



LSC TRANSPORTATION CONSULTANTS, INC.

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Carriage Meadows North at Lorson Ranch Filing No. 1
Updated Traffic Impact Analysis
PCD SF-17-023
(LSC #174860)
January 29, 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

1/31/18



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January 29, 2018

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

RE: Carriage Meadows North at Lorson Ranch
Filing No. 1
El Paso County, Colorado
Updated Traffic Impact Analysis
LSC #174860

Dear Mr. Mark:

LSC Transportation Consultants, Inc. has prepared this updated traffic impact analysis for the 155-lot Carriage Meadows North at Lorson Ranch Filing No. 1 residential development to be located north 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 intersection of Marksheffel/Fontaine and estimates of short-term and 2040 background traffic volumes at the key intersections in the vicinity of the site.
- 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/Fontaine Boulevard, Carriage Meadows Drive/Fontaine Boulevard, and the proposed right-in/right-out-only site access point to Marksheffel Road.
- Recommendations for street functional classification, traffic control, auxiliary turn lanes, and the center median island at the site access to Marksheffel Road.

SITE DEVELOPMENT AND LAND USE

The Carriage Meadows North at Lorson Ranch Filing No. 1 site is planned to be developed with 155 lots for single-family homes. Access is proposed to Fontaine Boulevard via an extension of Carriage Meadows Drive. An additional right-in/right-out-only access is proposed to Marksheffel Road about one-half mile north of Fontaine Boulevard. The site plan is shown in Figure 2.

Tracts D and E, located just south of the site, are planned to be developed for commercial uses in the future. The commercial development has not been planned or designed. Therefore, this report assumes that access for these tracts would be to be Carriage Meadows Drive about 330 feet south of the first Carriage Meadows North access point (445 feet north of Fontaine Boulevard).

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. Adjacent to the site 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 has recently completed Marksheffel Road upgrades between Mesa Ridge Parkway and Bradley Road. This included 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 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.

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 December 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: <i>Transportation Research Circular 212</i>			
(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 North at Lorson Ranch Filing No. 1 traffic. Background traffic includes the December 2017 traffic (from Figure 3) plus increases in through traffic due to regional growth plus traffic estimated to be generated by buildout of existing and currently proposed subdivisions within the Lorson Ranch development. These estimates include traffic projected to be generated by the development of about 50 lots within The Meadows at Lorson Ranch Filing No. 4 that are currently vacant, 12 lots within Pioneer Crossing at Lorson Ranch Filing No. 3, 234 lots within the Carriage Meadows South at Lorson Ranch Filing No. 1 subdivision located south of Fontaine Boulevard and east of Marksheffel Road, and 331 lots in the first phase of the Lorson Ranch East development located east of the East Tributary. The short-term background volumes assume zero traffic generated by Carriage Meadows North at Lorson Ranch Filing No. 1. The short-term background volumes assume Lorson Boulevard has **not** been extended across and east of Jimmy Camp Creek to Stingray Lane. The short-term background traffic volumes are shown in Figure 4.

2040 BACKGROUND TRAFFIC

Figure 5 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 5 also shows the 2040 lane geometry and projected level of service for the intersections of 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 2 shows the results of the trip generation estimates.

As shown in Table 2, the site could be expected to generate about 1,476 new vehicle-trips on the average weekday, with about 738 vehicles entering and 738 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 29 vehicles would enter and 87 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 98 vehicles would enter and 57 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.

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 North 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 9 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 10 shows the 2040 total traffic volumes. These 2040 total traffic volumes are the sum of the 2040 background traffic volumes (from Figure 5) plus the long-term site-generated traffic volumes (from Figure 8). Figure 10 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 Road/Fontaine Boulevard and Fontaine Boulevard/Carriage Meadows and the proposed right-in/right-out-only site access points to Marksheffel Road 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, 6th Edition* by the Transportation Research Board. The level of service reports are attached. The results of the analysis are shown in Figures 4, 5, 9, and 10.

Marksheffel/Fontaine

The signal-controlled Marksheffel Road/Fontaine Boulevard intersection is projected to operate at an overall level of service C and all movements are projected to operate at LOS D or better based on the short-term and 2040 background and total peak-hour traffic conditions.

Fontaine/Carriage Meadows

Based on the projected short-term total traffic volumes, the intersection of Fontaine/Carriage Meadows is projected to operate at LOS D or better for all movements during the peak hours as a two-way Stop-sign-controlled intersection. By 2040, the northbound and southbound approaches are projected to operate at LOS F during the peak hours based on both background and total traffic volumes if this intersection remains stop-sign controlled. If this intersection is signalized 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.

Right-In/Right-Out-Only Site Access Point

The proposed right-in/right-out-only site access point to Marksheffel Road is projected to operate at level of service B or better for all movements as a Stop-sign-controlled intersection based on the projected short-term and 2040 total traffic volumes.

QUEUEING ANALYSIS

A queueing analysis was performed using Synchro/SimTraffic to determine if the intersection spacing on Carriage Meadows Drive between Fontaine Boulevard and the first Carriage Meadows North access will be sufficient to accommodate the projected queues based on the total traffic volumes. The analysis assumes a full-movement access point for Tracts D and E about 445 feet north of Fontaine Boulevard and 330 feet south of the first Carriage Meadows North access point. The 2040 total morning and afternoon peak-hour traffic volumes were entered into the Synchro model. The simulation was run five times. The queueing reports are attached.

Based on the projected 2040 total afternoon peak-hour traffic volumes the projected maximum northbound left-turn queue on Carriage Meadows Drive approaching the access for Tracts D and E is about 49 feet. The projected maximum southbound left-turn queue approaching Fontaine Boulevard is about 127 feet.

TRAFFIC SIGNAL WARRANT ANALYSIS

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 11. The traffic volumes shown are based on the 2040 total traffic volumes shown in Figure 10. 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.

RECOMMENDED INTERNAL STREET CLASSIFICATIONS

Figure 12 shows the recommended street classifications for the Carriage Meadows North at Lorson Ranch Filing No. 1 internal streets and the proposed extension of Carriage Meadows Drive north of Fontaine Boulevard.

TRAFFIC SIGNAL ESCROW PERCENTAGES/AMOUNTS

Table 3 shows the projected total traffic volumes on the minor approach volumes at the intersection of Fontaine/Carriage Meadows by development at buildout of Lorson Ranch. The minor approach volumes were assumed to include the northbound and southbound left-turn and through movements plus 50 percent of the northbound right-turn movements and 10 percent of the southbound right-turn movements. As shown in Table 3, the Carriage Meadows North at Lorson Ranch Filing No. 1 development is projected to contribute about five 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 \$14,938. The timing of a future traffic signal at Fontaine/Carriage Meadows and the escrow amounts toward that signal should be reevaluated with the development of the any of the retail parcels and/or development of the multi-family residential development southeast of the intersection.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

- The Carriage Meadows North at Lorson Ranch Filing No. 1 site is expected to generate about 1,476 new vehicle-trips on the average weekday, with about 738 vehicles entering and 738 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 29 vehicles would enter and 87 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 98 vehicles would enter and 57 vehicles would exit the site.

Projected Levels of Service

- All movements at the signal-controlled Marksheffel Road/Fontaine Boulevard intersection are projected to operate at level of service D or better based on the short-term and 2040 background and total peak hour traffic conditions.
- Based on the projected short-term total traffic volumes, the intersection of Fontaine/Carriage Meadows is projected to operate at a LOS D or better all for all movements during the peak hours as a two-way Stop-sign-controlled intersection. By 2040 the northbound and southbound approaches are projected to operate at LOS F during the peak hours based on both background and total traffic volumes if this intersection remains stop-sign controlled. If this intersection is signalized 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 right-in/right-out-only site access point to Marksheffel Road is projected to operate at level of service B or better for all movements as a Stop-sign-controlled intersection based on the projected short-term and 2040 total traffic volumes.

Auxiliary Turn Lanes

Fontaine/Carriage Meadows

- There is currently adequate pavement width for a westbound right-turn deceleration lane on Fontaine Boulevard approaching Carriage Meadows Drive. The section of Fontaine Boulevard just east of Carriage Meadows Boulevard will need to be restriped with this development.
- There is an existing continuous westbound right-turn acceleration/deceleration lane on Fontaine Boulevard between Carriage Meadows Drive and Marksheffel Road.
- There is an existing 400-foot-long eastbound 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. The section of Fontaine Boulevard just west of Carriage Meadows Boulevard should be restriped to define a 12-foot wide left-turn lane adjacent to the raised median.

Marksheffel Road Right-in/Right-out Only Site Access Point

- Based on the projected short-term total traffic volumes, a northbound right-turn deceleration lane should be constructed on Marksheffel Road approaching the proposed right-in/right-out-only site access. This lane should be 290 feet long plus a 240-foot taper.

- The plans for the right-in/right-out only access show a section of raised center median on Marksheffel Road and a raised right turn channelizing island for purposes of physically preventing left turns at this access point.
- This proposed section of center median island on Marksheffel Road at the proposed right-in/right-out site access should be about 450-feet long (about 200 feet south of the access and 250 feet north).

Traffic Signal Escrow Percentages/Amounts

- Assuming a total signal cost of \$300,000, a fair share contribution towards a future signal at the intersection of Carriage Meadows Drive/Fontaine Boulevard would be \$14,938. Please refer to the section in the report entitled Traffic Signal Escrow Percentages/Amounts.

Street Classification

- Figure 12 presents the recommended street classification for Carriage Meadows North at Lorson Ranch Filing No. 1.

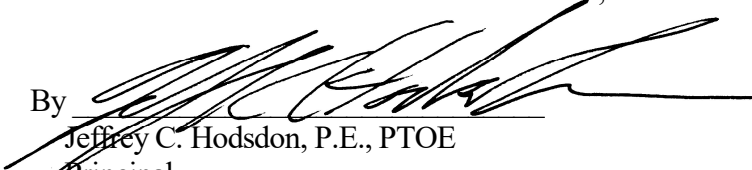
* * * * *

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 - 3
Figures 1-12
Traffic Count Reports
Level of Service Reports
Queuing Reports

<p style="text-align: center;">Table 2 Trip Generation Estimate Carriage Meadows North</p>
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												Internal Trips ⁽³⁾						Total External Trips Generated					
Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾					Total Trips Generated					Internal Trips (%)	(With Long-Term Buildout of Lorson Ranch)									
			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					
210	Single-Family Detached Housing	155 DU ⁽²⁾	9.52	0.19	0.56	0.63	0.37	1,476	29	87	98	57	14%	205	4	9	13	10	1,271	25	79	85	48

Notes:

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

(2) DU = dwelling unit

(3) Trips internal to the Lorson Ranch development. See Table 2 of the Lorson Ranch Sketch Plan Traffic Technical Memorandum by LSC dated April 15, 2016.

Source: LSC Transportation Consultants, Inc.

<p align="center">Table 3</p> <p align="center">Carriage Meadows/Fontaine Future Traffic Signal Contributions</p> <p align="center">Carriage Meadows North at Lorson Ranch Filing No. 1</p>
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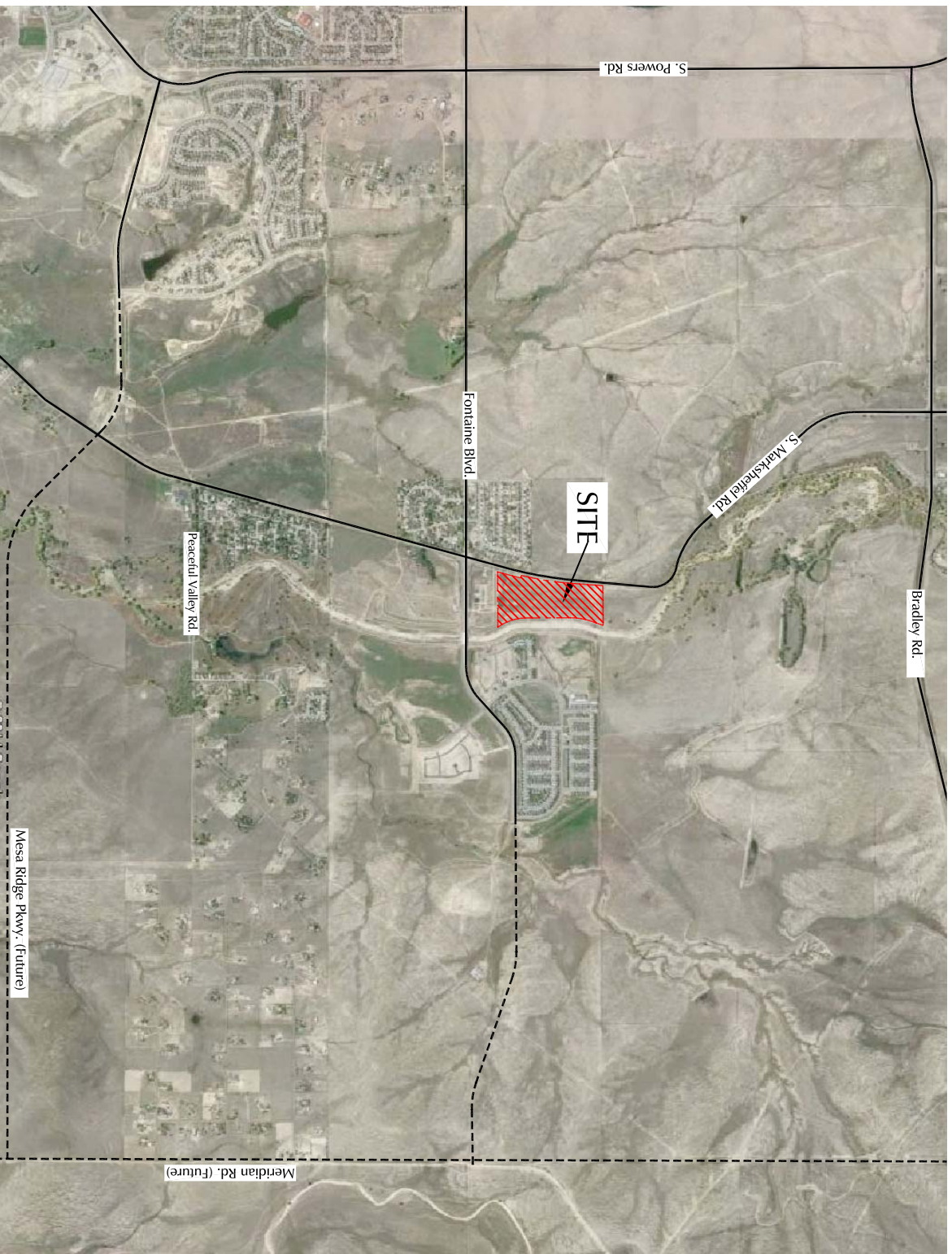
TABLE 1.1: TRAFFIC VOLUMES AND CONTRIBUTION TO TOTAL TRAFFIC										
Development		NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	TOTAL ⁽¹⁾ veh/hr	Signal Contribution %	\$
AM	Carriage Meadows North at Lorson Ranch Filing No. 1	0	0	0	7	1	53	13	10.6%	
	Carriage Meadows South at Lorson Ranch Filing No. 1	31	1	5	0	1	0	36	29.3%	
	Future Townhomes SE Carriage Meadows/Fontaine (Tract O)	13	1	2	0	0	0	15	12.2%	
	North Retail (Tracts D and E)	0	0	0	13	0	33	16	13.0%	
	South Retail (Tract N)	36	0	14	0	0	0	43	35.0%	
		80	2	21	20	2	86	123		
PM	Carriage Meadows North at Lorson Ranch Filing No. 1	0	4	0	1	2	36	11	3.1%	
	Carriage Meadows South at Lorson Ranch Filing No. 1	20	3	1	0	5	0	29	8.1%	
	Future Townhomes SE Carriage Meadows/Fontaine (Tract O)	7	1	0	0	0	0	8	2.2%	
	North Retail (Tracts D and E)	0	0	0	108	0	122	120	33.4%	
	South Retail (Tract N)	133	0	116	0	0	0	191	53.2%	
		160	8	117	109	7	158	359		
AM + PM	Carriage Meadows North at Lorson Ranch Filing No. 1	0	4	0	8	3	89	24	5.0%	\$14,938
	Carriage Meadows South at Lorson Ranch Filing No. 1	51	4	6	0	6	0	65	13.5%	\$40,456
	Future Townhomes SE Carriage Meadows/Fontaine (Tract O)	20	2	2	0	0	0	23	4.8%	\$14,315
	North Retail (Tracts D and E)	0	0	0	121	0	155	136	28.2%	\$84,647
	South Retail (Tract N)	169	0	130	0	0	0	234	48.5%	\$145,643
		240	10	138	129	9	244	482		\$300,000

Notes:

(1) The total includes all left-turn and through volumes plus 50% of the northbound right-turn volume and 10% of the southbound right-turn volume

Source: LSC Transportation Consultants, Inc.

