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this was a condition of approval on PUDSP...

For File
By: Elizabeth Nijkamp
Date:04/01/2020
El Paso County Planning & Community Development

Carriage Meadows Townhomes
Traffic Impact Analysis
PUDSP-19-005
(LSC #184720)
February 25, 2020

Traffic Engineer's Statement

This traffic report and supporting
comport with the standard of care
prepared in general conformance w

a. The fair share attributed to Carriage Meadows South Filing No. 2 shall be deposited as escrow in the amounts of $10,453 and $10,909 respectively for the intersections identified above, as identified in the Traffic Impact Analysis dated January 13, 2020, showing the proportionate impacts of the Lorson Ranch subdivision filings that are anticipated to add traffic to these intersections to a level warranting signalization or other improvements. An escrow agreement, including a financial assurance estimate for the intersection signalization improvements, as approved by the Planning and Community Development Department Director and the County Attorney's Office, shall be completed and escrow deposited prior to recording the final plat.

b. A decision regarding the County's preferred intersection option (signal, roundabout or channelized tee) for the Lorson Boulevard / Marksheffel Road intersection will be provided upon receipt of future warrant studies.

JEFFREY D. LORSON 31684 2-26-20 PROFESSIONAL ENGINEER

Comment

Developer's Statement

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

3/18/20
Date

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February 25, 2020

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

RE: Carriage Meadows Townhomes
El Paso County, Colorado
Traffic Impact Analysis
(2/25/2020)
LSC #184720

Dear Mr. Mark:

LSC Transportation Consultants, Inc. has prepared this traffic impact analysis for the multifamily residential development to be located south of Fontaine Boulevard and east of Carriage Meadows Drive within the Lorson Ranch development in El Paso County, Colorado. The site location is shown in 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, Marksheffel Road/Lorson Boulevard, and Carriage Meadows Drive/Fontaine Boulevard and the proposed site access to Carriage Meadows Drive;
- Recommendations for street functional classification, traffic control, and auxiliary turn lanes.

SITE DEVELOPMENT AND LAND USE

Land Use

The parcel south of Fontaine Boulevard and east of Carriage Meadows Drive is planned to be developed with 49 townhomes. Access is proposed to Carriage Meadows Drive about 575 feet south of Fontaine Boulevard. An additional access is proposed via an extension of Rubicon Drive on the south end of the site. The site plan is shown in Figure 2.

The parcel located just west of the site is 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 that future commercial parcel would be to Carriage Meadows Drive aligning with the currently proposed townhome access.

Sight Distance

Figure 3 shows the sight distance analysis at the proposed access to Carriage Meadows Drive. The figure shows the required entering sight distance for driveways based the criteria for passenger cars contained in Table 2-35 of the El Paso County *Engineering Criteria Manual* (ECM). The required sight distance to the north is based on an anticipated southbound posted speed limit of 35 miles per hour (mph) between Fontaine & Fire Steel (consistent with the standard posted speed limit of an Urban Collector street). The required sight distance to the south is based on an anticipated northbound speed limit of 25 mph between Mandan & Fire Steel. The 200-foot horizontal curve centerline radius south of Fire Steel is consistent with the ECM-prescribed maximum centerline radius of an urban local street (which has a corresponding 25-mph posted/design speed). As shown in Figure 3, the sight distance criteria can be met at the proposed access point in both directions.

Figure 3 also shows the sight distance analysis at the proposed intersection of Fire Steel Drive and Rubicon Drive. The figure shows the required entering sight distance for driveways based the criteria for passenger cars contained in Table 2-35 of the ECM and the required stopping sight distance based on the criteria contained in Table 2-17 of the ECM. As shown in Figure 3, the sight distance criteria can be met in both directions at this intersection.

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 55 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 4 shows the recent traffic volumes at the intersection of Marksheffel Road/Fontaine Boulevard. The traffic volumes were based on traffic counts conducted by LSC in March 2018. 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: Level of Service Delay Ranges

	Signalized Intersections	Unsignalized Intersections
Level of Service	Average Control Delay (seconds per vehicle)	Average Control Delay (seconds per vehicle)[(1)]
A	10.0 sec or less	10.0 sec or less
B	10.1-20.0 sec	10.1-15.0 sec
C	20.1-35.0 sec	15.1-25.0 sec
D	35.1-55.0 sec	25.1-35.0 sec
E	55.1-80.0 sec	35.1-50.0 sec
F	80.1 sec or more	50.1 sec or more
(1) For unsignalized intersections if V/C ratio is greater than 1.0 the level of service is LOS F regardless of the projected average control		

The intersection of Marksheffel/Fontaine was analyzed to determine the existing levels of service using Synchro. Figure 4 shows the level of service analysis results. As shown in the figure, all movements at 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 proposed multifamily development. The short-term background traffic volumes are shown in Figure 5. The background traffic volumes are based on the existing traffic volumes shown in Figure 4 with a portion of the volumes assumed to be rerouted with the construction of Lorson Boulevard from Marksheffel Road to Lamprey Drive including crossing both the Jimmy Camp Creek main channel and east tributary.

The short-term background traffic also includes additional traffic generated by buildout of the residential portion of Lorson Ranch subdivisions north of Lorson Boulevard between Jimmy Camp Creek and the east tributary, the Carriage Meadows North and Carriage Meadows South subdivisions located west of Jimmy Camp Creek, Lorson Ranch East Filings 1 and 2, Creekside at Lorson Ranch Filing 1, and the school located northeast of Fontaine Boulevard and Lamprey Drive. The background traffic assumes zero traffic generated by this townhome project.

2040 BACKGROUND TRAFFIC

Figure 6 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 (excluding the traffic projected to be generated by currently proposed multifamily development) and traffic volumes shown in the *Marksheffel Road South Corridor Preservation Plan* dated July 2014. Appendix Table 1 shows the trip generation estimates for all existing and future land uses assumed to be built out by 2040 in the Lorson Ranch development. The 2040 background volumes also assume full buildout of the street network within Lorson Ranch but assume Meridian Road has not been extended south to Fontaine Boulevard.

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, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). Table 2 shows the results of the trip generation estimates.

As shown in Table 2, the site is projected to generate about 359 new vehicle-trips on the average weekday, with about one-half of the vehicles entering and one-half of the vehicles exiting in a 24-hour period. During the morning peak hour, which generally occurs for one hour between 6:30 a.m. and 8:30 a.m., about 5 vehicles would enter and 17 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:30 p.m. and 6:30 p.m., about 17 vehicles would enter and 10 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 7 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; the roadway network; and the most recent traffic counts conducted at the intersection of Marksheffel/Fontaine. The number of external vehicle-trips were based on the internal trip estimates shown in Appendix Table 2.

Figures 8 and 9 show the short-term and long-term site-generated traffic volume estimates, respectively. These volumes were determined by first assigning the internal vehicle-trips to the street network based on the location of the planned school site located northeast of the intersection of Fontaine Boulevard and Lamprey Drive and the future retail sites located near the intersection of Fontaine Boulevard and Carriage Meadows Drive. The short-term internal trip assignment included only trips to and from the school site. For the short-term scenario, the retail internal trips were included in the external trip assignment. The long-term internal trip assignment included both trips to and from the school and the retail sites.

The external vehicle-trips were then assigned to the street network by applying the trip distribution percentages (from Figure 7) to the external trip generation estimates. The internal and external site-generated traffic volumes were then summed to determine the total site-generated traffic volumes.

PROJECTED TOTAL TRAFFIC

Figure 10a 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 5) plus the short-term site-generated traffic volumes (from Figure 8).

Figure 10b shows the lane geometry, traffic control, and level of service at the key area intersections based on the short-term total volumes.

Figure 11a shows the 2040 total traffic volumes. These 2040 total traffic volumes are the sum of the 2040 background traffic volumes (from Figure 6) plus the long-term site-generated traffic volumes (from Figure 9).

Figure 11b shows the lane geometry, traffic control, and level of service at the key area intersections based on the 2040 total volumes.

PROJECTED LEVELS OF SERVICE

The intersections of Marksheffel Road/Fontaine Boulevard, Marksheffel Road/Lorson Boulevard, and Fontaine Boulevard/Carriage Meadows and the proposed site access to Carriage Meadows Drive 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 5, 6, 10b, and 11b.

Marksheffel/Fontaine

The signal-controlled Marksheffel Road/Fontaine Boulevard intersection is projected to continue to operate at level of service D or better for all movements based on the short-term total traffic volumes. By 2040, this intersection is projected to operate at an overall LOS D or better during the peak hours; however, the southbound left-turn and westbound left-turn movements are projected to operate at LOS E during the afternoon peak hour based on both the background and total traffic volumes.

Marksheffel/Lorson

Unsignalized (Stop Sign-Controlled) and Signalized Intersection Traffic Control

The westbound left-turn movement at the intersection of Marksheffel/Lorson is projected to operate at LOS F during the morning and afternoon peak hours, if this intersection remains a conventional, stop sign-controlled, full-movement intersection. Assuming a conventional, signal-controlled intersection, all movements are projected to operate at LOS B or better during the peak hours based on the 2040 total traffic volumes.

Alternative Intersection Configuration/Traffic Control

The following are two potential alternatives to a conventional full-movement intersection (stop sign-controlled or signal-controlled, for which analysis results are presented in the preceding paragraph). These include modern roundabout and channelized-T type intersections.

Modern Roundabout Intersection

A modern roundabout intersection at Lorson/Marksheffel (hypothetically) would initially be a single-lane roundabout, but would need to be designed to be expandable to a two-lane roundabout.

By 2040 it was assumed that the intersection would be expanded to a two-lane roundabout. Based on the 2040 total traffic volumes the westbound approach is projected to operate at LOS D (25.5 seconds control delay) during the peak hour.

Advantages:

- Generally, modern roundabouts have safety advantages over conventional four-leg signal-controlled intersections. This is because crashes tend to be lower speed, there are fewer conflict points, and the types (angles) of crashes tend to be those that generally result in less severe accidents. Granted, as a conventional T intersection (which would be the case until (and if) a fourth leg is added) this intersection would have significantly fewer conflict points than a four-leg conventional intersection.
- A roundabout may be more aesthetically appealing than a traditional signal-controlled intersection and generally lower traffic noise levels.
- Long-term operation and maintenance cost is likely to be lower with a roundabout than a traffic signal.

Disadvantages:

- The travel speed through the intersection compared with a signalized intersection during the signal green phase would be slower for through traffic on Marksheffel Road. This may affect travel times along the corridor if, in the future, other Marksheffel intersections to the north and south are controlled by a series of coordinated traffic signals. However, the average intersection delay should be factored into the overall corridor travel time. This analysis may show no overall disadvantage.

Channelized-T Intersection

The channelized-T type intersection allows for an intersection with generally lower overall and side-street delay than with a conventional T intersection and with fewer stops for the through traffic on the major roadway when compared to a conventional signalized T intersection. An example of a channelized-T type intersection is at the intersection of US Highway 24 and Garrett Road near Falcon (El Paso County). That particular intersection is signalized with a “directional signal,” but a channelized-T can also operate as an unsignalized intersection with stop sign control on the minor street. Whether signalized or unsignalized, the raised median configuration would allow for “free” (no stopping) movement for the southbound through movement through the intersection. The westbound left turn would cross the northbound lanes and into a channelized southbound left-turn acceleration lane for merging into southbound through traffic.

By 2040 the delay for the westbound left-turn movement is projected to be LOS F during the morning peak hour even with the channelized-T. If the channelized-T intersection were signalized with a “directional signal,” the delay for the westbound left-turn movement is projected to be 21.3 seconds (LOS C).

Advantages:

- The intersection of Marksheffel/Lorson could likely operate at a satisfactory level of service as a stop sign-controlled intersection for longer as an unsignalized, channelized-T intersection than if it were to remain a conventional T intersection.
- Once signal control was required to maintain an acceptable level of service, the channelized-T configuration would result in lower delay for through traffic especially for the southbound traffic, which would operate freely. The overall intersection delay is projected to be lower with a channelized-T intersection. Based on the 2040 total morning peak-hour volumes, the projected overall intersection delay is 7.9 seconds per vehicle (LOS A) with a signal-controlled channelized-T intersection and 10.8 seconds per vehicle (LOS B) with a conventional signal-controlled intersection. Based on the 2040 total afternoon peak-hour volumes the projected overall intersection delay is 6.1 seconds per vehicle (LOS A) with a signal-controlled channelized-T intersection and 9.8 seconds per vehicle (LOS A) with a conventional signal-controlled intersection.
- There is the potential, depending on the time of day and traffic volumes, to allow for a longer side-street signal phase due to one-way signal progression and no red phase for southbound traffic.

Disadvantages:

- The channelized-T configuration would only work on an interim basis prior to the addition of a potential fourth leg of this intersection. It is anticipated that development of the Singer property on the west side of Marksheffel Road would result in a request for a full-movement-capable, fourth/west leg of this intersection. If/when that occurs, many of the channelized-T improvements would need to be removed or modified.
- The channelized-T configuration may be confusing for some drivers and the merging movement into southbound traffic requires a more complex movement than with a signal. However, most motorists entering the intersection from the east would be regular users and would quickly learn to navigate the intersection.
- A channelized-T intersection would require the construction of raised channelizing medians on Marksheffel Road and the ongoing maintenance of those medians.
- The section of Marksheffel Road between Lorson Boulevard and Poa Annua would need to be designed to accommodate a southbound left-turn acceleration lane from Lorson Boulevard, a taper, and a southbound left-turn lane approaching Poa Annua. Based on a posted speed limit of 55 mph, the El Paso County Engineering Criteria Manual (ECM) requires a 960-foot-long acceleration lane plus a 222-foot taper. Based on a design speed of 60 mph the ECM requires a 290-foot-long left-turn lane approach Poa Annua plus 50 to 75 feet of storage length. The total length of the acceleration lane, taper, and left-turn lane would be between 1,522 and 1,547 feet. The total distance between Lorson Boulevard and Poa Annua street is about 1,025 feet centerline to centerline. The construction of a channelized-T intersection would therefore require a deviation(s) to the ECM.

- A channelized-T can be more difficult for pedestrians than a conventional signalized intersection. However, there may be ways to better accommodate pedestrians – such as adding a pedestrian-only phase for southbound traffic. More research would be needed regarding pedestrian accommodation.

Fontaine/Carriage Meadows

Based on the projected short-term background and total traffic volumes and assuming two-way stop sign control, the intersection Fontaine/Carriage Meadows is projected to operate at LOS F for the northbound left-turn movement and southbound through movement during the afternoon peak hour. 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.

Site Access Point

The proposed site access point to Carriage Meadows Drive 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 queuing analysis was performed using Synchro/SimTraffic to determine if the intersection spacing on Carriage Meadows Drive between Fontaine Boulevard and the site access will be sufficient to accommodate the projected queues based on the projected short-term and 2040 total traffic volumes. The 2040 analysis assumes a full-movement access point, for the future retail parcel west of the site, will align with the currently proposed access for the multifamily development. The short-term total and 2040 total morning and afternoon peak-hour traffic volumes were entered into the Synchro model. The simulation was run five times. The queuing reports are attached.

Based on the projected short-term total morning peak-hour traffic volumes, the projected maximum northbound left-turn queue on Carriage Meadows Drive approaching Fontaine Boulevard is about 82 feet.

Based on the projected 2040 total afternoon peak-hour traffic volumes the projected maximum northbound left-turn queue on Carriage Meadows Drive approaching Fontaine Boulevard is about 204 feet. The projected average maximum southbound left-turn queue approaching the site access is projected to be less than one vehicle long.

TRAFFIC SIGNAL WARRANT ANALYSIS

Fontaine/Carriage Meadows

As shown in Figure 10a, based on the projected short-term total traffic volumes the northbound left-turn movement at the intersection of Carriage Meadows Drive and Fontaine Boulevard is projected to be 44 vehicles per hour during the morning peak hour and 29 vehicles per hour during the afternoon peak hour. The minimum threshold volume for a Four-Hour Vehicular Volume Traffic Signal Warrant is 60 vehicles per hour for a minor approach with one lane. As the projected short-term morning and afternoon peak-hour traffic volumes are both projected to be below this threshold, it is not anticipated that a traffic signal warrant will be met at this intersection until one or more of the future retail parcels are developed.

Marksheffel/Lorson

The intersection of Marksheffel/Lorson was analyzed to determine when the Four-Hour Vehicular Volume Traffic Signal Warrant thresholds would be reached or exceeded based on the projected morning and afternoon peak-hour short-term traffic volumes. The results of the analysis are shown in Figure 12. The minor approach volumes were assumed to include the westbound left-turn movements only.

As shown in the figure, the thresholds for a Four-Hour Vehicular Volume Traffic Signal Warrant are projected to be exceeded during the morning and afternoon peak hours based on the projected short-term background and total traffic volumes. In order for a Four-Hour Traffic Signal Warrant to be satisfied, the volume threshold would need to be met for two additional hours of the day. For example, the four-hour warrant would be satisfied with the volume thresholds met for the one hour in the morning, two hours (instead of the one-hour peak) during the afternoon peak period, and an hour during the mid-afternoon. The satisfaction of warrants does not indicate that a signal must be installed. The decision to require a signal to be installed at this location rests with the El Paso County Department of Transportation.

TRAFFIC SIGNAL ESCROW PERCENTAGES/AMOUNTS

Fontaine/Carriage Meadows

The intersection of Carriage Meadows/Lorson is not likely to meet a signal warrant until one or more of the retail parcels are developed. 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 4, the currently proposed multifamily development is projected to contribute about 3.6 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 $10,909. 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 any of the retail parcels.

Marksheffel/Lorson

As shown in Figure 12, the intersection of Marksheffel/Lorson is likely to meet a traffic signal warrant based on the short-term total traffic volumes. Table 4 shows the projected number of westbound left-turning vehicles at the intersection of Lorson/Marksheffel estimated to be generated by future developments within Lorson Ranch. Estimates of westbound left-turning vehicles due to existing or approved developments were not included as they will not participate in funding of this signal. The specific developments included in the calculation are listed in the table. These volumes were used to calculate a fair share contribution toward a future signal at this intersection. Assuming a total signal cost of $300,000, a fair share contribution toward a future signal at this intersection would be $10,453.

RECOMMENDED INTERNAL STREET CLASSIFICATIONS

Firesteel Drive and Rubicon Drive (south of Firesteel Drive) are proposed to be public streets and classified as Urban Local. Paluxy Trail, Rubicon Trail and Tolt Trail are proposed as private streets.

DEVIATIONS TO ECM CRITERIA

Per staff direction, modifications from the Engineering Criteria Manual (ECM) (2019) which do not qualify as a PUD modification as identified in Section 4.2.6.F.2 of the Land Development Code are required to be requested as deviations of the ECM. The applicant is requesting the following deviations(s) from the ECM:

- The applicant requests a deviation from Section 2.2.5.E of the ECM to allow for shortened intersection spacing of private roads along the proposed public road, Rubicon Drive. The proposed spacing of Paluxy Trail (private) between Firesteel Drive (public) and Tolt Trail (private) is approximately 75 feet from centerline to centerline of each road.
- Section 2.2.5.E of the ECM states:
  "Roads shall not intersect Urban Local roadways closer than 175 feet from each other (centerline to centerline) …"

ROADWAY IMPROVEMENT FEE PROGRAM

This project will be required to participate in the El Paso County Road Improvement Fee Program. The Carriage Meadow Townhomes will join the ten-mil PID. The ten-mil PID building permit fee portion associated with this option is $1,458 per multifamily dwelling unit. Based on 49 multifamily dwelling units, the total building permit fee would be $71,442.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

- The site is expected to generate about 359 new vehicle-trips on the average weekday, with about one-half of the vehicles entering and one-half of the vehicles exiting in a 24-hour period. During the morning peak hour, which generally occurs for one hour between 6:30 a.m. and 8:30 a.m., about 5 vehicles would enter and 17 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:30 p.m. and 6:30 p.m., about 17 vehicles would enter and 10 vehicles would exit the site.

Projected Levels of Service

- The signal-controlled Marksheffel Road/Fontaine Boulevard intersection is projected to continue to operate at level of service D or better for all movements based on the short-term total traffic volumes. By 2040 this intersection is projected to operate at an overall LOS D or better during the peak hours; however, the southbound left-turn and westbound left-turn movements are projected to operate at LOS E during the afternoon peak hour based on both the background and total traffic volumes.

- Based on the projected short-term total traffic volumes, the westbound left-turn movement at the intersection of Marksheffel/Lorson is projected to operate at LOS F during the morning peak hour and LOS E during the afternoon peak hour if this intersection is two-way stop sign-controlled. If this intersection were to be signal-controlled, all movements are projected to operate at LOS B or better during the peak hours based on both short-term and 2040 total traffic volumes. As requested by staff, this report includes discussion and general analysis of intersection traffic control/intersection type alternatives for Lorson Boulevard/Marksheffel Road.

