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**Sterling Ranch East - Filing 5 Rezone & Preliminary Plan  
 Traffic Impact Study  
 PCD File No. P237 & SP235  
 (LSC #S234180)  
 January 15, 2024**

**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.

**Accepted for File**  
 By: **Gilbert LaForce, P.E.**  
 Engineering Manager  
 Date: **01/18/2024 9:28:05 AM**  
 El Paso County Department of Public Works



  
 \_\_\_\_\_  
 P.E.

1/16/2024  
 Date

# **Sterling Ranch East**

## **Filing 5 Rezone and Preliminary Plan**

### **Traffic Impact Study**

Prepared for:  
Loren J. Moreland  
Vice President/ Project Manager  
Classic SRJ  
2138 Flying Horse Club Drive  
Colorado Springs, CO 80921

JANUARY 15, 2024

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LSC Transportation Consultants  
Prepared by: Kirstin D. Ferrin, P.E.  
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LSC #S234180



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January 15, 2024

Loren J. Moreland  
Vice President/ Project Manager  
Classic SRJ  
2138 Flying Horse Club Drive  
Colorado Springs, CO 80921

RE: Sterling Ranch East -  
Filing 5 Rezone & Preliminary Plan  
Traffic Impact Study  
El Paso County, Colorado  
LSC #S234180

Dear Mr. Moreland:

LSC Transportation Consultants, Inc. has prepared this Traffic Impact Study for the proposed Sterling Ranch East (SRE) Filing 5 Rezone and Preliminary Plan. As shown in Figure 1, the site is located east of the future Sterling Ranch Road between the future extensions of Marksheffel Road and Stapleton Drive in El Paso County, Colorado.

## REPORT CONTENTS

The preparation of this report included the following:

- A list of previous Sterling Ranch traffic reports and the context of this project;
- The existing roadway and traffic conditions in the site's vicinity including the roadway widths, surface conditions, lane geometries, traffic controls, and posted speed limits;
- A summary of the proposed land use and access plan;
- Existing traffic volume data;
- Estimates of projected short-term long-term baseline traffic volumes;
- The projected average weekday and peak-hour vehicle trips to be generated by the proposed future development within the preliminary plan area;
- The assignment of the projected preliminary-plan site-generated traffic volumes to the area roadways;
- The projected short-term and long-term total traffic volumes on the area roadways;
- The projected levels of service at the key intersections within the study area;

- Signal-warrant threshold analysis;
- The recommended street classifications;
- A list of deviation requests;
- Findings and recommendations for study area roadways and intersections, including number of lanes, auxiliary turn lanes, intersection traffic control, etc.; and
- The project's obligation to the County roadway improvement fee program.

## RECENT TRAFFIC REPORTS

LSC prepared a previous master traffic impact study (TIS) for the entire Sterling Ranch development, Sterling Ranch Updated Traffic Impact Analysis (SKP07007) dated June 5, 2008. **This master study was recently updated. The most currently version of the Sterling Ranch Sketch Plan Amendment Master Traffic Impact Study (SKP 224) is dated February 10, 2023.** Since 2008, LSC and SM Rocha, LLC have completed multiple studies for individual filings and phases within Sterling Ranch. Appendix Table 1, which includes a list of other traffic studies within Sterling Ranch and in the vicinity of area of study completed within the past five years (that LSC is aware of), is attached for reference.

El Paso County is currently studying the Briargate Stapleton Corridor as part of a Pikes Peak Rural Transportation Authority (PPRTA) study. A draft version of the Briargate-Stapleton Corridor Study by Wilson & Company was published December 9, 2021.

## STUDY AREA

Figure 1 shows the location of the Sterling Ranch East Filing 5 Preliminary Plan Area relative to the overall Sterling Ranch Sketch Plan Area. As shown in Figure 1, the site is located generally in the middle of the Sketch Plan Area adjacent to the future extension of Sterling Ranch Road.

## Land Use

N.E.S. Inc on behalf of Classic SRJ Land LLC is requesting a rezone of 42.033 acres east of the future Sterling Ranch Road and south of the future Briargate Parkway from RR-5 to RS-5000. They are also requesting a Preliminary Plan for the same area.

Figure 2 shows the proposed Sterling Ranch East Filing 5 Preliminary Plan. The site is planned to be developed with 160 lots for single-family homes which would represent a gross density of 3.4 dwelling units per acre. The Sterling Ranch Sketch Plan identifies the area included within this proposed preliminary plan as residential at a density of 3-5 dwelling units per acre. Along the south boundary of the site, the Sketch Plan identifies 2 dwelling units per acre residential density, a 50-foot buffer and a 100-foot setback with 150-foot average setback. This lower density and buffer were intended as a transition between the suburban density within the rest of the Sterling Ranch development and the lower density 5-acre lots in the Pawnee Rancheros subdivision to the south. Tract A, located in the southernmost portion of Sterling Ranch East

Filing 5 Preliminary Plan, is zoned RR-0.5 and planned as a 4.6AC detention basin. The proposed zone change would not create additional impacts to the county roadways beyond those identified in the *Sterling Ranch Sketch Plan Amendment Master Traffic Impact Study* ([SKP 224](#)) dated February 10, 2023 as the proposed land use is also consistent with the land use assumed for this same area in that report.

### **Pedestrian Plan**

Figure 2 also shows the location of all planned trails and sidewalks in the vicinity of the site. There are no proposed regional trails within the boundary of this Preliminary Plan. Multiple community trails are included for circulation and recreational use through the Sterling Ranch Phase 1 Preliminary Plan located west and south of the currently-proposed Filing 5 Preliminary Plan, including a 15-foot combined trail and maintenance road along the east side of the Sand Creek area. A 5-foot trail along the south boundary will provide connectivity from the eastern portion of Sterling Ranch to the Regional Trail on the west side of Sand Creek (identified as M11 in the El Paso County *2016 Major Transportation Corridors Plan Update*) and the community parks, trails, and open space within Sterling Ranch.

A detached sidewalk will be provided along both sides of Sterling Ranch Road. The multi-use paved shoulder on Sterling Ranch Road will accommodate bicycles. Attached 5-foot-wide concrete sidewalks are planned on all of the local streets within Sterling Ranch East Filing No. 5.

There are no existing schools within two miles of the site. However, there are multiple future school sites in the area including a future K-8 school site west of the site on the west side of Sterling Ranch Road and elementary school sites south and east of the site. No information or plans are available for the school sites and a separate site-specific traffic impact study including pedestrian plans will be required to be approved prior to school site development.

### **Proposed Access Points**

Figure 3 shows the roadway connections that are planned to be constructed in the short term. As shown in Figure 3, in the short term, Briargate Parkway is planned to be constructed to its final cross section between Vollmer Road and Sterling Ranch Road, Marksheffel Road is planned to be completed between Vollmer Road and Woodmen Road, and Sterling Ranch Road is planned to be constructed from Marksheffel Road to the northmost access point within the Sterling Ranch East Phase 1 Preliminary Plan area.

Figure 2 shows the access plan for the SRE Filing 5 Preliminary Plan. The access plan for this Preliminary plan is consistent with the access plan shown in LSC's February 10, 2023 Sketch Plan Master TIS. SRE Filing 5 is planned to have access to Sterling Ranch Road via Lake Tahoe Drive and Newport Beach Drive. The intersection of Lake Tahoe Drive/Sterling Ranch Road is located about 2,853 feet northeast of Dines Boulevard and 2,853 feet southwest of the future Briargate Parkway. The intersection of Lake Tahoe Drive/Sterling Ranch Road was approved as a

full-movement intersection as part of the Sterling Ranch East Preliminary Plan 1 (SP224). The intersection of Newport Beach Drive/Sterling Ranch Road is located about 627 feet north of Newport Beach Drive. The currently-proposed east leg aligns with the approved full-movement intersection that was also approved as part of Sterling Ranch East Preliminary Plan 1 (SP224). A future full-movement access is also proposed to Oak Park Drive about 665 feet east of Sterling Ranch Road. Oak Park Drive, which will form the north boundary of the site, is not planned to be constructed as part of the currently-proposed Preliminary Plan. All of the proposed access points meet the criteria contained in the *El Paso County Engineering Criteria Manual (ECM)*.

### **Sight Distance Analysis**

Figure 4a shows the intersection sight-distance analysis at the intersections of Sterling Ranch Road (Urban Non-Residential Collector)/Newport Beach Drive and Sterling Ranch Road (Urban Non-Residential Collector)/Lake Tahoe Drive (Urban Local). Based on a design speed of 40 miles per hour (mph) and the criteria contained in Table 2-21 of the *Engineering Criteria Manual (ECM)*, the required intersection sight distance at the future intersections is 445 feet. As shown in Figure 4a, the intersection sight distance can be met at both of these intersections.

Figure 4b shows the intersection sight-distance analysis at the future site access to Oak Park Drive (Non-Residential Collector) which is not planned to be constructed as part of the currently-proposed filing. Based on a design speed of 40 miles per hour (mph) and the criteria contained in Table 2-21 of the *Engineering Criteria Manual (ECM)*, the required intersection sight distance at the future intersection is 445 feet. As shown on Figure 4b the intersection sight distance can be met at this future intersection.

Figure 4c shows the stopping sight-distance analysis at the site-access points to Lake Tahoe Drive (Urban Local). Intersection sight-distance analysis was not analyzed for these intersections as guidance from the *Colorado Department of Transportation 2018 Roadway Design Guide* and *A Policy on Geometric Design of Highway and Street, 7<sup>th</sup> Edition* published by AASHTO indicate that intersection sight distance is not applicable to local urban/residential streets. See the attached Appendix A for further details. Based on a design speed of 25 miles per hour (mph) and the criteria contained in Table 2-17 of the *Engineering Criteria Manual (ECM)*, the required stopping sight distance at the future intersections is 155 feet. As shown in Figure 4c, the stopping sight distance can be met at all of the proposed access points.

## **REPORT SCENARIOS**

### **Short-Term Scenario**

The short-term scenario includes the roadway segments to be added in the short term only, as shown in Figure 3. This scenario includes the SRE Filing 5 Preliminary Plan area (“the site”) as well as traffic to be generated in the short term by buildout of Homestead at Sterling Ranch, Branding Iron at Sterling Ranch, Sterling Ranch Filings 2-4, Copper Chase at Sterling Ranch,

Homestead North at Sterling Ranch Filings 1-3, the Retreat at TimberRidge Filings 1-3, the planned FourSquare at Sterling Ranch East development and the approved filings within Sterling Ranch East Preliminary Plan 1 (Sterling Ranch East Filings 1 and 2). Note that the short-term scenario assumes no traffic due to future anticipated land uses within Sterling Ranch East Preliminary Plan 1 including the residential areas east of Sterling Ranch Road and north of Idaho Falls Drive the future school site. Trips projected from these other short-term developments outside of the SRE Filing 5 Preliminary Plan boundary are included as short-term “background traffic” in this report.

### **Long-Term Scenario**

The long-term scenario is essentially the same as the 2043 long-term scenario contained in the LSC February 10, 2023 Master TIS with additional detail added for this application – including the analysis of minor intersections and street segments that are part of the Preliminary Plan. The study area of this report is more focused than the Sketch Plan.

### **EXISTING ROAD AND TRAFFIC CONDITIONS**

The adjacent streets are shown in Figure 1 and are described below. Copies of the *2016 El Paso County Major Transportation Corridors Plan (MTCP)*, *2040 Roadway Plan*, and *2016 MTCP 2060 Corridor Preservation Plan* with the site location identified on them have been attached to this report.

**Vollmer Road** is currently a five-lane urban street within the City of Colorado Springs limits between Black Forest Road and Cowpoke Road; and a two-lane, rural, paved roadway north of Cowpoke Road extending to north of Hodgen Road. In the southbound direction, Vollmer Road has a posted speed limit of 45 mph. South of Cowpoke Road, Vollmer Road has a 40-mph posted speed limit. The *2040 El Paso County Major Transportation Corridors Plan (MTCP)* and the prior Sterling Ranch master traffic study show Vollmer Road as a four-lane Urban Minor Arterial in the vicinity of the site. Note: The new *Connect COS* City of Colorado Springs transportation plan shows Vollmer as a Principal Arterial. The South Vollmer Road improvements ([CDR2116](#)) which will provide two through lanes in each direction on Vollmer Road in the vicinity of Marksheffel Road are currently under construction and are anticipated to be completed by the end of November 2023. The North Vollmer Road improvements ([CDR217](#)) which will provide two through lanes in each direction on Vollmer Road in the vicinity of Briargate Parkway are currently under construction and are anticipated to be completed by 2024.

**Marksheffel Road** is a Principal Arterial extending north from the City of Fountain to Woodmen Road. Marksheffel Road is planned to ultimately be widened to six lanes and extended north and west from Woodmen Road to connect to Research Parkway at Black Forest Road. Marksheffel Road is shown as a four-lane Principal Arterial through the site on the El Paso County *MTCP*. The City of Colorado Springs intends to take ownership and maintenance of

Marksheffel Road when it is constructed from Vollmer to the east and south to where it will connect to the segment constructed north of Woodmen Road in the City.

The section of Marksheffel Road adjacent to Sterling Ranch has been or is planned to be constructed on 107 feet of right-of-way to the City's required cross section(s) and criteria. The section of Marksheffel Road between Sterling Ranch Road and Vollmer Road has recently been completed and the section of Marksheffel Road southeast of Sterling Ranch Road (to connect to the segment recently constructed) will be completed in the short term and will open the connection to Woodmen Road. Marksheffel will be constructed as a four-lane roadway to the previously agreed upon cross section.

**Briargate Parkway** is a Principal Arterial that extends east from I-25 to Grand Lawn Circle (about one-half mile east of Powers Boulevard). Briargate Parkway is planned ultimately to extend to Towner Drive. The segment of Briargate Parkway between Vollmer Road and Sterling Ranch Road is planned to be constructed to its full 4-lane cross section by May 2024.

**Sterling Ranch Road** is a planned Non-Residential Collector shown extending through the Sterling Ranch development between Marksheffel Road and the north end of the Sketch Plan area (Arroya Road). Sterling Ranch Road has been constructed between Marksheffel Road and Dines Boulevard and will be constructed north to Briargate Parkway in the short term with the Sterling Ranch East Phase 1 Preliminary Plan.

**Tahiti Drive** is a gravel road which extends for about 750 feet north from Vollmer Road. The intersection of Vollmer/Tahiti is located just south of the future location of the intersection of Vollmer/Marksheffel. This intersection is planned to be closed with the construction of Marksheffel Road between Vollmer Road and Sterling Ranch Road. Access for the existing home using this access will be relocated north to Loch Fyne Lane.

### **Existing Traffic Volumes**

Figures 5a and 5b show the existing average weekday and peak-hour traffic volumes at the key study-area intersections. The peak-hour traffic volumes shown are based on manual turning-movement counts by LSC Transportation Consultants and All Traffic Data Services. The date of each count is shown in Figure 5b. The average weekday traffic volumes shown in Figure 5a are estimates by LSC, based on the manual peak-hour traffic-count data. The traffic count sheets are attached.

### **Existing Levels of Service**

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

more than 50 seconds for unsignalized intersections. Table 1 shows the level of service delay ranges.

**Table 1: Intersection Levels of Service Delay Ranges**

| Level of Service | Signalized Intersections                    | Unsignalized Intersections                                 |
|------------------|---|--|
|                  | Average Control Delay (seconds per vehicle) | Average Control Delay (seconds per vehicle) <sup>(1)</sup> |
| 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.

The intersection of Burgess Road/Vollmer Road has been analyzed based on the unsignalized-intersection analysis procedures from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board. The results of the analysis are shown on Figure 5c.

Burgess Road/Vollmer Road

The stop-sign-controlled intersection of Burgess/Vollmer is currently operating at LOS E for the eastbound approach and LOS F for the westbound approach during the afternoon peak hour.

**Safety and Accident Analysis**

The Colorado State Patrol (CSP) provided LSC with crash history data for Vollmer Road between Tahiti Drive and Burgess Road from September 2019 through September 2022. During the reported time period, there were twelve reported crashes. Of the twelve reports, ten were single-vehicle non-intersection-related crashes on Vollmer Road. One crash involved a southbound vehicle that turned right onto Poco Road and crashed into several cars parked on Poco Road partially in the lane. The only intersection-related crash occurred in June 2022. A vehicle heading northbound on Vollmer Road was slowing to turn left at Lochwinnoch Road and the vehicle behind them attempted to pass on the left side. The crash history data has been attached.

**BASELINE CONDITIONS**

Baseline traffic is the traffic estimated to be on the adjacent roadways and at adjacent intersections without the proposed development’s trip generation of site-generated traffic volumes. Baseline traffic (for a specified horizon year) includes the through traffic and the

traffic generated by nearby developments (existing and planned, including traffic generated by existing and planned developments within the greater Sterling Ranch overall development) but assumes zero traffic generated by land uses within the site (the SRE Filing 5 preliminary plan boundary area).

### **Short-Term Scenario Baseline Conditions**

Please refer to the description of the short-term scenario above. Figures 6a and 6b show the projected volumes for the short-term baseline scenario. Note that the short-term baseline scenario assumes only the approved filings within Sterling Ranch East Preliminary Plan 1 (Filing Nos 1 and 2) have been constructed in the short-term. No traffic due to future anticipated land uses within Sterling Ranch East Preliminary Plan 1 including the residential areas east of Sterling Ranch Road and north of Idaho Falls Drive and the future school site are included in the volumes shown in Figures 6a and 6b.

Figure 6c shows the lane geometry, traffic control, and level of service at the key area intersections, based on the short-term scenario baseline volumes.

### **Long-Term Scenario Baseline Conditions**

Figure 7a shows the projected 2043 baseline daily traffic volumes on key street segments at the key area intersections and Figure 7b shows the projected 2043 peak-hour baseline traffic volumes at the key area intersections. These volumes assume buildout of the area street network, including the completion of Marksheffel Road between Vollmer Road and Black Forest Road, Briargate Parkway between Meridian Road and Black Forest Road, and Sterling Ranch Road between Marksheffel Road and Briargate Parkway.

The 2043 baseline traffic volumes are estimates by LSC, based on the traffic projections in the LSC February 10, 2023 Master TIS report. The 2043 baseline daily traffic volumes assume buildout of the land uses within the Sterling Ranch Master Plan that are not included in the Sterling Ranch East Phase 1 Preliminary Plan area.

Figure 7c shows the lane geometry, traffic control, and level of service at the key area intersections, based on the 2043 baseline volumes.

### **TRIP GENERATION**

The site-generated vehicle trips were estimated using the nationally-published trip-generation rates from *Trip Generation, 11th Edition, 2021* by the Institute of Transportation Engineers (ITE). Table 2 shows the trip-generation estimates.

The Sterling Ranch East Filing 5 Preliminary Plan is projected to generate about 1,509 new external vehicle trips on the average weekday, with about half entering and half exiting the site

during a 24-hour period. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 28 vehicles would enter and 84 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:15 and 6:15 p.m., about 95 vehicles would enter and 56 vehicles would exit the site.

## **TRIP DISTRIBUTION AND ASSIGNMENT**

The directional distribution of the site-generated traffic volumes on the street and roadway system serving the site is an important factor in determining the site's traffic impacts. The distribution estimates for short-term and long-term residential related traffic are shown in Figure 8. The short-term directional-distribution estimate assumes the short-term roadway network shown in Figure 3 only and the long-term directional-distribution estimate assumes buildout of the roadway network. The directional-distribution estimates are based, in part, on the estimates contained in the sketch plan TIS report. Factors include: the location of the site with respect to the Colorado Springs metropolitan area, the planned access system for the site, the street and roadway system serving the site, and the land uses proposed for the site.

When the distribution percentages (from Figure 8) are applied to the new, external trip-generation estimates (from Table 2), the resulting site-generated traffic volumes can be determined. Figures 9a and 9b show the short-term site-generated traffic volumes. These volumes assume only the street network shown in Figure 3. Figures 10a and 10b show the long-term residential site-generated traffic volumes assuming buildout of the area roadway network.

## **TOTAL TRAFFIC**

### **Short-Term Total Traffic**

Figure 11a shows the projected short-term total daily traffic volumes on key street segments and Figure 11b shows the projected short-term total peak-hour traffic volumes at the key study-area intersections. These volumes are the sum of the short-term baseline traffic volumes (from Figures 6a and 6b) and the short-term site-generated traffic volumes (from Figures 9a and 9b).

Figure 11c shows the level of service analysis results for the key area intersections based on the projected short-term total volumes. The figure also shows the general intersection lane geometry and intersection traffic control used in the analysis.

### **2043 Total Traffic**

Figure 12a shows the projected 2043 total daily traffic volumes on key street segments and Figure 12b shows the projected 2043 total peak-hour traffic volumes at the key study-area intersections. These volumes are the sum of the 2043 baseline traffic volumes (from Figures 7a and 7b) and the long-term site-generated traffic volumes (from Figures 10a and 10b).

Figure 12c shows the level of service analysis results for the key area intersections based on the projected 2043 total volumes. The figure also shows the general intersection lane geometry and intersection traffic control used in the analysis.

## **LEVEL OF SERVICE ANALYSIS**

The key area future signalized intersections have been analyzed to determine the projected intersection levels of service for short-term and 2043 baseline and total traffic scenarios for the morning and afternoon peak-hour periods using Synchro. The key area future stop-sign-controlled and modern-roundabout-controlled intersections have been analyzed based on the unsignalized-intersection analysis procedures from the *Highway Capacity Manual 6th Edition*. Figures 6c, 7c, 11c, and 12c show the level of service analysis results. The level of service reports are attached.

### **Intersection #1: Vollmer Road/Burgess Road**

The stop-sign-controlled intersection of Vollmer/Burgess is currently operating at LOS E for the eastbound approach and LOS F for the westbound approach during the afternoon peak hour. The intersection currently has one-lane approaches in all directions. If this intersection were converted to all-way, stop-sign control, all approaches are projected to operate at LOS D or better based on the short-term total traffic volumes and the existing lane geometry. Based on existing traffic volumes shown in Figure 5 and the criteria contained in the *El Paso County Engineering Criteria Manual (ECM)*, multiple auxiliary turn lanes would be required to meet the *ECM* standard. LSC recommends this intersection instead be reconstructed as a modern one-lane roundabout. As a modern roundabout, it is projected to operate at LOS C or better for all approaches during the peak hours, based on the projected short-term and 2043 total traffic volumes.

### **Intersection #4: Vollmer Road/Briargate Parkway**

The section of Briargate Parkway between Vollmer Road and Sterling Ranch Road is planned to be constructed to its final cross section in the short term. The intersection of Vollmer/Briargate could operate at a satisfactory level of service (LOS C or better) in the short term as a stop-sign-controlled intersection.

By 2043, it was assumed Briargate Parkway would be extended west to Black Forest Road and East to Towner Avenue and that the intersection of Vollmer/Briargate will be converted to traffic-signal control. The intersection of Vollmer/Briargate is projected to operate at an overall LOS C during the peak hours as a signalized intersection, based on the projected 2043 total traffic volumes shown in Figure 12b and the lane geometry shown in Figure 12c.

### **Intersection #5: Briargate Parkway/Sterling Ranch Road**

The section of Briargate Parkway between Vollmer Road and Sterling Ranch Road is planned to be constructed to its final cross section in the short term. The intersection of Briargate/Sterling Ranch could operate at a satisfactory level of service (LOS C or better) in the short term as a stop-sign-controlled intersection.

By 2043, it was assumed Briargate Parkway would be extended west to Black Forest Road and East to Towner Avenue and that the intersection of Briargate/Sterling Ranch will be converted to traffic-signal control. The intersection of Briargate/Sterling Ranch is projected to operate at an overall LOS C during the peak hours as a signalized intersection, based on the projected 2043 total traffic volumes shown in Figure 12b and the lane geometry shown in Figure 12c.

### **Intersection #12: Marksheffel Road/Vollmer Road**

Marksheffel Road is planned to be constructed between Vollmer Road and Sterling Ranch Road in the short-term future. The intersection of Marksheffel/Vollmer is initially planned to be stop-sign controlled. Based on the projected short-term total traffic volumes, the westbound left-turn movement is projected to operate at LOS E during the morning peak hour and LOS F during the afternoon peak hour. This intersection is planned as a future signalized intersection. However, traffic-signal warrant(s) may not be met in the short-term. It is not uncommon for the minor movements at a stop-sign-controlled intersection to operate at LOS E or F as the traffic volumes approach the levels needed to meet vehicular-volume traffic-signal warrants.

By 2043, it was assumed that Marksheffel Road would be constructed west to Briargate Parkway and that the intersection of Marksheffel/Vollmer will be converted to traffic-signal control. The intersection of Marksheffel/Vollmer is projected to operate at an overall LOS C or better during the peak hours as a signalized intersection, based on the projected 2043 total traffic volumes shown in Figure 12b and the lane geometry shown in Figure 12c.

### **Intersection #13: Marksheffel Road/Sterling Ranch Road**

Marksheffel Road is planned to be constructed between Vollmer Road and Sterling Ranch Road in the short-term future. The intersection of Marksheffel/Sterling Ranch is initially planned to be stop-sign controlled. Based on the projected short-term total traffic volumes, the southbound left-turn movement is projected to operate at LOS C during the morning peak hour and LOS E during the afternoon peak hour. This intersection is planned as a future signalized intersection. However, traffic-signal warrant(s) may not be met in the short-term. It is not uncommon for the minor movements at a stop-sign-controlled intersection to operate at LOS E or F as the traffic volumes approach the levels needed to meet vehicular-volume traffic-signal warrants.

The intersection of Marksheffel/Sterling Ranch is projected to operate at an overall LOS C or better during the peak hours as a signalized intersection, based on the projected 2043 total traffic volumes shown in Figure 12b and the lane geometry shown in Figure 12c.

### **Sterling Ranch Road Site Access Points (Intersection #305 & #306)**

The intersections of Lake Tahoe Drive/Sterling Ranch Road (#305) and Newport Beach Place/Sterling Ranch Road (#306) are projected to operate at a satisfactory level of service (LOS C or better) during the peak hours as stop-sign-controlled intersections, based on the projected short-term and 2043 total traffic volumes.

### **Intersection #8: Oak Park Drive/Sterling Ranch Road**

The intersection of Oak Park Drive/Sterling Ranch Road is not planned to be constructed in the short-term.

By 2043, it was assumed that Oak Park Drive would be constructed between Sterling Ranch Road and Banning Lewis Parkway. It was also assumed that the future K-8 School planned for the parcel southwest of Briargate/Sterling Ranch would be constructed and that an **exit-only** access would be constructed aligning with the Oak Park/Sterling Ranch intersection. Based on the 2043 total traffic volumes shown in Figure 12b and the lane geometry shown in Figure 12c, the eastbound and westbound left-turn movements are projected to operate at LOS E during the morning peak hour and LOS C during the afternoon peak hour. Alternate traffic control may be needed to achieve a satisfactory level of service at this intersection. Further analysis of this intersection should be conducted when the number of students, site layout, and proposed access plan for the school site are determined.

### **ALL-WAY, STOP-SIGN-CONTROL WARRANT ANALYSIS – VOLLMER ROAD/BURGESS ROAD**

The intersection of Vollmer Road/Burgess Road was analyzed to determine if a multi-way stop-control warrant is projected to be met, based on the existing total traffic volumes. The analysis is based on the following guidance contained in section 2B.07.04.C of the *2009 Manual on Uniform Traffic Control Devices (MUTCD)*

Minimum volumes:

1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and
2. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but

3. If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.

Table 3 shows the results of the analysis. As the posted speed limit on both Vollmer Road and Burgess Road is 45 miles per hour, the analysis is based on 70 percent of the values provided in Items 1 and 2 as allowed for under Item 3.

As shown in Table 3, the All-Way, Stop-Sign Control Warrant is currently met at the intersection of Vollmer/Burgess.

### **SIGNAL WARRANT ANALYSIS – VOLLMER ROAD/BURGESS ROAD**

The intersection of Vollmer/Burgess was analyzed to determine if the thresholds for Four-Hour and/or Eight-Hour Vehicular-Volume Traffic-Signal Warrant thresholds are currently met based on the existing and short-term total traffic volumes. Table 4 shows the results of the analysis.

As shown on Table 4, the intersection of Vollmer/Burgess currently meets the criteria for a Four-Hour Vehicular Volume Traffic-Signal Warrant but is not anticipated to meet the criteria for an Eight-Hour Vehicular Volume Traffic Signal Warrant based on both the existing and short-term total traffic volumes.

### **PRELIMINARY SIGNAL WARRANT THRESHOLD ANALYSIS (AM AND PM PEAK HOURS) – MARKSHEFFEL ROAD/VOLLMER ROAD AND MARKSHEFFEL ROAD/STERLING RANCH ROAD**

The intersections of Marksheffel/Vollmer and Marksheffel/Sterling Ranch were analyzed to determine if the thresholds for Four-Hour and/or Eight-Hour Vehicular-Volume Traffic-Signal Warrant thresholds would be reached or exceeded, based on the projected short-term peak-hour traffic volumes only. In order for an Eight-Hour Vehicular-Volume Traffic-Signal Warrant to be satisfied, the volume threshold would need to be met for six additional hours of the day and in order for a Four-Hour Vehicular Volume Traffic Signal Warrant to be satisfied, the volume threshold would need to be met for two additional hours of the day. For example, the four-hour warrant would be satisfied with the volume thresholds met for one hour in the morning, two hours (instead of the one-hour peak) during the afternoon peak period, and an hour during the mid-afternoon.

This “cursory”/planning-level analysis has been provided at the Preliminary Plan level to identify intersections which may need to be signalized in the short-term future. Detailed analysis of all applicable signal warrants should be evaluated with Filing submitted. The satisfaction of warrants does not indicate that a signal must be installed. The decision to require a signal to be installed rests with the County.

Table 5 shows the results of the analysis for the intersection of Marksheffel/Vollmer and Table 6 shows the results of the analysis for the intersection of Marksheffel/Sterling Ranch. As shown in Tables 5 and 6, the projected short-term morning and afternoon peak-hour traffic volumes at both intersections are projected to meet the thresholds for both Four-Hour and Eight-Hour Vehicular-Volume Traffic-Signal Warrants. This analysis indicates that traffic-signal warrant(s) may be met at both of these intersections prior to buildout of SRE Filing 5 Preliminary Plan. Detailed analysis should be provided with each future filing within Sterling Ranch. Escrow towards these improvements may also need to be provided with each filing.

## **ROADWAY FUNCTIONAL CLASSIFICATIONS AND LANEAGE**

Figure 13 shows the recommended functional classifications and number of through lanes for the streets in the study area.

## **WAIVER AND DEVIATION REQUESTS**

No waivers to the *Land Development Code* (LDC) or deviations to the criteria contained in the *El Paso County Engineering Criteria Manual (ECM)* are needed for the proposed preliminary plan.

## **AREA MTCP 2040 ROADWAY IMPROVEMENT PROJECTS**

The *El Paso County 2016 Major Transportation Corridors Plan Update* identified the following 2040 roadway improvement projects within the study area:

- C13: Vollmer Road from Marksheffel Road to Stapleton Drive as a Rural 4-Lane Minor Arterial;
- N5: Stapleton Drive [Briargate Parkway] from Towner Road to Black Forest Road as a 4-Lane Urban Principal Arterial;
- N12: Marksheffel Road from Woodman Road to Research Parkway as a 4-Lane Urban Principal Arterial; and
- M11: Vollmer Road Bicycle & Primary Regional Trail from Marksheffel Road to Shoup Road.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Trip Generation**

- The Sterling Ranch East Filing 5 Preliminary Plan is projected to generate about 1,509 new external vehicle trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 28 vehicles would enter and 84 vehicles would exit the site. During the afternoon peak hour, which

generally occurs for one hour between 4:15 and 6:15 p.m., about 95 vehicles would enter and 56 vehicles would exit the site.

### Level of Service

- The stop-sign-controlled intersection of Vollmer/Burgess is currently operating at LOS E for the eastbound approach and LOS F for the westbound approach during the afternoon peak hour. This intersection currently meets the criteria for all-way, stop-sign control. Based on the short-term total traffic volumes and the existing lane geometry, all approaches at this intersection are projected to operate at LOS D or better during the peak hours. This intersection also currently meets the criteria for a 4-Hour Vehicular-Volume Traffic-Signal Warrant. However, as it is not anticipated to meet an 8-Hour Vehicular-Volume Traffic-Signal Warrant in the short term and it is projected to operate at a satisfactory level of service as an all-way, stop-sign-controlled intersection, LSC does not recommend this intersection be converted to signal control in the short-term future. Additionally, this intersection currently has one-lane approaches in all directions. Based on existing traffic volumes shown in Figure 5 and the criteria contained in the El Paso County *Engineering Criteria Manual (ECM)*, multiple auxiliary turn lanes would be required to meet the *ECM* standard. LSC recommends this intersection be reconstructed as a modern one-lane roundabout. As a modern roundabout, it is projected to operate at LOS C or better for all approaches during the peak hours, based on the projected short-term and 2043 total traffic volumes. This project may be required to contribute to future improvements at this intersection. Based on the projected site-generated traffic volumes (shown in Figure 9b) and the short-term total traffic volumes (shown in Figure 11b), the site is projected to contribute about 1.1% of the morning and afternoon peak-hour volumes at this intersection.
- The intersections of Vollmer/Briargate and Briargate/Sterling Ranch are projected to operate at a satisfactory level of service as stop-sign-controlled intersections in the short-term future. By 2043, these intersections will likely need to be converted to traffic-signal control. As signalized intersections, all movements are projected to operate at LOS D or better during the peak hours based on the projected 2043 total traffic volumes.
- Some of the movements at the intersections of Marksheffel/Vollmer and Marksheffel/Sterling Ranch Road are projected to operate at LOS E or LOS F during the peak hours, if they remain stop-sign controlled in the short-term future. Once signalized, all movements at these intersections are projected to operate at LOS D or better, based on the projected short-term and 2043 total traffic volumes.
- The intersections of Sterling Ranch Road/Lake Tahoe Drive and Sterling Ranch Road/Newport Beach Drive are projected to operate at a satisfactory level of service (LOS D or better) during the peak hours as stop-sign-controlled intersections, based on the projected short-term and 2043 total traffic volumes.
- The intersection of Oak Park Drive/Sterling Ranch Road is not planned to be constructed in the short-term. By 2043, it was assumed that Oak Park Drive would be constructed

between Sterling Ranch Road and Banning Lewis Parkway. It was also assumed that the future K-8 School planned for the parcel southwest of Briargate/Sterling Ranch would be constructed and that an **exit-only** access would be constructed aligning with the Oak Park/Sterling Ranch intersection. Based on the 2043 total traffic volumes shown in Figure 12b and the lane geometry shown in Figure 12c, the eastbound and westbound left-turn movements are projected to operate at LOS E during the morning peak hour and LOS C during the afternoon peak hour. Alternate traffic control may be needed to achieve a satisfactory level of service at this intersection. Further analysis of this intersection should be conducted when the number of students, site layout, and proposed access plan for the school site are determined.

### **Recommended Improvements**

- Table 7 shows detailed **intersection** improvements needed with SRE Filing 5 Preliminary Plan at the site-access points and the intersection of Briargate/Sterling Ranch. The recommended improvements are based on the short-term and 2043 total traffic volumes shown in Figures 12b and 12b and the criteria contained in the El Paso County *Engineering Criteria Manual (ECM)*.
- Table 8 shows a list of the **roadway segment** improvements in the vicinity of the site. Please see Figure 14 for a map of the key street segment locations. These recommendations are consistent with the LSC Sketch Plan TIS report.

### **TRANSPORTATION IMPROVEMENT FEE PROGRAM AND CREDIT AGREEMENTS**

The applicant will be required to participate in the Countywide Transportation Improvement Fee Program. These projects will annex into the 5 mil PID, which has a per-lot upfront building permit fee of \$2,527 per dwelling unit. The total building permit fee amount for the 160 lots within SRE Phase 1 Preliminary Plan would be \$195,360. Note: This is based on the current rate, which is subject to change. El Paso County updates this rate periodically.

A road fee credit agreement and development agreement and Subdivision Improvements Agreement will be required to address developer's road fee credits for construction of Vollmer Road. Additional credit agreements will be needed with each phase of construction to account for reimbursement of costs for the additional lanes and major intersection improvements.

\* \* \* \* \*

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

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By Jeffrey C. Hodsdon, P.E.  
Principal

JCH/KDF:jas

Enclosures: Tables 2-8  
Figures 1-14  
Appendix Table 1  
MTCP Maps  
Traffic Count Reports  
Level of Service Reports  
Crash History  
Appendix A

**Table 2**  
**Trip Generation Estimate**  
**Sterling Ranch East Filing No. 5**

| ITE Code | ITE Land Use                   | Quantity | Unit | Daily | Trip Generation Rates <sup>(1)</sup> |      |              |      | Total Trip Generated |              |     |              |     |
|----------|--------------------------------|----------|------|-------|--------------------------------------|------|--------------|------|----------------------|--------------|-----|--------------|-----|
|          |                                |          |      |       | AM Peak Hour                         |      | PM Peak Hour |      | Daily                | AM Peak Hour |     | PM Peak Hour |     |
|          |                                |          |      |       | In                                   | Out  | In           | Out  |                      | In           | Out | In           | Out |
| 210      | Single-Family Detached Housing | 160      | DU   | 9.43  | 0.18                                 | 0.53 | 0.59         | 0.35 | 1,509                | 28           | 84  | 95           | 56  |

Notes:

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

(2) DU = Dwelling Unit

Source: LSC Transportation Consultants, Inc.

Jun-23

**Table 3**  
**All Way Stop Sign Control Warrant Analysis**  
 Burgess Road/Vollmer Road

| Existing Traffic <sup>(1)</sup>            |   |   |  |       |                      |
|--|---|---|--|-------|----------------------|
| Hour                                       | Traffic Volumes (vehicles per hour)       |   | All-Way, Stop-Sign Control Warrant Analysis <sup>(2)</sup> |       |                      |
|  | Major Approach<br>Burgess Road<br>EB & WB | Minor Approach<br>Vollmer Road<br>NB & SB | Volume Thresholds  |       | Warrant<br>Threshold |
|  | Left/Thru/Right                           | Left/Thru/Right                           | Major  | Minor | Met?                 |
| 12-1 AM                                    | 9   | 9   | 210  | 140   | No                   |
| 1-2 AM                                     | 7   | 7   | 210  | 140   | No                   |
| 2-3 AM                                     | 7   | 7   | 210  | 140   | No                   |
| 3-4 AM                                     | 7   | 7   | 210  | 140   | No                   |
| 4-5 AM                                     | 17  | 17  | 210  | 140   | No                   |
| 5-6 AM                                     | 88  | 88  | 210  | 140   | No                   |
| 6-7 AM                                     | 251                                       | 251                                       | 210  | 140   | Yes                  |
| 7-8 AM                                     | 401                                       | 401                                       | 210  | 140   | Yes                  |
| 8-9 AM                                     | 388                                       | 388                                       | 210  | 140   | Yes                  |
| 9-10 AM                                    | 330                                       | 330                                       | 210  | 140   | Yes                  |
| 10-11 AM                                   | 331                                       | 331                                       | 210  | 140   | Yes                  |
| 11-12 PM                                   | 337                                       | 337                                       | 210  | 140   | Yes                  |
| 12-1 PM                                    | 858                                       | 89  | 210  | 140   | No                   |
| 1-2 PM                                     | 303                                       | 162                                       | 210  | 140   | Yes                  |
| 2-3 PM                                     | 326                                       | 170                                       | 210  | 140   | Yes                  |
| 3-4 PM                                     | 328                                       | 173                                       | 210  | 140   | Yes                  |
| 4-5 PM                                     | 406                                       | 188                                       | 210  | 140   | Yes                  |
| 5-6 PM                                     | 476                                       | 211                                       | 210  | 140   | Yes                  |
| 6-7 PM                                     | 281                                       | 118                                       | 210  | 140   | No                   |
| 7-8 PM                                     | 206                                       | 79  | 210  | 140   | No                   |
| 8-9 PM                                     | 152                                       | 56  | 210  | 140   | No                   |
| 9-10 PM                                    | 119                                       | 36  | 210  | 140   | No                   |
| 10-11 PM                                   | 42  | 10  | 210  | 140   | No                   |
| 11-12 AM                                   | 20  | 7   | 210  | 140   | No                   |
| <b>Total Hours That Meet the Threshold</b> |   |   |  |       | <b>11</b>            |
| <b>Warrant Met?</b>                        |   |   |  |       | <b>Yes</b>           |

Notes:

- (1) Based on peak hour traffic counts by LSC July 2022. Off peak traffic volumes are based on 24-hour CDOT traffic count data
- (2) The all-way, stop-stop control warrant analysis is based on the guidance found in the *Manual of Uniform Traffic Control Devices (MUTCD) Section 2B.07.04.C*

Per Section 2B.07.04.C.1 the major street approach volumes includes all eastbound and westbound traffic movements (left, through, and right) on Vollmer Road

Per Section 2B.07.04.C.2 the minor street approach volumes includes all northbound and southbound traffic movements on Burgess Road

As the posted speed limit on both Burgess Road and Vollmer Road exceeds 45 mph, the minimum vehicular volume warrants shown are 70 percent of the values provided in items 1 and 2.

No pedestrian volumes were included in the warrant analysis

Source: LSC Transportation Consultants, Inc.

**Table 4  
Traffic Signal Warrant Analysis  
Burgess Road/Vollmer Road**

Warrant Analysis<sup>(1)</sup>

| Hour   | Warrant 1: Eight Hour Vehicular Volume Evaluation |   |       |   |       |                    |    |           |     |                        |     | Warrant 2: Four Hour Vehicular Volume Evaluation |                           |     |
|--|---|---|-------|---|-------|--------------------|----|-----------|-----|------------------------|-----|--|---------------------------|-----|
|  | Major <sup>(2)</sup><br>Vollmer                   | Minor 1 <sup>(3)</sup><br>EB<br>Burgess |       | Minor 2 <sup>(3)</sup><br>WB<br>Burgess |       | Warrant Thresholds |    |           |     | Warrant Threshold Met? |     | 70% Warrant<br>Threshold<br>Minor<br>Minimum     | Warrant Threshold<br>Met? |     |
|  |   | Condition A (70%)                       |       | Condition B (70%)                       |       | North Leg          |    | South Leg |     | EB                     | WB  |  |                           |     |
|  |   | Major                                   | Minor | Major                                   | Minor | A                  | B  | A         | B   |                        |     |  |                           |     |
| <b>Existing Traffic<sup>(4)</sup></b>              |   |   |       |   |       |                    |    |           |     |                        |     |  |                           |     |
| 7-8 AM   | 182   | 56                                      | 345   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 8-9 AM   | 156   | 122                                     | 266   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 9-10 AM  | 170   | 107                                     | 223   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 10-11 AM   | 161   | 153                                     | 178   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 11-12 PM   | 191   | 156                                     | 181   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 12-1 PM  | 286   | 769                                     | 89    | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 1-2 PM   | 435   | 141                                     | 162   | 350                                     | 105   | 525                | 53 | Yes       | No  | Yes                    | No  | 165  | No                        | No  |
| 2-3 PM   | 580   | 156                                     | 170   | 350                                     | 105   | 525                | 53 | Yes       | Yes | Yes                    | Yes | 130  | Yes                       | Yes |
| 3-4 PM   | 597   | 155                                     | 173   | 350                                     | 105   | 525                | 53 | Yes       | Yes | Yes                    | Yes | 130  | Yes                       | Yes |
| 4-5 PM   | 473   | 218                                     | 188   | 350                                     | 105   | 525                | 53 | Yes       | No  | Yes                    | No  | 165  | Yes                       | Yes |
| 5-6 PM   | 325   | 265                                     | 211   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | 205  | Yes                       | Yes |
| Numbers of Hours the Warrant is Met                |   |   |       |   |       |                    |    | 4         | 2   | 4                      | 2   | 4  |                           | 4   |
| Warrant Met?                                       |   |   |       |   |       |                    |    | No        |     |                        |     | Yes  |                           |     |
| <b>Short-Term Background Traffic<sup>(4)</sup></b> |   |   |       |   |       |                    |    |           |     |                        |     |  |                           |     |
| 6-7 AM   | 258   | 126                                     | 204   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 7-8 AM   | 254   | 130                                     | 359   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 8-9 AM   | 216   | 283                                     | 276   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 9-10 AM  | 231   | 248                                     | 232   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 10-11 AM   | 219   | 355                                     | 186   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 11-12 PM   | 257   | 364                                     | 188   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 12-1 PM  | 336   | 1041                                    | 93    | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | 205  | Yes                       | No  |
| 1-2 PM   | 526   | 191                                     | 169   | 350                                     | 105   | 525                | 53 | Yes       | Yes | Yes                    | Yes | 130  | Yes                       | Yes |
| 2-3 PM   | 704   | 212                                     | 177   | 350                                     | 105   | 525                | 53 | Yes       | Yes | Yes                    | Yes | 65   | Yes                       | Yes |
| 3-4 PM   | 724   | 210                                     | 181   | 350                                     | 105   | 525                | 53 | Yes       | Yes | Yes                    | Yes | 65   | Yes                       | Yes |
| 4-5 PM   | 572   | 295                                     | 196   | 350                                     | 105   | 525                | 53 | Yes       | Yes | Yes                    | Yes | 130  | Yes                       | Yes |
| 5-6 PM   | 388   | 359                                     | 220   | 350                                     | 105   | 525                | 53 | Yes       | No  | Yes                    | No  | 205  | Yes                       | Yes |
| 6-7 PM   | 282   | 221                                     | 123   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| Numbers of Hours the Warrant is Met                |   |   |       |   |       |                    |    | 5         | 4   | 5                      | 4   | 6  |                           | 5   |
| Warrant Met?                                       |   |   |       |   |       |                    |    | No        |     |                        |     | Yes  |                           |     |
| <b>Short-Term Total Traffic<sup>(4)</sup></b>      |   |   |       |   |       |                    |    |           |     |                        |     |  |                           |     |
| 6-7 AM   | 260   | 128                                     | 204   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 7-8 AM   | 256   | 132                                     | 359   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 8-9 AM   | 218   | 287                                     | 276   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 9-10 AM  | 232   | 252                                     | 232   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 10-11 AM   | 221   | 361                                     | 186   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 11-12 PM   | 259   | 369                                     | 188   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| 12-1 PM  | 338   | 1059                                    | 93    | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | 205  | Yes                       | No  |
| 1-2 PM   | 531   | 194                                     | 169   | 350                                     | 105   | 525                | 53 | Yes       | Yes | Yes                    | Yes | 130  | Yes                       | Yes |
| 2-3 PM   | 710   | 215                                     | 177   | 350                                     | 105   | 525                | 53 | Yes       | Yes | Yes                    | Yes | 65   | Yes                       | Yes |
| 3-4 PM   | 730   | 214                                     | 181   | 350                                     | 105   | 525                | 53 | Yes       | Yes | Yes                    | Yes | 65   | Yes                       | Yes |
| 4-5 PM   | 576   | 300                                     | 196   | 350                                     | 105   | 525                | 53 | Yes       | Yes | Yes                    | Yes | 130  | Yes                       | Yes |
| 5-6 PM   | 391   | 365                                     | 220   | 350                                     | 105   | 525                | 53 | Yes       | No  | Yes                    | No  | 205  | Yes                       | Yes |
| 6-7 PM   | 284   | 225                                     | 123   | 350                                     | 105   | 525                | 53 | No        | No  | No                     | No  | Low Vol  | No                        | No  |
| Numbers of Hours the Warrant is Met                |   |   |       |   |       |                    |    | 5         | 4   | 5                      | 4   | 6  |                           | 5   |
| Warrant Met?                                       |   |   |       |   |       |                    |    | No        |     |                        |     | Yes  |                           |     |

Notes:  
 (1) Thresholds are based on 1 lane on the major approach and 1 lane on the minor approach with the 70% factor applied for a posted speed limit above 40 mph  
 (2) The major street traffic includes all movements (left, through, and right)  
 (3) The minor street traffic includes all movements (left, through, and right)  
 (4) Off peak traffic volumes are based on the 24-hour CDOT traffic count data

**Table 5**  
**Traffic Signal Warrant Analysis**  
Marksheffel Road/Vollmer Road

| Warrant Analysis <sup>(1)</sup>                        |                                 |                                     |  |                      |                          |                      |                    |       |             |       |                       |  |                  |                       |                           |                           |                           |                           |    |
|--|---------------------------------|-------------------------------------|--|----------------------|--------------------------|----------------------|--------------------|-------|-------------|-------|-----------------------|--|------------------|-----------------------|---------------------------|---------------------------|---------------------------|---------------------------|----|
| Warrant 1: Eight Hour Vehicular Volume Evaluation      |                                 |                                     |  |                      |                          |                      |                    |       |             |       |                       | Warrant 2: Four Hour Vehicular Volume Evaluation |                  |                       |                           |                           |                           |                           |    |
| Warrant Thresholds                                     |                                 |                                     |  |                      |                          |                      |                    |       |             |       |                       | Warrant Threshold Met?                           |                  | Short-Term Background |                           | Short-Term Total          |                           |                           |    |
| Hour   | Short-Term Background Traffic   |                                     | Sterling Ranch Fil 5 Generated Traffic |                      | Short-Term Total Traffic |                      | Warrant Thresholds |       |             |       | Short-Term Background |  | Short-Term Total |                       | Warrant Threshold Minimum | Warrant Threshold Met? WB | Warrant Threshold Minimum | Warrant Threshold Met? WB |    |
|  | Major <sup>(2)</sup><br>Vollmer | Minor <sup>(3)</sup><br>Marksheffel | Major<br>Vollmer                       | Minor<br>Marksheffel | Major<br>Vollmer         | Minor<br>Marksheffel | Condition A        |       | Condition B |       | Condition A           | Condition B                                      | Condition A      | Condition B           |                           |                           |                           |                           |    |
|  |                                 |                                     |  |                      |                          |                      | Major              | Minor | Major       | Minor |                       |  |                  |                       |                           |                           |                           |                           |    |
| <b>Short-Term Total Traffic<sup>(4)</sup></b>          |                                 |                                     |  |                      |                          |                      |                    |       |             |       |                       |  |                  |                       |                           |                           |                           |                           |    |
| 12-1 AM  | 48                              | 3                                   | 0                                      | 0                    | 48                       | 3                    | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | Low Volume                | No                        | Low Volume                | No                        |    |
| 1-2 AM   | 23                              | 3                                   | 0                                      | 0                    | 23                       | 3                    | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | Low Volume                | No                        | Low Volume                | No                        |    |
| 2-3 AM   | 16                              | 0                                   | 0                                      | 0                    | 16                       | 0                    | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | Low Volume                | No                        | Low Volume                | No                        |    |
| 3-4 AM   | 25                              | 3                                   | 0                                      | 0                    | 25                       | 3                    | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | Low Volume                | No                        | Low Volume                | No                        |    |
| 4-5 AM   | 41                              | 11                                  | 0                                      | 0                    | 41                       | 11                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | Low Volume                | No                        | Low Volume                | No                        |    |
| 5-6 AM   | 109                             | 28                                  | 0                                      | 1                    | 109                      | 29                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | Low Volume                | No                        | Low Volume                | No                        |    |
| 6-7 AM   | 326                             | 84                                  | 1                                      | 2                    | 327                      | 86                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | Low Volume                | No                        | Low Volume                | No                        |    |
| 7-8 AM   | 782                             | 145                                 | 1                                      | 4                    | 783                      | 149                  | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | 209                       | No                        | 209                       | No                        |    |
| 8-9 AM   | 873                             | 122                                 | 1                                      | 3                    | 874                      | 125                  | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | 182                       | No                        | 182                       | No                        |    |
| 9-10 AM  | 755                             | 77                                  | 1                                      | 2                    | 756                      | 79                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | 223                       | No                        | 222                       | No                        |    |
| 10-11 AM   | 876                             | 77                                  | 1                                      | 2                    | 877                      | 79                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | 181                       | No                        | 181                       | No                        |    |
| 11-12 PM   | 989                             | 73                                  | 2                                      | 2                    | 991                      | 75                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | 153                       | No                        | 152                       | No                        |    |
| 12-1 PM  | 838                             | 72                                  | 3                                      | 2                    | 841                      | 74                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | 191                       | No                        | 190                       | No                        |    |
| 1-2 PM   | 831                             | 76                                  | 3                                      | 2                    | 834                      | 78                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | 192                       | No                        | 192                       | No                        |    |
| 2-3 PM   | 957                             | 80                                  | 3                                      | 2                    | 960                      | 82                   | 600                | 150   | 900         | 75    | No                    | Yes  | No               | Yes                   | 161                       | No                        | 160                       | No                        |    |
| 3-4 PM   | 1017                            | 78                                  | 4                                      | 2                    | 1021                     | 80                   | 600                | 150   | 900         | 75    | No                    | Yes  | No               | Yes                   | 145                       | No                        | 144                       | No                        |    |
| 4-5 PM   | 1059                            | 97                                  | 5                                      | 3                    | 1064                     | 100                  | 600                | 150   | 900         | 75    | No                    | Yes  | No               | Yes                   | 132                       | No                        | 131                       | No                        |    |
| 5-6 PM   | 889                             | 96                                  | 5                                      | 3                    | 894                      | 99                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | 178                       | No                        | 177                       | No                        |    |
| 6-7 PM   | 609                             | 76                                  | 4                                      | 2                    | 613                      | 78                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | 286                       | No                        | 285                       | No                        |    |
| 7-8 PM   | 384                             | 56                                  | 3                                      | 2                    | 387                      | 58                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | Low Volume                | No                        | Low Volume                | No                        |    |
| 8-9 PM   | 314                             | 40                                  | 3                                      | 1                    | 317                      | 41                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | Low Volume                | No                        | Low Volume                | No                        |    |
| 9-10 PM  | 202                             | 31                                  | 2                                      | 1                    | 204                      | 32                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | Low Volume                | No                        | Low Volume                | No                        |    |
| 10-11 PM   | 114                             | 14                                  | 1                                      | 0                    | 115                      | 14                   | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | Low Volume                | No                        | Low Volume                | No                        |    |
| 11-12 AM   | 61                              | 9                                   | 1                                      | 0                    | 62                       | 9                    | 600                | 150   | 900         | 75    | No                    | No   | No               | No                    | Low Volume                | No                        | Low Volume                | No                        |    |
| <b>Numbers of Hours the Warrant Thresholds Are Met</b> |                                 |                                     |  |                      |                          |                      |                    |       |             |       |                       | 0  | 3                | 0                     | 3                         |                           | 0                         |                           | 0  |
| <b>Warrant Met?</b>                                    |                                 |                                     |  |                      |                          |                      |                    |       |             |       |                       | No   |                  | No                    |                           |                           | No                        |                           | No |

**Notes:**

- (1) Thresholds are based on 2 or more lanes on the major approach and 1 lane on the minor approach (Warrant evaluation assuming the westbound left turn only for the minor street)
- (2) The major street traffic includes all movements (left, through, and right)
- (3) The minor street traffic includes only the left turns from the minor street
- (4) Off peak hour traffic volumes are based on the projected peak hour traffic volumes, 72-hour machine counts conducted on Vollmer Road in November 2020 and vehicle time-of-day distribution data for single-family residential published by the Institute of Transportation Engineers

Source: LSC Transportation Consultants, Inc.

