



Update title to match
the rest of the
application.
"Struthers Ranch
Subdivision Filing No.
5

LSC TRANSPORTATION CONSULTANTS, INC.
2504 East Pikes Peak Avenue, Suite 304
Colorado Springs, CO 80909
(719) 633-2868
FAX (719) 633-5430
E-mail: lsc@lsctrans.com
Website: <http://www.lsctrans.com>

Struthers Ranch Tract B Traffic Impact Study (LSC #204110) January 8, 2021

Traffic Engineer's Statement

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



Developer's Statement

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

A handwritten signature in blue ink, appearing to read 'Vernon H. ...', written over a horizontal line.

1-13-2021

Date

update

Struthers Ranch Tract B

Traffic Impact Study

Prepared for:
Design and Development Consultants
T-Bone Construction
1310 Ford Street
Colorado Springs, Colorado 80915

Contact: Mr. Darin C. Weiss, AIA

JANUARY 8, 2021

LSC Transportation Consultants
Prepared by: Colleen Guillotte, P.E., PTOE, RSP
Reviewed by: Jeffrey C. Hodsdon, P.E.

LSC #204110

Please add the
following: "PCD File
No. VR-2101"



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January 8, 2021

Darin C Weiss, AIA
Design and Development Consultants
T-Bone Construction
1310 Ford Street
Colorado Springs, CO 80915

Update

RE: **Struthers Ranch Tract B**
Traffic Impact Study
El Paso County, Colorado
LSC #204110

Dear Mr. Weiss:

LSC Transportation Consultants, Inc. has prepared this traffic impact study for the proposed **Struthers Ranch Tract B** development in El Paso County, Colorado. The development is planned to be located southeast of the intersection of Struthers Road/Struthers Ranch Road. The planned land use is for 19,740 square feet of retail, 5,200 square feet of office, and 5,200 square feet of restaurant. This report has been prepared for submittal to El Paso County.

REPORT CONTENTS

The preparation of this report included the following:

- Inventory of the existing adjacent and nearby area street and roadway system. This includes functional classifications, street widths, lane configurations, intersection traffic control, posted speed limits, pavement markings, intersection and access spacing, roadway and intersection alignments, auxiliary left- and right-turn lanes, intersection sight distances, etc.;
- A review of the proposed site land use and access locations;
- Morning and evening peak-hour traffic counts at the intersection of Struthers Road/Struthers Ranch Road;
- Estimates of short- and long-term background traffic volumes and total traffic (site traffic plus background traffic). Forecasts include buildout of adjacent proposed developments;
- Estimates of the daily and peak-hour trip generation for the proposed land use;
- The estimated directional distribution of site-generated vehicle trips on the study area street and roadway system;
- Projections of peak-hour site-generated turning-movement traffic volumes at the study area intersections, which include:

- Site access point intersections
- Struthers Road/Struthers Ranch Road
- Level of service (LOS) analysis at the study area intersections;
- Evaluation of the short-term and long-term projected intersection volumes to determine the potential need for a deviation request at the site access-point intersections.
- Findings and recommendations

Discuss this deviation request with your client. Staff does not see an undue hardship to justify a deviation request for access on Struthers Road. With access available at Struthers Ranch Rd, this deviation request will likely be denied.

PREVIOUS TRAFFIC STUDY

Nearby properties have received

- Monument Ridge L
- Monument Ridge A
- Cathedral Rock Church

If the request is withdrawn then update the TIS analysis based on a single access from Struthers Ranch Road.

Please note: If the applicant chooses to pursue the request, staff encourages you to submit the deviation request form prior to the 2nd resubmittal. The determination to approve or deny the deviation impacts the traffic report.

This report is consistent with the background traffic volumes.

LAND USE AND ACCESS

Figure 1 shows the site location relative to the adjacent and nearby roadways. The site plan is shown in Figure 2. The Cathedral Rock Church is planned for the adjacent Tract A on the north side of Struthers Ranch Road. As shown in Figure 2, two access points are proposed: a full movement access onto Struthers Ranch Road across from the proposed access to Cathedral Rock Church, and a right-in/right-out access onto Struthers Road.

Struthers Ranch Tract B is proposed to include 19,740 square feet of retail, 5,200 square feet of office, and 5,200 square feet of restaurant.

INTERSECTION SIGHT DISTANCE

Please revise 18 inches to 30 inches above the flow line of the adjacent road per ECM 2.3.6.G.2.

The required intersection sight distance for the intersection of Struthers Road/Struthers Ranch Road is 625 feet for passenger vehicles and 950 feet for combination trucks. This intersection would be able to meet this criterion provided the intersection line of sight "triangles" are kept free of site improvements (that would limit the line of sight needed to maintain ECM prescribed sight distance). Examples of site improvements include landscaping, monument signs, parking areas, berms, etc. Obstruction height to maintain passenger car line of sight is about 18 inches. Obstruction height to maintain truck line of sight is higher as the truck "driver's eye" is significantly higher than the "driver's eye" for a passenger vehicle. Depending on the site grading, the combination truck driver line of sight may pass over vehicles parked along the west side of the site. Line of sight exhibits are attached.

Update the required intersection sight distance and update Exhibit 1. Intersection sight distance applies to Struthers Road/Struthers Ranch Road intersection.

Intersection sight distance is ECM 2.3.6.G Table 2-21.
Driveway access sight distance is ECM 2.4.1.D.

The required sight distance for the right-in/right-out access point onto Struthers Road is 500 feet for passenger vehicles. The line of sight to arriving northbound through traffic on Struthers is over one quarter mile.

Please revise to include a description of the required sight distance for the access point on Struthers Ranch Rd.

ROAD AND TRAFFIC CONDITIONS

Area Roads

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

Struthers Road is a four-lane, median-divided road that extends north from North Gate Boulevard to the intersection of Baptist Road and Jackson Creek Parkway. Struthers Road is classified as a four-lane Urban Minor Arterial on the El Paso County Major Transportation Corridors Plan and has a speed limit of 45 miles per hour (mph) about 325 feet north of Air Garden Lane (adjacent to the south portion of the site). South of this point, the posted speed limit is 40 mph.

Struthers Ranch Road is classified as a local roadway. Struthers Ranch Road is an east/west road that extends from Struthers Road into the Struthers Ranch residential development. The roadway has a posted speed limit of 25 mph. The intersection with Struthers Road is unsignalized. The roadway at the intersection with Struthers Road is 32 feet wide, which only allows for a shared westbound left/right lane on the minor street approach. Struthers Road has a 340-foot southbound left-turn deceleration lane and a 260-foot northbound right-turn deceleration lane at the intersection with Struthers Ranch Road.

Traffic Volumes

Morning and evening peak-hour turning-movement traffic counts were conducted March 2020 at the intersection of Struthers Road/Struthers Ranch Road. The morning and evening peak-hour volumes are shown in Figure 3. It should be noted that the recorded southbound through traffic during the evening peak was significantly higher than historical counts. Counts recorded by LSC on Struthers Road between 2011 and 2019 have shown that the southbound traffic is typically lower than the northbound traffic during the evening peak hour. It is believed that there may have been an incident on I-25 in the southbound direction during the counts that caused a large number of vehicles to use Struthers Road as an alternate route. Traffic count reports are attached for reference.

Can this statement be verified? Explain how the future volumes were calibrated/modified.

Crash History

Three years of crash data were collected at the intersection of Struthers Road/Struthers Ranch Road. There was only one crash during the study period. The only crash was a fixed object type crash that resulted in property damage only. No correctable crash patterns were identified.

TRIP GENERATION

Estimates of the vehicle trips projected to be generated by the proposed development have been made using the nationally published trip-generation rates from *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). Table 1, below, presents a summary of the estimated site trip generation on a typical weekday. The detailed trip-generation estimate for the development, including ITE rates for the proposed land use, is presented in Table 3.

Approximately 2,986 total vehicle trips are projected to enter and exit the site at the access point (“driveway trips”) on the average weekday during a 24-hour period. During the morning peak hour, approximately 170 vehicles would enter and 98 vehicles would exit the site. During the evening peak hour, approximately 101 vehicles would enter and 112 vehicles would exit the site.

The proposed development is projected to generate approximately 1,776 (new/non-pass-by or diverted) vehicle trips on the average weekday during a 24-hour period.

Table 1: Estimated External Site Vehicle-Trip Generation (Vehicles per Hour)

Analysis Period	Total Trips			Pass-by Trips			New Trips		
	In	Out	Total	In	Out	Total	In	Out	Total
A.M. Peak Hour	170	98	268	53	53	106	117	45	162
P.M. Peak Hour	101	112	213	43	43	86	58	69	127
Daily/24-Hour	1,493	1,493	2,986	605	605	1,210	888	888	1,776

Internal Trips

Internal trips are trips that occur within the site and do not impact the external roadways. Because the site is planned to have multiple retail, office, and restaurant pads, some of the generated trips will be traveling within the site. Table 3 includes estimates of internal trip capture to account for trips generated within the site as well as non-motorized trips from adjacent and nearby developments.

Pass-by Trips

The trips generated by the site have also been aggregated by trip type to account for the pass-by phenomenon. A pass-by trip is one made by a motorist who would already be on an adjacent road regardless of the proposed development, but who stops in at the site while passing by. The pass-by motorist would then continue on his or her way to a final destination in the original direction. For purposes of this report, pass-by trips are trips by motorists already traveling through the intersection of Struthers Road/Struthers Ranch Road. Pass-by trips are shown in Table 3 and are based on *Trip Generation Handbook - An ITE Proposed Recommended Practice*, 3rd Edition, 2014 by ITE.

BACKGROUND TRAFFIC

Background volumes do not include projected traffic to be generated by the proposed development. As noted in the existing conditions section, the southbound through traffic during the evening peak was unusually high. This volume was modified in the background to reflect expected volumes.

Short-Term Background Traffic Volumes

Figure 4 shows the projected background traffic volumes. The projected volumes assume that the following nearby developments have been constructed:

- Monument Ridge Lots 7 & 8
- Cathedral Rock Church
- Monument Ridge Apartments

Long-Term Background Traffic Volumes

Figure 5 shows the projected 20-year background traffic volumes for the year 2040. The long-term scenario includes the developments in the short-term background. In addition, the long-term background traffic assumes a growth of approximately 2 percent per year of through traffic on Struthers Road.

Describe the reason behind the 2% traffic growth.

TRIP DISTRIBUTION AND ASSIGNMENT

Trip Directional Distribution

Estimation of the directional distribution of site-generated vehicle trips to the study area roads and intersections is a necessary component in determining the site's traffic impacts. Figure 6 shows the short-term and long-term directional distribution estimates for the proposed development. Estimates were based on the following factors: existing area development, the area roadway system, and the site's proposed land use.

Site-Generated Traffic

Site-generated traffic volumes at the study intersections have been calculated by applying the directional-distribution percentages estimated by LSC (from Figure 6) to the trip-generation estimates (from Table 1). Figure 7 shows the projected site-generated traffic volumes for the proposed development.

Short-Term Total Traffic Volumes

Figure 8 shows the sum of the short-term background traffic volumes (from Figure 4) and the site-generated peak-hour traffic volumes (shown in Figure 7). These volumes represent the projected short-term total traffic following construction of the development.

Long-Term Total Traffic Volumes

Please describe if MTCP was used for projected traffic volumes/conditions. Reference ECM B.2.2.C.

Figure 9 shows the projected 2040 total traffic volumes, which are the sum of 2040 background traffic volumes (from Figure 5) plus the site-generated traffic volumes (from Figure 7).