- Based on the projected short-term background and total traffic volumes and assuming two-way stop sign control, the intersection of Fontaine/Carriage Meadows is projected to operate at LOS F for the northbound left-turn movement and southbound through movement during the afternoon peak hour. A Vehicular Volume Traffic Signal Warrant is not projected to be met at this intersection until one or more of the commercial parcels are developed. It is not uncommon for the minor approaches at an unsignalized intersection to operate at LOS E or F during the peak hours as the volumes approach the thresholds for a signal warrant to be met. 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 site access point to Carriage Meadows Drive 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.

Recommended Improvements

- Table 5 shows a summary of the off-site improvements needed in the vicinity of the site. Table 5 also identifies the time frame that will likely be needed for each improvement and the party responsible for that improvement.

Auxiliary Turn Lanes

- 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 El Paso County Engineering Criteria Manual (ECM) based on a design speed of 50 mph for Fontaine Boulevard and the projected 2040 total westbound left-turn volume at this intersection.

- Figures 13 and 14 show the recommended lane geometry for Carriage Meadows Drive adjacent to the site for the short term and long term (following development of the adjacent commercial site), respectively. The recommended auxiliary turn-lane lengths were based on the queuing analysis results discussed above.

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 $10,909. Please refer to the section in the report entitled 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 Marksheffel Road/Lorson Boulevard would be $10,453. Please refer to the section in the report entitled Traffic Signal Escrow Percentages/Amounts.

* * * * *

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

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH:KDF:jas

Enclosures: Tables 2 – 5
Appendix Tables 1-2
Figures 1-14
Traffic Count Reports
Level of Service Reports
Queuing Reports

Tables 2-5

TRANSPORTATION
CONSULTANTS, INC.

Table 2
Trip Generation Estimate
Carriage Meadows Townhomes

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates [1]					Total Trips Generated				
			Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour	
				In	Out	In	Out		In	Out	In	Out
210	Multifamily Housing	49 DU[2]	7.32	0.11	0.35	0.35	0.21	359	5	17	17	10

Notes:
(1) Source: "*Trip Generation, 10th Edition, 2017*" by the Institute of Transportation Engineers (ITE)
(2) DU = dwelling unit

Source: LSC Transportation Consultants, Inc.

Table 3
Carriage Meadows/Fontaine Future Traffic Signal Contributions
Carriage Meadows South Multifamily

	Development	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	TOTAL[(1)] veh/hr	Signal Contribution %	Signal Contribution $
AM	Carriage Meadows North at Lorson Ranch Filing No. 1	0	1	0	7	0	53	13	10.5%	
	Carriage Meadows South at Lorson Ranch Filing No. 1	37	2	6	0	1	0	43	34.7%	
	Carriage Meadows South Multifamily	9	1	2	0	0	0	10	8.1%	
	North Retail (Tracts D and E)	0	0	0	11	0	34	14	11.3%	
	South Retail (Tract N)	39	0	9	0	0	0	44	35.5%	
		85	**4**	**17**	**18**	**1**	**87**	**124**		
PM	Carriage Meadows North at Lorson Ranch Filing No. 1	0	4	0	1	2	36	11	3.0%	
	Carriage Meadows South at Lorson Ranch Filing No. 1	26	4	1	0	7	0	38	10.2%	
	Carriage Meadows South Multifamily	6	1	0	0	1	0	8	2.2%	
	North Retail (Tracts D and E)	0	0	0	125	0	117	137	36.9%	
	South Retail (Tract N)	127	0	99	0	0	0	177	47.7%	
		159	**9**	**100**	**126**	**10**	**153**	**371**		
AM + PM	Carriage Meadows North at Lorson Ranch Filing No. 1	0	5	0	8	2	89	24	4.8%	$14,545
	Carriage Meadows South at Lorson Ranch Filing No. 1	63	6	7	0	8	0	81	16.4%	$49,091
	Carriage Meadows South Multifamily	15	2	2	0	1	0	18	3.6%	$10,909
	North Retail (Tracts D and E)	0	0	0	136	0	151	151	30.5%	$91,515
	South Retail (Tract N)	166	0	108	0	0	0	221	44.6%	$133,939
		244	**13**	**117**	**144**	**11**	**240**	**495**		**$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.

Table 4
Lorson/Marksheffel Future Traffic Signal Contributions
Carriage Meadows South Multifamily

Development	Westbound Left-Turn Volume			Signal Contribution	
	AM	PM	AM+PM	%	$
Carriage Meadows South at Lorson Ranch Filing No. 1	73	48	121	42.2%	$126,481
Lorson Ranch East Filing No. 1	57	38	95	33.1%	$99,303
Lorson Ranch East Filing No. 2	0	0	0	0.0%	$0
Creekside at Lorson Ranch Filing No. 1	41	30	71	24.7%	$74,216
Carriage Meadows South Multifamily	6	4	10	3.5%	$10,453
	171	**116**	**287**		**$300,000**

Source: LSC Transportation Consultants, Inc.

Table 5
Carriage Meadows South Multi-Family
Roadway Improvements

Item #	Improvement	Timing	Responsibility
	Roadway Segment Improvements		
1	Upgrade Carriage Meadows Drive from Fontaine Blvd to Mandan Drive to County Urban Collector standards with laneage depicted in Figure 13.	With the future commercial development	Future applicant for the commercial development
	Marksheffel/Fontaine		
2	Construct 2nd northbound and southbound through lanes	With growth in through traffic volumes and/or with additional traffic generated by future developments adjacent to or within the "travel-shed" of the Marksheffel corridor south of Bradley Road.	TBD - Master Planned
3	Cosntruct 2nd westbound and southbound left-turn lanes	With future development	Lorson Ranch
	Marksheffel/Lorson		
4	Select and install alternate traffic control to the existing two-way, stop-sign control: - Construct Channelized "T" - Reconstruct as modern one-lane roundabout - Install traffic signal	**Short-Term**	Lorson Ranch (required escrow for this development $10,453)
5	Construct 2nd Northbound and southbound through lanes. Other improvements may be required based on the alternate traffic control scenario selected for this intersection.	With growth in through traffic volumes and/or with additional traffic generated by future developments adjacent to or within the "travel-shed" of the Marksheffel corridor south of Bradley Road.	TBD - Master Planned
	Carriage Meadows/Fontaine		
6	Install traffic signal control	Once traffic signal warrants are met	Lorson Ranch (required escrow for this development $10,909)
7	Provide northbound left-turn and right-turn bays as shown in Figure 13	**Short-Term**	Lorson Ranch
	Fontaine/Firesteel Trail		
8	Construct southbound left-turn lane on Carriage Meadows Drive approaching Firesteel Trail	With development of the adjacent commercial parcel	Lorson Ranch

Source: LSC Transportation Consultants, Inc. Rev. 1-10-20

Figures 1-14

TRANSPORTATION
CONSULTANTS, INC.

Figure 1

Vicinity Map

Carriage Meadows South Multi-Family (LSC #184720)

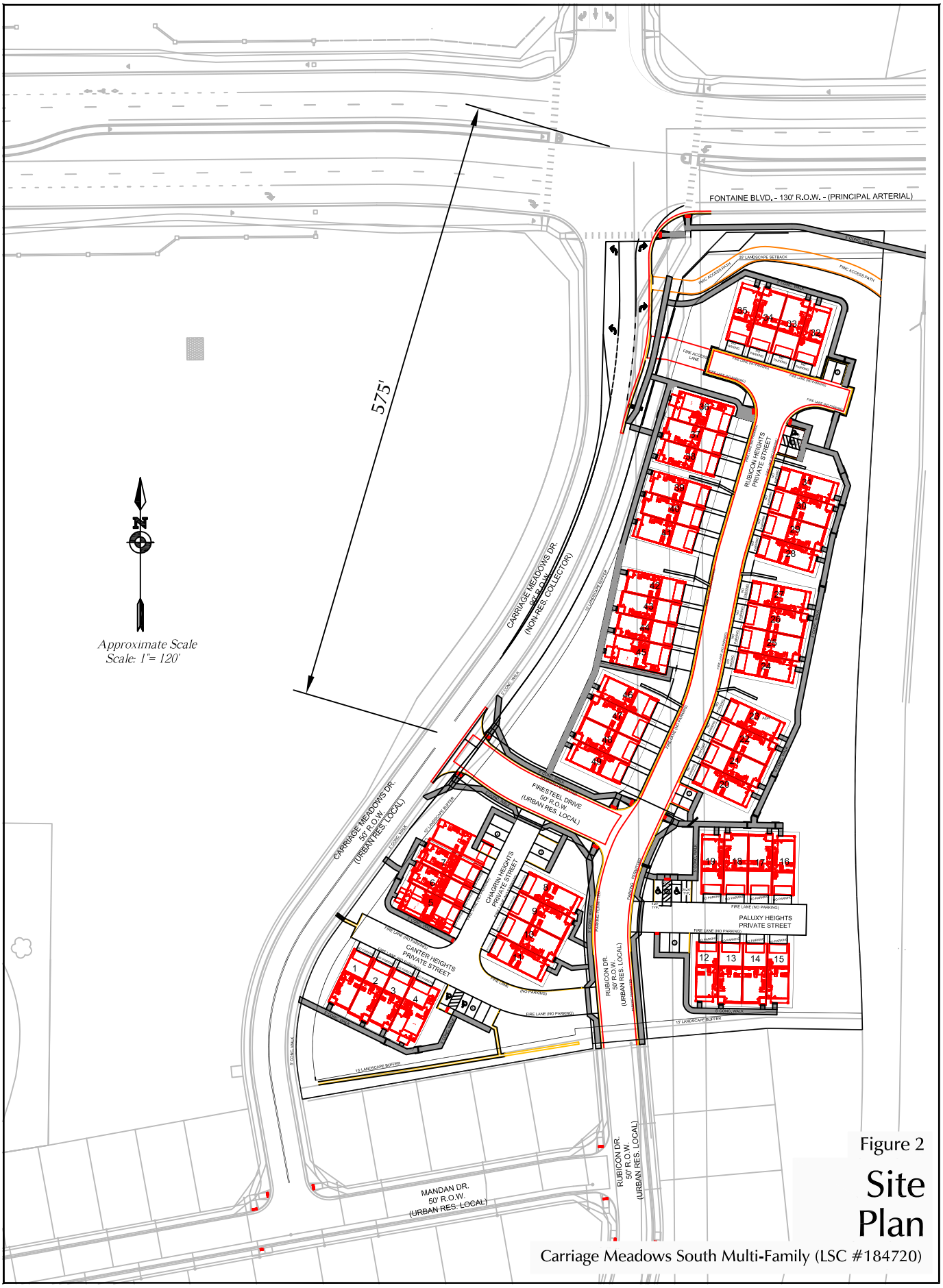


Figure 2

Site Plan

Carriage Meadows South Multi-Family (LSC #184720)

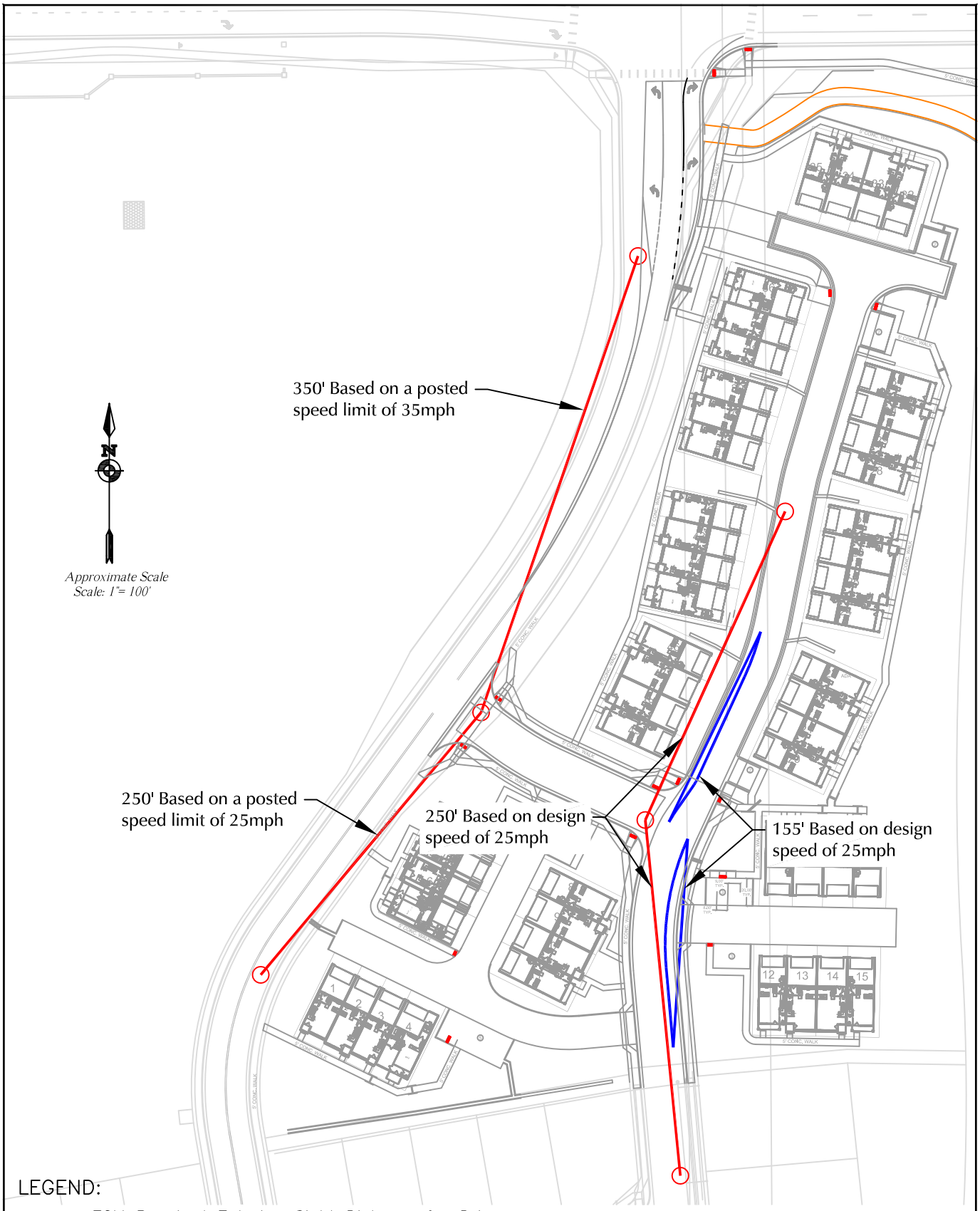
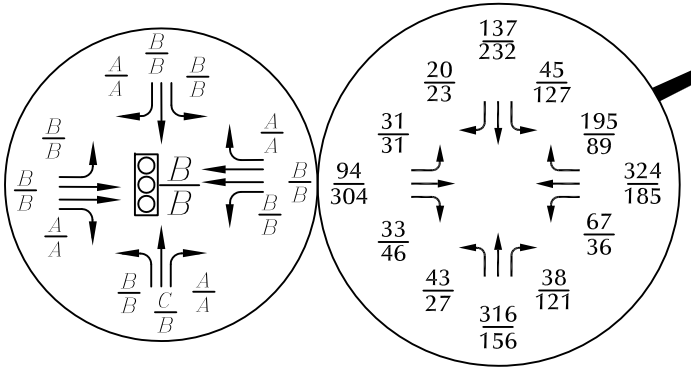


Figure 3

Sight Distance Analysis

Carriage Meadows South Multi-Family (LSC #184720)



Approximate Scale
Scale: 1"= 1,500'

LEGEND:

= Stop Sign

= Traffic Signal

XX/XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour) Based on counts by LSC March 2018

A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

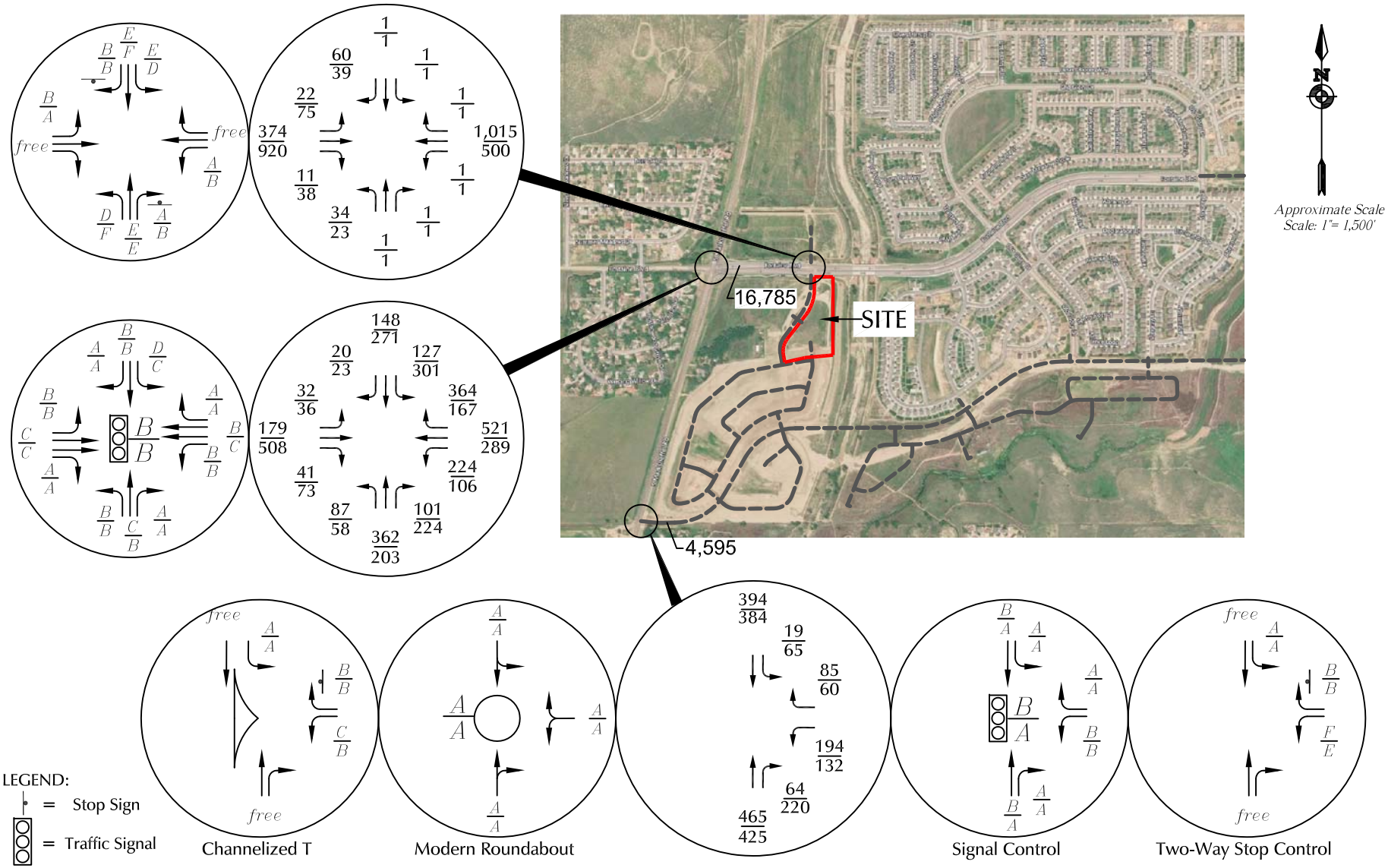
C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

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

Figure 4

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

Carriage Meadows South Multi-Family (LSC #184720)



LEGEND:

= Stop Sign

= Traffic Signal

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

A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

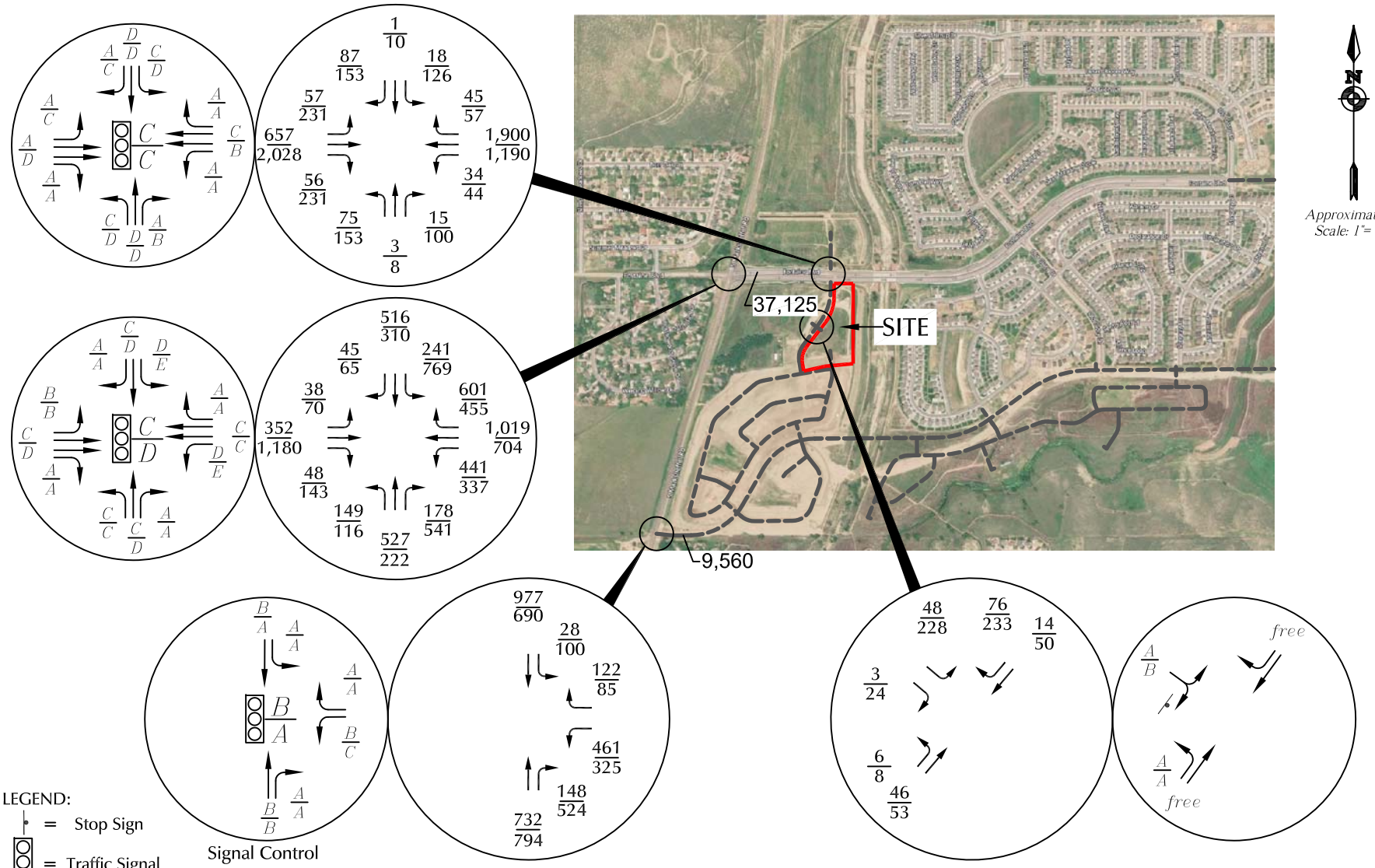
C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

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

Figure 5

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

Carriage Meadows South Multi-Family (LSC #184720)



Approximate Scale
Scale: 1"= 1,500'

LEGEND:

= Stop Sign

= Traffic Signal

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

A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

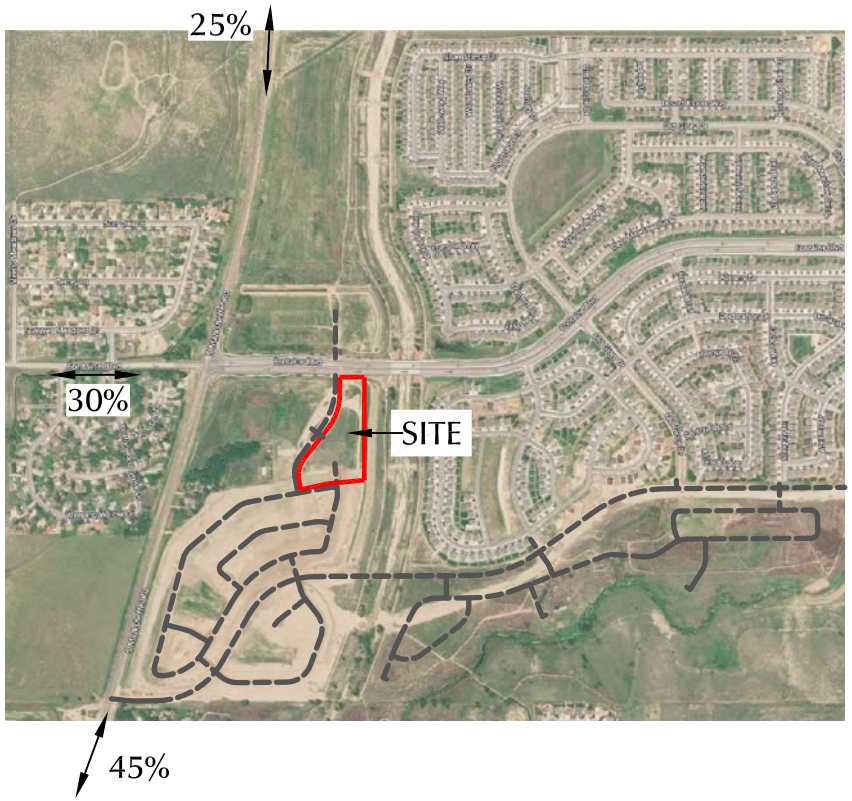
C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

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

Figure 6

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

Carriage Meadows South Multi-Family (LSC #184720)



Approximate Scale
Scale: 1"= 1,500'

LEGEND:

XX% = (Residential) Percent Directional Distribution

Figure 7

Directional Distribution of Site-Generated Traffic

Carriage Meadows South Multi-Family (LSC #184720)

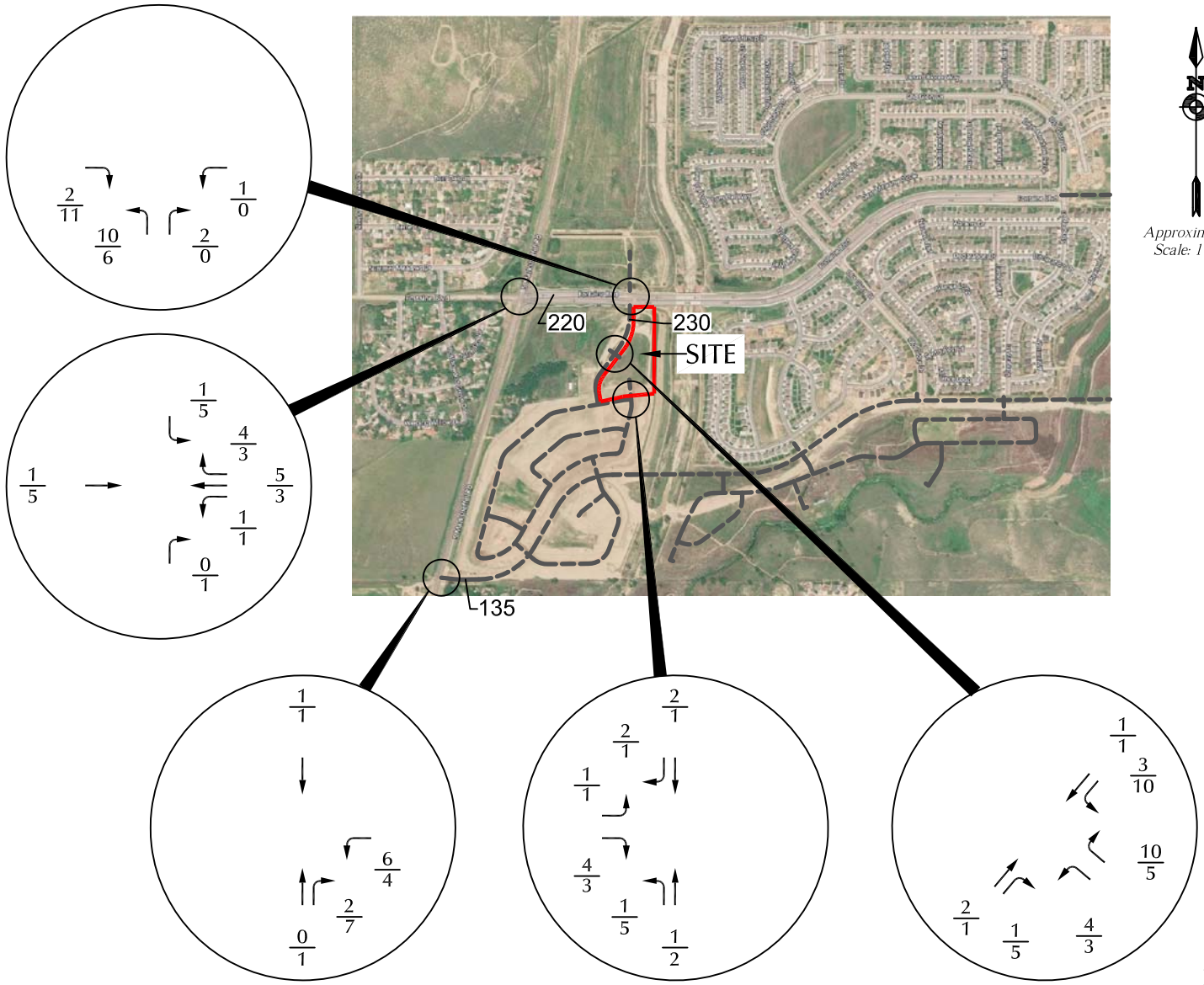


Figure 8

Assignment of Short-Term Site-Generated Traffic

Carriage Meadows South Multi-Family (LSC #184720)

LEGEND:

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

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

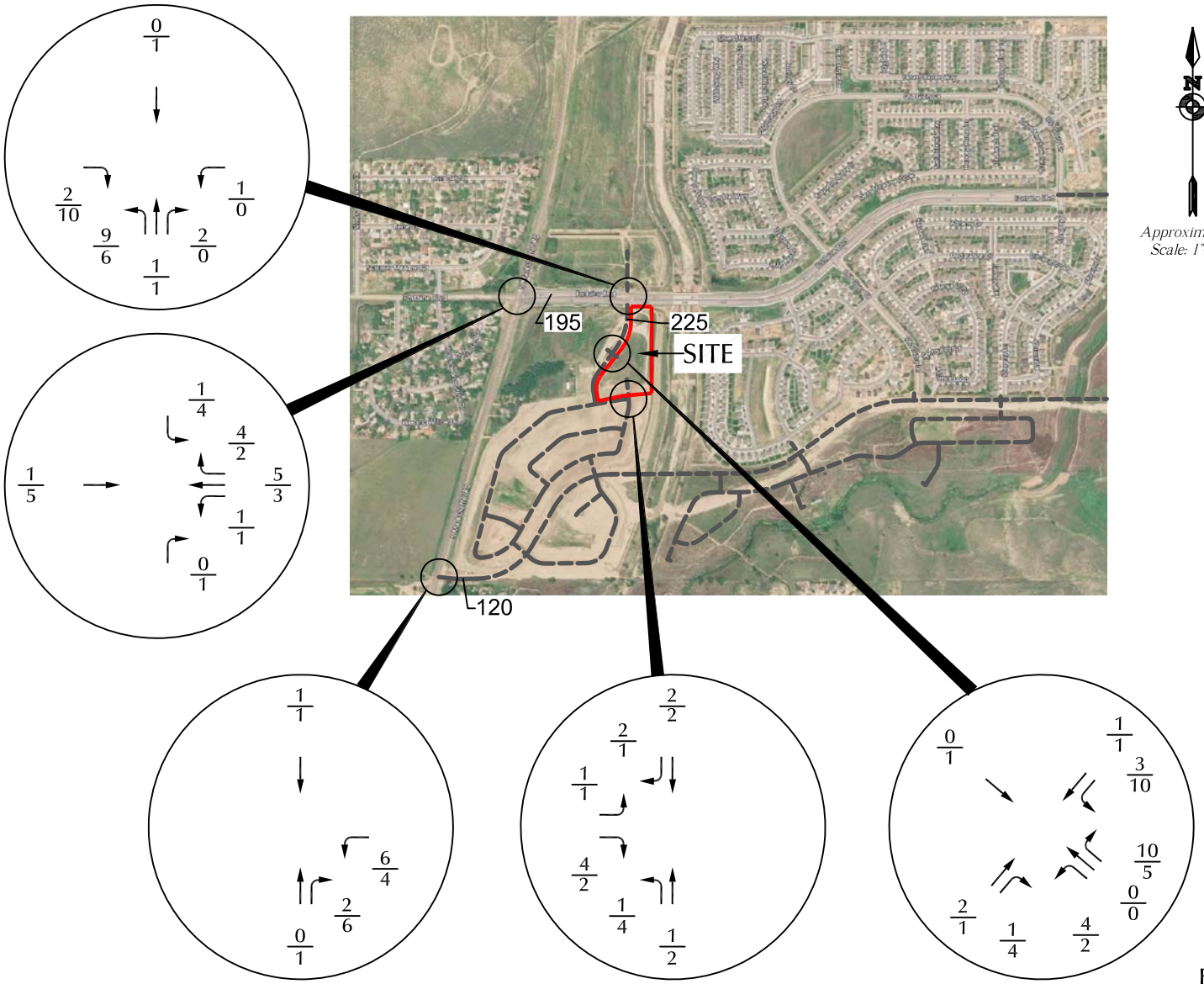


Figure 9

Assignment of Long-Term Site-Generated Traffic

Carriage Meadows South Multi-Family (LSC #184720)

LEGEND:

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

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

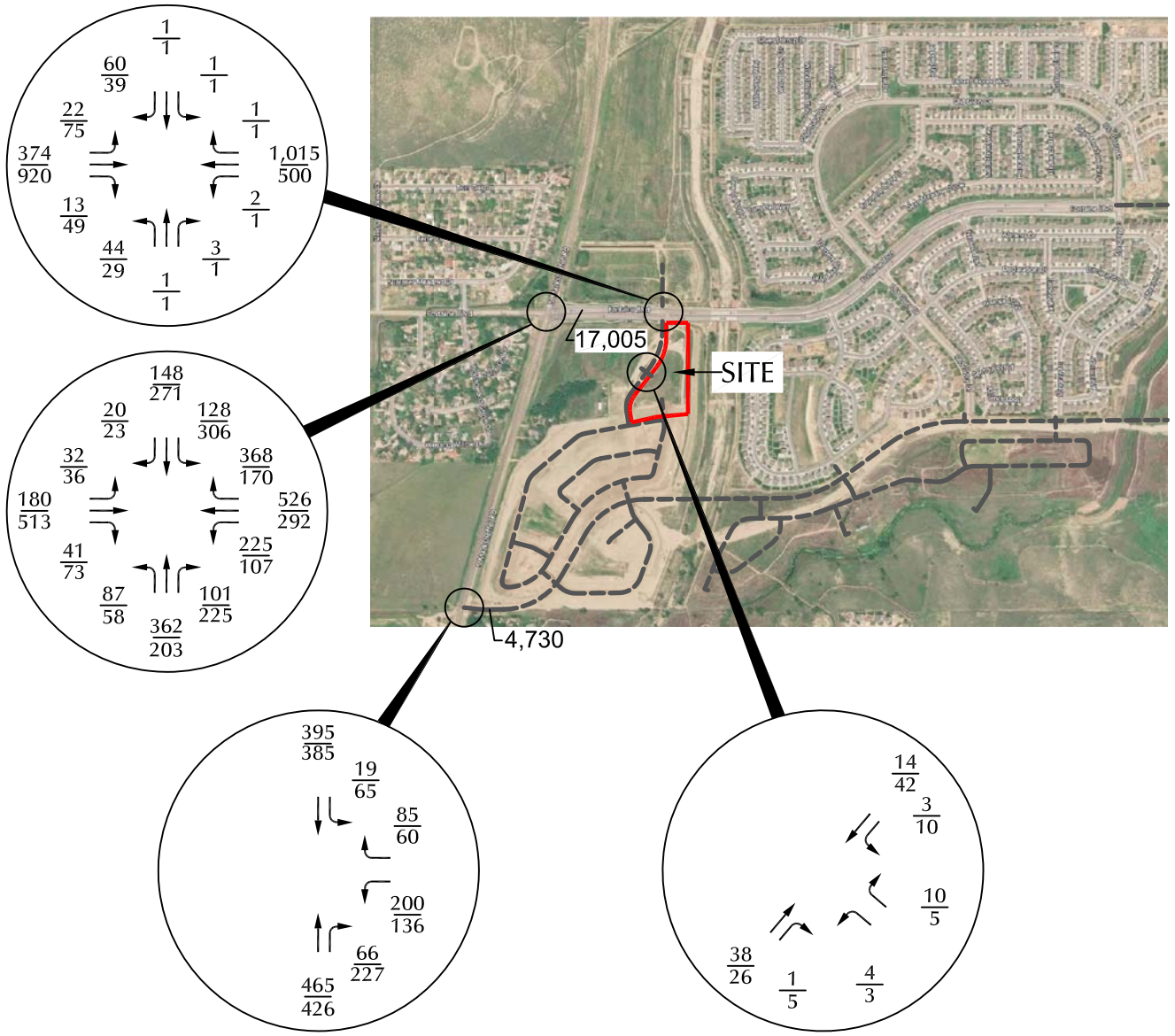


Figure 10a

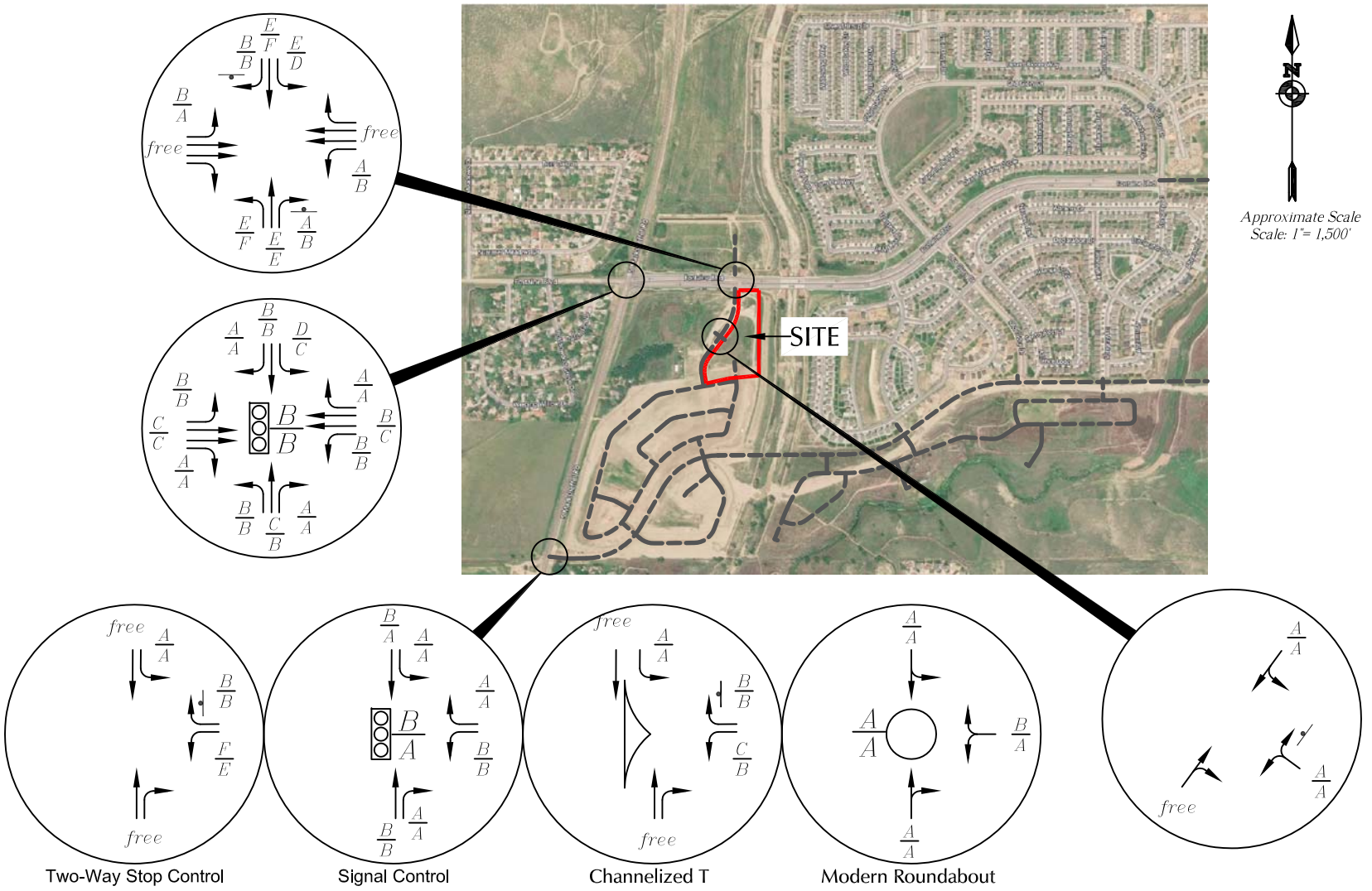
Short-Term Total Traffic

Carriage Meadows South Multi-Family (LSC #184720)

LEGEND:

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

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



LEGEND:

= Stop Sign

= Traffic Signal

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

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

Figure 10b

Short-Term Total Lane Geometry, Traffic Control and Level of Service

Carriage Meadows South Multi-Family (LSC #184720)

