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Peaceful Ridge at Fountain Valley
Traffic Impact Analysis
(LSC #S214530)
December 10, 2021

Please add "PCD File No. CDR-22-015".

Traffic Engineer's Statement

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



Developer's Statement

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

Date

Peaceful Ridge

Traffic Impact Study

Prepared for:

Mr. J. Ryan Watson
Fountain Valley Investment
3 Widefield Boulevard
Colorado Springs, CO 80911

DECEMBER 10, 2021

LSC Transportation Consultants
Prepared by: Jeffrey C. Hodsdon, P.E.

LSC #S214530



CONTENTS

REPORT CONTENTS	1
PRIOR AREA TRAFFIC REPORTS	3
LAND USE AND ACCESS	3
Proposed Land Use.....	3
Proposed Site Access.....	3
ROAD AND TRAFFIC CONDITIONS	3
Short-Term Baseline Traffic Volumes	4
CRASH/ACCIDENT HISTORY	4
SIGHT DISTANCE.....	4
El Paso County Requirements	4
Stopping Sight Distance.....	5
Entering Sight Distance	5
TRIP GENERATION.....	5
TRIP DISTRIBUTION AND ASSIGNMENT.....	6
Trip Directional Distribution.....	6
Site-Generated Traffic.....	6
Short Term	6
Long Term	6
Short-Term Baseline-Plus-Site-Generated Traffic Volumes.....	6
Estimated Future 2040 Background Traffic Volumes	6
Future 2040 Total Traffic Volumes	7
LEVEL OF SERVICE ANALYSIS	7
Marksheffel Road/Fontaine Boulevard	8
Short Term	8
Long Term	8
Fontaine Boulevard/Sleepy Meadows Drive	8
Marksheffel Road/Proposed North Site Access (RIRO).....	8
AUXILIARY TURN-LANE ANALYSIS.....	8
Marksheffel Road/Proposed North Site Access (RIRO).....	9
Left-Turn Deceleration Lane.....	9
Right-Turn Deceleration Lane.....	9

Right-Turn Acceleration Lane	9
Fontaine Boulevard/Sleepy Meadows Drive Intersection	9
Left-Turn Deceleration Lane.....	9
Right-Turn Deceleration Lane.....	10
Right-Turn Acceleration Lane	10
Marksheffel Road/Fontaine Boulevard	11
Southbound Right-Turn Deceleration Lane	11
Northbound Left-Turn Deceleration Lane	11
Eastbound Left-Turn Deceleration Lane	11
Eastbound Through/Right-Turn Laneage	11
SUBDIVISION STREET CLASSIFICATIONS	12
MTCP CONFORMANCE	12
Roadway Classifications	12
Reimbursable Improvements.....	12
MULTI-MODAL TRANSPORTATION AND TDM OPPORTUNITIES	12
DEVIATION REQUESTS.....	12
COUNTY TRANSPORTATION IMPROVEMENT FEE PROGRAM.....	12
CONCLUSIONS.....	13
Enclosures:.....	13

Table 3

Figure 1 - Figure 10

Traffic Count Reports

Synchro LOS Reports

MTCP Maps



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December 10, 2021

Mr. J. Ryan Watson
Fountain Valley Investment
3 Widefield Boulevard
Colorado Springs, CO 80911

RE: Peaceful Ridge
Traffic Impact Study
El Paso County, CO
LSC # S214530

Dear Mr. Watson,

LSC Transportation Consultants, Inc. has prepared this traffic impact study for the proposed Peaceful Ridge residential development. The site is located west of Marksheffel Road and north of Fontaine Boulevard in El Paso County, Colorado. The land use is 253 single-family (detached) dwelling units. Access would be to Marksheffel Road and Fontaine Boulevard (via Sleepy Meadows Drive).

This report has been prepared for submittal to El Paso County.

REPORT CONTENTS

The preparation of this report included the following:

- Inventory of existing adjacent and nearby area street system. This included surface conditions, functional classifications, roadway widths, lane configurations, traffic control, posted speed limits, pavement markings, intersection and access spacing, roadway and intersection alignments, auxiliary left- and right-turn lanes, intersection sight distances, etc.;
- Estimates of existing morning and late-afternoon peak-hour turning-movement traffic counts at the following “study-area” intersections:
 - Marksheffel Road/Fontaine Boulevard
 - Fontaine Boulevard/Cottonwood Grove Drive
 - Fontaine Boulevard/Sleepy Meadows Drive
- Short-term baseline traffic-volume estimates, which account for remaining effects of the

COVID-19 pandemic;

- Review of previously-completed traffic studies in the vicinity of this site for information and findings relative to this development. Other recent studies completed in the area and any applicable data/transferrable information/analysis etc. from previous LSC studies adjacent to the site were also utilized;
- Evaluation of intersection/access sight distance at the proposed access-point intersections on Marksheffel Road and Fontaine Boulevard, based on current criteria in the County's *Engineering Criteria Manual*.
- Estimates of average weekday and peak-hour trip generation for the proposed development;
- Estimation of directional distribution of site-generated vehicle trips on the area street system, at the study-area intersections, and at the proposed site access points;
- Projections of site-generated turning-movement traffic volumes at the following "study-area" intersections:
 - Marksheffel Road/Fontaine Boulevard
 - Fontaine Boulevard/Sleepy Meadows Drive
 - Marksheffel Road/proposed north site access (RIRO)
 - Marksheffel Road/Fontaine Boulevard
 - Fontaine Boulevard/Sleepy Meadows Drive
 - Marksheffel Road/proposed north site access (RIRO)
- Estimates of short- and long-term background traffic volumes at the study-area intersections and access points;
- Total traffic (site traffic-plus-background traffic) projections at the study-area intersections for the short and long term;
- Level of service (LOS) analysis at the study-area intersections;
- Evaluation of existing, short-term, and long-term projected intersection volumes to determine the potential need for any new auxiliary right-/left-turn lanes based on the criteria in the County's *Engineering Criteria Manual*;
- Other recommended improvements/modifications to the study-area streets and intersections; and
- Summary of compiled data, analysis, findings, and recommendations.

Remove duplicate "Marksheffel Road/proposed north site access". Revise to Marksheffel Road and Peaceful Ridge Drive.

Revise study area intersections to include the planned intersection of Marksheffel Road and Bradley Ridge per Bradley Ridge Filling No. 1. Or identify why the intersection was omitted from the study area.

PRIOR AREA TRAFFIC REPORTS

Reference Bradley Ridge Filling 1 Traffic Impact Study by Matrix Design Group, March 4, 2022.

LSC utilized the following previous traffic reports to assist in the production of this report:

- Lorson Ranch (December 2018)
- Grand Mountain School (July 21, 2021)
- Bradley Heights, Filing 1 (May 19, 2021)
- Glen at Widefield, Filings 10 and 11 (July 9, 2021)
- The Hills at Lorson Ranch (July 2021)
- Peaceful Ridge at Fountain Valley (May 2006)

LAND USE AND ACCESS

Proposed Land Use

Figure 1 shows the site location relative to the adjacent and nearby streets. The site is located west of Marksheffel Road and north of Fontaine Boulevard in El Paso County, Colorado. Approximately 253 single-family (detached) dwelling units are proposed. A copy of the site plan is shown in Figure 2.

Proposed Site Access

Access points proposed for the property include:

- Right-in/right-out (RIRO) access to Marksheffel Road – 0.5 miles north of Fontaine Boulevard/Marksheffel Road. This access would align with Cider Mill Place on the east side of Marksheffel Road (although left-turn and east/west through traffic would be prohibited).
- Fontaine Boulevard via existing Sleepy Meadows Drive
- A future connection to Bradley Heights approximately 900 feet west of Marksheffel Road/Cider Mill Place (long-term only).

There is no connection from Bradley Heights to Peaceful Ridge Drive. Do you mean through Bridgegate Place?

ROAD AND TRAFFIC CONDITIONS

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

Marksheffel Road extends north from the Link Road/C&S Road intersection in Fountain, Colorado to north of Woodmen Road. Marksheffel Road is shown as a future four-lane Expressway on the County's *Major Transportation Corridors Plan (MTCP)*. The posted speed limit on Marksheffel Road at Fontaine Boulevard is 55 miles per hour (mph). Auxiliary left- and right-turn lanes exist on all approaches at the signalized intersection of Marksheffel/Fontaine.

Fontaine Boulevard is designated as a four-lane Principal Arterial west of Marksheffel Road in the vicinity of the site. The posted speed limit on Fontaine Boulevard is generally 35 mph just west of Marksheffel and 45 mph west of Sleepy Meadows Drive. Auxiliary right-turn deceleration

lanes exist on all approaches at the stop-sign-controlled intersections of Fontaine Boulevard/Sleepy Meadows Drive and Fontaine Boulevard/Cottonwood Grove Drive. Additionally, southbound-to-westbound right-turn acceleration lanes exist for both of the previously-mentioned intersections on Fontaine Boulevard.

Cottonwood Grove Drive is a two-lane local street extending north-to-south for 0.3 miles between Summer Meadows Drive and Weeping Willow Drive. The Fontaine/Cottonwood Grove intersection is a four-leg, full-movement intersection with stop-sign control on the minor-street approaches. The posted speed limit on Cottonwood Grove Drive is 25 mph.

Sleepy Meadows Drive is a two-lane local street extending north from Fontaine Boulevard for about a quarter-mile. The Fontaine/Sleepy Meadows intersection is currently a full-movement T-intersection with stop-sign control on the southbound approach. The posted speed limit on Sleepy Meadows Drive is 25 mph.

Short-Term Baseline Traffic Volumes

Figure 4 shows estimated “short term baseline” traffic volumes on the study-area streets and at the study-area intersections (short-term peak-hour turning-movement volumes). Short-term analysis assumes that no modifications would be made to the existing lane geometry or traffic control at the study-area intersections. These estimates are consistent with short-term background traffic volumes shown in recent LSC traffic studies conducted in the vicinity of this site, as described in the “Prior Area Traffic Reports” section above.

CRASH/ACCIDENT HISTORY

Identify what years the crash-history data was obtained from.

Three years of crash-history data were obtained from the Colorado State Patrol Central Records Unit. During the three-year period, two crashes were reported at the intersection of Fontaine Boulevard/Sleepy Meadows Drive, neither of which involved personal injury. Zero crashes were reported at the intersection of Fontaine Boulevard/Cottonwood Grove Drive adjacent to the site.

SIGHT DISTANCE

El Paso County Requirements

Access points (planned public-roadway intersections) must meet *Engineering Criteria Manual* standards for sight distance. The north site-access point is anticipated to be a stop-controlled, RIRO intersection with Marksheffel. All sight-distance field measurements utilized a driver’s eye height of 3.5 feet and a height of 3.5 feet for an eastbound vehicle approaching from the west.

Mr. J. Ryan Watson
Peaceful Ridge

Identify the grade of Marksheffel Road approaching Peaceful Ridge Drive from the north. Per ECM Chapter 2.3.6.B Table 2-18 identifies stopping sight distances for roads with grades in excess of 3%; use Table 2-18 to determine stopping sight distance. Note: Posted speed limit along Marksheffel Road is 55mph.

Stopping Sight Distance

The “sight distance along the roadway” for the proposed (existing) site-access driveway would exceed the required 425 feet approaching the RIRO access from both directions along Marksheffel Road (per Table 2-17 of the County’s *Engineering Criteria Manual*).

Entering Sight Distance

Revise entering sight distance requirements since 555 feet per Table 2-21 is for a design speed of 50mph. The posted speed limit for Marksheffel Road is 55mph.

With a 55-mph posted speed limit and minimal vertical curvature on Marksheffel, the minimum sight distance for both approaches at the proposed site-access location is 555 feet for passenger vehicles (per Table 2-21 of the County’s *Engineering Criteria Manual*). Sight distances for both approaches at the proposed site-access location to Marksheffel Road exceed the 550-foot requirement for passenger vehicles.

TRIP GENERATION

Add an exhibit to the appendix showing the line of sight distances for design vehicles at access points (Marksheffel Road and Peaceful Ridge Drive).

Estimates of the existing and projected vehicle trips to be generated by the site have been made using nationally-published average trip-generation rates for land-use code “210 – Single-Family (Detached) Housing” in *Trip Generation, 11th Edition, 2021* by the Institute of Transportation Engineers (ITE).

Table 1 below presents a summary of the estimated site trip generation. A detailed trip-generation estimate for the development, including ITE rates for the proposed land uses, is presented in Table 3 (attached).

Table 1: Estimated External Site Vehicle-Trip Generation

Analysis Period	Weekday		
	In	Out	Total
Morning Peak Hour	45	128	173
Evening Peak Hour	150	88	238
Daily/24-hour	1,193	1,193	2,386

Based on the ITE estimate for the proposed residential development, the site would generate about 2,386 external vehicle trips on the average weekday. During the weekday morning peak hour, approximately 45 vehicles would enter and 128 vehicles would exit the site. Approximately 150 entering vehicles and 88 exiting vehicles are projected for the weekday afternoon peak hour.

TRIP DISTRIBUTION AND ASSIGNMENT

Trip Directional Distribution

Estimating the directional distribution of site-generated vehicle trips to the study-area roads and intersections is a necessary component in determining the site's traffic impacts. Figure 5 shows the percentages of the site-generated vehicle trips projected to be oriented to and from the site's major approaches. Estimates have been based on the following factors: the proposed new land uses, the area street and road system serving the site, previously-conducted traffic studies for the site, and the site's geographic location relative to the City of Colorado Springs metro area and the Pikes Peak region.

Provide further clarification on whether Bradley Ridge Filling 1 Traffic Impact Analysis was used for your analysis.

Site-Generated Traffic

Short Term

Figure 6 shows the projected short-term site-generated traffic volumes for the weekday morning and evening peak hours. Site-generated traffic volumes at the study-area intersections have been calculated by applying the directional-distribution percentages estimated by LSC (from Figure 5) to the trip-generation estimates (from Table 3).

Long Term

Figure 7 shows the projected long-term site-generated traffic volumes for the weekday morning and evening peak hours. Site-generated traffic volumes at the study-area intersections have been calculated by applying the directional-distribution percentages estimated by LSC (from Figure 5) to the trip-generation estimates (from Table 3).

Short-Term Baseline-Plus-Site-Generated Traffic Volumes

Figure 8 shows the sum of the short-term baseline traffic volumes (from Figure 4) and site-generated peak-hour traffic volumes (shown in Figure 6). These volumes are based on the projected short-term total traffic presented in the Ridge at Lorson Ranch TIS report.

Estimated Future 2040 Background Traffic Volumes

Figure 9 shows the projected 20-year background traffic volumes for the year 2040. Estimated 2040 background through-traffic volumes on Fontaine Boulevard and Marksheffel Road account for projected background traffic growth on these roadways and align with long-term traffic projections from recent LSC traffic studies in the vicinity of the site. Projected 20-year background traffic volumes do **not** include projected traffic to be generated by the proposed Peaceful Ridge development.

Annual growth rates reflected in projected future traffic projections are as follows:

- Marksheffel Road (northbound approach) – 5.9 percent per year
- Marksheffel Road (southbound approach) – 4.5 percent per year
- Fontaine Boulevard (eastbound approach) – 9.2 percent per year
- Fontaine Boulevard (westbound approach) – 8.3 percent per year

Future 2040 Total Traffic Volumes

Figure 10 shows the projected 2040 total traffic volumes, which are the sum of 2040 background traffic volumes (from Figure 9) plus the site-generated traffic volumes (from Figure 6).

LEVEL OF SERVICE ANALYSIS

The following intersections have been analyzed to determine the projected intersection levels of service for short- and long-term traffic scenarios for the morning and evening peak-hour time periods:

- Marksheffel Road/Fontaine Boulevard
- Marksheffel Road/proposed north site access (RIRO)
- Fontaine Boulevard/Sleepy Meadows Boulevard
- Fontaine Boulevard/Cottonwood Grove Drive

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection and is indicated on a scale from “A” to “F.” LOS A is indicative of little congestion or delay. LOS F indicates a high level of congestion or delay. Table 2 shows the level of service delay ranges for signalized and unsignalized intersections.

Table 2: Intersection Levels of Service Delay Ranges

Level of Service	Signalized Intersections	Unsignalized Intersections
	Average Control Delay (Seconds per Vehicle)	Average Control Delay (Seconds per Vehicle) ⁽¹⁾
A	10.0 sec or less	10.0 sec or less
B	10.1-20.0 sec	10.1-15.0 sec
C	20.1-35.0 sec	15.1-25.0 sec
D	35.1-55.0 sec	25.1-35.0 sec
E	55.1-80.0 sec	35.1-50.0 sec
F	80.1 sec or more	50.1 sec or more

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

Detailed Synchro reports are attached. A summary of LOS during the weekday morning and evening peak hours for the following unsignalized intersections is shown in the following figures:

- Figure 3: Existing Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 4: Short-Term Baseline Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 8: Short-Term Total Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 9: 2040 Background Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 10: 2040 Background + Site Traffic, Lane Geometry, Traffic Control, and LOS

Marksheffel Road/Fontaine Boulevard

Short Term

All individual turning movements at the intersection of Marksheffel Road/Fontaine Boulevard currently operate at and are projected to remain at LOS D or better during all short-term scenarios, with or without the addition of site-generated traffic.

Long Term

Overall, the signalized intersection of Marksheffel Road/Fontaine Boulevard is projected to operate at LOS D or better during both long-term peak hours, with or without the addition of site-generated traffic. The following turning movements are projected to operate at LOS E during the short term, with or without the addition of site-generated traffic:

- Eastbound-through, westbound-left, northbound-through, and southbound-left

All other turning movements are projected to remain at LOS D or better during the short term during both peak hours, with or without the addition of site-generated traffic.

Fontaine Boulevard/Sleepy Meadows Drive

Update labeling, appears to be Peaceful Ridge Drive.

All individual turning movements and single-lane approaches are projected to operate at LOS C or better during both short-term peak hours through the 20-year horizon, with or without the addition of site-generated traffic.

Marksheffel Road/Proposed North Site Access (RIRO)

All approaches and individual turning movements at the proposed RIRO site access on Marksheffel Road are projected to operate at LOS C or better during both peak hours through the 20-year horizon.

AUXILIARY TURN-LANE ANALYSIS

The *Engineering Criteria Manual* contains turning volume thresholds which require auxiliary left- or right-turn lanes by roadway classifications. Roadway classifications for key thoroughfares

Bradley Ridge Filling 1 Traffic Impact Analysis March 4, 2022 identified the Peaceful Ridge Drive and Marksheffel Road LOS as F. Discuss discrepancies between both analyses and explain why they are different in this report.

in the vicinity of the site are based on the El Paso County *Major Transportation Corridors Plan (MTCP)*. Marksheffel Road is classified as an Expressway, while Fontaine Boulevard is classified as a Principal Arterial Street.

Marksheffel Road/Proposed North Site Access (RIRO)

Left-Turn Deceleration Lane

The proposed north site-access intersection to Marksheffel Road is planned to be a right-in/right-out intersection. As such, a northbound left-turn deceleration lane would **not** apply.

Right-Turn Deceleration Lane

Right-turn deceleration auxiliary turn lanes are required for an Expressway access with a projected peak-hour right-ingress turning volume of 10 vph or greater. The southbound right-turn volume is projected to exceed this 10-vph threshold during both peak hours following the completion of the Peaceful Ridge residential development.

The posted speed limit on Marksheffel Road is 55 mph. Per the *Engineering Criteria Manual*, the required total lane length on Marksheffel Road is 530 feet, consisting of 290 feet of full-width lane length and a 240-foot approach taper.

Right-Turn Acceleration Lane

Right-turn acceleration auxiliary turn lanes are required for an Expressway access with a projected peak-hour right-exiting turning volume of 10 vph or greater. However, the current character and cross section of the current Marksheffel Road is an arterial rather than an Expressway. Based on Principal Arterial standards for acceleration lanes, a right-turn acceleration lane is not required until the right-turn volume entering the major roadway exceeds 50 vehicles per hour. LSC recommends that a right-turn acceleration lane be added later when Marksheffel is upgraded to the Expressway cross-section. The eastbound right-turn volume is not projected to exceed 50 right turns per hour during either peak hour following the completion of the Peaceful Ridge residential development.

Fontaine Boulevard/Sleepy Meadows Drive Intersection

Left-Turn Deceleration Lane

Left-turn deceleration auxiliary turn lanes are required for a Principal Arterial access with a projected peak-hour right-ingress turning volume of 10 vph or greater. The eastbound left-turn volume currently exceeds and is projected to remain above this 10-vph threshold during both peak hours following the completion of the Peaceful Ridge residential development.

Identify the section of the ECM used.

Identify grade of Marksheffel Road at section approaching Peaceful Ridge Drive. Per ECM Section 2.3.7.2 deceleration lane lengths shall be adjusted for grade. Use Table 2-25 to determine deceleration lane grade adjustment factors for determined grade.

Identify the section of
the ECM used.

The posted speed limit on Fontaine Boulevard is 45 mph. Per the *Engineering Criteria Manual*, the required total lane length on Fontaine Boulevard is 535 feet, consisting of 235 feet of full-width lane length, a 200-foot approach taper, and 100 feet of storage length. Redirect tapers west of the turn lane and east of Sleepy Meadows would be required.

Regarding the redirect tapers east of Sleepy Meadows, Fontaine Boulevard transitions from a 45-mph zone to a 35-mph zone between the limits of the proposed turn-lane improvements. Based on the higher of the two speed limits within this zone (45 mph), the redirect taper for the proposed left-turn deceleration lane on Fontaine Boulevard should be 540 feet (45:1 ratio). This assumes widening to the south only for the left-turn lane.

Two options would limit the extent of the redirect taper on the section of Fontaine Boulevard between Sleepy Meadows and Weeping Willow intersections:

- Shift the existing 35-mph zone west such that this entire section of Fontaine Boulevard has a posted speed limit of 35 mph. This would be feasible by moving the eastbound approach's 35-mph speed-limit sign to a new location upstream of Sleepy Meadows.
- Widen Fontaine symmetrically on the north and south sides. Note: the ability to widen Fontaine Boulevard symmetrically may be constrained due to the presence of existing power poles on the north side of Fontaine Boulevard.

Please refer to Figure 11 for more detail regarding proposed striping modifications adjacent to the intersection of Fontaine Boulevard/Sleepy Meadows Drive.

Identify which option you are recommending. Coordinate with the City of Colorado Springs to determine the best solution.

Right-Turn Deceleration Lane

Currently, the westbound right-turn deceleration lane is 300 feet long, consisting of 215 feet of lane length and an 85-foot approach taper. Per the *Engineering Criteria Manual*, the required turn-lane length on this Principal Arterial is 315 feet, consisting of 155 feet of lane length and a 160-foot transition taper (based on an assumed 40-mph design speed).

The combined lane-plus-taper length is short of *ECM* criteria by 15 feet (based on a 40-mph design speed). Although 15 feet short of the *ECM*-required length, the existing full-width lane length (215 feet) exceeds the *ECM* requirement for full-width lane length (155 feet). The taper could be lengthened by 15 feet with the project to construct the redirect tapers for the left-turn lane, or a deviation request could be submitted to allow use of the existing lane dimensions.

Identify which option you are proposing. If you are considering a deviation request, please submit one for consideration.

Right-Turn Acceleration Lane

Currently, the westbound right-turn acceleration lane (for southbound-to-westbound right turns) is 275 feet long, consisting of 150 feet of lane length and a 125-foot approach taper. Per the *Engineering Criteria Manual*, and assuming a posted speed of 45 mph east of Sleepy Meadow, the required acceleration-lane length on this Principal Arterial is 550 feet, consisting of 550 feet

of lane length and a 162-foot transition taper (13.5:1 ratio). Because this acceleration lane does not meet *ECM* criteria, LSC recommends lengthening the existing acceleration lane to the *ECM*-required length for a 45 mph (posted speed).

Marksheffel Road/Fontaine Boulevard

Identify the sections of the ECM referenced below.

Southbound Right-Turn Deceleration Lane

The posted speed limit on Marksheffel Road is 55 mph. Per the *Engineering Criteria Manual*, the required total lane length on Marksheffel Road is 530 feet, consisting of full-width 290 feet of lane length and a 240-foot approach taper. No modifications would be required to the existing southbound right-turn deceleration lane at Marksheffel/Fontaine, as this current 680-foot turn lane meets the *Engineering Criteria Manual's* criteria.

Northbound Left-Turn Deceleration Lane

Currently, the northbound left-turn lane on Marksheffel Road approaching Fontaine Boulevard is 366 feet. The posted speed limit on Marksheffel Road is 55 mph. Per the *Engineering Criteria Manual*, the required total lane length on Marksheffel Road is 680 feet, consisting of full-width 290 feet of lane length, a 240-foot approach taper, and 150 feet of storage length. The existing northbound left-turn deceleration lane at Marksheffel/Fontaine would need to be 680 feet to meet the prescribed length in the *Engineering Criteria Manual*.