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 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		

The intersections of Struthers Road/Struthers Ranch Road, as well as the site access points, have been analyzed to determine the projected control delay and corresponding levels of service for turning movements. Figure 3 provides the existing levels of service. Figure 4 and Figure 5 provide the background levels of service for the short-term and long-term scenarios, respectively. Figure 8 and Figure 9 provide the levels of service of the short-term and long-term total traffic scenarios, respectively.

Struthers Road/Struthers Ranch Road

The yielding turning movements at the unsignalized intersection of Struthers Road/Struthers Ranch Road currently operate at LOS C or better during both the morning and evening peak hours. In the short-term future, the yielding turning movements are forecast to continue to operate at LOS C or better during both peak hours with and without the proposed development.

In the long-term future, the yielding turning movements are also forecast to continue to operate at LOS C or better. This intersection is not anticipated to meet signal warrants.

Site Accesses

In all scenarios, the yielding turning movements operate at LOS B or better during both peak hours.

AUXILIARY TURN LANES

As mentioned previously, there is a 340-foot southbound left-turn deceleration lane at the intersection of Struthers Road/Struthers Ranch Road. This lane meets the ECM auxiliary lane criteria and does not need to be modified with the development.

There is a 400-foot northbound right-turn deceleration lane (combined lane plus taper length) at this intersection of Struthers Road/Struthers Ranch Road. This auxiliary lane, although it exists, is not currently required per the ECM and is not expected to be required in the future with added site-generated traffic. The turning volume threshold could potentially be met on Sunday mornings with addition of future church traffic. The turn lane already exists and is about 400 feet (lane plus taper). The ECM requirement is 435 feet.

The right-in/right-out access on Struthers Road is anticipated to require a right-turn deceleration lane. This criterion calls for 370-foot-long deceleration distance (lane plus taper) based on a 45-mph design speed and a 435-foot-long deceleration distance (lane plus taper) for a 50-mph design speed. The speed limit currently changes just south of the access location. LSC recommends an approximately 200-foot-long lane plus a 75-foot-long reverse curve bay taper. This would likely allow the lane to be installed given the limited space adjacent to the developed property to the south. No acceleration lanes are required on Struthers Road.

Although not anticipated to be required based on projected volumes or levels of service, it is recommended that right-of-way be reserved in case Struthers Ranch Road needs minor widening in the future to allow for separate right- and left-turn lanes in the westbound direction.

VEHICLE QUEUING

At the intersection of Struthers Road/Struthers Ranch Road, there are 250 feet available for vehicle queueing to the east prior to the site access. The 95th percentile queue length for the westbound approach at the intersection is anticipated to be 100 feet, which will not impact the site access. If Struthers Ranch Road were widened in the future to provide separate right- and left-turn lanes on the westbound approach the intersection, then the 95th percentile queue for the westbound left is forecast to be 75 feet, which also would not impact the access to the east.

PEDESTRIAN AND BICYCLE ACCOMMODATION

A sidewalk exists along Struthers Road adjacent to the site. However, there are currently no sidewalks along Struthers Ranch Road adjacent to the site. It is recommended that a sidewalk be

constructed adjacent to the site on Struthers Ranch Road.

There are no bike lanes on Struthers Road and the roadway is not planned to have bike lanes. However, there are sections of Struthers Road that have paved outside shoulders to accommodate cyclists.

COUNTY ROAD IMPROVEMENT FEE PROGRAM

Transportation Impact Fees

Per ECM Appendix B: *State what the current applicable Transportation Impact Fees are and what option the developer will be selecting for payment.*

The applicant intends to opt out of the PID options and will pay the full fee amount at the time of building permit. The current “full-fee” is \$4,958 per 1,000 square feet of building floor area. The total fee amount for the 30,140 square foot of commercial buildings is \$149,434.

Reimbursable MTCP Improvements

There are no apparent reimbursable improvements programmed in the MTCP in the general vicinity of this site.

FINDINGS AND CONCLUSIONS

- The site is projected to generate approximately 2,986 external vehicle trips on the average weekday. Approximately half of this traffic is expected to be pass-by traffic.
- During the morning peak hour, approximately 170 vehicles would enter and 98 vehicles would exit the site. During the evening peak hour, approximately 101 vehicles would enter and 112 vehicles would exit the site at the access points.
- The site improvements, landscaping, signage etc. will need to accommodate the driver sight distance lines of sight necessary to meet the prescribed intersection sight distance at Struthers Road/Struthers Ranch Road. Please refer to the Sight Distance section for details.
- Turning movements at the site accesses are projected to operate at acceptable levels of service in all scenarios.
- The westbound approach at the intersection of Struthers Road/Struthers Ranch Road operates at LOS C or better in all scenarios.
- The 95th percentile queues at all study intersection are not projected to impact adjacent intersections.
- See Table 4 for a summary of recommended improvements.

Update the to identify that a sight distance easement where the line of sight encroaches into the private property

Table 4: Recommended Improvements

Item #	Location	Improvement	Timing
1	Struthers Ranch Road - Adjacent to the site	Sidewalk	With development of the site
2	Struthers Road/Struthers Ranch Road	Reserve half-ROW or at least a "reservation" strip along the south side of Struthers Ranch Road to allow for potential future widening on the east leg/westbound approach to accommodate separate left/right turn lanes if these ever become necessary.	With the Site Development Plan
3	Struthers Road/South Site Access	Northbound Right Turn Deceleration Lane	With development of the site

Source: LSC Transportation Consultants, Inc. (1-8-2021)

* * * * *

Please contact me if you have any questions regarding this

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

By Colleen Guillotte, P.E., PTOE, RSP
Project Manager

CRG:JCH:jas

Enclosures: Table 3
Figures 1-9
Line of Sight Exhibits
Traffic Count Reports
Level of Service Reports

Will be reviewed on
the resubmittal.
Recommendation
may be different with
the removal of RIRO.

Please provide a list of references used to create this study.

Table 3

Show the Morning/Afternoon new external trip generated

Table 3: Detailed Trip Generation Estimate

Land Use Code	Land Use Description	Trip Generation Units	Total Trips Generated						Internal Trips	Internal Trips Generated ⁽²⁾						External Trips Generated						Pass-By Trips ⁽³⁾	New External Trips Generated	
			Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic		Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic					
				In	Out	In	Out			In	Out	In	Out		In	Out	In	Out						
820	Shopping Center	19.74 KSF ⁽⁴⁾	1,995	100	61	79	85	21%	423	7	8	32	22	1,571	93	53	47	63	14%	1,037				
712	Small Office Building	5.2 KSF	84	8	2	4	9	26%	22	1	1	2	2	62	7	1	2	7	7%	62				
933	Fast Food w/o Drive-Thru	5.2 KSF	1,800	78	52	74	74	25%	447	9	8	21	31	1,353	69	44	53	43	50%	677				
Total Trip Generation Estimate			3,879	187	115	156	167		892	17	17	55	55	2,987	170	98	101	112		1,776				
Notes:																								
(1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)																								
(2) NCHRP 684 Internal Trip Capture Estimate Tool Sheets																								
(3) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice, Third Edition September 2017" by ITE																								
(4) KSF = one thousand square feet of floor space																								
Source: LSC Transportation Consultants, Inc.																								
1-8-2021																								

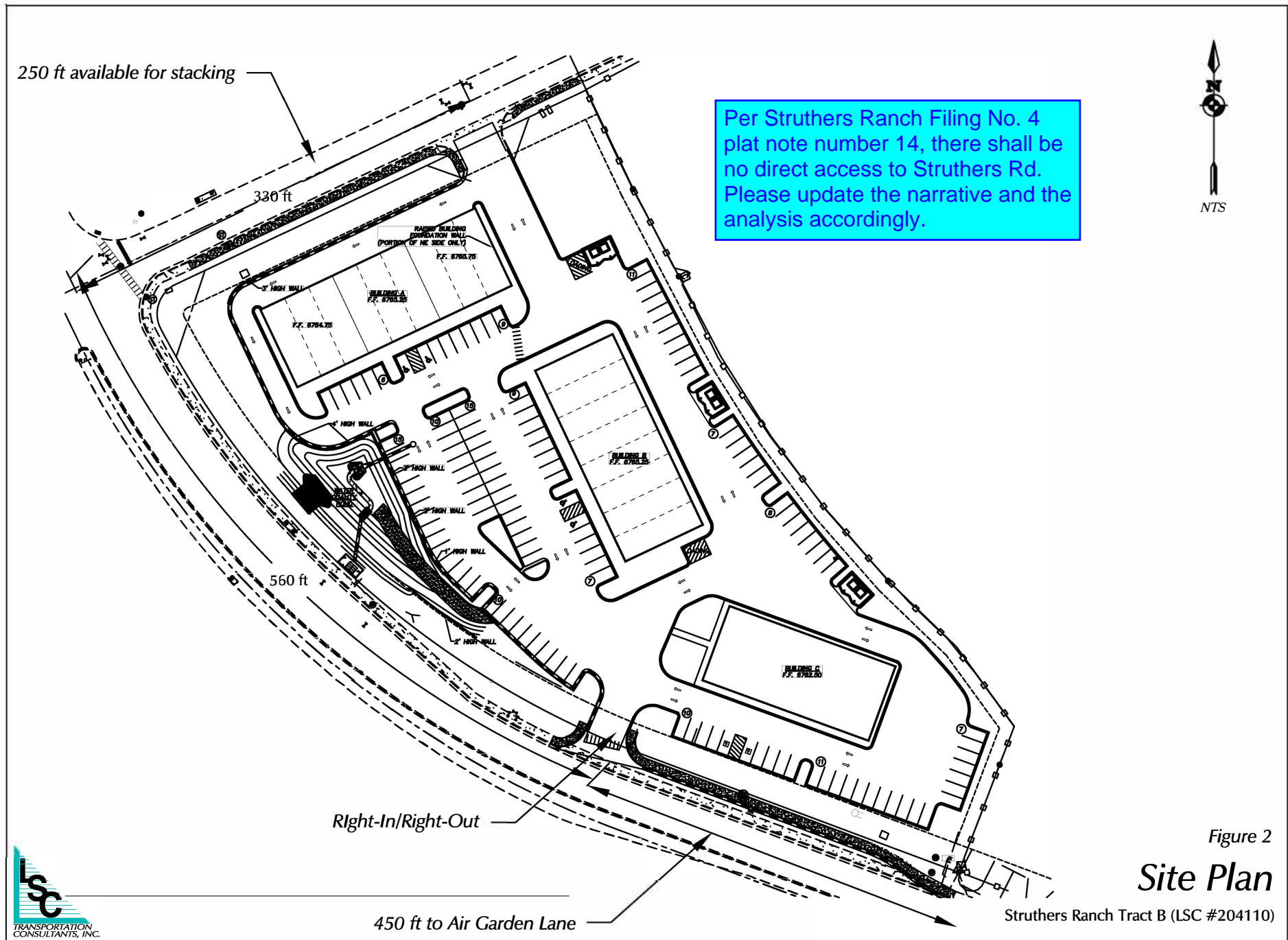
include the reference in the appendix. The percentages seems high.

