




LSC TRANSPORTATION CONSULTANTS, INC.
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Carriage Meadows South Updated Traffic Impact and Access Analysis LSC #164240

October 14, 2016

Traffic Engineer's Statement

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

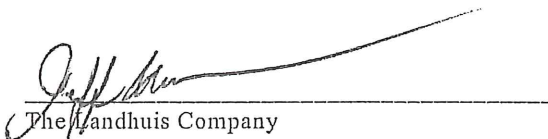

Jeffrey C. Hodsdon, P.E. #31684




Date

Developer's Statement

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


The Mandhuis Company


Date

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October 14, 2016

Mr. Jeff Mark
The Landhuis Company
212 North Wahsatch Avenue, Suite 301
Colorado Springs, CO 80903

RE: Carriage Meadows South
El Paso County, Colorado
Updated Traffic Impact and Access Analysis
LSC #164240

Dear Mr. Mark:

LSC Transportation Consultants, Inc. has prepared this updated traffic impact analysis for the 234-lot Carriage Meadows South residential development to be located south of Fontaine Boulevard and east of Marksheffel Road within the Lorson Ranch development in El Paso County, Colorado. The site location is shown on Figure 1.

REPORT CONTENTS

The report contains the following:

- Recent/current street and traffic conditions adjacent to and in the vicinity of the site including the street widths, lane geometries, traffic controls, posted speed limits, street classification, etc.
- Existing traffic volumes at the key intersections in the vicinity of the site and estimates of short-term and 2040 background traffic volumes.
- The projected average weekday and peak-hour vehicle-trips to be generated by the site.
- The assignment of the projected trips to the adjacent street system.
- The resulting short-term and 2040 total traffic volumes on the street system.
- The resulting traffic impacts. The traffic impacts have been quantified by determining the future levels of service at the intersections of Marksheffel Road/Lorson Boulevard, Marksheffel Road/Fontaine Boulevard, the proposed street connection to Fontaine Boulevard, and the proposed site access point intersections on Lorson Boulevard.
- Recommendations for street functional classification, the Lorson Boulevard intersections, traffic controls, and auxiliary turn lanes.

SITE DEVELOPMENT AND LAND USE

The Carriage Meadows South site is planned to be developed with 234 lots for single-family homes. A street connection is proposed to Fontaine Boulevard about 1,080 feet east of Marksheffel Road. Staff has indicated this street connection will require a deviation to the *El Paso County Engineering Criteria Manual*. A deviation request has been prepared and included with this resubmittal. Public street access points to the future Lorson Boulevard are planned at about 900 and 1,900 feet east of Marksheffel Road. The site plan is shown in Figure 2.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

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

- **Marksheffel Road** extends north from the Link Road/C&S Road intersection in Fountain, Colorado to north of Woodmen Road. Marksheffel Road is shown as a future four-lane Expressway on the *County Major Transportation Corridors Plan (MTCP)*. The posted speed limit on Marksheffel Road at Fontaine Boulevard is 45 miles per hour (mph). The PPRTA is currently upgrading Marksheffel Road between Mesa Ridge Parkway and Bradley Road. Road construction is underway. This includes intersection improvements at the Fontaine Boulevard intersection.
- **Fontaine Boulevard** is designated as a four-lane Urban Principal Arterial from Marksheffel Road east to Stingray Lane and has been constructed as such. The applicant will be dedicating 130 feet of right-of-way east of Stingray Lane for a future four-lane Principal Arterial. The north half-section will be constructed as development progresses east. The section west of Marksheffel is shown on the *Major Transportation Corridors Plan* as a two-lane Minor Arterial. The cross section from Marksheffel to Cottonwood Grove Drive has been constructed as a mix of rural and urban cross sections and the section between Cottonwood Grove Drive and Powers is a rural two-lane roadway section. The posted speed limit on Fontaine Boulevard is 35 mph just east of (and a short distance west of) Marksheffel Road. The speed limit increases to 45 mph just east of the bridge over Jimmy Camp Creek.
- **Lorson Boulevard** is a planned continuous roadway that will extend from Marksheffel Road about one-half mile south of Fontaine Boulevard east across both Jimmy Camp Creek and the East Tributary. Lorson Boulevard will be classified as an Urban Non-Residential Collector Street. The street width will be modified for a 44-foot street width rather than the standard 52-foot street width per the approved deviation. In the short term, Lorson Boulevard is planned to extend through this project, across Jimmy Camp Creek to Stingray Lane.

Existing Traffic Conditions

Figure 3 shows the recent (pre-construction) traffic volumes on Marksheffel Road adjacent to the site. The traffic volumes were based on traffic counts conducted by LSC at the intersection of Marksheffel/Peaceful Valley in May 2015. The traffic counts were conducted prior to the start of construction on the Marksheffel project. The traffic count reports are attached.

Existing Turn Lanes

The Marksheffel/Fontaine intersection is currently under construction. Please refer to Figure 4 for the post-construction laneage per the Marksheffel plans. Separate left- and right-turn lanes are provided eastbound and westbound.

SHORT-TERM (YEAR 2020) BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the roadways without the Carriage Meadows South traffic. Background traffic includes the existing traffic and traffic generated by buildout of the residential portion of Lorson Ranch subdivisions north of Lorson Boulevard between Jimmy Camp Creek and the East Tributary and the Carriage Meadows North subdivision located north of Fontaine Boulevard and east of Marksheffel Road but assumes zero traffic generated by Carriage Meadows South. The short-term background volumes assume Lorson Boulevard has been extended east of Jimmy Camp Creek to Stingray Lane. A portion of the existing traffic was assumed to be rerouted to use this new connection. The short-term background traffic volumes are shown in Figure 4.

2040 BACKGROUND TRAFFIC

Figure 5a shows the projected 2040 background traffic volumes. The 2040 background traffic volumes are based on estimates of traffic projected to be generated at buildout of the Lorson Ranch Sketch Plan and traffic volumes shown in the *Marksheffel Road South Corridor Preservation Plan* dated July 2014. The 2040 background volumes assume Lorson Boulevard has been extended east of Jimmy Camp Creek and the East Tributary.

Figure 5b shows the 2040 lane geometry and projected level of service for the intersections of Marksheffel/Lorson, Marksheffel/Fontaine and Fontaine/Carriage Meadows.

TRIP GENERATION

Estimates of the traffic volumes expected to be generated by the site have been made using the nationally published trip generation rates found in *Trip Generation, 9th Edition, 2012* by the Institute of Transportation Engineers (ITE). Table 1 shows the results of the trip generation estimates.

As shown in Table 1, the site could be expected to generate about 2,228 new vehicle-trips on the average weekday, with about 1,114 vehicles entering and 1,114 vehicles exiting in a 24-hour

period. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 44 vehicles would enter and 132 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:30 and 6:30 p.m., about 147 vehicles would enter and 87 vehicles would exit the site.

TRIP DISTRIBUTION AND ASSIGNMENT

The directional distribution of the site-generated traffic volumes on the street and roadway system serving the site is one of the most important factors in determining the site's traffic impacts. Figure 6 shows the external trip distribution estimates (external to Lorson Ranch). The directional distribution estimates have been based on the location of the site with respect to the regional residential employment, commercial, and activity centers; the land use proposed; the access/roadway connections assumed; and the roadway network system. The directional distribution estimate assumes Mesa Ridge Parkway has been extended east to Marksheffel Road.

When the external trip distribution percentages (from Figure 6) are applied to the trip generation estimates (from Table 1), the resulting site-generated traffic volumes can be determined. Figures 7 and 8 show the short-term and long-term site-generated traffic volume estimates, respectively. The short-term site-generated traffic volumes assume all trips generated by Carriage Meadows South have origins and destinations outside of Lorson Ranch. The long-term site-generated volumes assume a portion of the trips will travel within the Lorson Ranch Development to and from the planned commercial areas to be located near the intersection of Carriage Meadows Drive/Fontaine Boulevard and the planned school site located north of Fontaine Boulevard and east of the east tributary. The number of vehicle-trips assigned within the Lorson Ranch development were based on the internal trip estimates shown in Table 2 of the *Lorson Ranch Sketch Plan Traffic Technical Memorandum* by LSC dated April 15, 2016. Internal trips from this site are shown in Table 1.

PROJECTED TOTAL TRAFFIC

Figure 9a shows the short-term (year 2020) total traffic volumes. These short-term volumes are the sum of the short-term background traffic volumes (from Figure 4) plus the short-term site-generated traffic volumes (from Figure 7).

Figure 10a shows the 2040 total traffic volumes. These 2040 total traffic volumes are the sum of the 2040 background traffic volumes (from Figure 5a) plus the long-term site-generated traffic volumes (from Figure 8).

PROJECTED LEVELS OF SERVICE

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A represents control delay of less than 10 seconds for unsignalized and signalized intersections. LOS F represents control delay of more than 50 seconds for unsignalized intersections and more than 80 seconds for signalized intersections. Table 2 shows the level of service delay ranges.

Table 2 Intersection Levels of Service		
Level of Service	Signalized Intersections	Unsignalized Intersections
	Control Delay (seconds per vehicle)	
A	less than 10 sec	less than 10 sec
B	10-20 sec	10-15 sec
C	20-35 sec	15-25 sec
D	35-55 sec	25-35 sec
E	55-80 sec	35-50 sec
F	more than 80 sec	more than 50 sec

The intersections of Marksheffel/Lorson, Marksheffel Road/Fontaine Boulevard, and Fontaine Boulevard/Carriage Meadows and the two site access points to Lorson Boulevard have been analyzed to determine the projected levels of service for the short-term and 2040 background and total traffic volumes based on the signalized method of analysis from Synchro and the unsignalized method of analysis procedures outlined in the *Highway Capacity Manual, 2010 Edition* by the Transportation Research Board. The level of service reports are attached. The results of the analysis are shown in Figures 4, 5b, 9b and 10b.

Figure 9b shows the short-term lane geometry and projected level of service for the intersections of Marksheffel/Lorson, Marksheffel/Fontaine, Fontaine/Carriage Meadows, and the site access points to Lorson Boulevard.

Figure 10b shows the 2040 lane geometry and projected level of service for the intersections of Marksheffel/Lorson, Marksheffel/Fontaine, Fontaine/Carriage Meadows, and the site access points to Lorson Boulevard.

Marksheffel/Fontaine

The signal-controlled **Marksheffel Road/Fontaine Boulevard** intersection is projected to continue to operate at a level of service D overall or better based on the short-term and 2040 background and total traffic conditions.

Marksheffel/Lorson

Based on the projected short-term total traffic volumes all movements at the intersection of Marksheffel/Lorson are projected to operate at LOS C or better during the peak hours as a Stop-sign-controlled intersection (Stop-sign on the westbound approach). By 2040, it was assumed that this intersection would be signal controlled. As a signalized intersection all movements are projected to operate at LOS D or better during the peak hours based on the projected 2040 background and total traffic volumes.

Fontaine/Carriage Meadows

Based on the projected short-term total traffic volumes all movements at the intersection of Fontaine/Carriage Meadows are projected to operate at LOS C or better during the peak hours as a two-way Stop-sign-controlled intersection. By 2040, it was assumed that this intersection would be signal controlled. As a signalized intersection all movements are projected to operate at LOS D or better during the peak hours based on the projected 2040 background and total traffic volumes.

Lorson Boulevard Site Access Points

The proposed site access points to Lorson Boulevard are projected to operate at level of service B or better as Stop-sign-controlled intersections based on the projected short-term total traffic volumes. By 2040 the northbound approaches at both access points are projected to operate at LOS E during the afternoon peak hour.

QUEUING

A queuing analysis was performed using Synchro/SimTraffic to determine the vehicle queue lengths that could be expected at the site access points to Lorson Boulevard. The projected 2040 morning and afternoon peak-hour traffic volumes were used in the model. The simulation was run five times. The queuing report is attached.

The results of the queuing analysis show that the maximum southbound queue length is about 52 feet long at the east access point and 63 feet at the west access point. There is about 100 feet of storage available between Lorson Boulevard and the first internal street (Becksworth Drive) at both the east and west intersections.

LORSON BOULEVARD FUNCTIONAL CLASSIFICATION AND CROSS SECTION

Lorson Boulevard will be classified as an Urban Non-Residential Collector Street. The street width will be modified for a 44-foot-wide street rather than the standard 52-foot-wide street per the approved deviation. The projected 2040 total daily traffic volume on Lorson Boulevard just east of Marksheffel Road is 12,880 vehicles per day. This volume could be accommodated by a three-lane cross section (one through lane in each direction with a center two-way left-turn lane and right-turn lanes where warranted). The striped center turn lane would be 12 feet wide. The through lanes would be 14 feet wide (exclusive of curb and gutter). Travel lanes would be for shared use (bicycles).

RECOMMENDED INTERNAL STREET CLASSIFICATIONS

Figure 11 shows the estimated average weekday traffic volumes and recommended street classifications for the Carriage Meadows South internal streets and the street connection to the north to Fontaine Boulevard.

TRAFFIC SIGNAL ESCROW PERCENTAGES/AMOUNTS

Based on the long-term site-generated traffic volumes shown in Figure 8 and the projected 2040 total traffic volumes shown in Figure 10b, the Carriage Meadows South development is projected to contribute about 9.9 percent of the traffic on the westbound/minor approach to the intersection of Marksheffel Road/Lorson Boulevard. The minor approach volumes were assumed to include the westbound left-turn movements only. Assuming a total signal cost of \$300,000, a fair share contribution towards a future signal at this intersection would be \$29,700.

Based on the long-term site-generated traffic volumes shown in Figure 8 and the projected 2040 total traffic volumes shown in Figure 10b, the Carriage Meadows South development is projected to contribute about 10.9percent of the traffic on the northbound and southbound approaches to the intersection of Fontaine Boulevard/Carriage Meadows Drive. The minor approach volumes were assumed to include the northbound and southbound left-turn and through movements plus 50 percent of the right-turn movements. Assuming a total signal cost of \$300,000, a fair share contribution for towards a future signal at this intersection would be \$32,700.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

- The Carriage Meadows South site is expected to generate about 2,228 new vehicle-trips on the average weekday, with about 1,114 vehicles entering and 1,114 vehicles exiting in a 24-hour period. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 44 vehicles would enter and 132 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:30 and 6:30 p.m., about 147 vehicles would enter and 87 vehicles would exit the site.

Projected Levels of Service

- The signal-controlled Marksheffel Road/Fontaine Boulevard intersection is projected to continue to operate at level of service D or better based on the short-term and 2040 background and total traffic conditions.
- Based on the projected short-term total traffic volumes all movements at the intersection of Marksheffel/Lorson are projected to operate at LOS C or better during the peak hours as a two-way Stop-sign-controlled intersection. By 2040, it was assumed that this intersection would be signal controlled. As a signalized intersection all movements are projected to operate a LOS D or better during the peak hours based on the projected 2040 background and total traffic volumes.
- Based on the projected short-term total traffic volumes all movements at the intersection of Fontaine/Carriage Meadows are projected to operate at a LOS C or better during the peak hours as a two-way Stop-sign-controlled intersection. By 2040, it was assumed that this intersection would be signal controlled. As a signalized intersection all movements are

projected to operate at LOS D or better during the peak hours based on the projected 2040 background and total traffic volumes.

- The proposed site access points to Lorson Boulevard are projected to operate at level of service B or better as Stop-sign-controlled intersections based on the projected short-term total traffic volumes. By 2040 the northbound approaches at both access points are projected to operate at LOS E during the afternoon peak hour. The traffic signal at the intersection of Marksheffel/Lorson will likely help to create gaps to help these movements occur more easily.

Auxiliary Turn Lanes

Lorson Boulevard/Marksheffel Road

Center lane
striping?



- Based on the projected short-term total traffic volumes a northbound right-turn deceleration lane should be constructed on Marksheffel Road approaching Lorson Boulevard. This lane should be 290 feet long plus a 240-foot taper.

Fontaine/Carriage Meadows

- There is currently adequate pavement width for a continuous right-turn acceleration/deceleration lane on Fontaine Boulevard between Marksheffel Road and Carriage Meadows Drive. The section of Fontaine Boulevard just west of Carriage Meadows Boulevard will need to be restriped with this development.
- There is an existing 325-foot-long westbound left-turn lane on Fontaine Boulevard approaching Carriage Meadows Drive. This turn lane will meet the criteria contained in the ECM based on a design speed of 50 mph for Fontaine Boulevard and the projected 2040 total westbound left-turn volume at this intersection.

Lorson Boulevard Access Points

- A center striped two-way left-turn lane will be provided on Lorson Boulevard. This will provide left-turn lanes for the access points.
- Right-turn deceleration lanes would be **not** required on Lorson Boulevard approaching either of the site access points.
- ECM-standard intersection sight distance at these access point intersections should be initially provided and maintained across the inside of the horizontal curves.

