

TRAFFIC IMPACT STUDY

For

Retreat at PrairieRidge Filings 1-3 Preliminary Plan & Rezones
El Paso County, Colorado
PCD File No. P2313, P2314, P2316, & SP239

November 2023
Revised March 2024

Prepared for:

Classic SRJ, LLC
2138 Flying Horse Club Drive
Colorado Springs, Colorado 80921

Prepared by:



SM ROCHA, LLC
TRAFFIC AND TRANSPORTATION CONSULTANTS

8700 Turnpike Drive, Suite 240
Westminster, Colorado 80031
(303) 458-9798

6 South Tejon Street, Suite 618
Colorado Springs, Colorado 80903
(719) 203-6639

Project Engineer/Manager:
Mike Rocha, Principal
Brandon Wilson, EIT



Engineer in Responsible Charge:
Fred Lantz, PE

Traffic Engineer's Statement

The attached 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.



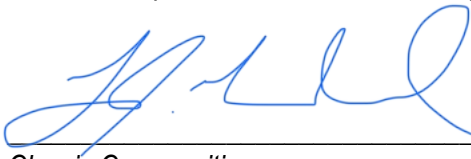
03/21/2024

Fred Lantz, P.E. #23410

Date

Developer's Statement

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



3/22/2024

Classic Communities
6385 Corporate Drive, Suite 200
Colorado Springs, CO 80919

Date

Table of Contents

| | |
|---|-----------|
| I. Introduction | 1 |
| Project Overview..... | 1 |
| Study Area Boundaries | 1 |
| Site Description..... | 1 |
| Existing and Committed Surface Transportation Network..... | 5 |
| II. Existing Traffic Conditions | 7 |
| Peak Hour Intersection Levels of Service – Existing Traffic..... | 9 |
| Existing Traffic Analysis Results | 9 |
| III. Future Traffic Conditions Without Proposed Development..... | 10 |
| Peak Hour Intersection Levels of Service – Background Traffic | 13 |
| Background Traffic Analysis Results – Year 2027 | 13 |
| Background Traffic Analysis Results – Year 2040 | 14 |
| IV. Proposed Project Traffic | 15 |
| Trip Generation..... | 15 |
| Adjustments to Trip Generation Rates | 16 |
| Trip Distribution & Assignment..... | 17 |
| V. Future Traffic Conditions With Proposed Developments | 20 |
| Total Traffic Auxiliary Lane Analysis | 20 |
| Multi-Modal Assessment..... | 21 |
| VI. Project Impacts | 24 |
| Peak Hour Intersection Levels of Service – Total Traffic | 24 |
| Total Traffic Analysis Results Upon Development Build-Out | 26 |
| Pedestrian Circulation & Safety Analysis | 27 |
| Queue Length Analysis..... | 27 |
| Recommended Improvements..... | 30 |
| VII. Conclusion | 31 |

List of Figures

Figure 1 – Location.....3
Figure 2 – Preliminary Plan4
Figure 3 – Existing Traffic Volumes & Intersection Geometry8
Figure 4 – Background Traffic Volumes & Intersection Geometry – Year 2027..... 11
Figure 5 – Background Traffic Volumes & Intersection Geometry – Year 2040..... 12
Figure 6A – Distribution and Site Generated Assignment – Year 2027 18
Figure 6B – Distribution and Site Generated Assignment – Year 2040 19
Figure 7 – Total Traffic Volumes & Intersection Geometry – Year 202722
Figure 8 – Total Traffic Volumes & Intersection Geometry – Year 2040.....23

List of Tables

Table 1 – Intersection Capacity Analysis Summary – Existing Traffic9
Table 2 – Intersection Capacity Analysis Summary – Background Traffic – Year 2027 13
Table 3 – Intersection Capacity Analysis Summary – Background Traffic – Year 2040 14
Table 4 – Trip Generation Rates 15
Table 5 – Trip Generation Summary 16
Table 6 – Intersection Capacity Analysis Summary – Total Traffic – Year 202725
Table 7 – Intersection Capacity Analysis Summary – Total Traffic – Year 204026
Table 8 – Turn Lane Queues and Storage Requirements – Total Traffic – Year 2040.....29
Table 9 – Recommended Improvements Summary30

Appendices

APPENDIX A TRAFFIC COUNT DATA
APPENDIX B LEVEL OF SERVICE DEFINITIONS
APPENDIX C CAPACITY WORKSHEETS

I. Introduction

Project Overview

This traffic impact study is provided as a planning document and addresses the capacity, geometric, and control requirements associated with the preliminary plan for the development entitled Retreat at PrairieRidge Filings 1-3 Preliminary Plan & Rezones (Jaynes Property). This traffic impact study is also provided as an update to the master traffic impact study¹ associated with the sketch plan prepared for Jaynes Property.

This traffic impact study has been revised to address County review comments regarding the addition of proposed roadway classifications, potential mitigations for background Year 2040 traffic conditions, and minor updates throughout.

This proposed mixed-use development consists of a variety of residential, neighborhood commercial and park land uses. This preliminary plan accounts for approximately 109 acres of the overall 142-acre development located along the west side of Vollmer Road between Poco Road and Dines Boulevard in El Paso County, Colorado.

Study Area Boundaries

The study area to be examined in this analysis encompasses the Vollmer Road intersections with Poco Road, Briargate Parkway (future) and Dines Boulevard, and the Briargate Parkway (future) intersection with the key site development roadway (future) and the right-in/right-out commercial access (future).

Consistent with Section B.2.3.B of Appendix B – Transportation Impact Study Guidelines from the County's Engineering Criteria Manual (ECM)², the study area did not extend south towards Marksheffel Road since the development's trip distribution pattern does not anticipate much, if any, site traffic traveling to/from Marksheffel Road.

Figure 1 illustrates location of the site and study intersections.

Site Description

Land for the development is vacant and surrounds existing land uses.

Unresolved: Grand Peak Academy, located on Cowpoke Rd, is within two miles of the project location. Provide a discussion of the impact the subdivision would have for any potential pedestrian routes in the area.

¹ Jaynes Property: Traffic Impact Study, SM ROCHA, LLC, January 19, 2023.

² El Paso County Engineering Criteria Manual, El Paso County, October 2020.

Unresolved: Add discussion or figure to illustrate sight distance for every access and whether it can be met for proposed conditions.

The proposed development’s preliminary plan is not yet finalized. However, there is understood to be a maximum capacity for 450 single-family dwelling units (approximately 230 single-family detached housing dwelling units and 220 single-family attached housing dwelling units) and 4.5 acres of commercial land uses (approximately 30,000 square feet of commercial land use assuming an FAR of 0.15).

Considering the conceptual nature of the proposed development, future access will generally include two access drives along future Briargate Parkway as well as roadways aligning with the existing intersections along Vollmer Road. For purposes of this analysis, primary points of entry to the overall development area are provided at the following locations:

- One full-movement access serving as the west leg of the Vollmer Road and (future) Sam Bass Drive intersection. Sam Bass Drive is located approximately 1,400 feet north of (future) Briargate Parkway.
- One full-movement access serving as the west leg of the Briargate Parkway and Vollmer Road intersection.
- One full-movement access serving as the west leg of the Vollmer Road and Dines Boulevard intersection. Dines Boulevard is located approximately 1,000 feet south of (future) Briargate Parkway. Access movements may be restricted to right-in/right-out or three-quarter movement due to geometric or design constraints.
- One full-movement accesses on (future) Briargate Parkway serving as the north/south roadway connection to proposed development (referred to as Street A). Street A is located approximately 1,000 feet west of Vollmer Road.
- One right-in/right-out access on (future) Briargate Parkway serving the commercial portion of the development (referred to as Commercial Access). Commercial Access is approximately 500 feet west of Vollmer Road.

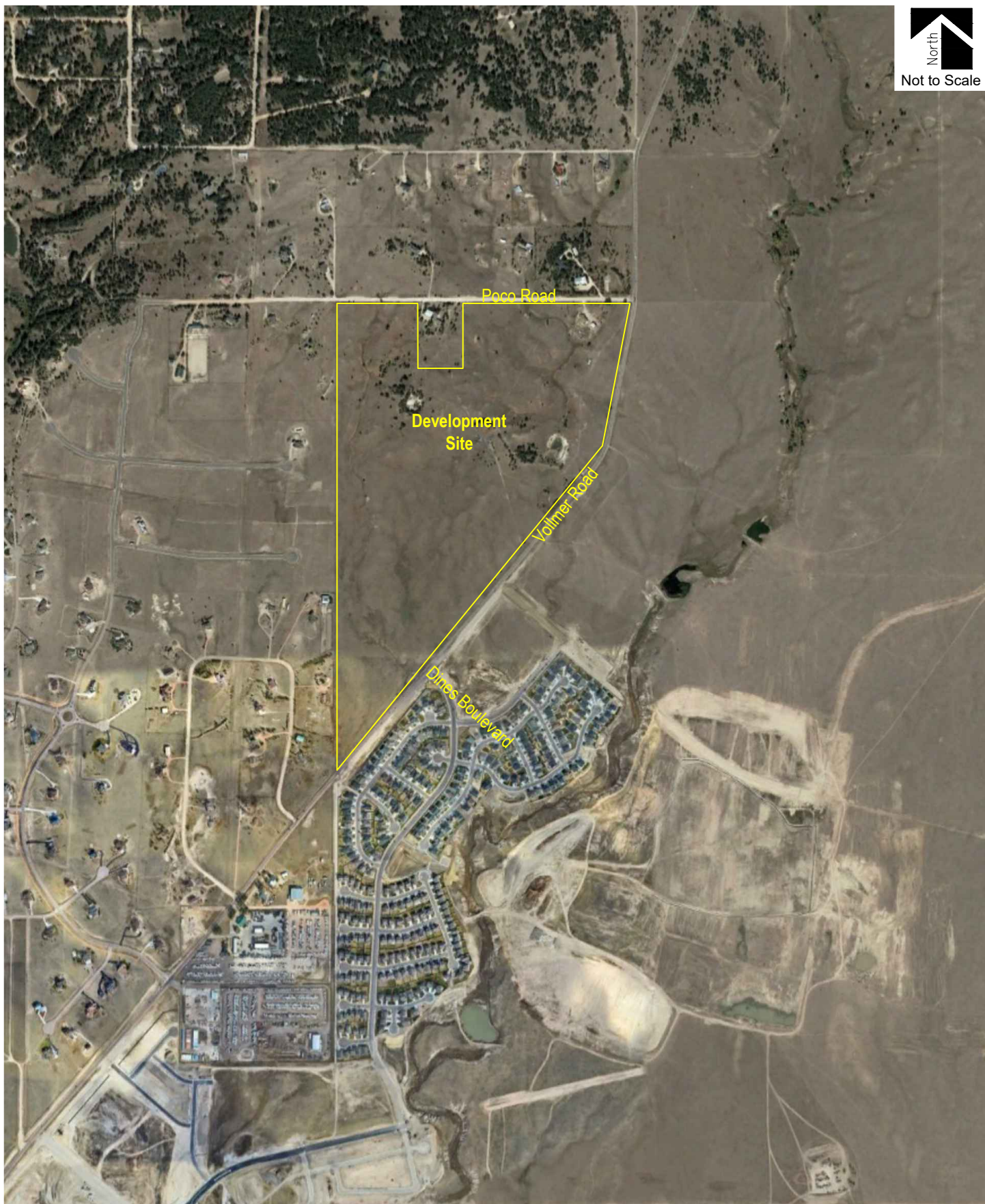
For purposes of this study, it is anticipated that development construction would be phased, with initial development phasing assumed to be completed by Year 2027, while total development build-out is assumed to be completed by Year 2040.

A preliminary plan, as prepared by N.E.S. Inc., is shown in Figure 2. This plan is provided for illustrative purposes only.

Per ECM Section 2.2.4.B.2 no direct lot access is allowed from a principal arterial

Per ECM Section 2.2.5.B, intersection spacing for a principal arterial is 1/2 mile. Please provide deviation for the spacing length.

Per ECM Section 2.2.5.B, intersection spacing for a rural minor arterial is 1/4 mile. Please provide deviation for the spacing length.





Not to Scale



Existing and Committed Surface Transportation Network

Within the study area, Vollmer Road and Briargate Parkway are the primary roadways that will accommodate traffic to and from the proposed development. A secondary roadway includes Poco Road. A brief description of each roadway, based on the County's 2016 Major Transportation Corridors Plan (MTCP)³ and ECM, as well as the City of Colorado Springs' Major Thoroughfare Plan⁴, is provided below:

Vollmer Road is a north-south, minor arterial roadway having two through lanes (one lane in each direction) with shared turn lanes at the intersections within the study area. Vollmer Road provides a posted speed limit of 45 MPH.

Pursuant to the County's 2040 MTCP Roadway Plan, Vollmer Road is envisioned to be widened from two to four through lanes from Briargate Parkway to Marksheffel Road, and remain as a two-lane roadway north of Briargate Parkway. Recently approved traffic studies^{5,6} for area development on the east side of Vollmer Road have proposed a modification to the MTCP Roadway Plan and recommend the widening of Vollmer Road to four through lanes between Briargate Parkway and Poco Road. The intermediate vision of Vollmer Road would remain as a two-lane roadway north of Poco Road and remain two lanes through the industrial segment south of Dines Boulevard and north of Sterling Ranch Filing 2.

Briargate Parkway is a future east-west, four-lane principal arterial roadway. Briargate Parkway design plans, for the portion east of Vollmer Road to Sterling Ranch Road, are understood to be under County review as of this study date. The Briargate Parkway extension west of Vollmer Road to Black Forest Road, and ultimately to N Powers Boulevard, will be completed through various future private development or public improvement projects. Briargate Parkway is envisioned to provide a posted speed limit of 45 MPH.

Poco Road is an east-west roadway having two through lanes (one lane in each direction) with shared turn lanes at the intersection within the study area. The County's MTCP does not provide a roadway classification for Poco Road. However, per Sections 2.2.4 and 2.3.2 of the County's ECM, the roadway's estimated right-of-way (ROW) width and its connection to Vollmer Road, Poco Road is assumed to be classified as a collector roadway with a posted speed limit of 35 MPH.

Due to Street A's connection with Vollmer Road and future Briargate Parkway, Street A is assumed to be classified as a collector roadway. All other roadways internal to the preliminary plan are expected to be classified as local roadways.

³ El Paso County 2016 Major Transportation Corridors Plan Update, Felsburg Holt & Ullevig, December 2016.

⁴ Major Thoroughfare Plan, City of Colorado Springs, August 2011.

⁵ The Retreat at Timber Ridge Preliminary Plan Transportation Memorandum, LSC Transportation Consultants Inc., June 29, 2018.

⁶ Homestead North Phase 1 Updated Traffic Impact Study, LSC Transportation Consultants Inc., January 11, 2022.

The study intersections along Vollmer Road currently operate under stop-controlled conditions. A stop-controlled intersection is defined as a roadway intersection where vehicle rights-of-way are controlled by one or more “STOP” signs.

Beyond that described in this section, no other regional or specific improvements for the above-described roadways are known to be planned or committed at this time.

II. Existing Traffic Conditions

Morning (AM) and afternoon (PM) peak hour traffic counts were collected at the following intersections:

- Vollmer Road / Poco Road
- Vollmer Road / Dines Boulevard

Average daily (24-hour) traffic volumes for study areas were derived from collected intersection peak hour volumes using standard average daily traffic volume conversion relationships or from adjacent traffic studies as earlier referenced.

Peak hour traffic counts and 24-hour traffic volumes mentioned above were obtained from the previous Jaynes Property master traffic impact study. Counts were collected on Thursday, March 24, 2022, with AM peak hour counts being collected during the period of 7:00 AM to 9:00 AM, and PM peak hour counts being collected during the period of 4:00 PM to 6:00 PM.

In order to represent traffic volumes during existing conditions, these counts were grown one year at a conservative annual growth rate of seven percent. A seven percent growth rate was chosen due to the County experiencing a large degree of regional growth in this area and in order to provide for a conservative analysis. In comparison to population growth estimates provided by the Pikes Peak Area Council of Governments' (PPACG) 2045 Long Range Transportation Plan⁷, this annual growth rate is aggressive but is considered to be consistent with long-term regional growth projections and the level of in-fill development expected within the area.

Existing volumes and intersection geometry are shown in Figure 3. Referenced traffic count data is included for reference in Appendix A.

⁷ [Moving Forward 2045: Pikes Peak Area Regional Transportation Plan](#), Pikes Peak Area Council of Governments, January 2020.

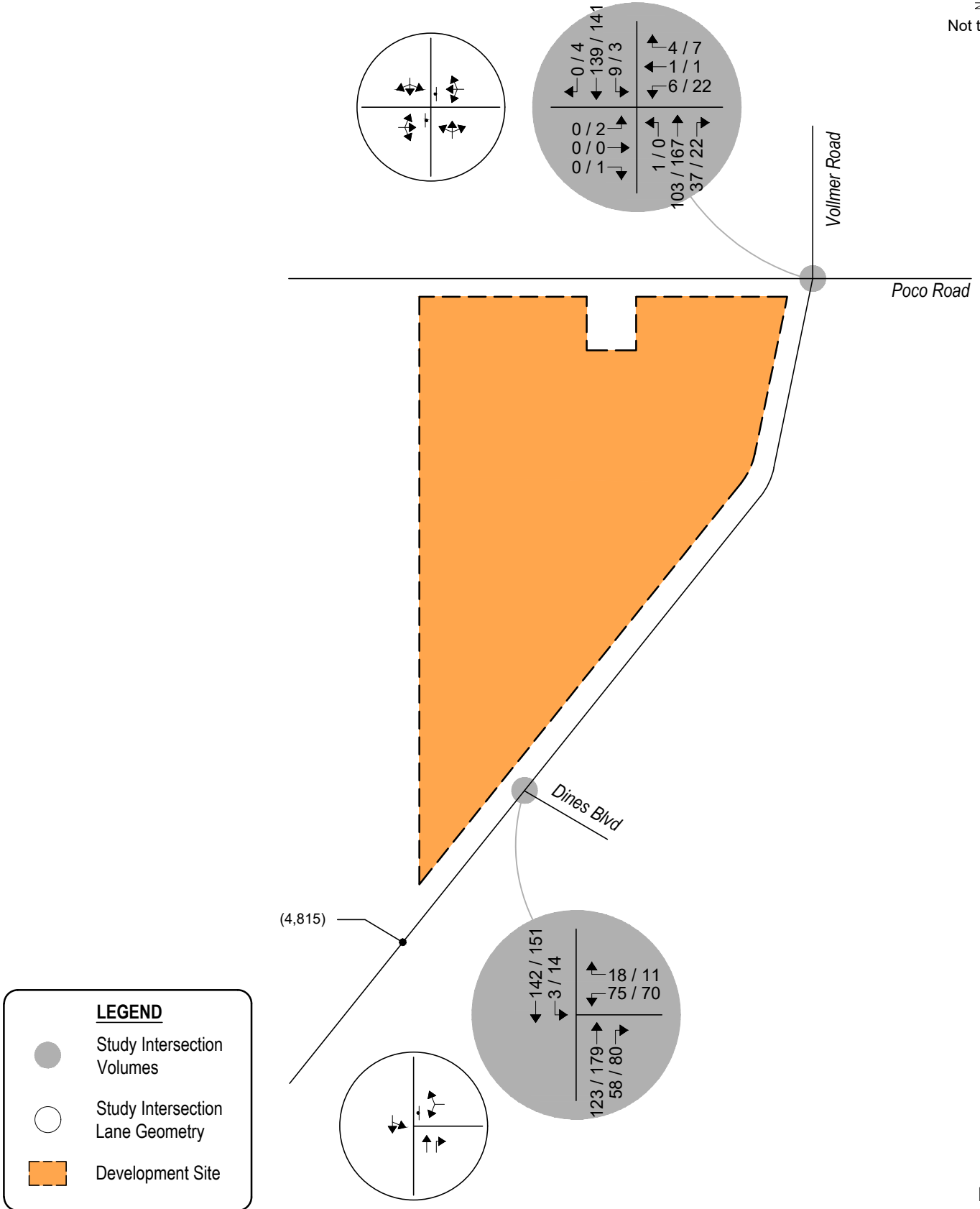


Figure 3
EXISTING TRAFFIC
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic



Peak Hour Intersection Levels of Service – Existing Traffic

The Signalized, Unsignalized, and Roundabout Intersection Analysis techniques, as published in the Highway Capacity Manual (HCM) by the Transportation Research Board and as incorporated into the SYNCHRO computer program, were used to analyze the study intersections for existing and future traffic conditions. These nationally accepted techniques allow for the determination of intersection level of service (LOS) based on the congestion and delay of each traffic movement and based on the volume to capacity ratio and control delay for each approach.

Level of service is a method of measurement used by transportation professionals to quantify a driver's perception of travel conditions that include travel time, number of stops, and total amount of stopped delay experienced on a roadway network. The HCM categorizes level of service into a range from "A" which indicates little, if any, vehicle delay, to "F" which indicates a level of operation considered unacceptable to most drivers. These levels of service grades with brief descriptions of the operating condition, for unsignalized and signalized intersections, are included for reference in Appendix B and have been used throughout this study.

The level of service analyses results for existing conditions are summarized in Table 1.

Intersection capacity worksheets developed for this study are provided in Appendix C.

Table 1 – Intersection Capacity Analysis Summary – Existing Traffic

| INTERSECTION LANE GROUPS | LEVEL OF SERVICE | |
|--|------------------|--------------|
| | AM PEAK HOUR | PM PEAK HOUR |
| Poco Road / Vollmer Road (Stop-Controlled) | | |
| Eastbound Left, Through and Right | A | B |
| Westbound Left, Through and Right | B | B |
| Northbound Left, Through and Right | A | A |
| Southbound Left, Through and Right | A | A |
| Dines Boulevard / Vollmer Road (Stop-Controlled) | | |
| Westbound Left and Right | B | B |
| Southbound Left and Through | A | A |

Key: Stop-Controlled Intersection: Level of Service

Existing Traffic Analysis Results

Under existing conditions, the stop-controlled intersections of Poco Road and Dines Boulevard with Vollmer Road have turn movement operations at or better than LOS B during both the morning and afternoon peak traffic hours.