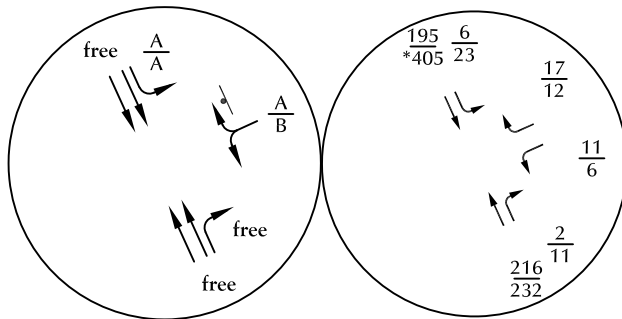
Figures



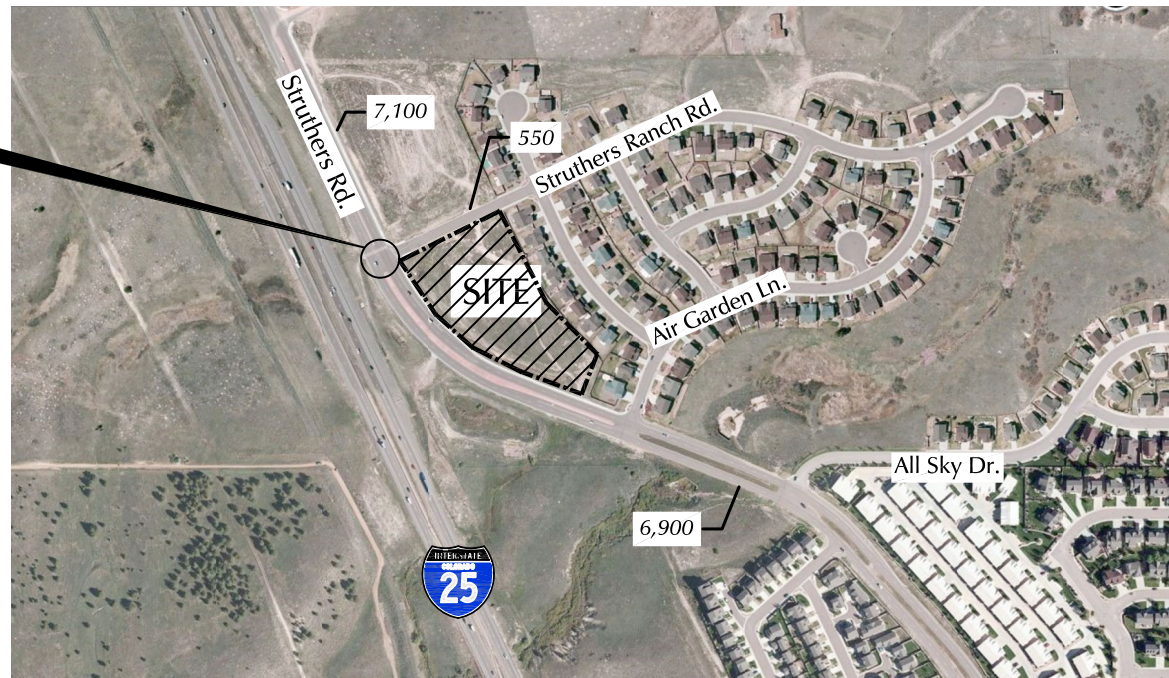
Figure 1
**Vicinity
Map**

Struthers Ranch Tract B (LSC #204110)





*The SB PM volume recorded was high compared to historical counts. It is assumed this was due to construction or an incident on I-25. Future volumes have been modified accordingly.



LEGEND:

⊥ = Stop Sign

$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 PM Weekday Peak-Hour Traffic (vehicles per hour)

$\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
 PM Individual Movement Peak-Hour Level of Service

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

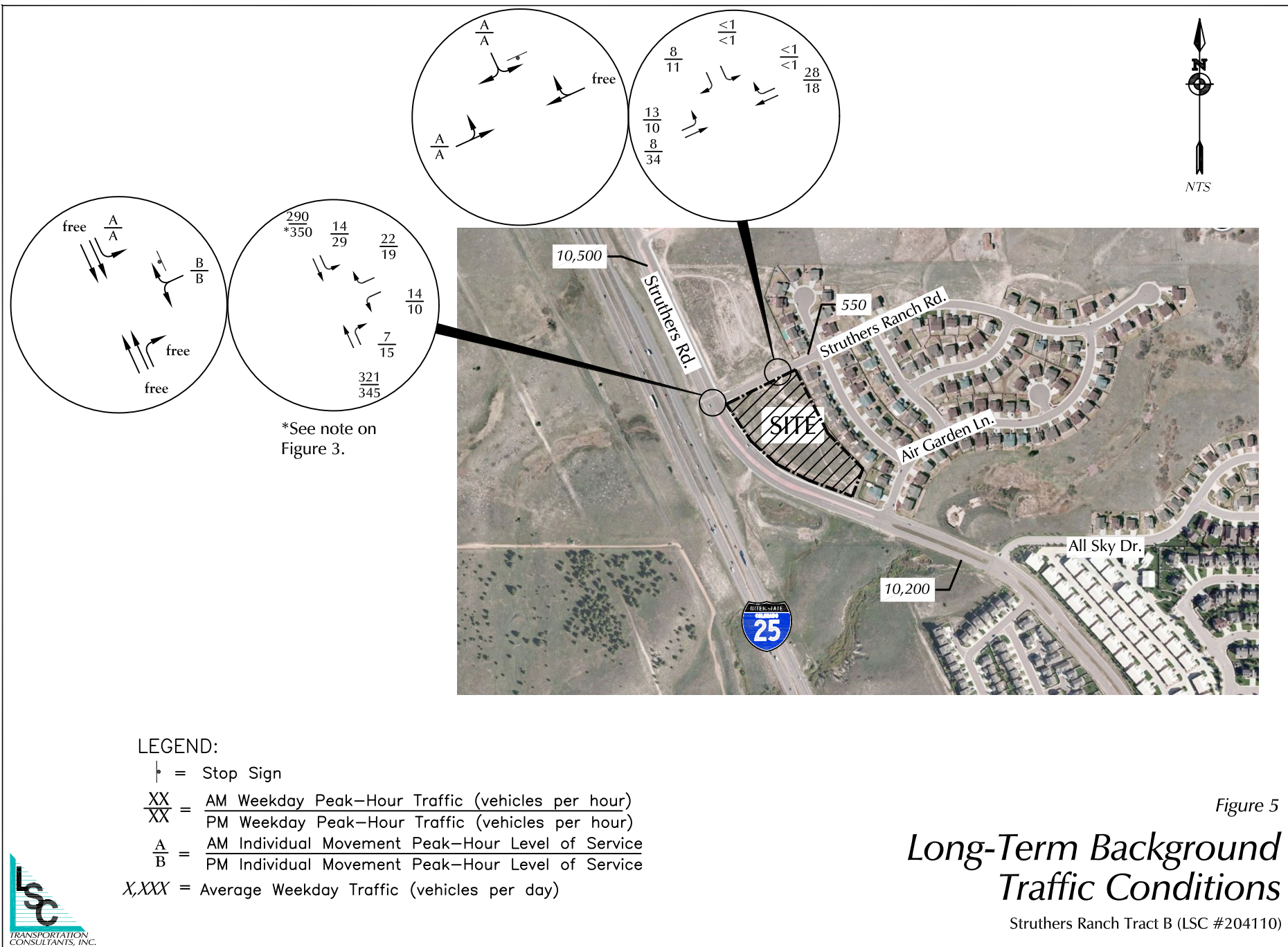


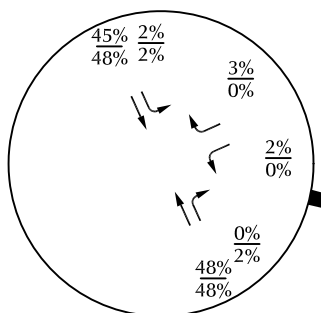
Based on counts by LSC March 2020

Figure 3

Existing Traffic Conditions

Struthers Ranch Tract B (LSC #204110)





Passby Trip Distribution



LEGEND:

XX = AM Percent Directional Distribution
 XX = PM Percent Directional Distribution



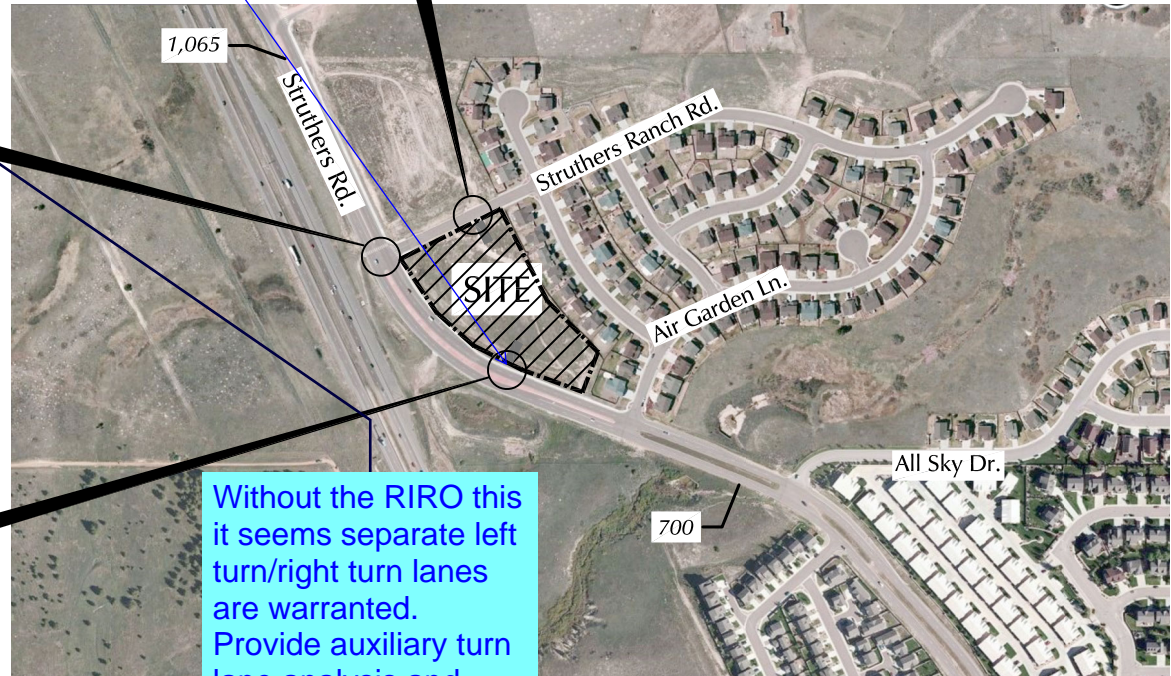
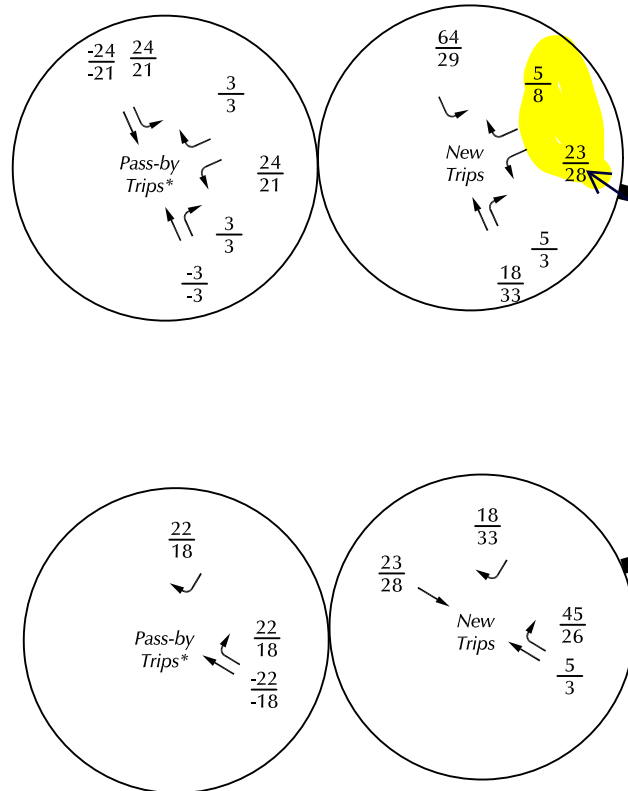
Directional Distribution of Site-Generated Traffic

Struthers Ranch Tract B (LSC #204110)

Figure 6

Per Struthers Ranch Filing No. 4 plat note number 14, there shall be no direct access to Struthers Rd. Please update the narrative and the analysis accordingly.

