also install the striping on this segment of roadway with Filing No. 1.

- **Auxiliary Turn Lanes**
  - The addition of an eastbound right-turn lane on Hodgen Road approaching the proposed site access (Cherry Crossing Drive) is **not** required for this Filing 1 development, as noted on the Filing 1 Preliminary Signage and Pavement Marking Plan (Exhibit 1).
  - An exclusive westbound left-turn lane is prescribed by the ECM at the intersection of Hodgen Road/Cherry Crossing Drive. The painted center median on Hodgen Road will need to be restriped to remove the existing striping configuration while providing for this left-turn lane. This turn lane would be back-to-back with the eastbound left-turn lane at the Hodgen/SH 83 intersection. Please refer to the attached Filing 1 Preliminary Signage and Pavement Marking Plan (Exhibit 1) for details, as well as the approved associated deviations.

- **Roadway Classification**: Cherry Crossing Drive south of Hodgen Road will be classified as a Rural Minor Arterial roadway adjacent to the commercial site. The projected buildout ADT is 4,980 vehicles per day. Please refer to the attached lane exhibit. A deviation was approved with the PUD/Preliminary Plan for modified standard cross-sectional elements. This applies to the section of roadway from Hodgen Road south to the southernmost commercial site access. Proposed elements include:
  - Right- and left-turn bays would be included, where needed for the future commercial development in addition to the two 12-foot-wide through lanes, to accommodate the projected higher-than-Collector-standard traffic volumes.
  - One-hundred-foot right-of way north of the south commercial access tapering to a 60-foot right-of-way south of the south commercial access point (with additional public improvement easements).
  - An intersection spacing of 360 feet between Hodgen Road and the Cherry Crossing Drive/Prayer Tree Trail/Proposed North Commercial Site Access intersection has been approved where Rural Minor Arterial intersection spacing is one quarter mile—this is included in the approved deviation.
  - Note: Cherry Crossing Drive between Hodgen Road and the south commercial access will need a pavement section/design based on the Rural Minor Arterial criteria.
  - All other streets would be classified as Rural Local.

- **Deviation Requests:** The following deviations were approved with the PUD/Preliminary Plan:
  - Deviation No. 1 - Cherry Crossing Drive – Rural Minor Arterial design standards by functional classification. Deviation No. 2 - Cherry Crossing Drive – Intersection Spacing along a Rural Minor Arterial.
  - Deviation No. 3 - Cherry Crossing Drive – Length of the northbound right-turn lane at the Hodgen/Cherry Crossing Drive intersection.
  - Deviation No. 4 - Hodgen Road at the Hodgen/Cherry Crossing Drive intersection – The proposed westbound left-turn lane and taper lengths.
  - Deviation No. 5 - Hodgen Road – Intersection spacing along a Rural Principal Arterial.

- **MTCP-Identified Roadway Improvement Projects**: According to El Paso County's 2016 *Major Transportation Corridors Plan Update* (MTCP), Hodgen has been identified as Project ID U-9. Hodgen Road is planned to be improved from a two-lane Rural Unimproved County Road to a two-lane Minor Arterial between Roller Coaster Road and State Highway 83 by 2040. However, these improvements are **not** required on Hodgen as part of this project. As such, the applicant does **not** need to be reimbursed by the fee program for a full roadway upgrade since no roadway segment improvements are required on Hodgen Road . The applicant will dedicate ROW. MTCP project SH6 is for an upgrade to SH 83 south of Hodgen to a four-lane Principal Arterial. No MTCP-eligible improvements on SH 83 would be required with Filing 1.

Road Impact Fee Program: This project will be required to participate in the El Paso County Road Improvement Fee Program. The applicant intends to join the ten-mil PID. The ten-mil PID building permit fee portion associated with this option is $1,221 per single-family dwelling unit. The total building permit fee would be $19,536 for the 16 lots.

- **Pavement Design Requirement**: The County has indicated that Cherry Crossing Drive, between Hodgen Road and the south commercial access, will need a pavement section/design based on the Rural Minor Arterial criteria.

- **Bicycle and Pedestrian Facilities**: The site is in rural El Paso County and the subdivision roadways will be rural, so sidewalks are **not** required. A wider paved shoulder is being constructed on Cherry Crossing Drive south of Hodgen, which will provide for better pedestrian and bicycle access. Also, cyclists may make use of the paved shoulders on Hodgen Road and SH 83.

- **Multimodal Transportation & TDM Opportunities:** No public transportation services are currently available or planned within the vicinity of the site.

* * * * *

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

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH:JAB

Enclosures: Table 3
Figure 1 – Figure 6
Lane Exhibits: Hodgen Road turn lane and Cherry Crossing Drive Entry Detail
Traffic Count Reports
Synchro LOS Reports

Table 3: Trip Generation Estimate

ITE		Value	Units [2]	Trip Generation Rates [1]					Driveway Trips Generated				
				Average	A.M.		P.M.		Average	A.M.		P.M.	
Code	Description			Weekday	In	Out	In	Out	Weekday	In	Out	In	Out
210	Single-Family Detached Housing	16	DU	12.04	0.25	0.76	0.69	0.40	193	4	12	11	6

[1] Source: *Trip Generation* , 10th Edition, 2017 by the Institute of Transportation Engineers (ITE)

