



LSC TRANSPORTATION CONSULTANTS, INC.
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MEMORANDUM

DATE: August 14, 2017

TO: Elizabeth Nijkamp – El Paso County Planning and Community Development

FROM: Jeffrey C. Hodsdon - LSC Transportation Consultants, Inc. *JCH*

SUBJECT: Carriage Meadows South at Lorson Ranch Filing No. 1
Response to Comments Memorandum
LSC #164240

Following are the LSC Transportation Consultants, Inc. responses to the El Paso County Planning and Community Development August 3, 2017 comments regarding the June 21, 2017 Updated Traffic Impact and Access Analysis by LSC.

- 1. Please do not use back ground traffic in your calculations for percentages. The Lorson/MS needs a number assigned to it at this time.*

LSC Response: Only Lorson Ranch development traffic has been included in the calculation. The report refers to “background traffic” as any traffic not generated by Carriage Meadows South. The updated report includes a signal percentage calculation table that identifies the Lorson developments included in the calculation. The traffic report has been updated to include a specific dollar amount associated with Carriage Meadows South. The report also contains updated language explaining our recommendation for the timing of this escrow payment to the County.

- 2. Please do not use background traffic, 100% of the dollar amount should be distributed between these three developments (the residential, and tract N and O).*

LSC Response: Only Lorson Ranch development traffic has been included in the calculation. The report refers to “background traffic” as any traffic not generated by Carriage Meadows South. The updated report includes a signal percentage calculation table that identifies the Lorson developments included in the calculation. Tracts N and O have been included as well as Carriage Meadows South and Lorson East residential developments. The traffic report has

been updated to include a specific dollar amount associated with Carriage Meadows South as well as these other future developments. The report also contains updated language explaining our recommendation for the timing of this escrow payment to the County. Basically, we recommend the actual payment of the escrow be deferred until timing of the construction of a bridge over the main channel of the Jimmy Camp is determined. The likely scenario is that a Lorson Ranch East plat would run concurrently with the bridge construction over the main channel. The escrow amount and timing for Carriage Meadows South at Lorson Ranch Filing No. 1 could be confirmed or recalculated at that time. The reason for this is so the developer will not need to pay a large escrow amount now as the signal will not meet traffic volume warrants (based on the TIS projections) prior to the construction of the bridge over the main channel.




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Carriage Meadows South at Lorson Ranch Filing No 1 Updated Traffic Impact and Access Analysis (LSC #164240) August 14, 2017

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.

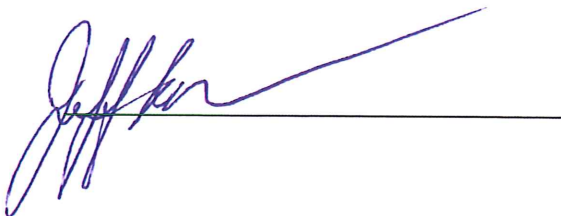

Jeffrey C. Hodsdon, P.E., #31684




Date

Developer's Statement

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




Date



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August 14, 2017

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

RE: Carriage Meadows South at Lorson Ranch
Filing No. 1
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 at Lorson Ranch Filing No. 1 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 at Lorson Ranch Filing No. 1 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 traffic volumes at the intersection of Marksheffel Road/Fontaine Boulevard. The traffic volumes were based on traffic counts conducted by LSC in March 2017. The traffic count reports are attached.

Existing Levels of Service

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

Table 1 Intersection Levels of Service Delay Ranges			
Level of Service	Signalized Intersections		Unsignalized Intersections
	Average Control Delay (seconds per vehicle)	V/C⁽¹⁾	Average Control Delay (seconds per vehicle)⁽²⁾
A	10.0 sec or less	less than 0.60	10.0 sec or less
B	10.1-20.0 sec	0.60-0.69	10.1-15.0 sec
C	20.1-35.0 sec	0.70-0.79	15.1-25.0 sec
D	35.1-55.0 sec	0.80-0.89	25.1-35.0 sec
E	55.1-80.0 sec	0.90-0.99	35.1-50.0 sec
F	80.1 sec or more	1.00 and greater	50.1 sec or more

(1) Source: *Transportation Research Circular 212*

(2) For unsignalized intersections if V/C ratio is greater than 1.0 the level of service is LOS F regardless of the projected average control delay per vehicle.

The intersection of Marksheffel/Fontaine was analyzed to determine the existing levels of service using Synchro. Figure 3 shows the level of service analysis results. As shown on the figure all movements this intersection are currently operating at a level of service C or better during the peak hours. The level of service (LOS) reports are attached.

SHORT-TERM (YEAR 2020) BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the roadways without the Carriage Meadows South at Lorson Ranch Filing No. 1 traffic. Background traffic includes the March 2017 traffic (from Figure 3) and increases in through traffic on Marksheffel Road due to both regional growth and the extension of Mesa Ridge Parkway east to Marksheffel Road. The portion of the existing traffic volumes were also assumed to be rerouted due to the extension of Mesa Ridge Parkway east to Marksheffel Road. A portion of the existing traffic that currently travels to and from the west

on Fontaine Boulevard was assumed to shift to travel to and from the south on Marksheffel Road to this new connection. The short-term background traffic also includes additional 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 for parcels east of the east tributary and zero traffic generated by Carriage Meadows South at Lorson Ranch Filing No. 1. The short-term background volumes assume Lorson Boulevard has been extended across and east of Jimmy Camp Creek to Stingray Lane. A portion of the existing traffic was assumed to be rerouted to use this new connection. Note: This scenario assuming a new bridge across Jimmy Camp Creek prior to any new subdivisions after Carriage Meadows South at Lorson Ranch Filing No. 1 has been carried through from earlier Carriage Meadows reports, however as noted in the recently completed Lorson East report, another potential scenario would be development of dwelling units in Lorson Ranch East until the dwelling unit cap is reached prior to the construction of the bridge over Jimmy Camp Creek. Under the scenario in the Lorson Ranch East report, the bridge over the East Tributary would be constructed before the bridge over the main channel of Jimmy Camp Creek. 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 2, 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 2), 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 at Lorson Ranch Filing No. 1 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 2.

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). Figure 10a also shows the projected 2040 traffic volumes at the intersection of Fontaine/Carriage Meadows assuming the future retail parcels within Lorson Ranch have not been developed by 2040. These volumes are for use in the traffic signal warrant analysis for this intersection only.

PROJECTED LEVELS OF SERVICE

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.

TRAFFIC SIGNAL WARRANT ANALYSIS

Lorson Boulevard/Marksheffel Road

The intersection of Marksheffel/Lorson was analyzed to determine if a Four-Hour Vehicular Volume Traffic Signal Warrant threshold would be reached or exceeded based on the projected short-term morning and afternoon peak-hour total traffic volumes. The results of the analysis are

shown in Figure 11. The traffic volumes shown are based on the short-term total traffic volumes shown in Figure 9a. The minor approach volumes were assumed to include the westbound left-turn movements only. As shown in the figure, the thresholds for a Four-Hour Vehicular Volume Traffic Signal Warrant are projected to be exceeded based on the morning and afternoon peak hours. This analysis using the peak hours is intended to provide an indication that a warrant may be met or is close to being met. In order for a Four-Hour Traffic Signal Warrant to be satisfied, the volume threshold would need to be met for two additional hours of the day. For example, the four-hour warrant would be satisfied with the volume thresholds met for one hour in the morning, two hours (instead of the one-hour peak) during the afternoon peak period, and an hour during the mid-afternoon.

Figure 11 also shows the projected short-term peak-hour volumes under another potential scenario presented in the recently submitted Lorson Ranch East traffic impact study. Under this scenario the bridge over the East Tributary would be constructed before the bridge over the main channel of Jimmy Camp Creek. The short-term volumes on the minor approach of the intersection of Marksheffel/Lorson for this scenario include traffic projected to be generated by Carriage Meadows South at Lorson Ranch Filing No. 1 and the future townhomes to be located south of Fontaine Boulevard and east of Carriage Meadows Drive only. As shown in Figure 11, the thresholds for a Four-Hour Vehicular Volume Traffic Signal Warrant are projected to be met for the morning peak hour only under the scenario where Lorson Boulevard is not constructed across the main channel of Jimmy Camp Creek. The afternoon peak hour is just above the minimum 80-vehicle-per-hour threshold. It is unlikely that three other hours could be found that would meet the threshold if Lorson Boulevard is not extended across the Jimmy Camp Creek main channel.

Fontaine Boulevard/Carriage Meadows South

The intersection of Fontaine/Carriage Meadows was analyzed to determine if a Four-Hour Vehicular Volume Traffic Signal Warrant threshold would be reached or exceeded based on the projected 2040 morning and afternoon peak-hour total traffic volumes with and without development of the retail parcels within the Lorson Ranch development. The results of the analysis are shown in Figure 12. The traffic volumes shown are based on the 2040 total traffic volumes shown in Figure 10a. The minor approach volumes were assumed to include the northbound left-turn movements, the northbound through movements, and fifty percent of the northbound right-turn movements. As shown in the figure, the thresholds for a Four-Hour Vehicular Volume Traffic Signal Warrant are only projected to be exceeded based on the morning and afternoon peak hours once the commercial parcel southwest of the intersection of Fontaine/Carriage Meadows is developed.

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 13 shows the estimated average weekday traffic volumes and recommended street classifications for the Carriage Meadows South at Lorson Ranch Filing No. 1 internal streets and the street connection to the north to Fontaine Boulevard.

TRAFFIC SIGNAL ESCROW PERCENTAGES/AMOUNTS

Lorson Boulevard/Marksheffel Road

As shown in Figure 11, the intersection of Marksheffel/Lorson is likely to meet a traffic signal warrant based on the short-term total traffic volumes, however, those volumes assume a new bridge across Jimmy Camp Creek prior to any new subdivisions after Carriage Meadows South at Lorson Ranch Filing No. 1. As noted in the recently completed Lorson East report, another potential scenario would be development of dwelling units in Lorson Ranch East until the dwelling unit cap is reached prior to the construction of the bridge over Jimmy Camp Creek. Under this scenario a traffic signal is not projected to be warranted at the intersection of Lorson/Fontaine in the short-term. Table 3 shows the projected number of westbound left-turning vehicles at the intersection of Lorson/Marksheffel estimated to be generated by future developments within Lorson Ranch. The specific developments included in the calculation are listed in the table. These volumes were used to calculate a fair share contribution toward a future signal at this intersection. Assuming a total signal cost of \$300,000, a fair share contribution towards a future signal at this intersection for Carriage Meadows South at Lorson Ranch Filing No. 1 would be \$115,302.

Fontaine Boulevard/Carriage Meadows

Table 4 shows the projected total traffic volumes on the minor approach volumes at the intersection of Fontaine/Carriage Meadows by development at the time a traffic signal will likely be warranted. This analysis assumes buildout of all of the residential areas of Lorson Ranch, development of the

school parcel, and development of the retail parcel southwest of the intersection of Carriage Meadows Drive/Fontaine Boulevard only. 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. As shown in Table 3, the Carriage Meadows South at Lorson Ranch Filing No. 1 development is projected to contribute about 22.3 percent of the traffic on the northbound and southbound approaches to the intersection of Fontaine Boulevard/Carriage Meadows Drive. Assuming a total signal cost of \$300,000, a fair share contribution towards a future signal at this intersection would be \$67,016. The timing of a future traffic signal at Fontaine/Carriage Meadows and the escrow amounts towards that signal should be reevaluated with the development of the retail parcel southwest the intersection and/or development of the multi-family residential development southeast of the intersection.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

- The Carriage Meadows South at Lorson Ranch Filing No. 1 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

- 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.
- Marksheffel Road should be restriped to provide a dedicated southbound left-turn lane approaching Lorson Boulevard. This lane should be 440 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 for this subdivision and other future Lorson Ranch developments to be escrowed for a future traffic signal at Fontaine/Carriage Meadows. Typically, signal escrows are provided to the county with the

subdivision plat, however in this case the entire cost of these signals will come from Lorson Ranch developments. As such, the applicant would like to provide the escrow at such time that the signal will be close to meeting traffic volume warrants. For this intersection, LSC suggests the signal escrow for Carriage Meadows South at Lorson Ranch Filing No. 1 be provided to the county at the time of development of the commercial parcel southeast of Fontaine/Marksheffel.

- Also, LSC suggests that the escrow amount for Carriage Meadows South at Lorson Ranch Filing No. 1 toward a future traffic signal at Marksheffel/Lorson Boulevard be reevaluated once the timing of the construction of a bridge over the main channel of the Jimmy Camp is determined. The likely scenario is that a Lorson Ranch East plat would run concurrently with the bridge construction over the main channel. The escrow amount and timing for Carriage Meadows South at Lorson Ranch Filing No. 1 could be confirmed or recalculated at that time.

Street Classification

- Figure 13 presents the recommended street classification for Carriage Meadows South at Lorson Ranch Filing No. 1.

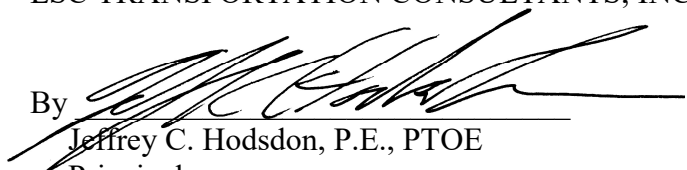
* * * * *

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: Tables 2 - 4
Figures 1-13
Traffic Count Reports
Level of Service Reports
Queuing Reports

Table 2
Trip Generation Estimate
Carriage Meadows South at Lorson Ranch Filing No. 1

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾				Total Trips Generated				Internal Trips (%)	Internal Trips with Long-Term Buildout of Lorson Ranch				Total 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						
				In	Out	In	Out		In	Out		In	Out		In	Out	In	Out					
210	Single-Family Detached Housing	234 DU ⁽²⁾	9.52	0.19	0.56	0.63	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.

Table 3
Lorson/Marksheffel Future Traffic Signal Contributions
Carriage Meadows South at Lorson Ranch Filing No. 1

Development	Westbound Left-Turn Volume			Signal Contribution	
	AM	PM	AM+PM	%	\$
Carriage Meadows South at Lorson Ranch Filing No. 1	65	43	108	38.4%	\$115,302
Future Townhomes SE Carriage Meadows/Fontaine (Tract O)	11	5	16	5.7%	\$17,082
South Retail (Tract N)	3	9	12	4.3%	\$12,811
Lorson Ranch East	87	58	145	51.6%	\$154,804
	166	115	281		\$300,000

Source: LSC Transportation Consultants, Inc.