This meets the criteria for right turn lane. Update the Auxiliary Turn Lane section and the conclusion/recommendation section to discuss.



Without the RIRO this it seems separate left turn/right turn lanes are warranted. Provide auxiliary turn lane analysis and recommendation

* Pass-by trips are existing trips on the adjacent roadways that stop at the site on the way to their planned destination. These trips are not new to the roadway, but are new turns at the access points.

LEGEND:

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



Figure 7

Site-Generated Traffic Volumes

Struthers Ranch Tract B (LSC #204110)

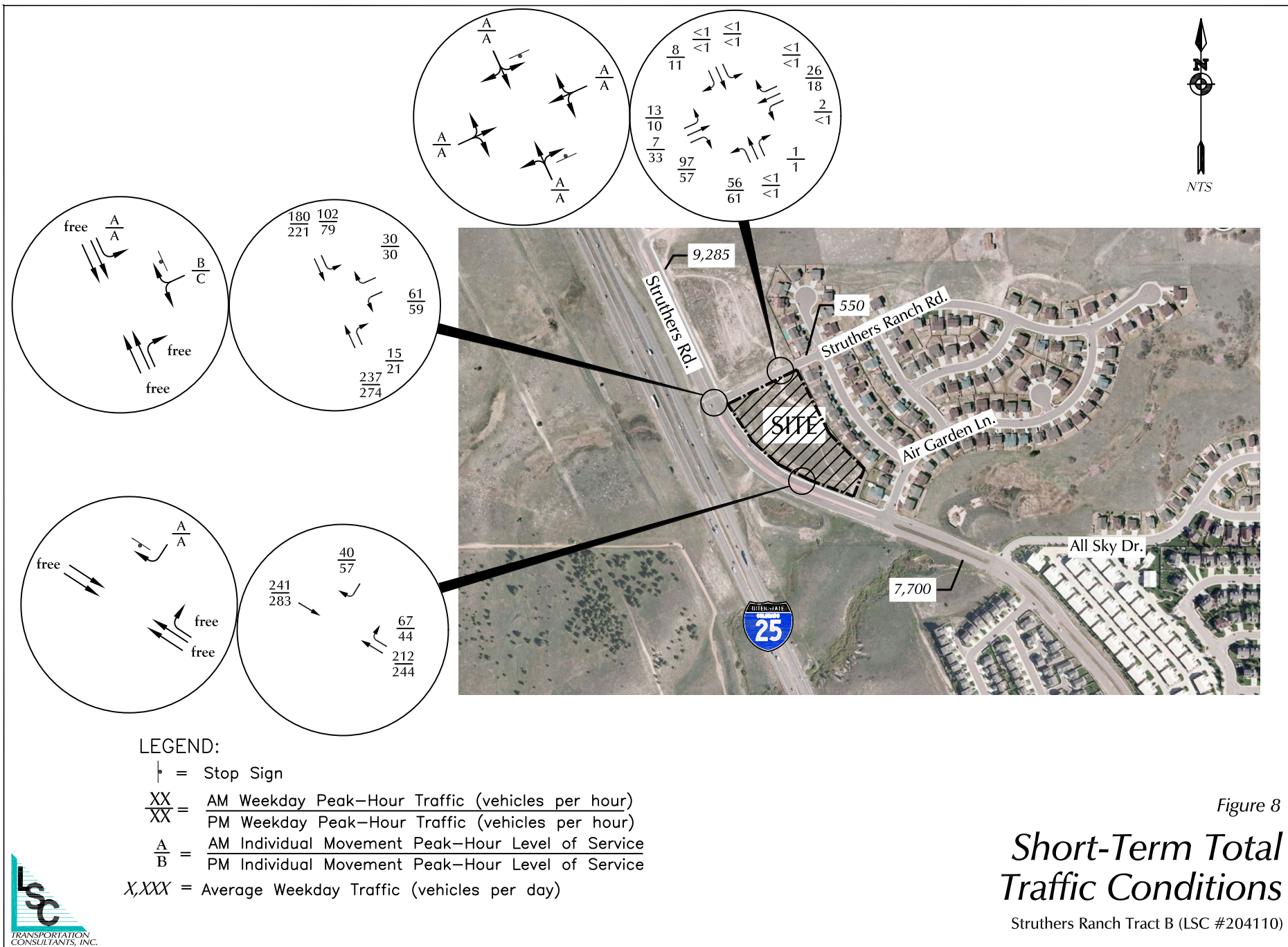
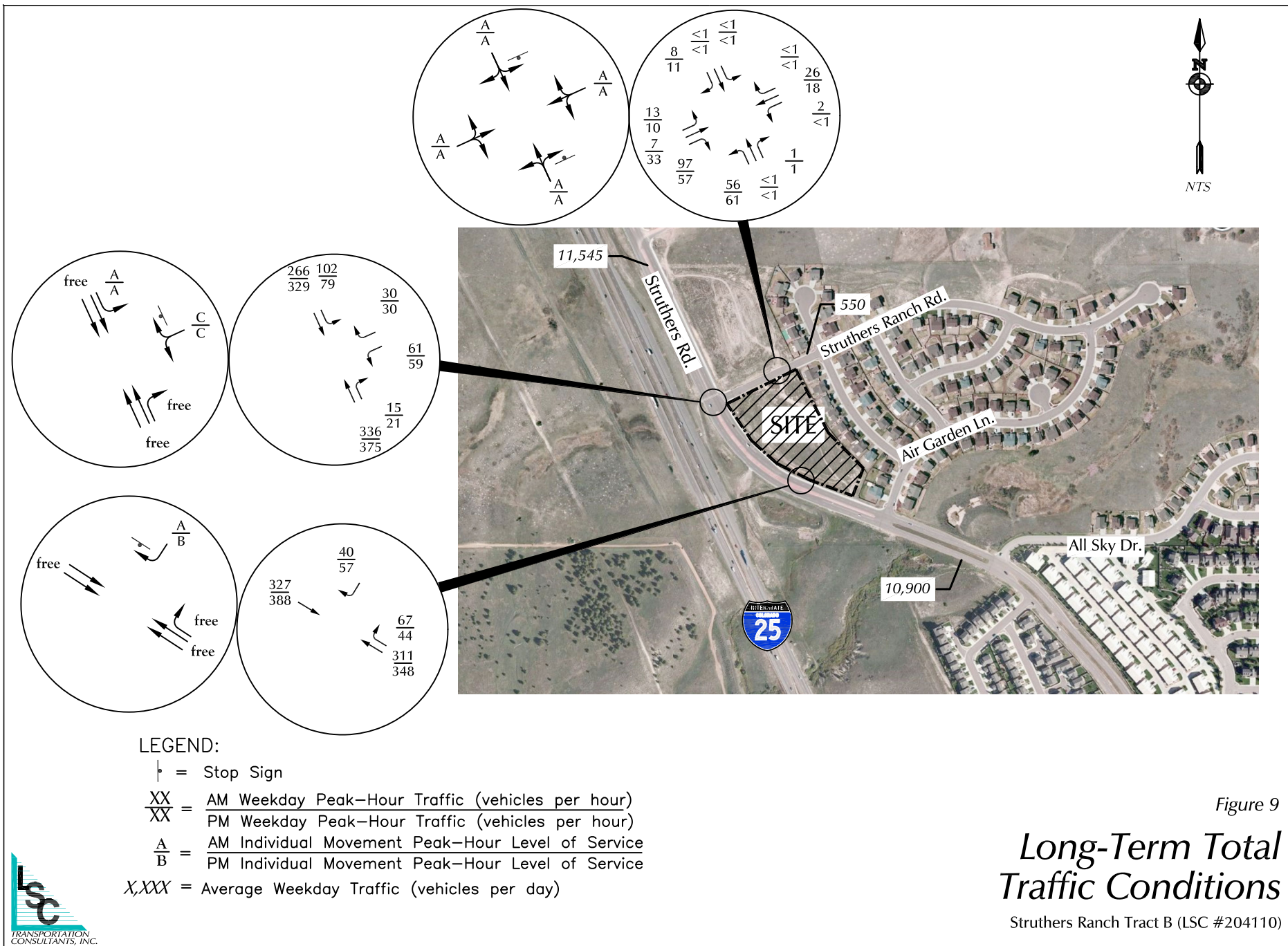


Figure 8

Short-Term Total Traffic Conditions

Struthers Ranch Tract B (LSC #204110)



Line of Sight Exhibits



Map

Satellite



Total Distance: 909 feet



Exhibit 1: Line of Sight for
950 feet of Intersection Sight
Distance to the South
(combination trucks)

Map

Satellite



Total Distance: 617 feet

Show the sight distance to the north and update the narrative to state whether or not it meets criteria. If it doesn't, provide recommendations to mitigate.

Provide an exhibit for the driveway entering sight distance

update.

Exhibit 2: Line of Sight for 625 feet of Intersection Sight Distance to the South (passenger vehicles)

Traffic Counts

LSC Transportation Consultants, Inc.

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

File Name : Struthers Rd - Struthers Ranch Rd AM
Site Code : 00204110
Start Date : 3/3/2020
Page No : 1

Groups Printed- Unshifted

Start Time	Struthers Rd Southbound					Struthers Ranch Rd Westbound					Struthers Rd Northbound					Eastbound					Int. Total
	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	
06:30 AM	0	23	0	0	23	2	0	3	0	5	0	22	0	0	22	0	0	0	0	0	50
06:45 AM	0	22	0	0	22	2	0	3	0	5	0	27	0	0	27	0	0	0	0	0	54
Total	0	45	0	0	45	4	0	6	0	10	0	49	0	0	49	0	0	0	0	0	104
07:00 AM	1	36	0	0	37	4	0	4	0	8	0	32	1	0	33	0	0	0	0	0	78
07:15 AM	1	44	0	0	45	4	0	3	0	7	0	54	0	0	54	0	0	0	0	0	106
07:30 AM	0	51	0	0	51	1	0	7	0	8	0	47	0	0	47	0	0	0	0	0	106
07:45 AM	1	56	0	0	57	3	0	4	0	7	0	60	0	0	60	0	0	0	0	0	124
Total	3	187	0	0	190	12	0	18	0	30	0	193	1	0	194	0	0	0	0	0	414
08:00 AM	4	47	0	0	51	6	0	1	0	7	0	51	1	0	52	0	0	0	0	0	110
08:15 AM	1	41	0	0	42	1	0	5	0	6	0	58	1	0	59	0	0	0	0	0	107
Grand Total	8	320	0	0	328	23	0	30	0	53	0	351	3	0	354	0	0	0	0	0	735
Apprch %	2.4	97.6	0	0		43.4	0	56.6	0		0	99.2	0.8	0		0	0	0	0		
Total %	1.1	43.5	0	0	44.6	3.1	0	4.1	0	7.2	0	47.8	0.4	0	48.2	0	0	0	0	0	

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719-633-2868

File Name : Struthers Rd - Struthers Ranch Rd AM
Site Code : 00204110
Start Date : 3/3/2020
Page No : 2