**Table 6**  
**Traffic Signal Warrant Analysis**  
 Marksheffel Road/Sterling Ranch Road

| Warrant Analysis <sup>(1)</sup>                        |                                  |   |                   |                      |                   |                          |             |                    |             |       |  |                        |             |                       |                           |                        |                           |                        |
|--|----------------------------------|---|-------------------|----------------------|-------------------|--------------------------|-------------|--------------------|-------------|-------|--|------------------------|-------------|-----------------------|---------------------------|------------------------|---------------------------|------------------------|
| Warrant 1: Eight Hour Vehicular Volume Evaluation      |                                  |   |                   |                      |                   |                          |             |                    |             |       | Warrant 2: Four Hour Vehicular Volume Evaluation |                        |             |                       |                           |                        |                           |                        |
| Short-Term Background Traffic                          |                                  | Sterling Ranch Filing No. 5 Generated Traffic |                   |                      |                   | Short-Term Total Traffic |             | Warrant Thresholds |             |       |  | Warrant Threshold Met? |             | Short-Term Background |                           | Short-Term Total       |                           |                        |
| Hour   | Major <sup>(2)</sup> Marksheffel | Minor <sup>(3)</sup> Sterling Ranch           | Major Marksheffel | Minor Sterling Ranch | Major Marksheffel | Minor Sterling Ranch     | Condition A |                    | Condition B |       | Condition A                                      | Condition B            | Condition A | Condition B           | Warrant Threshold Minimum | Warrant Threshold Met? | Warrant Threshold Minimum | Warrant Threshold Met? |
|  |                                  |   |                   |                      |                   |                          | Major       | Minor              | Major       | Minor | A  | B                      | A           | B                     |                           |                        |                           |                        |
| <b>Short-Term Total Traffic<sup>(4)</sup></b>          |                                  |   |                   |                      |                   |                          |             |                    |             |       |  |                        |             |                       |                           |                        |                           |                        |
| 12-1 AM  | 31                               | 7   | 4                 | 1                    | 35                | 8                        | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 1-2 AM   | 14                               | 7   | 2                 | 1                    | 16                | 8                        | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 2-3 AM   | 11                               | 0   | 2                 | 0                    | 13                | 0                        | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 3-4 AM   | 14                               | 7   | 2                 | 1                    | 16                | 8                        | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 4-5 AM   | 22                               | 28  | 2                 | 6                    | 24                | 34                       | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 5-6 AM   | 53                               | 69  | 4                 | 14                   | 57                | 83                       | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 6-7 AM   | 162                              | 205   | 13                | 42                   | 175               | 247                      | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 7-8 AM   | 368                              | 354   | 25                | 73                   | 393               | 427                      | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 8-9 AM   | 414                              | 298   | 29                | 62                   | 443               | 360                      | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | 369                       | No                     |
| 9-10 AM  | 359                              | 187   | 25                | 39                   | 384               | 226                      | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 10-11 AM   | 430                              | 187   | 33                | 39                   | 463               | 226                      | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | 359                       | No                     |
| 11-12 PM   | 505                              | 177   | 43                | 37                   | 548               | 214                      | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | 338                       | No                     | 316                       | No                     |
| 12-1 PM  | 521                              | 175   | 46                | 37                   | 567               | 212                      | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | 330                       | No                     | 307                       | No                     |
| 1-2 PM   | 539                              | 185   | 50                | 39                   | 589               | 224                      | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | 296                       | No                     |
| 2-3 PM   | 625                              | 194   | 58                | 41                   | 683               | 235                      | 600         | 150                | 900         | 75    | Yes  | No                     | Yes         | No                    | 280                       | No                     | 257                       | No                     |
| 3-4 PM   | 710                              | 188   | 71                | 39                   | 781               | 227                      | 600         | 150                | 900         | 75    | Yes  | No                     | Yes         | No                    | 245                       | No                     | 210                       | Yes                    |
| 4-5 PM   | 809                              | 235   | 88                | 49                   | 897               | 284                      | 600         | 150                | 900         | 75    | Yes  | No                     | Yes         | No                    | 198                       | Yes                    | 176                       | Yes                    |
| 5-6 PM   | 741                              | 232   | 86                | 48                   | 827               | 280                      | 600         | 150                | 900         | 75    | Yes  | No                     | Yes         | No                    | 230                       | Yes                    | 193                       | Yes                    |
| 6-7 PM   | 572                              | 185   | 72                | 39                   | 644               | 224                      | 600         | 150                | 900         | 75    | No   | No                     | Yes         | No                    | Low Volume                | No                     | 272                       | No                     |
| 7-8 PM   | 394                              | 135   | 52                | 28                   | 446               | 163                      | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 8-9 PM   | 374                              | 97  | 53                | 20                   | 427               | 117                      | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 9-10 PM  | 260                              | 75  | 38                | 16                   | 298               | 91                       | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 10-11 PM   | 131                              | 34  | 18                | 7                    | 149               | 41                       | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| 11-12 AM   | 75                               | 22  | 11                | 5                    | 86                | 27                       | 600         | 150                | 900         | 75    | No   | No                     | No          | No                    | Low Volume                | No                     | Low Volume                | No                     |
| <b>Numbers of Hours the Warrant Thresholds Are Met</b> |                                  |   |                   |                      |                   |                          |             |                    |             |       | 4  | 0                      | 5           | 0                     |                           |                        |                           |                        |
| <b>Warrant Met?</b>                                    |                                  |   |                   |                      |                   |                          |             |                    |             |       | No   |                        | No          |                       |                           |                        |                           |                        |
|  |                                  |   |                   |                      |                   |                          |             |                    |             |       |  |                        |             |                       |                           |                        |                           |                        |
|  |                                  |   |                   |                      |                   |                          |             |                    |             |       |  |                        |             |                       |                           |                        |                           |                        |

Notes:

- (1) Thresholds are based on 2 or more lanes on the major approach and 1 lane on the minor approach (Warrant evaluation assuming the southbound left turn only for the minor street)
- (2) The major street traffic includes all movements (left, through, and right)
- (3) The minor street traffic includes only the left turns from the minor street
- (4) Off peak hour traffic volumes are based on the projected peak hour traffic volumes, 72-hour machine counts conducted on Vollmer Road in November 2020 and vehicle time-of-day distribution data for single-family residential published by the Institute of Transportation Engineers

Source: LSC Transportation Consultants, Inc.

**Table 7  
Sterling Ranch East Filing 5  
Intersection Improvements**

| Item #  | Improvement   | Trigger   | Timing  | Responsibility  |
|---|---|---|---|---|
| <b>1) Burgess Road/Vollmer Road</b>                 |   |   |   |   |
| 1   | Reconstruct as a modern one-lane roundabout   | When the LOS degrades below LOS F   | Existing deficiency   | This intersection may be eligible intersection under the fee impact program |
| <b>5) Briargate Parkway/Sterling Ranch Road</b>     |   |   |   |   |
| 2   | Construct an eastbound left-turn lane on Briargate Parkway approaching Sterling Ranch Road. The lane should be 435' long plus a 200' taper.                   | eastbound left-turn volume > 10 vph   | With Sterling Ranch East Filing 1   | Sterling Ranch  |
| 3   | Construct an eastbound right-turn deceleration lane on Briargate Parkway approaching Sterling Ranch Road. The lane should be 235' long plus a 200' taper.     | eastbound right-turn volume > 25 vph  | With Sterling Ranch East Filing 1   | Sterling Ranch  |
| 4   | Construct a northbound to eastbound right-turn acceleration lane on Briargate Parkway at Sterling Ranch Road. The lane should be 580' long plus a 180' taper. | northbound right-turn volume > 50 vph   | Long Term<br>(with the construction of Briargate Parkway east of Sterling Ranch Road)   | Sterling Ranch  |
| 5   | Construct a westbound left-turn lane on Briargate Parkway approaching Sterling Ranch Road. The lane should be 285' long plus a 200' taper.                    | westbound left-turn volume > 10 vph   | Long Term<br>(with the construction of Briargate Parkway east of Sterling Ranch Road)   | Sterling Ranch  |
| 6   | Construct an eastbound right-turn deceleration lane on Briargate Parkway approaching Sterling Ranch Road. The lane should be 235' long plus a 200' taper.     | eastbound right-turn volume > 25 vph  | Long Term<br>(with the construction of Briargate Parkway east of Sterling Ranch Road)   | Sterling Ranch  |
| 7   | Construct a southbound to westbound right-turn acceleration lane on Briargate Parkway at Sterling Ranch Road. The lane should be 580' long plus a 180' taper. | southbound right-turn volume > 50 vph   | With Sterling Ranch East Filing 2   | Sterling Ranch  |
| <b>8) Sterling Ranch Road/Oak Park Place</b>        |   |   |   |   |
| 8   | Construct a southbound left-turn lane on Sterling Ranch Road approaching Oak Park Place. The lane should be 220' long plus a 160' taper.                      | southbound left-turn volume > 25 vph  | A center painter median is part of the standard Non-Residential Collector cross section and a left-turn lane is planned with Sterling Ranch East Filing 1   | Sterling Ranch  |
| 9   | Construct a northbound right-turn deceleration lane on Sterling Ranch Road approaching Oak Park Place. The lane should be 155' long plus a 160' taper.        | northbound right-turn volume > 50 vph   | Planned with Sterling Ranch East Filing 5   | Sterling Ranch  |
| <b>12) Marksheffel Road/Vollmer Road</b>            |   |   |   |   |
| 10  | Signalization of the intersection   | Once warrants are met. The decision on timing of traffic signal installation rests with El Paso County Public Works.  | Not Anticipated With Sterling Ranch East Filing 5   | This intersection may be eligible intersection under the fee impact program |
| <b>13) Marksheffel Road/Sterling Ranch Road</b>     |   |   |   |   |
| 11  | Signalization of the intersection   | Once warrants are met. The decision on timing of traffic signal installation rests with The City of Colorado Springs. | Not Anticipated With Sterling Ranch East Filing 5   | SRMD#3  |
| <b>305) Sterling Ranch Road/Lake Tahoe Drive</b>    |   |   |   |   |
| 12  | Construct an northeastbound left-turn deceleration lane on Sterling Ranch Road approaching Lake Tahoe Drive. The lane should be 225' long plus a 160' taper   | northeastbound left-turn volume > 25 vph  | With Sterling Ranch East Filing 1   | Sterling Ranch  |
| 13  | Construct a southwestbound left-turn lane on Sterling Ranch Road approaching Lake Tahoe Drive. The lane should be 205' long plus a 200' taper.                | southwestbound left-turn volume > 25 vph  | The left-turn volumes are not projected to exceed the threshold, however, a center painter median is part of the standard Non-Residential Collector cross section and a left-turn lane is planned with Sterling Ranch East Filing 1 | Sterling Ranch  |
| 14  | Construct an northeastbound right-turn deceleration lane on Sterling Ranch Road approaching Lake Tahoe Drive. The lane should be 155' long plus a 160' taper  | northeastbound right-turn volume > 50 vph   | Planned with Sterling Ranch East Filing 5   | Sterling Ranch  |
| <b>306) Sterling Ranch Road/Newport Beach Drive</b> |   |   |   |   |
| 14  | Construct a northeastbound left-turn lane on Sterling Ranch Road approaching Newport Beach Drive. The lane should be 205' long plus a 200' taper.             | northeastbound left-turn volume > 25 vph  | With Sterling Ranch East Filing 1   | Sterling Ranch  |
| 15  | Construct a southwestbound left-turn lane on Sterling Ranch Road approaching Newport Beach Drive. The lane should be 205' long plus a 200' taper.             | southwestbound left-turn volume > 25 vph  | The left-turn volumes are not projected to exceed the threshold, however, a center painter median is part of the standard Non-Residential Collector cross section and a left-turn lane is planned with Sterling Ranch East Filing 1 | Sterling Ranch  |

Source: LSC Transportation Consultants, Inc. (January 2024)

**Table 8**

**Roadway Segment Improvements**

**Sterling Ranch East Filing 5 Preliminary Plan**

(Page 1 of 2)

| Segment ID <sup>(1)</sup><br>(See Figure 14 for map) | Improvement Description   | Timing   | Design ADT (vpd)  | Projected 2042 ADT (vpd) | Responsibility  |
|--|---|--|---|--------------------------|---|
| V1<br>(Short-Term) Northbound                        | UPDATE (November 2023): It is our understanding that a meeting(s) with JR Engineering/the applicant, City staff and County staff were held, that a short-term/interim improvement to segment V1 will not be required. The original LSC recommendation for this segment was for restriping. However, City staff indicated that the striped bike lane in the southbound direction needs to remain.                        | Updated November 2023 - It is our understanding that following a meeting with the City of Colorado Springs and El Paso County, a V1 interim shoulder improvement will no longer be required. | 5,500<br>(Directional northbound)                         | 16,275                   | N/A   |
| V1<br>(Short-Term) Southbound                        |   |  | 10,000<br>(Directional southbound)                        |                          |   |
| V1   | Improve Vollmer Road between Dry Needle Place and the Sterling Ranch south boundary to a standard 4-Lane Urban Minor Arterial Cross Section (Add a second northbound through lane and painted center median) <sup>(2)</sup>   | Intermediate-Term Future   | 20,000  |                          | Updated November 2023<br>Adjacent parcel owner which could potentially include: <ul style="list-style-type: none"> <li>“Pioneer Landscape Center Parcel” (5300000742) (redevelopment is unlikely in the foreseeable future)</li> <li>“Schmidt Parcel” west of Vollmer Rd (5200000571)</li> <li>The triangular parcels southeast of Vollmer/Marksheffel (5232400001 and 5232400003)</li> </ul> |
| V2   | Improve Vollmer Road between the Sterling Ranch south boundary to Lochwinnoch Lane/Sterling property boundary to a standard 4-Lane Urban Minor Arterial Cross Section <sup>(2)</sup>  | Short-Term Future<br>(With Sterling Ranch Fil No. 2 Or Sterling Ranch Phase 2)<br>Updated November 2023:<br>In Progress to be complete by November 2023                                      | 20,000<br>(Note: Existing Capacity 8,000 <sup>(3)</sup> ) | 17,475                   | Sterling Ranch  |
| V3   | <b>Short Term:</b> Improve Vollmer Road from Lochwinnoch Lane to Sterling Ranch boundary (northeast of Glider Loop) to provide 36’ of pavement (existing pavement 1 approx. 23.38’) and stripe for one through lane and plus a 6’ paved, striped outside shoulder in each direction <sup>(2)</sup>  | Updated November 2023 –<br>Future as required due to net increase traffic demand. The construction documents have been approved.   | 11,000<br>(Note: Existing Capacity 8,000)                 | 17,380                   | Sterling Ranch  |
|  | <b>Long Term:</b> Improve Vollmer Road from Lochwinnoch Lane to Sterling Ranch boundary (northeast of Glider Loop) to a standard 4-Lane Urban Minor Arterial Cross Section <sup>(2)</sup>   | Long-Term Future   | 20,000  |                          | By others - pursuant to the recent development agreement between Sterling Ranch and EPC.  |
| V4   | Improve Vollmer Road from Sterling Ranch boundary (northeast of Glider Loop) to Briargate Parkway to a standard 4-Lane Urban Minor Arterial Cross Section <sup>(2)</sup> Update November 2023 - with transition section to the existing two-lane section to the south as shown on the Vollmer North CDs. Improvements consist of curb and gutter on west side (as most of the east side is already built) and repaving. | Sections V4, V5, V6 to be constructed by <b>May 2024</b>   | 20,000  | 16,445                   | Sterling Ranch  |
| V5   | Improve Vollmer Road from Briargate Parkway to Jane Kirkham Drive to a standard 4-Lane Urban Minor Arterial Cross Section <sup>(2)</sup>  | Sections V4, V5, v6 to be constructed by <b>May 2024</b>   | 20,000  | 11,690                   | Sterling Ranch  |
| V6   | Improve Vollmer Road from Jane Kirkham Drive to Sam Bass Drive to a standard 4-Lane Urban Minor Arterial Cross Section <sup>(2)</sup>   | Sections V4, V5, v6 to be constructed by <b>May 2024</b>   | 20,000  | 11,425                   | Sterling Ranch  |
| V7   | Improve Vollmer Road between Sam Bass Drive and Poco Road to a 4-lane Urban Minor Arterial but with necessary lane transitions, redirect tapers, etc. south of Poco to adequately transition between the 4-Lane Urban Minor Arterial Cross Section and the 2-Lane Rural Arterial Cross Section north of Poco Road.  | Sections V4, V5, v6 to be constructed by <b>May 2024</b>   | 20,000  | 10,090                   | Sterling Ranch  |
| V8   | Improve Vollmer Road from Poco Road to Shoup Road to a Rural 2-Lane Arterial Cross Section <sup>(2)</sup>   | Long-Term Future   | 10,000  | 11,790                   | El Paso County<br>Project ID U-12   |

Part 1/2 of this table (see Part 2 on next page)

Notes:

(1) See Figure 14

(2) Adequate transition/redirect tapers would be needed between the various cross sections on Vollmer Road. Based on the criteria contained in Table 2-29 of the *El Paso Engineering Criteria Manual* an appropriate taper ratio for a roadway with a design speed of 40 mile per hour is 20:1

(3) Source: Table 20 Road Impact Fee Study Updated November 16, 2016

Source: LSC Transportation Consultants, Inc. (December, 2023)

**Table 8**

**Roadway Segment Improvements**

**Sterling Ranch East Filing 5 Preliminary Plan**

(Page 2 of 2)

| Segment ID <sup>(1)</sup><br>(See Figure 14<br>for map) | Improvement Description   | Timing  | Design ADT<br>(vpd) | Projected<br>2042 ADT<br>(vpd) | Responsibility  |
|---|---|---|---------------------|--------------------------------|---|
| SR1   | Construct Sterling Ranch Road as an Urban Non-Residential Collector from Marksheffel Road to Dines Boulevard  | <u>Completed</u>  | 20,000              | 14,840                         | Sterling Ranch  |
| SR2   | Construct Sterling Ranch Road as an Urban Non-Residential Collector from Dines Boulevard to Briargate Parkway   | <b>Short-Term - with SRE Preliminary Plan 1</b>   | 20,000              | 10,275                         | Sterling Ranch  |
| SR3   | Construct Sterling Ranch Road as an Urban Collector from Briargate Parkway to Vancouver Street.   | <b>Short-Term - with SRE Preliminary Plan 1</b>   | 10,000              | 9,300                          | Sterling Ranch  |
| SR4   | Construct Sterling Ranch Road from Vancouver Street north to Arroya (or ultimate north terminus)  | Long-Term Future  | 10,000              | 4,260                          | Sterling Ranch  |
| M1  | Construct Marksheffel Road as an Urban Principal Arterial to City of Colorado Springs standards in 107' of right-of-way between Vollmer Road and Sterling Ranch Road  | <u>Completed</u>  | 40,000              | 23,370                         | Sterling Ranch  |
| M2  | Construct Marksheffel Road as an Urban Principal Arterial to City of Colorado Springs standards in 107' of right-of-way between Sterling Ranch Road and the south boundary of the Sterling Ranch Master Plan Area.<br><b>NOTE: With the completion of this improvement the connection between Vollmer Road and Woodmen Road will be completed</b> | To be completed in 2024   | 40,000              | 29,600                         | Sterling Ranch  |
| M3  | Construct Marksheffel Road between the south boundary of the Sterling Ranch Master Plan Area and Woodmen Road<br>(Note this segment is located within the City of Colorado Springs)   | <u>Completed</u> (by Others)  | 40,000              | 24,525                         | Others (Completed)  |
| M4  | Construct Marksheffel Road between Black Forest Road and Vollmer Road   | Long-Term Future  | 40,000              | 27,910                         | Others  |
| B1  | Construct the full section of Briargate Pkwy (4-Lane Principal Arterial) between Vollmer Road and Wheatland Drive   | <b>Full section to be completed in 2023</b> with Homestead at Sterling Ranch Filing No. 1 | 40,000              | 24,745                         | Sterling Ranch  |
| B2  | Construct Briargate Pkwy ( <b>full section</b> ) as a 4-Lane Principal Arterial between Wheatland Dr and Sterling Ranch Road  | <b>Full section to be completed in 2023 or Spring 2024</b>                                | 40,000              | 26,375                         | Sterling Ranch  |
| B3  | Construct Briargate Pkwy as a 4-Lane Principal Arterial between Sterling Ranch Road and Banning Lewis Parkway   | Intermediate Term   | 40,000              | 22,365                         | Sterling Ranch  |
| B4  | Construct Stapleton Road as a 4-Lane Principal Arterial between Banning Lewis Parkway and Meridian Road (including upgrade of existing rural two-lane segment between Towner and Meridian)  | Long-Term Future  | 40,000              | 17,945                         | Others  |
| B5  | Construct Briargate Pkwy as a 4-Lane Principal Arterial between its current terminus and Black Forest Road and between Black Forest Road and Vollmer Road   | Long-Term Future  | 40,000              | 24,340                         | Others  |
| BL1   | Construct Banning Lewis Parkway as a 4-Lane Principal Arterial between the south Sterling Ranch boundary and Briargate Pkwy   | Long-Term Future  | 40,000              | 20,320                         | Future- TBD with the future preliminary plan for that area-potentially, financial assurances for half-section, west-side half-section or full-section w/ cost recover may be required |
| BL2   | Construct Banning Lewis Parkway as a 4-Lane Principal Arterial between Woodmen Road and the south Sterling Ranch boundary<br>(Note this segment will be located within the City of Colorado Springs)  | Long-Term Future  | 40,000              | 28,480                         | Others  |
| W1  | Widen Woodmen Road from 4-lane to 6-lane section from Powers Boulevard to US 24   | Long-Term Future  | 72,000              | 66,690                         | Others  |

**Part 2/2 of this table**

**Notes:**

- (1) See Figure 14
- (2) Adequate transition/redirect tapers would be needed between the various cross sections on Vollmer Road. Based on the criteria contained in Table 2-29 of the *El Paso Engineering Criteria Manual* an appropriate taper ratio for a roadway with a design speed of 40 mile per hour is 20:1
- (3) Source: Table 20 *Road Impact Fee Study Updated* November 16, 2016

Source: LSC Transportation Consultants, Inc. (December, 2023)



Not to scale

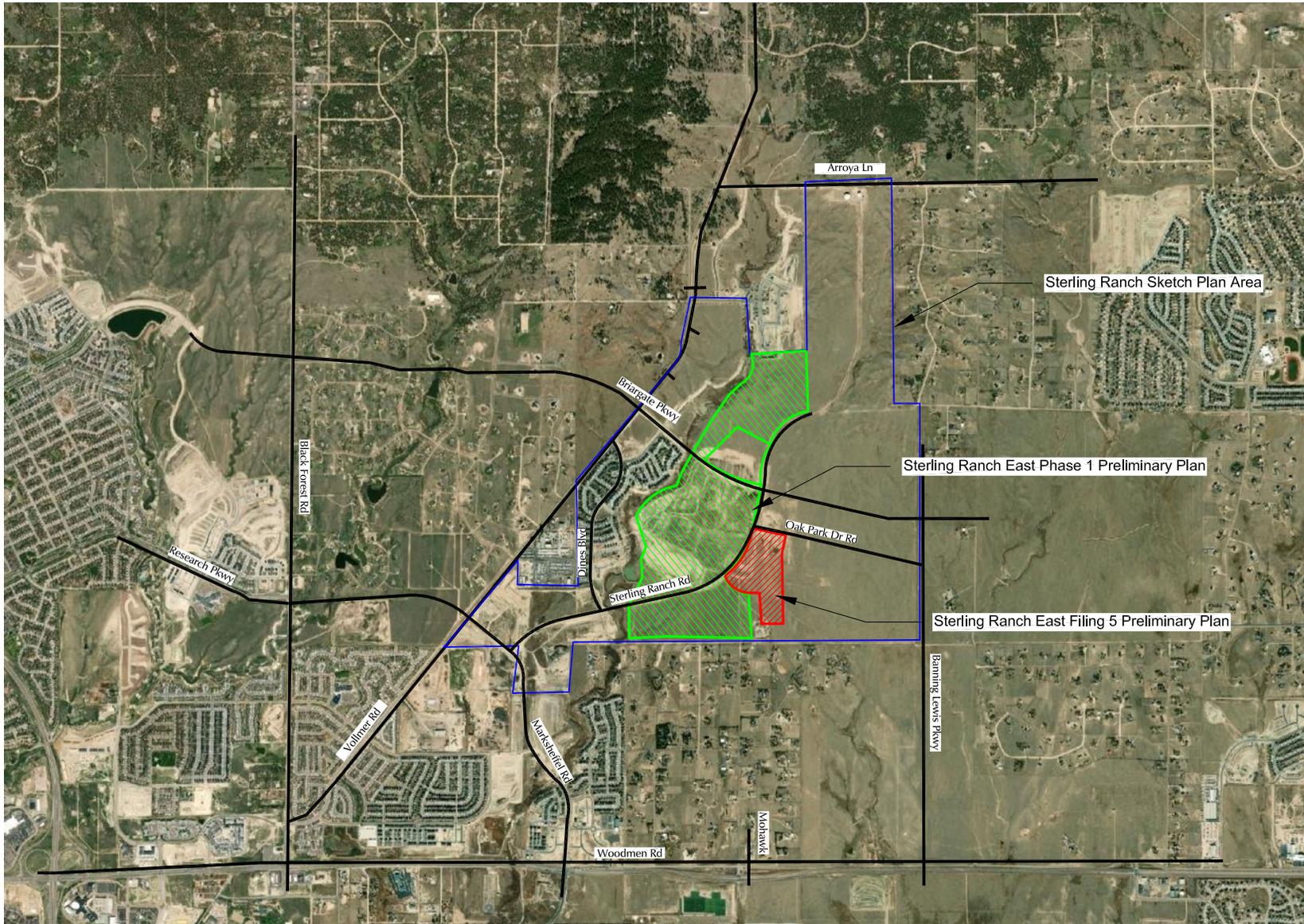


Figure 1

# Vicinity Map

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)





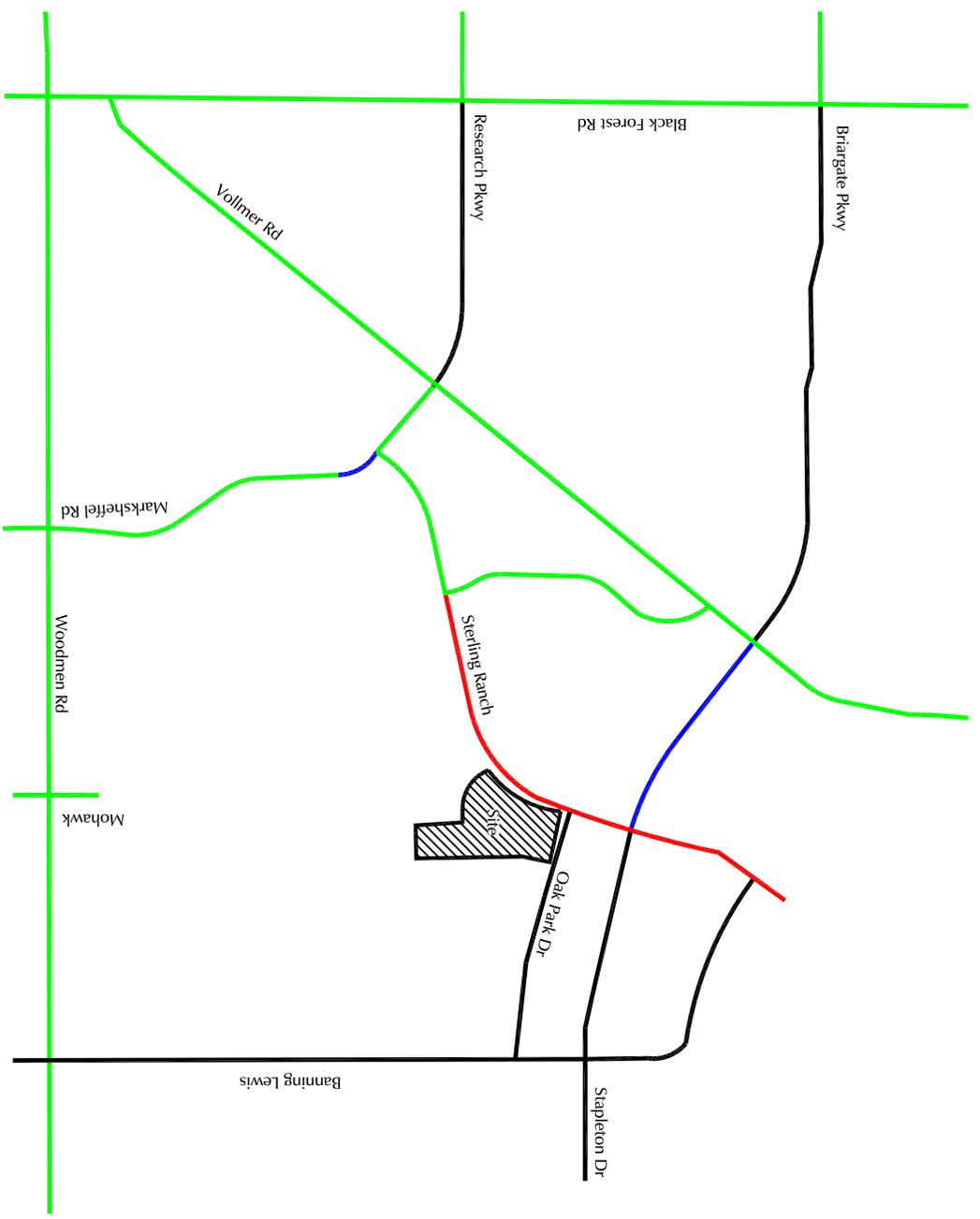
Approximate  
Scale  
1" = 300'

LEGEND:  
— Trail & Sidewalks  
 X,XXX' - Centerline Spacing of Intersections

Figure 2  
**Site Plan**

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)





- Roadway connection planned with Sterling Ranch East Preliminary Plan 1
- Roadway connection planned to be completed by 2024
- Existing Roadway
- Future Roadway

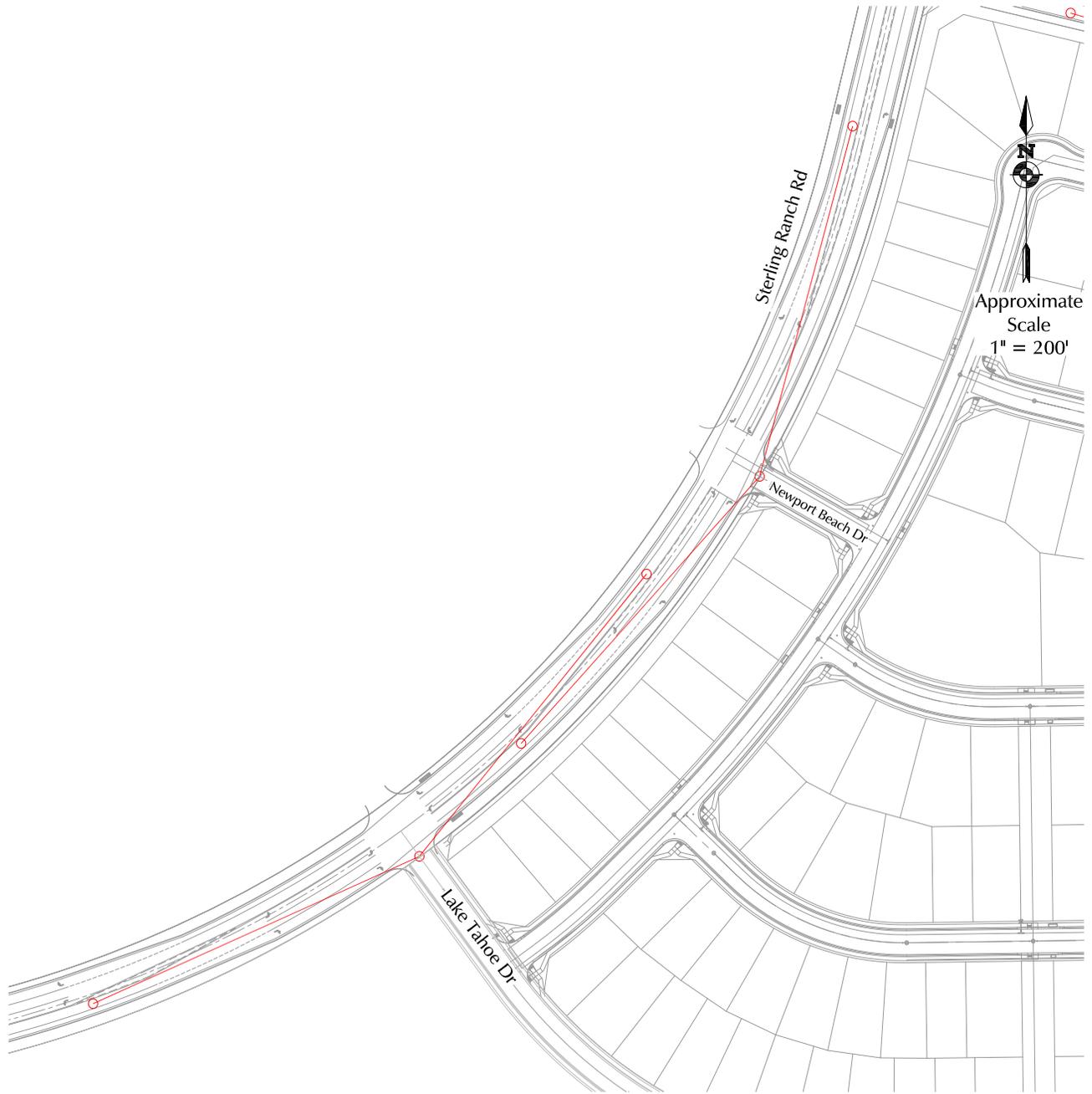


Not to scale

# Short-Term Roadway Connections

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)

Figure 3



Legend:  
 — ECM Required Intersection Sight Distance (445' from Table 2-21 based on a Design Speed of 40 mph)

Figure 4a  
**Sight Distance Analysis - Sterling Ranch Road**

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)



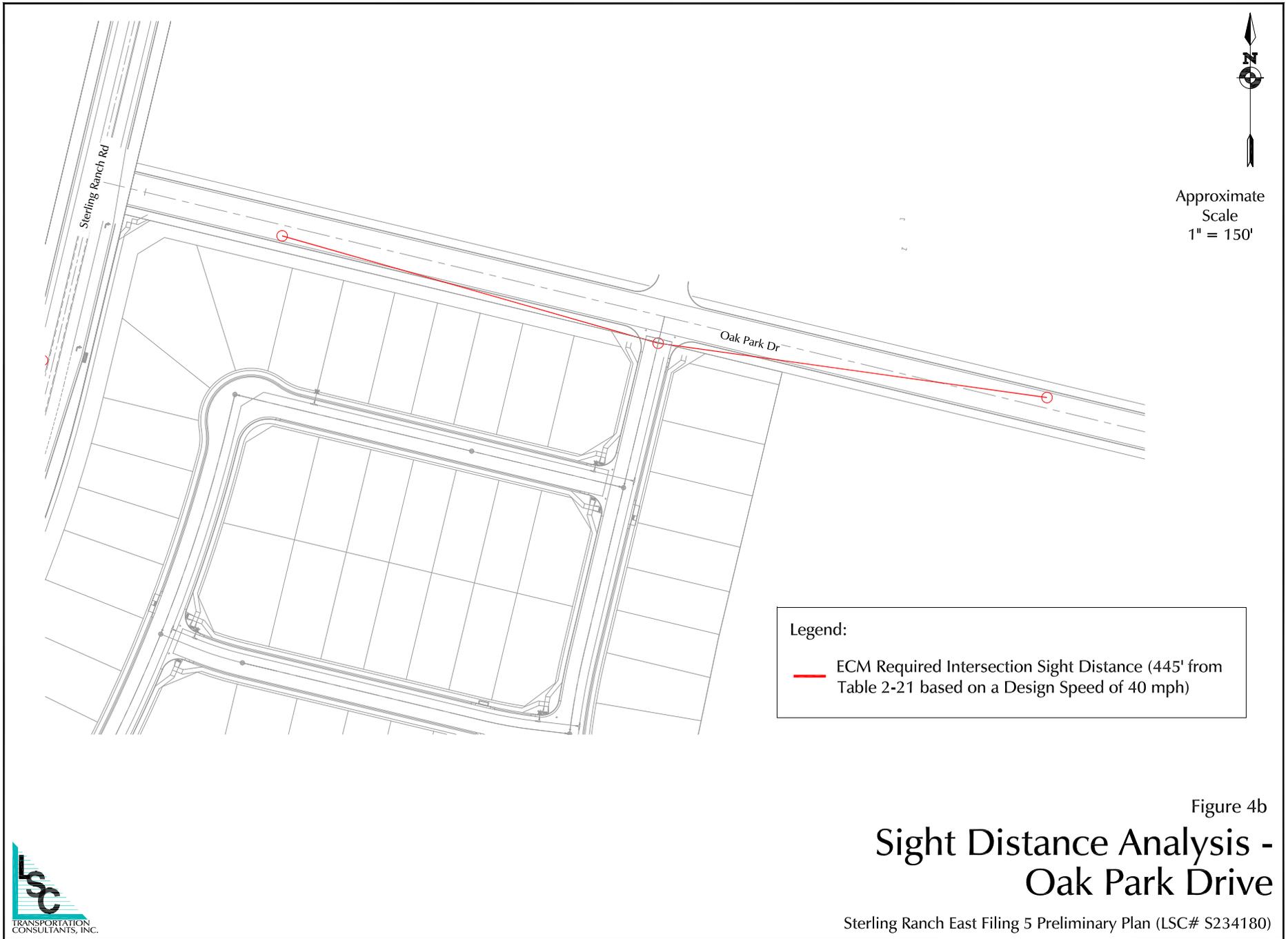


Figure 4b  
**Sight Distance Analysis -  
 Oak Park Drive**

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)



Approximate  
Scale  
1" = 200'

Legend:  
➤ ECM Required Stopping Sight Distance (155' from  
Table 2-17 based on a Design Speed of 25 mph)

# Sight Distance Analysis - Lake Tahoe Dr

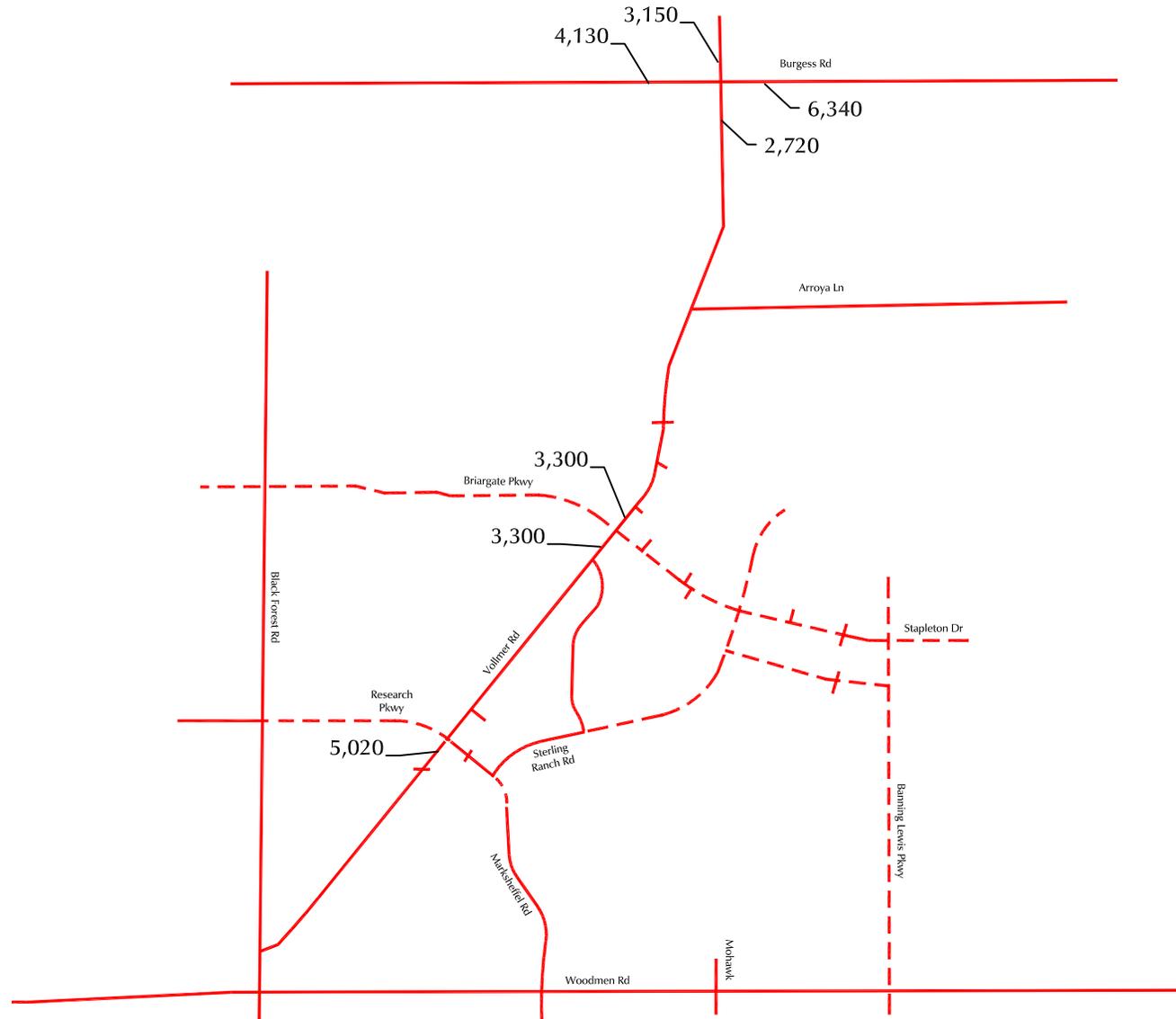
Figure 4c

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)





Not to scale



LEGEND:

XXX = Average Weekday Traffic (vehicles per day)(AWT) Estimates by LSC

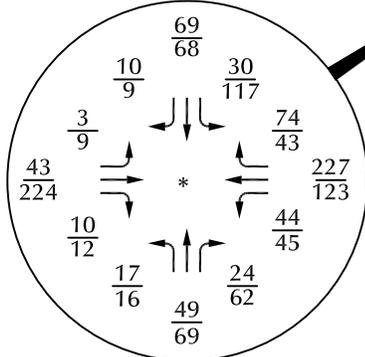
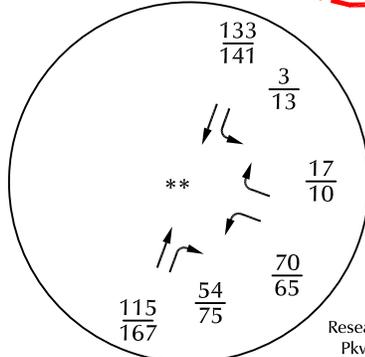
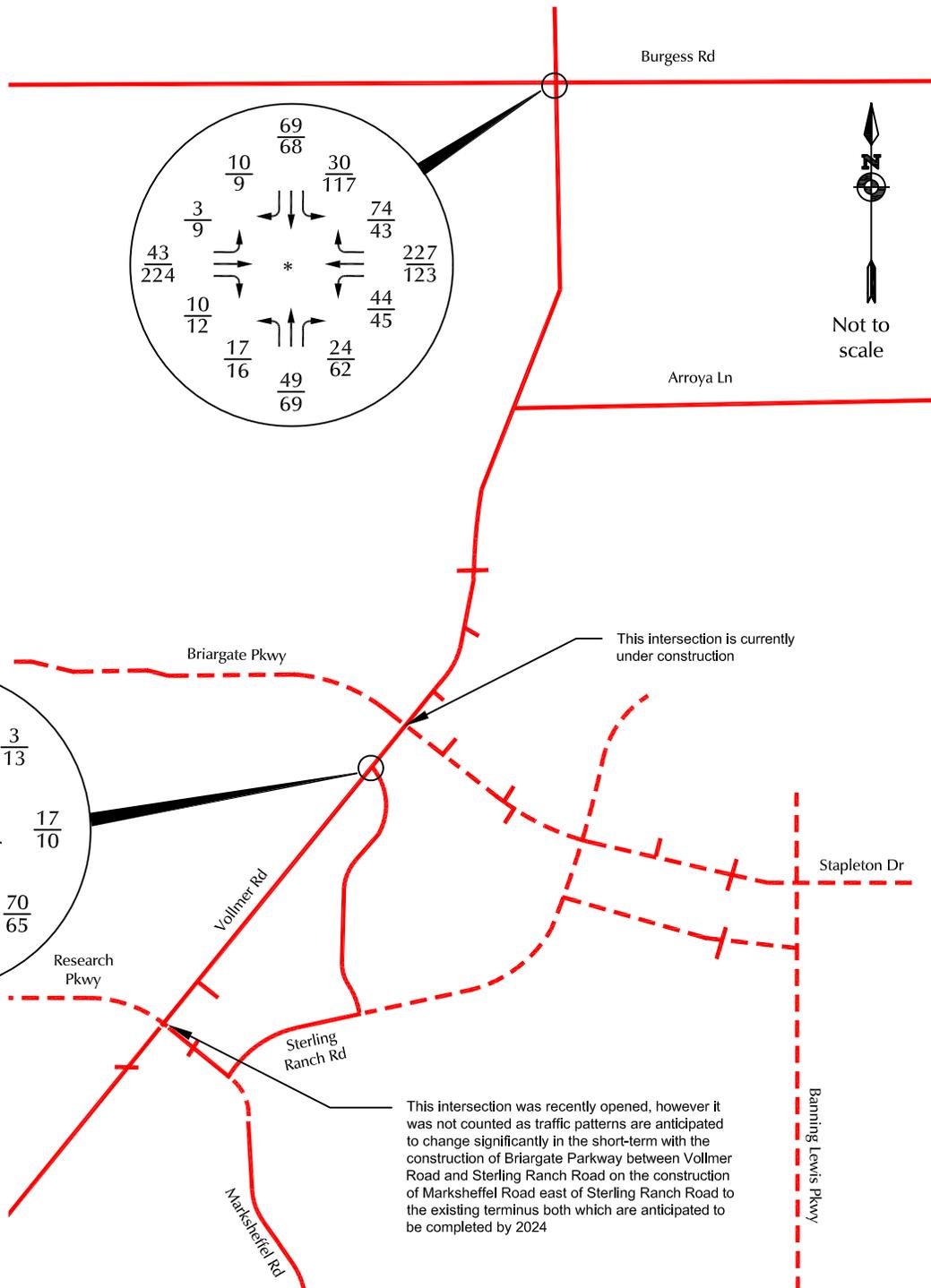
- Existing Roadway
- Future Roadway

# Existing Average Weekday Traffic

Figure 5a

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)





LEGEND:

$$\frac{XX}{XX} = \frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$$

- Existing Roadway
- - - - Future Roadway

\* Based on counts by LSC Transportation Consultants in July 2022

\*\* Based on counts by All Traffic Data Services, March 2022. The traffic count was conducted prior to the construction of Marksheffel between Vollmer Rd and Sterling Ranch Rd