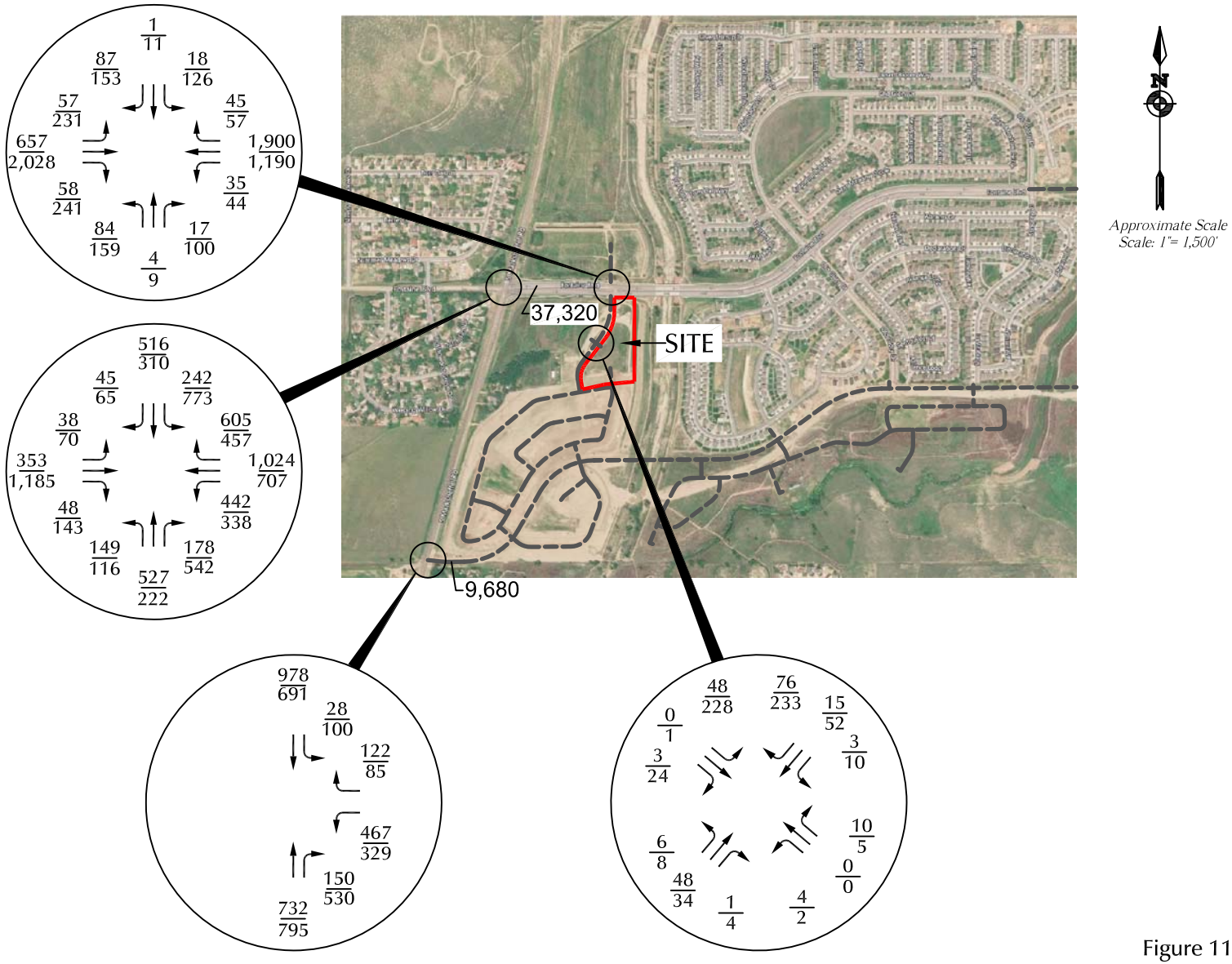


Figure 11a

Year 2040 Total Traffic

Carriage Meadows South Multi-Family (LSC #184720)

LEGEND:

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

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

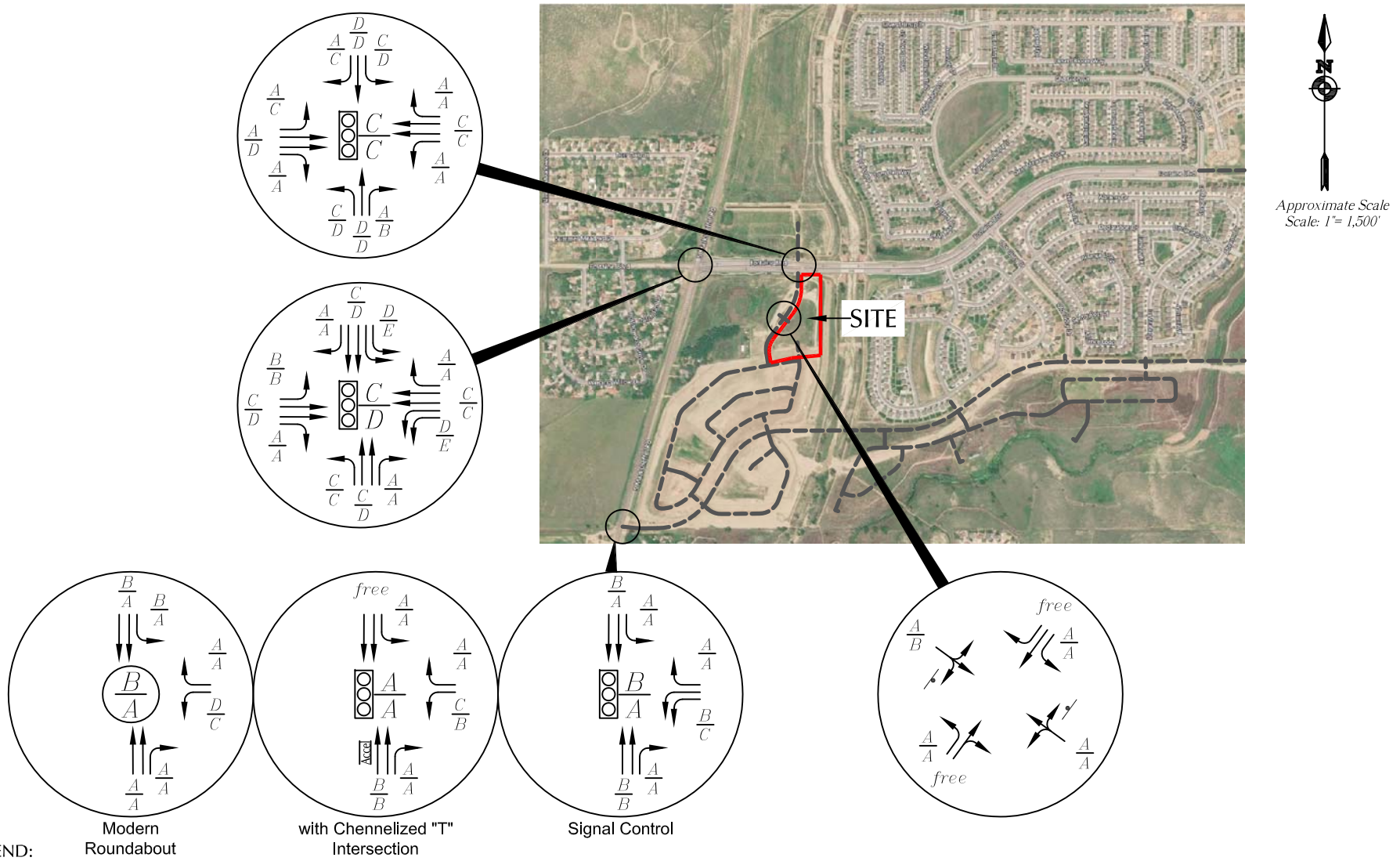


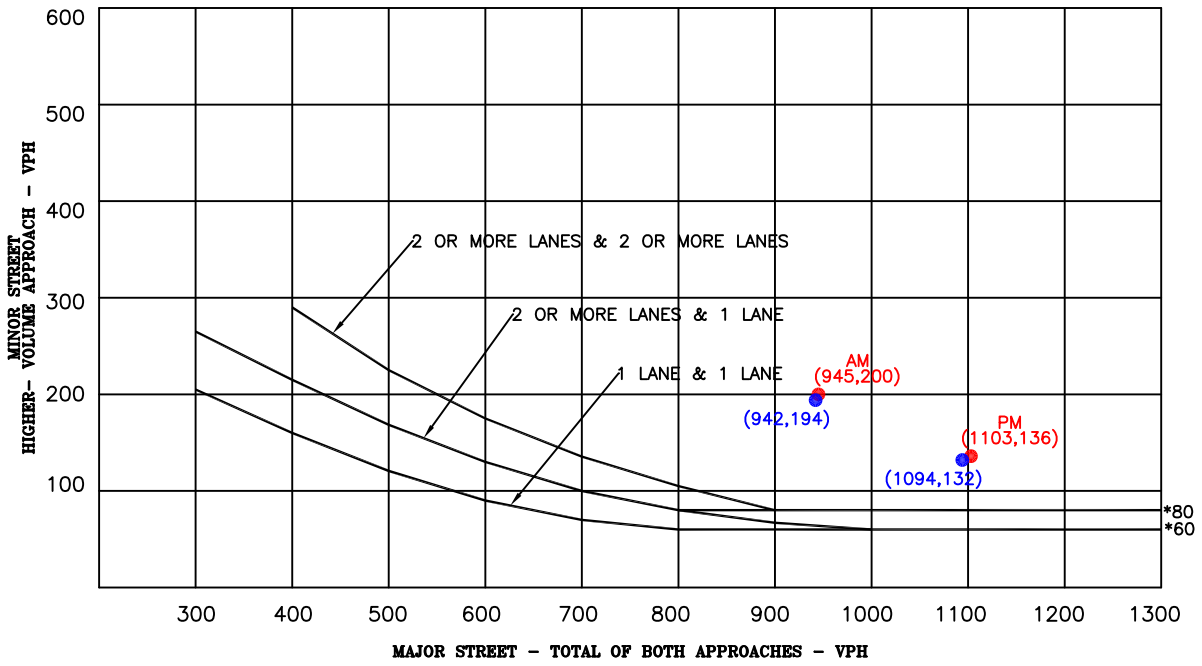
Figure 11b

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

Carriage Meadows South Multi-Family (LSC #184720)

Figure 4C-2. Warrant 2 Four-Hour Vehicular Volume (70% Factor)

(Community Less than 10,000 population or above 40 mph on Major Street)



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

Short-Term Background Traffic
Short-Term Total Traffic

Figure 12

Signal Warrant Analysis
Marksheffel/Lorson

Carriage Meadows South Multi-Family (LSC #184720)

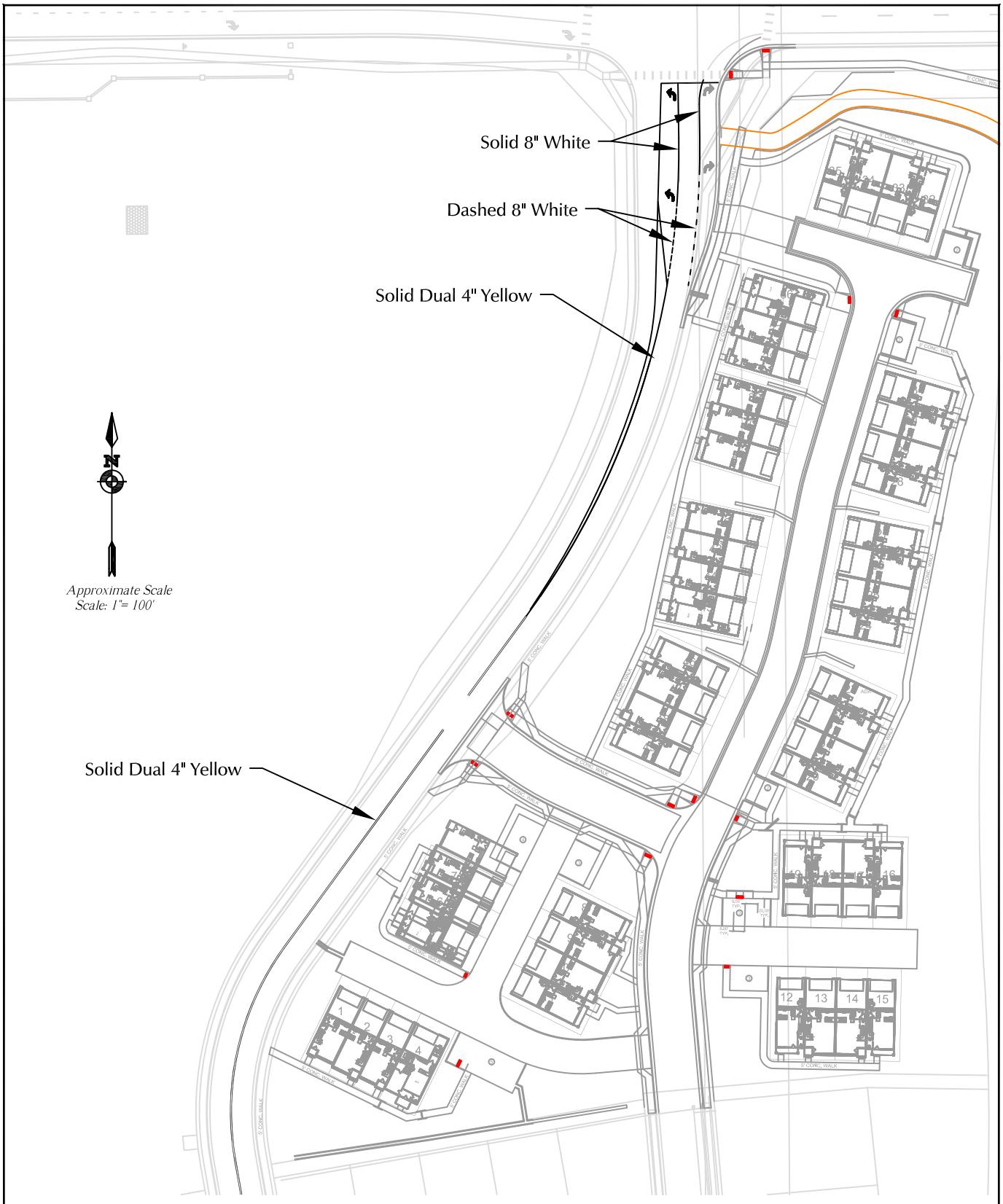
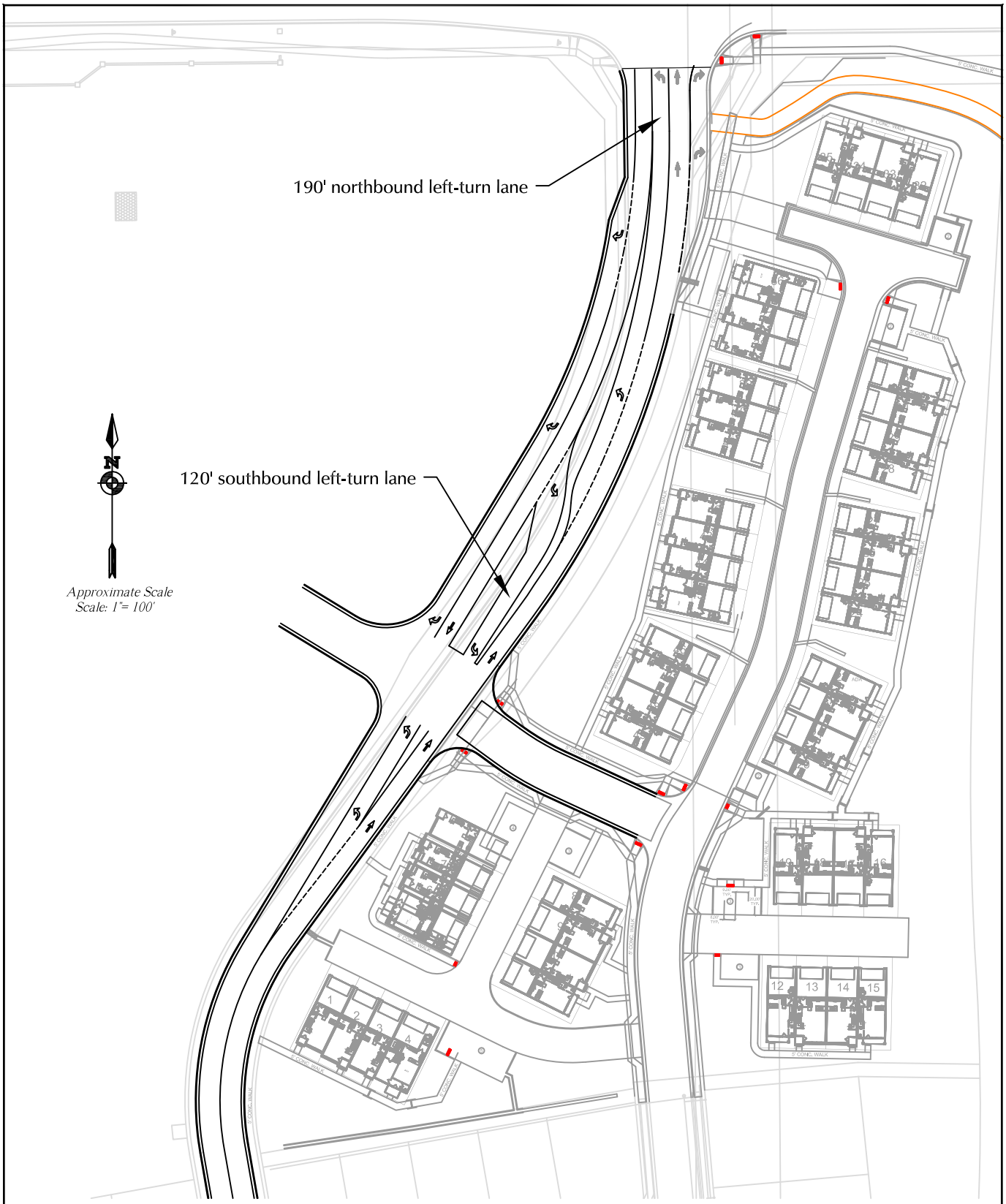


Figure 13

Carriage Meadows Drive
Short-Term Recommended Lane Geometry

Carriage Meadows South Multi-Family (LSC #184720)



* Following development of the adjacent commercial site (preliminary, subject to change depending on actual future plans for the commercial site).

Figure 14

Carriage Meadows Drive Buildout* Recommended Lane Geometry

Carriage Meadows South Multi-Family (LSC #184720)

Appendix Tables 1-2

TRANSPORTATION
CONSULTANTS, INC.

Appendix Table 1
Carriage Meadows Townhomes
Trip Generation Estimate

Land Use Data						Trip Generation Rates[1]					Raw ITE Trip Generation (Individual Driveway Trips)					School Internal Trips[2]					Retail Internal Trips[2]					Pass-by[3]	Pass-by Trips					Total New External Trips				
Traffix Zone	Name	ITE Land Use	ITE Code	Quantity	Unit	Daily	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour In	PM Peak Hour Out	Daily	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour In	PM Peak Hour Out	Daily	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour In	PM Peak Hour Out	Daily	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour In	PM Peak Hour Out	(%)	Daily	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour In	PM Peak Hour Out	Daily	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour In	PM Peak Hour Out
RESIDENTIAL																																				
All Residential North of Lorson Boulevard "Between the Creeks"																																				
8	Ponderosa	Single-Family Detached Housing	210	102	DU[4]	9.44	0.19	0.56	0.62	0.37	963	19	57	64	37	27	2	5	1	1	103	0	2	5	2	0%	0	0	0	0	0	833	17	50	58	34
9	Ponderosa	Single-Family Detached Housing	210	102	DU	9.44	0.19	0.56	0.62	0.37	963	19	57	64	37	27	2	5	1	1	103	0	2	5	2	0%	0	0	0	0	0	833	17	50	58	34
10	Meadows Fil 1	Single-Family Detached Housing	210	97	DU	9.44	0.19	0.56	0.62	0.37	916	18	54	60	36	26	2	5	1	1	98	0	2	5	2	0%	0	0	0	0	0	792	16	47	54	33
11	Meadows Fil 3	Single-Family Detached Housing	210	51	DU	9.44	0.19	0.56	0.62	0.37	481	9	28	32	19	14	1	2	1	0	51	0	1	3	1	0%	0	0	0	0	0	416	8	25	28	18
12	Meadows Fil 3	Single-Family Detached Housing	210	87	DU	9.44	0.19	0.56	0.62	0.37	821	16	48	54	32	23	2	4	1	0	87	0	1	4	2	0%	0	0	0	0	0	711	14	43	49	30
3	The Meadows Fil 2	Single-Family Detached Housing	210	109	DU	9.44	0.19	0.56	0.62	0.37	1,029	20	60	68	40	29	2	5	1	1	110	1	2	5	2	0%	0	0	0	0	0	890	17	53	62	37
13	Allegiant Fil 1	Single-Family Detached Housing	210	97	DU	9.44	0.19	0.56	0.62	0.37	916	18	54	60	36	26	2	5	1	1	98	0	2	5	2	0%	0	0	0	0	0	792	16	47	54	33
5	Buffalo Crossing	Single-Family Detached Housing	210	204	DU	9.44	0.19	0.56	0.62	0.37	1,926	38	113	127	75	54	5	10	2	1	205	1	3	10	5	0%	0	0	0	0	0	1,667	32	100	115	69
	Townhomes at Lorson Ranch	Multifamily Housing	210	46	DU	7.32	0.11	0.35	0.35	0.21	337	5	16	16	10	10	1	2	0	0	36	0	1	2	1	0%	0	0	0	0	0	291	4	13	14	9
6	Pioneer Landing	Single-Family Detached Housing	210	59	DU	9.44	0.19	0.56	0.62	0.37	557	11	33	37	22	16	1	3	1	0	59	0	1	3	1	0%	0	0	0	0	0	482	10	29	33	21
7	Pioneer Landing	Single-Family Detached Housing	210	59	DU	9.44	0.19	0.56	0.62	0.37	557	11	33	37	22	16	1	3	1	0	59	0	1	3	1	0%	0	0	0	0	0	482	10	29	33	21
15	Meadows Future Fil 4 West	Single-Family Detached Housing	210	110	DU	9.44	0.19	0.56	0.62	0.37	1,038	20	61	69	40	29	3	5	1	1	111	1	2	5	3	0%	0	0	0	0	0	898	16	54	63	36
16	Meadows Future Fil 4 East	Single-Family Detached Housing	210	126	DU	9.44	0.19	0.56	0.62	0.37	1,189	23	70	79	46	34	3	6	1	1	127	1	2	6	3	0%	0	0	0	0	0	1,028	19	62	72	42
18	Ponderosa Future Fil	Multifamily Housing	210	149	DU	7.32	0.11	0.35	0.35	0.21	1,091	16	53	53	31	31	3	5	1	1	116	1	2	6	3	0%	0	0	0	0	0	944	12	46	46	27
39	Pioneer Landing Fil 2	Single-Family Detached Housing	210	170	DU	9.44	0.19	0.56	0.62	0.37	1,605	31	94	106	62	45	4	8	2	1	171	1	3	8	4	0%	0	0	0	0	0	1,389	26	83	96	57
	Total All Residential "Between the Creeks"			**1,568**	**DU**						**14,389**	**274**	**831**	**926**	**545**	**407**	**34**	**73**	**16**	**10**	**1,534**	**6**	**27**	**75**	**34**							**12,448**	**234**	**731**	**835**	**501**
Residential Adjacent to Marksheffel																																				
1	Carriage Meadows North	Single-Family Detached Housing	210	155	DU	9.44	0.19	0.56	0.62	0.37	1,463	29	86	97	57	41	4	7	2	1	156	1	2	8	4	0%	0	0	0	0	0	1,266	24	77	87	52
147	Future Multi-Family	Multifamily Housing	210	49	DU	7.32	0.11	0.35	0.35	0.21	359	5	17	17	10	10	1	2	0	0	38	0	1	2	1	0%	0	0	0	0	0	311	4	14	15	9
47	Carriage Meadows South	Single-Family Detached Housing	210	86	DU	9.44	0.19	0.56	0.62	0.37	812	16	48	54	32	23	2	4	1	0	86	0	1	4	2	0%	0	0	0	0	0	703	14	43	49	30
247		Single-Family Detached Housing	210	51	DU	9.44	0.19	0.56	0.62	0.37	481	9	28	32	19	14	1	2	1	0	51	0	1	3	1	0%	0	0	0	0	0	416	8	25	28	18
347		Single-Family Detached Housing	210	97	DU	9.44	0.19	0.56	0.62	0.37	916	18	54	60	36	26	2	5	1	1	98	0	2	5	2	0%	0	0	0	0	0	792	16	47	54	33
	Total All Residential Adjacent to Marksheffel			**438**	**DU**						**4,031**	**77**	**233**	**260**	**154**	**114**	**10**	**20**	**5**	**2**	**429**	**1**	**7**	**22**	**10**							**3,488**	**66**	**206**	**233**	**142**
	Total All Residential "Between the Creeks" and Adjacent to Marksheffel			**2,006**	**DU**						**18,420**	**351**	**1,064**	**1,186**	**699**	**521**	**44**	**93**	**21**	**12**	**1,963**	**7**	**34**	**97**	**44**							**15,936**	**300**	**937**	**1,068**	**643**
Lorson Ranch East																																				
42	North of Fontaine	Single-Family Detached Housing	210	277	DU	9.44	0.19	0.56	0.62	0.37	2,615	51	154	173	101	74	6	13	3	2	279	1	4	14	6	0%	0	0	0	0	0	2,262	44	137	156	93
37	East of Lamprey	Single-Family Detached Housing	210	122	DU	9.44	0.19	0.56	0.62	0.37	1,152	23	68	76	45	33	3	6	1	1	123	1	2	6	3	0%	0	0	0	0	0	996	19	60	69	41
27	West of Lamprey	Single-Family Detached Housing	210	303	DU	9.44	0.19	0.56	0.62	0.37	2,860	56	168	189	111	81	7	14	3	2	305	1	5	15	7	0%	0	0	0	0	0	2,474	48	149	171	102
127	South of Lorson - West	Single-Family Detached Housing	210	76	DU	9.44	0.19	0.56	0.62	0.37	717	14	42	47	28	20	2	4	1	0	76	0	1	4	2	0%	0	0	0	0	0	621	12	37	42	26
227	South of Lorson - East	Single-Family Detached Housing	210	48	DU	9.44	0.19	0.56	0.62	0.37	453	9	27	30	18	13	1	2	0	0	48	0	1	2	1	0%	0	0	0	0	0	392	8	24	28	17
	Total Lorson Ranch East			**826**	**DU**						**7,797**	**153**	**459**	**515**	**303**	**221**	**19**	**39**	**8**	**5**	**831**	**3**	**13**	**41**	**19**							**6,745**	**131**	**407**	**466**	**279**
	Total All Residential "Between the Creeks", Adjacent to Marksheffel & Lorson Ranch East			**2,832**	**DU**						**26,217**	**504**	**1,523**	**1,701**	**1,002**	**742**	**63**	**132**	**29**	**17**	**2,794**	**10**	**47**	**138**	**63**							**22,681**	**365**	**1,138**	**1,301**	**780**
Creekside at Lorson Ranch Filing No. 1																																				
26	Creekside East	Single-Family Detached Housing	210	97	DU	9.44	0.19	0.56	0.62	0.37	916	18	54	60	36	26	2	5	1	1	98	0	2	5	2	0%	0	0	0	0	0	792	16	47	54	33
126	Creekside West	Single-Family Detached Housing	210	138	DU	9.44	0.19	0.56	0.62	0.37	1,303	26	77	86	51	37	3	7	1	1	139	1	2	7	3	0%	0	0	0	0	0	1,127	22	68	78	47
	Creekside at Lorson Ranch Filing No. 1			**235**	**DU**						**2,219**	**44**	**131**	**146**	**87**	**63**	**5**	**12**	**2**	**2**	**237**	**1**	**4**	**12**	**5**							**1,919**	**38**	**115**	**132**	**80**
	Short-Term Total			**3,067**	**DU**						**28,436**	**548**	**1,654**	**1,847**	**1,089**	**805**	**68**	**144**	**31**	**19**	**3,031**	**11**	**51**	**150**	**68**							**24,600**	**469**	**1,459**	**1,666**	**1,002**
All Other Future Residential West of the Power Line																																				
43	North of Fontaine and South of Lamprey	Multifamily Housing	210	176	DU	7.32	0.11	0.35	0.35	0.21	1,288	19	62	62	36	36	3	6	1	1	137	1	2	7	3	0%	0	0	0	0	0	1,115	15	54	54	32
45	North of Fontaine and NE Lamprey/Lorson	Multifamily Housing	210	123	DU	7.32	0.11	0.35	0.35	0.21	900	13	44	43	25	25	2	5	1	1	96	0	2	5	2	0%	0	0	0	0	0	779	11	37	37	22
327	South of Lorson and west of Trappe	Multifamily Housing	210	97	DU	7.32	0.11	0.35	0.35	0.21	710	10	34	34	20	20	2	4	1	0	76	0	1	4	2	0%	0	0	0	0	0	614	8	29	29	18
		Single-Family Detached Housing	210	227	DU	9.44	0.19	0.56	0.62	0.37	2,143	42	126	142	83	61	5	11	2	1	228	1	4	11	5	0%	0	0	0	0	0	1,854	36	111	129	77
	Other Future Residential Between the Power Line			**623**	**DU**						**5,041**	**84**	**266**	**281**	**164**	**142**	**12**	**26**	**5**	**3**	**537**	**2**	**9**	**27**	**12**							**4,362**	**70**	**231**	**249**	**149**
	Total from Marksheffel to The Power Line			**3,455**	**DU**						**33,477**	**632**	**1,920**	**2,128**	**1,253**	**947**	**80**	**170**	**36**	**22**	**3,568**	**13**	**60**	**177**	**80**							**28,962**	**539**	**1,690**	**1,915**	**1,151**
Future Residential Uses East of the Power Line																																				
30	South of Trappe Dr	Single-Family Detached Housing	210	281	DU	9.44	0.19	0.56	0.62	0.37	2,653	52	156	175	103	75	6	13	3	2	283	1	4	14	6	0%	0	0	0	0	0	2,295	45	139	158	95
35	Southeast of Lorson/Fontaine	Single-Family Detached Housing	210	279	DU	9.44	0.19	0.56	0.62	0.37	2,634	52	155	174	102	74	6	13	3	2	281	1	4	14	6	0%	0	0	0	0	0	2,279	45	138	157	94
36	Southwest of Lorson/Fontaine	Single-Family Detached Housing	210	203	DU	9.44	0.19	0.56	0.62	0.37	1,916	38	113	127	74	54	5	10	2	1	204	1	3	10	5	0%	0	0	0	0	0	1,658	32	100	115	68
44	Northwest Lorson/Fontaine	Multifamily Housing	210	247	DU	7.32	0.11	0.35	0.35	0.21	1,808	26	87	87	51	51	4	9	2	1	193	1	3	9	4	0%	0	0	0	0	0	1,564	21	75	76	46
46	Northeast Lorson/Fontaine	Single-Family Detached Housing	210	368	DU	9.44	0.19	0.56	0.62	0.37	3,474	68	204	230	135	98	8	17	4	2	370	2	6	18	8	0%	0	0	0	0	0	3,006	58	181	208	125
136	Between Trappe and Lorson	Single-Family Detached Housing	210	234	DU	9.44	0.19	0.56	0.62	0.37	2,209	43	130	146	86	62	5	11	2	1	235	1	4	12	5	0%	0	0	0	0	0	1,912	37	115	132	80
	Total East of the Power Line			**1,612**	**DU**						**14,694**	**279**	**845**	**939**	**551**	**414**	**34**	**73**	**16**	**9**	**1,566**	**7**	**24**	**77**	**34**							**12,714**	**238**	**748**	**846**	**508**
	Total Residential			**5,302**	**DU**						**48,171**	**911**	**2,765**	**3,067**	**1,804**	**1,361**	**114**	**243**	**52**	**31**	**5,134**	**20**	**84**	**254**	**114**							**41,676**	**777**	**2,438**	**2,761**	**1,659**
NON-RESIDENTIAL																																				
34	K-8 School	Elementary School	520	690	Students	1.89	0.36	0.31	0.07	0.08	1,304	250	213	51	53	913	175	85	20	37	0	0	0	0	0	0%	0	0	0	0	0	391	75	128	31	16
		Middle School/Junior High School	522	300	Students	2.13	0.31	0.27	0.07	0.08	639	94	80	22	23	447	66	32	9	16	0	0	0	0	0	0%	0	0	0	0	0	192	28	48	13	7
20	North of Fontaine	Shopping Center	820	101	KSF[5]	46.75	0.74	0.45	2.13	2.30	4,722	75	46	215	233	0	0	0	0	0	2,361	37	12	54	116	25%	590	9	9	35	35	1,771	29	25	126	82
22	South of Fontaine	Shopping Center	820	118	KSF	46.75	0.74	0.45	2.13	2.30	5,539	88	54	252	273	0	0	0	0	0	2,770	44	13	63	137	25%	692	11	11	41	41	2,077	33	30	148	95
											12,204	**507**	**393**	**540**	**582**	**1,360**	**241**	**117**	**29**	**53**	**5,131**	**81**	**25**	**117**	**253**		**1,282**	**20**	**20**	**76**	**76**	**4,431**	**165**	**231**	**318**	**200**
	Grand Total at Buildout of Lorson Ranch										**60,375**	**1,418**	**3,158**	**3,607**	**2,386**																	**46,107**	**942**	**2,669**	**3,079**	**1,859**
Trip Generation Estimate From *Lorson Ranch Sketch Plan Traffic Technical Memorandum* 4/15/2016																																				
	Single-Family Detached Housing		210	5,183	DU	9.52	0.19	0.56	0.63	0.37	49,342	972	2,915	3,265	1,918	1,092	112	205	60	39	5,660	24	78	264	122	0%	0	0	0	0	0	0	43,276	845	2,675	2,982	1,777
	Multifamily Housing (Low-Rise)		210	118	DU	5.81	0.07	0.37	0.35	0.17	686	9	43	41	20											0%	0	0	0	0	0	0					
	Elementary School		520	500	Students	1.29	0.25	0.20	0.07	0.08	645	124	101	37	38	484	93	51	19	29	0	0	0	0	0	0%	0	0	0	0	0	0	161	31	50	18	9
	Middle School/Junior High School		522	500	Students	1.62	0.30	0.24	0.08	0.08	810	149	122	39	41	608	112	61	20	31	0	0	0	0	0	0%	0	0	0	0	0	0	202	37	61	19	10
	Shopping Center		820	219	KSF	51.58	0.71	0.44	2.22	2.40	11,320	156	96	487	528	0	0	0	0	0	5,660	78	24	122	264	25%	1,415	19	19	79	79	4,245	59	53	286	185
											62,803	**1,410**	**3,277**	**3,869**	**2,545**												**1,415**	**19**	**19**	**79**	**79**	**47,884**	**972**	**2,839**	**3,305**	**1,981**
	Change (Increase) From 2016										**-2,428**	**8**	**-119**	**-262**	**-159**																	**-1,777**	**-30**	**-170**	**-226**	**-122**

Notes:
(1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)
(2) See Appendix Table 2 for Internal Trip Percentages
(3) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice 3rd Edition, 2017" by ITE
(3) DU = dwelling Unit
(4) KSF = thousand square feet of floor area

Appendix Table 2
Carriage Meadows Townhomes
Internal Trip Estimate

ITE Land Use	ITE Code	Quantity	Unit	Trip Generation Rates[1]					Raw ITE Trip Generation (Individual Driveway Trips)						Percent Internal Trips					Total Internal Trips					Total External Trips				
				Daily	AM Peak Hour		PM Peak Hour		Daily	AM Peak Hour		PM Peak Hour			Daily	AM Peak Hour		PM Peak Hour			Daily	AM Peak Hour		PM Peak Hour			Daily	AM Peak Hour		PM Peak Hour	
					In	Out	In	Out		In	Out	In	Out			In	Out	In	Out			In	Out	In	Out			In	Out	In	Out
Single-Family Detached Housing	210	4,415	DU[2]	9.44	0.19	0.56	0.62	0.37	41,678	817	2,450	2,754	1,617																	
Residential Condominium/Townhouse	210	887	DU	7.32	0.11	0.35	0.35	0.21	6,493	94	314	313	184																	
														School	3%	13%	9%	2%	2%	1,360	117	241	53	29					
														Retail	11%	3%	3%	8%	6%	5,131	25	81	253	117					
									48,171	**911**	**2,764**	**3,067**	**1,801**	**Total**	13%	16%	12%	10%	8%	**6,491**	**142**	**322**	**306**	**146**	**41,680**	**769**	**2,442**	**2,761**	**1,655**
Elementary School	520	690	Students	1.89	0.36	0.31	0.07	0.08	1,304	250	213	51	53		70%	70%	40%	40%	70%	913	175	85	20	37	391	75	128	31	16
Middle School/Junior High School	522	300	Students	2.13	0.31	0.27	0.07	0.08	639	94	80	22	23		70%	70%	40%	40%	70%	447	66	32	9	16	192	28	48	13	7
								Total School	**1,943**	**344**	**293**	**73**	**76**							**1,360**	**241**	**117**	**29**	**53**	**583**	**103**	**176**	**44**	**23**
Shopping Center	820	219	KSF[3]	46.75	0.74	0.45	2.13	2.30	10,261	162	99	467	506		50%	50%	25%	25%	50%	5,131	81	25	117	253	5,129	80	74	350	252
								Total School and Retail	**12,204**	**506**	**392**	**540**	**582**							**6,491**	**322**	**142**	**146**	**306**					
																									47,392	**952**	**2,692**	**3,155**	**1,930**

Notes:
(1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)
(2) DU = dwelling Unit
(3) KSF = thousand square feet of floor area

LSC Transportation Consultants, Inc.

Figures 1-13

TRANSPORTATION
CONSULTANTS, INC.

Traffic Counts

TRANSPORTATION
CONSULTANTS, INC.

COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET:
E/W STREET:
CITY:
COUNTY:

File Name : Marksheffel Rd - Fontaine Blvd AM
Site Code : 00174850
Start Date : 3/1/2018
Page No : 1

Groups Printed- VEHICLES

	Marksheffel Rd Southbound				Fontaine Blvd Westbound				Marksheffel Rd Northbound				Fontaine Blvd Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
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	30	4	0	21	74	38	0	10	80	7	0	8	18	6	0	301
06:45 AM	7	37	2	0	15	104	45	0	8	72	8	0	4	22	6	0	330
Total	12	67	6	0	36	178	83	0	18	152	15	0	12	40	12	0	631
07:00 AM	9	28	4	0	20	86	65	0	12	96	11	0	15	18	8	0	372
07:15 AM	14	32	7	0	12	84	45	0	9	74	11	0	5	29	12	0	334
07:30 AM	15	40	7	0	20	50	40	0	14	74	8	0	7	25	7	0	307
07:45 AM	14	20	2	0	13	59	25	0	5	42	12	0	7	38	5	0	242
Total	52	120	20	0	65	279	175	0	40	286	42	0	34	110	32	0	1255
08:00 AM	13	37	2	0	20	93	38	0	8	53	10	0	6	32	3	0	315
08:15 AM	6	34	4	0	18	96	23	0	12	39	6	0	5	22	9	0	274
Grand Total	83	258	32	0	139	646	319	0	78	530	73	0	57	204	56	0	2475
Apprch %	22.3	69.2	8.6	0.0	12.6	58.5	28.9	0.0	11.5	77.8	10.7	0.0	18.0	64.4	17.7	0.0	
Total %	3.4	10.4	1.3	0.0	5.6	26.1	12.9	0.0	3.2	21.4	2.9	0.0	2.3	8.2	2.3	0.0	

COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET:
E/W STREET:
CITY:
COUNTY:

File Name : Marksheffel Rd - Fontaine Blvd PM
Site Code : 00174850
Start Date : 3/1/2018
Page No : 1

Groups Printed- VEHICLES

	Marksheffel Rd Southbound				Fontaine Blvd Westbound				Marksheffel Rd Northbound				Marksheffel Blvd Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
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	31	70	8	0	5	35	16	0	4	46	19	0	11	68	12	0	325
04:15 PM	42	74	11	0	4	40	19	0	4	51	21	0	10	77	10	0	363
04:30 PM	35	59	12	0	8	45	20	0	11	46	23	0	10	70	14	0	353
04:45 PM	30	67	15	0	6	34	14	0	4	35	34	0	13	72	8	0	332
Total	138	270	46	0	23	154	69	0	23	178	97	0	44	287	44	0	1373
05:00 PM	27	54	8	0	6	40	22	0	4	37	35	0	6	54	18	0	311
05:15 PM	30	60	4	0	8	44	22	0	7	42	26	0	12	76	12	0	343
05:30 PM	33	65	6	0	9	42	25	0	9	41	23	0	4	103	10	0	370
05:45 PM	37	53	5	0	13	59	20	0	7	36	37	0	9	71	6	0	353
Total	127	232	23	0	36	185	89	0	27	156	121	0	31	304	46	0	1377
Grand Total	265	502	69	0	59	339	158	0	50	334	218	0	75	591	90	0	2750
Apprch %	31.7	60.0	8.3	0.0	10.6	61.0	28.4	0.0	8.3	55.5	36.2	0.0	9.9	78.2	11.9	0.0	
Total %	9.6	18.3	2.5	0.0	2.1	12.3	5.7	0.0	1.8	12.1	7.9	0.0	2.7	21.5	3.3	0.0	

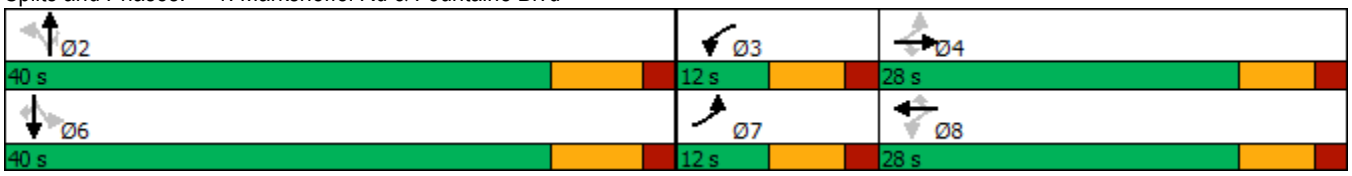
Levels of Service

TRANSPORTATION
CONSULTANTS, INC.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	179	41	224	521	364	87	362	101	127	148	20
Future Volume (vph)	32	179	41	224	521	364	87	362	101	127	148	20
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	11.5	26.5	26.5	11.5	26.5	26.5	27.5	27.5	27.5	27.5	27.5	27.5
Total Split (s)	12.0	28.0	28.0	12.0	28.0	28.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	5.5	5.5	5.5	5.5
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)	6.5	6.5	6.5	6.5	6.5	6.5	7.5	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	26.2	20.7	20.7	30.4	28.3	28.3	23.9	23.9	23.9	23.9	23.9	23.9
Actuated g/C Ratio	0.37	0.29	0.29	0.43	0.40	0.40	0.34	0.34	0.34	0.34	0.34	0.34
v/c Ratio	0.09	0.19	0.08	0.52	0.43	0.50	0.26	0.69	0.20	0.68	0.26	0.04
Control Delay	13.0	20.3	0.3	19.7	19.1	7.0	18.5	26.6	3.4	38.4	17.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	20.3	0.3	19.7	19.1	7.0	18.5	26.6	3.4	38.4	17.9	0.1
LOS	B	C	A	B	B	A	B	C	A	D	B	A
Approach Delay		16.1			15.2			21.1			25.5	
Approach LOS		B			B			C			C	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 70.7	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 18.1	Intersection LOS: B
Intersection Capacity Utilization 88.1%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Marksheffel Rd & Fountaine Blvd



Intersection	
Int Delay, s/veh	10.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	194	85	465	64	19	394
Future Vol, veh/h	194	85	465	64	19	394
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	250	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	15
Peak Hour Factor	92	92	83	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	211	92	560	70	21	428

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1030	560	0	0	630	0
Stage 1	560	-	-	-	-	-
Stage 2	470	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	259	528	-	-	952	-
Stage 1	572	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	253	528	-	-	952	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	629	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	48.5	0	0.4
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	253	528	952	-
HCM Lane V/C Ratio	-	-	0.833	0.175	0.022	-
HCM Control Delay (s)	-	-	63.9	13.3	8.9	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	6.6	0.6	0.1	-

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	374	11	1	1015	1	34	1	1	1	1	60
Future Vol, veh/h	22	374	11	1	1015	1	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	407	12	1	1103	1	37	1	1	1	1	65

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1104	0	0	419	0	0	1009	1561	204	1357	1572	552
Stage 1	-	-	-	-	-	-	455	455	-	1105	1105	-
Stage 2	-	-	-	-	-	-	554	1106	-	252	467	-
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	628	-	-	1137	-	-	194	111	803	108	109	477
Stage 1	-	-	-	-	-	-	554	567	-	225	285	-
Stage 2	-	-	-	-	-	-	484	284	-	730	560	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	628	-	-	1137	-	-	161	107	803	104	105	477
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	107	-	104	105	-
Stage 1	-	-	-	-	-	-	533	545	-	216	285	-
Stage 2	-	-	-	-	-	-	416	284	-	700	539	-

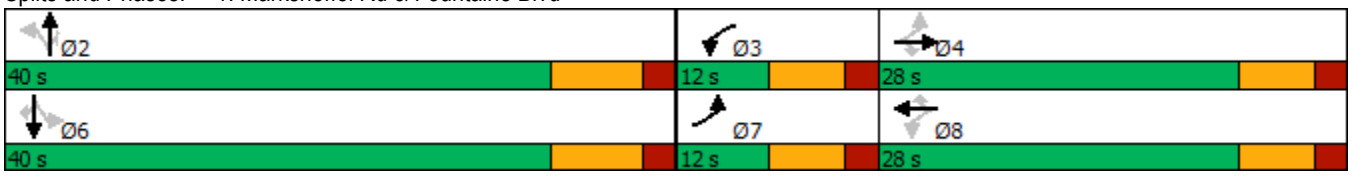
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	33.4	14.5
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	161	107	803	628	-	-	1137	-	-	104	105	477
HCM Lane V/C Ratio	0.23	0.01	0.001	0.038	-	-	0.001	-	-	0.01	0.01	0.137
HCM Control Delay (s)	33.9	39	9.5	11	-	-	8.2	-	-	40	39.6	13.7
HCM Lane LOS	D	E	A	B	-	-	A	-	-	E	E	B
HCM 95th %tile Q(veh)	0.8	0	0	0.1	-	-	0	-	-	0	0	0.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	508	73	106	289	167	58	203	224	301	271	23
Future Volume (vph)	36	508	73	106	289	167	58	203	224	301	271	23
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	11.5	26.5	26.5	11.5	26.5	26.5	27.5	27.5	27.5	27.5	27.5	27.5
Total Split (s)	12.0	28.0	28.0	12.0	28.0	28.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	5.5	5.5	5.5	5.5
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)	6.5	6.5	6.5	6.5	6.5	6.5	7.5	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	25.2	21.0	21.0	26.5	23.5	23.5	26.0	26.0	26.0	26.0	26.0	26.0
Actuated g/C Ratio	0.36	0.30	0.30	0.38	0.33	0.33	0.37	0.37	0.37	0.37	0.37	0.37
v/c Ratio	0.10	0.60	0.16	0.37	0.27	0.28	0.17	0.32	0.33	0.77	0.43	0.04
Control Delay	14.0	25.6	1.7	17.5	20.6	5.3	16.9	17.9	3.7	33.7	19.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	25.6	1.7	17.5	20.6	5.3	16.9	17.9	3.7	33.7	19.4	0.1
LOS	B	C	A	B	C	A	B	B	A	C	B	A
Approach Delay		22.1			15.5			11.2			25.9	
Approach LOS		C			B			B			C	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 70.4	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 79.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Marksheffel Rd & Fountaine Blvd



Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	132	60	425	220	65	384
Future Vol, veh/h	132	60	425	220	65	384
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	250	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	15
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	143	65	462	239	71	417

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1021	462	0	0	701	0
Stage 1	462	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	262	600	-	-	896	-
Stage 1	634	-	-	-	-	-
Stage 2	572	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	241	600	-	-	896	-
Mov Cap-2 Maneuver	241	-	-	-	-	-
Stage 1	584	-	-	-	-	-
Stage 2	572	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31	0	1.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	241	600	896	-
HCM Lane V/C Ratio	-	-	0.595	0.109	0.079	-
HCM Control Delay (s)	-	-	39.8	11.7	9.4	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	3.4	0.4	0.3	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	920	38	1	500	1	23	1	1	1	1	39
Future Vol, veh/h	75	920	38	1	500	1	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	-	-	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	82	1000	41	1	543	1	25	1	1	1	1	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	544	0	0	1041	0	0	1438	1710	500	1210	1750	272
Stage 1	-	-	-	-	-	-	1164	1164	-	545	545	-
Stage 2	-	-	-	-	-	-	274	546	-	665	1205	-
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	1021	-	-	664	-	-	94	90	516	138	85	726
Stage 1	-	-	-	-	-	-	207	267	-	490	517	-
Stage 2	-	-	-	-	-	-	709	516	-	416	255	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1021	-	-	664	-	-	82	83	516	128	78	726
Mov Cap-2 Maneuver	-	-	-	-	-	-	82	83	-	128	78	-
Stage 1	-	-	-	-	-	-	190	246	-	451	516	-
Stage 2	-	-	-	-	-	-	665	515	-	380	235	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	64.2	11.9
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	82	83	516	1021	-	-	664	-	-	128	78	726
HCM Lane V/C Ratio	0.305	0.013	0.002	0.08	-	-	0.002	-	-	0.008	0.014	0.058
HCM Control Delay (s)	67.1	48.9	12	8.8	-	-	10.4	-	-	33.4	51.8	10.3
HCM Lane LOS	F	E	B	A	-	-	B	-	-	D	F	B
HCM 95th %tile Q(veh)	1.1	0	0	0.3	-	-	0	-	-	0	0	0.2

Intersection	
Int Delay, s/veh	5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	194	85	465	64	19	0
Future Vol, veh/h	194	85	465	64	19	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	250	0	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	15
Peak Hour Factor	92	92	83	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	211	92	560	70	21	0

Major/Minor	Minor1		Major1	
Conflicting Flow All	560	560	0	0
Stage 1	560	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.42	6.22	-	-
Critical Hdwy Stg 1	5.42	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-
Pot Cap-1 Maneuver	489	528	-	-
Stage 1	572	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	489	528	-	-
Mov Cap-2 Maneuver	489	-	-	-
Stage 1	572	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	16.4	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2
Capacity (veh/h)	-	-	489	528
HCM Lane V/C Ratio	-	-	0.431	0.175
HCM Control Delay (s)	-	-	17.8	13.3
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	2.1	0.6

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	132	60	425	220	65	0
Future Vol, veh/h	132	60	425	220	65	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	250	0	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	15
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	143	65	462	239	71	0

Major/Minor	Minor1		Major1	
Conflicting Flow All	462	462	0	0
Stage 1	462	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.42	6.22	-	-
Critical Hdwy Stg 1	5.42	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-
Pot Cap-1 Maneuver	558	600	-	-
Stage 1	634	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	558	600	-	-
Mov Cap-2 Maneuver	558	-	-	-
Stage 1	634	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	13.1	0
HCM LOS	B	

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2
Capacity (veh/h)	-	-	558	600
HCM Lane V/C Ratio	-	-	0.257	0.109
HCM Control Delay (s)	-	-	13.7	11.7
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	1	0.4

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	303	630	21
Demand Flow Rate, veh/h	309	642	21
Vehicles Circulating, veh/h	571	21	215
Vehicles Exiting, veh/h	92	215	665
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	9.9	7.5	3.4
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	309	642	21
Cap Entry Lane, veh/h	771	1351	1108
Entry HV Adj Factor	0.981	0.981	1.000
Flow Entry, veh/h	303	630	21
Cap Entry, veh/h	756	1325	1108
V/C Ratio	0.401	0.475	0.019
Control Delay, s/veh	9.9	7.5	3.4
LOS	A	A	A
95th %tile Queue, veh	2	3	0

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	208	701	71
Demand Flow Rate, veh/h	212	715	72
Vehicles Circulating, veh/h	471	72	146
Vehicles Exiting, veh/h	316	146	537
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.0	9.2	3.6
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	212	715	72
Cap Entry Lane, veh/h	854	1282	1189
Entry HV Adj Factor	0.981	0.980	0.986
Flow Entry, veh/h	208	701	71
Cap Entry, veh/h	837	1257	1172
V/C Ratio	0.248	0.558	0.061
Control Delay, s/veh	7.0	9.2	3.6
LOS	A	A	A
95th %tile Queue, veh	1	4	0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	194	85	465	64	19	394
Future Volume (vph)	194	85	465	64	19	394
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	15.0	75.0	75.0	75.0	75.0
Total Split (%)	16.7%	16.7%	83.3%	83.3%	83.3%	83.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	10.1	10.1	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.28	0.28	0.44	0.44	0.44	0.44
v/c Ratio	0.43	0.18	0.68	0.09	0.08	0.56
Control Delay	15.4	5.0	12.6	2.1	6.1	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	5.0	12.6	2.1	6.1	10.5
LOS	B	A	B	A	A	B
Approach Delay	12.2		11.5			10.3
Approach LOS	B		B			B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 36.3	
Natural Cycle: 45	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 11.3	Intersection LOS: B
Intersection Capacity Utilization 43.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Marksheffel Rd & Lorson Blvd

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	132	60	425	220	65	384
Future Volume (vph)	132	60	425	220	65	384
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	15.0	75.0	75.0	75.0	75.0
Total Split (%)	16.7%	16.7%	83.3%	83.3%	83.3%	83.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	9.1	9.1	16.9	16.9	16.9	16.9
Actuated g/C Ratio	0.30	0.30	0.56	0.56	0.56	0.56
v/c Ratio	0.27	0.13	0.45	0.24	0.16	0.43
Control Delay	12.7	4.9	8.2	1.9	6.8	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	4.9	8.2	1.9	6.8	8.2
LOS	B	A	A	A	A	A
Approach Delay	10.2		6.0			8.0
Approach LOS	B		A			A

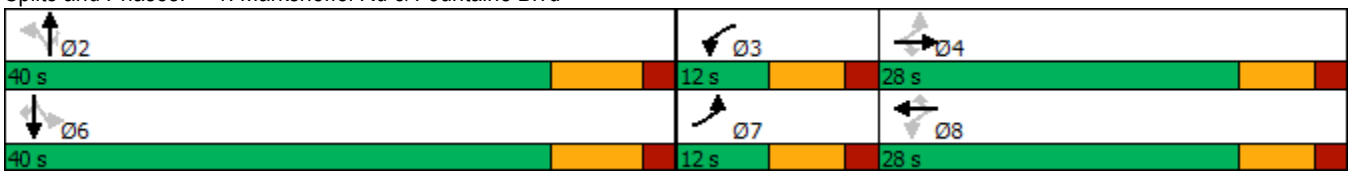
Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 30.3	
Natural Cycle: 40	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 7.4	Intersection LOS: A
Intersection Capacity Utilization 45.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Marksheffel Rd & Lorson Blvd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	180	41	225	526	368	87	362	101	128	148	20
Future Volume (vph)	32	180	41	225	526	368	87	362	101	128	148	20
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	11.5	26.5	26.5	11.5	26.5	26.5	27.5	27.5	27.5	27.5	27.5	27.5
Total Split (s)	12.0	28.0	28.0	12.0	28.0	28.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	5.5	5.5	5.5	5.5
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)	6.5	6.5	6.5	6.5	6.5	6.5	7.5	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	26.2	20.7	20.7	30.4	28.3	28.3	23.9	23.9	23.9	23.9	23.9	23.9
Actuated g/C Ratio	0.37	0.29	0.29	0.43	0.40	0.40	0.34	0.34	0.34	0.34	0.34	0.34
v/c Ratio	0.10	0.19	0.08	0.53	0.43	0.51	0.26	0.69	0.20	0.68	0.26	0.04
Control Delay	13.0	20.3	0.3	19.8	19.1	7.2	18.5	26.6	3.4	38.8	17.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	20.3	0.3	19.8	19.1	7.2	18.5	26.6	3.4	38.8	17.9	0.1
LOS	B	C	A	B	B	A	B	C	A	D	B	A
Approach Delay		16.1			15.3			21.1			25.7	
Approach LOS		B			B			C			C	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 70.7	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 18.2	Intersection LOS: B
Intersection Capacity Utilization 88.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Marksheffel Rd & Fountaine Blvd



Intersection	
Int Delay, s/veh	11.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	200	85	465	66	19	395
Future Vol, veh/h	200	85	465	66	19	395
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	250	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	15
Peak Hour Factor	92	92	83	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	217	92	560	72	21	429

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1031	560	0	0	632	0
Stage 1	560	-	-	-	-	-
Stage 2	471	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	258	528	-	-	951	-
Stage 1	572	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	252	528	-	-	951	-
Mov Cap-2 Maneuver	252	-	-	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	628	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	52.4	0	0.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	252	528	951	-
HCM Lane V/C Ratio	-	-	0.863	0.175	0.022	-
HCM Control Delay (s)	-	-	69	13.3	8.9	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	7.1	0.6	0.1	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	374	13	2	1015	1	44	1	3	1	1	60
Future Vol, veh/h	22	374	13	2	1015	1	44	1	3	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	100	-	100	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	407	14	2	1103	1	48	1	3	1	1	65

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1104	0	0	421	0	0	1011	1563	204	1359	1576	552
Stage 1	-	-	-	-	-	-	455	455	-	1107	1107	-
Stage 2	-	-	-	-	-	-	556	1108	-	252	469	-
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	628	-	-	1135	-	-	194	111	803	107	109	477
Stage 1	-	-	-	-	-	-	554	567	-	224	284	-
Stage 2	-	-	-	-	-	-	483	284	-	730	559	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	628	-	-	1135	-	-	161	107	803	103	105	477
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	107	-	103	105	-
Stage 1	-	-	-	-	-	-	533	545	-	215	283	-
Stage 2	-	-	-	-	-	-	415	283	-	698	538	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	34.9	14.5
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	161	107	803	628	-	-	1135	-	-	103	105	477
HCM Lane V/C Ratio	0.297	0.01	0.004	0.038	-	-	0.002	-	-	0.011	0.01	0.137
HCM Control Delay (s)	36.5	39	9.5	11	-	-	8.2	-	-	40.3	39.6	13.7
HCM Lane LOS	E	E	A	B	-	-	A	-	-	E	E	B
HCM 95th %tile Q(veh)	1.2	0	0	0.1	-	-	0	-	-	0	0	0.5

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	10	38	1	3	14
Future Vol, veh/h	4	10	38	1	3	14
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	-	-	-	-	-
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	4	11	41	1	3	15

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	63	42	0	0	42	0
Stage 1	42	-	-	-	-	-
Stage 2	21	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	943	1029	-	-	1567	-
Stage 1	980	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	941	1029	-	-	1567	-
Mov Cap-2 Maneuver	941	-	-	-	-	-
Stage 1	978	-	-	-	-	-
Stage 2	1002	-	-	-	-	-

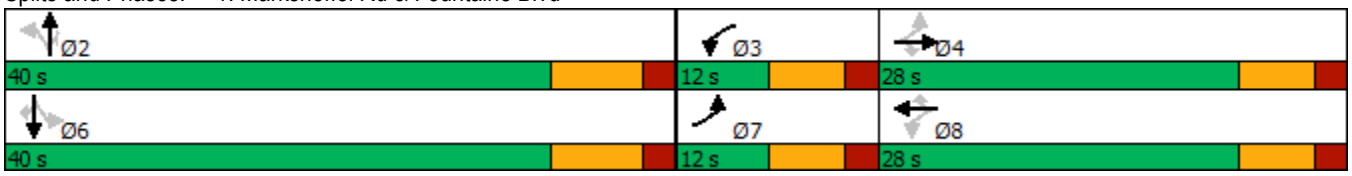
Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	1.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1002	1567	-
HCM Lane V/C Ratio	-	-	0.015	0.002	-
HCM Control Delay (s)	-	-	8.6	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	513	73	107	292	170	58	203	225	306	271	23
Future Volume (vph)	36	513	73	107	292	170	58	203	225	306	271	23
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	11.5	26.5	26.5	11.5	26.5	26.5	27.5	27.5	27.5	27.5	27.5	27.5
Total Split (s)	12.0	28.0	28.0	12.0	28.0	28.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	5.5	5.5	5.5	5.5
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)	6.5	6.5	6.5	6.5	6.5	6.5	7.5	7.5	7.5	7.5	7.5	7.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	25.1	20.9	20.9	26.5	23.5	23.5	26.2	26.2	26.2	26.2	26.2	26.2
Actuated g/C Ratio	0.36	0.30	0.30	0.38	0.33	0.33	0.37	0.37	0.37	0.37	0.37	0.37
v/c Ratio	0.10	0.60	0.16	0.38	0.27	0.28	0.17	0.32	0.33	0.78	0.43	0.04
Control Delay	14.1	25.9	1.7	17.9	20.7	5.3	16.8	17.8	3.6	34.3	19.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	25.9	1.7	17.9	20.7	5.3	16.8	17.8	3.6	34.3	19.3	0.1
LOS	B	C	A	B	C	A	B	B	A	C	B	A
Approach Delay		22.4			15.6			11.1			26.2	
Approach LOS		C			B			B			C	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 70.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 19.4	Intersection LOS: B
Intersection Capacity Utilization 79.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Marksheffel Rd & Fountaine Blvd



Intersection	
Int Delay, s/veh	5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	136	60	426	227	65	385
Future Vol, veh/h	136	60	426	227	65	385
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	250	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	15
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	148	65	463	247	71	418