1/29/2018

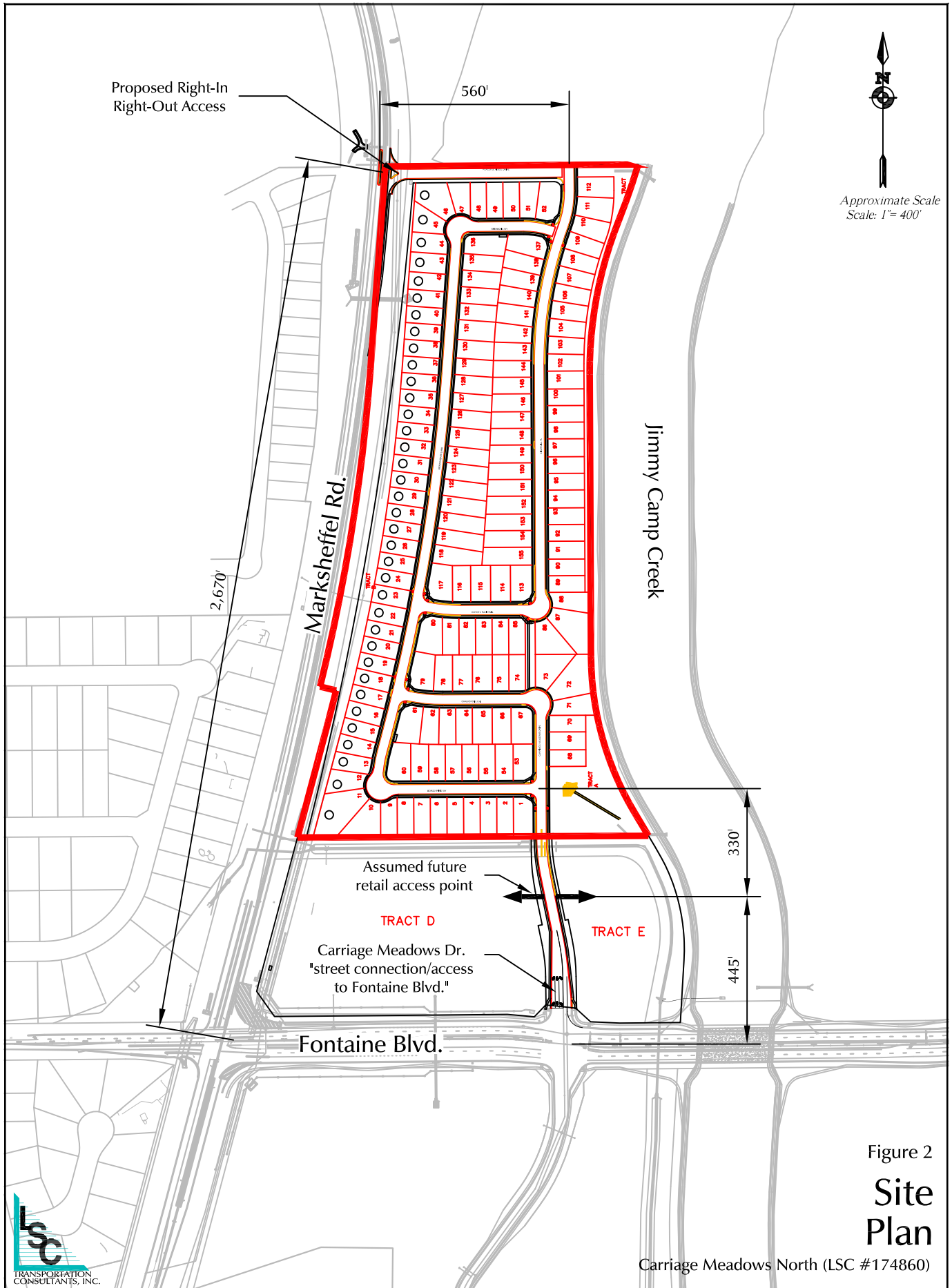


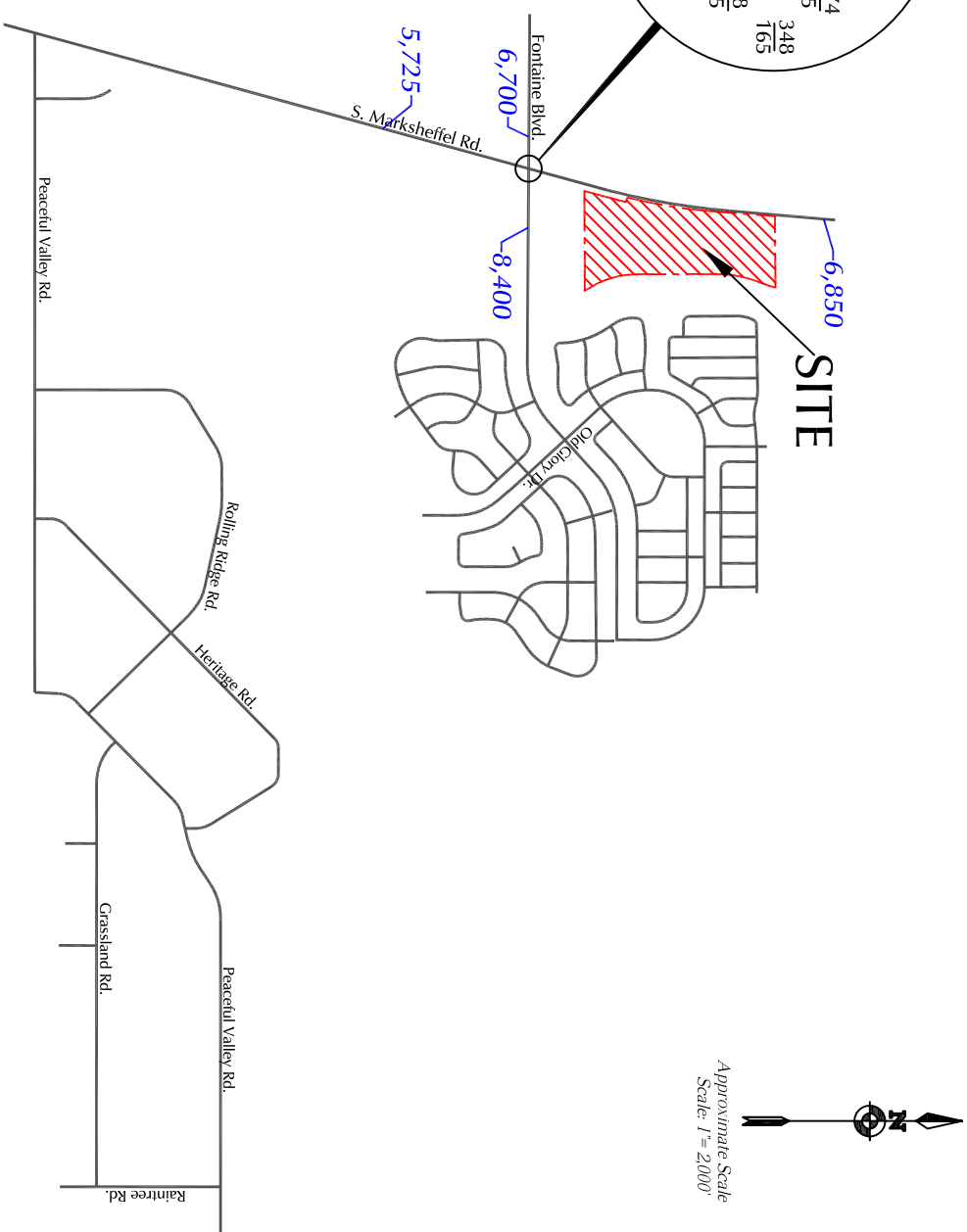
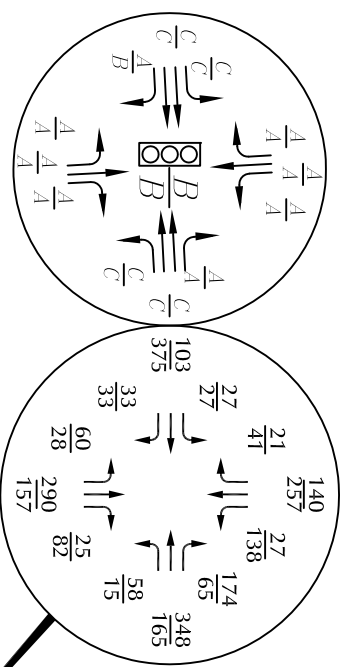
Approximate Scale
Scale: 1" = 3,000'

Figure 1

Vicinity Map

Carriage Meadows North (LSC #174860)





LEGEND:

$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour) Based on counts by LSC December 2017

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

$\frac{X,XXX}{X,XXX}$ = Average Weekday Traffic (vehicles per day)(Estimates by LSC)

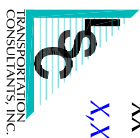


Figure 3

Existing Traffic Volumes

Carriage Meadows North (LSC #174860)



Approximate Scale
Scale: 1" = 2,000'

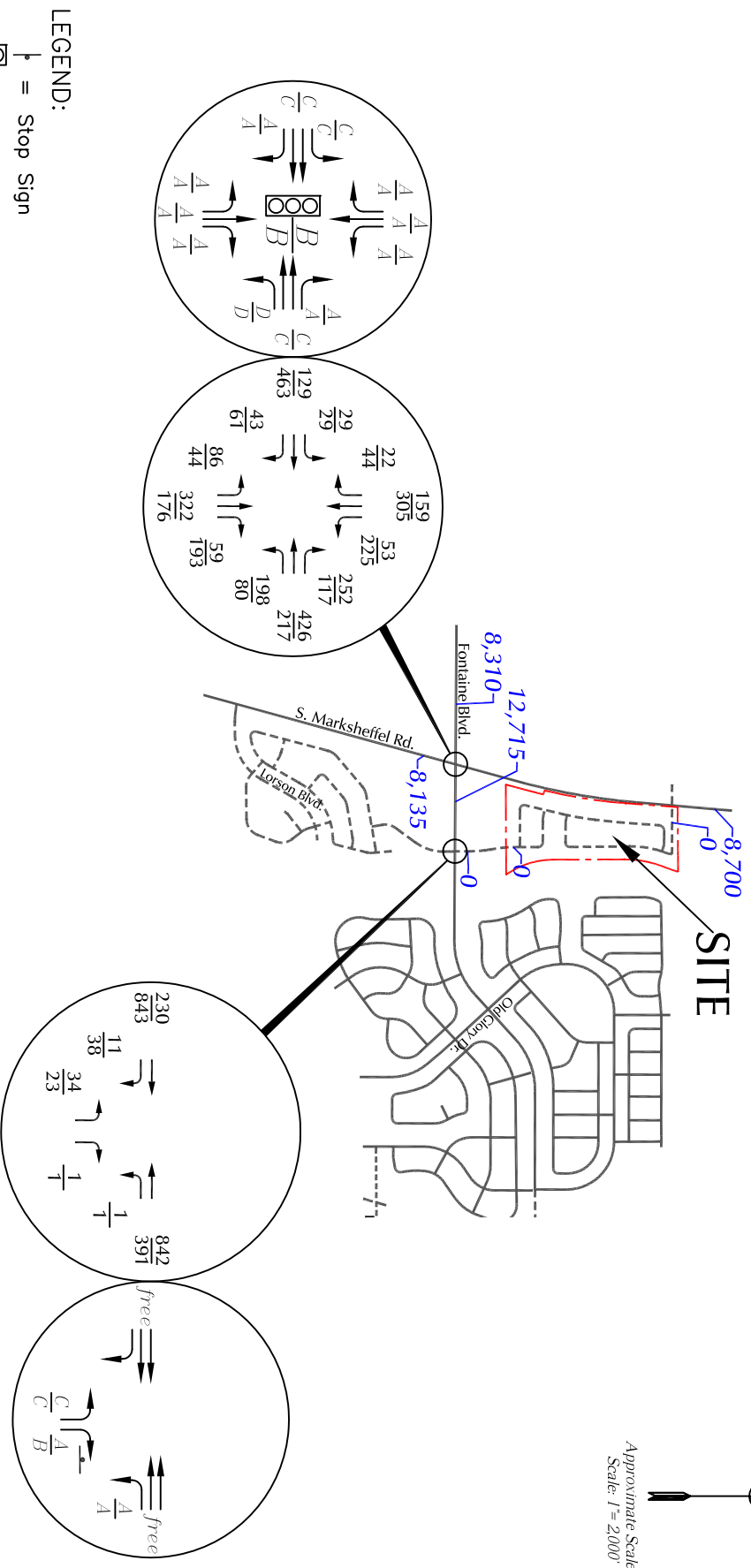


Figure 4

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

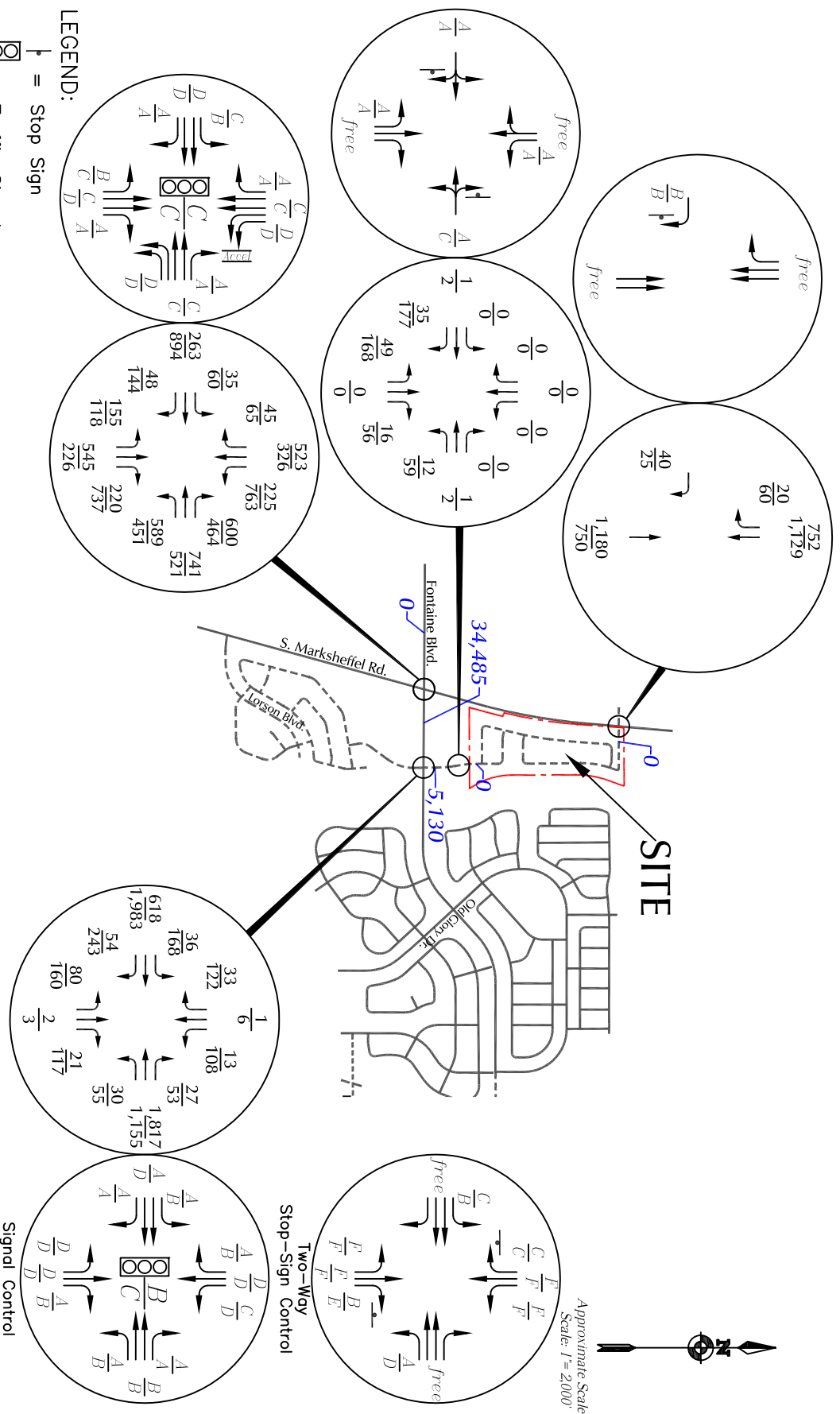
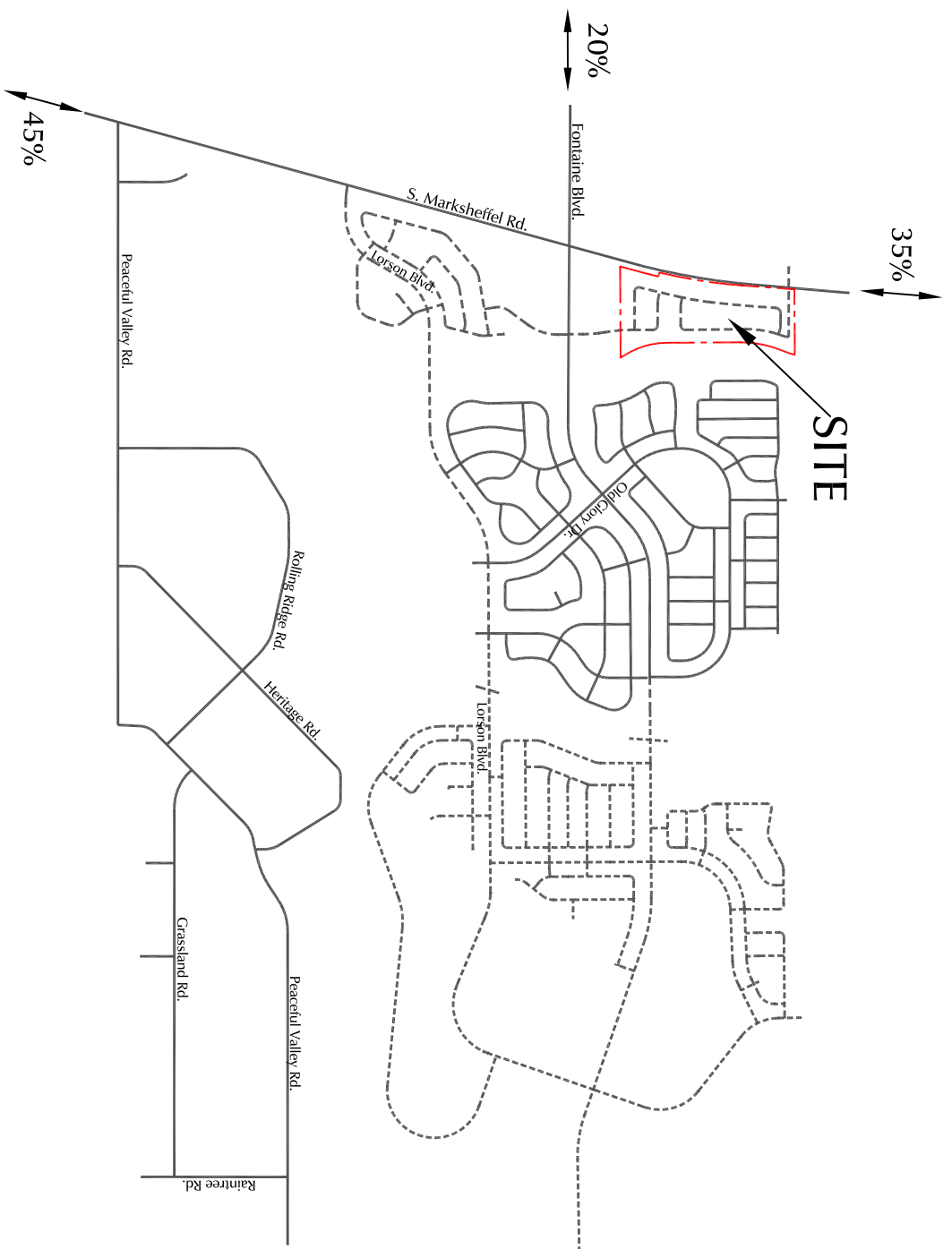