	Struthers Rd Southbound					Struthers Ranch Rd Westbound					Struthers Rd Northbound					Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 7:30:00 AM																					
7:30:00 AM	0	51	0	0	51	1	0	7	0	8	0	47	0	0	47	0	0	0	0	0	106
7:45:00 AM	1	56	0	0	57	3	0	4	0	7	0	60	0	0	60	0	0	0	0	0	124
8:00:00 AM	4	47	0	0	51	6	0	1	0	7	0	51	1	0	52	0	0	0	0	0	110
8:15:00 AM	1	41	0	0	42	1	0	5	0	6	0	58	1	0	59	0	0	0	0	0	107
Total Volume	6	195	0	0	201	11	0	17	0	28	0	216	2	0	218	0	0	0	0	0	447
% App. Total	3	97	0	0		39.3	0	60.7	0		0	99.1	0.9	0		0	0	0	0		
PHF	.375	.871	.000	.000	.882	.458	.000	.607	.000	.875	.000	.900	.500	.000	.908	.000	.000	.000	.000	.000	.901

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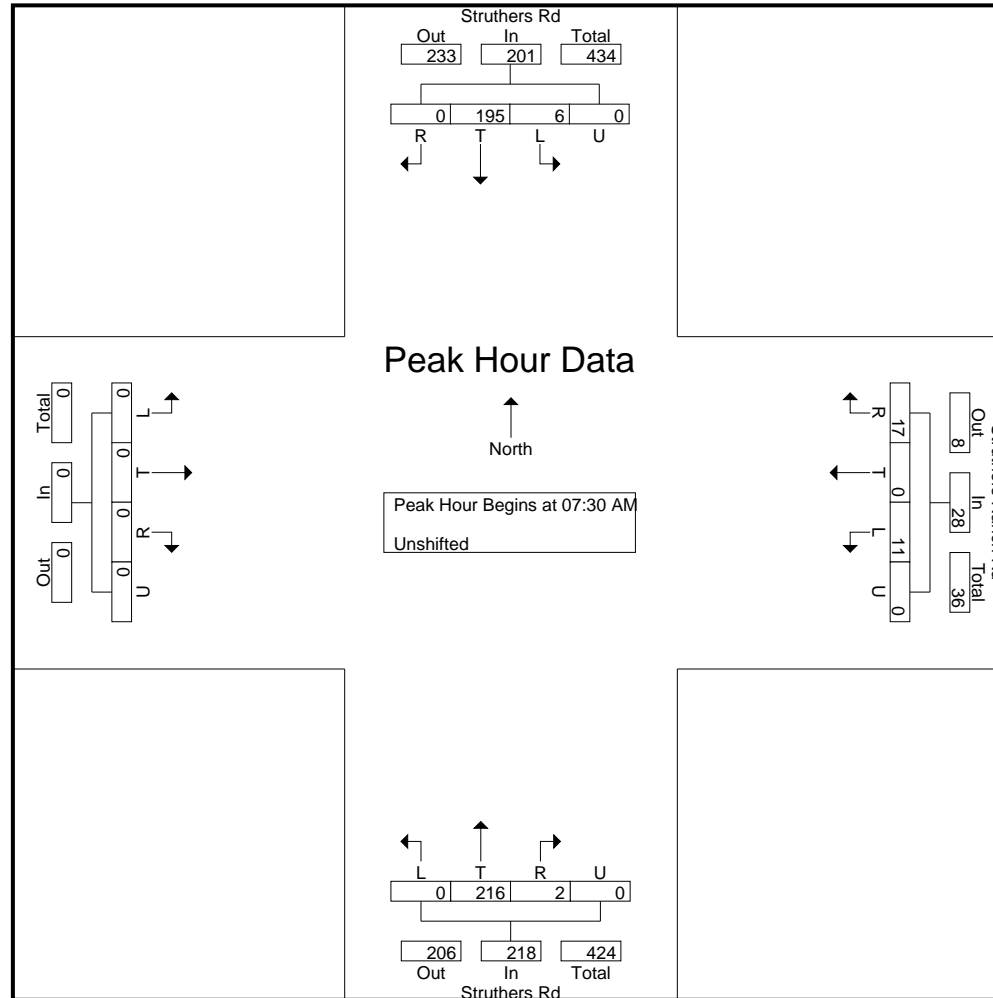
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719-633-2868

File Name : Struthers Rd - Struthers Ranch Rd AM

Site Code : 00204110

Start Date : 3/3/2020

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LSC Transportation Consultants, Inc.

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719-633-2868

File Name : Struthers Rd - Struthers Ranch Rd AM
Site Code : 00204110
Start Date : 3/3/2020
Page No : 4

	Struthers Rd Southbound					Struthers Ranch Rd Westbound					Struthers Rd Northbound					Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	7:15:00 AM					7:00:00 AM					7:30:00 AM					6:30:00 AM					
+0 mins.	1	44	0	0	45	4	0	4	0	8	0	47	0	0	47	0	0	0	0	0	
+5 mins.	0	51	0	0	51	4	0	3	0	7	0	60	0	0	60	0	0	0	0	0	
+10 mins.	1	56	0	0	57	1	0	7	0	8	0	51	1	0	52	0	0	0	0	0	
+15 mins.	4	47	0	0	51	3	0	4	0	7	0	58	1	0	59	0	0	0	0	0	
Total Volume	6	198	0	0	204	12	0	18	0	30	0	216	2	0	218	0	0	0	0	0	
% App. Total	2.9	97.1	0	0		40	0	60	0		0	99.1	0.9	0		0	0	0	0		
PHF	.375	.884	.000	.000	.895	.750	.000	.643	.000	.938	.000	.900	.500	.000	.908	.000	.000	.000	.000	.000	

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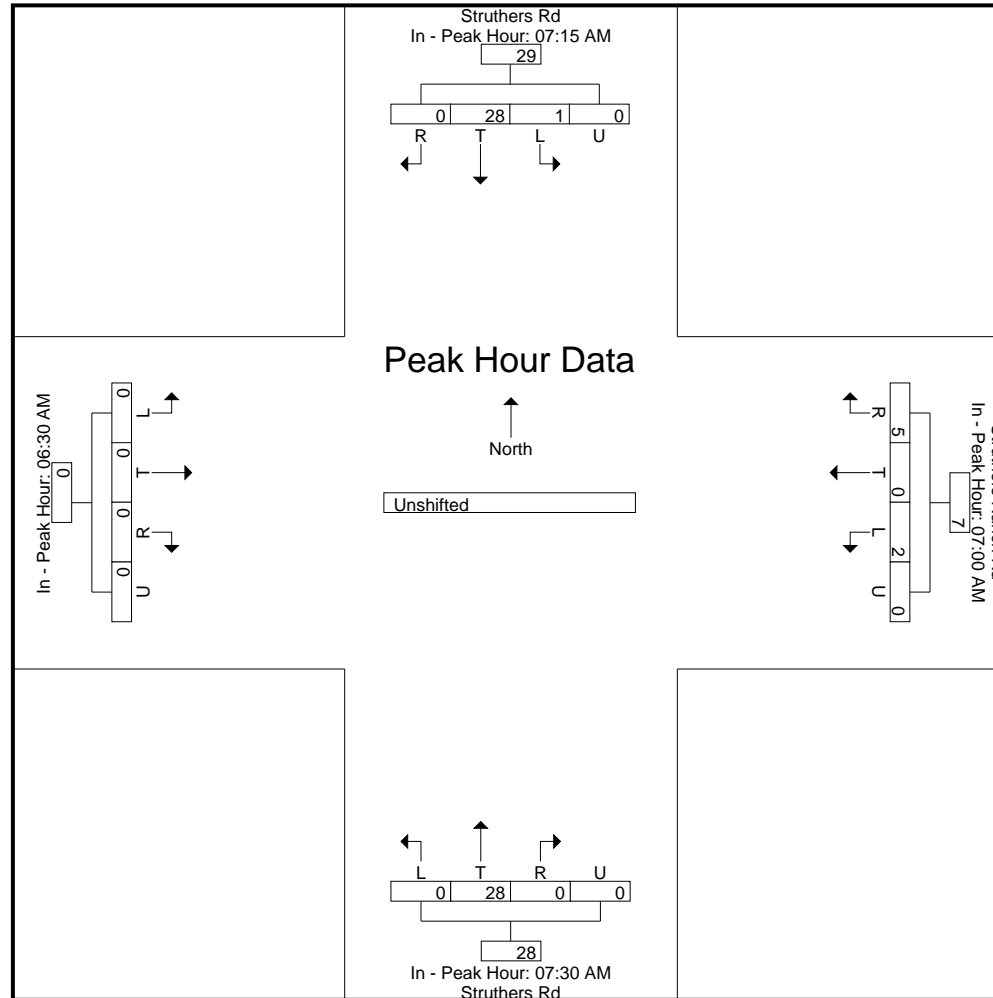
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File Name : Struthers Rd - Struthers Ranch Rd AM

Site Code : 00204110

Start Date : 3/3/2020

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LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210
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719-633-2868

File Name : Struthers Rd - Struthers Ranch Rd PM
Site Code : 00204110
Start Date : 3/3/2020
Page No : 1

Groups Printed- Unshifted

Start Time	Struthers Rd Southbound					Struthers Ranch Rd Westbound					Struthers Rd Northbound					Eastbound					Int. Total
	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	
04:00 PM	4	106	0	0	110	0	0	3	0	3	0	56	3	0	59	0	0	0	0	0	172
04:15 PM	4	98	0	0	102	1	0	3	0	4	0	52	3	0	55	0	0	0	0	0	161
04:30 PM	4	82	0	0	86	1	0	0	0	1	0	58	2	0	60	0	0	0	0	0	147
04:45 PM	6	75	0	0	81	0	0	3	0	3	0	61	2	0	63	0	0	0	0	0	147
Total	18	361	0	0	379	2	0	9	0	11	0	227	10	0	237	0	0	0	0	0	627
05:00 PM	6	120	0	0	126	1	0	1	0	2	0	61	2	0	63	0	0	0	0	0	191
05:15 PM	5	101	0	0	106	3	0	6	0	9	0	53	4	0	57	0	0	0	0	0	172
05:30 PM	6	109	0	0	115	2	0	2	0	4	0	57	3	0	60	0	0	0	0	0	179
05:45 PM	7	77	0	0	84	0	0	1	0	1	0	51	1	0	52	0	0	0	0	0	137
Total	24	407	0	0	431	6	0	10	0	16	0	222	10	0	232	0	0	0	0	0	679
Grand Total	42	768	0	0	810	8	0	19	0	27	0	449	20	0	469	0	0	0	0	0	1306
Apprch %	5.2	94.8	0	0		29.6	0	70.4	0		0	95.7	4.3	0		0	0	0	0		
Total %	3.2	58.8	0	0	62	0.6	0	1.5	0	2.1	0	34.4	1.5	0	35.9	0	0	0	0	0	

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File Name : Struthers Rd - Struthers Ranch Rd PM
Site Code : 00204110
Start Date : 3/3/2020
Page No : 2

	Struthers Rd Southbound					Struthers Ranch Rd Westbound					Struthers Rd Northbound					Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 4:45:00 PM																					
4:45:00 PM	6	75	0	0	81	0	0	3	0	3	0	61	2	0	63	0	0	0	0	0	147
5:00:00 PM	6	120	0	0	126	1	0	1	0	2	0	61	2	0	63	0	0	0	0	0	191
5:15:00 PM	5	101	0	0	106	3	0	6	0	9	0	53	4	0	57	0	0	0	0	0	172
5:30:00 PM	6	109	0	0	115	2	0	2	0	4	0	57	3	0	60	0	0	0	0	0	179
Total Volume	23	405	0	0	428	6	0	12	0	18	0	232	11	0	243	0	0	0	0	0	689
% App. Total	5.4	94.6	0	0		33.3	0	66.7	0		0	95.5	4.5	0		0	0	0	0		
PHF	.958	.844	.000	.000	.849	.500	.000	.500	.000	.500	.000	.951	.688	.000	.964	.000	.000	.000	.000	.000	.902