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1023	463	0	0	710	0
Stage 1	463	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	261	599	-	-	889	-
Stage 1	634	-	-	-	-	-
Stage 2	572	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	240	599	-	-	889	-
Mov Cap-2 Maneuver	240	-	-	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	572	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32.3	0	1.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	240	599	889	-
HCM Lane V/C Ratio	-	-	0.616	0.109	0.079	-
HCM Control Delay (s)	-	-	41.4	11.7	9.4	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	3.7	0.4	0.3	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	920	49	1	500	1	29	1	1	1	1	39
Future Vol, veh/h	75	920	49	1	500	1	29	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	100	-	100	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	82	1000	53	1	543	1	32	1	1	1	1	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	544	0	0	1053	0	0	1438	1710	500	1210	1762	272
Stage 1	-	-	-	-	-	-	1164	1164	-	545	545	-
Stage 2	-	-	-	-	-	-	274	546	-	665	1217	-
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	1021	-	-	657	-	-	94	90	516	138	83	726
Stage 1	-	-	-	-	-	-	207	267	-	490	517	-
Stage 2	-	-	-	-	-	-	709	516	-	416	252	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1021	-	-	657	-	-	82	83	516	128	76	726
Mov Cap-2 Maneuver	-	-	-	-	-	-	82	83	-	128	76	-
Stage 1	-	-	-	-	-	-	190	246	-	451	516	-
Stage 2	-	-	-	-	-	-	665	515	-	380	232	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	71.2	11.9
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	82	83	516	1021	-	-	657	-	-	128	76	726
HCM Lane V/C Ratio	0.384	0.013	0.002	0.08	-	-	0.002	-	-	0.008	0.014	0.058
HCM Control Delay (s)	74	48.9	12	8.8	-	-	10.5	-	-	33.4	53.1	10.3
HCM Lane LOS	F	E	B	A	-	-	B	-	-	D	F	B
HCM 95th %tile Q(veh)	1.5	0	0	0.3	-	-	0	-	-	0	0	0.2

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	5	26	5	10	42
Future Vol, veh/h	3	5	26	5	10	42
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	-	-	-	-	-
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	3	5	28	5	11	46

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	99	31	0	0	33	0
Stage 1	31	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	900	1043	-	-	1579	-
Stage 1	992	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	894	1043	-	-	1579	-
Mov Cap-2 Maneuver	894	-	-	-	-	-
Stage 1	985	-	-	-	-	-
Stage 2	955	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	1.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	982	1579	-
HCM Lane V/C Ratio	-	-	0.009	0.007	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	201	85	465	66	19	0
Future Vol, veh/h	201	85	465	66	19	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	250	-	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	15
Peak Hour Factor	92	92	83	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	218	92	560	72	21	0

Major/Minor	Minor1		Major1	
Conflicting Flow All	560	560	0	0
Stage 1	560	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.42	6.22	-	-
Critical Hdwy Stg 1	5.42	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-
Pot Cap-1 Maneuver	489	528	-	-
Stage 1	572	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	489	528	-	-
Mov Cap-2 Maneuver	489	-	-	-
Stage 1	572	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	16.7	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2
Capacity (veh/h)	-	-	489	528
HCM Lane V/C Ratio	-	-	0.447	0.175
HCM Control Delay (s)	-	-	18.2	13.3
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	2.3	0.6

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	137	60	426	228	65	0
Future Vol, veh/h	137	60	426	228	65	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	250	-	-
Veh in Median Storage, #	0	-	0	-	-	16979
Grade, %	0	-	0	-	-	15
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	149	65	463	248	71	0

Major/Minor	Minor1		Major1	
Conflicting Flow All	463	463	0	0
Stage 1	463	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.42	6.22	-	-
Critical Hdwy Stg 1	5.42	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-
Pot Cap-1 Maneuver	557	599	-	-
Stage 1	634	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	557	599	-	-
Mov Cap-2 Maneuver	557	-	-	-
Stage 1	634	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	13.2	0
HCM LOS	B	

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2
Capacity (veh/h)	-	-	557	599
HCM Lane V/C Ratio	-	-	0.267	0.109
HCM Control Delay (s)	-	-	13.8	11.7
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	1.1	0.4

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	310	632	21
Demand Flow Rate, veh/h	316	644	21
Vehicles Circulating, veh/h	571	21	222
Vehicles Exiting, veh/h	94	222	665
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	10.1	7.6	3.4
Approach LOS	B	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	316	644	21
Cap Entry Lane, veh/h	771	1351	1100
Entry HV Adj Factor	0.981	0.981	1.000
Flow Entry, veh/h	310	632	21
Cap Entry, veh/h	756	1325	1100
V/C Ratio	0.410	0.477	0.019
Control Delay, s/veh	10.1	7.6	3.4
LOS	B	A	A
95th %tile Queue, veh	2	3	0

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	214	711	71
Demand Flow Rate, veh/h	218	725	72
Vehicles Circulating, veh/h	472	72	152
Vehicles Exiting, veh/h	325	152	538
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.1	9.3	3.6
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	218	725	72
Cap Entry Lane, veh/h	853	1282	1182
Entry HV Adj Factor	0.982	0.980	0.986
Flow Entry, veh/h	214	711	71
Cap Entry, veh/h	837	1257	1165
V/C Ratio	0.256	0.565	0.061
Control Delay, s/veh	7.1	9.3	3.6
LOS	A	A	A
95th %tile Queue, veh	1	4	0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	201	85	465	66	19	395
Future Volume (vph)	201	85	465	66	19	395
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	15.0	75.0	75.0	75.0	75.0
Total Split (%)	16.7%	16.7%	83.3%	83.3%	83.3%	83.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	10.1	10.1	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.28	0.28	0.44	0.44	0.44	0.44
v/c Ratio	0.44	0.18	0.68	0.10	0.08	0.56
Control Delay	15.6	5.0	12.6	2.1	6.1	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	5.0	12.6	2.1	6.1	10.5
LOS	B	A	B	A	A	B
Approach Delay	12.5		11.4			10.3
Approach LOS	B		B			B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 36.3	
Natural Cycle: 45	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 11.3	Intersection LOS: B
Intersection Capacity Utilization 43.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Marksheffel Rd & Lorson Blvd

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	137	60	426	228	65	385
Future Volume (vph)	137	60	426	228	65	385
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	15.0	75.0	75.0	75.0	75.0
Total Split (%)	16.7%	16.7%	83.3%	83.3%	83.3%	83.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	9.4	9.4	16.9	16.9	16.9	16.9
Actuated g/C Ratio	0.31	0.31	0.55	0.55	0.55	0.55
v/c Ratio	0.27	0.12	0.45	0.25	0.16	0.44
Control Delay	12.6	4.9	8.3	1.9	6.9	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	4.9	8.3	1.9	6.9	8.4
LOS	B	A	A	A	A	A
Approach Delay	10.3		6.1			8.2
Approach LOS	B		A			A

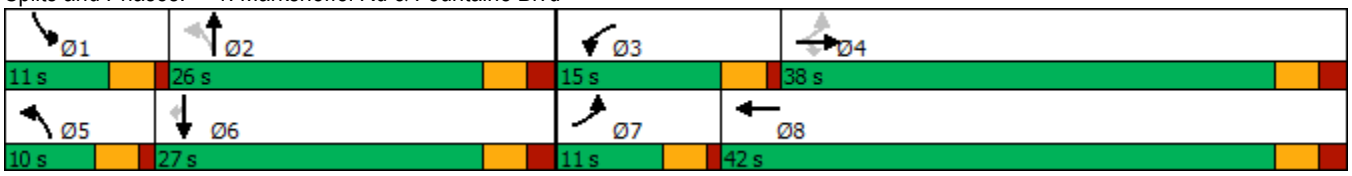
Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 30.5	
Natural Cycle: 40	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 7.4	Intersection LOS: A
Intersection Capacity Utilization 46.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Marksheffel Rd & Lorson Blvd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	352	48	441	1019	601	149	527	178	241	516	45
Future Volume (vph)	38	352	48	441	1019	601	149	527	178	241	516	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)	11.0	38.0	38.0	15.0	42.0		10.0	26.0		11.0	27.0	27.0
Total Split (%)	12.2%	42.2%	42.2%	16.7%	46.7%		11.1%	28.9%		12.2%	30.0%	30.0%
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	None		None	None	None
Act Effct Green (s)	28.9	21.3	21.3	11.5	31.2	75.6	24.1	16.8	75.6	7.3	17.8	17.8
Actuated g/C Ratio	0.38	0.28	0.28	0.15	0.41	1.00	0.32	0.22	1.00	0.10	0.24	0.24
v/c Ratio	0.16	0.36	0.10	0.86	0.73	0.40	0.55	0.71	0.12	0.74	0.65	0.10
Control Delay	11.5	21.8	0.4	53.7	23.4	0.8	27.8	33.9	0.2	52.6	31.5	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	11.5	21.8	0.4	53.7	23.4	0.8	27.8	33.9	0.2	52.6	31.5	0.4
LOS	B	C	A	D	C	A	C	C	A	D	C	A
Approach Delay		18.5			23.1			25.8			36.0	
Approach LOS		B			C			C			D	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 75.6	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 25.6	Intersection LOS: C
Intersection Capacity Utilization 69.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Marksheffel Rd & Fountaine Blvd



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	461	122	732	148	28	977
Future Volume (vph)	461	122	732	148	28	977
Turn Type	Prot	Perm	NA	Free	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		Free	6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		9.0	20.0
Total Split (s)	20.0	20.0	60.0		10.0	70.0
Total Split (%)	22.2%	22.2%	66.7%		11.1%	77.8%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	12.1	12.1	20.1	44.0	21.6	21.6
Actuated g/C Ratio	0.28	0.28	0.46	1.00	0.49	0.49
v/c Ratio	0.52	0.24	0.48	0.10	0.08	0.64
Control Delay	16.8	5.3	10.4	0.1	6.4	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	5.3	10.4	0.1	6.4	10.4
LOS	B	A	B	A	A	B
Approach Delay	14.4		8.7			10.3
Approach LOS	B		A			B

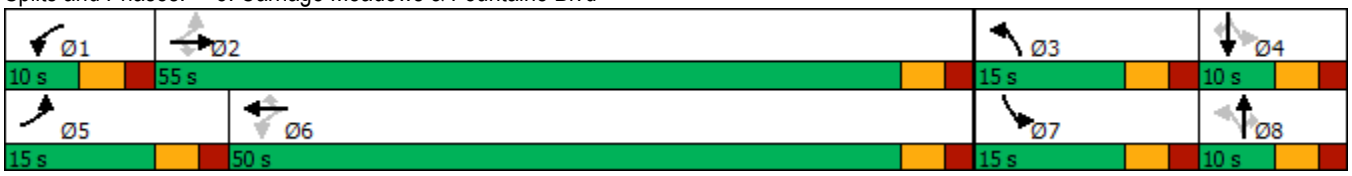
Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 44	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 10.7	Intersection LOS: B
Intersection Capacity Utilization 48.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Marksheffel Rd & Lorson Blvd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	657	56	34	1900	45	75	3	15	18	1	87
Future Volume (vph)	57	657	56	34	1900	45	75	3	15	18	1	87
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	15.0	55.0	55.0	10.0	50.0	50.0	15.0	10.0	10.0	15.0	10.0	10.0
Total Split (%)	16.7%	61.1%	61.1%	11.1%	55.6%	55.6%	16.7%	11.1%	11.1%	16.7%	11.1%	11.1%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	59.3	56.5	56.5	55.7	53.1	53.1	15.1	11.2	11.2	10.2	5.0	5.0
Actuated g/C Ratio	0.70	0.67	0.67	0.66	0.63	0.63	0.18	0.13	0.13	0.12	0.06	0.06
v/c Ratio	0.27	0.29	0.05	0.07	0.90	0.04	0.33	0.01	0.05	0.10	0.01	0.40
Control Delay	8.4	9.1	0.1	5.6	26.6	0.1	32.7	37.0	0.3	29.2	40.0	7.4
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	8.4	9.1	0.1	5.6	26.6	0.1	32.7	37.0	0.3	29.2	40.0	7.4
LOS	A	A	A	A	C	A	C	D	A	C	D	A
Approach Delay		8.4			25.6			27.5			11.4	
Approach LOS		A			C			C			B	

Intersection Summary		
Cycle Length: 90		
Actuated Cycle Length: 84.4		
Natural Cycle: 80		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.90		
Intersection Signal Delay: 20.7	Intersection LOS: C	
Intersection Capacity Utilization 74.6%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 8: Carriage Meadows & Fountaine Blvd



Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	3	6	46	14	76
Future Vol, veh/h	48	3	6	46	14	76
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	-	180	-	-	155
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	51	3	6	48	15	80

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	75	15	95	0	-	0
Stage 1	15	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	928	1065	1499	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	963	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	924	1065	1499	-	-	-
Mov Cap-2 Maneuver	924	-	-	-	-	-
Stage 1	1004	-	-	-	-	-
Stage 2	963	-	-	-	-	-

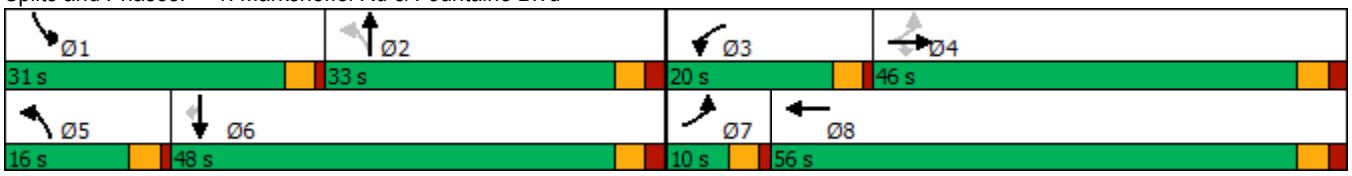
Approach	EB	NB	SB
HCM Control Delay, s	9.1	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1499	-	931	-	-
HCM Lane V/C Ratio	0.004	-	0.058	-	-
HCM Control Delay (s)	7.4	-	9.1	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	1186	143	338	707	458	116	222	542	774	310	65
Future Volume (vph)	70	1186	143	338	707	458	116	222	542	774	310	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	46.0	46.0	20.0	56.0		16.0	33.0		31.0	48.0	48.0
Total Split (%)	7.7%	35.4%	35.4%	15.4%	43.1%		12.3%	25.4%		23.8%	36.9%	36.9%
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	None		None	None	None
Act Effct Green (s)	48.0	41.0	41.0	15.2	52.3	113.8	23.7	12.6	113.8	27.0	29.5	29.5
Actuated g/C Ratio	0.42	0.36	0.36	0.13	0.46	1.00	0.21	0.11	1.00	0.24	0.26	0.26
v/c Ratio	0.21	0.95	0.22	0.75	0.44	0.30	0.42	0.58	0.35	0.97	0.34	0.13
Control Delay	15.6	51.8	4.7	59.2	22.8	0.5	29.5	54.4	0.6	68.7	35.9	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	51.8	4.7	59.2	22.8	0.5	29.5	54.4	0.6	68.7	35.9	1.1
LOS	B	D	A	E	C	A	C	D	A	E	D	A
Approach Delay		45.2			24.2			18.0			56.1	
Approach LOS		D			C			B			E	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 113.8	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 36.5	Intersection LOS: D
Intersection Capacity Utilization 85.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Marksheffel Rd & Fountaine Blvd



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	329	85	795	532	100	691
Future Volume (vph)	329	85	795	532	100	691
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	9.0	20.0
Total Split (s)	20.0	20.0	60.0	60.0	10.0	70.0
Total Split (%)	22.2%	22.2%	66.7%	66.7%	11.1%	77.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	10.8	10.8	21.8	21.8	29.1	29.1
Actuated g/C Ratio	0.21	0.21	0.43	0.43	0.57	0.57
v/c Ratio	0.48	0.22	0.55	0.56	0.30	0.39
Control Delay	22.0	7.2	12.8	3.6	6.9	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	7.2	12.8	3.6	6.9	6.2
LOS	C	A	B	A	A	A
Approach Delay	19.0		9.1			6.3
Approach LOS	B		A			A

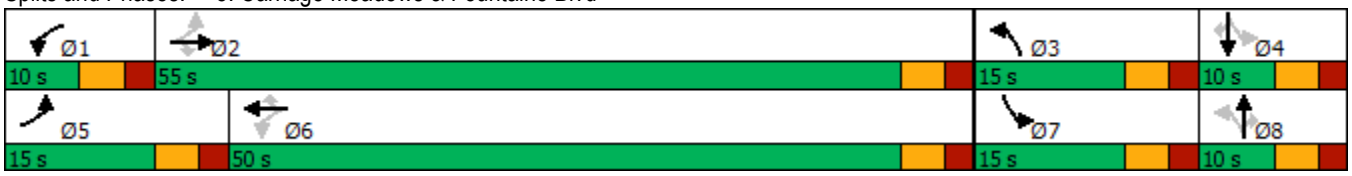
Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 50.7	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 9.8	Intersection LOS: A
Intersection Capacity Utilization 49.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Marksheffel Rd & Lorson Blvd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	2028	243	44	1190	57	160	9	100	126	10	153
Future Volume (vph)	231	2028	243	44	1190	57	160	9	100	126	10	153
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	15.0	55.0	55.0	10.0	50.0	50.0	15.0	10.0	10.0	15.0	10.0	10.0
Total Split (%)	16.7%	61.1%	61.1%	11.1%	55.6%	55.6%	16.7%	11.1%	11.1%	16.7%	11.1%	11.1%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	60.0	54.0	54.0	50.0	45.0	45.0	13.8	5.1	5.1	15.6	5.0	5.0
Actuated g/C Ratio	0.67	0.60	0.60	0.56	0.50	0.50	0.15	0.06	0.06	0.17	0.06	0.06
v/c Ratio	0.78	1.00	0.25	0.26	0.71	0.07	0.61	0.08	0.46	0.47	0.11	0.67
Control Delay	33.1	40.3	2.7	9.9	20.0	0.2	41.7	42.2	10.1	35.7	42.8	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	40.3	2.7	9.9	20.0	0.2	41.7	42.2	10.1	35.7	42.8	22.1
LOS	C	D	A	A	C	A	D	D	B	D	D	C
Approach Delay		36.0			18.8			29.9			28.8	
Approach LOS		D			B			C			C	

Intersection Summary		
Cycle Length: 90		
Actuated Cycle Length: 89.7		
Natural Cycle: 90		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 1.00		
Intersection Signal Delay: 30.1	Intersection LOS: C	
Intersection Capacity Utilization 87.4%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 8: Carriage Meadows & Fountaine Blvd



Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	228	1	24	3	0	6	8	34	5	11	52	233
Future Vol, veh/h	228	1	24	3	0	6	8	34	5	11	52	233
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	-	-	-	-	-	-	180	-	-	180	-	155
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	240	1	25	3	0	6	8	36	5	12	55	245

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	137	136	55	270	379	39	300	0	0	41	0	0
Stage 1	79	79	-	55	55	-	-	-	-	-	-	-
Stage 2	58	57	-	215	324	-	-	-	-	-	-	-
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	834	755	1012	683	553	1033	1261	-	-	1568	-	-
Stage 1	930	829	-	957	849	-	-	-	-	-	-	-
Stage 2	954	847	-	787	650	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	820	744	1012	658	545	1033	1261	-	-	1568	-	-
Mov Cap-2 Maneuver	820	744	-	658	545	-	-	-	-	-	-	-
Stage 1	924	822	-	951	844	-	-	-	-	-	-	-
Stage 2	942	842	-	761	645	-	-	-	-	-	-	-

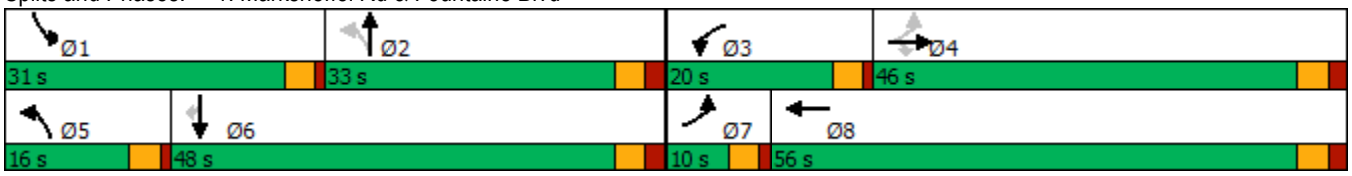
Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	9.2	1.3	0.3
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1261	-	-	835	868	1568	-	-
HCM Lane V/C Ratio	0.007	-	-	0.319	0.011	0.007	-	-
HCM Control Delay (s)	7.9	-	-	11.3	9.2	7.3	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.4	0	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	1180	143	337	704	455	116	222	541	769	310	65
Future Volume (vph)	70	1180	143	337	704	455	116	222	541	769	310	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	46.0	46.0	20.0	56.0		16.0	33.0		31.0	48.0	48.0
Total Split (%)	7.7%	35.4%	35.4%	15.4%	43.1%		12.3%	25.4%		23.8%	36.9%	36.9%
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	None		None	None	None
Act Effct Green (s)	48.0	41.0	41.0	15.1	52.3	113.8	23.7	12.6	113.8	27.0	29.5	29.5
Actuated g/C Ratio	0.42	0.36	0.36	0.13	0.46	1.00	0.21	0.11	1.00	0.24	0.26	0.26
v/c Ratio	0.21	0.94	0.22	0.75	0.44	0.29	0.42	0.58	0.35	0.96	0.34	0.13
Control Delay	15.6	51.0	4.7	59.1	22.8	0.5	29.5	54.4	0.6	67.5	35.9	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	51.0	4.7	59.1	22.8	0.5	29.5	54.4	0.6	67.5	35.9	1.1
LOS	B	D	A	E	C	A	C	D	A	E	D	A
Approach Delay		44.5			24.2			18.0			55.2	
Approach LOS		D			C			B			E	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 113.8	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 36.1	Intersection LOS: D
Intersection Capacity Utilization 85.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Marksheffel Rd & Fountaine Blvd