[2] DU = dwelling units

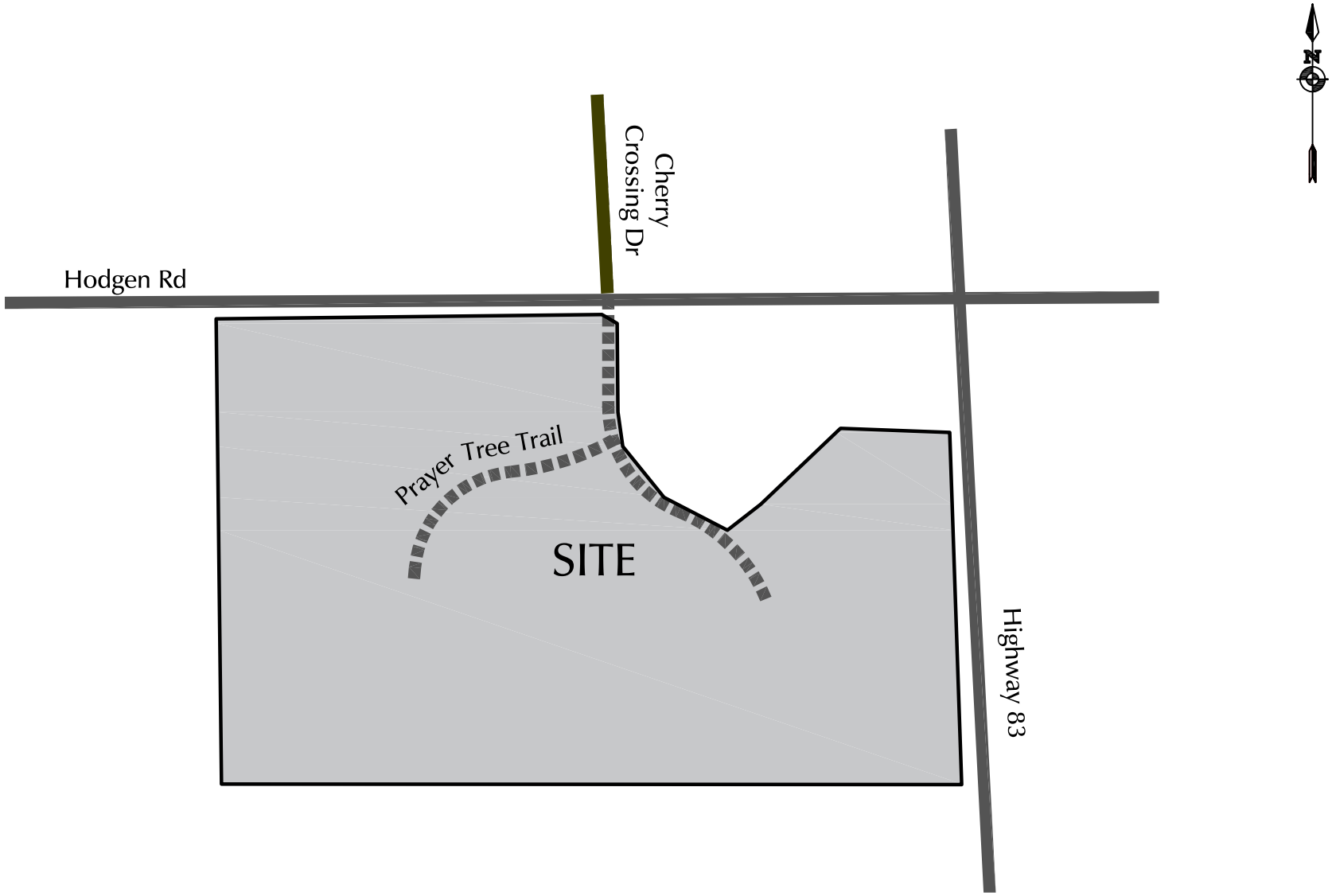
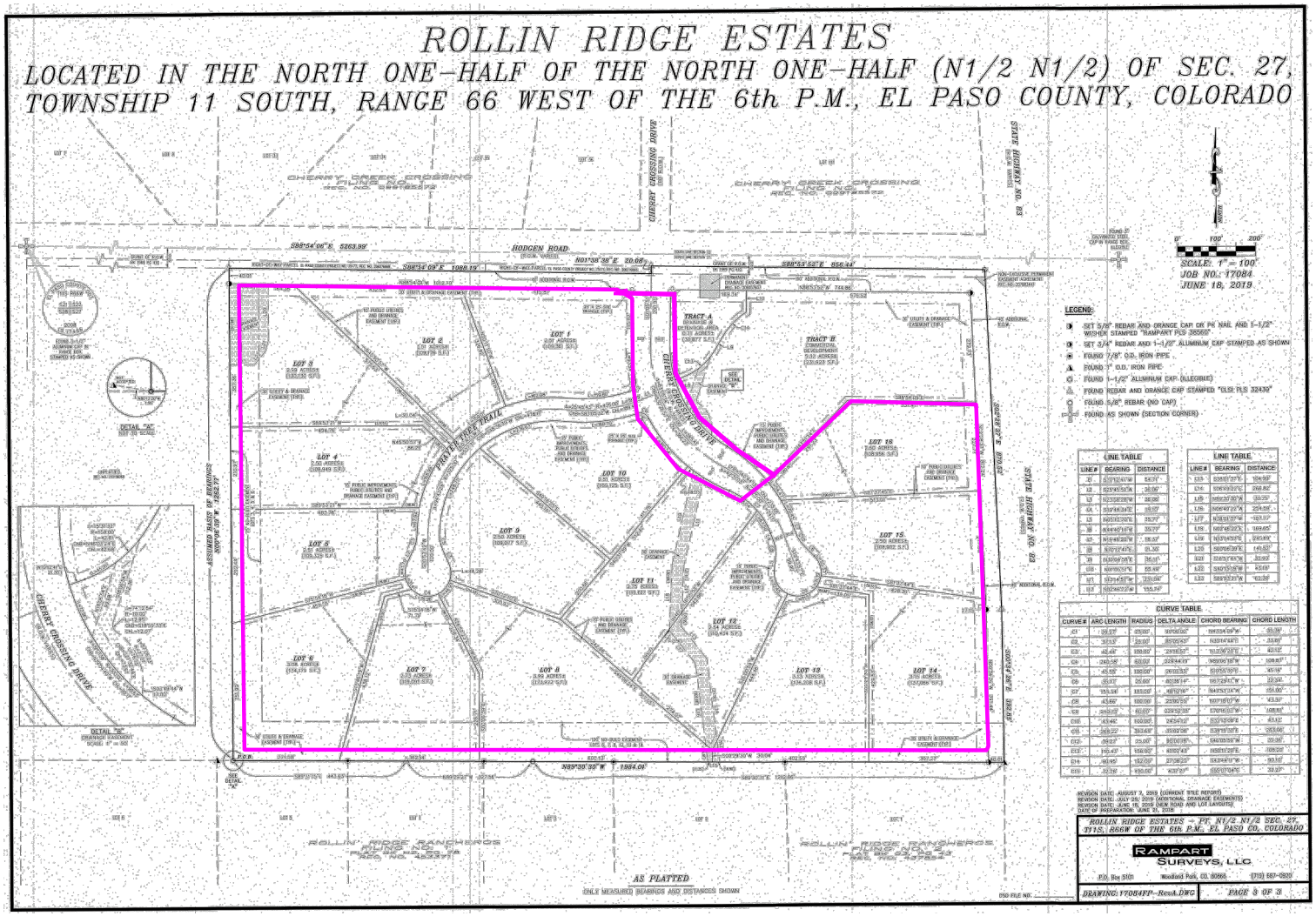


Figure 1

Vicinity Map

Rollin Ridge Estates - Filing 1 (LSC #194950)

LSC TRANSPORTATION CONSULTANTS, INC.