Eastbound Left-Turn Deceleration Lane

Per the *Engineering Criteria Manual*, the required total eastbound left-turn deceleration lane length on Marksheffel Road is 415 feet, consisting of full-width 155 feet of lane length and a 160-foot approach taper, plus 100 feet of additional storage for left-turning vehicles. The existing eastbound left-turn deceleration lane at Marksheffel/Fontaine would need to be 415 feet to meet the prescribed length in the *Engineering Criteria Manual*. The current length is 335 feet (235 feet plus a 100-foot taper).

This project is expected to add about 13 left turns during the morning peak hour (27 percent of the total) and 9 trips during the afternoon peak hour (14 percent of the total). Site-generated traffic is estimated to be 9 percent and 3 percent of the total eastbound approach volume during the morning and afternoon peak hours, respectively.

Eastbound Through/Right-Turn Laneage

The eastbound approach widens on the intersection approach to provide two through lanes at the intersection. Also, the corner is striped for a flared approach allowing a short distance for separate right-turn movements.

- Provide a table listing all the identified improvements and identify the improvements that will be constructed by Peaceful Ridge.
- In a separate column identify which jurisdiction the improvements lie in.

SUBDIVISION STREET CLASSIFICATIONS

All streets within this subdivision are classified as Urban Local.

MTCP CONFORMANCE

Roadway Classifications

The following study-area roadway improvements are shown on Map 13 of El Paso County's 2016 *MTCP*. The County will require these roadways to be constructed to County standards (*ECM* Table 2-5 presents a summary of roadways design standards):

- Marksheffel Road – 4-lane Rural Expressway
- Fontaine Boulevard – 4-lane Urban Minor Arterial
- Internal roadways within the proposed residential development – Urban Local

Reimbursable Improvements

The following roadway improvement projects have been identified as being needed by the year 2040 per Map 13 and Table 4 of El Paso County's 2016 *MTCP*:

- C4 – Marksheffel Road from 0.5 miles north of Fontaine to Link Road (\$20,816,000)
 - Existing conditions – 2-lane Rural Minor Arterial
 - Future conditions – 4-lane Rural Expressway
- C5 – Fontaine Boulevard from Marksheffel Road to Easy Street (\$42,449,000)
 - Existing conditions – 2-lane Urban Minor Arterial
 - Future conditions – 4-lane Urban Minor Arterial

See the attached *MTCP* maps for reference.

MULTI-MODAL TRANSPORTATION AND TDM OPPORTUNITIES

The following multi-modal improvement project has been identified as being needed by the year 2040 per Map 15 and Table 5 of El Paso County's 2016 *MTCP*:

- Crews Gulch Trail – proposed bicycle route and roadway upgrades/widenings

DEVIATION REQUESTS

A deviation request could be submitted to allow use of the existing lane dimensions for the westbound right-turn lane at Fontaine Boulevard/Sleepy Meadows. [See comment on page 10.](#)

COUNTY TRANSPORTATION IMPROVEMENT FEE PROGRAM

This project will be required to participate in the El Paso County Road Improvement Fee Program. Peaceful Ridge will join the ten-mil PID. The ten-mil PID building permit fee portion associated

[Deviation requests will be required for proposed knuckle designs not meeting radius requirements per ECM Appendix F Standard Drawing SD_2-77.](#)

with this option is \$1,221 per single-family dwelling unit. The total building permit fee would be \$308,913 for the 253 dwelling units.

Note: This is based on the current rate, which is subject to change. El Paso County updates this rate periodically.

CONCLUSIONS

- The site is projected to generate about 2,386 new driveway vehicle trips on the average weekday.
- During the weekday morning peak hour of adjacent street traffic, 45 vehicles would enter the site while 128 vehicles would exit.
- During the weekday evening peak hour of adjacent street traffic, 150 vehicles would enter the site while 88 vehicles would exit.
- Please refer to the “Level of Service” section above for detailed LOS analysis results for individual turning movements and approaches at all studied intersections, during both peak hours through the 2040 horizon year.
- Please refer to the “Auxiliary Turn-Lane Analysis” section for required auxiliary turn lanes at the study-area intersections.

* * * * *

Please contact me if you have any questions regarding this report.

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH/JAB:jas

Enclosures: Table 3
Figure 1 - Figure 10
Traffic Count Reports
Synchro LOS Reports
MTCP Maps

Please contact the City of Colorado Springs for input on road access to Marksheffel Road and Fontaine Boulevard west of Sleepy Meadows Drive. It is our understanding that ownership of Marksheffel Road has been conveyed to the City of Colorado Springs therefore City design criteria should be followed for areas in city boundaries.

Tables

Revise header to "Total
Trips Generated".

Table 3: Detailed Trip Generation Estimate

ITE		Value	Units ¹	Trip Generation Rates ²					Driveway Trips				
Code	Description			Average Weekday	A.M.		P.M.		Average Weekday	A.M.		P.M.	
					In	Out	In	Out		In	Out	In	Out
210	Single-Family (Detached) Housing	253	DU	9.43	0.18	0.51	0.59	0.35	2386	45	128	150	88

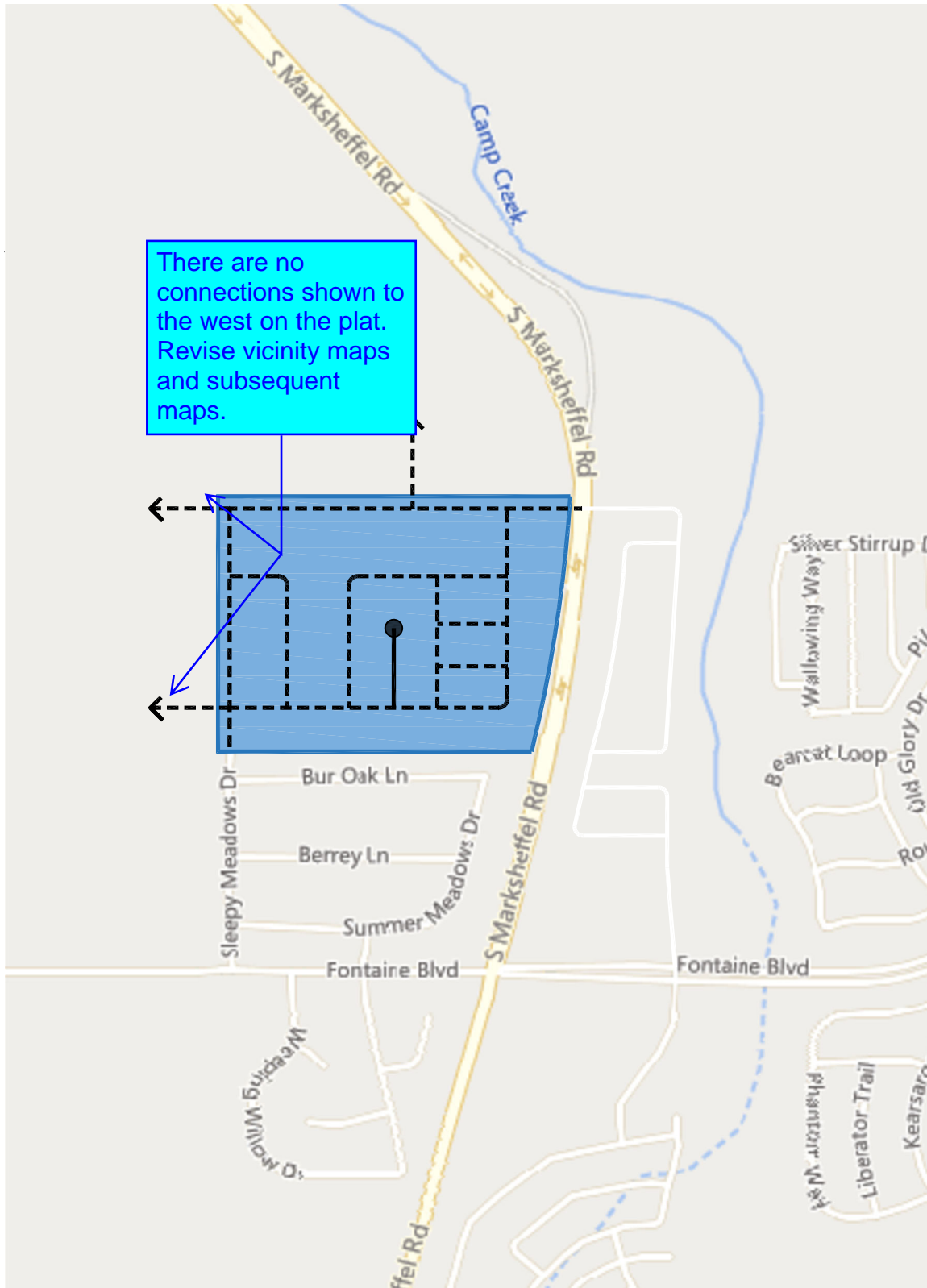
¹ DU = dwelling units

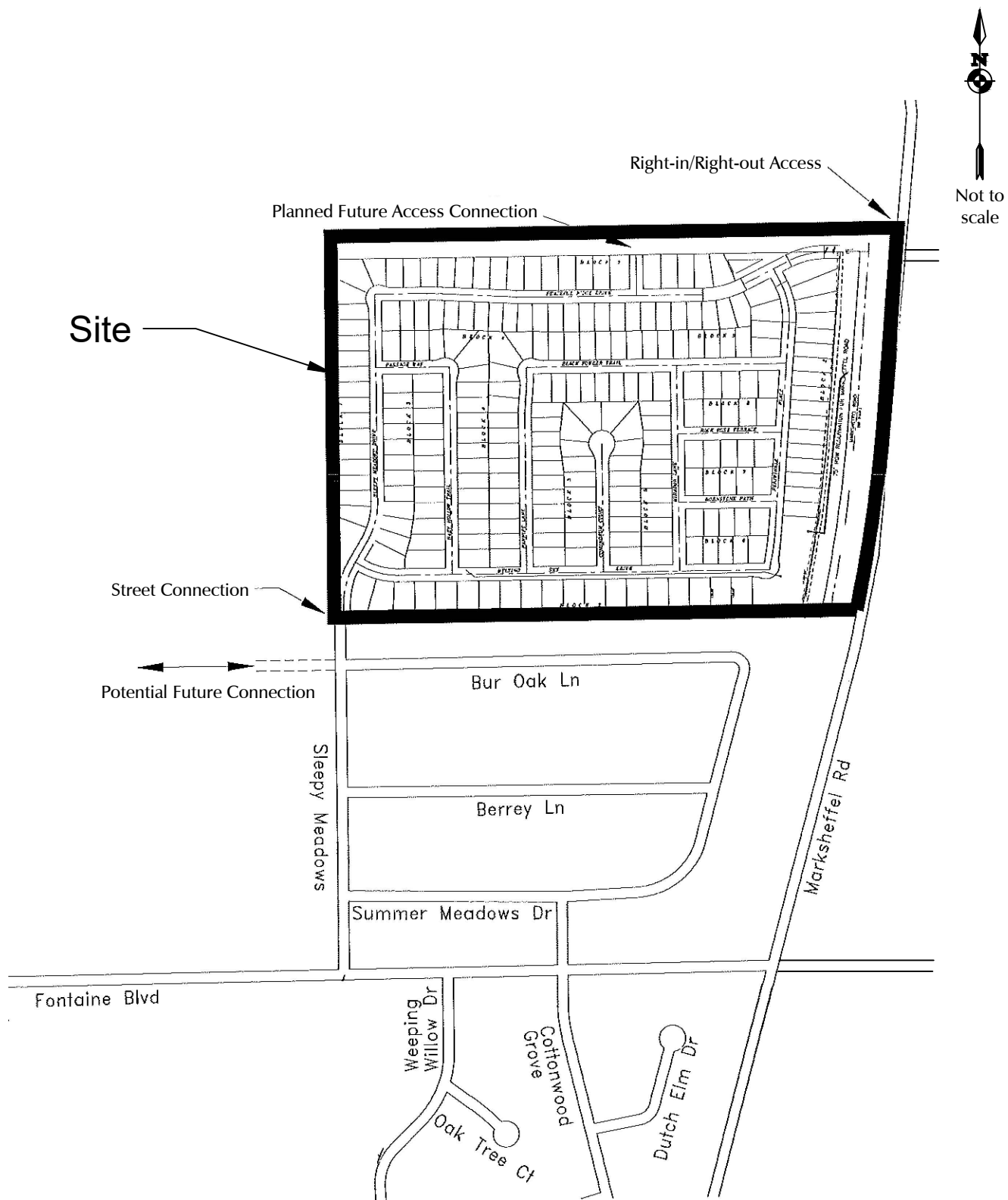
² Source: *Trip Generation*, 11th Edition (2021) by the Institute of Transportation Engineers (ITE)

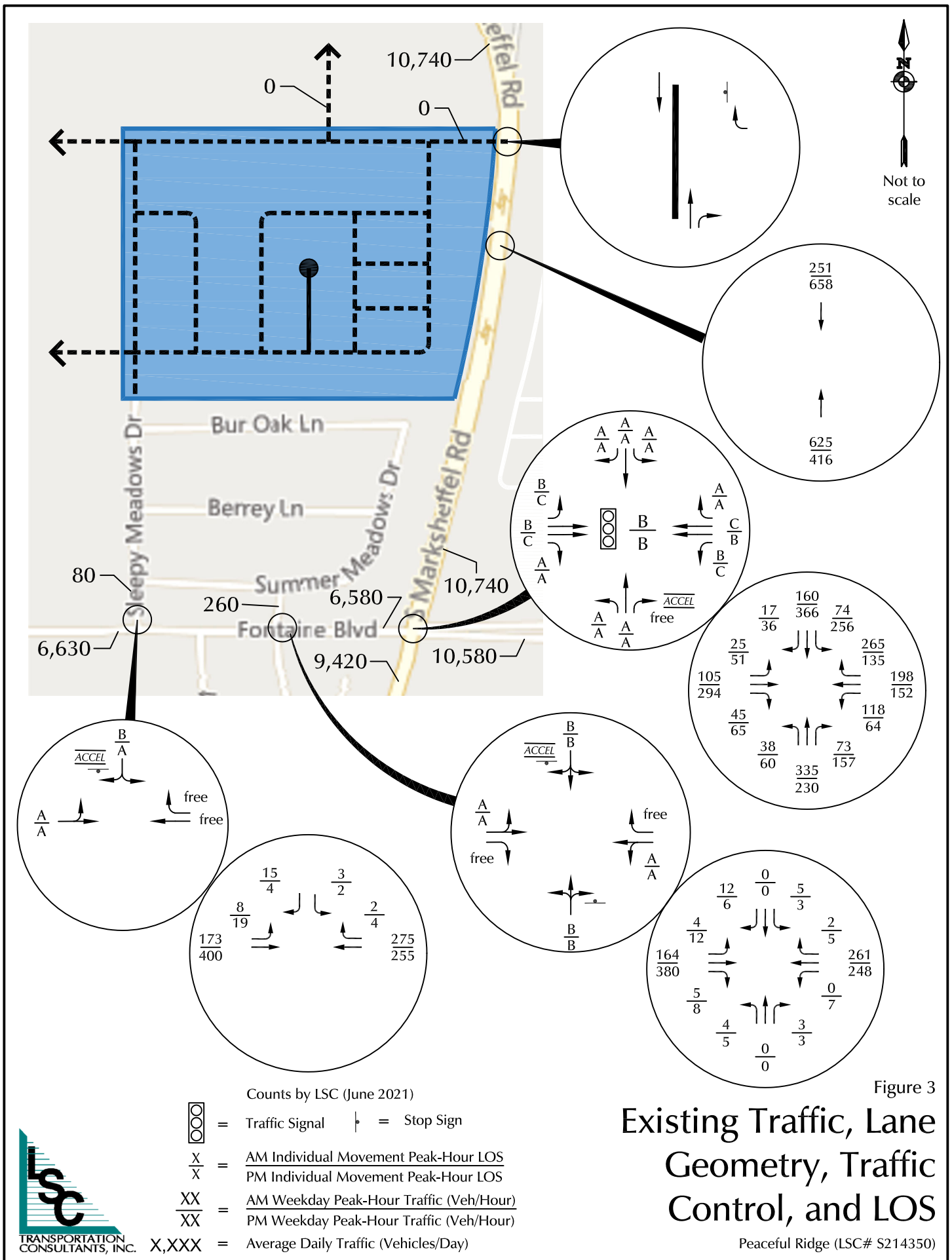
Figures

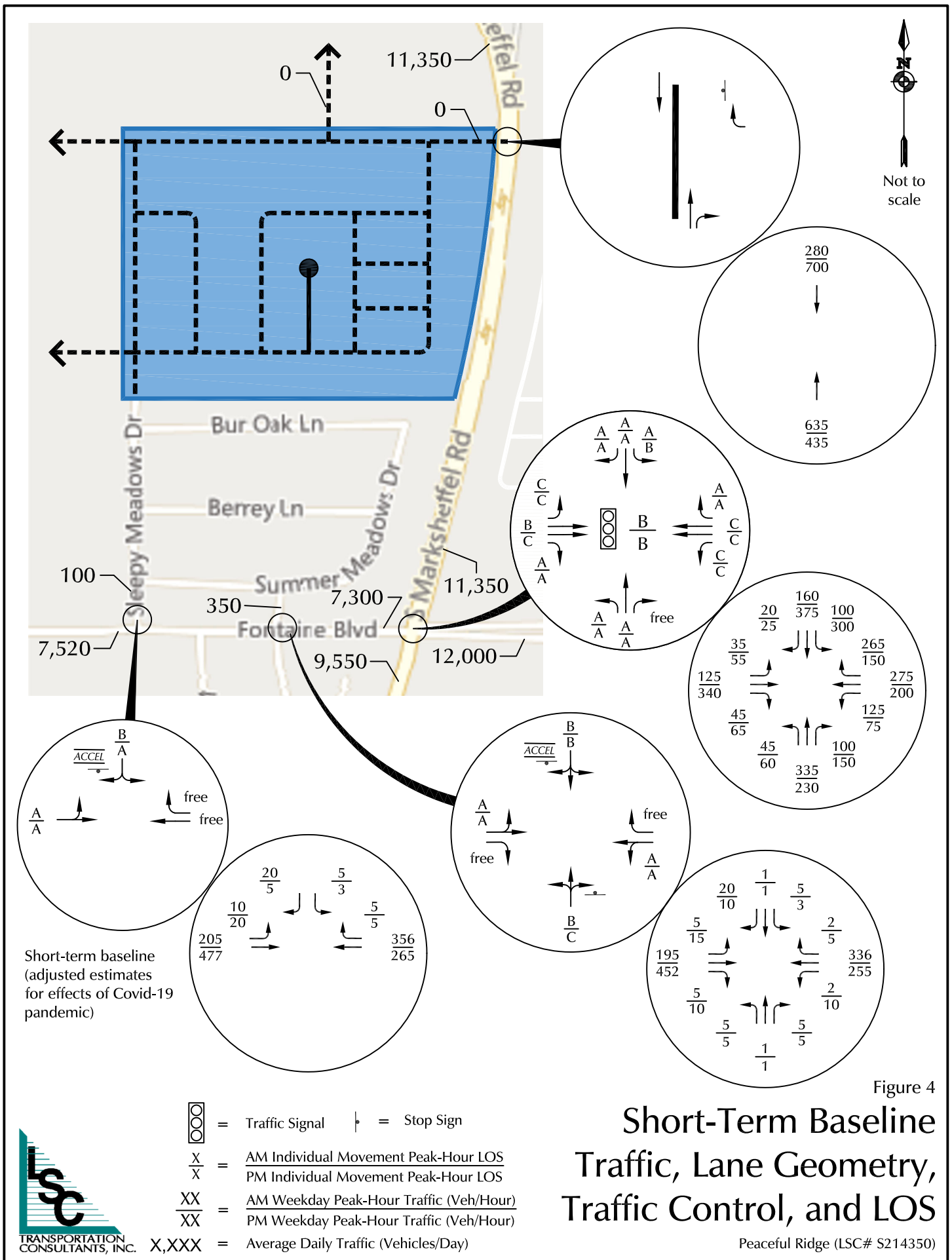


Not to
scale









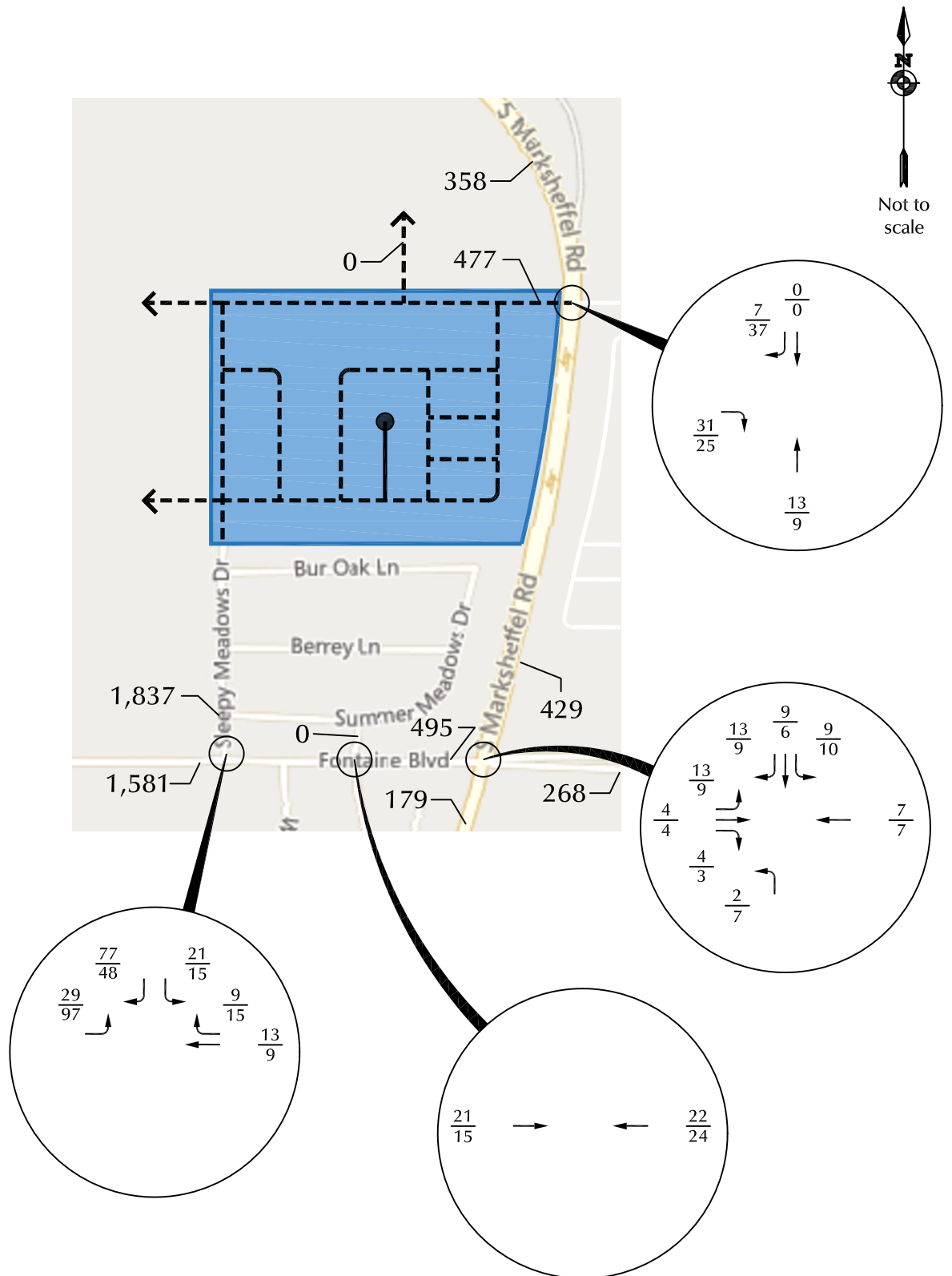


Figure 6
Site-Generated Traffic
Short-Term

Peaceful Ridge (LSC# S214350)