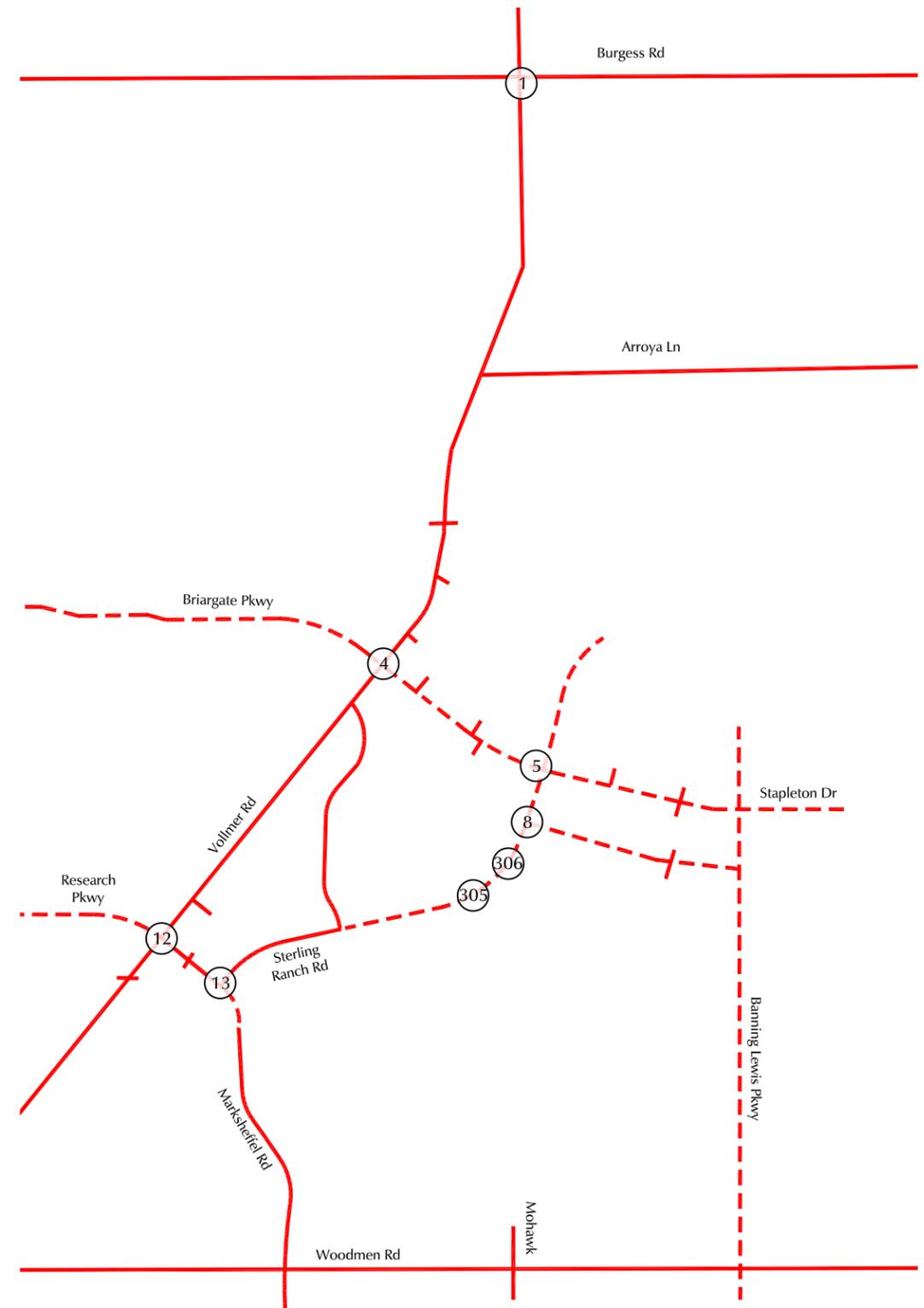
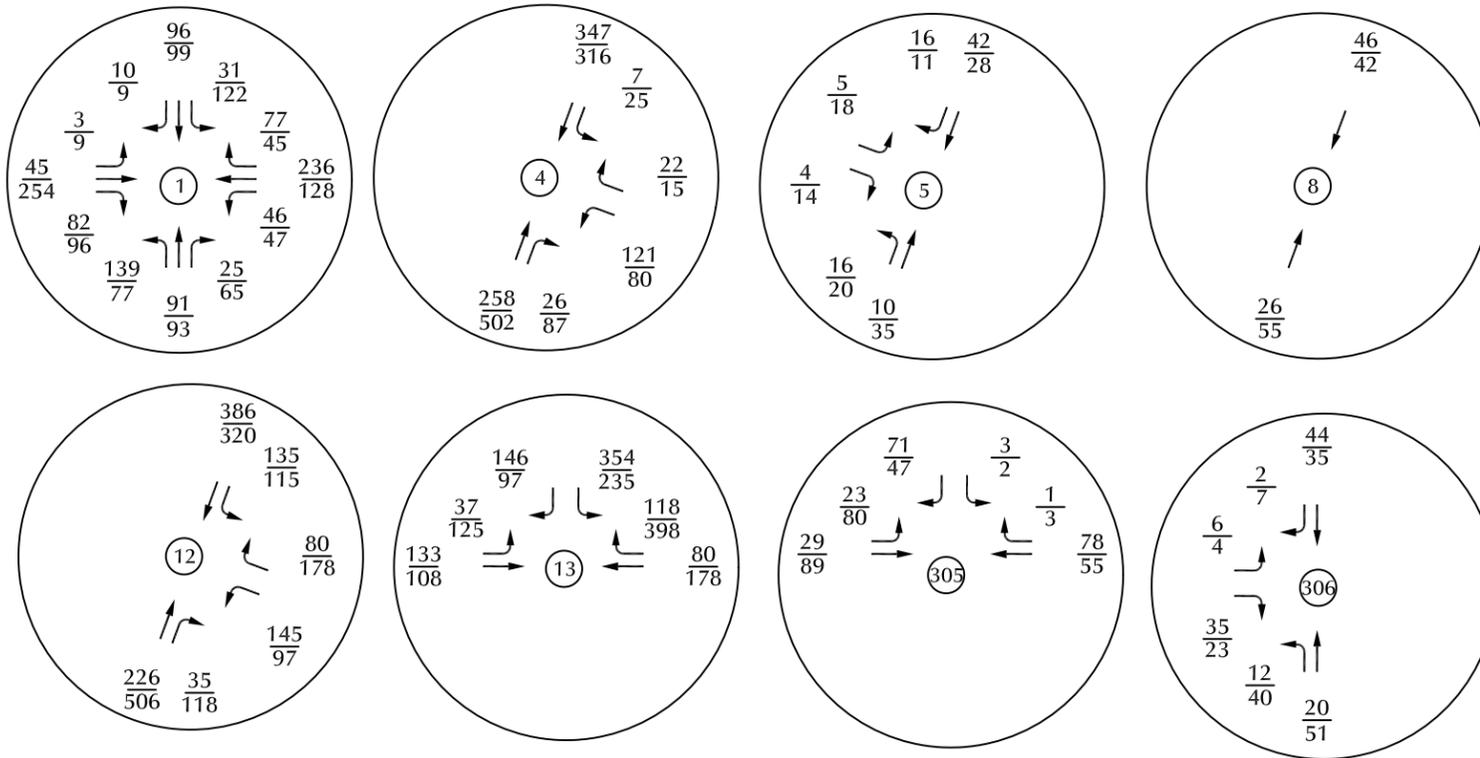
## Figure 5b Existing Traffic

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)









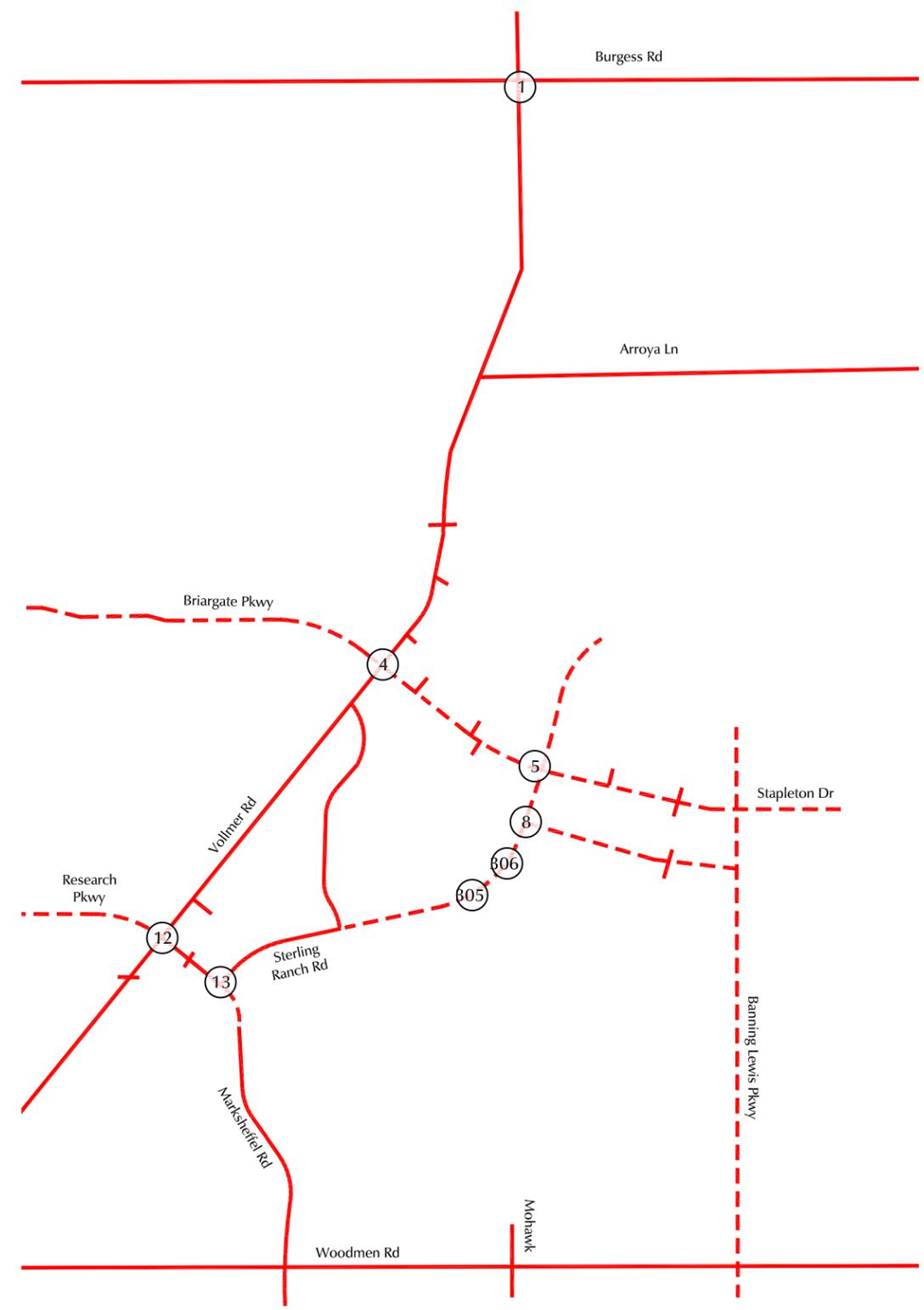
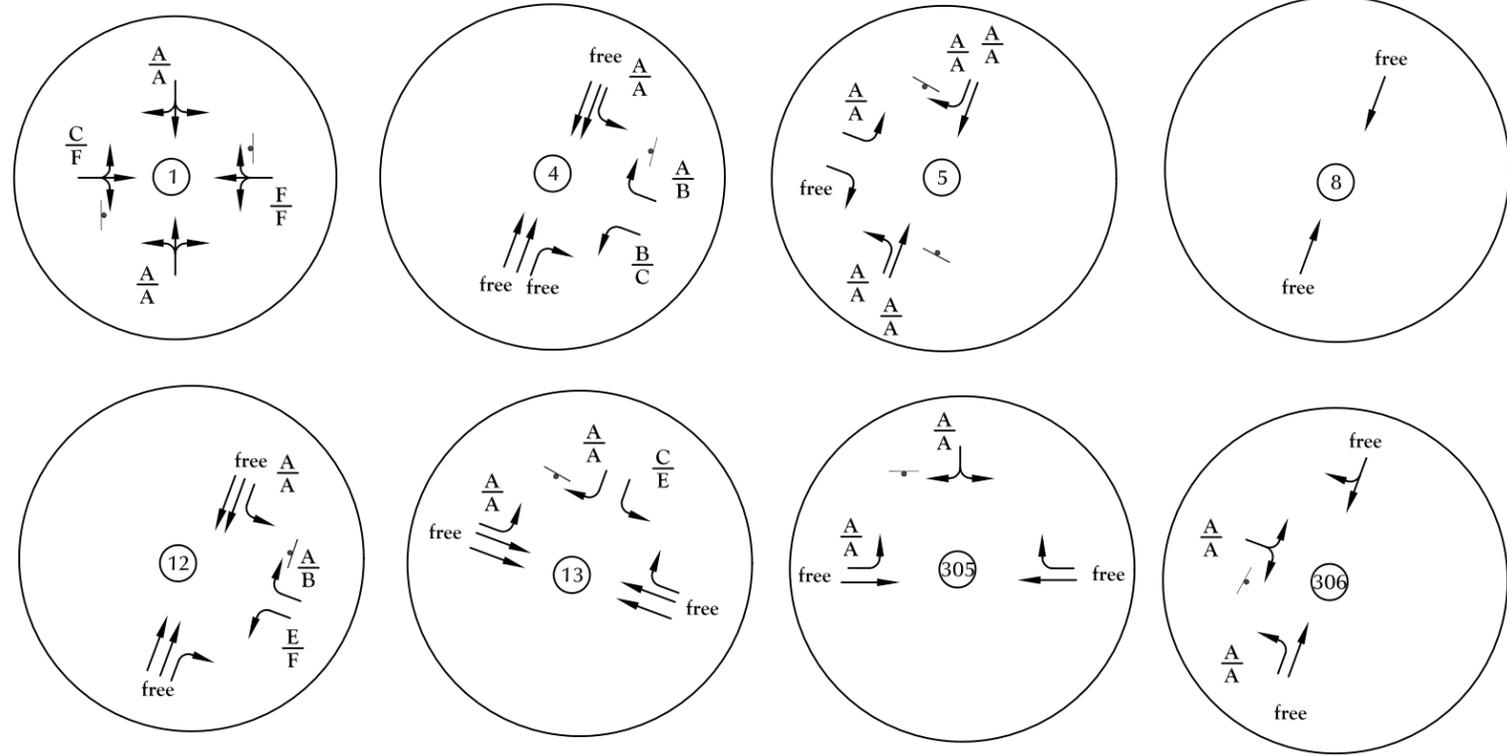
LEGEND:  $\frac{XX}{XX} = \frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$

— Existing Roadway  
 - - - Future Roadway



Figure 6b  
 Short-Term Background Traffic

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)



LEGEND:

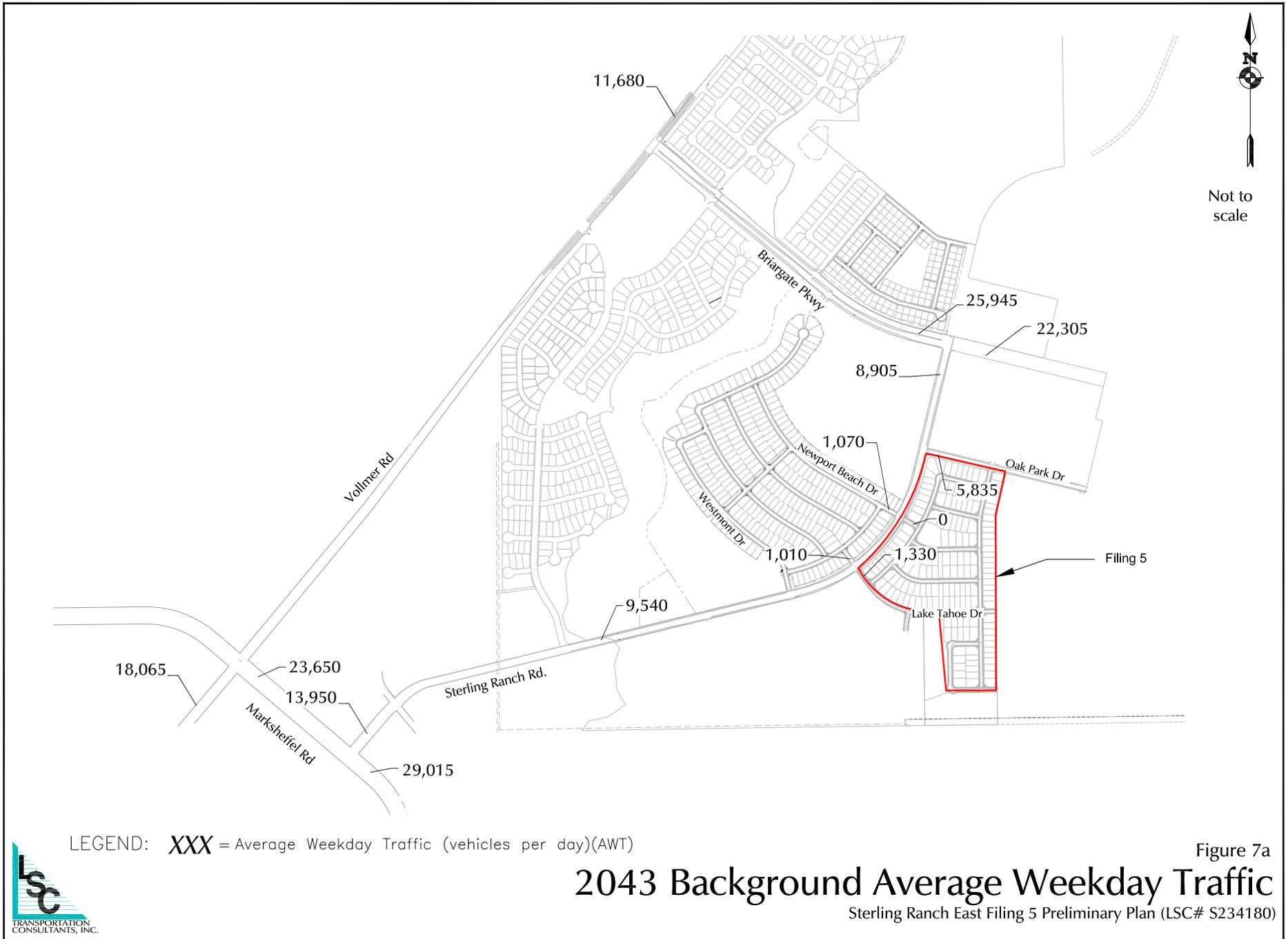
$\frac{A}{B}$  = AM Individual Movement Peak-Hour Level of Service  
 PM Individual Movement Peak-Hour Level of Service  
 $\frac{C}{D}$  = AM Entire Intersection Peak-Hour Level of Service  
 PM Entire Intersection Peak-Hour Level of Service

⊥ = Stop Sign  
 = Traffic Signal

Existing Roadway  
 Future Roadway

Figure 6c  
 Short-Term Background Lane Geometry,  
 Traffic Control, and Level of Service





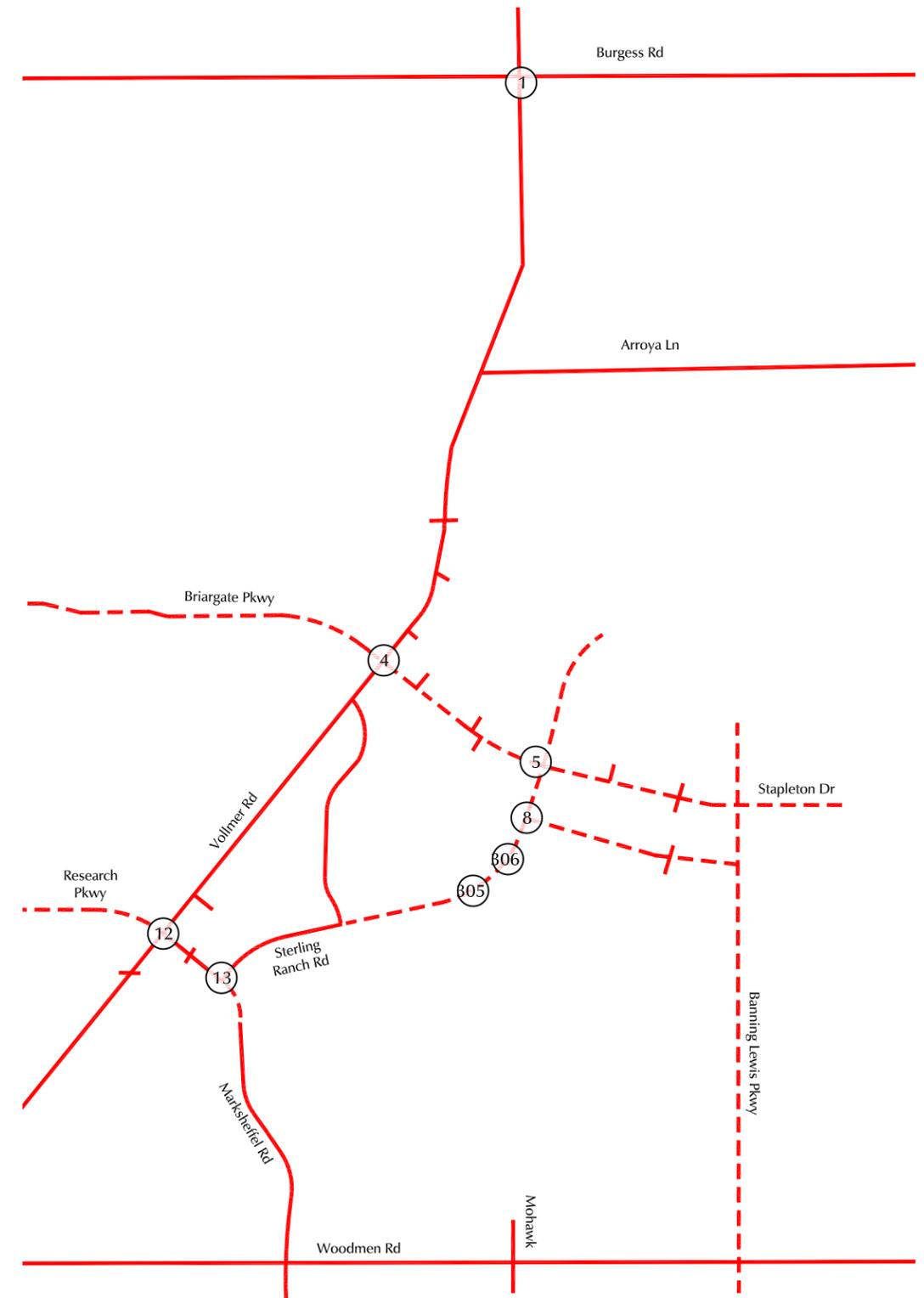
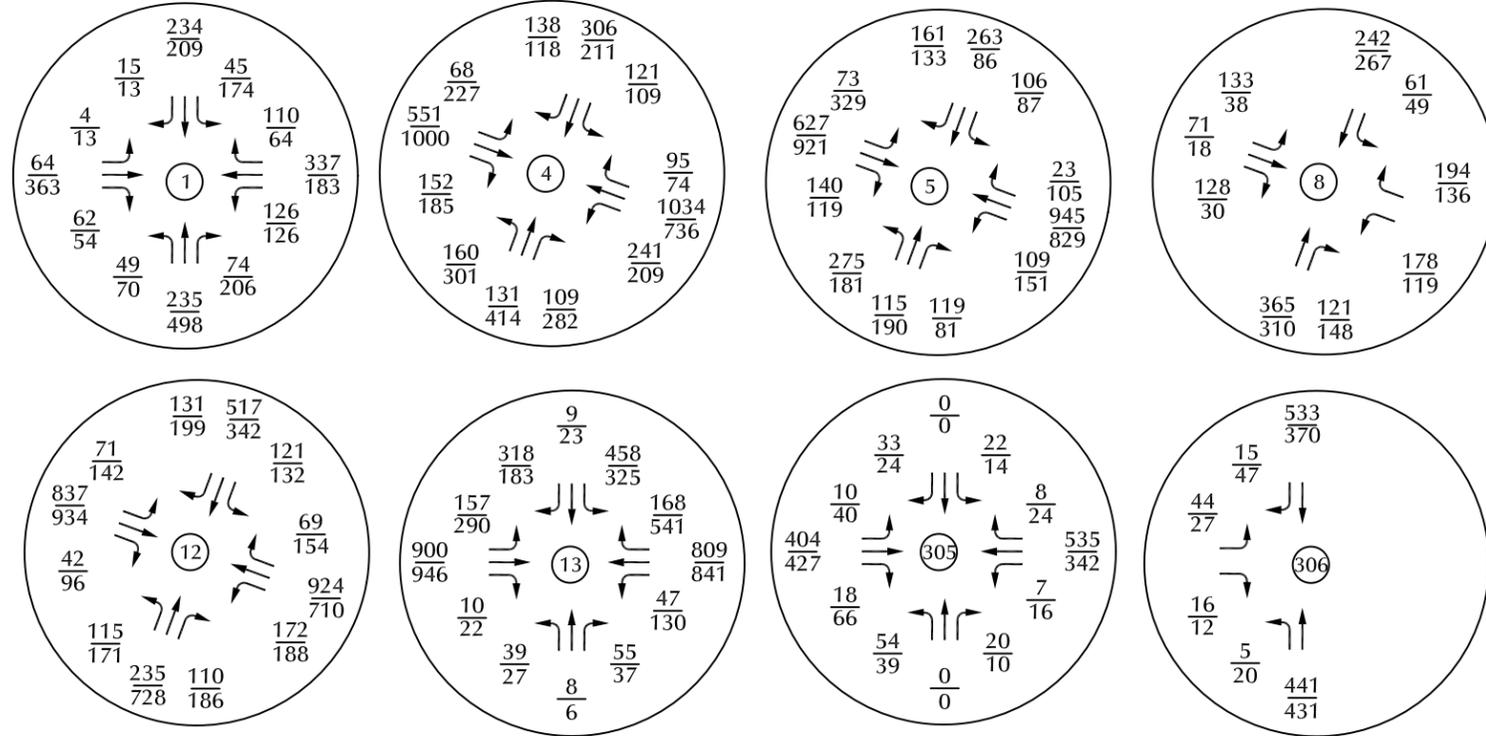
LEGEND: XXX = Average Weekday Traffic (vehicles per day)(AWT)

## 2043 Background Average Weekday Traffic

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)



Figure 7a

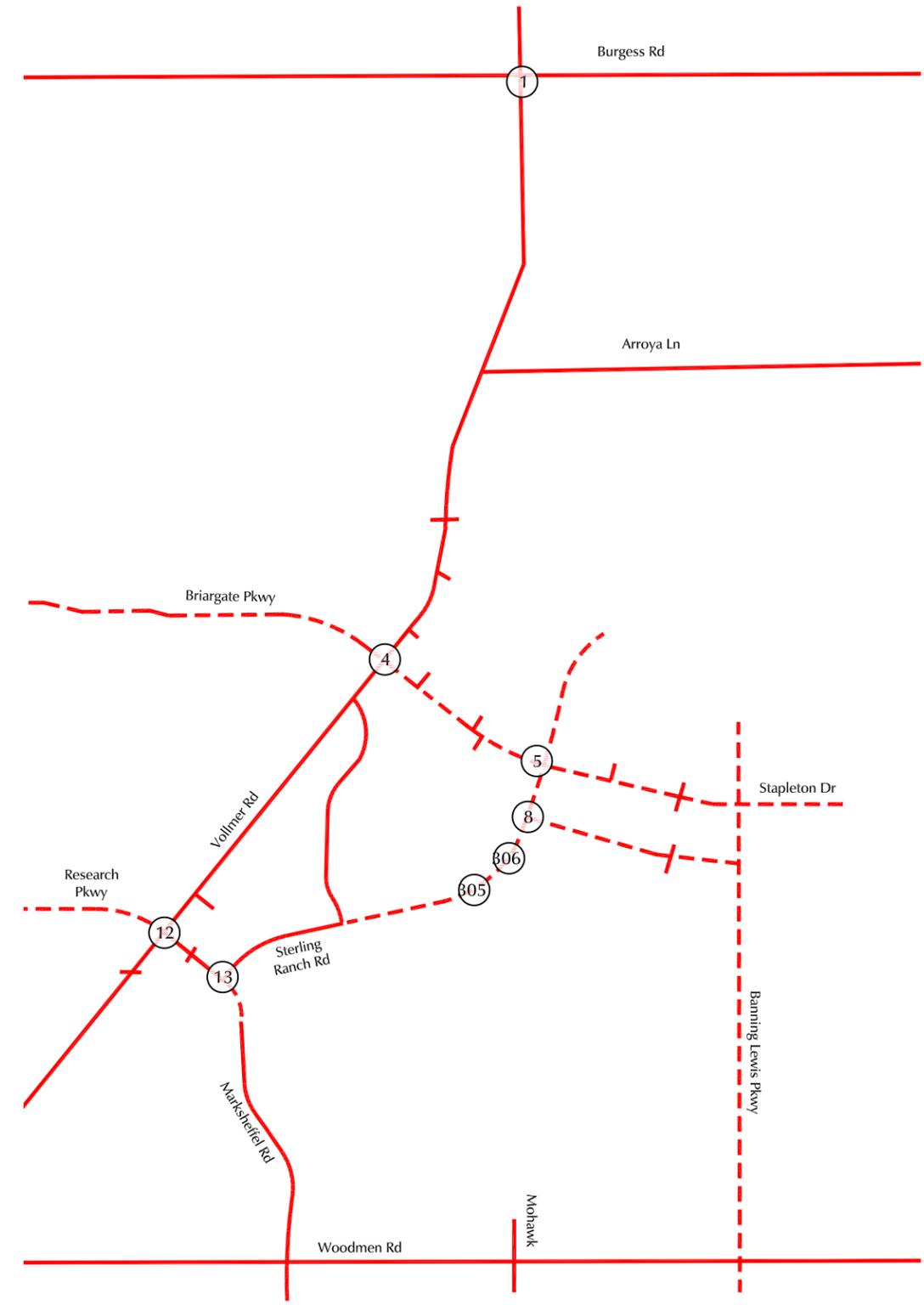
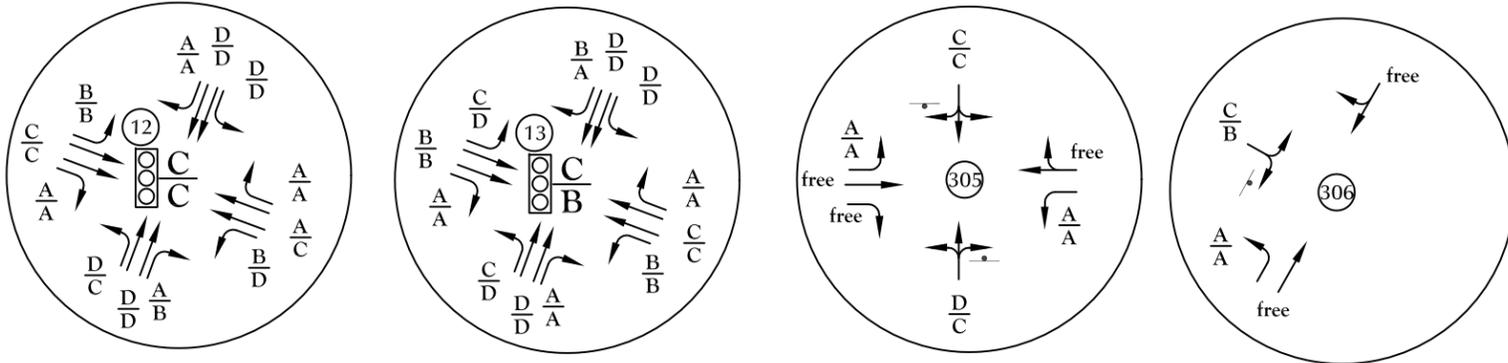
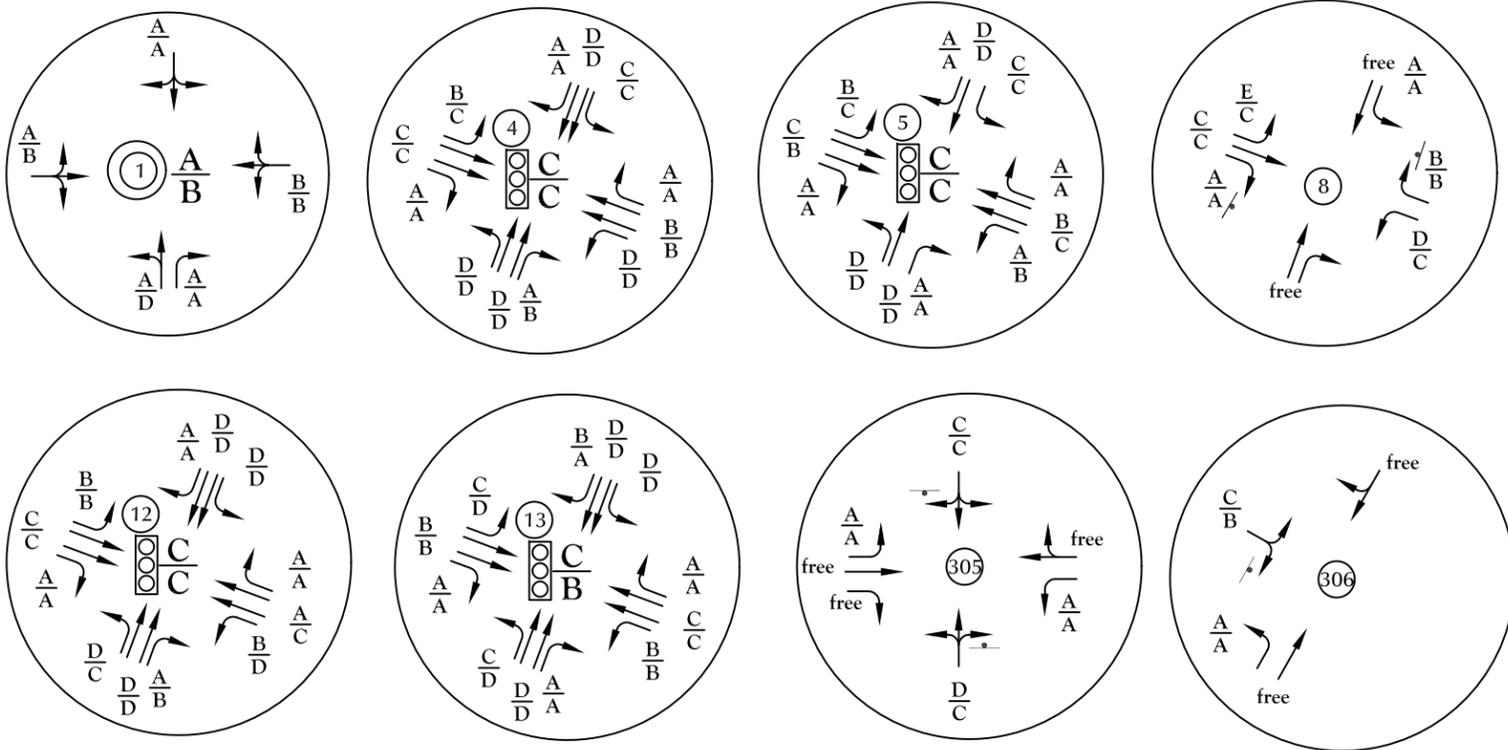


LEGEND:  $\frac{XX}{XX}$  = AM Peak-Hour Traffic (veh/hr)  
 $\frac{XX}{XX}$  = PM Peak-Hour Traffic (veh/hr)

— Existing Roadway  
 - - - Future Roadway



Figure 7b  
**2043 Background Traffic**  
 Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)



LEGEND:

$\frac{A}{B}$  = AM Individual Movement Peak-Hour Level of Service  
 PM Individual Movement Peak-Hour Level of Service  
 $\frac{C}{D}$  = AM Entire Intersection Peak-Hour Level of Service  
 PM Entire Intersection Peak-Hour Level of Service

T = Stop Sign  
 = Traffic Signal

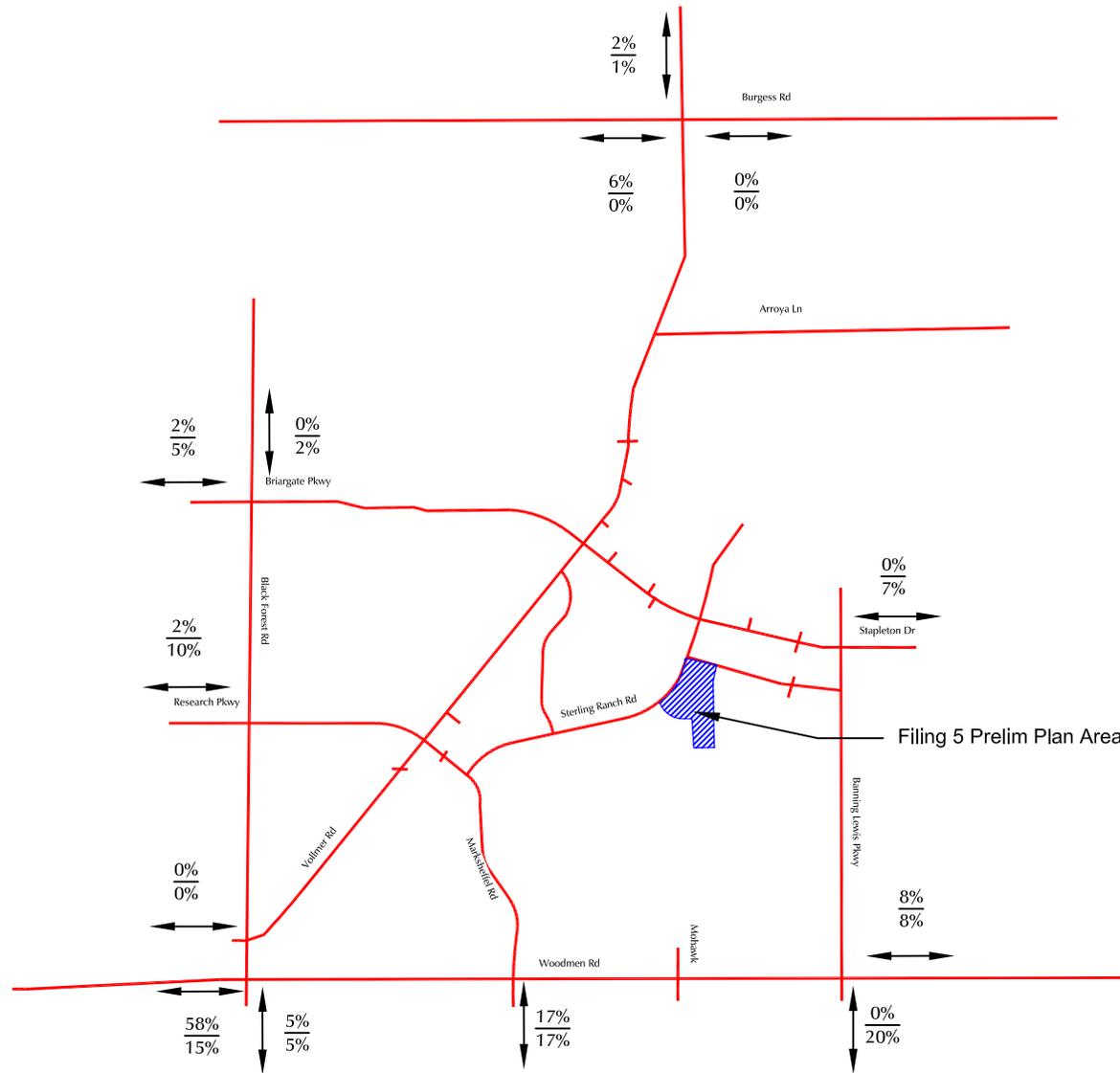
Existing Roadway  
 Future Roadway

Figure 7c  
 2043 Background Lane Geometry,  
 Traffic Control, and Level of Service





Not to scale



Filing 5 Prelim Plan Area

LEGEND:



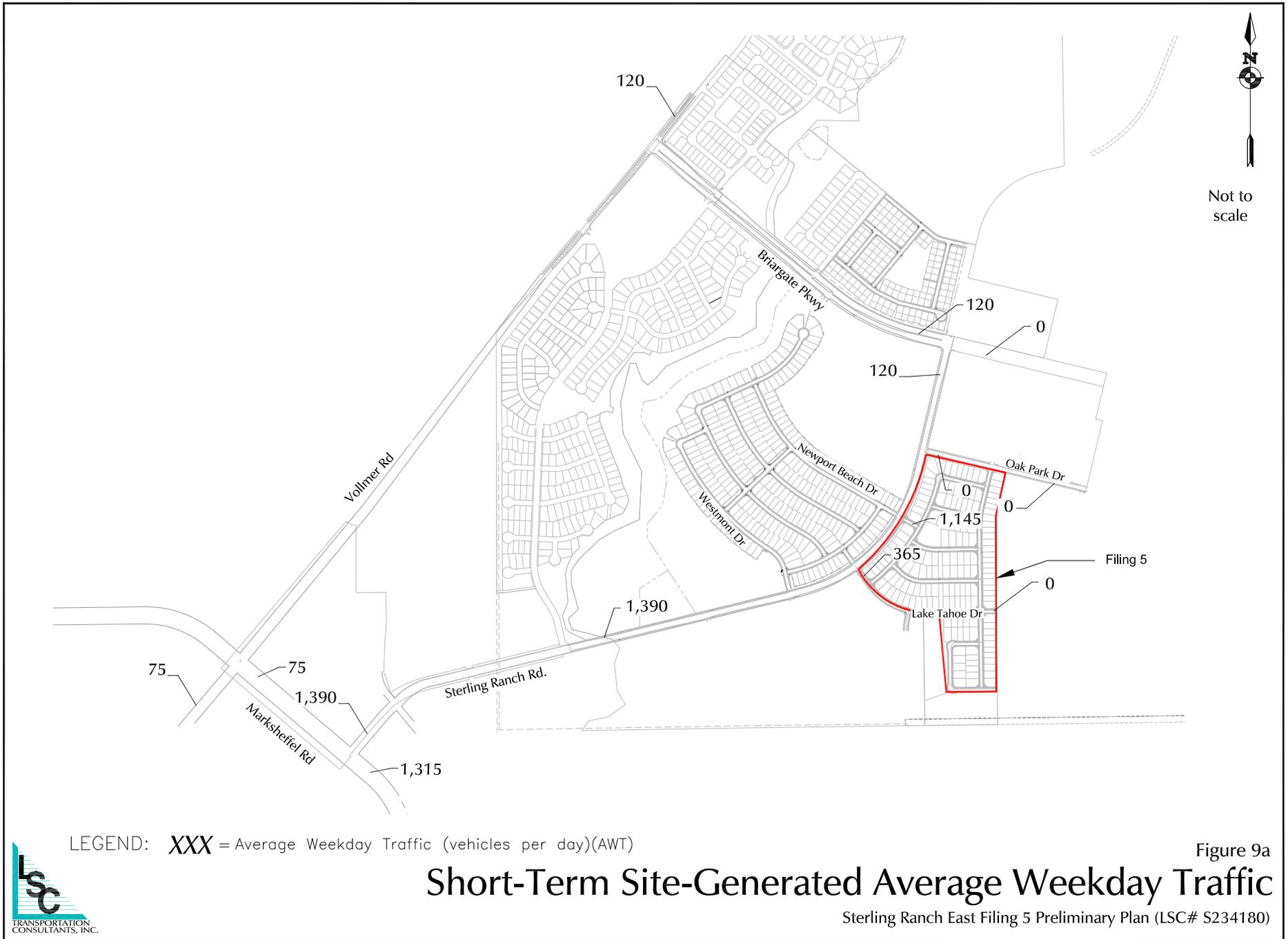
$\frac{XX\%}{XX\%} =$   $\frac{\text{Percent of Short-Term Trips}}{\text{Percent of Buildout Long-Term Trips}}$

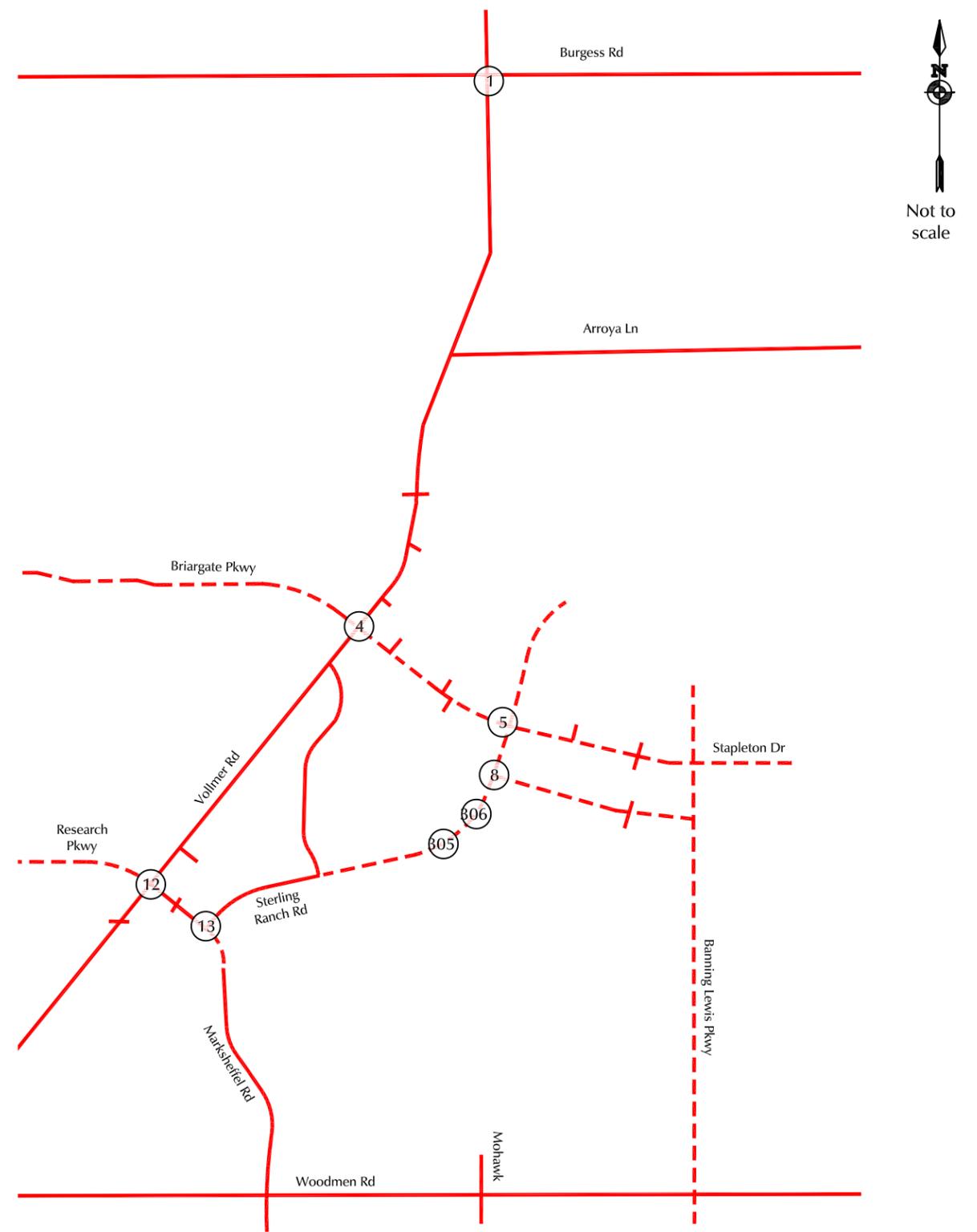
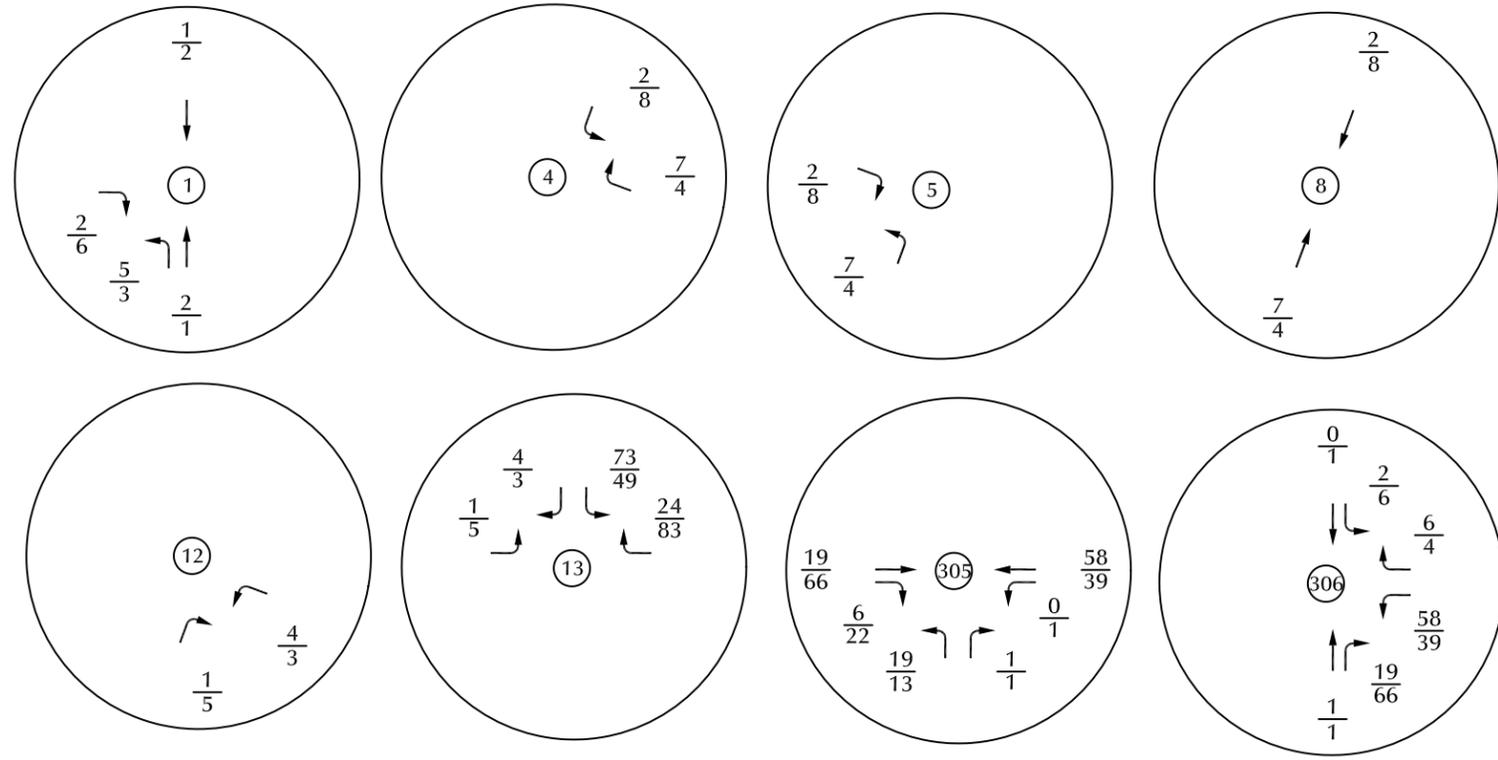
## Estimated Directional Distribution of Site-Generated Traffic

Figure 8

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)







LEGEND:  $\frac{XX}{XX} = \frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$