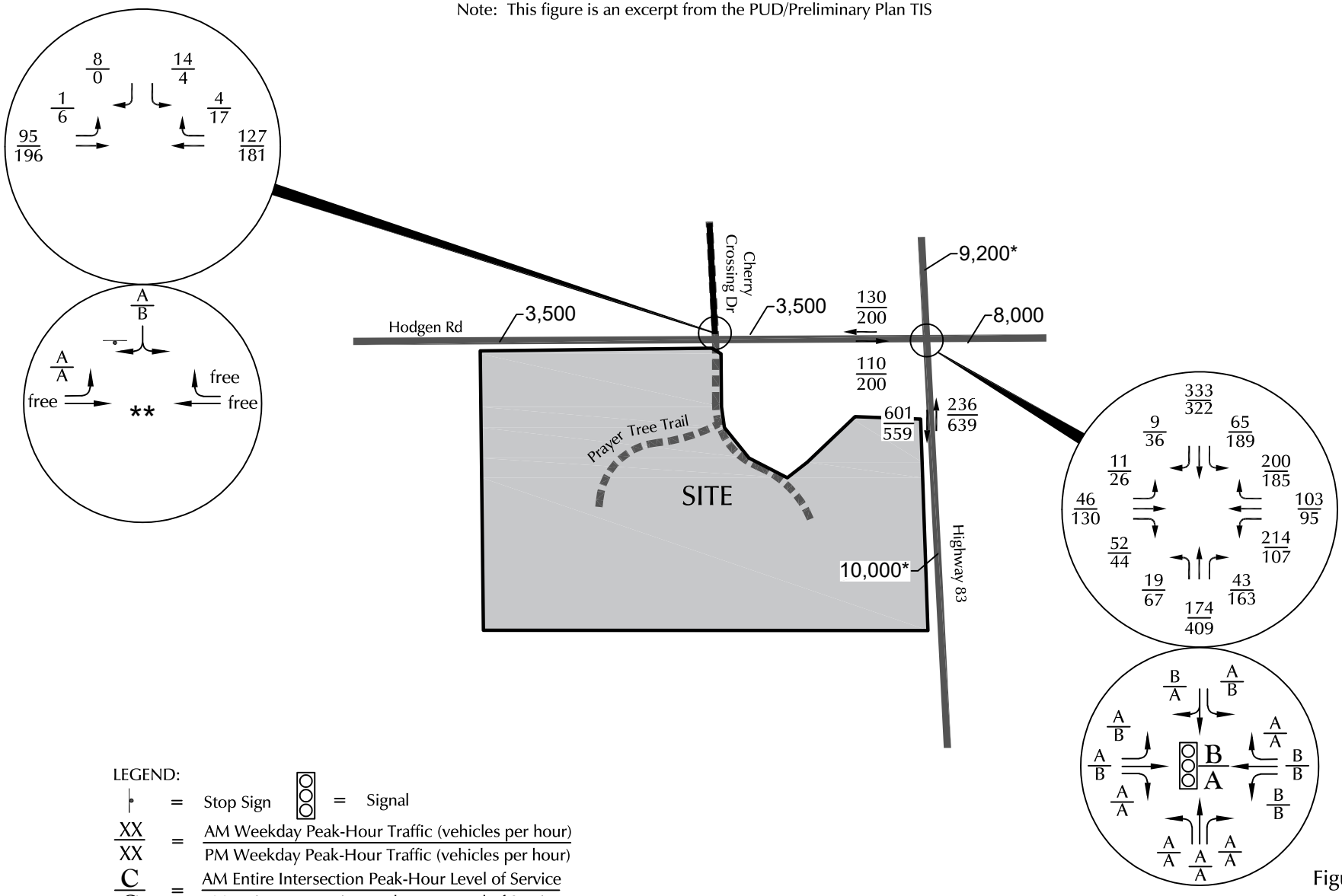
Filing 1 development site boundary

Figure 2

Site Plan

Rollin Ridge Estates - Filing 1 (LSC #194950)

Note: This figure is an excerpt from the PUD/Preliminary Plan TIS



LEGEND:

= Stop Sign = Signal

XX/XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

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

Based on counts by LSC (June 2017)

Estimates by LSC unless otherwise noted

* CDOT 2016 AADT

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 3

Existing Traffic, Lane Geometry, Traffic Control and Level of Service

Rollin Ridge Estates - Filing 1 (LSC #194950)