Traffic Signal Escrow Percentages/Amounts

- Please refer to the above section for calculated fair-share amounts to be escrowed for future traffic signals at Fontaine/Carriage Meadows and Marksheffel/Lorson Blvd intersections.

Street Classification

- Figure 11 presents the recommended street classification for Carriage Meadows South.

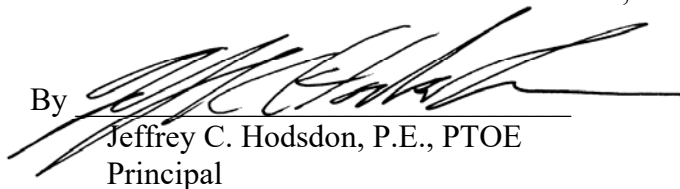
* * * * *

Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By



Jeffrey C. Hodsdon, P.E., PTOE
Principal

JCH:KDF:bjwb

Enclosures: Table 1
Figures 1-11
Traffic Count Reports
Level of Service Reports
Queuing Reports

Table 1
Trip Generation Estimate
Carriage Meadows

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾						Total Trips Generated						Internal Trips						Total External Trips Generated					
			Average		Morning		Afternoon		Average		Morning		Afternoon		Average		Morning		Afternoon		Average		Morning		Afternoon	
			Weekday Traffic	Peak Hour In	Peak Hour Out	Weekday Traffic	Peak Hour In	Peak Hour Out	Weekday Traffic	Peak Hour In	Peak Hour Out	Weekday Traffic	Peak Hour In	Peak Hour Out	Weekday Traffic	Peak Hour In	Peak Hour Out	Weekday Traffic	Peak Hour In	Peak Hour Out	Weekday Traffic	Peak Hour In	Peak Hour Out	Weekday Traffic	Peak Hour In	Peak Hour Out
210	Single-Family Detached Housing	234 DU ⁽²⁾	9.52	0.19	0.56	0.63	0.37	0.37	2,228	44	132	147	87	14%	307	6	13	15	7	1,921	38	119	132	80		

Notes:

(1) Source: "Trip Generation, 9th Edition, 2012" by the Institute of Transportation Engineers (ITE)

(2) DU = dwelling unit

Source: LSC Transportation Consultants, Inc.



Approximate Scale
Scale: 1" = 3,000'

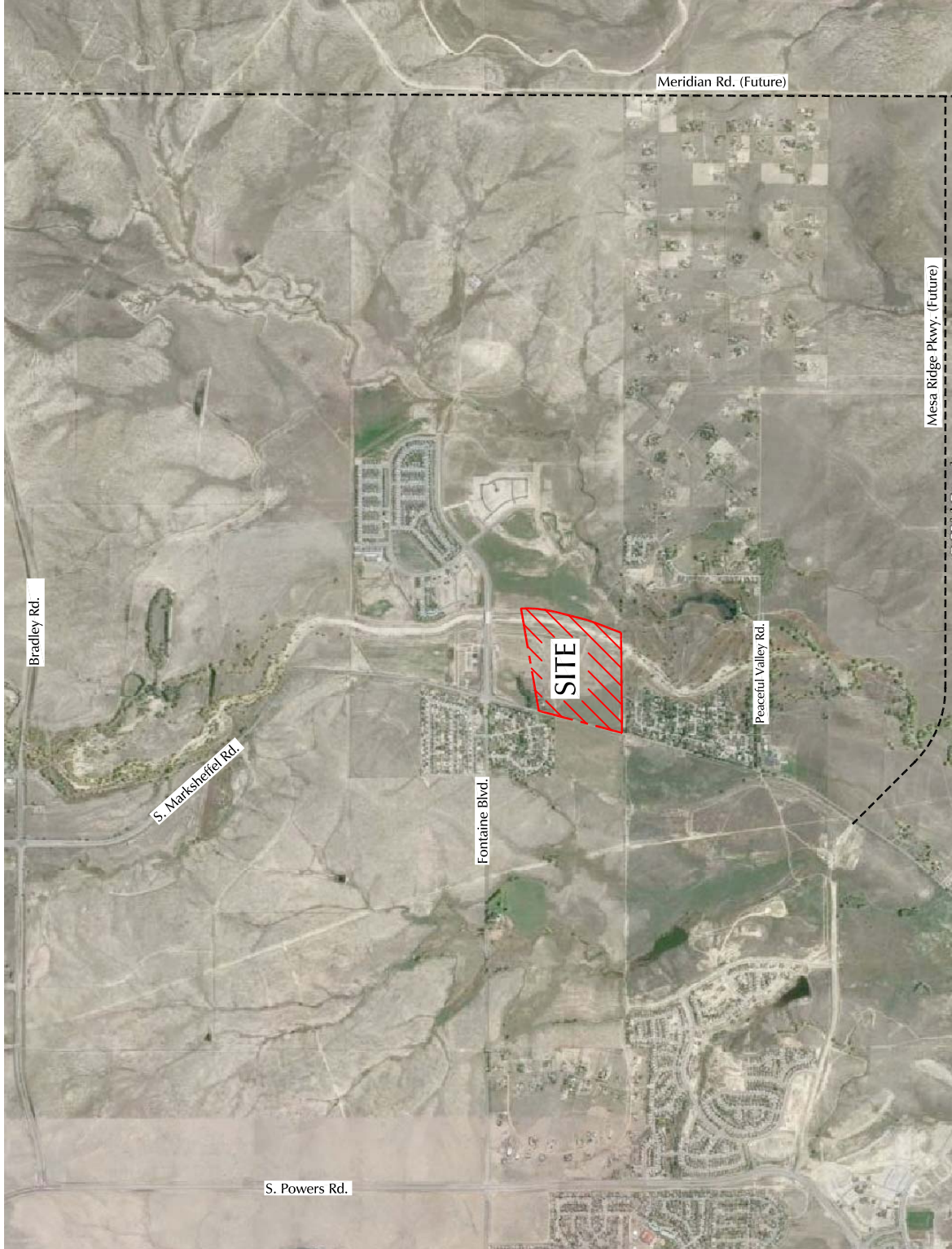


Figure 1

Vicinity Map

Carriage Meadows (LSC #164240)



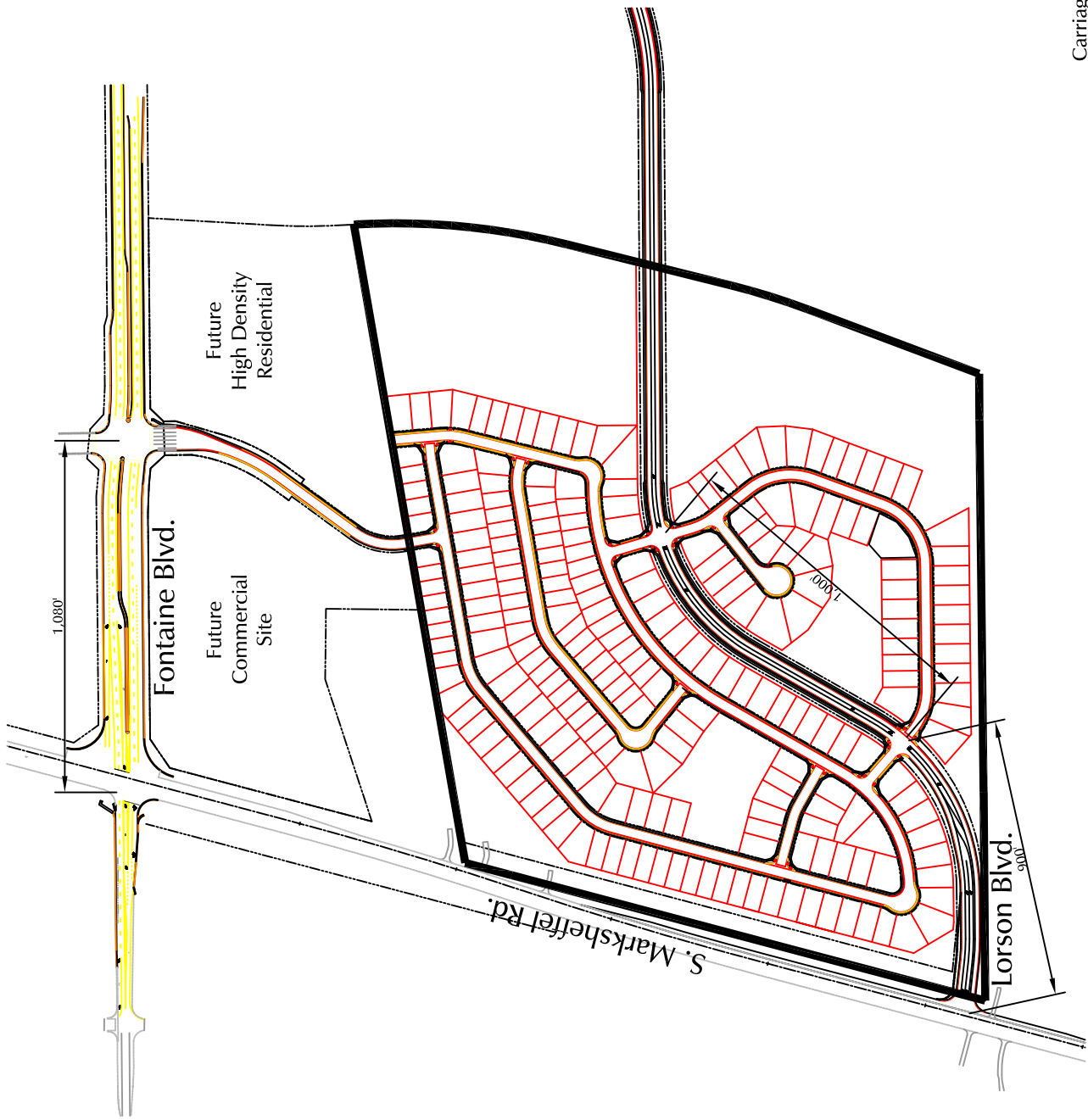


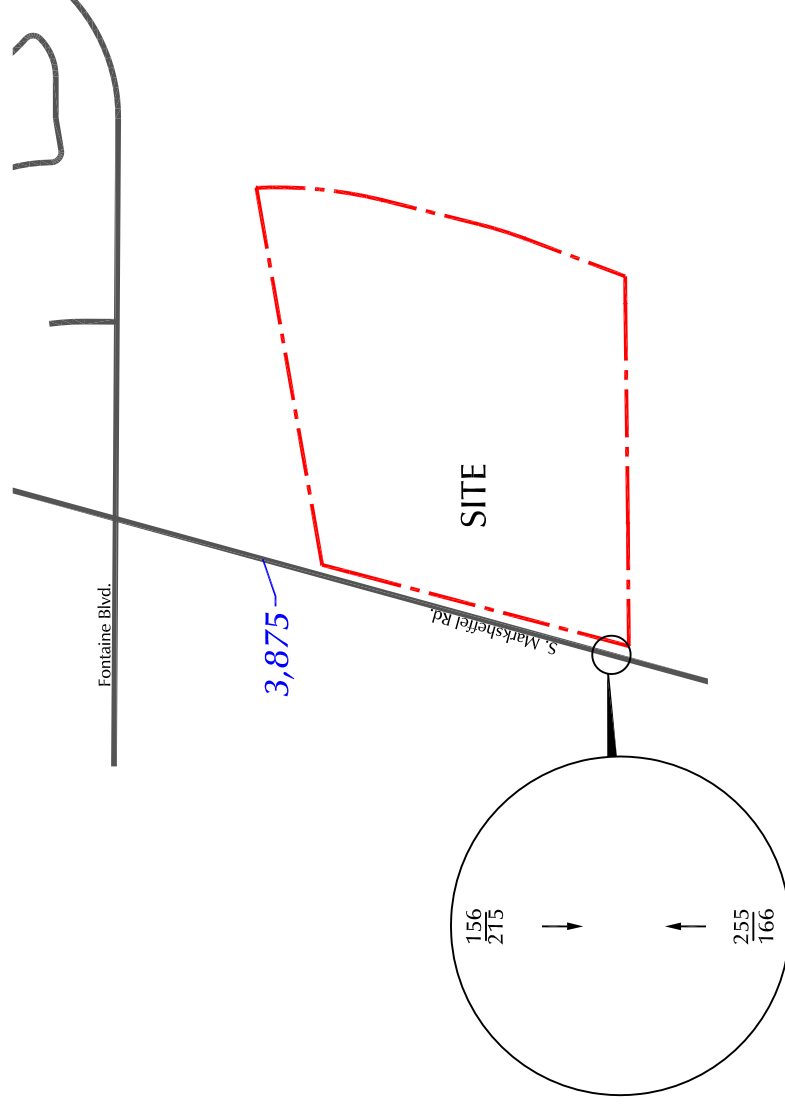
Figure 2
Site Plan

Carriage Meadows (LSC #164240)





Approximate Scale
Scale: 1" = 1,000'



LEGEND:

= Traffic Signal

- $\frac{26}{31}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
- $\frac{26}{31}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
- $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
- $\frac{C}{D}$ = PM Individual Movement Peak-Hour Level of Service
- $\frac{C}{D}$ = AM Entire Intersection Peak-Hour Level of Service
- $\frac{C}{D}$ = PM Entire Intersection Peak-Hour Level of Service

1,000 = Average Weekday Traffic (vehicles per day) Estimated by LSC

Figure 3

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

Carriage Meadows (LSC #164240)



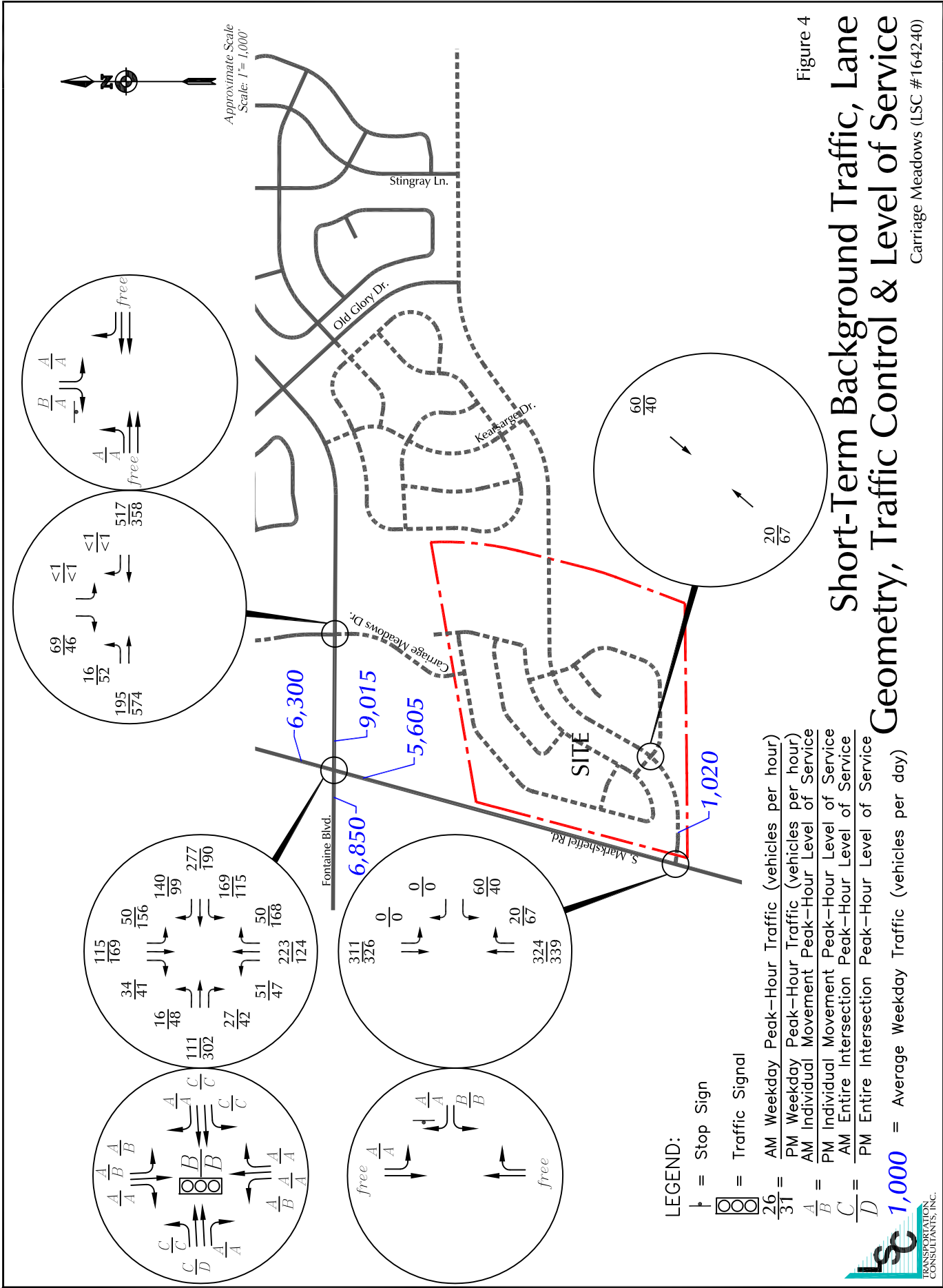


Figure 4

Short-Term Background Traffic, Lane Geometry, Traffic Control & Level of Service

Carriage Meadows (LSC #164240)