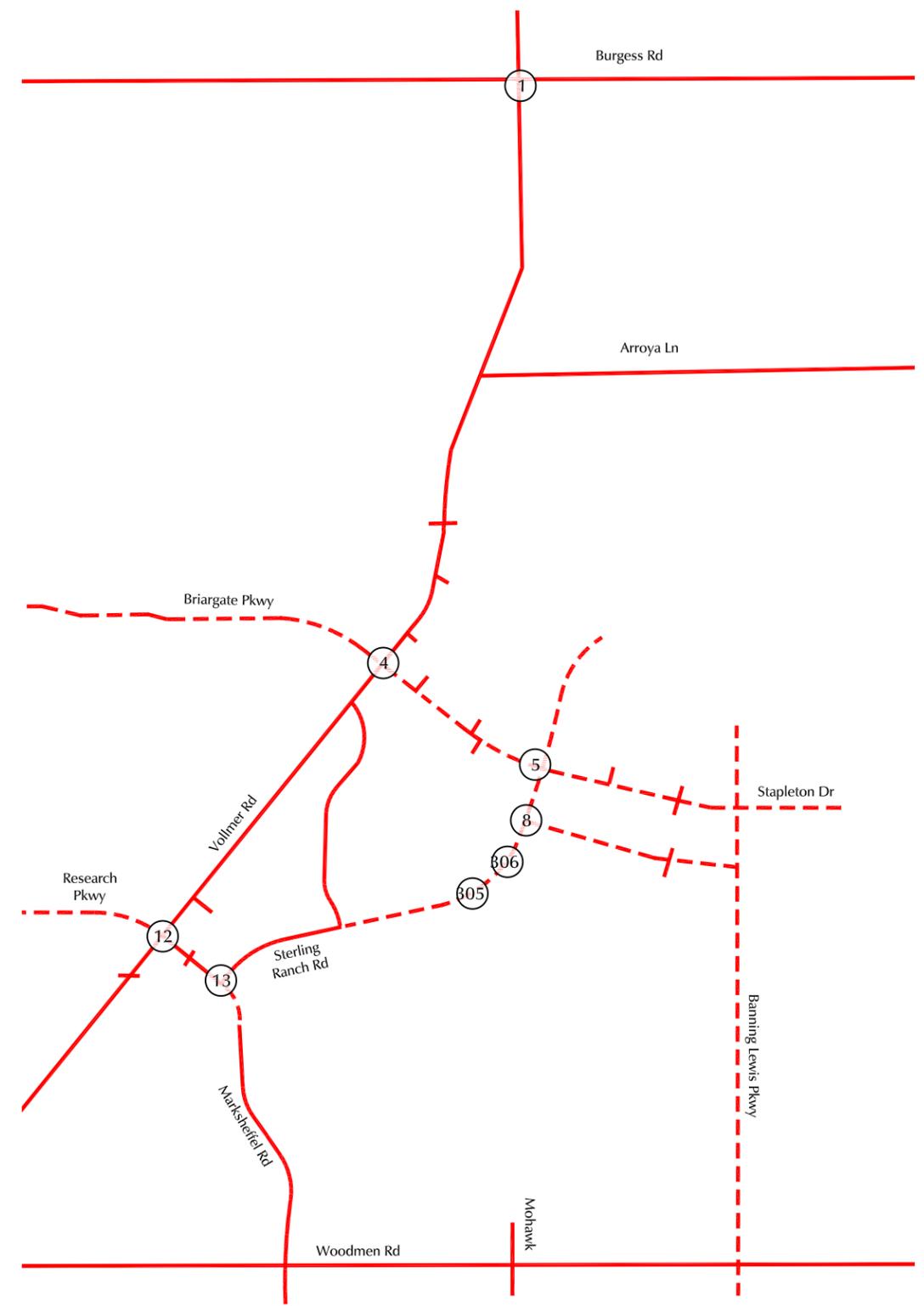
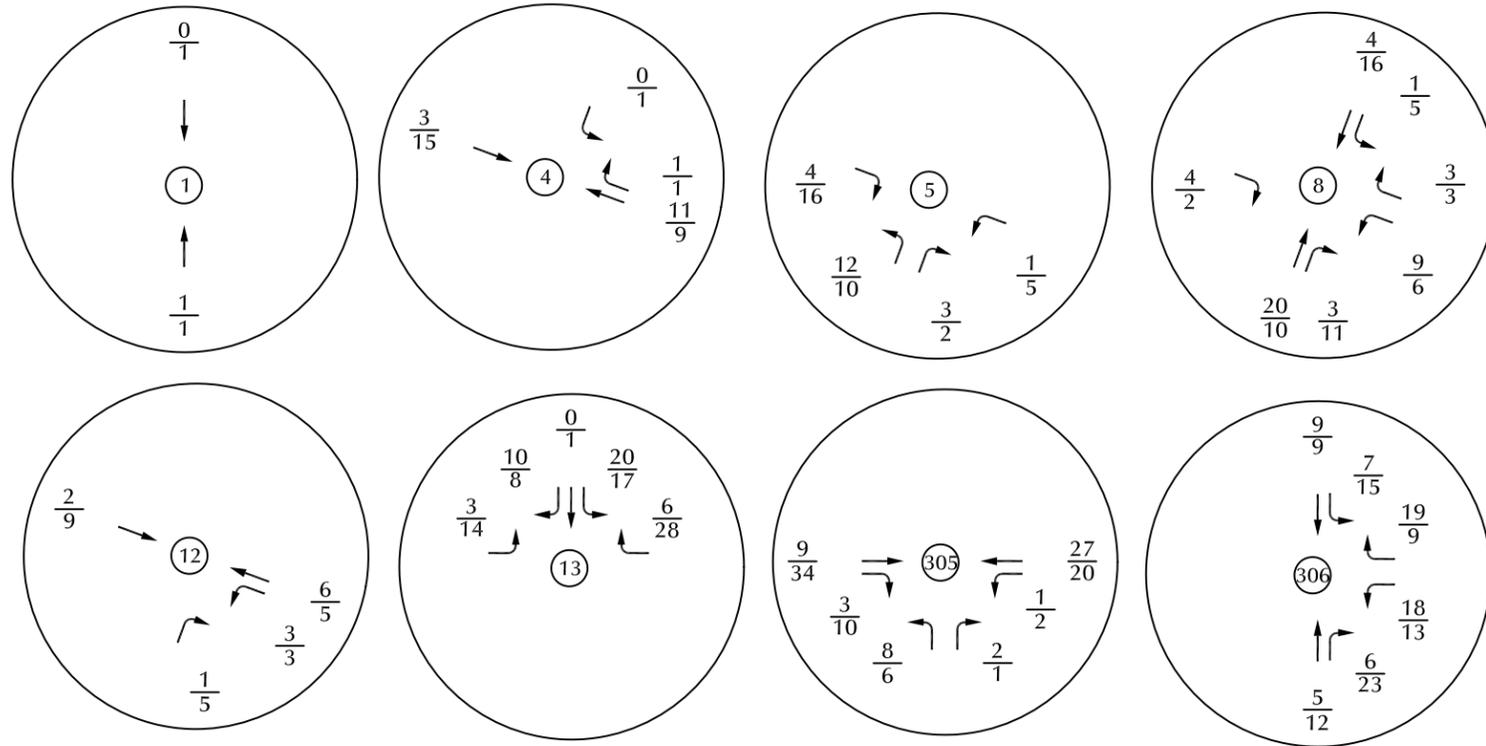
— Existing Roadway  
 - - - Future Roadway



Figure 9b  
 Short-Term Site-Generated Traffic

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)





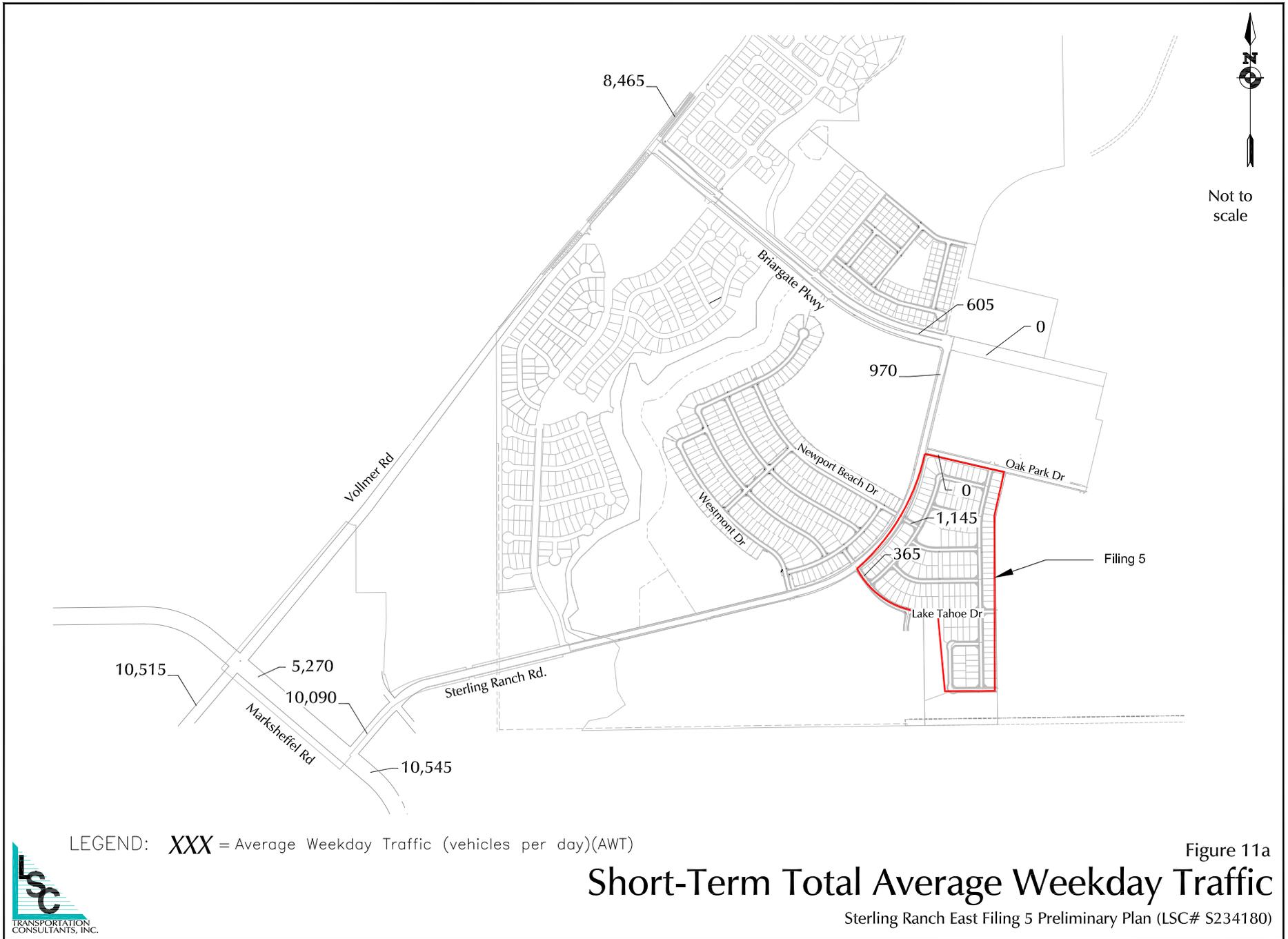
LEGEND:  $\frac{XX}{XX} = \frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$

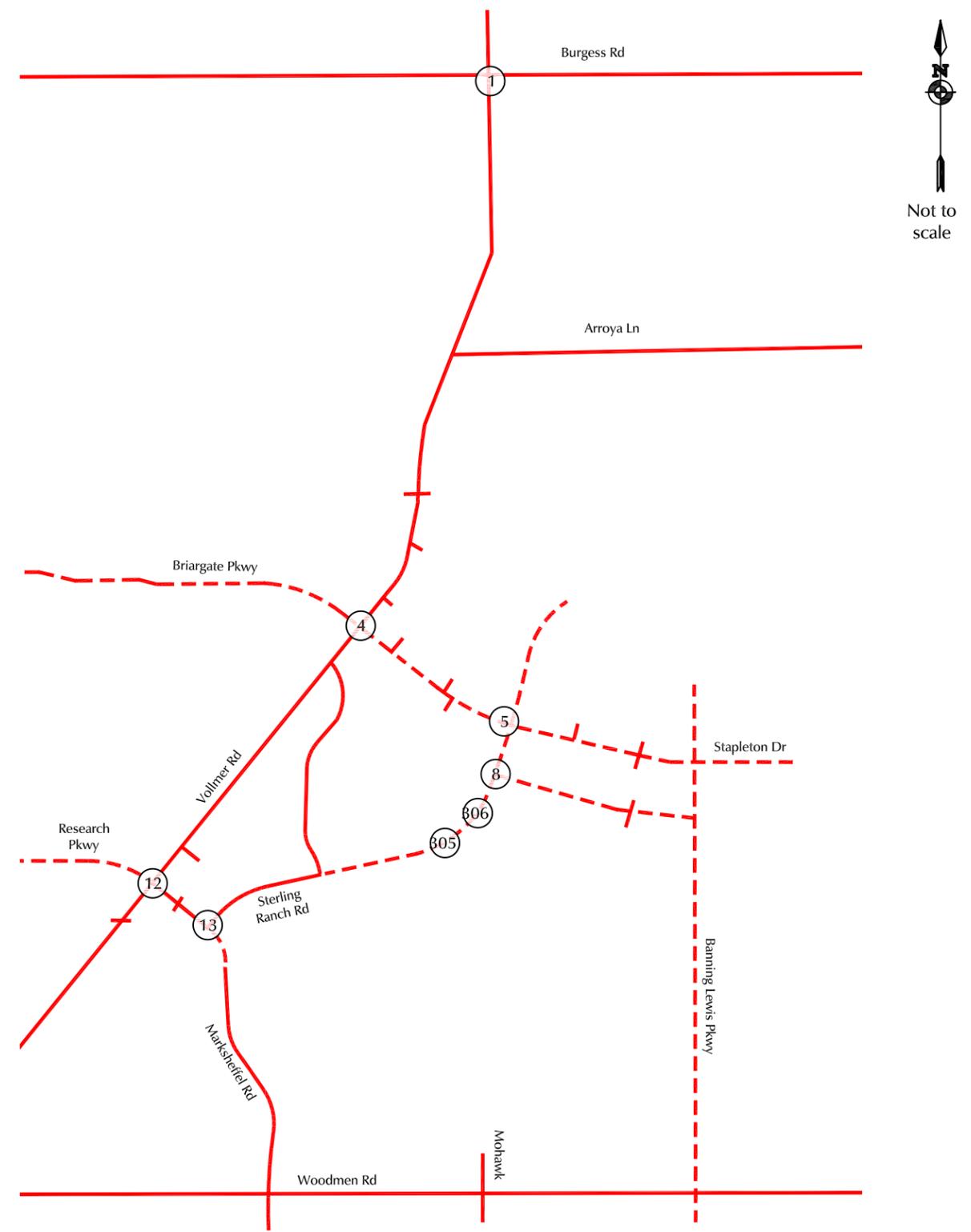
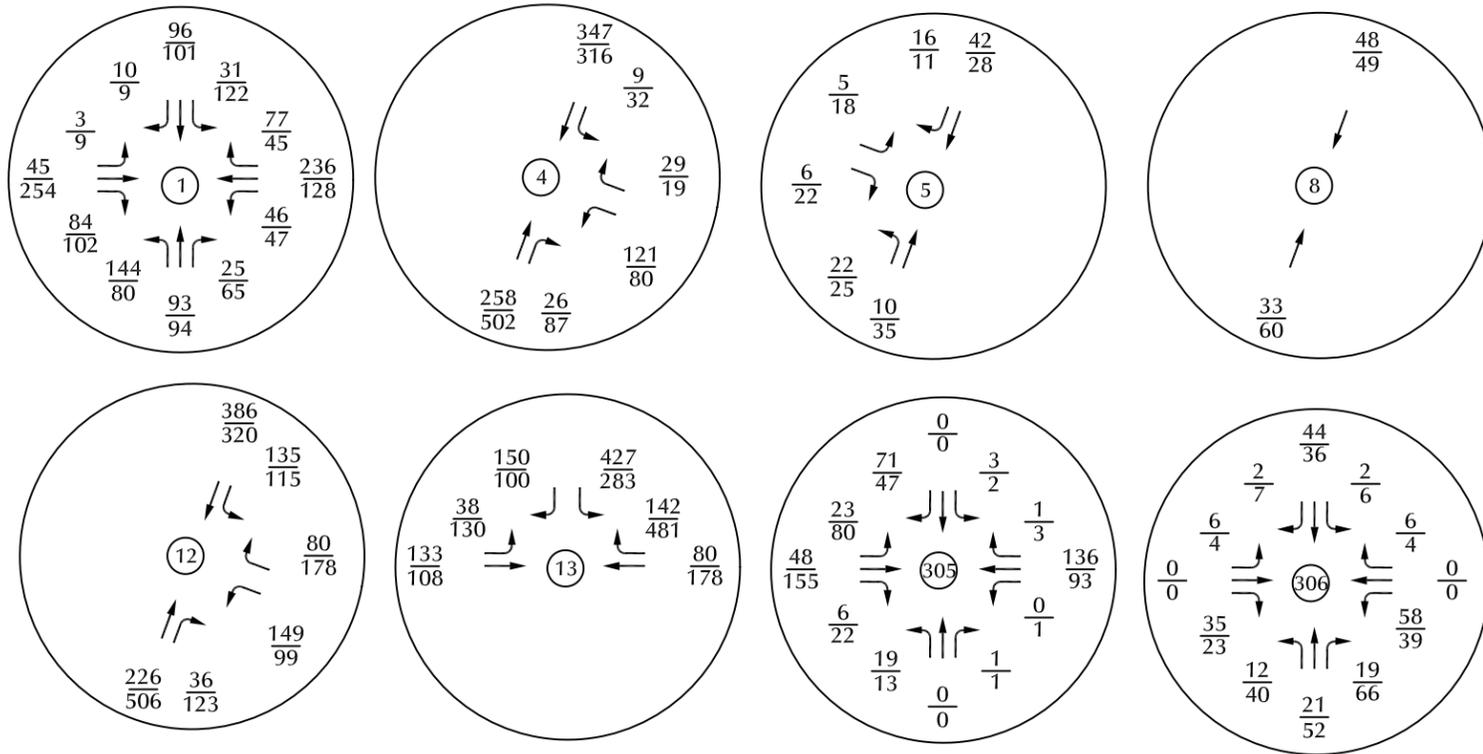
Existing Roadway  
Future Roadway



Figure 10b  
Long-Term Site-Generated Traffic

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)





LEGEND:  $\frac{XX}{XX} = \frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$

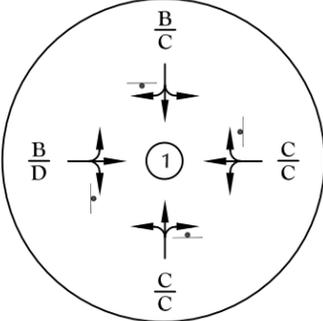
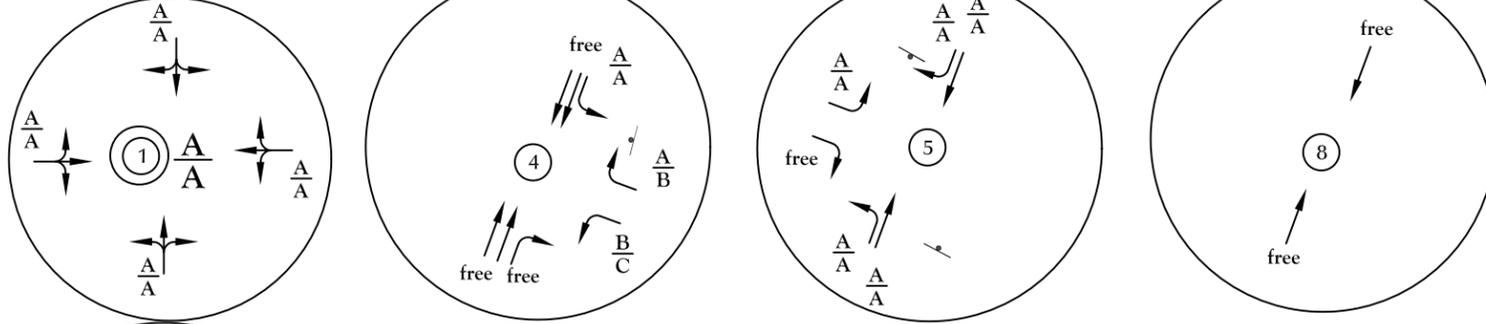
Existing Roadway  
Future Roadway



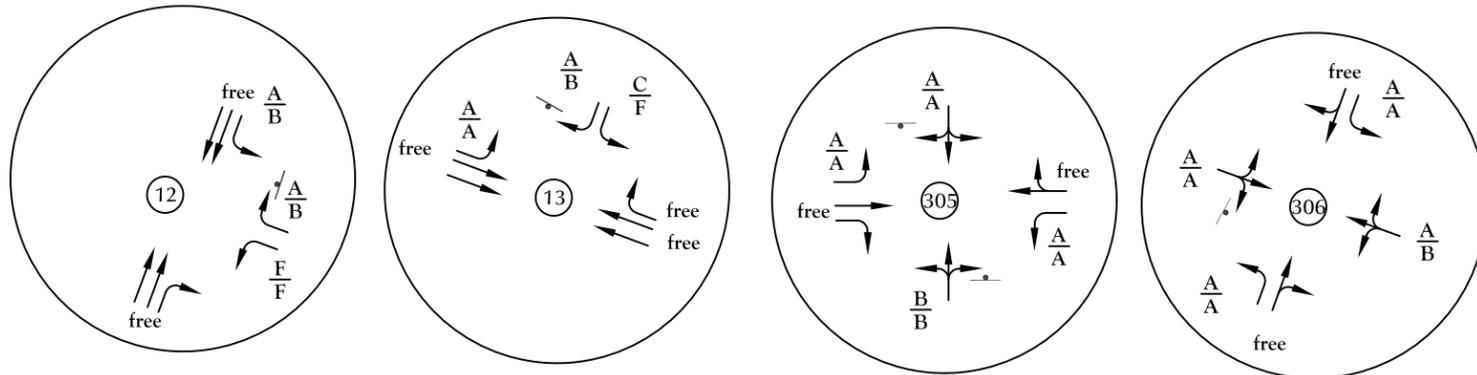
Figure 11b  
Short-Term Total Traffic

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)

One-lane Modern Roundabout



All-way Stop-sign Control



LEGEND:

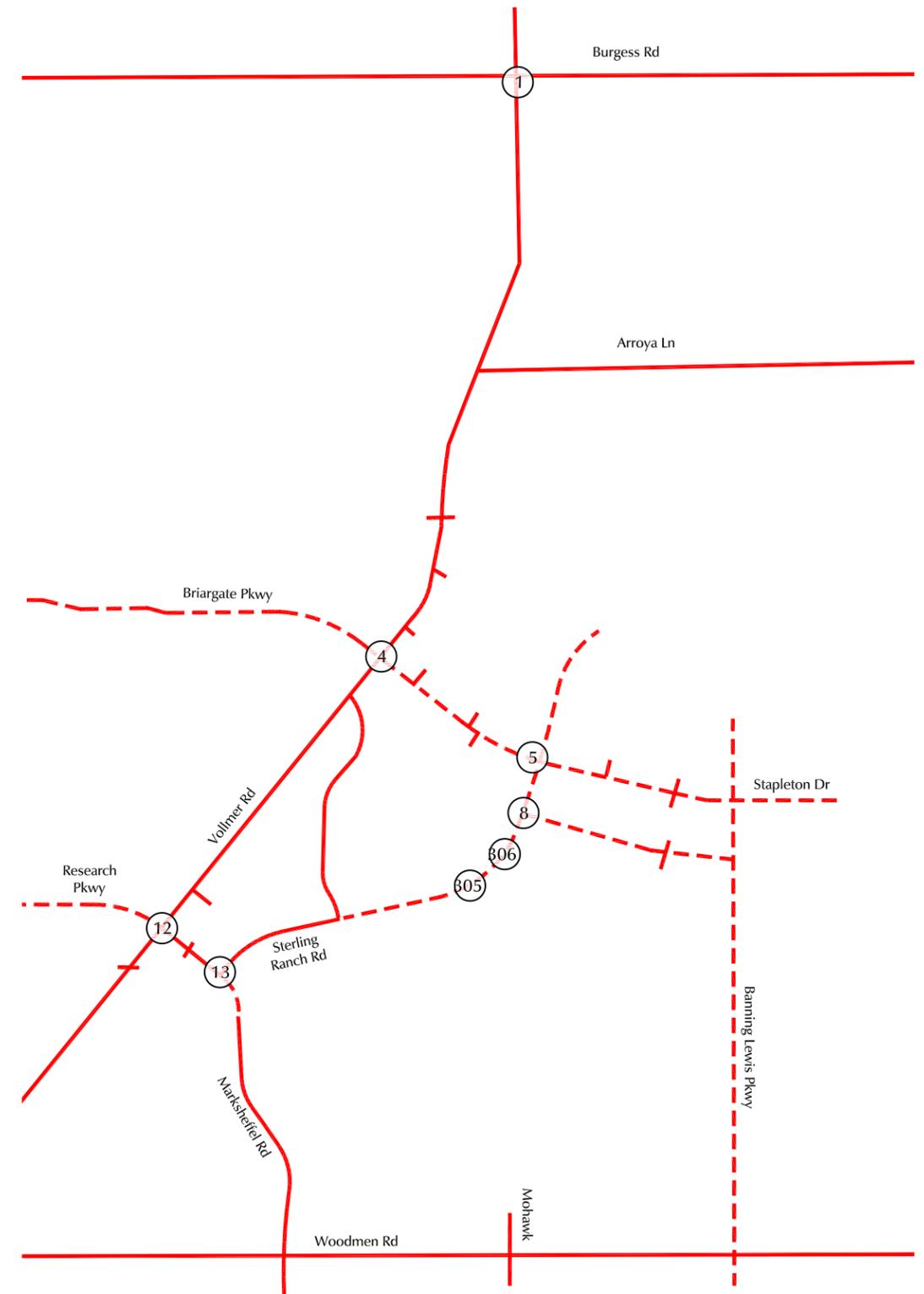
$\frac{A}{B}$  = AM Individual Movement Peak-Hour Level of Service  
 PM Individual Movement Peak-Hour Level of Service  
 $\frac{C}{D}$  = AM Entire Intersection Peak-Hour Level of Service  
 PM Entire Intersection Peak-Hour Level of Service

⊥ = Stop Sign

⓪ = Traffic Signal

○ = Roundabout

— Existing Roadway  
 - - - Future Roadway

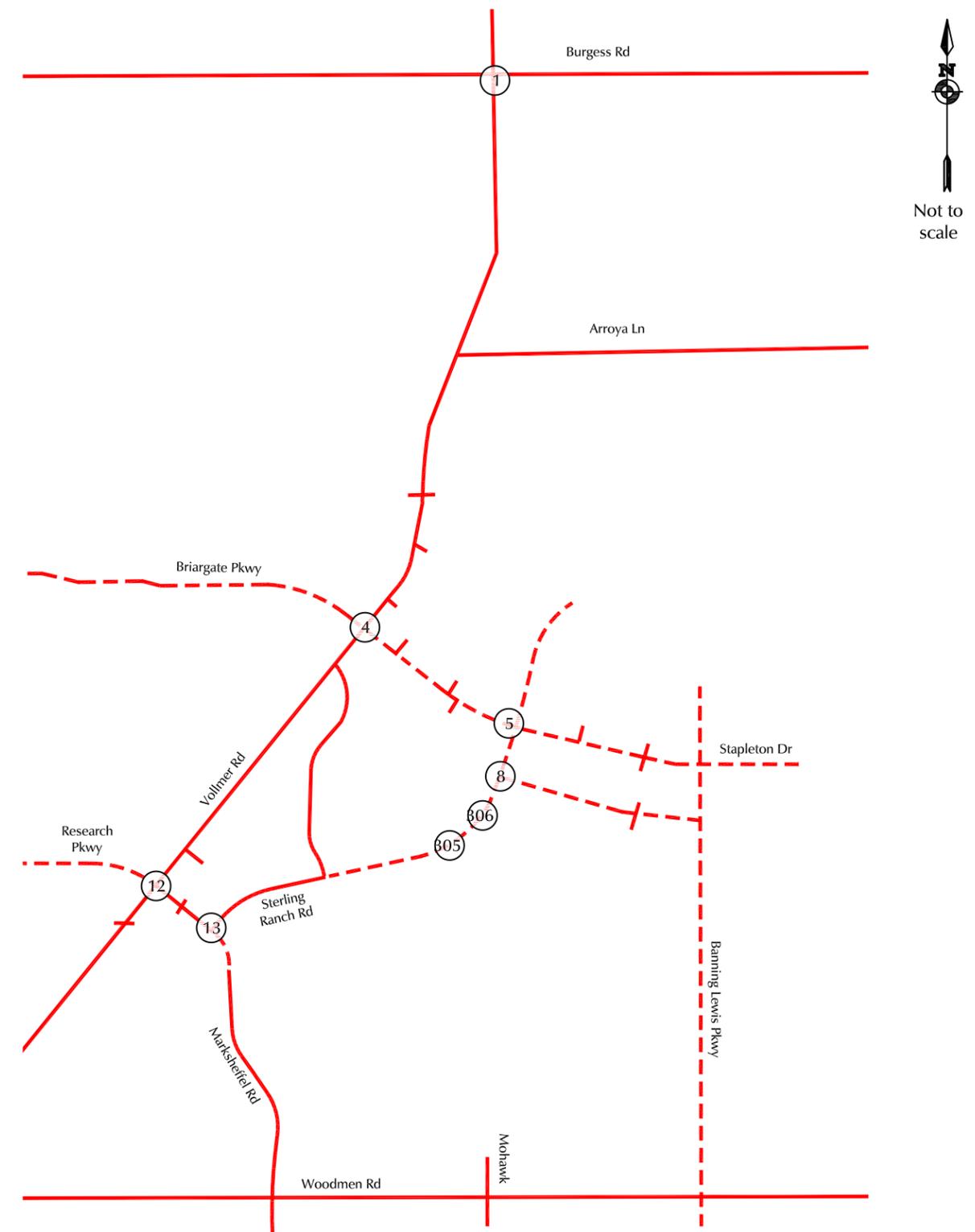
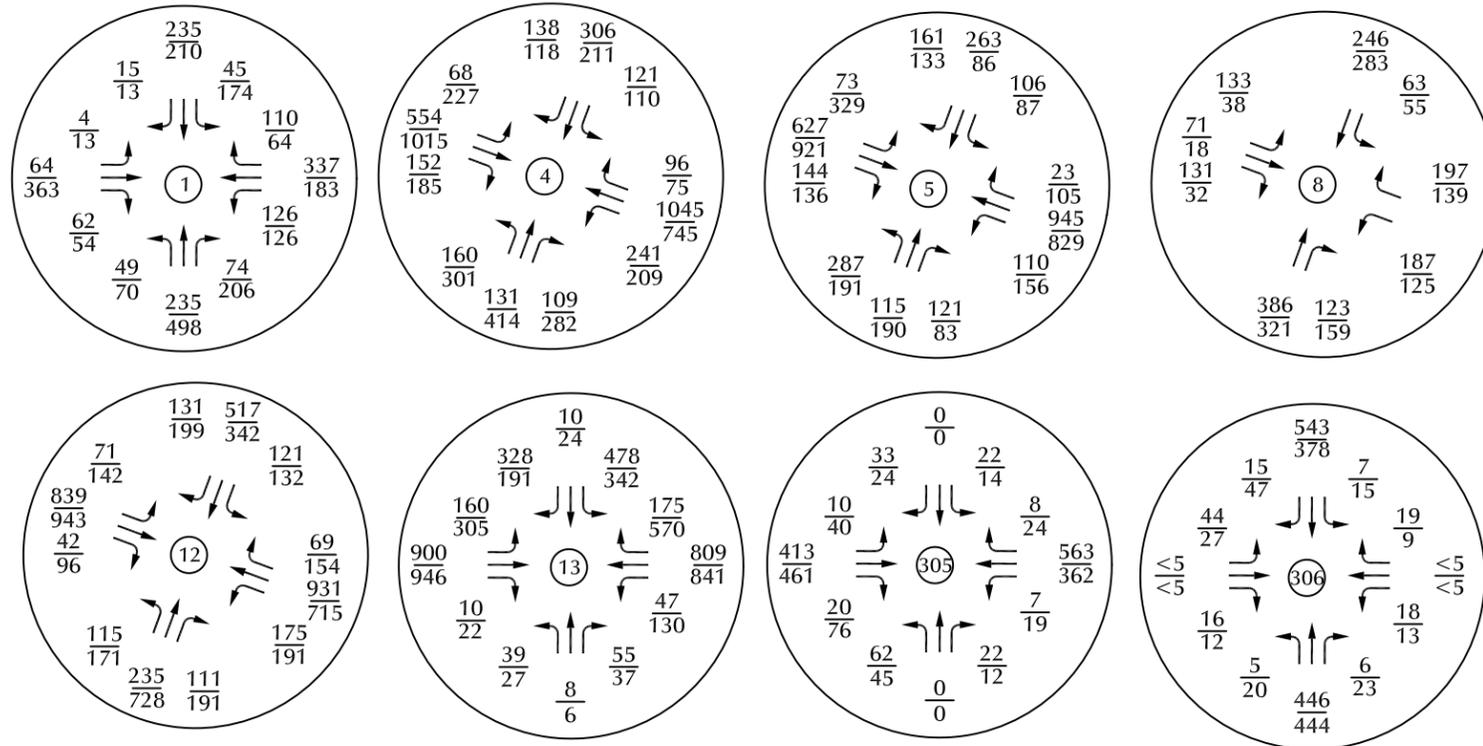


Not to scale



Figure 11c  
 Short-Term Total Lane Geometry,  
 Traffic Control, and Level of Service



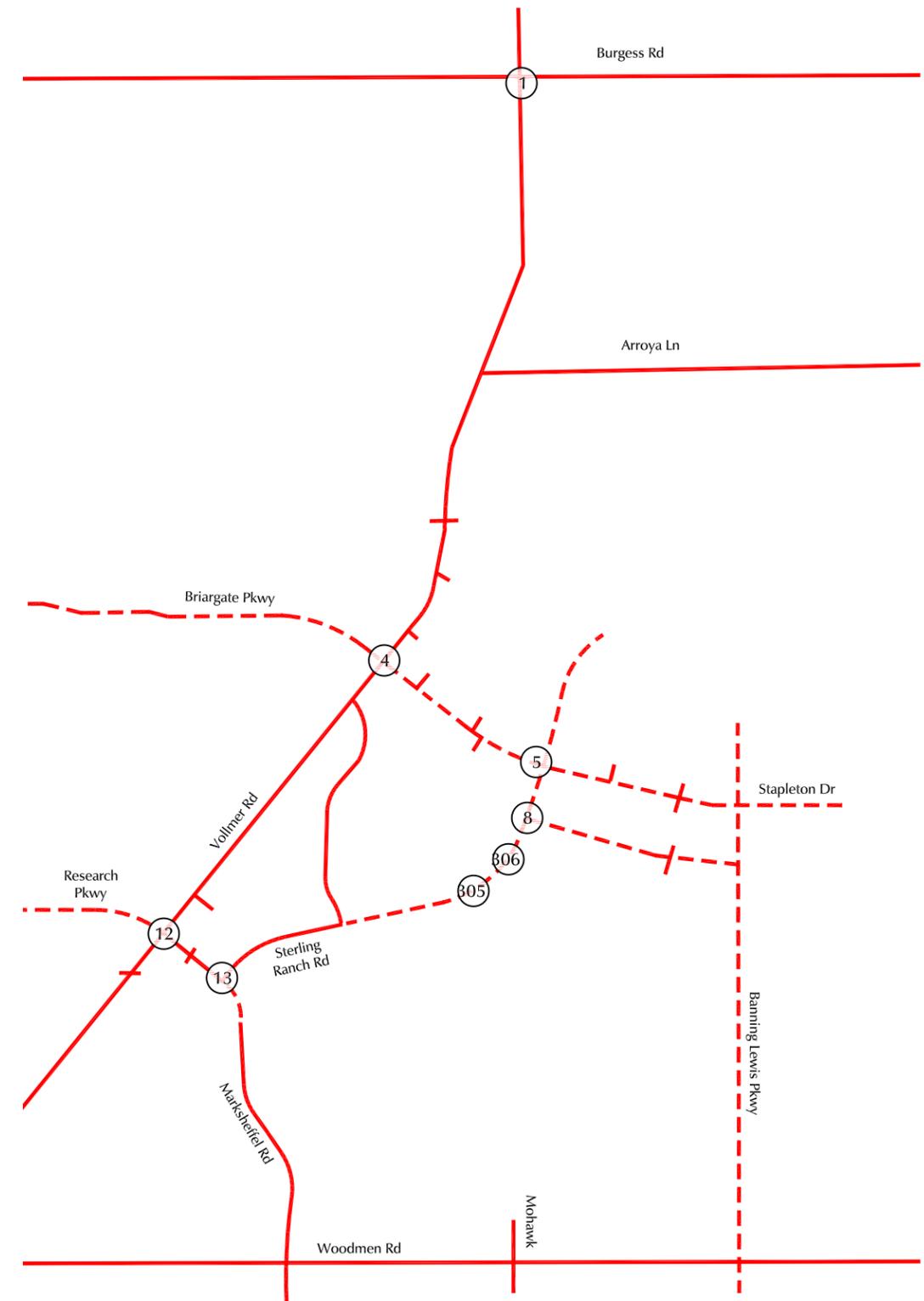
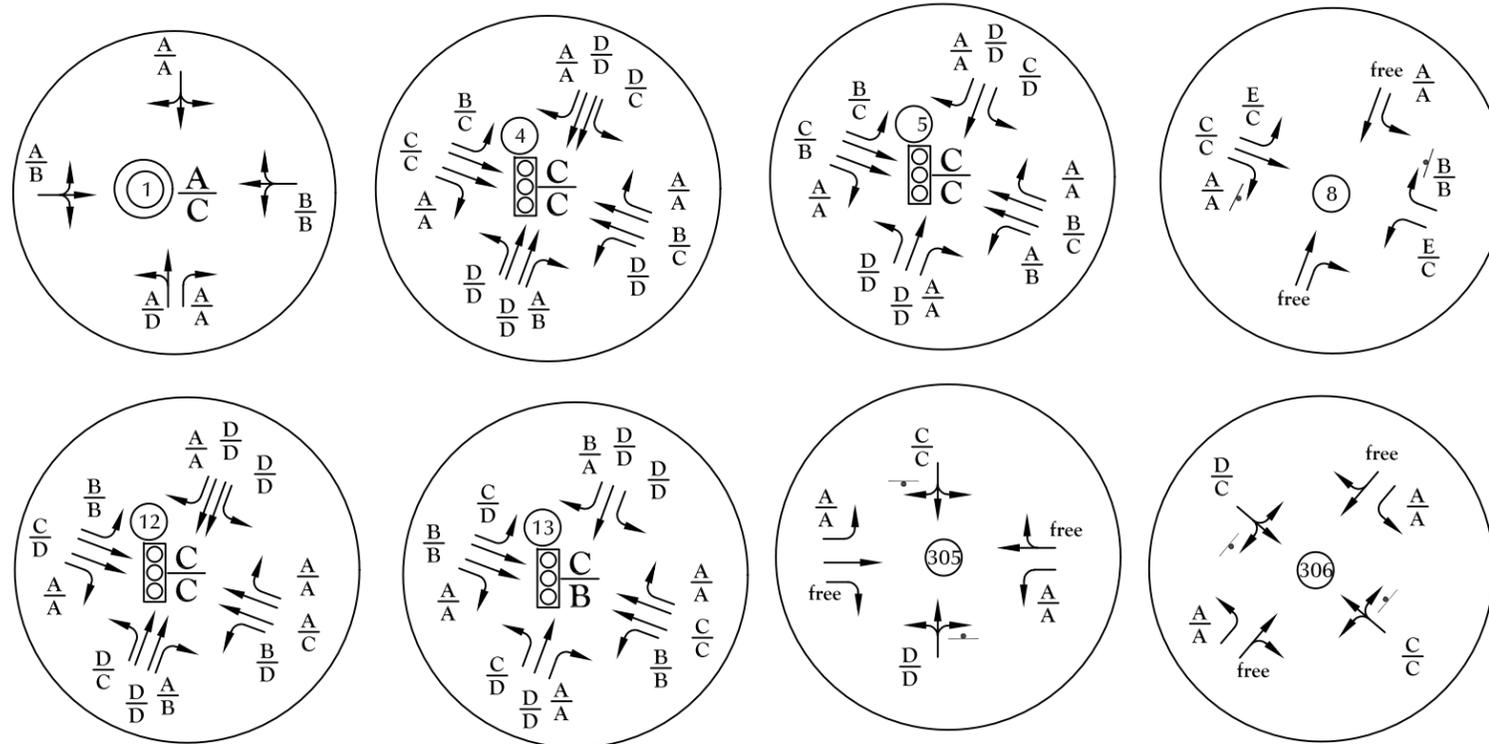


LEGEND:  $\frac{XX}{XX} = \frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$

— Existing Roadway  
 - - - Future Roadway



Figure 12b  
 2043 Total Traffic



LEGEND:

$\frac{A}{B}$  = AM Individual Movement Peak-Hour Level of Service  
 PM Individual Movement Peak-Hour Level of Service  
 $\frac{C}{D}$  = AM Entire Intersection Peak-Hour Level of Service  
 PM Entire Intersection Peak-Hour Level of Service

⊥ = Stop Sign

⓪ = Traffic Signal

○ = Roundabout

— Existing Roadway  
 - - - Future Roadway



Figure 12c  
 2043 Total Lane Geometry,  
 Traffic Control, and Level of Service



Not to scale



LEGEND:

 Urban Residential Collector

 Urban Non-Residential Collector

 Urban Local

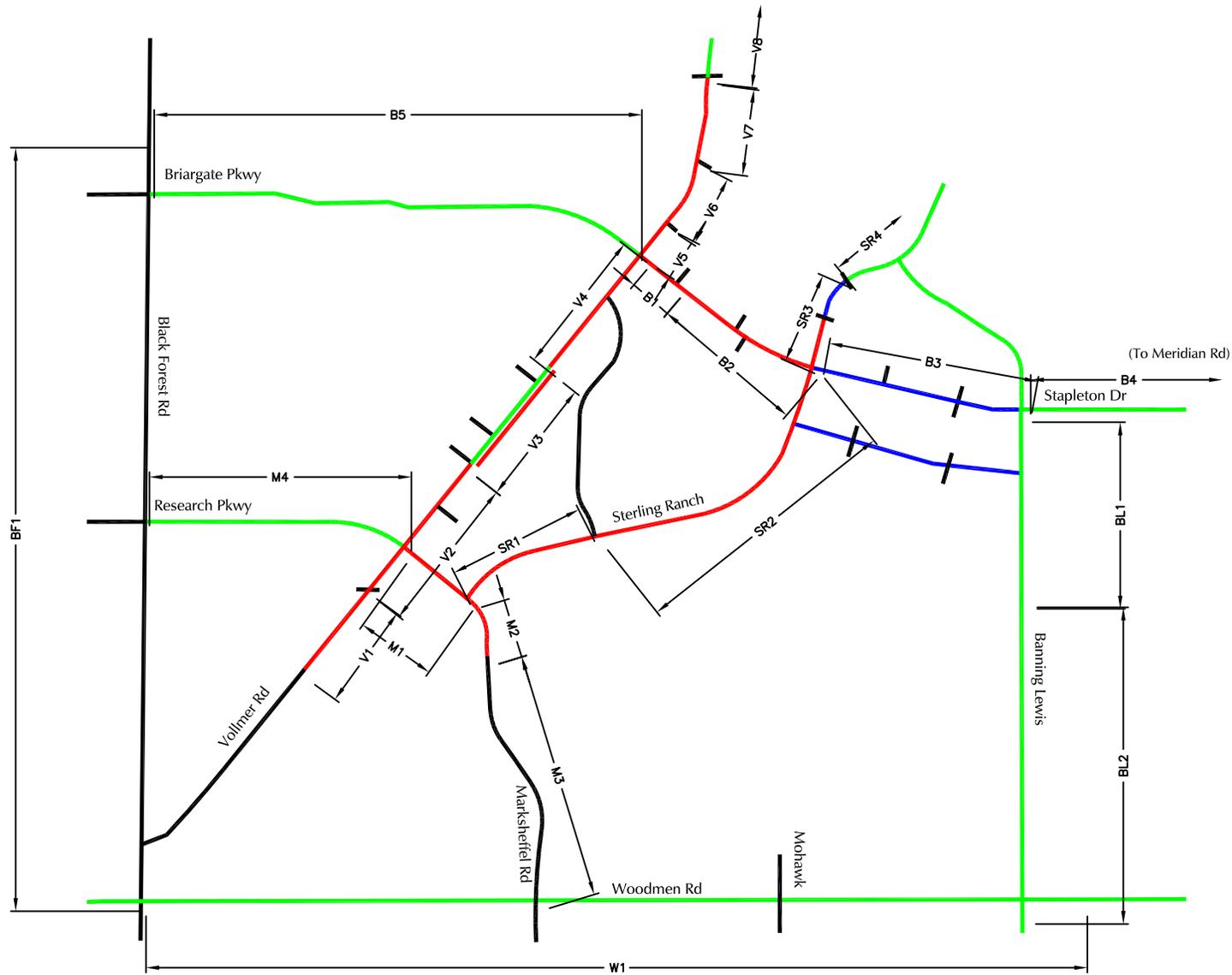


Figure 13  
**Roadway Classifications**

Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)



Not to scale



V1, B4, SR3, etc - Segment Identifier\*

- Short-Term
- Intermediate-Term
- Long-Term

\*See Table 4 for recommended roadway segment improvements for each segment.

# Roadway Improvement Segments\*

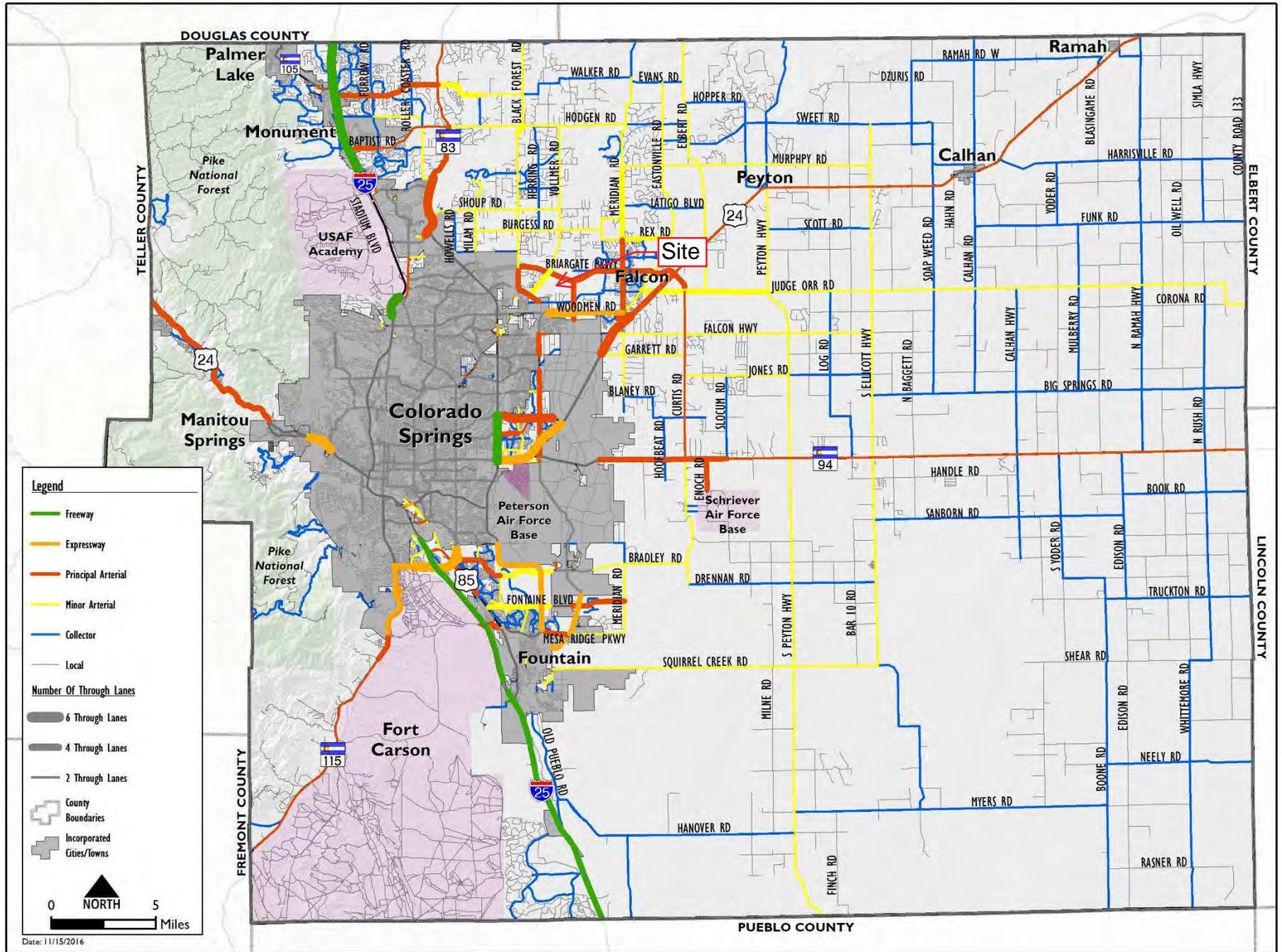
Sterling Ranch East Filing 5 Preliminary Plan (LSC# S234180)



Figure 14

**Appendix Table 1  
Area Traffic Impact Studies  
Sterling Ranch East Filing No. 5**

| <b>Study</b>  | <b>PCD File No<sup>(1)</sup></b>              | <b>Consultant</b>                   | <b>Date</b>                   |
|---|---|-------------------------------------|-------------------------------|
| <b>Sterling Ranch Reports</b>   |   |                                     |                               |
| Sterling Ranch Updated Traffic Impact Analysis  | <a href="#">SKP07007</a>                      | LSC Transportation Consultants, Inc | June 5, 2008                  |
| Sterling Ranch Phase 1 Traffic Impact Study   | <a href="#">P151</a>                          | LSC Transportation Consultants, Inc | March 16, 2015                |
| Sterling Ranch Phases 1-3 Transportation Memorandum   | <a href="#">SP1415</a>                        | LSC Transportation Consultants, Inc | October 2, 2017               |
| Branding Iron at Sterling Ranch Filing No. 1 and Homestead at Sterling Ranch Filing No. 1 Transportation  | <a href="#">SF1724</a> <a href="#">SF1725</a> | LSC Transportation Consultants, Inc | December 19, 2017             |
| Sterling Ranch Filing No. 2 Transportation Memorandum   | <a href="#">SF1820</a>                        | LSC Transportation Consultants, Inc | April 3, 2018                 |
| Sterling Ranch Phase 2 Preliminary Plan Traffic Impact Study  | <a href="#">SP203</a>                         | LSC Transportation Consultants, Inc | December 20, 2018             |
| Homestead at Sterling Ranch Filing No. 2 Transportation Memorandum  | <a href="#">SF194</a>                         | LSC Transportation Consultants, Inc | March 3, 2020                 |
| Branding Iron at Sterling Ranch Filing No. 2 Transportation Memorandum  | <a href="#">SF1918</a>                        | LSC Transportation Consultants, Inc | May 6, 2020                   |
| Sterling Ranch Filing No. 2 and Phase 2 Traffic Impact Study  | <a href="#">SF2015</a> <a href="#">SP191</a>  | LSC Transportation Consultants, Inc | June 23, 2021                 |
| Sterling Ranch Filing No. 3 Transportation Memorandum   | <a href="#">SF2132</a>                        | LSC Transportation Consultants, Inc | April 19, 2022                |
| Homestead North Phase 1 Updated Transportation Memorandum   | <a href="#">SP208</a>                         | LSC Transportation Consultants, Inc | January 11, 2022              |
| Homestead North Filing No. 1 Traffic Technical Memorandum   | <a href="#">SF2213</a>                        | LSC Transportation Consultants, Inc | February 2, 2022              |
| Homestead North Filing No. 2 Traffic Technical Memorandum   | <a href="#">SF2218</a>                        | LSC Transportation Consultants, Inc | April 15, 2022                |
| Homestead North Filing 3 Traffic Impact Study   | <a href="#">SF2229</a>                        | LSC Transportation Consultants, Inc | June 17, 2022                 |
| The Villages at Sterling Ranch East Preliminary Plan/Traffic Generation Analysis  | <a href="#">PUDSP226</a>                      | SM Rocha, LLC                       | July 1, 2022                  |
| Sterling Ranch Sketch Plan Amendment Master Traffic Impact Study  | <a href="#">SKP224</a>                        | LSC Transportation Consultants, Inc | March 17, 2023                |
| Sterling Ranch East - Rezoning & Preliminary Plan Traffic Impact Study  | <a href="#">SP-22-004, P-22-012, P-22-013</a> | LSC Transportation Consultants, Inc | March 17, 2023 <sup>(2)</sup> |
| Sterling Ranch East Filing Nos 1 & 2 Traffic Technical Memorandum   | <a href="#">SF2235</a> <a href="#">SF2237</a> | LSC Transportation Consultants, Inc | February 10, 2023             |
| Sterling Ranch Filing No. 4 Transportation Memorandum   | <a href="#">SF2230</a>                        | LSC Transportation Consultants, Inc | February 21, 2023             |
| Foursquare at Sterling Ranch East Transportation Memorandum   | <a href="#">SF2236</a>                        | LSC Transportation Consultants, Inc | April 20, 2023                |
| Copper Chase at Sterling Ranch Traffic Impact Study   | <a href="#">PUDSP222</a>                      | LSC Transportation Consultants, Inc | April 28, 2023                |
| <b>Retreat at TimberRidge Reports</b>   |   |                                     |                               |
| The Retreat at TimberRidge Traffic Impact Analysis  | <a href="#">PUD173</a>                        | LSC Transportation Consultants, Inc | January 25, 2018              |
| The Retreat at TimberRidge Preliminary Plan Traffic Technical Memorandum  | <a href="#">SP182</a>                         | LSC Transportation Consultants, Inc | June 29, 2018                 |
| The Retreat at TimberRidge Filing No. 1 Traffic Technical Memorandum  | <a href="#">SF199</a>                         | LSC Transportation Consultants, Inc | April 3, 2020                 |
| The Retreat at TimberRidge Filing No. 2 Updated Traffic Technical Memorandum  | <a href="#">SF2121</a>                        | LSC Transportation Consultants, Inc | October 4, 2021               |
| The Retreat at TimberRidge Filing No. 3 Traffic Technical Memorandum  | <a href="#">SF2241</a>                        | LSC Transportation Consultants, Inc | July 1, 2022                  |
| <b>Other Area Reports</b>   |   |                                     |                               |
| Wolf Ranch School Site Traffic Impact Study   | <a href="#">OAR1720</a>                       | Matrix Design Group, Inc.           | 5-May-17                      |
| The Ranch Sketch Plan Traffic Impact Analysis   | <a href="#">SKP186</a>                        | LSC Transportation Consultants, Inc | July 9, 2019                  |
| Lodge III Traffic Impact Study  | OAR   | LSC Transportation Consultants, Inc | December 13, 2019             |
| Continental 613 Traffic Impact Study  | <a href="#">OAR2177</a>                       | LSC Transportation Consultants, Inc | July 16, 2021                 |
| Solace at Black Forest Traffic Impact and Access Analysis   | <a href="#">OAR2134</a>                       | LSC Transportation Consultants, Inc | August 13, 2021               |
| Traffic Impact Study Addendum for Percheron   | <a href="#">OAR2173</a>                       | SM Rocha, LLC                       | October, 2021                 |
| Woodmen East Commercial Center Traffic Impact Analysis  | <a href="#">OAR2191</a>                       | LSC Transportation Consultants, Inc | December 8, 2021              |
| Traffic Impact Study for Jaynes Property  | <a href="#">SKP225</a>                        | SM Rocha, LLC                       | May, 2022                     |
| Traffic Impact Study for Rhetoric Site  | <a href="#">P2216</a>                         | SM Rocha, LLC                       | June, 2022                    |
| Briargate-Stapleton Corridor Study (DRAFT)  | <a href="#">briargate-stapleton.com</a>       | Wilson & Company                    | December 9, 2021              |
| Notes:  |   |                                     |                               |
| (1) Follow the links listed below to obtain the most recent version of each listed study. To obtain a copy of the version of each study used in preparing this report please contact LSC Transportation Consultants, Inc. |   |                                     |                               |
| (2) With minor revision 4/3/2023  |   |                                     |                               |
| Source: LSC Transportation Consultants, Inc.  |   |                                     |                               |