Figure 5

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

Carriage Meadows North (LSC #174860)



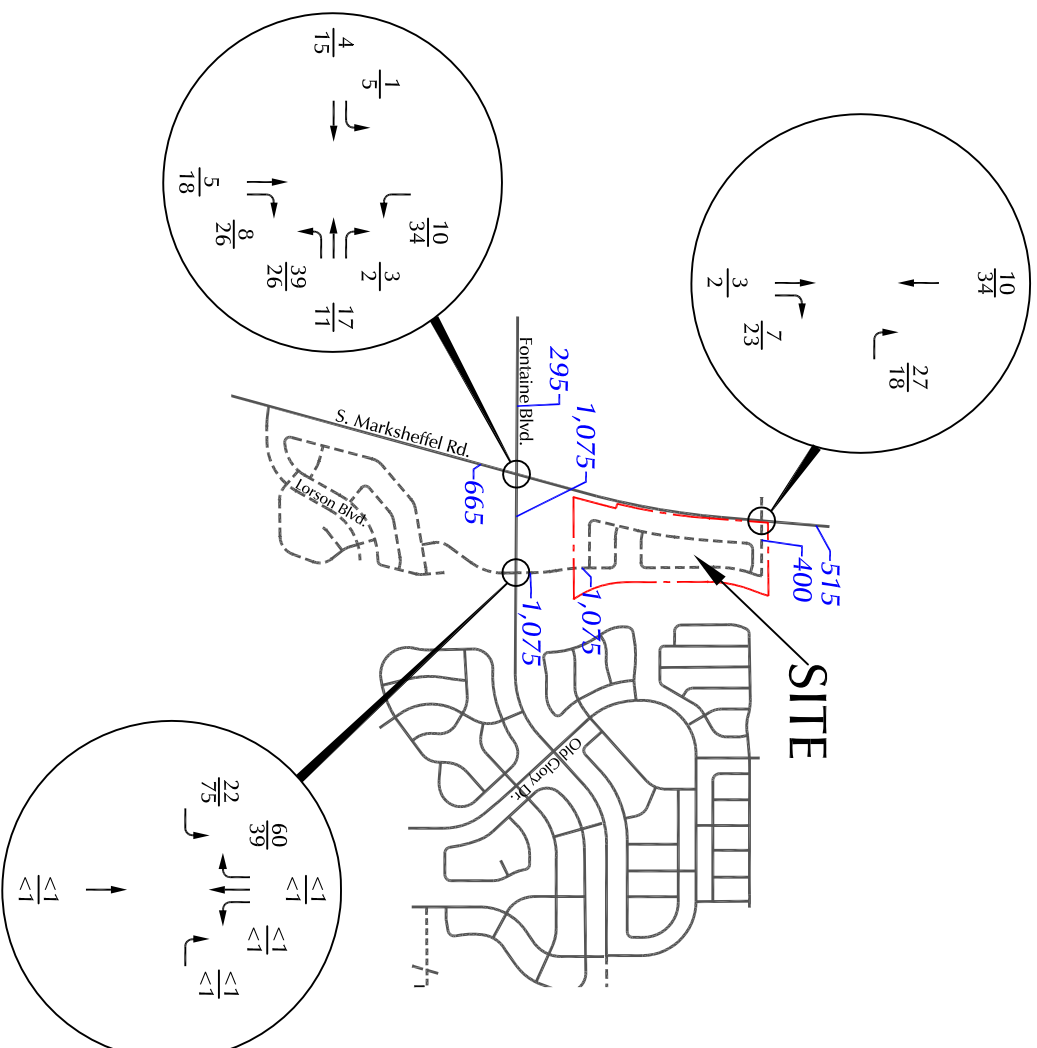
Approximate Scale
Scale: 1" = 3000'

LEGEND:

45% = Percent Directional Distribution



Figure 6
Directional Distribution
of Site-Generated Traffic
Carriage Meadows North (LSC #174860)



Approximate Scale
Scale: 1" = 2,000'

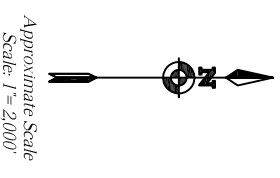
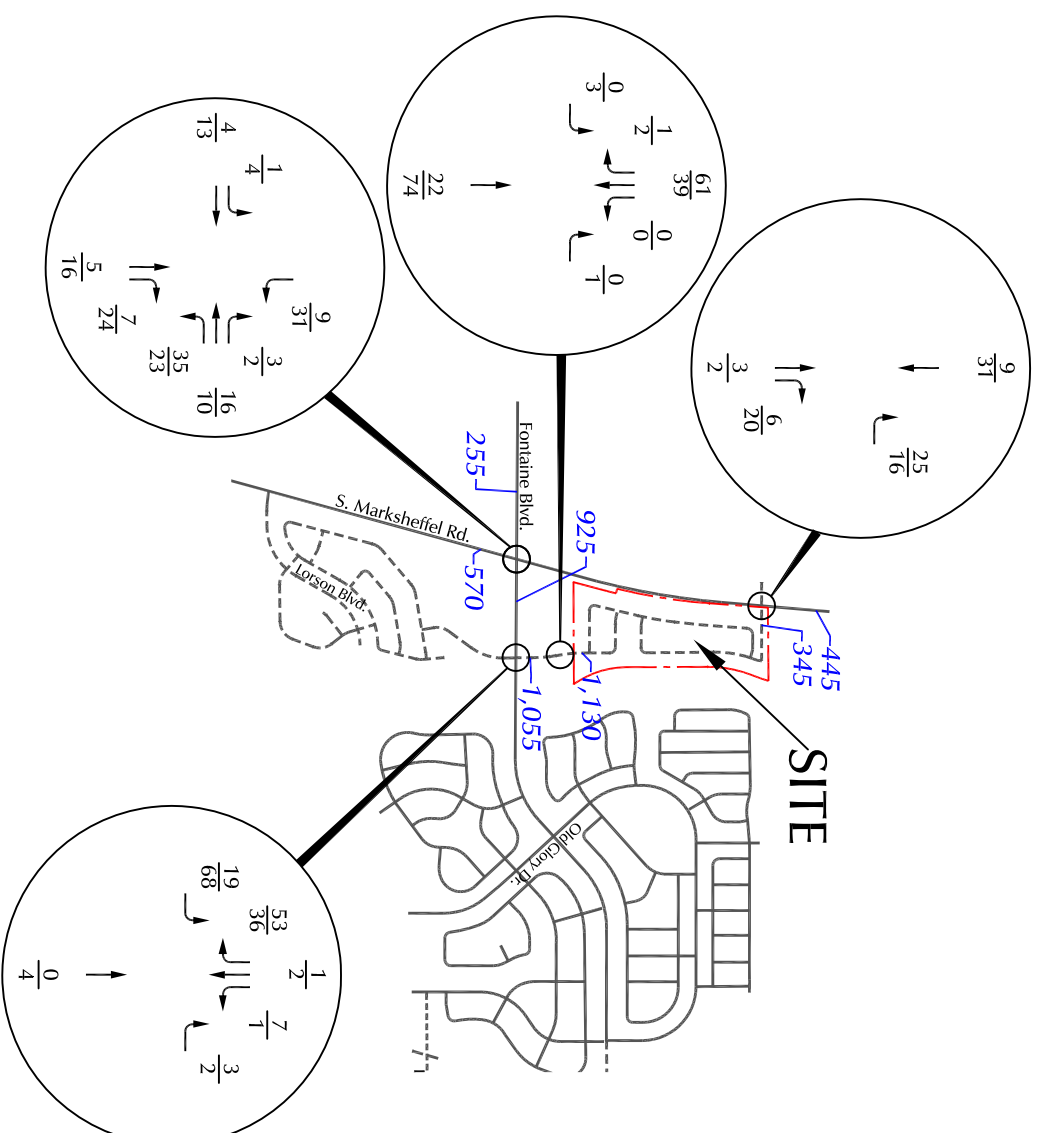
LEGEND:

XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
X,XXX = Average Weekday Traffic (vehicles per day)

Figure 7

Short-Term Assignment of Site-Generated Traffic

Carriage Meadows North (LSC #174860)



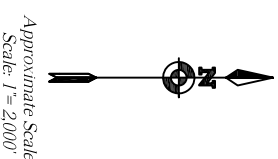
LEGEND:

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

Figure 8

Long-Term Assignment of Site-Generated Traffic

Carriage Meadows North (LSC #174860)



\vdash = Stop Sign

Traffic Signal

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

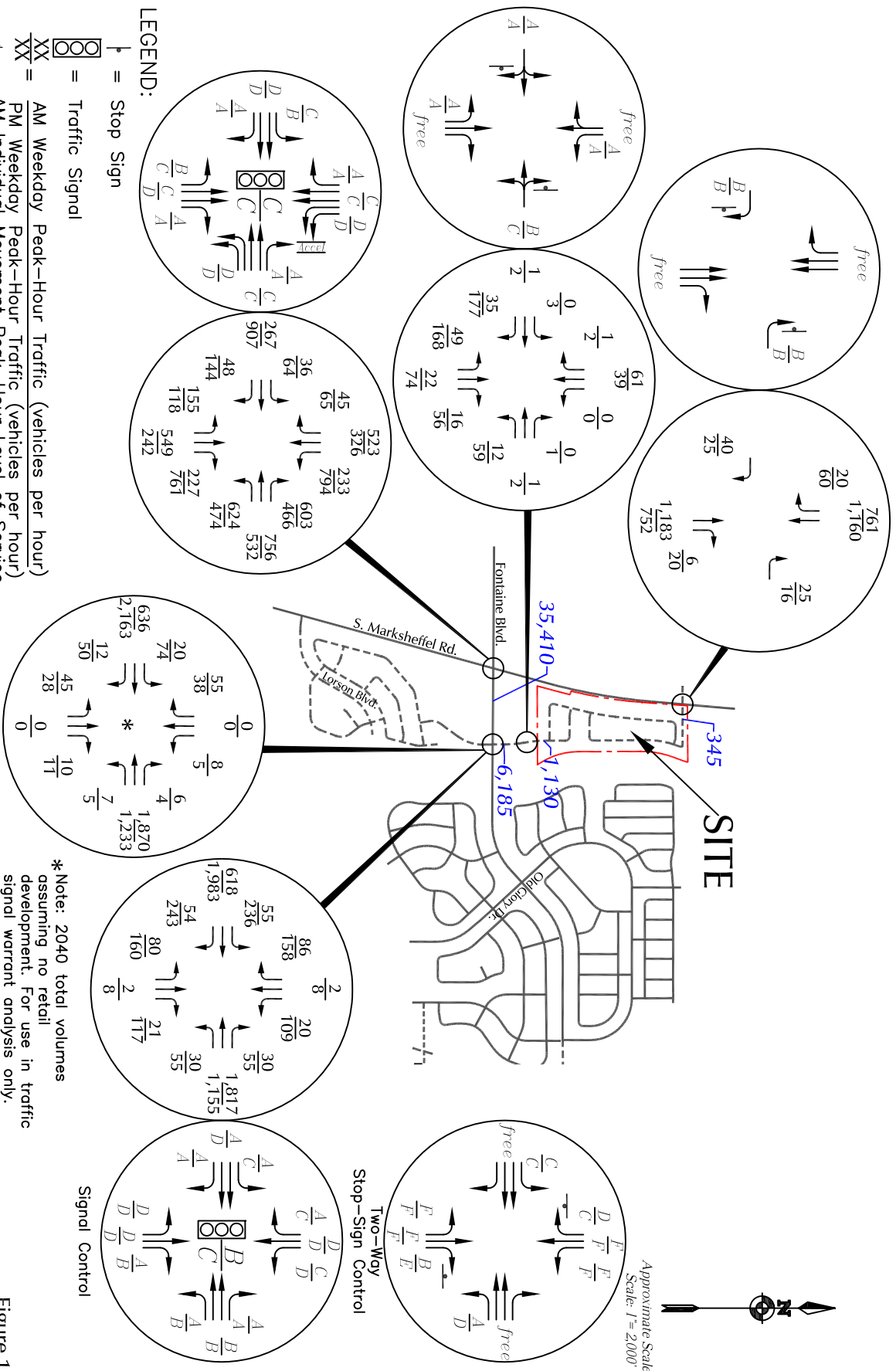
AM Individual Movement	Peak-Hour Level of Service
1. Low weekly peak hour traffic (vehicles per hour)	
2. Medium weekly peak hour traffic (vehicles per hour)	
3. High weekly peak hour traffic (vehicles per hour)	
4. Very high weekly peak hour traffic (vehicles per hour)	

AM Entire Intersection Peak-Hour Level of Service

PM Entire Intersection Peak-Hour Level of Service

$X_{i,j}$ = Average Weekday Traffic (vehicles per day)

Carriage Meadows North (LSC #174860)



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

Figure 10

- 2040 Total Traffic
- 2040 Total Traffic without Retail Development

* 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.