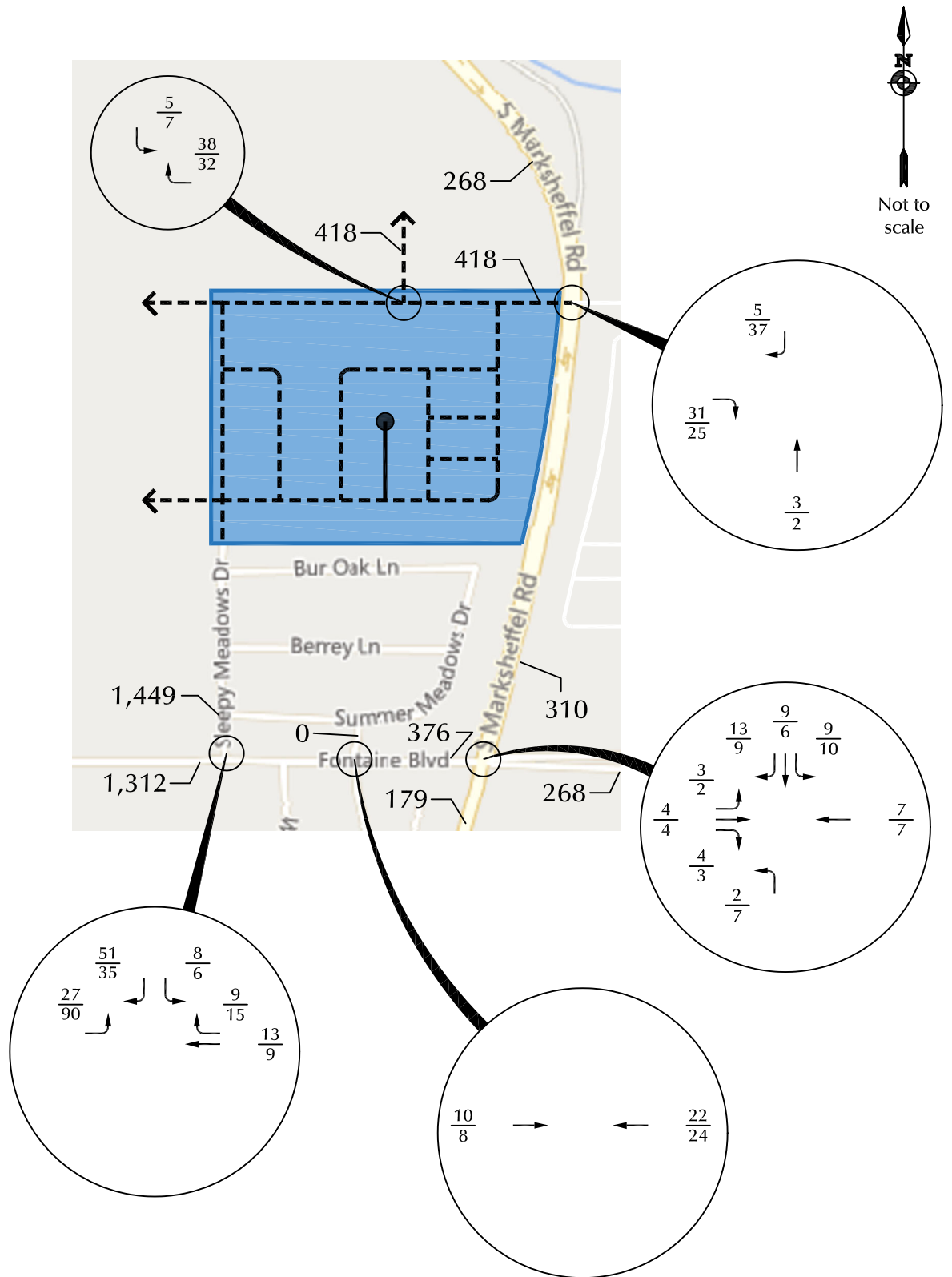
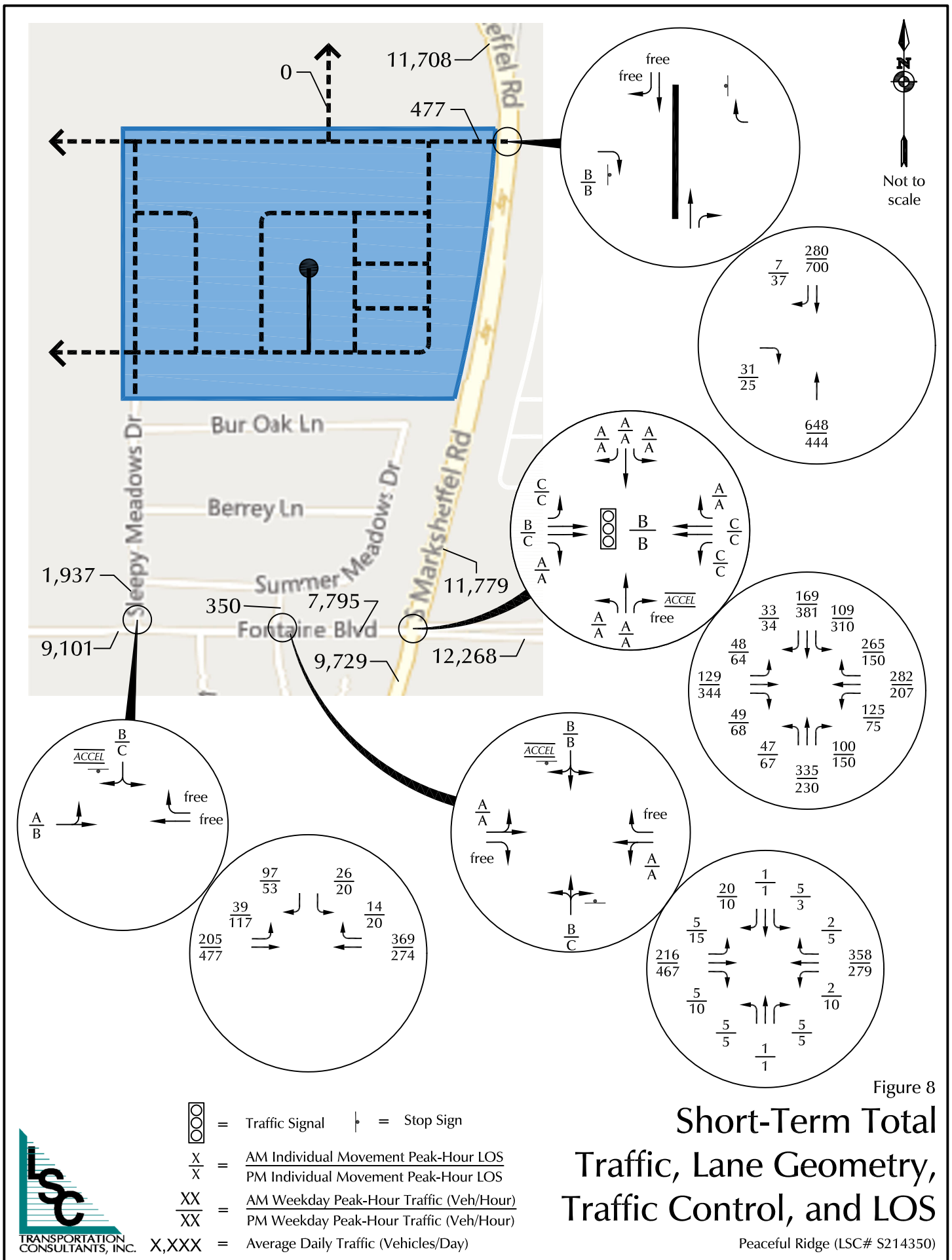
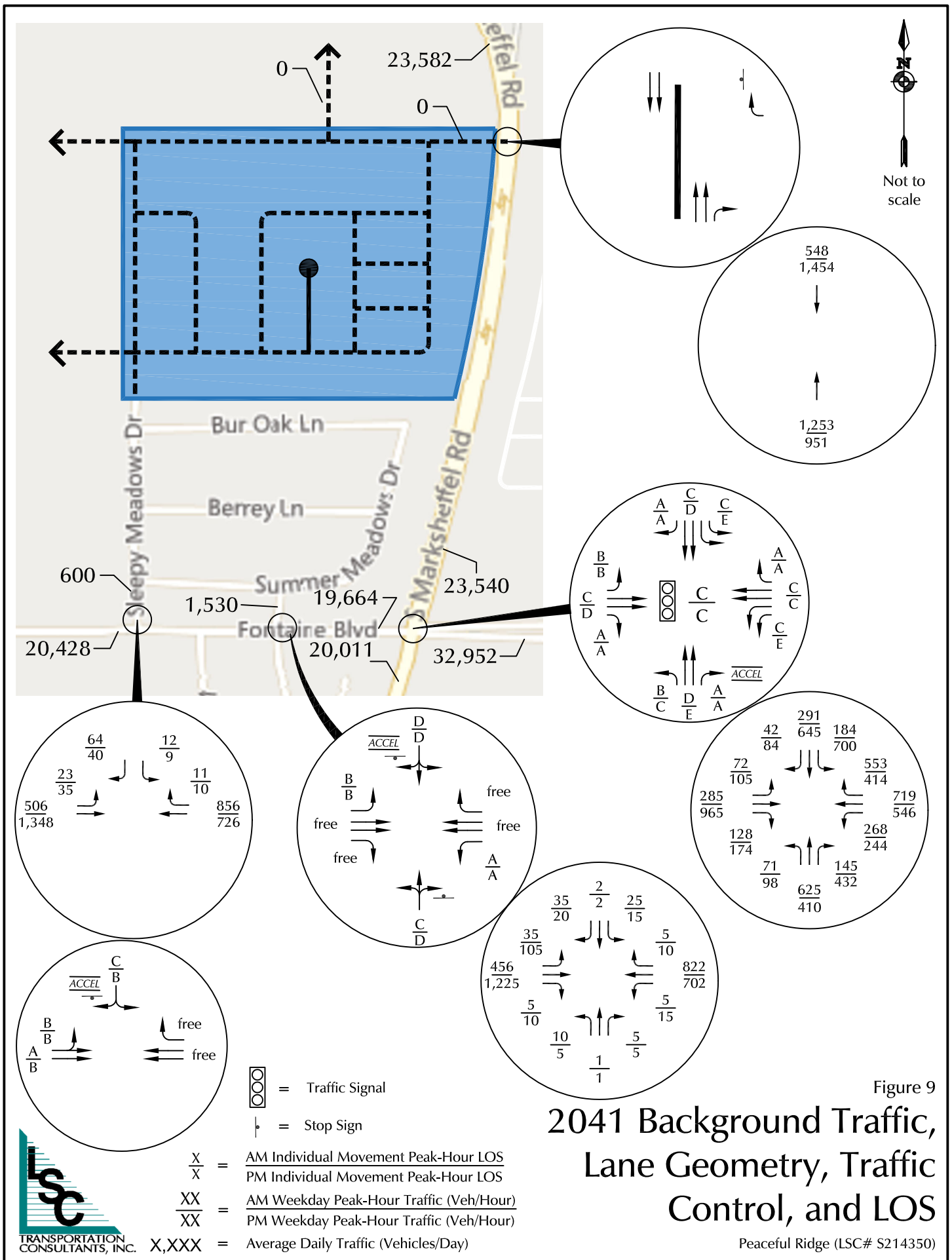
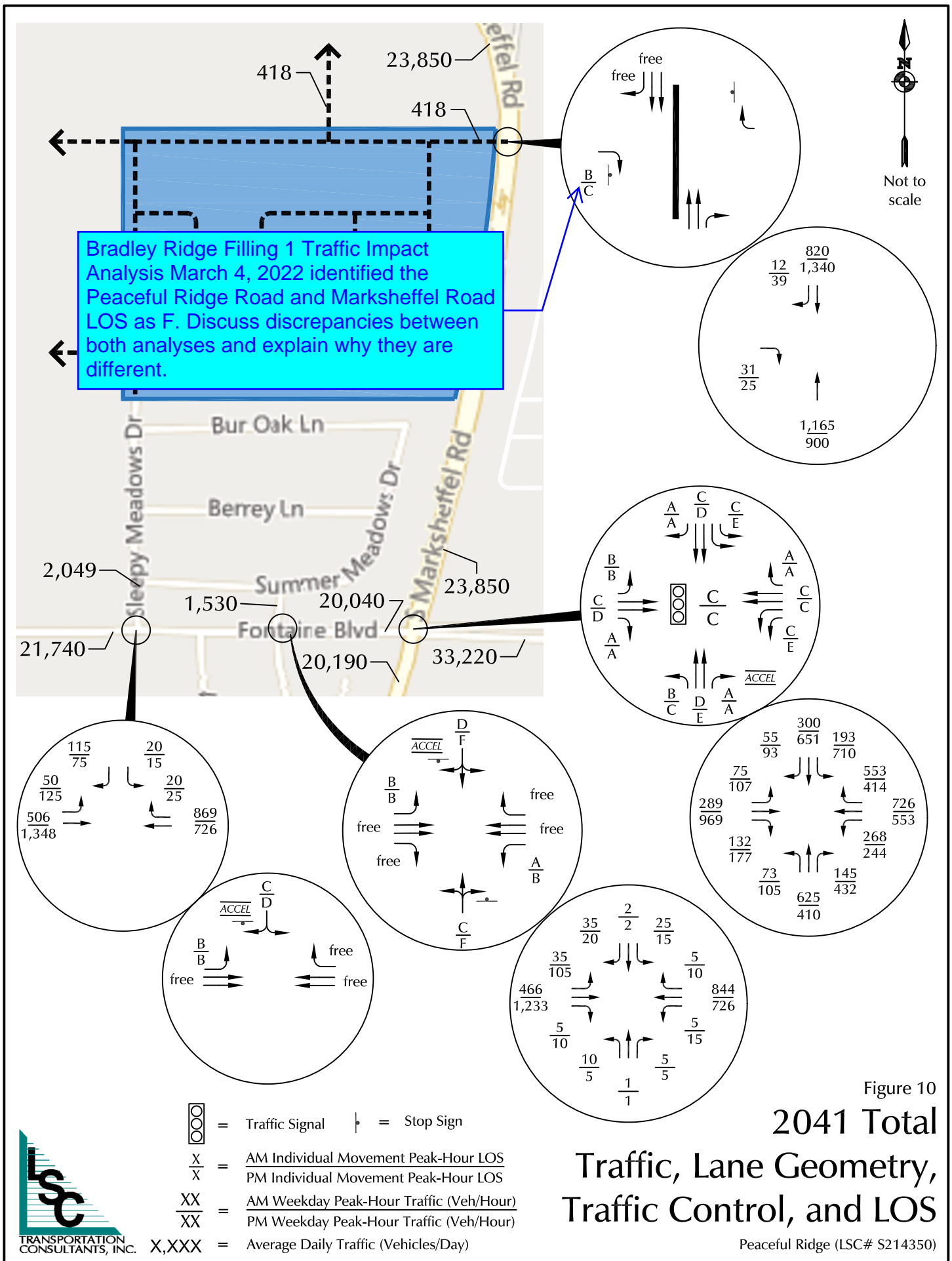


Figure 7
Site-Generated Traffic
Long-Term

Peaceful Ridge (LSC# S214350)



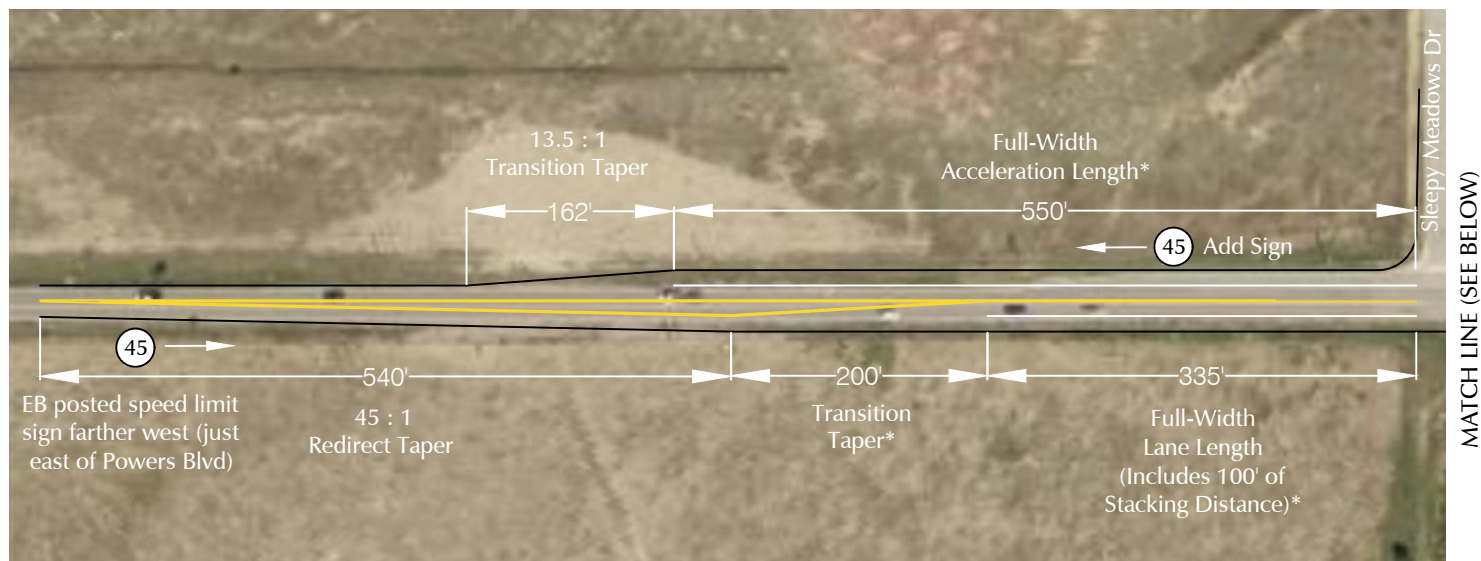






1" = 150'
scale

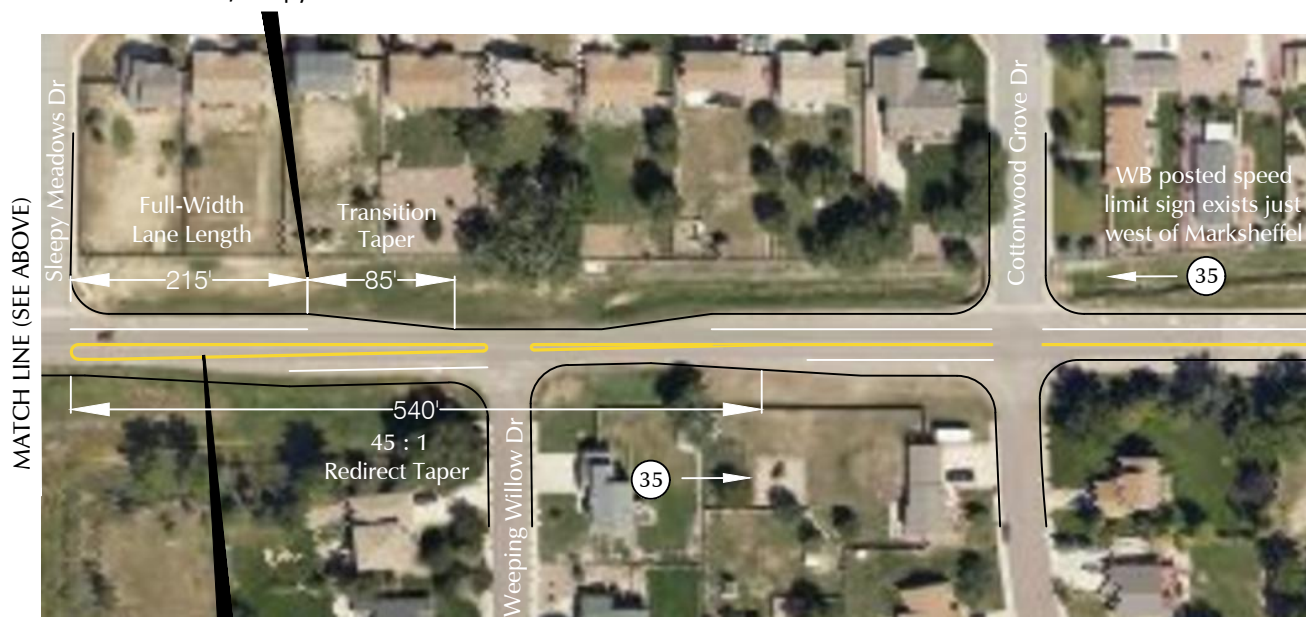
Note: this concept shows the WB through lane alignment unchanged, but shifts the EB thru lane south to accommodate the proposed EB left turn lane at Sleepy Meadows. This is due to existing overhead utility poles along the north side of Fontaine west of Sleepy Meadows.



* Adjusted for grade, if needed

(XX) Posted speed limit sign location (mph)

Please refer to report text for discussion regarding westbound-right turn lane at Fontaine Blvd/Sleepy Meadows Dr



Potential alternatives to limit extent of redirect taper to the section between Sleepy Meadows and Weeping Willow intersections

1. Shift 35-mph zone west such that this section is 35 mph (i.e., move EB 35 speed limit sign to a new location upstream of Sleepy Meadows)
2. Widen Fontaine Blvd symmetrically on north and south sides for the EBL turn lane approaching Sleepy Meadows Drive

Include propose improvements for Marksheffel Road and Peaceful Ridge Drive intersection and Marksheffel Road and Fontaine Boulevard.

Traffic Counts

LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Marksheffel Rd - Fontaine Blvd AM

Site Code : 00214350

Start Date : 6/17/2021

Page No : 1

Groups Printed- Unshifted

	Marksheffel Rd Southbound					Fontaine Blvd Westbound					Marksheffel Rd Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
07:00 AM	6	18	5	0	29	6	12	20	0	38	2	34	7	0	43	2	10	5	0	17	127
07:05 AM	4	12	0	0	16	10	20	29	0	59	1	26	5	0	32	1	6	4	0	11	118
07:10 AM	5	7	0	0	12	11	19	27	0	57	6	32	6	0	44	3	6	2	0	11	124
07:15 AM	6	16	1	0	23	9	17	17	0	43	1	18	6	0	25	1	12	8	0	21	112
07:20 AM	7	16	3	0	26	13	15	27	0	55	1	34	6	0	41	2	7	1	0	10	132
07:25 AM	10	11	1	0	22	11	15	14	0	40	4	25	3	0	32	3	15	4	0	22	116
07:30 AM	2	10	0	0	12	10	20	25	0	55	4	30	3	0	37	3	13	3	0	19	123
07:35 AM	8	10	1	0	19	7	22	20	0	49	7	43	5	0	55	3	5	6	0	14	137
07:40 AM	7	19	1	0	27	10	22	29	0	61	4	34	7	0	45	2	8	0	0	10	143
07:45 AM	10	10	2	0	22	11	20	17	0	48	5	22	11	0	38	0	9	5	0	14	122
07:50 AM	5	19	2	0	26	13	10	20	0	43	3	21	4	0	28	2	7	4	0	13	110
07:55 AM	4	12	1	0	17	7	6	9	0	22	0	16	10	0	26	3	7	3	0	13	78
Total	74	160	17	0	251	118	198	254	0	570	38	335	73	0	446	25	105	45	0	175	1442
08:00 AM	7	10	0	0	17	12	16	19	0	47	1	14	6	0	21	2	7	1	0	10	95
08:05 AM	7	12	0	0	19	11	10	6	0	27	1	24	6	0	31	0	4	1	0	5	82
08:10 AM	8	13	0	0	21	9	25	12	0	46	5	28	4	0	37	0	12	6	0	18	122
08:15 AM	5	5	1	0	11	11	24	13	0	48	6	24	6	0	36	5	10	3	0	18	113
08:20 AM	12	11	0	0	23	19	19	13	0	51	4	17	8	0	29	1	11	7	0	19	122
08:25 AM	9	12	1	0	22	16	26	15	0	57	1	31	4	0	36	1	4	1	0	6	121
08:30 AM	15	13	2	0	30	8	17	27	0	52	1	12	7	0	20	2	6	4	0	12	114
08:35 AM	7	9	3	0	19	15	19	18	0	52	1	17	7	0	25	1	9	0	0	10	106
08:40 AM	7	8	1	0	16	13	25	16	0	54	3	18	3	0	24	0	12	1	0	13	107
08:45 AM	4	16	1	0	21	7	8	5	0	20	2	20	8	0	30	4	5	3	0	12	83
08:50 AM	6	14	3	0	23	8	28	8	0	44	3	16	3	0	22	1	8	1	0	10	99
08:55 AM	7	19	1	0	27	8	12	12	0	32	4	8	5	0	17	3	6	2	0	11	87
Total	94	142	13	0	249	137	229	164	0	530	32	229	67	0	328	20	94	30	0	144	1251
Grand Total	168	302	30	0	500	255	427	418	0	1100	70	564	140	0	774	45	199	75	0	319	2693
Apprch %	33.6	60.4	6	0		23.2	38.8	38	0		9	72.9	18.1	0		14.1	62.4	23.5	0		
Total %	6.2	11.2	1.1	0	18.6	9.5	15.9	15.5	0	40.8	2.6	20.9	5.2	0	28.7	1.7	7.4	2.8	0	11.8	

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

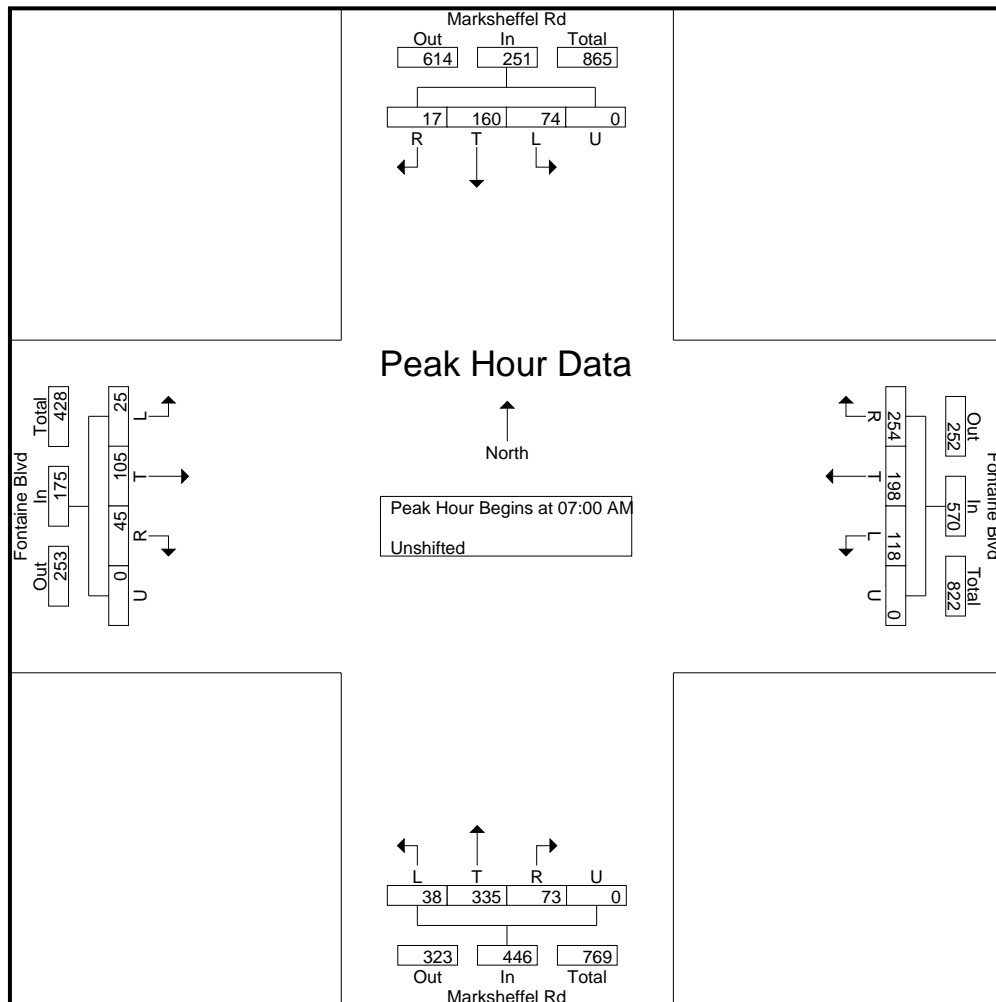
File Name : Marksheffel Rd - Fontaine Blvd AM

Site Code : 00214350

Start Date : 6/17/2021

Page No : 2

	Marksheffel Rd Southbound					Fontaine Blvd Westbound					Marksheffel Rd Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:55 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	6	18	5	0	29	6	12	20	0	38	2	34	7	0	43	2	10	5	0	17	127
07:05 AM	4	12	0	0	16	10	20	29	0	59	1	26	5	0	32	1	6	4	0	11	118
07:10 AM	5	7	0	0	12	11	19	27	0	57	6	32	6	0	44	3	6	2	0	11	124
07:15 AM	6	16	1	0	23	9	17	17	0	43	1	18	6	0	25	1	12	8	0	21	112
07:20 AM	7	16	3	0	26	13	15	27	0	55	1	34	6	0	41	2	7	1	0	10	132
07:25 AM	10	11	1	0	22	11	15	14	0	40	4	25	3	0	32	3	15	4	0	22	116
07:30 AM	2	10	0	0	12	10	20	25	0	55	4	30	3	0	37	3	13	3	0	19	123
07:35 AM	8	10	1	0	19	7	22	20	0	49	7	43	5	0	55	3	5	6	0	14	137
07:40 AM	7	19	1	0	27	10	22	29	0	61	4	34	7	0	45	2	8	0	0	10	143
07:45 AM	10	10	2	0	22	11	20	17	0	48	5	22	11	0	38	0	9	5	0	14	122
07:50 AM	5	19	2	0	26	13	10	20	0	43	3	21	4	0	28	2	7	4	0	13	110
07:55 AM	4	12	1	0	17	7	6	9	0	22	0	16	10	0	26	3	7	3	0	13	78
Total Volume	74	160	17	0	251	118	198	254	0	570	38	335	73	0	446	25	105	45	0	175	1442
% App. Total	29.5	63.7	6.8	0		20.7	34.7	44.6	0		8.5	75.1	16.4	0		14.3	60	25.7	0		
PHF	.617	.702	.283	.000	.721	.756	.750	.730	.000	.779	.452	.649	.553	.000	.676	.694	.583	.469	.000	.663	.840



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

File Name : Marksheffel Rd - Fontaine Blvd AM

Site Code : 00214350

Start Date : 6/17/2021

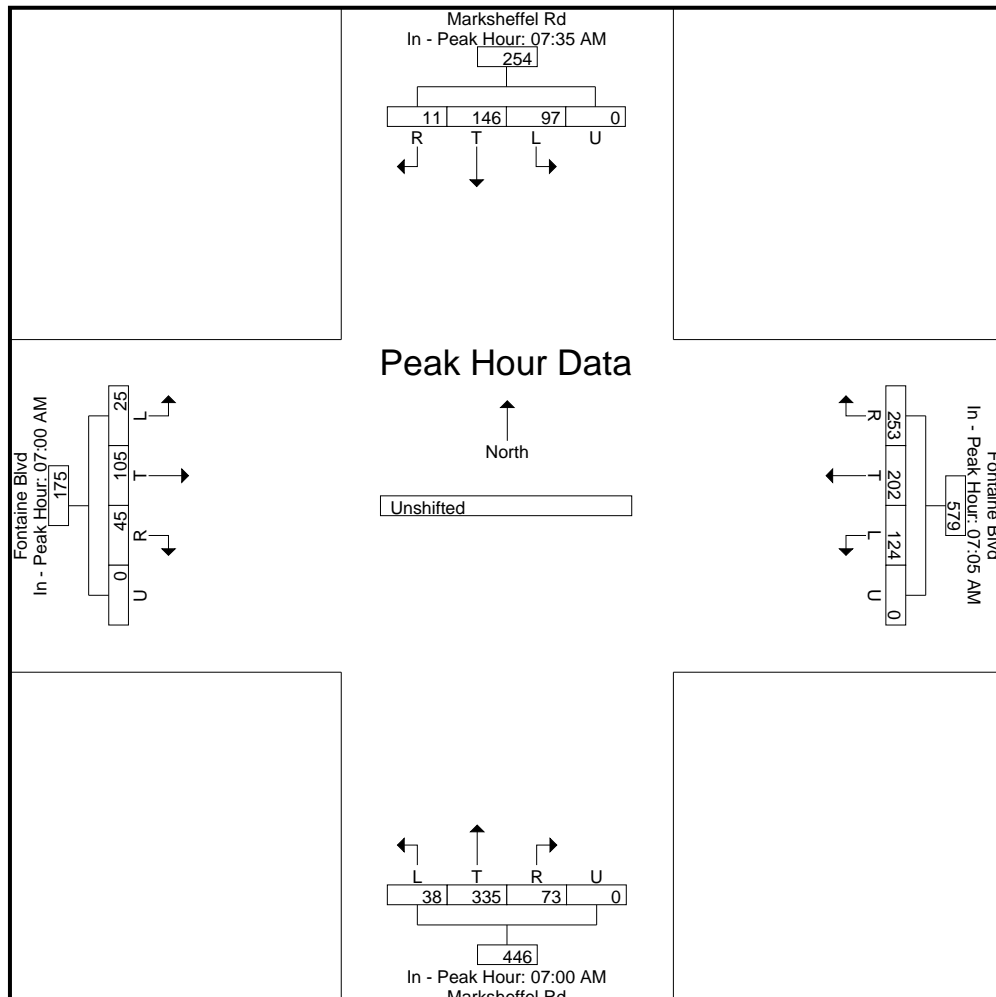
Page No : 3

	Marksheffel Rd Southbound					Fontaine Blvd Westbound					Marksheffel Rd Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total

Peak Hour Analysis From 07:00 AM to 08:55 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:35 AM					07:05 AM					07:00 AM					07:00 AM				
+0 mins.	8	10	1	0	19	10	20	29	0	59	2	34	7	0	43	2	10	5	0	17
+5 mins.	7	19	1	0	27	11	19	27	0	57	1	26	5	0	32	1	6	4	0	11
+10 mins.	10	10	2	0	22	9	17	17	0	43	6	32	6	0	44	3	6	2	0	11
+15 mins.	5	19	2	0	26	13	15	27	0	55	1	18	6	0	25	1	12	8	0	21
+20 mins.	4	12	1	0	17	11	15	14	0	40	1	34	6	0	41	2	7	1	0	10
+25 mins.	7	10	0	0	17	10	20	25	0	55	4	25	3	0	32	3	15	4	0	22
+30 mins.	7	12	0	0	19	7	22	20	0	49	4	30	3	0	37	3	13	3	0	19
+35 mins.	8	13	0	0	21	10	22	29	0	61	7	43	5	0	55	3	5	6	0	14
+40 mins.	5	5	1	0	11	11	20	17	0	48	4	34	7	0	45	2	8	0	0	10
+45 mins.	12	11	0	0	23	13	10	20	0	43	5	22	11	0	38	0	9	5	0	14
+50 mins.	9	12	1	0	22	7	6	9	0	22	3	21	4	0	28	2	7	4	0	13
+55 mins.	15	13	2	0	30	12	16	19	0	47	0	16	10	0	26	3	7	3	0	13
Total Volume	97	146	11	0	254	124	202	253	0	579	38	335	73	0	446	25	105	45	0	175
% App. Total	38.2	57.5	4.3	0		21.4	34.9	43.7	0		8.5	75.1	16.4	0		14.3	60	25.7	0	
PHF	.539	.640	.458	.000	.706	.795	.765	.727	.000	.791	.452	.649	.553	.000	.676	.694	.583	.469	.000	.663



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545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Marksheffel Rd - Fontaine Blvd PM

Site Code : 00214350

Start Date : 6/15/2021

Page No : 1

Groups Printed- Unshifted

	Marksheffel Rd Southbound					Fontaine Blvd Westbound					Marksheffel Rd Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
04:00 PM	20	24	2	0	46	5	7	8	0	20	5	24	12	0	41	2	18	4	0	24	131
04:05 PM	17	26	2	0	45	7	9	6	0	22	8	18	11	0	37	2	16	7	0	25	129
04:10 PM	23	18	1	0	42	11	14	12	0	37	0	17	13	0	30	3	27	5	0	35	144
04:15 PM	15	27	0	0	42	5	5	10	0	20	0	19	10	0	29	4	25	4	0	33	124
04:20 PM	23	30	0	0	53	4	11	7	0	22	4	23	8	0	35	5	29	4	0	38	148
04:25 PM	29	38	1	0	68	4	13	11	0	28	3	18	11	0	32	1	18	1	0	20	148
04:30 PM	20	35	0	0	55	7	12	14	0	33	3	24	8	0	35	2	25	4	0	31	154
04:35 PM	26	23	1	0	50	5	17	12	0	34	2	24	14	0	40	1	20	4	0	25	149
04:40 PM	28	39	0	0	67	5	21	12	1	39	0	22	13	0	35	2	24	7	0	33	174
04:45 PM	19	23	2	0	44	2	17	8	0	27	1	15	9	0	25	4	20	9	0	33	129
04:50 PM	25	32	1	0	58	7	6	10	0	23	4	19	14	0	37	4	26	7	0	37	155
04:55 PM	25	32	1	1	59	6	10	7	0	23	1	22	16	0	39	7	22	3	0	32	153
Total	270	347	11	1	629	68	142	117	1	328	31	245	139	0	415	37	270	59	0	366	1738
05:00 PM	20	33	2	0	55	6	14	13	1	34	5	15	13	0	33	3	24	6	0	33	155
05:05 PM	25	19	1	0	45	7	12	14	0	33	9	20	22	0	51	0	22	7	0	29	158
05:10 PM	24	34	5	0	63	3	6	12	0	21	6	26	11	0	43	3	22	7	0	32	159
05:15 PM	12	37	1	0	50	10	9	14	0	33	5	25	17	0	47	0	29	2	0	31	161
05:20 PM	20	41	3	0	64	6	13	13	0	32	5	18	16	0	39	3	19	1	0	23	158
05:25 PM	24	29	1	0	54	2	8	8	3	21	5	20	14	1	40	2	26	9	0	37	152
05:30 PM	8	23	6	0	37	5	22	10	0	37	6	17	3	0	26	10	28	5	0	43	143
05:35 PM	26	24	10	2	62	5	14	9	0	28	13	11	8	0	32	13	32	2	0	47	169
05:40 PM	17	26	0	0	43	9	10	7	0	26	1	19	21	0	41	2	35	4	0	41	151
05:45 PM	32	13	2	0	47	10	20	13	0	43	1	18	11	0	30	1	24	3	0	28	148
05:50 PM	19	24	1	0	44	5	17	12	0	34	4	18	14	0	36	4	24	5	0	33	147
05:55 PM	28	21	1	0	50	7	13	5	0	25	7	15	16	0	38	1	21	6	0	28	141
Total	255	324	33	2	614	75	158	130	4	367	67	222	166	1	456	42	306	57	0	405	1842
Grand Total	525	671	44	3	1243	143	300	247	5	695	98	467	305	1	871	79	576	116	0	771	3580
Apprch %	42.2	54	3.5	0.2		20.6	43.2	35.5	0.7		11.3	53.6	35	0.1		10.2	74.7	15	0		
Total %	14.7	18.7	1.2	0.1	34.7	4	8.4	6.9	0.1	19.4	2.7	13	8.5	0	24.3	2.2	16.1	3.2	0	21.5	

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545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

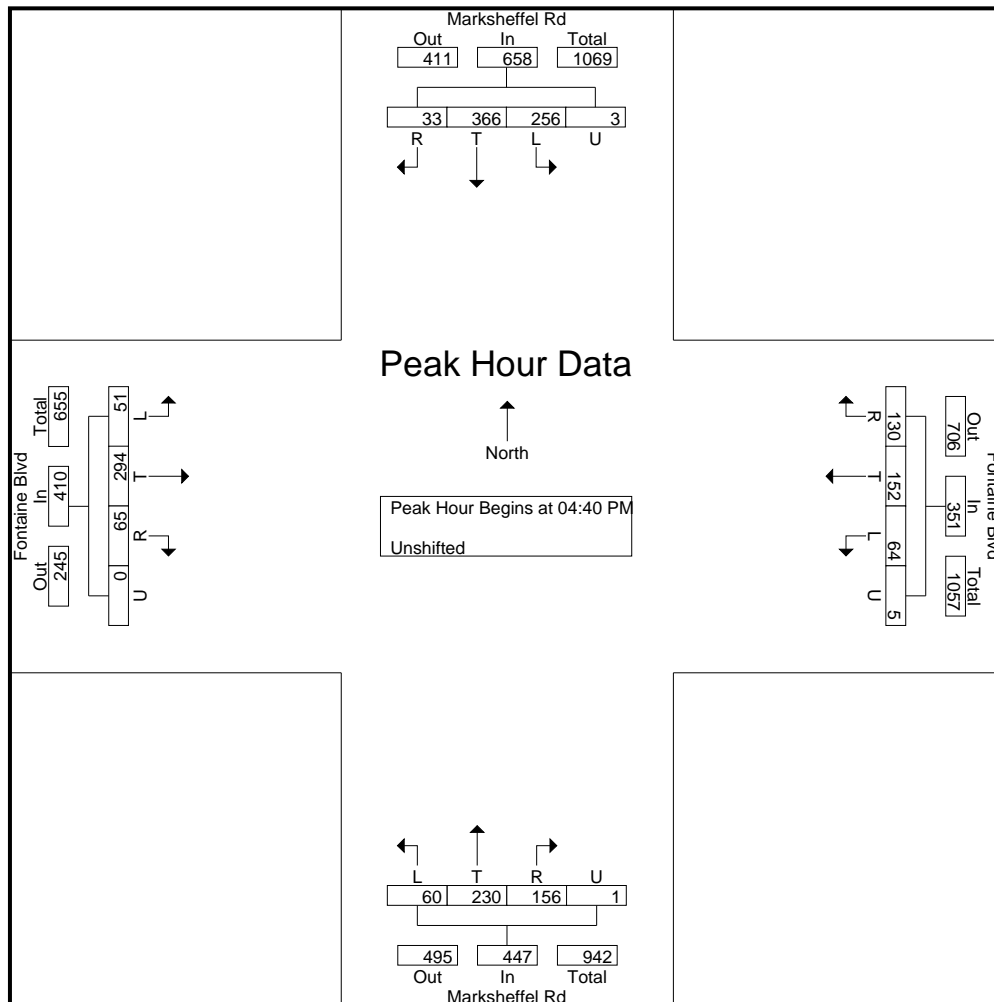
File Name : Marksheffel Rd - Fontaine Blvd PM

Site Code : 00214350

Start Date : 6/15/2021

Page No : 2

	Marksheffel Rd Southbound					Fontaine Blvd Westbound					Marksheffel Rd Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:40 PM																					
04:40 PM	28	39	0	0	67	5	21	12	1	39	0	22	13	0	35	2	24	7	0	33	174
04:45 PM	19	23	2	0	44	2	17	8	0	27	1	15	9	0	25	4	20	9	0	33	129
04:50 PM	25	32	1	0	58	7	6	10	0	23	4	19	14	0	37	4	26	7	0	37	155
04:55 PM	25	32	1	1	59	6	10	7	0	23	1	22	16	0	39	7	22	3	0	32	153
05:00 PM	20	33	2	0	55	6	14	13	1	34	5	15	13	0	33	3	24	6	0	33	155
05:05 PM	25	19	1	0	45	7	12	14	0	33	9	20	22	0	51	0	22	7	0	29	158
05:10 PM	24	34	5	0	63	3	6	12	0	21	6	26	11	0	43	3	22	7	0	32	159
05:15 PM	12	37	1	0	50	10	9	14	0	33	5	25	17	0	47	0	29	2	0	31	161
05:20 PM	20	41	3	0	64	6	13	13	0	32	5	18	16	0	39	3	19	1	0	23	158
05:25 PM	24	29	1	0	54	2	8	8	3	21	5	20	14	1	40	2	26	9	0	37	152
05:30 PM	8	23	6	0	37	5	22	10	0	37	6	17	3	0	26	10	28	5	0	43	143
05:35 PM	26	24	10	2	62	5	14	9	0	28	13	11	8	0	32	13	32	2	0	47	169
Total Volume	256	366	33	3	658	64	152	130	5	351	60	230	156	1	447	51	294	65	0	410	1866
% App. Total	38.9	55.6	5	0.5		18.2	43.3	37	1.4		13.4	51.5	34.9	0.2		12.4	71.7	15.9	0		
PHF	.762	.744	.275	.125	.818	.533	.576	.774	.139	.750	.385	.737	.591	.083	.730	.327	.766	.602	.000	.727	.894



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719-633-2868

File Name : Marksheffel Rd - Fontaine Blvd PM

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Start Date : 6/15/2021

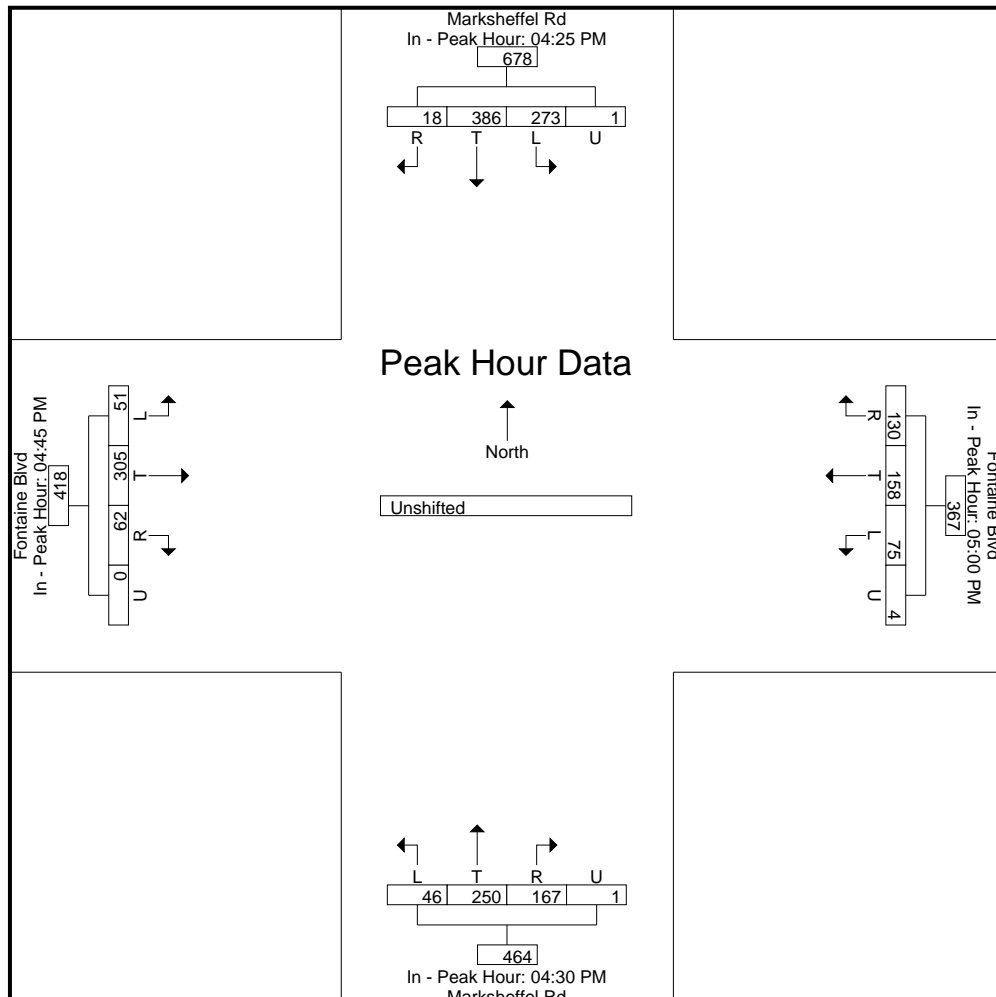
Page No : 3

	Marksheffel Rd Southbound					Fontaine Blvd Westbound					Marksheffel Rd Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total

Peak Hour Analysis From 04:00 PM to 05:55 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:25 PM					05:00 PM					04:30 PM					04:45 PM				
+0 mins.	29	38	1	0	68	6	14	13	1	34	3	24	8	0	35	4	20	9	0	33
+5 mins.	20	35	0	0	55	7	12	14	0	33	2	24	14	0	40	4	26	7	0	37
+10 mins.	26	23	1	0	50	3	6	12	0	21	0	22	13	0	35	7	22	3	0	32
+15 mins.	28	39	0	0	67	10	9	14	0	33	1	15	9	0	25	3	24	6	0	33
+20 mins.	19	23	2	0	44	6	13	13	0	32	4	19	14	0	37	0	22	7	0	29
+25 mins.	25	32	1	0	58	2	8	8	3	21	1	22	16	0	39	3	22	7	0	32
+30 mins.	25	32	1	1	59	5	22	10	0	37	5	15	13	0	33	0	29	2	0	31
+35 mins.	20	33	2	0	55	5	14	9	0	28	9	20	22	0	51	3	19	1	0	23
+40 mins.	25	19	1	0	45	9	10	7	0	26	6	26	11	0	43	2	26	9	0	37
+45 mins.	24	34	5	0	63	10	20	13	0	43	5	25	17	0	47	10	28	5	0	43
+50 mins.	12	37	1	0	50	5	17	12	0	34	5	18	16	0	39	13	32	2	0	47
+55 mins.	20	41	3	0	64	7	13	5	0	25	5	20	14	1	40	2	35	4	0	41
Total Volume	273	386	18	1	678	75	158	130	4	367	46	250	167	1	464	51	305	62	0	418
% App. Total	40.3	56.9	2.7	0.1		20.4	43.1	35.4	1.1		9.9	53.9	36	0.2		12.2	73	14.8	0	
PHF	.784	.785	.300	.083	.831	.625	.598	.774	.111	.711	.426	.801	.633	.083	.758	.327	.726	.574	.000	.741



LSC Transportation Consultants, Inc.

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

File Name : Cotton Wood Dr - Fontain Blvd AM
Site Code : S214530
Start Date : 6/23/2021
Page No : 1

Groups Printed- Unshifted

	Cottonwood Dr Southbound					Fontaine Blvd Westbound					Cottonwood Dr Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
06:30 AM	5	0	3	0	8	0	62	0	0	62	1	0	0	0	1	0	26	0	0	26	97
06:45 AM	0	0	1	0	1	0	54	0	0	54	2	0	1	0	3	0	45	1	0	46	104
Total	5	0	4	0	9	0	116	0	0	116	3	0	1	0	4	0	71	1	0	72	201
07:00 AM	1	0	2	0	3	0	60	1	0	61	2	0	1	0	3	3	39	2	0	44	111
07:15 AM	3	0	6	0	9	0	65	0	0	65	0	0	1	0	1	0	34	1	0	35	110
07:30 AM	1	0	3	0	4	0	82	1	0	83	0	0	0	0	0	1	46	1	0	48	135
07:45 AM	0	0	0	0	0	0	62	1	0	63	1	0	2	0	3	0	30	1	0	31	97
Total	5	0	11	0	16	0	269	3	0	272	3	0	4	0	7	4	149	5	0	158	453
08:00 AM	0	0	1	0	1	2	56	1	0	59	1	0	0	0	1	1	45	2	0	48	109
08:15 AM	1	0	1	0	2	3	61	0	0	64	1	0	1	0	2	1	46	0	0	47	115
Grand Total	11	0	17	0	28	5	502	4	0	511	8	0	6	0	14	6	311	8	0	325	878
Apprch %	39.3	0	60.7	0		1	98.2	0.8	0		57.1	0	42.9	0		1.8	95.7	2.5	0		
Total %	1.3	0	1.9	0	3.2	0.6	57.2	0.5	0	58.2	0.9	0	0.7	0	1.6	0.7	35.4	0.9	0	37	

LSC Transportation Consultants, Inc.

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

File Name : Cotton Wood Dr - Fontain Blvd AM
Site Code : S214530
Start Date : 6/23/2021
Page No : 2

	Cottonwood Dr Southbound					Fontaine Blvd Westbound					Cottonwood Dr Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 6:45:00 AM																					
6:45:00 AM	0	0	1	0	1	0	54	0	0	54	2	0	1	0	3	0	45	1	0	46	104
7:00:00 AM	1	0	2	0	3	0	60	1	0	61	2	0	1	0	3	3	39	2	0	44	111
7:15:00 AM	3	0	6	0	9	0	65	0	0	65	0	0	1	0	1	0	34	1	0	35	110
7:30:00 AM	1	0	3	0	4	0	82	1	0	83	0	0	0	0	0	1	46	1	0	48	135
Total Volume	5	0	12	0	17	0	261	2	0	263	4	0	3	0	7	4	164	5	0	173	460
% App. Total	29.4	0	70.6	0		0	99.2	0.8	0		57.1	0	42.9	0		2.3	94.8	2.9	0		
PHF	.417	.000	.500	.000	.472	.000	.796	.500	.000	.792	.500	.000	.750	.000	.583	.333	.891	.625	.000	.901	.852

LSC Transportation Consultants, Inc.

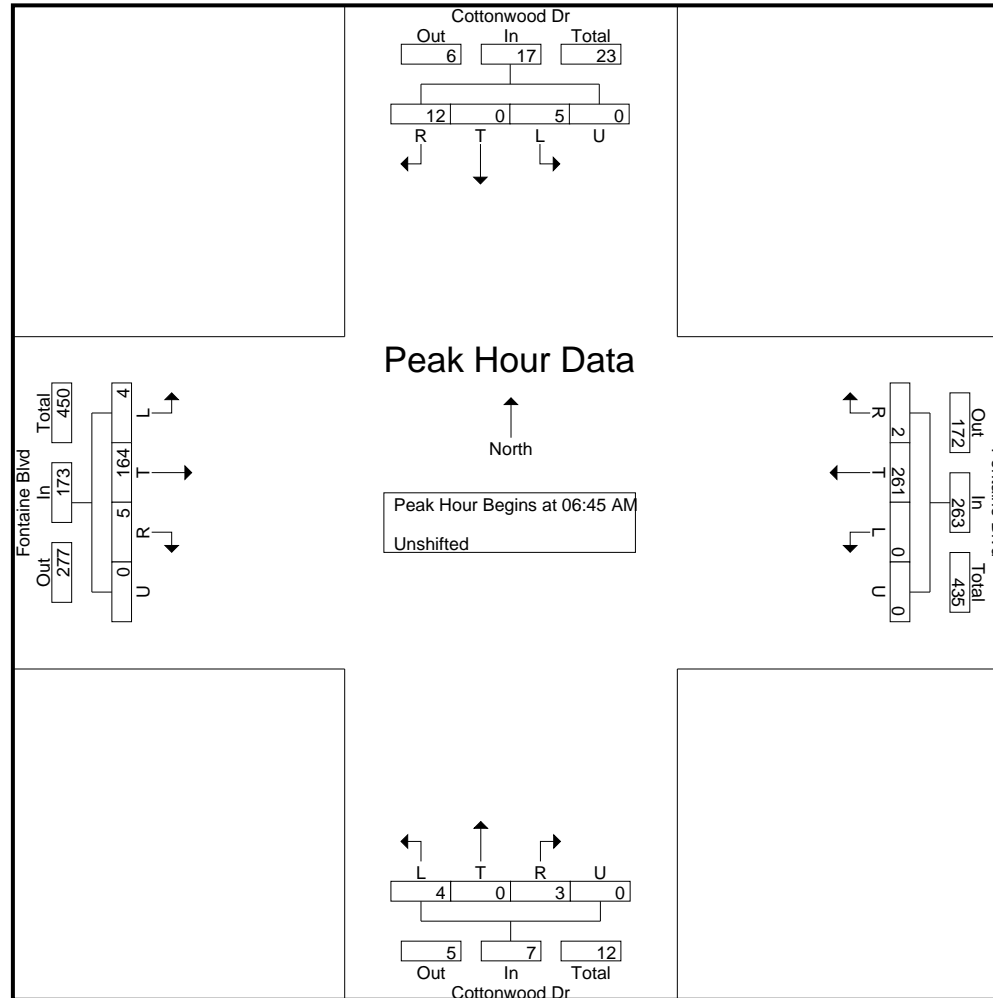
545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Cotton Wood Dr - Fontain Blvd AM

Site Code : S214530

Start Date : 6/23/2021

Page No : 3



LSC Transportation Consultants, Inc.

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

File Name : Cotton Wood Dr - Fontain Blvd AM
Site Code : S214530
Start Date : 6/23/2021
Page No : 4

	Cottonwood Dr Southbound					Fontaine Blvd Westbound					Cottonwood Dr Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	6:30:00 AM					7:00:00 AM					6:30:00 AM					7:30:00 AM					
+0 mins.	5	0	3	0	8	0	60	1	0	61	1	0	0	0	1	1	46	1	0	48	
+5 mins.	0	0	1	0	1	0	65	0	0	65	2	0	1	0	3	0	30	1	0	31	
+10 mins.	1	0	2	0	3	0	82	1	0	83	2	0	1	0	3	1	45	2	0	48	
+15 mins.	3	0	6	0	9	0	62	1	0	63	0	0	1	0	1	1	46	0	0	47	
Total Volume	9	0	12	0	21	0	269	3	0	272	5	0	3	0	8	3	167	4	0	174	
% App. Total	42.9	0	57.1	0		0	98.9	1.1	0		62.5	0	37.5	0		1.7	96	2.3	0		
PHF	.450	.000	.500	.000	.583	.000	.820	.750	.000	.819	.625	.000	.750	.000	.667	.750	.908	.500	.000	.906	

LSC Transportation Consultants, Inc.

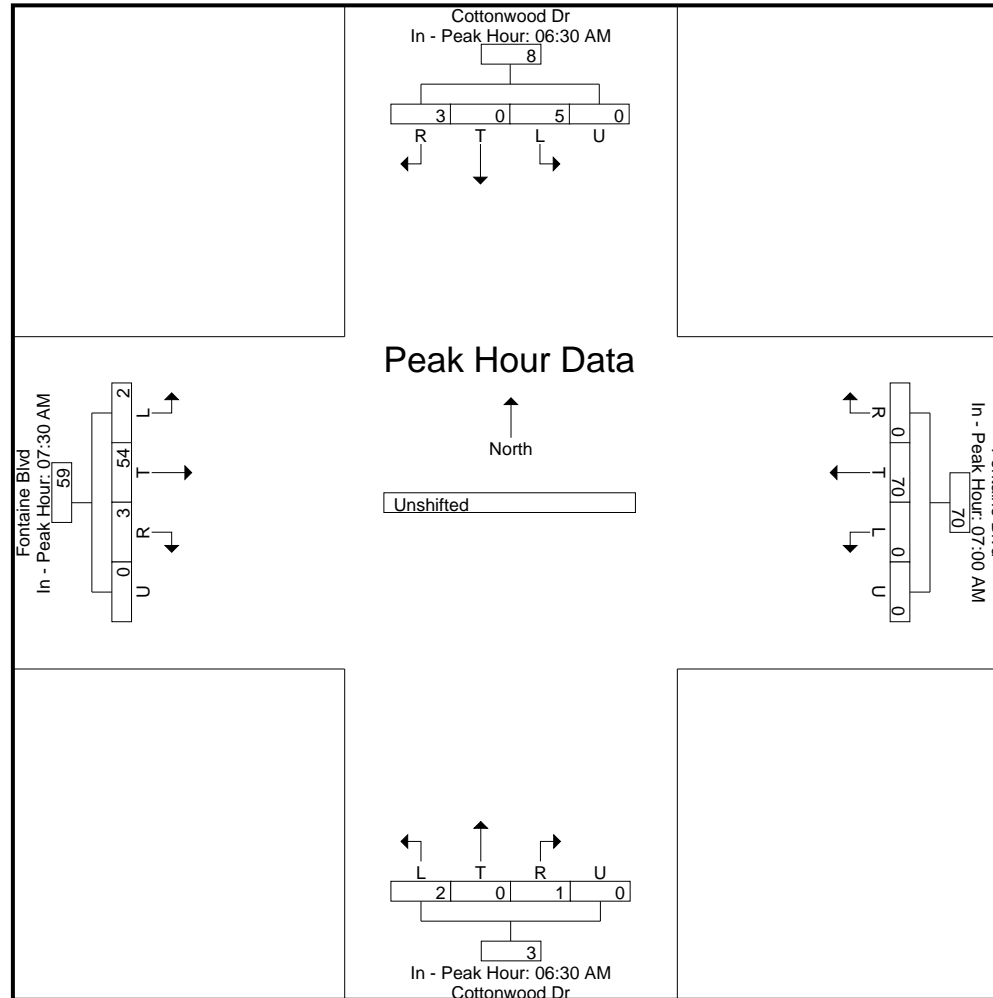
545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Cotton Wood Dr - Fontain Blvd AM

Site Code : S214530

Start Date : 6/23/2021

Page No : 5



LSC Transportation Consultants, Inc.

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

File Name : Cotton Wood Dr - Fontain Blvd PM
Site Code : S214530
Start Date : 6/29/2021
Page No : 1

Groups Printed- Unshifted

	Cottonwood Dr Southbound					Fontaine Blvd Westbound					Cottonwood Dr Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
04:00 PM	0	0	1	0	1	2	52	1	0	55	0	0	1	0	1	2	69	3	0	74	131
04:15 PM	0	0	2	0	2	1	57	1	0	59	0	0	2	0	2	1	108	2	0	111	174
04:30 PM	1	0	1	0	2	2	66	0	0	68	4	0	0	0	4	4	90	2	0	96	170
04:45 PM	0	0	0	0	0	2	61	0	0	63	3	0	1	0	4	1	80	3	0	84	151
Total	1	0	4	0	5	7	236	2	0	245	7	0	4	0	11	8	347	10	0	365	626
05:00 PM	0	0	0	0	0	3	49	1	0	53	0	0	1	0	1	1	104	2	0	107	161
05:15 PM	1	0	2	0	3	1	65	1	0	67	2	0	1	0	3	3	93	3	0	99	172
05:30 PM	1	0	1	0	2	1	67	3	0	71	2	0	1	0	3	5	103	0	0	108	184
05:45 PM	1	0	3	0	4	2	67	0	0	69	1	0	0	0	1	3	80	3	0	86	160
Total	3	0	6	0	9	7	248	5	0	260	5	0	3	0	8	12	380	8	0	400	677
Grand Total	4	0	10	0	14	14	484	7	0	505	12	0	7	0	19	20	727	18	0	765	1303
Apprch %	28.6	0	71.4	0		2.8	95.8	1.4	0		63.2	0	36.8	0		2.6	95	2.4	0		
Total %	0.3	0	0.8	0	1.1	1.1	37.1	0.5	0	38.8	0.9	0	0.5	0	1.5	1.5	55.8	1.4	0	58.7	

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

File Name : Cotton Wood Dr - Fontain Blvd PM
Site Code : S214530
Start Date : 6/29/2021
Page No : 2

	Cottonwood Dr Southbound					Fontaine Blvd Westbound					Cottonwood Dr Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 5:00:00 PM																					
5:00:00 PM	0	0	0	0	0	3	49	1	0	53	0	0	1	0	1	1	104	2	0	107	161
5:15:00 PM	1	0	2	0	3	1	65	1	0	67	2	0	1	0	3	3	93	3	0	99	172
5:30:00 PM	1	0	1	0	2	1	67	3	0	71	2	0	1	0	3	5	103	0	0	108	184
5:45:00 PM	1	0	3	0	4	2	67	0	0	69	1	0	0	0	1	3	80	3	0	86	160
Total Volume	3	0	6	0	9	7	248	5	0	260	5	0	3	0	8	12	380	8	0	400	677
% App. Total	33.3	0	66.7	0		2.7	95.4	1.9	0		62.5	0	37.5	0		3	95	2	0		
PHF	.750	.000	.500	.000	.563	.583	.925	.417	.000	.915	.625	.000	.750	.000	.667	.600	.913	.667	.000	.926	.920

LSC Transportation Consultants, Inc.

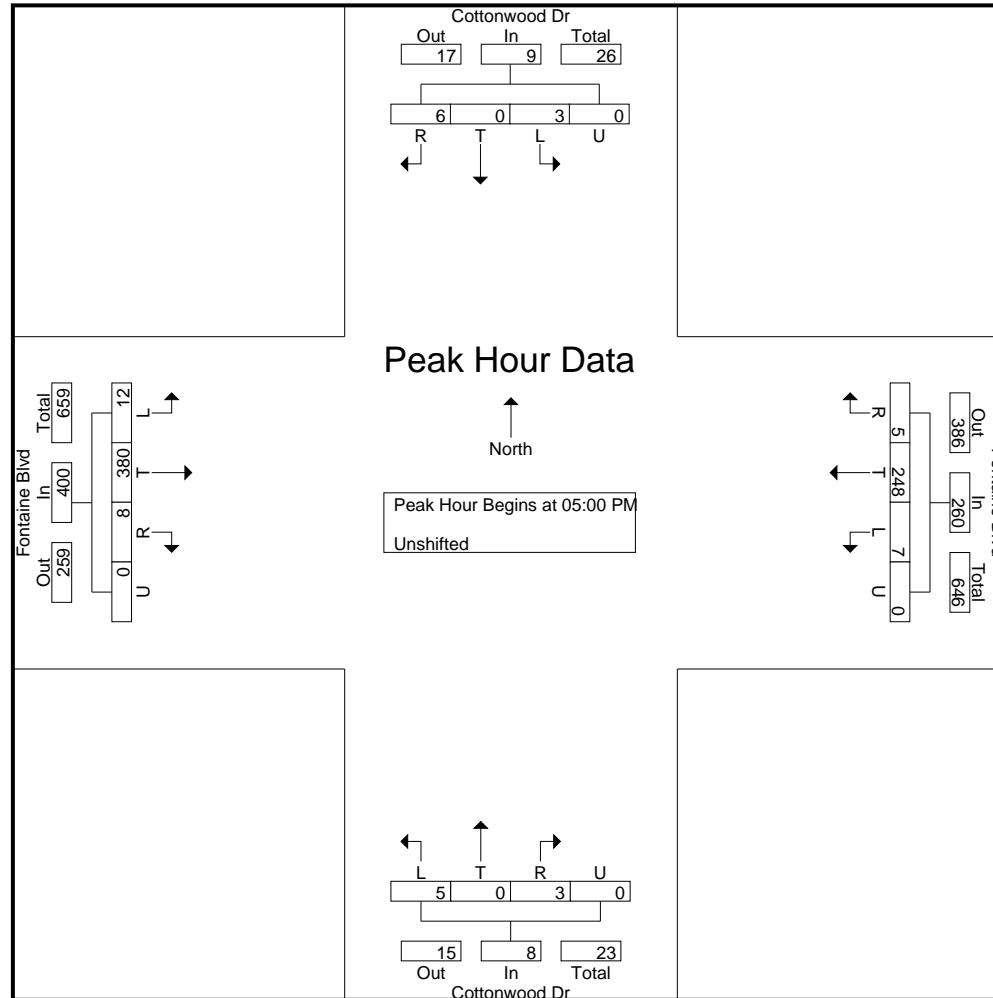
545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Cotton Wood Dr - Fontain Blvd PM

Site Code : S214530

Start Date : 6/29/2021

Page No : 3



LSC Transportation Consultants, Inc.

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

File Name : Cotton Wood Dr - Fontain Blvd PM
Site Code : S214530
Start Date : 6/29/2021
Page No : 4

	Cottonwood Dr Southbound					Fontaine Blvd Westbound					Cottonwood Dr Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	5:00:00 PM					5:00:00 PM					4:30:00 PM					5:00:00 PM					
+0 mins.	0	0	0	0	0	3	49	1	0	53	4	0	0	0	4	1	104	2	0	107	
+5 mins.	1	0	2	0	3	1	65	1	0	67	3	0	1	0	4	3	93	3	0	99	
+10 mins.	1	0	1	0	2	1	67	3	0	71	0	0	1	0	1	5	103	0	0	108	
+15 mins.	1	0	3	0	4	2	67	0	0	69	2	0	1	0	3	3	80	3	0	86	
Total Volume	3	0	6	0	9	7	248	5	0	260	9	0	3	0	12	12	380	8	0	400	
% App. Total	33.3	0	66.7	0		2.7	95.4	1.9	0		75	0	25	0		3	95	2	0		
PHF	.750	.000	.500	.000	.563	.583	.925	.417	.000	.915	.563	.000	.750	.000	.750	.600	.913	.667	.000	.926	

LSC Transportation Consultants, Inc.

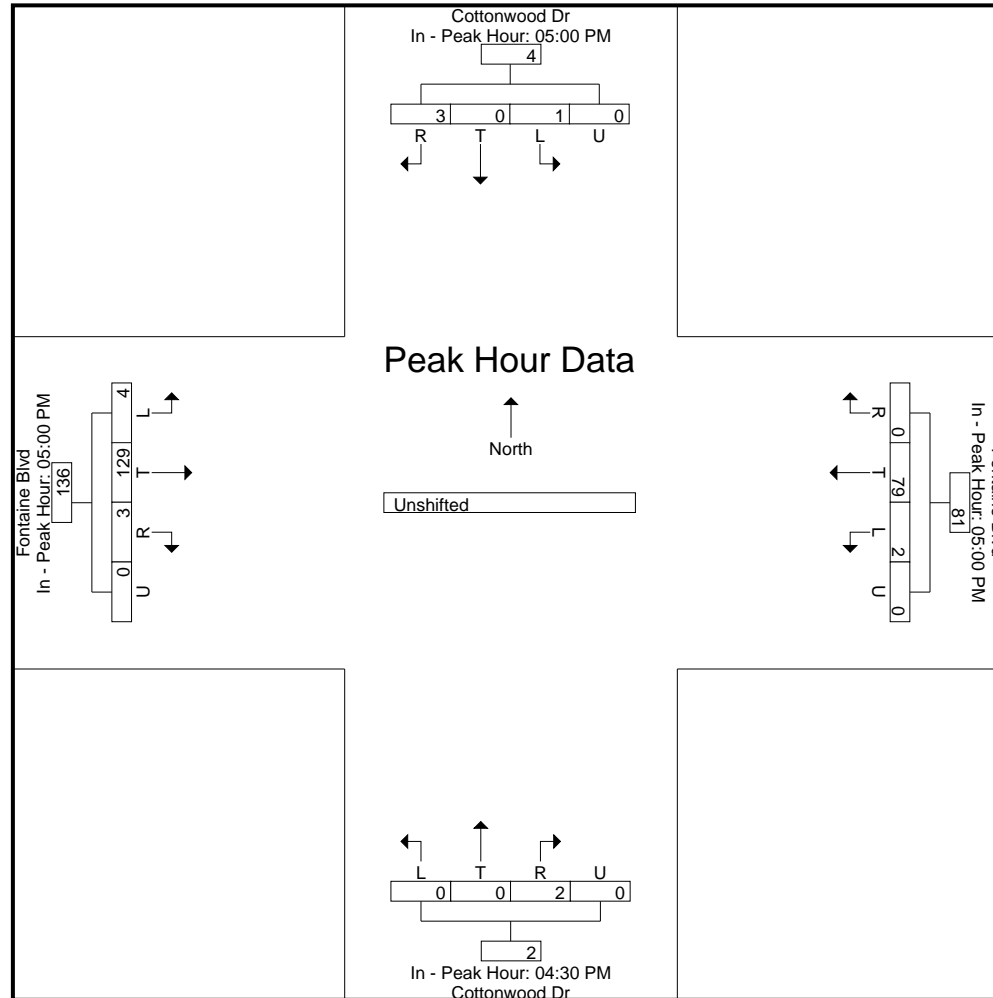
545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Cotton Wood Dr - Fontain Blvd PM

Site Code : S214530

Start Date : 6/29/2021

Page No : 5



LSC Transportation Consultants, Inc.

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

File Name : Sleepy Meadow Dr - Fontain Blvd AM
Site Code : S214530
Start Date : 6/23/2021
Page No : 1

Groups Printed- Bank 1

	Sleepy Meadow Dr Southbound					Fontaine Blvd Westbound					Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
06:30 AM	1	0	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
06:45 AM	1	0	5	0	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	7
Total	2	0	9	0	11	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	12
07:00 AM	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	5
07:15 AM	2	0	3	0	5	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	7
07:30 AM	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	7
07:45 AM	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	8
Total	2	0	16	0	18	0	0	1	0	1	0	0	0	0	0	8	0	0	0	8	27
08:00 AM	1	0	2	0	3	0	0	1	0	1	0	0	0	0	0	2	0	0	0	2	6
08:15 AM	1	0	3	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	5
Grand Total	6	0	30	0	36	0	0	2	0	2	0	0	0	0	0	12	0	0	0	12	50
Apprch %	16.7	0	83.3	0		0	0	100	0		0	0	0	0		100	0	0	0		
Total %	12	0	60	0	72	0	0	4	0	4	0	0	0	0	0	24	0	0	0	24	

LSC Transportation Consultants, Inc.

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

File Name : Sleepy Meadow Dr - Fontain Blvd AM
Site Code : S214530
Start Date : 6/23/2021
Page No : 2

	Sleepy Meadow Dr Southbound					Fontaine Blvd Westbound					Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 7:15:00 AM																					
7:15:00 AM	2	0	3	0	5	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	7
7:30:00 AM	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	7
7:45:00 AM	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	8
8:00:00 AM	1	0	2	0	3	0	0	1	0	1	0	0	0	0	0	2	0	0	0	2	6
Total Volume	3	0	15	0	18	0	0	2	0	2	0	0	0	0	0	8	0	0	0	8	28
% App. Total	16.7	0	83.3	0		0	0	100	0		0	0	0	0		100	0	0	0		
PHF	.375	.000	.750	.000	.900	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.667	.000	.000	.000	.667	.875

LSC Transportation Consultants, Inc.

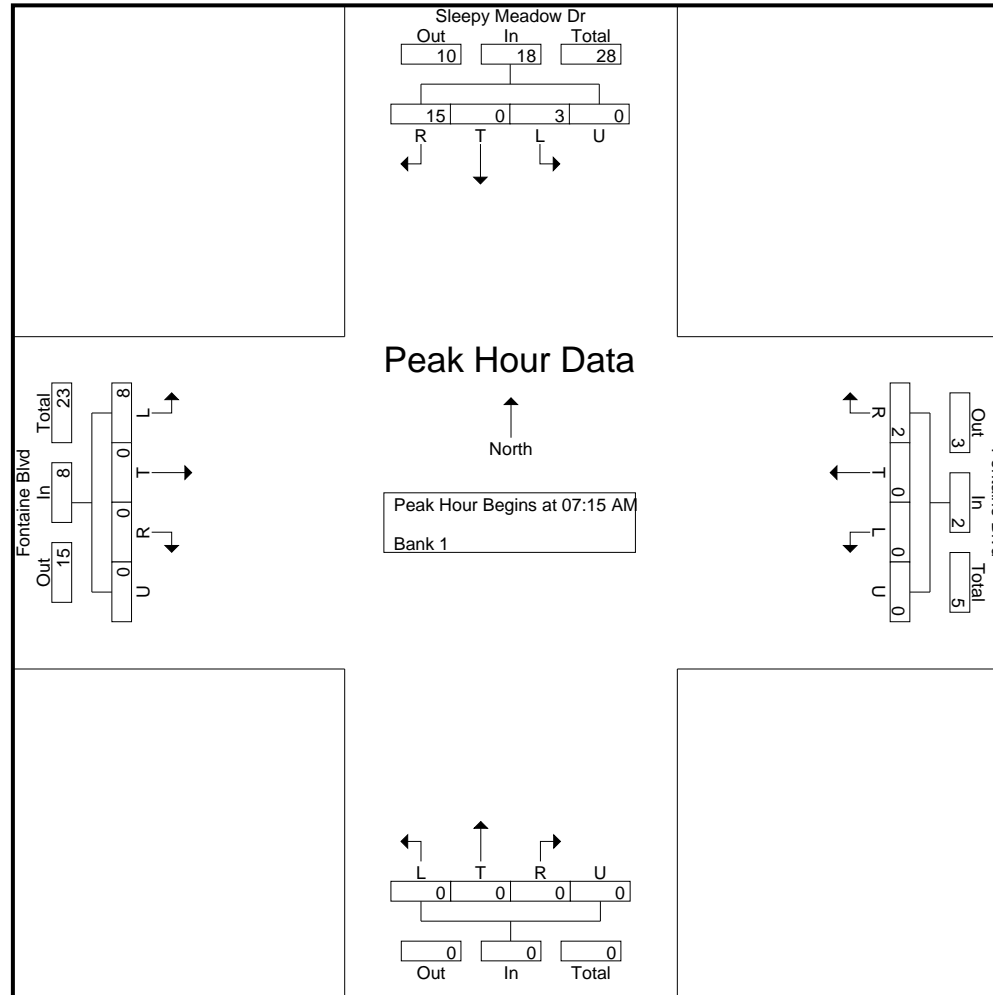
545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Sleepy Meadow Dr - Fontain Blvd AM

Site Code : S214530

Start Date : 6/23/2021

Page No : 3



LSC Transportation Consultants, Inc.

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

File Name : Sleepy Meadow Dr - Fontain Blvd AM
Site Code : S214530
Start Date : 6/23/2021
Page No : 4

	Sleepy Meadow Dr Southbound					Fontaine Blvd Westbound					Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	6:30:00 AM					7:15:00 AM					6:30:00 AM					7:00:00 AM					
+0 mins.	1	0	4	0	5	0	0	1	0	1	0	0	0	0	0	2	0	0	0	0	2
+5 mins.	1	0	5	0	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
+10 mins.	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
+15 mins.	2	0	3	0	5	0	0	1	0	1	0	0	0	0	0	3	0	0	0	0	3
Total Volume	4	0	15	0	19	0	0	2	0	2	0	0	0	0	0	8	0	0	0	0	8
% App. Total	21.1	0	78.9	0		0	0	100	0		0	0	0	0		100	0	0	0		
PHF	.500	.000	.750	.000	.792	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.667	.000	.000	.000		.667

LSC Transportation Consultants, Inc.

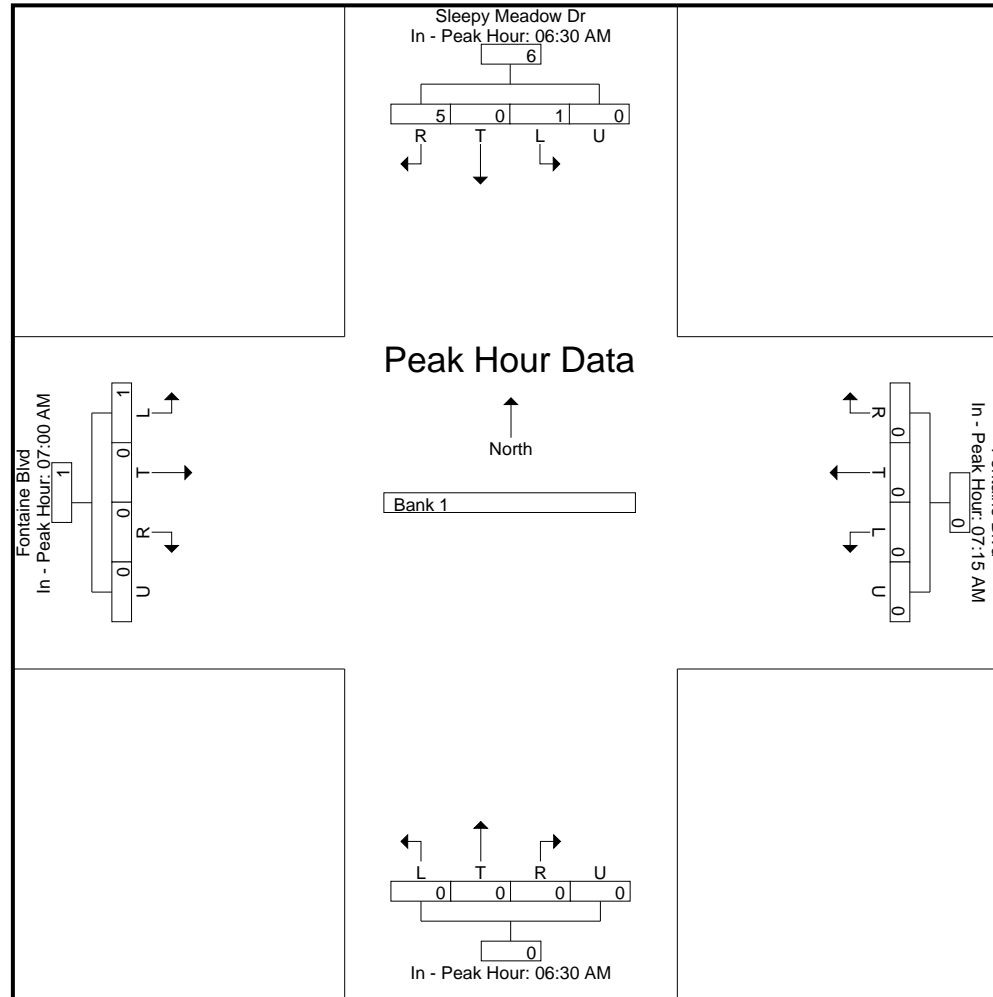
545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Sleepy Meadow Dr - Fontain Blvd AM

Site Code : S214530

Start Date : 6/23/2021

Page No : 5



LSC Transportation Consultants, Inc.

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

File Name : Sleepy Meadow Dr - Fontaine Blvd PM
Site Code : S214530
Start Date : 6/29/2021
Page No : 1

Groups Printed- Bank 1

	Sleepy Meadow Dr Southbound					Fontaine Blvd Westbound					Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
04:00 PM	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	7
04:15 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	4
04:30 PM	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	6
04:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	7	0	0	0	7	8
Total	1	0	8	0	9	0	0	0	0	0	0	0	0	0	0	16	0	0	0	16	25
05:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	6	0	0	0	6	7
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
05:30 PM	0	0	2	0	2	0	0	1	0	1	0	0	0	0	0	8	0	0	0	8	11
05:45 PM	2	0	2	0	4	0	0	2	0	2	0	0	0	0	0	4	0	0	0	4	10
Total	2	0	4	0	6	0	0	4	0	4	0	0	0	0	0	19	0	0	0	19	29
Grand Total	3	0	12	0	15	0	0	4	0	4	0	0	0	0	0	35	0	0	0	35	54
Apprch %	20	0	80	0		0	0	100	0		0	0	0	0		100	0	0	0		
Total %	5.6	0	22.2	0	27.8	0	0	7.4	0	7.4	0	0	0	0	0	64.8	0	0	0	64.8	

LSC Transportation Consultants, Inc.

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

File Name : Sleepy Meadow Dr - Fontaine Blvd PM
Site Code : S214530
Start Date : 6/29/2021
Page No : 2

	Sleepy Meadow Dr Southbound					Fontaine Blvd Westbound					Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 5:00:00 PM																					
5:00:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	6	0	0	0	6	7
5:15:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
5:30:00 PM	0	0	2	0	2	0	0	1	0	1	0	0	0	0	0	8	0	0	0	8	11
5:45:00 PM	2	0	2	0	4	0	0	2	0	2	0	0	0	0	0	4	0	0	0	4	10
Total Volume	2	0	4	0	6	0	0	4	0	4	0	0	0	0	0	19	0	0	0	19	29
% App. Total	33.3	0	66.7	0		0	0	100	0		0	0	0	0		100	0	0	0		
PHF	.250	.000	.500	.000	.375	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.594	.000	.000	.000	.594	.659

LSC Transportation Consultants, Inc.

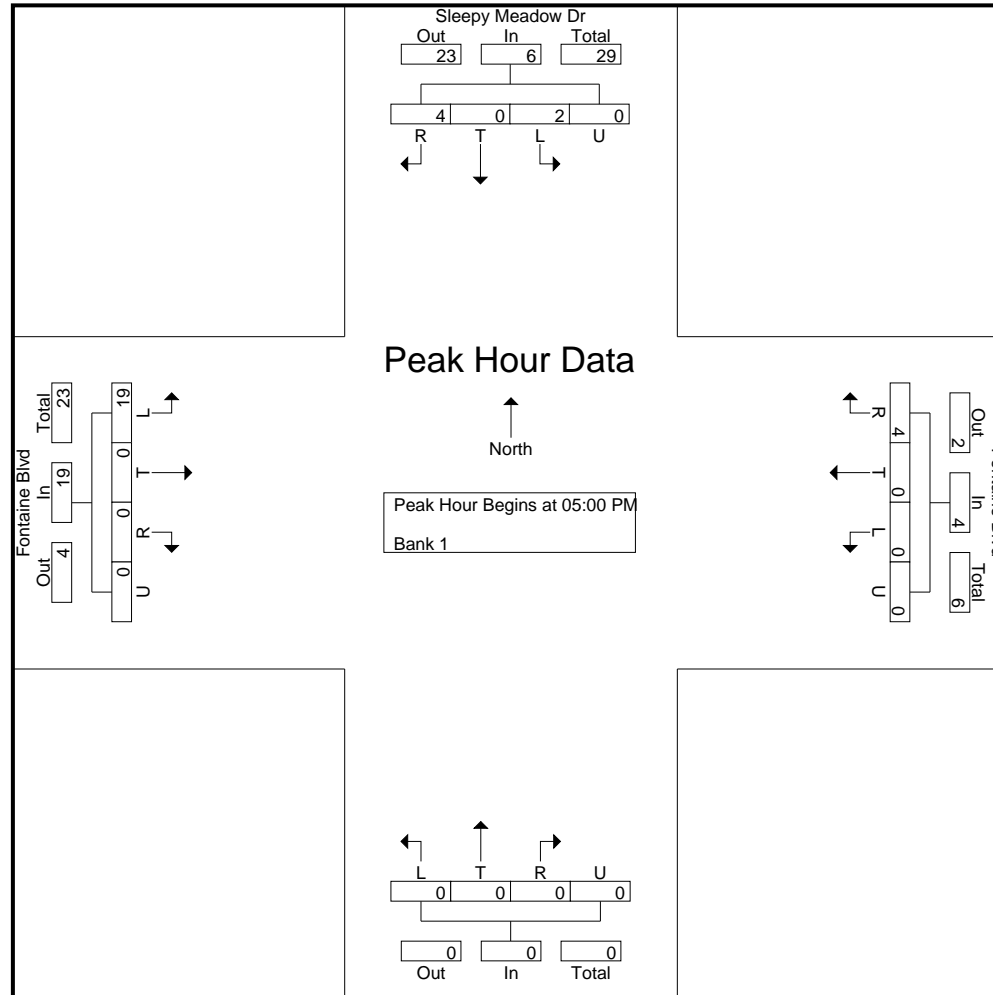
545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Sleepy Meadow Dr - Fontaine Blvd PM

Site Code : S214530

Start Date : 6/29/2021

Page No : 3



LSC Transportation Consultants, Inc.

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

File Name : Sleepy Meadow Dr - Fontaine Blvd PM
Site Code : S214530
Start Date : 6/29/2021
Page No : 4

	Sleepy Meadow Dr Southbound					Fontaine Blvd Westbound					Northbound					Fontaine Blvd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	4:00:00 PM					5:00:00 PM					4:00:00 PM					4:45:00 PM					
+0 mins.	0	0	3	0	3	0	0	1	0	1	0	0	0	0	0	7	0	0	0	0	7
+5 mins.	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6
+10 mins.	1	0	2	0	3	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	1
+15 mins.	0	0	1	0	1	0	0	2	0	2	0	0	0	0	0	8	0	0	0	0	8
Total Volume	1	0	8	0	9	0	0	4	0	4	0	0	0	0	0	22	0	0	0	0	22
% App. Total	11.1	0	88.9	0		0	0	100	0		0	0	0	0		100	0	0	0		
PHF	.250	.000	.667	.000	.750	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.688	.000	.000	.000		.688

LSC Transportation Consultants, Inc.

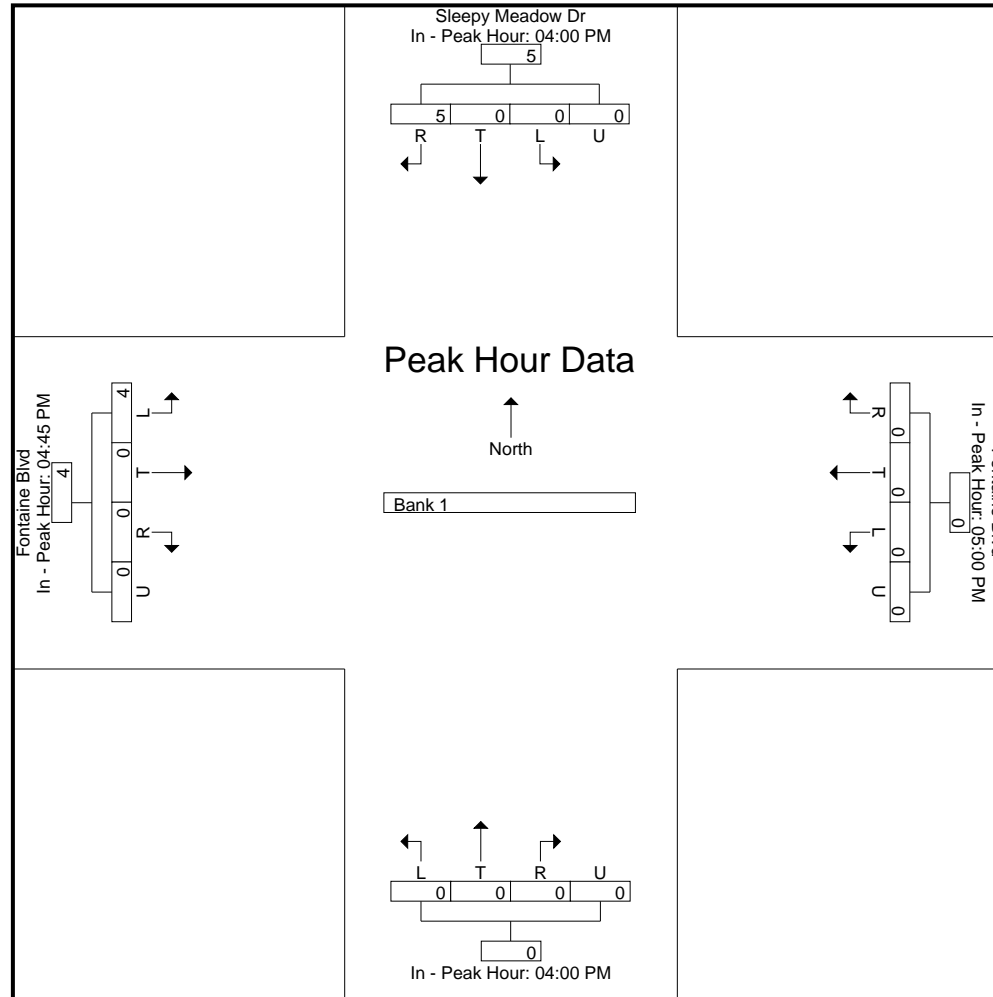
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719-633-2868

File Name : Sleepy Meadow Dr - Fontaine Blvd PM

Site Code : S214530

Start Date : 6/29/2021

























Page No : 5



Levels of Service

Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

Existing
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	105	45	118	198	265	38	335	73	74	160	17
Future Volume (vph)	25	105	45	118	198	265	38	335	73	74	160	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		110	430		0	460		460	385		385
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	145			100			205			265		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.617			0.675			0.647			0.544		
Satd. Flow (perm)	1149	3539	1583	1257	3539	1583	1205	1863	1583	1013	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55			288			79			55
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		396			1489			1250			2730	
Travel Time (s)		6.8			25.4			15.5			33.8	
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	121	52	128	215	288	41	364	79	80	174	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	121	52	128	215	288	41	364	79	80	174	18
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	L NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (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
Detector 1 Queue (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
Detector 1 Delay (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
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6













Existing AM
Lanes, Volumes, Timings

Synchro 10 Report
JAB

Lanes, Volumes, Timings

1: Marksheffel Rd & Fontaine Blvd

Existing
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	39.0	39.0	39.0	39.0	39.0	39.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0	15.0	33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (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
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)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (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
Recall Mode	None	None	None	None	None	None	Max	Max	Max	None	None	None
Act Effect Green (s)	11.2	11.2	11.2	11.2	11.2	11.2	33.1	33.1	33.1	33.1	33.1	33.1
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.59	0.59	0.59	0.59	0.59	0.59
v/c Ratio	0.13	0.17	0.14	0.51	0.31	0.53	0.06	0.33	0.08	0.13	0.16	0.02
Control Delay	19.2	18.7	6.8	27.5	20.0	6.8	6.3	7.7	2.1	6.9	6.6	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	18.7	6.8	27.5	20.0	6.8	6.3	7.7	2.1	6.9	6.6	0.3
LOS	B	B	A	C	B	A	A	A	A	A	A	A
Approach Delay	15.7			15.5			6.7			6.3		
Approach LOS	B			B			A			A		
Queue Length 50th (ft)	8	17	0	39	32	0	5	56	0	11	24	0
Queue Length 95th (ft)	25	34	20	82	57	50	18	112	15	31	54	2
Internal Link Dist (ft)	316			1409			1170			2650		
Turn Bay Length (ft)	210		110	430			460		460	385		385
Base Capacity (vph)	306	944	463	335	944	633	707	1094	962	595	1094	952
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.13	0.11	0.38	0.23	0.45	0.06	0.33	0.08	0.13	0.16	0.02

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 56.4

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 11.3

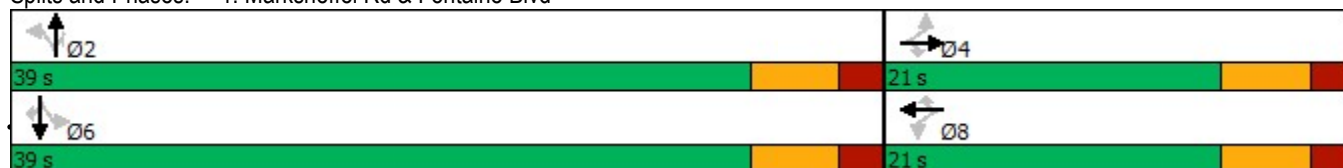
Intersection LOS: B

Intersection Capacity Utilization 53.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd









Lanes, Volumes, Timings

JAB

HCM 6th TWSC
2: Cottonwood Grove & Fontaine Blvd

Existing
AM

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	164	5	0	261	2	4	0	3	5	0	12
Future Vol, veh/h	4	164	5	0	261	2	4	0	3	5	0	12
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	-	-	Stop
Storage Length	-	-	155	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	92	92	92	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	189	6	0	284	2	5	0	4	6	0	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	286	0	0	195	0	0	484	485	189	488	489	284
Stage 1	-	-	-	-	-	-	199	199	-	284	284	-
Stage 2	-	-	-	-	-	-	285	286	-	204	205	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1276	-	-	1378	-	-	493	482	853	490	480	755
Stage 1	-	-	-	-	-	-	803	736	-	723	676	-
Stage 2	-	-	-	-	-	-	722	675	-	798	732	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1276	-	-	1378	-	-	482	480	853	486	478	755
Mov Cap-2 Maneuver	-	-	-	-	-	-	482	480	-	486	478	-
Stage 1	-	-	-	-	-	-	800	733	-	720	676	-
Stage 2	-	-	-	-	-	-	707	675	-	791	729	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			11.2			10.7		
HCM LOS							B			B		





Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	592	1276	-	-	1378	-	-	649
HCM Lane V/C Ratio	0.015	0.004	-	-	-	-	-	0.034
HCM Control Delay (s)	11.2	7.8	0	-	0	-	-	10.7
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

HCM 6th TWSC
3: Fontaine Blvd & Sleepy Meadows Dr

Existing
AM

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	173	275	2	3	15
Future Vol, veh/h	8	173	275	2	3	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	185	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	92	92	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	199	299	2	4	19

























Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	301	0	0 516 299
Stage 1	-	-	- 299 -
Stage 2	-	-	- 217 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1260	-	- 519 741
Stage 1	-	-	- 752 -
Stage 2	-	-	- 819 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1260	-	- 515 741
Mov Cap-2 Maneuver	-	-	- 515 -
Stage 1	-	-	- 746 -
Stage 2	-	-	- 819 -

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1260	-	-	-	741
HCM Lane V/C Ratio	0.007	-	-	-	0.026
HCM Control Delay (s)	7.9	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

Existing PM













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	294	65	64	152	135	60	230	157	256	366	36
Future Volume (vph)	51	294	65	64	152	135	60	230	157	256	366	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		110	430		0	460		460	385		385
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	145			100			205			265		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.648			0.558			0.524			0.604		
Satd. Flow (perm)	1207	3539	1583	1039	3539	1583	976	1863	1583	1125	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			71			147			171			55
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		396			1489			1250			2730	
Travel Time (s)		6.8			25.4			15.5			33.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	55	320	71	70	165	147	65	250	171	275	394	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	320	71	70	165	147	65	250	171	275	394	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	L NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (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
Detector 1 Queue (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
Detector 1 Delay (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
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6

Existing PM
Lanes, Volumes, Timings

Synchro 10 Report
JAB

Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

Existing
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	39.0	39.0	39.0	39.0	39.0	39.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0	15.0	33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (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
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)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (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
Recall Mode	None	None	None	None	None	None	Max	Max	Max	None	None	None
Act Effect Green (s)	10.7	10.7	10.7	10.7	10.7	10.7	33.1	33.1	33.1	33.1	33.1	33.1
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.19	0.59	0.59	0.59	0.59	0.59	0.59
v/c Ratio	0.24	0.47	0.20	0.35	0.24	0.35	0.11	0.23	0.17	0.41	0.36	0.04
Control Delay	21.4	22.2	7.0	24.5	19.7	6.6	6.4	6.6	1.7	9.2	7.6	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	22.2	7.0	24.5	19.7	6.6	6.4	6.6	1.7	9.2	7.6	1.6
LOS	C	C	A	C	B	A	A	A	A	A	A	A
Approach Delay	19.7			15.5			4.9			7.9		
Approach LOS	B			B			A			A		
Queue Length 50th (ft)	16	50	0	20	24	0	8	33	0	41	56	0
Queue Length 95th (ft)	41	81	26	51	46	37	26	76	21	104	124	8
Internal Link Dist (ft)	316			1409			1170			2650		
Turn Bay Length (ft)	210	110		430	460		460		385	385		
Base Capacity (vph)	325	953	478	279	953	534	578	1104	1007	666	1104	960
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.34	0.15	0.25	0.17	0.28	0.11	0.23	0.17	0.41	0.36	0.04

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 55.8

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 11.2

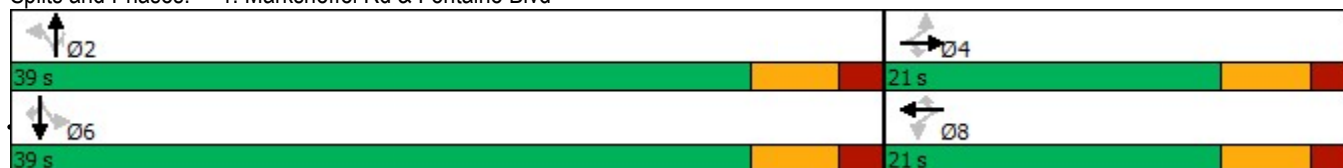
Intersection LOS: B

Intersection Capacity Utilization 58.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Lanes, Volumes, Timings

JAB





HCM 6th TWSC
2: Cottonwood Grove & Fontaine Blvd

Existing
PM

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗		↕			↕	
Traffic Vol, veh/h	12	380	8	7	248	5	5	0	3	3	0	6
Future Vol, veh/h	12	380	8	7	248	5	5	0	3	3	0	6
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	-	-	Stop
Storage Length	-	-	155	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	413	9	8	270	5	6	0	4	4	0	8
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	275	0	0	422	0	0	728	730	413	732	734	270
Stage 1	-	-	-	-	-	-	439	439	-	286	286	-
Stage 2	-	-	-	-	-	-	289	291	-	446	448	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1288	-	-	1137	-	-	339	349	639	337	347	769
Stage 1	-	-	-	-	-	-	597	578	-	721	675	-
Stage 2	-	-	-	-	-	-	719	672	-	591	573	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1288	-	-	1137	-	-	330	342	639	330	340	769
Mov Cap-2 Maneuver	-	-	-	-	-	-	330	342	-	330	340	-
Stage 1	-	-	-	-	-	-	589	570	-	712	670	-
Stage 2	-	-	-	-	-	-	706	667	-	580	566	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.2			14.2			11.9		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	403	1288	-	-	1137	-	-	533				
HCM Lane V/C Ratio	0.025	0.01	-	-	0.007	-	-	0.022				
HCM Control Delay (s)	14.2	7.8	0	-	8.2	0	-	11.9				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