III. Future Traffic Conditions Without Proposed Development

Background traffic is the traffic projected to be on area roadways without consideration of the proposed development. Background traffic includes traffic generated by development of vacant parcels in the area.

To account for projected increases in background traffic for Years 2027 and 2040, a compounded annual growth rate was determined using population growth estimates provided by the PPACG 2045 Long Range Transportation Plan. As mentioned in Section II, PPACG's 2045 Long Range Transportation Plan anticipates a 20-year growth rate between one and three percent. Because this area of the County is experiencing a large degree of regional growth and in order to provide for a conservative analysis, a growth rate of seven percent was applied to existing traffic volumes, where short-term or long-term background traffic volumes were not considered in adjacent development traffic studies. This annual growth rate is aggressive but is considered to be consistent with long-term regional growth projections and the level of in-fill development expected within the area.

Additionally, this study's background traffic analysis includes through traffic and intersection traffic generated by adjacent developments as described within the earlier referenced traffic studies for Retreat at Timber Ridge and Homestead North Phase I.

Pursuant to the committed area roadway improvements discussed in Section I, Year 2027 background traffic conditions assume the completion of various, earlier explained, roadway improvements for Vollmer Road (south of Poco Road) and Briargate Parkway (east of Vollmer Road) to accommodate regional transportation demands. Year 2040 background traffic conditions assume the new construction and westerly extension of Briargate Parkway (west of Vollmer Road). Year 2040 also assumes signal timing parameters for Briargate Parkway and Vollmer Road consistent with that described in the referenced traffic study for Homestead North Phase I. These assumptions provide for a conservative analysis.

Projected background traffic volumes and intersection geometry for Year 2027 are shown on Figure 4.

Figure 5 shows projected background traffic volumes and intersection geometry for Year 2040.

Multi-Modal Assessment

Within the area, multi-modal networks could have an effect on mode split and trip generation from the proposed development. These networks promote alternate modes of transportation and include but may not be limited to, pedestrian and bicycle facilities.

The County's MTCP currently identifies that no pedestrian or bicycle routes currently exist within the development area. However, pursuant to the County's MTCP, a 4.51 mile bicycle & pedestrian regional trail along Vollmer Road from Marksheffel Road to Shoup Road is currently planned.

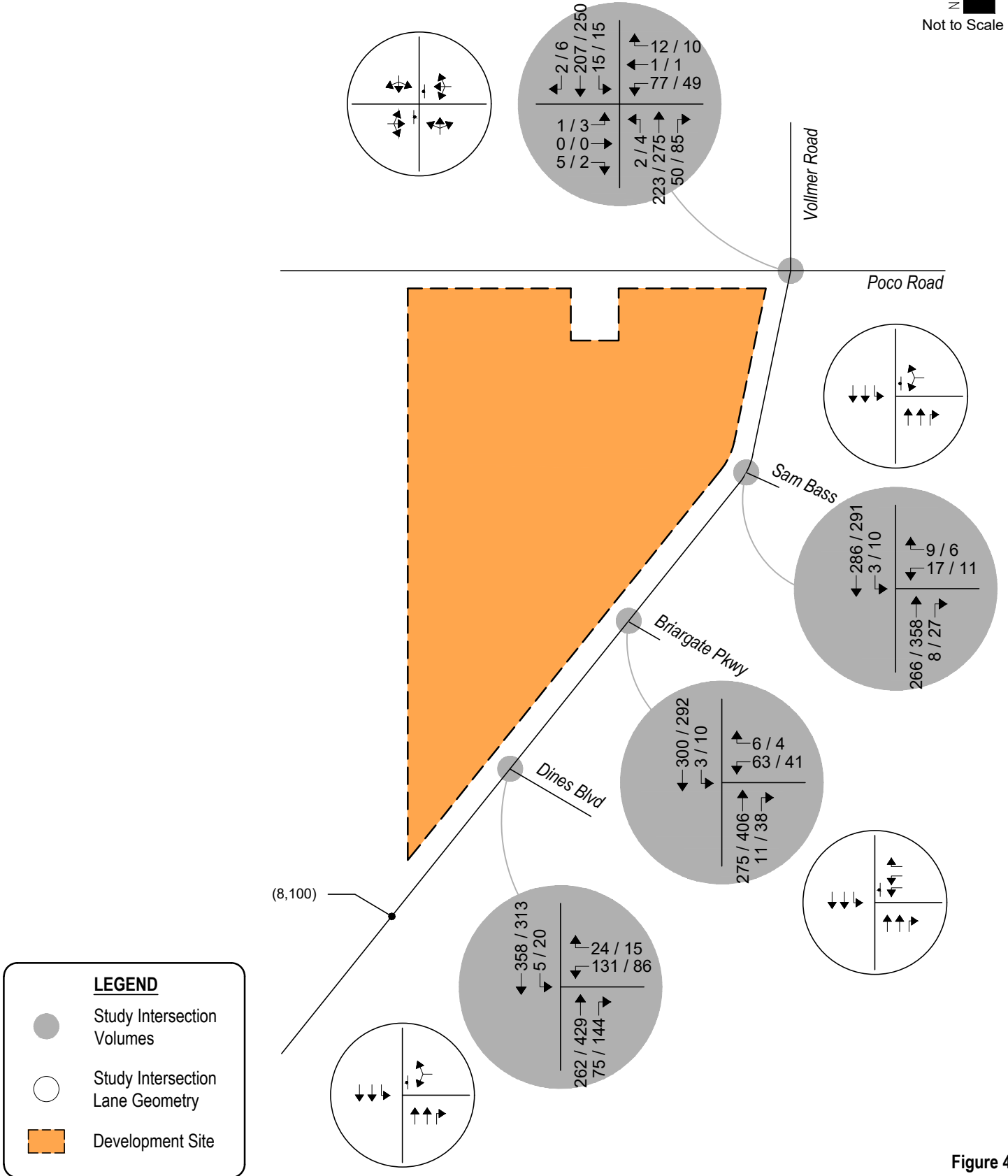


Figure 4
BACKGROUND TRAFFIC - YEAR 2027
 Volumes & Intersection Geometry
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic



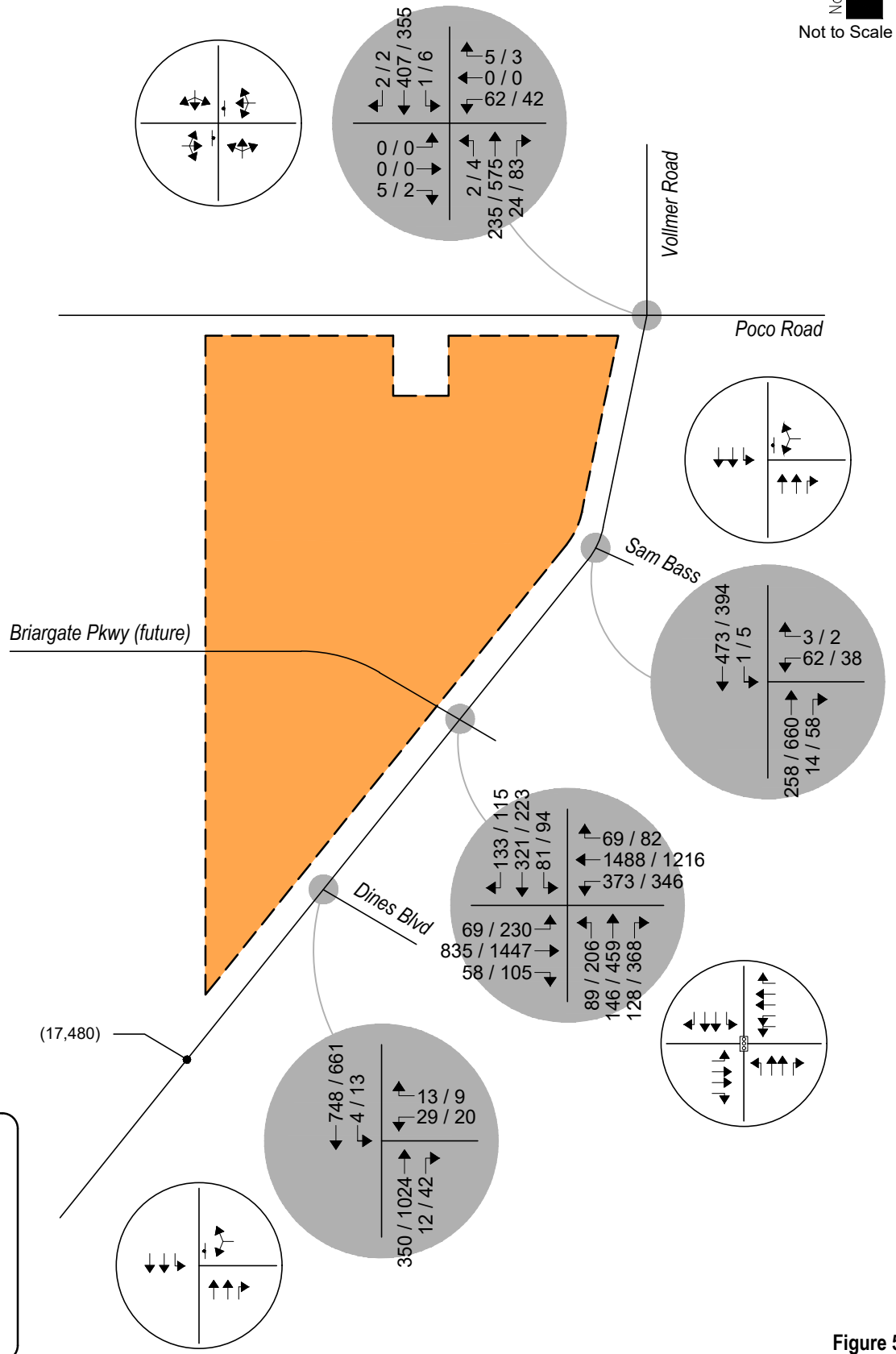


Figure 5
BACKGROUND TRAFFIC - YEAR 2040
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic



Peak Hour Intersection Levels of Service – Background Traffic

As with existing traffic conditions, the operations of study intersections were analyzed under background conditions, without the proposed development, using the SYNCHRO computer program.

Background traffic level of service analysis results for Year 2027 are listed in Table 2. Year 2040 operational results are summarized in Table 3.

Definitions of levels of service are given in Appendix B. Intersection capacity worksheets are provided in Appendix C.

Table 2 – Intersection Capacity Analysis Summary – Background Traffic – Year 2027

| INTERSECTION LANE GROUPS | LEVEL OF SERVICE | |
|--|------------------|------------------|
| | AM PEAK HOUR | PM PEAK HOUR |
| Poco Road / Vollmer Road (Stop-Controlled) Eastbound Left, Through and Right Westbound Left, Through and Right Northbound Left, Through and Right Southbound Left, Through and Right | B B A A | B C A A |
| Sam Bass Drive / Vollmer Road (Stop-Controlled) Westbound Left and Right Southbound Left | B A | B A |
| Briargate Parkway / Vollmer Road (Stop-Controlled) Westbound Left Westbound Right Southbound Left | B A A | B A A |
| Dines Boulevard / Vollmer Road (Stop-Controlled) Westbound Left and Right Southbound Left | B A | C A |

Key: Stop-Controlled Intersection: Level of Service

Background Traffic Analysis Results – Year 2027

Year 2027 background traffic analysis indicates that all stop-controlled intersections within the study area experience turn movement operations at or better than LOS B during the morning peak traffic hour and LOS C during the afternoon peak traffic hour.

Table 3 – Intersection Capacity Analysis Summary – Background Traffic – Year 2040

| INTERSECTION LANE GROUPS | LEVEL OF SERVICE | |
|--|------------------|------------------|
| | AM PEAK HOUR | PM PEAK HOUR |
| Poco Road / Vollmer Road (Stop-Controlled) Eastbound Left, Through and Right Westbound Left, Through and Right Northbound Left, Through and Right Southbound Left, Through and Right | B C A A | B D A A |
| Sam Bass Drive / Vollmer Road (Stop-Controlled) Westbound Left and Right Southbound Left | B A | C A |
| Briargate Parkway / Vollmer Road (Signalized) | C (29.0) | D (50.9) |
| Dines Boulevard / Vollmer Road (Stop-Controlled) Westbound Left and Right Southbound Left | C A | E B |

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)
Stop-Controlled Intersection: Level of Service

Background Traffic Analysis Results – Year 2040

By Year 2040 and without the proposed development, the signalized intersection of Briargate Parkway and Vollmer Road is projected to have an overall operation at LOS C during the morning peak traffic hour and LOS D within the afternoon peak hour. These projected operations remain similar to referenced traffic studies for adjacent development.

All stop-controlled intersections within the study area project turn movement operations at or better than LOS C during the AM peak traffic hour and LOS D during the PM peak traffic hour. An exception is the existing westbound left and right turn movement for Dines Boulevard at Vollmer Road where a LOS E is projected during the afternoon peak hour. The LOS E operation is attributed to the long-term projected through traffic volume along Vollmer Road and the stop-controlled nature of the intersection. To mitigate the projected LOS E operation, it is recommended to install a westbound to southbound left turn acceleration lane along Vollmer Road. This is projected to allow for LOS C or better operations during peak traffic hours.

It is emphasized that it is not uncommon for unsignalized movements to or from an arterial roadway, in urbanized areas, to operate with noticeable delays during peak traffic hours. It is, however, likely that turn movements will operate better than the results obtained with this HCM Two-Way Stop-Control (TWSC) level of service analysis would indicate, as HCM analysis limitations may not accurately account for the effect of vehicle platooning and gaps caused by upstream signals. Upstream signal controls along Vollmer Road may create additional gaps in the traffic stream for turning movements at Dines Boulevard which could provide mitigation to the LOS E operations projected during the peak afternoon traffic hour.

IV. Proposed Project Traffic

Trip Generation

Standard traffic generation characteristics compiled by the Institute of Transportation Engineers (ITE) in their report entitled Trip Generation Manual, 11th Edition, were applied to the proposed land use in order to estimate average daily traffic (ADT), AM Peak Hour, and PM Peak Hour vehicle trips. A vehicle trip is defined as a one-way vehicle movement from a point of origin to a point of destination.

The ITE land use codes 210 (Single-Family Detached Housing), 215 (Single-Family Attached Housing), and 822 (Strip Retail Plaza) were used for estimating trip generation because of their conservative rates and best fit to the proposed land use descriptions.

Due to the conceptual nature of the proposed development, no specific commercial land uses have been determined. As such, a floor-area-ratio (FAR) of 0.15 was applied to the assumed commercial area of development.

Unresolved: If still conceptual, why did FAR drop from 0.20 to 0.15, which was used in TIS for the Sketch Plan?

As actual land uses, densities or site plans within the Retreat at PrairieRidge Plan & Rezones become defined over time and through additional County land use approval procedures, it is expected that traffic generation characteristics considered within this study will need to be updated by more specific traffic analyses or studies to help assess if transportation improvements are needed to mitigate potential traffic impacts.

Trip generation rates used in this study are presented in Table 4.

Table 4 – Trip Generation Rates

| ITE CODE | LAND USE | UNIT | TRIP GENERATION RATES | | | | | | |
|----------|------------------------|------|-----------------------|--------------|------|-------|--------------|------|-------|
| | | | 24 HOUR | AM PEAK HOUR | | | PM PEAK HOUR | | |
| | | | | ENTER | EXIT | TOTAL | ENTER | EXIT | TOTAL |
| 210 | Single-Family Detached | DU | 9.43 | 0.18 | 0.52 | 0.70 | 0.59 | 0.35 | 0.94 |
| 215 | Single-Family Attached | DU | 7.20 | 0.15 | 0.33 | 0.48 | 0.32 | 0.25 | 0.57 |
| 822 | Strip Retail Plaza | KSF | 54.45 | 1.42 | 0.94 | 2.36 | 3.30 | 3.30 | 6.59 |

Key: KSF = Thousand Square Feet Gross Floor Area.
 Note: All data and calculations above are subject to being rounded to nearest value.

Table 5 illustrates projected ADT, AM Peak Hour, and PM Peak Hour traffic volumes likely generated by the proposed development upon build-out.

Table 5 – Trip Generation Summary

| ITE CODE | LAND USE | SIZE | TOTAL TRIPS GENERATED | | | | | | | |
|--|------------------------|----------|-----------------------|--------------|------------|-------------|--------------|------------|-------------|--|
| | | | 24 HOUR | AM PEAK HOUR | | | PM PEAK HOUR | | | |
| | | | | ENTER | EXIT | TOTAL | ENTER | EXIT | TOTAL | |
| <u>Site Development - Sketch Plan</u> | | | | | | | | | | |
| 210 | Single-Family Detached | 298 DU | 2,810 | 54 | 154 | 209 | 176 | 104 | 280 | |
| 215 | Single-Family Attached | 332 DU | 2,390 | 49 | 110 | 159 | 108 | 81 | 189 | |
| 822 | Strip Retail Plaza | 39.2 KSF | 2,134 | 56 | 37 | 93 | 129 | 129 | 258 | |
| <i>Sketch Plan Total:</i> | | | 7,335 | 159 | 301 | 460 | 414 | 314 | 728 | |
| <u>Site Development - Preliminary Plan</u> | | | | | | | | | | |
| 210 | Single-Family Detached | 230 DU | 2,169 | 42 | 119 | 161 | 136 | 80 | 216 | |
| 215 | Single-Family Attached | 220 DU | 1,584 | 33 | 73 | 106 | 71 | 54 | 125 | |
| 822 | Strip Retail Plaza | 30.0 KSF | 1,634 | 42 | 28 | 71 | 99 | 99 | 198 | |
| <i>Preliminary Plan Total:</i> | | | 5,386 | 117 | 220 | 337 | 307 | 233 | 539 | |
| <i>Difference Total:</i> | | | -1,949 | -42 | -81 | -123 | -107 | -81 | -188 | |

Key: KSF = Thousand Square Feet Gross Floor Area.

Note: All data and calculations above are subject to being rounded to nearest value.

Upon build-out and without consideration of applicable vehicle trip reductions, Table 5 illustrates that the proposed development has the potential to generate approximately 5,386 daily trips with 337 of those occurring during the morning peak hour and 539 during the afternoon peak hour.

Compared to trip generation estimates from the previous Jaynes Property master traffic impact study associated with the sketch plan, trip generation estimates associated with the preliminary plan, as shown in Table 5, represent an approximate 27 percent decrease in site trips.

Adjustments to Trip Generation Rates

While a mixed-use development of this type is likely to attract trips from within area land uses as well as pass-by or diverted linked trips from the adjacent roadway system, no trip reduction was taken in this analysis due to its conceptual nature. This assumption provides for a conservative analysis.

Trip Distribution & Assignment

The construction of this development is assumed to be phased with the initial phase being completed by Year 2027 and entailing the portion of residential (153 dwelling units) located south of future Briargate Parkway. The build-out phase entails the construction of commercial land uses as well as 297 residential dwelling units north of the future Briargate Parkway.

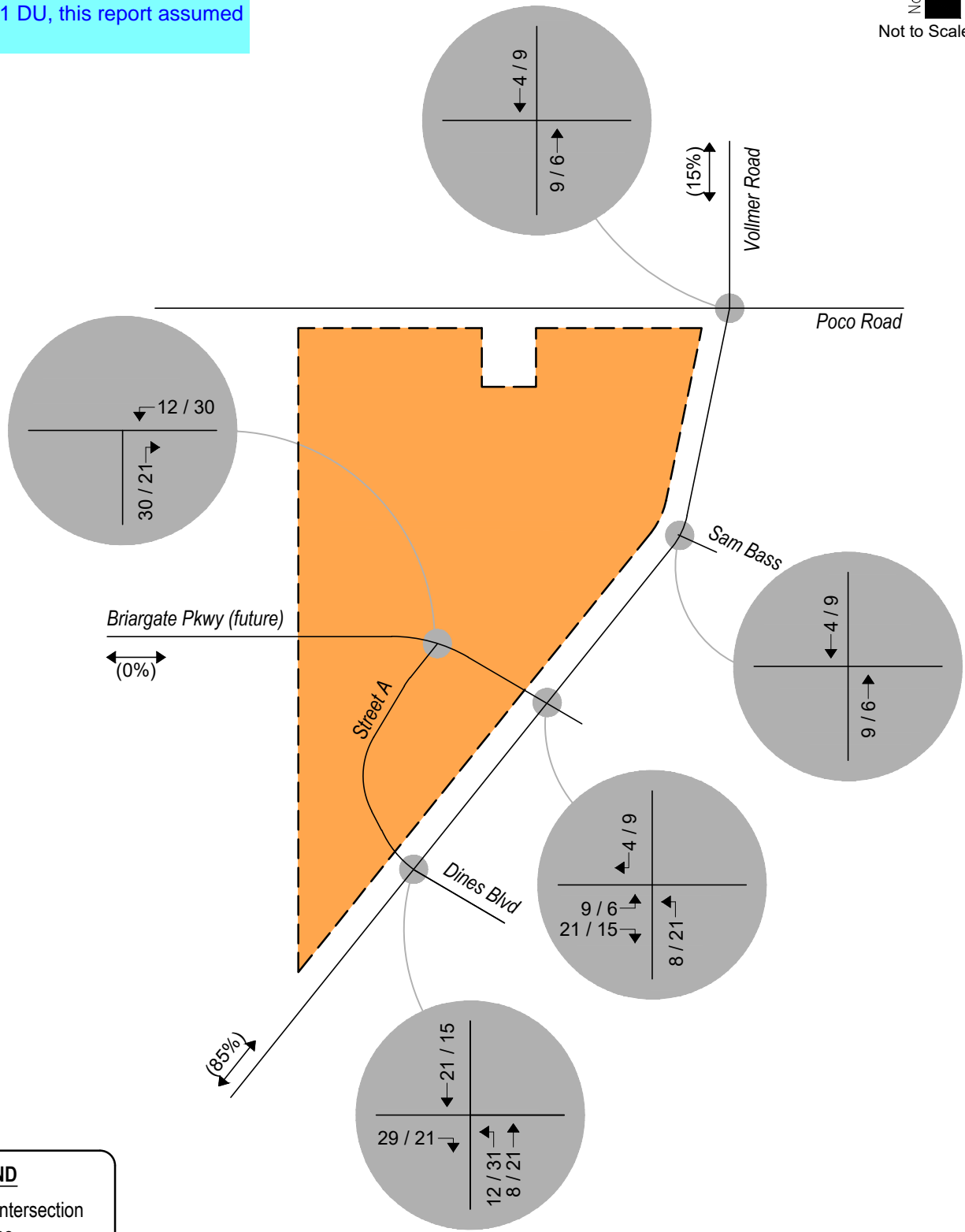
Traffic assignment is how generated and distributed vehicle trips are expected to be loaded onto the available roadway network.