Map 14: 2040 Roadway Plan (Classification and Lanes)



# LSC Transportation Consultants, Inc.

2504 E. Pikes Peak Ave, Suite 304  
 Colorado Springs, CO 80909  
 719-633-2868

File Name : Vollmer Rd - Burgess Rd AM

Site Code : S224440

Start Date : 7/28/2022

Page No : 1

## Groups Printed- Unshifted

| Start Time  | Vollmer Rd Southbound |      |      |      |            | Burgess Rd Westbound |      |      |      |            | Vollmer Rd Northbound |      |      |      |            | Burgess Rd Eastbound |      |      |      |            | Int. Total |
|-------------|-----------------------|------|------|------|------------|----------------------|------|------|------|------------|-----------------------|------|------|------|------------|----------------------|------|------|------|------------|------------|
|             | Right                 | Thru | Left | Peds | App. Total | Right                | Thru | Left | Peds | App. Total | Right                 | Thru | Left | Peds | App. Total | Right                | Thru | Left | Peds | App. Total |            |
| 06:30       | 0                     | 15   | 5    | 0    | 20         | 19                   | 47   | 10   | 0    | 76         | 4                     | 5    | 1    | 0    | 10         | 0                    | 6    | 0    | 0    | 6          | 112        |
| 06:45       | 1                     | 15   | 4    | 0    | 20         | 17                   | 35   | 13   | 0    | 65         | 5                     | 5    | 1    | 0    | 11         | 3                    | 6    | 1    | 0    | 10         | 106        |
| Total       | 1                     | 30   | 9    | 0    | 40         | 36                   | 82   | 23   | 0    | 141        | 9                     | 10   | 2    | 0    | 21         | 3                    | 12   | 1    | 0    | 16         | 218        |
| 07:00       | 2                     | 20   | 9    | 0    | 31         | 15                   | 51   | 14   | 0    | 80         | 6                     | 9    | 1    | 0    | 16         | 2                    | 10   | 0    | 0    | 12         | 139        |
| 07:15       | 2                     | 14   | 8    | 0    | 24         | 21                   | 57   | 12   | 0    | 90         | 4                     | 11   | 5    | 0    | 20         | 1                    | 8    | 0    | 0    | 9          | 143        |
| 07:30       | 2                     | 17   | 7    | 0    | 26         | 19                   | 58   | 12   | 0    | 89         | 4                     | 19   | 5    | 0    | 28         | 3                    | 13   | 1    | 0    | 17         | 160        |
| 07:45       | 3                     | 16   | 10   | 0    | 29         | 17                   | 51   | 8    | 0    | 76         | 9                     | 11   | 3    | 0    | 23         | 0                    | 8    | 2    | 0    | 10         | 138        |
| Total       | 9                     | 67   | 34   | 0    | 110        | 72                   | 217  | 46   | 0    | 335        | 23                    | 50   | 14   | 0    | 87         | 6                    | 39   | 3    | 0    | 48         | 580        |
| 08:00       | 3                     | 22   | 5    | 0    | 30         | 17                   | 61   | 12   | 0    | 90         | 7                     | 8    | 4    | 0    | 19         | 6                    | 14   | 0    | 0    | 20         | 159        |
| 08:15       | 2                     | 16   | 6    | 0    | 24         | 7                    | 36   | 15   | 0    | 58         | 13                    | 16   | 3    | 0    | 32         | 3                    | 9    | 1    | 0    | 13         | 127        |
| Grand Total | 15                    | 135  | 54   | 0    | 204        | 132                  | 396  | 96   | 0    | 624        | 52                    | 84   | 23   | 0    | 159        | 18                   | 74   | 5    | 0    | 97         | 1084       |
| Apprch %    | 7.4                   | 66.2 | 26.5 | 0    |            | 21.2                 | 63.5 | 15.4 | 0    |            | 32.7                  | 52.8 | 14.5 | 0    |            | 18.6                 | 76.3 | 5.2  | 0    |            |            |
| Total %     | 1.4                   | 12.5 | 5    | 0    | 18.8       | 12.2                 | 36.5 | 8.9  | 0    | 57.6       | 4.8                   | 7.7  | 2.1  | 0    | 14.7       | 1.7                  | 6.8  | 0.5  | 0    | 8.9        |            |

# LSC Transportation Consultants, Inc.

2504 E. Pikes Peak Ave, Suite 304  
 Colorado Springs, CO 80909  
 719-633-2868

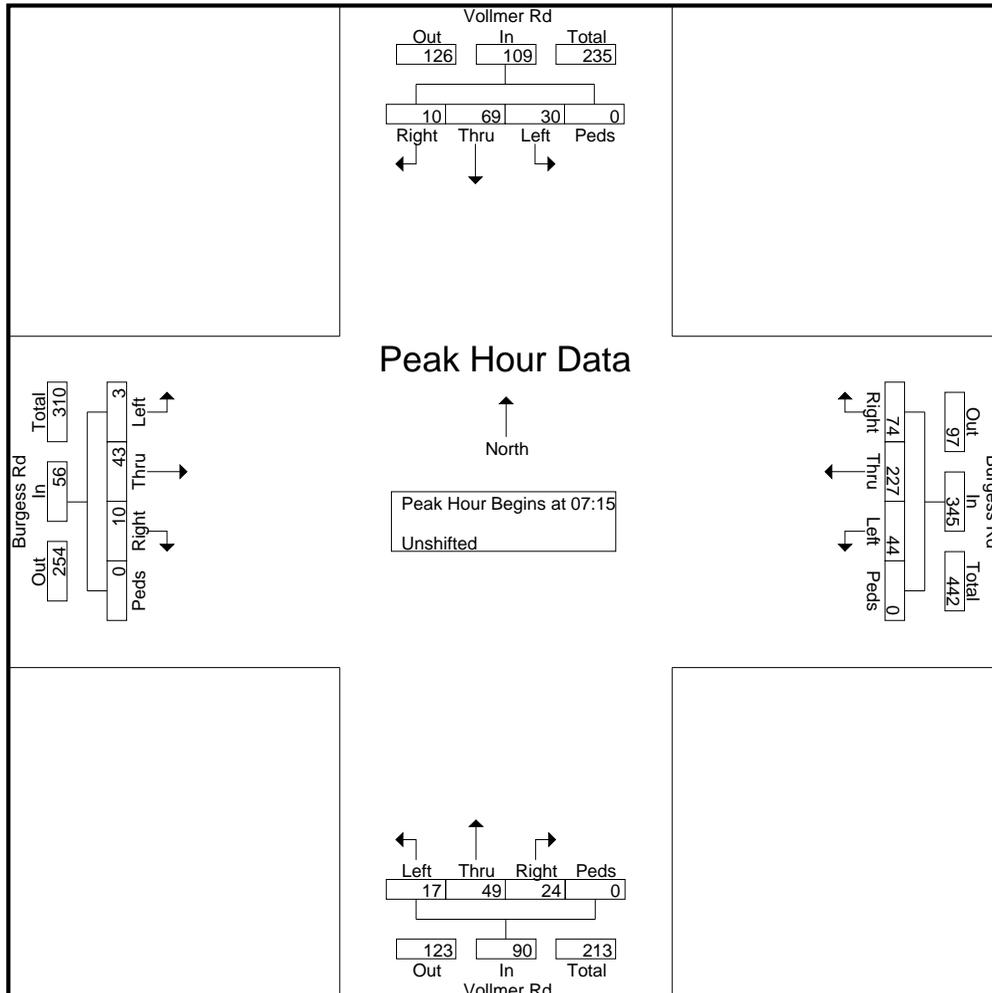
File Name : Vollmer Rd - Burgess Rd AM

Site Code : S224440

Start Date : 7/28/2022

Page No : 2

| Start Time   | Vollmer Rd Southbound |      |      |      |            | Burgess Rd Westbound |      |      |      |            | Vollmer Rd Northbound |      |      |      |            | Burgess Rd Eastbound |      |      |      |            | Int. Total |
|--|-----------------------|------|------|------|------------|----------------------|------|------|------|------------|-----------------------|------|------|------|------------|----------------------|------|------|------|------------|------------|
|  | Right                 | Thru | Left | Peds | App. Total | Right                | Thru | Left | Peds | App. Total | Right                 | Thru | Left | Peds | App. Total | Right                | Thru | Left | Peds | App. 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                     | 14   | 8    | 0    | 24         | 21                   | 57   | 12   | 0    | 90         | 4                     | 11   | 5    | 0    | 20         | 1                    | 8    | 0    | 0    | 9          | 143        |
| 7:30:00 AM   | 2                     | 17   | 7    | 0    | 26         | 19                   | 58   | 12   | 0    | 89         | 4                     | 19   | 5    | 0    | 28         | 3                    | 13   | 1    | 0    | 17         | 160        |
| 7:45:00 AM   | 3                     | 16   | 10   | 0    | 29         | 17                   | 51   | 8    | 0    | 76         | 9                     | 11   | 3    | 0    | 23         | 0                    | 8    | 2    | 0    | 10         | 138        |
| 8:00:00 AM   | 3                     | 22   | 5    | 0    | 30         | 17                   | 61   | 12   | 0    | 90         | 7                     | 8    | 4    | 0    | 19         | 6                    | 14   | 0    | 0    | 20         | 159        |
| Total Volume   | 10                    | 69   | 30   | 0    | 109        | 74                   | 227  | 44   | 0    | 345        | 24                    | 49   | 17   | 0    | 90         | 10                   | 43   | 3    | 0    | 56         | 600        |
| % App. Total   | 9.2                   | 63.3 | 27.5 | 0    |            | 21.4                 | 65.8 | 12.8 | 0    |            | 26.7                  | 54.4 | 18.9 | 0    |            | 17.9                 | 76.8 | 5.4  | 0    |            |            |
| PHF  | .833                  | .784 | .750 | .000 | .908       | .881                 | .930 | .917 | .000 | .958       | .667                  | .645 | .850 | .000 | .804       | .417                 | .768 | .375 | .000 | .700       | .938       |



# LSC Transportation Consultants, Inc.

2504 E. Pikes Peak Ave, Suite 304  
 Colorado Springs, CO 80909  
 719-633-2868

File Name : Vollmer Rd - Burgess Rd PM

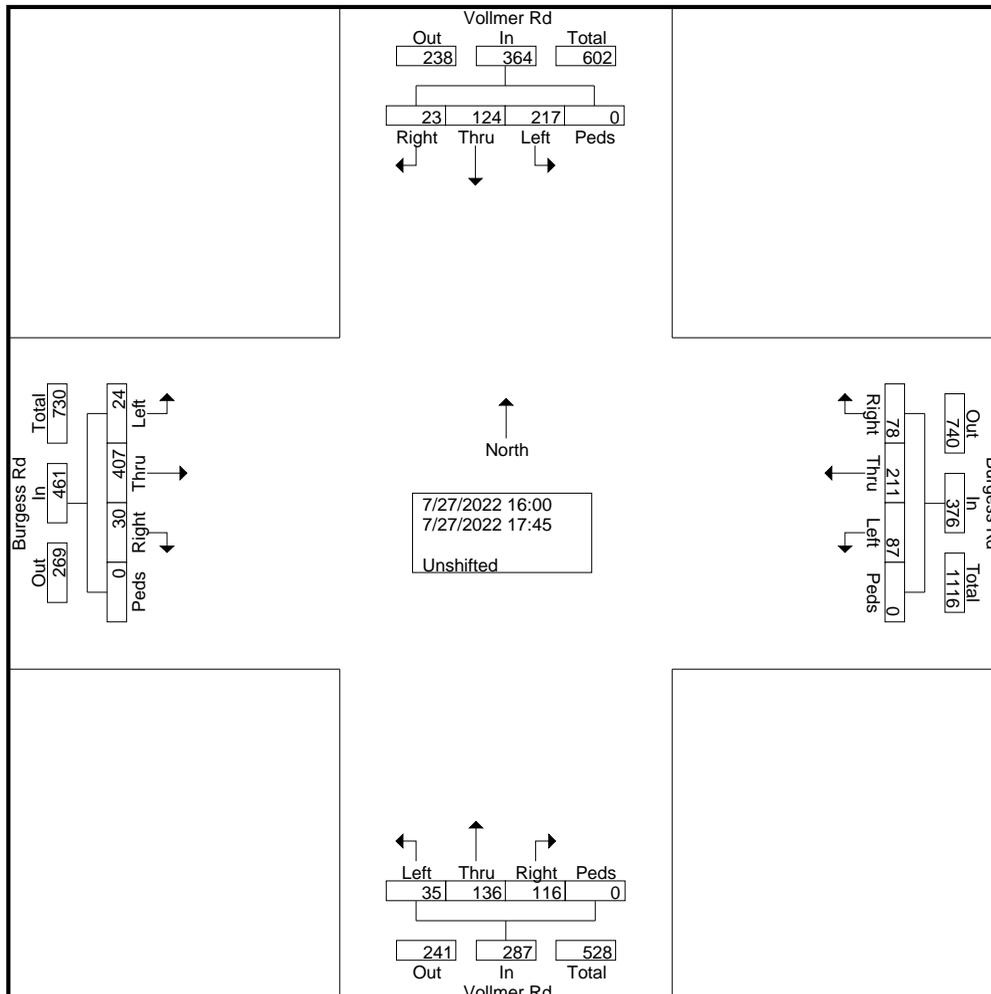
Site Code : S224440

Start Date : 7/27/2022

Page No : 1

## Groups Printed- Unshifted

| Start Time  | Vollmer Rd Southbound |      |      |      |            | Burgess Rd Westbound |      |      |      |            | Vollmer Rd Northbound |      |      |      |            | Burgess Rd Eastbound |      |      |      |            | Int. Total |
|-------------|-----------------------|------|------|------|------------|----------------------|------|------|------|------------|-----------------------|------|------|------|------------|----------------------|------|------|------|------------|------------|
|             | Right                 | Thru | Left | Peds | App. Total | Right                | Thru | Left | Peds | App. Total | Right                 | Thru | Left | Peds | App. Total | Right                | Thru | Left | Peds | App. Total |            |
| 16:00       | 2                     | 19   | 22   | 0    | 43         | 7                    | 21   | 7    | 0    | 35         | 9                     | 17   | 6    | 0    | 32         | 3                    | 37   | 3    | 0    | 43         | 153        |
| 16:15       | 5                     | 13   | 29   | 0    | 47         | 6                    | 23   | 11   | 0    | 40         | 18                    | 11   | 8    | 0    | 37         | 4                    | 37   | 5    | 0    | 46         | 170        |
| 16:30       | 2                     | 19   | 31   | 0    | 52         | 10                   | 30   | 9    | 0    | 49         | 12                    | 19   | 4    | 0    | 35         | 5                    | 46   | 3    | 0    | 54         | 190        |
| 16:45       | 1                     | 8    | 20   | 0    | 29         | 8                    | 33   | 17   | 0    | 58         | 16                    | 14   | 5    | 0    | 35         | 1                    | 65   | 0    | 0    | 66         | 188        |
| Total       | 10                    | 59   | 102  | 0    | 171        | 31                   | 107  | 44   | 0    | 182        | 55                    | 61   | 23   | 0    | 139        | 13                   | 185  | 11   | 0    | 209        | 701        |
| 17:00       | 5                     | 16   | 28   | 0    | 49         | 14                   | 29   | 9    | 0    | 52         | 16                    | 18   | 3    | 0    | 37         | 1                    | 56   | 3    | 0    | 60         | 198        |
| 17:15       | 1                     | 25   | 38   | 0    | 64         | 11                   | 31   | 10   | 0    | 52         | 18                    | 18   | 4    | 0    | 40         | 5                    | 77   | 3    | 0    | 85         | 241        |
| 17:30       | 1                     | 10   | 30   | 0    | 41         | 11                   | 21   | 19   | 0    | 51         | 13                    | 23   | 4    | 0    | 40         | 5                    | 46   | 1    | 0    | 52         | 184        |
| 17:45       | 6                     | 14   | 19   | 0    | 39         | 11                   | 23   | 5    | 0    | 39         | 14                    | 16   | 1    | 0    | 31         | 6                    | 43   | 6    | 0    | 55         | 164        |
| Total       | 13                    | 65   | 115  | 0    | 193        | 47                   | 104  | 43   | 0    | 194        | 61                    | 75   | 12   | 0    | 148        | 17                   | 222  | 13   | 0    | 252        | 787        |
| Grand Total | 23                    | 124  | 217  | 0    | 364        | 78                   | 211  | 87   | 0    | 376        | 116                   | 136  | 35   | 0    | 287        | 30                   | 407  | 24   | 0    | 461        | 1488       |
| Apprch %    | 6.3                   | 34.1 | 59.6 | 0    |            | 20.7                 | 56.1 | 23.1 | 0    |            | 40.4                  | 47.4 | 12.2 | 0    |            | 6.5                  | 88.3 | 5.2  | 0    |            |            |
| Total %     | 1.5                   | 8.3  | 14.6 | 0    | 24.5       | 5.2                  | 14.2 | 5.8  | 0    | 25.3       | 7.8                   | 9.1  | 2.4  | 0    | 19.3       | 2                    | 27.4 | 1.6  | 0    | 31         |            |



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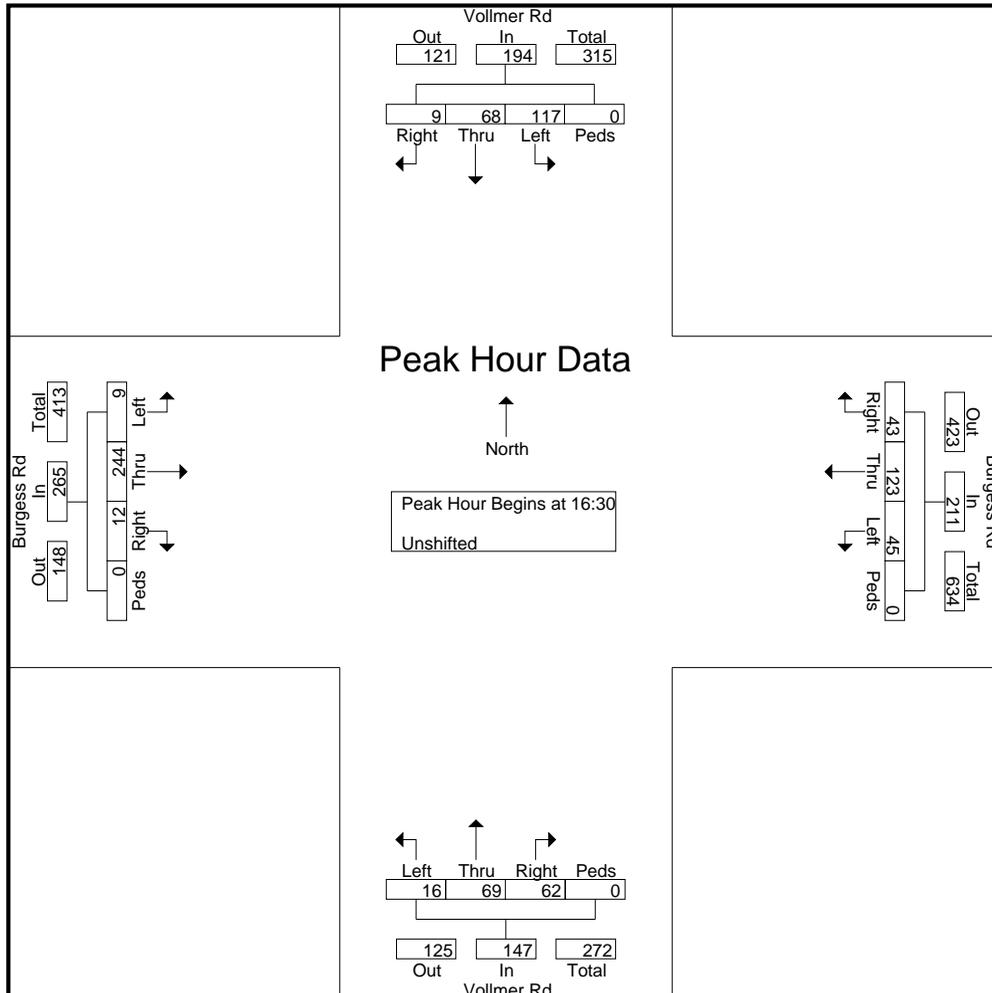
File Name : Vollmer Rd - Burgess Rd PM

Site Code : S224440

Start Date : 7/27/2022

Page No : 2

| Start Time   | Vollmer Rd Southbound |      |      |      |            | Burgess Rd Westbound |      |      |      |            | Vollmer Rd Northbound |      |      |      |            | Burgess Rd Eastbound |      |      |      |            | Int. Total |
|--|-----------------------|------|------|------|------------|----------------------|------|------|------|------------|-----------------------|------|------|------|------------|----------------------|------|------|------|------------|------------|
|  | Right                 | Thru | Left | Peds | App. Total | Right                | Thru | Left | Peds | App. Total | Right                 | Thru | Left | Peds | App. Total | Right                | Thru | Left | Peds | App. 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 4:30:00 PM         |                       |      |      |      |            |                      |      |      |      |            |                       |      |      |      |            |                      |      |      |      |            |            |
| 4:30:00 PM   | 2                     | 19   | 31   | 0    | 52         | 10                   | 30   | 9    | 0    | 49         | 12                    | 19   | 4    | 0    | 35         | 5                    | 46   | 3    | 0    | 54         | 190        |
| 4:45:00 PM   | 1                     | 8    | 20   | 0    | 29         | 8                    | 33   | 17   | 0    | 58         | 16                    | 14   | 5    | 0    | 35         | 1                    | 65   | 0    | 0    | 66         | 188        |
| 5:00:00 PM   | 5                     | 16   | 28   | 0    | 49         | 14                   | 29   | 9    | 0    | 52         | 16                    | 18   | 3    | 0    | 37         | 1                    | 56   | 3    | 0    | 60         | 198        |
| 5:15:00 PM   | 1                     | 25   | 38   | 0    | 64         | 11                   | 31   | 10   | 0    | 52         | 18                    | 18   | 4    | 0    | 40         | 5                    | 77   | 3    | 0    | 85         | 241        |
| Total Volume   | 9                     | 68   | 117  | 0    | 194        | 43                   | 123  | 45   | 0    | 211        | 62                    | 69   | 16   | 0    | 147        | 12                   | 244  | 9    | 0    | 265        | 817        |
| % App. Total   | 4.6                   | 35.1 | 60.3 | 0    |            | 20.4                 | 58.3 | 21.3 | 0    |            | 42.2                  | 46.9 | 10.9 | 0    |            | 4.5                  | 92.1 | 3.4  | 0    |            |            |
| PHF  | .450                  | .680 | .770 | .000 | .758       | .768                 | .932 | .662 | .000 | .909       | .861                  | .908 | .800 | .000 | .919       | .600                 | .792 | .750 | .000 | .779       | .848       |







ALL TRAFFIC DATA SERVICES

(303) 216-2439

www.alltrafficdata.net

**Location:** 6 Vollmer Road & Poco Road AM

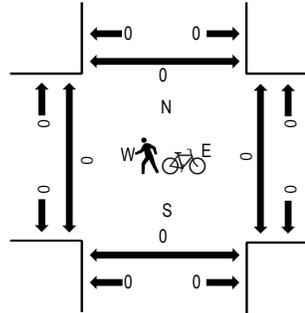
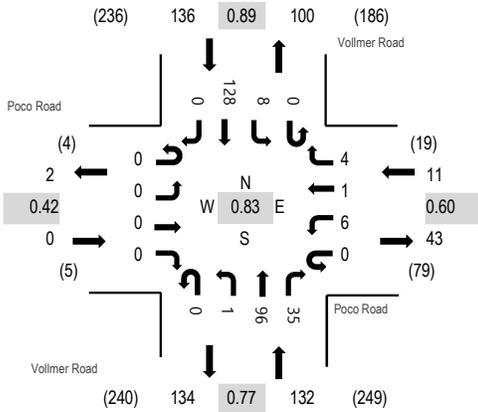
**Date:** Thursday, March 24, 2022

**Peak Hour:** 07:15 AM - 08:15 AM

**Peak 15-Minutes:** 07:45 AM - 08:00 AM

**Peak Hour - All Vehicles**

**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

| Interval<br>Start Time | Poco Road Eastbound |      |      |       | Poco Road Westbound |      |      |       | Vollmer Road Northbound |      |      |       | Vollmer Road Southbound |      |      |       | Total | Rolling Hour | Pedestrian Crossings |      |       |       |
|------------------------|---------------------|------|------|-------|---------------------|------|------|-------|-------------------------|------|------|-------|-------------------------|------|------|-------|-------|--------------|----------------------|------|-------|-------|
|                        | U-Turn              | Left | Thru | Right | U-Turn              | Left | Thru | Right | U-Turn                  | Left | Thru | Right | U-Turn                  | Left | Thru | Right |       |              | West                 | East | South | North |
| 7:00 AM                | 0                   | 0    | 0    | 0     | 0                   | 0    | 0    | 0     | 0                       | 0    | 10   | 15    | 0                       | 1    | 20   | 0     | 46    | 264          | 0                    | 0    | 0     | 0     |
| 7:15 AM                | 0                   | 0    | 0    | 0     | 0                   | 1    | 0    | 2     | 0                       | 0    | 18   | 8     | 0                       | 2    | 27   | 0     | 58    | 279          | 0                    | 0    | 0     | 0     |
| 7:30 AM                | 0                   | 0    | 0    | 0     | 0                   | 1    | 0    | 2     | 0                       | 1    | 26   | 8     | 0                       | 2    | 36   | 0     | 76    | 273          | 0                    | 0    | 0     | 0     |
| 7:45 AM                | 0                   | 0    | 0    | 0     | 0                   | 4    | 0    | 0     | 0                       | 0    | 34   | 9     | 0                       | 4    | 33   | 0     | 84    | 265          | 0                    | 0    | 0     | 0     |
| 8:00 AM                | 0                   | 0    | 0    | 0     | 0                   | 0    | 1    | 0     | 0                       | 0    | 18   | 10    | 0                       | 0    | 32   | 0     | 61    | 245          | 0                    | 0    | 0     | 0     |
| 8:15 AM                | 0                   | 0    | 0    | 0     | 0                   | 1    | 0    | 1     | 0                       | 0    | 24   | 3     | 0                       | 0    | 23   | 0     | 52    |              | 0                    | 0    | 0     | 0     |
| 8:30 AM                | 0                   | 0    | 0    | 2     | 0                   | 3    | 0    | 2     | 0                       | 1    | 24   | 6     | 0                       | 1    | 29   | 0     | 68    |              | 0                    | 0    | 0     | 0     |
| 8:45 AM                | 0                   | 2    | 0    | 1     | 0                   | 1    | 0    | 0     | 0                       | 1    | 23   | 10    | 0                       | 0    | 26   | 0     | 64    |              | 0                    | 0    | 0     | 0     |
| Count Total            | 0                   | 2    | 0    | 3     | 0                   | 11   | 1    | 7     | 0                       | 3    | 177  | 69    | 0                       | 10   | 226  | 0     | 509   |              | 0                    | 0    | 0     | 0     |
| Peak Hour              | 0                   | 0    | 0    | 0     | 0                   | 6    | 1    | 4     | 0                       | 1    | 96   | 35    | 0                       | 8    | 128  | 0     | 279   |              | 0                    | 0    | 0     | 0     |

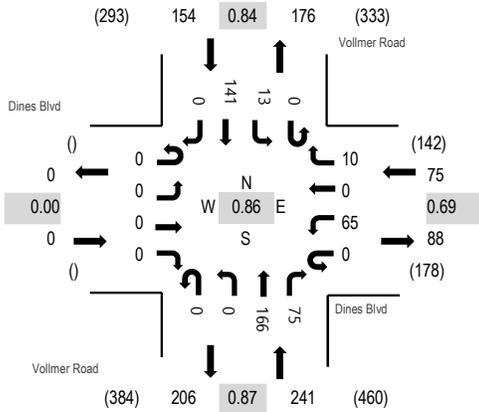
**Location:** 5 Vollmer Road & Dines Blvd PM

**Date:** Thursday, March 24, 2022

**Peak Hour:** 04:00 PM - 05:00 PM

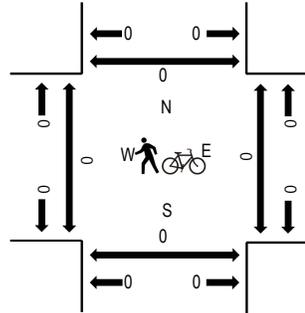
**Peak 15-Minutes:** 04:00 PM - 04:15 PM

**Peak Hour - All Vehicles**



Note: Total study counts contained in parentheses.

**Peak Hour - Pedestrians/Bicycles on Crosswalk**



**Traffic Counts**

| Interval<br>Start Time | Dines Blvd Eastbound |      |      |       | Dines Blvd Westbound |      |      |       | Vollmer Road Northbound |      |      |       | Vollmer Road Southbound |      |      |       | Total | Rolling Hour | Pedestrian Crossings |      |       |       |
|------------------------|----------------------|------|------|-------|----------------------|------|------|-------|-------------------------|------|------|-------|-------------------------|------|------|-------|-------|--------------|----------------------|------|-------|-------|
|                        | U-Turn               | Left | Thru | Right | U-Turn               | Left | Thru | Right | U-Turn                  | Left | Thru | Right | U-Turn                  | Left | Thru | Right |       |              | West                 | East | South | North |
| 4:00 PM                | 0                    | 0    | 0    | 0     | 0                    | 24   | 0    | 3     | 0                       | 0    | 46   | 18    | 0                       | 2    | 44   | 0     | 137   | 470          | 0                    | 0    | 0     | 0     |
| 4:15 PM                | 0                    | 0    | 0    | 0     | 0                    | 13   | 0    | 5     | 0                       | 0    | 36   | 25    | 0                       | 5    | 37   | 0     | 121   | 441          | 0                    | 0    | 0     | 0     |
| 4:30 PM                | 0                    | 0    | 0    | 0     | 0                    | 12   | 0    | 2     | 0                       | 0    | 35   | 11    | 0                       | 3    | 30   | 0     | 93    | 436          | 0                    | 0    | 0     | 0     |
| 4:45 PM                | 0                    | 0    | 0    | 0     | 0                    | 16   | 0    | 0     | 0                       | 0    | 49   | 21    | 0                       | 3    | 30   | 0     | 119   | 452          | 0                    | 0    | 0     | 0     |
| 5:00 PM                | 0                    | 0    | 0    | 0     | 0                    | 14   | 0    | 5     | 0                       | 0    | 42   | 18    | 0                       | 2    | 27   | 0     | 108   | 425          | 0                    | 0    | 0     | 0     |
| 5:15 PM                | 0                    | 0    | 0    | 0     | 0                    | 17   | 0    | 3     | 0                       | 0    | 39   | 17    | 0                       | 4    | 36   | 0     | 116   |              | 0                    | 0    | 0     | 0     |
| 5:30 PM                | 0                    | 0    | 0    | 0     | 0                    | 12   | 0    | 1     | 0                       | 0    | 36   | 21    | 0                       | 8    | 31   | 0     | 109   |              | 0                    | 0    | 0     | 0     |
| 5:45 PM                | 0                    | 0    | 0    | 0     | 0                    | 14   | 0    | 1     | 0                       | 0    | 30   | 16    | 0                       | 4    | 27   | 0     | 92    |              | 0                    | 0    | 0     | 0     |
| Count Total            | 0                    | 0    | 0    | 0     | 0                    | 122  | 0    | 20    | 0                       | 0    | 313  | 147   | 0                       | 31   | 262  | 0     | 895   |              | 0                    | 0    | 0     | 0     |
| Peak Hour              | 0                    | 0    | 0    | 0     | 0                    | 65   | 0    | 10    | 0                       | 0    | 166  | 75    | 0                       | 13   | 141  | 0     | 470   |              | 0                    | 0    | 0     | 0     |

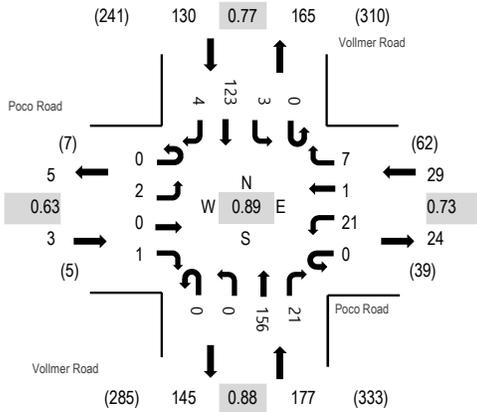
**Location:** 6 Vollmer Road & Poco Road PM

**Date:** Thursday, March 24, 2022

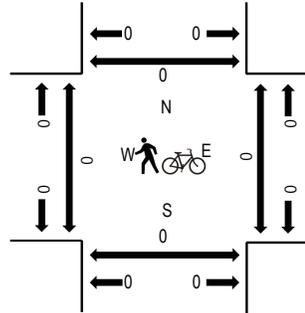
**Peak Hour:** 04:00 PM - 05:00 PM

**Peak 15-Minutes:** 04:15 PM - 04:30 PM

**Peak Hour - All Vehicles**



**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

| Interval<br>Start Time | Poco Road Eastbound |      |      |       | Poco Road Westbound |      |      |       | Vollmer Road Northbound |      |      |       | Vollmer Road Southbound |      |      |       | Total | Rolling Hour | Pedestrian Crossings |      |       |       |
|------------------------|---------------------|------|------|-------|---------------------|------|------|-------|-------------------------|------|------|-------|-------------------------|------|------|-------|-------|--------------|----------------------|------|-------|-------|
|                        | U-Turn              | Left | Thru | Right | U-Turn              | Left | Thru | Right | U-Turn                  | Left | Thru | Right | U-Turn                  | Left | Thru | Right |       |              | West                 | East | South | North |
| 4:00 PM                | 0                   | 0    | 0    | 0     | 0                   | 8    | 1    | 4     | 0                       | 0    | 41   | 4     | 0                       | 1    | 29   | 2     | 90    | 339          | 0                    | 0    | 0     | 0     |
| 4:15 PM                | 0                   | 1    | 0    | 0     | 0                   | 4    | 0    | 2     | 0                       | 0    | 40   | 6     | 0                       | 1    | 39   | 2     | 95    | 325          | 0                    | 0    | 0     | 0     |
| 4:30 PM                | 0                   | 0    | 0    | 0     | 0                   | 2    | 0    | 0     | 0                       | 0    | 32   | 3     | 0                       | 1    | 28   | 0     | 66    | 313          | 0                    | 0    | 0     | 0     |
| 4:45 PM                | 0                   | 1    | 0    | 1     | 0                   | 7    | 0    | 1     | 0                       | 0    | 43   | 8     | 0                       | 0    | 27   | 0     | 88    | 321          | 0                    | 0    | 0     | 0     |
| 5:00 PM                | 0                   | 0    | 0    | 2     | 0                   | 6    | 0    | 1     | 0                       | 0    | 44   | 3     | 0                       | 0    | 20   | 0     | 76    | 302          | 0                    | 0    | 0     | 0     |
| 5:15 PM                | 0                   | 0    | 0    | 0     | 0                   | 12   | 0    | 0     | 0                       | 0    | 37   | 4     | 0                       | 0    | 29   | 1     | 83    |              | 0                    | 0    | 0     | 0     |
| 5:30 PM                | 0                   | 0    | 0    | 0     | 0                   | 6    | 0    | 2     | 0                       | 0    | 33   | 3     | 0                       | 1    | 29   | 0     | 74    |              | 0                    | 0    | 0     | 0     |
| 5:45 PM                | 0                   | 0    | 0    | 0     | 0                   | 5    | 0    | 1     | 0                       | 1    | 27   | 4     | 0                       | 0    | 31   | 0     | 69    |              | 0                    | 0    | 0     | 0     |
| Count Total            | 0                   | 2    | 0    | 3     | 0                   | 50   | 1    | 11    | 0                       | 1    | 297  | 35    | 0                       | 4    | 232  | 5     | 641   |              | 0                    | 0    | 0     | 0     |
| Peak Hour              | 0                   | 2    | 0    | 1     | 0                   | 21   | 1    | 7     | 0                       | 0    | 156  | 21    | 0                       | 3    | 123  | 4     | 339   |              | 0                    | 0    | 0     | 0     |

HCM 6th TWSC  
1: Vollmer Rd & Burgess Rd

Existing Traffic  
AM Peak Hour

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 12.5 |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 3    | 43   | 10   | 44   | 227  | 74   | 17   | 49   | 24   | 30   | 69   | 10   |
| Future Vol, veh/h        | 3    | 43   | 10   | 44   | 227  | 74   | 17   | 49   | 24   | 30   | 69   | 10   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 4    | 51   | 12   | 52   | 267  | 87   | 20   | 58   | 28   | 35   | 81   | 12   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |       | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 446    | 283   | 87     | 301   | 275    | 72    | 93    | 0      | 0 | 86    | 0 | 0 |
| Stage 1              | 157    | 157   | -      | 112   | 112    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 289    | 126   | -      | 189   | 163    | -     | -     | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12  | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218 | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 523    | 626   | 971    | 651   | 632    | 990   | 1501  | -      | - | 1510  | - | - |
| Stage 1              | 845    | 768   | -      | 893   | 803    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 719    | 792   | -      | 813   | 763    | -     | -     | -      | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |       | -      | - | -     | - | - |
| Mov Cap-1 Maneuver   | 305    | 602   | 971    | 585   | 608    | 990   | 1501  | -      | - | 1510  | - | - |
| Mov Cap-2 Maneuver   | 305    | 602   | -      | 585   | 608    | -     | -     | -      | - | -     | - | - |
| Stage 1              | 833    | 750   | -      | 880   | 792    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 429    | 781   | -      | 731   | 745    | -     | -     | -      | - | -     | - | - |

| Approach             | EB   |  | WB   |  | NB  |  | SB |  |
|----------------------|------|--|------|--|-----|--|----|--|
| HCM Control Delay, s | 11.6 |  | 18.8 |  | 1.4 |  | 2  |  |
| HCM LOS              | B    |  | C    |  |     |  |    |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | WBLn1 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 1501  | -   | -   | 612   | 659   | 1510  | -   | -   |
| HCM Lane V/C Ratio    | 0.013 | -   | -   | 0.108 | 0.616 | 0.023 | -   | -   |
| HCM Control Delay (s) | 7.4   | 0   | -   | 11.6  | 18.8  | 7.4   | 0   | -   |
| HCM Lane LOS          | A     | A   | -   | B     | C     | A     | A   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | 0.4   | 4.2   | 0.1   | -   | -   |

HCM 6th TWSC  
1: Vollmer Rd & Burgess Rd

Existing Traffic  
PM Peak Hour

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 30   |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 9    | 224  | 12   | 45   | 123  | 43   | 16   | 69   | 62   | 117  | 68   | 9    |
| Future Vol, veh/h        | 9    | 224  | 12   | 45   | 123  | 43   | 16   | 69   | 62   | 117  | 68   | 9    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 78   | 78   | 78   | 87   | 87   | 87   | 92   | 92   | 92   | 78   | 78   | 78   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 12   | 287  | 15   | 52   | 141  | 49   | 17   | 75   | 67   | 150  | 87   | 12   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 631    | 569   | 93     | 687   | 542    | 109   | 99     | 0 | 0 | 142   | 0 | 0 |
| Stage 1              | 393    | 393   | -      | 143   | 143    | -     | -      | - | - | -     | - | - |
| Stage 2              | 238    | 176   | -      | 544   | 399    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 394    | 432   | 964    | 361   | 447    | 945   | 1494   | - | - | 1441  | - | - |
| Stage 1              | 632    | 606   | -      | 860   | 779    | -     | -      | - | - | -     | - | - |
| Stage 2              | 765    | 753   | -      | 523   | 602    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 246    | 380   | 964    | 125   | 393    | 945   | 1494   | - | - | 1441  | - | - |
| Mov Cap-2 Maneuver   | 246    | 380   | -      | 125   | 393    | -     | -      | - | - | -     | - | - |
| Stage 1              | 624    | 539   | -      | 850   | 770    | -     | -      | - | - | -     | - | - |
| Stage 2              | 585    | 744   | -      | 214   | 536    | -     | -      | - | - | -     | - | - |

| Approach             | EB | WB   | NB  | SB  |
|----------------------|----|------|-----|-----|
| HCM Control Delay, s | 45 | 55.9 | 0.8 | 4.7 |
| HCM LOS              | E  | F    |     |     |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | WBLn1 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 1494  | -   | -   | 384   | 294   | 1441  | -   | -   |
| HCM Lane V/C Ratio    | 0.012 | -   | -   | 0.818 | 0.825 | 0.104 | -   | -   |
| HCM Control Delay (s) | 7.4   | 0   | -   | 45    | 55.9  | 7.8   | 0   | -   |
| HCM Lane LOS          | A     | A   | -   | E     | F     | A     | A   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | 7.3   | 6.8   | 0.3   | -   | -   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.3  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↘    | ↗    | ↑    | ↗    | ↘    | ↗↗   |
| Traffic Vol, veh/h       | 70   | 17   | 112  | 54   | 3    | 133  |
| Future Vol, veh/h        | 70   | 17   | 112  | 54   | 3    | 133  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | 0    | -    | 155  | 205  | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 78   | 78   | 70   | 70   | 83   | 83   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 90   | 22   | 160  | 77   | 4    | 160  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |       |
|----------------------|--------|--------|--------|---|-------|
| Conflicting Flow All | 248    | 160    | 0      | 0 | 237   |
| Stage 1              | 160    | -      | -      | - | -     |
| Stage 2              | 88     | -      | -      | - | -     |
| Critical Hdwy        | 6.63   | 6.23   | -      | - | 4.13  |
| Critical Hdwy Stg 1  | 5.43   | -      | -      | - | -     |
| Critical Hdwy Stg 2  | 5.83   | -      | -      | - | -     |
| Follow-up Hdwy       | 3.519  | 3.319  | -      | - | 2.219 |
| Pot Cap-1 Maneuver   | 730    | 884    | -      | - | 1329  |
| Stage 1              | 868    | -      | -      | - | -     |
| Stage 2              | 926    | -      | -      | - | -     |
| Platoon blocked, %   |        |        | -      | - | -     |
| Mov Cap-1 Maneuver   | 728    | 884    | -      | - | 1329  |
| Mov Cap-2 Maneuver   | 728    | -      | -      | - | -     |
| Stage 1              | 868    | -      | -      | - | -     |
| Stage 2              | 923    | -      | -      | - | -     |

| Approach             | WB   | NB | SB  |
|----------------------|------|----|-----|
| HCM Control Delay, s | 10.3 | 0  | 0.2 |
| HCM LOS              | B    |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL   | SBT |
|-----------------------|-----|-----|-------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 728   | 884   | 1329  | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.123 | 0.025 | 0.003 | -   |
| HCM Control Delay (s) | -   | -   | 10.6  | 9.2   | 7.7   | -   |
| HCM Lane LOS          | -   | -   | B     | A     | A     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 0.4   | 0.1   | 0     | -   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.3  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↘    | ↗    | ↑    | ↗    | ↘    | ↗↗   |
| Traffic Vol, veh/h       | 65   | 10   | 166  | 75   | 13   | 141  |
| Future Vol, veh/h        | 65   | 10   | 166  | 75   | 13   | 141  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | 0    | -    | 155  | 205  | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 69   | 69   | 87   | 87   | 84   | 84   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 94   | 14   | 191  | 86   | 15   | 168  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |       |
|----------------------|--------|--------|--------|---|-------|
| Conflicting Flow All | 305    | 191    | 0      | 0 | 277   |
| Stage 1              | 191    | -      | -      | - | -     |
| Stage 2              | 114    | -      | -      | - | -     |
| Critical Hdwy        | 6.63   | 6.23   | -      | - | 4.13  |
| Critical Hdwy Stg 1  | 5.43   | -      | -      | - | -     |
| Critical Hdwy Stg 2  | 5.83   | -      | -      | - | -     |
| Follow-up Hdwy       | 3.519  | 3.319  | -      | - | 2.219 |
| Pot Cap-1 Maneuver   | 675    | 850    | -      | - | 1284  |
| Stage 1              | 841    | -      | -      | - | -     |
| Stage 2              | 899    | -      | -      | - | -     |
| Platoon blocked, %   |        |        | -      | - | -     |
| Mov Cap-1 Maneuver   | 667    | 850    | -      | - | 1284  |
| Mov Cap-2 Maneuver   | 667    | -      | -      | - | -     |
| Stage 1              | 841    | -      | -      | - | -     |
| Stage 2              | 888    | -      | -      | - | -     |

| Approach             | WB | NB | SB  |
|----------------------|----|----|-----|
| HCM Control Delay, s | 11 | 0  | 0.7 |
| HCM LOS              | B  |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL   | SBT |
|-----------------------|-----|-----|-------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 667   | 850   | 1284  | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.141 | 0.017 | 0.012 | -   |
| HCM Control Delay (s) | -   | -   | 11.3  | 9.3   | 7.8   | -   |
| HCM Lane LOS          | -   | -   | B     | A     | A     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 0.5   | 0.1   | 0     | -   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 56.3 |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 3    | 45   | 82   | 46   | 236  | 77   | 139  | 91   | 25   | 31   | 96   | 10   |
| Future Vol, veh/h        | 3    | 45   | 82   | 46   | 236  | 77   | 139  | 91   | 25   | 31   | 96   | 10   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 4    | 53   | 96   | 54   | 278  | 91   | 164  | 107  | 29   | 36   | 113  | 12   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 825    | 655   | 119    | 716   | 647    | 122   | 125    | 0 | 0 | 136   | 0 | 0 |
| Stage 1              | 191    | 191   | -      | 450   | 450    | -     | -      | - | - | -     | - | - |
| Stage 2              | 634    | 464   | -      | 266   | 197    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 292    | 386   | 933    | 345   | 390    | 929   | 1462   | - | - | 1448  | - | - |
| Stage 1              | 811    | 742   | -      | 589   | 572    | -     | -      | - | - | -     | - | - |
| Stage 2              | 467    | 564   | -      | 739   | 738    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 72     | 330   | 933    | 242   | 333    | 929   | 1462   | - | - | 1448  | - | - |
| Mov Cap-2 Maneuver   | 72     | 330   | -      | 242   | 333    | -     | -      | - | - | -     | - | - |
| Stage 1              | 712    | 722   | -      | 517   | 502    | -     | -      | - | - | -     | - | - |
| Stage 2              | 165    | 495   | -      | 597   | 718    | -     | -      | - | - | -     | - | - |

| Approach             | EB   | WB    | NB  | SB  |
|----------------------|------|-------|-----|-----|
| HCM Control Delay, s | 15.7 | 128.9 | 4.2 | 1.7 |
| HCM LOS              | C    | F     |     |     |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1 | SBL   | SBT   | SBR |
|-----------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h)      | 1462  | -   | -   | 489        | 366   | 1448  | -   |
| HCM Lane V/C Ratio    | 0.112 | -   | -   | 0.313      | 1.154 | 0.025 | -   |
| HCM Control Delay (s) | 7.8   | 0   | -   | 15.7       | 128.9 | 7.5   | 0   |
| HCM Lane LOS          | A     | A   | -   | C          | F     | A     | A   |
| HCM 95th %tile Q(veh) | 0.4   | -   | -   | 1.3        | 16.6  | 0.1   | -   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.5  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↘    | ↗    | ↑↑   | ↗    | ↘    | ↑↑   |
| Traffic Vol, veh/h       | 121  | 22   | 258  | 26   | 7    | 347  |
| Future Vol, veh/h        | 121  | 22   | 258  | 26   | 7    | 347  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 485  | -    | -    | 235  | 385  | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 142  | 26   | 304  | 31   | 8    | 408  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |      |   |
|----------------------|--------|--------|--------|---|------|---|
| Conflicting Flow All | 524    | 152    | 0      | 0 | 335  | 0 |
| Stage 1              | 304    | -      | -      | - | -    | - |
| Stage 2              | 220    | -      | -      | - | -    | - |
| Critical Hdwy        | 6.84   | 6.94   | -      | - | 4.14 | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | -    | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | -    | - |
| Follow-up Hdwy       | 3.52   | 3.32   | -      | - | 2.22 | - |
| Pot Cap-1 Maneuver   | 483    | 867    | -      | - | 1221 | - |
| Stage 1              | 722    | -      | -      | - | -    | - |
| Stage 2              | 795    | -      | -      | - | -    | - |
| Platoon blocked, %   |        |        | -      | - |      | - |
| Mov Cap-1 Maneuver   | 480    | 867    | -      | - | 1221 | - |
| Mov Cap-2 Maneuver   | 562    | -      | -      | - | -    | - |
| Stage 1              | 722    | -      | -      | - | -    | - |
| Stage 2              | 789    | -      | -      | - | -    | - |

| Approach             | WB   | NB | SB  |
|----------------------|------|----|-----|
| HCM Control Delay, s | 12.9 | 0  | 0.2 |
| HCM LOS              | B    |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | WBLn2 | SBL  | SBT   |
|-----------------------|-----|----------|-------|------|-------|
| Capacity (veh/h)      | -   | -        | 562   | 867  | 1221  |
| HCM Lane V/C Ratio    | -   | -        | 0.253 | 0.03 | 0.007 |
| HCM Control Delay (s) | -   | -        | 13.6  | 9.3  | 8     |
| HCM Lane LOS          | -   | -        | B     | A    | A     |
| HCM 95th %tile Q(veh) | -   | -        | 1     | 0.1  | 0     |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 8.5  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↘    | ↑↑   | ↗    | ↘    | ↑↑   | ↗    | ↘    | ↑    | ↗    | ↘    | ↑    | ↗    |
| Traffic Vol, veh/h       | 5    | 0    | 4    | 0    | 0    | 0    | 16   | 10   | 0    | 0    | 42   | 16   |
| Future Vol, veh/h        | 5    | 0    | 4    | 0    | 0    | 0    | 16   | 10   | 0    | 0    | 42   | 16   |
| 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 |
| Storage Length           | 535  | -    | 0    | 310  | -    | 0    | 410  | -    | 155  | 235  | -    | 155  |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 6    | 0    | 5    | 0    | 0    | 0    | 19   | 12   | 0    | 0    | 49   | 19   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |      |      | Minor2 |      |      |
|----------------------|--------|---|---|--------|---|---|--------|------|------|--------|------|------|
| Conflicting Flow All | 1      | 0 | 0 | 5      | 0 | 0 | 37     | 13   | 0    | 19     | 18   | 1    |
| Stage 1              | -      | - | - | -      | - | - | 12     | 12   | -    | 1      | 1    | -    |
| Stage 2              | -      | - | - | -      | - | - | 25     | 1    | -    | 18     | 17   | -    |
| 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   | 1620   | - | - | 1615   | - | - | 964    | 881  | -    | 992    | 875  | 1083 |
| Stage 1              | -      | - | - | -      | - | - | 1007   | 885  | -    | 1021   | 895  | -    |
| Stage 2              | -      | - | - | -      | - | - | 989    | 895  | -    | 999    | 881  | -    |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -    | -    | -      | -    | -    |
| Mov Cap-1 Maneuver   | 1620   | - | - | 1615   | - | - | 903    | 877  | -    | -      | 872  | 1083 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 903    | 877  | -    | -      | 872  | -    |
| Stage 1              | -      | - | - | -      | - | - | 1003   | 881  | -    | 1017   | 895  | -    |
| Stage 2              | -      | - | - | -      | - | - | 918    | 895  | -    | 982    | 877  | -    |