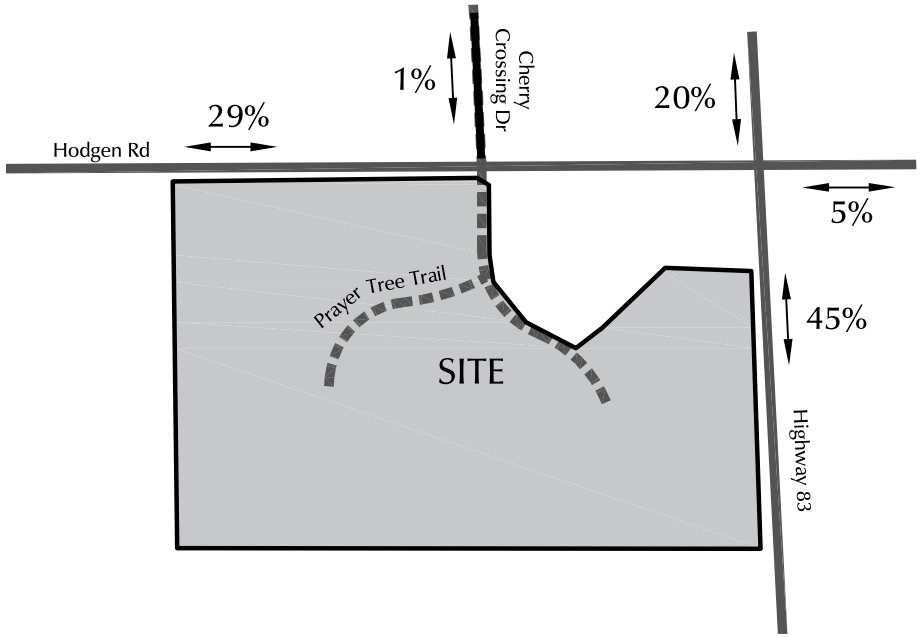


Figure 4

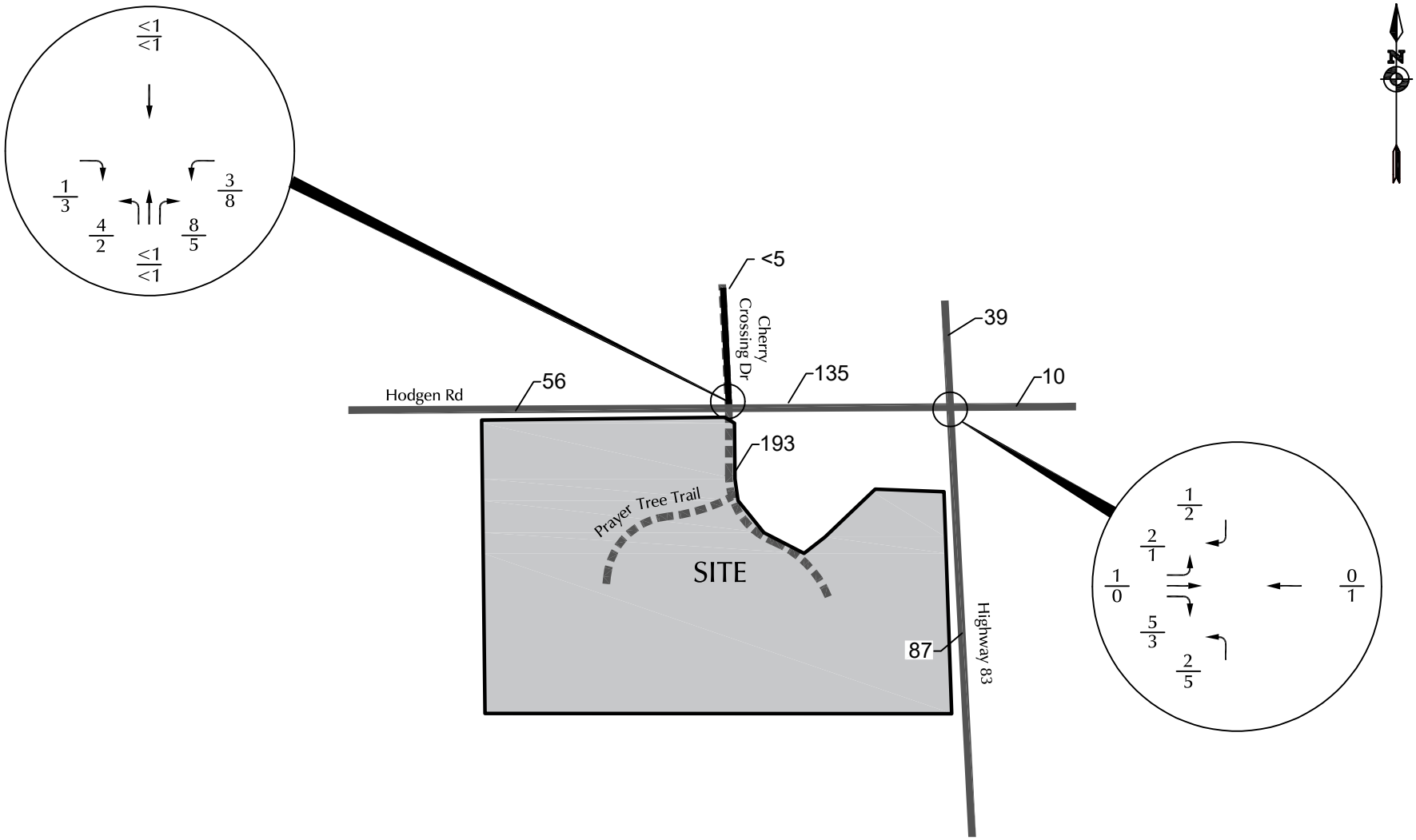
Directional Distribution of Site-Generated Traffic

Rollin Ridge Estates - Filing 1 (LSC #194950)

LSC TRANSPORTATION CONSULTANTS, INC.

LEGEND:

XX% = Primary Percent Directional Distribution (Residential)



LEGEND:

| = Stop Sign

XX / XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

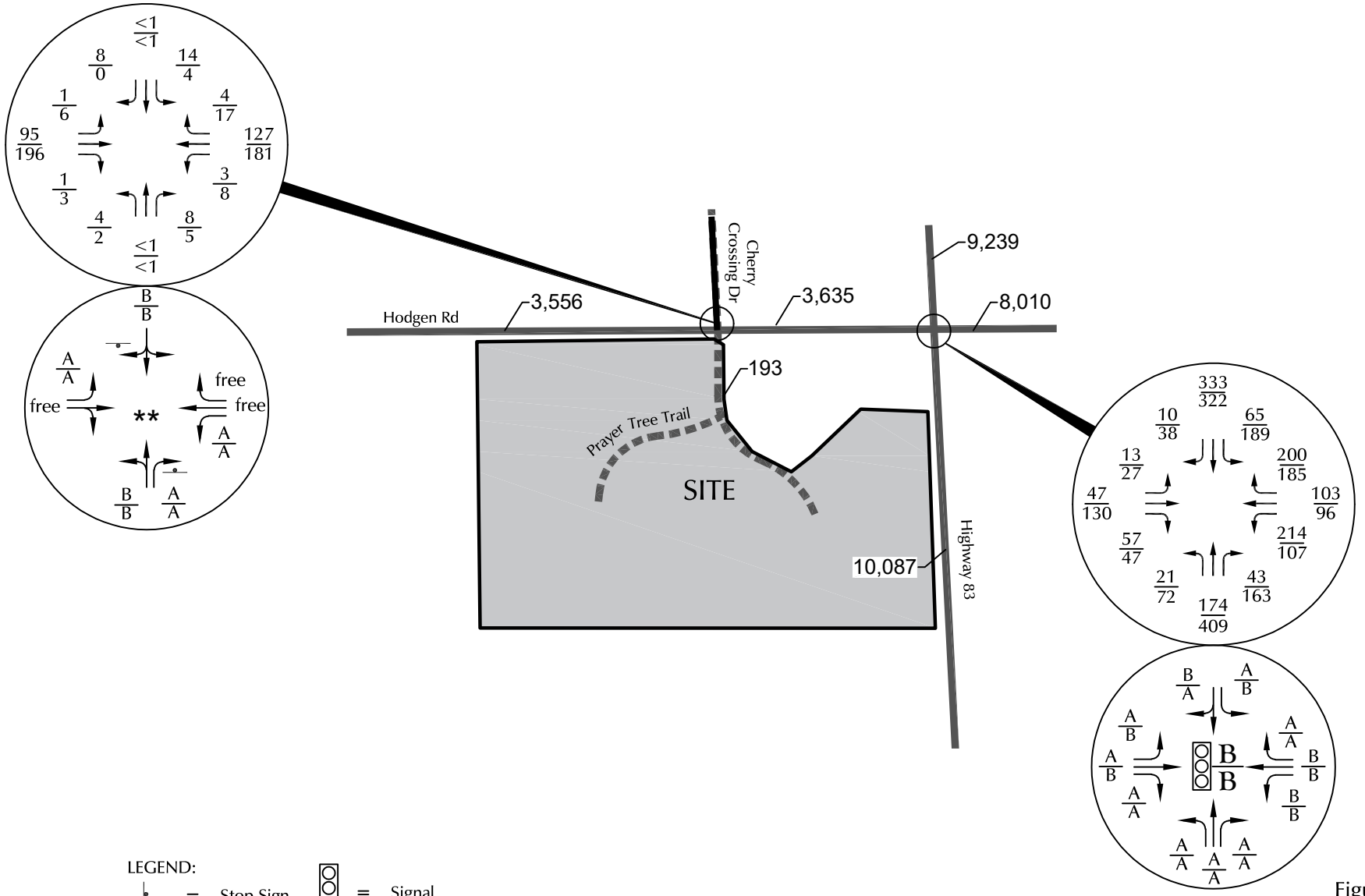
X,XXX = Average Daily Traffic (vehicles per day)

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 5

Assignment of Site-Generated Traffic

Rollin Ridge Estates - Filing 1 (LSC #194950)



LEGEND:

	=	Stop Sign	=	Signal
XX/XX	=	AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)		
C/C	=	AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service		
X,XXX	=	Average Daily Traffic (vehicles per day)		

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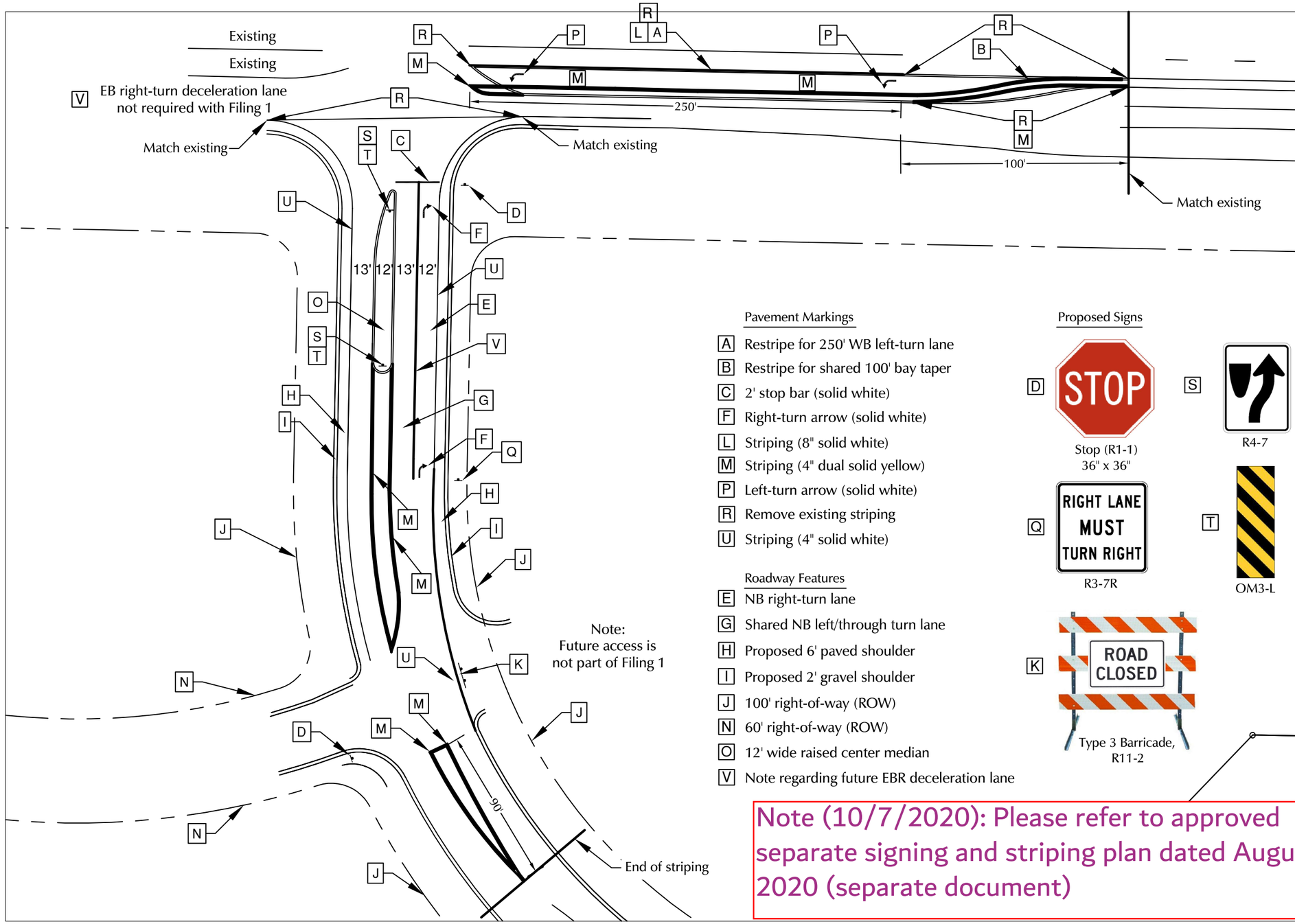
Figure 6