HCM 6th TWSC
3: Fontaine Blvd & Sleepy Meadows Dr

Existing
PM

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	400	255	4	2	4
Future Vol, veh/h	19	400	255	4	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	185	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	435	277	4	3	5

























Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	281	0	0	754	277
Stage 1	-	-	-	277	-
Stage 2	-	-	-	477	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1282	-	-	377	762
Stage 1	-	-	-	770	-
Stage 2	-	-	-	624	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1282	-	-	369	762
Mov Cap-2 Maneuver	-	-	-	369	-
Stage 1	-	-	-	753	-
Stage 2	-	-	-	624	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	9.8
HCM LOS	A		

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1282	-	-	-	762
HCM Lane V/C Ratio	0.016	-	-	-	0.007
HCM Control Delay (s)	7.9	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0













Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

Short-Term Baseline
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	125	45	125	275	265	45	335	100	100	160	20
Future Volume (vph)	35	125	45	125	275	265	45	335	100	100	160	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		110	430		0	460		460	385		385
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	145			100			205			265		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.571			0.661			0.647			0.544		
Satd. Flow (perm)	1064	3539	1583	1231	3539	1583	1205	1863	1583	1013	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			55			285			109			55
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		396			1489			1250			2730	
Travel Time (s)		6.8			25.4			15.5			33.8	
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	144	52	134	296	285	49	364	109	109	174	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	144	52	134	296	285	49	364	109	109	174	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	L NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (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
Detector 1 Queue (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
Detector 1 Delay (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
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

Short-Term Baseline
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	39.0	39.0	39.0	39.0	39.0	39.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0	15.0	33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (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
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)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (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
Recall Mode	None	None	None	None	None	None	Max	Max	Max	None	None	None
Act Effect Green (s)	11.8	11.8	11.8	11.8	11.8	11.8	33.1	33.1	33.1	33.1	33.1	33.1
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21	0.21	0.58	0.58	0.58	0.58	0.58	0.58
v/c Ratio	0.18	0.20	0.14	0.53	0.40	0.52	0.07	0.34	0.11	0.19	0.16	0.02
Control Delay	20.2	18.9	6.8	27.9	21.0	6.6	6.4	7.9	2.0	7.5	6.7	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	18.9	6.8	27.9	21.0	6.6	6.4	7.9	2.0	7.5	6.7	0.7
LOS	C	B	A	C	C	A	A	A	A	A	A	A
Approach Delay	16.4			16.5			6.5			6.5		
Approach LOS	B			B			A			A		
Queue Length 50th (ft)	11	21	0	41	46	0	7	58	0	16	25	0
Queue Length 95th (ft)	32	39	20	87	76	50	20	112	17	41	54	3
Internal Link Dist (ft)	316			1409			1170			2650		
Turn Bay Length (ft)	210		110	430			460		460	385		385
Base Capacity (vph)	281	935	459	325	935	627	700	1082	965	589	1082	943
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.15	0.11	0.41	0.32	0.45	0.07	0.34	0.11	0.19	0.16	0.02

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 56.9

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 11.9

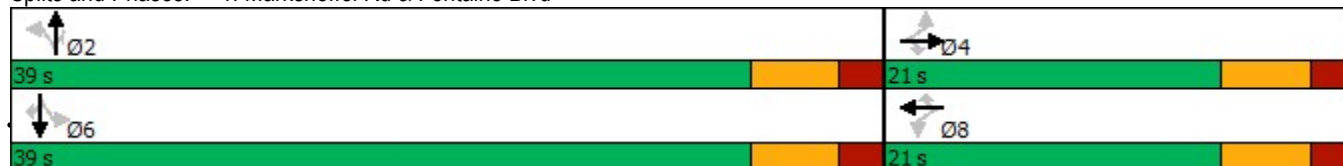
Intersection LOS: B

Intersection Capacity Utilization 54.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Lanes, Volumes, Timings

JAB

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗		↕			↕	
Traffic Vol, veh/h	5	195	5	2	336	2	5	1	5	5	1	20
Future Vol, veh/h	5	195	5	2	336	2	5	1	5	5	1	20
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	-	-	Stop
Storage Length	-	-	155	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	92	92	92	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	224	6	2	365	2	6	1	6	6	1	26
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	367	0	0	230	0	0	607	607	224	612	611	365
Stage 1	-	-	-	-	-	-	236	236	-	369	369	-
Stage 2	-	-	-	-	-	-	371	371	-	243	242	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1192	-	-	1338	-	-	408	411	815	405	409	680
Stage 1	-	-	-	-	-	-	767	710	-	651	621	-
Stage 2	-	-	-	-	-	-	649	620	-	761	705	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1192	-	-	1338	-	-	389	408	815	399	406	680
Mov Cap-2 Maneuver	-	-	-	-	-	-	389	408	-	399	406	-
Stage 1	-	-	-	-	-	-	762	706	-	647	620	-
Stage 2	-	-	-	-	-	-	622	619	-	749	701	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			12.2			11.5		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	513	1192	-	-	1338	-	-	586				
HCM Lane V/C Ratio	0.027	0.005	-	-	0.002	-	-	0.057				
HCM Control Delay (s)	12.2	8	0	-	7.7	0	-	11.5				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2				

























HCM 6th TWSC
3: Fontaine Blvd & Sleepy Meadows Dr

Short-Term Baseline
AM

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↗		↗
Traffic Vol, veh/h	10	205	356	5	5	20
Future Vol, veh/h	10	205	356	5	5	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	185	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	92	92	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	236	387	5	6	26
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	392	0	-	0	645	387
Stage 1	-	-	-	-	387	-
Stage 2	-	-	-	-	258	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1167	-	-	-	437	661
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	785	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1167	-	-	-	432	661
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	678	-
Stage 2	-	-	-	-	785	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		10.7		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1167	-	-	-	661	
HCM Lane V/C Ratio	0.01	-	-	-	0.039	
HCM Control Delay (s)	8.1	0	-	-	10.7	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	













Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

Short-Term Baseline
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	340	65	75	200	150	60	230	150	300	375	25
Future Volume (vph)	55	340	65	75	200	150	60	230	150	300	375	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		110	430		0	460		460	385		385
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	145			100			205			265		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.616			0.532			0.514			0.604		
Satd. Flow (perm)	1147	3539	1583	991	3539	1583	957	1863	1583	1125	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			71			163			156			55
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		396			1489			1250			2730	
Travel Time (s)		6.8			25.4			15.5			33.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	60	370	71	82	217	163	65	250	163	323	403	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	370	71	82	217	163	65	250	163	323	403	27
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	L NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (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
Detector 1 Queue (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
Detector 1 Delay (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
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

Short-Term Baseline
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	39.0	39.0	39.0	39.0	39.0	39.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0	15.0	33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (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
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)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (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
Recall Mode	None	None	None	None	None	None	Max	Max	Max	None	None	None
Act Effect Green (s)	11.3	11.3	11.3	11.3	11.3	11.3	33.1	33.1	33.1	33.1	33.1	33.1
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.59	0.59	0.59	0.59	0.59	0.59
v/c Ratio	0.26	0.52	0.19	0.41	0.31	0.36	0.12	0.23	0.16	0.49	0.37	0.03
Control Delay	21.8	22.8	6.9	26.2	20.1	6.4	6.6	6.8	1.9	10.7	7.9	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	22.8	6.9	26.2	20.1	6.4	6.6	6.8	1.9	10.7	7.9	1.0
LOS	C	C	A	C	C	A	A	A	A	B	A	A
Approach Delay	20.4			16.4			5.1			8.8		
Approach LOS	C			B			A			A		
Queue Length 50th (ft)	17	58	0	24	33	0	8	34	1	54	61	0
Queue Length 95th (ft)	44	93	26	58	57	38	26	76	22	130	127	4
Internal Link Dist (ft)	316			1409			1170			2650		
Turn Bay Length (ft)	210	110		430	460		460		385	385		
Base Capacity (vph)	305	942	474	263	942	541	560	1091	992	659	1091	950
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.39	0.15	0.31	0.23	0.30	0.12	0.23	0.16	0.49	0.37	0.03

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 56.4

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 12.2

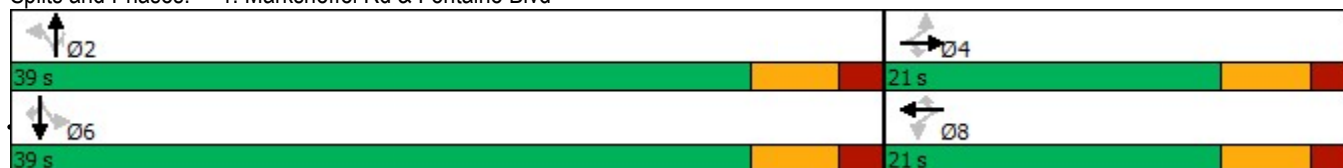
Intersection LOS: B

Intersection Capacity Utilization 62.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Lanes, Volumes, Timings

JAB

HCM 6th TWSC
2: Cottonwood Grove & Fontaine Blvd

Short-Term Baseline
PM

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔			↔	
Traffic Vol, veh/h	15	452	10	10	255	5	5	1	5	3	1	10
Future Vol, veh/h	15	452	10	10	255	5	5	1	5	3	1	10
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	-	-	Stop
Storage Length	-	-	155	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	491	11	11	277	5	6	1	6	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	282	0	0	502	0	0	825	827	491	831	833	277
Stage 1	-	-	-	-	-	-	523	523	-	299	299	-
Stage 2	-	-	-	-	-	-	302	304	-	532	534	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1280	-	-	1062	-	-	292	307	578	289	304	762
Stage 1	-	-	-	-	-	-	537	530	-	710	666	-
Stage 2	-	-	-	-	-	-	707	663	-	531	524	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1280	-	-	1062	-	-	280	298	578	279	295	762
Mov Cap-2 Maneuver	-	-	-	-	-	-	280	298	-	279	295	-
Stage 1	-	-	-	-	-	-	528	521	-	698	658	-
Stage 2	-	-	-	-	-	-	685	655	-	515	515	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			15.2			12.3		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	368	1280	-	-	1062	-	-	513
HCM Lane V/C Ratio	0.038	0.013	-	-	0.01	-	-	0.035
HCM Control Delay (s)	15.2	7.8	0	-	8.4	0	-	12.3
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

























HCM 6th TWSC
3: Fontaine Blvd & Sleepy Meadows Dr

Short-Term Baseline
PM

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔	↔		↔
Traffic Vol, veh/h	20	477	265	5	5	5
Future Vol, veh/h	20	477	265	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	185	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	518	288	5	6	6
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	293	0	-	0	850	288
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	562	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1269	-	-	-	331	751
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	571	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1269	-	-	-	323	751
Mov Cap-2 Maneuver	-	-	-	-	323	-
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	571	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.3	0		9.8		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1269	-	-	-	751	
HCM Lane V/C Ratio	0.017	-	-	-	0.009	
HCM Control Delay (s)	7.9	0	-	-	9.8	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0	













Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

Short-Term Baseline + Site
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	129	49	125	282	265	47	335	100	109	169	33
Future Volume (vph)	48	129	49	125	282	265	47	335	100	109	169	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		110	430		0	460		460	385		385
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	145			100			205			265		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.567			0.658			0.641			0.543		
Satd. Flow (perm)	1056	3539	1583	1226	3539	1583	1194	1863	1583	1011	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			56			285			109			55
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		396			1489			1250			2730	
Travel Time (s)		6.8			25.4			15.5			33.8	
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	148	56	134	303	285	51	364	109	118	184	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	148	56	134	303	285	51	364	109	118	184	36
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	L NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (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
Detector 1 Queue (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
Detector 1 Delay (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
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

Short-Term Baseline + Site
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	39.0	39.0	39.0	39.0	39.0	39.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0	15.0	33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (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
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)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (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
Recall Mode	None	None	None	None	None	None	Max	Max	Max	None	None	None
Act Effect Green (s)	12.0	12.0	12.0	12.0	12.0	12.0	33.1	33.1	33.1	33.1	33.1	33.1
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21	0.21	0.58	0.58	0.58	0.58	0.58	0.58
v/c Ratio	0.25	0.20	0.15	0.52	0.41	0.51	0.07	0.34	0.11	0.20	0.17	0.04
Control Delay	21.4	18.8	7.0	27.6	20.9	6.5	6.5	8.0	2.0	7.7	6.8	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	18.8	7.0	27.6	20.9	6.5	6.5	8.0	2.0	7.7	6.8	1.5
LOS	C	B	A	C	C	A	A	A	A	A	A	A
Approach Delay	16.8			16.5			6.6			6.5		
Approach LOS	B			B			A			A		
Queue Length 50th (ft)	16	22	0	41	47	0	7	61	0	18	27	0
Queue Length 95th (ft)	40	40	21	87	77	50	21	112	17	44	57	7
Internal Link Dist (ft)	316			1409			1170			2650		
Turn Bay Length (ft)	210		110	430			460		460	385		385
Base Capacity (vph)	278	931	457	322	931	626	691	1078	962	585	1078	940
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.16	0.12	0.42	0.33	0.46	0.07	0.34	0.11	0.20	0.17	0.04

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 57.1

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 11.9

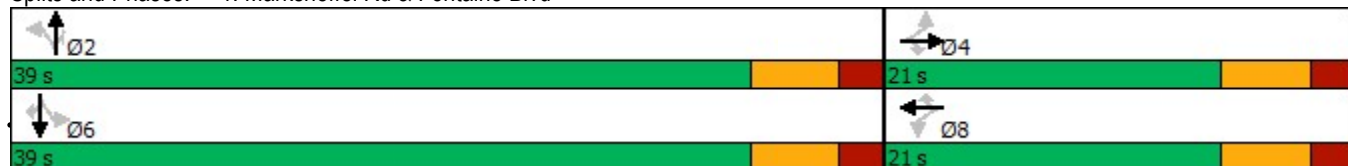
Intersection LOS: B

Intersection Capacity Utilization 55.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Lanes, Volumes, Timings

JAB

HCM 6th TWSC
2: Cottonwood Grove & Fontaine Blvd

Short-Term Baseline + Site
AM

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔	↔		↔			↔	
Traffic Vol, veh/h	15	467	10	10	285	5	5	1	5	3	1	10
Future Vol, veh/h	15	467	10	10	285	5	5	1	5	3	1	10
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	-	-	Stop
Storage Length	-	-	155	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	508	11	11	310	5	6	1	6	4	1	13







Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	315	0	0	519	0	0	875	877	508	881	883	310
Stage 1	-	-	-	-	-	-	540	540	-	332	332	-
Stage 2	-	-	-	-	-	-	335	337	-	549	551	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1245	-	-	1047	-	-	270	287	565	267	285	730
Stage 1	-	-	-	-	-	-	526	521	-	681	644	-
Stage 2	-	-	-	-	-	-	679	641	-	520	515	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1245	-	-	1047	-	-	258	278	565	257	276	730
Mov Cap-2 Maneuver	-	-	-	-	-	-	258	278	-	257	276	-
Stage 1	-	-	-	-	-	-	517	512	-	669	636	-
Stage 2	-	-	-	-	-	-	657	633	-	504	506	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			15.8			12.7		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	346	1245	-	-	1047	-	-	483
HCM Lane V/C Ratio	0.041	0.013	-	-	0.01	-	-	0.037
HCM Control Delay (s)	15.8	7.9	0	-	8.5	0	-	12.7
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

HCM 6th TWSC
3: Fontaine Blvd & Sleepy Meadows Dr

























Short-Term Baseline + Site
AM

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	117	477	274	20	20	53
Future Vol, veh/h	117	477	274	20	20	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	155	-	-	185	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	127	518	298	22	24	64
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	320	0	-	0	1070	298
Stage 1	-	-	-	-	298	-
Stage 2	-	-	-	-	772	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1240	-	-	-	245	741
Stage 1	-	-	-	-	753	-
Stage 2	-	-	-	-	456	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1240	-	-	-	220	741
Mov Cap-2 Maneuver	-	-	-	-	220	-
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	456	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.6	0		15		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1240	-	-	-	449	
HCM Lane V/C Ratio	0.103	-	-	-	0.196	
HCM Control Delay (s)	8.2	-	-	-	15	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7	

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↖	↗
Traffic Vol, veh/h	0	42	0	444	700	37
Future Vol, veh/h	0	42	0	444	700	37
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	-	-	-	280
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	92	92	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	54	0	483	753	40
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	753	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	410	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	410	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.1	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 410		-	-		
HCM Lane V/C Ratio	- 0.131		-	-		
HCM Control Delay (s)	- 15.1		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 0.4		-	-		













Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

Short-Term Baseline + Site
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	302	68	65	198	135	76	20	125	263	381	33
Future Volume (vph)	74	302	68	65	198	135	76	20	125	263	381	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		110	430		0	460		460	385		385
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	145			100			205			265		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.617			0.554			0.510			0.742		
Satd. Flow (perm)	1149	3539	1583	1032	3539	1583	950	1863	1583	1382	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			74			147			144			55
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		396			1489			1250			2730	
Travel Time (s)		6.8			25.4			15.5			33.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	0.87	0.93	0.93	0.93
Adj. Flow (vph)	80	328	74	71	215	147	87	23	144	283	410	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	328	74	71	215	147	87	23	144	283	410	35
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	L NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (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
Detector 1 Queue (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
Detector 1 Delay (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
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

Short-Term Baseline + Site
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0	21.0	39.0	39.0	39.0	39.0	39.0	39.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0	15.0	33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (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
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)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (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
Recall Mode	None	None	None	None	None	None	Max	Max	Max	None	None	None
Act Effect Green (s)	10.8	10.8	10.8	10.8	10.8	10.8	33.1	33.1	33.1	33.1	33.1	33.1
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.19	0.59	0.59	0.59	0.59	0.59	0.59
v/c Ratio	0.36	0.48	0.20	0.36	0.32	0.35	0.15	0.02	0.14	0.35	0.37	0.04
Control Delay	24.2	22.3	7.0	24.6	20.4	6.5	6.8	5.7	1.8	8.0	7.7	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	22.3	7.0	24.6	20.4	6.5	6.8	5.7	1.8	8.0	7.7	1.4
LOS	C	C	A	C	C	A	A	A	A	A	A	A
Approach Delay	20.3			16.4			3.9			7.5		
Approach LOS	C			B			A			A		
Queue Length 50th (ft)	23	51	0	21	32	0	11	3	0	40	60	0
Queue Length 95th (ft)	56	83	27	51	57	37	32	11	18	96	130	7
Internal Link Dist (ft)	316			1409			1170			2650		
Turn Bay Length (ft)	210	110		430	460		460		385	385		
Base Capacity (vph)	309	952	480	277	952	533	562	1102	995	817	1102	959
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.34	0.15	0.26	0.23	0.28	0.15	0.02	0.14	0.35	0.37	0.04

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 55.9

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 12.3

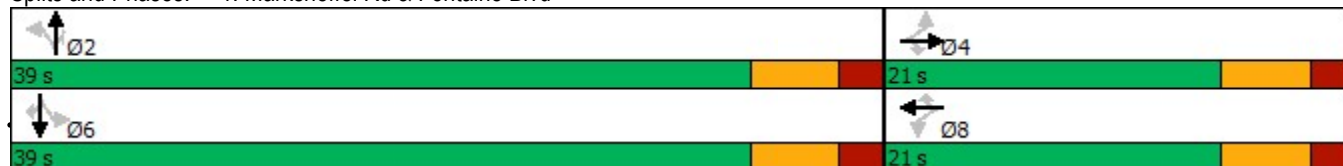
Intersection LOS: B

Intersection Capacity Utilization 56.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



Lanes, Volumes, Timings

JAB







HCM 6th TWSC
2: Cottonwood Grove & Fontaine Blvd

Short-Term Baseline + Site
PM

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗		↕			↕	
Traffic Vol, veh/h	15	467	10	10	285	5	5	1	5	3	1	10
Future Vol, veh/h	15	467	10	10	285	5	5	1	5	3	1	10
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	-	-	Stop
Storage Length	-	-	155	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	508	11	11	310	5	6	1	6	4	1	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	315	0	0	519	0	0	875	877	508	881	883	310
Stage 1	-	-	-	-	-	-	540	540	-	332	332	-
Stage 2	-	-	-	-	-	-	335	337	-	549	551	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1245	-	-	1047	-	-	270	287	565	267	285	730
Stage 1	-	-	-	-	-	-	526	521	-	681	644	-
Stage 2	-	-	-	-	-	-	679	641	-	520	515	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1245	-	-	1047	-	-	258	278	565	257	276	730
Mov Cap-2 Maneuver	-	-	-	-	-	-	258	278	-	257	276	-
Stage 1	-	-	-	-	-	-	517	512	-	669	636	-
Stage 2	-	-	-	-	-	-	657	633	-	504	506	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			15.8			12.7		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	346	1245	-	-	1047	-	-	483				
HCM Lane V/C Ratio	0.041	0.013	-	-	0.01	-	-	0.037				
HCM Control Delay (s)	15.8	7.9	0	-	8.5	0	-	12.7				
HCM Lane LOS	C	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

HCM 6th TWSC
3: Fontaine Blvd & Sleepy Meadows Dr

Short-Term Baseline + Site
PM

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	117	477	274	20	20	53
Future Vol, veh/h	117	477	274	20	20	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	155	-	-	185	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	127	518	298	22	24	64

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	320	0	0 1070 298
Stage 1	-	-	- 298 -
Stage 2	-	-	- 772 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1240	-	- 245 741
Stage 1	-	-	- 753 -
Stage 2	-	-	- 456 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1240	-	- 220 741
Mov Cap-2 Maneuver	-	-	- 220 -
Stage 1	-	-	- 676 -
Stage 2	-	-	- 456 -

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	15
HCM LOS			C

























Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1240	-	-	-	449
HCM Lane V/C Ratio	0.103	-	-	-	0.196
HCM Control Delay (s)	8.2	-	-	-	15
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗	↗	↗
Traffic Vol, veh/h	0	25	0	444	700	37
Future Vol, veh/h	0	25	0	444	700	37
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	-	-	-	280
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	92	92	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	32	0	483	753	40
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	753	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	410	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	410	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	14.5	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 410		-	-		
HCM Lane V/C Ratio	- 0.078		-	-		
HCM Control Delay (s)	- 14.5		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.3		-	-		

Lanes, Volumes, Timings

1: Marksheffel Rd & Fontaine Blvd

12/07/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	285	128	268	719	553	71	625	145	184	291	42
Future Volume (vph)	72	285	128	268	719	553	71	625	145	184	291	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		110	430		0	460		460	385		385
Storage Lanes	1		1	2		1	1		1	2		1
Taper Length (ft)	145			100			205			265		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.307			0.950			0.562			0.950		
Satd. Flow (perm)	572	3539	1583	3433	3539	1583	1047	3539	1583	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			483			209			127
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		747			1489			1250			1763	
Travel Time (s)		11.3			22.6			15.5			21.9	
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	78	310	139	282	757	582	76	672	156	198	313	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	310	139	282	757	582	76	672	156	198	313	45
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (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
Detector 1 Queue (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
Detector 1 Delay (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
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
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

Lanes, Volumes, Timings

1: Marksheffel Rd & Fontaine Blvd

12/07/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	24.0	24.0	9.5	24.0		9.5	24.0		9.5	24.0	24.0
Total Split (s)	10.0	46.0	46.0	19.0	55.0		16.0	22.0		33.0	39.0	39.0
Total Split (%)	8.3%	38.3%	38.3%	15.8%	45.8%		13.3%	18.3%		27.5%	32.5%	32.5%
Maximum Green (s)	6.0	41.0	41.0	15.0	50.0		12.0	17.0		29.0	34.0	34.0
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
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max		None	None	None
Act Effect Green (s)	22.5	15.5	15.5	11.4	23.3	72.2	25.9	17.2	72.2	9.8	21.7	21.7
Actuated g/C Ratio	0.31	0.21	0.21	0.16	0.32	1.00	0.36	0.24	1.00	0.14	0.30	0.30
v/c Ratio	0.28	0.41	0.30	0.52	0.66	0.37	0.17	0.80	0.10	0.42	0.29	0.08
Control Delay	15.2	26.4	4.9	32.5	25.0	0.7	14.7	36.3	0.1	32.9	23.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	26.4	4.9	32.5	25.0	0.7	14.7	36.3	0.1	32.9	23.3	0.3
LOS	B	C	A	C	C	A	B	D	A	C	C	A
Approach Delay		19.1			17.6			28.3			24.8	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	19	62	0	61	157	0	19	152	0	43	60	0
Queue Length 95th (ft)	44	107	31	106	226	0	50	#289	0	80	110	0
Internal Link Dist (ft)		667			1409			1170			1683	
Turn Bay Length (ft)	210		110	430			460		460	385		385
Base Capacity (vph)	280	2036	980	722	2483	1583	559	844	1583	1397	1688	822
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.15	0.14	0.39	0.30	0.37	0.14	0.80	0.10	0.14	0.19	0.05

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 72.2

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 21.6

Intersection LOS: C

Intersection Capacity Utilization 61.6%

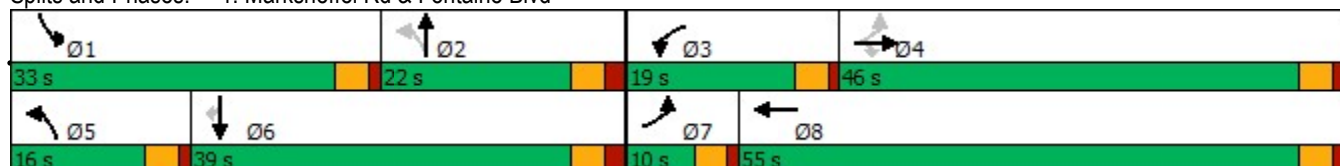
ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.









Queue shown is maximum after two cycles.

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd



HCM 6th TWSC
2: Cottonwood Grove & Fontaine Blvd

12/07/2021

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	35	456	5	5	822	5	10	1	5	25	2	35
Future Vol, veh/h	35	456	5	5	822	5	10	1	5	25	2	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	195	-	155	195	-	195	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	93	93	93	89	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	496	5	5	884	5	11	1	6	32	3	45

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	889	0	0	501	0	0	1026	1471	248	1219	1471	442
Stage 1	-	-	-	-	-	-	572	572	-	894	894	-
Stage 2	-	-	-	-	-	-	454	899	-	325	577	-
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	758	-	-	1059	-	-	189	126	752	136	126	563
Stage 1	-	-	-	-	-	-	472	502	-	302	358	-
Stage 2	-	-	-	-	-	-	555	356	-	661	500	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	758	-	-	1059	-	-	164	119	752	128	119	563
Mov Cap-2 Maneuver	-	-	-	-	-	-	164	119	-	128	119	-
Stage 1	-	-	-	-	-	-	448	477	-	287	356	-
Stage 2	-	-	-	-	-	-	505	354	-	621	475	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.1	23.3	29.3
HCM LOS			C	D





Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	216	758	-	-	1059	-	-	226
HCM Lane V/C Ratio	0.088	0.05	-	-	0.005	-	-	0.352
HCM Control Delay (s)	23.3	10	-	-	8.4	-	-	29.3
HCM Lane LOS	C	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0	-	-	1.5

HCM 6th TWSC
3: Fontaine Blvd & Sleepy Meadows Dr

12/07/2021

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	506	856	11	12	64
Future Vol, veh/h	23	506	856	11	12	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	185	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	95	95	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	550	901	12	14	77

























Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	913	0	0	1226	451
Stage 1	-	-	-	901	-
Stage 2	-	-	-	325	-
Critical Hdwy	4.14	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	3.52	3.32
Pot Cap-1 Maneuver	742	-	-	171	556
Stage 1	-	-	-	357	-
Stage 2	-	-	-	705	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	742	-	-	163	556
Mov Cap-2 Maneuver	-	-	-	163	-
Stage 1	-	-	-	340	-
Stage 2	-	-	-	705	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	16.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	742	-	-	-	403
HCM Lane V/C Ratio	0.034	-	-	-	0.227
HCM Control Delay (s)	10	0.2	-	-	16.5
HCM Lane LOS	B	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9













Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

2041 Background
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	965	174	244	546	414	98	410	432	700	645	84
Future Volume (vph)	105	965	174	244	546	414	98	410	432	700	645	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		110	430		0	460		460	385		385
Storage Lanes	1		1	2		1	1		1	2		1
Taper Length (ft)	145			100			205			265		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.414			0.950			0.393			0.950		
Satd. Flow (perm)	771	3539	1583	3433	3539	1583	732	3539	1583	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			436			338			127
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		747			1489			1250			1763	
Travel Time (s)		11.3			22.6			15.5			21.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.95	0.95	0.95
Adj. Flow (vph)	111	1016	183	257	575	436	105	441	465	737	679	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	1016	183	257	575	436	105	441	465	737	679	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (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
Detector 1 Queue (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
Detector 1 Delay (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
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
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

Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

2041 Background
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	24.0	24.0	9.5	24.0		9.5	24.0		9.5	24.0	24.0
Total Split (s)	10.0	46.0	46.0	19.0	55.0		16.0	22.0		33.0	39.0	39.0
Total Split (%)	8.3%	38.3%	38.3%	15.8%	45.8%		13.3%	18.3%		27.5%	32.5%	32.5%
Maximum Green (s)	6.0	41.0	41.0	15.0	50.0		12.0	17.0		29.0	34.0	34.0
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
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max		None	None	None
Act Effect Green (s)	44.8	37.7	37.7	13.1	44.7	113.3	27.6	17.1	113.3	27.2	34.9	34.9
Actuated g/C Ratio	0.40	0.33	0.33	0.12	0.39	1.00	0.24	0.15	1.00	0.24	0.31	0.31
v/c Ratio	0.31	0.86	0.29	0.65	0.41	0.28	0.40	0.82	0.29	0.89	0.62	0.15
Control Delay	19.2	44.4	7.0	57.0	25.7	0.4	27.6	61.8	0.5	56.8	37.8	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	44.4	7.0	57.0	25.7	0.4	27.6	61.8	0.5	56.8	37.8	2.5
LOS	B	D	A	E	C	A	C	E	A	E	D	A
Approach Delay		37.1			23.3			30.0			45.1	
Approach LOS		D			C			C			D	
Queue Length 50th (ft)	44	375	10	98	160	0	48	176	0	282	235	0
Queue Length 95th (ft)	76	468	61	142	208	0	86	#268	0	#389	313	16
Internal Link Dist (ft)		667			1409			1170			1683	
Turn Bay Length (ft)	210		110	430			460		460	385		385
Base Capacity (vph)	357	1291	681	458	1575	1583	306	535	1583	886	1104	581
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.79	0.27	0.56	0.37	0.28	0.34	0.82	0.29	0.83	0.62	0.15

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 113.3

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 34.6

Intersection LOS: C

Intersection Capacity Utilization 79.9%

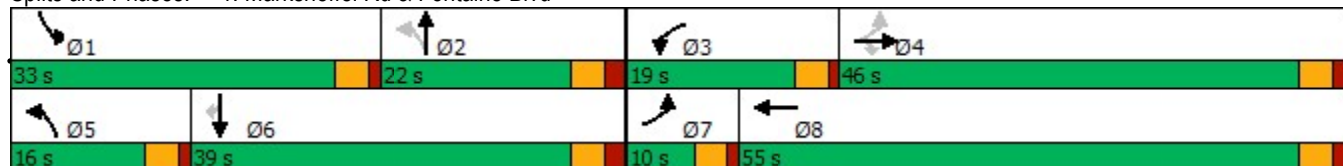
ICU Level of Service D









Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd















Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	105	1233	10	15	726	10	5	1	5	15	2	20
Future Vol, veh/h	105	1233	10	15	726	10	5	1	5	15	2	20
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	-	-	Stop
Storage Length	195	-	155	195	-	195	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	93	93	93	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	111	1298	11	16	781	11	6	1	6	19	3	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	792	0	0	1309	0	0	1944	2344	649	1685	2344	391
Stage 1	-	-	-	-	-	-	1520	1520	-	813	813	-
Stage 2	-	-	-	-	-	-	424	824	-	872	1531	-
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	824	-	-	524	-	-	39	36	412	61	36	608
Stage 1	-	-	-	-	-	-	124	179	-	339	390	-
Stage 2	-	-	-	-	-	-	578	385	-	312	177	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	824	-	-	524	-	-	31	30	412	51	30	608
Mov Cap-2 Maneuver	-	-	-	-	-	-	31	30	-	51	30	-
Stage 1	-	-	-	-	-	-	107	155	-	293	378	-
Stage 2	-	-	-	-	-	-	533	373	-	264	153	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.2			95.9			77.2		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	53	824	-	-	524	-	-	94
HCM Lane V/C Ratio	0.266	0.134	-	-	0.031	-	-	0.505
HCM Control Delay (s)	95.9	10	-	-	12.1	-	-	77.2
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.9	0.5	-	-	0.1	-	-	2.2







Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	1348	717	10	9	40
Future Vol, veh/h	35	1348	717	10	9	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	185	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	93	93	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	1419	771	11	12	51
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	782	0	-	0	1555	386
Stage 1	-	-	-	-	771	-
Stage 2	-	-	-	-	784	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	832	-	-	-	104	612
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	410	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	832	-	-	-	82	612
Mov Cap-2 Maneuver	-	-	-	-	82	-
Stage 1	-	-	-	-	329	-
Stage 2	-	-	-	-	410	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.2	0		11.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	832	-	-	-	-	612
HCM Lane V/C Ratio	0.044	-	-	-	-	0.084
HCM Control Delay (s)	9.5	1	-	-	-	11.4
HCM Lane LOS	A	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	-	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	35	466	5	5	844	5	10	1	5	25	2	35
Future Vol, veh/h	35	466	5	5	844	5	10	1	5	25	2	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	195	-	155	195	-	195	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	93	93	93	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	507	5	5	908	5	13	1	6	32	3	45

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	913	0	0	512	0	0	1049	1506	254	1248	1506	454
Stage 1	-	-	-	-	-	-	583	583	-	918	918	-
Stage 2	-	-	-	-	-	-	466	923	-	330	588	-
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	742	-	-	1050	-	-	182	120	745	130	120	553
Stage 1	-	-	-	-	-	-	465	497	-	292	349	-
Stage 2	-	-	-	-	-	-	546	347	-	657	494	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	742	-	-	1050	-	-	157	113	745	122	113	553
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	113	-	122	113	-
Stage 1	-	-	-	-	-	-	441	472	-	277	347	-
Stage 2	-	-	-	-	-	-	496	345	-	616	469	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0	24.8	30.9
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	202	742	-	-	1050	-	-	217
HCM Lane V/C Ratio	0.102	0.051	-	-	0.005	-	-	0.366
HCM Control Delay (s)	24.8	10.1	-	-	8.4	-	-	30.9
HCM Lane LOS	C	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0	-	-	1.6

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	506	869	20	20	115
Future Vol, veh/h	50	506	869	20	20	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	155	-	-	185	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	544	934	22	24	139

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	956	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	715	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	715	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

























Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	21.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	715	-	-	-	379
HCM Lane V/C Ratio	0.075	-	-	-	0.429
HCM Control Delay (s)	10.4	-	-	-	21.5
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	2.1

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	↗
Traffic Vol, veh/h	0	31	0	1253	517	5
Future Vol, veh/h	0	31	0	1253	517	5
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	-	-	-	290
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	95	95	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	40	0	1319	556	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	278	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	719	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	719	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.3	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 719		-	-		
HCM Lane V/C Ratio	- 0.055		-	-		
HCM Control Delay (s)	- 10.3		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.2		-	-		













Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

2041 Background + Site
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	969	177	244	553	414	105	410	432	710	651	93
Future Volume (vph)	107	969	177	244	553	414	105	410	432	710	651	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		110	430		0	460		460	385		385
Storage Lanes	1		1	2		1	1		1	2		1
Taper Length (ft)	145			100			205			265		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.410			0.950			0.391			0.950		
Satd. Flow (perm)	764	3539	1583	3433	3539	1583	728	3539	1583	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			436			337			127
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		747			1489			1250			1763	
Travel Time (s)		11.3			22.6			15.5			21.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.95	0.95	0.95
Adj. Flow (vph)	113	1020	186	257	582	436	113	441	465	747	685	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	1020	186	257	582	436	113	441	465	747	685	98
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA	L NA	Left	R NA
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (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
Detector 1 Queue (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
Detector 1 Delay (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
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
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

Lanes, Volumes, Timings
1: Marksheffel Rd & Fontaine Blvd

2041 Background + Site
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	24.0	24.0	9.5	24.0		9.5	24.0		9.5	24.0	24.0
Total Split (s)	10.0	46.0	46.0	19.0	55.0		16.0	22.0		33.0	39.0	39.0
Total Split (%)	8.3%	38.3%	38.3%	15.8%	45.8%		13.3%	18.3%		27.5%	32.5%	32.5%
Maximum Green (s)	6.0	41.0	41.0	15.0	50.0		12.0	17.0		29.0	34.0	34.0
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
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max		None	None	None
Act Effect Green (s)	44.9	37.8	37.8	13.1	44.9	113.7	27.8	17.1	113.7	27.5	34.9	34.9
Actuated g/C Ratio	0.39	0.33	0.33	0.12	0.39	1.00	0.24	0.15	1.00	0.24	0.31	0.31
v/c Ratio	0.32	0.87	0.29	0.65	0.42	0.28	0.42	0.83	0.29	0.90	0.63	0.17
Control Delay	19.4	44.8	7.2	57.2	25.8	0.4	28.1	62.3	0.5	57.4	38.1	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	44.8	7.2	57.2	25.8	0.4	28.1	62.3	0.5	57.4	38.1	3.3
LOS	B	D	A	E	C	A	C	E	A	E	D	A
Approach Delay	37.3				23.5		30.3				45.3	
Approach LOS	D				C		C				D	
Queue Length 50th (ft)	45	377	11	98	162	0	52	176	0	287	240	0
Queue Length 95th (ft)	77	471	62	142	211	0	92	#268	0	#397	316	23
Internal Link Dist (ft)	667				1409		1170				1683	
Turn Bay Length (ft)	210	110		430			460	460		385	385	
Base Capacity (vph)	354	1286	679	456	1568	1583	304	533	1583	882	1097	578
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.79	0.27	0.56	0.37	0.28	0.37	0.83	0.29	0.85	0.62	0.17

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 113.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 34.9

Intersection LOS: C

Intersection Capacity Utilization 80.3%

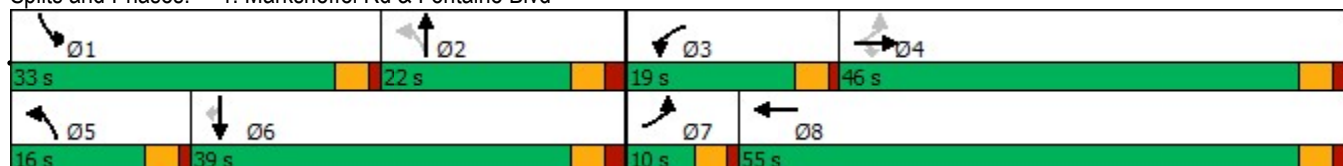
ICU Level of Service D









Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Marksheffel Rd & Fontaine Blvd









Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	105	1233	10	15	726	10	5	1	5	15	2	20
Future Vol, veh/h	105	1233	10	15	726	10	5	1	5	15	2	20
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	-	-	Stop
Storage Length	195	-	155	195	-	195	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	93	93	93	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	111	1298	11	16	781	11	6	1	6	19	3	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	792	0	0	1309	0	0	1944	2344	649	1685	2344	391
Stage 1	-	-	-	-	-	-	1520	1520	-	813	813	-
Stage 2	-	-	-	-	-	-	424	824	-	872	1531	-
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	824	-	-	524	-	-	39	36	412	61	36	608
Stage 1	-	-	-	-	-	-	124	179	-	339	390	-
Stage 2	-	-	-	-	-	-	578	385	-	312	177	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	824	-	-	524	-	-	31	30	412	51	30	608
Mov Cap-2 Maneuver	-	-	-	-	-	-	31	30	-	51	30	-
Stage 1	-	-	-	-	-	-	107	155	-	293	378	-
Stage 2	-	-	-	-	-	-	533	373	-	264	153	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.2			95.9			77.2		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	53	824	-	-	524	-	-	94
HCM Lane V/C Ratio	0.266	0.134	-	-	0.031	-	-	0.505
HCM Control Delay (s)	95.9	10	-	-	12.1	-	-	77.2
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.9	0.5	-	-	0.1	-	-	2.2

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	125	1348	726	25	15	75
Future Vol, veh/h	125	1348	726	25	15	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	155	-	-	185	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	93	93	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	132	1419	781	27	19	96

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	808	0	-	0	1755
Stage 1	-	-	-	-	781
Stage 2	-	-	-	-	974
Critical Hdwy	4.14	-	-	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	2.22	-	-	-	3.52
Pot Cap-1 Maneuver	813	-	-	-	76
Stage 1	-	-	-	-	412
Stage 2	-	-	-	-	327
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	813	-	-	-	64
Mov Cap-2 Maneuver	-	-	-	-	64
Stage 1	-	-	-	-	345
Stage 2	-	-	-	-	327

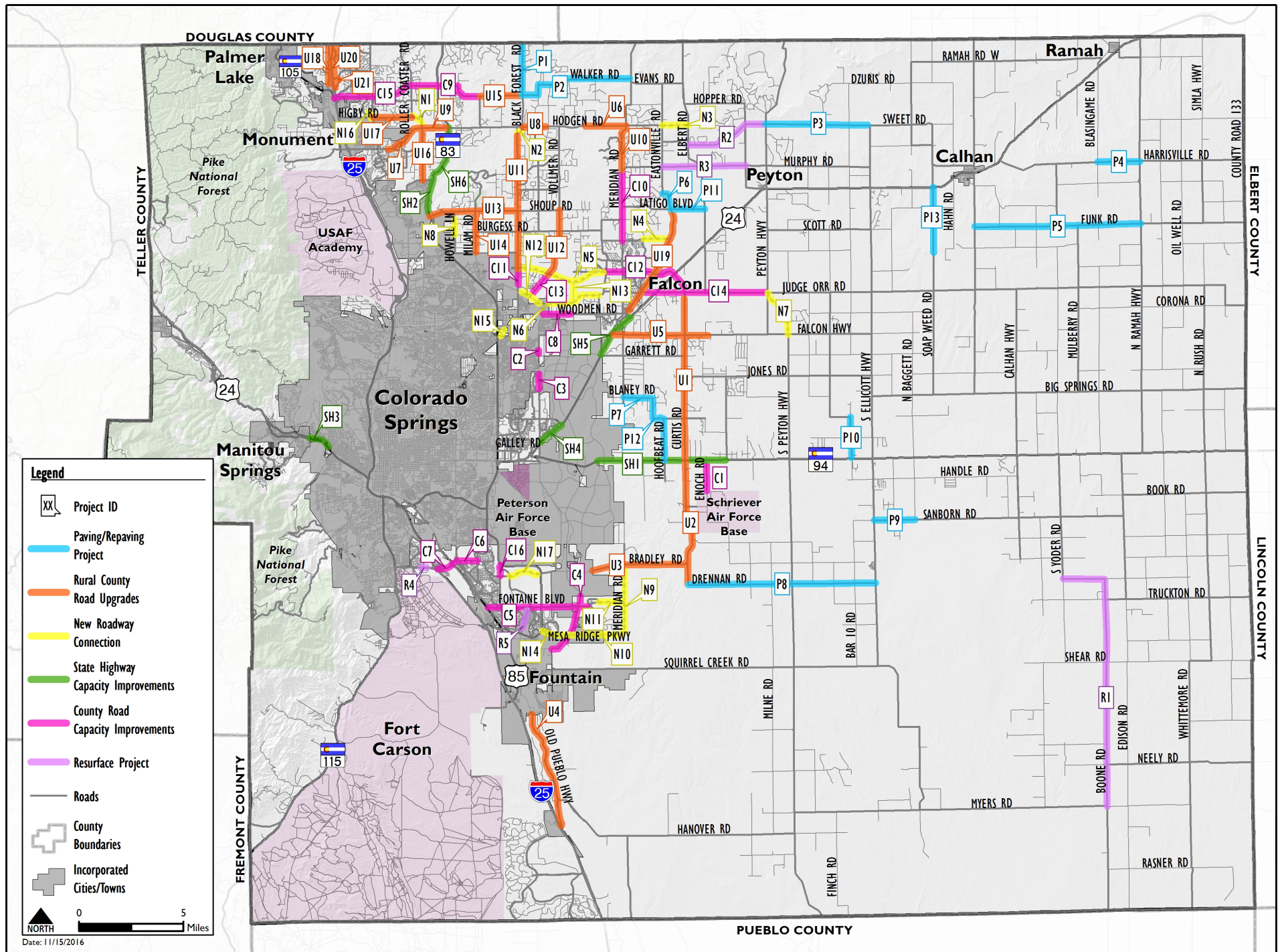
Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	30.8
HCM LOS			D

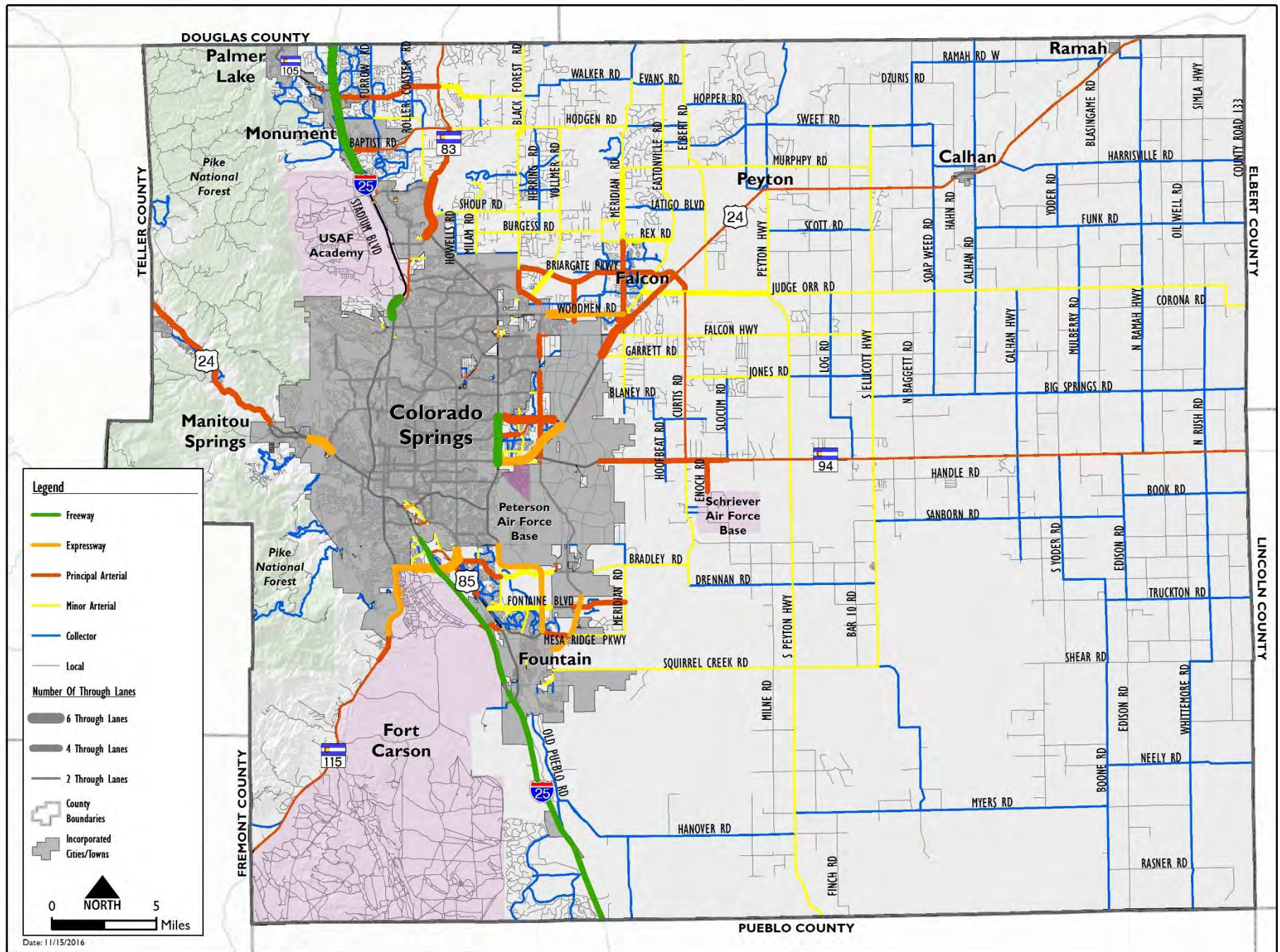
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	813	-	-	-	252
HCM Lane V/C Ratio	0.162	-	-	-	0.458
HCM Control Delay (s)	10.3	-	-	-	30.8
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.6	-	-	-	2.2

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	↗
Traffic Vol, veh/h	0	42	0	931	1429	37
Future Vol, veh/h	0	42	0	931	1429	37
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	-	-	-	290
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	93	93	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	54	0	1001	1504	39
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	752	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	353	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	353	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	17	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 353		-	-		
HCM Lane V/C Ratio	- 0.153		-	-		
HCM Control Delay (s)	- 17		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 0.5		-	-		

MTCP Maps

Map 13: Improvements Map





Map 14: 2040 Roadway Plan (Classification and Lanes)