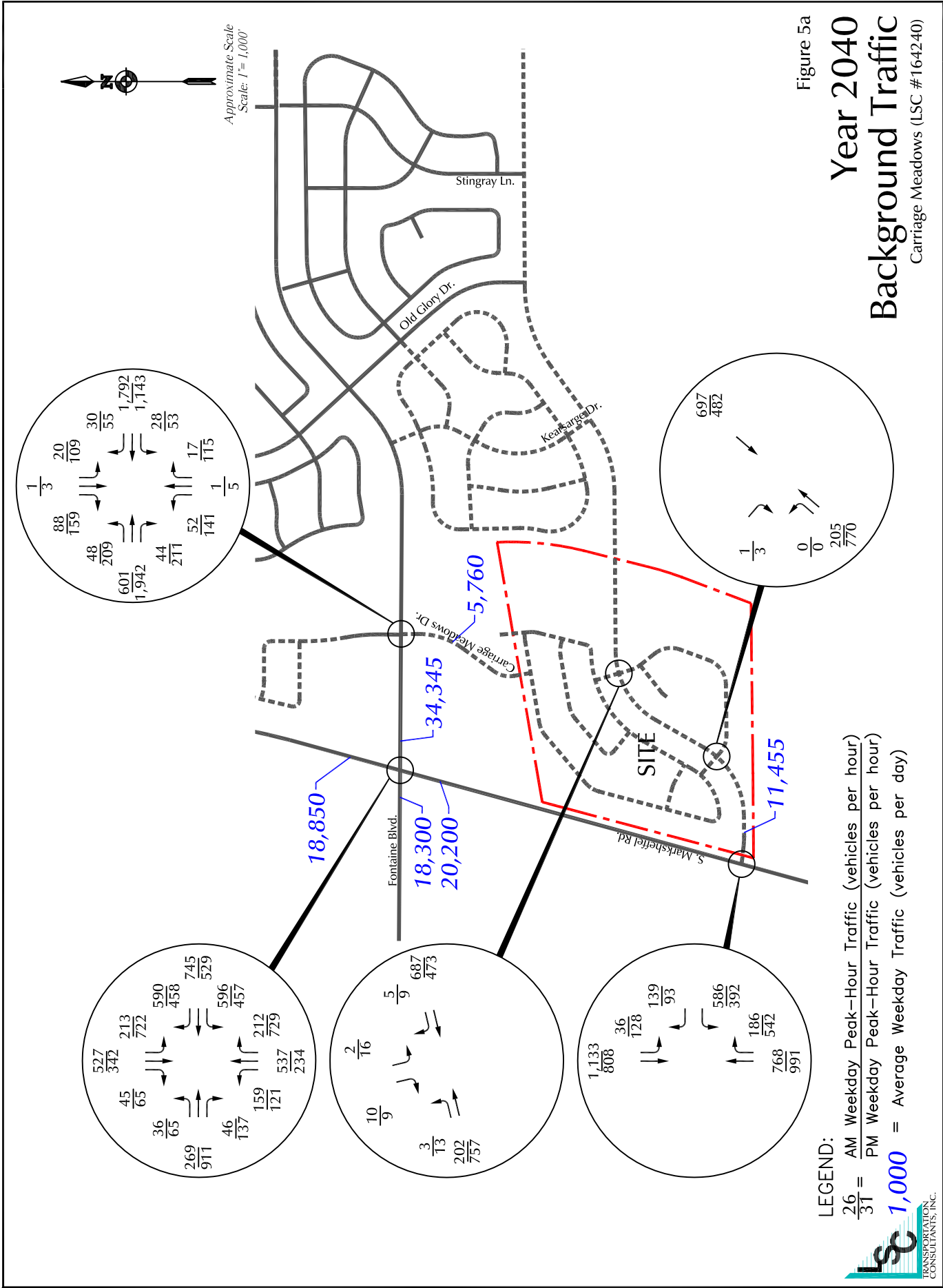


Figure 5a
Year 2040
Background Traffic
 Carriage Meadows (LSC #164240)

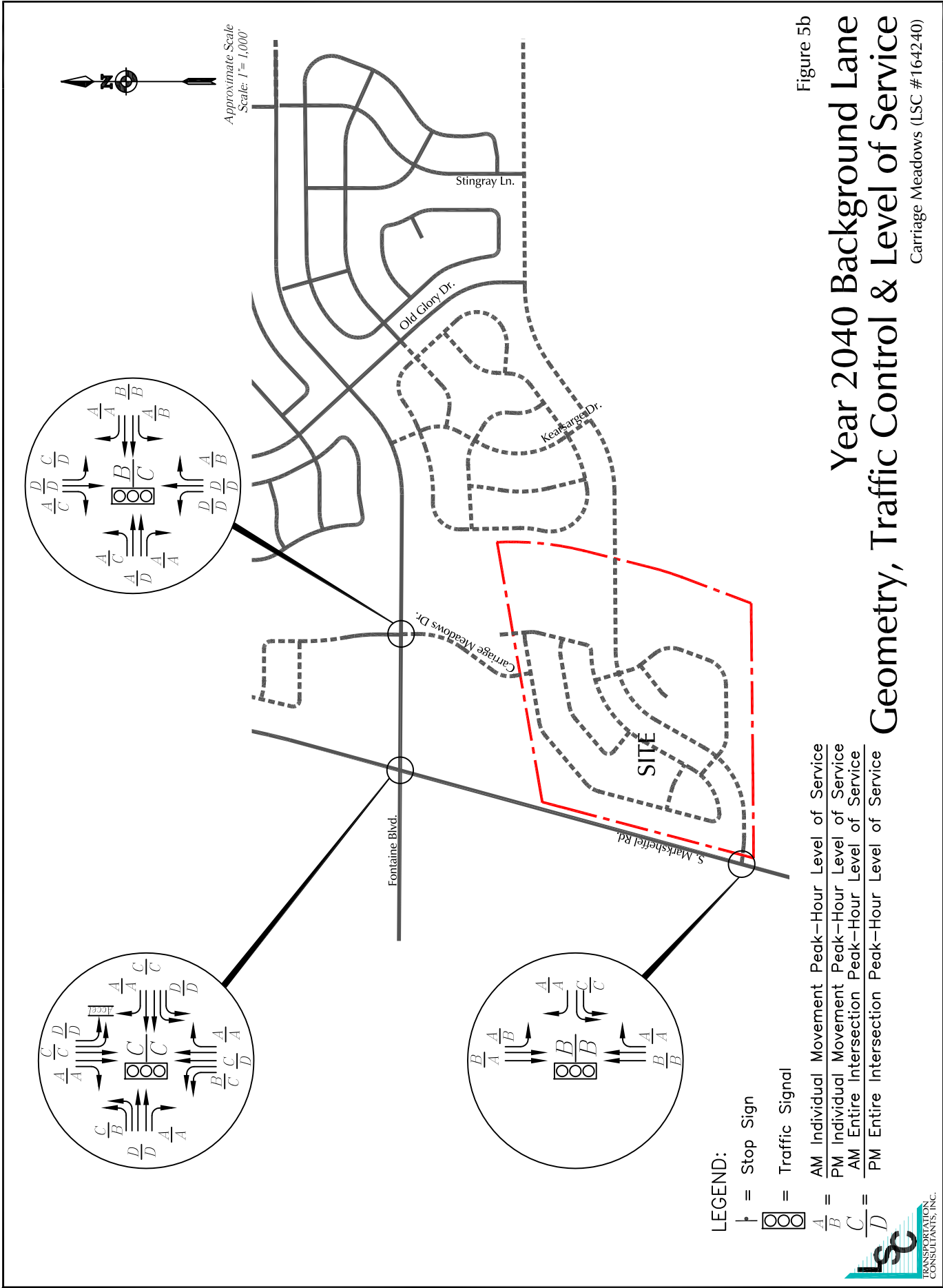
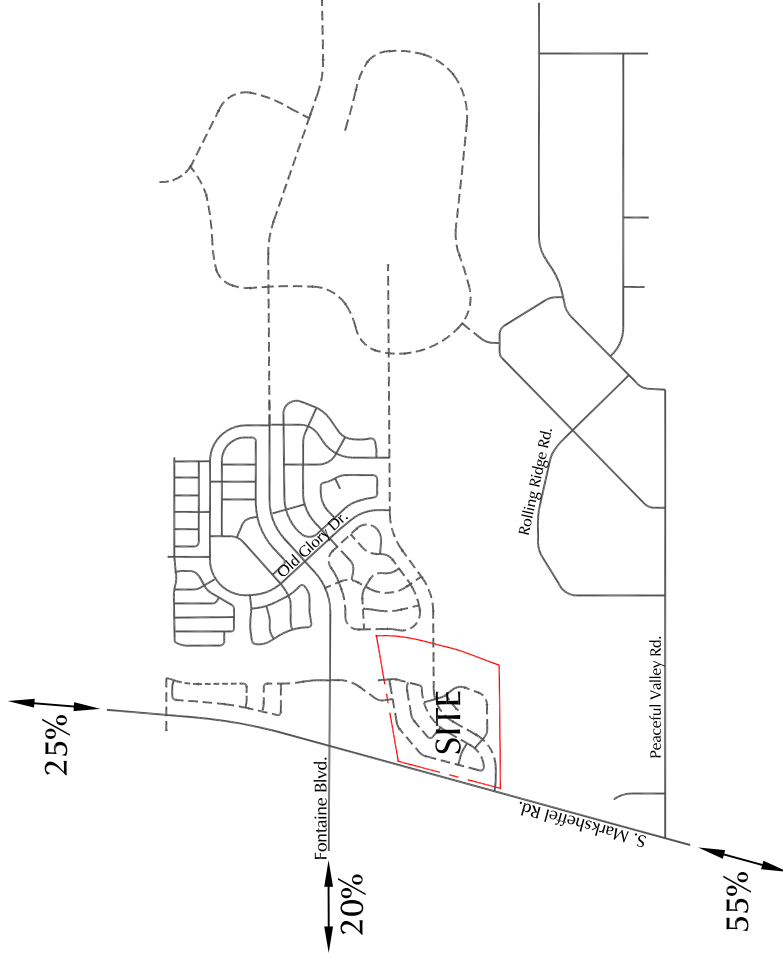


Figure 5b
**Year 2040 Background Lane
 Geometry, Traffic Control & Level of Service**
 Carriage Meadows (LSC #164240)



Approximate Scale
Scale: 1" = 3,000'



LEGEND:



35% = Percent Directional Distribution



Figure 6

Directional Distribution of Site-Generated Traffic

Carriage Meadows (LSC #164240)

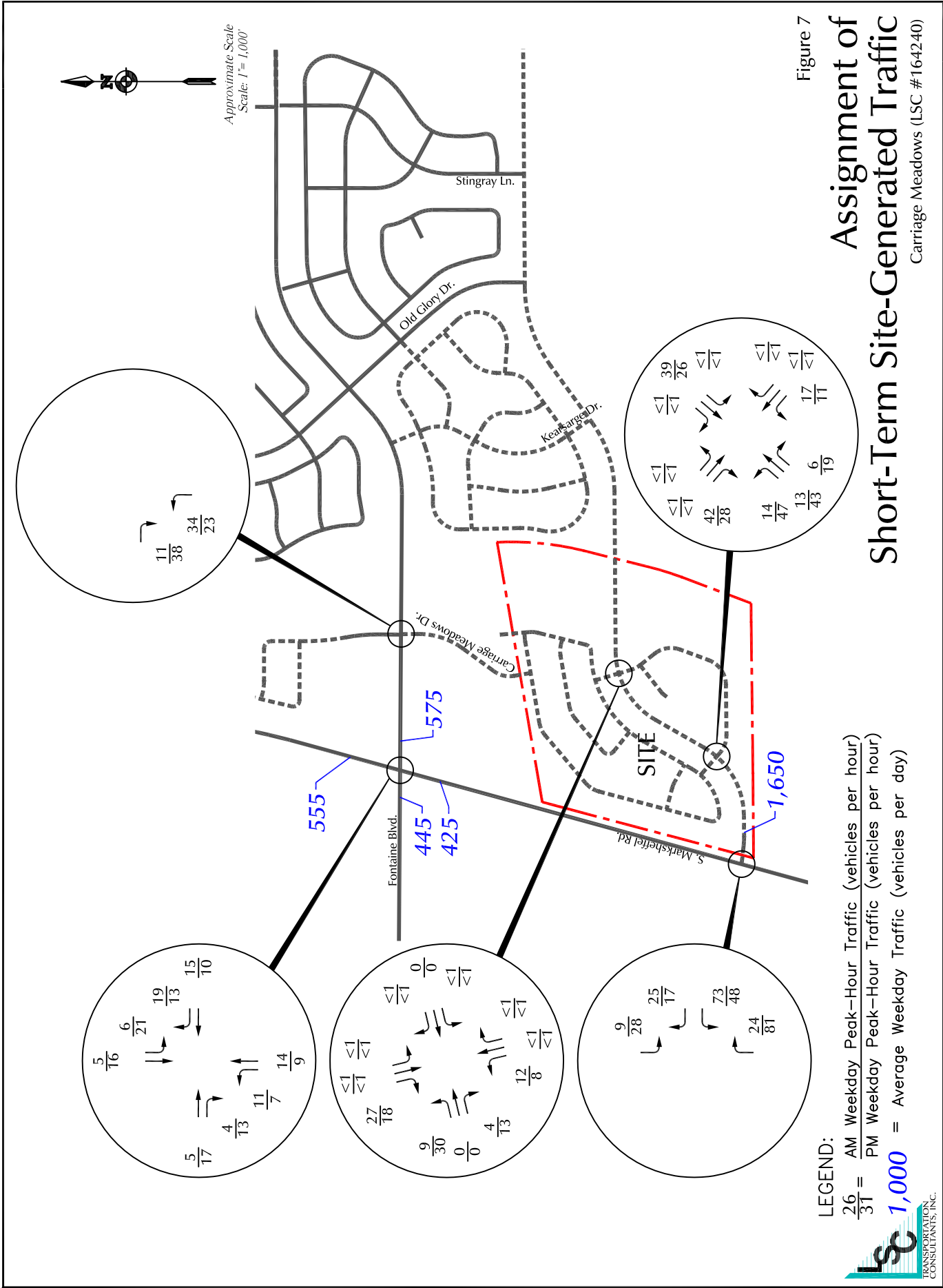
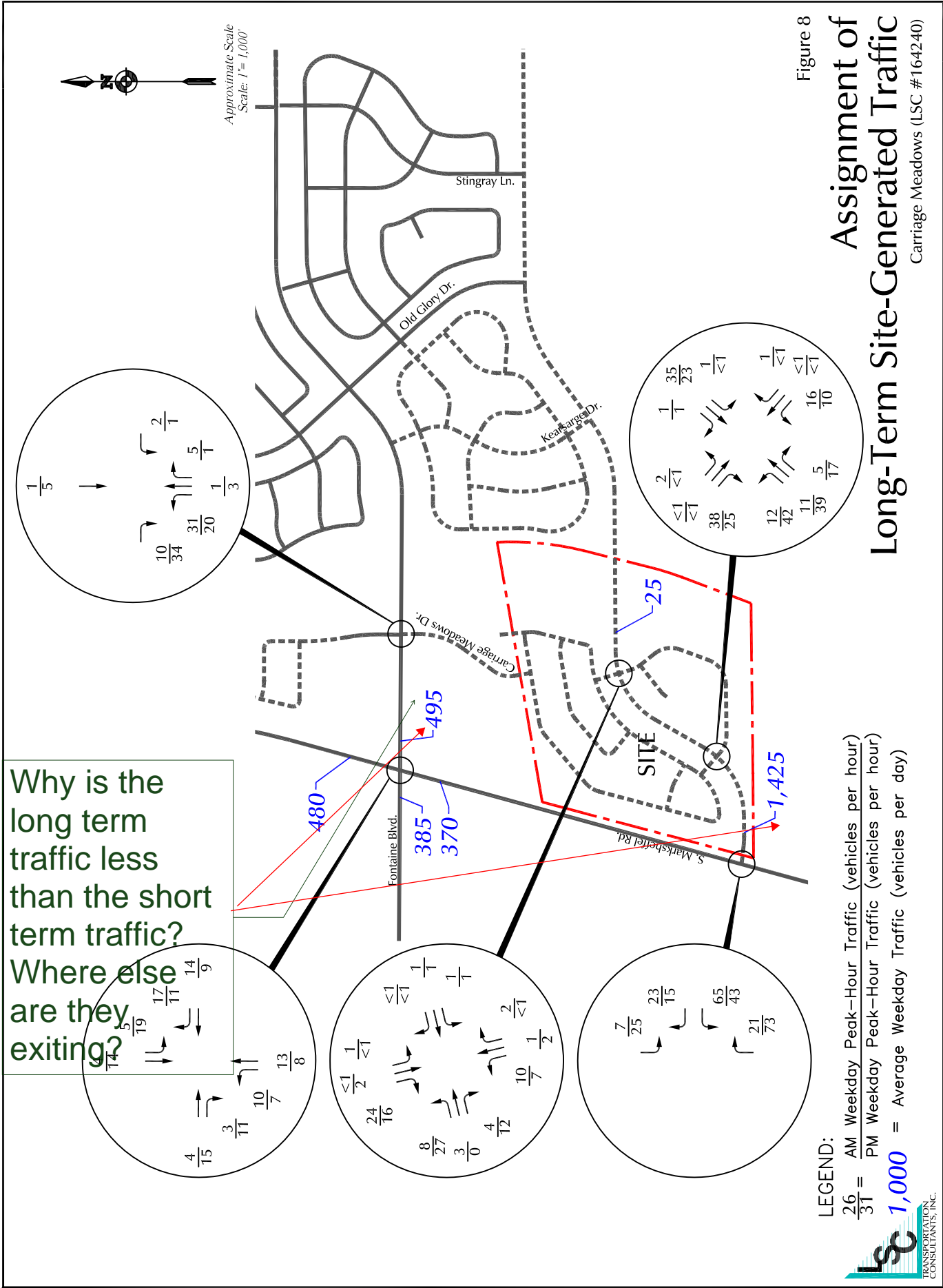