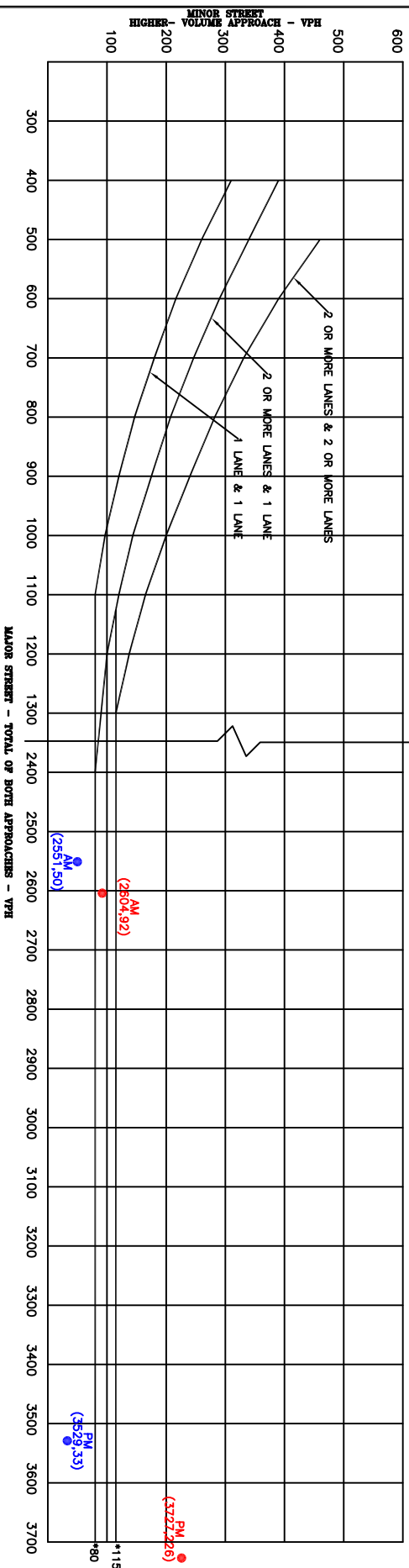


Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

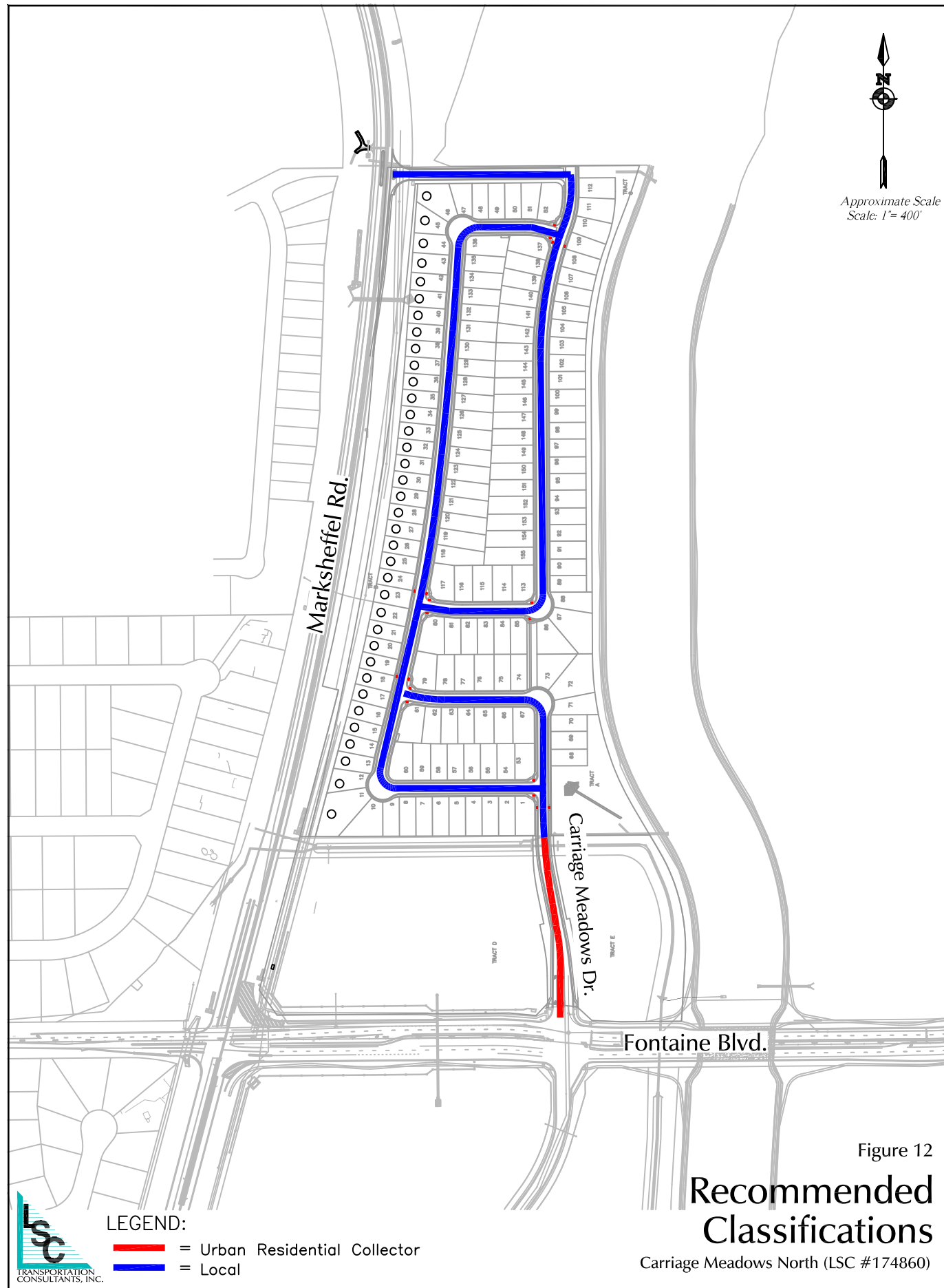
Figure 11

Traffic Signal Warrant Analysis Fontaine/Carriage Meadows Total Traffic

Carriage Meadows North (LSC #174860)



Approximate Scale
Scale: 1" = 400'



LEGEND:

- = Urban Residential Collector
- = Local



Figure 12
**Recommended
Classifications**
Carriage Meadows North (LSC #174860)

Counts by LSC

LSC Transportation Consultants, Inc.

File Name : Marksheffel Rd - Fontaine AM

Site Code : 00174860

Start Date : 12/05/2017

Page No : 1

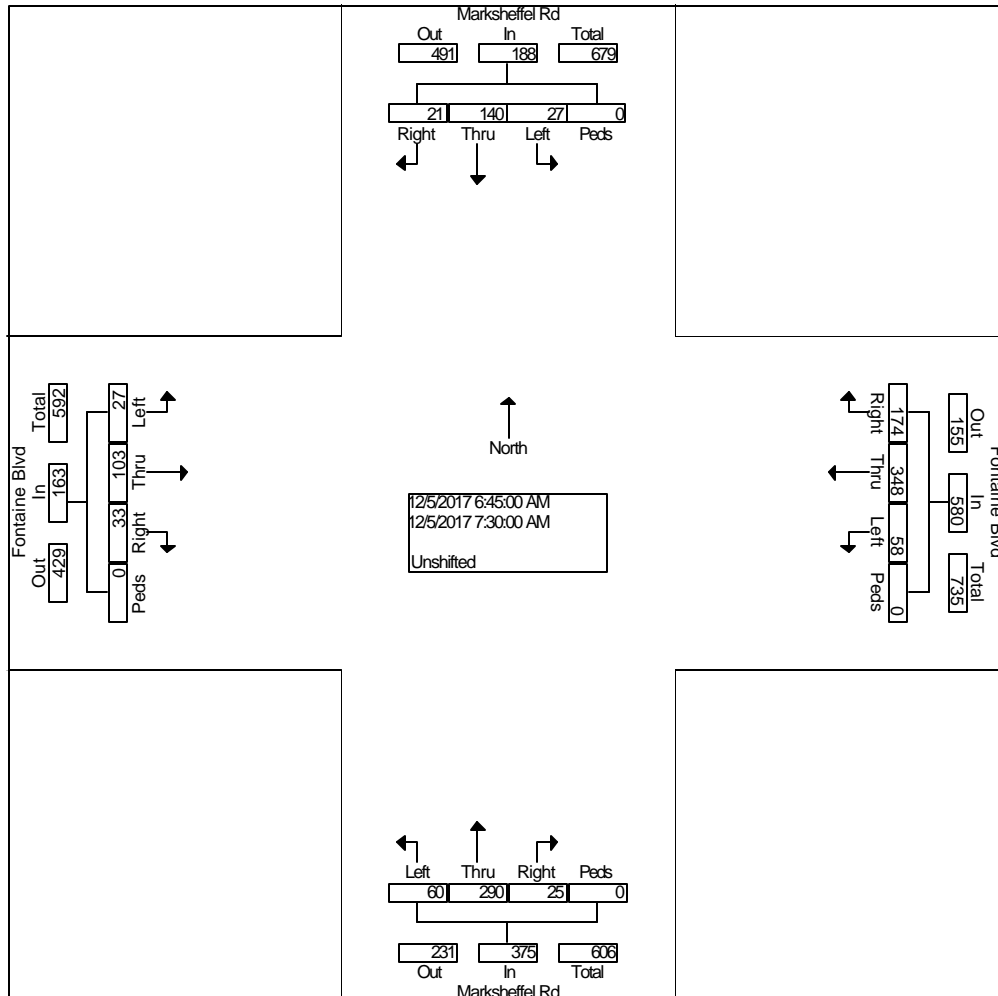
Groups Printed- Unshifted

	Marksheffel Rd From North				Fontaine Blvd From East				Marksheffel Rd From South				Fontaine Blvd From West				Int. Total
Start Time	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	5	34	5	0	30	92	16	0	4	70	7	0	7	9	6	0	285
06:45 AM	6	29	4	0	35	107	11	0	5	69	15	0	3	17	8	0	309
Total	11	63	9	0	65	199	27	0	9	139	22	0	10	26	14	0	594
07:00 AM	3	48	5	0	61	108	14	0	11	91	11	0	5	19	8	0	384
07:15 AM	7	31	6	0	46	85	15	0	4	62	15	0	13	32	8	0	324
07:30 AM	5	32	12	0	32	48	18	0	5	68	19	0	12	35	3	0	289
07:45 AM	5	30	15	0	18	54	3	0	11	67	4	0	9	37	6	0	259
Total	20	141	38	0	157	295	50	0	31	288	49	0	39	123	25	0	1256
08:00 AM	2	27	8	0	22	90	10	0	4	35	9	0	4	37	3	0	251
08:15 AM	3	35	7	0	19	92	9	0	5	40	8	0	11	37	4	0	270
Grand Total	36	266	62	0	263	676	96	0	49	502	88	0	64	223	46	0	2371
Apprch %	9.9	73.1	17.0	0.0	25.4	65.3	9.3	0.0	7.7	78.6	13.8	0.0	19.2	67.0	13.8	0.0	
Total %	1.5	11.2	2.6	0.0	11.1	28.5	4.0	0.0	2.1	21.2	3.7	0.0	2.7	9.4	1.9	0.0	

Counts by LSC

File Name : Marksheffel Rd - Fontaine AM
 Site Code : 00174860
 Start Date : 12/05/2017
 Page No : 2

	Marksheffel Rd From North					Fontaine Blvd From East					Marksheffel Rd From South					Fontaine Blvd From West					
Start Time	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	Int. Total
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	06:45 AM																				
Volume	21	14	27	0	188	17	34	58	0	580	25	29	60	0	375	33	10	27	0	163	1306
		0				4	8					0					3				
Percent	11.	74.	14.	0.0		30.	60.	10.	0.0		6.7	77.	16.	0.0		20.	63.	16.	0.0		
	2	5	4			0	0	0				3	0			2	2	6			
07:00							10														
Volume	3	48	5	0	56	61	8	14	0	183	11	91	11	0	113	5	19	8	0	32	384
Peak Factor																					0.850
High Int.	07:00 AM					07:00 AM					07:00 AM					07:15 AM					
Volume	3	48	5	0	56	61	10	14	0	183	11	91	11	0	113	13	32	8	0	53	
Peak Factor					0.83					0.79					0.83					0.76	
					9					2					0					9	



Counts by LSC

LSC Transportation Consultants, Inc.

File Name : Marksheffel Rd - Fontaine PM

Site Code : 00174860

Start Date : 12/05/2017

Page No : 1

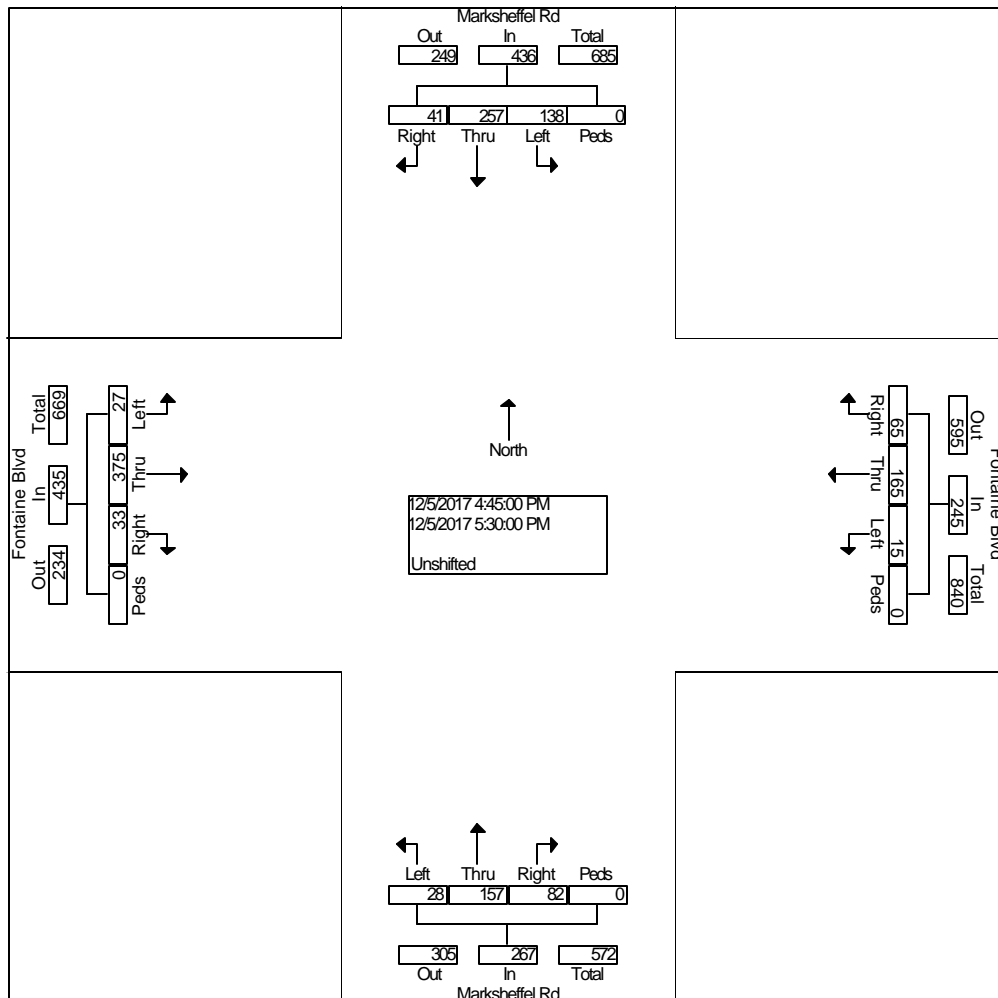
Groups Printed- Unshifted

	Marksheffel Rd From North				Fontaine Blvd From East				Marksheffel Rd From South				Fontaine Blvd From West				Int. Total
Start Time	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	
04:00 PM	10	56	30	0	12	36	1	0	13	46	10	0	14	74	4	0	306
04:15 PM	11	61	28	0	14	45	4	0	15	38	13	0	10	86	6	0	331
04:30 PM	9	55	36	0	15	38	8	0	18	40	8	0	15	81	7	0	330
04:45 PM	14	73	33	0	16	30	4	0	12	37	3	0	9	81	9	0	321
Total	44	245	127	0	57	149	17	0	58	161	34	0	48	322	26	0	1288
05:00 PM	12	64	40	0	16	45	5	0	28	46	4	0	6	105	6	0	377
05:15 PM	9	73	34	0	13	45	3	0	16	33	8	0	8	96	5	0	343
05:30 PM	6	47	31	0	20	45	3	0	26	41	13	0	10	93	7	0	342
05:45 PM	6	38	31	0	8	37	2	0	14	27	5	0	10	86	7	0	271
Total	33	222	136	0	57	172	13	0	84	147	30	0	34	380	25	0	1333
Grand Total	77	467	263	0	114	321	30	0	142	308	64	0	82	702	51	0	2621
Apprch %	9.5	57.9	32.6	0.0	24.5	69.0	6.5	0.0	27.6	59.9	12.5	0.0	9.8	84.1	6.1	0.0	
Total %	2.9	17.8	10.0	0.0	4.3	12.2	1.1	0.0	5.4	11.8	2.4	0.0	3.1	26.8	1.9	0.0	

Counts by LSC

File Name : Marksheffel Rd - Fontaine PM
 Site Code : 00174860
 Start Date : 12/05/2017
 Page No : 2

	Marksheffel Rd From North					Fontaine Blvd From East					Marksheffel Rd From South					Fontaine Blvd From West					
Start Time	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	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	41	25	13	0	436	65	16	15	0	245	82	15	28	0	267	33	37	27	0	435	1383
Percent	9.4	58.9	31.7	0.0		26.5	67.3	6.1	0.0		30.7	58.8	10.5	0.0		7.6	86.2	6.2	0.0		
05:00 Volume	12	64	40	0	116	16	45	5	0	66	28	46	4	0	78	6	10	6	0	117	377
Peak Factor																					0.917
High Int.	04:45 PM					05:30 PM					05:30 PM					05:00 PM					
Volume	14	73	33	0	120	20	45	3	0	68	26	41	13	0	80	6	10	6	0	117	
Peak Factor	0.908					0.901					0.834					0.929					



























Timings

1: Marksheffel Rd & Fountaine 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)	27	103	33	58	348	174	60	290	25	27	140	21
Future Volume (vph)	27	103	33	58	348	174	60	290	25	27	140	21
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 Effect Green (s)	16.6	16.6	16.6	16.6	16.6	16.6	55.2	55.2	55.2	55.2	55.2	55.2
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.67	0.67	0.67	0.67	0.67	0.67
v/c Ratio	0.20	0.14	0.10	0.28	0.62	0.44	0.09	0.28	0.03	0.05	0.13	0.02
Control Delay	30.2	26.5	9.8	29.9	33.4	7.0	6.0	6.7	2.4	5.8	5.8	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	30.2	26.5	9.8	29.9	33.4	7.0	6.0	6.7	2.4	5.8	5.8	2.6
LOS	C	C	A	C	C	A	A	A	A	A	A	A
Approach Delay		23.8			25.1			6.3			5.4	
Approach LOS		C			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.8

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 16.8

Intersection LOS: B

Intersection Capacity Utilization 49.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fountaine Blvd



























Timings

1: Marksheffel Rd & Fountaine 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)	27	375	33	15	165	65	28	157	82	138	257	41
Future Volume (vph)	27	375	33	15	165	65	28	157	82	138	257	41
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 Effect Green (s)	14.5	14.5	14.5	14.5	14.5	14.5	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	0.69	0.69	0.69	0.69	0.69	0.69
v/c Ratio	0.13	0.62	0.11	0.12	0.27	0.20	0.04	0.14	0.08	0.18	0.21	0.04
Control Delay	28.2	34.5	10.4	28.9	28.8	8.8	4.9	5.0	1.4	5.5	5.4	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	28.2	34.5	10.4	28.9	28.8	8.8	4.9	5.0	1.4	5.5	5.4	1.8
LOS	C	C	B	C	C	A	A	A	A	A	A	A
Approach Delay		32.3			23.5			3.9			5.1	
Approach LOS		C			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 79.6