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	325	85	794	524	100	690
Future Volume (vph)	325	85	794	524	100	690
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	9.0	20.0
Total Split (s)	20.0	20.0	60.0	60.0	10.0	70.0
Total Split (%)	22.2%	22.2%	66.7%	66.7%	11.1%	77.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	10.7	10.7	21.7	21.7	29.1	29.1
Actuated g/C Ratio	0.21	0.21	0.43	0.43	0.58	0.58
v/c Ratio	0.47	0.22	0.55	0.56	0.30	0.39
Control Delay	21.9	7.2	12.8	3.5	6.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	7.2	12.8	3.5	6.8	6.2
LOS	C	A	B	A	A	A
Approach Delay	18.9		9.1			6.3
Approach LOS	B		A			A

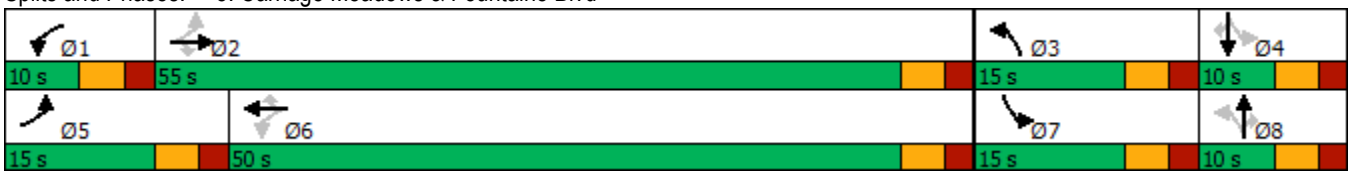
Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 50.6	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 9.8	Intersection LOS: A
Intersection Capacity Utilization 49.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Marksheffel Rd & Lorson Blvd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	2028	231	44	1190	57	153	8	100	126	10	153
Future Volume (vph)	231	2028	231	44	1190	57	153	8	100	126	10	153
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	15.0	55.0	55.0	10.0	50.0	50.0	15.0	10.0	10.0	15.0	10.0	10.0
Total Split (%)	16.7%	61.1%	61.1%	11.1%	55.6%	55.6%	16.7%	11.1%	11.1%	16.7%	11.1%	11.1%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	59.8	53.8	53.8	50.0	45.0	45.0	13.7	5.1	5.1	15.5	5.0	5.0
Actuated g/C Ratio	0.67	0.60	0.60	0.56	0.50	0.50	0.15	0.06	0.06	0.17	0.06	0.06
v/c Ratio	0.79	1.00	0.23	0.26	0.70	0.07	0.59	0.08	0.46	0.47	0.11	0.67
Control Delay	33.5	40.5	2.7	9.8	19.9	0.2	40.6	42.0	10.1	35.8	42.8	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	40.5	2.7	9.8	19.9	0.2	40.6	42.0	10.1	35.8	42.8	22.0
LOS	C	D	A	A	B	A	D	D	B	D	D	C
Approach Delay		36.3			18.7			28.9			28.8	
Approach LOS		D			B			C			C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 89.4	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 30.1	Intersection LOS: C
Intersection Capacity Utilization 87.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 8: Carriage Meadows & Fountaine Blvd



Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	228	24	8	33	50	233
Future Vol, veh/h	228	24	8	33	50	233
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	-	180	-	-	155
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	240	25	8	35	53	245

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	104	53	298	0	-	0
Stage 1	53	-	-	-	-	-
Stage 2	51	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	894	1014	1263	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	971	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	889	1014	1263	-	-	-
Mov Cap-2 Maneuver	889	-	-	-	-	-
Stage 1	964	-	-	-	-	-
Stage 2	971	-	-	-	-	-

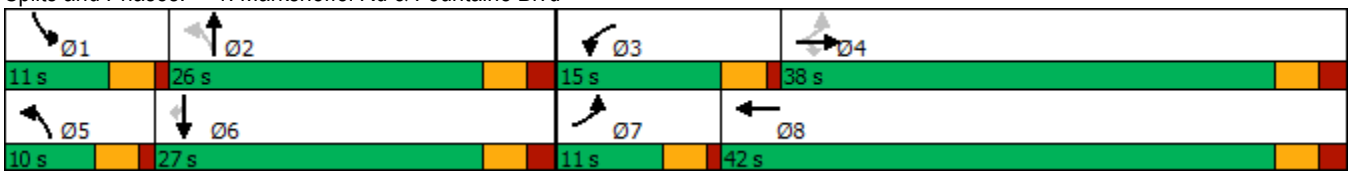
Approach	EB	NB	SB
HCM Control Delay, s	10.7	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1263	-	900	-	-
HCM Lane V/C Ratio	0.007	-	0.295	-	-
HCM Control Delay (s)	7.9	-	10.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	1.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	354	48	442	1024	606	149	527	178	242	516	45
Future Volume (vph)	38	354	48	442	1024	606	149	527	178	242	516	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)	11.0	38.0	38.0	15.0	42.0		10.0	26.0		11.0	27.0	27.0
Total Split (%)	12.2%	42.2%	42.2%	16.7%	46.7%		11.1%	28.9%		12.2%	30.0%	30.0%
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	None		None	None	None
Act Effct Green (s)	28.9	21.3	21.3	11.5	31.2	75.6	24.1	16.8	75.6	7.3	17.8	17.8
Actuated g/C Ratio	0.38	0.28	0.28	0.15	0.41	1.00	0.32	0.22	1.00	0.10	0.24	0.24
v/c Ratio	0.16	0.36	0.10	0.87	0.74	0.40	0.55	0.71	0.12	0.75	0.65	0.10
Control Delay	11.5	21.9	0.4	53.9	23.5	0.8	27.8	34.0	0.2	52.9	31.5	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	11.5	21.9	0.4	53.9	23.5	0.8	27.8	34.0	0.2	52.9	31.5	0.4
LOS	B	C	A	D	C	A	C	C	A	D	C	A
Approach Delay		18.5			23.1			25.9			36.1	
Approach LOS		B			C			C			D	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 75.6	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 25.7	Intersection LOS: C
Intersection Capacity Utilization 69.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Marksheffel Rd & Fountaine Blvd



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	468	122	732	150	28	978
Future Volume (vph)	468	122	732	150	28	978
Turn Type	Prot	Perm	NA	Free	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		Free	6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		9.0	20.0
Total Split (s)	20.0	20.0	60.0		10.0	70.0
Total Split (%)	22.2%	22.2%	66.7%		11.1%	77.8%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	None		None	None
Act Effct Green (s)	12.4	12.4	20.1	44.4	21.7	21.7
Actuated g/C Ratio	0.28	0.28	0.45	1.00	0.49	0.49
v/c Ratio	0.51	0.24	0.48	0.10	0.08	0.64
Control Delay	16.8	5.2	10.5	0.1	6.5	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	5.2	10.5	0.1	6.5	10.6
LOS	B	A	B	A	A	B
Approach Delay	14.4		8.8			10.5
Approach LOS	B		A			B

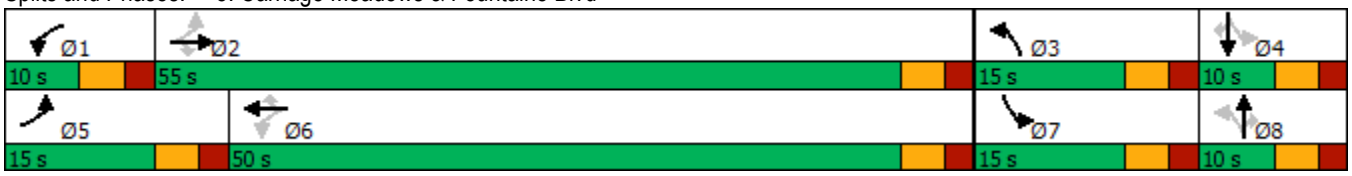
Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 44.4	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 10.8	Intersection LOS: B
Intersection Capacity Utilization 48.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Marksheffel Rd & Lorson Blvd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	657	59	35	1900	45	86	4	17	18	1	87
Future Volume (vph)	57	657	59	35	1900	45	86	4	17	18	1	87
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	15.0	55.0	55.0	10.0	50.0	50.0	15.0	10.0	10.0	15.0	10.0	10.0
Total Split (%)	16.7%	61.1%	61.1%	11.1%	55.6%	55.6%	16.7%	11.1%	11.1%	16.7%	11.1%	11.1%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effct Green (s)	59.3	56.5	56.5	55.8	53.1	53.1	15.3	11.3	11.3	10.2	5.0	5.0
Actuated g/C Ratio	0.70	0.67	0.67	0.66	0.63	0.63	0.18	0.13	0.13	0.12	0.06	0.06
v/c Ratio	0.27	0.29	0.06	0.07	0.90	0.04	0.37	0.02	0.05	0.10	0.01	0.40
Control Delay	8.4	9.2	0.1	5.7	26.8	0.1	33.6	37.0	0.3	29.2	40.0	7.4
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	8.4	9.2	0.1	5.7	26.8	0.1	33.6	37.0	0.3	29.2	40.0	7.4
LOS	A	A	A	A	C	A	C	D	A	C	D	A
Approach Delay		8.4			25.8			28.4			11.4	
Approach LOS		A			C			C			B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 84.6	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 20.9	Intersection LOS: C
Intersection Capacity Utilization 75.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 8: Carriage Meadows & Fountaine Blvd



Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	0	3	5	0	11	6	48	1	3	15	76
Future Vol, veh/h	48	0	3	5	0	11	6	48	1	3	15	76
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	-	-	-	-	-	-	180	-	-	180	-	155
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	51	0	3	5	0	12	6	51	1	3	16	80

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	92	86	16	128	166	52	96	0	0	52	0	0
Stage 1	22	22	-	64	64	-	-	-	-	-	-	-
Stage 2	70	64	-	64	102	-	-	-	-	-	-	-
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	892	804	1063	845	727	1016	1498	-	-	1554	-	-
Stage 1	996	877	-	947	842	-	-	-	-	-	-	-
Stage 2	940	842	-	947	811	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	878	799	1063	839	723	1016	1498	-	-	1554	-	-
Mov Cap-2 Maneuver	878	799	-	839	723	-	-	-	-	-	-	-
Stage 1	992	875	-	943	839	-	-	-	-	-	-	-
Stage 2	926	839	-	942	809	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	8.8	0.8	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1498	-	-	887	953	1554	-	-
HCM Lane V/C Ratio	0.004	-	-	0.061	0.018	0.002	-	-
HCM Control Delay (s)	7.4	-	-	9.3	8.8	7.3	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Intersection Delay, s/veh	12.7
Intersection LOS	B

Approach	WB	NB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	621	929	1058
Demand Flow Rate, veh/h	634	947	1080
Vehicles Circulating, veh/h	786	30	503
Vehicles Exiting, veh/h	191	1553	917
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	21.7	5.9	13.4
Approach LOS	C	A	B

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	LT	TR	LT	TR
Assumed Moves	L	TR	LT	TR	LT	TR
RT Channelized						
Lane Util	0.793	0.207	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	503	131	445	502	508	572
Cap Entry Lane, veh/h	655	728	1313	1384	850	926
Entry HV Adj Factor	0.980	0.977	0.981	0.980	0.979	0.981
Flow Entry, veh/h	493	128	436	492	497	561
Cap Entry, veh/h	642	711	1288	1357	832	908
V/C Ratio	0.768	0.180	0.339	0.363	0.598	0.618
Control Delay, s/veh	25.5	7.1	5.9	6.0	13.5	13.2
LOS	D	A	A	A	B	B
95th %tile Queue, veh	7	1	2	2	4	4

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

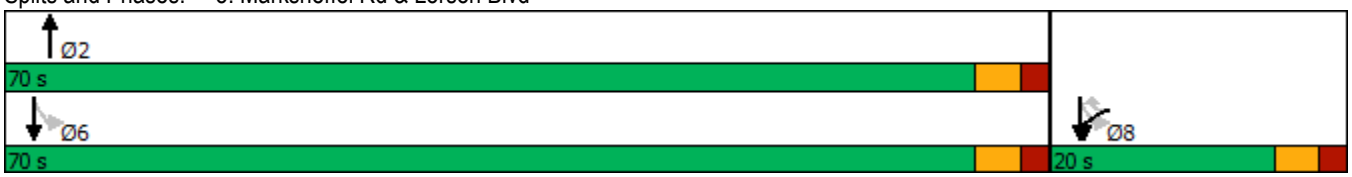
Approach	WB	NB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	435	1397	832
Demand Flow Rate, veh/h	444	1425	849
Vehicles Circulating, veh/h	854	107	353
Vehicles Exiting, veh/h	678	1095	945
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	14.6	9.5	8.3
Approach LOS	B	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	LT	TR	LT	TR
Assumed Moves	L	TR	LT	TR	LT	TR
RT Channelized						
Lane Util	0.795	0.205	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	353	91	670	755	399	450
Cap Entry Lane, veh/h	615	687	1223	1297	976	1052
Entry HV Adj Factor	0.980	0.978	0.980	0.981	0.981	0.980
Flow Entry, veh/h	346	89	657	741	391	441
Cap Entry, veh/h	603	672	1199	1272	957	1031
V/C Ratio	0.574	0.132	0.548	0.582	0.409	0.428
Control Delay, s/veh	16.6	6.8	9.3	9.6	8.4	8.2
LOS	C	A	A	A	A	A
95th %tile Queue, veh	4	0	3	4	2	2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø6
Lane Configurations							
Traffic Volume (vph)	468	122	732	150	28	978	
Future Volume (vph)	468	122	732	150	28	978	
Turn Type	Prot	Perm	NA	Free	Perm	NA	
Protected Phases	8!		2			8 6!	6
Permitted Phases		8		Free	8 6!		
Detector Phase	8	8	2		8 6	8 6	
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0				4.0
Minimum Split (s)	20.0	20.0	20.0				20.0
Total Split (s)	20.0	20.0	70.0				70.0
Total Split (%)	22.2%	22.2%	77.8%				78%
Yellow Time (s)	3.0	3.0	3.0				3.0
All-Red Time (s)	2.0	2.0	2.0				2.0
Lost Time Adjust (s)	0.0	0.0	0.0				
Total Lost Time (s)	5.0	5.0	5.0				
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None				None
Act Effct Green (s)	15.1	15.1	14.5	39.6	39.6	39.6	
Actuated g/C Ratio	0.38	0.38	0.37	1.00	1.00	1.00	
v/c Ratio	0.73	0.19	0.60	0.10	0.05	0.31	
Control Delay	21.3	3.5	12.2	0.1	0.2	0.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	21.3	3.5	12.2	0.1	0.2	0.3	
LOS	C	A	B	A	A	A	
Approach Delay	17.7		10.1			0.2	
Approach LOS	B		B			A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 39.6	
Natural Cycle: 45	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 7.9	Intersection LOS: A
Intersection Capacity Utilization 61.3%	ICU Level of Service B
Analysis Period (min) 15	
! Phase conflict between lane groups.	

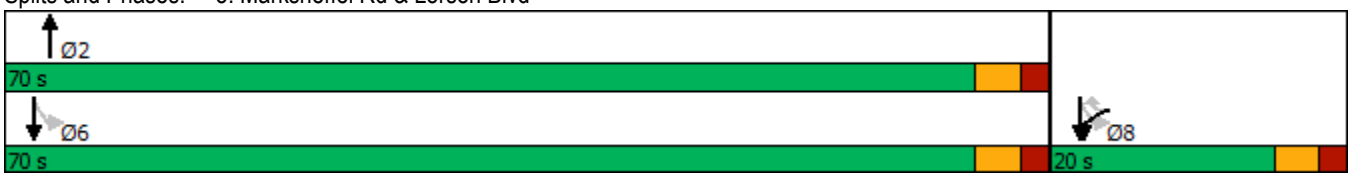
Splits and Phases: 5: Marksheffel Rd & Lorson Blvd



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø6
Lane Configurations							
Traffic Volume (vph)	329	85	795	532	100	691	
Future Volume (vph)	329	85	795	532	100	691	
Turn Type	Prot	Perm	NA	Free	Perm	NA	
Protected Phases	8!		2			8 6!	6
Permitted Phases		8		Free	8 6!		
Detector Phase	8	8	2		8 6	8 6	
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0				4.0
Minimum Split (s)	20.0	20.0	20.0				20.0
Total Split (s)	20.0	20.0	70.0				70.0
Total Split (%)	22.2%	22.2%	77.8%				78%
Yellow Time (s)	3.0	3.0	3.0				3.0
All-Red Time (s)	2.0	2.0	2.0				2.0
Lost Time Adjust (s)	0.0	0.0	0.0				
Total Lost Time (s)	5.0	5.0	5.0				
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None				None
Act Effct Green (s)	15.1	15.1	15.8	40.9	40.9	40.9	
Actuated g/C Ratio	0.37	0.37	0.39	1.00	1.00	1.00	
v/c Ratio	0.53	0.14	0.61	0.35	0.21	0.22	
Control Delay	14.7	3.9	12.1	0.6	0.9	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	14.7	3.9	12.1	0.6	0.9	0.2	
LOS	B	A	B	A	A	A	
Approach Delay	12.5		7.5			0.3	
Approach LOS	B		A			A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 40.9	
Natural Cycle: 40	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 6.1	Intersection LOS: A
Intersection Capacity Utilization 58.2%	ICU Level of Service B
Analysis Period (min) 15	
! Phase conflict between lane groups.	

Splits and Phases: 5: Marksheffel Rd & Lorson Blvd



Queuing Reports

TRANSPORTATION
CONSULTANTS, INC.

Queuing and Blocking Report

Intersection: 8: Carriage Meadows & Fountaine Blvd

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	L	T	R	L	T	R
Maximum Queue (ft)	52	6	82	37	21	10	10	79
Average Queue (ft)	9	0	29	3	3	0	0	31
95th Queue (ft)	27	3	66	19	14	6	6	58
Link Distance (ft)				540		218	218	218
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	400	375	85		50			
Storage Blk Time (%)			1	0				
Queuing Penalty (veh)			0	0				

Queuing and Blocking Report

Intersection: 8: Carriage Meadows & Fountaine Blvd

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	L	T	R	L	T	R
Maximum Queue (ft)	53	7	77	26	12	17	30	60
Average Queue (ft)	17	0	20	1	1	1	2	26
95th Queue (ft)	37	4	53	14	7	7	15	50
Link Distance (ft)				540		218	218	218
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	400	375	85		50			
Storage Blk Time (%)			0	0				
Queuing Penalty (veh)			0	0				

Queuing and Blocking Report

Intersection: 8: Carriage Meadows & Fountaine 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)	241	940	970	260	69	292	292	35	204	37	106	146
Average Queue (ft)	93	322	422	32	23	166	145	8	103	8	46	75
95th Queue (ft)	180	746	959	169	53	273	250	24	173	28	90	132
Link Distance (ft)		909	909	909		541	541			478		218
Upstream Blk Time (%)		0	1	0								
Queuing Penalty (veh)		1	10	0								
Storage Bay Dist (ft)	400				375			250	250		155	
Storage Blk Time (%)		0					0		0			
Queuing Penalty (veh)		1					0		0			

Intersection: 8: Carriage Meadows & Fountaine Blvd

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	47	141
Average Queue (ft)	12	63
95th Queue (ft)	39	116
Link Distance (ft)	218	218
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 22: Carriage Meadows & Future Retail Access/CMS Multifamily Access

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	R
Maximum Queue (ft)	109	31	12	4
Average Queue (ft)	45	8	1	0
95th Queue (ft)	81	31	9	4
Link Distance (ft)	245	372		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			180	155
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 13

TIS V_1 redlines.pdf Markup Summary

Steve Kuehster (1)

Subject: text box
Page Label: 1
Author: Steve Kuehster
Date: 5/15/2020 11:57:10 AM
Status:
Color:
Layer:
Space:

Comment

dsdparsons (2)

Subject: Image
Page Label: 1
Author: dsdparsons
Date: 5/13/2020 8:29:54 AM
Status:
Color:
Layer:
Space:

Subject: Callout
Page Label: 1
Author: dsdparsons
Date: 5/13/2020 8:30:33 AM
Status:
Color:
Layer:
Space:

this was a condition of approval on PUDSP...