Figure 7
**Assignment of
 Short-Term Site-Generated Traffic**
 Carriage Meadows (LSC #164240)

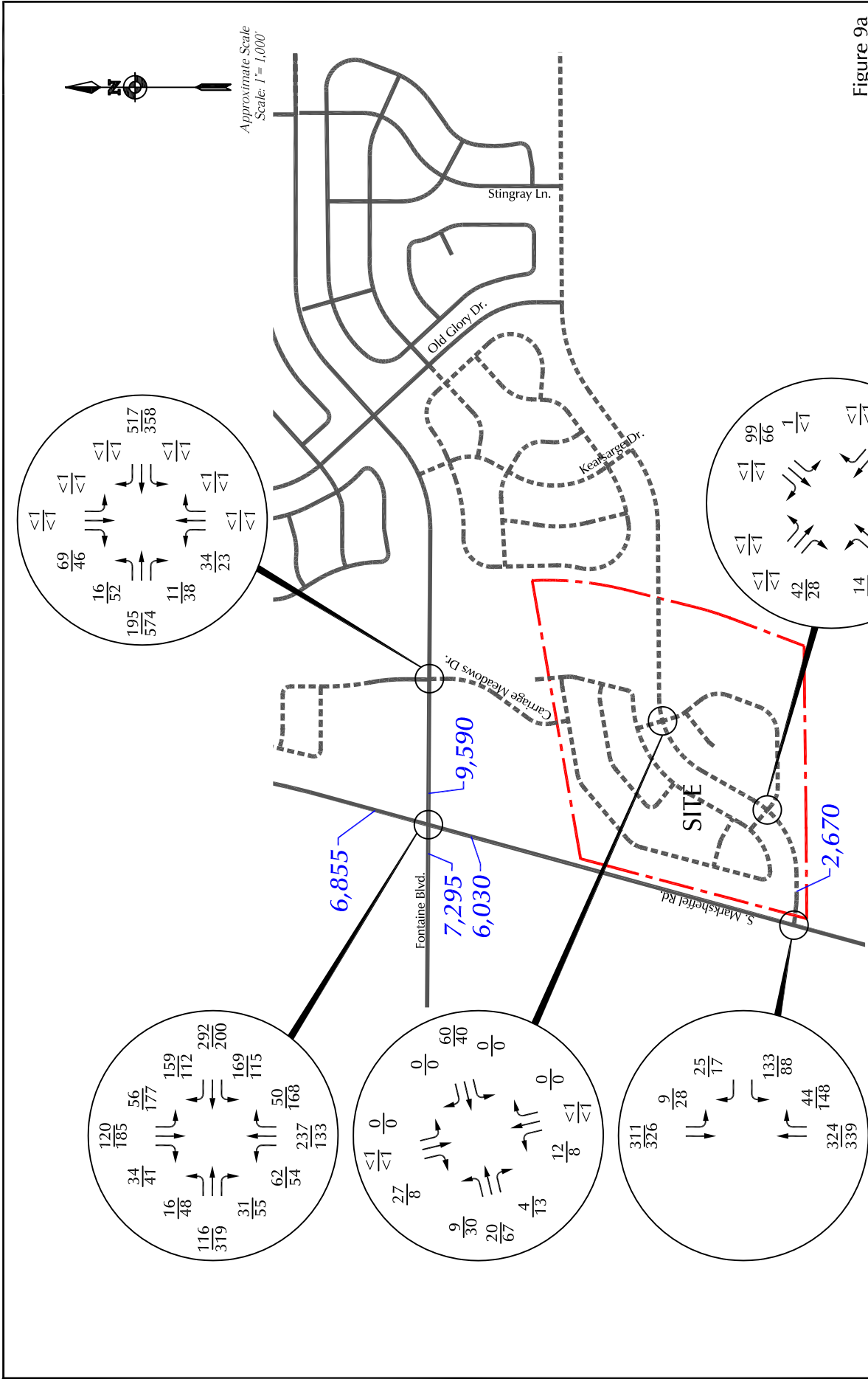


Why is the long term traffic less than the short term traffic? Where else are they exiting?

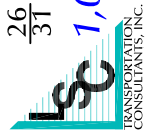
Figure 8
Assignment of Long-Term Site-Generated Traffic
 Carriage Meadows (LSC #164240)

LEGEND:
 $\frac{26}{31}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{31}{26}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
1,000 = Average Weekday Traffic (vehicles per day)

Figure 9a
**Short-Term
 Total Traffic**
 Carriage Meadows (LSC #164240)



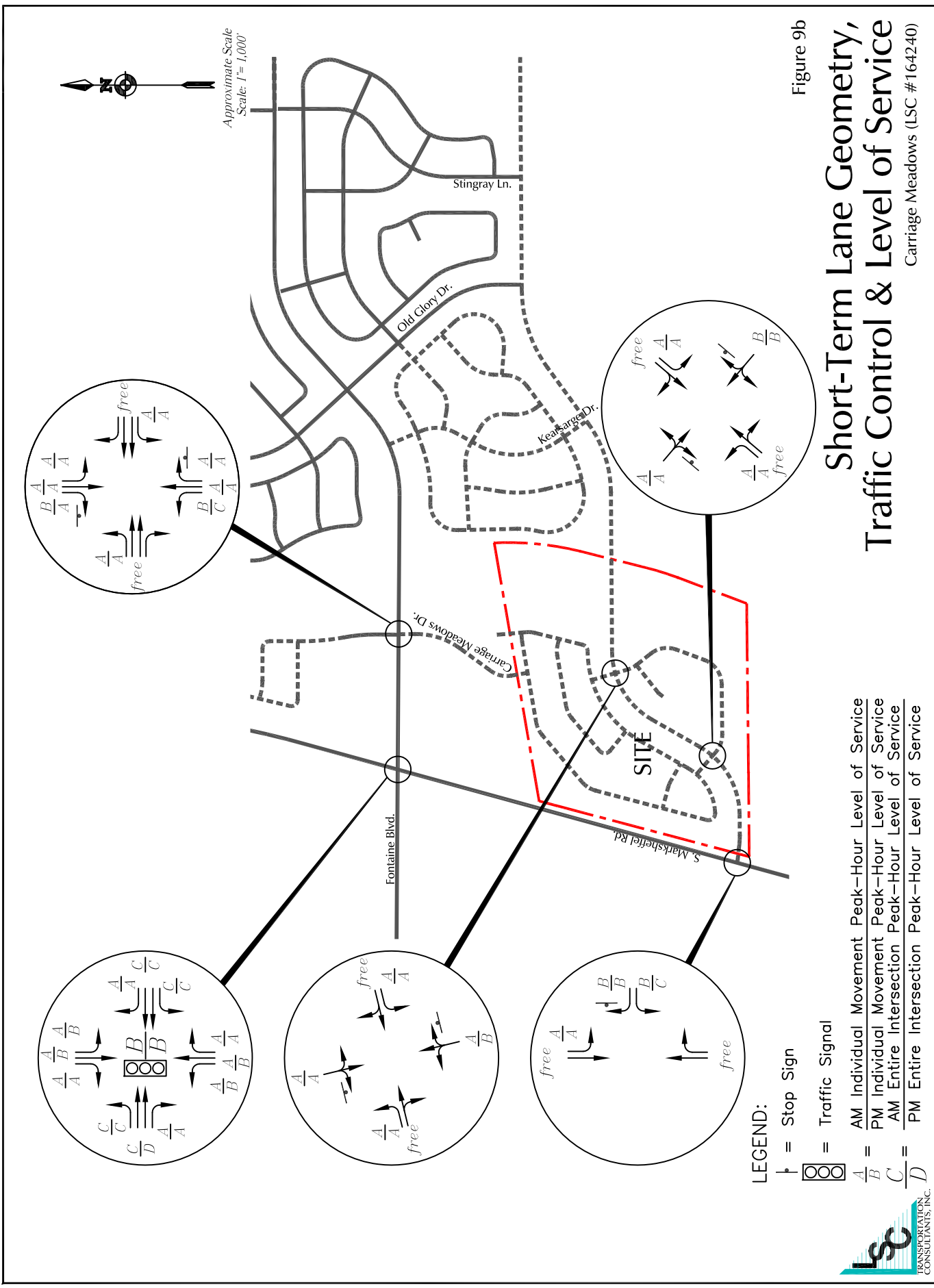
LEGEND:
 26 = AM Weekday Peak-Hour Traffic (vehicles per hour)
 31 = PM Weekday Peak-Hour Traffic (vehicles per hour)
1,000 = Average Weekday Traffic (vehicles per day)



Short-Term Lane Geometry, Traffic Control & Level of Service

Carriage Meadows (LSC #164240)

Figure 9b



LEGEND:

⊥ = Stop Sign

⊞ = Traffic Signal

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

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

$\frac{C}{C}$ = AM Entire Intersection Peak-Hour Level of Service

$\frac{D}{D}$ = PM Entire Intersection Peak-Hour Level of Service



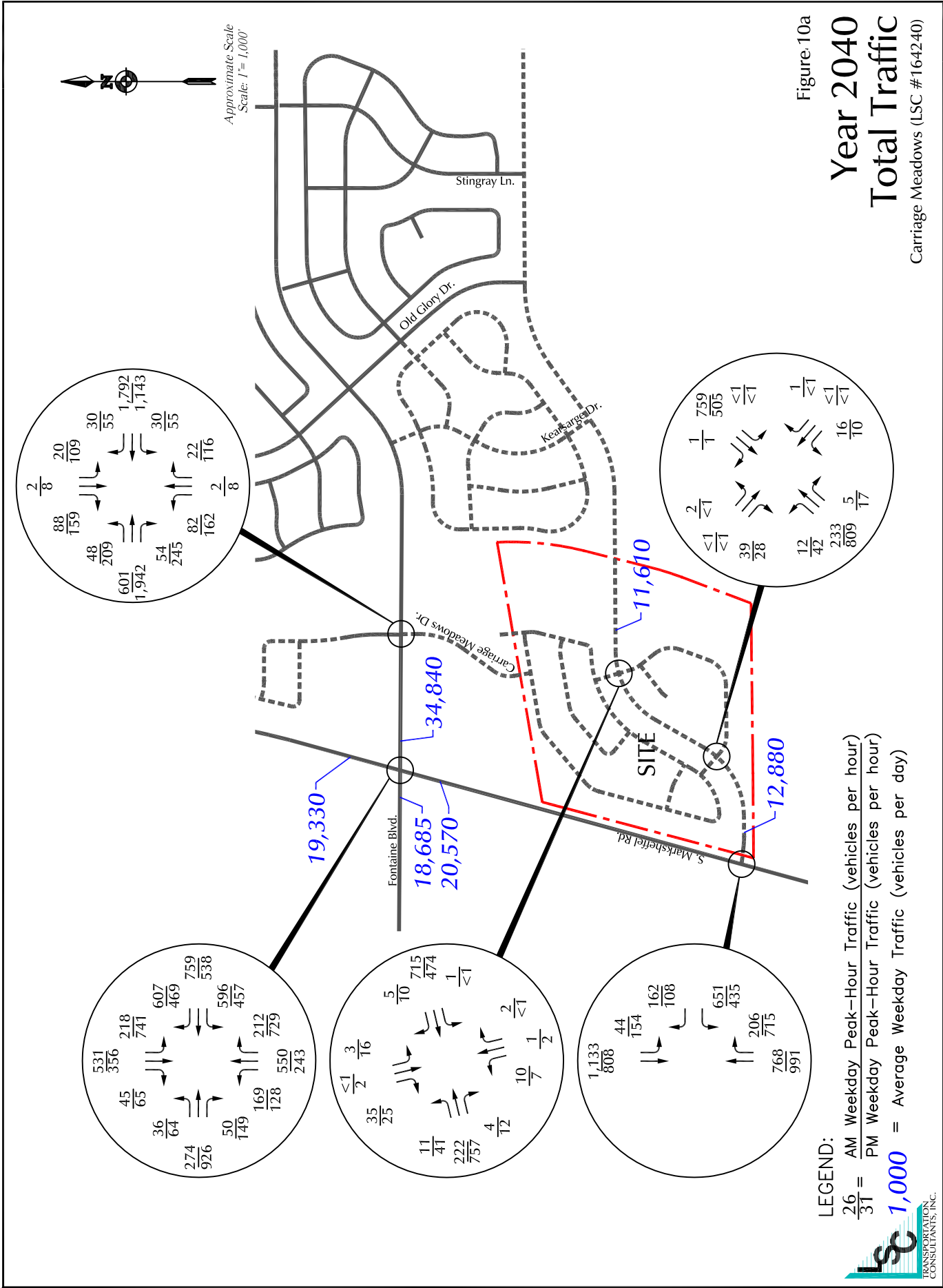


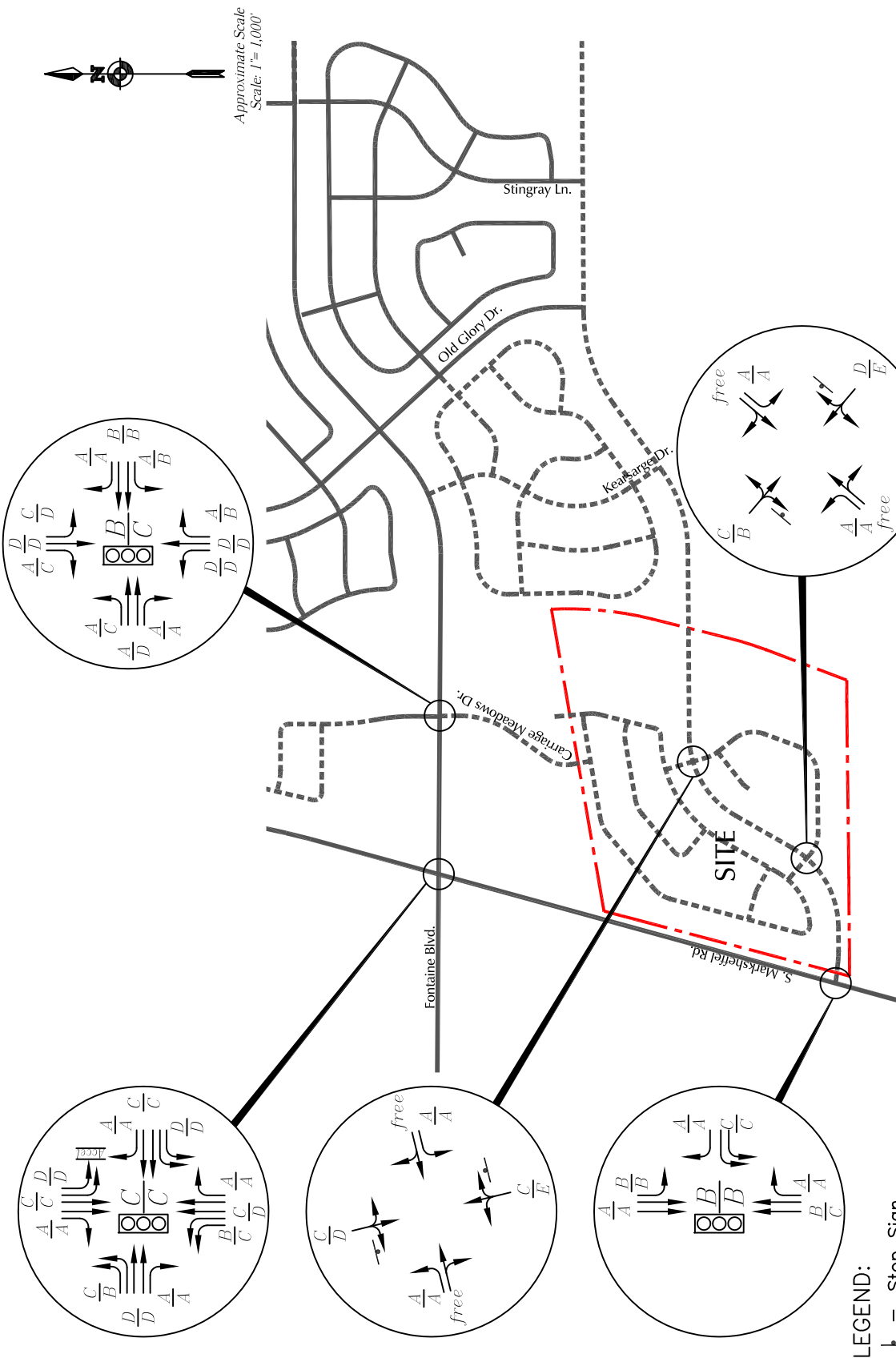
Figure 10a
**Year 2040
Total Traffic**
Carriage Meadows (LSC #164240)

LEGEND:
 26 = AM Weekday Peak-Hour Traffic (vehicles per hour)
 31 = PM Weekday Peak-Hour Traffic (vehicles per hour)
 1,000 = Average Weekday Traffic (vehicles per day)

Year 2040 Total Lane Geometry, Traffic Control & Level of Service

Carriage Meadows (LSC #164240)

Figure 10b



LEGEND:

⊥ = Stop Sign

⊞ = Traffic Signal

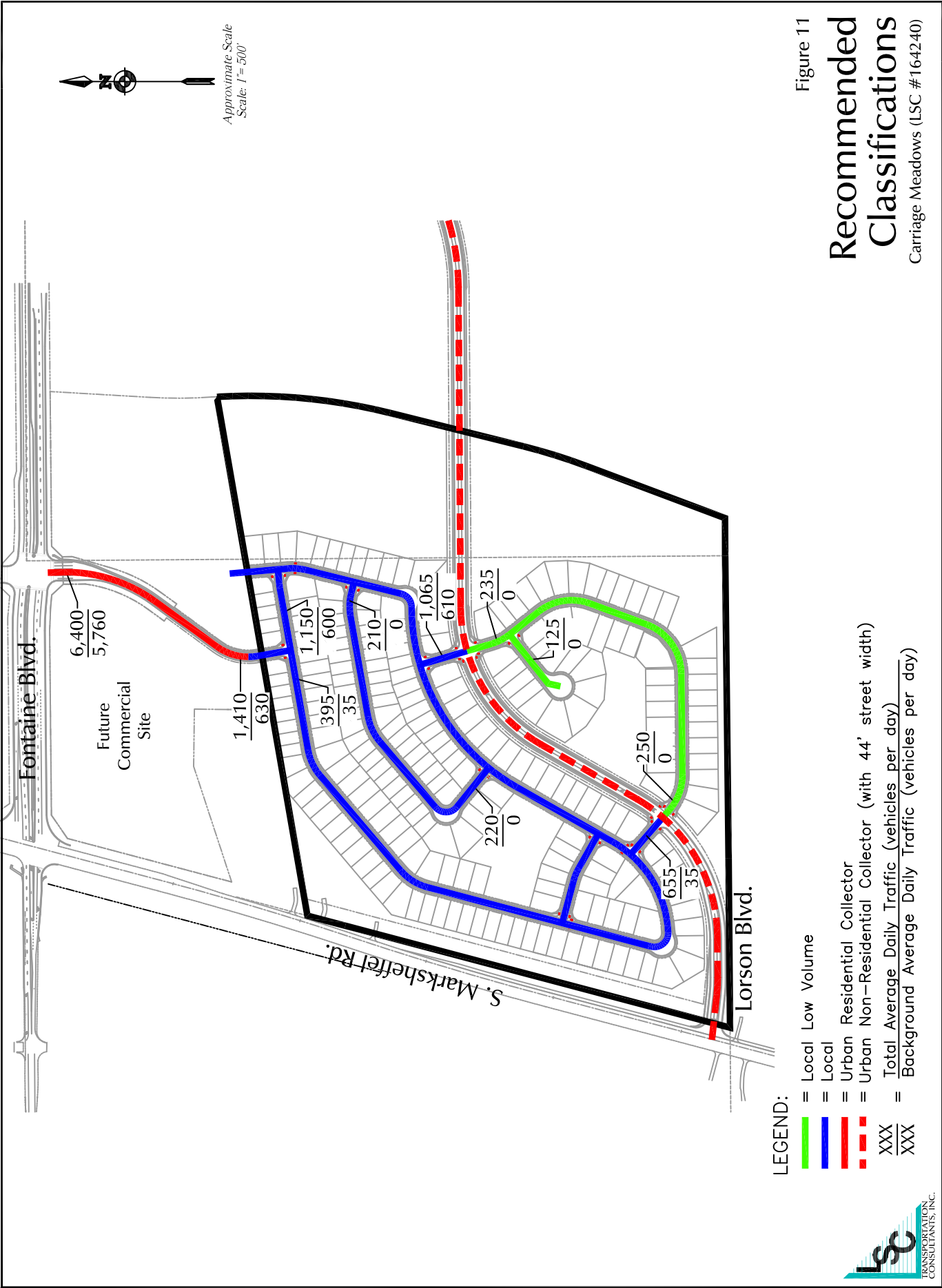
A = AM Individual Movement Peak-Hour Level of Service

B = PM Individual Movement Peak-Hour Level of Service

C = AM Entire Intersection Peak-Hour Level of Service

D = PM Entire Intersection Peak-Hour Level of Service





LSC Transportation Consultants, Inc.

516 N. Tejon St.

LSC Transportation Consultants, Inc.

Colorado Springs, CO Name : Marksheffel Rd - Fontaine Blvd AM

(719) 633-2868 Site Code : 00000000

Start Date : 05/16/2013

Page No : 1

Groups Printed- Unshifted

Start Time	Marksheffel Rd From North				Fontaine Blvd From East				Marksheffel Rd From South				Fontane Blvd From West				Int. Total
	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	7	15	4	0	11	32	7	0	0	52	12	0	3	15	0	0	158
06:45 AM	10	26	3	0	9	35	2	0	4	36	10	0	9	21	4	0	169
Total	17	41	7	0	20	67	9	0	4	88	22	0	12	36	4	0	327
07:00 AM	8	18	6	0	11	33	10	0	1	37	17	0	5	18	4	0	168
07:15 AM	6	24	5	0	15	40	6	0	2	52	8	0	8	13	5	0	184
07:30 AM	4	13	6	0	10	34	1	0	4	48	15	0	5	12	5	0	157
07:45 AM	7	19	8	0	11	25	2	0	3	38	11	0	8	19	5	0	156
Total	25	74	25	0	47	132	19	0	10	175	51	0	26	62	19	0	665
08:00 AM	9	14	3	0	11	42	2	0	3	23	10	0	12	30	6	0	165
08:15 AM	8	22	5	0	14	39	4	0	3	27	8	0	12	19	5	0	166
Grand Total	59	151	40	0	92	280	34	0	20	313	91	0	62	147	34	0	1323
Apprch %	23.6	60.4	16.0	0.0	22.7	69.0	8.4	0.0	4.7	73.8	21.5	0.0	25.5	60.5	14.0	0.0	
Total %	4.5	11.4	3.0	0.0	7.0	21.2	2.6	0.0	1.5	23.7	6.9	0.0	4.7	11.1	2.6	0.0	

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516 N. Tejon St.

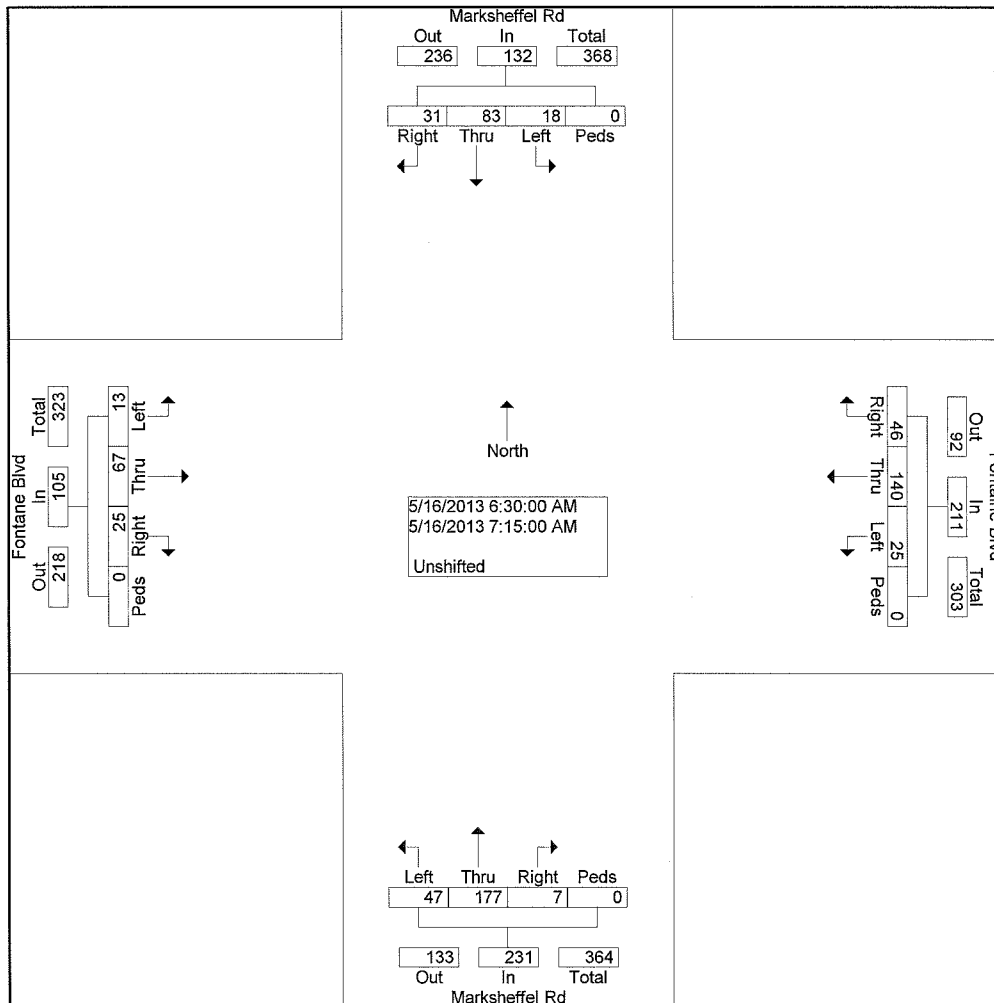
Colorado Springs, CO **Site Name : Marksheffel Rd - Fontaine Blvd AM**

(719) 633-2868 **Site Code : 00000000**

Start Date : 05/16/2013

Page No : 2

Start Time	Marksheffel Rd From North					Fontaine Blvd From East					Marksheffel Rd From South					Fontaine Blvd From West					Int. Total
	Rig ht	Thru	Lef t	Pe ds	App. Total	Rig ht	Thru	Lef t	Pe ds	App. Total	Rig ht	Thru	Lef t	Pe ds	App. Total	Rig ht	Thru	Lef t	Pe ds	App. Total	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	06:30 AM																				
Volume	31	83	18	0	132	46	140	25	0	211	7	177	47	0	231	25	67	13	0	105	679
Percent	23.5	62.9	13.6	0.0		21.8	66.4	11.8	0.0		3.0	76.6	20.3	0.0		23.8	63.8	12.4	0.0		
07:15 Volume	6	24	5	0	35	15	40	6	0	61	2	52	8	0	62	8	13	5	0	26	184
Peak Factor																					
High Int. Volume	06:45 AM					07:15 AM					06:30 AM					06:45 AM					
Peak Factor	10	26	3	0	39	15	40	6	0	61	0	52	12	0	64	9	21	4	0	34	0.923
	0.84					0.86					0.90					0.77					2
	6					5					2					2					



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516 N. Tejon St.

LSC Transportation Consultants, Inc.

Colorado Springs, CO Site Name : Marksheffel Rd - Fontaine Blvd PM

(719) 633-2868 Site Code : 00000000

Start Date : 05/15/2013

Page No : 1

Groups Printed- Unshifted

Start Time	Marksheffel Rd From North				Fontaine Blvd From East				Marksheffel Rd From South				Fontaine Blvd From West				Int. Total
	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:15 PM	11	36	13	0	11	15	3	0	4	28	7	0	21	39	7	0	195
04:30 PM	5	31	12	0	9	18	1	0	8	21	3	0	15	45	8	0	176
04:45 PM	8	43	16	0	5	26	6	0	3	26	12	0	6	28	9	0	188
Total	24	110	41	0	25	59	10	0	15	75	22	0	42	112	24	0	559
05:00 PM	9	30	8	0	9	20	4	0	11	19	14	0	10	43	11	0	188
05:15 PM	10	41	17	0	11	25	7	0	8	31	10	0	11	47	7	0	225
05:30 PM	11	42	10	0	12	29	3	0	3	22	7	0	12	39	10	0	200
05:45 PM	5	24	13	0	9	14	2	0	4	8	8	0	15	39	10	0	151
Total	35	137	48	0	41	88	16	0	26	80	39	0	48	168	38	0	764
06:00 PM	7	18	11	0	8	26	3	0	4	20	8	0	18	41	3	0	167
Grand Total	66	265	100	0	74	173	29	0	45	175	69	0	108	321	65	0	1490
Apprch %	15.3	61.5	23.2	0.0	26.8	62.7	10.5	0.0	15.6	60.6	23.9	0.0	21.9	65.0	13.2	0.0	
Total %	4.4	17.8	6.7	0.0	5.0	11.6	1.9	0.0	3.0	11.7	4.6	0.0	7.2	21.5	4.4	0.0	

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516 N. Tejon St.

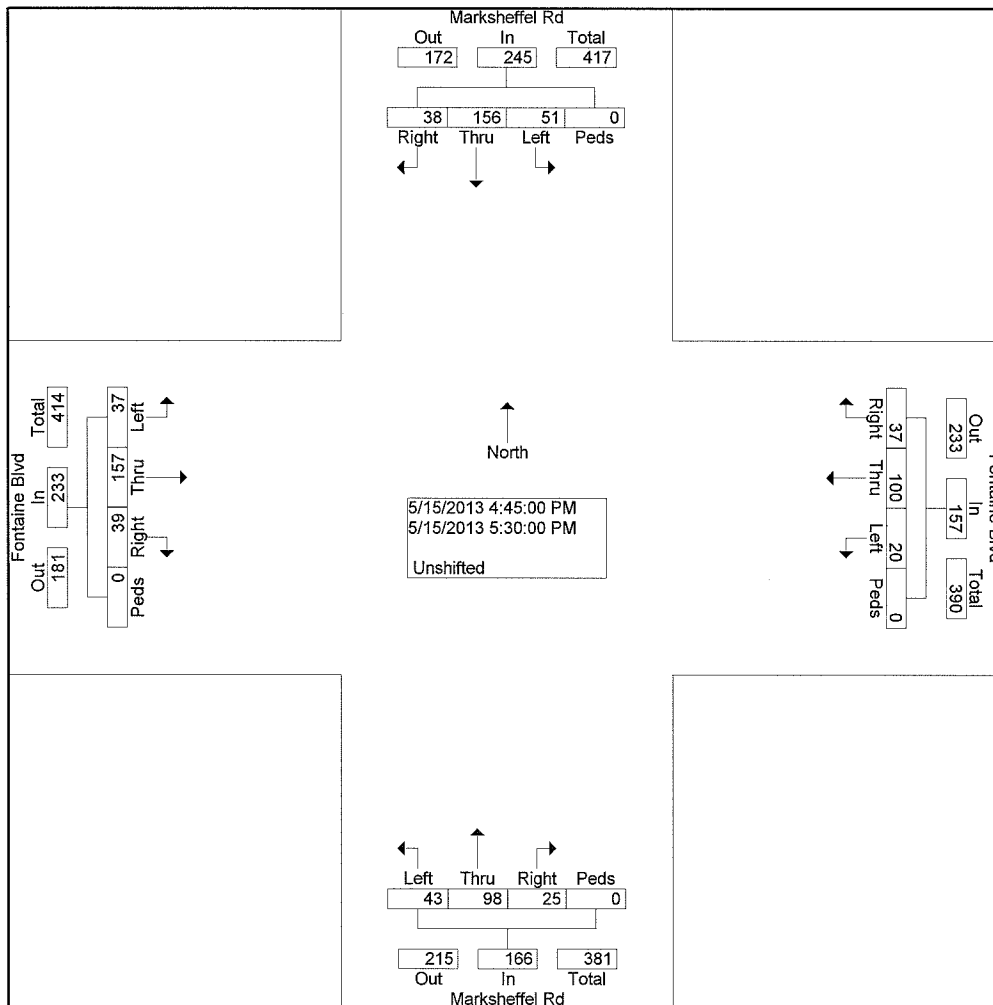
Colorado Springs, CO Name : Marksheffel Rd - Fontaine Blvd PM

(719) 633-2868 Site Code : 00000000

Start Date : 05/15/2013

Page No : 2

Start Time	Marksheffel Rd From North					Fontaine Blvd From East					Marksheffel Rd From South					Fontaine Blvd From West					Int. Total
	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	
Peak Hour From 04:15 PM to 06:00 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	38	156	51	0	245	37	100	20	0	157	25	98	43	0	166	39	157	37	0	233	801
Percent	15.5	63.7	20.8	0.0		23.6	63.7	12.7	0.0		15.1	59.0	25.9	0.0		16.7	67.4	15.9	0.0		
05:15 Volume	10	41	17	0	68	11	25	7	0	43	8	31	10	0	49	11	47	7	0	65	225
Peak Factor	0.890																				
High Int. Volume	05:15 PM					05:30 PM					05:15 PM					05:15 PM					
Peak Factor	10	41	17	0	68	12	29	3	0	44	8	31	10	0	49	11	47	7	0	65	0.896



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516 N. Tejon St.

Colorado Springs, CO

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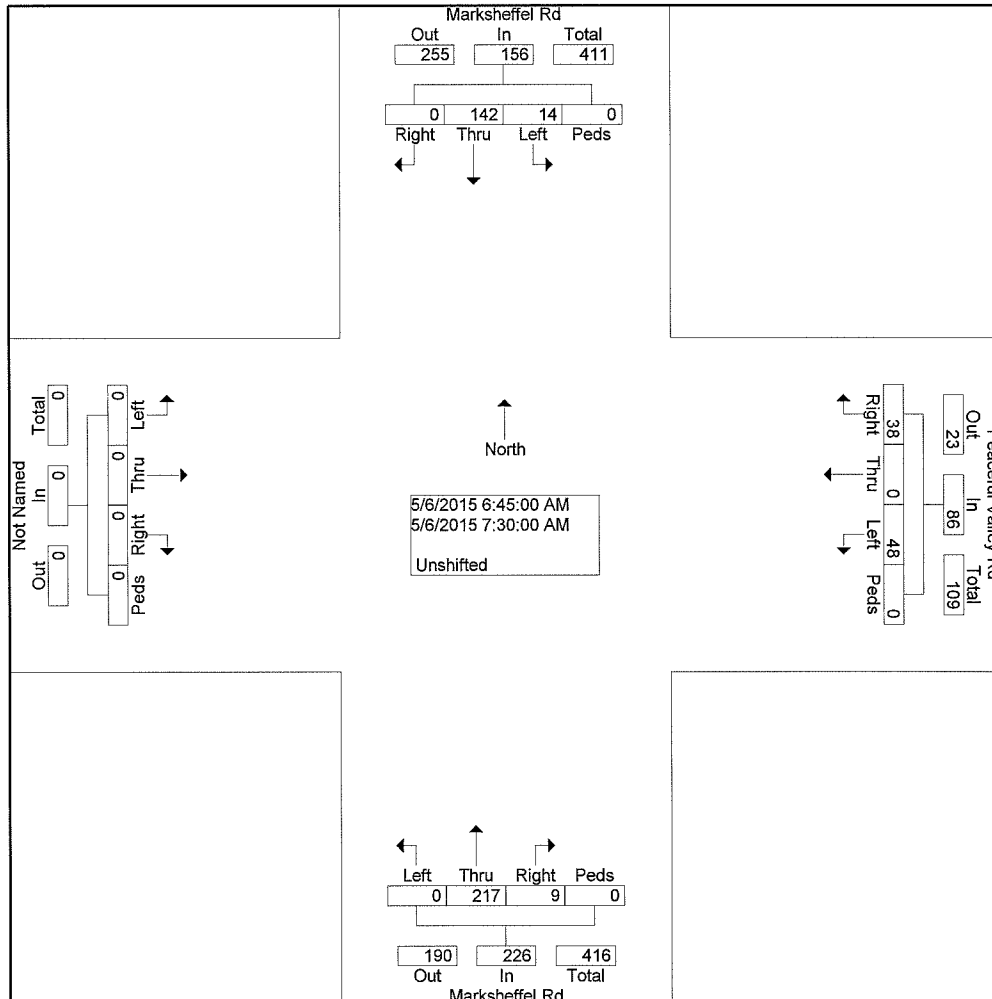
File Name : Marksheffel-Peaceful Valley AM

Site Code : 00154020

Start Date : 05/06/2015

Page No : 2

Start Time	Marksheffel Rd From North					Peaceful Valley Rd From East					Marksheffel Rd From South					From West					Int. Total
	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	Rig ht	Thru	Left	Ped s	App. Total	
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	06:45 AM																				
Volume	0	142	14	0	156	38	0	48	0	86	9	217	0	0	226	0	0	0	0	0	468
Percent	0.0	91.0	9.0	0.0		44.2	0.0	55.8	0.0		4.0	96.0	0.0	0.0		0.0	0.0	0.0	0.0		
07:15 Volume	0	36	6	0	42	14	0	13	0	27	4	70	0	0	74	0	0	0	0	0	143
Peak Factor	0.818																				
High Int. Volume	07:00 AM					07:15 AM					07:15 AM					6:15:00 AM					
Peak Factor	0	43	2	0	45.7	14	0	13	0	27.6	4	70	0	0	74.4						



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Colorado Springs, CO

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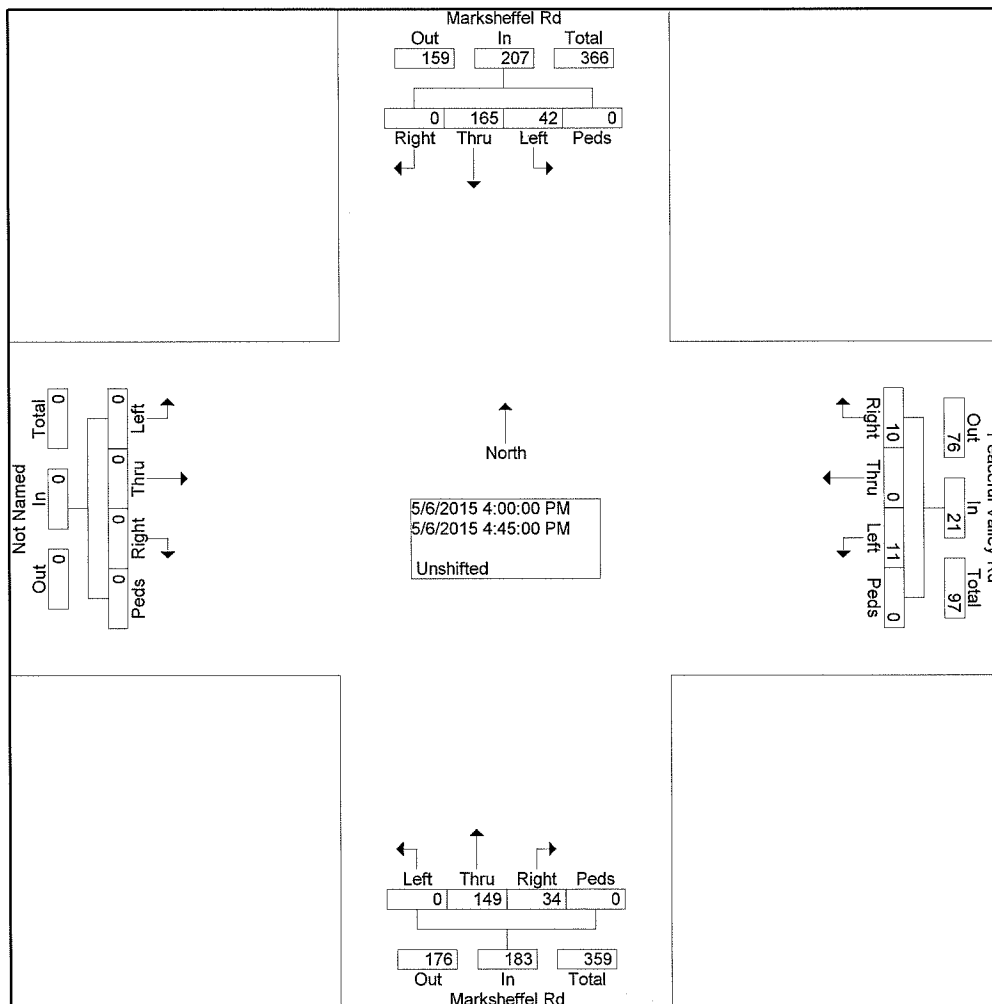
File Name : Marksheffel-Peaceful Valley PM

Site Code : 00154020

Start Date : 05/06/2015

Page No : 2

Start Time	Marksheffel Rd From North					Peaceful Valley Rd From East					Marksheffel Rd From South					From West					Int. Total	
	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total	Rig ht	Thr u	Left	Ped s	App. Total		
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																						
Intersecti on	04:00 PM																					
Volume	0	165	42	0	207	10	0	11	0	21	34	149	0	0	183	0	0	0	0	0	0	411
Percent	0.0	79.7	20.3	0.0		47.6	0.0	52.4	0.0		18.6	81.4	0.0	0.0		0.0	0.0	0.0	0.0			
04:15 Volume	0	45	15	0	60	1	0	2	0	3	13	49	0	0	62	0	0	0	0	0	0	125
Factor	0.822																					
High Int. Volume	04:15 PM					04:00 PM					04:15 PM					3:45:00 PM						
Peak Factor	0	45	15	0	60	4	0	3	0	7	13	49	0	0	62							
	0.86					0.75					0.73					0.8						



Intersection

Int Delay, s/veh 2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑
Traffic Vol, veh/h	133	25	324	44	9	311
Future Vol, veh/h	133	25	324	44	9	311
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	0	-	250	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	15
Peak Hour Factor	92	92	93	92	92	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	145	27	348	48	10	331

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	698	348	0
Stage 1	348	-	-
Stage 2	350	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	407	695	1211
Stage 1	715	-	-
Stage 2	713	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	404	695	1211
Mov Cap-2 Maneuver	509	-	-
Stage 1	715	-	-
Stage 2	707	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.2	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	509	695	1211	-
HCM Lane V/C Ratio	-	-	0.284	0.039	0.008	-
HCM Control Delay (s)	-	-	14.9	10.4	8	-
HCM Lane LOS	-	-	B	B	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0.1	0	-

Timings

2020 Background Traffic

1: Marksheffel Rd & Fontaine Blvd

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	111	27	169	277	140	51	223	50	50	115	34
Future Volume (vph)	16	111	27	169	277	140	51	223	50	50	115	34
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	10.0	10.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	26.0	26.0	14.0	30.0	30.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	11.1%	28.9%	28.9%	15.6%	33.3%	33.3%	55.6%	55.6%	55.6%	55.6%	55.6%	55.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	11.9	8.3	8.3	19.5	17.9	17.9	45.3	45.3	45.3	45.3	45.3	45.3
Actuated g/C Ratio	0.16	0.11	0.11	0.26	0.24	0.24	0.60	0.60	0.60	0.60	0.60	0.60
v/c Ratio	0.07	0.28	0.11	0.60	0.38	0.33	0.07	0.21	0.05	0.08	0.11	0.04
Control Delay	20.6	33.3	0.9	30.6	25.8	6.7	8.1	8.5	1.1	8.1	8.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	33.3	0.9	30.6	25.8	6.7	8.1	8.5	1.1	8.1	8.0	0.1
LOS	C	C	A	C	C	A	A	A	A	A	A	A
Approach Delay		26.3			22.6			7.3			6.7	
Approach LOS		C			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 75.1

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 16.8

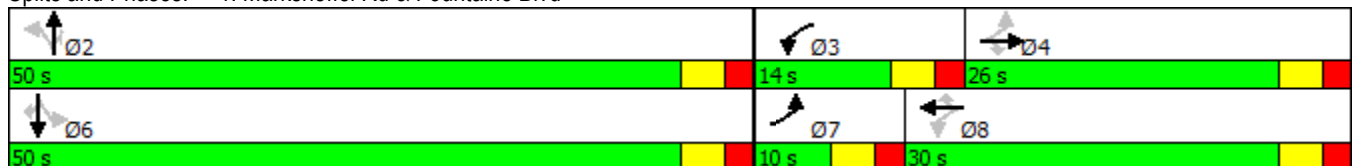
Intersection LOS: B

Intersection Capacity Utilization 44.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Intersection

Int Delay, s/veh 1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑
Traffic Vol, veh/h	88	17	339	148	28	326
Future Vol, veh/h	88	17	339	148	28	326
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	0	-	250	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	15
Peak Hour Factor	92	92	85	92	92	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	96	18	399	161	30	362

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	822	399	0
Stage 1	399	-	-
Stage 2	423	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	344	651	1160
Stage 1	678	-	-
Stage 2	661	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	335	651	1160
Mov Cap-2 Maneuver	454	-	-
Stage 1	678	-	-
Stage 2	644	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	454	651	1160	-
HCM Lane V/C Ratio	-	-	0.211	0.028	0.026	-
HCM Control Delay (s)	-	-	15	10.7	8.2	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.1	0.1	-

Timings

2020 Background Traffic

1: Marksheffel Rd & Fontaine Blvd

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗	↖	↖	↗↗	↖	↖	↗	↖	↖	↗	↖
Traffic Volume (vph)	48	302	42	115	190	99	47	124	168	156	169	41
Future Volume (vph)	48	302	42	115	190	99	47	124	168	156	169	41
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	10.0	10.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	26.0	26.0	14.0	30.0	30.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	11.1%	28.9%	28.9%	15.6%	33.3%	33.3%	55.6%	55.6%	55.6%	55.6%	55.6%	55.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	16.9	13.1	13.1	23.1	18.0	18.0	45.5	45.5	45.5	45.5	45.5	45.5
Actuated g/C Ratio	0.21	0.17	0.17	0.29	0.23	0.23	0.57	0.57	0.57	0.57	0.57	0.57
v/c Ratio	0.19	0.58	0.14	0.41	0.26	0.25	0.08	0.14	0.20	0.24	0.18	0.05
Control Delay	20.8	35.3	3.0	23.9	26.6	7.3	10.1	10.0	2.2	11.3	10.2	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	35.3	3.0	23.9	26.6	7.3	10.1	10.0	2.2	11.3	10.2	0.8
LOS	C	D	A	C	C	A	B	A	A	B	B	A
Approach Delay		30.1			21.1			6.2			9.6	
Approach LOS		C			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 79.3

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 17.1

Intersection LOS: B

Intersection Capacity Utilization 46.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Intersection

Int Delay, s/veh 5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑
Traffic Vol, veh/h	236	43	361	78	13	421
Future Vol, veh/h	236	43	361	78	13	421
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	0	-	250	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	15
Peak Hour Factor	92	92	93	93	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	257	47	388	84	14	448