The initial and overall directional distribution of site-generated traffic was determined based on the location of development site within the County, proposed and existing area land uses, allowed turning movements, available roadway network, and in compliance to the adjacent traffic study prepared for Homestead North Phase I previously referenced.

Trip distribution patterns for the initial phase of development are shown in Figure 6A. Applying trip distribution patterns to initial phase of site-generated traffic provides the initial site-generated trip assignments are also shown on Figure 6A.

Overall, long-term, trip distribution patterns and site-generated traffic assignment for development build-out are shown on Figure 6B.

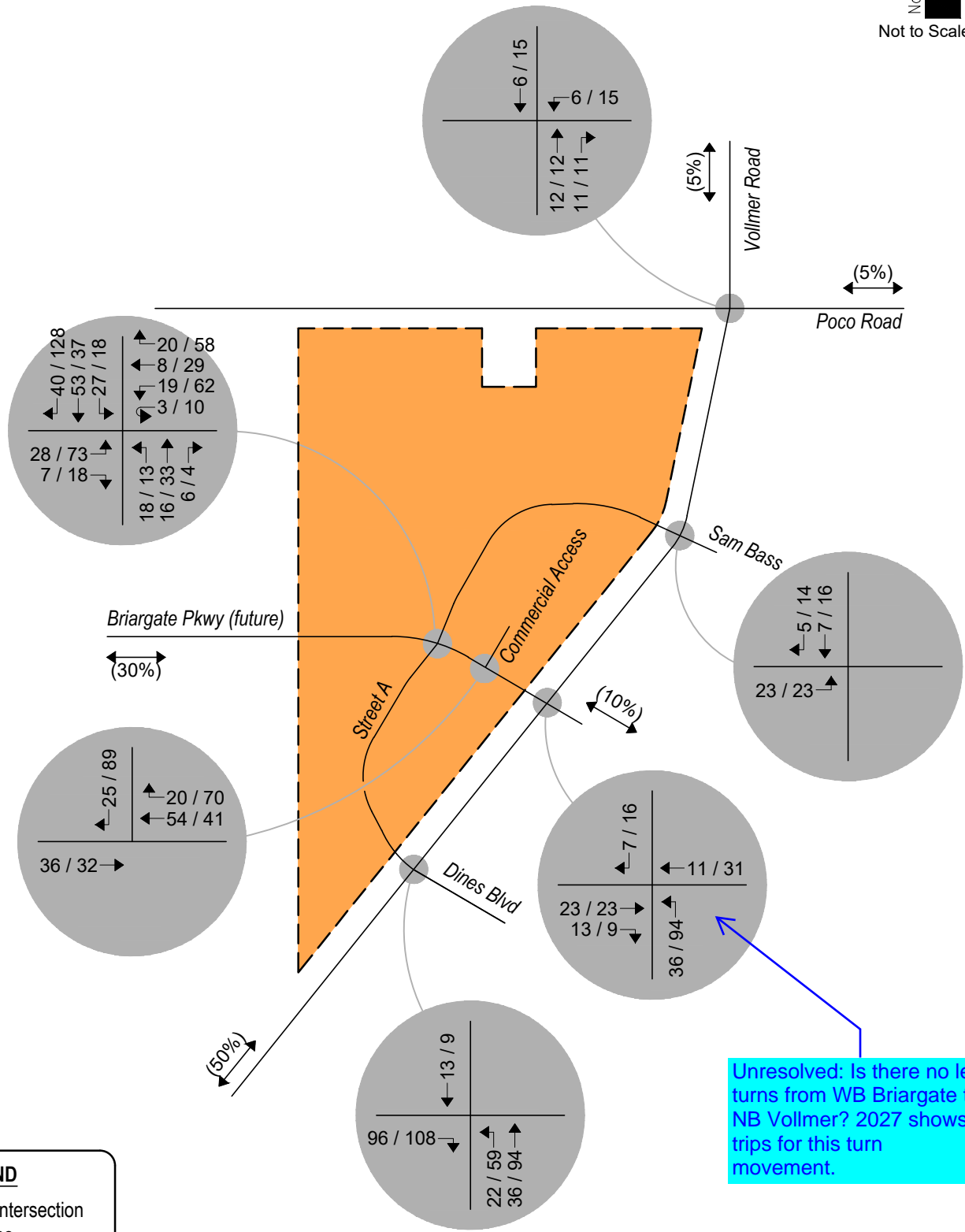
Unresolved: How did site generated trips decrease from what was shown in Sketch Plan TIS, when DU's increased? Sketch plan assumed 361 DU, this report assumed 450 (153+297).



LEGEND

- Study Intersection Volumes
- Development Site

Figure 6A
SITE DEVELOPMENT DISTRIBUTION - YEAR 2027
 (%): Overall
SITE-GENERATED TRIPS
 AM / PM Peak Hour



Unresolved: Is there no left turns from WB Briargate to NB Vollmer? 2027 shows trips for this turn movement.

LEGEND

- Study Intersection Volumes
- Development Site

Figure 6B
SITE DEVELOPMENT DISTRIBUTION - YEAR 2040
 (%): Overall
SITE-GENERATED TRIPS
 AM / PM Peak Hour

V. Future Traffic Conditions With Proposed Developments

Total traffic is the traffic projected to be on area roadways with consideration of the proposed development. Total traffic includes background traffic projections for Years 2027 and 2040 with consideration of site-generated traffic. For analysis purposes, it was assumed that overall development construction would be completed by end of Year 2040.

Pursuant to area roadway improvement discussions provided in Section III, Year 2027 and Year 2040 total traffic conditions assume no additional roadway improvements to accommodate regional transportation demands than that described for each background analysis year. Roadway improvements associated with site development are expected to be limited to site access and frontage as required by the governing agency.

Projected Year 2027 total traffic volumes and intersection geometry are shown in Figure 7.

Figure 8 shows projected total traffic volumes and intersection geometry for Year 2040.

Total Traffic Auxiliary Lane Analysis

Auxiliary lanes for site development access drive

An evaluation of auxiliary lane requirements, pursuant to Section 2.3.7 of the County's ECM, reveals that a southbound right turn deceleration lane along Vollmer Road at Briargate Parkway is not required until Year 2040, upon overall build-out of the surrounding area, when the southbound right turn ingress volume exceeds the 25 VPH threshold. In addition, a right turn deceleration for the westbound right turn at the intersection of Briargate Parkway and Commercial Access is required since the expected peak hour right turn ingress volume exceeds the 25 vehicles per hour threshold.

Considering development build-out (Year 2040), peak hour volumes for southbound right turn ingress movements along Vollmer Road at Sam Bass Drive and Dines Boulevard are not projected to exceed the 25 vehicles per hour threshold. However, right turn lanes were assumed for analysis purposes. Dedicated right turn lanes were also assumed along the future, ultimate section of Briargate Parkway at Vollmer Road.

Section 2.3.7 of the County's ECM also reveals that, by Year 2040, an exclusive left turn deceleration lane is required along ultimate Briargate Parkway at Vollmer Road, and along Vollmer Road at Dines Boulevard and Briargate Parkway since the projected left turn ingress volume exceeds the County's threshold of 10 vehicles per hour.

Due to the conservative analysis performed throughout this study and the conceptual nature of site development, it is expected that auxiliary lane requirements evaluated within this study will need to be updated by more specific traffic analyses or studies as actual area development occurs, to help assess if transportation improvements are needed to meet the County's vehicle volume thresholds.

Unresolved: Please include a discussion of future traffic conditions. This study ends at the full development phase and does not consider impacts beyond the end of the development phases.

Multi-Modal Assessment

The proposed development would accommodate pedestrians and bicyclists by maintaining the proposed pedestrian and bicycle facilities currently proposed pursuant to Section III.

With the assumption that the preliminary plan for the proposed development was designed per the County's ECM, and pursuant to the Federal Highway Administration's (FHWA) Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations⁸, traffic calming, and pedestrian crossing treatments are not applicable, and traffic calming is not expected to be needed for the proposed conditions.

⁸ Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, Federal Highway Administration, July 2018.

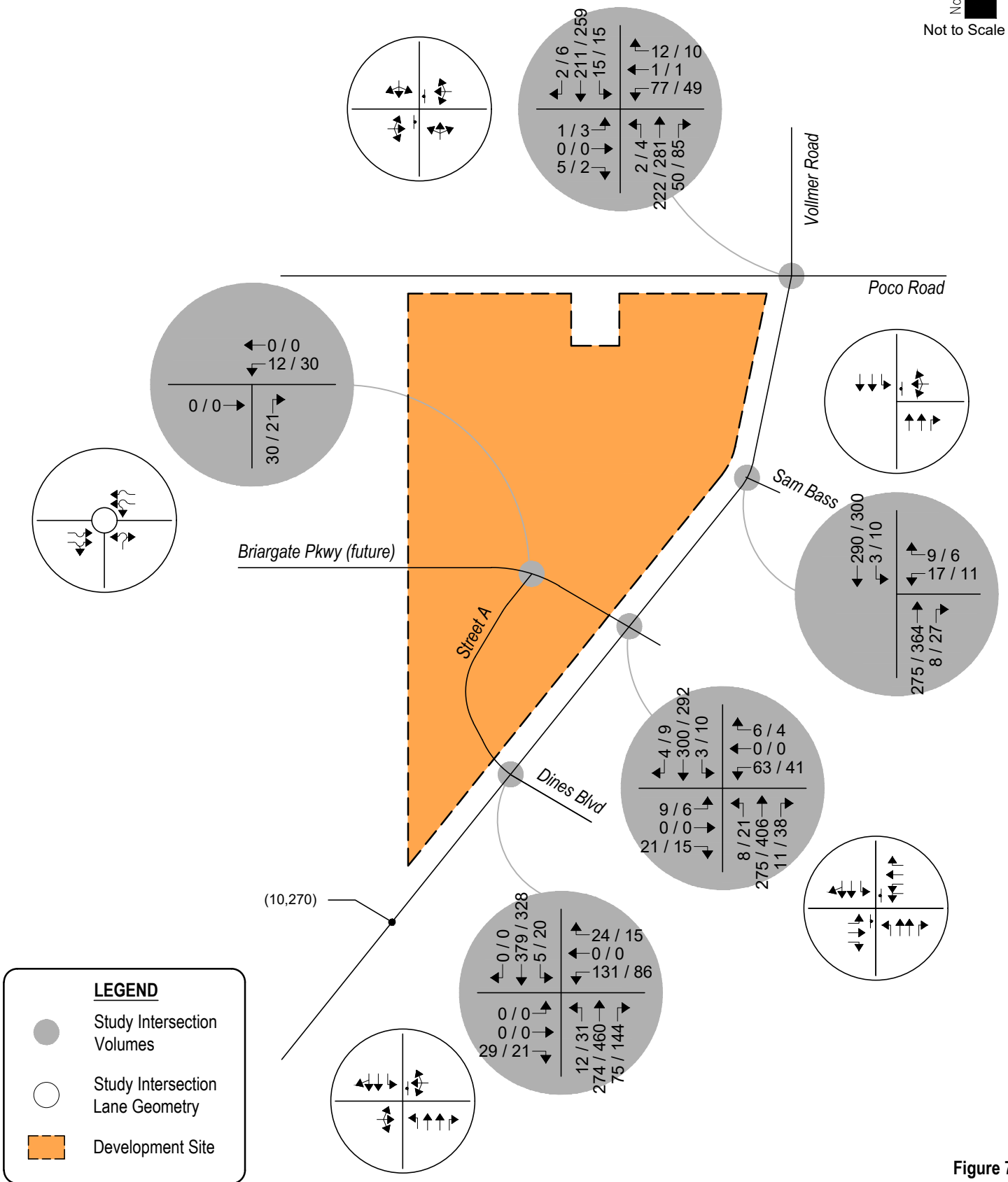


Figure 7
TOTAL TRAFFIC - YEAR 2027
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic



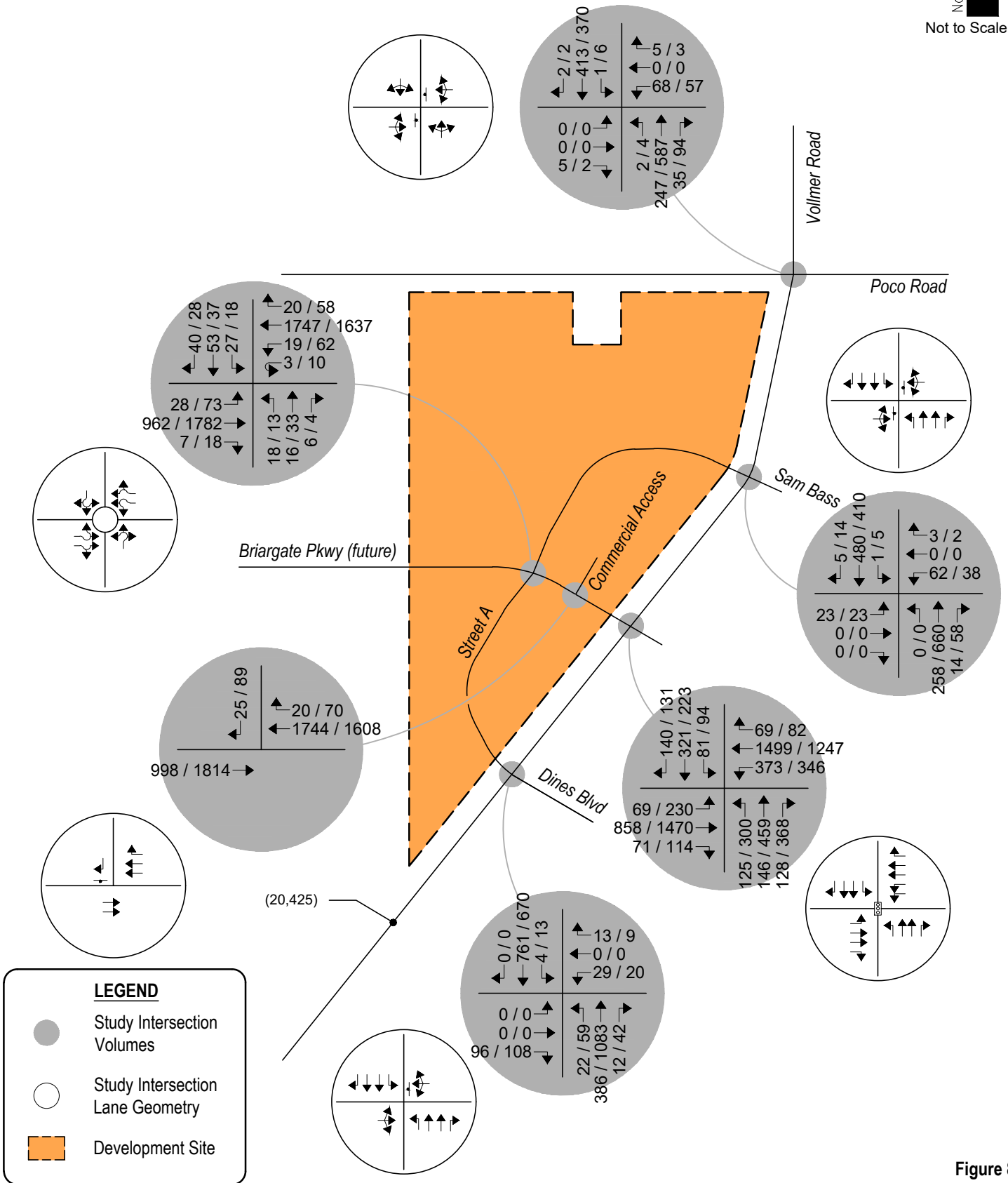


Figure 8
TOTAL TRAFFIC - YEAR 2040
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic



VI. Project Impacts

The analyses and procedures described in this study were performed in accordance with the Highway Capacity Manual (HCM) and are based upon the worst-case conditions that occur during a typical weekday upon build-out of site development and analyzed land uses. Therefore, study intersections are likely to operate with traffic conditions better than those described within this study, which represent the peak hours of weekday operations only.

Peak Hour Intersection Levels of Service – Total Traffic

As with background traffic, the operations of the study intersections were analyzed under projected total traffic conditions using the SYNCHRO computer program. Total traffic level of service analysis results for Years 2027 and 2040 are summarized in Table 6 and Table 7, respectively.

Definitions of levels of service are given in Appendix B. Intersection capacity worksheets are provided in Appendix C.

Table 6 – Intersection Capacity Analysis Summary – Total Traffic – Year 2027

| INTERSECTION LANE GROUPS | LEVEL OF SERVICE | |
|--|------------------|--------------|
| | AM PEAK HOUR | PM PEAK HOUR |
| Poco Road / Vollmer Road (Stop-Controlled) | | |
| Eastbound Left, Through and Right | B | B |
| Westbound Left, Through and Right | B | C |
| Northbound Left, Through and Right | A | A |
| Southbound Left, Through and Right | A | A |
| Sam Bass Drive / Vollmer Road (Stop-Controlled) | | |
| Westbound Left and Right | B | B |
| Southbound Left | A | A |
| Briargate Parkway / Vollmer Road (Stop-Controlled) | | |
| Eastbound Left | B | B |
| Eastbound Through | A | A |
| Eastbound Right | A | A |
| Westbound Left | B | C |
| Westbound Through | A | A |
| Westbound Right | A | A |
| Northbound Left | A | A |
| Southbound Left | A | A |
| Dines Boulevard / Vollmer Road (Stop-Controlled) | | |
| Eastbound Left, Through and Right | A | A |
| Westbound Left, Through and Right | C | C |
| Northbound Left | A | A |
| Southbound Right | A | A |
| Street A / Briargate Parkway (Roundabout) | | |
| Eastbound Through | A | A |
| Eastbound Through and Right | A | A |
| Westbound Left and Through | A | A |
| Westbound Through | A | A |
| Northbound Left and Right | A | A |

Key: Stop-Controlled Intersection: Level of Service
Roundabout Intersection: Level of Service

Table 7 – Intersection Capacity Analysis Summary – Total Traffic – Year 2040

| INTERSECTION LANE GROUPS | LEVEL OF SERVICE | |
|---|----------------------------|----------------------------|
| | AM PEAK HOUR | PM PEAK HOUR |
| Poco Road / Vollmer Road (Stop-Controlled) Eastbound Left, Through and Right Westbound Left, Through and Right Northbound Left, Through and Right Southbound Left, Through and Right | B C A A | B D A A |
| Sam Bass Drive / Vollmer Road (Stop-Controlled) Eastbound Left, Through and Right Westbound Left, Through and Right Northbound Left Southbound Left | C B A A | B C A A |
| Briargate Parkway / Vollmer Road (Signalized) | C (30.1) | D (50.6) |
| Dines Boulevard / Vollmer Road (Stop-Controlled) Eastbound Left, Through and Right Westbound Left, Through and Right Northbound Left Southbound Left | B C A A | B F A B |
| Street A / Briargate Parkway (Roundabout) Eastbound Left and Through Eastbound Through and Right Westbound Left and Through Westbound Through and Right Northbound Left, Through and Right Southbound Left, Through and Right | A A B C A D | C C C C C C |
| Briargate Parkway / Commercial Access (Stop-Controlled) Southbound Right | C | C |

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)
 Stop-Controlled Intersection: Level of Service
 Roundabout Intersection: Level of Service

Total Traffic Analysis Results Upon Development Build-Out

Table 7 illustrates how, by Year 2040 and upon assumed development build-out, the signalized intersection of Briargate Parkway with Vollmer Road experiences overall operations at LOS C during the morning peak traffic hour and LOS D during the afternoon peak traffic hour.

The stop-controlled intersections along Vollmer Road are projected to have turn movement operations at or better than LOS C during the morning peak traffic hour and LOS D or better during the afternoon peak traffic hour. Exceptions would include the westbound turning movements at the intersection of Dines Boulevard and Vollmer Road which operate at LOS F during the PM peak traffic hour. The LOS F operation is attributed to the through traffic volume along Vollmer Road and the stop-controlled nature of the intersection.

The stop-controlled intersection of Briargate Parkway with Commercial Access is anticipated to have turning movement operations at LOS C during the morning and afternoon peak traffic hours.

The roundabout-controlled intersection of Street A and Briargate Parkway is expected to have turning movement operations at LOS D or better during the morning peak traffic hour and LOS C during the afternoon peak traffic hour.

It is again emphasized that it is not uncommon for unsignalized movements to or from an arterial roadway, in urbanized areas, to operate with noticeable delays during peak traffic hours. It is, however, likely that turn movements will operate better than the results obtained with this HCM Two-Way Stop-Control (TWSC) level of service analysis would indicate, as the HCM analysis limitations may not accurately account for the effect of vehicle platooning and gaps caused by upstream signals. Upstream signal controls along Vollmer Road may create additional gaps in the traffic stream for turning movements onto Vollmer Road which could provide mitigation to the LOS F operation projected during the PM peak traffic hour.

Pedestrian Circulation & Safety Analysis

An assessment to pedestrian connectivity and safety was considered.

The proposed development would accommodate pedestrians and bicyclists with the following improvements:

- Attached and detached sidewalks along applicable roadways per County roadway design standards.
- Bicycle lanes along applicable roadways per County roadway design standards.