Existing + Site-Generated Traffic, Lane Geometry, Traffic Control and LOS

Rollin Ridge Estates - Filing 1 (LSC #194950)



1" = 60'

Note (10/7/2020): Please refer to approved separate signing and striping plan dated August 28, 2020 (separate document)

Exhibit 1

Filing 1 Preliminary Signage and Pavement Marking Plan

Rollin' Ridge Estates Filing 1 (LSC #194950)

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	95	127	4	14	8
Future Vol, veh/h	1	95	127	4	14	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	575	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	87	87	61	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	128	146	5	23	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	151	0	-	0	276	146
Stage 1	-	-	-	-	146	-
Stage 2	-	-	-	-	130	-
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	1430	-	-	-	714	901
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	896	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1430	-	-	-	713	901
Mov Cap-2 Maneuver	-	-	-	-	713	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	896	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1430	-	-	-	772
HCM Lane V/C Ratio	0.001	-	-	-	0.047
HCM Control Delay (s)	7.5	-	-	-	9.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

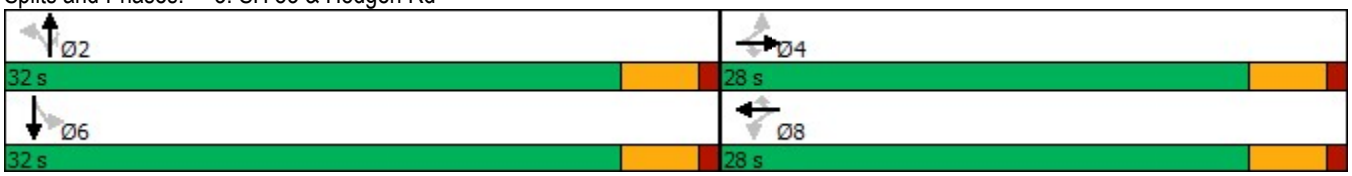
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	46	52	214	103	200	19	174	43	65	333	9
Future Volume (vph)	11	46	52	214	103	200	19	174	43	65	333	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		450	400		400	200		900	650		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. 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
Frt			0.850			0.850			0.850		0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1855	0
Flt Permitted	0.681			0.717			0.421			0.631		
Satd. Flow (perm)	1269	1863	1583	1336	1863	1583	784	1863	1583	1175	1855	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			70			230			50		3	
Link Speed (mph)		40			40			60			60	
Link Distance (ft)		843			1794			2113			2252	
Travel Time (s)		14.4			30.6			24.0			25.6	
Peak Hour Factor	0.74	0.74	0.74	0.87	0.87	0.87	0.86	0.86	0.86	0.79	0.79	0.79
Adj. Flow (vph)	15	62	70	246	118	230	22	202	50	82	422	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	62	70	246	118	230	22	202	50	82	433	0
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			12			12	
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	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
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	20	6	20	20	6	20	20	6	
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	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	28.0	28.0	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0	32.0	
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%	53.3%	
Maximum Green (s)	23.5	23.5	23.5	23.5	23.5	23.5	27.5	27.5	27.5	27.5	27.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
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	None	None	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	
Act Effct Green (s)	13.4	13.4	13.4	13.4	13.4	13.4	14.7	14.7	14.7	14.7	14.7	
Actuated g/C Ratio	0.35	0.35	0.35	0.35	0.35	0.35	0.39	0.39	0.39	0.39	0.39	
v/c Ratio	0.03	0.09	0.12	0.52	0.18	0.33	0.07	0.28	0.08	0.18	0.60	
Control Delay	9.5	9.6	3.8	15.1	10.1	3.3	9.4	9.9	3.8	9.8	13.9	
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	9.5	9.6	3.8	15.1	10.1	3.3	9.4	9.9	3.8	9.8	13.9	
LOS	A	A	A	B	B	A	A	A	A	A	B	
Approach Delay		6.8			9.6			8.8			13.3	
Approach LOS		A			A			A			B	
90th %ile Green (s)	23.5	23.5	23.5	23.5	23.5	23.5	24.8	24.8	24.8	24.8	24.8	
90th %ile Term Code	Hold	Hold	Hold	Max	Max	Max	Hold	Hold	Hold	Gap	Gap	
70th %ile Green (s)	16.9	16.9	16.9	16.9	16.9	16.9	18.3	18.3	18.3	18.3	18.3	
70th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Hold	Hold	Hold	Gap	Gap	
50th %ile Green (s)	12.7	12.7	12.7	12.7	12.7	12.7	13.6	13.6	13.6	13.6	13.6	
50th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Hold	Hold	Hold	Gap	Gap	
30th %ile Green (s)	9.4	9.4	9.4	9.4	9.4	9.4	10.7	10.7	10.7	10.7	10.7	
30th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Hold	Hold	Hold	Gap	Gap	
10th %ile Green (s)	7.0	7.0	7.0	7.0	7.0	7.0	8.2	8.2	8.2	8.2	8.2	
10th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Hold	Hold	Hold	Gap	Gap	

Intersection Summary	
Area Type: Other	
Cycle Length: 60	
Actuated Cycle Length: 38	
Natural Cycle: 45	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 10.4	Intersection LOS: B
Intersection Capacity Utilization 52.0%	ICU Level of Service A
Analysis Period (min) 15	
90th %ile Actuated Cycle: 57.3	

70th %ile Actuated Cycle: 44.2
50th %ile Actuated Cycle: 35.3
30th %ile Actuated Cycle: 29.1
10th %ile Actuated Cycle: 24.2

Splits and Phases: 3: SH 83 & Hodgen Rd



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	196	181	17	4	0
Future Vol, veh/h	6	196	181	17	4	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	575	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	76	76	85	85	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	258	213	20	8	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	233	0	-	0	487	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	274	-
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	1335	-	-	-	540	827
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	772	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1335	-	-	-	537	827
Mov Cap-2 Maneuver	-	-	-	-	537	-
Stage 1	-	-	-	-	818	-
Stage 2	-	-	-	-	772	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.8
HCM LOS			B