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	864	388	0
Stage 1	388	-	-
Stage 2	476	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	325	660	-
Stage 1	686	-	-
Stage 2	625	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	321	660	-
Mov Cap-2 Maneuver	442	-	-
Stage 1	686	-	-
Stage 2	618	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.8	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	442 660	1170	-
HCM Lane V/C Ratio	-	-	0.58 0.071	0.012	-
HCM Control Delay (s)	-	-	23.8 10.9	8.1	-
HCM Lane LOS	-	-	C B	A	-
HCM 95th %tile Q(veh)	-	-	3.6 0.2	0	-

Timings

2020 Total Traffic

1: Marksheffel Rd & Fontaine Blvd

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	116	31	169	292	159	62	237	50	56	120	34
Future Volume (vph)	16	116	31	169	292	159	62	237	50	56	120	34
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	10.0	10.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	26.0	26.0	14.0	30.0	30.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	11.1%	28.9%	28.9%	15.6%	33.3%	33.3%	55.6%	55.6%	55.6%	55.6%	55.6%	55.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	12.3	8.7	8.7	19.9	18.3	18.3	45.3	45.3	45.3	45.3	45.3	45.3
Actuated g/C Ratio	0.16	0.12	0.12	0.26	0.24	0.24	0.60	0.60	0.60	0.60	0.60	0.60
v/c Ratio	0.07	0.29	0.12	0.59	0.40	0.35	0.09	0.23	0.05	0.09	0.11	0.04
Control Delay	20.4	33.0	1.0	30.1	25.7	6.5	8.5	8.9	1.1	8.6	8.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	33.0	1.0	30.1	25.7	6.5	8.5	8.9	1.1	8.6	8.3	0.2
LOS	C	C	A	C	C	A	A	A	A	A	A	A
Approach Delay		25.7			22.0			7.7			7.0	
Approach LOS		C			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 75.5

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 16.5

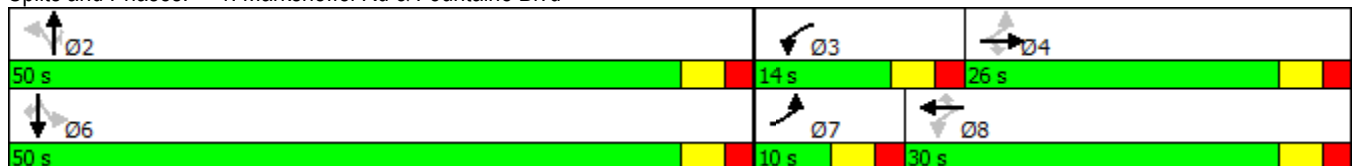
Intersection LOS: B

Intersection Capacity Utilization 45.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Intersection

Int Delay, s/veh 3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑
Traffic Vol, veh/h	155	29	462	263	42	399
Future Vol, veh/h	155	29	462	263	42	399
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	0	-	250	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	15
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	168	32	502	286	46	434

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1027	502	0
Stage 1	502	-	-
Stage 2	525	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	260	569	1062
Stage 1	608	-	-
Stage 2	593	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	249	569	1062
Mov Cap-2 Maneuver	381	-	-
Stage 1	608	-	-
Stage 2	567	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.1	0	0.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	381	569	1062	-
HCM Lane V/C Ratio	-	-	0.442	0.055	0.043	-
HCM Control Delay (s)	-	-	21.7	11.7	8.5	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	2.2	0.2	0.1	-

Timings

2020 Total Traffic

1: Marksheffel Rd & Fontaine Blvd

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	319	55	115	200	112	54	133	168	177	185	41
Future Volume (vph)	48	319	55	115	200	112	54	133	168	177	185	41
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	10.0	10.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	26.0	26.0	14.0	30.0	30.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	11.1%	28.9%	28.9%	15.6%	33.3%	33.3%	55.6%	55.6%	55.6%	55.6%	55.6%	55.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	17.3	13.5	13.5	23.5	18.4	18.4	45.5	45.5	45.5	45.5	45.5	45.5
Actuated g/C Ratio	0.22	0.17	0.17	0.29	0.23	0.23	0.57	0.57	0.57	0.57	0.57	0.57
v/c Ratio	0.18	0.59	0.18	0.41	0.27	0.27	0.10	0.15	0.20	0.28	0.19	0.05
Control Delay	20.6	35.4	5.1	23.9	26.5	7.0	10.4	10.2	2.3	11.9	10.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	35.4	5.1	23.9	26.5	7.0	10.4	10.2	2.3	11.9	10.5	0.8
LOS	C	D	A	C	C	A	B	B	A	B	B	A
Approach Delay		29.8			20.7			6.5			10.1	
Approach LOS		C			C			A			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 79.7

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 17.1

Intersection LOS: B

Intersection Capacity Utilization 48.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Timings

2040 Background Traffic

1: Marksheffel Rd & Fontaine Blvd

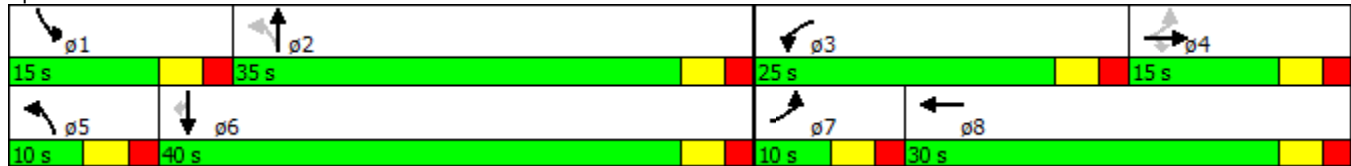
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	269	46	596	745	590	159	537	212	213	527	45
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free	2		Free			6
Detector Phase	7	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	20.0	20.0	9.0	20.0		9.0	20.0		9.0	20.0	20.0
Total Split (s)	10.0	15.0	15.0	25.0	30.0		10.0	35.0		15.0	40.0	40.0
Total Split (%)	11.1%	16.7%	16.7%	27.8%	33.3%		11.1%	38.9%		16.7%	44.4%	44.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Act Effct Green (s)	14.8	9.8	9.8	19.1	28.0	88.9	35.5	30.5	88.9	9.5	35.0	35.0
Actuated g/C Ratio	0.17	0.11	0.11	0.21	0.31	1.00	0.40	0.34	1.00	0.11	0.39	0.39
v/c Ratio	0.22	0.73	0.13	0.85	0.70	0.39	0.45	0.47	0.14	0.61	0.40	0.06
Control Delay	22.8	50.3	0.8	46.0	32.0	0.7	18.6	24.8	0.2	45.7	20.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	50.3	0.8	46.0	32.0	0.7	18.6	24.8	0.2	45.7	20.7	0.2
LOS	C	D	A	D	C	A	B	C	A	D	C	A
Approach Delay		41.1			26.8			18.0			26.3	
Approach LOS		D			C			B			C	

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 88.9
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 25.9
 Intersection LOS: C
 Intersection Capacity Utilization 64.5%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Timings
5: Marksheffel Rd & South Lorson Access

2040 Background Traffic
AM Peak Hour

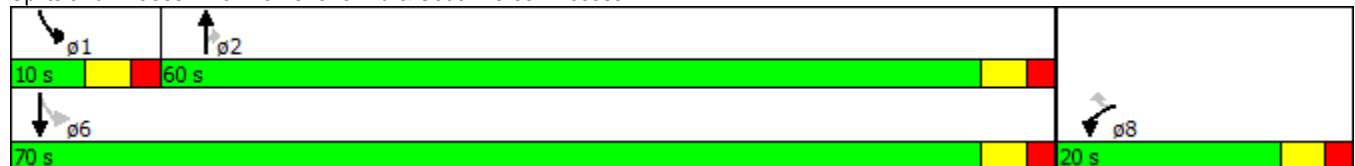
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	586	139	768	186	36	1133
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	9.0	20.0
Total Split (s)	20.0	20.0	60.0	60.0	10.0	70.0
Total Split (%)	22.2%	22.2%	66.7%	66.7%	11.1%	77.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	Min	Min	None	Min
Act Effect Green (s)	15.2	15.2	22.6	22.6	26.1	26.1
Actuated g/C Ratio	0.30	0.30	0.44	0.44	0.51	0.51
v/c Ratio	0.61	0.26	0.52	0.24	0.12	0.72
Control Delay	20.3	5.4	12.7	3.0	6.5	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	5.4	12.7	3.0	6.5	12.3
LOS	C	A	B	A	A	B
Approach Delay	17.4		10.8			12.1
Approach LOS	B		B			B

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 51.5
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 13.0
 Intersection Capacity Utilization 56.4%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 5: Marksheffel Rd & South Lorson Access



Timings
8: Carriage Meadows & Fontaine Blvd

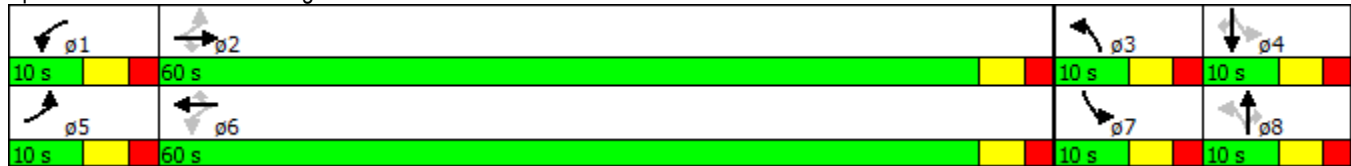
2040 Background Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	601	44	28	1792	30	52	1	17	20	1	88
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	60.0	60.0	10.0	60.0	60.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (%)	11.1%	66.7%	66.7%	11.1%	66.7%	66.7%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	62.7	61.9	61.9	61.7	60.1	60.1	8.7	6.9	6.9	7.8	5.1	5.1
Actuated g/C Ratio	0.76	0.75	0.75	0.74	0.72	0.72	0.10	0.08	0.08	0.09	0.06	0.06
v/c Ratio	0.26	0.24	0.04	0.05	0.74	0.03	0.33	0.01	0.07	0.13	0.01	0.40
Control Delay	7.4	5.7	0.1	3.8	13.4	0.0	38.3	40.0	0.5	33.9	40.0	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.4	5.7	0.1	3.8	13.4	0.0	38.3	40.0	0.5	33.9	40.0	7.5
LOS	A	A	A	A	B	A	D	D	A	C	D	A
Approach Delay		5.5			13.0			29.1			12.6	
Approach LOS		A			B			C			B	

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 83	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 11.5	Intersection LOS: B
Intersection Capacity Utilization 70.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: Carriage Meadows & Fontaine Blvd



Timings

2040 Background Traffic

1: Marksheffel Rd & Fontaine Blvd

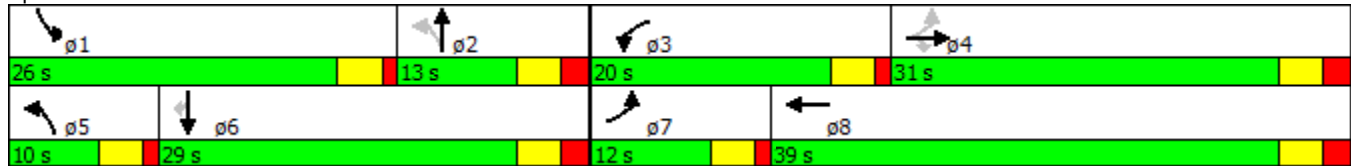
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	911	137	457	529	458	121	234	729	722	342	65
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free	2		Free			6
Detector Phase	7	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0		9.0	9.0		9.0	9.0	9.0
Total Split (s)	12.0	31.0	31.0	20.0	39.0		10.0	13.0		26.0	29.0	29.0
Total Split (%)	13.3%	34.4%	34.4%	22.2%	43.3%		11.1%	14.4%		28.9%	32.2%	32.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Act Effct Green (s)	34.0	26.0	26.0	15.4	36.4	89.4	15.4	8.4	89.4	21.6	24.0	24.0
Actuated g/C Ratio	0.38	0.29	0.29	0.17	0.41	1.00	0.17	0.09	1.00	0.24	0.27	0.27
v/c Ratio	0.18	0.93	0.23	0.81	0.39	0.30	0.57	0.73	0.48	0.92	0.37	0.12
Control Delay	12.8	47.9	1.6	47.8	20.5	0.5	32.3	53.7	1.1	50.7	28.1	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	47.9	1.6	47.8	20.5	0.5	32.3	53.7	1.1	50.7	28.1	0.5
LOS	B	D	A	D	C	A	C	D	A	D	C	A
Approach Delay		40.2			22.8			15.7			41.0	
Approach LOS		D			C			B			D	

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 89.4	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 29.6	Intersection LOS: C
Intersection Capacity Utilization 80.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Timings
5: Marksheffel Rd & South Lorson Access

2040 Background Traffic
PM Peak Hour

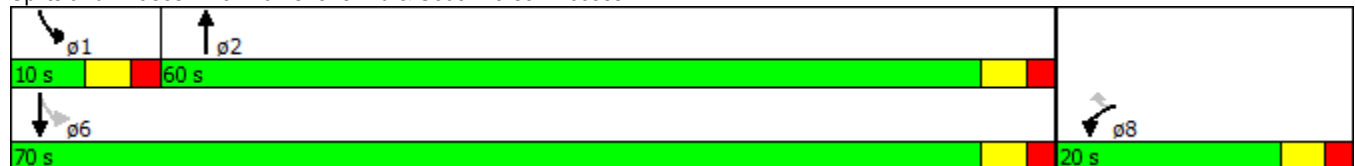
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	392	93	991	642	128	808
Turn Type	Prot	Perm	NA	Free	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		Free	6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		9.0	20.0
Total Split (s)	20.0	20.0	60.0		10.0	70.0
Total Split (%)	22.2%	22.2%	66.7%		11.1%	77.8%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effect Green (s)	12.0	12.0	23.9	53.8	31.3	31.3
Actuated g/C Ratio	0.22	0.22	0.44	1.00	0.58	0.58
v/c Ratio	0.54	0.23	0.66	0.43	0.48	0.45
Control Delay	23.2	7.0	14.8	0.8	10.8	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	7.0	14.8	0.8	10.8	7.0
LOS	C	A	B	A	B	A
Approach Delay	20.1		9.3			7.5
Approach LOS	C		A			A

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 53.8
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.66
 Intersection Signal Delay: 10.5
 Intersection Capacity Utilization 58.2%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 5: Marksheffel Rd & South Lorson Access



Timings
8: Carriage Meadows & Fontaine Blvd

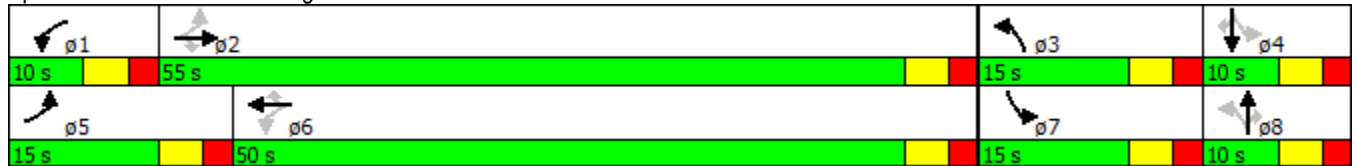
2040 Background Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	209	1942	211	53	1143	55	141	5	115	109	3	159
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	15.0	55.0	55.0	10.0	50.0	50.0	15.0	10.0	10.0	15.0	10.0	10.0
Total Split (%)	16.7%	61.1%	61.1%	11.1%	55.6%	55.6%	16.7%	11.1%	11.1%	16.7%	11.1%	11.1%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	59.4	51.7	51.7	50.3	45.3	45.3	15.7	7.8	7.8	14.0	5.0	5.0
Actuated g/C Ratio	0.67	0.58	0.58	0.57	0.51	0.51	0.18	0.09	0.09	0.16	0.06	0.06
v/c Ratio	0.70	0.99	0.22	0.31	0.67	0.07	0.56	0.03	0.45	0.45	0.03	0.68
Control Delay	23.2	39.5	2.5	11.1	18.8	0.1	39.0	40.8	10.7	35.3	41.0	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	39.5	2.5	11.1	18.8	0.1	39.0	40.8	10.7	35.3	41.0	22.2
LOS	C	D	A	B	B	A	D	D	B	D	D	C
Approach Delay		34.8			17.7			26.5			27.7	
Approach LOS		C			B			C			C	

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 89	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 28.6	Intersection LOS: C
Intersection Capacity Utilization 84.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 8: Carriage Meadows & Fontaine Blvd



Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	11	222	4	1	715	5	10	1	2	3	0	35
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	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	234	4	1	753	5	11	1	2	3	0	37

Major/Minor

	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	758	0	0	238	0	0	1035	1019	236	1018	1018	755
Stage 1	-	-	-	-	-	-	259	259	-	757	757	-
Stage 2	-	-	-	-	-	-	776	760	-	261	261	-
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	853	-	-	1329	-	-	210	237	803	216	237	409
Stage 1	-	-	-	-	-	-	746	694	-	400	416	-
Stage 2	-	-	-	-	-	-	390	414	-	744	692	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	853	-	-	1329	-	-	189	233	803	212	233	409
Mov Cap-2 Maneuver	-	-	-	-	-	-	189	233	-	212	233	-
Stage 1	-	-	-	-	-	-	736	684	-	394	416	-
Stage 2	-	-	-	-	-	-	355	414	-	730	682	-

Approach

	EB		WB		NB		SB
HCM Control Delay, s	0.4		0		22.6		15.6
HCM LOS					C		C

Minor Lane/Major Mvmt

	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	218	853	-	-	1329	-	-	381
HCM Lane V/C Ratio	0.063	0.014	-	-	0.001	-	-	0.105
HCM Control Delay (s)	22.6	9.3	-	-	7.7	-	-	15.6
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.3

Intersection												
Int Delay, s/veh	1.2											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	233	5	0	759	1	16	0	1	2	0	39
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	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	245	5	0	799	1	17	0	1	2	0	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	800	0	0	251	0	0	1093	1073	248	1073	1075	799
Stage 1	-	-	-	-	-	-	273	273	-	799	799	-
Stage 2	-	-	-	-	-	-	820	800	-	274	276	-
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	823	-	-	1314	-	-	192	220	791	198	220	386
Stage 1	-	-	-	-	-	-	733	684	-	379	398	-
Stage 2	-	-	-	-	-	-	369	397	-	732	682	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	823	-	-	1314	-	-	170	217	791	195	217	386
Mov Cap-2 Maneuver	-	-	-	-	-	-	170	217	-	195	217	-
Stage 1	-	-	-	-	-	-	721	673	-	373	398	-
Stage 2	-	-	-	-	-	-	330	397	-	719	671	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	27.5	16.1
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	178	823	-	-	1314	-	-	368
HCM Lane V/C Ratio	0.101	0.015	-	-	-	-	-	0.117
HCM Control Delay (s)	27.5	9.4	-	-	0	-	-	16.1
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.4

Timings

2040 Total Traffic

1: Marksheffel Rd & Fontaine Blvd

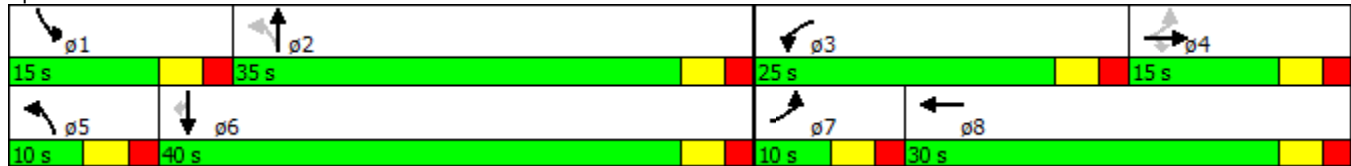
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	274	50	596	759	607	169	550	212	218	531	45
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free	2		Free			6
Detector Phase	7	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	20.0	20.0	9.0	20.0		9.0	20.0		9.0	20.0	20.0
Total Split (s)	10.0	15.0	15.0	25.0	30.0		10.0	35.0		15.0	40.0	40.0
Total Split (%)	11.1%	16.7%	16.7%	27.8%	33.3%		11.1%	38.9%		16.7%	44.4%	44.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Act Effct Green (s)	14.8	9.8	9.8	19.1	28.0	89.0	35.4	30.4	89.0	9.6	35.0	35.0
Actuated g/C Ratio	0.17	0.11	0.11	0.21	0.31	1.00	0.40	0.34	1.00	0.11	0.39	0.39
v/c Ratio	0.22	0.74	0.15	0.85	0.72	0.40	0.48	0.48	0.14	0.62	0.40	0.06
Control Delay	22.9	50.9	0.9	46.1	32.4	0.8	19.6	25.0	0.2	46.0	20.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.9	50.9	0.9	46.1	32.4	0.8	19.6	25.0	0.2	46.0	20.7	0.2
LOS	C	D	A	D	C	A	B	C	A	D	C	A
Approach Delay		41.1			26.8			18.4			26.5	
Approach LOS		D			C			B			C	

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 89	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 65.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Timings
5: Marksheffel Rd & Lorson Blvd

2040 Total Traffic
AM Peak Hour

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	651	162	768	206	44	1133
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	9.0	20.0
Total Split (s)	20.0	20.0	60.0	60.0	10.0	70.0
Total Split (%)	22.2%	22.2%	66.7%	66.7%	11.1%	77.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	Min	Min	None	Min
Act Effect Green (s)	15.2	15.2	22.8	22.8	26.3	26.3
Actuated g/C Ratio	0.29	0.29	0.44	0.44	0.51	0.51
v/c Ratio	0.68	0.29	0.52	0.26	0.14	0.72
Control Delay	22.4	5.3	12.6	3.0	6.8	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.4	5.3	12.6	3.0	6.8	12.3
LOS	C	A	B	A	A	B
Approach Delay	19.0		10.6			12.0
Approach LOS	B		B			B

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 51.7
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 13.5
 Intersection Capacity Utilization 58.2%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 5: Marksheffel Rd & Lorson Blvd



Timings
8: Carriage Meadows & Fontaine Blvd

2040 Total Traffic
AM Peak Hour

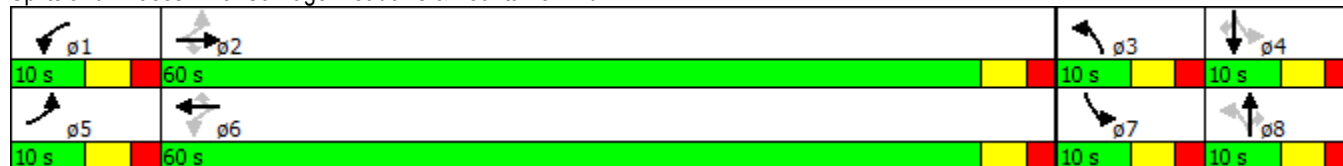
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	601	54	30	1792	30	82	2	22	20	2	88
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	60.0	60.0	10.0	60.0	60.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (%)	11.1%	66.7%	66.7%	11.1%	66.7%	66.7%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	61.6	59.9	59.9	61.6	59.9	59.9	10.9	9.0	9.0	8.9	5.0	5.0
Actuated g/C Ratio	0.72	0.70	0.70	0.72	0.70	0.70	0.13	0.11	0.11	0.10	0.06	0.06
v/c Ratio	0.27	0.25	0.05	0.05	0.76	0.03	0.49	0.01	0.08	0.12	0.02	0.41
Control Delay	7.7	7.0	0.1	3.9	14.5	0.0	43.2	39.5	0.5	33.5	40.5	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	7.0	0.1	3.9	14.5	0.0	43.2	39.5	0.5	33.5	40.5	7.6
LOS	A	A	A	A	B	A	D	D	A	C	D	A
Approach Delay		6.5			14.1			34.3			12.8	
Approach LOS		A			B			C			B	

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 85
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 12.9
 Intersection Capacity Utilization 72.0%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 8: Carriage Meadows & Fontaine Blvd



Intersection												
Int Delay, s/veh	1.3											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	41	757	12	0	474	10	7	2	0	16	2	25
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	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	797	13	0	499	11	7	2	0	17	2	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	509	0	0	809	0	0	1407	1398	803	1395	1400	504
Stage 1	-	-	-	-	-	-	889	889	-	504	504	-
Stage 2	-	-	-	-	-	-	518	509	-	891	896	-
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	1056	-	-	817	-	-	117	141	383	119	140	568
Stage 1	-	-	-	-	-	-	338	361	-	550	541	-
Stage 2	-	-	-	-	-	-	541	538	-	337	359	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1056	-	-	817	-	-	107	135	383	114	134	568
Mov Cap-2 Maneuver	-	-	-	-	-	-	107	135	-	114	134	-
Stage 1	-	-	-	-	-	-	324	346	-	528	541	-
Stage 2	-	-	-	-	-	-	514	538	-	321	344	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	40.1	26
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	112	1056	-	-	817	-	-	216
HCM Lane V/C Ratio	0.085	0.041	-	-	-	-	-	0.21
HCM Control Delay (s)	40.1	8.6	-	-	0	-	-	26
HCM Lane LOS	E	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.8

Intersection												
Int Delay, s/veh	0.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	42	809	17	0	505	1	10	0	0	0	0	28
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	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	852	18	0	532	1	11	0	0	0	0	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	533	0	0	869	0	0	1496	1482	861	1481	1490	532
Stage 1	-	-	-	-	-	-	949	949	-	532	532	-
Stage 2	-	-	-	-	-	-	547	533	-	949	958	-
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	1035	-	-	775	-	-	101	125	355	103	124	547
Stage 1	-	-	-	-	-	-	313	339	-	531	526	-
Stage 2	-	-	-	-	-	-	521	525	-	313	336	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1035	-	-	775	-	-	92	120	355	100	119	547
Mov Cap-2 Maneuver	-	-	-	-	-	-	92	120	-	100	119	-
Stage 1	-	-	-	-	-	-	300	325	-	508	526	-
Stage 2	-	-	-	-	-	-	493	525	-	300	322	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	49.1	12
HCM LOS			E	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	92	1035	-	-	775	-	-	547
HCM Lane V/C Ratio	0.114	0.043	-	-	-	-	-	0.054
HCM Control Delay (s)	49.1	8.6	-	-	0	-	-	12
HCM Lane LOS	E	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	0.2

Timings

2040 Total Traffic

1: Marksheffel Rd & Fontaine Blvd

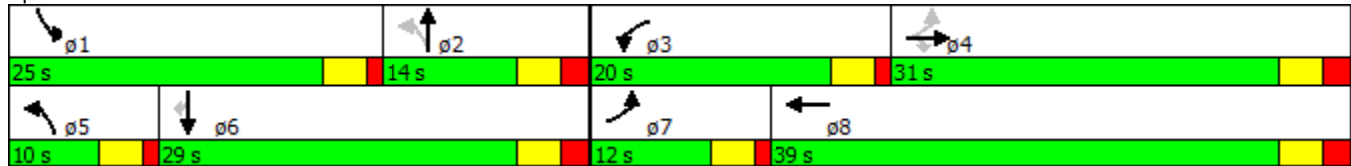
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	926	149	457	538	469	128	243	729	741	356	65
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free	2		Free			6
Detector Phase	7	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0		9.0	9.0		9.0	9.0	9.0
Total Split (s)	12.0	31.0	31.0	20.0	39.0		10.0	14.0		25.0	29.0	29.0
Total Split (%)	13.3%	34.4%	34.4%	22.2%	43.3%		11.1%	15.6%		27.8%	32.2%	32.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Act Effct Green (s)	34.0	26.0	26.0	15.4	36.4	89.4	16.0	9.0	89.4	21.0	24.0	24.0
Actuated g/C Ratio	0.38	0.29	0.29	0.17	0.41	1.00	0.18	0.10	1.00	0.23	0.27	0.27
v/c Ratio	0.18	0.95	0.26	0.81	0.39	0.31	0.59	0.72	0.48	0.94	0.40	0.12
Control Delay	12.8	50.3	2.2	47.8	20.5	0.5	33.1	51.7	1.1	54.8	28.4	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	50.3	2.2	47.8	20.5	0.5	33.1	51.7	1.1	54.8	28.4	0.5
LOS	B	D	A	D	C	A	C	D	A	D	C	A
Approach Delay		41.9			22.6			16.0			43.5	
Approach LOS		D			C			B			D	

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 89.4	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 30.6	Intersection LOS: C
Intersection Capacity Utilization 81.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Timings
5: Marksheffel Rd & Lorson Blvd

2040 Total Traffic
PM Peak Hour

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↖↗	↖	↘	↖↗
Volume (vph)	435	108	991	715	154	808
Turn Type	Prot	Perm	NA	Free	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		Free	6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		9.0	20.0
Total Split (s)	20.0	20.0	60.0		10.0	70.0
Total Split (%)	22.2%	22.2%	66.7%		11.1%	77.8%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effect Green (s)	12.7	12.7	23.8	56.8	33.9	33.9
Actuated g/C Ratio	0.22	0.22	0.42	1.00	0.60	0.60
v/c Ratio	0.60	0.26	0.70	0.48	0.61	0.44
Control Delay	24.3	6.8	16.5	1.0	17.7	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	6.8	16.5	1.0	17.7	7.1
LOS	C	A	B	A	B	A
Approach Delay	20.8		10.0			8.8
Approach LOS	C		B			A

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 56.8
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 11.5
 Intersection Capacity Utilization 60.8%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 5: Marksheffel Rd & Lorson Blvd



Timings
8: Carriage Meadows & Fontaine Blvd

2040 Total Traffic
PM Peak Hour

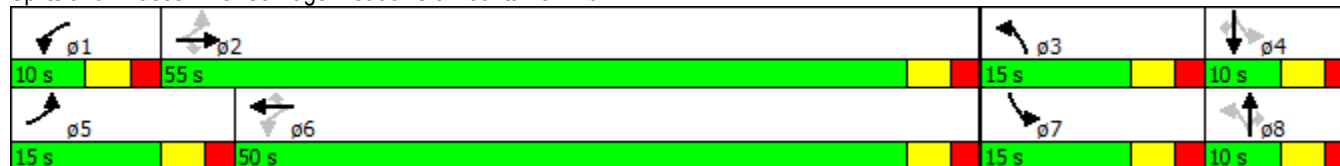
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	209	1942	245	55	1143	55	162	8	116	109	8	159
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	15.0	55.0	55.0	10.0	50.0	50.0	15.0	10.0	10.0	15.0	10.0	10.0
Total Split (%)	16.7%	61.1%	61.1%	11.1%	55.6%	55.6%	16.7%	11.1%	11.1%	16.7%	11.1%	11.1%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	59.3	51.6	51.6	50.2	45.2	45.2	15.8	7.9	7.9	14.0	5.0	5.0
Actuated g/C Ratio	0.67	0.58	0.58	0.56	0.51	0.51	0.18	0.09	0.09	0.16	0.06	0.06
v/c Ratio	0.70	1.00	0.25	0.32	0.67	0.07	0.65	0.05	0.45	0.45	0.08	0.69
Control Delay	23.3	40.0	2.5	11.4	18.9	0.1	43.2	41.1	10.8	35.4	42.0	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	40.0	2.5	11.4	18.9	0.1	43.2	41.1	10.8	35.4	42.0	24.1
LOS	C	D	A	B	B	A	D	D	B	D	D	C
Approach Delay		34.7			17.7			30.0			29.1	
Approach LOS		C			B			C			C	

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 89.1
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 29.0
 Intersection Capacity Utilization 85.2%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service E

Splits and Phases: 8: Carriage Meadows & Fontaine Blvd



Queuing and Blocking Report

Intersection: 56: East Access & Lorson Blvd

Movement	EB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	31	40	50
Average Queue (ft)	5	11	24
95th Queue (ft)	24	36	50
Link Distance (ft)		392	338
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 177: West Access & Lorson Blvd

Movement	EB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	31	44	63
Average Queue (ft)	6	16	26
95th Queue (ft)	25	43	54
Link Distance (ft)		331	349
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 0

Queuing and Blocking Report

Intersection: 56: East Access & Lorson Blvd

Movement	EB	WB	NB	SB
Directions Served	L	TR	LTR	LTR
Maximum Queue (ft)	52	4	48	52
Average Queue (ft)	15	0	12	24
95th Queue (ft)	42	3	38	50
Link Distance (ft)		1143	392	338
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 177: West Access & Lorson Blvd

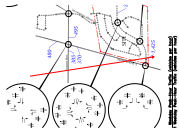
Movement	EB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	57	40	40
Average Queue (ft)	14	10	18
95th Queue (ft)	41	35	44
Link Distance (ft)		331	349
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

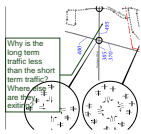
Zone wide Queuing Penalty: 0

Markup Summary

dsdparsons (3)

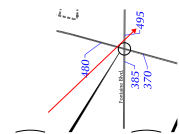


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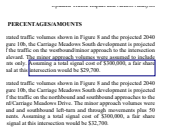
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Why is the long term traffic less than the short term traffic? Where else are they exiting?

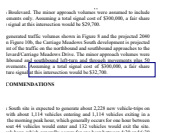


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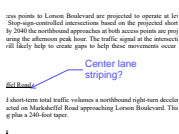
dsdrice (3)



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Center lane striping?