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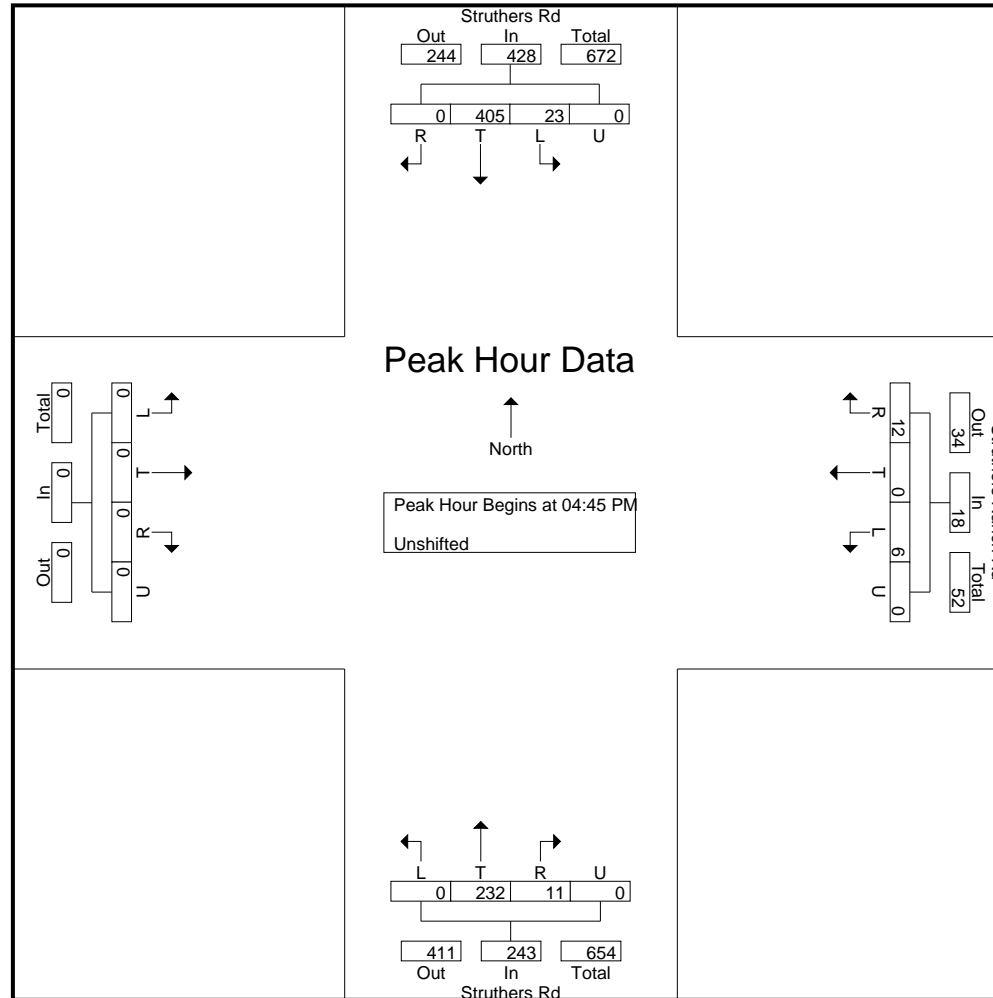
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File Name : Struthers Rd - Struthers Ranch Rd PM

Site Code : 00204110

Start Date : 3/3/2020

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File Name : Struthers Rd - Struthers Ranch Rd PM
Site Code : 00204110
Start Date : 3/3/2020
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	Struthers Rd Southbound					Struthers Ranch Rd Westbound					Struthers Rd Northbound					Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	5:00:00 PM					4:45:00 PM					4:30:00 PM					4:00:00 PM					
+0 mins.	6	120	0	0	126	0	0	3	0	3	0	58	2	0	60	0	0	0	0	0	
+5 mins.	5	101	0	0	106	1	0	1	0	2	0	61	2	0	63	0	0	0	0	0	
+10 mins.	6	109	0	0	115	3	0	6	0	9	0	61	2	0	63	0	0	0	0	0	
+15 mins.	7	77	0	0	84	2	0	2	0	4	0	53	4	0	57	0	0	0	0	0	
Total Volume	24	407	0	0	431	6	0	12	0	18	0	233	10	0	243	0	0	0	0	0	
% App. Total	5.6	94.4	0	0		33.3	0	66.7	0		0	95.9	4.1	0		0	0	0	0		
PHF	.857	.848	.000	.000	.855	.500	.000	.500	.000	.500	.000	.955	.625	.000	.964	.000	.000	.000	.000	.000	

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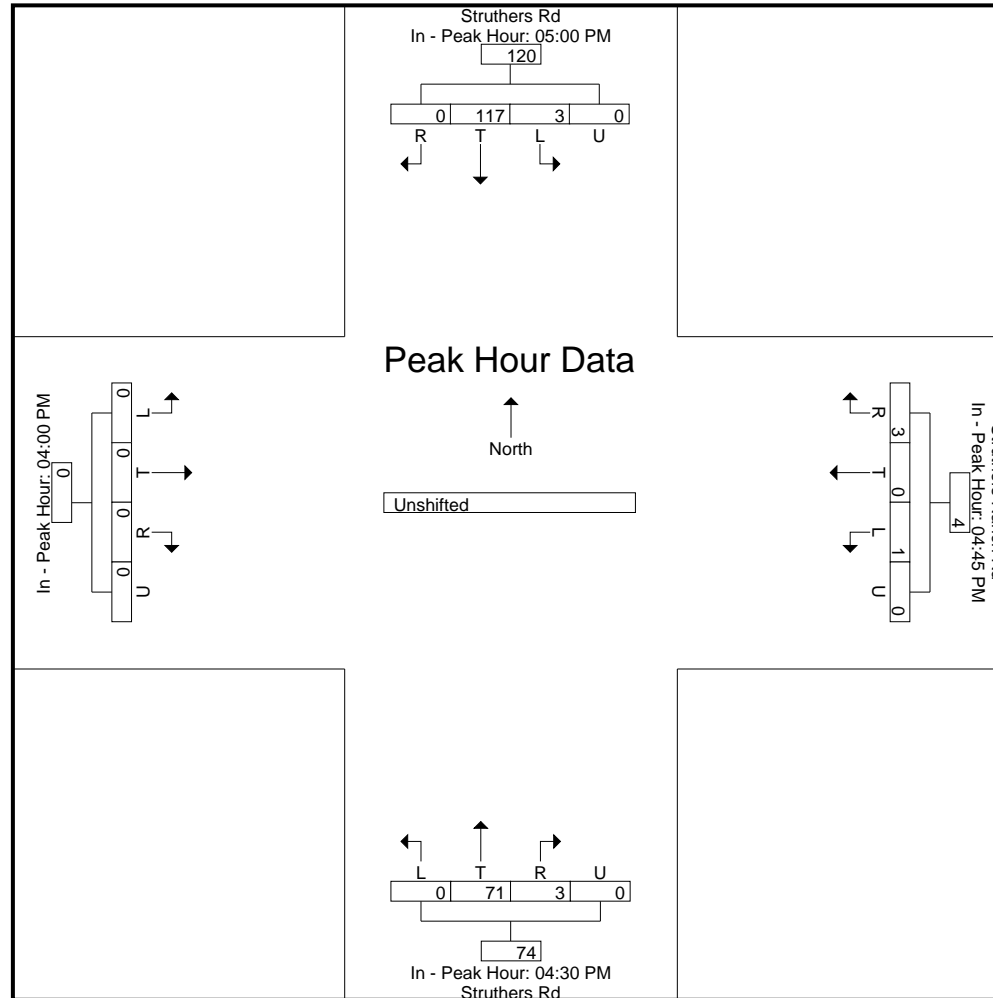
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File Name : Struthers Rd - Struthers Ranch Rd PM

Site Code : 00204110

Start Date : 3/3/2020

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Levels of Service

HCM 6th TWSC
1: Struthers Rd & Struthers Ranch Rd

Existing Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕	↕	↔	↕
Traffic Vol, veh/h	11	17	216	2	6	195
Future Vol, veh/h	11	17	216	2	6	195
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	-	-	255	340	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	91	91	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	19	237	2	7	222

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	362	119	0	0	239
Stage 1	237	-	-	-	-
Stage 2	125	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22
Pot Cap-1 Maneuver	610	910	-	-	1325
Stage 1	780	-	-	-	-
Stage 2	887	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	607	910	-	-	1325
Mov Cap-2 Maneuver	607	-	-	-	-
Stage 1	780	-	-	-	-
Stage 2	883	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	761	1325
HCM Lane V/C Ratio	-	-	0.042	0.005
HCM Control Delay (s)	-	-	9.9	7.7
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM 6th TWSC
1: Struthers Rd & Struthers Ranch Rd

Existing Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔		↕↕	↔	↔	↕↕
Traffic Vol, veh/h	6	12	232	11	23	405
Future Vol, veh/h	6	12	232	11	23	405
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	-	-	255	340	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	92	92	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	24	252	12	27	476
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	544	126	0	0	264	0
Stage 1	252	-	-	-	-	-
Stage 2	292	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	469	901	-	-	1297	-
Stage 1	767	-	-	-	-	-
Stage 2	732	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	459	901	-	-	1297	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.6	0	0.4			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	682	1297	-	
HCM Lane V/C Ratio	-	-	0.053	0.021	-	
HCM Control Delay (s)	-	-	10.6	7.8	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	

HCM 6th TWSC
1: Struthers Rd & Struthers Ranch Rd

Short-Term Background
AM Peak Hour

Intersection

Int Delay, s/veh 1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔		↕↕	↗	↘	↕↕
Traffic Vol, veh/h	14	22	222	7	14	204
Future Vol, veh/h	14	22	222	7	14	204
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	-	-	255	340	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	91	91	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	25	244	8	16	232

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	392	122	0
Stage 1	244	-	-
Stage 2	148	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	585	906	-
Stage 1	774	-	-
Stage 2	864	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	578	906	-
Mov Cap-2 Maneuver	578	-	-
Stage 1	774	-	-
Stage 2	854	-	-






Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	742	1310
HCM Lane V/C Ratio	-	-	0.055	0.012
HCM Control Delay (s)	-	-	10.1	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	13	8	0	0	28	0	0	0	0	0	0	8
Future Vol, veh/h	13	8	0	0	28	0	0	0	0	0	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	10	0	0	36	0	0	0	0	0	0	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	36	0	0	10	0	0	85	80	10	80	80	36
Stage 1	-	-	-	-	-	-	44	44	-	36	36	-
Stage 2	-	-	-	-	-	-	41	36	-	44	44	-
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	1575	-	-	1610	-	-	901	810	1071	908	810	1037
Stage 1	-	-	-	-	-	-	970	858	-	980	865	-
Stage 2	-	-	-	-	-	-	974	865	-	970	858	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1575	-	-	1610	-	-	885	801	1071	901	801	1037
Mov Cap-2 Maneuver	-	-	-	-	-	-	885	801	-	901	801	-
Stage 1	-	-	-	-	-	-	959	849	-	969	865	-
Stage 2	-	-	-	-	-	-	964	865	-	959	849	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.5			0			0			8.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	1575	-	-	1610	-	-	1037				
HCM Lane V/C Ratio	-	0.011	-	-	-	-	-	0.01				
HCM Control Delay (s)	0	7.3	0	-	0	-	-	8.5				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0				