With the assumption that the development's preliminary plan was designed per the County's ECM, and pursuant to the FHWA's Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, pedestrian safety is not expected to be of concern. Moreover, as discussed in Section V, traffic calming and pedestrian crossing treatments are not applicable, and traffic calming is not recommended for the proposed conditions.

Queue Length Analysis

Queue lengths for the study intersections were analyzed using Year 2040 total traffic conditions. The analysis yields estimate of 95th percentile queue lengths, which have only a five percent probability of being exceeded during the analysis time period. An average vehicle length of 25 feet was assumed. Queue lengths were modeled and are included with the Synchro worksheets in Appendix C.

Table 8 summarizes the 95th percentile queue results in comparison to the projected storage requirements for turn movements within study area for Year 2040. Table 8 further provides recommended turn lane lengths based on minimum requirements from Section 2.3.7 of the County's ECM, projected 95th percentile queue lengths, and assuming design speeds for future roadways.

For example, at the Briargate Parkway and Vollmer Road intersection, exclusive left and right turn deceleration lanes are recommended to accommodate a minimum of 235 feet of lane length. Exceptions include the eastbound left turn lane and the westbound left and right turn lanes, which are recommended to be between approximately 255 and 300 feet in length in order to accommodate projected 95th percentile vehicle queue lengths.

Table 8 – Turn Lane Queues and Storage Requirements – Total Traffic – Year 2040

| Intersection | Turn Movement | | Existing Turn Lane Length (feet) | AM Peak Hour | PM Peak Hour | Recommended Turn Lane Length (feet) |
|---------------------------------------|---------------|-------|----------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | | | | 95th Percentile Queue Length (feet) | 95th Percentile Queue Length (feet) | |
| Signalized Intersections | | | | | | |
| Briargate Parkway / Vollmer Road | EB | L | - | 46' | 258' | 260' |
| | | T | - | 355' | 831' | - |
| | | R | - | 0' | 21' | 235' |
| | WB | L | - | 207' | 185' | 235' |
| | | T | - | 612' | 712' | - |
| | | R | - | 9' | 0' | 235' |
| | NB | L | - | 141' | 297' | 300' |
| | | T | - | 90' | 249' | - |
| | | R | - | 45' | 252' | 255' |
| | SB | L | - | 97' | 98' | 235' |
| | | T | - | 191' | 179' | - |
| | | R | - | 59' | 18' | 235' |
| Stop-Controlled Intersections | | | | | | |
| Poco Road / Vollmer Road | EB | L,T,R | - | 0' | 0' | - |
| | WB | L,T,R | - | 23' | 38' | - |
| | NB | L,T,R | - | 0' | 0' | - |
| | SB | L,T,R | - | 0' | 0' | - |
| Sam Bass Drive / Vollmer Road | EB | L,T,R | - | 5' | 5' | - |
| | | L,T,R | - | 15' | 13' | - |
| | NB | L | - | 0' | 0' | 235' |
| | | T | - | 0' | 0' | - |
| | | R | - | 0' | 0' | 235' |
| | SB | L | - | 0' | 0' | 235' |
| | | T | - | 0' | 0' | - |
| | | R | - | 0' | 0' | 235' |
| Dines Boulevard / Vollmer Road | EB | L,T,R | - | 15' | 18' | - |
| | | L,T,R | - | 18' | 50' | - |
| | NB | L | - | 3' | 5' | - |
| | | T | - | 0' | 0' | - |
| | | R | 380' | 0' | 0' | 235' |
| | SB | L | - | 0' | 3' | 235' |
| | | T | - | 0' | 0' | - |
| | | R | - | 0' | 0' | - |
| Briargate Parkway / Commercial Access | EB | T | - | 0' | 0' | - |
| | | T | - | 0' | 0' | - |
| | WB | R | - | 0' | 0' | 235' |
| | | R | - | 8' | 35' | - |
| Roundabout Intersections | | | | | | |
| Street A / Briargate Parkway | EB | L,T | - | 50' | 250' | - |
| | | T,R | - | 50' | 325' | - |
| | WB | L,T | - | 175' | 200' | - |
| | | T,R | - | 225' | 250' | - |
| | NB | L,T,R | - | 0' | 25' | - |
| | SB | L,T,R | - | 75' | 25' | - |

Note: Turn Lane Length does not include taper length.

Recommended Improvements

Table 9 illustrates the recommended roadway and intersection control improvements associated with the proposed Retreat at PrairieRidge Filings 1-3 Preliminary Plan & Rezones development and adjacent area.

Unresolved: Highlighted items show a different responsible party than was shown on Sketch Plan TIS. Why have they changed?

Table 9 – Recommended Improvements Summary

| IMPROVEMENT | TYPE | TIMING | RESPONSIBILITY |
|--|-----------------|---|--|
| Signalization of Vollmer Road / Briargate Parkway | Traffic Signal | When Warranted | By Others (Sterling Ranch) |
| Widen Vollmer Road to four-lane cross-section from Marksheffel Road to Poco Road (excluding industrial development site) | Roadway Segment | Shown on MTCP by 2040 | By Others (Sterling Ranch) |
| Construct Sam Bass Drive west of Vollmer Road | Roadway Segment | With Final Plat Application(s) / Site Development | Applicant / Developer |
| Construct Dines Boulevard west of Vollmer Road | Roadway Segment | With Final Plat Application(s) / Site Development | Applicant / Developer |
| Construct Briargate Parkway west of Vollmer Road | Roadway Segment | With Final Plat Application(s) / Site Development | Developer (subject to reimbursement under the County's Road Impact Fee Program) or PPRTA |
| Construct southbound right turn lanes along Vollmer Road at Sam Bass Drive and Dines Boulevard | Auxiliary Lane | With final phasing of Site Development | Applicant / Developer (upon appropriate development phase) |
| Construct southbound right turn lane along Vollmer Road at Briargate Parkway | Auxiliary Lane | Upon overall development built out (DHV < 25 VPH) | Applicant / Developer (upon appropriate development phase) |
| Construct northbound left turn lanes along Vollmer Road at Dines Boulevard | Auxiliary Lane | Construction estimated by 2023 / 2024 | By Others (Sterling Ranch) |
| Construct northbound left turn lanes along Vollmer Road at Briargate Parkway | Auxiliary Lane | Construction estimated by 2023 / 2024 | By Others (Sterling Ranch) |

Recommended improvements, as shown in Table 9 above, which may be reimbursable under the County's MTCP include roadway widening improvements and auxiliary lane improvements along Vollmer Road or Briargate Parkway.

Unresolved: What about other necessary improvements, such as Briargate/Dines intersection?

VII. Conclusion

This traffic impact study is provided as a planning document and addressed the capacity, geometric, and control requirements associated with the preliminary plan for the development entitled Retreat at PrairieRidge Filings 1-3 Preliminary Plan & Rezones (Jaynes Property). This traffic impact study is also provided as an update to the master traffic impact study associated with the sketch plan prepared for Jaynes Property. This proposed mixed-use development consists of a variety of residential, neighborhood commercial and park land uses. The 142-acre development is located along the west side of Vollmer Road between Poco Road and Dines Boulevard in El Paso County, Colorado.

The study area to be examined in this analysis encompasses the Vollmer Road intersections with Poco Road, Briargate Parkway (future) and Dines Boulevard, and the Briargate Parkway (future) intersection with the key site development roadway (future) and the right-in/right-out commercial access (future).

Analysis was conducted for critical AM Peak Hour and PM Peak Hour traffic operations for existing traffic conditions, Year 2027 and Year 2040 background traffic conditions, and Year 2027 and Year 2040 total traffic conditions.

Analysis of existing traffic conditions indicates that the stop-controlled intersections of Poco Road and Dines Boulevard with Vollmer Road have turn movement operations at or better than LOS B during both the morning and afternoon peak traffic hours.

Without the proposed development, Year 2027 background operational analysis shows all stop-controlled intersections within the study area experience turn movement operations at or better than LOS C during both the morning and afternoon peak traffic hours.

By Year 2040 and without the proposed development, the signalized intersection of Briargate Parkway and Vollmer Road is projected to have an overall operation at or better than LOS C during the morning peak traffic hour and LOS D or better during the afternoon peak hour, consistent with referenced traffic studies for adjacent developments. All stop-controlled intersections within the study area project turn movement operations at or better than LOS D during both peak traffic hours. The exception is the existing westbound left and right turn movement for Dines Boulevard at Vollmer Road where an LOS E is projected during the afternoon peak hour. The LOS E operation is attributed to the long-term projected through traffic volume along Vollmer Road and the stop-controlled nature of the intersection. To mitigate the projected LOS E operation, it is recommended to install a westbound to southbound left turn acceleration lane along Vollmer Road. This is projected to allow for LOS C or better operations during peak traffic hours.

Analysis of future traffic conditions indicates that the addition of site-generated traffic is expected to create no negative impact to traffic operations for the existing and surrounding roadway system upon roadway and intersection control improvements assumed within this analysis.

This site is subjected to the El Paso County Road Impact Fee Program (Resolution 19-471), as amended. An option for payment will be selected at the final land use approval stage.

APPENDIX A

Traffic Count Data

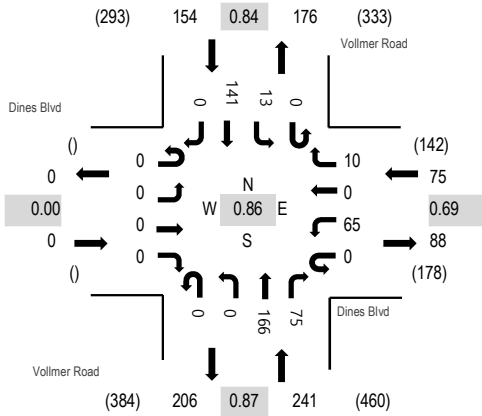
Location: 5 Vollmer Road & Dines Blvd PM

Date: Thursday, March 24, 2022

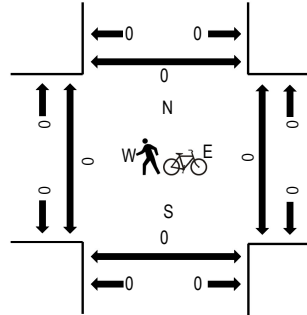
Peak Hour: 04:00 PM - 05:00 PM

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

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

| Interval 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 |



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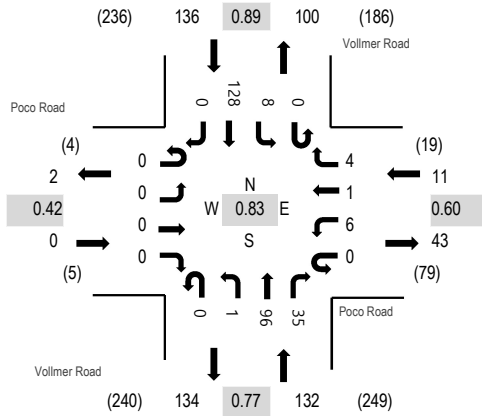
Location: 6 Vollmer Road & Poco Road AM

Date: Thursday, March 24, 2022

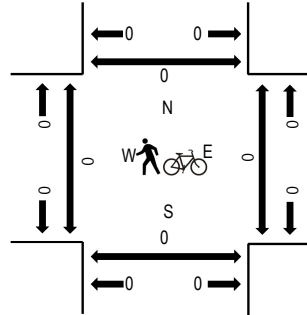
Peak Hour: 07:15 AM - 08:15 AM

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 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 |

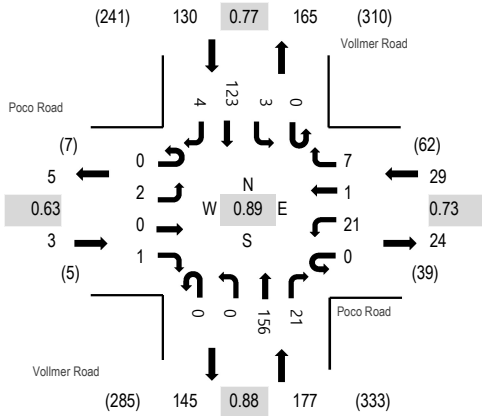
Location: 6 Vollmer Road & Poco Road PM

Date: Thursday, March 24, 2022

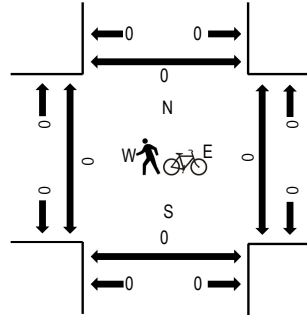
Peak Hour: 04:00 PM - 05:00 PM

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 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 |

APPENDIX B

Level of Service Definitions

The following information is referenced from the Highway Capacity Manual: A Guide for Multimodal Mobility Analysis, 6th Edition, Transportation Research Board, 2016: Chapter 19 – Signalized Intersections.

Motorized Vehicle Level of Service (LOS) for Signalized Intersections

Levels of service are defined to represent reasonable ranges in control delay.

LOS A Describes operations with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B Describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C Describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D Describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E Describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F Describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

| Control Delay (s/veh) | LOS by Volume-to-Capacity Ratio ^a | |
|--------------------------|--|-------------|
| | $v/c \leq 1.0$ | $v/c > 1.0$ |
| ≤ 10 | A | F |
| > 10 – 20 | B | F |
| > 20 – 35 | C | F |
| > 35 – 55 | D | F |
| > 55 – 80 | E | F |
| > 80 | F | F |

Note: ^a For approach-based and intersectionwide assessments, LOS is defined solely by control delay.

The following information is referenced from the Highway Capacity Manual: A Guide for Multimodal Mobility Analysis, 6th Edition, Transportation Research Board, 2016: Chapter 20 – Two-Way Stop-Controlled Intersections, Chapter 21 – All-Way Stop-Controlled Intersections, and Chapter 22 - Roundabouts.

Motorized Vehicle Level of Service (LOS) for Unsignalized & Roundabout Intersections

LOS is a quantitative stratification of performance measure(s) representing quality of service. Quality of service describes how well a transportation facility or service operates from a traveler’s perspective. LOS is measured on an A – F scale, with LOS A representing the best operating conditions from a traveler’s perspective.

| Control Delay (s/veh) | LOS by Volume-to-Capacity Ratio ^a | |
|--------------------------|--|-------------|
| | $v/c \leq 1.0$ | $v/c > 1.0$ |
| 0 – 10 | A | F |
| > 10 – 15 | B | F |
| > 15 – 25 | C | F |
| > 25 – 35 | D | F |
| > 35 – 50 | E | F |
| > 50 | F | F |

Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

^a For approaches and intersectionwide assessment, LOS is defined solely by control delay.

APPENDIX C

Capacity Worksheets

HCM 6th TWSC
1: Poco Road & Vollmer Road

Existing Traffic Volumes
AM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.7 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 6 | 1 | 4 | 1 | 103 | 37 | 9 | 139 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 6 | 1 | 4 | 1 | 103 | 37 | 9 | 139 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 7 | 1 | 4 | 1 | 112 | 40 | 10 | 151 | 0 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 308 | 325 | 151 | 305 | 305 | 132 | 151 | 0 | 0 | 152 | 0 | 0 |
| Stage 1 | 171 | 171 | - | 134 | 134 | - | - | - | - | - | - | - |
| Stage 2 | 137 | 154 | - | 171 | 171 | - | - | - | - | - | - | - |
| 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 | 644 | 593 | 895 | 647 | 608 | 917 | 1430 | - | - | 1429 | - | - |
| Stage 1 | 831 | 757 | - | 869 | 785 | - | - | - | - | - | - | - |
| Stage 2 | 866 | 770 | - | 831 | 757 | - | - | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 636 | 588 | 895 | 642 | 603 | 917 | 1430 | - | - | 1429 | - | - |
| Mov Cap-2 Maneuver | 636 | 588 | - | 642 | 603 | - | - | - | - | - | - | - |
| Stage 1 | 830 | 751 | - | 868 | 784 | - | - | - | - | - | - | - |
| Stage 2 | 860 | 769 | - | 824 | 751 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|----|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 0 | | 10.1 | | 0.1 | | 0.5 | |
| HCM LOS | A | | B | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1430 | - | - | - | 716 | 1429 | - | - |
| HCM Lane V/C Ratio | 0.001 | - | - | - | 0.017 | 0.007 | - | - |
| HCM Control Delay (s) | 7.5 | 0 | - | 0 | 10.1 | 7.5 | 0 | - |
| HCM Lane LOS | A | A | - | A | B | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 | 0 | - | - |

HCM 6th TWSC
2: Vollmer Road & Dines Boulevard

Existing Traffic Volumes
AM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.4 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Y | | ↑ | ↑ | | ↑ |
| Traffic Vol, veh/h | 75 | 18 | 123 | 58 | 3 | 142 |
| Future Vol, veh/h | 75 | 18 | 123 | 58 | 3 | 142 |
| 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 | - | - | 380 | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 82 | 20 | 134 | 63 | 3 | 154 |

| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|-------|
| Conflicting Flow All | 294 | 134 | 0 | 0 | 197 |
| Stage 1 | 134 | - | - | - | - |
| Stage 2 | 160 | - | - | - | - |
| 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 | 697 | 915 | - | - | 1376 |
| Stage 1 | 892 | - | - | - | - |
| Stage 2 | 869 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 696 | 915 | - | - | 1376 |
| Mov Cap-2 Maneuver | 696 | - | - | - | - |
| Stage 1 | 892 | - | - | - | - |
| Stage 2 | 867 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|-----|
| HCM Control Delay, s | 10.7 | 0 | 0.2 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 730 | 1376 |
| HCM Lane V/C Ratio | - | - | 0.138 | 0.002 |
| HCM Control Delay (s) | - | - | 10.7 | 7.6 |
| HCM Lane LOS | - | - | B | A |
| HCM 95th %tile Q(veh) | - | - | 0.5 | 0 |

HCM 6th TWSC
1: Poco Road & Vollmer Road

Existing Traffic Volumes
PM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 1 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Traffic Vol, veh/h | 2 | 0 | 1 | 22 | 1 | 7 | 0 | 167 | 22 | 3 | 141 | 4 |
| Future Vol, veh/h | 2 | 0 | 1 | 22 | 1 | 7 | 0 | 167 | 22 | 3 | 141 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 2 | 0 | 1 | 24 | 1 | 8 | 0 | 182 | 24 | 3 | 153 | 4 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 360 | 367 | 155 | 356 | 357 | 194 | 157 | 0 | 0 | 206 | 0 | 0 |
| Stage 1 | 161 | 161 | - | 194 | 194 | - | - | - | - | - | - | - |
| Stage 2 | 199 | 206 | - | 162 | 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 | 596 | 562 | 891 | 599 | 569 | 847 | 1423 | - | - | 1365 | - | - |
| Stage 1 | 841 | 765 | - | 808 | 740 | - | - | - | - | - | - | - |
| Stage 2 | 803 | 731 | - | 840 | 763 | - | - | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 589 | 561 | 891 | 597 | 568 | 847 | 1423 | - | - | 1365 | - | - |
| Mov Cap-2 Maneuver | 589 | 561 | - | 597 | 568 | - | - | - | - | - | - | - |
| Stage 1 | 841 | 763 | - | 808 | 740 | - | - | - | - | - | - | - |
| Stage 2 | 795 | 731 | - | 837 | 761 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|----|--|-----|--|
| HCM Control Delay, s | 10.4 | | 10.9 | | 0 | | 0.2 | |
| HCM LOS | B | | B | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1423 | - | - | 664 | 640 | 1365 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.005 | 0.051 | 0.002 | - | - |
| HCM Control Delay (s) | 0 | - | - | 10.4 | 10.9 | 7.6 | 0 | - |
| HCM Lane LOS | A | - | - | B | B | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 0.2 | 0 | - | - |

HCM 6th TWSC
2: Vollmer Road & Dines Boulevard

Existing Traffic Volumes
PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.1 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Y | | ↑ | ↑ | | ↑ |
| Traffic Vol, veh/h | 70 | 11 | 179 | 80 | 14 | 151 |
| Future Vol, veh/h | 70 | 11 | 179 | 80 | 14 | 151 |
| 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 | - | - | 380 | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 76 | 12 | 195 | 87 | 15 | 164 |

| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|-------|
| Conflicting Flow All | 389 | 195 | 0 | 0 | 282 |
| Stage 1 | 195 | - | - | - | - |
| Stage 2 | 194 | - | - | - | - |
| 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 | 615 | 846 | - | - | 1280 |
| Stage 1 | 838 | - | - | - | - |
| Stage 2 | 839 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 607 | 846 | - | - | 1280 |
| Mov Cap-2 Maneuver | 607 | - | - | - | - |
| Stage 1 | 838 | - | - | - | - |
| Stage 2 | 828 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|-----|
| HCM Control Delay, s | 11.6 | 0 | 0.7 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|------|-------|
| Capacity (veh/h) | - | - | 631 | 1280 |
| HCM Lane V/C Ratio | - | - | 0.14 | 0.012 |
| HCM Control Delay (s) | - | - | 11.6 | 7.8 |
| HCM Lane LOS | - | - | B | A |
| HCM 95th %tile Q(veh) | - | - | 0.5 | 0 |