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 16.5

Intersection LOS: B

Intersection Capacity Utilization 48.9%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 1: Marksheffel Rd & Fountaine Blvd



Timings

1: Marksheffel Rd & Fontaine Blvd

2020 Background Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	129	43	198	426	252	86	322	59	53	159	22
Future Volume (vph)	29	129	43	198	426	252	86	322	59	53	159	22
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)	35.0	35.0	35.0	35.0	35.0	35.0	55.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	38.9%	38.9%	38.9%	38.9%	38.9%	38.9%	61.1%	61.1%	61.1%	61.1%	61.1%	61.1%
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 Optimize?												
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	21.1	21.1	21.1	21.1	21.1	21.1	50.3	50.3	50.3	50.3	50.3	50.3
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26	0.26	0.62	0.62	0.62	0.62	0.62	0.62
v/c Ratio	0.18	0.15	0.11	0.69	0.52	0.45	0.12	0.30	0.06	0.10	0.15	0.02
Control Delay	24.8	22.7	7.3	38.5	27.3	5.5	8.8	9.5	2.7	8.8	8.4	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	22.7	7.3	38.5	27.3	5.5	8.8	9.5	2.7	8.8	8.4	3.7
LOS	C	C	A	D	C	A	A	A	A	A	A	A
Approach Delay		19.7			23.6			8.5			8.0	
Approach LOS		B			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.5

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 17.2

Intersection LOS: B

Intersection Capacity Utilization 53.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



























HCM 6th TWSC
8: Carriage Meadows Dr & Fontaine Blvd/Fontaine Blvd

2020 Background Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	230	11	1	842	34	1
Future Vol, veh/h	230	11	1	842	34	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	375	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	250	12	1	915	37	1
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	262	0	710	125
Stage 1	-	-	-	-	250	-
Stage 2	-	-	-	-	460	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1299	-	368	902
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	602	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1299	-	368	902
Mov Cap-2 Maneuver	-	-	-	-	368	-
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	602	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0	15.7			
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	368	902	-	-	1299	-
HCM Lane V/C Ratio	0.1	0.001	-	-	0.001	-
HCM Control Delay (s)	15.9	9	-	-	7.8	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-

Timings
1: Marksheffel Rd & Fontaine Blvd

2020 Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	463	61	80	217	117	44	176	193	225	305	44
Future Volume (vph)	29	463	61	80	217	117	44	176	193	225	305	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)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
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 Effect Green (s)	14.6	14.6	14.6	14.6	14.6	14.6	40.1	40.1	40.1	40.1	40.1	40.1
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.23	0.62	0.62	0.62	0.62	0.62	0.62
v/c Ratio	0.12	0.61	0.16	0.55	0.29	0.27	0.07	0.16	0.19	0.32	0.28	0.05
Control Delay	20.6	25.9	6.9	36.1	21.4	6.1	6.2	6.3	1.6	8.0	7.0	2.3
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	20.6	25.9	6.9	36.1	21.4	6.1	6.2	6.3	1.6	8.0	7.0	2.3
LOS	C	C	A	D	C	A	A	A	A	A	A	A
Approach Delay		23.5			19.9			4.1			7.1	
Approach LOS		C			B			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 64.7

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 13.8

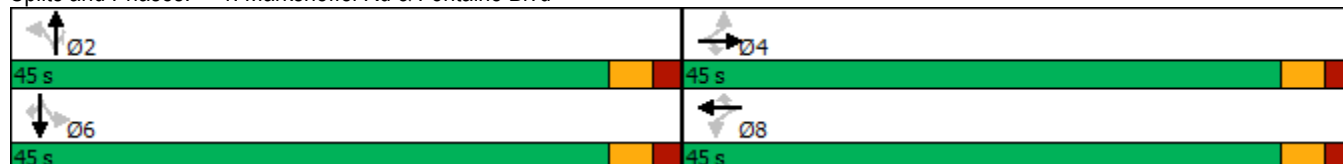
Intersection LOS: B

Intersection Capacity Utilization 55.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



HCM 6th TWSC
8: Carriage Meadows Dr & Fontaine Blvd

2020 Background Traffic
PM Peak Hour

























Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↘	↑↑	↘	↗
Traffic Vol, veh/h	843	38	1	391	23	1
Future Vol, veh/h	843	38	1	391	23	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	375	-	0	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	887	40	1	412	24	1
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	927	0	1095	444
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	208	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	733	-	208	561
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	807	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	733	-	208	561
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	807	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		17.7	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	302	561	-	-	733	-
HCM Lane V/C Ratio	0.08	0.002	-	-	0.001	-
HCM Control Delay (s)	18	11.4	-	-	9.9	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-

Timings

1: Marksheffel Rd & Fontaine Blvd

2020 Total Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	133	43	237	443	255	86	327	67	63	159	22
Future Volume (vph)	30	133	43	237	443	255	86	327	67	63	159	22
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)	35.0	35.0	35.0	35.0	35.0	35.0	55.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	38.9%	38.9%	38.9%	38.9%	38.9%	38.9%	61.1%	61.1%	61.1%	61.1%	61.1%	61.1%
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 Optimize?												
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	23.6	23.6	23.6	23.6	23.6	23.6	50.3	50.3	50.3	50.3	50.3	50.3
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.28	0.28	0.60	0.60	0.60	0.60	0.60	0.60
v/c Ratio	0.17	0.15	0.10	0.76	0.49	0.44	0.13	0.32	0.07	0.12	0.16	0.03
Control Delay	24.1	22.2	7.1	42.3	26.5	5.1	9.5	10.4	2.6	9.6	9.1	3.8
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	24.1	22.2	7.1	42.3	26.5	5.1	9.5	10.4	2.6	9.6	9.1	3.8
LOS	C	C	A	D	C	A	A	B	A	A	A	A
Approach Delay		19.3			24.7			9.2			8.8	
Approach LOS		B			C			A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 84

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 55.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd







HCM 6th TWSC
6: Marksheffel Rd & Carriage Meadows North RIRO

2020 Total Traffic
AM Peak Hour

Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	27	606	7	0	244
Future Vol, veh/h	0	27	606	7	0	244
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	-	250	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	28	638	7	0	257













Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	638	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.22	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.318	-
Pot Cap-1 Maneuver	0	477	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	477	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	477
HCM Lane V/C Ratio	-	-	0.06
HCM Control Delay (s)	-	-	13
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.2

HCM 6th TWSC
8: Carriage Meadows Dr & Fontaine Blvd/Fontaine Blvd

2020 Total Traffic
AM Peak Hour

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	230	11	0	842	0	34	1	1	1	1	60
Future Vol, veh/h	22	230	11	0	842	0	34	1	1	1	1	60
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	-	-	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	24	250	12	0	915	0	37	1	1	1	1	65













Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	915	0	0	262	0	0	756	1213	125	1089	1225	458
Stage 1	-	-	-	-	-	-	298	298	-	915	915	-
Stage 2	-	-	-	-	-	-	458	915	-	174	310	-
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	741	-	-	1299	-	-	297	181	902	170	178	550
Stage 1	-	-	-	-	-	-	686	666	-	294	350	-
Stage 2	-	-	-	-	-	-	552	350	-	811	658	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	741	-	-	1299	-	-	254	175	902	165	172	550
Mov Cap-2 Maneuver	-	-	-	-	-	-	254	175	-	165	172	-
Stage 1	-	-	-	-	-	-	664	645	-	285	350	-
Stage 2	-	-	-	-	-	-	485	350	-	782	637	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8	-	-	0	-	-	21.4	-	-	12.9	-	-
HCM LOS	C			C			C			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	254	175	902	741	-	-	1299	-	-	165	172	550
HCM Lane V/C Ratio	0.145	0.006	0.001	0.032	-	-	-	-	-	0.007	0.006	0.119
HCM Control Delay (s)	21.6	25.7	9	10	-	-	0	-	-	27	26.1	12.4
HCM Lane LOS	C	D	A	B	-	-	A	-	-	D	D	B
HCM 95th %tile Q(veh)	0.5	0	0	0.1	-	-	0	-	-	0	0	0.4

HCM 6th TWSC
8: Carriage Meadows Dr & Fontaine Blvd

2020 Total Traffic
PM Peak Hour

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	843	38	0	391	0	23	1	1	1	1	39
Future Vol, veh/h	75	843	38	0	391	0	23	1	1	1	1	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	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	82	916	41	0	425	0	25	1	1	1	1	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	425	0	0	957	0	0	1293	1505	458	1048	1546	213
Stage 1	-	-	-	-	-	-	1080	1080	-	425	425	-
Stage 2	-	-	-	-	-	-	213	425	-	623	1121	-
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	1131	-	-	714	-	-	120	120	550	182	113	792
Stage 1	-	-	-	-	-	-	233	293	-	578	585	-
Stage 2	-	-	-	-	-	-	769	585	-	440	280	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1131	-	-	714	-	-	107	111	550	171	105	792
Mov Cap-2 Maneuver	-	-	-	-	-	-	180	206	-	287	203	-
Stage 1	-	-	-	-	-	-	216	272	-	536	585	-
Stage 2	-	-	-	-	-	-	726	585	-	406	260	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7	-	-	0	-	-	27.3	-	-	10.3	-	-
HCM LOS	-	-	-	-	-	-	D	-	-	B	-	-

























Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	180	206	550	1131	-	-	714	-	-	287	203	792
HCM Lane V/C Ratio	0.139	0.005	0.002	0.072	-	-	-	-	-	0.004	0.005	0.054
HCM Control Delay (s)	28.2	22.6	11.6	8.4	-	-	0	-	-	17.6	22.8	9.8
HCM Lane LOS	D	C	B	A	-	-	A	-	-	C	C	A
HCM 95th %tile Q(veh)	0.5	0	0	0.2	-	-	0	-	-	0	0	0.2

Timings

1: Marksheffel Rd & Fontaine Blvd

2040 Background Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	263	48	589	741	600	155	545	220	225	523	45
Future Volume (vph)	35	263	48	589	741	600	155	545	220	225	523	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	9.0	9.0	9.0	9.0		9.0	9.0		9.0	9.0	9.0
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 Effect Green (s)	14.8	9.8	9.8	19.0	27.9	88.8	35.4	30.4	88.8	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	0.21	0.71	0.14	0.84	0.70	0.40	0.44	0.47	0.15	0.64	0.39	0.06
Control Delay	22.7	49.5	0.8	45.5	32.0	0.8	18.3	24.9	0.2	46.6	20.6	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	22.7	49.5	0.8	45.5	32.0	0.8	18.3	24.9	0.2	46.6	20.6	0.2
LOS	C	D	A	D	C	A	B	C	A	D	C	A
Approach Delay		40.0			26.4			17.9			26.8	
Approach LOS		D			C			B			C	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 88.8

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 25.7

Intersection LOS: C

Intersection Capacity Utilization 63.8%

ICU Level of Service B

Analysis Period (min) 15








Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



HCM 6th TWSC
6: Marksheffel Rd & Peaceful Ridge R/O



























2040 Background Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	40	0	1180	752	20
Future Vol, veh/h	0	40	0	1180	752	20
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	-	-	-	250
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	42	0	1242	792	21
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	396	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	603	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	603	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	11.4	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	603	-	-		
HCM Lane V/C Ratio	-	0.07	-	-		
HCM Control Delay (s)	-	11.4	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.2	-	-		

Intersection												
Int Delay, s/veh	6.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	35	12	1	0	49	1	16	0	1	0
Future Vol, veh/h	0	1	35	12	1	0	49	1	16	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	155	100	-	-
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	0	1	37	13	1	0	52	1	17	0	1	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	115	123	1	125	106	1	1	0	0	18	0	0
Stage 1	1	1	-	105	105	-	-	-	-	-	-	-
Stage 2	114	122	-	20	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	862	767	1084	849	784	1084	1622	-	-	1599	-	-
Stage 1	1022	895	-	901	808	-	-	-	-	-	-	-
Stage 2	891	795	-	999	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	840	742	1084	799	759	1084	1622	-	-	1599	-	-
Mov Cap-2 Maneuver	840	742	-	799	759	-	-	-	-	-	-	-
Stage 1	989	895	-	872	782	-	-	-	-	-	-	-
Stage 2	861	770	-	964	895	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	8.5		9.6		5.4		0					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1622	-	-	1070	796	1599	-	-				
HCM Lane V/C Ratio	0.032	-	-	0.035	0.017	-	-	-				
HCM Control Delay (s)	7.3	-	-	8.5	9.6	0	-	-				
HCM Lane LOS	A	-	-	A	A	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-				

Timings 8: Carriage Meadows Dr & Fontaine Blvd

2040 Background Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (vph)	36	618	54	30	1817	27	80	2	21	13	1	33
Future Volume (vph)	36	618	54	30	1817	27	80	2	21	13	1	33
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 Effect Green (s)	61.7	60.1	60.1	61.7	60.1	60.1	9.7	8.7	8.7	7.8	5.1	5.1
Actuated g/C Ratio	0.74	0.72	0.72	0.74	0.72	0.72	0.12	0.10	0.10	0.09	0.06	0.06
v/c Ratio	0.20	0.25	0.05	0.05	0.75	0.02	0.52	0.01	0.07	0.09	0.01	0.15
Control Delay	6.0	6.6	0.1	3.8	13.8	0.0	45.7	36.5	0.5	33.0	40.0	1.4
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	6.0	6.6	0.1	3.8	13.8	0.0	45.7	36.5	0.5	33.0	40.0	1.4
LOS	A	A	A	A	B	A	D	D	A	C	D	A
Approach Delay		6.1			13.4			36.3			11.0	
Approach LOS		A			B			D			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 83

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 12.3








Intersection LOS: B

Intersection Capacity Utilization 70.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: Carriage Meadows Dr & Fontaine Blvd

 Ø1	 Ø2	 Ø3	 Ø4
10 s	60 s	10 s	10 s
 Ø5	 Ø6	 Ø7	 Ø8
10 s	60 s	10 s	10 s

HCM 6th TWSC
8: Carriage Meadows Dr & Fontaine Blvd

2040 Background Traffic
AM Peak Hour

























Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↗	↘	↰	↗	↘	↰	↗	↘	↰	↗	↘
Traffic Vol, veh/h	36	618	54	30	1817	27	80	2	21	13	1	33
Future Vol, veh/h	36	618	54	30	1817	27	80	2	21	13	1	33
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	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	38	651	57	32	1913	28	84	2	22	14	1	35
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1941	0	0	708	0	0	1748	2732	326	2380	2761	957
Stage 1	-	-	-	-	-	-	727	727	-	1977	1977	-
Stage 2	-	-	-	-	-	-	1021	2005	-	403	784	-
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	298	-	-	887	-	-	~ 55	20	670	18	19	258
Stage 1	-	-	-	-	-	-	381	427	-	64	106	-
Stage 2	-	-	-	-	-	-	253	103	-	595	402	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	298	-	-	887	-	-	~ 41	17	670	15	16	258
Mov Cap-2 Maneuver	-	-	-	-	-	-	119	51	-	48	76	-
Stage 1	-	-	-	-	-	-	332	372	-	56	102	-
Stage 2	-	-	-	-	-	-	209	99	-	499	351	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			0.1			71.7			45.7		
HCM LOS							F			E		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	119	51	670	298	-	-	887	-	-	48	76	258
HCM Lane V/C Ratio	0.708	0.041	0.033	0.127	-	-	0.036	-	-	0.285	0.014	0.135
HCM Control Delay (s)	87.6	78.6	10.6	18.8	-	-	9.2	-	-	107.5	53	21.1
HCM Lane LOS	F	F	B	C	-	-	A	-	-	F	F	C
HCM 95th %tile Q(veh)	3.9	0.1	0.1	0.4	-	-	0.1	-	-	1	0	0.5
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

Timings

1: Marksheffel Rd & Fontaine Blvd

2040 Background Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	894	144	451	521	464	118	226	737	763	326	65
Future Volume (vph)	60	894	144	451	521	464	118	226	737	763	326	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)	10.0	30.0	30.0	19.0	39.0		10.0	14.0		27.0	31.0	31.0
Total Split (%)	11.1%	33.3%	33.3%	21.1%	43.3%		11.1%	15.6%		30.0%	34.4%	34.4%
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)	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 Effect Green (s)	31.9	25.0	25.0	14.7	35.7	89.7	16.4	9.4	89.7	22.6	26.0	26.0
Actuated g/C Ratio	0.36	0.28	0.28	0.16	0.40	1.00	0.18	0.10	1.00	0.25	0.29	0.29
v/c Ratio	0.18	0.94	0.25	0.85	0.39	0.31	0.53	0.64	0.49	0.92	0.33	0.12
Control Delay	14.0	50.8	2.1	51.8	20.9	0.5	29.0	47.6	1.1	49.9	26.2	0.4
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	14.0	50.8	2.1	51.8	20.9	0.5	29.0	47.6	1.1	49.9	26.2	0.4
LOS	B	D	A	D	C	A	C	D	A	D	C	A
Approach Delay		42.3			24.0			13.9			40.4	
Approach LOS		D			C			B			D	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 89.7