HCM 6th TWSC
1: Struthers Rd & Struthers Ranch Rd

Short-Term Background
PM Peak Hour

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	19	244	15	29	245
Future Vol, veh/h	10	19	244	15	29	245
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	-	-	255	340	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	92	92	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	38	265	16	34	288
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	477	133	0	0	281	0
Stage 1	265	-	-	-	-	-
Stage 2	212	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	517	892	-	-	1278	-
Stage 1	755	-	-	-	-	-
Stage 2	803	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	503	892	-	-	1278	-
Mov Cap-2 Maneuver	503	-	-	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	781	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.6	0		0.8		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	704	1278	-	
HCM Lane V/C Ratio	-	-	0.082	0.027	-	
HCM Control Delay (s)	-	-	10.6	7.9	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-	

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	34	0	0	18	0	0	0	0	0	0	11
Future Vol, veh/h	10	34	0	0	18	0	0	0	0	0	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	44	0	0	23	0	0	0	0	0	0	14
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	23	0	0	44	0	0	100	93	44	93	93	23
Stage 1	-	-	-	-	-	-	70	70	-	23	23	-
Stage 2	-	-	-	-	-	-	30	23	-	70	70	-
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	1592	-	-	1564	-	-	881	797	1026	891	797	1054
Stage 1	-	-	-	-	-	-	940	837	-	995	876	-
Stage 2	-	-	-	-	-	-	987	876	-	940	837	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1592	-	-	1564	-	-	864	791	1026	886	791	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	864	791	-	886	791	-
Stage 1	-	-	-	-	-	-	932	830	-	987	876	-
Stage 2	-	-	-	-	-	-	974	876	-	932	830	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.7			0			0			8.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	1592	-	-	1564	-	-	1054				
HCM Lane V/C Ratio	-	0.008	-	-	-	-	-	0.013				
HCM Control Delay (s)	0	7.3	0	-	0	-	-	8.5				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0				

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔		↕↕	↕	↕	↕↕
Traffic Vol, veh/h	14	22	321	7	14	290
Future Vol, veh/h	14	22	321	7	14	290
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	-	-	255	340	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	91	91	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	25	353	8	16	330
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	550	177	0	0	361	0
Stage 1	353	-	-	-	-	-
Stage 2	197	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	465	835	-	-	1194	-
Stage 1	682	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	459	835	-	-	1194	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	682	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	11.1	0	0.4			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	633	1194	-	
HCM Lane V/C Ratio	-	-	0.065	0.013	-	
HCM Control Delay (s)	-	-	11.1	8.1	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	






Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	13	8	0	0	28	0	0	0	0	0	0	8
Future Vol, veh/h	13	8	0	0	28	0	0	0	0	0	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	10	0	0	36	0	0	0	0	0	0	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	36	0	0	10	0	0	85	80	10	80	80	36
Stage 1	-	-	-	-	-	-	44	44	-	36	36	-
Stage 2	-	-	-	-	-	-	41	36	-	44	44	-
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	1575	-	-	1610	-	-	901	810	1071	908	810	1037
Stage 1	-	-	-	-	-	-	970	858	-	980	865	-
Stage 2	-	-	-	-	-	-	974	865	-	970	858	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1575	-	-	1610	-	-	885	801	1071	901	801	1037
Mov Cap-2 Maneuver	-	-	-	-	-	-	885	801	-	901	801	-
Stage 1	-	-	-	-	-	-	959	849	-	969	865	-
Stage 2	-	-	-	-	-	-	964	865	-	959	849	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.5			0			0			8.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	1575	-	-	1610	-	-	1037				
HCM Lane V/C Ratio	-	0.011	-	-	-	-	-	0.01				
HCM Control Delay (s)	0	7.3	0	-	0	-	-	8.5				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0				

HCM 6th TWSC
1: Struthers Rd & Struthers Ranch Rd

Long-Term Background
PM Peak Hour

Intersection

Int Delay, s/veh 1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	19	345	15	29	350
Future Vol, veh/h	10	19	345	15	29	350
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	-	-	255	340	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	92	92	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	38	375	16	34	412

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	649	188	0
Stage 1	375	-	-
Stage 2	274	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	402	822	-
Stage 1	665	-	-
Stage 2	747	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	390	822	-
Mov Cap-2 Maneuver	390	-	-
Stage 1	665	-	-
Stage 2	725	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	595	1164
HCM Lane V/C Ratio	-	-	0.097	0.029
HCM Control Delay (s)	-	-	11.7	8.2
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	34	0	0	18	0	0	0	0	0	0	11
Future Vol, veh/h	10	34	0	0	18	0	0	0	0	0	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	44	0	0	23	0	0	0	0	0	0	14
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	23	0	0	44	0	0	100	93	44	93	93	23
Stage 1	-	-	-	-	-	-	70	70	-	23	23	-
Stage 2	-	-	-	-	-	-	30	23	-	70	70	-
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	1592	-	-	1564	-	-	881	797	1026	891	797	1054
Stage 1	-	-	-	-	-	-	940	837	-	995	876	-
Stage 2	-	-	-	-	-	-	987	876	-	940	837	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1592	-	-	1564	-	-	864	791	1026	886	791	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	864	791	-	886	791	-
Stage 1	-	-	-	-	-	-	932	830	-	987	876	-
Stage 2	-	-	-	-	-	-	974	876	-	932	830	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.7			0			0			8.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	1592	-	-	1564	-	-	1054				
HCM Lane V/C Ratio	-	0.008	-	-	-	-	-	0.013				
HCM Control Delay (s)	0	7.3	0	-	0	-	-	8.5				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0				

HCM 6th TWSC
1: Struthers Rd & Struthers Ranch Rd

Short-Term Total
AM Peak Hour

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔		↕↕	↕	↕	↕↕
Traffic Vol, veh/h	61	30	237	15	102	180
Future Vol, veh/h	61	30	237	15	102	180
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	-	-	255	340	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	91	91	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	69	34	260	16	116	205
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	595	130	0	0	276	0
Stage 1	260	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	436	896	-	-	1284	-
Stage 1	760	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	397	896	-	-	1284	-
Mov Cap-2 Maneuver	397	-	-	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	634	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	14.4	0	2.9			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	486	1284	-	
HCM Lane V/C Ratio	-	-	0.213	0.09	-	
HCM Control Delay (s)	-	-	14.4	8.1	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.8	0.3	-	

HCM 6th TWSC
5: Access & Struthers Ranch Rd

Short-Term Total
AM Peak Hour

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	7	97	2	26	0	56	0	1	0	0	8
Future Vol, veh/h	13	7	97	2	26	0	56	0	1	0	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	9	124	3	33	0	72	0	1	0	0	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	33	0	0	133	0	0	149	144	71	145	206	33
Stage 1	-	-	-	-	-	-	105	105	-	39	39	-
Stage 2	-	-	-	-	-	-	44	39	-	106	167	-
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	1579	-	-	1452	-	-	819	747	991	824	691	1041
Stage 1	-	-	-	-	-	-	901	808	-	976	862	-
Stage 2	-	-	-	-	-	-	970	862	-	900	760	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1579	-	-	1452	-	-	803	737	991	814	681	1041
Mov Cap-2 Maneuver	-	-	-	-	-	-	803	737	-	814	681	-
Stage 1	-	-	-	-	-	-	890	798	-	964	860	-
Stage 2	-	-	-	-	-	-	959	860	-	888	751	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.5			9.9			8.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	806	1579	-	-	1452	-	-	1041				
HCM Lane V/C Ratio	0.091	0.011	-	-	0.002	-	-	0.01				
HCM Control Delay (s)	9.9	7.3	0	-	7.5	0	-	8.5				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0				

HCM 6th TWSC
8: Struthers Rd & RIRO Access

Short-Term Total
AM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↗
Traffic Vol, veh/h	0	241	212	67	0	40
Future Vol, veh/h	0	241	212	67	0	40
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	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	277	244	86	0	51
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	165
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	850
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	850
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		9.5		
HCM LOS	A					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	850		
HCM Lane V/C Ratio	-	-	-	0.06		
HCM Control Delay (s)	-	-	-	9.5		
HCM Lane LOS	-	-	-	A		
HCM 95th %tile Q(veh)	-	-	-	0.2		

HCM 6th TWSC
1: Struthers Rd & Struthers Ranch Rd

Short-Term Total
PM Peak Hour

Intersection

Int Delay, s/veh 4.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔		↕↕	↗	↖	↕↕
Traffic Vol, veh/h	59	30	274	21	79	221
Future Vol, veh/h	59	30	274	21	79	221
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	-	-	255	340	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	92	92	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	118	60	298	23	93	260

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	614	149	0
Stage 1	298	-	-
Stage 2	316	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	424	871	-
Stage 1	727	-	-
Stage 2	712	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	392	871	-
Mov Cap-2 Maneuver	392	-	-
Stage 1	727	-	-
Stage 2	659	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.8	0	2.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	481	1236
HCM Lane V/C Ratio	-	-	0.37	0.075
HCM Control Delay (s)	-	-	16.8	8.1
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.7	0.2

HCM 6th TWSC
5: Access & Struthers Ranch Rd

Short-Term Total
PM Peak Hour

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	33	57	0	18	0	61	0	1	0	0	11
Future Vol, veh/h	10	33	57	0	18	0	61	0	1	0	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	42	73	0	23	0	78	0	1	0	0	14
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	23	0	0	115	0	0	135	128	79	128	164	23
Stage 1	-	-	-	-	-	-	105	105	-	23	23	-
Stage 2	-	-	-	-	-	-	30	23	-	105	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	1592	-	-	1474	-	-	836	763	981	845	729	1054
Stage 1	-	-	-	-	-	-	901	808	-	995	876	-
Stage 2	-	-	-	-	-	-	987	876	-	901	780	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1592	-	-	1474	-	-	819	756	981	838	722	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	819	756	-	838	722	-
Stage 1	-	-	-	-	-	-	893	801	-	986	876	-
Stage 2	-	-	-	-	-	-	974	876	-	892	773	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0			9.9			8.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	821	1592	-	-	1474	-	-	1054				
HCM Lane V/C Ratio	0.097	0.008	-	-	-	-	-	0.013				
HCM Control Delay (s)	9.9	7.3	0	-	0	-	-	8.5				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0				

HCM 6th TWSC
8: Struthers Rd & RIRO Access

Short-Term Total
PM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↗
Traffic Vol, veh/h	0	283	244	44	0	51
Future Vol, veh/h	0	283	244	44	0	51
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	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	325	280	56	0	65
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	-	0	-	0	-	168
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	847
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	847
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		9.6		
HCM LOS	A					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	847		
HCM Lane V/C Ratio	-	-	-	0.077		
HCM Control Delay (s)	-	-	-	9.6		
HCM Lane LOS	-	-	-	A		
HCM 95th %tile Q(veh)	-	-	-	0.2		

HCM 6th TWSC
1: Struthers Rd & Struthers Ranch Rd

Long-Term Total
AM Peak Hour

Intersection

Int Delay, s/veh 3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗		↕↕	↖↗	↖↗	↕↕
Traffic Vol, veh/h	61	30	336	15	102	266
Future Vol, veh/h	61	30	336	15	102	266
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	-	-	255	340	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	91	91	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	69	34	369	16	116	302

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	752	185	0
Stage 1	369	-	-
Stage 2	383	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	346	826	-
Stage 1	670	-	-
Stage 2	659	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	312	826	-
Mov Cap-2 Maneuver	312	-	-
Stage 1	670	-	-
Stage 2	594	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.4	0	2.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	393	1170
HCM Lane V/C Ratio	-	-	0.263	0.099
HCM Control Delay (s)	-	-	17.4	8.4
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1	0.3