HCM 6th TWSC
1: Vollmer Road & Poco Road

Background Traffic Volumes
Year 2027 - AM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Traffic Vol, veh/h | 1 | 0 | 5 | 77 | 1 | 12 | 2 | 223 | 50 | 15 | 207 | 2 |
| Future Vol, veh/h | 1 | 0 | 5 | 77 | 1 | 12 | 2 | 223 | 50 | 15 | 207 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 0 | 5 | 84 | 1 | 13 | 2 | 242 | 54 | 16 | 225 | 2 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 538 | 558 | 226 | 534 | 532 | 269 | 227 | 0 | 0 | 296 | 0 | 0 |
| Stage 1 | 258 | 258 | - | 273 | 273 | - | - | - | - | - | - | - |
| Stage 2 | 280 | 300 | - | 261 | 259 | - | - | - | - | - | - | - |
| 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 | 454 | 438 | 813 | 457 | 453 | 770 | 1341 | - | - | 1265 | - | - |
| Stage 1 | 747 | 694 | - | 733 | 684 | - | - | - | - | - | - | - |
| Stage 2 | 727 | 666 | - | 744 | 694 | - | - | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 440 | 431 | 813 | 448 | 446 | 770 | 1341 | - | - | 1265 | - | - |
| Mov Cap-2 Maneuver | 440 | 431 | - | 448 | 446 | - | - | - | - | - | - | - |
| Stage 1 | 746 | 684 | - | 732 | 683 | - | - | - | - | - | - | - |
| Stage 2 | 712 | 665 | - | 729 | 684 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 10.1 | | 14.6 | | 0.1 | | 0.5 | |
| HCM LOS | B | | B | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1341 | - | - | 712 | 474 | 1265 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | - | 0.009 | 0.206 | 0.013 | - | - |
| HCM Control Delay (s) | 7.7 | 0 | - | 10.1 | 14.6 | 7.9 | 0 | - |
| HCM Lane LOS | A | A | - | B | B | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 0.8 | 0 | - | - |

HCM 6th TWSC
2: Vollmer Road & Dines Boulevard

Background Traffic Volumes
Year 2027 - AM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.7 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Y | | ↑↑ | ↑ | ↓ | ↑↑ |
| Traffic Vol, veh/h | 131 | 24 | 262 | 75 | 5 | 358 |
| Future Vol, veh/h | 131 | 24 | 262 | 75 | 5 | 358 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | 250 | 250 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 142 | 26 | 285 | 82 | 5 | 389 |

| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 490 | 143 | 0 | 0 | 367 |
| Stage 1 | 285 | - | - | - | - |
| Stage 2 | 205 | - | - | - | - |
| 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 | 507 | 879 | - | - | 1188 |
| Stage 1 | 738 | - | - | - | - |
| Stage 2 | 809 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 505 | 879 | - | - | 1188 |
| Mov Cap-2 Maneuver | 505 | - | - | - | - |
| Stage 1 | 738 | - | - | - | - |
| Stage 2 | 806 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|-----|
| HCM Control Delay, s | 14.6 | 0 | 0.1 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 541 | 1188 |
| HCM Lane V/C Ratio | - | - | 0.311 | 0.005 |
| HCM Control Delay (s) | - | - | 14.6 | 8 |
| HCM Lane LOS | - | - | B | A |
| HCM 95th %tile Q(veh) | - | - | 1.3 | 0 |

HCM 6th TWSC
3: Sam Bass Drive & Vollmer Road

Background Traffic Volumes
Year 2027 - AM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.5 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↘↗ | | ↑↑ | ↑ | ↘ | ↑↑ |
| Traffic Vol, veh/h | 17 | 9 | 266 | 8 | 3 | 286 |
| Future Vol, veh/h | 17 | 9 | 266 | 8 | 3 | 286 |
| 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 | - | - | 150 | 200 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 18 | 10 | 289 | 9 | 3 | 311 |

| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 451 | 145 | 0 | 0 | 298 |
| Stage 1 | 289 | - | - | - | - |
| Stage 2 | 162 | - | - | - | - |
| 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 | 537 | 876 | - | - | 1260 |
| Stage 1 | 735 | - | - | - | - |
| Stage 2 | 850 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 536 | 876 | - | - | 1260 |
| Mov Cap-2 Maneuver | 536 | - | - | - | - |
| Stage 1 | 735 | - | - | - | - |
| Stage 2 | 848 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|-----|
| HCM Control Delay, s | 11.1 | 0 | 0.1 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 619 | 1260 |
| HCM Lane V/C Ratio | - | - | 0.046 | 0.003 |
| HCM Control Delay (s) | - | - | 11.1 | 7.9 |
| HCM Lane LOS | - | - | B | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 |

HCM 6th TWSC
4: Vollmer Road & Briargate Parkway

Background Traffic Volumes
Year 2027 - AM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.4 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↘ | ↗ | ↑↑ | ↗ | ↘ | ↑↑ |
| Traffic Vol, veh/h | 63 | 6 | 275 | 11 | 3 | 300 |
| Future Vol, veh/h | 63 | 6 | 275 | 11 | 3 | 300 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 375 | 0 | - | 250 | 250 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 68 | 7 | 299 | 12 | 3 | 326 |

| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 468 | 150 | 0 | 0 | 311 |
| Stage 1 | 299 | - | - | - | - |
| Stage 2 | 169 | - | - | - | - |
| 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 | 524 | 870 | - | - | 1246 |
| Stage 1 | 726 | - | - | - | - |
| Stage 2 | 843 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 523 | 870 | - | - | 1246 |
| Mov Cap-2 Maneuver | 523 | - | - | - | - |
| Stage 1 | 726 | - | - | - | - |
| Stage 2 | 841 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|-----|
| HCM Control Delay, s | 12.6 | 0 | 0.1 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|-----------------------|-----|-----|-------|-------|-------|-----|
| Capacity (veh/h) | - | - | 523 | 870 | 1246 | - |
| HCM Lane V/C Ratio | - | - | 0.131 | 0.007 | 0.003 | - |
| HCM Control Delay (s) | - | - | 12.9 | 9.2 | 7.9 | - |
| HCM Lane LOS | - | - | B | A | A | - |
| HCM 95th %tile Q(veh) | - | - | 0.4 | 0 | 0 | - |

HCM 6th TWSC
1: Vollmer Road & Poco Road

Background Traffic Volumes
Year 2027 - PM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.6 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Traffic Vol, veh/h | 3 | 0 | 2 | 49 | 1 | 10 | 4 | 275 | 85 | 15 | 250 | 6 |
| Future Vol, veh/h | 3 | 0 | 2 | 49 | 1 | 10 | 4 | 275 | 85 | 15 | 250 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 0 | 2 | 53 | 1 | 11 | 4 | 299 | 92 | 16 | 272 | 7 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 667 | 707 | 276 | 662 | 664 | 345 | 279 | 0 | 0 | 391 | 0 | 0 |
| Stage 1 | 308 | 308 | - | 353 | 353 | - | - | - | - | - | - | - |
| Stage 2 | 359 | 399 | - | 309 | 311 | - | - | - | - | - | - | - |
| 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 | 372 | 360 | 763 | 375 | 381 | 698 | 1284 | - | - | 1168 | - | - |
| Stage 1 | 702 | 660 | - | 664 | 631 | - | - | - | - | - | - | - |
| Stage 2 | 659 | 602 | - | 701 | 658 | - | - | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 360 | 353 | 763 | 368 | 373 | 698 | 1284 | - | - | 1168 | - | - |
| Mov Cap-2 Maneuver | 360 | 353 | - | 368 | 373 | - | - | - | - | - | - | - |
| Stage 1 | 699 | 649 | - | 661 | 628 | - | - | - | - | - | - | - |
| Stage 2 | 645 | 600 | - | 688 | 647 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|----|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 13 | | 15.7 | | 0.1 | | 0.4 | |
| HCM LOS | B | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1284 | - | - | 456 | 400 | 1168 | - | - |
| HCM Lane V/C Ratio | 0.003 | - | - | 0.012 | 0.163 | 0.014 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | - | 13 | 15.7 | 8.1 | 0 | - |
| HCM Lane LOS | A | A | - | B | C | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 0.6 | 0 | - | - |

HCM 6th TWSC
2: Vollmer Road & Dines Boulevard

Background Traffic Volumes
Year 2027 - PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.9 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↘↗ | | ↑↑ | ↑ | ↘ | ↑↑ |
| Traffic Vol, veh/h | 86 | 15 | 429 | 144 | 20 | 313 |
| Future Vol, veh/h | 86 | 15 | 429 | 144 | 20 | 313 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | 250 | 250 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 93 | 16 | 466 | 157 | 22 | 340 |

| Major/Minor | Minor1 | Major1 | Major2 | | | |
|----------------------|--------|--------|--------|---|------|---|
| Conflicting Flow All | 680 | 233 | 0 | 0 | 623 | 0 |
| Stage 1 | 466 | - | - | - | - | - |
| Stage 2 | 214 | - | - | - | - | - |
| 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 | 385 | 769 | - | - | 954 | - |
| Stage 1 | 598 | - | - | - | - | - |
| Stage 2 | 801 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | |
| Mov Cap-1 Maneuver | 376 | 769 | - | - | 954 | - |
| Mov Cap-2 Maneuver | 376 | - | - | - | - | - |
| Stage 1 | 598 | - | - | - | - | - |
| Stage 2 | 783 | - | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|-----|
| HCM Control Delay, s | 17.1 | 0 | 0.5 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|------|-------|
| Capacity (veh/h) | - | - | 407 | 954 |
| HCM Lane V/C Ratio | - | - | 0.27 | 0.023 |
| HCM Control Delay (s) | - | - | 17.1 | 8.9 |
| HCM Lane LOS | - | - | C | A |
| HCM 95th %tile Q(veh) | - | - | 1.1 | 0.1 |

HCM 6th TWSC
3: Sam Bass Drive & Vollmer Road

Background Traffic Volumes
Year 2027 - PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.4 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↘↗ | | ↑↑ | ↑ | ↘ | ↑↑ |
| Traffic Vol, veh/h | 11 | 6 | 358 | 27 | 10 | 291 |
| Future Vol, veh/h | 11 | 6 | 358 | 27 | 10 | 291 |
| 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 | - | - | 150 | 200 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 7 | 389 | 29 | 11 | 316 |

| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 569 | 195 | 0 | 0 | 418 |
| Stage 1 | 389 | - | - | - | - |
| Stage 2 | 180 | - | - | - | - |
| 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 | 452 | 814 | - | - | 1138 |
| Stage 1 | 654 | - | - | - | - |
| Stage 2 | 833 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 447 | 814 | - | - | 1138 |
| Mov Cap-2 Maneuver | 447 | - | - | - | - |
| Stage 1 | 654 | - | - | - | - |
| Stage 2 | 825 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|----|----|-----|
| HCM Control Delay, s | 12 | 0 | 0.3 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|------|
| Capacity (veh/h) | - | - | 532 | 1138 |
| HCM Lane V/C Ratio | - | - | 0.035 | 0.01 |
| HCM Control Delay (s) | - | - | 12 | 8.2 |
| HCM Lane LOS | - | - | B | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 |

HCM 6th TWSC
4: Vollmer Road & Briargate Parkway

Background Traffic Volumes
Year 2027 - PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.9 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↘ | ↗ | ↑↑ | ↗ | ↘ | ↑↑ |
| Traffic Vol, veh/h | 41 | 4 | 406 | 38 | 10 | 292 |
| Future Vol, veh/h | 41 | 4 | 406 | 38 | 10 | 292 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 375 | 0 | - | 250 | 250 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 45 | 4 | 441 | 41 | 11 | 317 |

| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 622 | 221 | 0 | 0 | 482 |
| Stage 1 | 441 | - | - | - | - |
| Stage 2 | 181 | - | - | - | - |
| 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 | 419 | 783 | - | - | 1077 |
| Stage 1 | 616 | - | - | - | - |
| Stage 2 | 832 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 415 | 783 | - | - | 1077 |
| Mov Cap-2 Maneuver | 415 | - | - | - | - |
| Stage 1 | 616 | - | - | - | - |
| Stage 2 | 824 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|-----|
| HCM Control Delay, s | 14.2 | 0 | 0.3 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|-----------------------|-----|-----|-------|-------|------|-----|
| Capacity (veh/h) | - | - | 415 | 783 | 1077 | - |
| HCM Lane V/C Ratio | - | - | 0.107 | 0.006 | 0.01 | - |
| HCM Control Delay (s) | - | - | 14.7 | 9.6 | 8.4 | - |
| HCM Lane LOS | - | - | B | A | A | - |
| HCM 95th %tile Q(veh) | - | - | 0.4 | 0 | 0 | - |

HCM 6th TWSC
1: Vollmer Road & Poco Road

Background Traffic Volumes
Year 2040 - AM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.7 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Traffic Vol, veh/h | 0 | 0 | 5 | 62 | 0 | 5 | 2 | 235 | 24 | 1 | 407 | 2 |
| Future Vol, veh/h | 0 | 0 | 5 | 62 | 0 | 5 | 2 | 235 | 24 | 1 | 407 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 5 | 67 | 0 | 5 | 2 | 255 | 26 | 1 | 442 | 2 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 720 | 730 | 443 | 720 | 718 | 268 | 444 | 0 | 0 | 281 | 0 | 0 |
| Stage 1 | 445 | 445 | - | 272 | 272 | - | - | - | - | - | - | - |
| Stage 2 | 275 | 285 | - | 448 | 446 | - | - | - | - | - | - | - |
| 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 | 343 | 349 | 615 | 343 | 355 | 771 | 1116 | - | - | 1282 | - | - |
| Stage 1 | 592 | 575 | - | 734 | 685 | - | - | - | - | - | - | - |
| Stage 2 | 731 | 676 | - | 590 | 574 | - | - | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 340 | 348 | 615 | 339 | 354 | 771 | 1116 | - | - | 1282 | - | - |
| Mov Cap-2 Maneuver | 340 | 348 | - | 339 | 354 | - | - | - | - | - | - | - |
| Stage 1 | 591 | 574 | - | 733 | 684 | - | - | - | - | - | - | - |
| Stage 2 | 724 | 675 | - | 584 | 573 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|----|--|
| HCM Control Delay, s | 10.9 | | 17.8 | | 0.1 | | 0 | |
| HCM LOS | B | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1116 | - | - | 615 | 354 | 1282 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | - | 0.009 | 0.206 | 0.001 | - | - |
| HCM Control Delay (s) | 8.2 | 0 | - | 10.9 | 17.8 | 7.8 | 0 | - |
| HCM Lane LOS | A | A | - | B | C | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 0.8 | 0 | - | - |

HCM 6th TWSC
2: Vollmer Road & Dines Boulevard

Background Traffic Volumes
Year 2040 - AM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.6 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Y | | ↑↑ | ↑ | ↓ | ↑↑ |
| Traffic Vol, veh/h | 29 | 13 | 350 | 12 | 4 | 748 |
| Future Vol, veh/h | 29 | 13 | 350 | 12 | 4 | 748 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | 250 | 250 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 32 | 14 | 380 | 13 | 4 | 813 |

| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 795 | 190 | 0 | 0 | 393 |
| Stage 1 | 380 | - | - | - | - |
| Stage 2 | 415 | - | - | - | - |
| 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 | 325 | 820 | - | - | 1162 |
| Stage 1 | 661 | - | - | - | - |
| Stage 2 | 635 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 324 | 820 | - | - | 1162 |
| Mov Cap-2 Maneuver | 324 | - | - | - | - |
| Stage 1 | 661 | - | - | - | - |
| Stage 2 | 633 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|----|
| HCM Control Delay, s | 15.2 | 0 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 399 | 1162 |
| HCM Lane V/C Ratio | - | - | 0.114 | 0.004 |
| HCM Control Delay (s) | - | - | 15.2 | 8.1 |
| HCM Lane LOS | - | - | C | A |
| HCM 95th %tile Q(veh) | - | - | 0.4 | 0 |

HCM 6th TWSC
3: Sam Bass Drive & Vollmer Road

Background Traffic Volumes
Year 2040 - AM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.1 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Y | | ↑↑ | ↑ | ↑ | ↑↑ |
| Traffic Vol, veh/h | 62 | 3 | 258 | 14 | 1 | 473 |
| Future Vol, veh/h | 62 | 3 | 258 | 14 | 1 | 473 |
| 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 | - | - | 150 | 200 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 67 | 3 | 280 | 15 | 1 | 514 |

























| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 539 | 140 | 0 | 0 | 295 |
| Stage 1 | 280 | - | - | - | - |
| Stage 2 | 259 | - | - | - | - |
| 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 | 473 | 882 | - | - | 1263 |
| Stage 1 | 742 | - | - | - | - |
| Stage 2 | 761 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 473 | 882 | - | - | 1263 |
| Mov Cap-2 Maneuver | 473 | - | - | - | - |
| Stage 1 | 742 | - | - | - | - |
| Stage 2 | 760 | - | - | - | - |

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

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 483 | 1263 |
| HCM Lane V/C Ratio | - | - | 0.146 | 0.001 |
| HCM Control Delay (s) | - | - | 13.7 | 7.9 |
| HCM Lane LOS | - | - | B | A |
| HCM 95th %tile Q(veh) | - | - | 0.5 | 0 |

Timings
4: Vollmer Road & Briargate Parkway

Background Traffic Volumes
Year 2040 - AM Peak Hour

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 69 | 835 | 58 | 373 | 1488 | 69 | 89 | 146 | 128 | 81 | 321 | 133 |
| Future Volume (vph) | 69 | 835 | 58 | 373 | 1488 | 69 | 89 | 146 | 128 | 81 | 321 | 133 |
| Satd. Flow (prot) | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.095 | | | 0.950 | | | 0.384 | | | 0.651 | | |
| Satd. Flow (perm) | 177 | 3539 | 1583 | 3433 | 3539 | 1583 | 715 | 3539 | 1583 | 1213 | 3539 | 1583 |
| Satd. Flow (RTOR) | | | 155 | | | 109 | | | 155 | | | 155 |
| Lane Group Flow (vph) | 75 | 908 | 63 | 405 | 1617 | 75 | 97 | 159 | 139 | 88 | 349 | 145 |
| 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Total Split (s) | 10.0 | 53.0 | 53.0 | 22.0 | 65.0 | 65.0 | 15.0 | 30.0 | 30.0 | 15.0 | 30.0 | 30.0 |
| Total Split (%) | 8.3% | 44.2% | 44.2% | 18.3% | 54.2% | 54.2% | 12.5% | 25.0% | 25.0% | 12.5% | 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 | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | None | None | Min | Min | None | Min | Min |
| Act Effct Green (s) | 45.8 | 40.4 | 40.4 | 16.4 | 55.0 | 55.0 | 23.4 | 16.5 | 16.5 | 23.2 | 16.4 | 16.4 |
| Actuated g/C Ratio | 0.46 | 0.40 | 0.40 | 0.16 | 0.55 | 0.55 | 0.23 | 0.17 | 0.17 | 0.23 | 0.16 | 0.16 |
| v/c Ratio | 0.45 | 0.63 | 0.09 | 0.72 | 0.83 | 0.08 | 0.37 | 0.27 | 0.36 | 0.27 | 0.60 | 0.37 |
| Control Delay | 21.6 | 26.6 | 0.2 | 51.2 | 25.8 | 1.3 | 33.9 | 41.5 | 7.9 | 31.8 | 46.2 | 8.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 21.6 | 26.6 | 0.2 | 51.2 | 25.8 | 1.3 | 33.9 | 41.5 | 7.9 | 31.8 | 46.2 | 8.8 |
| LOS | C | C | A | D | C | A | C | D | A | C | D | A |
| Approach Delay | | 24.7 | | | 29.8 | | | 27.8 | | | 34.7 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Queue Length 50th (ft) | 19 | 255 | 0 | 144 | 491 | 0 | 53 | 53 | 0 | 48 | 125 | 0 |
| Queue Length 95th (ft) | 46 | 349 | 0 | #225 | 668 | 11 | 95 | 86 | 43 | 89 | 175 | 49 |
| Internal Link Dist (ft) | | 3244 | | | 884 | | | 915 | | | 1327 | |
| Turn Bay Length (ft) | 375 | | 250 | 375 | | 250 | 250 | | 250 | 250 | | 250 |
| Base Capacity (vph) | 166 | 1825 | 891 | 626 | 2250 | 1046 | 283 | 950 | 538 | 347 | 950 | 538 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.45 | 0.50 | 0.07 | 0.65 | 0.72 | 0.07 | 0.34 | 0.17 | 0.26 | 0.25 | 0.37 | 0.27 |

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 99.9
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.83

HCM 6th TWSC
1: Vollmer Road & Poco Road

Background Traffic Volumes
Year 2040 - PM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Traffic Vol, veh/h | 0 | 0 | 2 | 42 | 0 | 3 | 4 | 575 | 83 | 6 | 355 | 2 |
| Future Vol, veh/h | 0 | 0 | 2 | 42 | 0 | 3 | 4 | 575 | 83 | 6 | 355 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 2 | 46 | 0 | 3 | 4 | 625 | 90 | 7 | 386 | 2 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 1081 | 1124 | 387 | 1080 | 1080 | 670 | 388 | 0 | 0 | 715 | 0 | 0 |
| Stage 1 | 401 | 401 | - | 678 | 678 | - | - | - | - | - | - | - |
| Stage 2 | 680 | 723 | - | 402 | 402 | - | - | - | - | - | - | - |
| 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 | 195 | 205 | 661 | 196 | 218 | 457 | 1170 | - | - | 885 | - | - |
| Stage 1 | 626 | 601 | - | 442 | 452 | - | - | - | - | - | - | - |
| Stage 2 | 441 | 431 | - | 625 | 600 | - | - | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 191 | 202 | 661 | 193 | 215 | 457 | 1170 | - | - | 885 | - | - |
| Mov Cap-2 Maneuver | 191 | 202 | - | 193 | 215 | - | - | - | - | - | - | - |
| Stage 1 | 622 | 595 | - | 439 | 449 | - | - | - | - | - | - | - |
| Stage 2 | 435 | 428 | - | 617 | 594 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|----|--|-----|--|
| HCM Control Delay, s | 10.5 | | 28.6 | | 0 | | 0.2 | |
| HCM LOS | B | | D | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1170 | - | - | 661 | 201 | 885 | - | - |
| HCM Lane V/C Ratio | 0.004 | - | - | 0.003 | 0.243 | 0.007 | - | - |
| HCM Control Delay (s) | 8.1 | 0 | - | 10.5 | 28.6 | 9.1 | 0 | - |
| HCM Lane LOS | A | A | - | B | D | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 0.9 | 0 | - | - |