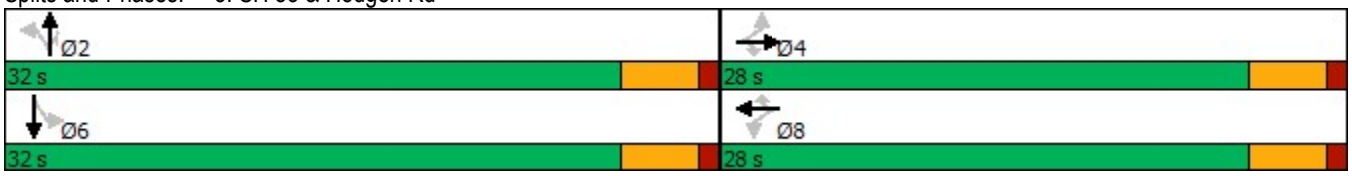
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1335	-	-	-	537
HCM Lane V/C Ratio	0.006	-	-	-	0.015
HCM Control Delay (s)	7.7	-	-	-	11.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	130	44	107	95	185	67	409	163	189	322	36
Future Volume (vph)	26	130	44	107	95	185	67	409	163	189	322	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		450	400		400	200		900	650		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. 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
Frt			0.850			0.850			0.850		0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1835	0
Flt Permitted	0.685			0.649			0.515			0.467		
Satd. Flow (perm)	1276	1863	1583	1209	1863	1583	959	1863	1583	870	1835	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			58			218			181		12	
Link Speed (mph)		40			40			60			60	
Link Distance (ft)		843			1794			2113			2252	
Travel Time (s)		14.4			30.6			24.0			25.6	
Peak Hour Factor	0.76	0.76	0.76	0.85	0.85	0.85	0.90	0.90	0.90	0.89	0.89	0.89
Adj. Flow (vph)	34	171	58	126	112	218	74	454	181	212	362	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	171	58	126	112	218	74	454	181	212	402	0
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			12			12	
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	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
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	20	6	20	20	6	20	20	6	
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	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	28.0	28.0	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0	32.0	
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%	53.3%	
Maximum Green (s)	23.5	23.5	23.5	23.5	23.5	23.5	27.5	27.5	27.5	27.5	27.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
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	None	None	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	
Act Effct Green (s)	11.2	11.2	11.2	11.1	11.1	11.1	20.2	20.2	20.2	20.2	20.2	
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32	0.32	0.58	0.58	0.58	0.58	0.58	
v/c Ratio	0.08	0.29	0.11	0.33	0.19	0.33	0.13	0.42	0.18	0.42	0.37	
Control Delay	12.5	13.5	5.1	15.2	12.8	4.2	7.0	8.3	1.9	10.6	7.7	
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	12.5	13.5	5.1	15.2	12.8	4.2	7.0	8.3	1.9	10.6	7.7	
LOS	B	B	A	B	B	A	A	A	A	B	A	
Approach Delay		11.5			9.3			6.6			8.7	
Approach LOS		B			A			A			A	

Intersection Summary	
Area Type: Other	
Cycle Length: 60	
Actuated Cycle Length: 34.7	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 8.5	Intersection LOS: A
Intersection Capacity Utilization 59.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: SH 83 & Hodgen Rd



Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	95	1	3	127	4	4	0	8	14	0	8
Future Vol, veh/h	1	95	1	3	127	4	4	0	8	14	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	575	-	-	150	-	0	-	-	105	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	87	87	87	92	92	92	61	61	61
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	128	1	3	146	5	4	0	9	23	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	151	0	0	129	0	0	292	288	129	287	283	146
Stage 1	-	-	-	-	-	-	131	131	-	152	152	-
Stage 2	-	-	-	-	-	-	161	157	-	135	131	-
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	1430	-	-	1457	-	-	660	622	921	665	626	901
Stage 1	-	-	-	-	-	-	873	788	-	850	772	-
Stage 2	-	-	-	-	-	-	841	768	-	868	788	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1430	-	-	1457	-	-	649	620	921	657	624	901
Mov Cap-2 Maneuver	-	-	-	-	-	-	649	620	-	657	624	-
Stage 1	-	-	-	-	-	-	872	787	-	849	770	-
Stage 2	-	-	-	-	-	-	827	766	-	859	787	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	9.5	10.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	649	921	1430	-	-	1457	-	-	729
HCM Lane V/C Ratio	0.007	0.009	0.001	-	-	0.002	-	-	0.049
HCM Control Delay (s)	10.6	8.9	7.5	-	-	7.5	-	-	10.2
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	0	-	-	0	-	-	0.2