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 29.8

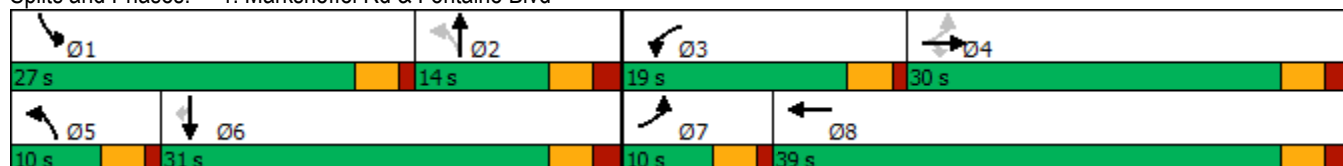
Intersection LOS: C

Intersection Capacity Utilization 80.6%

ICU Level of Service D

Analysis Period (min) 15








Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



HCM 6th TWSC
6: Marksheffel Rd & Peaceful Ridge R/O

























2040 Background Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	↗
Traffic Vol, veh/h	0	25	0	750	1129	60
Future Vol, veh/h	0	25	0	750	1129	60
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	-	-	-	250
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	26	0	789	1188	63
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	594	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	448	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	448	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	13.5	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	448	-	-		
HCM Lane V/C Ratio	-	0.059	-	-		
HCM Control Delay (s)	-	13.5	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.2	-	-		

Intersection												
Int Delay, s/veh	8.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2	177	59	2	0	168	1	56	0	1	0
Future Vol, veh/h	0	2	177	59	2	0	168	1	56	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	155	100	-	-
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	0	2	186	62	2	0	177	1	59	0	1	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	387	415	1	450	356	1	1	0	0	60	0	0
Stage 1	1	1	-	355	355	-	-	-	-	-	-	-
Stage 2	386	414	-	95	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	572	528	1084	519	570	1084	1622	-	-	1544	-	-
Stage 1	1022	895	-	662	630	-	-	-	-	-	-	-
Stage 2	637	593	-	912	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	523	470	1084	392	508	1084	1622	-	-	1544	-	-
Mov Cap-2 Maneuver	523	470	-	392	508	-	-	-	-	-	-	-
Stage 1	911	895	-	590	561	-	-	-	-	-	-	-
Stage 2	565	528	-	753	895	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.1		15.9		5.6		0					
HCM LOS	A		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1622	-	-	1068	395	1544	-	-				
HCM Lane V/C Ratio	0.109	-	-	0.176	0.163	-	-	-				
HCM Control Delay (s)	7.5	-	-	9.1	15.9	0	-	-				
HCM Lane LOS	A	-	-	A	C	A	-	-				
HCM 95th %tile Q(veh)	0.4	-	-	0.6	0.6	0	-	-				

Timings 8: Carriage Meadows Dr & Fontaine Blvd

2040 Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	168	1983	243	55	1155	53	160	3	117	108	6	122
Future Volume (vph)	168	1983	243	55	1155	53	160	3	117	108	6	122
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 Effect Green (s)	58.7	51.5	51.5	50.7	45.7	45.7	15.8	7.9	7.9	14.0	5.0	5.0
Actuated g/C Ratio	0.66	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	0.59	1.02	0.25	0.32	0.67	0.06	0.63	0.02	0.45	0.44	0.06	0.57
Control Delay	16.0	45.8	2.6	11.4	18.6	0.1	42.6	40.7	11.0	35.2	41.7	16.4
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	16.0	45.8	2.6	11.4	18.6	0.1	42.6	40.7	11.0	35.2	41.7	16.4
LOS	B	D	A	B	B	A	D	D	B	D	D	B
Approach Delay		39.3			17.5			29.4			25.6	
Approach LOS		D			B			C			C	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 88.9

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 31.3

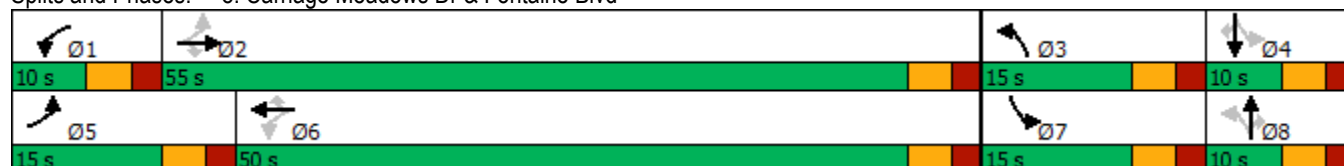
Intersection LOS: C

Intersection Capacity Utilization 86.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 8: Carriage Meadows Dr & Fontaine Blvd



HCM 6th TWSC
8: Carriage Meadows Dr & Fontaine Blvd

2040 Background Traffic
PM Peak Hour

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↰	↰	↰	↰↰	↰	↰	↰	↰	↰	↰	↰
Traffic Vol, veh/h	168	1983	243	55	1155	53	160	3	117	108	6	122
Future Vol, veh/h	168	1983	243	55	1155	53	160	3	117	108	6	122
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	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	177	2087	256	58	1216	56	168	3	123	114	6	128

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1272	0	0	2343	0	0	3168	3829	1044	2731	4029	608
Stage 1	-	-	-	-	-	-	2441	2441	-	1332	1332	-
Stage 2	-	-	-	-	-	-	727	1388	-	1399	2697	-
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	542	-	-	207	-	-	~ 4	4	226	~ 10	~ 3	439
Stage 1	-	-	-	-	-	-	~ 32	61	-	163	222	-
Stage 2	-	-	-	-	-	-	381	208	-	148	45	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	542	-	-	207	-	-	~ 2	~ 2	226	~ 3	~ 1	439
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 7	~ 101	-	~ 18	~ 31	-
Stage 1	-	-	-	-	-	-	~ 22	41	-	~ 110	160	-
Stage 2	-	-	-	-	-	-	186	150	-	~ 42	30	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	1.3		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	7	+	226	542	-	-	207	-	-	+	+	439
HCM Lane V/C Ratio	24.06	-	0.545	0.326	-	-	0.28	-	-	-	-	0.293
HCM Control Delay (s)	\$ 11407.7	-	38.5	14.8	-	-	29	-	-	-	-	16.6
HCM Lane LOS	F	-	E	B	-	-	D	-	-	-	-	C
HCM 95th %tile Q(veh)	22.9	-	2.9	1.4	-	-	1.1	-	-	-	-	1.2

























Notes												
~: Volume exceeds capacity			\$: Delay exceeds 300s			+: Computation Not Defined			*: All major volume in platoon			

Timings

1: Marksheffel Rd & Fontaine Blvd

2040 Total Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	267	48	624	756	603	155	549	227	233	523	45
Future Volume (vph)	36	267	48	624	756	603	155	549	227	233	523	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	9.0	9.0	9.0	9.0		9.0	9.0		9.0	9.0	9.0
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 Effect Green (s)	14.8	9.8	9.8	19.4	28.2	89.2	35.4	30.4	89.2	9.6	35.0	35.0
Actuated g/C Ratio	0.17	0.11	0.11	0.22	0.32	1.00	0.40	0.34	1.00	0.11	0.39	0.39
v/c Ratio	0.22	0.72	0.14	0.88	0.71	0.40	0.44	0.48	0.15	0.66	0.40	0.06
Control Delay	22.9	50.3	0.8	48.7	32.2	0.8	18.4	25.2	0.2	47.6	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	50.3	0.8	48.7	32.2	0.8	18.4	25.2	0.2	47.6	20.7	0.2
LOS	C	D	A	D	C	A	B	C	A	D	C	A
Approach Delay		40.7			27.8			17.9			27.4	
Approach LOS		D			C			B			C	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 89.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 26.6

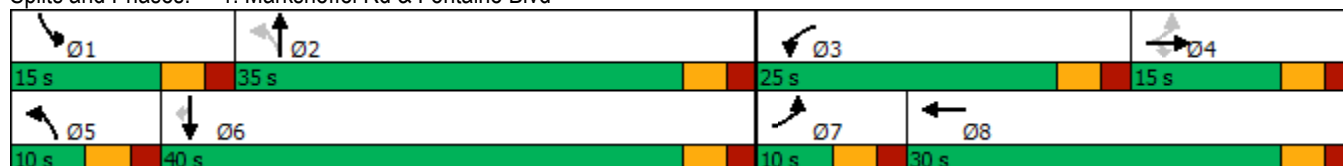
Intersection LOS: C

Intersection Capacity Utilization 64.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd










Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗	↗		↗↗	↗
Traffic Vol, veh/h	0	0	40	0	0	25	0	1183	6	0	761	20
Future Vol, veh/h	0	0	40	0	0	25	0	1183	6	0	761	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	250	-	-	250
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	0	0	42	0	0	26	0	1245	6	0	801	21

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	401	-	-	623	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-
Pot Cap-1 Maneuver	0	0	599	0	0	429	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	599	-	-	429	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

























Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	13.9	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	599 429	-	-
HCM Lane V/C Ratio	-	-	0.07 0.061	-	-
HCM Control Delay (s)	-	-	11.5 13.9	-	-
HCM Lane LOS	-	-	B B	-	-
HCM 95th %tile Q(veh)	-	-	0.2 0.2	-	-

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	35	12	1	0	49	22	16	0	61	1
Future Vol, veh/h	0	1	35	12	1	0	49	22	16	0	61	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	155	100	-	-
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	0	1	37	13	1	0	52	23	17	0	64	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	201	209	65	211	192	23	65	0	0	40	0	0
Stage 1	65	65	-	127	127	-	-	-	-	-	-	-
Stage 2	136	144	-	84	65	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	757	688	999	746	703	1054	1537	-	-	1570	-	-
Stage 1	946	841	-	877	791	-	-	-	-	-	-	-
Stage 2	867	778	-	924	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	737	665	999	699	679	1054	1537	-	-	1570	-	-
Mov Cap-2 Maneuver	737	665	-	699	679	-	-	-	-	-	-	-
Stage 1	914	841	-	847	764	-	-	-	-	-	-	-
Stage 2	837	752	-	889	841	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	8.8		10.3		4.2		0					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1537	-	-	985	697	1570	-	-				
HCM Lane V/C Ratio	0.034	-	-	0.038	0.02	-	-	-				
HCM Control Delay (s)	7.4	-	-	8.8	10.3	0	-	-				
HCM Lane LOS	A	-	-	A	B	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-				

Timings 8: Carriage Meadows Dr & Fontaine Blvd

2040 Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	618	54	30	1817	30	80	2	21	20	2	86
Future Volume (vph)	55	618	54	30	1817	30	80	2	21	20	2	86
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 Effect Green (s)	63.6	61.9	61.9	62.6	59.9	59.9	10.8	8.9	8.9	8.9	5.0	5.0
Actuated g/C Ratio	0.73	0.71	0.71	0.72	0.69	0.69	0.12	0.10	0.10	0.10	0.06	0.06
v/c Ratio	0.31	0.26	0.05	0.05	0.78	0.03	0.49	0.01	0.08	0.13	0.02	0.40
Control Delay	9.8	7.0	0.1	3.9	16.3	0.0	44.0	39.5	0.5	33.8	40.5	7.3
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	9.8	7.0	0.1	3.9	16.3	0.0	44.0	39.5	0.5	33.8	40.5	7.3
LOS	A	A	A	A	B	A	D	D	A	C	D	A
Approach Delay		6.7			15.8			35.1			12.7	
Approach LOS		A			B			D			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 87

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 14.0









Intersection LOS: B

Intersection Capacity Utilization 72.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: Carriage Meadows Dr & Fontaine Blvd

			
10 s	60 s	10 s	10 s
			
10 s	60 s	10 s	10 s

HCM 6th TWSC
8: Carriage Meadows Dr & Fontaine Blvd

2040 Total Traffic
AM Peak Hour

























Intersection												
Int Delay, s/veh	9.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↗	↘	↰	↗	↘	↰	↗	↘	↰	↗	↘
Traffic Vol, veh/h	55	618	54	30	1817	30	80	2	21	20	2	86
Future Vol, veh/h	55	618	54	30	1817	30	80	2	21	20	2	86
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	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	58	651	57	32	1913	32	84	2	22	21	2	91
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1945	0	0	708	0	0	1789	2776	326	2420	2801	957
Stage 1	-	-	-	-	-	-	767	767	-	1977	1977	-
Stage 2	-	-	-	-	-	-	1022	2009	-	443	824	-
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	297	-	-	887	-	-	~ 51	19	670	~ 17	18	258
Stage 1	-	-	-	-	-	-	361	410	-	64	106	-
Stage 2	-	-	-	-	-	-	253	102	-	564	385	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	297	-	-	887	-	-	~ 27	15	670	~ 13	14	258
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 75	35	-	44	73	-
Stage 1	-	-	-	-	-	-	291	330	-	52	102	-
Stage 2	-	-	-	-	-	-	155	98	-	436	310	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.5			0.1			189.9			49.1		
HCM LOS							F			E		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	75	35	670	297	-	-	887	-	-	44	73	258
HCM Lane V/C Ratio	1.123	0.06	0.033	0.195	-	-	0.036	-	-	0.478	0.029	0.351
HCM Control Delay (s)	238.8	114.3	10.6	20	-	-	9.2	-	-	146.6	55.8	26.3
HCM Lane LOS	F	F	B	C	-	-	A	-	-	F	F	D
HCM 95th %tile Q(veh)	6.2	0.2	0.1	0.7	-	-	0.1	-	-	1.7	0.1	1.5
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

Timings

1: Marksheffel Rd & Fontaine Blvd

2040 Total Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	907	144	474	532	466	118	242	761	794	326	65
Future Volume (vph)	64	907	144	474	532	466	118	242	761	794	326	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)	10.0	30.0	30.0	19.0	39.0		10.0	14.0		27.0	31.0	31.0
Total Split (%)	11.1%	33.3%	33.3%	21.1%	43.3%		11.1%	15.6%		30.0%	34.4%	34.4%
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)	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 Effect Green (s)	31.9	25.0	25.0	14.9	35.9	89.9	16.1	9.1	89.9	22.9	26.0	26.0
Actuated g/C Ratio	0.35	0.28	0.28	0.17	0.40	1.00	0.18	0.10	1.00	0.25	0.29	0.29
v/c Ratio	0.19	0.96	0.25	0.88	0.40	0.31	0.53	0.72	0.51	0.94	0.34	0.12
Control Delay	14.1	53.7	2.1	55.0	21.0	0.5	29.5	51.6	1.2	53.6	26.3	0.4
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	14.1	53.7	2.1	55.0	21.0	0.5	29.5	51.6	1.2	53.6	26.3	0.4
LOS	B	D	A	D	C	A	C	D	A	D	C	A
Approach Delay		44.7			25.4			15.1			43.1	
Approach LOS		D			C			B			D	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 89.9

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 31.7

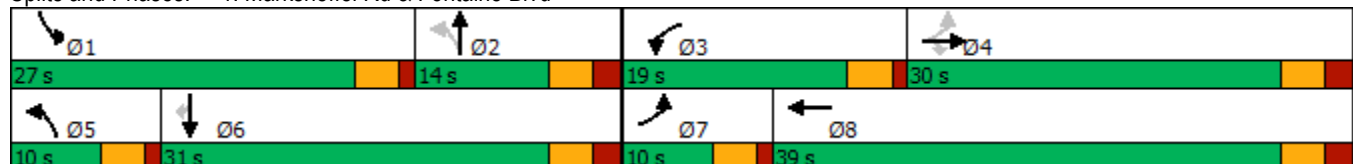
Intersection LOS: C

Intersection Capacity Utilization 82.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd










Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗	↗		↗↗	↗
Traffic Vol, veh/h	0	0	25	0	0	16	0	752	20	0	1160	60
Future Vol, veh/h	0	0	25	0	0	16	0	752	20	0	1160	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	250	-	-	250
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	0	0	26	0	0	17	0	792	21	0	1221	63

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	611	-	-	396	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-
Pot Cap-1 Maneuver	0	0	437	0	0	603	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	437	-	-	603	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

























Approach	EB	WB	NB	SB
HCM Control Delay, s	13.8	11.1	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	437 603	-	-
HCM Lane V/C Ratio	-	-	0.06 0.028	-	-
HCM Control Delay (s)	-	-	13.8 11.1	-	-
HCM Lane LOS	-	-	B B	-	-
HCM 95th %tile Q(veh)	-	-	0.2 0.1	-	-

Intersection												
Int Delay, s/veh	7.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	2	177	59	2	1	168	74	56	0	39	2
Future Vol, veh/h	3	2	177	59	2	1	168	74	56	0	39	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	155	100	-	-
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	3	2	186	62	2	1	177	78	59	0	41	2
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	505	533	42	568	475	78	43	0	0	137	0	0
Stage 1	42	42	-	432	432	-	-	-	-	-	-	-
Stage 2	463	491	-	136	43	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	478	453	1029	434	488	983	1566	-	-	1447	-	-
Stage 1	972	860	-	602	582	-	-	-	-	-	-	-
Stage 2	579	548	-	867	859	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	435	402	1029	323	433	983	1566	-	-	1447	-	-
Mov Cap-2 Maneuver	435	402	-	323	433	-	-	-	-	-	-	-
Stage 1	862	860	-	534	516	-	-	-	-	-	-	-
Stage 2	511	486	-	708	859	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.5		18.6		4.3		0					
HCM LOS	A		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1566	-	-	990	329	1447	-	-				
HCM Lane V/C Ratio	0.113	-	-	0.194	0.198	-	-	-				
HCM Control Delay (s)	7.6	-	-	9.5	18.6	0	-	-				
HCM Lane LOS	A	-	-	A	C	A	-	-				
HCM 95th %tile Q(veh)	0.4	-	-	0.7	0.7	0	-	-				

Timings
8: Carriage Meadows Dr & Fontaine Blvd

2040 Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	236	1983	243	55	1155	55	160	7	117	109	8	158
Future Volume (vph)	236	1983	243	55	1155	55	160	7	117	109	8	158
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 Effect Green (s)	59.8	51.9	51.9	50.0	45.0	45.0	15.8	7.9	7.9	14.0	5.0	5.0
Actuated g/C Ratio	0.67	0.58	0.58	0.56	0.50	0.50	0.18	0.09	0.09	0.16	0.06	0.06
v/c Ratio	0.78	1.02	0.25	0.32	0.68	0.07	0.64	0.04	0.45	0.45	0.08	0.69
Control Delay	31.6	45.0	2.6	11.3	19.3	0.1	42.8	41.1	11.1	35.4	42.1	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	45.0	2.6	11.3	19.3	0.1	42.8	41.1	11.1	35.4	42.1	23.7
LOS	C	D	A	B	B	A	D	D	B	D	D	C
Approach Delay		39.5			18.2			29.6			28.9	
Approach LOS		D			B			C			C	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 89.3

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 31.9

Intersection LOS: C

Intersection Capacity Utilization 86.2%

ICU Level of Service E













Analysis Period (min) 15

Splits and Phases: 8: Carriage Meadows Dr & Fontaine Blvd



HCM 6th TWSC
8: Carriage Meadows Dr & Fontaine Blvd

2040 Total Traffic
PM Peak Hour

Intersection													
Int Delay, s/veh	192.9												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Vol, veh/h	236	1983	243	55	1155	55	160	8	117	109	8	158	
Future Vol, veh/h	236	1983	243	55	1155	55	160	8	117	109	8	158	
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	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	248	2087	256	58	1216	58	168	8	123	115	8	166	
Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	1274	0	0	2343	0	0	3311	3973	1044	2876	4171	608	
Stage 1	-	-	-	-	-	-	2583	2583	-	1332	1332	-	
Stage 2	-	-	-	-	-	-	728	1390	-	1544	2839	-	
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	541	-	-	207	-	-	~ 3	~ 3	226	~ 7	~ 2	439	
Stage 1	-	-	-	-	-	-	~ 26	51	-	163	222	-	
Stage 2	-	-	-	-	-	-	381	208	-	120	38	-	
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	
Mov Cap-1 Maneuver	541	-	-	207	-	-	~ 1	~ 1	226	~ 1	~ 1	439	
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 15	35	-	~ -61	~ -45	-	
Stage 1	-	-	-	-	-	-	~ 14	28	-	~ 88	160	-	
Stage 2	-	-	-	-	-	-	~ 161	150	-	~ 21	21	-	
Approach	EB			WB			NB			SB			
HCM Control Delay, s	1.6			1.3			\$ 2881.4						
HCM LOS							F			-			
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3	
Capacity (veh/h)	15	35	226	541	-	-	207	-	-	-	+	+	439
HCM Lane V/C Ratio	11.228	0.241	0.545	0.459	-	-	0.28	-	-	-	-	-	0.379
HCM Control Delay (s)	\$ 5097.5	137.8	38.5	17.2	-	-	29	-	-	-	-	-	18.1
HCM Lane LOS	F	F	E	C	-	-	D	-	-	-	-	-	C
HCM 95th %tile Q(veh)	22	0.8	2.9	2.4	-	-	1.1	-	-	-	-	-	1.7
Notes													
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon					

Queuing and Blocking Report

Intersection: 7: Carriage Meadows Dr & Tract D Access/Tract E Access

Movement	EB	WB	NB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	54	23	29
Average Queue (ft)	22	9	2
95th Queue (ft)	48	27	16
Link Distance (ft)	283	311	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Carriage Meadows Dr & Fontaine Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	74	91	107	27	43	307	299	86	124	25	34	56
Average Queue (ft)	28	20	31	5	10	114	90	5	52	1	11	18
95th Queue (ft)	63	68	82	18	32	233	209	54	100	11	30	48
Link Distance (ft)		923	923	923		540	540		468	468	468	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	400				375			250				100
Storage Blk Time (%)						0	0					
Queuing Penalty (veh)						0	0					

Intersection: 8: Carriage Meadows Dr & Fontaine Blvd

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	17	104
Average Queue (ft)	2	45
95th Queue (ft)	15	84
Link Distance (ft)	350	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		160
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

Queuing and Blocking Report

Intersection: 7: Carriage Meadows Dr & Tract D Access/Tract E Access

Movement	EB	WB	NB	NB
Directions Served	LTR	LTR	L	R
Maximum Queue (ft)	85	56	49	15
Average Queue (ft)	43	24	6	1
95th Queue (ft)	71	45	30	11
Link Distance (ft)	283	311		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	155
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 8: Carriage Meadows Dr & Fontaine Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	219	962	987	257	91	338	284	38	204	37	133	127
Average Queue (ft)	98	343	487	38	30	180	146	9	102	5	59	64
95th Queue (ft)	176	849	1087	225	67	297	250	26	176	22	109	111
Link Distance (ft)		923	923	923		540	540		468	468	468	
Upstream Blk Time (%)		0	2	0								
Queuing Penalty (veh)		2	15	0								
Storage Bay Dist (ft)	400				375			250				100
Storage Blk Time (%)		0				0	0					3
Queuing Penalty (veh)		1				0	0					5

Intersection: 8: Carriage Meadows Dr & Fontaine Blvd

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	61	151
Average Queue (ft)	9	65
95th Queue (ft)	37	121
Link Distance (ft)	350	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		160
Storage Blk Time (%)	0	0
Queuing Penalty (veh)	0	0

Zone Summary

Zone wide Queuing Penalty: 24



LSC TRANSPORTATION CONSULTANTS, INC.
545 East Pikes Peak Avenue, Suite 210
Colorado Springs, CO 80903
(719) 633-2868
FAX (719) 633-5430
E-mail: lsc@lsctrans.com
Website: <http://www.lsctrans.com>

December 7, 2017

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

RE: Carriage Meadows North
Noise Impact Study
El Paso County, Colorado
LSC #174861

Dear Mr. Mark:

In response to your request, LSC Transportation Consultants, Inc. has completed a detailed analysis of the noise impacts of Marksheffel Road on the proposed Carriage Meadows North residential development. The site is located north of Fontaine Boulevard and east of Marksheffel Road within the Lorson Ranch development in El Paso County, Colorado. The site location is shown in Figure 1. LSC has completed an evaluation of the noise exposure for submittal to the El Paso County Department of Transportation in accordance with the Federal Highway Administration (FHWA) requirements.

LSC used the software program Traffic Noise Model Version 2.5—developed by FHWA—to predict the noise levels at 36 locations in the development. The locations are shown in Figure 1. The receiver points are located on the west side of the development, closest to Marksheffel Road. An elevation of five feet was assumed for the receivers.

The input data for the noise predictions included traffic volumes, roadway geometry, topographic elevations, and the locations of the receivers. The analysis was completed using the projected 2040 morning peak-hour traffic volumes on Marksheffel Road from the *Carriage Meadows North Traffic Impact Study* by LSC dated December 7, 2017. Figure 1 shows the 2040 traffic volumes. The analysis assumes the future cross section of Marksheffel Road with two through lanes in each direction.

The results of the noise prediction show that in the year 2040, all locations have predicted noise levels that would not exceed 67 decibels Leq. The noise analysis inputs and outputs are attached.

Mr. Jeff Mark
Carriage Meadows North Noise Impact Study

Page 2

December 7, 2016


* * * * *

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

Respectfully submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

By


Kirstin D. Ferrin, P.E.
Senior Transportation Engineer

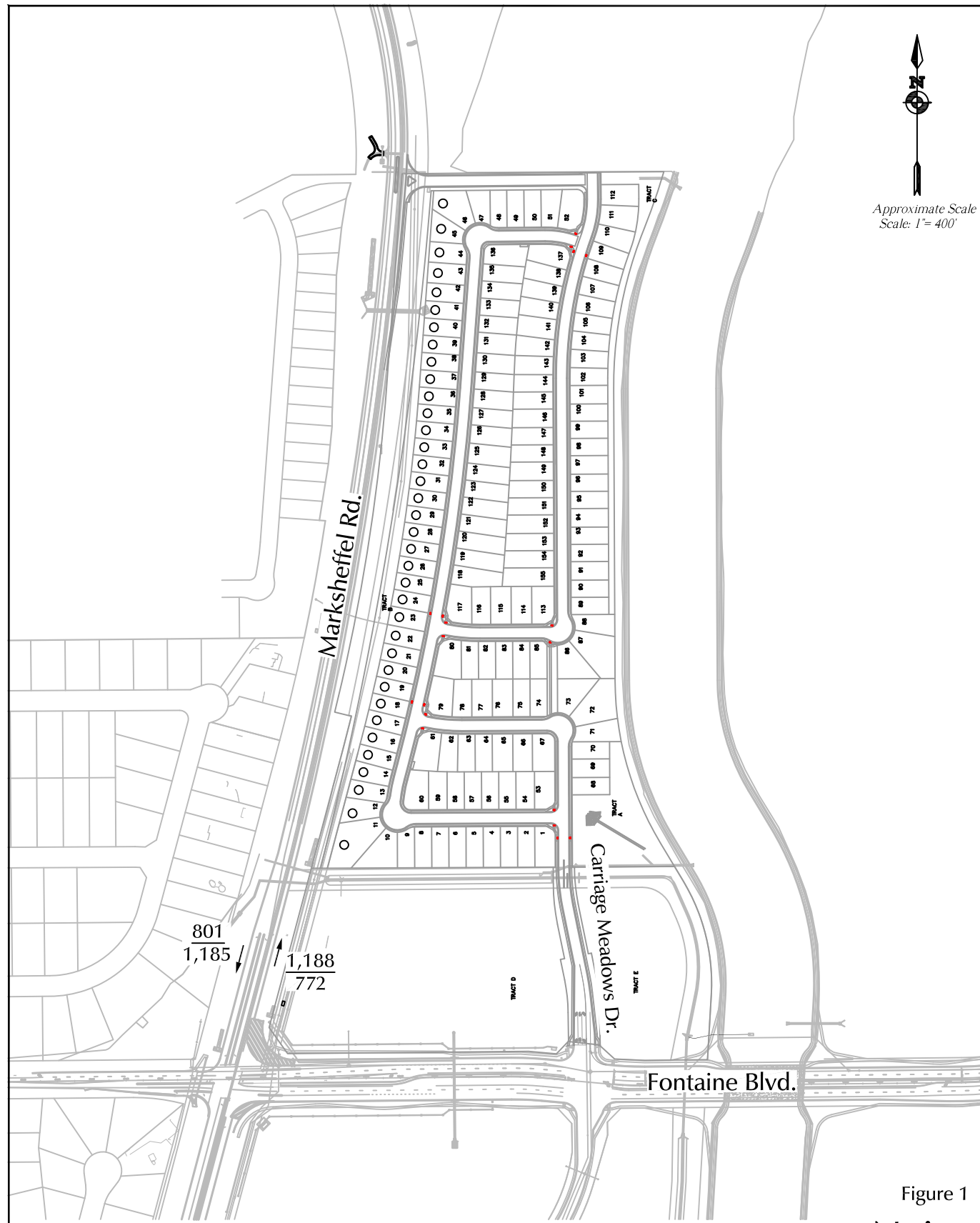


KDF:bjwb

Enclosures: Figure 1
Noise Analysis Inputs/Outputs



Approximate Scale
Scale: 1"= 400'



LEGEND:
○ = Receiver Location
XXX
XXX = AM 2040 Peak Hour Total
 PM 2040 Peak Hour Total



Figure 1
**Noise
Analysis Data**
Carriage Meadows North (LSC #174860)

INPUT: RECEIVERS
Carriage Meadows North

LSC											
KDF											
INPUT: RECEIVERS											
PROJECT/CONTRACT:	Carriage Meadows North										
RUN:	2040 Total AM Traffic										
Receiver											
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active
			X	Y	Z	above	Existing	Impact Criteria		NR	in
						Ground	LAeq1h	LAeq1h	Sub'l	Goal	Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Lot 11	1	1	20,370.6	23,326.8	5,720.00	4.92	0.00	66	10.0	8.0	Y
Lot 12	2	1	20,395.0	23,418.8	5,719.50	4.92	0.00	66	10.0	8.0	Y
Lot 13	3	1	20,413.0	23,486.9	5,720.00	4.92	0.00	66	10.0	8.0	Y
Lot 14	4	1	20,426.8	23,538.8	5,720.50	4.92	0.00	66	10.0	8.0	Y
Lot 15	5	1	20,440.1	23,589.3	5,721.00	4.92	0.00	66	10.0	8.0	Y
Lot 16	6	1	20,453.2	23,639.6	5,721.50	4.92	0.00	66	10.0	8.0	Y
Lot 17	7	1	20,465.8	23,690.1	5,721.75	4.92	0.00	66	10.0	8.0	Y
Lot 18	8	1	20,477.6	23,738.8	5,722.00	4.92	0.00	66	10.0	8.0	Y
Lot 19	9	1	20,488.9	23,787.6	5,722.50	4.92	0.00	66	10.0	8.0	Y
Lot 20	10	1	20,499.8	23,836.4	5,723.00	4.92	0.00	66	10.0	8.0	Y
Lot 21	11	1	20,510.3	23,885.4	5,723.25	4.92	0.00	66	10.0	8.0	Y
Lot 22	12	1	20,520.8	23,936.9	5,723.50	4.92	0.00	66	10.0	8.0	Y
Lot 23	13	1	20,531.4	23,990.9	5,724.00	4.92	0.00	66	10.0	8.0	Y
Lot 24	14	1	20,541.0	24,042.5	5,724.50	4.92	0.00	66	10.0	8.0	Y
Lot 25	15	1	20,549.7	24,091.5	5,724.75	4.92	0.00	66	10.0	8.0	Y
Lot 26	16	1	20,558.0	24,140.7	5,725.25	4.92	0.00	66	10.0	8.0	Y
Lot 27	17	1	20,565.8	24,189.9	5,725.50	4.92	0.00	66	10.0	8.0	Y
Lot 28	18	1	20,573.3	24,239.1	5,726.00	4.92	0.00	66	10.0	8.0	Y
Lot 29	19	1	20,580.3	24,288.4	5,726.25	4.92	0.00	66	10.0	8.0	Y
Lot 30	20	1	20,586.9	24,337.8	5,726.75	4.92	0.00	66	10.0	8.0	Y
Lot 31	21	1	20,593.1	24,387.3	5,727.00	4.92	0.00	66	10.0	8.0	Y
Lot 32	22	1	20,598.9	24,436.7	5,727.50	4.92	0.00	66	10.0	8.0	Y

INPUT: RECEIVERS**Carriage Meadows North**

Lot 33	23	1	20,604.2	24,486.3	5,727.75	4.92	0.00	66	10.0	8.0	Y
Lot 34	24	1	20,609.2	24,535.8	5,728.25	4.92	0.00	66	10.0	8.0	Y
Lot 35	25	1	20,613.7	24,585.5	5,728.50	4.92	0.00	66	10.0	8.0	Y
Lot 36	26	1	20,617.8	24,635.1	5,729.00	4.92	0.00	66	10.0	8.0	Y
Lot 37	27	1	20,621.5	24,685.1	5,729.25	4.92	0.00	66	10.0	8.0	Y
Lot 38	28	1	20,625.2	24,735.4	5,729.75	4.92	0.00	66	10.0	8.0	Y
Lot 39	29	1	20,628.9	24,785.8	5,730.00	4.92	0.00	66	10.0	8.0	Y
Lot 40	30	1	20,632.6	24,836.2	5,730.25	4.92	0.00	66	10.0	8.0	Y
Lot 41	31	1	20,636.2	24,886.5	5,730.75	4.92	0.00	66	10.0	8.0	Y
Lot 42	32	1	20,640.0	24,938.1	5,731.25	4.92	0.00	66	10.0	8.0	Y
Lot 43	33	1	20,644.1	24,994.4	5,731.50	4.92	0.00	66	10.0	8.0	Y
Lot 44	34	1	20,648.4	25,054.2	5,732.00	4.92	0.00	66	10.0	8.0	Y
Lot 45	35	1	20,653.5	25,123.3	5,732.25	4.92	0.00	66	10.0	8.0	Y
Lot 46	36	1	20,658.9	25,197.3	5,732.75	4.92	0.00	66	10.0	8.0	Y

INPUT: ROADWAYS
Carriage Meadows North

LSC					6 December 2017						
KDF					TNM 2.5						
INPUT: ROADWAYS							Average pavement type shall be used unless				
PROJECT/CONTRACT:	Carriage Meadows North					a State highway agency substantiates the use					
RUN:	2040 Total AM Traffic					of a different type with the approval of FHWA					
Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
NB Marksheffel Rd	24.0	point1	1	20,068.0	22,700.4	5,714.00	Signal	0.00	50	Average	
		point4	4	20,091.0	22,789.0	5,715.00				Average	
		point5	5	20,114.3	22,878.7	5,716.00				Average	
		point6	6	20,137.6	22,968.3	5,717.00				Average	
		point7	7	20,160.4	23,056.2	5,718.00				Average	
		point8	8	20,184.2	23,147.8	5,719.00				Average	
		point9	9	20,207.4	23,237.0	5,720.00				Average	
		point10	10	20,230.8	23,327.1	5,721.00				Average	
		point11	11	20,254.5	23,418.6	5,722.00				Average	
		point12	12	20,275.4	23,508.3	5,723.00				Average	
		point13	13	20,295.9	23,599.5	5,724.00				Average	
		point14	14	20,315.5	23,692.8	5,725.00				Average	
		point15	15	20,335.1	23,784.0	5,726.00				Average	
		point16	16	20,353.2	23,874.5	5,727.00				Average	
		point17	17	20,371.0	23,967.3	5,728.00				Average	
		point18	18	20,388.0	24,059.5	5,729.00				Average	
		point19	19	20,405.5	24,159.5	5,730.00				Average	
		point20	20	20,426.4	24,285.0	5,731.00				Average	
		point21	21	20,453.4	24,461.7	5,732.00				Average	
		point22	22	20,481.6	24,668.7	5,733.00				Average	
		point23	23	20,504.9	24,869.1	5,734.00				Average	
		point24	24	20,523.1	25,060.3	5,735.00				Average	
		point25	25	20,538.2	25,216.7	5,736.00				Average	
		point26	26	20,543.9	25,294.1	5,737.00				Average	
		point27	27	20,546.2	25,361.6	5,738.00				Average	

INPUT: ROADWAYS
Carriage Meadows North

		point28	28	20,547.0	25,413.6	5,739.00				Average	
		point29	29	20,544.9	25,460.9	5,740.00				Average	
		point30	30	20,542.6	25,503.4	5,741.00				Average	
		point31	31	20,538.9	25,539.7	5,742.00				Average	
		point32	32	20,535.7	25,573.4	5,743.00				Average	
		point33	33	20,529.9	25,606.3	5,744.00				Average	
		point34	34	20,524.9	25,637.5	5,745.00				Average	
		point35	35	20,519.8	25,666.0	5,746.00				Average	
		point36	36	20,515.3	25,693.1	5,747.00				Average	
		point37	37	20,507.9	25,721.8	5,748.00				Average	
		point38	38	20,501.8	25,749.0	5,749.00				Average	
		point39	39	20,495.1	25,776.3	5,750.00				Average	
		point40	40	20,486.4	25,804.3	5,751.00				Average	
		point41	41	20,479.1	25,830.5	5,752.00				Average	
		point42	42	20,470.8	25,857.8	5,753.00				Average	
		point43	43	20,459.9	25,885.7	5,754.00				Average	
		point44	44	20,451.3	25,910.5	5,755.00				Average	
		point45	45	20,440.5	25,938.7	5,756.00				Average	
		point46	46	20,430.0	25,964.9	5,757.00				Average	
		point47	47	20,419.1	25,989.9	5,758.00				Average	
		point48	48	20,406.7	26,017.8	5,759.00				Average	
		point49	49	20,394.8	26,045.0	5,760.00				Average	
		point50	50	20,379.2	26,074.4	5,761.00				Average	
		point3	3	20,361.3	26,105.6	5,762.00					
SB Marksheffel Rd	24.0	point51	51	20,303.4	26,134.1	5,762.00				Average	
		point53	53	20,319.6	26,103.1	5,761.00				Average	
		point54	54	20,336.0	26,072.9	5,760.00				Average	
		point55	55	20,350.9	26,044.0	5,759.00				Average	
		point56	56	20,364.7	26,016.2	5,758.00				Average	
		point57	57	20,378.5	25,989.0	5,757.00				Average	
		point58	58	20,387.9	25,964.2	5,756.00				Average	
		point59	59	20,399.8	25,938.0	5,755.00				Average	
		point60	60	20,410.4	25,912.1	5,754.00				Average	
		point61	61	20,418.6	25,886.9	5,753.00				Average	
		point62	62	20,428.7	25,860.3	5,752.00				Average	
		point63	63	20,437.1	25,834.2	5,751.00				Average	
		point64	64	20,444.9	25,808.0	5,750.00				Average	
		point65	65	20,452.3	25,781.7	5,749.00				Average	
		point66	66	20,461.0	25,754.0	5,748.00				Average	

INPUT: ROADWAYS
Carriage Meadows North

	point67	67	20,465.7	25,728.6	5,747.00				Average	
	point68	68	20,474.3	25,699.9	5,746.00				Average	
	point69	69	20,479.1	25,673.4	5,745.00				Average	
	point70	70	20,483.9	25,647.3	5,744.00				Average	
	point71	71	20,489.3	25,617.5	5,743.00				Average	
	point72	72	20,494.3	25,586.9	5,742.00				Average	
	point73	73	20,498.5	25,553.2	5,741.00				Average	
	point74	74	20,502.1	25,518.5	5,740.00				Average	
	point75	75	20,505.2	25,481.7	5,739.00				Average	
	point76	76	20,508.3	25,437.3	5,738.00				Average	
	point77	77	20,506.9	25,381.1	5,737.00				Average	
	point78	78	20,504.4	25,293.3	5,736.00				Average	
	point79	79	20,495.4	25,166.9	5,735.00				Average	
	point80	80	20,478.7	24,980.4	5,734.00				Average	
	point81	81	20,455.9	24,782.0	5,733.00				Average	
	point82	82	20,431.0	24,579.0	5,732.00				Average	
	point83	83	20,402.9	24,385.1	5,731.00				Average	
	point84	84	20,378.4	24,233.2	5,730.00				Average	
	point85	85	20,359.8	24,119.7	5,729.00				Average	
	point86	86	20,342.6	24,027.7	5,728.00				Average	
	point87	87	20,325.4	23,936.2	5,727.00				Average	
	point88	88	20,307.5	23,844.6	5,726.00				Average	
	point89	89	20,288.9	23,753.4	5,725.00				Average	
	point90	90	20,269.7	23,662.7	5,724.00				Average	
	point91	91	20,249.4	23,572.4	5,723.00				Average	
	point92	92	20,228.9	23,481.2	5,722.00				Average	
	point93	93	20,207.5	23,390.4	5,721.00				Average	
	point94	94	20,184.3	23,304.4	5,720.00				Average	
	point95	95	20,162.6	23,214.0	5,719.00				Average	
	point96	96	20,137.9	23,125.4	5,718.00				Average	
	point97	97	20,114.5	23,032.5	5,717.00				Average	
	point98	98	20,090.8	22,941.3	5,716.00				Average	
	point99	99	20,067.2	22,850.2	5,715.00				Average	
	point52	52	20,036.6	22,731.7	5,714.00					

INPUT: TRAFFIC FOR LAeq1h Volumes
Carriage Meadows North

LSC												
KDF												
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	Carriage Meadows North											
RUN:	2040 Total AM Traffic											
Roadway	Points											
Name	Name	No.	Segment		MTrucks		HTrucks		Buses		Motorcycles	
			Autos									
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
NB Marksheffel Rd	point1	1	1128	55	36	55	24	55	0	0	0	0
	point4	4	1128	55	36	55	24	55	0	0	0	0
	point5	5	1128	55	36	55	24	55	0	0	0	0
	point6	6	1128	55	36	55	24	55	0	0	0	0
	point7	7	1128	55	36	55	24	55	0	0	0	0
	point8	8	1128	55	36	55	24	55	0	0	0	0
	point9	9	1128	55	36	55	24	55	0	0	0	0
	point10	10	1128	55	36	55	24	55	0	0	0	0
	point11	11	1128	55	36	55	24	55	0	0	0	0
	point12	12	1128	55	36	55	24	55	0	0	0	0
	point13	13	1128	55	36	55	24	55	0	0	0	0
	point14	14	1128	55	36	55	24	55	0	0	0	0
	point15	15	1128	55	36	55	24	55	0	0	0	0
	point16	16	1128	55	36	55	24	55	0	0	0	0
	point17	17	1128	55	36	55	24	55	0	0	0	0
	point18	18	1128	55	36	55	24	55	0	0	0	0
	point19	19	1128	55	36	55	24	55	0	0	0	0
	point20	20	1128	55	36	55	24	55	0	0	0	0
	point21	21	1128	55	36	55	24	55	0	0	0	0
	point22	22	1128	55	36	55	24	55	0	0	0	0
	point23	23	1128	55	36	55	24	55	0	0	0	0
	point24	24	1128	55	36	55	24	55	0	0	0	0
	point25	25	1128	55	36	55	24	55	0	0	0	0

INPUT: TRAFFIC FOR LAeq1h Volumes
Carriage Meadows North

	point26	26	1128	55	36	55	24	55	0	0	0	0
	point27	27	1128	55	36	55	24	55	0	0	0	0
	point28	28	1128	55	36	55	24	55	0	0	0	0
	point29	29	1128	55	36	55	24	55	0	0	0	0
	point30	30	1128	55	36	55	24	55	0	0	0	0
	point31	31	1128	55	36	55	24	55	0	0	0	0
	point32	32	1128	55	36	55	24	55	0	0	0	0
	point33	33	1128	55	36	55	24	55	0	0	0	0
	point34	34	1128	55	36	55	24	55	0	0	0	0
	point35	35	1128	55	36	55	24	55	0	0	0	0
	point36	36	1128	55	36	55	24	55	0	0	0	0
	point37	37	1128	55	36	55	24	55	0	0	0	0
	point38	38	1128	55	36	55	24	55	0	0	0	0
	point39	39	1128	55	36	55	24	55	0	0	0	0
	point40	40	1128	55	36	55	24	55	0	0	0	0
	point41	41	1128	55	36	55	24	55	0	0	0	0
	point42	42	1128	55	36	55	24	55	0	0	0	0
	point43	43	1128	55	36	55	24	55	0	0	0	0
	point44	44	1128	55	36	55	24	55	0	0	0	0
	point45	45	1128	55	36	55	24	55	0	0	0	0
	point46	46	1128	55	36	55	24	55	0	0	0	0
	point47	47	1128	55	36	55	24	55	0	0	0	0
	point48	48	1128	55	36	55	24	55	0	0	0	0
	point49	49	1128	55	36	55	24	55	0	0	0	0
	point50	50	1128	55	36	55	24	55	0	0	0	0
	point3	3										
SB Marksheffel Rd	point51	51	761	55	24	55	16	55	0	0	0	0
	point53	53	761	55	24	55	16	55	0	0	0	0
	point54	54	761	55	24	55	16	55	0	0	0	0
	point55	55	761	55	24	55	16	55	0	0	0	0
	point56	56	761	55	24	55	16	55	0	0	0	0
	point57	57	761	55	24	55	16	55	0	0	0	0
	point58	58	761	55	24	55	16	55	0	0	0	0
	point59	59	761	55	24	55	16	55	0	0	0	0
	point60	60	761	55	24	55	16	55	0	0	0	0
	point61	61	761	55	24	55	16	55	0	0	0	0

INPUT: TRAFFIC FOR LAeq1h Volumes**Carriage Meadows North**

	point62	62	761	55	24	55	16	55	0	0	0	0
	point63	63	761	55	24	55	16	55	0	0	0	0
	point64	64	761	55	24	55	16	55	0	0	0	0
	point65	65	761	55	24	55	16	55	0	0	0	0
	point66	66	761	55	24	55	16	55	0	0	0	0
	point67	67	761	55	24	55	16	55	0	0	0	0
	point68	68	761	55	24	55	16	55	0	0	0	0
	point69	69	761	55	24	55	16	55	0	0	0	0
	point70	70	761	55	24	55	16	55	0	0	0	0
	point71	71	761	55	24	55	16	55	0	0	0	0
	point72	72	761	55	24	55	16	55	0	0	0	0
	point73	73	761	55	24	55	16	55	0	0	0	0
	point74	74	761	55	24	55	16	55	0	0	0	0
	point75	75	761	55	24	55	16	55	0	0	0	0
	point76	76	761	55	24	55	16	55	0	0	0	0
	point77	77	761	55	24	55	16	55	0	0	0	0
	point78	78	761	55	24	55	16	55	0	0	0	0
	point79	79	761	55	24	55	16	55	0	0	0	0
	point80	80	761	55	24	55	16	55	0	0	0	0
	point81	81	761	55	24	55	16	55	0	0	0	0
	point82	82	761	55	24	55	16	55	0	0	0	0
	point83	83	761	55	24	55	16	55	0	0	0	0
	point84	84	761	55	24	55	16	55	0	0	0	0
	point85	85	761	55	24	55	16	55	0	0	0	0
	point86	86	761	55	24	55	16	55	0	0	0	0
	point87	87	761	55	24	55	16	55	0	0	0	0
	point88	88	761	55	24	55	16	55	0	0	0	0
	point89	89	761	55	24	55	16	55	0	0	0	0
	point90	90	761	55	24	55	16	55	0	0	0	0
	point91	91	761	55	24	55	16	55	0	0	0	0
	point92	92	761	55	24	55	16	55	0	0	0	0
	point93	93	761	55	24	55	16	55	0	0	0	0
	point94	94	761	55	24	55	16	55	0	0	0	0
	point95	95	761	55	24	55	16	55	0	0	0	0
	point96	96	761	55	24	55	16	55	0	0	0	0
	point97	97	761	55	24	55	16	55	0	0	0	0

INPUT: TRAFFIC FOR LAeq1h Volumes

Carriage Meadows North

	point98	98	761	55	24	55	16	55	0	0	0	0
	point99	99	761	55	24	55	16	55	0	0	0	0
	point52	52										

RESULTS: SOUND LEVELS

Carriage Meadows North

LSC												
KDF												
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:												
RUN:												
BARRIER DESIGN:												
ATMOSPHERICS:												
Receiver												
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h					Calculated	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated
							Sub'l Inc					minus
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Lot 11	1	1	0.0	64.9	67	64.9	10	----	64.9	0.0	8	-8.0
Lot 12	2	1	0.0	64.8	67	64.8	10	----	64.8	0.0	8	-8.0
Lot 13	3	1	0.0	64.7	67	64.7	10	----	64.7	0.0	8	-8.0
Lot 14	4	1	0.0	64.6	67	64.6	10	----	64.6	0.0	8	-8.0
Lot 15	5	1	0.0	64.4	67	64.4	10	----	64.4	0.0	8	-8.0
Lot 16	6	1	0.0	64.3	67	64.3	10	----	64.3	0.0	8	-8.0
Lot 17	7	1	0.0	64.3	67	64.3	10	----	64.3	0.0	8	-8.0
Lot 18	8	1	0.0	64.3	67	64.3	10	----	64.3	0.0	8	-8.0
Lot 19	9	1	0.0	64.3	67	64.3	10	----	64.3	0.0	8	-8.0
Lot 20	10	1	0.0	64.2	67	64.2	10	----	64.2	0.0	8	-8.0
Lot 21	11	1	0.0	64.1	67	64.1	10	----	64.1	0.0	8	-8.0
Lot 22	12	1	0.0	64.0	67	64.0	10	----	64.0	0.0	8	-8.0
Lot 23	13	1	0.0	63.9	67	63.9	10	----	63.9	0.0	8	-8.0
Lot 24	14	1	0.0	63.9	67	63.9	10	----	63.9	0.0	8	-8.0
Lot 25	15	1	0.0	63.8	67	63.8	10	----	63.8	0.0	8	-8.0
Lot 26	16	1	0.0	63.9	67	63.9	10	----	63.9	0.0	8	-8.0
Lot 27	17	1	0.0	63.9	67	63.9	10	----	63.9	0.0	8	-8.0
Lot 28	18	1	0.0	63.9	67	63.9	10	----	63.9	0.0	8	-8.0
Lot 29	19	1	0.0	64.0	67	64.0	10	----	64.0	0.0	8	-8.0
Lot 30	20	1	0.0	64.0	67	64.0	10	----	64.0	0.0	8	-8.0
Lot 31	21	1	0.0	64.1	67	64.1	10	----	64.1	0.0	8	-8.0
Lot 32	22	1	0.0	64.3	67	64.3	10	----	64.3	0.0	8	-8.0
Lot 33	23	1	0.0	64.4	67	64.4	10	----	64.4	0.0	8	-8.0
Lot 34	24	1	0.0	64.6	67	64.6	10	----	64.6	0.0	8	-8.0

RESULTS: SOUND LEVELS
Carriage Meadows North

Lot 35	25	1	0.0	64.7	67	64.7	10	----	64.7	0.0	8	-8.0
Lot 36	26	1	0.0	65.0	67	65.0	10	----	65.0	0.0	8	-8.0
Lot 37	27	1	0.0	65.2	67	65.2	10	----	65.2	0.0	8	-8.0
Lot 38	28	1	0.0	65.3	67	65.3	10	----	65.3	0.0	8	-8.0
Lot 39	29	1	0.0	65.5	67	65.5	10	----	65.5	0.0	8	-8.0
Lot 40	30	1	0.0	65.6	67	65.6	10	----	65.6	0.0	8	-8.0
Lot 41	31	1	0.0	65.8	67	65.8	10	----	65.8	0.0	8	-8.0
Lot 42	32	1	0.0	65.9	67	65.9	10	----	65.9	0.0	8	-8.0
Lot 43	33	1	0.0	66.0	67	66.0	10	----	66.0	0.0	8	-8.0
Lot 44	34	1	0.0	66.1	67	66.1	10	----	66.1	0.0	8	-8.0
Lot 45	35	1	0.0	66.2	67	66.2	10	----	66.2	0.0	8	-8.0
Lot 46	36	1	0.0	66.1	67	66.1	10	----	66.1	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		36	0.0	0.0	0.0							
All Impacted		0	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							