HCM 6th TWSC
2: Vollmer Road & Dines Boulevard

Background Traffic Volumes
Year 2040 - PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.7 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↘↗ | | ↑↑ | ↑ | ↘ | ↑↑ |
| Traffic Vol, veh/h | 20 | 9 | 1024 | 42 | 13 | 661 |
| Future Vol, veh/h | 20 | 9 | 1024 | 42 | 13 | 661 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | 250 | 250 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 22 | 10 | 1113 | 46 | 14 | 718 |

| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 1500 | 557 | 0 | 0 | 1159 |
| Stage 1 | 1113 | - | - | - | - |
| Stage 2 | 387 | - | - | - | - |
| 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 | 113 | 474 | - | - | 599 |
| Stage 1 | 276 | - | - | - | - |
| Stage 2 | 656 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 110 | 474 | - | - | 599 |
| Mov Cap-2 Maneuver | 110 | - | - | - | - |
| Stage 1 | 276 | - | - | - | - |
| Stage 2 | 641 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|-----|
| HCM Control Delay, s | 36.9 | 0 | 0.2 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 144 | 599 |
| HCM Lane V/C Ratio | - | - | 0.219 | 0.024 |
| HCM Control Delay (s) | - | - | 36.9 | 11.2 |
| HCM Lane LOS | - | - | E | B |
| HCM 95th %tile Q(veh) | - | - | 0.8 | 0.1 |

HCM 6th TWSC
3: Sam Bass Drive & Vollmer Road

Background Traffic Volumes
Year 2040 - PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.8 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Y | | ↑↑ | ↑ | ↓ | ↑↑ |
| Traffic Vol, veh/h | 38 | 2 | 660 | 58 | 5 | 394 |
| Future Vol, veh/h | 38 | 2 | 660 | 58 | 5 | 394 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | 150 | 200 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 41 | 2 | 717 | 63 | 5 | 428 |

























| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 941 | 359 | 0 | 0 | 780 |
| Stage 1 | 717 | - | - | - | - |
| Stage 2 | 224 | - | - | - | - |
| 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 | 262 | 638 | - | - | 833 |
| Stage 1 | 445 | - | - | - | - |
| Stage 2 | 792 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 260 | 638 | - | - | 833 |
| Mov Cap-2 Maneuver | 260 | - | - | - | - |
| Stage 1 | 445 | - | - | - | - |
| Stage 2 | 787 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|----|----|-----|
| HCM Control Delay, s | 21 | 0 | 0.1 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 268 | 833 |
| HCM Lane V/C Ratio | - | - | 0.162 | 0.007 |
| HCM Control Delay (s) | - | - | 21 | 9.3 |
| HCM Lane LOS | - | - | C | A |
| HCM 95th %tile Q(veh) | - | - | 0.6 | 0 |

Timings
4: Vollmer Road & Briargate Parkway

Background Traffic Volumes
Year 2040 - PM Peak Hour

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 230 | 1447 | 105 | 346 | 1216 | 82 | 206 | 459 | 368 | 94 | 223 | 115 |
| Future Volume (vph) | 230 | 1447 | 105 | 346 | 1216 | 82 | 206 | 459 | 368 | 94 | 223 | 115 |
| Satd. Flow (prot) | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.088 | | | 0.950 | | | 0.377 | | | 0.324 | | |
| Satd. Flow (perm) | 164 | 3539 | 1583 | 3433 | 3539 | 1583 | 702 | 3539 | 1583 | 604 | 3539 | 1583 |
| Satd. Flow (RTOR) | | | 200 | | | 155 | | | 400 | | | 200 |
| Lane Group Flow (vph) | 250 | 1573 | 114 | 376 | 1322 | 89 | 224 | 499 | 400 | 102 | 242 | 125 |
| 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Total Split (s) | 20.0 | 44.0 | 44.0 | 35.0 | 59.0 | 59.0 | 20.0 | 28.0 | 28.0 | 13.0 | 21.0 | 21.0 |
| Total Split (%) | 16.7% | 36.7% | 36.7% | 29.2% | 49.2% | 49.2% | 16.7% | 23.3% | 23.3% | 10.8% | 17.5% | 17.5% |
| 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 | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | None | None | Min | Min | None | Min | Min |
| Act Effct Green (s) | 59.9 | 45.8 | 45.8 | 17.7 | 49.3 | 49.3 | 33.2 | 20.8 | 20.8 | 22.5 | 14.7 | 14.7 |
| Actuated g/C Ratio | 0.53 | 0.41 | 0.41 | 0.16 | 0.44 | 0.44 | 0.30 | 0.19 | 0.19 | 0.20 | 0.13 | 0.13 |
| v/c Ratio | 0.86 | 1.09 | 0.15 | 0.70 | 0.85 | 0.11 | 0.66 | 0.76 | 0.65 | 0.51 | 0.52 | 0.33 |
| Control Delay | 57.5 | 85.1 | 0.4 | 52.5 | 34.9 | 0.3 | 43.0 | 52.5 | 9.5 | 41.0 | 51.1 | 2.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 57.5 | 85.1 | 0.4 | 52.5 | 34.9 | 0.3 | 43.0 | 52.5 | 9.5 | 41.0 | 51.1 | 2.6 |
| LOS | E | F | A | D | C | A | D | D | A | D | D | A |
| Approach Delay | | 76.6 | | | 36.9 | | | 35.3 | | | 36.0 | |
| Approach LOS | | E | | | D | | | D | | | D | |
| Queue Length 50th (ft) | 133 | ~702 | 0 | 143 | 462 | 0 | 138 | 191 | 0 | 58 | 92 | 0 |
| Queue Length 95th (ft) | #290 | #899 | 0 | 188 | 561 | 1 | 214 | 255 | 90 | 105 | 136 | 2 |
| Internal Link Dist (ft) | | 3244 | | | 884 | | | 915 | | | 1327 | |
| Turn Bay Length (ft) | 375 | | 250 | 375 | | 250 | 250 | | 250 | 250 | | 250 |
| Base Capacity (vph) | 305 | 1443 | 763 | 927 | 1720 | 849 | 354 | 733 | 645 | 206 | 509 | 399 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.82 | 1.09 | 0.15 | 0.41 | 0.77 | 0.10 | 0.63 | 0.68 | 0.62 | 0.50 | 0.48 | 0.31 |

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 112.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.09

Timings

4: Vollmer Road & Briargate Parkway

Background Traffic Volumes
Year 2040 - PM Peak Hour

| | |
|---|------------------------|
| Intersection Signal Delay: 50.9 | Intersection LOS: D |
| Intersection Capacity Utilization 84.4% | ICU Level of Service E |
| Analysis Period (min) 15 | |
| ~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles. | |
| # 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles. | |

Splits and Phases: 4: Vollmer Road & Briargate Parkway

| | | | |
|------|------|------|------|
| Ø1 | Ø2 | Ø3 | Ø4 |
| 35 s | 44 s | 20 s | 21 s |
| Ø5 | Ø6 | Ø7 | Ø8 |
| 20 s | 59 s | 13 s | 28 s |

HCM 6th TWSC
1: Vollmer Road & Poco Road

Total Traffic Volumes
Year 2027 - AM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Traffic Vol, veh/h | 1 | 0 | 5 | 77 | 1 | 12 | 2 | 222 | 50 | 15 | 211 | 2 |
| Future Vol, veh/h | 1 | 0 | 5 | 77 | 1 | 12 | 2 | 222 | 50 | 15 | 211 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 0 | 5 | 84 | 1 | 13 | 2 | 241 | 54 | 16 | 229 | 2 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 541 | 561 | 230 | 537 | 535 | 268 | 231 | 0 | 0 | 295 | 0 | 0 |
| Stage 1 | 262 | 262 | - | 272 | 272 | - | - | - | - | - | - | - |
| Stage 2 | 279 | 299 | - | 265 | 263 | - | - | - | - | - | - | - |
| 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 | 452 | 436 | 809 | 455 | 452 | 771 | 1337 | - | - | 1266 | - | - |
| Stage 1 | 743 | 691 | - | 734 | 685 | - | - | - | - | - | - | - |
| Stage 2 | 728 | 666 | - | 740 | 691 | - | - | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 438 | 429 | 809 | 446 | 444 | 771 | 1337 | - | - | 1266 | - | - |
| Mov Cap-2 Maneuver | 438 | 429 | - | 446 | 444 | - | - | - | - | - | - | - |
| Stage 1 | 742 | 681 | - | 733 | 684 | - | - | - | - | - | - | - |
| Stage 2 | 713 | 665 | - | 724 | 681 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 10.1 | | 14.6 | | 0.1 | | 0.5 | |
| HCM LOS | B | | B | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1337 | - | - | 709 | 473 | 1266 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | - | 0.009 | 0.207 | 0.013 | - | - |
| HCM Control Delay (s) | 7.7 | 0 | - | 10.1 | 14.6 | 7.9 | 0 | - |
| HCM Lane LOS | A | A | - | B | B | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 0.8 | 0 | - | - |

HCM 6th TWSC
2: Vollmer Road & Dines Boulevard

Total Traffic Volumes
Year 2027 - AM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 3.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕↔ | | | ↕↔ | | ↕ | ↑↑ | ↕ | ↕ | ↑↔ | |
| Traffic Vol, veh/h | 0 | 0 | 29 | 131 | 0 | 24 | 12 | 274 | 75 | 5 | 379 | 0 |
| Future Vol, veh/h | 0 | 0 | 29 | 131 | 0 | 24 | 12 | 274 | 75 | 5 | 379 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 50 | - | 250 | 250 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 32 | 142 | 0 | 26 | 13 | 298 | 82 | 5 | 412 | 0 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|------|--------|------|------|--------|---|------|---|---|
| Conflicting Flow All | 597 | 828 | 206 | 540 | 746 | 149 | 412 | 0 | 0 | 380 | 0 | 0 |
| Stage 1 | 422 | 422 | - | 324 | 324 | - | - | - | - | - | - | - |
| Stage 2 | 175 | 406 | - | 216 | 422 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.54 | 6.94 | 7.54 | 6.54 | 6.94 | 4.14 | - | - | 4.14 | - | - |
| 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 | 3.52 | 4.02 | 3.32 | 3.52 | 4.02 | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 387 | 305 | 800 | 425 | 340 | 871 | 1143 | - | - | 1175 | - | - |
| Stage 1 | 580 | 587 | - | 662 | 648 | - | - | - | - | - | - | - |
| Stage 2 | 810 | 596 | - | 766 | 587 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 371 | 300 | 800 | 403 | 335 | 871 | 1143 | - | - | 1175 | - | - |
| Mov Cap-2 Maneuver | 371 | 300 | - | 403 | 335 | - | - | - | - | - | - | - |
| Stage 1 | 574 | 585 | - | 655 | 641 | - | - | - | - | - | - | - |
| Stage 2 | 777 | 589 | - | 733 | 585 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|-----|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 9.7 | | 18.2 | | 0.3 | | 0.1 | |
| HCM LOS | A | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1143 | - | - | 800 | 440 | 1175 | - | - |
| HCM Lane V/C Ratio | 0.011 | - | - | 0.039 | 0.383 | 0.005 | - | - |
| HCM Control Delay (s) | 8.2 | - | - | 9.7 | 18.2 | 8.1 | - | - |
| HCM Lane LOS | A | - | - | A | C | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 1.8 | 0 | - | - |

HCM 6th TWSC
3: Sam Bass Drive & Vollmer Road

Total Traffic Volumes
Year 2027 - AM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.5 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↘↗ | | ↑↑ | ↑ | ↘ | ↑↑ |
| Traffic Vol, veh/h | 17 | 9 | 275 | 8 | 3 | 290 |
| Future Vol, veh/h | 17 | 9 | 275 | 8 | 3 | 290 |
| 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 | - | - | 150 | 200 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 18 | 10 | 299 | 9 | 3 | 315 |

| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 463 | 150 | 0 | 0 | 308 |
| Stage 1 | 299 | - | - | - | - |
| Stage 2 | 164 | - | - | - | - |
| 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 | 528 | 870 | - | - | 1249 |
| Stage 1 | 726 | - | - | - | - |
| Stage 2 | 848 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 527 | 870 | - | - | 1249 |
| Mov Cap-2 Maneuver | 527 | - | - | - | - |
| Stage 1 | 726 | - | - | - | - |
| Stage 2 | 846 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|-----|
| HCM Control Delay, s | 11.2 | 0 | 0.1 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h) | - | - | 610 | 1249 |
| HCM Lane V/C Ratio | - | - | 0.046 | 0.003 |
| HCM Control Delay (s) | - | - | 11.2 | 7.9 |
| HCM Lane LOS | - | - | B | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 |

HCM 6th TWSC
4: Vollmer Road & Briargate Parkway

Total Traffic Volumes
Year 2027 - AM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 2 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↙ | ↑ | ↗ | ↙ | ↑ | ↗ | ↙ | ↑↑ | ↗ | ↙ | ↑↑ | ↗ |
| Traffic Vol, veh/h | 9 | 0 | 21 | 63 | 0 | 6 | 8 | 275 | 11 | 3 | 300 | 4 |
| Future Vol, veh/h | 9 | 0 | 21 | 63 | 0 | 6 | 8 | 275 | 11 | 3 | 300 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 0 | - | 250 | 375 | - | 250 | 250 | - | 250 | 250 | - | 250 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 10 | 0 | 23 | 68 | 0 | 7 | 9 | 299 | 12 | 3 | 326 | 4 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|------|--------|------|------|--------|---|------|---|---|
| Conflicting Flow All | 500 | 661 | 163 | 486 | 653 | 150 | 330 | 0 | 0 | 311 | 0 | 0 |
| Stage 1 | 332 | 332 | - | 317 | 317 | - | - | - | - | - | - | - |
| Stage 2 | 168 | 329 | - | 169 | 336 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.54 | 6.94 | 7.54 | 6.54 | 6.94 | 4.14 | - | - | 4.14 | - | - |
| 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 | 3.52 | 4.02 | 3.32 | 3.52 | 4.02 | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 454 | 381 | 853 | 464 | 385 | 870 | 1226 | - | - | 1246 | - | - |
| Stage 1 | 655 | 643 | - | 669 | 653 | - | - | - | - | - | - | - |
| Stage 2 | 817 | 645 | - | 816 | 640 | - | - | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 447 | 378 | 853 | 448 | 382 | 870 | 1226 | - | - | 1246 | - | - |
| Mov Cap-2 Maneuver | 447 | 378 | - | 448 | 382 | - | - | - | - | - | - | - |
| Stage 1 | 650 | 642 | - | 664 | 648 | - | - | - | - | - | - | - |
| Stage 2 | 805 | 640 | - | 792 | 639 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|------|----|-----|-----|
| HCM Control Delay, s | 10.5 | 14 | 0.2 | 0.1 |
| HCM LOS | B | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | WBLn3 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1226 | - | - | 447 | - | 853 | 448 | - | 870 | 1246 | - | - |
| HCM Lane V/C Ratio | 0.007 | - | - | 0.022 | - | 0.027 | 0.153 | - | 0.007 | 0.003 | - | - |
| HCM Control Delay (s) | 8 | - | - | 13.2 | 0 | 9.3 | 14.5 | 0 | 9.2 | 7.9 | - | - |
| HCM Lane LOS | A | - | - | B | A | A | B | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | - | 0.1 | 0.5 | - | 0 | 0 | - | - |

HCM 6th Roundabout
5: Street A & Briargate Parkway

Total Traffic Volumes
Year 2027 - AM Peak Hour

| Intersection | | | | | |
|-----------------------------|-------|-------|-------|-------|-------|
| Intersection Delay, s/veh | 2.8 | | | | |
| Intersection LOS | A | | | | |
| Approach | EB | | WB | | NB |
| Entry Lanes | 2 | | 2 | | 1 |
| Conflicting Circle Lanes | 2 | | 2 | | 2 |
| Adj Approach Flow, veh/h | 0 | | 13 | | 33 |
| Demand Flow Rate, veh/h | 0 | | 13 | | 34 |
| Vehicles Circulating, veh/h | 13 | | 0 | | 0 |
| Vehicles Exiting, veh/h | 0 | | 34 | | 13 |
| Ped Vol Crossing Leg, #/h | 0 | | 0 | | 0 |
| Ped Cap Adj | 1.000 | | 1.000 | | 1.000 |
| Approach Delay, s/veh | 0.0 | | 2.7 | | 2.8 |
| Approach LOS | - | | A | | A |
| Lane | Left | Right | Left | Right | Left |
| Designated Moves | LT | TR | LT | TR | LR |
| Assumed Moves | LT | TR | L | TR | LR |
| RT Channelized | | | | | |
| Lane Util | 0.500 | 0.500 | 1.000 | 0.000 | 1.000 |
| Follow-Up Headway, s | 2.667 | 2.535 | 2.667 | 2.535 | 2.535 |
| Critical Headway, s | 4.645 | 4.328 | 4.645 | 4.328 | 4.328 |
| Entry Flow, veh/h | 0 | 0 | 13 | 0 | 34 |
| Cap Entry Lane, veh/h | 1334 | 1405 | 1350 | 1420 | 1420 |
| Entry HV Adj Factor | 1.000 | 1.000 | 1.000 | 1.000 | 0.971 |
| Flow Entry, veh/h | 0 | 0 | 13 | 0 | 33 |
| Cap Entry, veh/h | 1334 | 1405 | 1350 | 1420 | 1378 |
| V/C Ratio | 0.000 | 0.000 | 0.010 | 0.000 | 0.024 |
| Control Delay, s/veh | 2.7 | 2.6 | 2.7 | 2.5 | 2.8 |
| LOS | A | A | A | A | A |
| 95th %tile Queue, veh | 0 | 0 | 0 | 0 | 0 |

HCM 6th TWSC
1: Vollmer Road & Poco Road

Total Traffic Volumes
Year 2027 - PM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.7 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Traffic Vol, veh/h | 3 | 0 | 2 | 49 | 1 | 10 | 4 | 281 | 85 | 15 | 259 | 6 |
| Future Vol, veh/h | 3 | 0 | 2 | 49 | 1 | 10 | 4 | 281 | 85 | 15 | 259 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 0 | 2 | 53 | 1 | 11 | 4 | 305 | 92 | 16 | 282 | 7 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 683 | 723 | 286 | 678 | 680 | 351 | 289 | 0 | 0 | 397 | 0 | 0 |
| Stage 1 | 318 | 318 | - | 359 | 359 | - | - | - | - | - | - | - |
| Stage 2 | 365 | 405 | - | 319 | 321 | - | - | - | - | - | - | - |
| 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 | 363 | 352 | 753 | 366 | 373 | 692 | 1273 | - | - | 1162 | - | - |
| Stage 1 | 693 | 654 | - | 659 | 627 | - | - | - | - | - | - | - |
| Stage 2 | 654 | 598 | - | 693 | 652 | - | - | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 351 | 345 | 753 | 359 | 366 | 692 | 1273 | - | - | 1162 | - | - |
| Mov Cap-2 Maneuver | 351 | 345 | - | 359 | 366 | - | - | - | - | - | - | - |
| Stage 1 | 690 | 644 | - | 656 | 624 | - | - | - | - | - | - | - |
| Stage 2 | 640 | 596 | - | 680 | 642 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 13.2 | | 16.1 | | 0.1 | | 0.4 | |
| HCM LOS | B | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1273 | - | - | 446 | 390 | 1162 | - | - |
| HCM Lane V/C Ratio | 0.003 | - | - | 0.012 | 0.167 | 0.014 | - | - |
| HCM Control Delay (s) | 7.8 | 0 | - | 13.2 | 16.1 | 8.1 | 0 | - |
| HCM Lane LOS | A | A | - | B | C | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 0.6 | 0 | - | - |

HCM 6th TWSC
2: Vollmer Road & Dines Boulevard

Total Traffic Volumes
Year 2027 - PM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.8 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↑↑ | ↖ | ↗ | ↑↑ | |
| Traffic Vol, veh/h | 0 | 0 | 21 | 86 | 0 | 15 | 31 | 460 | 144 | 20 | 328 | 0 |
| Future Vol, veh/h | 0 | 0 | 21 | 86 | 0 | 15 | 31 | 460 | 144 | 20 | 328 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 50 | - | 250 | 250 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 23 | 93 | 0 | 16 | 34 | 500 | 157 | 22 | 357 | 0 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|------|--------|------|------|--------|---|------|---|---|
| Conflicting Flow All | 719 | 1126 | 179 | 791 | 969 | 250 | 357 | 0 | 0 | 657 | 0 | 0 |
| Stage 1 | 401 | 401 | - | 568 | 568 | - | - | - | - | - | - | - |
| Stage 2 | 318 | 725 | - | 223 | 401 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.54 | 6.94 | 7.54 | 6.54 | 6.94 | 4.14 | - | - | 4.14 | - | - |
| 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 | 3.52 | 4.02 | 3.32 | 3.52 | 4.02 | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 316 | 203 | 833 | 280 | 252 | 750 | 1198 | - | - | 926 | - | - |
| Stage 1 | 597 | 599 | - | 475 | 505 | - | - | - | - | - | - | - |
| Stage 2 | 668 | 428 | - | 759 | 599 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 297 | 193 | 833 | 262 | 239 | 750 | 1198 | - | - | 926 | - | - |
| Mov Cap-2 Maneuver | 297 | 193 | - | 262 | 239 | - | - | - | - | - | - | - |
| Stage 1 | 580 | 585 | - | 462 | 491 | - | - | - | - | - | - | - |
| Stage 2 | 635 | 416 | - | 721 | 585 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|-----|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 9.4 | | 24.8 | | 0.4 | | 0.5 | |
| HCM LOS | A | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1198 | - | - | 833 | 290 | 926 | - | - |
| HCM Lane V/C Ratio | 0.028 | - | - | 0.027 | 0.379 | 0.023 | - | - |
| HCM Control Delay (s) | 8.1 | - | - | 9.4 | 24.8 | 9 | - | - |
| HCM Lane LOS | A | - | - | A | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.1 | 1.7 | 0.1 | - | - |