| Approach             | EB |  |  | WB |  |  | NB  |  |  | SB  |  |  |
|----------------------|----|--|--|----|--|--|-----|--|--|-----|--|--|
| HCM Control Delay, s | 4  |  |  | 0  |  |  | 9.1 |  |  | 9.1 |  |  |
| HCM LOS              |    |  |  |    |  |  | A   |  |  | A   |  |  |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | NBLn3 | EBL   | EBT | EBR | WBL  | WBT | WBR | SBLn1 | SBLn2 | SBLn3       |
|-----------------------|-------|-------|-------|-------|-----|-----|------|-----|-----|-------|-------|-------------|
| Capacity (veh/h)      | 903   | 877   | -     | 1620  | -   | -   | 1615 | -   | -   | -     | -     | 872 1083    |
| HCM Lane V/C Ratio    | 0.021 | 0.013 | -     | 0.004 | -   | -   | -    | -   | -   | -     | -     | 0.057 0.017 |
| HCM Control Delay (s) | 9.1   | 9.2   | 0     | 7.2   | -   | -   | 0    | -   | -   | 0     | 9.4   | 8.4         |
| HCM Lane LOS          | A     | A     | A     | A     | -   | -   | A    | -   | -   | A     | A     | A           |
| HCM 95th %tile Q(veh) | 0.1   | 0     | -     | 0     | -   | -   | 0    | -   | -   | -     | 0.2   | 0.1         |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 7.2  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↘    | ↗    | ↑↑   | ↗    | ↘    | ↑↑   |
| Traffic Vol, veh/h       | 145  | 80   | 226  | 35   | 135  | 386  |
| Future Vol, veh/h        | 145  | 80   | 226  | 35   | 135  | 386  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 300  | -    | -    | 155  | 300  | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 171  | 94   | 266  | 41   | 159  | 454  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |      |   |
|----------------------|--------|--------|--------|---|------|---|
| Conflicting Flow All | 811    | 133    | 0      | 0 | 307  | 0 |
| Stage 1              | 266    | -      | -      | - | -    | - |
| Stage 2              | 545    | -      | -      | - | -    | - |
| Critical Hdwy        | 6.84   | 6.94   | -      | - | 4.14 | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | -    | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | -    | - |
| Follow-up Hdwy       | 3.52   | 3.32   | -      | - | 2.22 | - |
| Pot Cap-1 Maneuver   | 317    | 892    | -      | - | 1250 | - |
| Stage 1              | 754    | -      | -      | - | -    | - |
| Stage 2              | 545    | -      | -      | - | -    | - |
| Platoon blocked, %   |        |        | -      | - |      | - |
| Mov Cap-1 Maneuver   | 277    | 892    | -      | - | 1250 | - |
| Mov Cap-2 Maneuver   | 277    | -      | -      | - | -    | - |
| Stage 1              | 754    | -      | -      | - | -    | - |
| Stage 2              | 476    | -      | -      | - | -    | - |

| Approach             | WB   | NB | SB  |
|----------------------|------|----|-----|
| HCM Control Delay, s | 27.1 | 0  | 2.2 |
| HCM LOS              | D    |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL   | SBT |
|-----------------------|-----|-----|-------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 277   | 892   | 1250  | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.616 | 0.106 | 0.127 | -   |
| HCM Control Delay (s) | -   | -   | 36.8  | 9.5   | 8.3   | -   |
| HCM Lane LOS          | -   | -   | E     | A     | A     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 3.8   | 0.4   | 0.4   | -   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 9.3  |      |      |      |      |      |
| Movement                 | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
| Lane Configurations      | ↘    | ↑↑   | ↑↑   | ↗    | ↘    | ↗    |
| Traffic Vol, veh/h       | 37   | 133  | 80   | 118  | 354  | 146  |
| Future Vol, veh/h        | 37   | 133  | 80   | 118  | 354  | 146  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 300  | -    | -    | 205  | 155  | 0    |
| Veh in Median Storage, # | -    | 0    | 0    | -    | 0    | -    |
| Grade, %                 | -    | 0    | 0    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 44   | 156  | 94   | 139  | 416  | 172  |

| Major/Minor          | Major1 | Major2 | Minor2 |   |      |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 233    | 0      | -      | 0 | 260  |
| Stage 1              | -      | -      | -      | - | 94   |
| Stage 2              | -      | -      | -      | - | 166  |
| 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   | 1332   | -      | -      | - | 707  |
| Stage 1              | -      | -      | -      | - | 919  |
| Stage 2              | -      | -      | -      | - | 846  |
| Platoon blocked, %   |        | -      | -      | - |      |
| Mov Cap-1 Maneuver   | 1332   | -      | -      | - | 684  |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 684  |
| Stage 1              | -      | -      | -      | - | 889  |
| Stage 2              | -      | -      | -      | - | 846  |

| Approach             | EB  | WB | SB   |
|----------------------|-----|----|------|
| HCM Control Delay, s | 1.7 | 0  | 15.5 |
| HCM LOS              |     |    | C    |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h)      | 1332  | -   | -   | -   | 684   | 1012  |
| HCM Lane V/C Ratio    | 0.033 | -   | -   | -   | 0.609 | 0.17  |
| HCM Control Delay (s) | 7.8   | -   | -   | -   | 18.1  | 9.3   |
| HCM Lane LOS          | A     | -   | -   | -   | C     | A     |
| HCM 95th %tile Q(veh) | 0.1   | -   | -   | -   | 4.2   | 0.6   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.1  |      |      |      |      |      |
| Movement                 | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
| Lane Configurations      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 23   | 29   | 78   | 1    | 3    | 71   |
| Future Vol, veh/h        | 23   | 29   | 78   | 1    | 3    | 71   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 305  | -    | -    | -    | 0    | -    |
| Veh in Median Storage, # | -    | 0    | 0    | -    | 0    | -    |
| Grade, %                 | -    | 0    | 0    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 27   | 34   | 92   | 1    | 4    | 84   |

| Major/Minor          | Major1 | Major2 | Minor2 |   |       |
|----------------------|--------|--------|--------|---|-------|
| Conflicting Flow All | 93     | 0      | -      | 0 | 181   |
| Stage 1              | -      | -      | -      | - | 93    |
| Stage 2              | -      | -      | -      | - | 88    |
| Critical Hdwy        | 4.12   | -      | -      | - | 6.42  |
| Critical Hdwy Stg 1  | -      | -      | -      | - | 5.42  |
| Critical Hdwy Stg 2  | -      | -      | -      | - | 5.42  |
| Follow-up Hdwy       | 2.218  | -      | -      | - | 3.518 |
| Pot Cap-1 Maneuver   | 1501   | -      | -      | - | 808   |
| Stage 1              | -      | -      | -      | - | 931   |
| Stage 2              | -      | -      | -      | - | 935   |
| Platoon blocked, %   |        | -      | -      | - |       |
| Mov Cap-1 Maneuver   | 1501   | -      | -      | - | 793   |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 783   |
| Stage 1              | -      | -      | -      | - | 914   |
| Stage 2              | -      | -      | -      | - | 935   |

| Approach             | EB  | WB | SB  |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 3.3 | 0  | 9.1 |
| HCM LOS              |     |    | A   |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h)      | 1501  | -   | -   | -   | 955   |
| HCM Lane V/C Ratio    | 0.018 | -   | -   | -   | 0.091 |
| HCM Control Delay (s) | 7.4   | -   | -   | -   | 9.1   |
| HCM Lane LOS          | A     | -   | -   | -   | A     |
| HCM 95th %tile Q(veh) | 0.1   | -   | -   | -   | 0.3   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.8  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | ↔    |      | ↔    | ↑    | ↑    |      |
| Traffic Vol, veh/h       | 6    | 35   | 12   | 20   | 44   | 2    |
| Future Vol, veh/h        | 6    | 35   | 12   | 20   | 44   | 2    |
| 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    | -    | 205  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 7    | 41   | 14   | 24   | 52   | 2    |

| Major/Minor          | Minor2 | Major1 |       | Major2 |   |
|----------------------|--------|--------|-------|--------|---|
| Conflicting Flow All | 105    | 53     | 54    | 0      | 0 |
| Stage 1              | 53     | -      | -     | -      | - |
| Stage 2              | 52     | -      | -     | -      | - |
| Critical Hdwy        | 6.42   | 6.22   | 4.12  | -      | - |
| Critical Hdwy Stg 1  | 5.42   | -      | -     | -      | - |
| Critical Hdwy Stg 2  | 5.42   | -      | -     | -      | - |
| Follow-up Hdwy       | 3.518  | 3.318  | 2.218 | -      | - |
| Pot Cap-1 Maneuver   | 893    | 1014   | 1551  | -      | - |
| Stage 1              | 970    | -      | -     | -      | - |
| Stage 2              | 970    | -      | -     | -      | - |
| Platoon blocked, %   |        |        |       | -      | - |
| Mov Cap-1 Maneuver   | 885    | 1014   | 1551  | -      | - |
| Mov Cap-2 Maneuver   | 844    | -      | -     | -      | - |
| Stage 1              | 961    | -      | -     | -      | - |
| Stage 2              | 970    | -      | -     | -      | - |

| Approach             | EB  | NB  | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 8.8 | 2.8 | 0  |
| HCM LOS              | A   |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1551  | -   | 985   | -   | -   |
| HCM Lane V/C Ratio    | 0.009 | -   | 0.049 | -   | -   |
| HCM Control Delay (s) | 7.3   | -   | 8.8   | -   | -   |
| HCM Lane LOS          | A     | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | 0.2   | -   | -   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 66.9 |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 9    | 254  | 96   | 47   | 128  | 45   | 77   | 93   | 65   | 122  | 99   | 9    |
| Future Vol, veh/h        | 9    | 254  | 96   | 47   | 128  | 45   | 77   | 93   | 65   | 122  | 99   | 9    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 11   | 299  | 113  | 55   | 151  | 53   | 91   | 109  | 76   | 144  | 116  | 11   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 841    | 777   | 122    | 945   | 744    | 147   | 127    | 0 | 0 | 185   | 0 | 0 |
| Stage 1              | 410    | 410   | -      | 329   | 329    | -     | -      | - | - | -     | - | - |
| Stage 2              | 431    | 367   | -      | 616   | 415    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 284    | 328   | 929    | 242   | 343    | 900   | 1459   | - | - | 1390  | - | - |
| Stage 1              | 619    | 595   | -      | 684   | 646    | -     | -      | - | - | -     | - | - |
| Stage 2              | 603    | 622   | -      | 478   | 592    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 136    | ~ 271 | 929    | -     | 283    | 900   | 1459   | - | - | 1390  | - | - |
| Mov Cap-2 Maneuver   | 136    | ~ 271 | -      | -     | 283    | -     | -      | - | - | -     | - | - |
| Stage 1              | 576    | 528   | -      | 636   | 601    | -     | -      | - | - | -     | - | - |
| Stage 2              | 396    | 578   | -      | 162   | 526    | -     | -      | - | - | -     | - | - |

| Approach             | EB    | WB | NB  | SB  |
|----------------------|-------|----|-----|-----|
| HCM Control Delay, s | 190.2 |    | 2.5 | 4.2 |
| HCM LOS              | F     | -  |     |     |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1WBLn1 | SBL | SBT   | SBR |
|-----------------------|-------|-----|-----|------------|-----|-------|-----|
| Capacity (veh/h)      | 1459  | -   | -   | 324        | -   | 1390  | -   |
| HCM Lane V/C Ratio    | 0.062 | -   | -   | 1.304      | -   | 0.103 | -   |
| HCM Control Delay (s) | 7.6   | 0   | -   | 190.2      | -   | 7.9   | 0   |
| HCM Lane LOS          | A     | A   | -   | F          | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0.2   | -   | -   | 20.2       | -   | 0.3   | -   |

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

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.7  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↘    | ↗    | ↕↕   | ↗    | ↘    | ↕↕   |
| Traffic Vol, veh/h       | 80   | 15   | 502  | 87   | 25   | 316  |
| Future Vol, veh/h        | 80   | 15   | 502  | 87   | 25   | 316  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 485  | -    | -    | 235  | 385  | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 94   | 18   | 591  | 102  | 29   | 372  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |      |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 835    | 296    | 0      | 0 | 693  |
| Stage 1              | 591    | -      | -      | - | -    |
| Stage 2              | 244    | -      | -      | - | -    |
| Critical Hdwy        | 6.84   | 6.94   | -      | - | 4.14 |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | -    |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | -    |
| Follow-up Hdwy       | 3.52   | 3.32   | -      | - | 2.22 |
| Pot Cap-1 Maneuver   | 306    | 700    | -      | - | 898  |
| Stage 1              | 516    | -      | -      | - | -    |
| Stage 2              | 774    | -      | -      | - | -    |
| Platoon blocked, %   |        |        | -      | - | -    |
| Mov Cap-1 Maneuver   | 296    | 700    | -      | - | 898  |
| Mov Cap-2 Maneuver   | 405    | -      | -      | - | -    |
| Stage 1              | 516    | -      | -      | - | -    |
| Stage 2              | 749    | -      | -      | - | -    |

| Approach             | WB   | NB | SB  |
|----------------------|------|----|-----|
| HCM Control Delay, s | 15.6 | 0  | 0.7 |
| HCM LOS              | C    |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | WBLn2 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|-------|
| Capacity (veh/h)      | -   | -        | 405   | 700   | 898   |
| HCM Lane V/C Ratio    | -   | -        | 0.232 | 0.025 | 0.033 |
| HCM Control Delay (s) | -   | -        | 16.6  | 10.3  | 9.1   |
| HCM Lane LOS          | -   | -        | C     | B     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.9   | 0.1   | 0.1   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 8    |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↘    | ↗    | ↘    | ↘    | ↗    | ↘    | ↘    | ↗    | ↘    | ↘    | ↗    | ↘    |
| Traffic Vol, veh/h       | 18   | 0    | 14   | 0    | 0    | 0    | 20   | 35   | 0    | 0    | 28   | 11   |
| Future Vol, veh/h        | 18   | 0    | 14   | 0    | 0    | 0    | 20   | 35   | 0    | 0    | 28   | 11   |
| 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 |
| Storage Length           | 535  | -    | 0    | 310  | -    | 0    | 410  | -    | 155  | 235  | -    | 155  |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 21   | 0    | 16   | 0    | 0    | 0    | 24   | 41   | 0    | 0    | 33   | 13   |

| Major/Minor          | Major1 |   | Major2 |      | Minor1 |   | Minor2 |      |      |      |      |      |
|----------------------|--------|---|--------|------|--------|---|--------|------|------|------|------|------|
| Conflicting Flow All | 1      | 0 | 0      | 16   | 0      | 0 | 59     | 43   | 0    | 64   | 59   | 1    |
| Stage 1              | -      | - | -      | -    | -      | - | 42     | 42   | -    | 1    | 1    | -    |
| Stage 2              | -      | - | -      | -    | -      | - | 17     | 1    | -    | 63   | 58   | -    |
| 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   | 1620   | - | -      | 1600 | -      | - | 930    | 848  | -    | 923  | 831  | 1083 |
| Stage 1              | -      | - | -      | -    | -      | - | 967    | 859  | -    | 1021 | 895  | -    |
| Stage 2              | -      | - | -      | -    | -      | - | 1000   | 895  | -    | 941  | 846  | -    |
| Platoon blocked, %   | -      | - | -      | -    | -      | - | -      | -    | -    | -    | -    | -    |
| Mov Cap-1 Maneuver   | 1620   | - | -      | 1600 | -      | - | 882    | 837  | -    | -    | 820  | 1083 |
| Mov Cap-2 Maneuver   | -      | - | -      | -    | -      | - | 882    | 837  | -    | -    | 820  | -    |
| Stage 1              | -      | - | -      | -    | -      | - | 954    | 848  | -    | 1008 | 895  | -    |
| Stage 2              | -      | - | -      | -    | -      | - | 952    | 895  | -    | 884  | 835  | -    |

| Approach             | EB  | WB | NB  | SB  |
|----------------------|-----|----|-----|-----|
| HCM Control Delay, s | 4.1 | 0  | 9.4 | 9.3 |
| HCM LOS              |     |    | A   | A   |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | NBLn3 | EBL   | EBT | EBR | WBL  | WBT | WBR | SBLn1 | SBLn2 | SBLn3 |
|-----------------------|-------|-------|-------|-------|-----|-----|------|-----|-----|-------|-------|-------|
| Capacity (veh/h)      | 882   | 837   | -     | 1620  | -   | -   | 1600 | -   | -   | -     | 820   | 1083  |
| HCM Lane V/C Ratio    | 0.027 | 0.049 | -     | 0.013 | -   | -   | -    | -   | -   | -     | 0.04  | 0.012 |
| HCM Control Delay (s) | 9.2   | 9.5   | 0     | 7.3   | -   | -   | 0    | -   | -   | 0     | 9.6   | 8.4   |
| HCM Lane LOS          | A     | A     | A     | A     | -   | -   | A    | -   | -   | A     | A     | A     |
| HCM 95th %tile Q(veh) | 0.1   | 0.2   | -     | 0     | -   | -   | 0    | -   | -   | -     | 0.1   | 0     |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 6.2  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↘    | ↗    | ↑↑   | ↗    | ↘    | ↑↑   |
| Traffic Vol, veh/h       | 97   | 178  | 506  | 118  | 115  | 320  |
| Future Vol, veh/h        | 97   | 178  | 506  | 118  | 115  | 320  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 300  | -    | -    | 155  | 300  | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 114  | 209  | 595  | 139  | 135  | 376  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |      |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 1053   | 298    | 0      | 0 | 734  |
| Stage 1              | 595    | -      | -      | - | -    |
| Stage 2              | 458    | -      | -      | - | -    |
| Critical Hdwy        | 6.84   | 6.94   | -      | - | 4.14 |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | -    |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | -    |
| Follow-up Hdwy       | 3.52   | 3.32   | -      | - | 2.22 |
| Pot Cap-1 Maneuver   | 222    | 698    | -      | - | 867  |
| Stage 1              | 514    | -      | -      | - | -    |
| Stage 2              | 604    | -      | -      | - | -    |
| Platoon blocked, %   |        |        | -      | - | -    |
| Mov Cap-1 Maneuver   | 187    | 698    | -      | - | 867  |
| Mov Cap-2 Maneuver   | 187    | -      | -      | - | -    |
| Stage 1              | 514    | -      | -      | - | -    |
| Stage 2              | 510    | -      | -      | - | -    |

| Approach             | WB   | NB | SB  |
|----------------------|------|----|-----|
| HCM Control Delay, s | 25.8 | 0  | 2.6 |
| HCM LOS              | D    |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | WBLn2 | SBL  | SBT   |
|-----------------------|-----|----------|-------|------|-------|
| Capacity (veh/h)      | -   | -        | 187   | 698  | 867   |
| HCM Lane V/C Ratio    | -   | -        | 0.61  | 0.3  | 0.156 |
| HCM Control Delay (s) | -   | -        | 50.5  | 12.4 | 9.9   |
| HCM Lane LOS          | -   | -        | F     | B    | A     |
| HCM 95th %tile Q(veh) | -   | -        | 3.4   | 1.3  | 0.6   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 9.2  |      |      |      |      |      |
| Movement                 | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
| Lane Configurations      | ↘    | ↑↑   | ↑↑   | ↗    | ↘    | ↗    |
| Traffic Vol, veh/h       | 125  | 108  | 178  | 398  | 235  | 97   |
| Future Vol, veh/h        | 125  | 108  | 178  | 398  | 235  | 97   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 300  | -    | -    | 205  | 155  | 0    |
| Veh in Median Storage, # | -    | 0    | 0    | -    | 0    | -    |
| Grade, %                 | -    | 0    | 0    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 147  | 127  | 209  | 468  | 276  | 114  |

| Major/Minor          | Major1 | Major2 | Minor2 |   |      |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 677    | 0      | -      | 0 | 567  |
| Stage 1              | -      | -      | -      | - | 209  |
| Stage 2              | -      | -      | -      | - | 358  |
| 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   | 911    | -      | -      | - | 454  |
| Stage 1              | -      | -      | -      | - | 806  |
| Stage 2              | -      | -      | -      | - | 678  |
| Platoon blocked, %   |        | -      | -      | - |      |
| Mov Cap-1 Maneuver   | 911    | -      | -      | - | 381  |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 381  |
| Stage 1              | -      | -      | -      | - | 676  |
| Stage 2              | -      | -      | -      | - | 678  |

| Approach             | EB  | WB | SB   |
|----------------------|-----|----|------|
| HCM Control Delay, s | 5.2 | 0  | 28.1 |
| HCM LOS              |     |    | D    |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h)      | 911   | -   | -   | -   | 381   | 929   |
| HCM Lane V/C Ratio    | 0.161 | -   | -   | -   | 0.726 | 0.123 |
| HCM Control Delay (s) | 9.7   | -   | -   | -   | 35.8  | 9.4   |
| HCM Lane LOS          | A     | -   | -   | -   | E     | A     |
| HCM 95th %tile Q(veh) | 0.6   | -   | -   | -   | 5.6   | 0.4   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.8  |      |      |      |      |      |
| Movement                 | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
| Lane Configurations      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 80   | 89   | 55   | 3    | 2    | 47   |
| Future Vol, veh/h        | 80   | 89   | 55   | 3    | 2    | 47   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 305  | -    | -    | -    | 0    | -    |
| Veh in Median Storage, # | -    | 0    | 0    | -    | 0    | -    |
| Grade, %                 | -    | 0    | 0    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 94   | 105  | 65   | 4    | 2    | 55   |

| Major/Minor          | Major1 | Major2 | Minor2 |   |             |
|----------------------|--------|--------|--------|---|-------------|
| Conflicting Flow All | 69     | 0      | -      | 0 | 360 67      |
| Stage 1              | -      | -      | -      | - | 67 -        |
| Stage 2              | -      | -      | -      | - | 293 -       |
| 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   | 1532   | -      | -      | - | 639 997     |
| Stage 1              | -      | -      | -      | - | 956 -       |
| Stage 2              | -      | -      | -      | - | 757 -       |
| Platoon blocked, %   |        | -      | -      | - |             |
| Mov Cap-1 Maneuver   | 1532   | -      | -      | - | 600 997     |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 642 -       |
| Stage 1              | -      | -      | -      | - | 898 -       |
| Stage 2              | -      | -      | -      | - | 757 -       |

| Approach             | EB  | WB | SB  |
|----------------------|-----|----|-----|
| HCM Control Delay, s | 3.6 | 0  | 8.9 |
| HCM LOS              |     |    | A   |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h)      | 1532  | -   | -   | -   | 975   |
| HCM Lane V/C Ratio    | 0.061 | -   | -   | -   | 0.059 |
| HCM Control Delay (s) | 7.5   | -   | -   | -   | 8.9   |
| HCM Lane LOS          | A     | -   | -   | -   | A     |
| HCM 95th %tile Q(veh) | 0.2   | -   | -   | -   | 0.2   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.3  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 4    | 23   | 40   | 51   | 35   | 7    |
| Future Vol, veh/h        | 4    | 23   | 40   | 51   | 35   | 7    |
| 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    | -    | 205  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 5    | 27   | 47   | 60   | 41   | 8    |

| Major/Minor          | Minor2 | Major1 |       | Major2 |   |
|----------------------|--------|--------|-------|--------|---|
| Conflicting Flow All | 199    | 45     | 49    | 0      | 0 |
| Stage 1              | 45     | -      | -     | -      | - |
| Stage 2              | 154    | -      | -     | -      | - |
| Critical Hdwy        | 6.42   | 6.22   | 4.12  | -      | - |
| Critical Hdwy Stg 1  | 5.42   | -      | -     | -      | - |
| Critical Hdwy Stg 2  | 5.42   | -      | -     | -      | - |
| Follow-up Hdwy       | 3.518  | 3.318  | 2.218 | -      | - |
| Pot Cap-1 Maneuver   | 790    | 1025   | 1558  | -      | - |
| Stage 1              | 977    | -      | -     | -      | - |
| Stage 2              | 874    | -      | -     | -      | - |
| Platoon blocked, %   |        |        |       | -      | - |
| Mov Cap-1 Maneuver   | 766    | 1025   | 1558  | -      | - |
| Mov Cap-2 Maneuver   | 761    | -      | -     | -      | - |
| Stage 1              | 948    | -      | -     | -      | - |
| Stage 2              | 874    | -      | -     | -      | - |

| Approach             | EB  | NB  | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 8.8 | 3.2 | 0  |
| HCM LOS              | A   |     |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1558 | -   | 975   | -   | -   |
| HCM Lane V/C Ratio    | 0.03 | -   | 0.033 | -   | -   |
| HCM Control Delay (s) | 7.4  | -   | 8.8   | -   | -   |
| HCM Lane LOS          | A    | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1  | -   | 0.1   | -   | -   |

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 15.2 |
| Intersection LOS          | C    |

| Movement            | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h  | 3    | 45   | 84   | 46   | 236  | 77   | 144  | 93   | 25   | 31   | 96   | 10   |
| Future Vol, veh/h   | 3    | 45   | 84   | 46   | 236  | 77   | 144  | 93   | 25   | 31   | 96   | 10   |
| Peak Hour Factor    | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Heavy Vehicles, %   | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow           | 4    | 53   | 99   | 54   | 278  | 91   | 169  | 109  | 29   | 36   | 113  | 12   |
| Number of Lanes     | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | EB   | WB   | NB   | SB   |
|----------------------------|------|------|------|------|
| Opposing Approach          | WB   | EB   | SB   | NB   |
| Opposing Lanes             | 1    | 1    | 1    | 1    |
| Conflicting Approach Left  | SB   | NB   | EB   | WB   |
| Conflicting Lanes Left     | 1    | 1    | 1    | 1    |
| Conflicting Approach Right | NB   | SB   | WB   | EB   |
| Conflicting Lanes Right    | 1    | 1    | 1    | 1    |
| HCM Control Delay          | 10.8 | 18.3 | 15.1 | 11.7 |
| HCM LOS                    | B    | C    | C    | B    |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 55%   | 2%    | 13%   | 23%   |
| Vol Thru, %            | 35%   | 34%   | 66%   | 70%   |
| Vol Right, %           | 10%   | 64%   | 21%   | 7%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 262   | 132   | 359   | 137   |
| LT Vol                 | 144   | 3     | 46    | 31    |
| Through Vol            | 93    | 45    | 236   | 96    |
| RT Vol                 | 25    | 84    | 77    | 10    |
| Lane Flow Rate         | 308   | 155   | 422   | 161   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.508 | 0.248 | 0.648 | 0.277 |
| Departure Headway (Hd) | 5.932 | 5.74  | 5.52  | 6.181 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 604   | 618   | 650   | 575   |
| Service Time           | 4.015 | 3.84  | 3.596 | 4.281 |
| HCM Lane V/C Ratio     | 0.51  | 0.251 | 0.649 | 0.28  |
| HCM Control Delay      | 15.1  | 10.8  | 18.3  | 11.7  |
| HCM Lane LOS           | C     | B     | C     | B     |
| HCM 95th-tile Q        | 2.9   | 1     | 4.7   | 1.1   |

HCM 6th Roundabout  
1: Vollmer Rd & Burgess Rd

Short-Term Total Traffic  
AM Peak Hour

| Intersection                |       |       |       |       |
|-----------------------------|-------|-------|-------|-------|
| Intersection Delay, s/veh   | 6.5   |       |       |       |
| Intersection LOS            | A     |       |       |       |
| Approach                    | EB    | WB    | NB    | SB    |
| Entry Lanes                 | 1     | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 156   | 423   | 307   | 161   |
| Demand Flow Rate, veh/h     | 159   | 432   | 313   | 164   |
| Vehicles Circulating, veh/h | 207   | 287   | 95    | 511   |
| Vehicles Exiting, veh/h     | 468   | 121   | 271   | 208   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 4.5   | 8.2   | 5.2   | 6.6   |
| Approach LOS                | A     | A     | A     | A     |
| Lane                        | Left  | Left  | Left  | Left  |
| Designated Moves            | LTR   | LTR   | LTR   | LTR   |
| Assumed Moves               | LTR   | LTR   | LTR   | LTR   |
| RT Channelized              |       |       |       |       |
| Lane Util                   | 1.000 | 1.000 | 1.000 | 1.000 |
| Follow-Up Headway, s        | 2.609 | 2.609 | 2.609 | 2.609 |
| Critical Headway, s         | 4.976 | 4.976 | 4.976 | 4.976 |
| Entry Flow, veh/h           | 159   | 432   | 313   | 164   |
| Cap Entry Lane, veh/h       | 1117  | 1030  | 1252  | 819   |
| Entry HV Adj Factor         | 0.981 | 0.980 | 0.980 | 0.980 |
| Flow Entry, veh/h           | 156   | 423   | 307   | 161   |
| Cap Entry, veh/h            | 1096  | 1009  | 1228  | 803   |
| V/C Ratio                   | 0.142 | 0.420 | 0.250 | 0.200 |
| Control Delay, s/veh        | 4.5   | 8.2   | 5.2   | 6.6   |
| LOS                         | A     | A     | A     | A     |
| 95th %tile Queue, veh       | 0     | 2     | 1     | 1     |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.5  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↘    | ↗    | ↕    | ↗    | ↘    | ↕    |
| Traffic Vol, veh/h       | 121  | 29   | 258  | 26   | 9    | 347  |
| Future Vol, veh/h        | 121  | 29   | 258  | 26   | 9    | 347  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 485  | -    | -    | 235  | 385  | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 142  | 34   | 304  | 31   | 11   | 408  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |      |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 530    | 152    | 0      | 0 | 335  |
| Stage 1              | 304    | -      | -      | - | -    |
| Stage 2              | 226    | -      | -      | - | -    |
| Critical Hdwy        | 6.84   | 6.94   | -      | - | 4.14 |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | -    |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | -    |
| Follow-up Hdwy       | 3.52   | 3.32   | -      | - | 2.22 |
| Pot Cap-1 Maneuver   | 479    | 867    | -      | - | 1221 |
| Stage 1              | 722    | -      | -      | - | -    |
| Stage 2              | 790    | -      | -      | - | -    |
| Platoon blocked, %   |        |        | -      | - | -    |
| Mov Cap-1 Maneuver   | 475    | 867    | -      | - | 1221 |
| Mov Cap-2 Maneuver   | 559    | -      | -      | - | -    |
| Stage 1              | 722    | -      | -      | - | -    |
| Stage 2              | 783    | -      | -      | - | -    |

| Approach             | WB   | NB | SB  |
|----------------------|------|----|-----|
| HCM Control Delay, s | 12.8 | 0  | 0.2 |
| HCM LOS              | B    |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL   | SBT |
|-----------------------|-----|-----|-------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 559   | 867   | 1221  | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.255 | 0.039 | 0.009 | -   |
| HCM Control Delay (s) | -   | -   | 13.6  | 9.3   | 8     | -   |
| HCM Lane LOS          | -   | -   | B     | A     | A     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 1     | 0.1   | 0     | -   |

HCM 6th TWSC  
5: Sterling Ranch Rd & Briargate Pkwy

Short-Term Total Traffic  
AM Peak Hour

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 8.4  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↘    | ↗    | ↗    | ↘    | ↗    | ↗    | ↘    | ↗    | ↗    | ↘    | ↗    | ↗    |
| Traffic Vol, veh/h       | 5    | 0    | 6    | 0    | 0    | 0    | 22   | 10   | 0    | 0    | 42   | 16   |
| Future Vol, veh/h        | 5    | 0    | 6    | 0    | 0    | 0    | 22   | 10   | 0    | 0    | 42   | 16   |
| 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 |
| Storage Length           | 535  | -    | 0    | 310  | -    | 0    | 410  | -    | 155  | 235  | -    | 155  |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 6    | 0    | 7    | 0    | 0    | 0    | 26   | 12   | 0    | 0    | 49   | 19   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |      |      | Minor2 |      |      |
|----------------------|--------|---|---|--------|---|---|--------|------|------|--------|------|------|
| Conflicting Flow All | 1      | 0 | 0 | 7      | 0 | 0 | 37     | 13   | 0    | 19     | 20   | 1    |
| Stage 1              | -      | - | - | -      | - | - | 12     | 12   | -    | 1      | 1    | -    |
| Stage 2              | -      | - | - | -      | - | - | 25     | 1    | -    | 18     | 19   | -    |
| 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   | 1620   | - | - | 1612   | - | - | 964    | 881  | -    | 992    | 873  | 1083 |
| Stage 1              | -      | - | - | -      | - | - | 1007   | 885  | -    | 1021   | 895  | -    |
| Stage 2              | -      | - | - | -      | - | - | 989    | 895  | -    | 999    | 879  | -    |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -    | -    | -      | -    | -    |
| Mov Cap-1 Maneuver   | 1620   | - | - | 1612   | - | - | 903    | 877  | -    | -      | 870  | 1083 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 903    | 877  | -    | -      | 870  | -    |
| Stage 1              | -      | - | - | -      | - | - | 1003   | 881  | -    | 1017   | 895  | -    |
| Stage 2              | -      | - | - | -      | - | - | 918    | 895  | -    | 982    | 875  | -    |

| Approach             | EB  | WB | NB  | SB  |
|----------------------|-----|----|-----|-----|
| HCM Control Delay, s | 3.3 | 0  | 9.1 | 9.1 |
| HCM LOS              |     |    | A   | A   |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | NBLn3 | EBL   | EBT | EBR | WBL  | WBT | WBR | SBLn1 | SBLn2 | SBLn3 |
|-----------------------|-------|-------|-------|-------|-----|-----|------|-----|-----|-------|-------|-------|
| Capacity (veh/h)      | 903   | 877   | -     | 1620  | -   | -   | 1612 | -   | -   | -     | 870   | 1083  |
| HCM Lane V/C Ratio    | 0.029 | 0.013 | -     | 0.004 | -   | -   | -    | -   | -   | -     | 0.057 | 0.017 |
| HCM Control Delay (s) | 9.1   | 9.2   | 0     | 7.2   | -   | -   | 0    | -   | -   | 0     | 9.4   | 8.4   |
| HCM Lane LOS          | A     | A     | A     | A     | -   | -   | A    | -   | -   | A     | A     | A     |
| HCM 95th %tile Q(veh) | 0.1   | 0     | -     | 0     | -   | -   | 0    | -   | -   | -     | 0.2   | 0.1   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 7.5  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↘    | ↗    | ↑↑   | ↗    | ↘    | ↑↑   |
| Traffic Vol, veh/h       | 149  | 80   | 226  | 36   | 135  | 386  |
| Future Vol, veh/h        | 149  | 80   | 226  | 36   | 135  | 386  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 300  | -    | -    | 155  | 300  | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 175  | 94   | 266  | 42   | 159  | 454  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |      |   |
|----------------------|--------|--------|--------|---|------|---|
| Conflicting Flow All | 811    | 133    | 0      | 0 | 308  | 0 |
| Stage 1              | 266    | -      | -      | - | -    | - |
| Stage 2              | 545    | -      | -      | - | -    | - |
| Critical Hdwy        | 6.84   | 6.94   | -      | - | 4.14 | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | -    | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | -    | - |
| Follow-up Hdwy       | 3.52   | 3.32   | -      | - | 2.22 | - |
| Pot Cap-1 Maneuver   | 317    | 892    | -      | - | 1249 | - |
| Stage 1              | 754    | -      | -      | - | -    | - |
| Stage 2              | 545    | -      | -      | - | -    | - |
| Platoon blocked, %   |        |        | -      | - |      | - |
| Mov Cap-1 Maneuver   | 277    | 892    | -      | - | 1249 | - |
| Mov Cap-2 Maneuver   | 277    | -      | -      | - | -    | - |
| Stage 1              | 754    | -      | -      | - | -    | - |
| Stage 2              | 476    | -      | -      | - | -    | - |

| Approach             | WB | NB | SB  |
|----------------------|----|----|-----|
| HCM Control Delay, s | 28 | 0  | 2.2 |
| HCM LOS              | D  |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL   | SBT |
|-----------------------|-----|-----|-------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 277   | 892   | 1249  | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.633 | 0.106 | 0.127 | -   |
| HCM Control Delay (s) | -   | -   | 38    | 9.5   | 8.3   | -   |
| HCM Lane LOS          | -   | -   | E     | A     | A     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 3.9   | 0.4   | 0.4   | -   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 12.2 |      |      |      |      |      |
| Movement                 | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
| Lane Configurations      | ↘    | ↑↑   | ↑↑   | ↗    | ↘    | ↗    |
| Traffic Vol, veh/h       | 38   | 133  | 80   | 142  | 427  | 150  |
| Future Vol, veh/h        | 38   | 133  | 80   | 142  | 427  | 150  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 300  | -    | -    | 205  | 155  | 0    |
| Veh in Median Storage, # | -    | 0    | 0    | -    | 0    | -    |
| Grade, %                 | -    | 0    | 0    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 45   | 156  | 94   | 167  | 502  | 176  |

| Major/Minor          | Major1 | Major2 | Minor2 |   |           |
|----------------------|--------|--------|--------|---|-----------|
| Conflicting Flow All | 261    | 0      | -      | 0 | 262 47    |
| Stage 1              | -      | -      | -      | - | 94 -      |
| Stage 2              | -      | -      | -      | - | 168 -     |
| 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   | 1300   | -      | -      | - | 705 1012  |
| Stage 1              | -      | -      | -      | - | 919 -     |
| Stage 2              | -      | -      | -      | - | 844 -     |
| Platoon blocked, %   |        | -      | -      | - |           |
| Mov Cap-1 Maneuver   | 1300   | -      | -      | - | 680 1012  |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 680 -     |
| Stage 1              | -      | -      | -      | - | 887 -     |
| Stage 2              | -      | -      | -      | - | 844 -     |

| Approach             | EB  | WB | SB |
|----------------------|-----|----|----|
| HCM Control Delay, s | 1.7 | 0  | 20 |
| HCM LOS              |     |    | C  |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h)      | 1300  | -   | -   | -   | 680   | 1012  |
| HCM Lane V/C Ratio    | 0.034 | -   | -   | -   | 0.739 | 0.174 |
| HCM Control Delay (s) | 7.9   | -   | -   | -   | 23.7  | 9.3   |
| HCM Lane LOS          | A     | -   | -   | -   | C     | A     |
| HCM 95th %tile Q(veh) | 0.1   | -   | -   | -   | 6.6   | 0.6   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.6  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↙    | ↑    | ↗    | ↙    | ↗    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 23   | 48   | 6    | 0    | 136  | 1    | 19   | 0    | 1    | 3    | 0    | 71   |
| Future Vol, veh/h        | 23   | 48   | 6    | 0    | 136  | 1    | 19   | 0    | 1    | 3    | 0    | 71   |
| 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 |
| Storage Length           | 305  | -    | 255  | 305  | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 27   | 56   | 7    | 0    | 160  | 1    | 22   | 0    | 1    | 4    | 0    | 84   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 161    | 0 | 0 | 63     | 0 | 0 | 313    | 271   | 56    | 275    | 278   | 161   |
| Stage 1              | -      | - | - | -      | - | - | 110    | 110   | -     | 161    | 161   | -     |
| Stage 2              | -      | - | - | -      | - | - | 203    | 161   | -     | 114    | 117   | -     |
| 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   | 1418   | - | - | 1540   | - | - | 640    | 636   | 1011  | 677    | 630   | 884   |
| Stage 1              | -      | - | - | -      | - | - | 895    | 804   | -     | 841    | 765   | -     |
| Stage 2              | -      | - | - | -      | - | - | 799    | 765   | -     | 891    | 799   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1418   | - | - | 1540   | - | - | 571    | 624   | 1011  | 666    | 618   | 884   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 571    | 624   | -     | 666    | 618   | -     |
| Stage 1              | -      | - | - | -      | - | - | 878    | 789   | -     | 825    | 765   | -     |
| Stage 2              | -      | - | - | -      | - | - | 724    | 765   | -     | 873    | 784   | -     |

| Approach             | EB  | WB | NB   | SB  |
|----------------------|-----|----|------|-----|
| HCM Control Delay, s | 2.3 | 0  | 11.4 | 9.6 |
| HCM LOS              |     |    | B    | A   |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL  | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|------|-----|-----|-------|
| Capacity (veh/h)      | 584   | 1418  | -   | -   | 1540 | -   | -   | 872   |
| HCM Lane V/C Ratio    | 0.04  | 0.019 | -   | -   | -    | -   | -   | 0.1   |
| HCM Control Delay (s) | 11.4  | 7.6   | -   | -   | 0    | -   | -   | 9.6   |
| HCM Lane LOS          | B     | A     | -   | -   | A    | -   | -   | A     |
| HCM 95th %tile Q(veh) | 0.1   | 0.1   | -   | -   | 0    | -   | -   | 0.3   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 5.4  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      | ↕    | ↕    |      | ↕    | ↕    |      |
| Traffic Vol, veh/h       | 6    | 0    | 35   | 58   | 0    | 6    | 12   | 21   | 19   | 2    | 44   | 2    |
| Future Vol, veh/h        | 6    | 0    | 35   | 58   | 0    | 6    | 12   | 21   | 19   | 2    | 44   | 2    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | 205  | -    | -    | 205  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 7    | 0    | 41   | 68   | 0    | 7    | 14   | 25   | 22   | 2    | 52   | 2    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |       | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 125    | 132   | 53     | 142   | 122    | 36    | 54    | 0      | 0 | 47    | 0 | 0 |
| Stage 1              | 57     | 57    | -      | 64    | 64     | -     | -     | -      | - | -     | - | - |
| Stage 2              | 68     | 75    | -      | 78    | 58     | -     | -     | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12  | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218 | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 849    | 759   | 1014   | 828   | 768    | 1037  | 1551  | -      | - | 1560  | - | - |
| Stage 1              | 955    | 847   | -      | 947   | 842    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 942    | 833   | -      | 931   | 847    | -     | -     | -      | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |       | -      | - | -     | - | - |
| Mov Cap-1 Maneuver   | 836    | 751   | 1014   | 788   | 760    | 1037  | 1551  | -      | - | 1560  | - | - |
| Mov Cap-2 Maneuver   | 836    | 751   | -      | 788   | 760    | -     | -     | -      | - | -     | - | - |
| Stage 1              | 946    | 846   | -      | 938   | 834    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 927    | 826   | -      | 892   | 846    | -     | -     | -      | - | -     | - | - |

| Approach             | EB  |  | WB  |  | NB  |  | SB  |  |
|----------------------|-----|--|-----|--|-----|--|-----|--|
| HCM Control Delay, s | 8.9 |  | 9.9 |  | 1.7 |  | 0.3 |  |
| HCM LOS              | A   |  | A   |  |     |  |     |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | WBLn1 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 1551  | -   | -   | 983   | 806   | 1560  | -   | -   |
| HCM Lane V/C Ratio    | 0.009 | -   | -   | 0.049 | 0.093 | 0.002 | -   | -   |
| HCM Control Delay (s) | 7.3   | 0   | -   | 8.9   | 9.9   | 7.3   | -   | -   |
| HCM Lane LOS          | A     | A   | -   | A     | A     | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | 0.2   | 0.3   | 0     | -   | -   |

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 21.3 |
| Intersection LOS          | C    |

| Movement            | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h  | 9    | 254  | 102  | 47   | 128  | 45   | 80   | 94   | 65   | 122  | 101  | 9    |
| Future Vol, veh/h   | 9    | 254  | 102  | 47   | 128  | 45   | 80   | 94   | 65   | 122  | 101  | 9    |
| Peak Hour Factor    | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Heavy Vehicles, %   | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow           | 11   | 299  | 120  | 55   | 151  | 53   | 94   | 111  | 76   | 144  | 119  | 11   |
| Number of Lanes     | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | EB   | WB   | NB | SB   |
|----------------------------|------|------|----|------|
| Opposing Approach          | WB   | EB   | SB | NB   |
| Opposing Lanes             | 1    | 1    | 1  | 1    |
| Conflicting Approach Left  | SB   | NB   | EB | WB   |
| Conflicting Lanes Left     | 1    | 1    | 1  | 1    |
| Conflicting Approach Right | NB   | SB   | WB | EB   |
| Conflicting Lanes Right    | 1    | 1    | 1  | 1    |
| HCM Control Delay          | 28.1 | 16.8 | 18 | 18.4 |
| HCM LOS                    | D    | C    | C  | C    |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 33%   | 2%    | 21%   | 53%   |
| Vol Thru, %            | 39%   | 70%   | 58%   | 44%   |
| Vol Right, %           | 27%   | 28%   | 20%   | 4%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 239   | 365   | 220   | 232   |
| LT Vol                 | 80    | 9     | 47    | 122   |
| Through Vol            | 94    | 254   | 128   | 101   |
| RT Vol                 | 65    | 102   | 45    | 9     |
| Lane Flow Rate         | 281   | 429   | 259   | 273   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.543 | 0.773 | 0.499 | 0.541 |
| Departure Headway (Hd) | 6.947 | 6.482 | 6.935 | 7.132 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 517   | 563   | 518   | 505   |
| Service Time           | 5.013 | 4.482 | 5.001 | 5.2   |
| HCM Lane V/C Ratio     | 0.544 | 0.762 | 0.5   | 0.541 |
| HCM Control Delay      | 18    | 28.1  | 16.8  | 18.4  |
| HCM Lane LOS           | C     | D     | C     | C     |
| HCM 95th-tile Q        | 3.2   | 7.1   | 2.8   | 3.2   |

HCM 6th Roundabout  
1: Vollmer Rd & Burgess Rd

Short-Term Total Traffic  
PM Peak Hour

| Intersection                |       |       |       |       |
|-----------------------------|-------|-------|-------|-------|
| Intersection Delay, s/veh   | 7.4   |       |       |       |
| Intersection LOS            | A     |       |       |       |
| Approach                    | EB    | WB    | NB    | SB    |
| Entry Lanes                 | 1     | 1     | 1     | 1     |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1     |
| Adj Approach Flow, veh/h    | 430   | 259   | 281   | 274   |
| Demand Flow Rate, veh/h     | 438   | 264   | 287   | 279   |
| Vehicles Circulating, veh/h | 324   | 220   | 463   | 306   |
| Vehicles Exiting, veh/h     | 261   | 530   | 299   | 178   |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0     |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh       | 8.8   | 5.6   | 8.1   | 6.4   |
| Approach LOS                | A     | A     | A     | A     |
| Lane                        | Left  | Left  | Left  | Left  |
| Designated Moves            | LTR   | LTR   | LTR   | LTR   |
| Assumed Moves               | LTR   | LTR   | LTR   | LTR   |
| RT Channelized              |       |       |       |       |
| Lane Util                   | 1.000 | 1.000 | 1.000 | 1.000 |
| Follow-Up Headway, s        | 2.609 | 2.609 | 2.609 | 2.609 |
| Critical Headway, s         | 4.976 | 4.976 | 4.976 | 4.976 |
| Entry Flow, veh/h           | 438   | 264   | 287   | 279   |
| Cap Entry Lane, veh/h       | 992   | 1103  | 861   | 1010  |
| Entry HV Adj Factor         | 0.982 | 0.981 | 0.978 | 0.981 |
| Flow Entry, veh/h           | 430   | 259   | 281   | 274   |
| Cap Entry, veh/h            | 974   | 1082  | 842   | 990   |
| V/C Ratio                   | 0.442 | 0.239 | 0.334 | 0.276 |
| Control Delay, s/veh        | 8.8   | 5.6   | 8.1   | 6.4   |
| LOS                         | A     | A     | A     | A     |
| 95th %tile Queue, veh       | 2     | 1     | 1     | 1     |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.8  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↘    | ↗    | ↕    | ↗    | ↘    | ↕    |
| Traffic Vol, veh/h       | 80   | 19   | 502  | 87   | 32   | 316  |
| Future Vol, veh/h        | 80   | 19   | 502  | 87   | 32   | 316  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 485  | -    | -    | 235  | 385  | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 94   | 22   | 591  | 102  | 38   | 372  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |      |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 853    | 296    | 0      | 0 | 693  |
| Stage 1              | 591    | -      | -      | - | -    |
| Stage 2              | 262    | -      | -      | - | -    |
| Critical Hdwy        | 6.84   | 6.94   | -      | - | 4.14 |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | -    |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | -    |
| Follow-up Hdwy       | 3.52   | 3.32   | -      | - | 2.22 |
| Pot Cap-1 Maneuver   | 298    | 700    | -      | - | 898  |
| Stage 1              | 516    | -      | -      | - | -    |
| Stage 2              | 758    | -      | -      | - | -    |
| Platoon blocked, %   |        |        | -      | - | -    |
| Mov Cap-1 Maneuver   | 285    | 700    | -      | - | 898  |
| Mov Cap-2 Maneuver   | 399    | -      | -      | - | -    |
| Stage 1              | 516    | -      | -      | - | -    |
| Stage 2              | 726    | -      | -      | - | -    |

| Approach             | WB   | NB | SB  |
|----------------------|------|----|-----|
| HCM Control Delay, s | 15.6 | 0  | 0.8 |
| HCM LOS              | C    |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL   | SBT |
|-----------------------|-----|-----|-------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 399   | 700   | 898   | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.236 | 0.032 | 0.042 | -   |
| HCM Control Delay (s) | -   | -   | 16.8  | 10.3  | 9.2   | -   |
| HCM Lane LOS          | -   | -   | C     | B     | A     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 0.9   | 0.1   | 0.1   | -   |