HCM 6th TWSC
5: Access & Struthers Ranch Rd

Long-Term Total
AM Peak Hour

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	7	97	2	26	0	56	0	1	0	0	8
Future Vol, veh/h	13	7	97	2	26	0	56	0	1	0	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	9	124	3	33	0	72	0	1	0	0	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	33	0	0	133	0	0	149	144	71	145	206	33
Stage 1	-	-	-	-	-	-	105	105	-	39	39	-
Stage 2	-	-	-	-	-	-	44	39	-	106	167	-
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	1579	-	-	1452	-	-	819	747	991	824	691	1041
Stage 1	-	-	-	-	-	-	901	808	-	976	862	-
Stage 2	-	-	-	-	-	-	970	862	-	900	760	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1579	-	-	1452	-	-	803	737	991	814	681	1041
Mov Cap-2 Maneuver	-	-	-	-	-	-	803	737	-	814	681	-
Stage 1	-	-	-	-	-	-	890	798	-	964	860	-
Stage 2	-	-	-	-	-	-	959	860	-	888	751	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.5			9.9			8.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	806	1579	-	-	1452	-	-	1041				
HCM Lane V/C Ratio	0.091	0.011	-	-	0.002	-	-	0.01				
HCM Control Delay (s)	9.9	7.3	0	-	7.5	0	-	8.5				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0				

HCM 6th TWSC
8: Struthers Rd & RIRO Access

Long-Term Total
AM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↗
Traffic Vol, veh/h	0	327	311	67	0	40
Future Vol, veh/h	0	327	311	67	0	40
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	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	376	357	86	0	51
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	222
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	782
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	782
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		9.9		
HCM LOS	A					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	782		
HCM Lane V/C Ratio	-	-	-	0.066		
HCM Control Delay (s)	-	-	-	9.9		
HCM Lane LOS	-	-	-	A		
HCM 95th %tile Q(veh)	-	-	-	0.2		

HCM 6th TWSC
1: Struthers Rd & Struthers Ranch Rd

Long-Term Total
PM Peak Hour

Intersection

Int Delay, s/veh 4.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔		↕↕	↗	↖	↕↕
Traffic Vol, veh/h	59	30	375	21	79	329
Future Vol, veh/h	59	30	375	21	79	329
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	-	-	255	340	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	92	92	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	118	60	408	23	93	387

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	788	204	0
Stage 1	408	-	-
Stage 2	380	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	328	803	-
Stage 1	640	-	-
Stage 2	661	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	301	803	-
Mov Cap-2 Maneuver	301	-	-
Stage 1	640	-	-
Stage 2	606	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.5	0	1.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	381	1125
HCM Lane V/C Ratio	-	-	0.467	0.083
HCM Control Delay (s)	-	-	22.5	8.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	2.4	0.3

HCM 6th TWSC
5: Access & Struthers Ranch Rd

Long-Term Total
PM Peak Hour

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	33	57	0	18	0	61	0	1	0	0	11
Future Vol, veh/h	10	33	57	0	18	0	61	0	1	0	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	42	73	0	23	0	78	0	1	0	0	14
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	23	0	0	115	0	0	135	128	79	128	164	23
Stage 1	-	-	-	-	-	-	105	105	-	23	23	-
Stage 2	-	-	-	-	-	-	30	23	-	105	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	1592	-	-	1474	-	-	836	763	981	845	729	1054
Stage 1	-	-	-	-	-	-	901	808	-	995	876	-
Stage 2	-	-	-	-	-	-	987	876	-	901	780	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1592	-	-	1474	-	-	819	756	981	838	722	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	819	756	-	838	722	-
Stage 1	-	-	-	-	-	-	893	801	-	986	876	-
Stage 2	-	-	-	-	-	-	974	876	-	892	773	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0			9.9			8.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	821	1592	-	-	1474	-	-	1054				
HCM Lane V/C Ratio	0.097	0.008	-	-	-	-	-	0.013				
HCM Control Delay (s)	9.9	7.3	0	-	0	-	-	8.5				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0				

HCM 6th TWSC
8: Struthers Rd & RIRO Access

Long-Term Total
PM Peak Hour

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Vol, veh/h	0	388	348	44	0	51
Future Vol, veh/h	0	388	348	44	0	51
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	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	446	400	56	0	65

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 228
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	0	-	- - 0 775
Stage 1	0	-	- - 0 -
Stage 2	0	-	- - 0 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - 775
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	775
HCM Lane V/C Ratio	-	-	-	0.084
HCM Control Delay (s)	-	-	-	10.1
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.3

dsdlaforce (22)

каждому из них, в частности, в отношении

END USE AND ACCESS

Figure 1 shows the site location relative to the adjacent and nearby town in Figure 2. The Cathedral Rock Church is planned for the edge of Struthers Ranch Road. As shown in Figure 2, two access points provide access onto Struthers Ranch Road across from the proposed church, and a right-in/right-out access onto Struthers Road.

nuthers Ranch Tract II is proposed to include 29,740 square feet of office, and 5,200 square feet of restaurant.

INTERSECTION SIGHT DISTANCE

is required intersection sight distance for the intersection of Strutt
rd is 835 feet for passenger vehicles and 650 feet for combination

Space:

Space:

Calla Volante

Turning and evening peak-hour turning-movement traffic counts were conducted March 1 at the intersection of Strathairn Road/Strathairn Road-Ranch Road. The morning and evening peak volumes are shown in Figure 5. It should be noted that the recorded southbound through-turning the evening peak was significantly higher than historical counts. Counts recorded in 1990s Road between 2011 and 2019 have shown that the southbound traffic is by far less than the northbound traffic during the evening peak hour. It is believed that this has been an incident or 2% in the southbound direction during the count that caused a number of vehicles to be misclassified and as otherwise counts, traffic count reports are all in reference.

Can this statement be verified? Explain how the future volumes were calibrated/modified.

Five years of crash data were collected at the intersection of Strathern Road/Strathern Road. There was only one crash during the study period. The only crash was a fixed object crash that resulted in property damage only. No correctable crash patterns were identified.

Space:

site-generated traffic. The turning mornings with addition of future ch (lane plus taper). The ECM requiren

The right-in/right-out access on Str. lane. This criterion calls for 370-ft 45-mph design speed and a 435-ft design speed. The speed limit c recommends an approximately 200

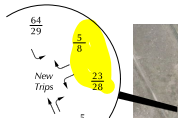
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New Trips

$\frac{69}{32}$


$\frac{27}{36}$

Space:




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Page Label: 23
Author: dsdlaforce
Date: 3/11/2021 2:53:00 PM
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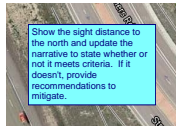
Subject: Callout
Page Label: 23
Author: dsdlaforce
Date: 3/11/2021 2:53:05 PM
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This meets the criteria for right turn lane. Update the Auxiliary Turn Lane section and the conclusion/recommendation section to discuss.



Subject: Cloud+
Page Label: 13
Author: dsdlaforce
Date: 3/11/2021 3:03:16 PM
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Will be reviewed on the resubmittal. Recommendation may be different with the removal of RIRO.



Subject: Text Box
Page Label: 28
Author: dsdlaforce
Date: 3/11/2021 3:40:55 PM
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Show the sight distance to the north and update the narrative to state whether or not it meets criteria. If it doesn't, provide recommendations to mitigate.



Subject: Callout
Page Label: 28
Author: dsdlaforce
Date: 3/11/2021 3:49:55 PM
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update.



Subject: Text Box
Page Label: 28
Author: dsdlaforce
Date: 3/11/2021 3:59:35 PM
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Provide an exhibit for the driveway entering sight distance



Subject: Callout
Page Label: 23
Author: dsdlaforce
Date: 3/11/2021 4:15:58 PM
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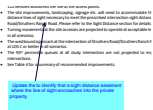
Without the RIRO this it seems separate left turn/right turn lanes are warranted. Provide auxiliary turn lane analysis and recommendation



Subject: Callout
Page Label: 6
Author: dsdlaforce
Date: 3/11/2021 5:12:52 PM
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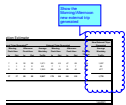
Update the required intersection sight distance and update Exhibit 1. Intersection sight distance applies to Struthers Road/Struthers Ranch Road intersection.

Intersection sight distance is ECM 2.3.6.G Table 2-21.
Driveway access sight distance is ECM ECM 2.4.1.D.



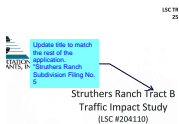
Subject: Callout
Page Label: 12
Author: dsdlaforce
Date: 3/11/2021 5:15:47 PM
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Update the to identify that a sight distance easement where the line of sight encroaches into the private property



Subject: Cloud+
Page Label: 15
Author: dsdlaforce
Date: 3/11/2021 5:16:17 PM
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Show the Morning/Afternoon new external trip generated



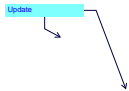
Subject: Callout
Page Label: 1
Author: dsdlaforce
Date: 3/11/2021 5:19:04 PM
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Update title to match the rest of the application. "Struthers Ranch Subdivision Filing No. 5



Subject: Callout
Page Label: 2
Author: dsdlaforce
Date: 3/11/2021 5:19:43 PM
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update



Subject: Callout
Page Label: 5
Author: dsdlaforce
Date: 3/11/2021 5:20:02 PM
Status:
Color:
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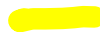
Update



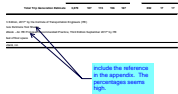
Subject: Highlight
Page Label: 5
Author: dsdlaforce
Date: 3/11/2021 5:20:07 PM
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Subject: Highlight
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Date: 3/11/2021 5:20:08 PM
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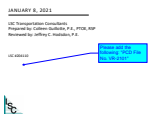
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Date: 3/11/2021 5:20:11 PM
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Subject: Callout
Page Label: 15
Author: dsdlaforce
Date: 3/11/2021 7:43:57 AM
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include the reference in the appendix. The percentages seems high.


lpackman (9)



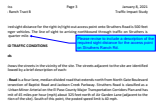
Subject: Callout
Page Label: 2
Author: lpackman
Date: 2/25/2021 11:11:27 AM
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Please add the following: "PCD File No. VR-2101"

can prescribe signs, parking out 18 inches. river's eye" is the site grading

Subject: Highlight
Page Label: 6
Author: lpackman
Date: 2/25/2021 11:33:56 AM
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18 inches



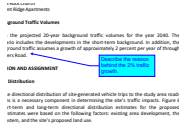
Subject: Callout
Page Label: 7
Author: lpackman
Date: 2/25/2021 11:57:43 AM
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Please revise to include a description of the required sight distance for the access point on Struthers Ranch Rd.



Subject: Text Box
Page Label: 13
Author: lpackman
Date: 2/25/2021 2:29:47 PM
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Please provide a list of references used to create this study.



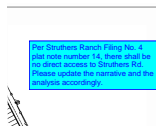
Subject: Callout
Page Label: 9
Author: lpackman
Date: 2/25/2021 4:10:45 PM
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Describe the reason behind the 2% traffic growth.



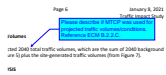
Subject: Callout
Page Label: 23
Author: lpackman
Date: 2/25/2021 4:36:18 PM
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Per Struthers Ranch Filing No. 4 plat note number 14, there shall be no direct access to Struthers Rd. Please update the narrative and the analysis accordingly.



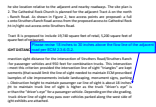
Subject: Text Box
Page Label: 18
Author: lpackman
Date: 2/25/2021 4:36:54 PM
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Per Struthers Ranch Filing No. 4 plat note number 14, there shall be no direct access to Struthers Rd. Please update the narrative and the analysis accordingly.



Subject: Callout
Page Label: 10
Author: lpackman
Date: 3/1/2021 7:13:14 AM
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Please describe if MTCP was used for projected traffic volumes/conditions. Reference ECM B.2.2.C.



Subject: Callout
Page Label: 6
Author: lpackman
Date: 3/1/2021 8:08:28 AM
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Please revise 18 inches to 30 inches above the flow line of the adjacent road per ECM 2.3.6.G.2.