**Table 4
Carriage Meadows/Fontaine Future Traffic Signal Contributions
Carriage Meadows South at Lorson Ranch Filing No. 1**

Development		NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	TOTAL (Includes 50% of RT) veh/hr	Signal Contribution %	Signal Contribution \$
	Carriage Meadows South at Lorson Ranch Filing No. 1	31	1	5	0	1	0	36	44.2%	
AM	Future Townhomes SE Carriage Meadows/Fontaine (Tract O)	15	0	2	0	0	0	16	19.6%	
	South Retail (Tract N)	0	0	0	13	0	33	30	36.2%	
		46	1	7	13	1	33	82		
	Carriage Meadows South at Lorson Ranch Filing No. 1	20	3	1	0	5	0	29	14.1%	
PM	Future Townhomes SE Carriage Meadows/Fontaine (Tract O)	7	0	0	0	1	0	8	3.9%	
	South Retail (Tract N)	0	0	0	108	0	122	169	82.0%	
		27	3	1	108	6	122	206		
	Carriage Meadows South at Lorson Ranch Filing No. 1	51	4	6	0	6	0	64	22.3%	\$67,016
AM + PM	Future Townhomes SE Carriage Meadows/Fontaine (Tract O)	22	0	2	0	1	0	24	8.4%	\$25,131
	South Retail (Tract N)	0	0	0	121	0	155	199	69.3%	\$207,853
		73	4	8	121	7	155	287		\$300,000

Source: LSC Transportation Consultants, Inc.



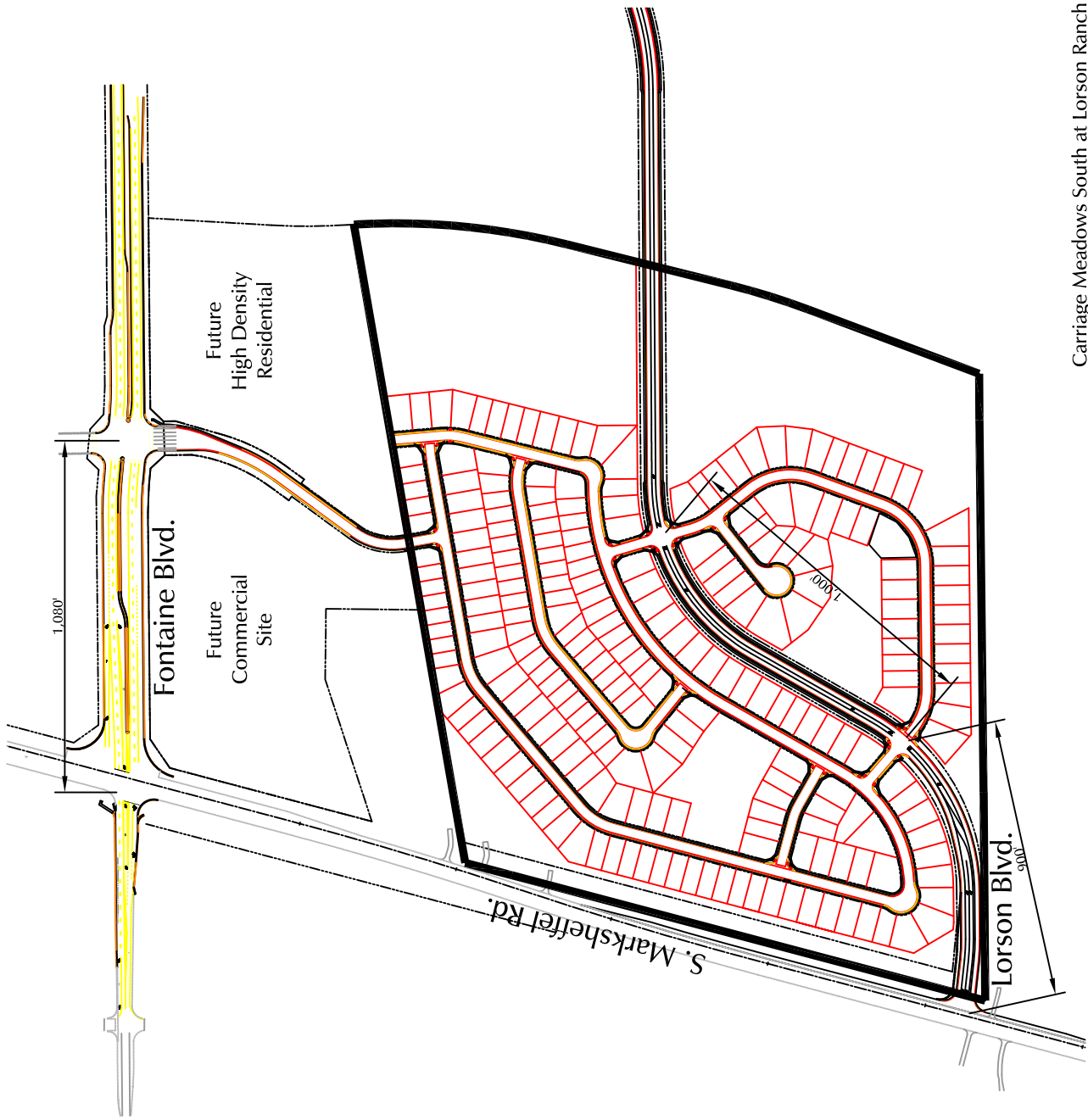
Approximate Scale
Scale: 1" = 3,000'



Figure 1
**Vicinity
Map**

Carriage Meadows South at Lorson Ranch Filing No. 1 (LSC #164240)





Approximate Scale
Scale: 1" = 500'

Figure 2
Site Plan

Carriage Meadows South at Lorson Ranch Filing No. 1 (LSC #164240)



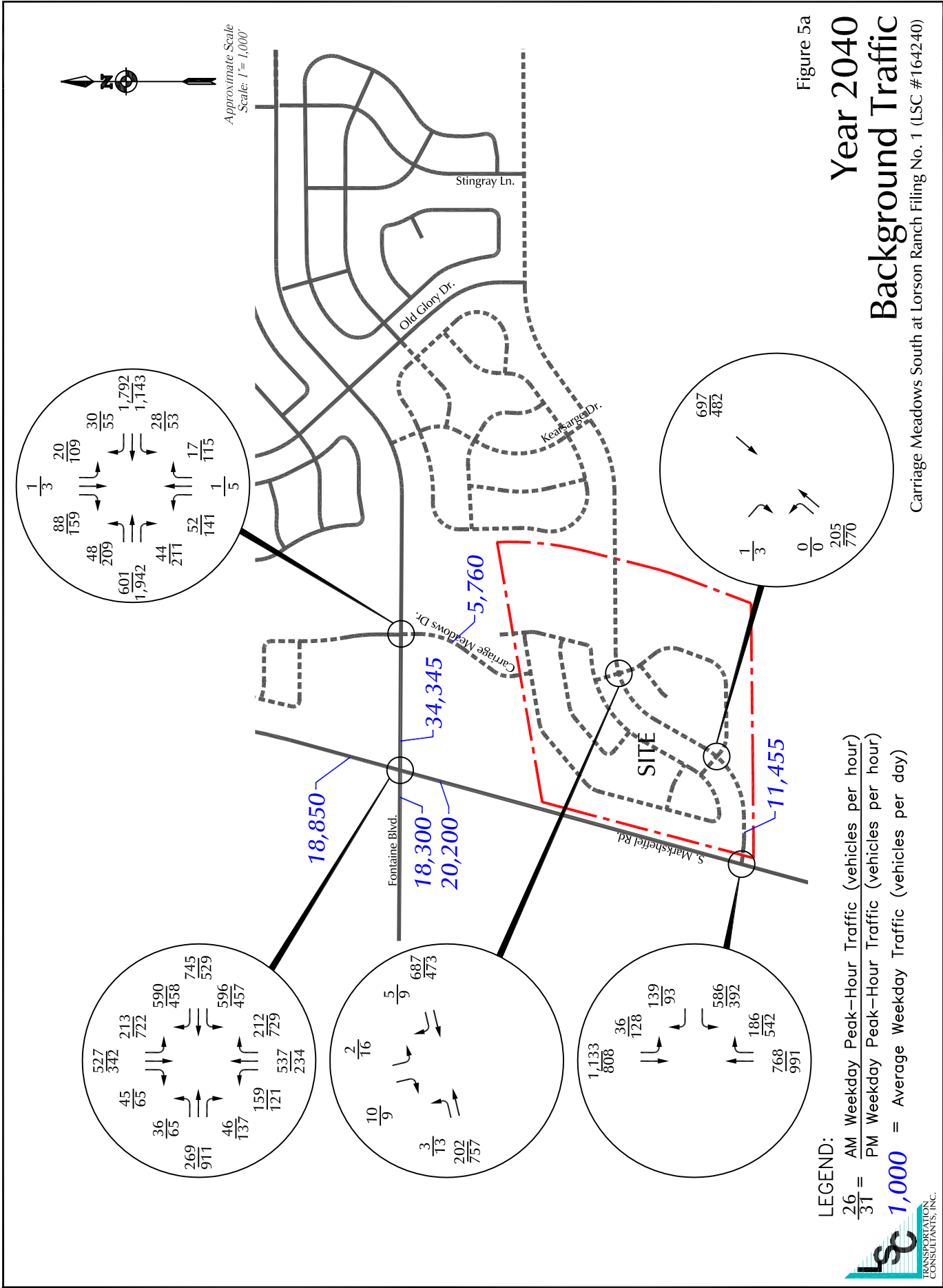


Figure 5a

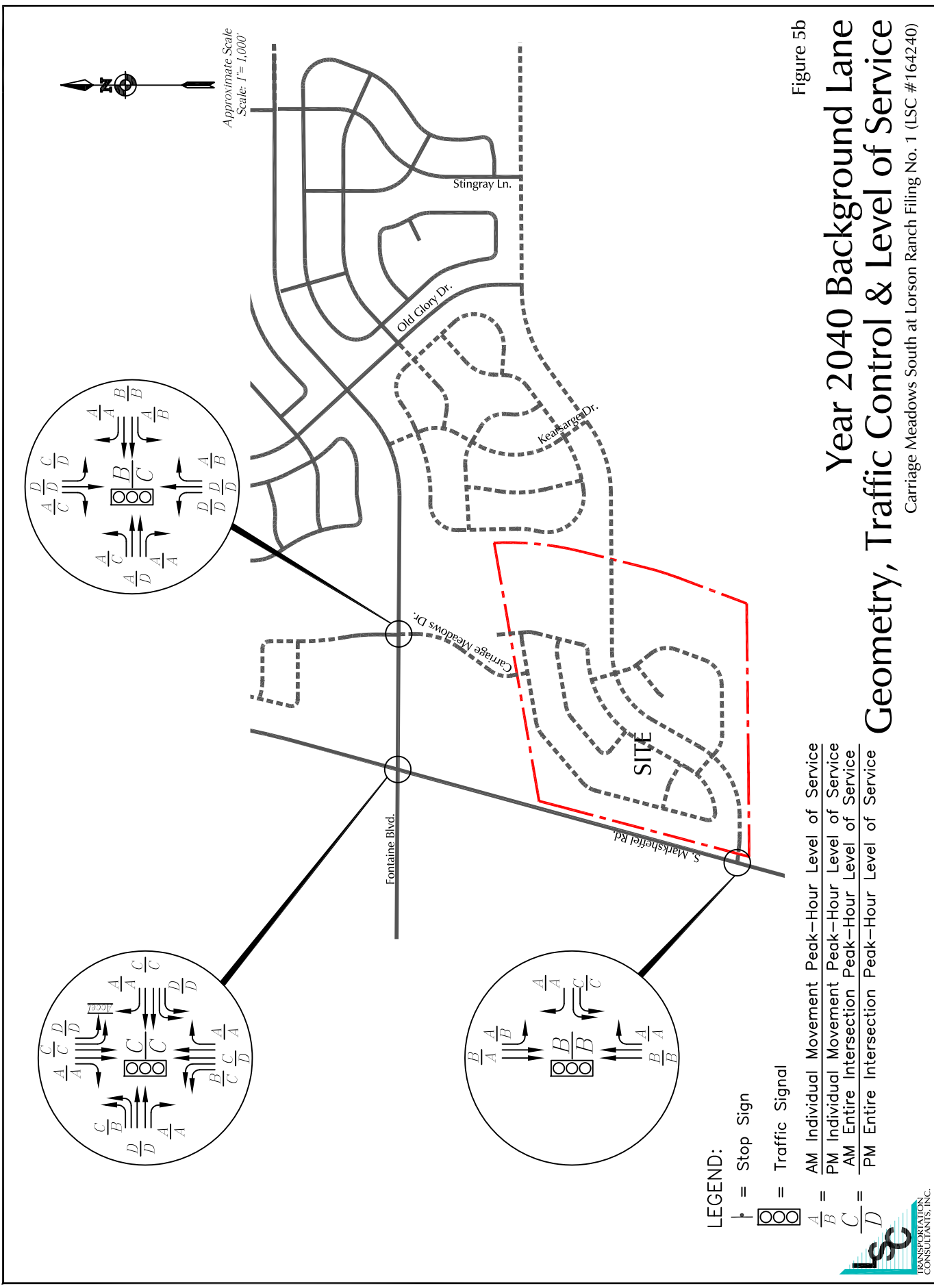
Year 2040 Background Traffic

Carriage Meadows South at Lorson Ranch Filing No. 1 (LSC #164240)

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

Figure 5b

Carriage Meadows South at Lorson Ranch Filing No. 1 (LSC #164240)



LEGEND:

† = Stop Sign

⊞ = Traffic Signal

A = AM Individual Movement Peak-Hour Level of Service

B = PM Individual Movement Peak-Hour Level of Service

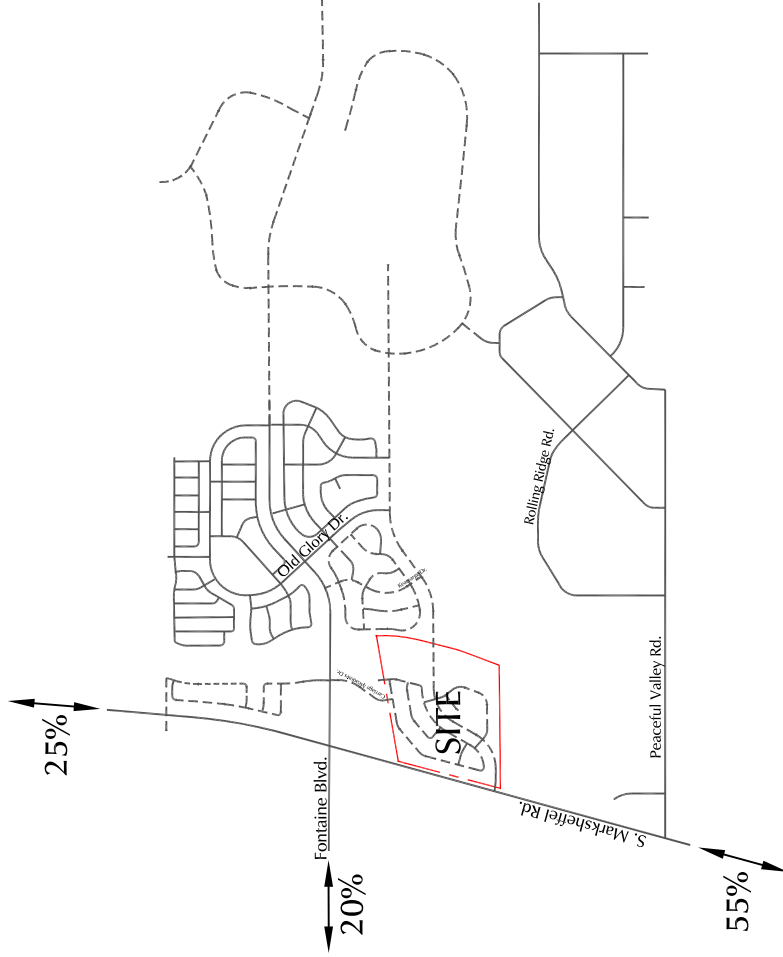
C = AM Entire Intersection Peak-Hour Level of Service