HCM 6th TWSC
3: Sam Bass Drive & Vollmer Road

Total Traffic Volumes
Year 2027 - PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.4 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ↘↗ | | ↑↑ | ↑ | ↘ | ↑↑ |
| Traffic Vol, veh/h | 11 | 6 | 364 | 27 | 10 | 300 |
| Future Vol, veh/h | 11 | 6 | 364 | 27 | 10 | 300 |
| 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 | - | - | 150 | 200 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 7 | 396 | 29 | 11 | 326 |

| Major/Minor | Minor1 | Major1 | Major2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | 581 | 198 | 0 | 0 | 425 |
| Stage 1 | 396 | - | - | - | - |
| Stage 2 | 185 | - | - | - | - |
| 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 | 445 | 810 | - | - | 1131 |
| Stage 1 | 649 | - | - | - | - |
| Stage 2 | 828 | - | - | - | - |
| Platoon blocked, % | | | - | - | - |
| Mov Cap-1 Maneuver | 441 | 810 | - | - | 1131 |
| Mov Cap-2 Maneuver | 441 | - | - | - | - |
| Stage 1 | 649 | - | - | - | - |
| Stage 2 | 820 | - | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|-----|
| HCM Control Delay, s | 12.1 | 0 | 0.3 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT |
|-----------------------|-----|----------|-------|------|
| Capacity (veh/h) | - | - | 525 | 1131 |
| HCM Lane V/C Ratio | - | - | 0.035 | 0.01 |
| HCM Control Delay (s) | - | - | 12.1 | 8.2 |
| HCM Lane LOS | - | - | B | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 |

HCM 6th TWSC
4: Vollmer Road & Briargate Parkway

Total Traffic Volumes
Year 2027 - PM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↙ | ↑ | ↗ | ↙ | ↑ | ↗ | ↙ | ↑↑ | ↗ | ↙ | ↑↑ | ↗ |
| Traffic Vol, veh/h | 6 | 0 | 15 | 41 | 0 | 4 | 21 | 406 | 38 | 10 | 292 | 9 |
| Future Vol, veh/h | 6 | 0 | 15 | 41 | 0 | 4 | 21 | 406 | 38 | 10 | 292 | 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 | - | - | None | - | - | None | - | - | None |
| Storage Length | 0 | - | 250 | 375 | - | 250 | 250 | - | 250 | 250 | - | 250 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 7 | 0 | 16 | 45 | 0 | 4 | 23 | 441 | 41 | 11 | 317 | 10 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|------|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 606 | 867 | 159 | 668 | 836 | 221 | 327 | 0 | 0 | 482 | 0 | 0 |
| Stage 1 | 339 | 339 | - | 487 | 487 | - | - | - | - | - | - | - |
| Stage 2 | 267 | 528 | - | 181 | 349 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.54 | 6.94 | 7.54 | 6.54 | 6.94 | 4.14 | - | - | 4.14 | - | - |
| 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 | 3.52 | 4.02 | 3.32 | 3.52 | 4.02 | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 381 | 289 | 858 | 344 | 302 | 783 | 1229 | - | - | 1077 | - | - |
| Stage 1 | 649 | 638 | - | 531 | 549 | - | - | - | - | - | - | - |
| Stage 2 | 715 | 526 | - | 803 | 632 | - | - | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 371 | 281 | 858 | 330 | 293 | 783 | 1229 | - | - | 1077 | - | - |
| Mov Cap-2 Maneuver | 371 | 281 | - | 330 | 293 | - | - | - | - | - | - | - |
| Stage 1 | 637 | 632 | - | 521 | 539 | - | - | - | - | - | - | - |
| Stage 2 | 698 | 516 | - | 780 | 626 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | | | |
|----------------------|------|--|------|--|-----|--|-----|--|--|--|
| HCM Control Delay, s | 10.9 | | 16.9 | | 0.4 | | 0.3 | | | |
| HCM LOS | B | | C | | | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | WBLn3 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-------|-------|------|-----|-----|
| Capacity (veh/h) | 1229 | - | - | 371 | - | 858 | 330 | - | 783 | 1077 | - | - |
| HCM Lane V/C Ratio | 0.019 | - | - | 0.018 | - | 0.019 | 0.135 | - | 0.006 | 0.01 | - | - |
| HCM Control Delay (s) | 8 | - | - | 14.9 | 0 | 9.3 | 17.6 | 0 | 9.6 | 8.4 | - | - |
| HCM Lane LOS | A | - | - | B | A | A | C | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.1 | - | 0.1 | 0.5 | - | 0 | 0 | - | - |

HCM 6th Roundabout
5: Street A & Briargate Parkway

Total Traffic Volumes
Year 2027 - PM Peak Hour

| Intersection | | | | | |
|-----------------------------|-------|-------|-------|-------|-------|
| Intersection Delay, s/veh | 2.8 | | | | |
| Intersection LOS | A | | | | |
| Approach | EB | | WB | | NB |
| Entry Lanes | 2 | | 2 | | 1 |
| Conflicting Circle Lanes | 2 | | 2 | | 2 |
| Adj Approach Flow, veh/h | 0 | | 33 | | 23 |
| Demand Flow Rate, veh/h | 0 | | 34 | | 23 |
| Vehicles Circulating, veh/h | 34 | | 0 | | 0 |
| Vehicles Exiting, veh/h | 0 | | 23 | | 34 |
| Ped Vol Crossing Leg, #/h | 0 | | 0 | | 0 |
| Ped Cap Adj | 1.000 | | 1.000 | | 1.000 |
| Approach Delay, s/veh | 0.0 | | 2.9 | | 2.7 |
| Approach LOS | - | | A | | A |
| Lane | Left | Right | Left | Right | Left |
| Designated Moves | LT | TR | LT | TR | LR |
| Assumed Moves | LT | TR | L | TR | LR |
| RT Channelized | | | | | |
| Lane Util | 0.500 | 0.500 | 1.000 | 0.000 | 1.000 |
| Follow-Up Headway, s | 2.667 | 2.535 | 2.667 | 2.535 | 2.535 |
| Critical Headway, s | 4.645 | 4.328 | 4.645 | 4.328 | 4.328 |
| Entry Flow, veh/h | 0 | 0 | 34 | 0 | 23 |
| Cap Entry Lane, veh/h | 1308 | 1380 | 1350 | 1420 | 1420 |
| Entry HV Adj Factor | 1.000 | 1.000 | 0.971 | 1.000 | 1.000 |
| Flow Entry, veh/h | 0 | 0 | 33 | 0 | 23 |
| Cap Entry, veh/h | 1308 | 1380 | 1310 | 1420 | 1420 |
| V/C Ratio | 0.000 | 0.000 | 0.025 | 0.000 | 0.016 |
| Control Delay, s/veh | 2.8 | 2.6 | 2.9 | 2.5 | 2.7 |
| LOS | A | A | A | A | A |
| 95th %tile Queue, veh | 0 | 0 | 0 | 0 | 0 |

HCM 6th TWSC
1: Vollmer Road & Poco Road

Total Traffic Volumes
Year 2040 - AM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.9 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Traffic Vol, veh/h | 0 | 0 | 5 | 68 | 0 | 5 | 2 | 247 | 35 | 1 | 413 | 2 |
| Future Vol, veh/h | 0 | 0 | 5 | 68 | 0 | 5 | 2 | 247 | 35 | 1 | 413 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 5 | 74 | 0 | 5 | 2 | 268 | 38 | 1 | 449 | 2 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 746 | 762 | 450 | 746 | 744 | 287 | 451 | 0 | 0 | 306 | 0 | 0 |
| Stage 1 | 452 | 452 | - | 291 | 291 | - | - | - | - | - | - | - |
| Stage 2 | 294 | 310 | - | 455 | 453 | - | - | - | - | - | - | - |
| 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 | 330 | 335 | 609 | 330 | 343 | 752 | 1109 | - | - | 1255 | - | - |
| Stage 1 | 587 | 570 | - | 717 | 672 | - | - | - | - | - | - | - |
| Stage 2 | 714 | 659 | - | 585 | 570 | - | - | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 327 | 334 | 609 | 326 | 342 | 752 | 1109 | - | - | 1255 | - | - |
| Mov Cap-2 Maneuver | 327 | 334 | - | 326 | 342 | - | - | - | - | - | - | - |
| Stage 1 | 586 | 569 | - | 716 | 671 | - | - | - | - | - | - | - |
| Stage 2 | 707 | 658 | - | 579 | 569 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|----|--|------|--|-----|--|----|--|
| HCM Control Delay, s | 11 | | 18.8 | | 0.1 | | 0 | |
| HCM LOS | B | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1109 | - | - | 609 | 339 | 1255 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | - | 0.009 | 0.234 | 0.001 | - | - |
| HCM Control Delay (s) | 8.3 | 0 | - | 11 | 18.8 | 7.9 | 0 | - |
| HCM Lane LOS | A | A | - | B | C | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 0.9 | 0 | - | - |

HCM 6th TWSC
2: Vollmer Road & Dines Boulevard

Total Traffic Volumes
Year 2040 - AM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.8 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↑↑ | ↖ | ↗ | ↑↑ | ↖ |
| Traffic Vol, veh/h | 0 | 0 | 96 | 29 | 0 | 13 | 22 | 386 | 12 | 4 | 761 | 0 |
| Future Vol, veh/h | 0 | 0 | 96 | 29 | 0 | 13 | 22 | 386 | 12 | 4 | 761 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 0 | - | 250 | 250 | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 104 | 32 | 0 | 14 | 24 | 420 | 13 | 4 | 827 | 0 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|------|--------|------|------|--------|---|------|---|---|
| Conflicting Flow All | 1093 | 1316 | 414 | 890 | 1303 | 210 | 827 | 0 | 0 | 433 | 0 | 0 |
| Stage 1 | 835 | 835 | - | 468 | 468 | - | - | - | - | - | - | - |
| Stage 2 | 258 | 481 | - | 422 | 835 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.54 | 6.94 | 7.54 | 6.54 | 6.94 | 4.14 | - | - | 4.14 | - | - |
| 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 | 3.52 | 4.02 | 3.32 | 3.52 | 4.02 | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 169 | 156 | 587 | 237 | 159 | 796 | 800 | - | - | 1123 | - | - |
| Stage 1 | 328 | 381 | - | 545 | 560 | - | - | - | - | - | - | - |
| Stage 2 | 724 | 552 | - | 580 | 381 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 162 | 151 | 587 | 190 | 154 | 796 | 800 | - | - | 1123 | - | - |
| Mov Cap-2 Maneuver | 162 | 151 | - | 190 | 154 | - | - | - | - | - | - | - |
| Stage 1 | 318 | 379 | - | 529 | 543 | - | - | - | - | - | - | - |
| Stage 2 | 690 | 535 | - | 475 | 379 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|----|--|
| HCM Control Delay, s | 12.5 | | 22.7 | | 0.5 | | 0 | |
| HCM LOS | B | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 800 | - | - | 587 | 249 | 1123 | - | - |
| HCM Lane V/C Ratio | 0.03 | - | - | 0.178 | 0.183 | 0.004 | - | - |
| HCM Control Delay (s) | 9.6 | - | - | 12.5 | 22.7 | 8.2 | - | - |
| HCM Lane LOS | A | - | - | B | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.6 | 0.7 | 0 | - | - |

HCM 6th TWSC
3: Sam Bass Drive & Vollmer Road

Total Traffic Volumes
Year 2040 - AM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.6 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕↔ | | | ↕↔ | | ↕ | ↑↑ | ↕ | ↕ | ↑↑ | ↕ |
| Traffic Vol, veh/h | 23 | 0 | 0 | 62 | 0 | 3 | 0 | 258 | 14 | 1 | 480 | 5 |
| Future Vol, veh/h | 23 | 0 | 0 | 62 | 0 | 3 | 0 | 258 | 14 | 1 | 480 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 200 | - | 150 | 200 | - | 150 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 25 | 0 | 0 | 67 | 0 | 3 | 0 | 280 | 15 | 1 | 522 | 5 |

























| Major/Minor | Minor2 | | Minor1 | | | Major1 | | | Major2 | | | |
|----------------------|--------|------|--------|------|------|--------|------|---|--------|------|---|---|
| Conflicting Flow All | 664 | 819 | 261 | 543 | 809 | 140 | 527 | 0 | 0 | 295 | 0 | 0 |
| Stage 1 | 524 | 524 | - | 280 | 280 | - | - | - | - | - | - | - |
| Stage 2 | 140 | 295 | - | 263 | 529 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.54 | 6.94 | 7.54 | 6.54 | 6.94 | 4.14 | - | - | 4.14 | - | - |
| 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 | 3.52 | 4.02 | 3.32 | 3.52 | 4.02 | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 346 | 309 | 738 | 423 | 313 | 882 | 1036 | - | - | 1263 | - | - |
| Stage 1 | 504 | 528 | - | 703 | 678 | - | - | - | - | - | - | - |
| Stage 2 | 849 | 668 | - | 719 | 525 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 345 | 309 | 738 | 423 | 313 | 882 | 1036 | - | - | 1263 | - | - |
| Mov Cap-2 Maneuver | 345 | 309 | - | 423 | 313 | - | - | - | - | - | - | - |
| Stage 1 | 504 | 527 | - | 703 | 678 | - | - | - | - | - | - | - |
| Stage 2 | 846 | 668 | - | 718 | 524 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | | NB | | | SB | | |
|----------------------|------|--|------|--|--|----|--|--|----|--|--|
| HCM Control Delay, s | 16.2 | | 14.9 | | | 0 | | | 0 | | |
| HCM LOS | C | | B | | | | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1036 | - | - | 345 | 433 | 1263 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.072 | 0.163 | 0.001 | - | - |
| HCM Control Delay (s) | 0 | - | - | 16.2 | 14.9 | 7.9 | - | - |
| HCM Lane LOS | A | - | - | C | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.6 | 0 | - | - |

Timings
4: Vollmer Road & Briargate Parkway

Total Traffic Volumes
Year 2040 - AM Peak Hour

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 69 | 858 | 71 | 373 | 1499 | 69 | 125 | 146 | 128 | 81 | 321 | 140 |
| Future Volume (vph) | 69 | 858 | 71 | 373 | 1499 | 69 | 125 | 146 | 128 | 81 | 321 | 140 |
| Satd. Flow (prot) | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.091 | | | 0.950 | | | 0.274 | | | 0.651 | | |
| Satd. Flow (perm) | 170 | 3539 | 1583 | 3433 | 3539 | 1583 | 510 | 3539 | 1583 | 1213 | 3539 | 1583 |
| Satd. Flow (RTOR) | | | 155 | | | 109 | | | 155 | | | 155 |
| Lane Group Flow (vph) | 75 | 933 | 77 | 405 | 1629 | 75 | 136 | 159 | 139 | 88 | 349 | 152 |
| 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Total Split (s) | 10.0 | 57.0 | 57.0 | 26.0 | 73.0 | 73.0 | 16.0 | 26.0 | 26.0 | 11.0 | 21.0 | 21.0 |
| Total Split (%) | 8.3% | 47.5% | 47.5% | 21.7% | 60.8% | 60.8% | 13.3% | 21.7% | 21.7% | 9.2% | 17.5% | 17.5% |
| 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 | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | None | None | Min | Min | None | Min | Min |
| Act Effct Green (s) | 47.7 | 42.5 | 42.5 | 17.4 | 57.7 | 57.7 | 29.6 | 21.6 | 21.6 | 20.8 | 14.5 | 14.5 |
| Actuated g/C Ratio | 0.45 | 0.40 | 0.40 | 0.17 | 0.55 | 0.55 | 0.28 | 0.21 | 0.21 | 0.20 | 0.14 | 0.14 |
| v/c Ratio | 0.48 | 0.65 | 0.11 | 0.72 | 0.84 | 0.08 | 0.52 | 0.22 | 0.31 | 0.32 | 0.72 | 0.43 |
| Control Delay | 24.4 | 27.7 | 0.3 | 51.4 | 25.2 | 1.0 | 40.6 | 40.9 | 7.2 | 37.7 | 55.1 | 11.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 24.4 | 27.7 | 0.3 | 51.4 | 25.2 | 1.0 | 40.6 | 40.9 | 7.2 | 37.7 | 55.1 | 11.4 |
| LOS | C | C | A | D | C | A | D | D | A | D | E | B |
| Approach Delay | | 25.5 | | | 29.4 | | | 30.0 | | | 41.2 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Queue Length 50th (ft) | 20 | 275 | 0 | 148 | 507 | 0 | 79 | 53 | 0 | 50 | 131 | 0 |
| Queue Length 95th (ft) | 46 | 355 | 0 | 207 | 612 | 9 | 141 | 90 | 45 | 97 | 191 | 59 |
| Internal Link Dist (ft) | | 412 | | | 884 | | | 915 | | | 1327 | |
| Turn Bay Length (ft) | 375 | | 250 | 375 | | 250 | 500 | | 250 | 250 | | 250 |
| Base Capacity (vph) | 156 | 1825 | 891 | 715 | 2387 | 1103 | 281 | 747 | 456 | 272 | 561 | 381 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.48 | 0.51 | 0.09 | 0.57 | 0.68 | 0.07 | 0.48 | 0.21 | 0.30 | 0.32 | 0.62 | 0.40 |

Intersection Summary









Cycle Length: 120
 Actuated Cycle Length: 105.3
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.84

Timings
 4: Vollmer Road & Briargate Parkway

Total Traffic Volumes
 Year 2040 - AM Peak Hour

| | |
|---|------------------------|
| Intersection Signal Delay: 30.1 | Intersection LOS: C |
| Intersection Capacity Utilization 78.1% | ICU Level of Service D |
| Analysis Period (min) 15 | |

Splits and Phases: 4: Vollmer Road & Briargate Parkway

| | | | | | | | |
|--|--|--|--|--|--|--|--|
|  Ø1 26 s | |  Ø2 57 s | |  Ø3 16 s | |  Ø4 21 s | |
|  Ø5 10 s | |  Ø6 73 s | |  Ø7 11 s | |  Ø8 26 s | |

HCM 6th Roundabout
5: Briargate Parkway & Street A

Total Traffic Volumes
Year 2040 - AM Peak Hour

| Intersection | | | | | | |
|--------------------------------|-------|-------|-------|-------|-------|-------|
| Intersection Delay, s/veh 12.9 | | | | | | |
| Intersection LOS B | | | | | | |
| Approach | EB | | WB | | NB | SB |
| Entry Lanes | 2 | | 2 | | 1 | 1 |
| Conflicting Circle Lanes | 2 | | 2 | | 2 | 2 |
| Adj Approach Flow, veh/h | 1084 | | 1945 | | 44 | 130 |
| Demand Flow Rate, veh/h | 1106 | | 1983 | | 44 | 133 |
| Vehicles Circulating, veh/h | 113 | | 68 | | 1131 | 1981 |
| Vehicles Exiting, veh/h | 2001 | | 1107 | | 88 | 70 |
| Ped Vol Crossing Leg, #/h | 0 | | 0 | | 0 | 0 |
| Ped Cap Adj | 1.000 | | 1.000 | | 1.000 | 1.000 |
| Approach Delay, s/veh | 7.4 | | 15.0 | | 7.7 | 30.0 |
| Approach LOS | A | | B | | A | D |
| Lane | Left | Right | Left | Right | Left | Left |
| Designated Moves | LT | TR | LT | TR | LTR | LTR |
| Assumed Moves | LT | TR | LT | TR | LTR | LTR |
| RT Channelized | | | | | | |
| Lane Util | 0.470 | 0.530 | 0.470 | 0.530 | 1.000 | 1.000 |
| Follow-Up Headway, s | 2.667 | 2.535 | 2.667 | 2.535 | 2.535 | 2.535 |
| Critical Headway, s | 4.645 | 4.328 | 4.645 | 4.328 | 4.328 | 4.328 |
| Entry Flow, veh/h | 520 | 586 | 932 | 1051 | 44 | 133 |
| Cap Entry Lane, veh/h | 1217 | 1290 | 1268 | 1340 | 543 | 264 |
| Entry HV Adj Factor | 0.980 | 0.980 | 0.981 | 0.981 | 0.992 | 0.976 |
| Flow Entry, veh/h | 510 | 575 | 914 | 1031 | 44 | 130 |
| Cap Entry, veh/h | 1192 | 1265 | 1244 | 1315 | 539 | 257 |
| V/C Ratio | 0.427 | 0.454 | 0.735 | 0.784 | 0.081 | 0.505 |
| Control Delay, s/veh | 7.4 | 7.5 | 14.1 | 15.8 | 7.7 | 30.0 |
| LOS | A | A | B | C | A | D |
| 95th %tile Queue, veh | 2 | 2 | 7 | 9 | 0 | 3 |

HCM 6th TWSC
6: Briargate Parkway & Commercial Access

Total Traffic Volumes
Year 2040 - AM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.2 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | ↑↑ | ↑↑ | ↑ | | ↑ |
| Traffic Vol, veh/h | 0 | 998 | 1744 | 20 | 0 | 25 |
| Future Vol, veh/h | 0 | 998 | 1744 | 20 | 0 | 25 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 0 | - | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 1085 | 1896 | 22 | 0 | 27 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | - | 0 | - | 0 | 948 |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | 3.32 |
| Pot Cap-1 Maneuver | 0 | - | - | - | 262 |
| Stage 1 | 0 | - | - | - | - |
| Stage 2 | 0 | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | 262 |
| Mov Cap-2 Maneuver | - | - | - | - | - |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |

| Approach | EB | WB | SB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 20.3 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBT | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-----|-------|
| Capacity (veh/h) | - | - | - | 262 |
| HCM Lane V/C Ratio | - | - | - | 0.104 |
| HCM Control Delay (s) | - | - | - | 20.3 |
| HCM Lane LOS | - | - | - | C |
| HCM 95th %tile Q(veh) | - | - | - | 0.3 |