HCM 6th TWSC  
5: Sterling Ranch Rd & Briargate Pkwy

Short-Term Total Traffic  
PM Peak Hour

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 7.6  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↘    | ↑↑   | ↗    | ↘    | ↑↑   | ↗    | ↘    | ↑    | ↗    | ↘    | ↑    | ↗    |
| Traffic Vol, veh/h       | 18   | 0    | 22   | 0    | 0    | 0    | 25   | 35   | 0    | 0    | 28   | 11   |
| Future Vol, veh/h        | 18   | 0    | 22   | 0    | 0    | 0    | 25   | 35   | 0    | 0    | 28   | 11   |
| 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 |
| Storage Length           | 535  | -    | 0    | 310  | -    | 0    | 410  | -    | 155  | 235  | -    | 155  |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 21   | 0    | 26   | 0    | 0    | 0    | 29   | 41   | 0    | 0    | 33   | 13   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |      |      | Minor2 |      |      |
|----------------------|--------|---|---|--------|---|---|--------|------|------|--------|------|------|
| Conflicting Flow All | 1      | 0 | 0 | 26     | 0 | 0 | 59     | 43   | 0    | 64     | 69   | 1    |
| Stage 1              | -      | - | - | -      | - | - | 42     | 42   | -    | 1      | 1    | -    |
| Stage 2              | -      | - | - | -      | - | - | 17     | 1    | -    | 63     | 68   | -    |
| 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   | 1620   | - | - | 1587   | - | - | 930    | 848  | -    | 923    | 821  | 1083 |
| Stage 1              | -      | - | - | -      | - | - | 967    | 859  | -    | 1021   | 895  | -    |
| Stage 2              | -      | - | - | -      | - | - | 1000   | 895  | -    | 941    | 838  | -    |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -    | -    | -      | -    | -    |
| Mov Cap-1 Maneuver   | 1620   | - | - | 1587   | - | - | 882    | 837  | -    | -      | 810  | 1083 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 882    | 837  | -    | -      | 810  | -    |
| Stage 1              | -      | - | - | -      | - | - | 954    | 848  | -    | 1008   | 895  | -    |
| Stage 2              | -      | - | - | -      | - | - | 952    | 895  | -    | 884    | 827  | -    |

| Approach             | EB  | WB | NB  | SB  |
|----------------------|-----|----|-----|-----|
| HCM Control Delay, s | 3.3 | 0  | 9.4 | 9.3 |
| HCM LOS              |     |    | A   | A   |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | NBLn3 | EBL   | EBT | EBR | WBL  | WBT | WBR | SBLn1 | SBLn2 | SBLn3 |
|-----------------------|-------|-------|-------|-------|-----|-----|------|-----|-----|-------|-------|-------|
| Capacity (veh/h)      | 882   | 837   | -     | 1620  | -   | -   | 1587 | -   | -   | -     | 810   | 1083  |
| HCM Lane V/C Ratio    | 0.033 | 0.049 | -     | 0.013 | -   | -   | -    | -   | -   | -     | 0.041 | 0.012 |
| HCM Control Delay (s) | 9.2   | 9.5   | 0     | 7.3   | -   | -   | 0    | -   | -   | 0     | 9.6   | 8.4   |
| HCM Lane LOS          | A     | A     | A     | A     | -   | -   | A    | -   | -   | A     | A     | A     |
| HCM 95th %tile Q(veh) | 0.1   | 0.2   | -     | 0     | -   | -   | 0    | -   | -   | -     | 0.1   | 0     |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 6.3  |      |      |      |      |      |
| Movement                 | WBL  | WBR  | NBT  | NBR  | SBL  | SBT  |
| Lane Configurations      | ↘    | ↗    | ↑↑   | ↗    | ↘    | ↑↑   |
| Traffic Vol, veh/h       | 99   | 178  | 506  | 123  | 115  | 320  |
| Future Vol, veh/h        | 99   | 178  | 506  | 123  | 115  | 320  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 300  | -    | -    | 155  | 300  | -    |
| Veh in Median Storage, # | 0    | -    | 0    | -    | -    | 0    |
| Grade, %                 | 0    | -    | 0    | -    | -    | 0    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 116  | 209  | 595  | 145  | 135  | 376  |

| Major/Minor          | Minor1 | Major1 | Major2 |   |      |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 1053   | 298    | 0      | 0 | 740  |
| Stage 1              | 595    | -      | -      | - | -    |
| Stage 2              | 458    | -      | -      | - | -    |
| Critical Hdwy        | 6.84   | 6.94   | -      | - | 4.14 |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | -    |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | -    |
| Follow-up Hdwy       | 3.52   | 3.32   | -      | - | 2.22 |
| Pot Cap-1 Maneuver   | 222    | 698    | -      | - | 862  |
| Stage 1              | 514    | -      | -      | - | -    |
| Stage 2              | 604    | -      | -      | - | -    |
| Platoon blocked, %   |        |        | -      | - | -    |
| Mov Cap-1 Maneuver   | 187    | 698    | -      | - | 862  |
| Mov Cap-2 Maneuver   | 187    | -      | -      | - | -    |
| Stage 1              | 514    | -      | -      | - | -    |
| Stage 2              | 509    | -      | -      | - | -    |

| Approach             | WB   | NB | SB  |
|----------------------|------|----|-----|
| HCM Control Delay, s | 26.4 | 0  | 2.6 |
| HCM LOS              | D    |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL   | SBT |
|-----------------------|-----|-----|-------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 187   | 698   | 862   | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.623 | 0.3   | 0.157 | -   |
| HCM Control Delay (s) | -   | -   | 51.6  | 12.4  | 10    | -   |
| HCM Lane LOS          | -   | -   | F     | B     | A     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 3.5   | 1.3   | 0.6   | -   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 15.6 |      |      |      |      |      |
| Movement                 | EBL  | EBT  | WBT  | WBR  | SBL  | SBR  |
| Lane Configurations      | ↘    | ↑↑   | ↑↑   | ↗    | ↘    | ↗    |
| Traffic Vol, veh/h       | 130  | 108  | 178  | 481  | 283  | 100  |
| Future Vol, veh/h        | 130  | 108  | 178  | 481  | 283  | 100  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 300  | -    | -    | 205  | 155  | 0    |
| Veh in Median Storage, # | -    | 0    | 0    | -    | 0    | -    |
| Grade, %                 | -    | 0    | 0    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 153  | 127  | 209  | 566  | 333  | 118  |

| Major/Minor          | Major1 | Major2 | Minor2 |   |           |
|----------------------|--------|--------|--------|---|-----------|
| Conflicting Flow All | 775    | 0      | -      | 0 | 579 105   |
| Stage 1              | -      | -      | -      | - | 209 -     |
| Stage 2              | -      | -      | -      | - | 370 -     |
| 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   | 837    | -      | -      | - | 446 929   |
| Stage 1              | -      | -      | -      | - | 806 -     |
| Stage 2              | -      | -      | -      | - | 669 -     |
| Platoon blocked, %   |        | -      | -      | - |           |
| Mov Cap-1 Maneuver   | 837    | -      | -      | - | 364 929   |
| Mov Cap-2 Maneuver   | -      | -      | -      | - | 364 -     |
| Stage 1              | -      | -      | -      | - | 659 -     |
| Stage 2              | -      | -      | -      | - | 669 -     |

| Approach             | EB  | WB | SB   |
|----------------------|-----|----|------|
| HCM Control Delay, s | 5.6 | 0  | 48.5 |
| HCM LOS              |     |    | E    |

| Minor Lane/Major Mvmt | EBL   | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h)      | 837   | -   | -   | -   | 364   | 929   |
| HCM Lane V/C Ratio    | 0.183 | -   | -   | -   | 0.915 | 0.127 |
| HCM Control Delay (s) | 10.3  | -   | -   | -   | 62.3  | 9.4   |
| HCM Lane LOS          | B     | -   | -   | -   | F     | A     |
| HCM 95th %tile Q(veh) | 0.7   | -   | -   | -   | 9.4   | 0.4   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3    |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↖    | ↑    | ↗    | ↖    | ↗    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 80   | 155  | 22   | 1    | 93   | 3    | 13   | 0    | 1    | 2    | 0    | 47   |
| Future Vol, veh/h        | 80   | 155  | 22   | 1    | 93   | 3    | 13   | 0    | 1    | 2    | 0    | 47   |
| 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 |
| Storage Length           | 305  | -    | 255  | 305  | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 94   | 182  | 26   | 1    | 109  | 4    | 15   | 0    | 1    | 2    | 0    | 55   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 113    | 0 | 0 | 208    | 0 | 0 | 511    | 485   | 182   | 497    | 509   | 111   |
| Stage 1              | -      | - | - | -      | - | - | 370    | 370   | -     | 113    | 113   | -     |
| Stage 2              | -      | - | - | -      | - | - | 141    | 115   | -     | 384    | 396   | -     |
| 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   | 1476   | - | - | 1363   | - | - | 473    | 482   | 861   | 483    | 467   | 942   |
| Stage 1              | -      | - | - | -      | - | - | 650    | 620   | -     | 892    | 802   | -     |
| Stage 2              | -      | - | - | -      | - | - | 862    | 800   | -     | 639    | 604   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1476   | - | - | 1363   | - | - | 423    | 451   | 861   | 458    | 437   | 942   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 423    | 451   | -     | 458    | 437   | -     |
| Stage 1              | -      | - | - | -      | - | - | 608    | 580   | -     | 835    | 801   | -     |
| Stage 2              | -      | - | - | -      | - | - | 811    | 799   | -     | 597    | 565   | -     |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB  |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|-----|--|--|
| HCM Control Delay, s | 2.4 |  |  | 0.1 |  |  | 13.5 |  |  | 9.3 |  |  |
| HCM LOS              |     |  |  |     |  |  | B    |  |  | A   |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 439   | 1476  | -   | -   | 1363  | -   | -   | 903   |
| HCM Lane V/C Ratio    | 0.038 | 0.064 | -   | -   | 0.001 | -   | -   | 0.064 |
| HCM Control Delay (s) | 13.5  | 7.6   | -   | -   | 7.6   | -   | -   | 9.3   |
| HCM Lane LOS          | B     | A     | -   | -   | A     | -   | -   | A     |
| HCM 95th %tile Q(veh) | 0.1   | 0.2   | -   | -   | 0     | -   | -   | 0.2   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.8  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      | ↕    | ↕    |      | ↕    | ↕    |      |
| Traffic Vol, veh/h       | 4    | 0    | 23   | 39   | 0    | 4    | 40   | 52   | 66   | 6    | 36   | 7    |
| Future Vol, veh/h        | 4    | 0    | 23   | 39   | 0    | 4    | 40   | 52   | 66   | 6    | 36   | 7    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | 205  | -    | -    | 205  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   | 85   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 5    | 0    | 27   | 46   | 0    | 5    | 47   | 61   | 78   | 7    | 42   | 8    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 257    | 293   | 46     | 268   | 258    | 100   | 50     | 0 | 0 | 139   | 0 | 0 |
| Stage 1              | 60     | 60    | -      | 194   | 194    | -     | -      | - | - | -     | - | - |
| Stage 2              | 197    | 233   | -      | 74    | 64     | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 696    | 618   | 1023   | 685   | 646    | 956   | 1557   | - | - | 1445  | - | - |
| Stage 1              | 951    | 845   | -      | 808   | 740    | -     | -      | - | - | -     | - | - |
| Stage 2              | 805    | 712   | -      | 935   | 842    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 674    | 596   | 1023   | 649   | 623    | 956   | 1557   | - | - | 1445  | - | - |
| Mov Cap-2 Maneuver   | 674    | 596   | -      | 649   | 623    | -     | -      | - | - | -     | - | - |
| Stage 1              | 922    | 841   | -      | 784   | 718    | -     | -      | - | - | -     | - | - |
| Stage 2              | 777    | 691   | -      | 906   | 838    | -     | -      | - | - | -     | - | - |

| Approach             | EB  |  | WB   |  | NB  |  | SB  |  |
|----------------------|-----|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 8.9 |  | 10.8 |  | 1.9 |  | 0.9 |  |
| HCM LOS              | A   |  | B    |  |     |  |     |  |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1 | WBLn1 | SBL   | SBT | SBR |
|-----------------------|------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 1557 | -   | -   | 950   | 669   | 1445  | -   | -   |
| HCM Lane V/C Ratio    | 0.03 | -   | -   | 0.033 | 0.076 | 0.005 | -   | -   |
| HCM Control Delay (s) | 7.4  | 0   | -   | 8.9   | 10.8  | 7.5   | -   | -   |
| HCM Lane LOS          | A    | A   | -   | A     | B     | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1  | -   | -   | 0.1   | 0.2   | 0     | -   | -   |

| Intersection                |       |       |       |        |       |
|-----------------------------|-------|-------|-------|--------|-------|
| Intersection Delay, s/veh   | 9.0   |       |       |        |       |
| Intersection LOS            | A     |       |       |        |       |
| Approach                    | EB    | WB    | NB    | SB     |       |
| Entry Lanes                 | 1     | 1     | 1     | 1      |       |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1      |       |
| Adj Approach Flow, veh/h    | 136   | 604   | 377   | 309    |       |
| Demand Flow Rate, veh/h     | 138   | 616   | 385   | 315    |       |
| Vehicles Circulating, veh/h | 435   | 309   | 120   | 551    |       |
| Vehicles Exiting, veh/h     | 431   | 116   | 453   | 374    |       |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0      |       |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000  |       |
| Approach Delay, s/veh       | 5.7   | 12.3  | 4.2   | 9.7    |       |
| Approach LOS                | A     | B     | A     | A      |       |
| Lane                        | Left  | Left  | Left  | Bypass | Left  |
| Designated Moves            | LTR   | LTR   | LT    | R      | LTR   |
| Assumed Moves               | LTR   | LTR   | LT    | R      | LTR   |
| RT Channelized              |       |       |       | Free   |       |
| Lane Util                   | 1.000 | 1.000 | 1.000 |        | 1.000 |
| Follow-Up Headway, s        | 2.609 | 2.609 | 2.609 |        | 2.609 |
| Critical Headway, s         | 4.976 | 4.976 | 4.976 | 80     | 4.976 |
| Entry Flow, veh/h           | 138   | 616   | 305   | 1938   | 315   |
| Cap Entry Lane, veh/h       | 885   | 1007  | 1221  | 0.980  | 787   |
| Entry HV Adj Factor         | 0.983 | 0.980 | 0.981 | 78     | 0.981 |
| Flow Entry, veh/h           | 136   | 604   | 299   | 1900   | 309   |
| Cap Entry, veh/h            | 870   | 987   | 1197  | 0.041  | 772   |
| V/C Ratio                   | 0.156 | 0.612 | 0.250 | 0.0    | 0.400 |
| Control Delay, s/veh        | 5.7   | 12.3  | 5.3   | A      | 9.7   |
| LOS                         | A     | B     | A     | 0      | A     |
| 95th %tile Queue, veh       | 1     | 4     | 1     |        | 2     |

Timings  
4: Vollmer Rd & Briargate Pkwy

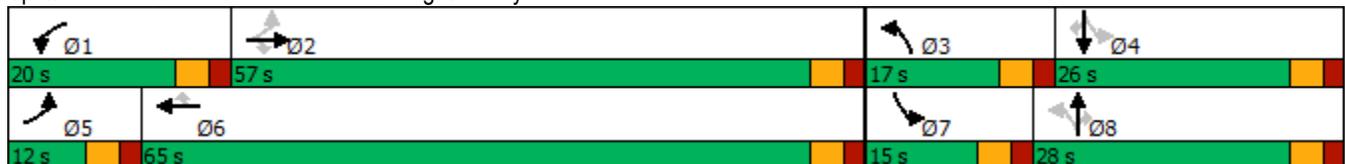
2042 Background Traffic  
AM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 68    | 551   | 152   | 241   | 1034  | 95    | 160   | 131   | 109   | 121   | 306   | 138   |
| Future Volume (vph)  | 68    | 551   | 152   | 241   | 1034  | 95    | 160   | 131   | 109   | 121   | 306   | 138   |
| Turn Type            | pm+pt | NA    | Perm  | Prot  | NA    | Perm  | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     |       |       | 6     | 8     |       | 8     | 4     |       | 4     |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     | 8     | 7     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 15.0  | 15.0  | 15.0  | 15.0  | 15.0  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)    | 10.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  |
| Total Split (s)      | 12.0  | 57.0  | 57.0  | 20.0  | 65.0  | 65.0  | 17.0  | 28.0  | 28.0  | 15.0  | 26.0  | 26.0  |
| Total Split (%)      | 10.0% | 47.5% | 47.5% | 16.7% | 54.2% | 54.2% | 14.2% | 23.3% | 23.3% | 12.5% | 21.7% | 21.7% |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead/Lag             | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?   | Yes   |
| Recall Mode          | None  | Max   | Max   | None  | Max   | Max   | None  | None  | None  | None  | None  | None  |
| Act Effct Green (s)  | 58.7  | 52.1  | 52.1  | 15.0  | 62.7  | 62.7  | 29.2  | 17.8  | 17.8  | 25.4  | 15.9  | 15.9  |
| Actuated g/C Ratio   | 0.51  | 0.46  | 0.46  | 0.13  | 0.55  | 0.55  | 0.26  | 0.16  | 0.16  | 0.22  | 0.14  | 0.14  |
| v/c Ratio            | 0.25  | 0.35  | 0.20  | 0.56  | 0.56  | 0.11  | 0.62  | 0.24  | 0.31  | 0.40  | 0.66  | 0.41  |
| Control Delay        | 12.3  | 21.5  | 3.7   | 52.8  | 19.6  | 2.7   | 43.0  | 43.3  | 4.6   | 35.7  | 53.4  | 9.5   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay          | 12.3  | 21.5  | 3.7   | 52.8  | 19.6  | 2.7   | 43.0  | 43.3  | 4.6   | 35.7  | 53.4  | 9.5   |
| LOS                  | B     | C     | A     | D     | B     | A     | D     | D     | A     | D     | D     | A     |
| Approach Delay       |       | 17.1  |       |       | 24.3  |       |       | 32.5  |       |       | 38.9  |       |
| Approach LOS         |       | B     |       |       | C     |       |       | C     |       |       | D     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 114.4  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 26.3  
 Intersection LOS: C  
 Intersection Capacity Utilization 66.7%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 4: Vollmer Rd & Briargate Pkwy



Timings  
5: Sterling Ranch Rd & Briargate Pkwy

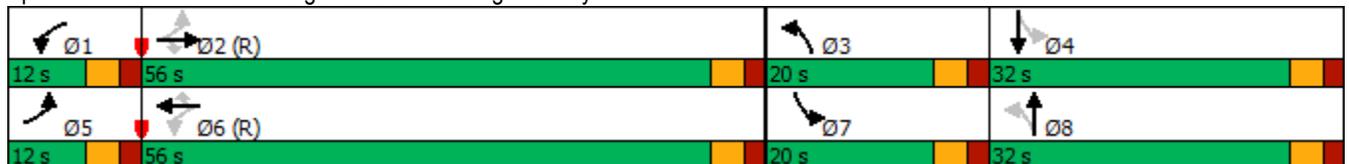
2042 Background Traffic  
AM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 73    | 627   | 140   | 109   | 945   | 23    | 275   | 115   | 119   | 106   | 263   | 161   |
| Future Volume (vph)  | 73    | 627   | 140   | 109   | 945   | 23    | 275   | 115   | 119   | 106   | 263   | 161   |
| Turn Type            | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | pm+pt | NA    | Free  | pm+pt | NA    | Free  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     | 6     |       | 6     | 8     |       | Free  | 4     |       | Free  |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     |       | 7     | 4     |       |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 20.0  |       | 5.0   | 20.0  |       |
| Minimum Split (s)    | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  | 25.0  |       | 10.0  | 25.0  |       |
| Total Split (s)      | 12.0  | 56.0  | 56.0  | 12.0  | 56.0  | 56.0  | 20.0  | 32.0  |       | 20.0  | 32.0  |       |
| Total Split (%)      | 10.0% | 46.7% | 46.7% | 10.0% | 46.7% | 46.7% | 16.7% | 26.7% |       | 16.7% | 26.7% |       |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |       | 3.0   | 3.0   |       |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |       | 2.0   | 2.0   |       |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |       |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |       | 5.0   | 5.0   |       |
| Lead/Lag             | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   | Lead  | Lag   |       | Lead  | Lag   |       |
| Lead-Lag Optimize?   | Yes   |       | Yes   | Yes   |       |
| Recall Mode          | None  | C-Max | C-Max | None  | C-Max | C-Max | None  | Max   |       | None  | Max   |       |
| Act Effct Green (s)  | 57.8  | 51.0  | 51.0  | 59.0  | 53.4  | 53.4  | 45.8  | 31.5  | 120.0 | 37.6  | 27.2  | 120.0 |
| Actuated g/C Ratio   | 0.48  | 0.42  | 0.42  | 0.49  | 0.44  | 0.44  | 0.38  | 0.26  | 1.00  | 0.31  | 0.23  | 1.00  |
| v/c Ratio            | 0.33  | 0.44  | 0.19  | 0.33  | 0.63  | 0.03  | 0.81  | 0.25  | 0.08  | 0.25  | 0.66  | 0.11  |
| Control Delay        | 18.3  | 25.5  | 4.0   | 9.5   | 18.7  | 0.7   | 46.8  | 37.4  | 0.1   | 25.8  | 50.7  | 0.1   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay          | 18.3  | 25.5  | 4.0   | 9.5   | 18.7  | 0.7   | 46.8  | 37.4  | 0.1   | 25.8  | 50.7  | 0.1   |
| LOS                  | B     | C     | A     | A     | B     | A     | D     | D     | A     | C     | D     | A     |
| Approach Delay       |       | 21.3  |       |       | 17.4  |       |       | 33.8  |       |       | 30.4  |       |
| Approach LOS         |       | C     |       |       | B     |       |       | C     |       |       | C     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 63 (53%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 23.6  
 Intersection LOS: C  
 Intersection Capacity Utilization 78.9%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 5: Sterling Ranch Rd & Briargate Pkwy



| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 10.9 |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↖    | ↑    | ↗    | ↖    |      | ↗    |      | ↑    | ↗    | ↖    | ↑    |      |
| Traffic Vol, veh/h       | 133  | 71   | 128  | 178  | 0    | 194  | 0    | 365  | 121  | 61   | 242  | 0    |
| Future Vol, veh/h        | 133  | 71   | 128  | 178  | 0    | 194  | 0    | 365  | 121  | 61   | 242  | 0    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None |
| Storage Length           | 0    | -    | 0    | 0    | -    | 0    | -    | -    | 205  | 205  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 140  | 75   | 135  | 187  | 0    | 204  | 0    | 384  | 127  | 64   | 255  | 0    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |   | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|---|--------|---|-------|---|---|
| Conflicting Flow All | 933    | 894   | 255    | 872   | -      | 384   | - | 0      | 0 | 511   | 0 | 0 |
| Stage 1              | 383    | 383   | -      | 384   | -      | -     | - | -      | - | -     | - | - |
| Stage 2              | 550    | 511   | -      | 488   | -      | -     | - | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | -      | 6.22  | - | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | -      | -     | - | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | -      | -     | - | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | -      | 3.318 | - | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 245    | 275   | *898   | 275   | 0      | 664   | 0 | -      | - | 1054  | - | 0 |
| Stage 1              | 705    | 639   | -      | 639   | 0      | -     | 0 | -      | - | -     | - | 0 |
| Stage 2              | 519    | 537   | -      | 603   | 0      | -     | 0 | -      | - | -     | - | 0 |
| Platoon blocked, %   | 1      | 1     | 1      | 1     |        |       |   | -      | - |       |   |   |
| Mov Cap-1 Maneuver   | 162    | 258   | *898   | ~ 187 | -      | 664   | - | -      | - | 1054  | - | - |
| Mov Cap-2 Maneuver   | 245    | 356   | -      | 311   | -      | -     | - | -      | - | -     | - | - |
| Stage 1              | 705    | 600   | -      | 639   | -      | -     | - | -      | - | -     | - | - |
| Stage 2              | 359    | 537   | -      | 421   | -      | -     | - | -      | - | -     | - | - |

| Approach             | EB   |  | WB   |  | NB |  |  | SB  |  |  |
|----------------------|------|--|------|--|----|--|--|-----|--|--|
| HCM Control Delay, s | 22.6 |  | 22.3 |  | 0  |  |  | 1.7 |  |  |
| HCM LOS              | C    |  | C    |  |    |  |  |     |  |  |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT |
|-----------------------|-----|-----|-------|-------|-------|-------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 245   | 356   | 898   | 311   | 664   | 1054  | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.571 | 0.21  | 0.15  | 0.602 | 0.308 | 0.061 | -   |
| HCM Control Delay (s) | -   | -   | 37.6  | 17.8  | 9.7   | 32.7  | 12.8  | 8.6   | -   |
| HCM Lane LOS          | -   | -   | E     | C     | A     | D     | B     | A     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 3.2   | 0.8   | 0.5   | 3.7   | 1.3   | 0.2   | -   |

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

Timings  
12: Vollmer Rd & Marksheffel Rd

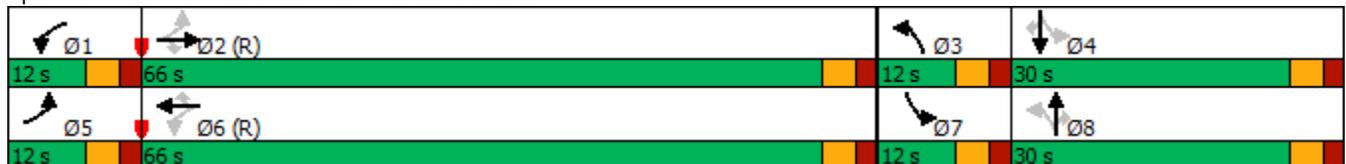
2042 Background Traffic  
AM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 71    | 837   | 42    | 172   | 924   | 69    | 115   | 235   | 110   | 121   | 517   | 131   |
| Future Volume (vph)  | 71    | 837   | 42    | 172   | 924   | 69    | 115   | 235   | 110   | 121   | 517   | 131   |
| Turn Type            | pm+pt | NA    | Perm  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     | 6     |       | 6     | 8     |       | 8     | 4     |       | 4     |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     | 8     | 7     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 10.0  | 10.0  | 5.0   | 10.0  | 10.0  |
| Minimum Split (s)    | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  | 23.0  |
| Total Split (s)      | 12.0  | 66.0  | 66.0  | 12.0  | 66.0  | 66.0  | 12.0  | 30.0  | 30.0  | 12.0  | 30.0  | 30.0  |
| Total Split (%)      | 10.0% | 55.0% | 55.0% | 10.0% | 55.0% | 55.0% | 10.0% | 25.0% | 25.0% | 10.0% | 25.0% | 25.0% |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead/Lag             | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?   | Yes   |
| Recall Mode          | None  | C-Max | C-Max | None  | C-Max | C-Max | None  | Max   | Max   | None  | Max   | Max   |
| Act Effct Green (s)  | 67.7  | 61.0  | 61.0  | 69.0  | 63.4  | 63.4  | 32.0  | 25.0  | 25.0  | 32.0  | 25.0  | 25.0  |
| Actuated g/C Ratio   | 0.56  | 0.51  | 0.51  | 0.58  | 0.53  | 0.53  | 0.27  | 0.21  | 0.21  | 0.27  | 0.21  | 0.21  |
| v/c Ratio            | 0.25  | 0.49  | 0.05  | 0.55  | 0.52  | 0.08  | 0.65  | 0.34  | 0.28  | 0.41  | 0.74  | 0.32  |
| Control Delay        | 11.8  | 20.5  | 0.1   | 17.1  | 9.8   | 0.2   | 49.2  | 41.9  | 8.9   | 36.2  | 51.3  | 9.6   |
| 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          | 11.8  | 20.5  | 0.1   | 17.1  | 9.8   | 0.2   | 49.2  | 41.9  | 8.9   | 36.2  | 51.3  | 9.6   |
| LOS                  | B     | C     | A     | B     | A     | A     | D     | D     | A     | D     | D     | A     |
| Approach Delay       |       | 18.9  |       |       | 10.3  |       |       | 35.8  |       |       | 41.8  |       |
| Approach LOS         |       | B     |       |       | B     |       |       | D     |       |       | D     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 23.5  
 Intersection LOS: C  
 Intersection Capacity Utilization 70.0%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 12: Vollmer Rd & Marksheffel Rd



Timings  
13: Sterling Ranch Rd & Marksheffel Rd

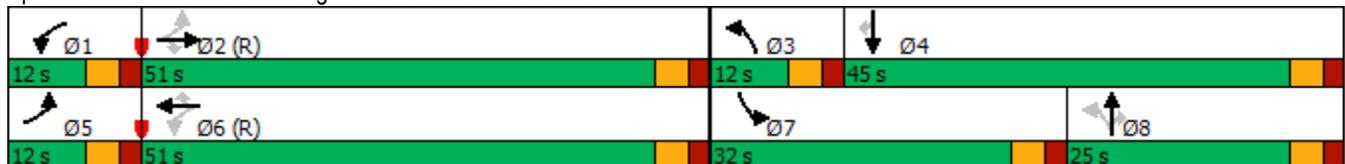
2042 Background Traffic  
AM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 157   | 900   | 10    | 47    | 809   | 168   | 39    | 8     | 55    | 458   | 9     | 318   |
| Future Volume (vph)  | 157   | 900   | 10    | 47    | 809   | 168   | 39    | 8     | 55    | 458   | 9     | 318   |
| Turn Type            | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | Prot  | NA    | Perm  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     | 6     |       | 6     | 8     |       | 8     |       |       | 4     |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     | 8     | 7     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 15.0  | 15.0  | 5.0   | 15.0  | 15.0  | 5.0   | 10.0  | 10.0  | 20.0  | 10.0  | 10.0  |
| Minimum Split (s)    | 10.0  | 20.0  | 20.0  | 10.0  | 20.0  | 20.0  | 10.0  | 15.0  | 15.0  | 25.0  | 20.0  | 20.0  |
| Total Split (s)      | 12.0  | 51.0  | 51.0  | 12.0  | 51.0  | 51.0  | 12.0  | 25.0  | 25.0  | 32.0  | 45.0  | 45.0  |
| Total Split (%)      | 10.0% | 42.5% | 42.5% | 10.0% | 42.5% | 42.5% | 10.0% | 20.8% | 20.8% | 26.7% | 37.5% | 37.5% |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead/Lag             | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?   | Yes   |
| Recall Mode          | None  | C-Max | C-Max | None  | C-Max | C-Max | None  | None  | None  | None  | None  | None  |
| Act Effct Green (s)  | 74.7  | 65.6  | 65.6  | 66.6  | 59.7  | 59.7  | 14.6  | 10.0  | 10.0  | 22.6  | 25.1  | 25.1  |
| Actuated g/C Ratio   | 0.62  | 0.55  | 0.55  | 0.56  | 0.50  | 0.50  | 0.12  | 0.08  | 0.08  | 0.19  | 0.21  | 0.21  |
| v/c Ratio            | 0.43  | 0.49  | 0.01  | 0.15  | 0.48  | 0.20  | 0.21  | 0.05  | 0.21  | 0.74  | 0.02  | 0.62  |
| Control Delay        | 20.1  | 15.3  | 0.0   | 12.1  | 22.9  | 3.7   | 32.8  | 51.6  | 1.8   | 53.4  | 35.6  | 14.7  |
| 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          | 20.1  | 15.3  | 0.0   | 12.1  | 22.9  | 3.7   | 32.8  | 51.6  | 1.8   | 53.4  | 35.6  | 14.7  |
| LOS                  | C     | B     | A     | B     | C     | A     | C     | D     | A     | D     | D     | B     |
| Approach Delay       |       | 15.9  |       |       | 19.3  |       |       | 17.4  |       |       | 37.5  |       |
| Approach LOS         |       | B     |       |       | B     |       |       | B     |       |       | D     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 22.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 63.3%  
 ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 13: Sterling Ranch Rd & Marksheffel Rd



| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.9  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↙    | ↑    | ↗    | ↙    | ↗    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 10   | 404  | 18   | 7    | 535  | 8    | 54   | 0    | 20   | 22   | 0    | 33   |
| Future Vol, veh/h        | 10   | 404  | 18   | 7    | 535  | 8    | 54   | 0    | 20   | 22   | 0    | 33   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None |
| Storage Length           | 305  | -    | 255  | 305  | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 11   | 425  | 19   | 7    | 563  | 8    | 57   | 0    | 21   | 23   | 0    | 35   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 571    | 0 | 0 | 444    | 0 | 0 | 1046   | 1032  | 425   | 1048   | 1047  | 567   |
| Stage 1              | -      | - | - | -      | - | - | 447    | 447   | -     | 581    | 581   | -     |
| Stage 2              | -      | - | - | -      | - | - | 599    | 585   | -     | 467    | 466   | -     |
| 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   | 1002   | - | - | 1116   | - | - | 206    | 233   | 629   | 206    | 228   | 523   |
| Stage 1              | -      | - | - | -      | - | - | 591    | 573   | -     | 499    | 500   | -     |
| Stage 2              | -      | - | - | -      | - | - | 488    | 498   | -     | 576    | 562   | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -     | -     | -      | -     | -     |
| Mov Cap-1 Maneuver   | 1002   | - | - | 1116   | - | - | 190    | 229   | 629   | 197    | 224   | 523   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 190    | 229   | -     | 197    | 224   | -     |
| Stage 1              | -      | - | - | -      | - | - | 584    | 567   | -     | 494    | 497   | -     |
| Stage 2              | -      | - | - | -      | - | - | 453    | 495   | -     | 551    | 556   | -     |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|----|--|--|
| HCM Control Delay, s | 0.2 |  |  | 0.1 |  |  | 27.9 |  |  | 19 |  |  |
| HCM LOS              |     |  |  |     |  |  | D    |  |  | C  |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 234   | 1002  | -   | -   | 1116  | -   | -   | 315   |
| HCM Lane V/C Ratio    | 0.333 | 0.011 | -   | -   | 0.007 | -   | -   | 0.184 |
| HCM Control Delay (s) | 27.9  | 8.6   | -   | -   | 8.2   | -   | -   | 19    |
| HCM Lane LOS          | D     | A     | -   | -   | A     | -   | -   | C     |
| HCM 95th %tile Q(veh) | 1.4   | 0     | -   | -   | 0     | -   | -   | 0.7   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.9  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      |      |      |      |      |      |      |
| Traffic Vol, veh/h       | 44   | 16   | 5    | 441  | 533  | 15   |
| Future Vol, veh/h        | 44   | 16   | 5    | 441  | 533  | 15   |
| 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    | -    | 205  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 46   | 17   | 5    | 464  | 561  | 16   |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 1043   | 569    | 577    | 0 | - | 0 |
| Stage 1              | 569    | -      | -      | - | - | - |
| Stage 2              | 474    | -      | -      | - | - | - |
| Critical Hdwy        | 6.42   | 6.22   | 4.12   | - | - | - |
| Critical Hdwy Stg 1  | 5.42   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.42   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.518  | 3.318  | 2.218  | - | - | - |
| Pot Cap-1 Maneuver   | 254    | 522    | 996    | - | - | - |
| Stage 1              | 566    | -      | -      | - | - | - |
| Stage 2              | 626    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 253    | 522    | 996    | - | - | - |
| Mov Cap-2 Maneuver   | 385    | -      | -      | - | - | - |
| Stage 1              | 563    | -      | -      | - | - | - |
| Stage 2              | 626    | -      | -      | - | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 15.3 | 0.1 | 0  |
| HCM LOS              | C    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 996   | -   | 414   | -   | -   |
| HCM Lane V/C Ratio    | 0.005 | -   | 0.153 | -   | -   |
| HCM Control Delay (s) | 8.6   | -   | 15.3  | -   | -   |
| HCM Lane LOS          | A     | -   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | 0.5   | -   | -   |

| Intersection                |       |       |       |        |       |
|-----------------------------|-------|-------|-------|--------|-------|
| Intersection Delay, s/veh   | 15.0  |       |       |        |       |
| Intersection LOS            | C     |       |       |        |       |
| Approach                    | EB    | WB    | NB    | SB     |       |
| Entry Lanes                 | 1     | 1     | 1     | 1      |       |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1      |       |
| Adj Approach Flow, veh/h    | 453   | 393   | 815   | 417    |       |
| Demand Flow Rate, veh/h     | 462   | 401   | 830   | 425    |       |
| Vehicles Circulating, veh/h | 547   | 623   | 591   | 408    |       |
| Vehicles Exiting, veh/h     | 286   | 577   | 418   | 616    |       |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0      |       |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000  |       |
| Approach Delay, s/veh       | 13.9  | 13.7  | 19.0  | 9.9    |       |
| Approach LOS                | B     | B     | C     | A      |       |
| Lane                        | Left  | Left  | Left  | Bypass | Left  |
| Designated Moves            | LTR   | LTR   | LT    | R      | LTR   |
| Assumed Moves               | LTR   | LTR   | LT    | R      | LTR   |
| RT Channelized              |       |       |       | Free   |       |
| Lane Util                   | 1.000 | 1.000 | 1.000 |        | 1.000 |
| Follow-Up Headway, s        | 2.609 | 2.609 | 2.609 |        | 2.609 |
| Critical Headway, s         | 4.976 | 4.976 | 4.976 | 221    | 4.976 |
| Entry Flow, veh/h           | 462   | 401   | 609   | 1938   | 425   |
| Cap Entry Lane, veh/h       | 790   | 731   | 755   | 0.980  | 910   |
| Entry HV Adj Factor         | 0.981 | 0.980 | 0.981 | 217    | 0.980 |
| Flow Entry, veh/h           | 453   | 393   | 598   | 1900   | 417   |
| Cap Entry, veh/h            | 775   | 717   | 741   | 0.114  | 892   |
| V/C Ratio                   | 0.585 | 0.549 | 0.806 | 0.0    | 0.467 |
| Control Delay, s/veh        | 13.9  | 13.7  | 25.8  | A      | 9.9   |
| LOS                         | B     | B     | D     | 0      | A     |
| 95th %tile Queue, veh       | 4     | 3     | 8     |        | 3     |

Timings  
4: Vollmer Rd & Briargate Pkwy

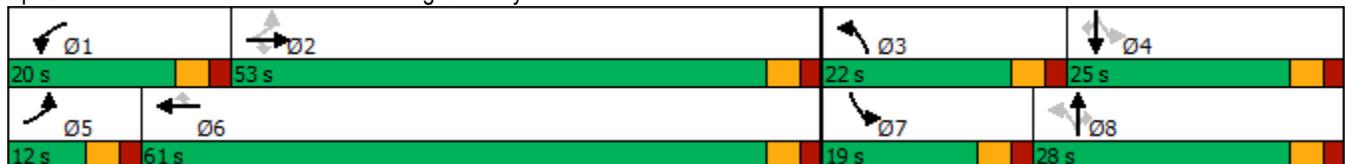
2042 Background Traffic  
PM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 227   | 1000  | 185   | 209   | 736   | 74    | 301   | 414   | 282   | 109   | 211   | 118   |
| Future Volume (vph)  | 227   | 1000  | 185   | 209   | 736   | 74    | 301   | 414   | 282   | 109   | 211   | 118   |
| Turn Type            | pm+pt | NA    | Perm  | Prot  | NA    | Perm  | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     |       |       | 6     | 8     |       | 8     | 4     |       | 4     |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     | 8     | 7     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 15.0  | 15.0  | 15.0  | 15.0  | 15.0  | 8.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)    | 10.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 13.0  | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  |
| Total Split (s)      | 12.0  | 53.0  | 53.0  | 20.0  | 61.0  | 61.0  | 22.0  | 28.0  | 28.0  | 19.0  | 25.0  | 25.0  |
| Total Split (%)      | 10.0% | 44.2% | 44.2% | 16.7% | 50.8% | 50.8% | 18.3% | 23.3% | 23.3% | 15.8% | 20.8% | 20.8% |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead/Lag             | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?   | Yes   |
| Recall Mode          | None  | Max   | Max   | None  | Max   | Max   | None  | None  | None  | None  | None  | None  |
| Act Effct Green (s)  | 55.1  | 48.1  | 48.1  | 15.0  | 56.1  | 56.1  | 35.6  | 20.3  | 20.3  | 25.3  | 14.5  | 14.5  |
| Actuated g/C Ratio   | 0.48  | 0.42  | 0.42  | 0.13  | 0.49  | 0.49  | 0.31  | 0.18  | 0.18  | 0.22  | 0.13  | 0.13  |
| v/c Ratio            | 0.65  | 0.69  | 0.25  | 0.49  | 0.45  | 0.09  | 0.83  | 0.67  | 0.59  | 0.43  | 0.50  | 0.37  |
| Control Delay        | 25.2  | 30.5  | 4.4   | 51.0  | 20.6  | 1.6   | 52.9  | 49.9  | 12.0  | 33.9  | 50.1  | 6.5   |
| 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          | 25.2  | 30.5  | 4.4   | 51.0  | 20.6  | 1.6   | 52.9  | 49.9  | 12.0  | 33.9  | 50.1  | 6.5   |
| LOS                  | C     | C     | A     | D     | C     | A     | D     | D     | B     | C     | D     | A     |
| Approach Delay       |       | 26.2  |       |       | 25.5  |       |       | 39.9  |       |       | 34.3  |       |
| Approach LOS         |       | C     |       |       | C     |       |       | D     |       |       | C     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 114.3  
 Natural Cycle: 80  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 30.5  
 Intersection LOS: C  
 Intersection Capacity Utilization 79.3%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 4: Vollmer Rd & Briargate Pkwy





| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.6  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↘    | ↑    | ↗    | ↘    |      | ↗    |      | ↑    | ↗    | ↘    | ↑    |      |
| Traffic Vol, veh/h       | 38   | 18   | 30   | 119  | 0    | 136  | 0    | 310  | 148  | 49   | 267  | 0    |
| Future Vol, veh/h        | 38   | 18   | 30   | 119  | 0    | 136  | 0    | 310  | 148  | 49   | 267  | 0    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None |
| Storage Length           | 0    | -    | 0    | 0    | -    | 0    | -    | -    | 205  | 205  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 40   | 19   | 32   | 125  | 0    | 143  | 0    | 326  | 156  | 52   | 281  | 0    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |   | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|---|--------|---|-------|---|---|
| Conflicting Flow All | 861    | 867   | 281    | 737   | -      | 326   | - | 0      | 0 | 482   | 0 | 0 |
| Stage 1              | 385    | 385   | -      | 326   | -      | -     | - | -      | - | -     | - | - |
| Stage 2              | 476    | 482   | -      | 411   | -      | -     | - | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | -      | 6.22  | - | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | -      | -     | - | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | -      | -     | - | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | -      | 3.318 | - | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 282    | 287   | *872   | 358   | 0      | 715   | 0 | -      | - | 1081  | - | 0 |
| Stage 1              | 717    | 645   | -      | 687   | 0      | -     | 0 | -      | - | -     | - | 0 |
| Stage 2              | 570    | 553   | -      | 689   | 0      | -     | 0 | -      | - | -     | - | 0 |
| Platoon blocked, %   | 1      | 1     | 1      | 1     |        |       |   | -      | - |       |   |   |
| Mov Cap-1 Maneuver   | 217    | 273   | *872   | 320   | -      | 715   | - | -      | - | 1081  | - | - |
| Mov Cap-2 Maneuver   | 322    | 374   | -      | 441   | -      | -     | - | -      | - | -     | - | - |
| Stage 1              | 717    | 614   | -      | 687   | -      | -     | - | -      | - | -     | - | - |
| Stage 2              | 456    | 553   | -      | 612   | -      | -     | - | -      | - | -     | - | - |

| Approach             | EB   | WB   | NB | SB  |
|----------------------|------|------|----|-----|
| HCM Control Delay, s | 14.3 | 13.7 | 0  | 1.3 |
| HCM LOS              | B    | B    |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT |
|-----------------------|-----|-----|-------|-------|-------|-------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 322   | 374   | 872   | 441   | 715   | 1081  | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.124 | 0.051 | 0.036 | 0.284 | 0.2   | 0.048 | -   |
| HCM Control Delay (s) | -   | -   | 17.8  | 15.1  | 9.3   | 16.4  | 11.3  | 8.5   | -   |
| HCM Lane LOS          | -   | -   | C     | C     | A     | C     | B     | A     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 0.4   | 0.2   | 0.1   | 1.2   | 0.7   | 0.1   | -   |

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

Timings  
12: Vollmer Rd & Marksheffel Rd

2042 Background Traffic  
PM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 142   | 934   | 96    | 188   | 710   | 154   | 171   | 728   | 186   | 132   | 342   | 199   |
| Future Volume (vph)  | 142   | 934   | 96    | 188   | 710   | 154   | 171   | 728   | 186   | 132   | 342   | 199   |
| Turn Type            | pm+pt | NA    | Perm  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     | 6     |       | 6     | 8     |       | 8     | 4     |       | 4     |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     | 8     | 7     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 10.0  | 10.0  | 5.0   | 10.0  | 10.0  |
| Minimum Split (s)    | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  | 23.0  |
| Total Split (s)      | 20.0  | 50.0  | 50.0  | 19.0  | 49.0  | 49.0  | 15.0  | 36.0  | 36.0  | 15.0  | 36.0  | 36.0  |
| Total Split (%)      | 16.7% | 41.7% | 41.7% | 15.8% | 40.8% | 40.8% | 12.5% | 30.0% | 30.0% | 12.5% | 30.0% | 30.0% |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead/Lag             | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?   | Yes   |
| Recall Mode          | None  | C-Max | C-Max | None  | C-Max | C-Max | None  | Max   | Max   | None  | Max   | Max   |
| Act Effct Green (s)  | 57.6  | 46.9  | 46.9  | 60.4  | 48.3  | 48.3  | 41.2  | 31.4  | 31.4  | 40.8  | 31.2  | 31.2  |
| Actuated g/C Ratio   | 0.48  | 0.39  | 0.39  | 0.50  | 0.40  | 0.40  | 0.34  | 0.26  | 0.26  | 0.34  | 0.26  | 0.26  |
| v/c Ratio            | 0.43  | 0.71  | 0.15  | 0.71  | 0.52  | 0.22  | 0.50  | 0.83  | 0.38  | 0.68  | 0.39  | 0.37  |
| Control Delay        | 18.6  | 34.6  | 4.5   | 50.9  | 22.4  | 5.3   | 31.4  | 50.7  | 13.6  | 43.5  | 38.2  | 6.7   |
| 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          | 18.6  | 34.6  | 4.5   | 50.9  | 22.4  | 5.3   | 31.4  | 50.7  | 13.6  | 43.5  | 38.2  | 6.7   |
| LOS                  | B     | C     | A     | D     | C     | A     | C     | D     | B     | D     | D     | A     |
| Approach Delay       |       | 30.2  |       |       | 25.0  |       |       | 41.3  |       |       | 29.9  |       |
| Approach LOS         |       | C     |       |       | C     |       |       | D     |       |       | C     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 31.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 80.3%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 12: Vollmer Rd & Marksheffel Rd



Timings  
13: Sterling Ranch Rd & Marksheffel Rd

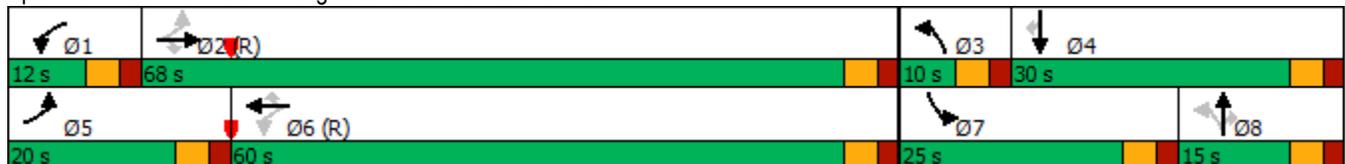
2042 Background Traffic  
PM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 290   | 946   | 22    | 130   | 841   | 541   | 27    | 6     | 37    | 325   | 23    | 183   |
| Future Volume (vph)  | 290   | 946   | 22    | 130   | 841   | 541   | 27    | 6     | 37    | 325   | 23    | 183   |
| Turn Type            | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | Prot  | NA    | Perm  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     | 6     |       | 6     | 8     |       | 8     |       |       | 4     |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     | 8     | 7     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 15.0  | 15.0  | 5.0   | 15.0  | 15.0  | 5.0   | 10.0  | 10.0  | 20.0  | 10.0  | 10.0  |
| Minimum Split (s)    | 10.0  | 20.0  | 20.0  | 10.0  | 20.0  | 20.0  | 10.0  | 15.0  | 15.0  | 25.0  | 20.0  | 20.0  |
| Total Split (s)      | 20.0  | 68.0  | 68.0  | 12.0  | 60.0  | 60.0  | 10.0  | 15.0  | 15.0  | 25.0  | 30.0  | 30.0  |
| Total Split (%)      | 16.7% | 56.7% | 56.7% | 10.0% | 50.0% | 50.0% | 8.3%  | 12.5% | 12.5% | 20.8% | 25.0% | 25.0% |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead/Lag             | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?   | Yes   |
| Recall Mode          | None  | C-Max | C-Max | None  | C-Max | C-Max | None  | None  | None  | None  | None  | None  |
| Act Effct Green (s)  | 80.3  | 69.1  | 69.1  | 69.9  | 63.0  | 63.0  | 11.0  | 10.0  | 10.0  | 20.0  | 23.0  | 23.0  |
| Actuated g/C Ratio   | 0.67  | 0.58  | 0.58  | 0.58  | 0.52  | 0.52  | 0.09  | 0.08  | 0.08  | 0.17  | 0.19  | 0.19  |
| v/c Ratio            | 0.72  | 0.49  | 0.02  | 0.41  | 0.48  | 0.52  | 0.20  | 0.04  | 0.12  | 0.60  | 0.07  | 0.42  |
| Control Delay        | 37.0  | 10.4  | 0.0   | 12.8  | 20.8  | 3.4   | 37.8  | 51.3  | 0.8   | 51.2  | 39.1  | 8.5   |
| 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          | 37.0  | 10.4  | 0.0   | 12.8  | 20.8  | 3.4   | 37.8  | 51.3  | 0.8   | 51.2  | 39.1  | 8.5   |
| LOS                  | D     | B     | A     | B     | C     | A     | D     | D     | A     | D     | D     | A     |
| Approach Delay       |       | 16.4  |       |       | 13.9  |       |       | 19.1  |       |       | 36.0  |       |
| Approach LOS         |       | B     |       |       | B     |       |       | B     |       |       | D     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 18.4  
 Intersection LOS: B  
 Intersection Capacity Utilization 70.4%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 13: Sterling Ranch Rd & Marksheffel Rd



| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.2  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↙    | ↑    | ↗    | ↙    | ↗    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 40   | 427  | 66   | 16   | 342  | 24   | 39   | 0    | 10   | 14   | 0    | 24   |
| Future Vol, veh/h        | 40   | 427  | 66   | 16   | 342  | 24   | 39   | 0    | 10   | 14   | 0    | 24   |
| 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 |
| Storage Length           | 305  | -    | 255  | 305  | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 42   | 449  | 69   | 17   | 360  | 25   | 41   | 0    | 11   | 15   | 0    | 25   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 385    | 0 | 0 | 518    | 0 | 0 | 952    | 952   | 449   | 980    | 1009  | 373   |
| Stage 1              | -      | - | - | -      | - | - | 533    | 533   | -     | 407    | 407   | -     |
| Stage 2              | -      | - | - | -      | - | - | 419    | 419   | -     | 573    | 602   | -     |
| 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   | 1173   | - | - | 1048   | - | - | 239    | 259   | 610   | 229    | 240   | 673   |
| Stage 1              | -      | - | - | -      | - | - | 531    | 525   | -     | 621    | 597   | -     |
| Stage 2              | -      | - | - | -      | - | - | 612    | 590   | -     | 505    | 489   | -     |
| Platoon blocked, %   |        | - | - | -      | - | - |        |       |       |        |       |       |
| Mov Cap-1 Maneuver   | 1173   | - | - | 1048   | - | - | 221    | 246   | 610   | 216    | 228   | 673   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 221    | 246   | -     | 216    | 228   | -     |
| Stage 1              | -      | - | - | -      | - | - | 512    | 506   | -     | 599    | 587   | -     |
| Stage 2              | -      | - | - | -      | - | - | 579    | 581   | -     | 479    | 471   | -     |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB   |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 0.6 |  |  | 0.4 |  |  | 22.7 |  |  | 15.6 |  |  |
| HCM LOS              |     |  |  |     |  |  | C    |  |  | C    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 254   | 1173  | -   | -   | 1048  | -   | -   | 378   |
| HCM Lane V/C Ratio    | 0.203 | 0.036 | -   | -   | 0.016 | -   | -   | 0.106 |
| HCM Control Delay (s) | 22.7  | 8.2   | -   | -   | 8.5   | -   | -   | 15.6  |
| HCM Lane LOS          | C     | A     | -   | -   | A     | -   | -   | C     |
| HCM 95th %tile Q(veh) | 0.7   | 0.1   | -   | -   | 0     | -   | -   | 0.4   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.8  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | Y    |      | Y    | ↑    | ↑    |      |
| Traffic Vol, veh/h       | 27   | 12   | 20   | 431  | 370  | 47   |
| Future Vol, veh/h        | 27   | 12   | 20   | 431  | 370  | 47   |
| 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    | -    | 205  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 28   | 13   | 21   | 454  | 389  | 49   |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 910    | 414    | 438    | 0 | - | 0 |
| Stage 1              | 414    | -      | -      | - | - | - |
| Stage 2              | 496    | -      | -      | - | - | - |
| Critical Hdwy        | 6.42   | 6.22   | 4.12   | - | - | - |
| Critical Hdwy Stg 1  | 5.42   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.42   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.518  | 3.318  | 2.218  | - | - | - |
| Pot Cap-1 Maneuver   | 305    | 638    | 1122   | - | - | - |
| Stage 1              | 667    | -      | -      | - | - | - |
| Stage 2              | 612    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 299    | 638    | 1122   | - | - | - |
| Mov Cap-2 Maneuver   | 425    | -      | -      | - | - | - |
| Stage 1              | 654    | -      | -      | - | - | - |
| Stage 2              | 612    | -      | -      | - | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 13.3 | 0.4 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1122  | -   | 474   | -   | -   |
| HCM Lane V/C Ratio    | 0.019 | -   | 0.087 | -   | -   |
| HCM Control Delay (s) | 8.3   | -   | 13.3  | -   | -   |
| HCM Lane LOS          | A     | -   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | 0.3   | -   | -   |

| Intersection                |       |       |       |        |       |
|-----------------------------|-------|-------|-------|--------|-------|
| Intersection Delay, s/veh   | 9.0   |       |       |        |       |
| Intersection LOS            | A     |       |       |        |       |
| Approach                    | EB    | WB    | NB    | SB     |       |
| Entry Lanes                 | 1     | 1     | 1     | 1      |       |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1      |       |
| Adj Approach Flow, veh/h    | 136   | 604   | 377   | 310    |       |
| Demand Flow Rate, veh/h     | 138   | 616   | 385   | 316    |       |
| Vehicles Circulating, veh/h | 436   | 309   | 120   | 551    |       |
| Vehicles Exiting, veh/h     | 431   | 116   | 454   | 374    |       |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0      |       |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000  |       |
| Approach Delay, s/veh       | 5.7   | 12.3  | 4.2   | 9.8    |       |
| Approach LOS                | A     | B     | A     | A      |       |
| Lane                        | Left  | Left  | Left  | Bypass | Left  |
| Designated Moves            | LTR   | LTR   | LT    | R      | LTR   |
| Assumed Moves               | LTR   | LTR   | LT    | R      | LTR   |
| RT Channelized              |       |       |       | Free   |       |
| Lane Util                   | 1.000 | 1.000 | 1.000 |        | 1.000 |
| Follow-Up Headway, s        | 2.609 | 2.609 | 2.609 |        | 2.609 |
| Critical Headway, s         | 4.976 | 4.976 | 4.976 | 80     | 4.976 |
| Entry Flow, veh/h           | 138   | 616   | 305   | 1938   | 316   |
| Cap Entry Lane, veh/h       | 885   | 1007  | 1221  | 0.980  | 787   |
| Entry HV Adj Factor         | 0.983 | 0.980 | 0.981 | 78     | 0.981 |
| Flow Entry, veh/h           | 136   | 604   | 299   | 1900   | 310   |
| Cap Entry, veh/h            | 870   | 987   | 1197  | 0.041  | 772   |
| V/C Ratio                   | 0.156 | 0.612 | 0.250 | 0.0    | 0.402 |
| Control Delay, s/veh        | 5.7   | 12.3  | 5.3   | A      | 9.8   |
| LOS                         | A     | B     | A     | 0      | A     |
| 95th %tile Queue, veh       | 1     | 4     | 1     |        | 2     |

Timings  
4: Vollmer Rd & Briargate Pkwy

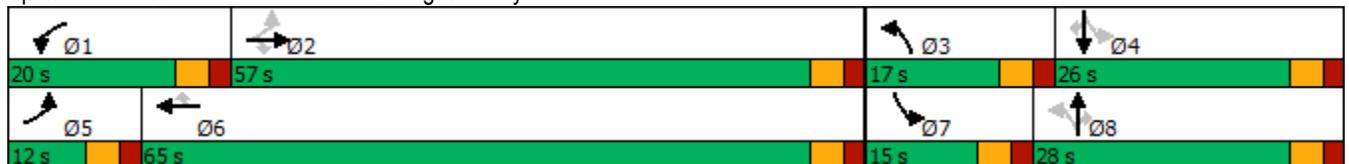
2042 Total Traffic  
AM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 68    | 554   | 152   | 241   | 1045  | 96    | 160   | 131   | 109   | 121   | 306   | 138   |
| Future Volume (vph)  | 68    | 554   | 152   | 241   | 1045  | 96    | 160   | 131   | 109   | 121   | 306   | 138   |
| Turn Type            | pm+pt | NA    | Perm  | Prot  | NA    | Perm  | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     |       |       | 6     | 8     |       | 8     | 4     |       | 4     |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     | 8     | 7     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 15.0  | 15.0  | 15.0  | 15.0  | 15.0  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)    | 10.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  |
| Total Split (s)      | 12.0  | 57.0  | 57.0  | 20.0  | 65.0  | 65.0  | 17.0  | 28.0  | 28.0  | 15.0  | 26.0  | 26.0  |
| Total Split (%)      | 10.0% | 47.5% | 47.5% | 16.7% | 54.2% | 54.2% | 14.2% | 23.3% | 23.3% | 12.5% | 21.7% | 21.7% |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead/Lag             | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?   | Yes   |
| Recall Mode          | None  | Max   | Max   | None  | Max   | Max   | None  | None  | None  | None  | None  | None  |
| Act Effct Green (s)  | 58.7  | 52.1  | 52.1  | 15.0  | 62.7  | 62.7  | 29.2  | 17.8  | 17.8  | 25.4  | 15.9  | 15.9  |
| Actuated g/C Ratio   | 0.51  | 0.46  | 0.46  | 0.13  | 0.55  | 0.55  | 0.26  | 0.16  | 0.16  | 0.22  | 0.14  | 0.14  |
| v/c Ratio            | 0.26  | 0.35  | 0.20  | 0.56  | 0.57  | 0.11  | 0.62  | 0.24  | 0.31  | 0.40  | 0.66  | 0.41  |
| Control Delay        | 12.4  | 21.6  | 3.7   | 52.8  | 19.8  | 2.8   | 43.0  | 43.3  | 4.6   | 35.7  | 53.4  | 9.5   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay          | 12.4  | 21.6  | 3.7   | 52.8  | 19.8  | 2.8   | 43.0  | 43.3  | 4.6   | 35.7  | 53.4  | 9.5   |
| LOS                  | B     | C     | A     | D     | B     | A     | D     | D     | A     | D     | D     | A     |
| Approach Delay       |       | 17.1  |       |       | 24.3  |       |       | 32.5  |       |       | 38.9  |       |
| Approach LOS         |       | B     |       |       | C     |       |       | C     |       |       | D     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 114.4  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 26.3  
 Intersection LOS: C  
 Intersection Capacity Utilization 67.0%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 4: Vollmer Rd & Briargate Pkwy





HCM 6th TWSC  
 8: Sterling Ranch Rd & School Access/Oak Park Pl

2042 Total Traffic  
 AM Peak Hour

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 11.9 |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↖    | ↗    | ↖    | ↖    |      | ↖    |      | ↗    | ↖    | ↖    | ↗    |      |
| Traffic Vol, veh/h       | 133  | 71   | 131  | 187  | 0    | 197  | 0    | 386  | 123  | 63   | 246  | 0    |
| Future Vol, veh/h        | 133  | 71   | 131  | 187  | 0    | 197  | 0    | 386  | 123  | 63   | 246  | 0    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None |
| Storage Length           | 0    | -    | 0    | 0    | -    | 0    | -    | -    | 205  | 205  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 140  | 75   | 138  | 197  | 0    | 207  | 0    | 406  | 129  | 66   | 259  | 0    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |   | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|---|--------|---|-------|---|---|
| Conflicting Flow All | 965    | 926   | 259    | 904   | -      | 406   | - | 0      | 0 | 535   | 0 | 0 |
| Stage 1              | 391    | 391   | -      | 406   | -      | -     | - | -      | - | -     | - | - |
| Stage 2              | 574    | 535   | -      | 498   | -      | -     | - | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | -      | 6.22  | - | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | -      | -     | - | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | -      | -     | - | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | -      | 3.318 | - | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 231    | 261   | 897    | 258   | 0      | 645   | 0 | -      | - | 1033  | - | 0 |
| Stage 1              | 697    | 634   | -      | 622   | 0      | -     | 0 | -      | - | -     | - | 0 |
| Stage 2              | 504    | 524   | -      | 594   | 0      | -     | 0 | -      | - | -     | - | 0 |
| Platoon blocked, %   | 1      | 1     | 1      | 1     |        |       |   | -      | - |       |   |   |
| Mov Cap-1 Maneuver   | 149    | 244   | 897    | ~ 174 | -      | 645   | - | -      | - | 1033  | - | - |
| Mov Cap-2 Maneuver   | 230    | 344   | -      | 300   | -      | -     | - | -      | - | -     | - | - |
| Stage 1              | 697    | 593   | -      | 622   | -      | -     | - | -      | - | -     | - | - |
| Stage 2              | 342    | 524   | -      | 411   | -      | -     | - | -      | - | -     | - | - |

| Approach             | EB   | WB   | NB | SB  |
|----------------------|------|------|----|-----|
| HCM Control Delay, s | 24.5 | 24.9 | 0  | 1.8 |
| HCM LOS              | C    | C    |    |     |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT |
|-----------------------|-----|-----|-------|-------|-------|-------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 230   | 344   | 897   | 300   | 645   | 1033  | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.609 | 0.217 | 0.154 | 0.656 | 0.322 | 0.064 | -   |
| HCM Control Delay (s) | -   | -   | 42.3  | 18.3  | 9.7   | 37.2  | 13.2  | 8.7   | -   |
| HCM Lane LOS          | -   | -   | E     | C     | A     | E     | B     | A     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 3.5   | 0.8   | 0.5   | 4.3   | 1.4   | 0.2   | -   |

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



Timings  
13: Sterling Ranch Rd & Marksheffel Rd

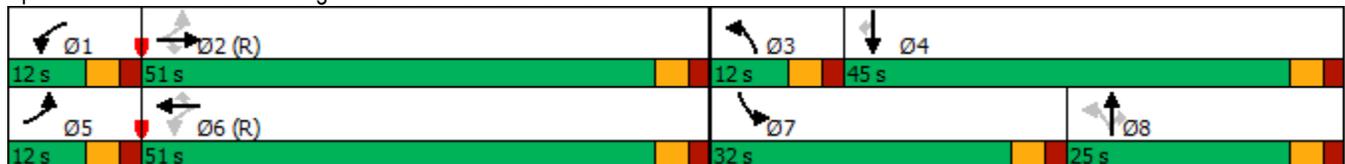
2042 Total Traffic  
AM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 160   | 900   | 10    | 47    | 809   | 175   | 39    | 8     | 55    | 478   | 10    | 328   |
| Future Volume (vph)  | 160   | 900   | 10    | 47    | 809   | 175   | 39    | 8     | 55    | 478   | 10    | 328   |
| Turn Type            | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | Prot  | NA    | Perm  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     | 6     |       | 6     | 8     |       | 8     |       |       | 4     |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     | 8     | 7     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 15.0  | 15.0  | 5.0   | 15.0  | 15.0  | 5.0   | 10.0  | 10.0  | 20.0  | 10.0  | 10.0  |
| Minimum Split (s)    | 10.0  | 20.0  | 20.0  | 10.0  | 20.0  | 20.0  | 10.0  | 15.0  | 15.0  | 25.0  | 20.0  | 20.0  |
| Total Split (s)      | 12.0  | 51.0  | 51.0  | 12.0  | 51.0  | 51.0  | 12.0  | 25.0  | 25.0  | 32.0  | 45.0  | 45.0  |
| Total Split (%)      | 10.0% | 42.5% | 42.5% | 10.0% | 42.5% | 42.5% | 10.0% | 20.8% | 20.8% | 26.7% | 37.5% | 37.5% |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead/Lag             | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?   | Yes   |
| Recall Mode          | None  | C-Max | C-Max | None  | C-Max | C-Max | None  | None  | None  | None  | None  | None  |
| Act Effct Green (s)  | 74.4  | 65.2  | 65.2  | 66.0  | 59.1  | 59.1  | 14.6  | 10.0  | 10.0  | 23.0  | 25.5  | 25.5  |
| Actuated g/C Ratio   | 0.62  | 0.54  | 0.54  | 0.55  | 0.49  | 0.49  | 0.12  | 0.08  | 0.08  | 0.19  | 0.21  | 0.21  |
| v/c Ratio            | 0.44  | 0.49  | 0.01  | 0.15  | 0.49  | 0.21  | 0.22  | 0.05  | 0.21  | 0.76  | 0.03  | 0.63  |
| Control Delay        | 21.0  | 15.5  | 0.0   | 12.3  | 23.4  | 3.7   | 32.6  | 51.6  | 1.8   | 54.0  | 35.4  | 15.6  |
| 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          | 21.0  | 15.5  | 0.0   | 12.3  | 23.4  | 3.7   | 32.6  | 51.6  | 1.8   | 54.0  | 35.4  | 15.6  |
| LOS                  | C     | B     | A     | B     | C     | A     | C     | D     | A     | D     | D     | B     |
| Approach Delay       |       | 16.2  |       |       | 19.6  |       |       | 17.3  |       |       | 38.3  |       |
| Approach LOS         |       | B     |       |       | B     |       |       | B     |       |       | D     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.76  
 Intersection Signal Delay: 23.4  
 Intersection LOS: C  
 Intersection Capacity Utilization 64.0%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 13: Sterling Ranch Rd & Marksheffel Rd



| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3.4  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↖    | ↑    | ↗    | ↖    | ↗    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 10   | 413  | 20   | 7    | 563  | 8    | 62   | 0    | 22   | 22   | 0    | 33   |
| Future Vol, veh/h        | 10   | 413  | 20   | 7    | 563  | 8    | 62   | 0    | 22   | 22   | 0    | 33   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None |
| Storage Length           | 305  | -    | 255  | 305  | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 11   | 435  | 21   | 7    | 593  | 8    | 65   | 0    | 23   | 23   | 0    | 35   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 601    | 0 | 0 | 456    | 0 | 0 | 1086   | 1072  | 435   | 1090   | 1089  | 597   |
| Stage 1              | -      | - | - | -      | - | - | 457    | 457   | -     | 611    | 611   | -     |
| Stage 2              | -      | - | - | -      | - | - | 629    | 615   | -     | 479    | 478   | -     |
| 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   | 976    | - | - | 1105   | - | - | 194    | 220   | 621   | 193    | 215   | 503   |
| Stage 1              | -      | - | - | -      | - | - | 583    | 568   | -     | 481    | 484   | -     |
| Stage 2              | -      | - | - | -      | - | - | 470    | 482   | -     | 568    | 556   | -     |
| Platoon blocked, %   |        | - | - | -      | - | - |        |       |       |        |       |       |
| Mov Cap-1 Maneuver   | 976    | - | - | 1105   | - | - | 178    | 216   | 621   | 183    | 211   | 503   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 178    | 216   | -     | 183    | 211   | -     |
| Stage 1              | -      | - | - | -      | - | - | 577    | 562   | -     | 476    | 481   | -     |
| Stage 2              | -      | - | - | -      | - | - | 435    | 479   | -     | 541    | 550   | -     |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB   |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 0.2 |  |  | 0.1 |  |  | 32.1 |  |  | 20.1 |  |  |
| HCM LOS              |     |  |  |     |  |  | D    |  |  | C    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 219   | 976   | -   | -   | 1105  | -   | -   | 296   |
| HCM Lane V/C Ratio    | 0.404 | 0.011 | -   | -   | 0.007 | -   | -   | 0.196 |
| HCM Control Delay (s) | 32.1  | 8.7   | -   | -   | 8.3   | -   | -   | 20.1  |
| HCM Lane LOS          | D     | A     | -   | -   | A     | -   | -   | C     |
| HCM 95th %tile Q(veh) | 1.8   | 0     | -   | -   | 0     | -   | -   | 0.7   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.2  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      | ↕    | ↕    |      | ↕    | ↕    |      |
| Traffic Vol, veh/h       | 44   | 0    | 16   | 18   | 0    | 19   | 5    | 446  | 6    | 7    | 543  | 15   |
| Future Vol, veh/h        | 44   | 0    | 16   | 18   | 0    | 19   | 5    | 446  | 6    | 7    | 543  | 15   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | 205  | -    | -    | 205  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 46   | 0    | 17   | 19   | 0    | 20   | 5    | 469  | 6    | 7    | 572  | 16   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       | Major2 |   |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 1086   | 1079  | 580    | 1085  | 1084   | 472   | 588    | 0 | 0 | 475   | 0 | 0 |
| Stage 1              | 594    | 594   | -      | 482   | 482    | -     | -      | - | - | -     | - | - |
| Stage 2              | 492    | 485   | -      | 603   | 602    | -     | -      | - | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12   | - | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -      | - | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218  | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 194    | 218   | 514    | 194   | 217    | 592   | 987    | - | - | 1087  | - | - |
| Stage 1              | 491    | 493   | -      | 565   | 553    | -     | -      | - | - | -     | - | - |
| Stage 2              | 558    | 552   | -      | 486   | 489    | -     | -      | - | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |        | - | - | -     | - | - |
| Mov Cap-1 Maneuver   | 186    | 216   | 514    | 186   | 215    | 592   | 987    | - | - | 1087  | - | - |
| Mov Cap-2 Maneuver   | 186    | 216   | -      | 186   | 215    | -     | -      | - | - | -     | - | - |
| Stage 1              | 489    | 490   | -      | 562   | 550    | -     | -      | - | - | -     | - | - |
| Stage 2              | 536    | 549   | -      | 467   | 486    | -     | -      | - | - | -     | - | - |

| Approach             | EB   |  | WB   |  | NB  |  | SB  |  |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 27.3 |  | 19.5 |  | 0.1 |  | 0.1 |  |
| HCM LOS              | D    |  | C    |  |     |  |     |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | WBLn1 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 987   | -   | -   | 224   | 287   | 1087  | -   | -   |
| HCM Lane V/C Ratio    | 0.005 | -   | -   | 0.282 | 0.136 | 0.007 | -   | -   |
| HCM Control Delay (s) | 8.7   | -   | -   | 27.3  | 19.5  | 8.3   | -   | -   |
| HCM Lane LOS          | A     | -   | -   | D     | C     | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | 1.1   | 0.5   | 0     | -   | -   |

| Intersection                |       |       |       |        |       |
|-----------------------------|-------|-------|-------|--------|-------|
| Intersection Delay, s/veh   | 15.0  |       |       |        |       |
| Intersection LOS            | C     |       |       |        |       |
| Approach                    | EB    | WB    | NB    | SB     |       |
| Entry Lanes                 | 1     | 1     | 1     | 1      |       |
| Conflicting Circle Lanes    | 1     | 1     | 1     | 1      |       |
| Adj Approach Flow, veh/h    | 453   | 393   | 815   | 418    |       |
| Demand Flow Rate, veh/h     | 462   | 401   | 830   | 426    |       |
| Vehicles Circulating, veh/h | 548   | 623   | 591   | 408    |       |
| Vehicles Exiting, veh/h     | 286   | 577   | 419   | 616    |       |
| Ped Vol Crossing Leg, #/h   | 0     | 0     | 0     | 0      |       |
| Ped Cap Adj                 | 1.000 | 1.000 | 1.000 | 1.000  |       |
| Approach Delay, s/veh       | 13.9  | 13.7  | 19.0  | 9.9    |       |
| Approach LOS                | B     | B     | C     | A      |       |
| Lane                        | Left  | Left  | Left  | Bypass | Left  |
| Designated Moves            | LTR   | LTR   | LT    | R      | LTR   |
| Assumed Moves               | LTR   | LTR   | LT    | R      | LTR   |
| RT Channelized              |       |       |       | Free   |       |
| Lane Util                   | 1.000 | 1.000 | 1.000 |        | 1.000 |
| Follow-Up Headway, s        | 2.609 | 2.609 | 2.609 |        | 2.609 |
| Critical Headway, s         | 4.976 | 4.976 | 4.976 | 221    | 4.976 |
| Entry Flow, veh/h           | 462   | 401   | 609   | 1938   | 426   |
| Cap Entry Lane, veh/h       | 789   | 731   | 755   | 0.980  | 910   |
| Entry HV Adj Factor         | 0.981 | 0.980 | 0.981 | 217    | 0.980 |
| Flow Entry, veh/h           | 453   | 393   | 598   | 1900   | 418   |
| Cap Entry, veh/h            | 774   | 717   | 741   | 0.114  | 892   |
| V/C Ratio                   | 0.586 | 0.549 | 0.806 | 0.0    | 0.468 |
| Control Delay, s/veh        | 13.9  | 13.7  | 25.8  | A      | 9.9   |
| LOS                         | B     | B     | D     | 0      | A     |
| 95th %tile Queue, veh       | 4     | 3     | 8     |        | 3     |

Timings  
4: Vollmer Rd & Briargate Pkwy

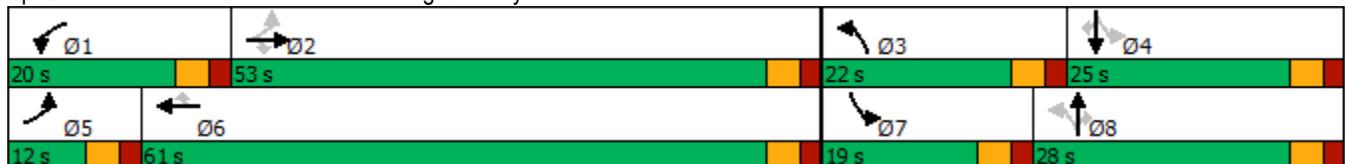
2042 Total Traffic  
PM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 227   | 1015  | 185   | 209   | 745   | 75    | 301   | 414   | 282   | 110   | 211   | 118   |
| Future Volume (vph)  | 227   | 1015  | 185   | 209   | 745   | 75    | 301   | 414   | 282   | 110   | 211   | 118   |
| Turn Type            | pm+pt | NA    | Perm  | Prot  | NA    | Perm  | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     |       |       | 6     | 8     |       | 8     | 4     |       | 4     |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     | 8     | 7     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 15.0  | 15.0  | 15.0  | 15.0  | 15.0  | 8.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)    | 10.0  | 20.0  | 20.0  | 20.0  | 20.0  | 20.0  | 13.0  | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  |
| Total Split (s)      | 12.0  | 53.0  | 53.0  | 20.0  | 61.0  | 61.0  | 22.0  | 28.0  | 28.0  | 19.0  | 25.0  | 25.0  |
| Total Split (%)      | 10.0% | 44.2% | 44.2% | 16.7% | 50.8% | 50.8% | 18.3% | 23.3% | 23.3% | 15.8% | 20.8% | 20.8% |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead/Lag             | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?   | Yes   |
| Recall Mode          | None  | Max   | Max   | None  | Max   | Max   | None  | None  | None  | None  | None  | None  |
| Act Effct Green (s)  | 55.1  | 48.1  | 48.1  | 15.0  | 56.1  | 56.1  | 35.6  | 20.3  | 20.3  | 25.3  | 14.5  | 14.5  |
| Actuated g/C Ratio   | 0.48  | 0.42  | 0.42  | 0.13  | 0.49  | 0.49  | 0.31  | 0.18  | 0.18  | 0.22  | 0.13  | 0.13  |
| v/c Ratio            | 0.66  | 0.70  | 0.25  | 0.49  | 0.45  | 0.09  | 0.83  | 0.67  | 0.59  | 0.43  | 0.50  | 0.37  |
| Control Delay        | 25.6  | 30.9  | 4.7   | 51.0  | 20.7  | 1.7   | 52.9  | 49.9  | 12.3  | 33.9  | 50.1  | 6.5   |
| 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          | 25.6  | 30.9  | 4.7   | 51.0  | 20.7  | 1.7   | 52.9  | 49.9  | 12.3  | 33.9  | 50.1  | 6.5   |
| LOS                  | C     | C     | A     | D     | C     | A     | D     | D     | B     | C     | D     | A     |
| Approach Delay       |       | 26.5  |       |       | 25.5  |       |       | 40.1  |       |       | 34.3  |       |
| Approach LOS         |       | C     |       |       | C     |       |       | D     |       |       | C     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 114.3  
 Natural Cycle: 80  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 30.6  
 Intersection LOS: C  
 Intersection Capacity Utilization 79.7%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 4: Vollmer Rd & Briargate Pkwy



Timings  
5: Sterling Ranch Rd & Briargate Pkwy

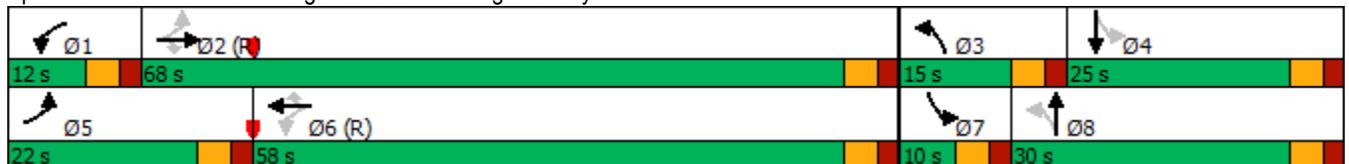
2042 Total Traffic  
PM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 329   | 921   | 136   | 156   | 829   | 105   | 191   | 190   | 83    | 87    | 86    | 133   |
| Future Volume (vph)  | 329   | 921   | 136   | 156   | 829   | 105   | 191   | 190   | 83    | 87    | 86    | 133   |
| Turn Type            | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | pm+pt | NA    | Free  | pm+pt | NA    | Free  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     | 6     |       | 6     | 8     |       | Free  | 4     |       | Free  |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     |       | 7     | 4     |       |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 20.0  |       | 5.0   | 20.0  |       |
| Minimum Split (s)    | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  | 23.0  | 10.0  | 25.0  |       | 10.0  | 25.0  |       |
| Total Split (s)      | 22.0  | 68.0  | 68.0  | 12.0  | 58.0  | 58.0  | 15.0  | 30.0  |       | 10.0  | 25.0  |       |
| Total Split (%)      | 18.3% | 56.7% | 56.7% | 10.0% | 48.3% | 48.3% | 12.5% | 25.0% |       | 8.3%  | 20.8% |       |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |       | 3.0   | 3.0   |       |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |       | 2.0   | 2.0   |       |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |       | 0.0   | 0.0   |       |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |       | 5.0   | 5.0   |       |
| Lead/Lag             | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   | Lead  | Lag   |       | Lead  | Lag   |       |
| Lead-Lag Optimize?   | Yes   |       | Yes   | Yes   |       |
| Recall Mode          | None  | C-Max | C-Max | None  | C-Max | C-Max | None  | None  |       | None  | None  |       |
| Act Effct Green (s)  | 75.9  | 64.0  | 64.0  | 62.4  | 55.3  | 55.3  | 34.0  | 24.0  | 120.0 | 21.0  | 20.0  | 120.0 |
| Actuated g/C Ratio   | 0.63  | 0.53  | 0.53  | 0.52  | 0.46  | 0.46  | 0.28  | 0.20  | 1.00  | 0.18  | 0.17  | 1.00  |
| v/c Ratio            | 0.83  | 0.51  | 0.16  | 0.52  | 0.53  | 0.14  | 0.55  | 0.54  | 0.05  | 0.40  | 0.29  | 0.09  |
| Control Delay        | 30.3  | 19.4  | 2.7   | 18.6  | 25.1  | 5.4   | 41.3  | 48.7  | 0.1   | 40.8  | 46.8  | 0.1   |
| Queue Delay          | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay          | 30.3  | 19.4  | 2.7   | 18.6  | 25.1  | 5.4   | 41.3  | 48.7  | 0.1   | 40.8  | 46.8  | 0.1   |
| LOS                  | C     | B     | A     | B     | C     | A     | D     | D     | A     | D     | D     | A     |
| Approach Delay       |       | 20.4  |       |       | 22.3  |       |       | 37.0  |       |       | 24.8  |       |
| Approach LOS         |       | C     |       |       | C     |       |       | D     |       |       | C     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 23.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 85.1%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 5: Sterling Ranch Rd & Briargate Pkwy



| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.8  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↘    | ↗    | ↗    | ↘    |      | ↗    |      | ↗    | ↗    | ↘    | ↗    |      |
| Traffic Vol, veh/h       | 38   | 18   | 32   | 125  | 0    | 139  | 0    | 321  | 159  | 55   | 283  | 0    |
| Future Vol, veh/h        | 38   | 18   | 32   | 125  | 0    | 139  | 0    | 321  | 159  | 55   | 283  | 0    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None |
| Storage Length           | 0    | -    | 0    | 0    | -    | 0    | -    | -    | 205  | 205  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 40   | 19   | 34   | 132  | 0    | 146  | 0    | 338  | 167  | 58   | 298  | 0    |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |   | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|---|--------|---|-------|---|---|
| Conflicting Flow All | 909    | 919   | 298    | 779   | -      | 338   | - | 0      | 0 | 505   | 0 | 0 |
| Stage 1              | 414    | 414   | -      | 338   | -      | -     | - | -      | - | -     | - | - |
| Stage 2              | 495    | 505   | -      | 441   | -      | -     | - | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | -      | 6.22  | - | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | -      | -     | - | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | -      | -     | - | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | -      | 3.318 | - | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 257    | 264   | 867    | 330   | 0      | 704   | 0 | -      | - | 1060  | - | 0 |
| Stage 1              | 686    | 622   | -      | 676   | 0      | -     | 0 | -      | - | -     | - | 0 |
| Stage 2              | 556    | 540   | -      | 658   | 0      | -     | 0 | -      | - | -     | - | 0 |
| Platoon blocked, %   | 1      | 1     | 1      | 1     |        |       |   | -      | - |       |   |   |
| Mov Cap-1 Maneuver   | 195    | 249   | 867    | 292   | -      | 704   | - | -      | - | 1060  | - | - |
| Mov Cap-2 Maneuver   | 302    | 353   | -      | 416   | -      | -     | - | -      | - | -     | - | - |
| Stage 1              | 686    | 588   | -      | 676   | -      | -     | - | -      | - | -     | - | - |
| Stage 2              | 440    | 540   | -      | 579   | -      | -     | - | -      | - | -     | - | - |

| Approach             | EB   |  | WB   |  | NB |  |  | SB  |  |
|----------------------|------|--|------|--|----|--|--|-----|--|
| HCM Control Delay, s | 14.7 |  | 14.4 |  | 0  |  |  | 1.4 |  |
| HCM LOS              | B    |  | B    |  |    |  |  |     |  |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT |
|-----------------------|-----|-----|-------|-------|-------|-------|-------|-------|-----|
| Capacity (veh/h)      | -   | -   | 302   | 353   | 867   | 416   | 704   | 1060  | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.132 | 0.054 | 0.039 | 0.316 | 0.208 | 0.055 | -   |
| HCM Control Delay (s) | -   | -   | 18.7  | 15.8  | 9.3   | 17.6  | 11.5  | 8.6   | -   |
| HCM Lane LOS          | -   | -   | C     | C     | A     | C     | B     | A     | -   |
| HCM 95th %tile Q(veh) | -   | -   | 0.5   | 0.2   | 0.1   | 1.3   | 0.8   | 0.2   | -   |

Timings  
12: Vollmer Rd & Marksheffel Rd

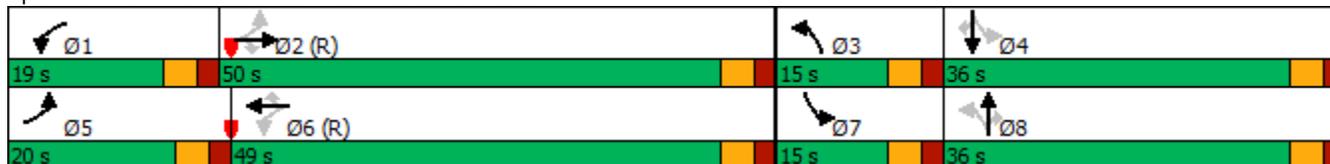
2042 Total Traffic  
PM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 142   | 943   | 96    | 191   | 715   | 154   | 171   | 728   | 191   | 132   | 342   | 199   |
| Future Volume (vph)  | 142   | 943   | 96    | 191   | 715   | 154   | 171   | 728   | 191   | 132   | 342   | 199   |
| Turn Type            | pm+pt | NA    | Perm  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     | 6     |       | 6     | 8     |       | 8     | 4     |       | 4     |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     | 8     | 7     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 10.0  | 10.0  | 5.0   | 10.0  | 10.0  |
| Minimum Split (s)    | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  | 23.0  | 10.0  | 23.0  | 23.0  |
| Total Split (s)      | 20.0  | 50.0  | 50.0  | 19.0  | 49.0  | 49.0  | 15.0  | 36.0  | 36.0  | 15.0  | 36.0  | 36.0  |
| Total Split (%)      | 16.7% | 41.7% | 41.7% | 15.8% | 40.8% | 40.8% | 12.5% | 30.0% | 30.0% | 12.5% | 30.0% | 30.0% |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead/Lag             | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?   | Yes   |
| Recall Mode          | None  | C-Max | C-Max | None  | C-Max | C-Max | None  | Max   | Max   | None  | Max   | Max   |
| Act Effct Green (s)  | 57.4  | 46.8  | 46.8  | 60.6  | 48.3  | 48.3  | 41.2  | 31.4  | 31.4  | 40.8  | 31.2  | 31.2  |
| Actuated g/C Ratio   | 0.48  | 0.39  | 0.39  | 0.50  | 0.40  | 0.40  | 0.34  | 0.26  | 0.26  | 0.34  | 0.26  | 0.26  |
| v/c Ratio            | 0.43  | 0.72  | 0.15  | 0.72  | 0.53  | 0.22  | 0.50  | 0.83  | 0.39  | 0.68  | 0.39  | 0.37  |
| Control Delay        | 18.7  | 35.1  | 4.5   | 52.2  | 22.5  | 5.4   | 31.4  | 50.7  | 13.7  | 43.5  | 38.2  | 6.7   |
| 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          | 18.7  | 35.1  | 4.5   | 52.2  | 22.5  | 5.4   | 31.4  | 50.7  | 13.7  | 43.5  | 38.2  | 6.7   |
| LOS                  | B     | D     | A     | D     | C     | A     | C     | D     | B     | D     | D     | A     |
| Approach Delay       |       | 30.6  |       |       | 25.3  |       |       | 41.2  |       |       | 29.9  |       |
| Approach LOS         |       | C     |       |       | C     |       |       | D     |       |       | C     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 32.0  
 Intersection LOS: C  
 Intersection Capacity Utilization 80.8%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 12: Vollmer Rd & Marksheffel Rd



Timings  
13: Sterling Ranch Rd & Marksheffel Rd

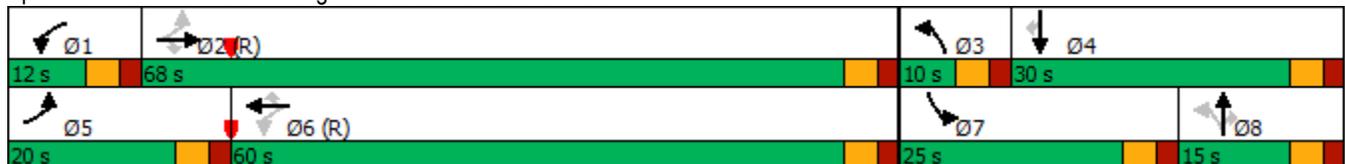
2042 Total Traffic  
PM Peak Hour

| Lane Group           | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations  |       |       |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph) | 305   | 946   | 22    | 130   | 841   | 570   | 27    | 6     | 37    | 342   | 24    | 191   |
| Future Volume (vph)  | 305   | 946   | 22    | 130   | 841   | 570   | 27    | 6     | 37    | 342   | 24    | 191   |
| Turn Type            | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | Prot  | NA    | Perm  |
| Protected Phases     | 5     | 2     |       | 1     | 6     |       | 3     | 8     |       | 7     | 4     |       |
| Permitted Phases     | 2     |       | 2     | 6     |       | 6     | 8     |       | 8     |       |       | 4     |
| Detector Phase       | 5     | 2     | 2     | 1     | 6     | 6     | 3     | 8     | 8     | 7     | 4     | 4     |
| Switch Phase         |       |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)  | 5.0   | 15.0  | 15.0  | 5.0   | 15.0  | 15.0  | 5.0   | 10.0  | 10.0  | 20.0  | 10.0  | 10.0  |
| Minimum Split (s)    | 10.0  | 20.0  | 20.0  | 10.0  | 20.0  | 20.0  | 10.0  | 15.0  | 15.0  | 25.0  | 20.0  | 20.0  |
| Total Split (s)      | 20.0  | 68.0  | 68.0  | 12.0  | 60.0  | 60.0  | 10.0  | 15.0  | 15.0  | 25.0  | 30.0  | 30.0  |
| Total Split (%)      | 16.7% | 56.7% | 56.7% | 10.0% | 50.0% | 50.0% | 8.3%  | 12.5% | 12.5% | 20.8% | 25.0% | 25.0% |
| Yellow Time (s)      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)     | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s) | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)  | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Lead/Lag             | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?   | Yes   |
| Recall Mode          | None  | C-Max | C-Max | None  | C-Max | C-Max | None  | None  | None  | None  | None  | None  |
| Act Effct Green (s)  | 80.6  | 69.1  | 69.1  | 69.6  | 62.7  | 62.7  | 11.0  | 10.0  | 10.0  | 20.0  | 23.0  | 23.0  |
| Actuated g/C Ratio   | 0.67  | 0.58  | 0.58  | 0.58  | 0.52  | 0.52  | 0.09  | 0.08  | 0.08  | 0.17  | 0.19  | 0.19  |
| v/c Ratio            | 0.75  | 0.49  | 0.02  | 0.41  | 0.48  | 0.54  | 0.20  | 0.04  | 0.12  | 0.63  | 0.07  | 0.43  |
| Control Delay        | 39.5  | 10.5  | 0.0   | 12.9  | 20.9  | 3.5   | 37.8  | 51.3  | 0.8   | 52.1  | 39.2  | 8.5   |
| 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          | 39.5  | 10.5  | 0.0   | 12.9  | 20.9  | 3.5   | 37.8  | 51.3  | 0.8   | 52.1  | 39.2  | 8.5   |
| LOS                  | D     | B     | A     | B     | C     | A     | D     | D     | A     | D     | D     | A     |
| Approach Delay       |       | 17.3  |       |       | 13.8  |       |       | 19.1  |       |       | 36.6  |       |
| Approach LOS         |       | B     |       |       | B     |       |       | B     |       |       | D     |       |

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.75  
 Intersection Signal Delay: 18.9  
 Intersection LOS: B  
 Intersection Capacity Utilization 73.0%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 13: Sterling Ranch Rd & Marksheffel Rd



| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.4  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↙    | ↑    | ↗    | ↙    | ↗    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 40   | 461  | 76   | 19   | 362  | 24   | 45   | 0    | 12   | 14   | 0    | 24   |
| Future Vol, veh/h        | 40   | 461  | 76   | 19   | 362  | 24   | 45   | 0    | 12   | 14   | 0    | 24   |
| 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 |
| Storage Length           | 305  | -    | 255  | 305  | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 42   | 485  | 80   | 20   | 381  | 25   | 47   | 0    | 13   | 15   | 0    | 25   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |       |       | Minor2 |       |       |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 406    | 0 | 0 | 565    | 0 | 0 | 1015   | 1015  | 485   | 1050   | 1083  | 394   |
| Stage 1              | -      | - | - | -      | - | - | 569    | 569   | -     | 434    | 434   | -     |
| Stage 2              | -      | - | - | -      | - | - | 446    | 446   | -     | 616    | 649   | -     |
| 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   | 1153   | - | - | 1007   | - | - | 217    | 238   | 582   | 205    | 217   | 655   |
| Stage 1              | -      | - | - | -      | - | - | 507    | 506   | -     | 600    | 581   | -     |
| Stage 2              | -      | - | - | -      | - | - | 591    | 574   | -     | 478    | 466   | -     |
| Platoon blocked, %   |        | - | - | -      | - | - |        |       |       |        |       |       |
| Mov Cap-1 Maneuver   | 1153   | - | - | 1007   | - | - | 200    | 225   | 582   | 192    | 205   | 655   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 200    | 225   | -     | 192    | 205   | -     |
| Stage 1              | -      | - | - | -      | - | - | 489    | 488   | -     | 578    | 569   | -     |
| Stage 2              | -      | - | - | -      | - | - | 557    | 563   | -     | 451    | 449   | -     |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB   |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 0.6 |  |  | 0.4 |  |  | 25.8 |  |  | 16.7 |  |  |
| HCM LOS              |     |  |  |     |  |  | D    |  |  | C    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL  | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|------|-----|-----|-------|
| Capacity (veh/h)      | 232   | 1153  | -   | -   | 1007 | -   | -   | 347   |
| HCM Lane V/C Ratio    | 0.259 | 0.037 | -   | -   | 0.02 | -   | -   | 0.115 |
| HCM Control Delay (s) | 25.8  | 8.2   | -   | -   | 8.6  | -   | -   | 16.7  |
| HCM Lane LOS          |       | D     | A   | -   | -    | A   | -   | C     |
| HCM 95th %tile Q(veh) |       | 1     | 0.1 | -   | -    | 0.1 | -   | 0.4   |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.5  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      | ↕    | ↕    |      | ↕    | ↕    |      |
| Traffic Vol, veh/h       | 27   | 0    | 12   | 13   | 0    | 9    | 20   | 444  | 23   | 15   | 378  | 47   |
| Future Vol, veh/h        | 27   | 0    | 12   | 13   | 0    | 9    | 20   | 444  | 23   | 15   | 378  | 47   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | 205  | -    | -    | 205  | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 28   | 0    | 13   | 14   | 0    | 9    | 21   | 467  | 24   | 16   | 398  | 49   |

| Major/Minor          | Minor2 |       | Minor1 |       | Major1 |       |       | Major2 |   |       |   |   |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 981    | 988   | 423    | 982   | 1000   | 479   | 447   | 0      | 0 | 491   | 0 | 0 |
| Stage 1              | 455    | 455   | -      | 521   | 521    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 526    | 533   | -      | 461   | 479    | -     | -     | -      | - | -     | - | - |
| Critical Hdwy        | 7.12   | 6.52  | 6.22   | 7.12  | 6.52   | 6.22  | 4.12  | -      | - | 4.12  | - | - |
| Critical Hdwy Stg 1  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Critical Hdwy Stg 2  | 6.12   | 5.52  | -      | 6.12  | 5.52   | -     | -     | -      | - | -     | - | - |
| Follow-up Hdwy       | 3.518  | 4.018 | 3.318  | 3.518 | 4.018  | 3.318 | 2.218 | -      | - | 2.218 | - | - |
| Pot Cap-1 Maneuver   | 229    | 247   | 631    | 228   | 243    | 587   | 1113  | -      | - | 1072  | - | - |
| Stage 1              | 585    | 569   | -      | 539   | 532    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 535    | 525   | -      | 581   | 555    | -     | -     | -      | - | -     | - | - |
| Platoon blocked, %   |        |       |        |       |        |       |       | -      | - | -     | - | - |
| Mov Cap-1 Maneuver   | 220    | 239   | 631    | 218   | 235    | 587   | 1113  | -      | - | 1072  | - | - |
| Mov Cap-2 Maneuver   | 220    | 239   | -      | 218   | 235    | -     | -     | -      | - | -     | - | - |
| Stage 1              | 574    | 560   | -      | 529   | 522    | -     | -     | -      | - | -     | - | - |
| Stage 2              | 516    | 515   | -      | 561   | 547    | -     | -     | -      | - | -     | - | - |

| Approach             | EB   |  | WB   |  | NB  |  | SB  |  |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 20.4 |  | 18.3 |  | 0.3 |  | 0.3 |  |
| HCM LOS              | C    |  | C    |  |     |  |     |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | WBLn1 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 1113  | -   | -   | 275   | 293   | 1072  | -   | -   |
| HCM Lane V/C Ratio    | 0.019 | -   | -   | 0.149 | 0.079 | 0.015 | -   | -   |
| HCM Control Delay (s) | 8.3   | -   | -   | 20.4  | 18.3  | 8.4   | -   | -   |
| HCM Lane LOS          | A     | -   | -   | C     | C     | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | -   | 0.5   | 0.3   | 0     | -   | -   |

| AccidentDate | TotalVehicles | ReferencePointName | ReferencePointAtName | AccidentNarrative  |
|--------------|---------------|--------------------|----------------------|--|
| 2019-09-29   | 1             | VOLLMER RD         | GLIDER LP            | Vehicle # 1 was traveling northbound Vollmer Road .8 miles north of Glider Loop. Vehicle # 1's right side tires dropped off the right side of the roadway as it entered a sharp left curve. Vehicle #1 lost control on the roadway for approximately 131' before it traveled approximately 100' off the right side of the roadway. Vehicle # 1 collided its rear with a barbed-wire fence. Vehicle # 1 was moved prior to investigation.   |
| 2019-10-01   | 1             | VOLLMER RD         | S POCO RD            | Vehicle #1 was northbound on Vollmer Road in a left hand curve. Vehicle #1 ran off the right side of the road for 107.3'. Vehicle over corrected, reentered the roadway, spinning counter clockwise. Vehicle #1 was out of control for 98.5'. Vehicle #1 ran off the left side of the road for 99.8', rolling 1 1/2 times. Vehicle #1 came to rest on its top facing west.   |
| 2019-11-14   | 1             | VOLLMER RD         | GLIDER PL            | Vehicle 1 was southbound on Vollmer Road south of Burgess Road. Vehicle 1 was travelling in excessive speed, when it failed to negotiate a right hand bend in the roadway. Vehicle left heavy left side tire skids marks for 115.8 feet in the northbound lane, afterwhich it traveled for 59.4 across the southbound lane. Vehicle 1 ran off the right side of the road for 130.9 feet where it began to overturn, airborne for 20.7 feet, colliding with the ground, traveled another 25.9 feet and rolled another 52.2 feet where it came to final rest facing east on its right side 23.9 feet from the west road edge.  |
| 2020-04-23   | 1             | VOLLMER RD         | WILDFLOWER RD        | Vehicle #1 was traveling south on Vollmer Rd approaching Wildflower Rd. Vehicle #1 failed to navigate the slight left curve in the roadway at which point it ran off the right side of the road. Vehicle #1 crashed through the fence on the right side of the road, traveled southwest into the yard of 8455 Wildflower Rd, rolled, crashed into a well, and came to rest on its wheels facing south.   |
| 2020-05-26   | 1             | VOLLMER            | WILD FLOWER          | Vehicle #1 was southbound on Vollmer. Driver of vehicle #1 lost control and went off the right side of the road and overturned. Vehicle #1 was moved prior to investigation.   |
| 2020-07-25   | 1             | VOLLMER RD         | POCO RD              | Vehicle 1 was traveling in an easterly direction on Vollmer Road approaching a left curve. Vehicle 1 drove on the wrong side of the road to avoid a deceased raccoon in the middle of its lane. Vehicle 1 returned to its lane while navigating the curve. Vehicle 1's right tires dropped off the right edge of the road. Driver 1 pulled the wheel to the left causing Vehicle 1 to spin out of control. Driver 1 overcorrected to the right and the vehicle rolled 3/4 times off the right side of the road. Vehicle 1 came to final rest on top of a fence facing south on its right side.   |
| 2021-03-24   | 1             | VOLLMER RD         | POCO RD              | Vehicle #1 was southbound on Vollmer Road just south of Poco Road. Vehicle #1 lost control on the icy covered roadway and slid off of the west edge of the roadway for approximately 50 feet while rotating 1/4 times clockwise. Vehicle #1 then collided with a barbed wire fence approximately 15 feet west of the road edge and overturned 1/4 times onto it's left. Vehicle #1 came to final rest on its left side, approximately 15 feet west of the road edge facing west.   |
| 2021-09-13   | 3             | VOLLMER RD         | POCO RD              | Vehicle #1 was traveling southbound on Vollmer Road. Vehicle #2 was parked on Poco Road, facing east, just west of the intersection of Vollmer Rd. and Poco Rd. Vehicle #2 was partially in the lane and partially on what would be a shoulder, as the entire road is dirt. Vehicle #3 was parked likewise, behind vehicle #2. Vehicle #1 made a right hand turn, to travel westbound on Poco Rd. The left front of vehicle #1 crashed into the left front of vehicle #2. Vehicle #2, being on dirt, slid backwards into the front of vehicle #3. Both vehicles #2 and #3 were unoccupied. Vehicle #1 pulled through and pulled over further down Poco Road to a safe location.  |
| 2021-11-11   | 1             | VOLLMER RD         | POCO RD              | Vehicle #1 was travelling northbound on Vollmer Rd approaching Poco Rd. Vehicle #1 failed to negotiate a curve to the left and travelled off the right side of the road. Vehicle #1 overcorrected to the left, travelled across both lanes of traffic, and drove off the left side of the road. Vehicle #1 rotated counter-clockwise and hit a trip point in the soft dirt. Vehicle #1 rolled 1 and 3/4 times, coming to rest on its left side facing southwest approximately 30 feet off the road. The driver of the vehicle was ejected out of the passenger window during the rollover and came to rest in the field approximately 50 feet northwest of the vehicle.  |
| 2022-04-07   | 1             | VOLLMER RD         | WILDFLOWER RD        | Vehicle 1 was traveling southbound on Vollmer Rd approaching the intersection of Wildflower Rd. Vehicle 1 failed to negotiate a curve and drove off the right side of the roadway at the intersection of Wildflower Rd. Vehicle 1 drove approximately 19 feet off of the right side of the roadway impacting an embankment and came to final rest 85 feet south of Wildflower Rd on the southwest side of the intersection facing south.   |
| 2022-06-19   | 2             | VOLLMER RD         | LOCHWINNOCH LN       | VEHICLE 1 WAS NORTHBOUND ON VOLLMER ROAD. VEHICLE 2 WAS NORTHBOUND ON VOLLMER ROAD, IN FRONT OF VEHICLE 1. VEHICLE 2 BEGAN TO SLOW TO MAKE A LEFT TURN ONTO LOCHWINNOCH ROAD. VEHICLE 1 ATTEMPTED TO PASS VEHICLE 2 ON THE LEFT SIDE IN A MARKED NO PASSING ZONE. VEHICLE 2 BEGAN TO MAKE THE LEFT TURN WHERE VEHICLE 2 WAS STRUCK IN THE FRONT DRIVERS SIDE, BY THE FRONT PASSENGER SIDE OF VEHICLE 1. THE COLLISION OCCURRED WITHIN THE SOUTHBOUND LANE OF VOLLMER ROAD. VEHICLE 1 THEN ROTATED 1/2 TIME CLOCKWISE ACROSS THE NORTHBOUND LANE. VEHICLE 1 THEN DROVE OFF THE NORTHBOUND SIDE OF THE ROAD AND OVERTURNED 1/2 TIME, COMING TO FINAL REST ON ITS ROOF FACING SOUTH. VEHICLE 2 CAME TO A CONTROLLED FINAL REST ON LOCHWINNOCH LN. |
| 2022-07-03   | 1             | VOLLMER RD         | POCO RD              | Motorcycle was traveling on Vollmer Rd headed northbound. Motorcycle traveled off the right side of the road. Motorcycle lost control and rolled multiple times, the rider was ejected. Motorcycle came to rest on the left side. Rider came to rest on his back.  |

## Appendix A

### Sight Distance on Urban Local/Residential Streets with homes fronting

Section 2.3.6.G of the *El Paso County Engineering Criteria Manual* states:

This section applies to intersections where one public road meets a second public road. The intersection sight distance provides for vehicles to enter traffic and accelerate to the average running speed.

However, for local residential streets, the intent is different from Collector or Arterial roadways and ensuring that motorists traveling along a residential/local street can maintain an “average running speed,” should **not** be an objective, but should actually be discouraged.

*The 2018 Roadway Design Guide* published by the Colorado Department of Transportation and *A Policy on Geometric Design of Highways and Streets* (“green book”) published by the American Association of Highway and Transportation Officials (AASHTO) both identify that need for different design standards for local roads. See the clips from key pages from both reports below. Both reports give the same criteria for stopping sight distance and both state that passing sight distance is rarely applicable. Neither report provides criteria for “entering” (or “intersection”) sight distance and it is our position that entering sight distance is also not applicable to local urban/residential streets.



## 5.2 LOCAL URBAN STREETS

### 5.2.4 Sight Distance

Minimum **stopping sight distance** for local streets should range from 115 to 200 feet depending on the design speed (see Table 3-1). Design for passing sight distance seldom is applicable on local streets.

## 5.2 LOCAL URBAN STREETS

### 5.2.1 General Design Considerations

The design criteria presented in other chapters of this Guide are **most applicable to rural and high speed roadways**. This section attempts to identify **lower design criteria applicable to the lesser functional classes of urban streets that operate at lower speeds**.

An urban street **is characterized by** restricted right of way, stop-and-go traffic, residential, commercial and industrial traffic, pedestrian and bus traffic, bikeways and the special demands and needs these conditions generate. An urban street includes the entire area within the right of way and usually is the product of a comprehensive community development plan. The design values should be those for the ultimately planned development. Typical types of improvements through the urban program include:

# From the AASHTO “Green Book”

## 5.3 LOCAL STREETS IN URBAN AREAS

This section presents guidance on the design of local streets in urban areas. Local streets in urban areas are designed with a flexible approach to meet the needs of the suburban, urban, and urban core contexts. Local streets generally have lower traffic volumes than collectors and

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arterials and lower speeds are appropriate because the emphasis is on serving the adjacent developments. A flexible and balanced design approach to serve all transportation modes appropriately should be applied. The balance among transportation modes may differ between projects based on the demand flows for each transportation mode and established neighborhood plans. The design guidance given below should be adapted to the context and needs of each individual neighborhood and street.

### 5.3.1 General Design Considerations

Local streets in urban areas fall within three functional classifications: arterials, collectors, and local access routes, which are discussed in Chapter 1. Geometric design guidance is provided for collector streets in Chapter 6 and for arterial streets in Chapter 7. This chapter does not present a complete discussion of all design criteria that apply to local streets. However, where there are substantial differences from the criteria used in design of other functional classes, specific design guidance is given below.

#### 5.3.1.8 Sight Distance

Minimum stopping sight distance for local streets should range from 100 to 200 ft [30 to 60 m] depending on the design speed (see Table 3-1). Design for passing sight distance seldom is applicable on local streets.