D = PM Entire Intersection Peak-Hour Level of Service





Approximate Scale
Scale: 1" = 3,000'



LEGEND:



35% = Percent Directional Distribution



Figure 6

Directional Distribution of Site-Generated Traffic

Carriage Meadows South at Lorson Ranch Filing No. 1 (LSC #164240)

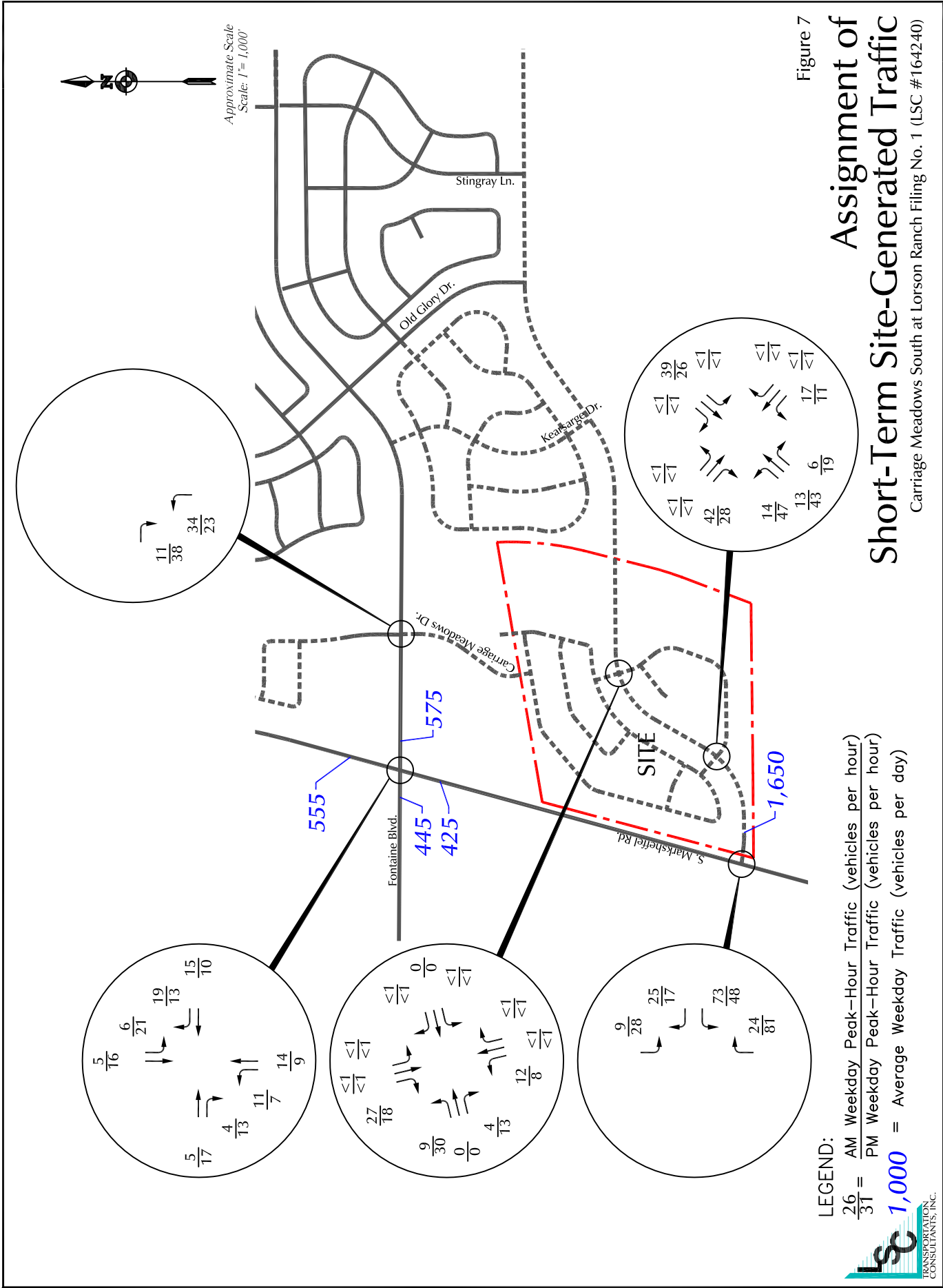


Figure 7

Assignment of Short-Term Site-Generated Traffic

Carriage Meadows South at Lorson Ranch Filing No. 1 (LSC #164240)

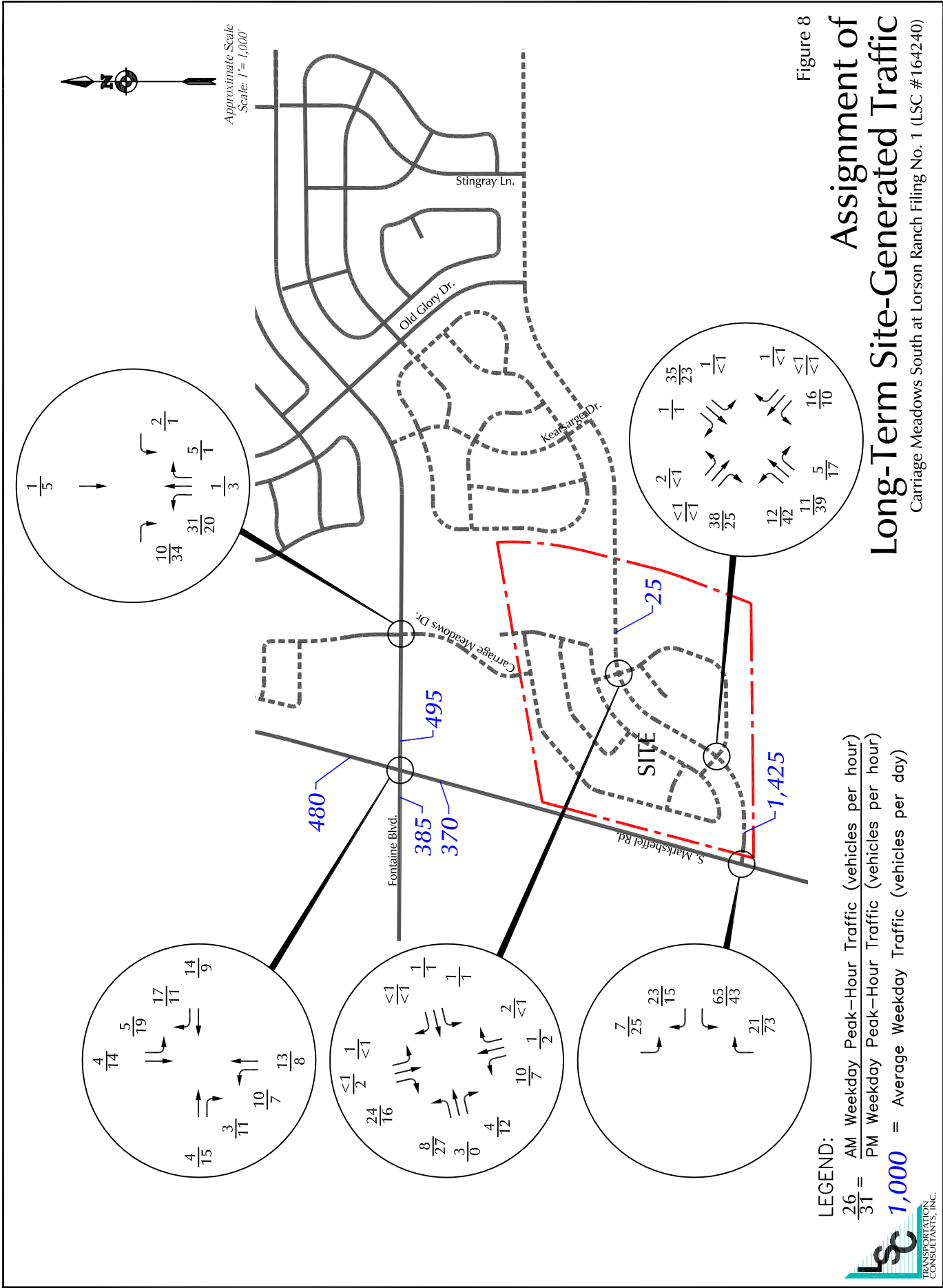
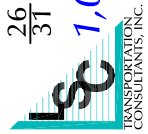
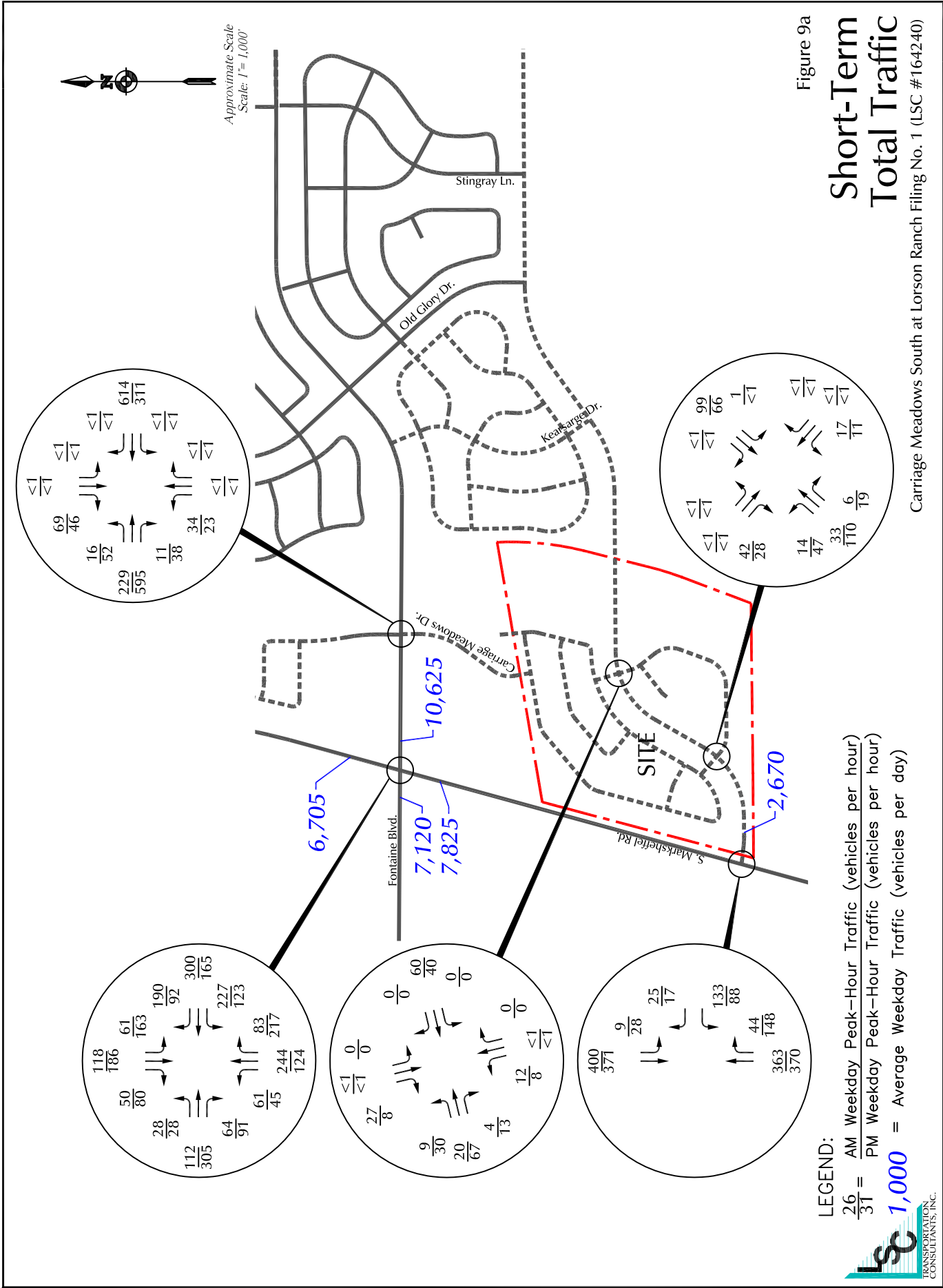


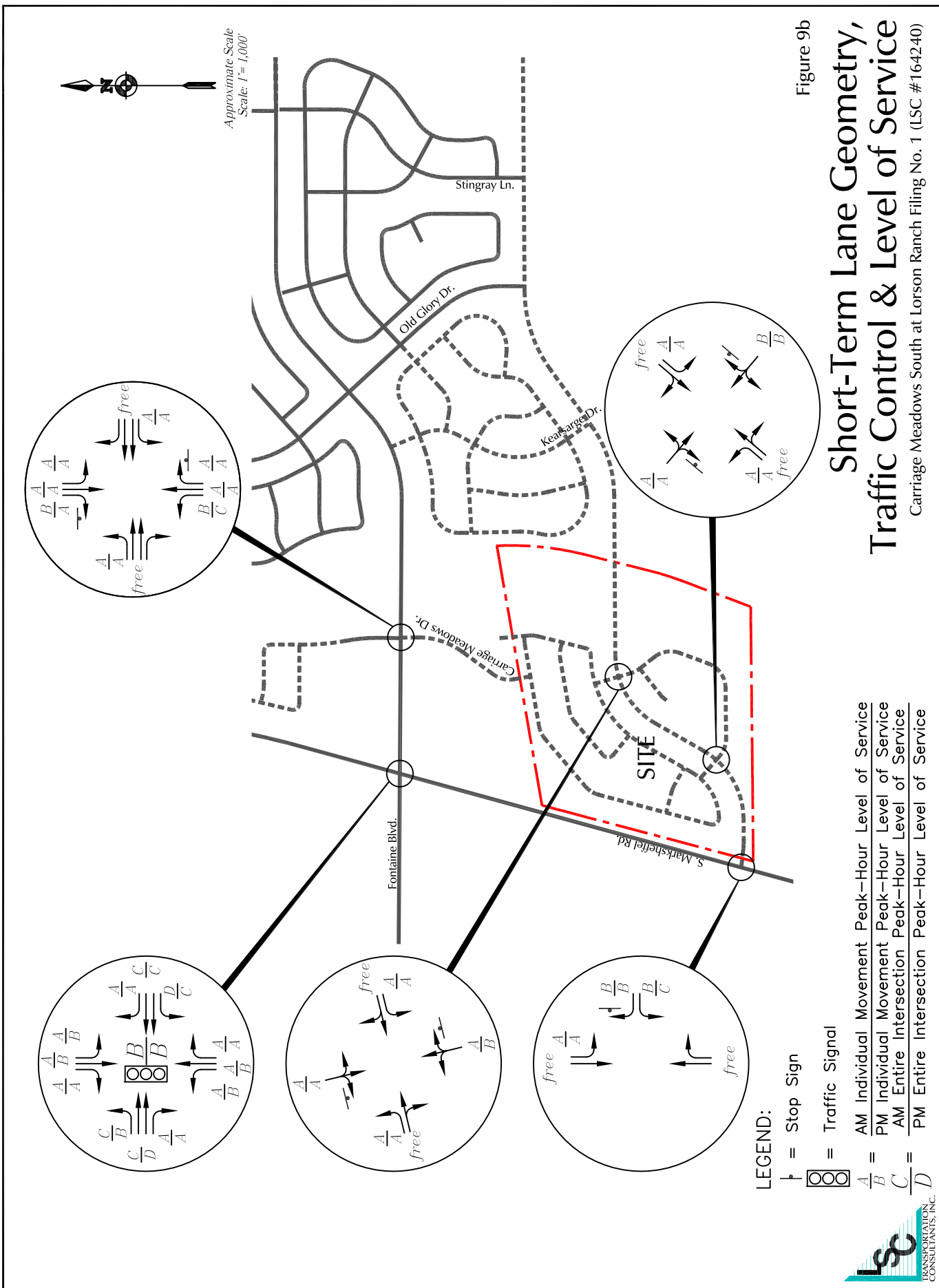
Figure 8
**Assignment of
 Long-Term Site-Generated Traffic**
 Carriage Meadows South at Lorson Ranch Filing No. 1 (LSC #164240)



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

Carriage Meadows South at Lorson Ranch Filing No. 1 (LSC #164240)

Figure 9b

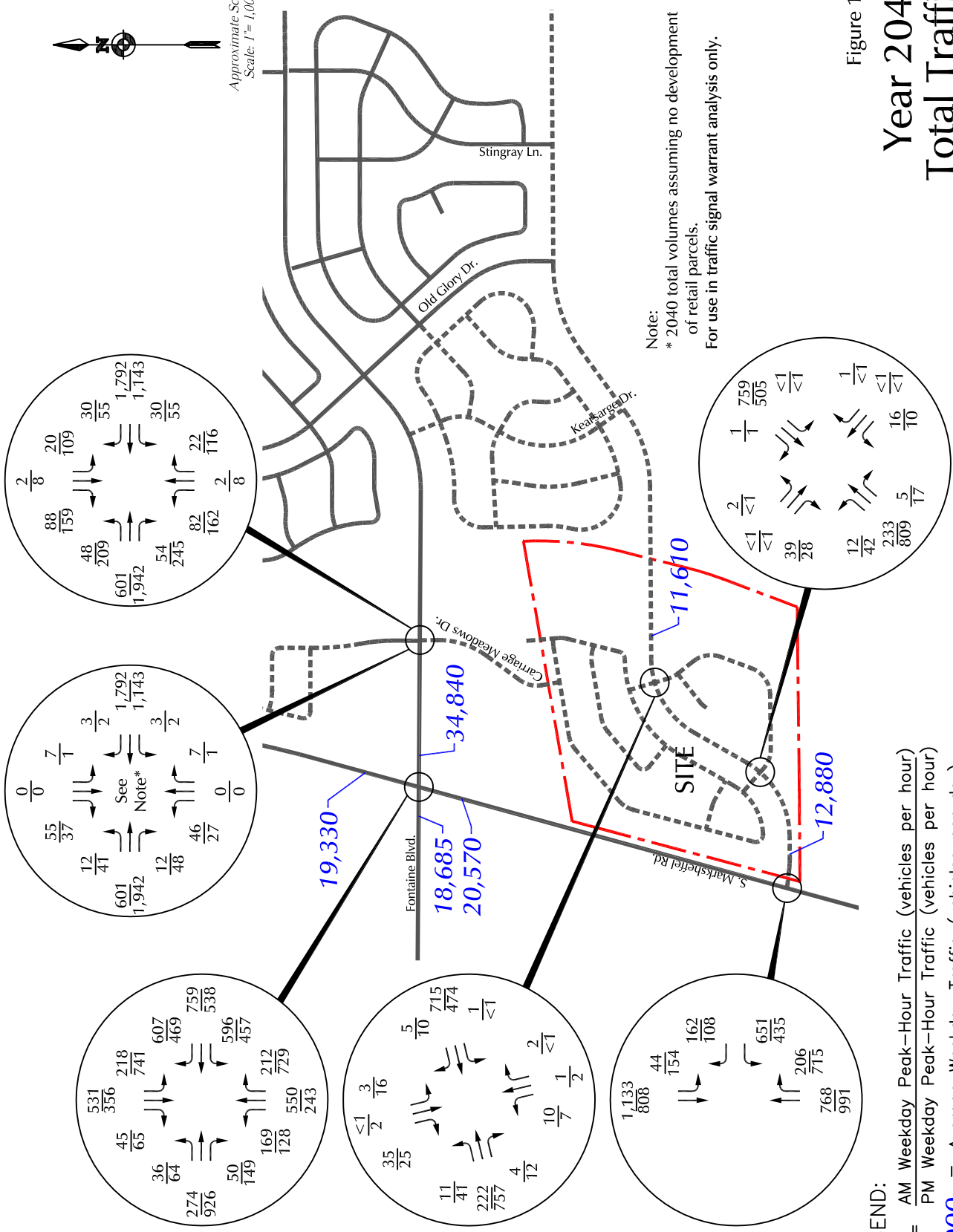


LEGEND:
 ┆ = Stop Sign
 ○○○ = Traffic Signal
 A/B = AM Individual Movement Peak-Hour Level of Service
 A/C = PM Individual Movement Peak-Hour Level of Service
 C/D = AM Entire Intersection Peak-Hour Level of Service
 D/B = PM Entire Intersection Peak-Hour Level of Service





Approximate Scale
Scale: 1" = 1,000'



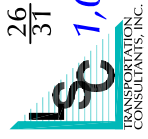
Note:
* 2040 total volumes assuming no development of retail parcels.
For use in traffic signal warrant analysis only.

Year 2040 Total Traffic

Figure 10a

Carriage Meadows South at Lorson Ranch Filing No. 1 (LSC #164240)

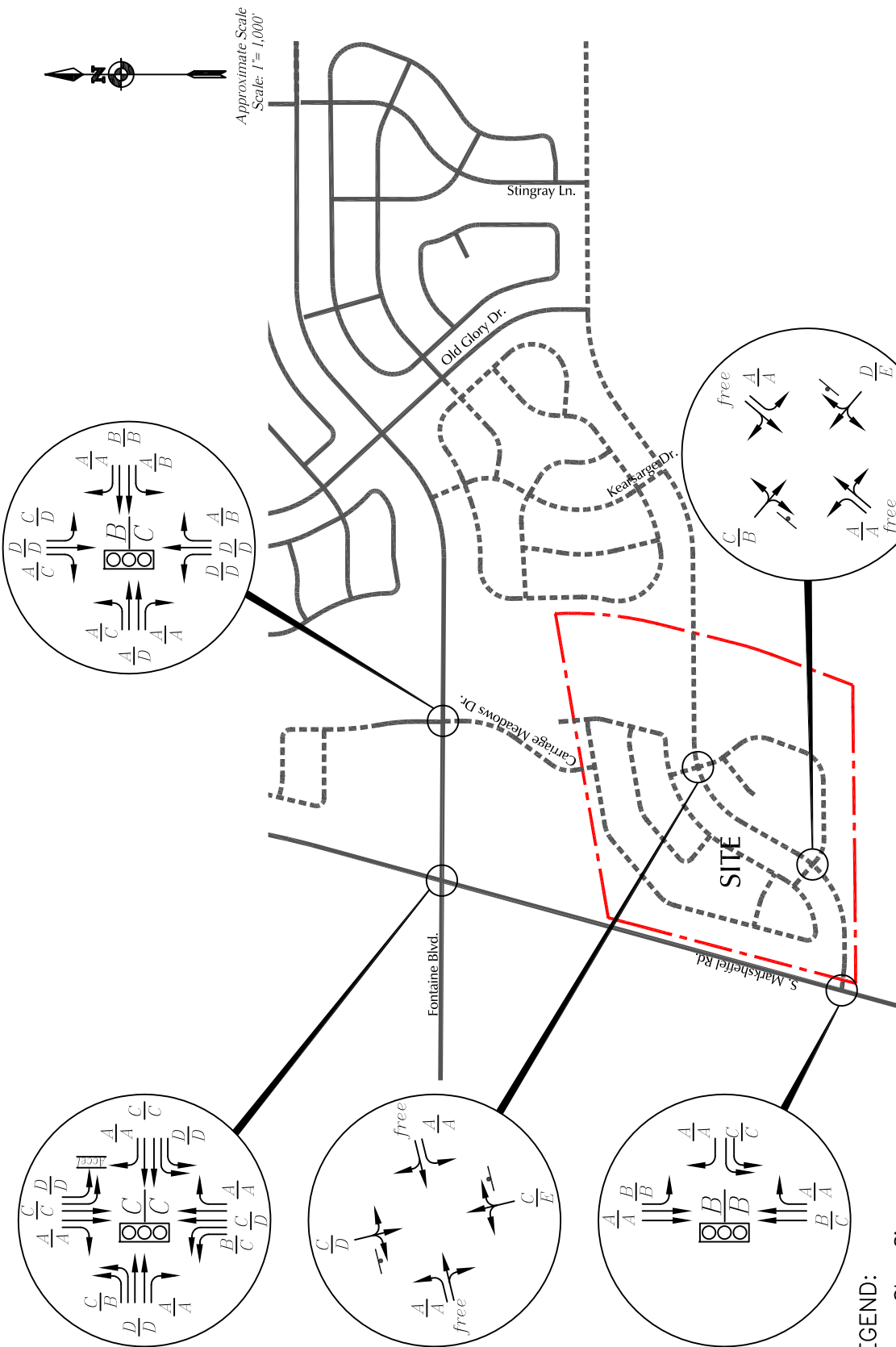
LEGEND:
 $\frac{26}{31}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{31}{31}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
1,000 = Average Weekday Traffic (vehicles per day)



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

Carriage Meadows South at Lorson Ranch Filing No. 1 (LSC #164240)

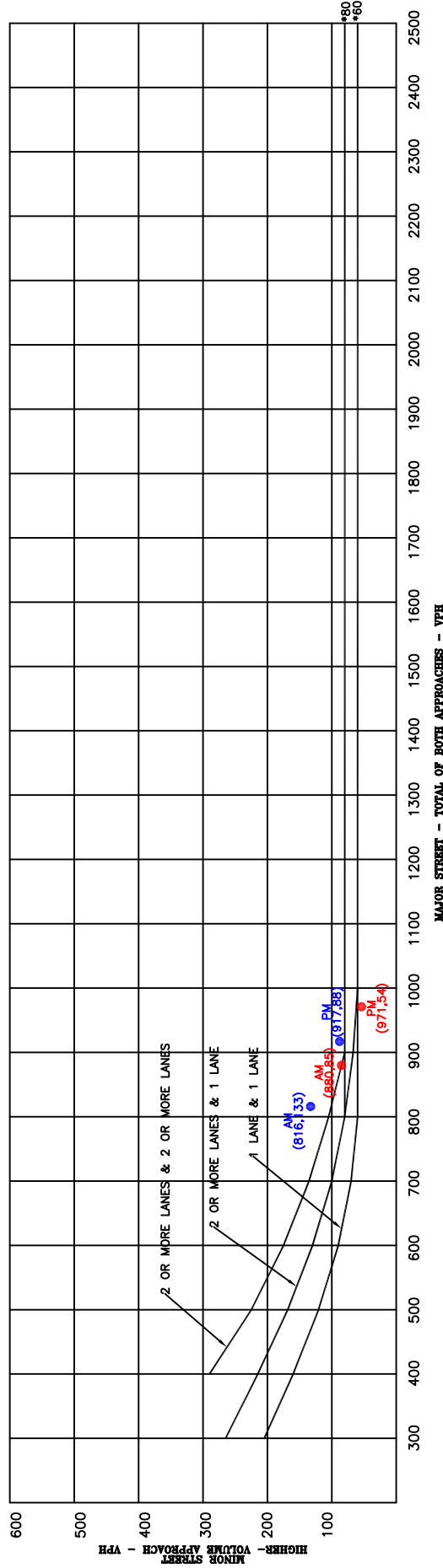
Figure 10b



- LEGEND:**
- ⊥ = Stop Sign
 - ⊞ = Traffic Signal
 - $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
 - $\frac{A}{B}$ = PM Individual Movement Peak-Hour Level of Service
 - $\frac{C}{D}$ = AM Entire Intersection Peak-Hour Level of Service
 - $\frac{D}{D}$ = PM Entire Intersection Peak-Hour Level of Service



Figure 4C-2. Warrant 2 Four-Hour Vehicular Volume (70% Factor)
 (Community Less than 10,000 population or above 40 mph on Major Street)



* Note: 80 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

- Short-Term Total Traffic
- Short-Term Alternative Scenario with No Lorson Blvd. Extension Across the Main Jimmy Camp Creek Channel

Figure 11

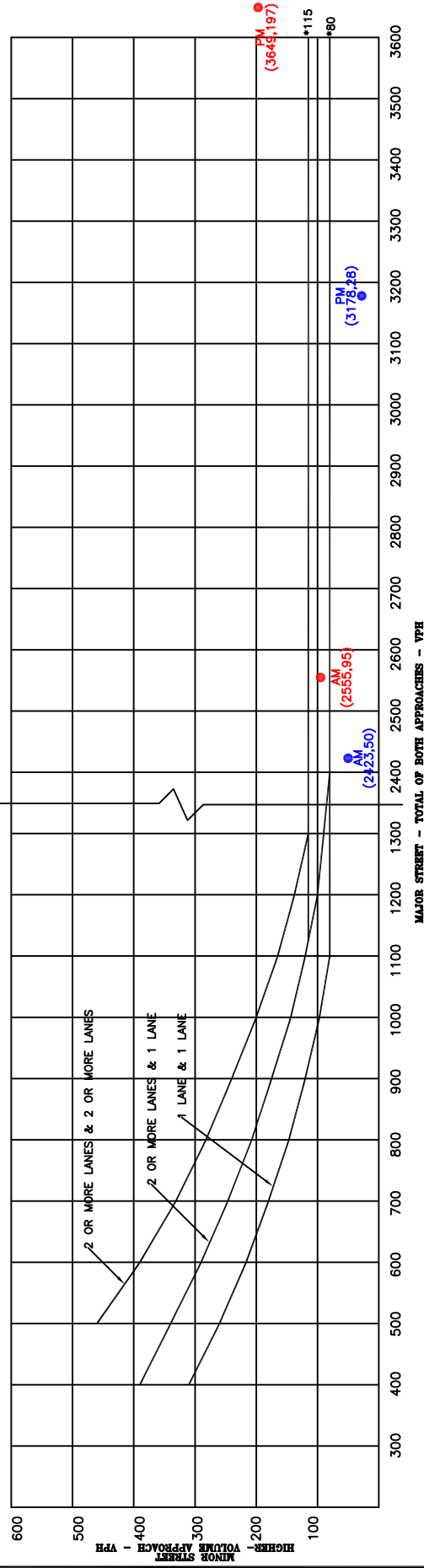
Traffic Signal Warrant Analysis

Marksheffel/Lorson Short-Term Total Traffic

Carriage Meadows South at Lorson Ranch Filing No. 1 (LSC #164240)



Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



* Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

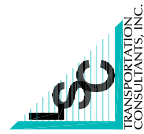
● 2040 Total Traffic

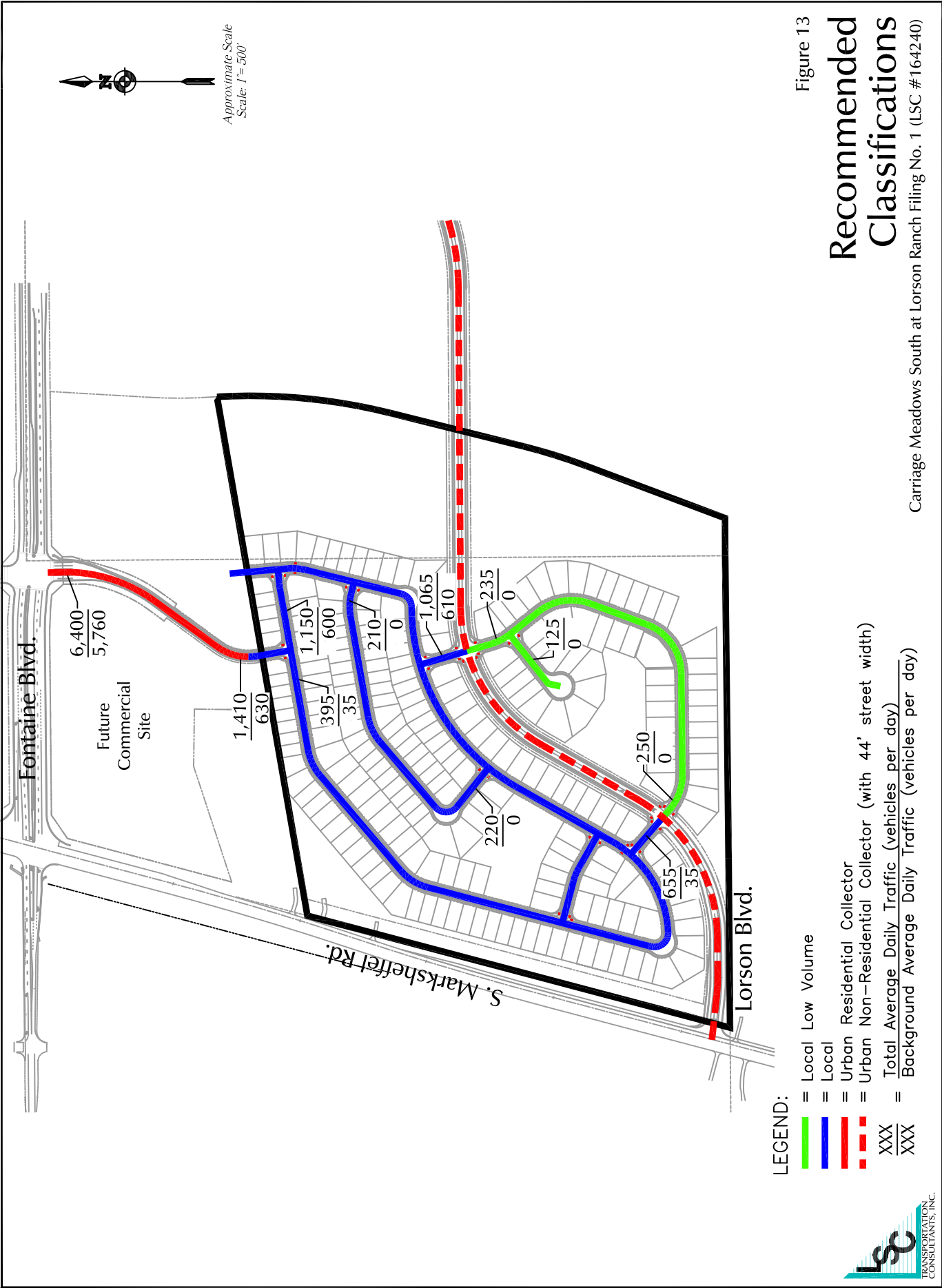
● 2040 Total Traffic without Retail Development

Figure 12

Traffic Signal Warrant Analysis Fontaine/Carriage Meadows Total Traffic

Carriage Meadows South at Lorson Ranch Filing No. 1 (LSC #164240)





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

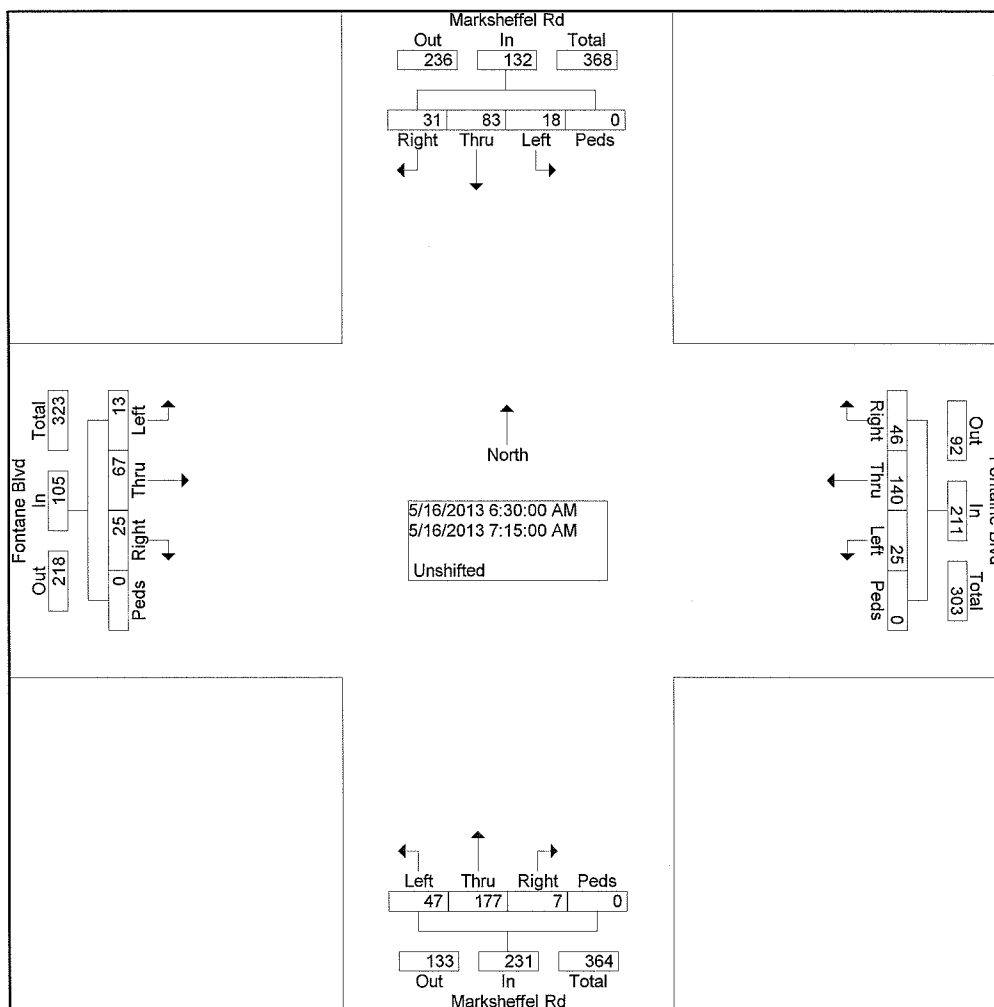
Start Time	Marksheffel Rd From North				Fontaine Blvd From East				Marksheffel Rd From South				Fontane Blvd From West				Int. Total
	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	Righ t	Thru	Left	Ped s	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 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	

LSC Transportation Consultants, Inc.

516 N. Tejon St.
 Colorado Springs, CO
 (719) 633-2868

Site Name : Marksheffel Rd - Fontaine Blvd AM
 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																					0.923
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	
	0.84					0.86					0.90					0.77					
	6					5					2					2					



LSC Transportation Consultants, Inc.

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	

LSC Transportation Consultants, Inc.

516 N. Tejon St.

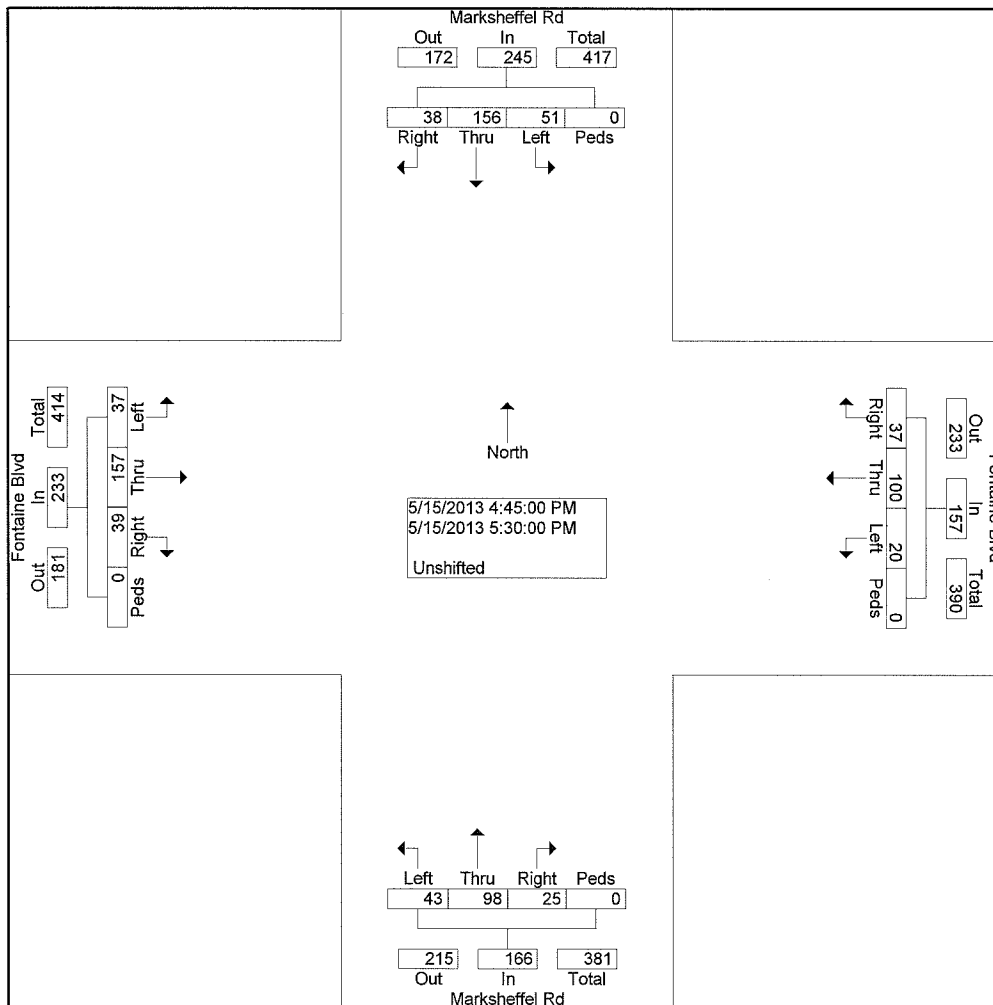
Colorado Springs, CO Name : Marksheffel Rd - Fontaine Blvd PM

(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
					0.90					0.89					0.84					0.89	6
					1					2					7						



LSC Transportation Consultants, Inc.

516 N. Tejon St.

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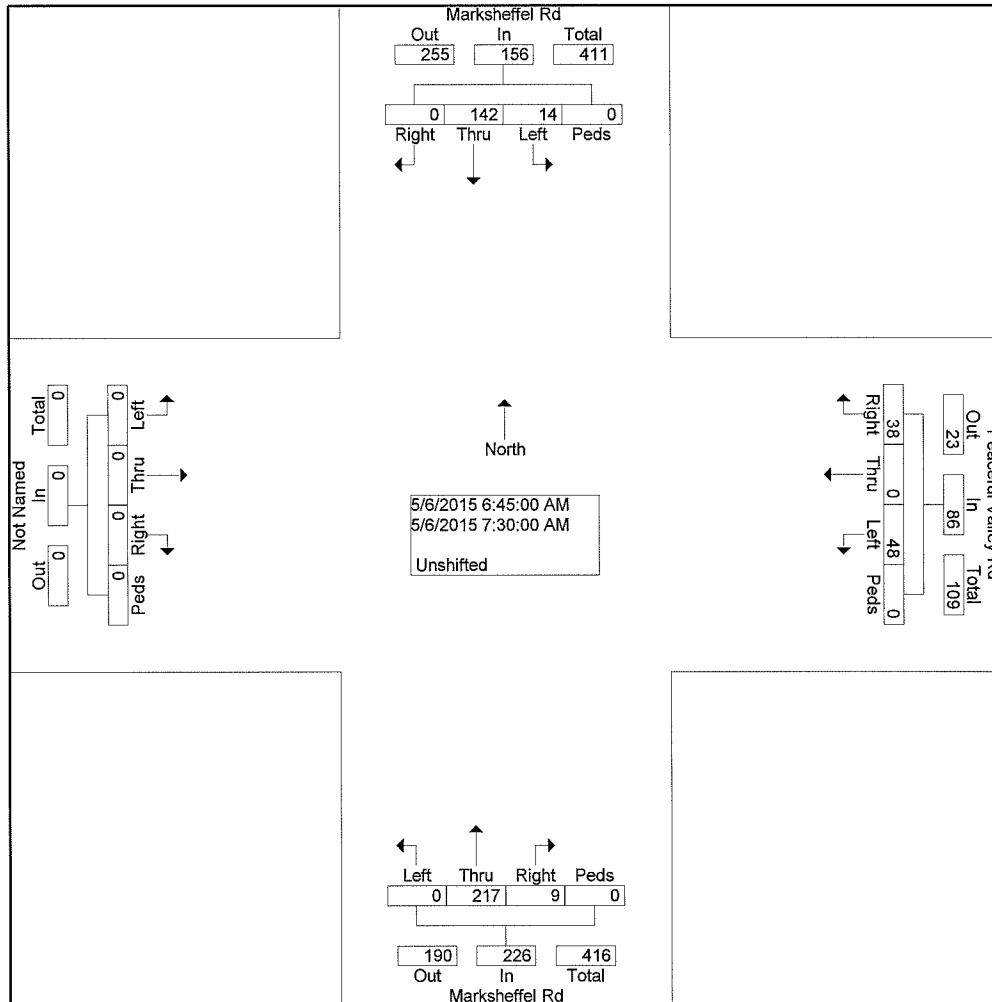
File Name : Marksheffel-Peaceful Valley AM

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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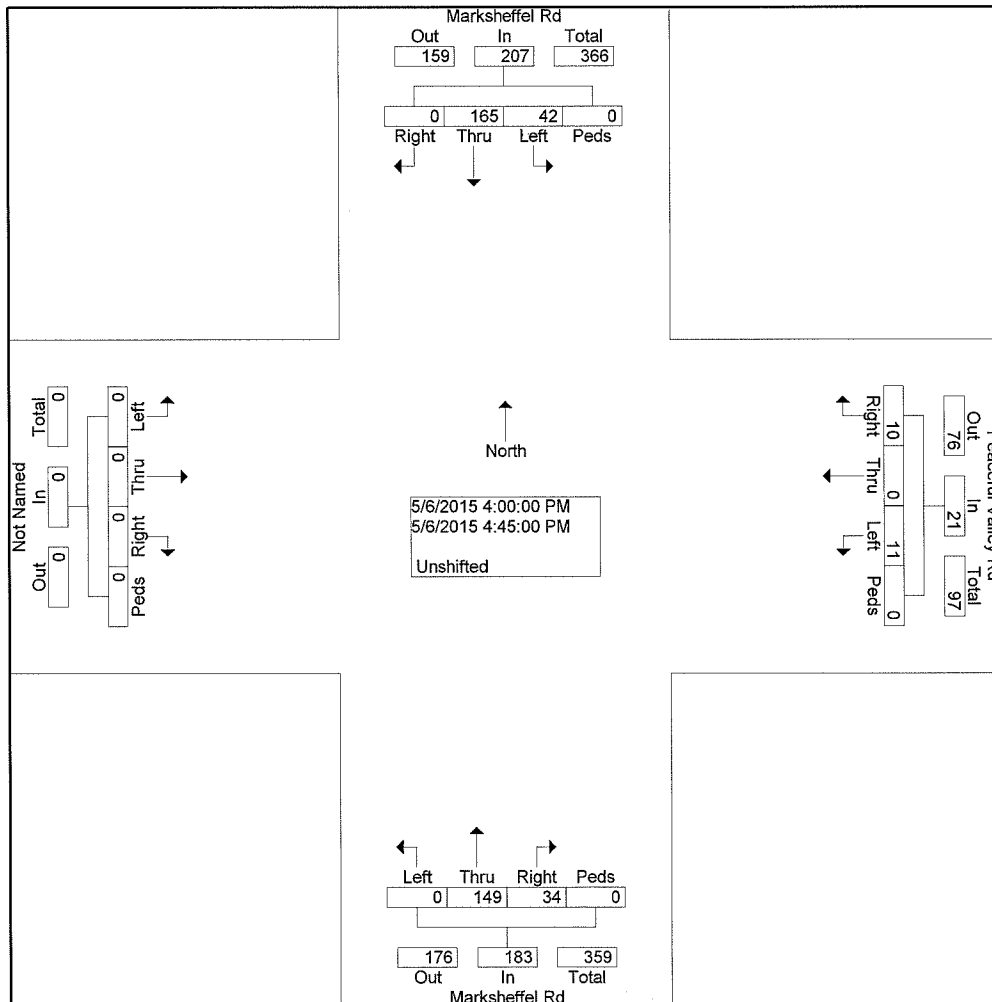
File Name : Marksheffel-Peaceful Valley PM

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	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 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	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						



LSC Transportation Consultants, Inc.

545 E. Pikes Peak Ave., #210

LSC Transportation Consultants, Inc. Colorado Springs, CO 80903 Name : Marksheffel - Fontaine Blvd AM

(719) 633-2868

Site Code : 00164360

Start Date : 03/21/2017

Page No : 1

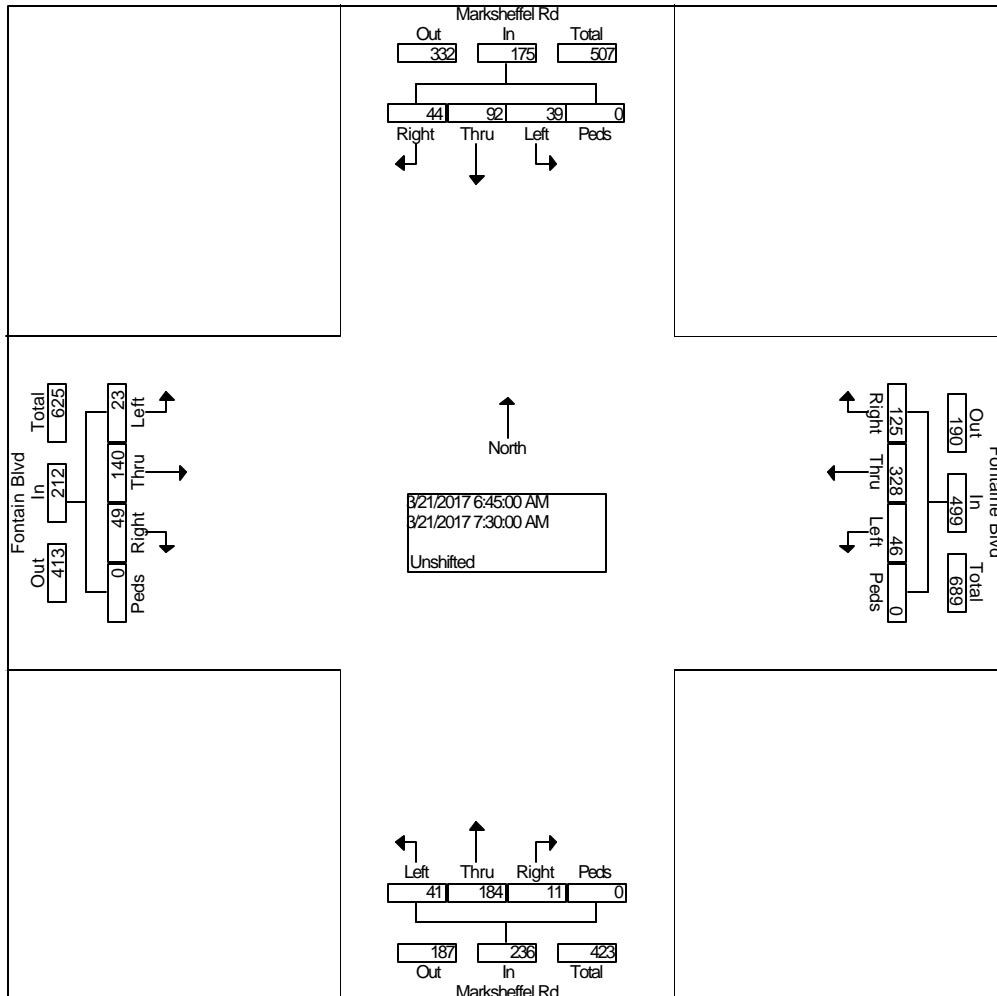
Groups Printed- Unshifted

Start Time	Marksheffel Rd From North				Fontaine Blvd From East				Marksheffel Rd From South				Fontain Blvd From West				Int. Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
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	8	17	6	0	28	87	8	0	4	63	8	0	10	22	5	0	266
06:45 AM	9	24	9	0	26	104	9	0	1	36	19	0	15	35	3	0	290
Total	17	41	15	0	54	191	17	0	5	99	27	0	25	57	8	0	556
07:00 AM	12	28	13	0	26	78	13	0	3	56	9	0	13	28	5	0	284
07:15 AM	9	16	5	0	43	78	11	0	5	58	7	0	6	36	7	0	281
07:30 AM	14	24	12	0	30	68	13	0	2	34	6	0	15	41	8	0	267
07:45 AM	9	23	13	0	18	48	7	0	2	47	7	0	25	54	3	0	256
Total	44	91	43	0	117	272	44	0	12	195	29	0	59	159	23	0	1088
08:00 AM	12	10	8	0	19	80	6	1	9	24	15	0	8	41	7	0	240
08:15 AM	14	22	5	0	20	80	3	0	1	21	14	0	12	31	3	0	226
Grand Total	87	164	71	0	210	623	70	1	27	339	85	0	104	288	41	0	2110
Apprch %	27.0	50.9	22.0	0.0	23.2	68.9	7.7	0.1	6.0	75.2	18.8	0.0	24.0	66.5	9.5	0.0	
Total %	4.1	7.8	3.4	0.0	10.0	29.5	3.3	0.0	1.3	16.1	4.0	0.0	4.9	13.6	1.9	0.0	

LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210
Colorado Springs, CO 80903
(719) 633-2868

Name : Marksheffel - Fontaine Blvd AM
 Site Code : 00164360
 Start Date : 03/21/2017
 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 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	06:45 AM																				
Volume	44	92	39	0	175	12	32	46	0	499	11	18	41	0	236	49	14	23	0	212	1122
Percent	25.1	52.6	22.3	0.0		25.1	65.7	9.2	0.0		4.7	78.0	17.4	0.0		23.1	66.0	10.8	0.0		
06:45 Volume	9	24	9	0	42	26	10	9	0	139	1	36	19	0	56	15	35	3	0	53	290
Peak Factor	0.967																				
High Int.	07:00 AM					06:45 AM					07:15 AM					07:30 AM					
Volume	12	28	13	0	53	26	10	9	0	139	5	58	7	0	70	15	41	8	0	64	
Peak Factor	0.825					0.897					0.843					0.828					



LSC Transportation Consultants, Inc.

545 E. Pikes Peak Ave., #210

LSC Transportation Consultants, Inc.

Colorado Springs, CO 80903

(719) 633-2868

Site Name : Marksheffel - Fontaine Blvd PM

Site Code : 00164360

Start Date : 03/20/2017

Page No : 1

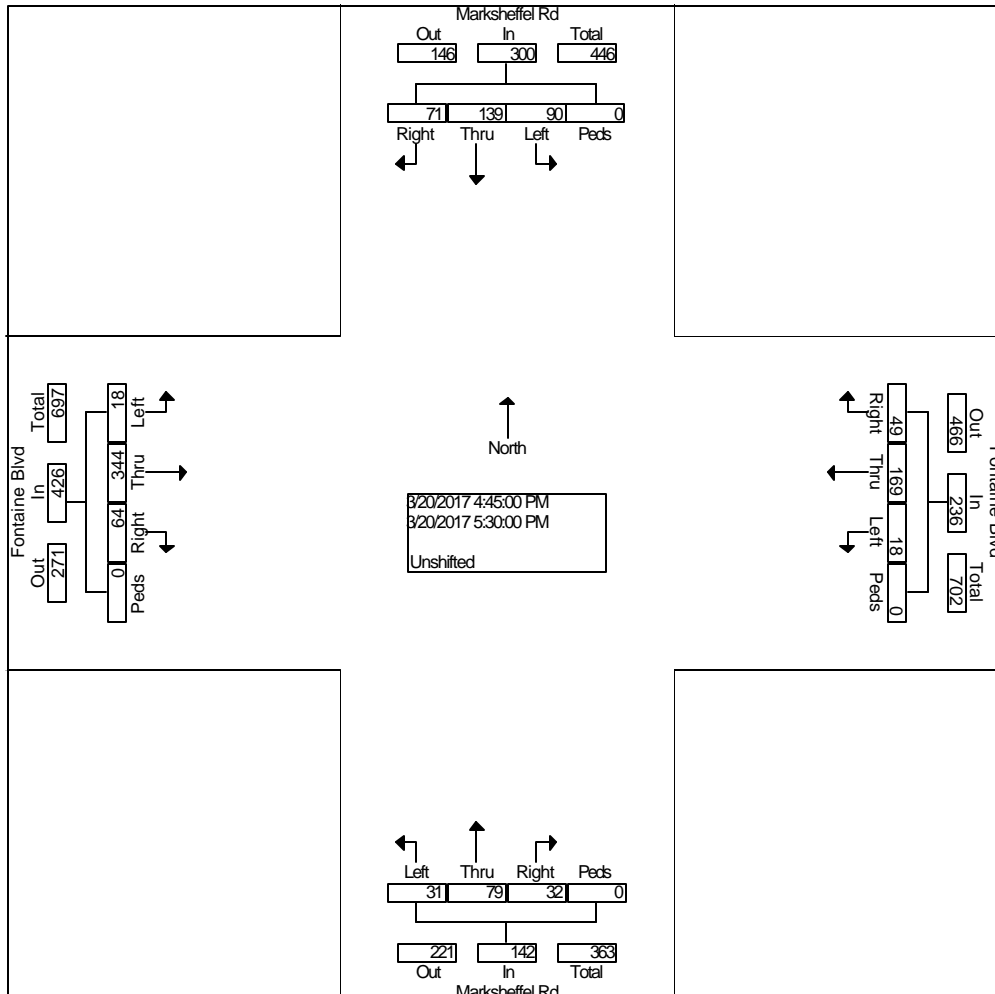
Groups Printed- Unshifted

Start Time	Marksheffel Rd From North				Fontaine Blvd From East				Marksheffel Rd From South				Fontaine Blvd From West				Int. Total	
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds		
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	1.0	
04:00 PM	18	25	8	0	6	53	5	0	5	31	5	0	8	61	0	0		225
04:15 PM	13	36	28	0	21	29	8	0	6	32	11	0	12	84	7	0		287
04:30 PM	21	35	14	0	17	38	3	0	8	21	12	0	12	69	6	0		256
04:45 PM	19	39	29	0	10	42	2	0	4	14	7	0	24	91	5	0		286
Total	71	135	79	0	54	162	18	0	23	98	35	0	56	305	18	0		1054
05:00 PM	16	24	19	0	14	38	5	0	8	19	5	0	10	81	5	0		244
05:15 PM	20	51	19	0	18	50	6	0	8	19	10	0	17	84	7	0		309
05:30 PM	16	25	23	0	7	39	5	0	12	27	9	0	13	88	1	0		265
05:45 PM	8	24	14	0	6	45	4	0	7	7	7	0	15	77	2	0		216
Total	60	124	75	0	45	172	20	0	35	72	31	0	55	330	15	0		1034
Grand Total	131	259	154	0	99	334	38	0	58	170	66	0	111	635	33	0		2088
Apprch %	24.1	47.6	28.3	0.0	21.0	70.9	8.1	0.0	19.7	57.8	22.4	0.0	14.2	81.5	4.2	0.0		
Total %	6.3	12.4	7.4	0.0	4.7	16.0	1.8	0.0	2.8	8.1	3.2	0.0	5.3	30.4	1.6	0.0		

LSC Transporton Consultants, Inc.
 545 E. Pikes Peak Ave., #210
 Colorado Springs, CO 80903
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Project Name : Marksheffel - Fontaine Blvd PM
 Site Code : 00164360
 Start Date : 03/20/2017
 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	71	139	90	0	300	49	169	18	0	236	32	79	31	0	142	64	344	18	0	426	1104
Percent	23.7	46.3	30.0	0.0		20.8	71.6	7.6	0.0		22.5	55.6	21.8	0.0		15.0	80.8	4.2	0.0		
05:15 Volume	20	51	19	0	90	18	50	6	0	74	8	19	10	0	37	17	84	7	0	108	309
Peak Factor	0.893																				
High Int. Volume	05:15 PM					05:15 PM					05:30 PM					04:45 PM					
Peak Factor	0.83					0.79					0.74					0.88					
	3					7					0					8					



Timings

1: Marksheffel Rd & Fontaine Blvd

Existing Traffic

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	140	49	46	328	125	41	184	11	39	92	44
Future Volume (vph)	23	140	49	46	328	125	41	184	11	39	92	44
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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)	30.0	30.0	30.0	30.0	30.0	30.0	60.0	60.0	60.0	60.0	60.0	60.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%	66.7%	66.7%
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 Optimize?												
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	14.0	14.0	14.0	14.0	14.0	14.0	55.1	55.1	55.1	55.1	55.1	55.1
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.18	0.18	0.70	0.70	0.70	0.70	0.70	0.70
v/c Ratio	0.16	0.22	0.15	0.23	0.58	0.35	0.05	0.14	0.01	0.05	0.07	0.04
Control Delay	29.9	28.4	9.7	30.3	33.7	8.0	4.7	4.9	1.1	4.7	4.6	1.8
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	29.9	28.4	9.7	30.3	33.7	8.0	4.7	4.9	1.1	4.7	4.6	1.8
LOS	C	C	A	C	C	A	A	A	A	A	A	A
Approach Delay		24.2			26.9			4.7			3.9	
Approach LOS		C			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 79.1

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 18.5

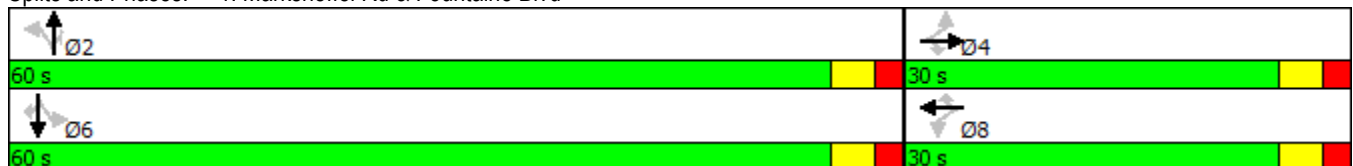
Intersection LOS: B

Intersection Capacity Utilization 43.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Timings

1: Marksheffel Rd & Fontaine Blvd

Existing Traffic

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	344	64	18	169	49	31	79	32	90	139	71
Future Volume (vph)	18	344	64	18	169	49	31	79	32	90	139	71
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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)	30.0	30.0	30.0	30.0	30.0	30.0	60.0	60.0	60.0	60.0	60.0	60.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%	66.7%	66.7%
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 Optimize?												
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	13.0	13.0	13.0	13.0	13.0	13.0	55.1	55.1	55.1	55.1	55.1	55.1
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.17	0.17	0.71	0.71	0.71	0.71	0.71	0.71
v/c Ratio	0.09	0.59	0.21	0.17	0.36	0.19	0.04	0.06	0.03	0.12	0.13	0.08
Control Delay	28.1	34.3	9.4	30.4	30.4	9.5	4.3	4.3	1.8	4.6	4.4	1.3
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	28.1	34.3	9.4	30.4	30.4	9.5	4.3	4.3	1.8	4.6	4.4	1.3
LOS	C	C	A	C	C	A	A	A	A	A	A	A
Approach Delay		30.3			26.1			3.7			3.7	
Approach LOS		C			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 78.1

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 18.3

Intersection LOS: B

Intersection Capacity Utilization 38.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



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)	28	107	60	227	285	171	50	230	83	55	113	50
Future Volume (vph)	28	107	60	227	285	171	50	230	83	55	113	50
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)	12.5	8.8	8.8	20.0	16.6	16.6	45.4	45.4	45.4	45.4	45.4	45.4
Actuated g/C Ratio	0.16	0.12	0.12	0.26	0.22	0.22	0.60	0.60	0.60	0.60	0.60	0.60
v/c Ratio	0.13	0.26	0.23	0.76	0.41	0.38	0.07	0.21	0.08	0.08	0.10	0.05
Control Delay	21.2	32.7	6.3	39.5	27.8	7.2	8.3	8.8	2.4	8.5	8.3	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.2	32.7	6.3	39.5	27.8	7.2	8.3	8.8	2.4	8.5	8.3	0.9
LOS	C	C	A	D	C	A	A	A	A	A	A	A
Approach Delay		22.9			26.5			7.3			6.7	
Approach LOS		C			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 75.8

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 18.7

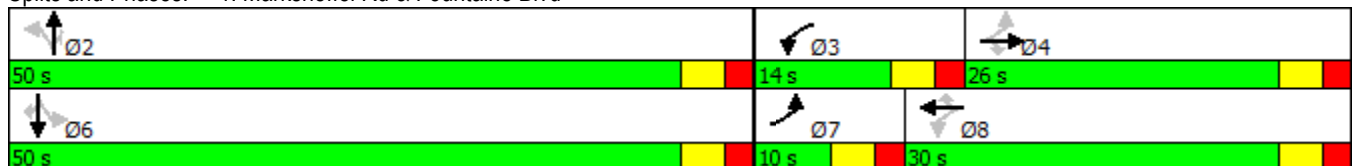
Intersection LOS: B

Intersection Capacity Utilization 49.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑
Traffic Vol, veh/h	60	0	363	20	0	400
Future Vol, veh/h	60	0	363	20	0	400
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	65	0	390	22	0	426

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	816	390	0	0	390	0
Stage 1	390	-	-	-	-	-
Stage 2	426	-	-	-	-	-
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	347	658	-	-	1169	-
Stage 1	684	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	347	658	-	-	1169	-
Mov Cap-2 Maneuver	465	-	-	-	-	-
Stage 1	684	-	-	-	-	-
Stage 2	659	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	465	-	1169	-
HCM Lane V/C Ratio	-	-	0.14	-	-	-
HCM Control Delay (s)	-	-	14	0	0	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.5	-	0	-

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	16	229	614	0	0	69
Future Vol, veh/h	16	229	614	0	0	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	400	-	-	250	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	249	667	0	0	75

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	667	0	334
Stage 1	-	-	667
Stage 2	-	-	159
Critical Hdwy	4.14	-	6.94
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	2.22	-	3.32
Pot Cap-1 Maneuver	919	-	662
Stage 1	-	-	472
Stage 2	-	-	853
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	919	-	662
Mov Cap-2 Maneuver	-	-	394
Stage 1	-	-	472
Stage 2	-	-	837

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	919	-	-	-	-	662
HCM Lane V/C Ratio	0.019	-	-	-	-	0.113
HCM Control Delay (s)	9	-	-	-	0	11.1
HCM Lane LOS	A	-	-	-	A	B
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.4

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)	28	288	78	123	155	79	38	115	217	142	170	80
Future Volume (vph)	28	288	78	123	155	79	38	115	217	142	170	80
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)	17.0	12.0	12.0	25.2	21.8	21.8	45.1	45.1	45.1	45.1	45.1	45.1
Actuated g/C Ratio	0.21	0.15	0.15	0.31	0.27	0.27	0.56	0.56	0.56	0.56	0.56	0.56
v/c Ratio	0.10	0.55	0.26	0.46	0.20	0.20	0.06	0.12	0.23	0.24	0.20	0.10
Control Delay	19.9	36.0	9.0	25.0	24.6	7.2	9.4	9.5	2.1	10.9	10.1	2.6
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	19.9	36.0	9.0	25.0	24.6	7.2	9.4	9.5	2.1	10.9	10.1	2.6
LOS	B	D	A	C	C	A	A	A	A	B	B	A
Approach Delay		29.5			20.9			5.2			8.9	
Approach LOS		C			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 80.7

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 16.0

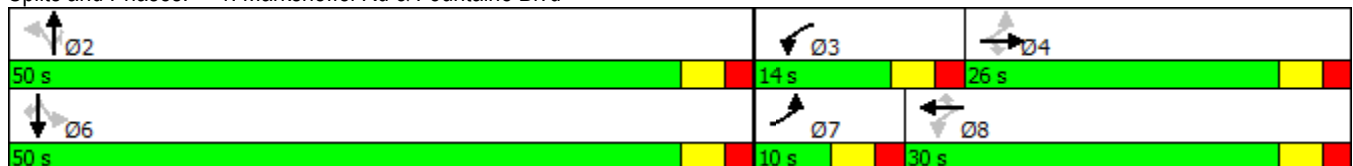
Intersection LOS: B

Intersection Capacity Utilization 45.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑
Traffic Vol, veh/h	40	0	370	67	0	371
Future Vol, veh/h	40	0	370	67	0	371
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	43	0	435	73	0	412

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	847	435	0	0	435	0
Stage 1	435	-	-	-	-	-
Stage 2	412	-	-	-	-	-
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	332	621	-	-	1125	-
Stage 1	653	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	332	621	-	-	1125	-
Mov Cap-2 Maneuver	453	-	-	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	669	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	453	-	1125	-
HCM Lane V/C Ratio	-	-	0.096	-	-	-
HCM Control Delay (s)	-	-	13.8	0	0	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	-	0	-

Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	52	595	311	0	0	46
Future Vol, veh/h	52	595	311	0	0	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	400	-	-	250	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	647	338	0	0	50

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	338	0	774
Stage 1	-	-	338
Stage 2	-	-	436
Critical Hdwy	4.14	-	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	2.22	-	3.52
Pot Cap-1 Maneuver	1218	-	335
Stage 1	-	-	694
Stage 2	-	-	619
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1218	-	319
Mov Cap-2 Maneuver	-	-	435
Stage 1	-	-	694
Stage 2	-	-	590

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1218	-	-	-	-	845
HCM Lane V/C Ratio	0.046	-	-	-	-	0.059
HCM Control Delay (s)	8.1	-	-	-	0	9.5
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.2

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)	28	112	64	227	300	190	61	244	83	61	118	50
Future Volume (vph)	28	112	64	227	300	190	61	244	83	61	118	50
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)	12.6	9.0	9.0	20.2	16.8	16.8	45.4	45.4	45.4	45.4	45.4	45.4
Actuated g/C Ratio	0.17	0.12	0.12	0.27	0.22	0.22	0.60	0.60	0.60	0.60	0.60	0.60
v/c Ratio	0.13	0.27	0.24	0.76	0.43	0.41	0.08	0.22	0.08	0.09	0.11	0.05
Control Delay	21.1	32.6	7.2	39.1	27.9	7.1	8.6	9.0	2.4	8.7	8.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	32.6	7.2	39.1	27.9	7.1	8.6	9.0	2.4	8.7	8.4	1.0
LOS	C	C	A	D	C	A	A	A	A	A	A	A
Approach Delay		23.0			25.9			7.5			6.9	
Approach LOS		C			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 76

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 18.4

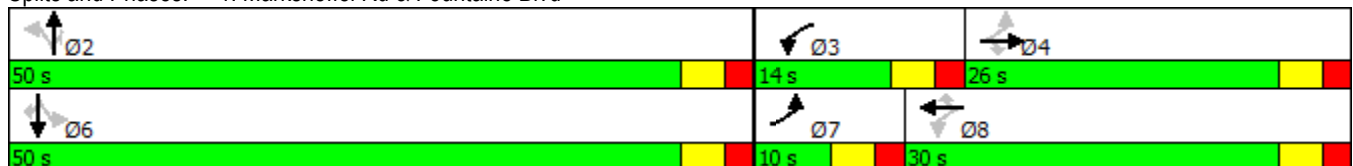
Intersection LOS: B

Intersection Capacity Utilization 50.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Intersection

Int Delay, s/veh 2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑
Traffic Vol, veh/h	133	25	363	44	9	400
Future Vol, veh/h	133	25	363	44	9	400
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	390	48	10	426

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	835	390	0	0	390	0
Stage 1	390	-	-	-	-	-
Stage 2	445	-	-	-	-	-
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	338	658	-	-	1169	-
Stage 1	684	-	-	-	-	-
Stage 2	646	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	335	658	-	-	1169	-
Mov Cap-2 Maneuver	454	-	-	-	-	-
Stage 1	684	-	-	-	-	-
Stage 2	640	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	15.7		0		0.2
HCM LOS	C				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	454	658	1169	-
HCM Lane V/C Ratio	-	-	0.318	0.041	0.008	-
HCM Control Delay (s)	-	-	16.6	10.7	8.1	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1.4	0.1	0	-

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕	↗	↘	↕	↗	↘	↕	↗	↘	↕	↗
Traffic Vol, veh/h	16	229	11	0	614	0	34	0	0	0	0	69
Future Vol, veh/h	16	229	11	0	614	0	34	0	0	0	0	69
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	400	-	0	375	-	250	0	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	249	12	0	667	0	37	0	0	0	0	75

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	667	0	0	249	0	0	618	951	124	826	951	334
Stage 1	-	-	-	-	-	-	284	284	-	667	667	-
Stage 2	-	-	-	-	-	-	334	667	-	159	284	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	919	-	-	1314	-	-	373	258	904	264	258	662
Stage 1	-	-	-	-	-	-	699	675	-	414	455	-
Stage 2	-	-	-	-	-	-	653	455	-	827	675	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	919	-	-	1314	-	-	326	253	904	260	253	662
Mov Cap-2 Maneuver	-	-	-	-	-	-	428	347	-	343	354	-
Stage 1	-	-	-	-	-	-	686	663	-	406	455	-
Stage 2	-	-	-	-	-	-	579	455	-	812	663	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	14.2	11.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	428	-	-	919	-	-	1314	-	-	-	-	662
HCM Lane V/C Ratio	0.086	-	-	0.019	-	-	-	-	-	-	-	0.113
HCM Control Delay (s)	14.2	0	0	9	-	-	0	-	-	0	0	11.1
HCM Lane LOS	B	A	A	A	-	-	A	-	-	A	A	B
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-	-	0	-	-	-	-	0.4

Intersection

Int Delay, s/veh 3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↕	↕		↕	↕	
Traffic Vol, veh/h	14	33	6	0	99	0	17	0	0	0	0	42
Future Vol, veh/h	14	33	6	0	99	0	17	0	0	0	0	42
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	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	36	7	0	108	0	18	0	0	0	0	46

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	108	0	0	42	0	0	200	178	39	178	181	108
Stage 1	-	-	-	-	-	-	70	70	-	108	108	-
Stage 2	-	-	-	-	-	-	130	108	-	70	73	-
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	1483	-	-	1567	-	-	759	716	1033	784	713	946
Stage 1	-	-	-	-	-	-	940	837	-	897	806	-
Stage 2	-	-	-	-	-	-	874	806	-	940	834	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1483	-	-	1567	-	-	717	709	1033	778	706	946
Mov Cap-2 Maneuver	-	-	-	-	-	-	717	709	-	778	706	-
Stage 1	-	-	-	-	-	-	930	829	-	888	806	-
Stage 2	-	-	-	-	-	-	832	806	-	930	826	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0	10.2	9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	717	1483	-	-	1567	-	-	946
HCM Lane V/C Ratio	0.026	0.01	-	-	-	-	-	0.048
HCM Control Delay (s)	10.2	7.5	-	-	0	-	-	9
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔			↔	
Traffic Vol, veh/h	9	20	4	0	60	0	12	0	0	0	0	27
Future Vol, veh/h	9	20	4	0	60	0	12	0	0	0	0	27
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	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	22	4	0	65	0	13	0	0	0	0	29
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	65	0	0	26	0	0	123	108	24	108	111	65
Stage 1	-	-	-	-	-	-	43	43	-	65	65	-
Stage 2	-	-	-	-	-	-	80	65	-	43	46	-
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	1537	-	-	1588	-	-	852	782	1052	871	779	999
Stage 1	-	-	-	-	-	-	971	859	-	946	841	-
Stage 2	-	-	-	-	-	-	929	841	-	971	857	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1537	-	-	1588	-	-	823	777	1052	867	774	999
Mov Cap-2 Maneuver	-	-	-	-	-	-	823	777	-	867	774	-
Stage 1	-	-	-	-	-	-	965	853	-	940	841	-
Stage 2	-	-	-	-	-	-	902	841	-	965	851	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2			0			9.4			8.7		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	823	1537	-	-	1588	-	-	999				
HCM Lane V/C Ratio	0.016	0.006	-	-	-	-	-	0.029				
HCM Control Delay (s)	9.4	7.4	-	-	0	-	-	8.7				
HCM Lane LOS	A	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	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)	28	305	91	123	165	92	45	124	217	163	186	80
Future Volume (vph)	28	305	91	123	165	92	45	124	217	163	186	80
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)	17.5	12.5	12.5	25.7	22.2	22.2	45.1	45.1	45.1	45.1	45.1	45.1
Actuated g/C Ratio	0.22	0.15	0.15	0.32	0.27	0.27	0.56	0.56	0.56	0.56	0.56	0.56
v/c Ratio	0.10	0.57	0.29	0.46	0.21	0.22	0.07	0.12	0.23	0.28	0.22	0.10
Control Delay	19.8	36.1	9.5	25.0	24.6	6.8	9.8	9.8	2.2	11.6	10.4	2.6
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	19.8	36.1	9.5	25.0	24.6	6.8	9.8	9.8	2.2	11.6	10.4	2.6
LOS	B	D	A	C	C	A	A	A	A	B	B	A
Approach Delay		29.3			20.4			5.5			9.4	
Approach LOS		C			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.2

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 16.1

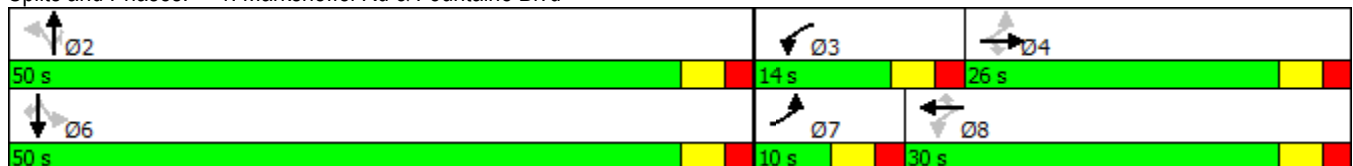
Intersection LOS: B

Intersection Capacity Utilization 47.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑	↗	↘	↑
Traffic Vol, veh/h	88	17	370	148	28	371
Future Vol, veh/h	88	17	370	148	28	371
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	435	161	30	412

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	908	435	0	0	435	0
Stage 1	435	-	-	-	-	-
Stage 2	473	-	-	-	-	-
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	306	621	-	-	1125	-
Stage 1	653	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	298	621	-	-	1125	-
Mov Cap-2 Maneuver	424	-	-	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	610	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	15.1		0		0.6
HCM LOS	C				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	424	621	1125	-
HCM Lane V/C Ratio	-	-	0.226	0.03	0.027	-
HCM Control Delay (s)	-	-	15.9	11	8.3	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0.1	0.1	-

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕	↗	↘	↕	↗	↘	↕	↗	↘	↕	↗
Traffic Vol, veh/h	52	595	38	0	311	0	23	0	0	0	0	46
Future Vol, veh/h	52	595	38	0	311	0	23	0	0	0	0	46
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	400	-	0	375	-	250	0	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	57	647	41	0	338	0	25	0	0	0	0	50

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	338	0	0	647	0	0	929	1098	323	774	1098	169
Stage 1	-	-	-	-	-	-	760	760	-	338	338	-
Stage 2	-	-	-	-	-	-	169	338	-	436	760	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1218	-	-	934	-	-	222	211	673	288	211	845
Stage 1	-	-	-	-	-	-	364	413	-	650	639	-
Stage 2	-	-	-	-	-	-	816	639	-	569	413	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1218	-	-	934	-	-	201	201	673	278	201	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	287	300	-	390	306	-
Stage 1	-	-	-	-	-	-	347	394	-	620	639	-
Stage 2	-	-	-	-	-	-	768	639	-	542	394	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	18.7	9.5
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	287	-	-	1218	-	-	934	-	-	-	-	845
HCM Lane V/C Ratio	0.087	-	-	0.046	-	-	-	-	-	-	-	0.059
HCM Control Delay (s)	18.7	0	0	8.1	-	-	0	-	-	0	0	9.5
HCM Lane LOS	C	A	A	A	-	-	A	-	-	A	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-	-	0	-	-	-	-	0.2

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	47	110	19	0	66	0	11	0	0	0	0	28
Future Vol, veh/h	47	110	19	0	66	0	11	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	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	120	21	0	72	0	12	0	0	0	0	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	72	0	0	140	0	0	319	304	130	304	314	72
Stage 1	-	-	-	-	-	-	232	232	-	72	72	-
Stage 2	-	-	-	-	-	-	87	72	-	232	242	-
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	1528	-	-	1443	-	-	634	609	920	648	601	990
Stage 1	-	-	-	-	-	-	771	713	-	938	835	-
Stage 2	-	-	-	-	-	-	921	835	-	771	705	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1528	-	-	1443	-	-	599	589	920	631	581	990
Mov Cap-2 Maneuver	-	-	-	-	-	-	599	589	-	631	581	-
Stage 1	-	-	-	-	-	-	745	689	-	907	835	-
Stage 2	-	-	-	-	-	-	893	835	-	745	681	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0	11.1	8.8
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	599	1528	-	-	1443	-	-	990
HCM Lane V/C Ratio	0.02	0.033	-	-	-	-	-	0.031
HCM Control Delay (s)	11.1	7.4	-	-	0	-	-	8.8
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↕	↕		↕	↕	
Traffic Vol, veh/h	30	67	13	0	40	0	8	0	0	0	0	18
Future Vol, veh/h	30	67	13	0	40	0	8	0	0	0	0	18
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	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	73	14	0	43	0	9	0	0	0	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	43	0	0	87	0	0	198	188	80	188	195	43
Stage 1	-	-	-	-	-	-	145	145	-	43	43	-
Stage 2	-	-	-	-	-	-	53	43	-	145	152	-
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	1566	-	-	1509	-	-	761	707	980	772	700	1027
Stage 1	-	-	-	-	-	-	858	777	-	971	859	-
Stage 2	-	-	-	-	-	-	960	859	-	858	772	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1566	-	-	1509	-	-	734	692	980	760	685	1027
Mov Cap-2 Maneuver	-	-	-	-	-	-	734	692	-	760	685	-
Stage 1	-	-	-	-	-	-	840	761	-	951	859	-
Stage 2	-	-	-	-	-	-	942	859	-	840	756	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0	10	8.6
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	734	1566	-	-	1509	-	-	1027
HCM Lane V/C Ratio	0.012	0.021	-	-	-	-	-	0.019
HCM Control Delay (s)	10	7.3	-	-	0	-	-	8.6
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.1

Timings

2040 Background Traffic

1: Marksheffel Rd & Fontaine Blvd

AM Peak Hour

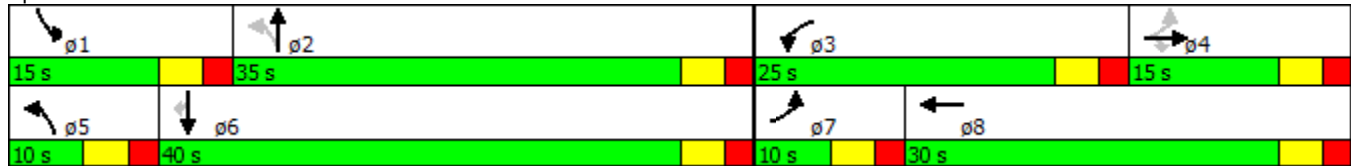
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	269	46	596	745	590	159	537	212	213	527	45
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	pm+pt	NA	Free	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free	2		Free			6
Detector Phase	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 Capacity Utilization 64.5%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Timings
5: Marksheffel Rd & South Lorson Access

2040 Background Traffic
AM Peak Hour

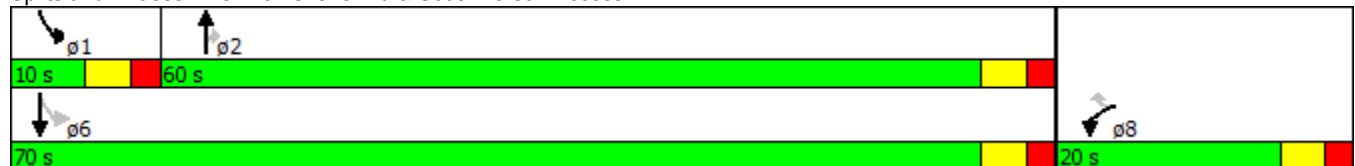
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	586	139	768	186	36	1133
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	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

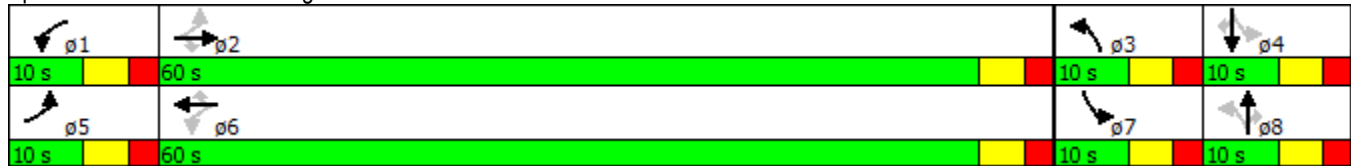
2040 Background Traffic
AM Peak Hour

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

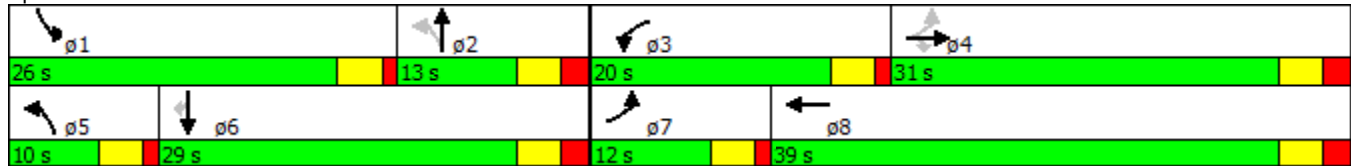
PM Peak Hour

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

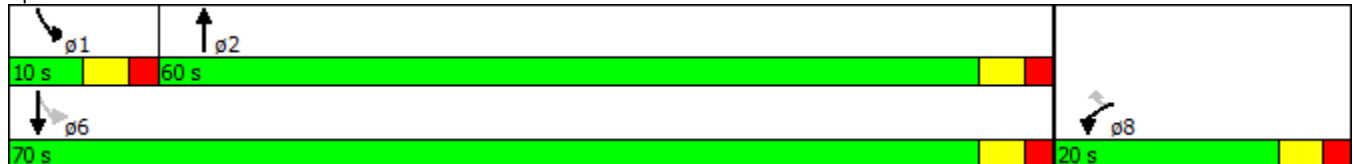
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	392	93	991	642	128	808
Turn Type	Prot	Perm	NA	Free	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		Free	6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	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

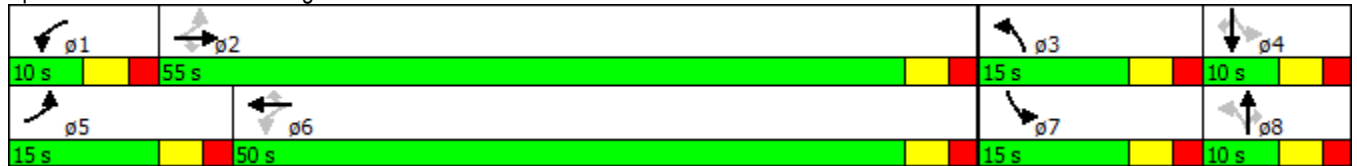
2040 Background Traffic
PM Peak Hour

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



Timings

2040 Total Traffic

1: Marksheffel Rd & Fontaine Blvd

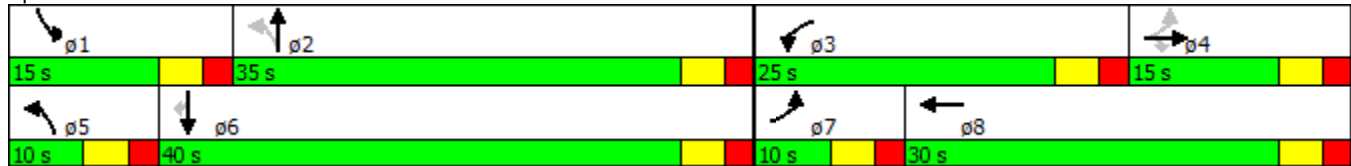
AM Peak Hour

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 LOS: B
Intersection Capacity Utilization 58.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: Marksheffel Rd & Lorson Blvd



Timings
8: Carriage Meadows & Fontaine Blvd

2040 Total Traffic
AM Peak Hour

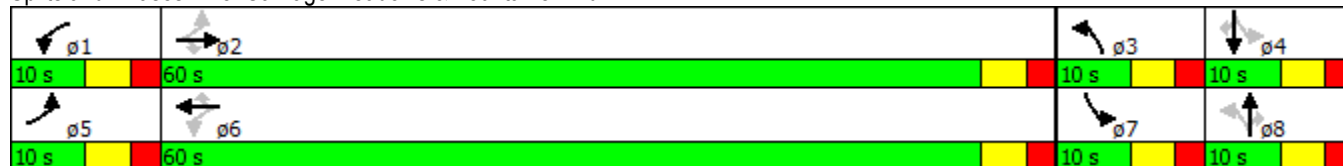
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	601	54	30	1792	30	82	2	22	20	2	88
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	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

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

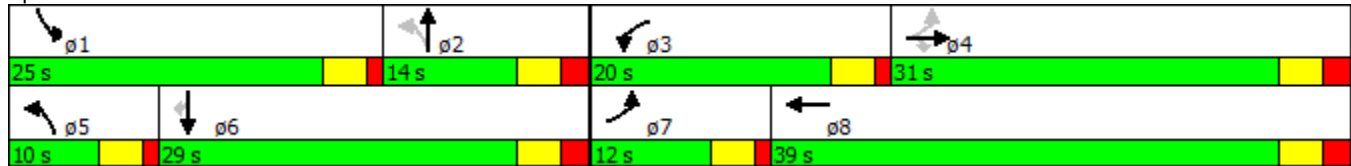
PM Peak Hour

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

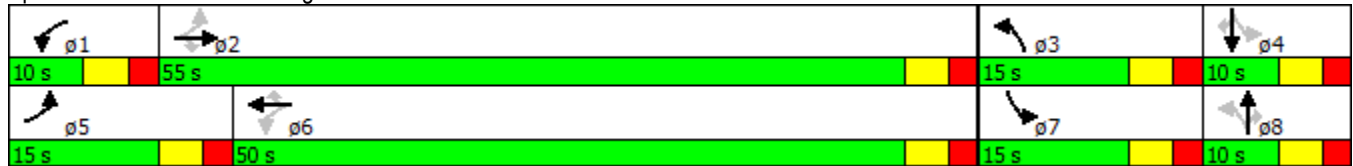
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	209	1942	245	55	1143	55	162	8	116	109	8	159
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	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



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

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