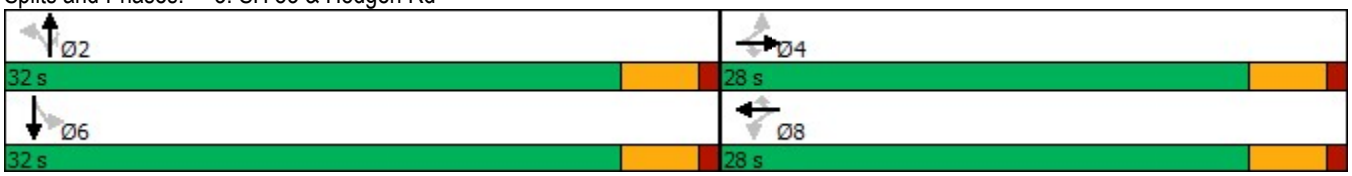
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	47	57	214	103	214	21	174	43	65	333	10
Future Volume (vph)	13	47	57	214	103	214	21	174	43	65	333	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		450	400		400	200		900	650		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. 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
Frt			0.850			0.850			0.850		0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1855	0
Flt Permitted	0.681			0.715			0.419			0.631		
Satd. Flow (perm)	1269	1863	1583	1332	1863	1583	780	1863	1583	1175	1855	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			77			246			50		3	
Link Speed (mph)		40			40			60			60	
Link Distance (ft)		843			1794			2113			2252	
Travel Time (s)		14.4			30.6			24.0			25.6	
Peak Hour Factor	0.74	0.74	0.74	0.87	0.87	0.87	0.86	0.86	0.86	0.79	0.79	0.79
Adj. Flow (vph)	18	64	77	246	118	246	24	202	50	82	422	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	64	77	246	118	246	24	202	50	82	435	0
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			12			12	
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	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
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	20	6	20	20	6	20	20	6	
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	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	28.0	28.0	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0	32.0	
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%	53.3%	
Maximum Green (s)	23.5	23.5	23.5	23.5	23.5	23.5	27.5	27.5	27.5	27.5	27.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
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	None	None	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	
Act Effct Green (s)	13.4	13.4	13.4	13.4	13.4	13.4	14.8	14.8	14.8	14.8	14.8	
Actuated g/C Ratio	0.35	0.35	0.35	0.35	0.35	0.35	0.39	0.39	0.39	0.39	0.39	
v/c Ratio	0.04	0.10	0.13	0.52	0.18	0.34	0.08	0.28	0.08	0.18	0.60	
Control Delay	9.6	9.6	3.7	15.2	10.1	3.4	9.5	9.9	3.8	9.8	14.0	
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	9.6	9.6	3.7	15.2	10.1	3.4	9.5	9.9	3.8	9.8	14.0	
LOS	A	A	A	B	B	A	A	A	A	A	B	
Approach Delay		6.8			9.4			8.8			13.3	
Approach LOS		A			A			A			B	
90th %ile Green (s)	23.5	23.5	23.5	23.5	23.5	23.5	24.9	24.9	24.9	24.9	24.9	
90th %ile Term Code	Hold	Hold	Hold	Max	Max	Max	Hold	Hold	Hold	Gap	Gap	
70th %ile Green (s)	17.0	17.0	17.0	17.0	17.0	17.0	18.4	18.4	18.4	18.4	18.4	
70th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Hold	Hold	Hold	Gap	Gap	
50th %ile Green (s)	12.7	12.7	12.7	12.7	12.7	12.7	13.6	13.6	13.6	13.6	13.6	
50th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Hold	Hold	Hold	Gap	Gap	
30th %ile Green (s)	9.4	9.4	9.4	9.4	9.4	9.4	10.8	10.8	10.8	10.8	10.8	
30th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Hold	Hold	Hold	Gap	Gap	
10th %ile Green (s)	7.0	7.0	7.0	7.0	7.0	7.0	8.2	8.2	8.2	8.2	8.2	
10th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Hold	Hold	Hold	Gap	Gap	

Intersection Summary	
Area Type: Other	
Cycle Length: 60	
Actuated Cycle Length: 38.1	
Natural Cycle: 45	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 10.3	Intersection LOS: B
Intersection Capacity Utilization 52.1%	ICU Level of Service A
Analysis Period (min) 15	
90th %ile Actuated Cycle: 57.4	

70th %ile Actuated Cycle: 44.4
50th %ile Actuated Cycle: 35.3
30th %ile Actuated Cycle: 29.2
10th %ile Actuated Cycle: 24.2

Splits and Phases: 3: SH 83 & Hodgen Rd



Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	196	3	8	181	17	2	0	5	4	0	0
Future Vol, veh/h	6	196	3	8	181	17	2	0	5	4	0	0
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	575	-	-	150	-	0	-	-	105	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	85	85	85	92	92	95	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	258	4	9	213	20	2	0	5	8	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	233	0	0	262	0	0	517	527	260	510	509	213
Stage 1	-	-	-	-	-	-	276	276	-	231	231	-
Stage 2	-	-	-	-	-	-	241	251	-	279	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	1335	-	-	1302	-	-	469	456	779	474	467	827
Stage 1	-	-	-	-	-	-	730	682	-	772	713	-
Stage 2	-	-	-	-	-	-	762	699	-	728	680	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1335	-	-	1302	-	-	464	450	779	466	461	827
Mov Cap-2 Maneuver	-	-	-	-	-	-	464	450	-	466	461	-
Stage 1	-	-	-	-	-	-	726	678	-	767	708	-
Stage 2	-	-	-	-	-	-	757	694	-	719	676	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	10.6	12.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	464	779	1335	-	-	1302	-	-	466
HCM Lane V/C Ratio	0.005	0.007	0.006	-	-	0.007	-	-	0.017
HCM Control Delay (s)	12.8	9.7	7.7	-	-	7.8	-	-	12.9
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	0	-	-	0	-	-	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	130	47	107	96	185	72	409	163	189	322	38
Future Volume (vph)	27	130	47	107	96	185	72	409	163	189	322	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		450	400		400	200		900	650		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. 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
Frt			0.850			0.850			0.850		0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1833	0
Flt Permitted	0.684			0.649			0.512			0.467		
Satd. Flow (perm)	1274	1863	1583	1209	1863	1583	954	1863	1583	870	1833	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			62			218			181		13	
Link Speed (mph)		40			40			60			60	
Link Distance (ft)		843			1794			2113			2252	
Travel Time (s)		14.4			30.6			24.0			25.6	
Peak Hour Factor	0.76	0.76	0.76	0.85	0.85	0.85	0.90	0.90	0.90	0.89	0.89	0.89
Adj. Flow (vph)	36	171	62	126	113	218	80	454	181	212	362	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	171	62	126	113	218	80	454	181	212	405	0
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			12			12	
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	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
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	20	6	20	20	6	20	20	6	
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	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	28.0	28.0	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0	32.0	
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%	53.3%	
Maximum Green (s)	23.5	23.5	23.5	23.5	23.5	23.5	27.5	27.5	27.5	27.5	27.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
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	None	None	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	
Act Effct Green (s)	11.2	11.2	11.2	11.1	11.1	11.1	20.2	20.2	20.2	20.2	20.2	
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32	0.32	0.58	0.58	0.58	0.58	0.58	
v/c Ratio	0.09	0.29	0.11	0.33	0.19	0.33	0.14	0.42	0.18	0.42	0.38	
Control Delay	12.5	13.5	5.0	15.2	12.8	4.2	7.1	8.3	1.9	10.6	7.8	
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	12.5	13.5	5.0	15.2	12.8	4.2	7.1	8.3	1.9	10.6	7.8	
LOS	B	B	A	B	B	A	A	A	A	B	A	
Approach Delay		11.4			9.4			6.6			8.7	
Approach LOS		B			A			A			A	

Intersection Summary	
Area Type: Other	
Cycle Length: 60	
Actuated Cycle Length: 34.7	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 8.5	Intersection LOS: A
Intersection Capacity Utilization 59.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: SH 83 & Hodgen Rd