HCM 6th TWSC
1: Vollmer Road & Poco Road

Total Traffic Volumes
Year 2040 - PM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.9 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Traffic Vol, veh/h | 0 | 0 | 2 | 57 | 0 | 3 | 4 | 587 | 94 | 6 | 370 | 2 |
| Future Vol, veh/h | 0 | 0 | 2 | 57 | 0 | 3 | 4 | 587 | 94 | 6 | 370 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 2 | 62 | 0 | 3 | 4 | 638 | 102 | 7 | 402 | 2 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 1116 | 1165 | 403 | 1115 | 1115 | 689 | 404 | 0 | 0 | 740 | 0 | 0 |
| Stage 1 | 417 | 417 | - | 697 | 697 | - | - | - | - | - | - | - |
| Stage 2 | 699 | 748 | - | 418 | 418 | - | - | - | - | - | - | - |
| 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 | 185 | 194 | 647 | 185 | 208 | 446 | 1155 | - | - | 867 | - | - |
| Stage 1 | 613 | 591 | - | 431 | 443 | - | - | - | - | - | - | - |
| Stage 2 | 430 | 420 | - | 612 | 591 | - | - | - | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 181 | 191 | 647 | 182 | 205 | 446 | 1155 | - | - | 867 | - | - |
| Mov Cap-2 Maneuver | 181 | 191 | - | 182 | 205 | - | - | - | - | - | - | - |
| Stage 1 | 609 | 585 | - | 428 | 440 | - | - | - | - | - | - | - |
| Stage 2 | 424 | 417 | - | 604 | 585 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|------|----|----|-----|
| HCM Control Delay, s | 10.6 | 34 | 0 | 0.1 |
| HCM LOS | B | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h) | 1155 | - | - | 647 | 188 | 867 | - |
| HCM Lane V/C Ratio | 0.004 | - | - | 0.003 | 0.347 | 0.008 | - |
| HCM Control Delay (s) | 8.1 | 0 | - | 10.6 | 34 | 9.2 | 0 |
| HCM Lane LOS | A | A | - | B | D | A | A |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 1.5 | 0 | - |

HCM 6th TWSC
2: Vollmer Road & Dines Boulevard

Total Traffic Volumes
Year 2040 - PM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.6 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↙ | ↑↑ | ↗ | ↙ | ↑↑ | ↗ |
| Traffic Vol, veh/h | 0 | 0 | 108 | 20 | 0 | 9 | 59 | 1083 | 42 | 13 | 670 | 0 |
| Future Vol, veh/h | 0 | 0 | 108 | 20 | 0 | 9 | 59 | 1083 | 42 | 13 | 670 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 0 | - | 250 | 250 | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 117 | 22 | 0 | 10 | 64 | 1177 | 46 | 14 | 728 | 0 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|------|--------|------|------|--------|---|------|---|---|
| Conflicting Flow All | 1473 | 2107 | 364 | 1697 | 2061 | 589 | 728 | 0 | 0 | 1223 | 0 | 0 |
| Stage 1 | 756 | 756 | - | 1305 | 1305 | - | - | - | - | - | - | - |
| Stage 2 | 717 | 1351 | - | 392 | 756 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.54 | 6.94 | 7.54 | 6.54 | 6.94 | 4.14 | - | - | 4.14 | - | - |
| 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 | 3.52 | 4.02 | 3.32 | 3.52 | 4.02 | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 88 | 51 | 633 | 60 | 54 | 452 | 871 | - | - | 566 | - | - |
| Stage 1 | 366 | 414 | - | 169 | 228 | - | - | - | - | - | - | - |
| Stage 2 | 387 | 217 | - | 604 | 414 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 80 | 46 | 633 | 45 | 49 | 452 | 871 | - | - | 566 | - | - |
| Mov Cap-2 Maneuver | 80 | 46 | - | 45 | 49 | - | - | - | - | - | - | - |
| Stage 1 | 339 | 404 | - | 157 | 211 | - | - | - | - | - | - | - |
| Stage 2 | 351 | 201 | - | 480 | 404 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | | SB | | |
|----------------------|----|--|-------|--|-----|--|--|-----|--|--|
| HCM Control Delay, s | 12 | | 112.2 | | 0.5 | | | 0.2 | | |
| HCM LOS | B | | F | | | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 871 | - | - | 633 | 62 | 566 | - | - |
| HCM Lane V/C Ratio | 0.074 | - | - | 0.185 | 0.508 | 0.025 | - | - |
| HCM Control Delay (s) | 9.5 | - | - | 12 | 112.2 | 11.5 | - | - |
| HCM Lane LOS | A | - | - | B | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 0.7 | 2 | 0.1 | - | - |

HCM 6th TWSC
3: Sam Bass Drive & Vollmer Road

Total Traffic Volumes
Year 2040 - PM Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.2 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↑↑ | ↖ | ↗ | ↑↑ | ↖ |
| Traffic Vol, veh/h | 23 | 0 | 0 | 38 | 0 | 2 | 0 | 660 | 58 | 5 | 140 | 14 |
| Future Vol, veh/h | 23 | 0 | 0 | 38 | 0 | 2 | 0 | 660 | 58 | 5 | 140 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 200 | - | 150 | 200 | - | 150 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 25 | 0 | 0 | 41 | 0 | 2 | 0 | 717 | 63 | 5 | 152 | 15 |

























| Major/Minor | Minor2 | | Minor1 | | | Major1 | | Major2 | | | | |
|----------------------|--------|------|--------|------|------|--------|------|--------|---|------|---|---|
| Conflicting Flow All | 521 | 942 | 76 | 803 | 894 | 359 | 167 | 0 | 0 | 780 | 0 | 0 |
| Stage 1 | 162 | 162 | - | 717 | 717 | - | - | - | - | - | - | - |
| Stage 2 | 359 | 780 | - | 86 | 177 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.54 | 6.94 | 7.54 | 6.54 | 6.94 | 4.14 | - | - | 4.14 | - | - |
| 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 | 3.52 | 4.02 | 3.32 | 3.52 | 4.02 | 3.32 | 2.22 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | 438 | 261 | 970 | 275 | 279 | 638 | 1408 | - | - | 833 | - | - |
| Stage 1 | 824 | 763 | - | 387 | 432 | - | - | - | - | - | - | - |
| Stage 2 | 632 | 404 | - | 912 | 752 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 434 | 259 | 970 | 274 | 277 | 638 | 1408 | - | - | 833 | - | - |
| Mov Cap-2 Maneuver | 434 | 259 | - | 274 | 277 | - | - | - | - | - | - | - |
| Stage 1 | 824 | 758 | - | 387 | 432 | - | - | - | - | - | - | - |
| Stage 2 | 630 | 404 | - | 907 | 747 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | | NB | | SB | | |
|----------------------|------|--|------|--|--|----|--|-----|--|--|
| HCM Control Delay, s | 13.8 | | 20.1 | | | 0 | | 0.3 | | |
| HCM LOS | B | | C | | | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1408 | - | - | 434 | 282 | 833 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.058 | 0.154 | 0.007 | - | - |
| HCM Control Delay (s) | 0 | - | - | 13.8 | 20.1 | 9.3 | - | - |
| HCM Lane LOS | A | - | - | B | C | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.5 | 0 | - | - |

Timings
4: Vollmer Road & Briargate Parkway

Total Traffic Volumes
Year 2040 - PM Peak Hour

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 230 | 1470 | 114 | 346 | 1247 | 82 | 300 | 459 | 368 | 94 | 223 | 131 |
| Future Volume (vph) | 230 | 1470 | 114 | 346 | 1247 | 82 | 300 | 459 | 368 | 94 | 223 | 131 |
| Satd. Flow (prot) | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.075 | | | 0.083 | | | 0.286 | | | 0.469 | | |
| Satd. Flow (perm) | 140 | 3539 | 1583 | 300 | 3539 | 1583 | 533 | 3539 | 1583 | 874 | 3539 | 1583 |
| Satd. Flow (RTOR) | | | 155 | | | 200 | | | 238 | | | 200 |
| Lane Group Flow (vph) | 250 | 1598 | 124 | 376 | 1355 | 89 | 326 | 499 | 400 | 102 | 242 | 142 |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 8 | | 8 | 4 | | 4 |
| Detector Phase | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 8 | 7 | 4 | 4 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Total Split (s) | 23.0 | 58.0 | 58.0 | 16.0 | 51.0 | 51.0 | 32.0 | 30.0 | 30.0 | 16.0 | 14.0 | 14.0 |
| Total Split (%) | 19.2% | 48.3% | 48.3% | 13.3% | 42.5% | 42.5% | 26.7% | 25.0% | 25.0% | 13.3% | 11.7% | 11.7% |
| 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 | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | Max | Max | Max | Max | Max | Max | Min | Min | Max | Min | Min |
| Act Effct Green (s) | 67.8 | 53.0 | 53.0 | 59.0 | 48.0 | 48.0 | 41.0 | 25.0 | 25.0 | 20.0 | 9.0 | 9.0 |
| Actuated g/C Ratio | 0.56 | 0.44 | 0.44 | 0.49 | 0.40 | 0.40 | 0.34 | 0.21 | 0.21 | 0.17 | 0.08 | 0.08 |
| v/c Ratio | 0.84 | 1.02 | 0.16 | 0.87 | 0.96 | 0.12 | 0.71 | 0.68 | 0.77 | 0.45 | 0.91 | 0.47 |
| Control Delay | 54.5 | 62.1 | 1.9 | 49.3 | 51.7 | 0.3 | 41.4 | 49.1 | 28.9 | 36.4 | 92.2 | 7.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 54.5 | 62.1 | 1.9 | 49.3 | 51.7 | 0.3 | 41.4 | 49.1 | 28.9 | 36.4 | 92.2 | 7.0 |
| LOS | D | E | A | D | D | A | D | D | C | D | F | A |
| Approach Delay | | 57.4 | | | 48.7 | | | 40.5 | | | 55.6 | |
| Approach LOS | | E | | | D | | | D | | | E | |
| Queue Length 50th (ft) | 136 | ~692 | 0 | 100 | 545 | 0 | 203 | 188 | 121 | 55 | 100 | 0 |
| Queue Length 95th (ft) | #258 | #831 | 21 | #185 | #712 | 0 | 297 | 249 | #252 | 98 | #179 | 18 |
| Internal Link Dist (ft) | | 412 | | | 884 | | | 915 | | | 1327 | |
| Turn Bay Length (ft) | 375 | | 250 | 375 | | 250 | 500 | | 250 | 250 | | 250 |
| Base Capacity (vph) | 325 | 1563 | 785 | 434 | 1414 | 752 | 460 | 737 | 518 | 227 | 265 | 303 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.77 | 1.02 | 0.16 | 0.87 | 0.96 | 0.12 | 0.71 | 0.68 | 0.77 | 0.45 | 0.91 | 0.47 |

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.02

HCM 6th Roundabout
5: Briargate Parkway & Street A

Total Traffic Volumes
Year 2040 - PM Peak Hour

| Intersection | | | | | | |
|--------------------------------|-------|-------|-------|-------|-------|-------|
| Intersection Delay, s/veh 19.5 | | | | | | |
| Intersection LOS C | | | | | | |
| Approach | EB | | WB | | NB | SB |
| Entry Lanes | 2 | | 2 | | 1 | 1 |
| Conflicting Circle Lanes | 2 | | 2 | | 2 | 2 |
| Adj Approach Flow, veh/h | 2036 | | 1920 | | 54 | 90 |
| Demand Flow Rate, veh/h | 2077 | | 1958 | | 55 | 92 |
| Vehicles Circulating, veh/h | 140 | | 132 | | 2088 | 1908 |
| Vehicles Exiting, veh/h | 1860 | | 2011 | | 129 | 182 |
| Ped Vol Crossing Leg, #/h | 0 | | 0 | | 0 | 0 |
| Ped Cap Adj | 1.000 | | 1.000 | | 1.000 | 1.000 |
| Approach Delay, s/veh | 21.4 | | 17.4 | | 20.7 | 21.0 |
| Approach LOS | C | | C | | C | C |
| Lane | Left | Right | Left | Right | Left | Left |
| Designated Moves | LT | TR | LT | TR | LTR | LTR |
| Assumed Moves | LT | TR | LT | TR | LTR | LTR |
| RT Channelized | | | | | | |
| Lane Util | 0.470 | 0.530 | 0.470 | 0.530 | 1.000 | 1.000 |
| Follow-Up Headway, s | 2.667 | 2.535 | 2.667 | 2.535 | 2.535 | 2.535 |
| Critical Headway, s | 4.645 | 4.328 | 4.645 | 4.328 | 4.328 | 4.328 |
| Entry Flow, veh/h | 976 | 1101 | 920 | 1038 | 55 | 92 |
| Cap Entry Lane, veh/h | 1187 | 1261 | 1195 | 1269 | 241 | 280 |
| Entry HV Adj Factor | 0.981 | 0.980 | 0.981 | 0.980 | 0.987 | 0.980 |
| Flow Entry, veh/h | 957 | 1079 | 902 | 1018 | 54 | 90 |
| Cap Entry, veh/h | 1164 | 1236 | 1173 | 1245 | 237 | 275 |
| V/C Ratio | 0.822 | 0.873 | 0.770 | 0.818 | 0.229 | 0.328 |
| Control Delay, s/veh | 19.6 | 23.0 | 16.3 | 18.4 | 20.7 | 21.0 |
| LOS | C | C | C | C | C | C |
| 95th %tile Queue, veh | 10 | 13 | 8 | 10 | 1 | 1 |

HCM 6th TWSC
6: Briargate Parkway & Commercial Access

Total Traffic Volumes
Year 2040 - PM Peak Hour

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.6 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | ↑↑ | ↑↑ | ↑ | | ↑ |
| Traffic Vol, veh/h | 0 | 1814 | 1608 | 70 | 0 | 89 |
| Future Vol, veh/h | 0 | 1814 | 1608 | 70 | 0 | 89 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | 250 | - | 0 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 1972 | 1748 | 76 | 0 | 97 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|---|------|
| Conflicting Flow All | - | 0 | - | 0 | 874 |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | 3.32 |
| Pot Cap-1 Maneuver | 0 | - | - | - | 293 |
| Stage 1 | 0 | - | - | - | - |
| Stage 2 | 0 | - | - | - | - |
| Platoon blocked, % | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | 293 |
| Mov Cap-2 Maneuver | - | - | - | - | - |
| Stage 1 | - | - | - | - | - |
| Stage 2 | - | - | - | - | - |

| Approach | EB | WB | SB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 23.2 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBT | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-----|-------|
| Capacity (veh/h) | - | - | - | 293 |
| HCM Lane V/C Ratio | - | - | - | 0.33 |
| HCM Control Delay (s) | - | - | - | 23.2 |
| HCM Lane LOS | - | - | - | C |
| HCM 95th %tile Q(veh) | - | - | - | 1.4 |

V2_Traffic Impact Study review 2.pdf Markup Summary

Bret (15)

If the study area did not extend south towards Main Street, the pattern does not anticipate much, if any, site traffic.

Study Information:
Comment: Grand Peak Academy, located on Cowpoke Rd, is within two miles of the project location. Provide a discussion of the impact the subdivision would have for any potential pedestrian routes in the area.

1. I.C.C. January 19, 2025.

Subject: High Volume OR Complexity of Comments
Page Label: 5
Author: Bret
Date: 5/3/2024 2:52:46 PM
Status:
Color: ■
Layer:
Space:

Unresolved: Grand Peak Academy, located on Cowpoke Rd, is within two miles of the project location. Provide a discussion of the impact the subdivision would have for any potential pedestrian routes in the area.

Plan 4 - Roadway - Traffic Impact Study March 2024

Comment: Add discussion of Figure 10.1 to determine sight distance for every driveway and whether it can be met for proposed conditions. In addition, provide a discussion of the impact of housing dwelling units and 200 single-family attached commercial land uses (approximately 30,000 square feet of (O 15).

proposed development, future access will generally include

Subject: High Volume OR Complexity of Comments
Page Label: 6
Author: Bret
Date: 5/3/2024 2:58:11 PM
Status:
Color: ■
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Unresolved: Add discussion or figure to illustrate sight distance for every access and whether it can be met for proposed conditions.

required development (labeled as Street A) is located west of Main Street. The proposed development is located on Main Street, by serving the commercial portion of the Commercial Access. Commercial Access is approximately 1/2 mile west of Main Street.

located that development construction will be phased, with initial construction to be completed by Year 2027, while final development to be completed by Year 2040.

N.E.S. Inc., as shown in Figure 2. The plan is provided for illustrative purposes only.

Subject: Callout
Page Label: 6
Author: Bret
Date: 5/3/2024 3:27:55 PM
Status:
Color: ■
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Space:

Per ECM Section 2.2.5.B, intersection spacing for a principal arterial is 1/2 mile. Please provide deviation for the spacing length.

development (labeled as Street A) is located west of Main Street. The proposed development is located on Main Street, by serving the commercial portion of the Commercial Access. Commercial Access is approximately 1/2 mile west of Main Street.

located that development construction will be phased, with initial construction to be completed by Year 2027, while final development to be completed by Year 2040.

N.E.S. Inc., as shown in Figure 2. The plan is provided for illustrative purposes only.

Subject: Callout
Page Label: 6
Author: Bret
Date: 5/3/2024 3:28:10 PM
Status:
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Space:

Per ECM Section 2.2.5.B, intersection spacing for a rural minor arterial is 1/4 mile. Please provide deviation for the spacing length.

development (labeled as Street A) is located west of Main Street. The proposed development is located on Main Street, by serving the commercial portion of the Commercial Access. Commercial Access is approximately 1/2 mile west of Main Street.

or purposes of this study, it is anticipated that development construction will be phased, with initial construction to be completed by Year 2027, while final development to be completed by Year 2040.

preliminary plan, as prepared by N.E.S. Inc., as shown in Figure 2. The plan is provided for illustrative purposes only.

per ECM Section 2.2.4.B.2, no direct lot access is allowed from a principal arterial.

Subject: Callout
Page Label: 6
Author: Bret
Date: 5/3/2024 3:33:53 PM
Status:
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Per ECM Section 2.2.4.B.2 no direct lot access is allowed from a principal arterial

development (labeled as Street A) is located west of Main Street. The proposed development is located on Main Street, by serving the commercial portion of the Commercial Access. Commercial Access is approximately 1/2 mile west of Main Street.

power, no specific commercial land uses have been identified for the assumed commercial development.

through additional County level use approval and/or through additional County level use approval.

through additional County level use approval and/or through additional County level use approval.

through additional County level use approval and/or through additional County level use approval.

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through additional County level use approval and/or through additional County level use approval.

Subject: Callout
Page Label: 19
Author: Bret
Date: 5/3/2024 3:02:42 PM
Status:
Color: ■
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Space:

Unresolved: If still conceptual, why did FAR drop from 0.20 to 0.15, which was used in TIS for the Sketch Plan?

Unresolved: How did site generated trips decrease from what was shown in Sketch Plan TIS, when DU's increased? Sketch plan assumed 361 DU, this report assumed 450 (153+297).

Subject: Text Box
Page Label: 22
Author: Bret
Date: 5/3/2024 3:04:32 PM
Status:
Color: ■
Layer:
Space:

Unresolved: How did site generated trips decrease from what was shown in Sketch Plan TIS, when DU's increased? Sketch plan assumed 361 DU, this report assumed 450 (153+297).



Unresolved: Is there no left turns from WB Briargate to NB Vollmer? 2027 shows trips for this turn movement.

Subject: Callout
Page Label: 23
Author: Bret
Date: 5/3/2024 3:05:32 PM
Status:
Color: ■
Layer:
Space:

Unresolved: Is there no left turns from WB Briargate to NB Vollmer? 2027 shows trips for this turn movement.

Intersection geometry are shown in Figure 7.
and intersection geometry for Year 2040.

Unresolved: Please include a discussion of future traffic conditions. This study ends at the end of the development phase and does not consider impacts beyond the end of the development phases.
along Vollmer Road at Briargate Parkway is not required including a right turn deceleration lane, a right turn deceleration for the westbound right and Commercial Access is required since the expected

Subject: High Volume OR Complexity of Comments
Page Label: 24
Author: Bret
Date: 5/3/2024 3:08:35 PM
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Unresolved: Please include a discussion of future traffic conditions. This study ends at the full development phase and does not consider impacts beyond the end of the development phases.

and improvements associated with
and 8. Decrease development and
Summary

| |
|----------------------------|
| By Others (Sterling Ranch) |
| By Others (Sterling Ranch) |
| By Others (Sterling Ranch) |

Subject: Callout
Page Label: 34
Author: Bret
Date: 5/3/2024 3:11:29 PM
Status:
Color: ■
Layer:
Space:

Unresolved: Highlighted items show a different responsible party than was shown on Sketch Plan TIS. Why have they changed?

in Table 9 above, which may be reimbursable
g improvements and auxiliary lane improvement

Unresolved: What about other necessary
improvements, such as Briargate/Dines
intersection?

Subject: Text Box
Page Label: 34
Author: Bret
Date: 5/3/2024 3:11:41 PM
Status:
Color: ■
Layer:
Space:

Unresolved: What about other necessary improvements, such as Briargate/Dines intersection?

| RESPONSIBILITY |
|----------------------------|
| By Others (Sterling Ranch) |
| By Others (Sterling Ranch) |

Subject: Highlight
Page Label: 34
Author: Bret
Date: 5/3/2024 3:12:10 PM
Status:
Color: ■
Layer:
Space:

By Others (Sterling Ranch)

By Others (Sterling Ranch)
By Others (Sterling Ranch)
Applicant / Developer

Subject: Highlight
Page Label: 34
Author: Bret
Date: 5/3/2024 3:12:13 PM
Status:
Color:
Layer:
Space:

By Others (Sterling Ranch)

Applicant / Developer (upon ap
development phase)
By Others (Sterling Ranch)
By Others (Sterling Ranch)

Subject: Highlight
Page Label: 34
Author: Bret
Date: 5/3/2024 3:12:17 PM
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Space:

By Others (Sterling Ranch)

By Others (Sterling Ranch)
By Others (Sterling Ranch)

Subject: Highlight
Page Label: 34
Author: Bret
Date: 5/3/2024 3:12:19 PM
Status:
Color:
Layer:
Space:

By Others (Sterling Ranch)

Mobile User (1)



Subject: Stamp
Page Label: 2
Author: Mobile User
Date: 3/22/2024 1:12:29 PM
Status:
Color:
Layer:
Space: