# APPENDIX E

# TRANSPORTATION IMPACT ANALYSIS

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TRANSPORTATION IMPACT ANALYSIS

# Gilman Gateway Rezone Project

**PREPARED FOR**
Forge Development LLC
City of Berkeley

**PREPARED BY**
Fehr & Peers
FEHR & PEERS

**DATE**
January 2024

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# 0. Executive Summary

This report presents the transportation impact analysis conducted for the Gilman Gateway Rezone Project in West Berkeley. At maximum buildout, the Rezone Project would result in just over 1,000,000 square feet of new R&D/ office uses in the area bound by Gilman Street to the north, Union Pacific railroad tracks to the east, Page Street to the south, and Eastshore Highway to the west.

The main findings are summarized below:

- **VMT:** The Project would have a less-than-significant impact on vehicle miles traveled (VMT), with the implementation of a transportation demand management (TDM) Plan, which would reduce the VMT generated by the Project.
- **TDM Plan**: The Project would implement a TDM plan that would reduce the VMT by between six to ten percent. The main components of the TDM Plan include:
    - Shuttle service to BART and Amtrak
    - Potential extension of bus service closer to the Project area
    - Bicycle parking and amenities
    - Transit fare subsidy
    - Marketing and education
- **Automobile Trip Generation:** The Gilman Gateway Rezone Project is estimated to generate about 9,980 daily, 918 AM, and 868 PM peak hour automobile trips.
- **Traffic Operations:** Since Project effects on traffic congestion is not considered an environmental topic under CEQA, the effects of the Project on traffic operations at the intersections serving the Project is completed outside the CEQA process. Based on the analysis, which accounts for the completion of the currently under-construction I-80/Gilman Street Interchange Project and traffic generated by other approved and pending development projects in the area, the Project would trigger the City of Berkeley's thresholds for traffic operations at the currently under construction Gilman Street/I-80 Ramps roundabouts.

  The I-80 Ramp intersections on Gilman Street currently operate at Level of Service (LOS) E or LOS F during both AM and PM peak hours. After the completion of the I-80/Gilman Street Interchange Project, both roundabouts are estimated to operate at LOS D or better during the AM and PM peak hours. The Gilman Street/I-80 Ramps/West Frontage Road intersection (the West Roundabout) is estimated to operate at LOS F during the AM peak hour and LOS E during the PM peak hour and the Gilman Street/I-80 Ramps/Eastshore Highway intersection (the East Roundabout) is estimated to operate at LOS F during both AM and PM peak hours after Project completion. The Project is also estimated to increase the queues on the southbound I-80 Off-Ramp at Gilman Street to spill back onto the freeway mainline during the AM peak hour.

Implementation of the TDM Plan would reduce the delay at the roundabouts but they would continue to operate at LOS E or LOS F during the AM and PM peak hours.

Other improvements, such as a more rigorous TDM Plan, keeping the at-grade railroad crossing on Camelia Street open, and/or installing metering signals upstream of the roundabouts on the West Frontage Road and/or Eastshore Highway, could improve conditions at the roundabout. However, the feasibility and effectiveness of these measures is not known at this time.

All other evaluated study intersections would operate at LOS D or better during both the AM and PM peak hours.

The traffic operations analysis completed for the Project is somewhat conservative in that it is based on pre-pandemic traffic volumes which may overestimate current traffic volumes in the study area, assumes similar rates of traffic diversion from the I-80 freeway to the West Frontage Road as pre-pandemic conditions, and does not account for upstream bottlenecks that may constrain the vehicle volumes that reach the roundabouts during the peak congestion periods.

- **Access and Circulation:** The Project would accommodate access and circulation for passenger automobiles, trucks, bicycles, pedestrians, and emergency vehicles in and around the Project area. This report includes recommendations, which are provided at the end of Chapter 7 and would need to be approved by the City of Berkeley staff, to improve access and circulation around the Project area. Note that the final circulation plans for the Project will be refined in coordination with the City of Berkeley and designed to meet City standards.



# 1. Introduction

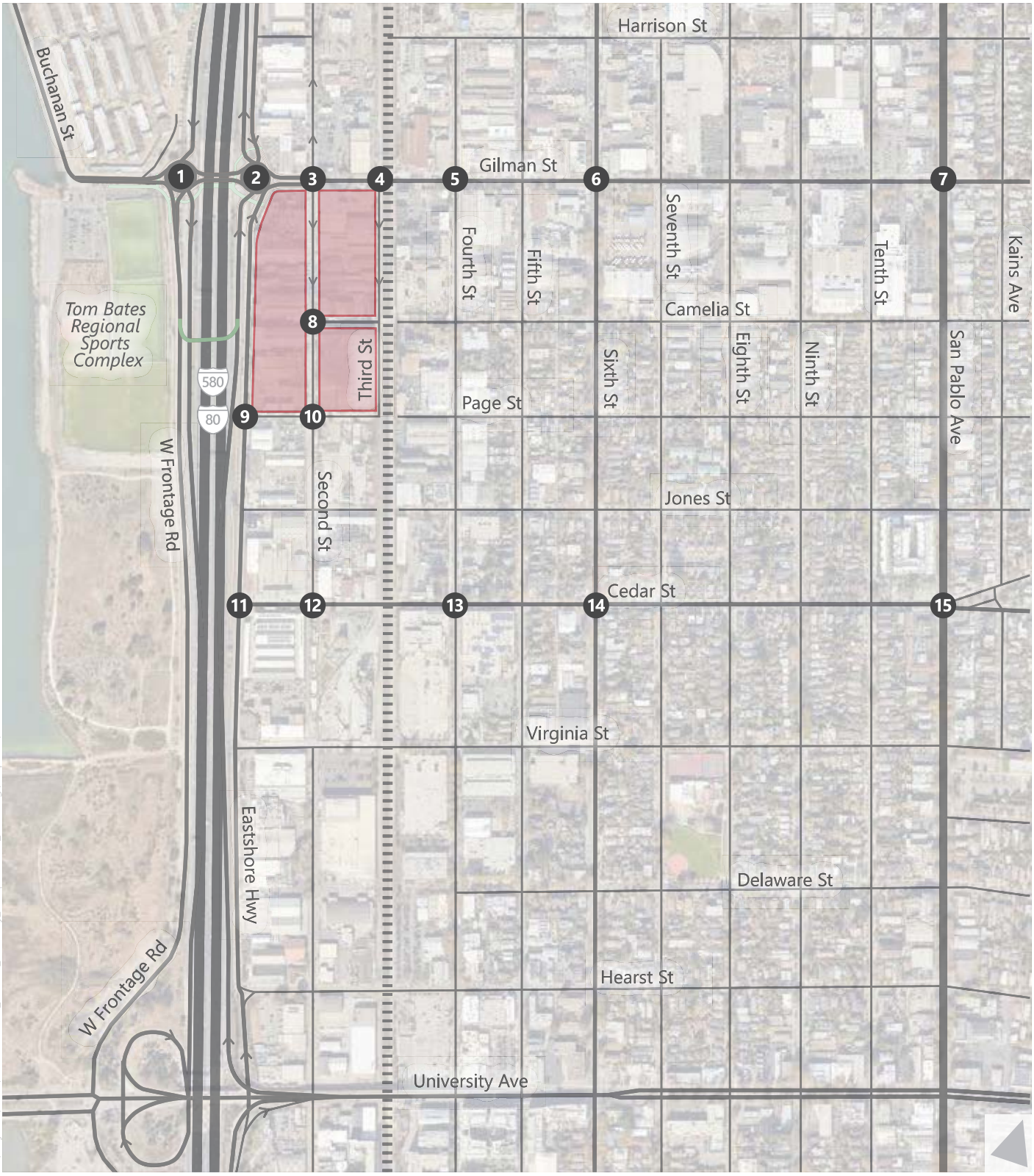
This report evaluates the effects of the proposed Gilman Gateway Rezone Project on traffic and transportation. Maximum buildout of the Rezone Project would result in just over 1,000,000 square feet of new R&D/office uses in the area bound by Gilman Street to the north, Union Pacific railroad tracks to the east, Page Street to the south, and Eastshore Highway to the west. The Berkeley Forge Project is the primary component of the Gilman Gateway Rezone Project, which would consist of about 890,000 square feet of new R&D/office uses. This report evaluates the effects of the larger Gilman Gateway Rezone Project on the off-site transportation network and provides a more detailed evaluation of the Project area for the Berkeley Forge Project, specifically.

**Figure 1** shows the location of the Project site and study intersections.

## 1.1 Report Organization

This report is divided into the following seven chapters:

- ***Chapter 1 – Introduction*** describes the analysis methods used for the traffic operations analysis of the Project. This chapter also includes the criteria used to determine the substantial effects caused by the Project.
- ***Chapter 2 – Existing Conditions*** describes the existing conditions within and in the vicinity of the Project area, including the existing roadway network, traffic operations, transit, and bicycle and pedestrian circulation, and a summary of expected changes to the transportation network.
- ***Chapter 3 – Project Transportation Characteristics*** describes the Project, the estimated number of trips generated by the Project, and the projected trip distribution and assignment of Project trips.
- ***Chapter 4 – VMT Assessment*** describes the VMT assessment for the Project.
- ***Chapter 5 – Traffic Operation Analysis*** describes traffic operations under Near-Term No Project and Near-Term Plus Project conditions and identifies potential substantial effects of the Project on traffic operations.
- ***Chapter 6 – Congestion Management Program Analysis*** summarizes the analysis as required by the Alameda County Transportation Commission.
- ***Chapter 7 – Access, Circulation, and Parking*** evaluates the multimodal access and circulation, and parking for the Project.




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**Legend**

- Railroad
- Proposed Ped/Bike Bridge
- Project Site
- Study Intersections

Figure 1

## Project Site and Study Locations

## 1.2 Intersection Operations Analysis Methodology

### 1.2.1 Study Intersections

This study analyzes existing traffic operations during typical weekday AM and PM peak hours at the following 15 intersections in the vicinity of the Project:

1. Gilman Street/Frontage Road/I-80 Southbound Ramps
2. Gilman Street/Eastshore Highway/I-80 Northbound Ramps
3. Gilman Street/Second Street
4. Gilman Street/Third Street
5. Gilman Street/Fourth Street
6. Gilman Street/Sixth Street
7. Gilman Street/San Pablo Avenue
8. Camelia Street/Second Street
9. Page Street/Eastshore Highway
10. Page Street/Second Street
11. Cedar Street/Eastshore Highway
12. Cedar Street/Second Street
13. Cedar Street/Fourth Street
14. Cedar Street/Sixth Street
15. Cedar Street/San Pablo Avenue

These intersections were selected for analysis and confirmed by City staff because they are either within or adjacent to the Project area, or they are most likely to be affected by the Project. Figure 1 shows the location of the study intersections.

### 1.2.2 Intersection Analysis Scenarios

For this study, the following scenarios were evaluated:

- ***Existing*** – Existing (2019) conditions based on data collected in the past five years.
- ***Near-Term No Project*** – Existing traffic, plus traffic generated by major approved and proposed development projects in the study area that are expected to be constructed and occupied in the near future. This scenario also accounts for the completion of the I-80/Gilman Street Interchange Project, which is currently under construction.
- ***Near-Term Plus Project*** – Near-Term conditions, plus traffic generated by the Project.

### 1.2.3 Level of Service

Intersection operations are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic operations from the vehicle driver perspective and consists of the delay experienced by the driver at the intersection. It ranges from LOS A, with no congestion and little delay, to LOS F, with excessive congestion and delays. Different methods are used to assess signalized and unsignalized intersections.

*Signalized Intersections*

Signalized intersection operations are evaluated using the method provided in the *Highway Capacity Manual 6th Edition* (HCM6, 2016). This method uses intersection characteristics to estimate average control delay and then assigns a LOS value. Control delay is defined as the delay associated with deceleration, stopping, moving up in the queue, and acceleration experienced by drivers at a signalized intersection.

**Table 1** provides descriptions of various LOS and the corresponding ranges of delays for signalized intersections.

*Unsignalized Intersections*

All-way stop-controlled and side-street stop-controlled intersection operations are also analyzed using the HCM6. Delay is calculated for movements that are controlled by a stop sign or that must yield the right-of-way. This method defines operations by average control delay per vehicle (measured in seconds) for each stop-controlled movement. This incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. For side-street stop-controlled intersections, the movement or approach with the highest delay is reported, as well as average intersection delay. Table 1 summarizes the LOS ranges for unsignalized intersections. They are lower than the delay ranges for signalized intersections because drivers generally tolerate less delay at unsignalized intersections.

### 1.2.4 Analysis Tools

The Synchro 11 Software is used to estimate delay and LOS for all study intersections under Existing Conditions and all intersections except the ones along Gilman Street between the I-80 Interchange and Fourth Street under the Near-Term No Project and Near-Term Plus Project conditions. Synchro uses the equations provided in the HCM6 to calculate control delay. These equations use intersection characteristics, such as vehicle and pedestrian volumes, lane geometry, and signal phasing, as inputs to estimate control delay.

The Sidra Network software is used to estimate delay and LOS for the study intersections along Gilman Street between the I-80 Interchange and Fourth Street under the Near-Term No Project and Near-Term Plus Project conditions. The main advantage of Sidra Network is that it evaluates traffic conditions at multi-lane multi-approach roundabouts with more accuracy and better accounts for the effects of upstream and downstream bottlenecks at closely spaced intersections. The Sidra Network software was previously used for the *I-80 Gilman Street Interchange Improvement Project Traffic Operations Analysis Report* (2017).

### 1.2.5 Peak Hour Signal Warrant Assessment

To assess the need for signalization of stop-controlled intersections, the *California Manual on Uniform Traffic Control Devices* (MUTCD, 2014) includes eight signal warrants. Generally, meeting one or more of the signal warrants could justify signalization of an intersection. This analysis evaluates the California MUTCD peak hour vehicular volume warrant (Warrant 3B) for urban conditions to determine if the traffic added by the Project would result in the stop-controlled intersections needing to be signalized.

**Table 1: Intersection Level of Service Definitions**

| Unsignalized Intersections | | Level of Service Grade | Signalized Intersections | |
|---|---|---|---|---|
| Description | Average Total Vehicle Delay (Seconds) | | Average Control Vehicle Delay (Seconds) | Description |
| No delay for stop-controlled approaches. | ≤10.0 | A | ≤10.0 | Free Flow or Insignificant Delays: Operations with very low delay, when signal progression is extremely favorable, and most vehicles arrive during the green light phase. Most vehicles do not stop at all. |
| Operations with minor delay. | >10.0 and ≤15.0 | B | >10.0 and ≤20.0 | Stable Operation or Minimal Delays: Generally occurs with good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average delay. An occasional approach phase is fully utilized. |
| Operations with moderate delays. | >15.0 and ≤25.0 | C | >20.0 and ≤35.0 | Stable Operation or Acceptable Delays: Higher delays resulting from fair signal progression and/or longer cycle lengths. Drivers begin having to wait through more than one red light. Most drivers feel somewhat restricted. |
| Operations with increasingly unacceptable delays. | >25.0 and ≤35.0 | D | >35.0 and ≤55.0 | Approaching Unstable or Tolerable Delays: Influence of congestion becomes more noticeable. Longer delays result from unfavorable signal progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop. Drivers may have to wait through more than one red light. Queues may develop, but dissipate rapidly, without excessive delays. |
| Operations with high delays, and long queues. | >35.0 and ≤50.0 | E | >55.0 and ≤80.0 | Unstable Operation or Significant Delays: Considered to be the limit of acceptable delay. High delays indicate poor signal progression, long cycle lengths and high volume to capacity ratios. Individual cycle failures are frequent occurrences. Vehicles may wait through several signal cycles. Long queues form upstream from intersection. |
| Operations with extreme congestion, and with very high delays and long queues unacceptable to most drivers. | >50.0 | F | >80.0 | Forced Flow or Excessive Delays: Occurs with oversaturation when flows exceed the intersection capacity. Represents jammed conditions. Many cycle failures. Queues may block upstream intersections. |

Source: *Highway Capacity Manual*, Transportation Research Board, 2016.

### 1.2.6 Thresholds for Traffic Operations

For the purposes of this analysis, the following intersection LOS thresholds are used based on the City of Berkeley's *Guidelines for Development of Traffic Impact Reports (2005)*. A substantial effect is identified if the addition of Project-generated traffic under Near-Term conditions results in[1]:

- At a signalized, roundabout, or all-way stop-controlled intersection operations degrade from LOS D to LOS E or worse and more than a two-second increase in delay; or
- At a signalized, roundabout, or all-way stop-controlled intersection, more than a three-second increase in delay at intersections operating at LOS E without and with the project; or
- At a signalized, roundabout, or all-way stop-controlled intersection, operations degrade from LOS E to LOS F and more than a three-second increase in delay; or
- At a signalized, roundabout, or all-way stop-controlled intersection operating at LOS F without the project, a change in the volume-to-capacity (v/c) ratio of more than 0.01.
- At an unsignalized intersection:
    - a movement that operates at LOS F;
    - the intersection meets peak hour traffic volume signal warrants;
    - minimum of 10 peak-hour vehicles added to the critical movement; and
    - no alternative routes are available.

[1] Since Project effects on traffic operations is not considered an environmental topic under CEQA, this report uses the terms "effect," "substantial," and "improvement," instead of "impact," "significant," and "mitigation" when discussing traffic operations and LOS results to differentiate between the CEQA and the non-CEQA analyses.

# 2. Existing Conditions

This chapter describes the existing transportation conditions for the Project. Conditions described in this chapter generally represent conditions as of April 2023 and may not reflect the modifications completed by the currently under construction I-80/Gilman Street Interchange Project since April 2023.

## 2.1 Existing Roadway Network

The regional and local roadways serving the Project area are described below.

### 2.1.1 Regional Roadways

*Interstate 80/580* (I-80/I-580) provides access around and beyond the San Francisco Bay Area. Between Emeryville and Albany, I-80 shares the same roadway as I-580, with I-580 connecting with Marin County to the west and I-80 connecting with Sacramento to the east. Near the Project, I-80 and I-580 are oriented in a north-south direction and provide five lanes of travel, including one carpool lane, in each direction. Access between I-80/I-580 and the Project is provided primarily through the interchange at Gilman Street. I-80/I-580 had an Average Annual Daily Traffic (AADT) of 233,000 vehicles at the University Avenue interchange in 2019.[2]

*San Pablo Avenue* (SR 123) is a divided, four-lane, north-south major street that extends between Rodeo in the north and Downtown Oakland in the south. The divided roadway provides a center median and left-turn pockets at major intersections in Berkeley. San Pablo Avenue provides sidewalks and metered parallel parking on both sides of the street near the Project. San Pablo Avenue had an AADT of 22,100 at University Avenue in 2019.[3]

### 2.1.2 Local Roadways

Gilman Street is a two-lane, east-west major street that borders the north side of the Project area and extends between Golden Gate Fields in the west and Hopkins Street in the east. It provides access to I-80/580 through an interchange at the northwest corner of the Project. In the Project vicinity, Gilman Street generally provides unrestricted on-street parking and sidewalks along both sides of the street. The segment of Gilman Street between I-80/580 and San Pablo Avenue has dedicated bicycle lanes on both sides. The segment east of San Pablo Avenue is a designated bicycle route.

Cedar Street is a two-lane east-west collector that extends between Eastshore highway in the west and La Loma Avenue in the east. In the Project vicinity, it generally provides unrestricted on-street parking and sidewalks along both sides of the street, except for the block between Second Street and the railroad tracks, which does not provide a sidewalk on the south side of the street.

[2] Caltrans volume database (https://dot.ca.gov/programs/traffic-operations/census)
[3] Caltrans volume database (https://dot.ca.gov/programs/traffic-operations/census)

Camelia Street is a two-lane east-west local street that extends between Second Street in the west and Santa Fe Avenue in the east. Within the Project area, Camelia Street provides unrestricted on-street parking and sidewalks on both sides of the street.

Page Street is a two-lane east-west local street that extends between Eastshore Highway in the west and Cornell Street in the east with a discontinuous segment between Second and Fourth Streets due to the railroad tracks. Page Street provides unrestricted on-street parking and intermittent sidewalks on both sides of the street within the Project area.

West Frontage Road is a two-lane north-south collector west and parallel to the I-80 freeway. It extends between Gilman Street in the north and the City of Emeryville in the south. In the Project vicinity, parking is prohibited along the roadway and a paved path is provided west of the roadway.

Eastshore Highway is a two-lane north-south collector east and parallel to the I-80 freeway. It extends between Buchanan Street in the north and Hearst Avenue in the south, and forms the west border of the Project area. Within the Project area, Eastshore Highway provides an intermittent sidewalk and parallel parking on the east side of the street.

Second Street is a two-lane north-south local street that extends between the Codornices Creek in the north and Addison Street in the south. The segment of Second Street between Gilman and Harrison Street is currently one-way northbound, and the segment between Cedar and Virginia Streets is closed to the public. Within the Project area, Second Street provides intermittent sidewalks and on-street parking on both sides of the street.

Fourth Street is a two-lane north-south, collector that extends between Harrison Street in the north and Dwight Way in the south. In the Project vicinity, Fourth Street provides unrestricted on-street parking and continuous sidewalks on both sides of the street.

*Sixth Street* is a two-lane, north-south collector that extends between the Albany University Village in the north and Dwight Way in the south. In the Project vicinity, it provides unrestricted on-street parking and continuous sidewalks on both sides of the street. Sixth Street provides dedicated bicycle lanes on both sides of the street south of Gilman Street.

## 2.2 Existing Intersection Operations

### 2.2.1 Existing Volumes

Traffic patterns and travel behavior have shifted substantially in Berkeley and throughout Bay Area because of the COVID-19 pandemic and associated shelter-in-place orders which started in March 2020. In addition, the construction of the I-80/Gilman Street Interchange Project, which started in July 2021, has also changed traffic patterns in the Project vicinity. As a result, traditional traffic counts collected under current conditions may not reflect typical traffic volumes in the Project vicinity. Thus, this analysis uses two available sources to estimate the weekday AM and PM peak hour (the hour with the highest traffic volumes during the 7:00 to 9:00 AM and 4:00 to 6:00 PM period) intersection turning movement volumes at the study intersections



under existing conditions. These time periods were selected because the trips generated by the Project during the peak periods, in combination with background traffic, are expected to represent typical worst case traffic conditions.

Traffic volumes at the Gilman Street Interchange intersections are based on data collected in November 2019 for the *Berkeley Commons Transportation Impact Analysis (January 2021)*. Since count data from the past five years was not available for the other intersections, data purchased from StreetLight Data (a big data vendor of anonymous location records from GPS devices) is used.[4] The Streetlight Data volume estimates were downloaded for midweek days (Tuesdays, Wednesdays, and Thursdays) for February 1 through March 15, April 1 through June 1, and September 1 through November 15 of 2019 and 2022 and aggregated to represent a typical mid-week day for the remaining study intersections. Since the traffic volumes in 2019 were higher than in 2022, this analysis uses the 2019 traffic volumes, and therefore may represent conservative estimates. **Appendix A** presents the detailed StreetLight volume data.

**Figure 2** shows the existing AM and PM peak hour intersection vehicle volumes and the lane configurations and controls at the study intersections.

### 2.2.2 Intersection Operations

Based on the volumes, intersection controls, and roadway configurations presented on Figure 2, Fehr & Peers calculated the AM and PM peak hour LOS at the study intersections using the methodologies presented in Chapter 1. **Table 2** summarizes existing weekday AM and PM peak hour intersection LOS analysis results. **Appendix B** provides the detailed LOS calculation worksheets.

As shown in the table, the stop-controlled movements at the Gilman Interchange (intersections 1 and 2) operate at LOS F during both AM and PM peak hours. In addition, the side-street stop-controlled northbound movement at the Gilman Street/Second Street intersection (intersection 3) currently operates at LOS E during both AM and PM peak hours, and the side-street stop-controlled northbound movement at the Gilman Street/Fourth Street intersection (intersection 5) currently operates at LOS E during the AM peak hour, and at LOS F during the PM peak hour. All other study intersections operate at LOS D or better during both AM and PM peak hours.

[4] In 2020, Fehr & Peers conducted an independent review of StreetLight Data volume estimates by comparing the volume estimates to historical count data. The review concluded that StreetLight volume estimates are a reasonable and acceptable source of data as a replacement for traditional traffic counts. Streetlight Data volume estimates are generally more robust than traditional traffic counts since they assess travel patterns across several months, rather than a single day. For more information about the Streetlight data collection approach, including the Fehr & Peers white paper "A Transformative Data Collection Solution," visit: https://www.fehrandpeers.com/transformative-data-collection-solution/



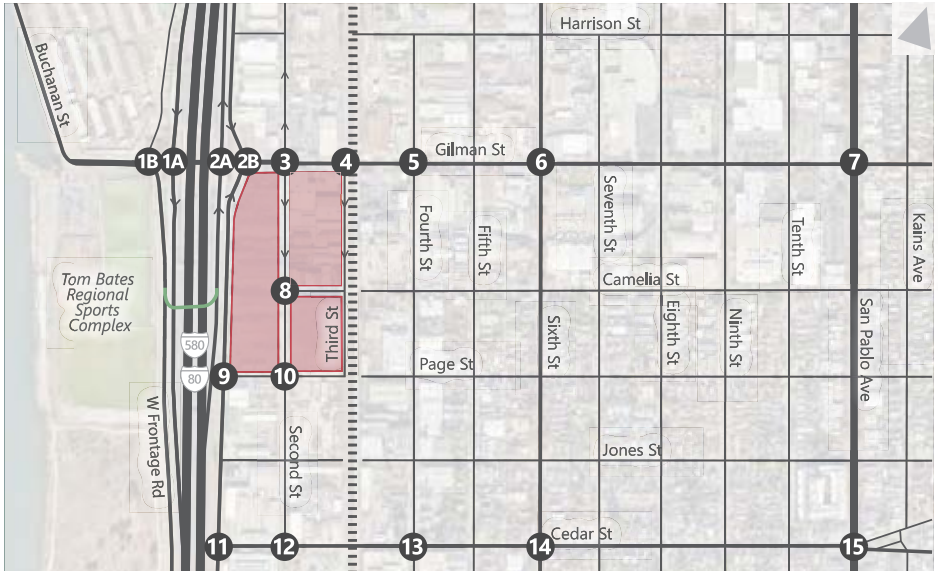
**Table 2: Existing Conditions – Study Intersection LOS Summary**

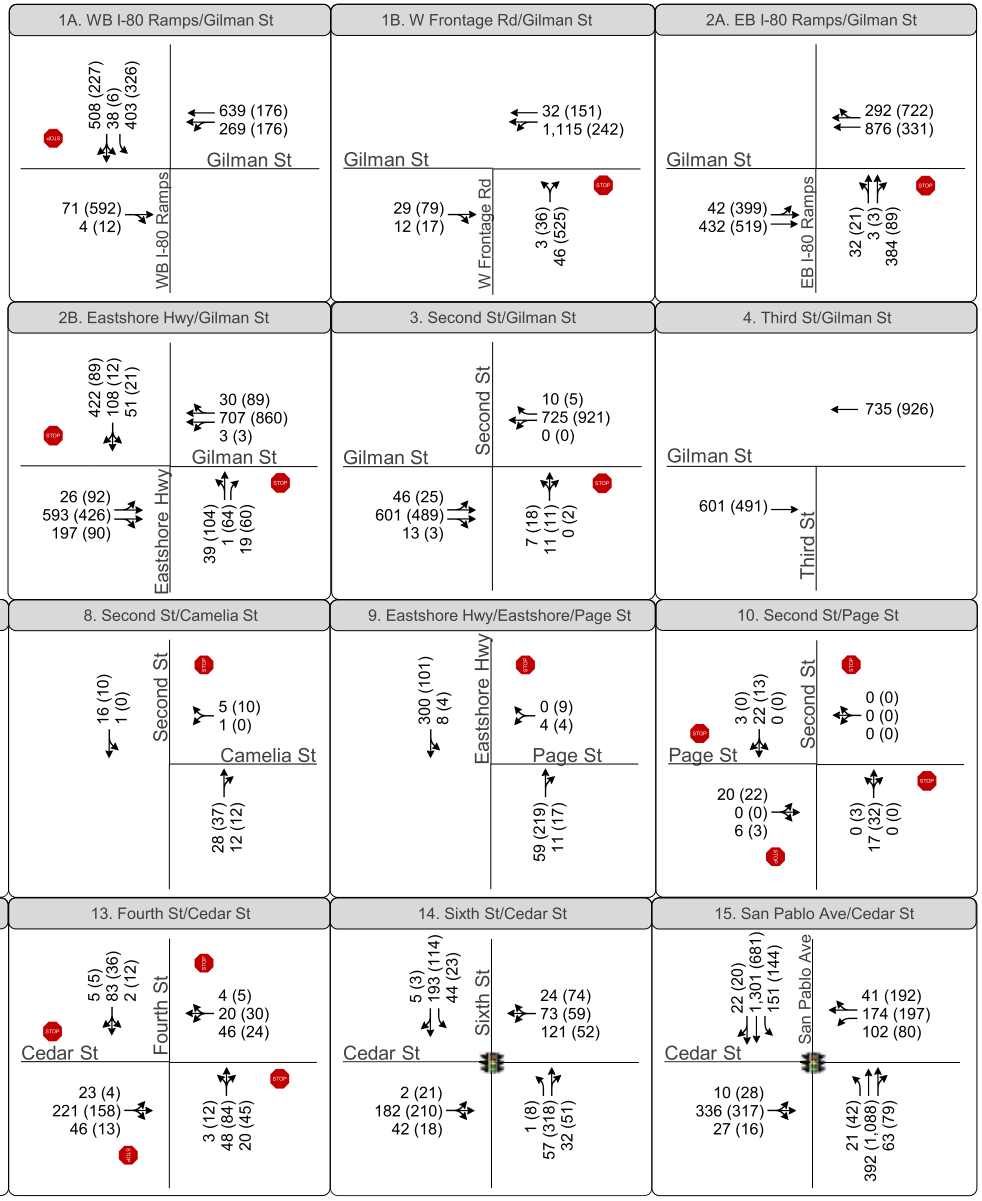
| Intersection | Control | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|---|
| | | Delay (Seconds)[1] | LOS [2] | Delay (Seconds) [1] | LOS[2] |
| 1A. Gilman Street/Westbound I-80 Ramps | Side-Street Stop | **> 150 (SB = >150)** | **F (F)** | 39 **(SB = 102)** | E **(F)** |
| 1B. Gilman Street/West Frontage Road | Side-Street Stop | 13 **(NB = 43)** | B **(E)** | 11 (NB = 17) | B (C) |
| 2A. Gilman Street/Eastbound I-80 Ramps | Side-Street Stop | 3 (NB = 15) | A (B) | 13 **(NB = >150)** | B **(F)** |
| 2B. Gilman Street/Eastshore Highway | Side-Street Stop | **138 (SB = >150)** | **F (F)** | **52 (NB = >150)** | **F (F)** |
| 3. Gilman Street/Second Street | Side-Street Stop | 1 (NB = 39) | A (E) | 1 (NB = 40) | A (E) |
| 4. Gilman Street/Third Street | N/A | N/A | N/A | N/A | N/A |
| 5. Gilman Street/Fourth Street | Side-Street Stop | 1 (NB = 39) | A (E) | 6 **(NB = 86)** | A **(F)** |
| 6. Gilman Street/Sixth Street | Signal | 10 | A | 14 | B |
| 7. Gilman Street/San Pablo Avenue | Signal | 25 | C | 26 | C |
| 8. Camelia Street/Second Street | Side-Street Stop | 1 (WB = 9) | A (A) | 1 (WB = 9) | A (A) |
| 9. Page Street/Eastshore Highway | Side-Street Stop | 0 (WB = 11) | A (B) | 1 (WB = 10) | A (B) |
| 10. Page Street/Second Street | All-way Stop[3] | 7 | A | 7 | A |
| 11. Cedar Street/Eastshore Highway | Side-Street Stop | 1 (WB = 11) | A (B) | 2 (WB = 10) | A (B) |
| 12. Cedar Street/Second Street | Side-Street Stop[4] | 1 (SB = 10) | A (B) | 1 (SB = 10) | A (A) |
| 13. Cedar Street/Fourth Street | All-way stop | 9 | A | 8 | A |
| 14. Cedar Street/Sixth Street | Signal | 14 | B | 16 | B |
| 15. Cedar Street/San Pablo Avenue | Signal | 21 | C | 26 | C |

Notes:
**Bold** indicates intersection operating at LOS E or LOS F

1. Average intersection delay and LOS based on the HCM6 method as calculated by the Synchro software. Average delay is reported for signalized and all-way stop-controlled intersections. Average intersection and worst-movement delays, respectively, are reported for side-street stop-controlled intersections.
2. Based on HCM6 delay thresholds.
3. Intersection is currently uncontrolled; analyzed as all-way stop.
4. Intersection is currently uncontrolled; analyzed as side-street stop-controlled.

Source: Fehr & Peers, 2023.




**Legend**

- Railroad
- Proposed Ped/Bike Bridge
- Project Site
- Recommended Study Intersections

Figure 2

Existing Peak Hour Traffic Volumes, Lane Configurations and Traffic Control

### 2.2.3 Peak Hour Signal Warrant Assessment

The peak hour traffic signal warrant was evaluated for the 12 unsignalized study intersections based on the volumes, intersection controls, and roadway configurations presented on Figure 2. As shown in **Table 3**, the four intersections at the Gilman Street Interchange meet the California MUTCD peak hour signal warrant under existing conditions during the AM or PM peak hours. **Appendix C** provides the signal warrant worksheets.

**Table 3: Existing Conditions – Study Intersection Peak Hour Signal Warrant Summary**

| Intersection | Control | Meet Peak Hour Signal Warrant?[1] |
|---|---|---|
| 1A. Gilman Street/Westbound I-80 Ramps | Side-Street Stop | **Yes** |
| 1B. Gilman Street/West Frontage Road | Side-Street Stop | **Yes** |
| 2A. Gilman Street/Eastbound I-80 Ramps | Side-Street Stop | **Yes** |
| 2B. Gilman Street/Eastshore Highway | Side-Street Stop | **Yes** |
| 3. Gilman Street/Second Street | Side-Street Stop | No |
| 5. Gilman Street/Fourth Street | Side-Street Stop | No |
| 8. Camelia Street/Second Street | Side-Street Stop | No |
| 9. Page Street/Eastshore Highway | Side-Street Stop | No |
| 10. Page Street/Second Street | All-way Stop[2] | No |
| 11. Cedar Street/Eastshore Highway | Side-Street Stop | No |
| 12. Cedar Street/Second Street | Side-Street Stop[3] | No |
| 13. Cedar Street/Fourth Street | All-way stop | No |

Notes:
1. Based on the application of California MUTCD Warrant 3B.
2. Intersection is currently uncontrolled; analyzed as all-way stop.
3. Intersection is currently uncontrolled; analyzed as side-street stop-controlled.

Source: Fehr & Peers, 2023.

## 2.3 Existing Transit Service

The Project area is served by Alameda Contra Costa Transit District (AC Transit), Bay Area Rapid Transit (BART), and Amtrak California. **Figure 3** shows the transit routes in the Project vicinity.

### 2.3.1 AC Transit

Local bus service in the Project area is provided by AC Transit, the public transportation authority for western Alameda and Contra Costa counties. As shown on Figure 3, the Project area is served by several AC Transit bus lines, connecting the Project area to other neighborhoods within Berkeley and the nearby cities of Albany, Emeryville, Oakland, and San Francisco. **Table 4** describes the AC Transit bus lines serving the Project area as of April 2023. **Table 5** describes the AC Transit bus stops near the Project.






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*Source: actransit.org, April 2023.*

**Legend**

- Railroad
- Proposed Ped/Bike Bridge
- Project Site
- Bus Stop
- AC Transit Local Route
- AC Transit Transbay Route
- West Berkeley Shuttle
- BART
- Amtrak

Figure 3

## Existing Transit Service

**Table 4: AC Transit Service Summary**

| Line | Route [1] | Nearest Stop [2] | Weekday [1] | | Weekend [1] | |
|---|---|---|---|---|---|---|
| | | | Hours | Frequency | Hours | Frequency |
| ***Local Routes*** | | | | | | |
| 12 | Northwest Berkeley to Jack London Square via Gilman Ave., Hopkins Ave., Martin Luther King Jr. Way, 51st St., Piedmont Ave., Grand Ave., and Broadway | Gilman St. west of Sixth St. (about 0.4 miles) | 6:00 AM to 1:20 AM | 20 to 30 minutes | 6:00 AM to 11:50 PM | 30 minutes |
| 52 | Albany University Village to UC Campus via University Ave., Cedar St., Sacramento St., and University Ave. | San Pablo Ave at far side of Gilman St (about 0.7 miles) | 5:50 AM to 11:45 PM | 15 to 20 minutes | 8:15 AM to 8:20 PM | 20 minutes |
| 72 | Hilltop Mall to Jack London Square via Moyers Rd., Contra Costa College, San Pablo Ave., and downtown Oakland | San Pablo Ave at far side of Gilman St (about 0.7 miles) | 4:45 AM to 1:20 AM | 30 to 40 minutes | 5:00 AM to 2:00 AM | 30 minutes |
| 72M | Point Richmond to Jack London Square via Garrard Blvd., Macdonald Ave., San Pablo Ave., and downtown Oakland | San Pablo Ave at far side of Gilman St (about 0.7 miles) | 4:45 AM to 12:30 AM | 30 to 40 minutes | 6:00 AM to 2:00 AM | 30 to 40 minutes |
| 72R | Contra Costa College to Jack London Square via San Pablo Ave., and downtown Oakland with limited stops | San Pablo Ave at far side of Gilman St (about 0.7 miles) | 6:00 AM to 8:15 PM | 12 minutes | 7:00 AM to 8:00 PM | 15 minutes |
| ***Night Routes*** | | | | | | |
| 800 | Richmond BART to San Francisco via MacDonald Ave, San Pablo Ave., University Ave., and Telegraph Avenue | San Pablo Ave at far side of Gilman St (about 0.7 miles) | 12:20 AM to 7:40 AM | 30 minutes | 12:20 AM to 7:40 AM | 30 minutes |
| ***Transbay Routes*** | | | | | | |
| G | El Cerrito Plaza BART to Salesforce Transit Center, San Francisco via Fairmount Ave., Colusa Ave., Solano Ave., San Pablo Ave., and University Ave. | San Pablo Ave at far side of Gilman St (about 0.7 miles) | 7:00 AM to 9:45 AM (westbound) 4:10 PM to 6:50 PM (eastbound) | 20 to 60 minutes | No Weekend Service | |

Notes:
1. Service description as of April 2023
2. Distance shown is the walking distance between bus stop and the Camelia Street/Second Street intersection.

Source: Fehr & Peers and AC Transit, 2023.

**Table 5: AC Transit Bus Stops Summary**

| Stop Location | Distance to Project Area[1] | Lines Served | Stop Amenities |
|---|---|---|---|
| Gilman Street at Sixth Street | 0.4 miles east of the Project | 12 | Eastbound: no amenities<br>Westbound: bicycle parking |
| University Avenue at Gilman Street | 0.7 miles east of the Project | 52, 72, 72M, 72R, 800, G | Both Directions: bench, shelter, trash receptacle, and lighting |

Notes:
1. Distance shown is the walking distance between the bus stop and the Camelia Street/Second Street intersection.
Source: Fehr & Peers and AC Transit, 2023.

### 2.3.2 BART

BART provides regional commuter rail transit in Alameda, Contra Costa, San Francisco, San Mateo, and Santa Clara counties. As of April 2023, BART trains operate on weekdays from 5:00 AM to 1:00 AM, on Saturdays from 6:00 AM to 1:00 AM, and on Sundays from 7:00 AM to 1:00 AM. The nearest BART station to the Project area is the North Berkeley BART station, located about 1.2 miles east of the Project.

The North Berkeley BART stations is served by the Richmond-Berryessa/North San José (orange) and Richmond-Millbrae/SFO (red) lines. Other destinations in the BART system can be reached by transferring at stations in Oakland. As of April 2023, the North Berkeley BART station is served by a train every eight minutes during peak weekday commute periods, and every 15 minutes on Saturdays, Sundays, and holidays. In March 2023, the North Berkeley BART station had approximately 3,200 entries and exits on an average weekday.[5]

### 2.3.3 Amtrak

Amtrak provides regional rail transit for intercity commuters in northern and southern California, with select service to Nevada. Amtrak's Capitol Corridor route operates between San Jose and Sacramento.

The Berkeley Amtrak station is located under the University Avenue overpass, about 0.8 miles south of the Project. There are 12 daily weekday departures and arrivals and 11 daily weekend departures and arrivals per direction at the Berkeley Station.[6] In FY2021, the station served about 26,000 rail passengers.[7] The Amtrak station is served by AC Transit Line 51B, with additional bus service nearby. The station provides basic amenities, including outside seating and automobile and bicycle parking.

[5] Bay Area Rapid Transit 2019 Monthly Ridership Reports: http://www.bart.gov/about/reports/ridership
[6] Amtrak Capitol Corridor Schedule: https://www.capitolcorridor.org/trainschedule/Train_Schedules.pdf
[7] Amtrak Fact Sheet, Fiscal Year 2021: https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/statefactsheets/CALIFORNIA21.pdf



Amtrak operates on the Union Pacific Railroad (UPRR) mainline tracks through West Berkeley. Adjacent to the east of the Project area, the tracks have at-grade crossing at Gilman and Camelia Streets. The at-grade crossing on Gilman Street provides automated gate arms and flashing warning devices for both vehicular approaches, and paved pedestrian crossings on both sides of the street. The at-grade crossing on Camelia Street provides automated gate arms and flashing warning devices for both vehicular approaches, and the pedestrian crossings do not meet ADA standards. The currently under construction I-80/Gilman Street Interchange Project will improve the Gilman Street crossing and close the Camelia Street crossing (See page 21 for more detail on the I-80/Gilman Street Interchange Project).

## 2.4 Existing Pedestrian Circulation

The streets within the Project area, Second, Camelia, and Page Streets and Eastshore Highway generally do not provide continuous paved sidewalks with curbs on both sides of the street. Pedestrian facilities consist of a combination of paved and unpaved sidewalks or shoulders. Gilman Street provides sidewalks on both sides of the street including under the I-80 overcrossing with marked crosswalks across the side street and a marked unprotected crosswalk across Gilman Street just east of Eastshore Highway. The under-construction Gilman Street Interchange Project will provide sidewalks with curbs and gutters on both sides of Second Street and on the east side of Eastshore Highway and improve the pedestrian facilities on both sides of Gilman Street.

The four existing signalized study intersections provide marked crosswalks across all four approaches with one curb ramp per intersection corner. Except for the Cedar Street/Sixth Street intersection, the existing signalized study intersections provide pedestrian signal heads for all crossings.

The *City of Berkeley Pedestrian Plan* (2020) does not identify any improvements within or near the Project area.

## 2.5 Existing Bicycle Circulation

Based on the *City of Berkeley Bicycle Plan* (2017), bicycle facilities can be classified into the following:

- ***Multi-Use Paths (Class I)*** – These facilities are located off-street and may serve both bicyclists and pedestrians. They provide complete right-of-way to cycling, walking, and other non-motorized forms of transportation.
- ***Bicycle Lanes (Class II)*** – These facilities provide a dedicated area for bicyclists within the paved street width through striping and signage.
- ***Bicycle Routes (Class III)*** – These facilities are found along streets that do not provide adequate width for dedicated bicycle lanes. The street is then designated as a bicycle route through signage informing drivers to expect bicyclists. Bicycle routes are generally along collector and arterial streets when bicycle lanes are infeasible.
- ***Cycletracks (Class IV)*** – These are separated and protected bikeways where a type of barrier, usually curbs, bollards, or parking isles, separate the bike lane from the vehicular flow of traffic. Cycletracks are also known as separated bikeways.



- ***Bicycle Boulevards*** – These facilities are mostly installed along residential streets with low traffic volumes and prioritize bicycle travel. Assignment of right-of-way to the route, traffic calming measures and bicycle traffic signal actuation are used to prioritize through-trips for bicycles.

**Figure 4** shows the existing and proposed bicycle facilities in the study area. The following bicycle facilities are currently provided in the Project vicinity:

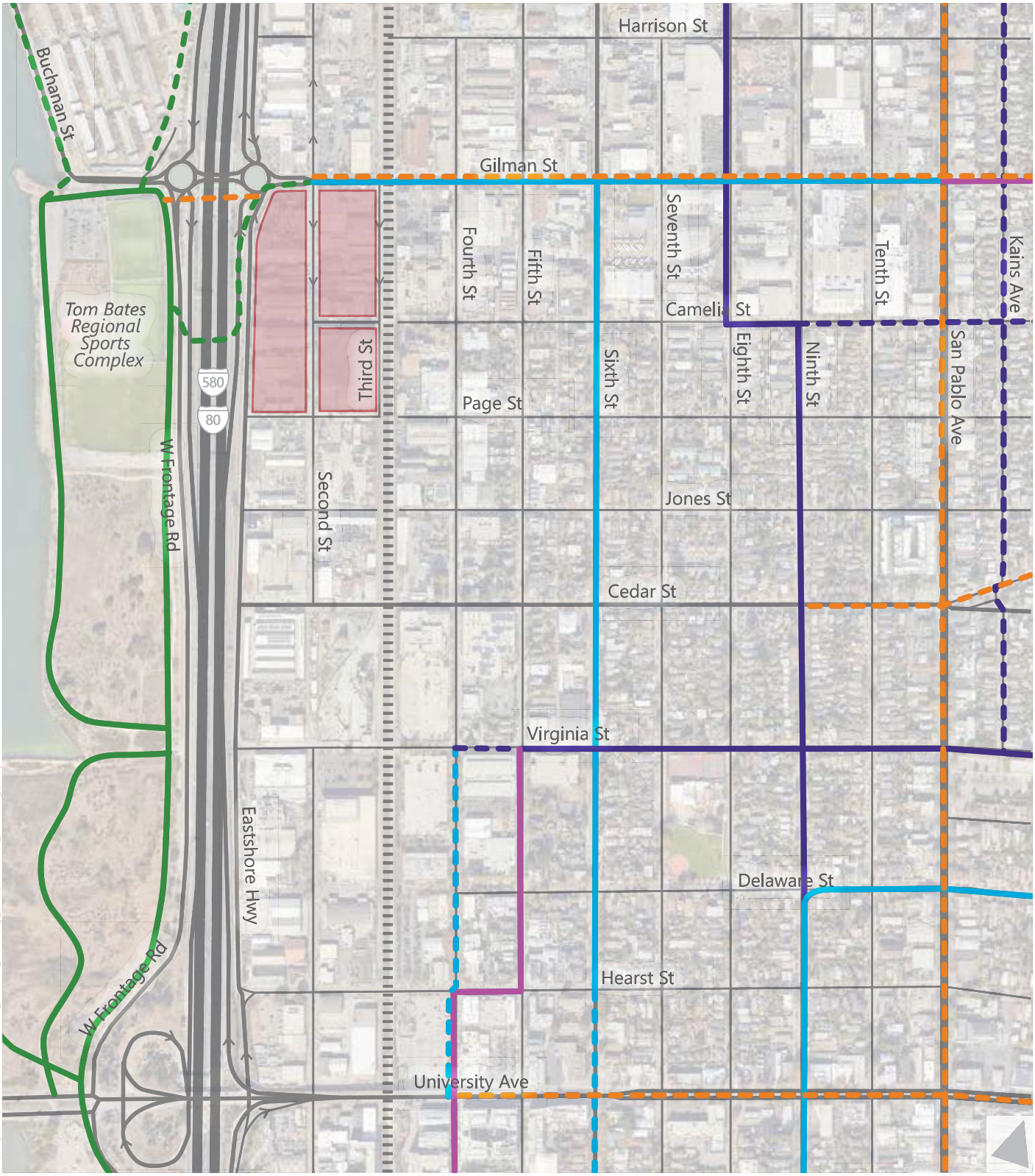
- Class I multi-use path on the west side of West Frontage Road, which is part of the Bay Trail
- Class II dedicated bicycle lanes on both sides of Gilman Street between I-80/580 and San Pablo Avenue
- Class II dedicated bicycle lanes on both sides of Sixth Street south of Gilman Street
- Bicycle boulevards (Class III bicycle routes) on Eighth Street between Albany University Village and Camelia Street, Camelia Street between Eight and Ninth Streets, and Ninth Street south of Camelia Street

The *City of Berkeley Bicycle Plan* identifies the following proposed facilities in the vicinity of the Project area:

- Gilman Street overcrossing as a Class I multi-use path over the I-80 freeway to connect the Bay Trail west of the freeway and Gilman Street east of the freeway
- Class IV cycletracks on Gilman Street and San Pablo Avenue
- Upgrades to the existing Class II bike lanes on Sixth Street, including provision of striped buffers
- Extension of the bicycle boulevard on Camelia Street east to Santa Fe Avenue, including a new pedestrian hybrid beacon at the Camelia Street/San Pablo Avenue intersection

The Gilman Street Overcrossing and the Gilman Street cycletrack between the I-80 freeway and Fourth Street are part of the under-construction Gilman Street Interchange Project.

The nearest Bay Wheels bikeshare station is on Fifth Street just north of Delaware Street, about 0.6 miles south of the Project.




**Legend**

Railroad

Project Site

**Bicycle Network**

| *Existing* | *Under Construction/Proposed* |
|---|---|
| | Bike Path (Class I) |
| | Bike Lane (Class II) |
| | Bike Route (Class III) |
| | Bicycle Boulevard |
| | Cycletrack/Study Cycletrack (Class IV) |

*Source: City of Berkeley Bicycle Plan 2017.*

Figure 4

## Existing and Future Bicycle Network

## 2.6 Changes to the Circulation System

The I-80/Gilman Street Interchange Project, currently under construction, primarily consists of installing two roundabouts at the intersections of I-80 Ramps on Gilman Street. The roundabouts will replace the existing stop-signs on the I-80 Northbound and Southbound Off-Ramps, West Frontage Road, and Eastshore Highway. The Gilman Street Interchange Project will also complete the following:

- Provide a two-way cycletrack (separated bikeway) on the south side of Gilman Street between the Interchange and Fourth Street
- Provide a non-motorized overcrossing of I-80 about 500 feet south of the Interchange which will connect to the Bay Trail west of I-80 and the Gilman Street cycletrack east of I-80 through a path between the freeway and Eastshore Highway
- Improve the at-grade railroad crossing on Gilman Street including installation of medians with bollards on both directions of Gilman Street
- Remove most on-street parking on Gilman Street between I-80 and Fourth Street
- Repave Second Street and provide sidewalk, curb, and gutter on both sides of the street
- Convert Eastshore Highway between Harrison and Gilman Streets to one-way southbound
- Convert about 150 feet of Eastshore Highway south of Gilman Street to one-way northbound
- Convert Second Street to one-way southbound between Gilman and Camelia Streets and prohibit left-turns from westbound Gilman Street onto Second Street
- Open Third Street just west of the railroad tracks to emergency vehicles only, and local access to the existing Live/Work Building at 1306 Third Street. This segment of Third Street will be designed as a one-way southbound street between Gilman and Camelia Streets with access at the Gilman Street/Third Street intersection limited to right-turns only from eastbound Gilman Street to southbound Third Street
- Signalize the Gilman Street/Fourth Street intersection and the at-grade railroad crossing with a signal interconnect to minimize the potential for queues on Gilman Street to spill back onto the railroad tracks
- Close the existing at-grade railroad crossing on Camelia Street and provide a fence west of the railroad tracks along the Project frontage between Gilman and Camelia Streets

Construction of the Gilman Street Interchange Project is expected to be completed by 2025.

As described above, the Gilman Street Interchange Project will modify vehicular access to and from the north and the east for the Project area. Vehicles would only be able to turn right from eastbound Gilman Street to Second Street to access the Project area. Thus, vehicles accessing from the east would either travel westbound on Gilman Street and navigate through the East Roundabout to access eastbound Gilman Street and turn right onto southbound Second, or use westbound Cedar Street and turn right onto northbound Second Street or Eastshore Highway. Vehicles leaving the Project area to the north would use northbound Eastshore Highway and either use the roundabouts to access the freeway ramps or travel eastbound on Gilman Street.



# 3. Project Transportation Characteristics

This section describes the Project and its transportation characteristics.

## 3.1 Project Description

The Gilman Gateway Rezone Project would consist of up to about 1,003,400 square feet of new R&D/ office uses in the area bound by Gilman Street to the north, Union Pacific railroad tracks to the east, Page Street to the south, and Eastshore Highway to the west. It would consist of the following component developments, as shown on **Figure 5**:

- Berkeley Forge Project = 890,000 square feet
- 1306 Third Street = 12,410 square feet
- 600 Gilman Street = 23,250 square feet
- 1433 Eastshore Highway = 77,700 square feet

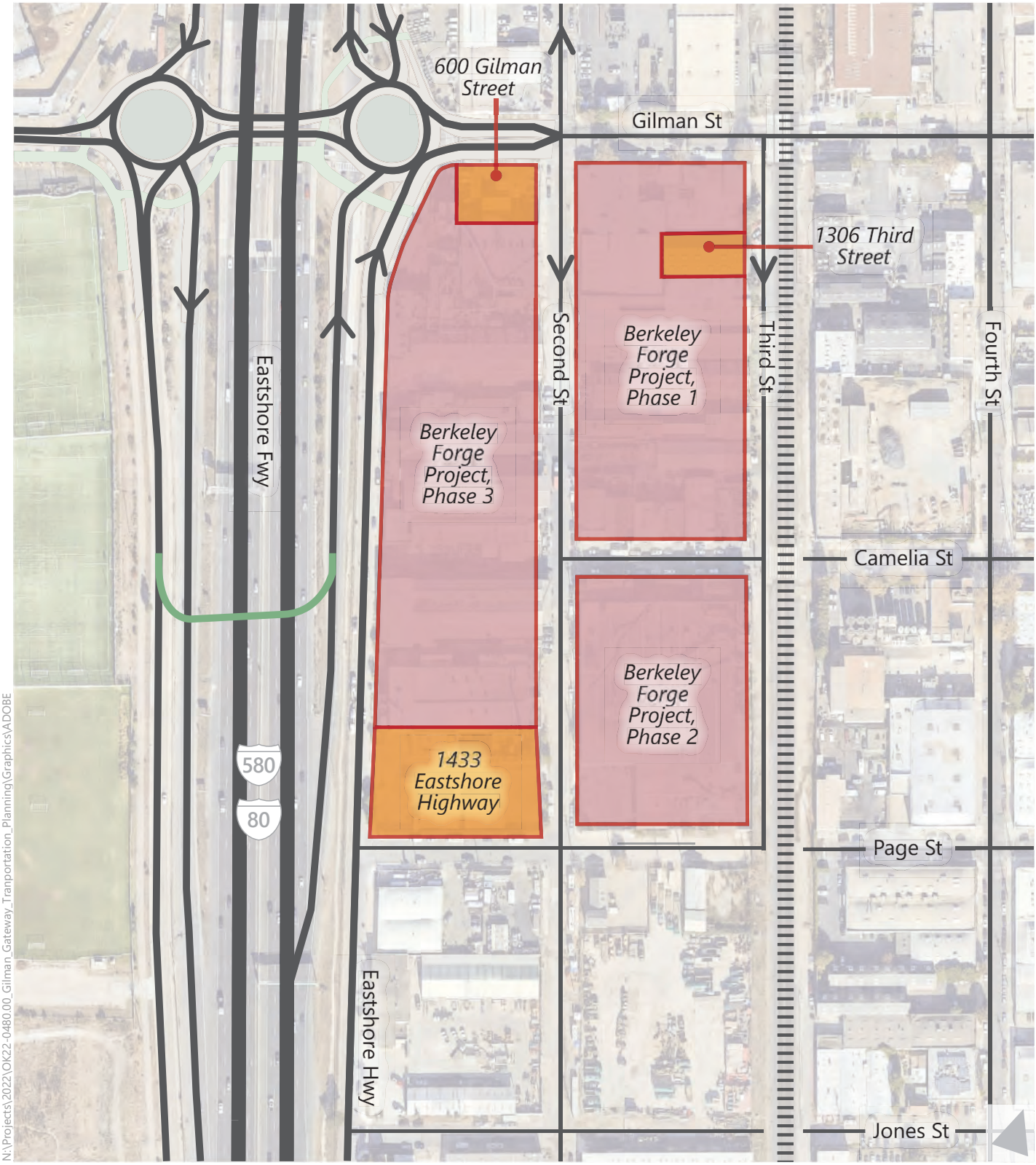
The Project would demolish the mostly currently unused buildings and structures in the Project area. Additional details are available for the Berkeley Forge Project which is provided below.

### 3.1.1 Berkeley Forge Project

**Appendix D** provides the preliminary site plan for the Berkeley Forge Project, which would consist of multiple four to six-level buildings completed in three phases. Each Project phase is described below:

- Phase 1 (Block A) would consist of the block bound by Gilman Street to the north, Union Pacific railroad tracks to the east, Camelia Street to the south and Second Street to the west. It would include three buildings (A1, A2, and A3) providing about 358,000 square feet of space.[8] Phase 1 would also include Garage A in the southeast corner of the block, which would provide 690 parking spaces and would be accessed through a full-access driveway on Camelia Street and a right-turn out only driveway on Third Street. Phase 1 does not include the existing 1306 Third Street building.

[8] The Phase 1 square footage includes about 1,200 square feet of incidental retail in Building A1, which would most likely be a coffee shop. Although open to the public, the retail component is expected to primarily serve the Project area workers considering the size and the location of the use. Since the retail use is estimated to generate minimal activity from outside the Project area, this analysis assumes the retail component as part of the primary use in the Project and does not estimate trip generation for it separately.




**Legend**

- Railroad
- Proposed Ped/Bike Bridge
- Berkeley Forge Project
- Other Parcels within the Gilman Gateway Rezone Project

Figure 5

## Project Area Components

- Phase 2 (Block B) would consist of the block bound by Camelia Street to the north, Union Pacific railroad tracks to the east, Page Street to the south and Second Street to the west. It would include two buildings (B1 and B2) providing about 214,000 square feet of space. Phase 2 would also include Garage B in the southeast corner of the block, which would provide 568 parking spaces and would be accessed through full-access driveways on Page and Third Streets.
- Phase 3 (Block C) would consist of the block bound by Gilman Street to the north, Second Street to the east, Page Street to the south and Eastshore Highway to the west, excluding the northmost and southmost parcels in the block. It would include three buildings (C1, C2, and the Forge Shed) providing about 318,000 square feet of space. Phase 3 would also include Garage C in the south portion of the site, which would provide 618 parking spaces and would be accessed through full-access driveways on Second Street and Eastshore Highway.

In addition, the Project proposes the following modifications to the transportation network:

- Maintain the segment of Second Street between Gilman and Camelia Streets as one-way southbound and narrow the segment from two to one automobile lane.
- Convert the segment of Second Street between Camelia and Page Streets from one-way southbound to two-way operations, consistent with current conditions, but a modification to the Gilman Street Interchange Project.
- Utilize Third Street between Gilman and Camelia Streets to allow truck and emergency vehicle access and allow passenger vehicles to turn right out of Garage A.
- Create a private street on the east side of the Project between Camelia and Page Streets and within the Project right-of-way to provide truck access for Building B1 and passenger vehicle access for Garage B.
- Complete and/or widen sidewalks along Project frontages.

Final circulation plans will be refined in coordination with the City of Berkeley and designed to meet City standards.

## 3.2 Automobile Trip Generation

Trip generation is the process of estimating the number of vehicles that would likely access a project on a typical day. **Table 6** summarizes the trip generation for the Gilman Gateway Rezone Project. Trip generation data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual (11th Edition)* is used to estimate the vehicle trip generation by applying the ITE trip generation equations for the entire Project area.

The Gilman Gateway Rezone Project is estimated to generate about 9,980 daily, 918 AM, and 868 PM peak hour automobile trips. This trip generation estimate is conservative in that it does not account for the existing trips generated by the current active uses in the Project area that would be demolished by the



Project, or the TDM Plan that would be implemented by the Project as described on page 33 of this report. **Table 7** presents the trip generation for the four Gilman Gateway Rezone Project components.

**Table 6: Automobile Trip Generation**

| Land Use | Size[1] | Daily[2] | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total |
| R&D/Office[3] | 1,003.4 KSF | 9,980 | 753 | 165 | 918 | 139 | 729 | 868 |

Notes:
1. KSF = 1,000 square feet
2. Daily trip generation rounded to nearest 10.
3. ITE Trip Generation Manual (11th Edition) land use category 760 (Research and Development Center) in general urban/suburban setting:
   Daily: T = 9.70 * X + 247.71
   AM Peak Hour: T = 0.89 * X + 24.54 (82% in, 18% out)
   PM Peak Hour: T = 0.84 * X + 25.08 (16% in, 84% out)

Source: Fehr & Peers, 2023.

**Table 7: Automobile Trip Generation by Project Component**

| Project | Size[1] | Daily[2, 3] | AM Peak Hour[3] | | | PM Peak Hour[3] | | |
|---|---|---|---|---|---|---|---|---|
| | | | In | Out | Total | In | Out | Total |
| Berkeley Forge | 890.0 KSF | 8,860 | 669 | 146 | 815 | 123 | 647 | 770 |
| 1306 Third Street | 12.4 KSF | 120 | 9 | 2 | 11 | 2 | 9 | 11 |
| 600 Gilman Street | 23.3 KSF | 230 | 17 | 4 | 21 | 3 | 17 | 20 |
| 1433 Eastshore Hwy | 77.7 KSF | 770 | 58 | 13 | 71 | 11 | 56 | 67 |
| ***Total*** | ***1,003.4 KSF*** | ***9,980*** | ***753*** | ***165*** | ***918*** | ***139*** | ***729*** | ***868*** |

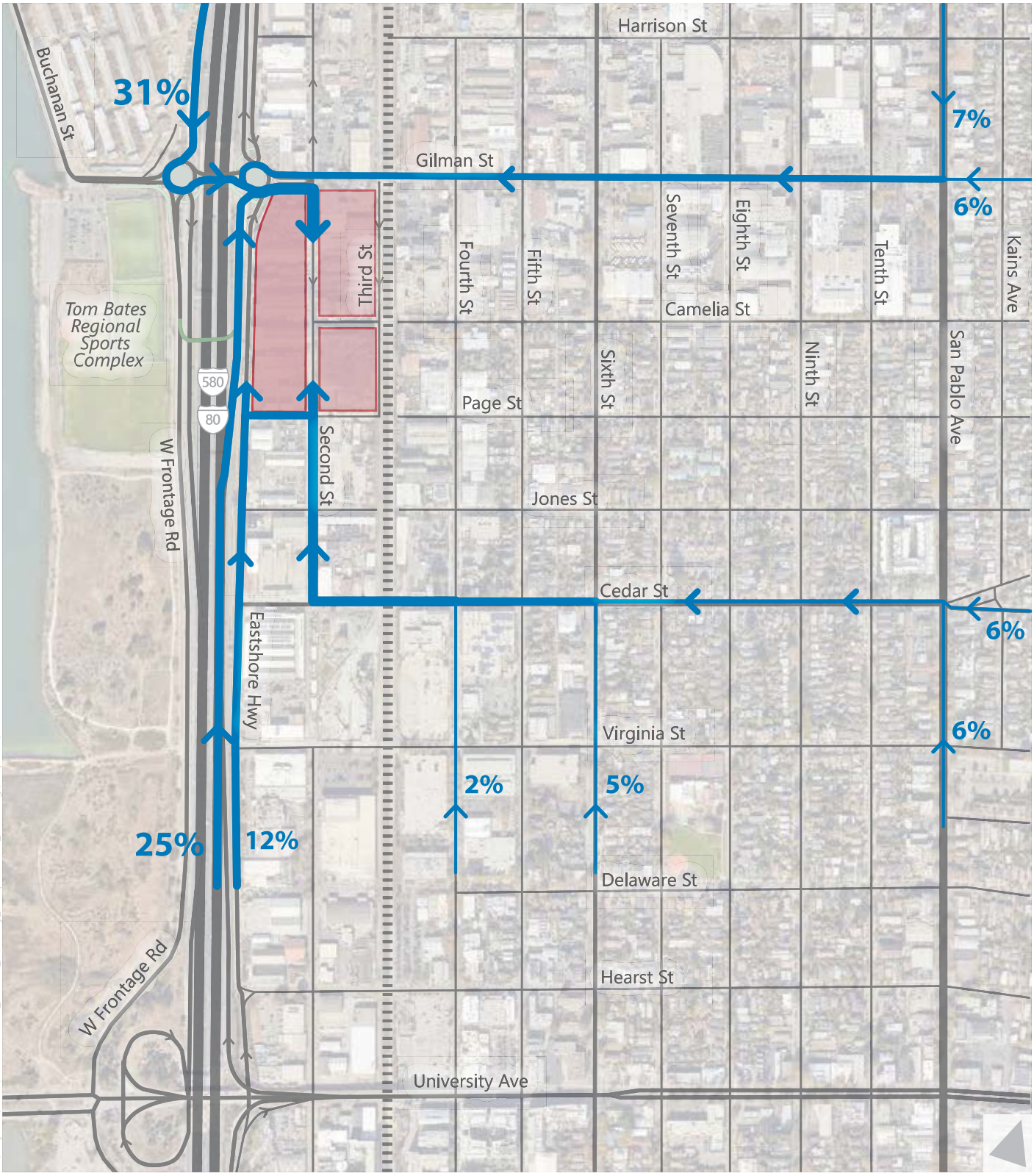
Notes:
1. KSF = 1,000 square feet
2. Daily trip generation rounded to nearest 10.
3. The trip generation for each project component is estimated by proportioning the trip generation for the Gilman Gateway Rezone Project as presented in Table 3 based on the size of each project component.

Source: Fehr & Peers, 2023.

## 3.3 Trip Distribution and Assignment

Trip distribution is defined as the directions of approach and departure that vehicle trips generated by the Project would use to arrive at and depart from the Project. The trip distribution for the Project is primarily based on the latest US Census data for the home location of workers in West Berkeley, location of complementary land uses, and the existing and proposed street network serving the Project area. It accounts for the Project location, current traffic patterns, and under-construction infrastructure changes in the area such as prohibition on left-turns from westbound Gilman Street onto southbound Second Street and the closure of the at-grade railroad crossing on Camelia Street. **Figure 6** shows the resulting inbound trip distribution and **Figure 7** shows the resulting outbound trip distribution.

Trips generated by the Project and summarized in Table 7 were assigned to the roadway network according to the trip distribution shown on Figure 6 and Figure 7. **Figure 8** presents the peak hour Project automobile trips generated by the Project at the study intersections.



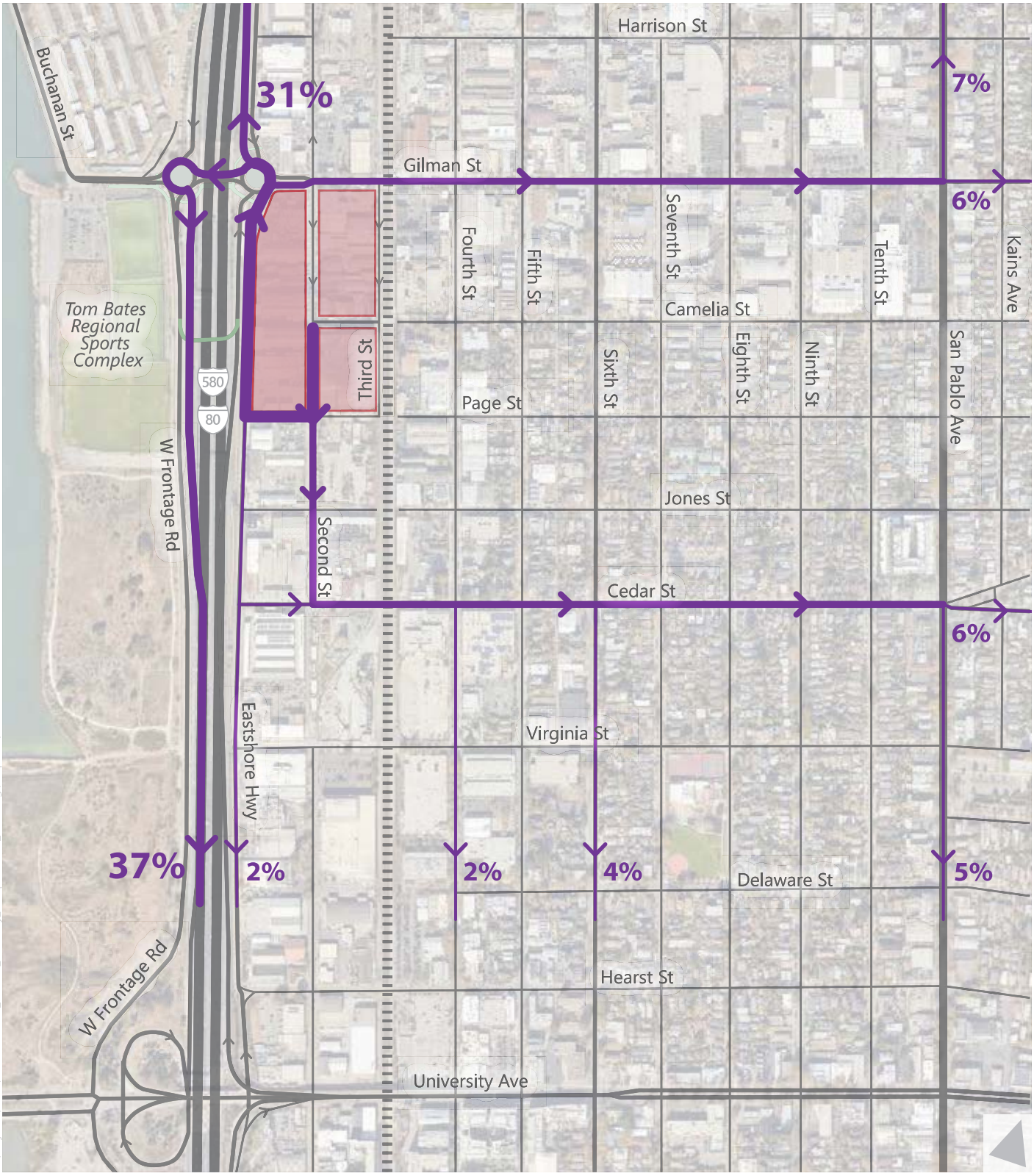

**Legend**

- Railroad
- Proposed Ped/Bike Bridge
- Project Site
- Inbound Trips

Figure 6

## Inbound Trip Distribution

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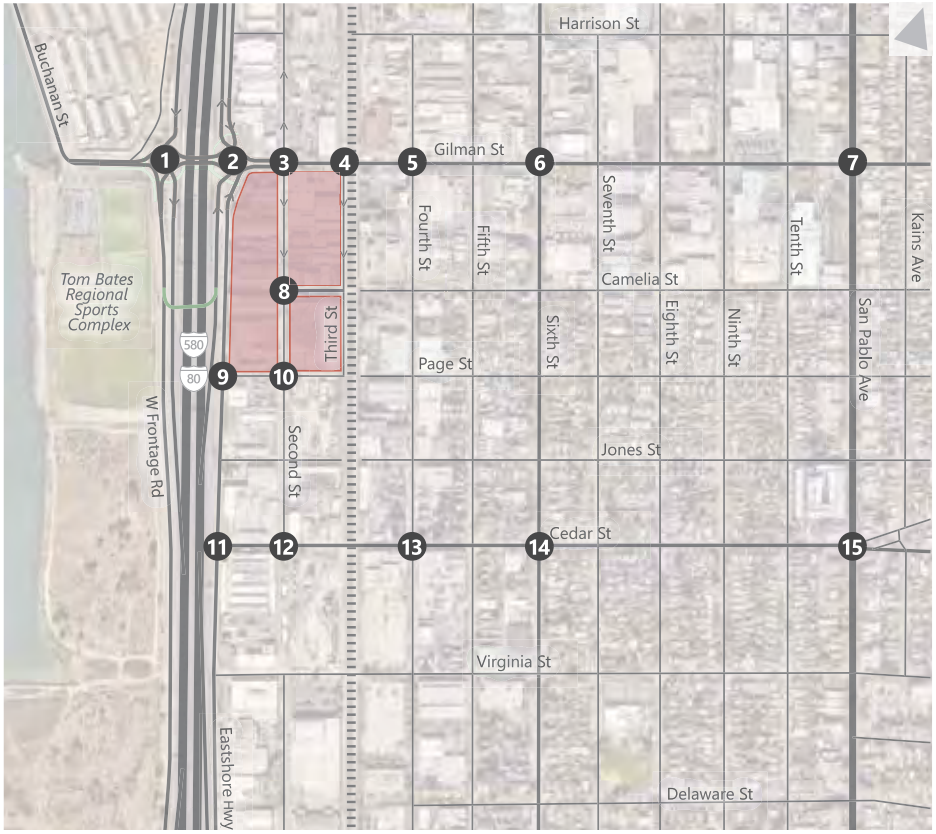

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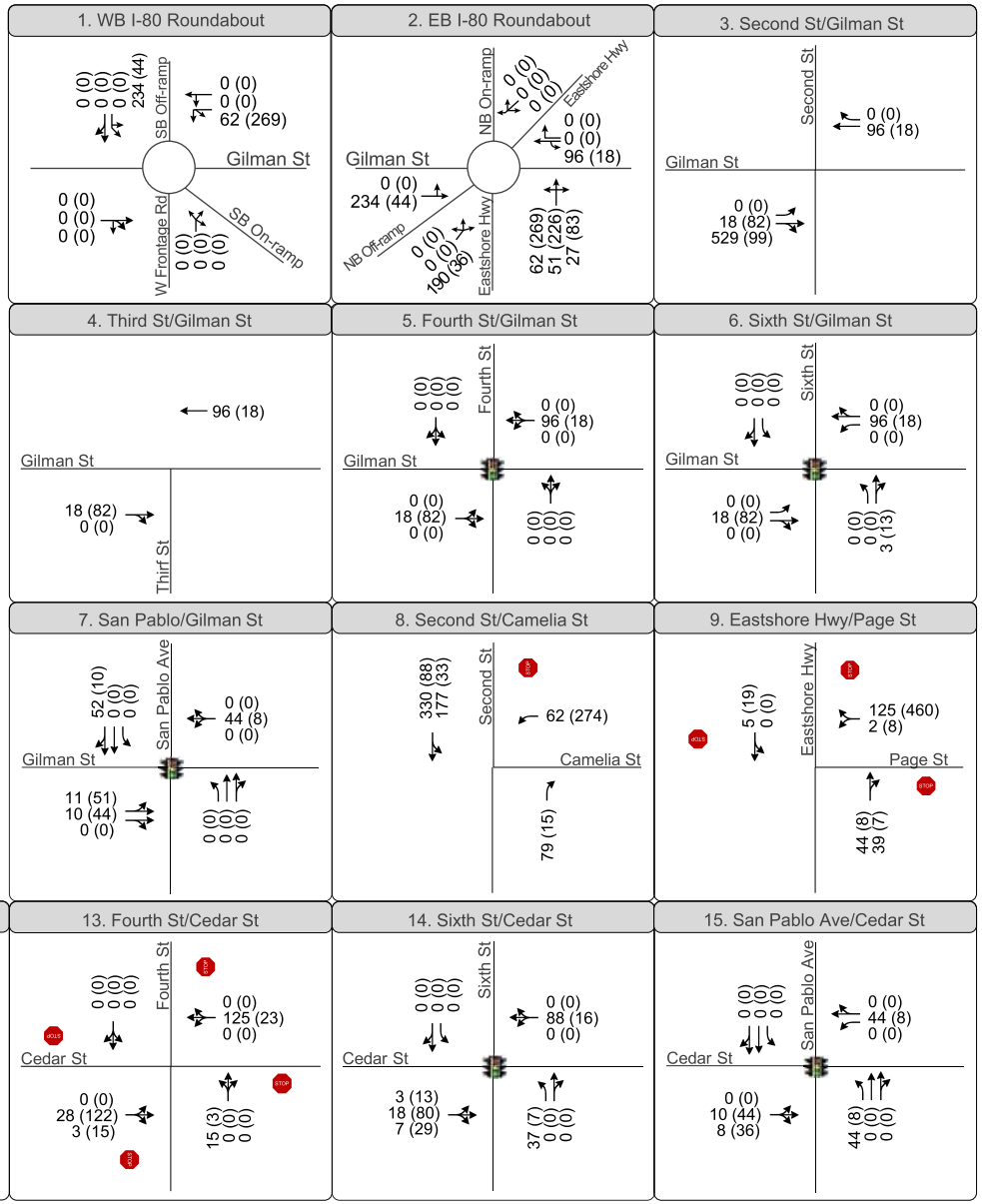
**Legend**

- Railroad
- Proposed Ped/Bike Bridge
- Project Site
- Outbound Trips

Figure 7

## Outbound Trip Distribution




**Legend**

- Railroad
- Proposed Ped/Bike Bridge
- Project Site
- Study Intersections

Figure 8
Peak Hour Project Trips

# 4. Vehicle Miles Traveled Assessment

In November 2020, the City of Berkeley adopted guidelines, thresholds of significance, and screening criteria for evaluating vehicle miles traveled (VMT) in California Environmental Quality Act (CEQA) documents, as required by the State for all CEQA documents published after July 1, 2020. This section assesses impacts of the Project on VMT, in accordance with the adopted City guidelines. It starts by presenting the City of Berkeley's applicable threshold of significance for the Project, describes the applicability of VMT screening, and estimates the VMT metric for the Project.

## 4.1 City of Berkeley Thresholds of Significance

The State Office of Planning and Research's (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* recommends evaluating VMT impacts using an efficiency-based version of the metric, such as VMT per resident for residential developments or VMT per worker for office or other employment-based developments. Consistent with OPR's guidelines, City of Berkeley uses the metric of home-work VMT per worker for evaluating the impacts of employment-based uses, such as the Gilman Gateway Project. The home-work VMT per worker measures all of the worker commute VMT by a motor vehicle on a typical weekday between homes and workplaces and divides that VMT by the number of workers.

Based on the City of Berkeley's guidelines, the following significance threshold is applicable to the Project:

- An employment-generating project's VMT impact is considered less-than-significant if its home-work VMT per worker is at least 15 percent below the regionwide average home-work VMT per worker

## 4.2 VMT Screening Assessment

According to the OPR's Technical Advisory, screening thresholds can be used to quickly identify projects that can be expected to cause a less-than-significant impact without conducting a detailed study. The City of Berkeley guidelines include several screening criteria. The screening criteria potentially applicable to the project are the Projects in Low VMT Areas and the Transit Priority Areas, which are described below.

- **Projects in Low VMT Areas:** According to the Projects in Low VMT Areas criterion, projects that are located in low-VMT areas and that have characteristics similar to other uses already located in those areas can be presumed to generate VMT at similar rates. The low-VMT areas in Berkeley are defined based on the results of the Alameda County Transportation commission (CTC) Travel Demand Model, and are summarized in maps. Figure 9 shows the City of Berkeley's map for low-VMT areas for employment-based uses. Based on the City of Berkeley's screening map, the Project is not located in a low-VMT area and does not meet the Low VMT Areas screening criterion.



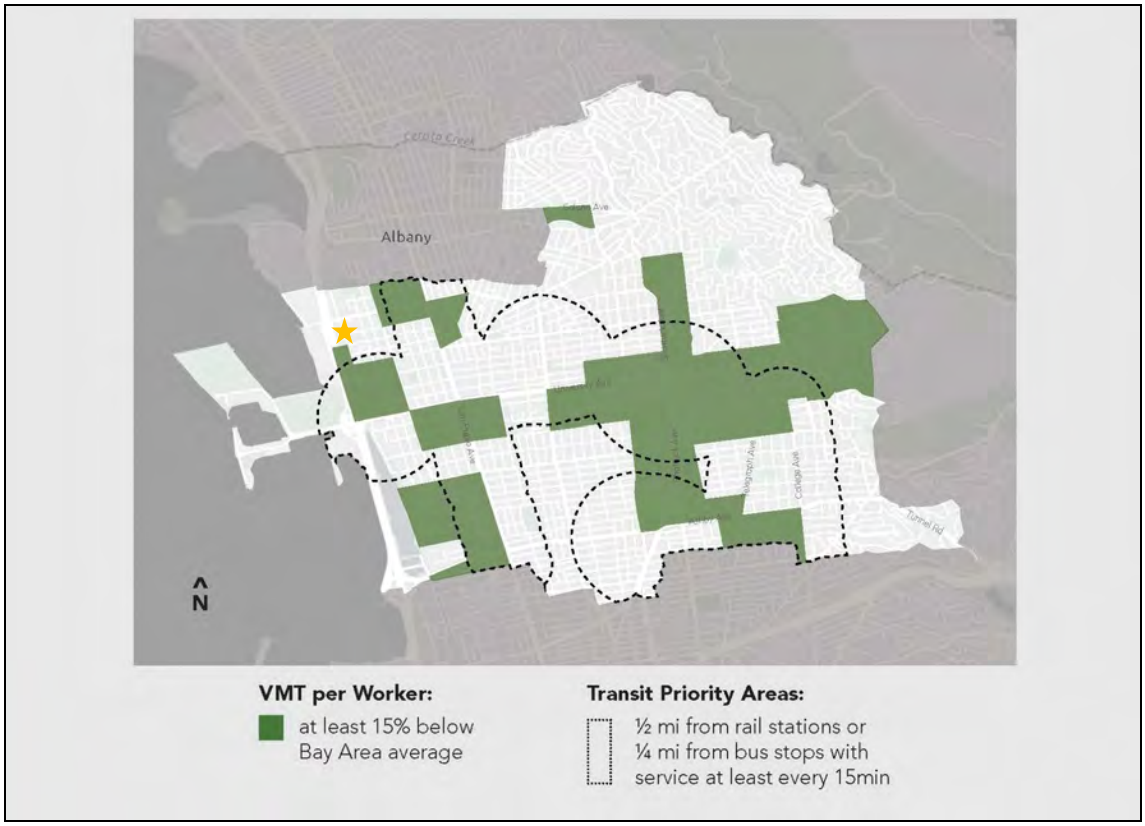



*Figure 9 City of Berkeley Low VMT Areas for Workers*

- **Transit Priority Areas (TPAs):** According to the TPAs criterion, projects located within a 0.5-mile walkshed of a major transit stop[9] or within a 0.25-mile walkshed of a stop along a high-quality transit corridor[10] can be presumed to have a less-than-significant impact on VMT. Figure 9 also shows the City of Berkeley's map for TPAs. Based on the City of Berkeley's screening map, the project is not located in a TPA and does not meet the TPAs screening criterion.

Since the Project does not meet either the Low VMT Areas or the TPAs screening criteria, a detailed evaluation of the VMT generated by the Project is required, which is presented in the next subsection of this memorandum.

[9] Major transit stop is defined as an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (Pub. Resources Code, § 21064.3).

[10] High-quality transit corridor is defined as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours (Pub. Resources Code, § R21155).

## 4.3 Project VMT Estimate

Since the Project would not meet any of the City of Berkeley's VMT screening criteria, a more detailed VMT analysis is completed. VMT is typically an output from travel demand models. This analysis uses the Alameda CTC Countywide Travel Demand Model, as recommended by the City of Berkeley guidelines, as the tool to estimate VMT for the Project.

The Alameda CTC Model, which covers the entire nine-county Bay Area, is a regional travel demand model that uses socio-economic data and roadway and transit network assumptions to forecast traffic volumes, transit ridership, and VMT using a four-step modeling process that includes trip generation, trip distribution, mode split, and trip assignment. This process accounts for changes in travel patterns due to future growth and expected changes in the transportation network. This analysis uses the latest version of the Alameda CTC Model, which was released in May 2019. The Model is based on the Metropolitan Transportation Commission (MTC) Plan Bay Area 2040 (i.e., Sustainable Communities Strategy) transportation network and land uses for 2020 and 2040.

As a regional planning tool, the Alameda CTC Model was developed through an extensive model validation process and is intended to replicate existing vehicular travel behavior. Therefore, it can provide a reasonable estimate of the VMT generated in various geographic areas on a typical weekday, as well as estimate future VMT that reflects planned local and regional land use and transportation system changes. The Model was used to estimate home-work VMT per worker for the Project and the entire nine-county Bay Area region under 2020 and 2040 conditions.

**Table 8** summarizes the VMT estimates under 2020 and 2040 conditions as estimated by the Alameda CTC Model. The table also compares the home-work VMT per worker for the Project with the regionwide average and 15 percent below the regionwide average, which is the threshold used to determine the significance of the VMT impact.

Under both 2020 and 2040 conditions, the home-work VMT per worker for the Project is estimated to be 16.1. Note that these estimated VMT metrics are based on the Alameda CTC Model, which is a regional travel demand model and only accounts for the built environment variables to which the model is sensitive. Project characteristics, such as limited on-site parking and the transportation demand management (TDM) measures that would be implemented by the Project, may not be reflected in the VMT metrics estimated for the Project.

Both the 2020 and 2040 home-work VMT per worker for the Project would be above the threshold of significance (i.e., 15 percent below the regionwide Bay area average) by about five percent. Implementation of a TDM Plan, which is described below, could reduce the home-work VMT per worker for the Project by about six to ten percent, as described below, which would reduce the home-work VMT per worker for the Project to below the threshold of significance.



**Table 8: VMT Summary**

| Geographic Area | Home-Work VMT per Worker (2020) | Home-Work VMT per Worker (2040) |
|---|---|---|
| Bay Area Regionwide Average[1] | 18.1 | 18.2 |
| Bay Area Regionwide Average minus 15% (i.e., threshold of significance) | 15.4 | 15.5 |
| Project (TAZ 79)[1] | 16.1 | 16.1 |
| Below Threshold without TDM? | No | No |
| Project with TDM[2] | 14.5 to 15.1 | 14.5 to 15.1 |
| Below Threshold with TDM? | Yes | Yes |

Notes:
1. Based on the results of the Alameda CTC Countywide Travel Demand Model.
2. See Appendix E for TDM Plan details and effectiveness.

Source: Fehr & Peers, 2022.

## 4.4 Transportation Demand Management

The Project would implement a TDM Plan to reduce the VMT impact of the Project, as well as automobile trip generation and parking demand, through measures that discourage the use of automobiles and encourage the use of other travel modes.

**Appendix E** provides the detailed TDM Plan for the Project. The TDM Plan, which would be implemented at the time of the occupancy of the first phase of the Project, would include the following strategies:

a. Provide shuttle service between the Project area, the North Berkeley BART station, and the Berkeley Amtrak station during weekday peak commute periods (6:00 AM to 10:00 AM and 3:00 PM to 7:00 PM). The Project would also explore the feasibility, and if feasible, will coordinate the shuttle service with existing shuttle services, and/or other employers in West Berkeley. Shuttle service would be adjusted based on ridership.
b. Coordinate with AC Transit to explore the potential to either extend existing bus service or provide new bus service through or near the Project area (Note that since the characteristics of a potential bus service extension, such as service frequency and/or destinations served, cannot be known at this time, the potential effects of bus service expansion on reducing VMT cannot be quantified and therefore not included in the total VMT reduction of the TDM Plan).
c. Provide bike lockers, showers, personal lockers, and a repair station throughout the Project area to encourage bicycling.
d. Coordinate with the City of Berkeley and/or regional agencies to facilitate the potential installation of a BayWheels bikeshare station in the Project area.
e. Offer carpool/ride-matching services, such as ComoVee, or 511.org RideShare, to pair employees interested in forming commute carpools.



f. Provide preferential carpool parking, including free parking for carpoolers if employees are charged for on-site parking. Carpool parking spaces not occupied by 10:00 AM would be available to other vehicles.
g. Require tenants to provide full or partial transit subsidy to Project employees. Tenants may offer one of the following to employees that request it:[11]
    - A monthly commuter check (or alternatively Clipper Card, which is accepted by BART, AC Transit, and other major transit providers in the Bay Area)
    - Subsidized AC Transit bus pass
    - Subsidized Capital Corridor monthly ticket
h. Require tenants to provide pre-tax commuter benefits for employees.
i. Regularly provide Project tenants and employees information about various transportation options in the area and the TDM strategies provided by the Project. The main lobby of each major Project building shall also provide all the information on transportation options, such as a TransitScreen.
j. Provide information on the Bay Area Commuter Benefits Program to all building tenants. As of September 30, 2014, Bay Area employers with 50 or more full-time employees within the Bay Area Air Quality Management District (Air District) geographic boundaries are required to register and offer commuter benefits to their employees in order to comply with Air District Regulation 14, Rule 1, also known as the Bay Area Commuter Benefits Program. Employers must select one of four Commuter Benefit options to offer their employees: a pre-tax benefit, an employer-provided subsidy, employer-provided transit, or an alternative commute benefit. (Information about Commute Benefits Program is at 511.org/employers/commuter/overview.)

**Table 9** summarizes the estimated effectiveness of the TDM Plan components in reducing the Project VMT. The effectiveness of the strategies is primarily based on the Alameda CTC VMT Reduction Calculator Tool,[12] which is a tool that accounts for the particular location of a development project and quantifies the effects of various strategies in reducing VMT consistent with the research compiled in the *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity, Designed for Local Governments, Communities, and Project Developers* (California Air Pollution Control Officers Association [CAPCOA], December 2021). The CAPCOA publication is a resource for local agencies to quantify the benefit, in terms of reduced travel demand, of implementing various TDM strategies.

It is estimated that the TDM Plan would reduce the Project-generated VMT by between six and ten percent, which would be more than the five percent reduction needed to reduce the home-work VMT per worker for the Project to below the threshold of significance.

[11] This analysis assumes that a transit fare subsidy of about $2.50 per employee per weekday (value to rider, not cost to employer) will be available to all site employees.
[12] See https://www.alamedactc.org/planning/sb743-vmt/ for more information.

**Table 9: TDM Plan VMT Reduction Estimates**

| TDM Strategy | Description | Estimated VMT Reduction[1] |
|---|---|---|
| BART Shuttle | Provide peak commute period shuttle service to BART and Amtrak | 3% - 6% |
| Bus Service Extension | Extend AC Transit bus service into the Project area | N/A [2] |
| Bicycle Amenities | Provide secure bicycle parking, showers and lockers, and repair station | <1% |
| Bike Share | Allow and facilitate installation of a potential BayWheels bikeshare station in the Project area | |
| Carpool and Ride-Matching Assistance | Assist Project area employees in forming carpools and provide preferential carpool parking spaces | 1% |
| Carshare Parking Spaces | Dedicate on-site carshare parking spaces | <1% |
| Transit Fare Subsidy | Require tenants to provide transit subsidies | 1% - 2%[3] |
| Pre-Tax Commuter Benefits | Require tenants to provide pre-tax commuter benefits | |
| Marketing and Education | Active marketing and education of employees on various commuting options | N/A[4] |
| | ***Total Estimated VMT Reduction*** | **6-10%** |

Notes:

1. Primarily based on the results of the Alameda CTC VMT Reduction Calculator Tool
2. Since the characteristics of a potential bus service extension, such as service frequency and/or destinations served, cannot be known at this time, effectiveness of this strategy cannot be quantified at this time.
3. Assuming a transit subsidy of about $2.50 per day per employee (value to transit user and not necessarily the cost) available to all employees.
4. The effectiveness of this strategy cannot be quantified at this time. This does not necessarily imply that the strategy is ineffective. It only demonstrates that existing literature does not provide a robust methodology for calculating its effectiveness. In addition, many strategies are complementary to each other and isolating their specific effectiveness may not be feasible.

Source: Fehr & Peers, 2023.



# 5. Traffic Operations Analysis

As described in previous chapters, automobile delay, LOS, and other similar measures of vehicular capacity or traffic congestion can no longer be used to identify significant impacts under CEQA. This report evaluates the effects of the Project on local intersection operations at 15 key intersections for informational purposes. This chapter summarizes intersection operations at the study intersections under Near-Term No Project and Near-Term Plus Project conditions and identifies substantial effects based on the City of Berkeley thresholds for intersection operations.

## 5.1 Near-Term Intersection Operations

The Near-Term No Project conditions represent existing traffic plus traffic volumes from approved and proposed but not yet constructed and occupied developments that are expected to be operational in the near future. The projects included in the Near-Term scenarios include:

- 600 Addison Street (approved) – would consist of about 471,000 square feet of office/R&D space west of the railroad tracks between Addison Street and Bancroft Way.
- 1914 Fifth Street (proposed) - would consist of 257 multi-family residential units and about 24,600 square feet of commercial space on Fifth Street between Hearst and University Avenues.
- 1200 San Pablo Avenue (approved) – would consist of 104 multi-family residential units, and about 3,100 square feet of commercial space at the southwest corner of the San Pablo Avenue/ Harrison Street intersection.
- 1201 San Pablo Avenue (approved) – would consist of 66 multi-family residential units and about 1,700 square feet of commercial space at the southeast corner of the San Pablo Avenue/Harrison Street intersection.
- 1701 San Pablo Avenue (approved) – would consist of 110 affordable multi-family residential units at the northeast corner of the San Pablo Avenue/ Francisco Street intersection.
- 1820 San Pablo Avenue (approved) – would consist of 44 multi-family residential units, and about 6,800 square feet of commercial space on San Pablo Avenue midblock between Delaware Street and Hearst Avenue.
- 787 Bancroft/TheLAB (approved) – would consist of about 265,000 square feet of office/R&D space through renovation and repurposing of existing buildings and construction of a new building in an area approximately bound by Bancroft Way, Fifth Street, Allston Way, and the railroad tracks.

The intersection volumes under the Near-Term No Project Conditions were estimated by adding the trips generated by the development projects listed above to the existing intersection volumes. **Figure 10** shows the intersection volumes under the Near-Term No Project conditions. Project trips were added to the Near-Term No Project conditions to develop traffic volumes for the Near-Term Plus Project conditions, shown on **Figure 11**. Roadway geometries and traffic controls under Near-Term No Project conditions account for



the completion of the I-80/Gilman Street Interchange Project, as described in Section 2.6 on page 21 of this report.

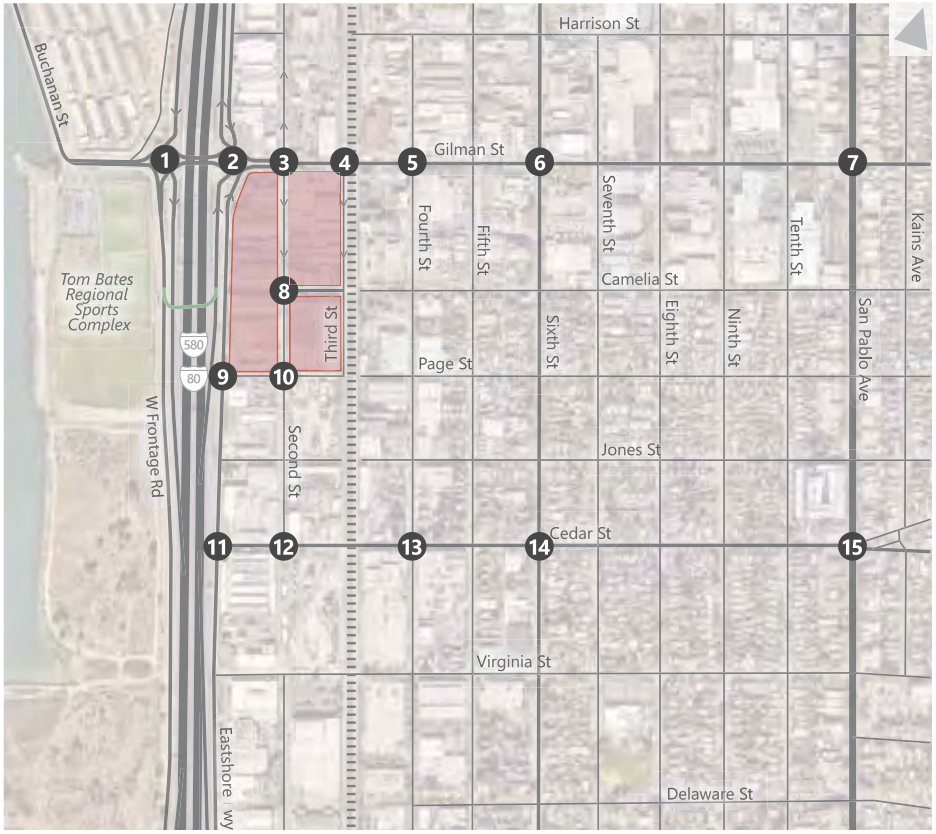
**Table 10** summarizes the Near-Term No Project and Near-Term Plus Project intersection operations analysis results. Appendix B (Synchro) and Appendix F (SIDRA) provide the detailed LOS calculation worksheets. As shown in Table 10, the 15 study intersections would operate at LOS D or better under Near-Term No Project conditions during both AM and PM peak hours.

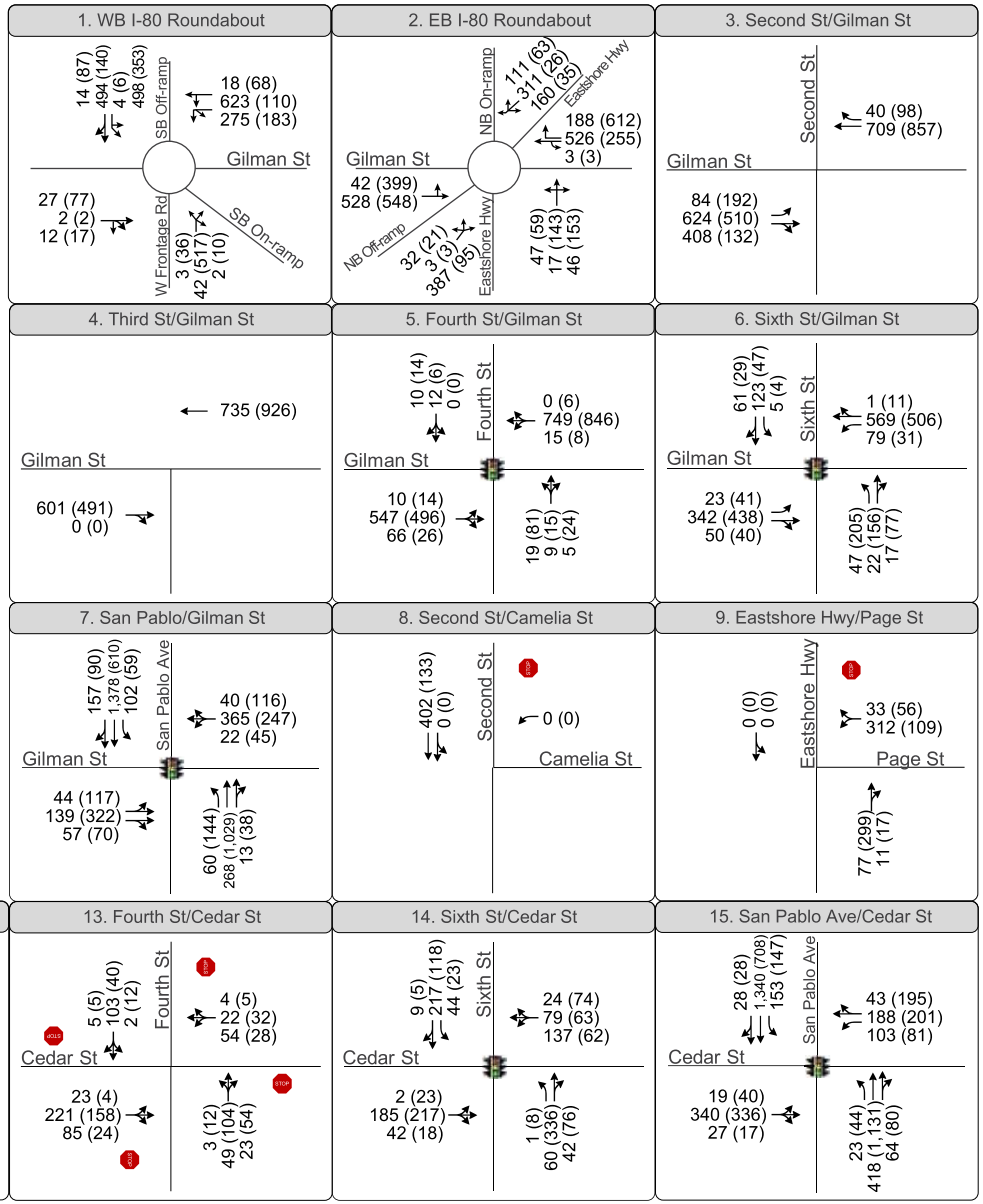
Under the Near-Term Plus Project conditions, the following intersections would operate at LOS E or LOS F:

- The Gilman Street/I-80 Ramps/West Frontage Road intersection (the West Roundabout) would operate at LOS F during the AM peak hour
- The Gilman Street/I-80 Ramps/Eastshore Highway intersection (the East Roundabout) would operate at LOS F during both the AM and PM peak hours
- The all-way stop-controlled Camelia Street/Second Street intersections would operate at LOS F during the AM peak hour

All other study intersections would operate at LOS D or better during the AM and PM peak hours under the Near-Term Plus Project conditions.





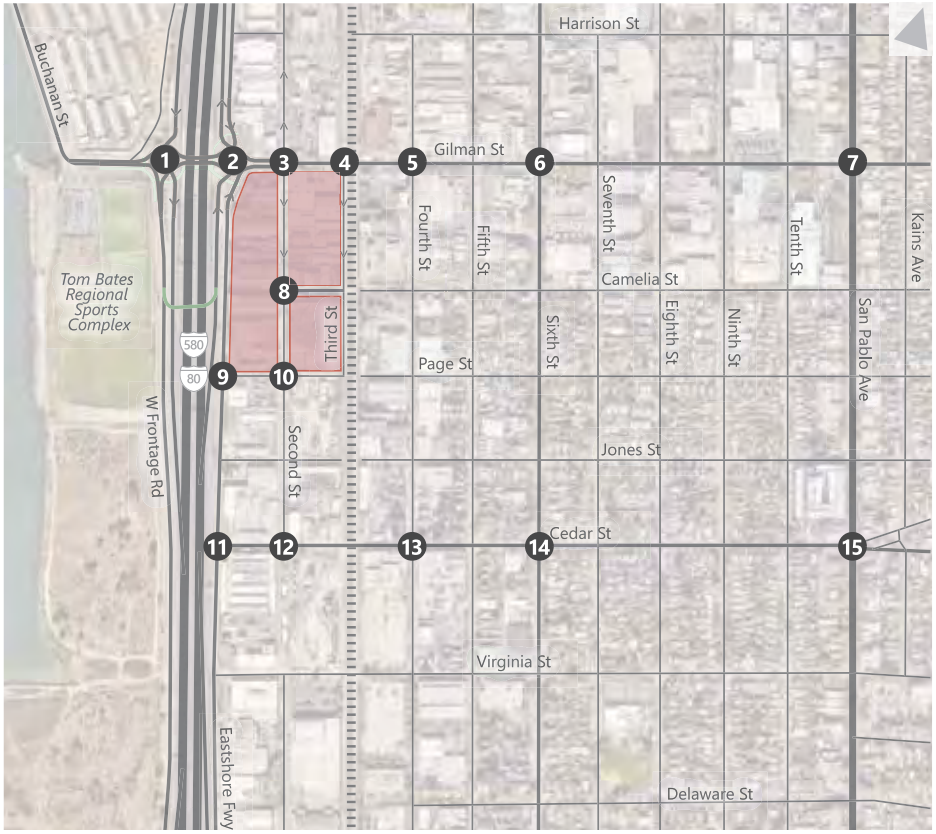



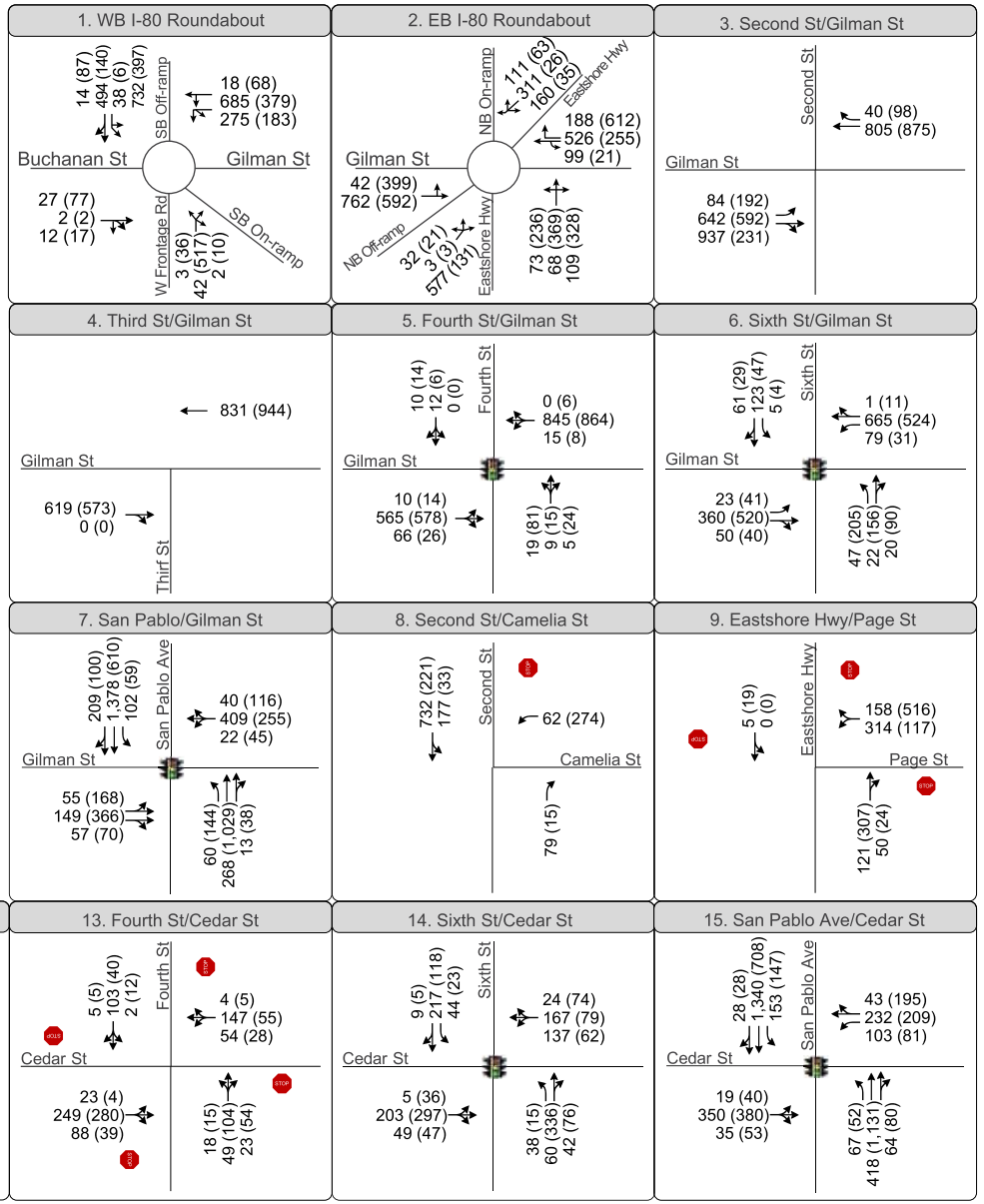

**Legend**

- Railroad
- Proposed Ped/Bike Bridge
- Project Site
- Study Intersections

Figure 10

Near-Term No Project Peak Hour Traffic Volumes, Lane Configurations and Traffic Control




**Legend**

- Railroad
- Proposed Ped/Bike Bridge
- Project Site
- Recommended Study Intersections

Figure 11

Near-Term Plus Project Peak Hour Traffic Volumes, Lane Configurations and Traffic Control

**Table 10: Near-Term Conditions – Study Intersection LOS Summary**

| Intersection | Traffic Control | Peak Hour | Near-Term No Project | | Near-Term Plus Project | | Substantial Effect? |
|---|---|---|---|---|---|---|---|
| | | | Delay[1] (seconds) | LOS[2] | Delay[1] (seconds) | LOS[2] | |
| 1. Gilman Street/I-80 Ramps/West Frontage Road (West) | Roundabout | AM | 26 | D | **73** | **F** | **Yes** |
| | | PM | 20 | C | **38** | **E** | **Yes** |
| 2. Gilman Street/I-80 Ramps/Eastshore Highway (East) | Roundabout | AM | 18 | C | **54** | **F** | **Yes** |
| | | PM | 17 | C | **>150** | **F** | **Yes** |
| 3. Gilman Street/ Second Street | Side-Street Stop | AM | <1 (EB Left = 5) | A (A) | <1 (EB Left = 6) | A (A) | No |
| | | PM | 1 (EB Left = 8) | A (A) | 1 (EB Left = 8) | A (A) | No |
| 4. Gilman Street/ Third Street | NA | AM | NA | NA | NA | NA | No |
| | | PM | NA | NA | NA | NA | No |
| 5. Gilman Street/ Fourth Street | Signal | AM | 9 | A | 8 | A | No |
| | | PM | 12 | B | 12 | B | No |
| 6. Gilman Street/ Sixth Street | Signal | AM | 12 | B | 12 | B | No |
| | | PM | 14 | B | 19 | B | No |
| 7. Gilman Street/ San Pablo Avenue | Signal | AM | 29 | C | 35 | C | No |
| | | PM | 28 | C | 35 | D | No |
| 8. Camelia Street/ Second Street | Side-Street Stop/All-way Stop[3] | AM | <1 (WB = <1) | A (A) | **65** | **F** | No |
| | | PM | <1 (WB = <1) | A (A) | 10 | B | No |
| 9. Page Street/ Eastshore Highway | Side-Street Stop/All-way Stop[3] | AM | 9 (WB = 11) | A (B) | 12 | B | No |
| | | PM | 4 (WB = 12) | A (B) | 19 | C | No |
| 10. Page Street/ Second Street | Side-Street Stop/All-way Stop[3] | AM | 11 (NB = 13) | B (B) | 18 | C | No |
| | | PM | 8 (NB = 10) | A (B) | 13 | B | No |
| 11. Cedar Street/ Eastshore Highway | Side-Street Stop | AM | 2 (WB = 13) | A (B) | 2 (WB = 14) | A (B) | No |
| | | PM | 2 (WB = 11) | A (B) | 2 (WB = 12) | A (B) | No |
| 12. Cedar Street/ Second Street | All-way Stop | AM | 3 (SB = 10) | A (B) | 3 (SB = 12) | A (B) | No |



**Table 10: Near-Term Conditions – Study Intersection LOS Summary**

| Intersection | Traffic Control | Peak Hour | Near-Term No Project | | Near-Term Plus Project | | Substantial Effect? |
|---|---|---|---|---|---|---|---|
| | | | Delay[1] (seconds) | LOS[2] | Delay[1] (seconds) | LOS[2] | |
| | | PM | 2 (SB = 10) | A (A) | 5 (SB = 11) | A (B) | No |
| 13. Cedar Street/ Fourth Street | All-way Stop | AM | 10 | A | 11 | B | No |
| | | PM | 9 | A | 10 | A | No |
| 14. Cedar Street/ Sixth Street | Signal | AM | 15 | B | 16 | B | No |
| | | PM | 16 | B | 17 | B | No |
| 15. Cedar Street/ San Pablo Avenue | Signal | AM | 22 | C | 24 | C | No |
| | | PM | 30 | C | 33 | C | No |

Notes:
**Bold** indicates intersection operating at LOS E or LOS F

1. Average intersection delay and LOS based on the HCM6 method as calculated by the SIDRA Network software for intersections 1 through 5 and Synchro software for other intersections. Average delay is reported for signalized and all-way stop-controlled intersections. Average intersection and worst-movement delays, respectively, are reported for side-street stop-controlled intersections.
2. Based on HCM6 delay thresholds.
3. Intersection is side-street stop-controlled under Near-Term No Project conditions and all-way stop-controlled under Near-Term Plus Project conditions.

Source: Fehr & Peers, 2023.

### 5.1.1 Signal Warrant Assessment

As described in Chapter 1, the California MUTCD includes eight signal warrants, and meeting one or more of the signal warrants could justify signalization of a stop-controlled intersection. This analysis evaluates the California MUTCD peak hour vehicular volume warrant (Warrant 3B) for urban conditions to determine if the traffic added by the Project would result in the stop-controlled intersections meeting a signal warrant.

The peak hour traffic signal warrant was evaluated for the four unsignalized study intersections under Near-Term and Near-Term Plus Project conditions based on the volumes, intersection controls, and roadway configurations presented on Figure 10 and Figure 11. As shown in **Table 11**, none of the stop-controlled intersections would meet the California MUTCD peak hour signal warrant under the Near-Term No Project and Near-Term Plus Project conditions. Appendix C provides the signal warrant worksheets.



**Table 11: Near-Term Conditions –Peak Hour Signal Warrant Summary**

| Intersection | Control | Meet Peak Hour Signal Warrant under Near-Term No Project Conditions?[1] | Meet Peak Hour Signal Warrant under Near-Term Plus Project Conditions? [1] |
|---|---|---|---|
| 3. Gilman Street/ Second Street | Side-Street Stop | No | No |
| 8. Camelia Street/ Second Street | Side-Street Stop/All-way Stop[2] | No | No |
| 9. Page Street/ Eastshore Highway | Side-Street Stop/ All-way Stop[2] | No | No |
| 10. Page Street/ Second Street | Side-Street Stop/ All-way Stop[2] | No | No |
| 11. Cedar Street/ Eastshore Highway | Side-Street Stop | No | No |
| 12. Cedar Street/ Second Street | All-way Stop | No | No |
| 13. Cedar Street/ Fourth Street | All-way Stop | No | No |

Notes:
1. Based on the application of California MUTCD Warrant 3B.
2. Intersection is side-street stop-controlled under Near-Term No Project conditions and all-way stop-controlled under Near-Term Plus Project conditions.

Source: Fehr & Peers, 2023.

### 5.1.2 Queuing

**Table 12** summarizes the average and 95th percentile[13] queues on the off-ramps at the Gilman Street roundabouts and on Gilman Street at the at-grade railroad crossing during AM and PM peak hours under Near-Term No Project and Near-Term Plus Project conditions. The queues were estimated using the Sidra Network software.

Under the Near-Term No Project conditions, the average and 95th percentile queues on the off-ramps would not spill back on to the freeway mainline and the average and 95th percentile queues on Gilman Street would not block the at-grade crossing under typical operating conditions.

[13] 95th percentile queue is defined as the queue length that has only a five percent probability of being exceeded during the analyzed peak hour.

**Table 12: Near-Term Conditions – Queuing Summary**

| Location | Queue Storage Length in feet | Peak Hour | Near-Term No Project Average (95th Percentile) Queues in feet[1] | Near-Term Plus Project Average (95th Percentile) Queues in feet[1] |
|---|---|---|---|---|
| Southbound I-80 Off-Ramp at West Roundabout, Lane 1 | 1,100 | AM | 120 (290) | 610 (**1,520**) |
| | | PM | 20 (50) | 30 (80) |
| Southbound I-80 Off-Ramp at West Roundabout, Lane 2 | 600 | AM | 140 (360) | 160 (400) |
| | | PM | 10 (30) | 10 (30) |
| Northbound I-80 Off-Ramp at East Roundabout | 1,150 | AM | 60 (140) | 400 (1,000) |
| | | PM | 10 (30) | 10 (40) |
| Westbound Gilman Street at Second Street | 250 | AM | <10 (20) | <10 (20) |
| | | PM | <10 (20) | <10 (40) |
| Eastbound Gilman Street at Fourth Street | 260 | AM | 150 (250) | 130 (220) |
| | | PM | 150 (240) | 160 (260) |

Notes:
**Bold** indicates queues exceeding the available storage length.
1. Average (95th percentile) queues as calculated by the SIDRA Network Software.
Source: Fehr & Peers, 2023.

Under the Near-Term Plus Project conditions, the average queues on the off-ramps would not spill back on to the freeway mainline and the average and 95th percentile queues on Gilman Street are not expected to block the at-grade crossing under typical operating conditions. However, the 95th percentile queues on the Southbound Off-Ramp at the West Roundabout would spill back onto the southbound freeway mainline during the AM peak hour. Although the 95th percentile queues on the Southbound I-80 Off-Ramp would exceed the available storage length, the average queues would continue to be contained within the available storage area, indicating that the queue exceedance would occur occasionally during the peak hours.

According to Caltrans guidance[14], queue spillovers on freeway off-ramps are considered significant impacts only if the speed differential between the off-ramp and the mainline freeway is more than 30 miles per hour (mph). Based on Caltrans Performance Measurement System (PeMS) data, the average speed on mainline Southbound I-80 just north of Gilman Street during the weekday AM peak period was about 23 mph, which is less than 30 mph. The low speed on this segment of mainline Southbound I-80 is primarily due to the two shoulder lanes merging just south of the Gilman Street Off-Ramp. Since the speed differential between

[14] *Traffic Safety Bulletin 20-02-R1: Interim Local Development Intergovernmental Review Safety Review Practitioners Guidance* (https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-12-22-updated-interim-ldigr-safety-review-guidance-a11y.pdf)



the off-ramp and the mainline freeway is less than 30 mph, the queue spillover on the Southbound I-80 Off-Ramp is not considered a significant impact according to the Caltrans guidance.

The analysis assumes typical signal timings at the Gilman Street/Fourth Street intersection and does not account for the queue cutter signal that was installed at the intersection by the Gilman Street Interchange Project, where the intersection signal is interconnected with the at-grade railroad crossing; when a train is approaching the crossing, all intersection approaches, except the eastbound Gilman Street approach receive a red phase while the eastbound Gilman Street approach has a green phase, which allows the queues on this approach to dissipate and minimize the potential for queues to spill back onto the railroad tracks. Thus, the queue on eastbound Gilman Street at Fourth Street may be less than reported in Table 12.

## 5.2 Substantial Effects and Improvement Measures

Intersection operations under Near-Term Plus Project conditions were compared to intersection operations under Near-Term No Project conditions using the criteria listed in Chapter 1. The Project would result in a substantial effect at the currently under construction Gilman Street interchange roundabouts because the Gilman Street/I-80 Ramps/West Frontage Road intersection (the west roundabout) would operate at LOS F during the AM peak hour and LOS E during the PM peak hour and the Gilman Street/I-80 Ramps/Eastshore Highway intersection (the east roundabout) would operate at LOS F during both AM and PM peak hours under Near-Term Plus Project conditions compared to LOS D or better under Near-Term No Project conditions.

It is estimated that this substantial effect would be triggered when about 65 percent of the Gilman Gateway Rezone Project (corresponding to approximately Phases 1 and 2 of the Berkeley Forge Project) is occupied.

At buildout, the Gilman Gateway Rezone Project is estimated to add about 296 AM peak hour and 313 PM peak hour trips to the Gilman Street/I-80 Ramps/West Frontage Road intersection (the west roundabout) and about 660 AM peak hour and 676 PM peak hour trips to the Gilman Street/I-80 Ramps/Eastshore Highway intersection (the east roundabout).

The all-way stop-controlled Camelia Street/Second Street intersections would operate at LOS F during the AM peak hour under Near-Term Plus Project conditions, compared to LOS A conditions under Near-Term No Project conditions. However, the increase in delay is not considered a substantial effect because the intersection would not meet the California MUTCD peak hour signal warrant under the Near-Term Plus Project conditions, as described in the previous section.

### 5.2.1 Improvement Measures

The substantial effect at the roundabouts can be improved through the TDM Plan that the Project would be required to implement to mitigate the significant impact on VMT to a less-than-significant level. As described on page 35 of this report, the Project TDM Plan is required to reduce VMT by at least five percent and estimated to reduce the VMT by about six to ten percent. **Table 13** summarizes the LOS at the two roundabouts accounting for the implementation of the TDM Plan assuming a five percent reduction in the Project trip generation. Although the implementation of the TDM Plan would reduce the average delay at



the roundabouts, the TDM Plan would not improve the LOS at the intersections to LOS D or better. Thus, the substantial effect would remain.

Similarly, the TDM Plan would reduce the 95th percentile queue on the Southbound I-80 Off-Ramp at West Roundabout during the AM peak hour from 1,520 to 1,450 feet, which would continue to exceed the available storage length and spill back onto the southbound freeway mainline.

**Table 13: Improvement Measure Effectiveness – Study Intersection LOS Summary**

| Intersection | Traffic Control | Peak Hour | Near-Term Plus Project | | Near-Term Plus Project and TDM | | Substantial Effect? |
|---|---|---|---|---|---|---|---|
| | | | Delay[1] (seconds) | LOS[2] | Delay[1] (seconds) | LOS[2] | |
| 1. Gilman Street/I-80 Ramps/West Frontage Road (West) | Roundabout | AM | **73** | **F** | **66** | **F** | **Yes** |
| | | PM | **38** | **E** | **38** | **E** | **Yes** |
| 2. Gilman Street/I-80 Ramps/Eastshore Highway (East) | Roundabout | AM | **54** | **F** | **39** | **F** | **Yes** |
| | | PM | **>150** | **F** | **>150** | **F** | **Yes** |

Notes:
**Bold** indicates intersection operating at LOS E or LOS F

1. Average intersection delay and LOS based on the HCM6 method as calculated by the SIDRA Network software. Average delay is reported.
2. Based on HCM6 delay thresholds.

Source: Fehr & Peers, 2023.

### 5.2.2 Other Considerations

The adverse conditions at the two roundabouts may be further improved through implementation of one or more the following:

- Widening the roundabouts and/or one or more of the roundabout approaches to provide additional lanes such as two continuous lanes in each roundabout, two through lanes on each direction of Gilman Street between the two roundabouts, and/or a bypass lane from northbound Eastshore Highway to eastbound Gilman Street. However, these potential roadway widenings are not feasible due to the limited availability of right-of-way and potential adverse impacts on pedestrians and bicyclists.
- Installing upstream metering signals, which would limit the number of vehicles that could enter the roundabouts. Metering signals could not be installed on the freeway off-ramps due to potential queue spillbacks onto the mainline freeway, nor on westbound Gilman Street due to potential queue spillbacks onto the railroad tracks. However, installing upstream metering signals on northbound West Frontage Road, northbound and/or southbound Eastshore Highway upstream of the roundabouts may be feasible and would reduce the traffic volumes and the associated congestion in the roundabouts.



- Implement a more rigorous TDM Plan to reduce the Project trip generation by at least 30 percent. Based on the location of the Project and type of uses, a TDM Plan that would reduce the Project trip generation by 30 percent would not be feasible.

Since the feasibility of the above measures is not known at this time, their effectiveness cannot be estimated.

### 5.2.3 Analysis Limitations

The analysis presented in this section is somewhat conservative for the following reasons:

- The Existing traffic volumes used in this analysis are based on pre-pandemic 2019 conditions as described on page 10. The analysis conservatively assumes that the long-term traffic patterns would be similar to the pre-pandemic 2019 conditions and does not account for the prevalence of remote work, online shopping, and other behaviors that have changed travel patterns in the last few years, and have generally reduced traffic volumes, especially during peak periods.
- The analysis does not account for traffic diverting to other routes if the roundabouts become congested. For example, the Existing Conditions volumes include a large number of vehicles (about 400 vehicles in the peak direction during each peak hour) that use West Frontage Road to bypass the congestion on I-80 freeway. It is possible that with the increased congestion at the roundabouts, many of these vehicles would not use West Frontage Road and the Gilman Street Interchange and instead would remain on the freeway, use other routes, and/or shift their trip to other times.
- The analysis does not account for upstream bottlenecks that could constrain the number of vehicles that could reach the roundabouts during the peak congestion periods, and assumes that all vehicles who wish to travel during the peak hours would be able to do so. It is possible that congestion in both directions of the I-80 freeway, especially if traffic patterns return to the pre-pandemic conditions as described above, could limit the number of vehicles that could reach the off-ramps and use the roundabouts during the AM and PM peak hours.

The Near-Term Plus Project conditions at the roundabouts presented above is similar with the findings of the *I-80 Gilman Street Interchange Improvement Project Traffic Operations Analysis Report* (TOAR, 2017)[15], which evaluated the effects of the currently under-construction improvements at the Gilman Street Interchange and was used to inform the final design of the roundabouts. According to the TOAR, the West Roundabout would operate at LOS F during the AM peak hour and LOS E during the PM peak hour and the East Roundabout would operate at LOS B or better during both AM and PM peak hours, under 2040 conditions. In addition, the TOAR estimates that the 95th percentile queue on the Southbound I-80 Off-Ramp would spill back onto the mainline freeway during the AM peak hours under 2040 conditions, similar to the findings of this analysis. The TOAR also recommended the installation of an upstream metering signal on northbound West Frontage Road, as described above.

[15] The report is at: https://www.alamedactc.org/wp-content/uploads/2019/08/I-80_Gilman_Traffic_Ops_Analysis_Rpt_Jun2017.pdf



**Recommendation 1:** Coordinate with Caltrans and the City of Berkeley to evaluate the feasibility of upstream metering signals on northbound West Frontage Road, northbound and/or southbound Eastshore Highway upstream of the roundabouts. If approved, the Berkeley Forge Project shall provide fair share contributions to the design and implementation of the improvements as part of the entitlement process for the Project.

# 6. Congestion Management Program Analysis

The Alameda CTC as part of the Alameda County Congestion Management Program (CMP) Land Use Analysis Program, requires the assessment of development-driven impacts on the Metropolitan Transportation System (MTS) roadways. Since the Project would generate more than 100 net new PM peak hour trips over existing conditions, the Alameda CTC requires the use of the Countywide Travel Demand Model to assess the impacts on nearby regional roadways. Based on the Notice of Preparation (NOP) comment letter by the Alameda CTC dated February 27, 2023, the potential impacts of the Project on the following roadways are evaluated:

- I-80/I-580
- San Pablo Avenue (SR 123)
- Ashby Avenue (SR 13)
- Gilman Street
- Buchannan Street
- Marin Avenue

Since California State law (California Public Resources Code, § 21099(b)(2)) prohibits the use of automobile delay or similar measures of congestion in identifying project impacts in environmental documents, this CMP analysis is prepared outside of the CEQA process and presented as a separate document to fulfill the requirements of the 2019 CMP.

The Alameda CTC Model used in this study is a regional travel demand model that uses socio-economic data and roadway and transit network assumptions to forecast traffic volumes and transit ridership using a four-step modeling process that includes trip generation, trip distribution, mode split, and trip assignment. This process accounts for changes in travel patterns due to future growth and balances trip productions and attractions. This analysis uses the Alameda CTC Model version released in May 2019, which incorporates land use data and transportation network improvements consistent with *Plan Bay Area 2040* (i.e., the Sustainable Communities Strategy) for the years 2020 and 2040. For the purposes of this CMP analysis, the Project is assumed to not be included in the Alameda CTC Model to present a more conservative analysis. The segment traffic forecasts for the 2020 and 2040 scenarios were extracted from the Alameda CTC Model for the MTS roadway segments from that Model and used as the "No Project" forecasts. The Project generated trips were then added, as described in Chapter 3 of this report were then added to the "No Project" volumes to estimate the "Plus Project" traffic volumes.

This analysis uses volume-to-capacity (V/C) ratios to assess the impact of vehicle volumes on roadway segments. For freeway segments, a per-lane capacity of 2,000 vehicles per hour (vph) is used, consistent with the latest CMP documents. For surface streets, a per-lane capacity of 800 vph is used. Roadway segments with a V/C ratio greater than 1.00 signify LOS F.

The Alameda CTC has not adopted thresholds of significance for CMP land use analysis purposes. Consistent with other recent environmental documents, this analysis uses the following performance standards to determine if the Project would result in a substantial effect[16] on the CMP roadway segments:

- A segment operating at LOS E or better to deteriorate to LOS F, or
- A segment operating at LOS F to continue to operate at LOS F with an increase in the V/C ratio of 0.03 or more.

**Appendix G** presents the PM peak hour segment volumes and the corresponding V/C ratio and LOS for the study CMP segments for the "No Project" and "Plus Project" conditions in 2020 and 2040, respectively.

As shown in Appendix G, the Project would not result in a substantial effect on the analyzed CMP roadway segments because it would not result in any of the analyzed CMP segments to deteriorate from LOS E to LOS F or increase the V/C ratio by 0.03 or more on segments that operate at LOS F regardless of the Project.

[16] Since this analysis is prepared outside of the CEQA process, "performance standards" is used instead of "significance criteria" and "substantial effect" is used instead of "significant impact."

# 7. Site Access, Circulation, and Parking

Fehr & Peers reviewed the preliminary site plan for the Berkeley Forge Project dated December 13, 2023 and shown in Appendix D, and the street network within and near the Project area to evaluate access, and circulation for all travel modes accessing the Project. This chapter provides the findings of this assessment. Note that the final circulation plans for the Project will be refined in coordination with the City of Berkeley and designed to meet City standards. Since the other Project components do not have a site plan at this time, their access and circulation cannot be evaluated.

## 7.1 Automobile Access and Circulation

The Berkeley Forge Project would generally maintain the street network serving the Project area. The main modifications proposed by the Project include:

- Narrow Second Street between Gilman and Camelia Streets from two to one southbound lane.
- Convert the segment of Second Street between Camelia and Page Streets from one-way southbound to two-way operations to allow access to Camelia Street from the south.
- Utilize Third Street between Gilman and Camelia Street to allow truck access from Gilman Street and allow passenger vehicles to exit right out of Garage A.
- Create a private street on the east side of the Project between Camelia and Page Streets and within the Project right-of-way to provide truck access for Building B1 and passenger vehicle access for Garage B.

Final circulation plans will be refined in coordination with the City of Berkeley and designed to meet City standards.

The traffic operations analysis presented in Chapter 5 evaluated traffic operations at the intersections within the Project area. Informed by this analysis, appropriate controls at these internal intersections were identified and are listed below.

**Recommendation 2:** Implement the following intersection controls at the intersections in the Project area:

- Camelia Street/Second Street – Stop signs on all approaches
- Camelia Street/Third Street – Stop signs on all approaches
- Page Street/Third Street – Stop signs on all approaches
- Page Street/Eastshore Highway – Stop signs on all approaches
- Page Street/Second Street – Stop signs on all approaches



- Garage Driveways: stop signs on the garage approaches

Access for the parking garages in the Project area, the on-street parking areas, and loading docks are discussed below.

### 7.1.1 Parking Garages

The Berkeley Forge Project would include the following three garages:

- Garage A would provide 690 parking spaces and be located on the northwest corner of the Camelia Street/Third Street intersection. Access would be provided through a full-access driveway on Camelia Street and a right-turn out only driveway on Third Street.
- Garage B would provide 568 parking spaces and be located at the northwest corner of the Page Street/Third Street intersection. Access would be provided through full access driveways on Page and Third Streets.
- Garage C would provide 618 parking spaces and be located at the south side of Block C. Access would be provided through full access driveways on Second Street and Eastshore Highway about 130 feet north of Page Street.

As described above, the garage driveways, except one, would allow all movements in and out of the driveways. The Garage A driveway on Third Street would be limited to right-turns out only to southbound Third Street. However, based on the current site plan, vehicles exiting the driveway would be able to turn left onto northbound Third Street. Additional design features should be provided to discourage left-turns out of the Garage A driveway on Third Street.

> **Recommendation 3:** Ensure all vehicles exiting the Garage A driveway on Third Street would turn right only by angling the driveway to the south and/or providing physical features, such as bulb-outs, to prohibit left-turns out of the driveway. Ensure that Third Street adjacent to Garage A would continue to provide at least 26 feet width to accommodate fire apparatus.

The current site plan does not show any controls at the garage driveways. If gates are installed at the garage driveways, the vehicle queues waiting to enter the garage may spill back onto the street and block the adjacent sidewalk and automobile lanes.

> **Recommendation 4:** If gates are provided at the garage driveways, ensure that entering vehicle queues for typical operating conditions can be accommodated within the garage with minimal queue spillbacks onto the adjacent sidewalks, bicycle facilities, or streets.

Based on the Project site plan, the driveways for the three parking garages would provide adequate sight distance between exiting motorists and pedestrians on the adjacent sidewalk. Adequate sight distance is defined as a clear line-of-sight between a motorist ten feet back from the sidewalk and a pedestrian ten feet away on each side of the driveway. No on-street parking would be provided adjacent to the garage driveways. Thus, the garage driveways would provide adequate sight distance between exiting motorists and cyclists or motorists on the adjacent street.



The driveways for the three Project garages are in the periphery of the Project area, in locations with less pedestrian activity after completion of the Project, which would minimize potential conflicts between vehicles turning into and out of the driveways and pedestrians on the adjacent sidewalks.

Each of the three garages would provide internal circulation through a single two-way drive aisle with parking spaces on both sides. The drive aisles would be generally 24 feet wide, providing adequate space for vehicles to circulate through the garage and maneuver into and out of parking spaces.

### 7.1.2 Truck Access

Each Berkeley Forge Project building would provide its own off-street loading area. Buildings A1, A2, and B1 would have a loading dock on Third Street, Building A3 on Camelia Street, Building B2 on Page Street and Buildings C1 and C2 on Eastshore Highway.

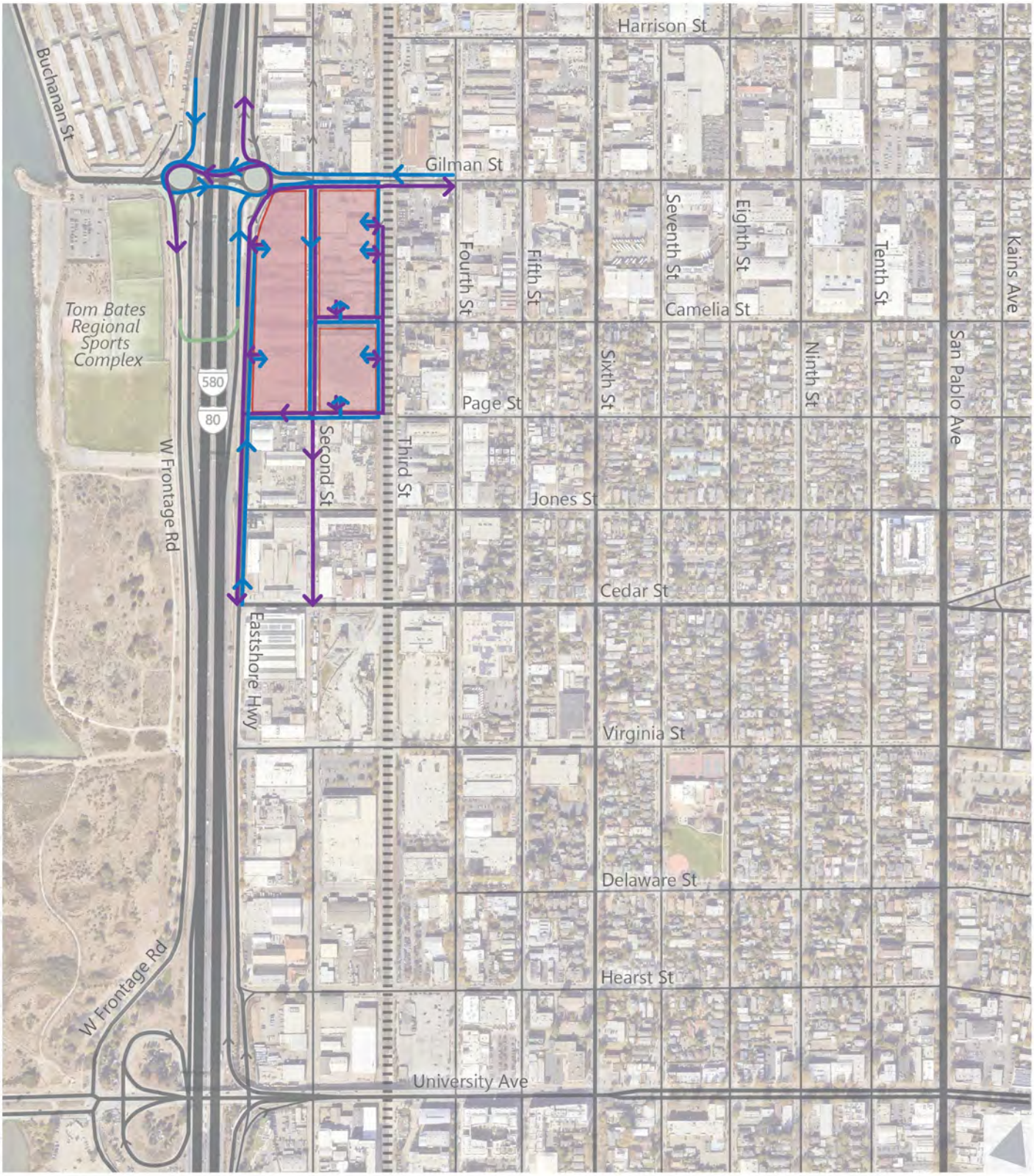
**Figure 12** shows the preferred truck routes to and from the Project area. Considering the roadway network serving the Project area, most trucks are expected to approach the Project area from the I-80 freeway, exit at the Gilman Street interchange and use eastbound Gilman Street. Most trucks leaving the Project area would navigate through the Project area and use northbound Eastshore Highway to leave the site. Trucks can also use Second Street or Eastshore Highway to approach or leave the Project area from and to the south. However, trucks larger than three tons are prohibited on Cedar Street east of Sixth Street.

Trucks would either directly back into the loading dock spaces from the adjacent street (Buildings A1, A2, and B1 on Third Street, Building A3 on Camelia Street, and Building B2 on Page Street) or use an off-street area to back into the loading docks (Buildings C1 and C2 on Eastshore Highway). Thus, all Berkeley Forge Project buildings would provide adequate sight distance between trucks maneuvering into and out of the loading docks and through traffic on the adjacent streets, as well as pedestrians on the adjacent sidewalks, where sidewalks would be provided.

Second Street, which would serve as main pedestrian corridor in the Project area, would not provide direct access to any loading docks, minimizing the potential conflicts between trucks maneuvering in and out of loading docks and other vehicles, cyclists, or pedestrians along Second Street.

> **Recommendation 5:** Review final Project site plan to ensure that trucks can navigate through the site and access the loading docks for each Project building.






**Legend**

- Railroad
- Proposed Ped/Bike Bridge
- Project Site
- Inbound Truck Routes
- Outbound Truck Routes

Figure 12

## Preferred Truck Routes

### 7.1.3 On-Street Parking and Passenger Loading

Currently, all Project area streets provide intermittent parallel on-street parking that is generally unregulated. The Berkeley Forge Project proposes to accommodate on-street passenger loading intermittently through bulb-ins on the west side of Second Street. The Project also proposes limited on-street parking on the south side of Camelia Street, and on the north side of Page Street. On-street parking would not be provided on Eastshore Highway or on the north side of Camelia Street.

Considering the limited on-street parking in the area and the expected need for passenger and commercial loading, all the parking spaces along Second Street should be designated for passenger (white curb) or commercial (yellow curb) loading and the parking spaces on Camelia and Page Streets should be designated for short-term (30 minute) visitor parking and controlled by parking meters.

> **Recommendation 6:** Designate all on-street spaces along the west side of Second Street between Gilman and Page Streets as either passenger (white curb) or commercial (yellow curb) loading spaces. Designate the on-street parking spaces on Camelia and Page Streets for short-term (30 minute) visitor parking and controlled by parking meters.

## 7.2 At-Grade Railroad Crossings

Active railroad tracks are adjacent to the east side of the Project area with one at-grade crossings on Gilman Street. The currently under construction Gilman Street Interchange Project improved the Gilman Street crossing and closed the Camelia Street crossing.

The Project would increase the amount of vehicular traffic and traffic congestion on Gilman Street. Based on the traffic operations analysis completed for the Project and summarized in Chapter 5 of this report, the 95th percentile downstream queues on both directions of Gilman Street would not spill back onto the railroad tracks. As described on page 42 and although not reflected in the traffic operations analysis, the signals at the Gilman Street/Fourth Street intersection and the at-grade railroad crossing installed by the Gilman Street Interchange Project include queue cutter signals which are interconnected with the at-grade railroad crossing equipment to further minimize the potential for queue spillovers. Thus, no additional improvements are recommended at the Gilman Street crossing.

## 7.3 Bicycle Access and Circulation

The I-80 freeway on the west side of the Project area and the railroad tracks on the east side of the Project area limit bicycle access for the Project area. Bicycles can access the Project area from either the north or south. From the north, bicycles would use the two-way cycletrack on the south side of Gilman Street that would be completed by the under-construction Gilman Street Interchange Project which would connect to the Bay Trail in the west through the under-construction Gilman Street Overcrossing and the rest of the City of Berkeley in the east, including existing and proposed bicycle facilities on Sixth Street, Ninth Street, San Pablo Avenue and Kains Avenue, which connect to the existing bicycle lanes on Gilman Street. From the south, bicycles would primarily use Second Street to access the Project area. Second Street is not currently



a designated bicycle facility, and the *City of Berkeley Bicycle Plan* does not propose future bicycle facilities on Second Street.

The Berkeley Forge Project sponsor is coordinating with the City of Berkeley on a multimodal design for Second Street, which could include bicycle facilities on the street between Gilman and Page Streets, and connect with the two-way cycletrack on the south side of Gilman Street.

The long-term and short-term bicycle parking for all Berkeley Forge Project buildings would be accessed from Second Street. The long-term bicycle parking for each building is in a secure room on the ground level with direct access to both outside and inside of the building. Short-term bicycle parking would be provided in the form of bike racks within 50 feet of the main entrance of each building. The adequacy of the long-term and short-term bicycle parking supplies for each Project building is discussed starting on page 59.

> **Recommendation 7:** Coordinate the final design of Second Street with the City of Berkeley's Public Works and Fire Departments.

## 7.4 Pedestrian Access and Circulation

Under current conditions, the streets in the Project area provide intermittent discontinuous sidewalks. The Gilman Street Interchange Project would upgrade the sidewalks along both sides of Second Street, east side of Eastshore Highway, and north side of Page Street to provide continuous 10-foot sidewalks with curb and gutters. The Gilman Street Interchange Project would also provide marked crosswalks with directional curb ramps across the north, east, and south approaches of the Gilman Street/Second Street intersection.

The Berkeley Forge Project would improve the streets within the Project area and provide sidewalks with or without landscaping along the Project frontages.

All Project buildings would have their main lobby oriented on Second Street. Thus, Second Street frontage would be the focus of pedestrian activity in the area and the wide sidewalks on both sides of the street and the frequent pedestrian crossings would accommodate pedestrian travel between the different buildings, parking garages, and open spaces and other amenities in the Project area. Second Street within the Project area does not provide direct access to any loading docks and only one garage driveway (Garage C on the south side of the Berkeley Forge Project area) is provided, minimizing potential conflicts between pedestrians and turning vehicles.

Sidewalks around each Project block and walkways within each Project block provide pedestrian connectivity within each block and allow pedestrians to walk between the buildings and the garage in each block without crossing any driveways or loading docks.

Currently, the existing 1306 Third Street building can be accessed on Third Street. The under-construction Gilman Street Interchange Project would limit Third Street to emergency vehicle access which would prohibit vehicular access for the 1306 Third Street building. The Berkeley Forge Project would also use this segment of Third Street to provide truck access for Buildings A1 and A2. Third Street would continue to serve as the primary pedestrian access for the 1306 Third Street building.



**Recommendation 8:** Ensure pedestrian access for the existing 1306 Third Street building by designating an ADA-compliant pedestrian walkway along Third Street between Gilman Street and the 1306 Third Street building adjacent to Building A1 ensuring adequate sight distance between trucks using the Building A1 loading docks and pedestrian along the walkway.

The Project proposes an uncontrolled midblock marked crosswalk On Second Street midblock between Gilman and Camelia Streets. Consistent with Federal Highway Administration (FHWA) guidelines[17] for two-lane streets with average daily traffic (ADT) of less than 9,000 and vehicle speeds of 30 miles per hour or less, it is recommended that the midblock crosswalk provide high-visibility crosswalk markings, nighttime pedestrian-scale lighting, advanced "Yield Here to Pedestrians" signs and yield lines at the crosswalk, and a potential raised crosswalk if approved by City of Berkeley. Devices, such as Rectangular Rapid Flashing Beacons (RRFBs) are not recommended for these midblock crosswalks because the FHWA guidance does not identify RRFBs as a candidate safety treatment for two-lane streets with relatively low traffic and vehicle speeds.

**Recommendation 9:** At the midblock crosswalk on Second Street (between Gilman and Camelia Streets) provide high-visibility crosswalk markings, nighttime pedestrian-scale lighting, advanced "Yield Here to Pedestrians" signs and yield lines at the crosswalk, and a potential raised crosswalk if approved by City of Berkeley.

## 7.5 Transit Access

As described on page 14, transit service providers in the Project vicinity include Alameda Contra Costa Transit District (AC Transit), Amtrak, and Bay Area Rapid Transit (BART). The nearest bus stop to the Project area is on Gilman Street at Sixth Street, about 0.4 miles east of the Project area. The Berkeley Amtrak Station is about 0.8 miles south of, and the North Berkeley BART Station is about 1.2 miles east of the Project area.

Based on the current proximity of various transit services to the Project area, minimal transit ridership is expected. However, the TDM Plan required for the Project (Appendix E) includes the provision of a shuttle service to connect the Project area to BART and/or Amtrak, and coordination with AC Transit to potentially extend bus service closer to or through the Project area. The Project area streets would accommodate shuttles and/or buses and potential stops with amenities.

## 7.6 Emergency Vehicle Access

Emergency vehicles would access the Project area through Gilman Street, Second Street, Eastshore Highway and/or Third Street. The Project would not modify the existing roadway network. Appendix D shows the emergency vehicle access for the Berkeley Forge Project. The streets in the Project area would all accommodate fire apparatus. Although left-turns from westbound Gilman Street to Second and Third Streets and Eastshore Highway would be prohibited for passenger vehicles and trucks, emergency vehicles

[17] FHWA's *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations (2018):* *https://transportation.wv.gov/highways/training/TrainingDocuments/Guide-for-Improving-Pedestrian-Safety-at-Uncontrolled-Crossing-Locations.pdf*

would be able to make the left-turn from westbound Gilman Street onto southbound Second and Third Streets. In addition, the under-construction Gilman Street Interchange Project recently closed the at-grade Camelia Street railroad crossing to all traffic, including emergency vehicles.

> **Recommendation 10:** Coordinate with UPRR to explore allowing emergency vehicle access only at the recently closed at-grade railroad crossing on Camelia Street.

As shown in Appendix D, emergency vehicles would be able to access all Berkeley Forge Project buildings from at least two directions. Since all Project buildings would be 30 feet or higher, they require aerial fire apparatus access, which requires an access roadway with at least 26 feet of clear width within between 15 to 30 feet from the building. All Project buildings would meet the minimum access for aerial fire apparatus on at least two sides of the building.

The nearest fire station to the Project area is Berkeley Fire Station #6 at 999 Cedar Street, about 0.7 miles southeast of the Project area. Although general traffic congestion may delay emergency vehicle response during peak commute times, typical response times are expected to remain less than five minutes.

## 7.7 Parking and Loading

Parking requirements for automobiles and bicycles and truck loading requirements are described below.

### 7.7.1 Automobile Parking

City of Berkeley Municipal Code (Section 23.322.030), as proposed to be amended by the City Planning Commission on March 1, 2023, would require at least one automobile parking space per 1,000 square feet of R&D space in the proposed M-RD zoning district. **Table 14** summarizes the off-street automobile parking requirements for the Berkeley Forge Project by development block and compares them to the proposed parking supply. Each block by itself and the total Project would exceed the proposed minimum required parking.

*Accessible Parking*

The California Building Code requires accessible parking spaces to be provided when parking is provided for new buildings. The three Berkeley Forge Project garages would provide the following accessible parking spaces:

- Garage A, which would provide 690 parking spaces, would include 15 accessible parking spaces, consisting of 12 car accessible spaces and three van accessible spaces, exceeding the minimum 14 required parking spaces (12 car accessible and two van accessible).[18]
- Garage B, which would provide 568 parking spaces, would include 13 accessible parking spaces, consisting of 10 car accessible spaces and three van accessible spaces, exceeding the minimum 12 required parking spaces (ten car accessible and two van accessible)

[18] Parking facilities providing between 500 and 1,000 parking spaces are required to have at least two percent of their parking spaces be accessible and at least one of every six accessible spaces be van accessible.

- Garage C, which would provide 618 parking spaces, would include 13 accessible parking spaces, consisting of 11 car accessible spaces and two van accessible spaces, exceeding the minimum 12 required parking spaces (ten car accessible and two van accessible)

**Table 14: Automobile Parking Requirements**

| Block/Building | Size[1] | Required Parking Spaces[2] | Proposed Parking Supply[3] |
|---|---|---|---|
| **Block A** | | | |
| Building A1 | 103.2 KSF | 103 | |
| Building A2 | 147.2 KSF | 147 | |
| Building A3 | 107.2 KSF | 107 | |
| **Block A Total** | | ***357*** | ***690*** |
| **Block A Automobile Parking Requirements Met?** | | | **Yes** |
| **Block B** | | | |
| Building B1 | 116.0 KSF | 116 | |
| Building B2 | 98.2 KSF | 98 | |
| **Block B Total** | | ***215*** | ***568*** |
| **Block B Automobile Parking Requirements Met?** | | | **Yes** |
| **Block C** | | | |
| Building C1 | 216.7 KSF | 217 | |
| Building C2 | 92.2 KSF | 92 | |
| Shed | 9.6 KSF | 10 | |
| **Block C Total** | | ***319*** | ***618*** |
| **Block C Automobile Parking Requirements Met?** | | | **Yes** |
| **Blocks A, B and C Combined Total** | | ***891*** | ***1,876*** |
| **Blocks A, B and C Combined Automobile Parking Requirements Met?** | | | **Yes** |

Notes:
1. KSF = 1,000 square feet
2. City of Berkeley Municipal Code (Section 23.322.030) requirement of one parking space per 1,000 square feet of R&D space in the M-RD zoning district.
3. Per Berkeley Forge Project site plan dated April 7, 2023.

Source: Fehr & Peers, 2023.

All accessible parking spaces would be on the ground level of the garages and located on the shortest accessible route to an accessible entrance and are arranged so that people with disabilities are not forced to wheel or walk behind parked vehicles other than their own.

*Electric Vehicle Parking*

The City of Berkeley Municipal Code (Section 19.37.040) requires non-residential developments to provide 20 percent of the parking spaces with electric vehicle (EV) capable stations and ten percent of the parking

spaces with EV charging stations. The Berkeley Forge Project garages would provide the following EV equipment:

- Garage A, which would provide 690 parking spaces, would include 138 EV capable parking spaces, which would meet the City requirement, and 35 EV charging stations, which would not meet the 69 required EV charging stations.
- Garage B, which would provide 568 parking spaces, would include 114 EV capable parking spaces, which would meet the City requirement, and 29 EV charging stations, which would not meet the 57 required EV charging stations.
- Garage C, which would provide 618 parking spaces, would include 125 EV capable parking spaces, which would meet the City requirement, and 32 EV charging stations, which would not meet the 62 required EV charging stations.

**Recommendation 11:** Ensure all Project parking facilities would meet the City's requirements for EV capable stations and EV charging stations.

### 7.7.2 Bicycle Parking

**Table 15** presents the bicycle parking and amenities provided for each Berkeley Forge Project building. Each building would provide long-term bicycle parking in a secure room on the ground level with direct access to both outside and inside of the building. Each bicycle room would also include a repair station. Each building would also provide shower facilities adjacent to the bicycle room. Short-term bicycle parking would be provided in the form of bike racks within 50 feet of the main entrance of each building.

The City of Berkeley Municipal Code Section 23.322.090 requires one bicycle parking space per 2,000 square feet of new floor area for non-residential buildings. Although the bicycle parking required by the City Code can be either long-term or short-term, the long-term parking in each building by itself would meet the City Code requirement.

The *City of Berkeley Bicycle Plan* provides recommendations on the amount of long-term and short-term bicycle parking for development projects. For office uses, the *Bicycle Plan* recommends one long-term bicycle parking space per 2,500 square feet of space and one short-term bicycle space per 10,000 square feet of space. All Berkeley Forge Project buildings would exceed the recommended long-term bicycle parking spaces; however, two buildings (A2 and C2) would not meet the recommended number of short-term bicycle parking spaces. In addition, neither the City Code nor the *Bicycle Plan* provide for shower facilities, which each building would provide.

**Recommendation 12:** Ensure all Project buildings would meet the minimum short-term bicycle parking recommended by the *City of Berkeley Bicycle Plan*.



**Table 15: Bicycle Parking and Amenities Summary**

| Block/Building | Size[1] | Required Bicycle Parking Spaces[2] | Recommended Short-Term Bicycle Parking Spaces[3] | Proposed Long-Term Bicycle Parking Spaces[4] | Proposed Short-Term Bicycle Parking Spaces[4] | Proposed Showers[4] |
|---|---|---|---|---|---|---|
| **Block A** | | | | | | |
| Building A1 | 103.2 KSF | 52 | 10 | 60 | 12 | 4 |
| Building A2 | 147.2 KSF | 74 | 15 | 76 | **12** | 4 |
| Building A3 | 107.2 KSF | 54 | 11 | 60 | 12 | 4 |
| *Block A Subtotal* | | *178* | *36* | *196* | *36* | *12* |
| **Block B** | | | | | | |
| Building B1 | 116.0 KSF | 58 | 12 | 64 | 12 | 4 |
| Building B2 | 98.2 KSF | 49 | 10 | 64 | 10 | 4 |
| *Block B Subtotal* | | *107* | *22* | *128* | *22* | *8* |
| **Block C** | | | | | | |
| Building C1 | 216.7 KSF | 108 | 22 | 112 | **20** | 5 |
| Building C2 | 92.2 KSF | 46 | 9 | 68 | 12 | 6 |
| Shed | 9.6 KSF | 5 | 2 | Provided in Building C2 | | |
| *Block C Subtotal* | | *159* | *33* | *180* | ***32*** | *11* |
| **Project Total** | | **444** | **91** | **504** | **90** | **31** |

Notes:
1. **Bold** indicated locations that do not meet the required or recommended quantities.
2. KSF = 1,000 square feet
3. City of Berkeley Municipal Code (Section 23.322.090) requirement of one bicycle parking space per 2,000 square feet of lab space
4. City of Berkeley Bicycle Plan Appendix F recommendation of one short-term bicycle parking space per 10,000 square feet of office space
5. Per Berkeley Forge Project site plan dated April 7, 2023.

Source: Fehr & Peers, 2023.

### 7.7.3 Loading Requirement

City of Berkeley Municipal Code (Section 23.322.100) requires one off-street loading space for the first 10,000 square feet of new commercial or manufacturing floor area, and one space for each additional 25,000 square feet of floor area. Off-street loading spaces are required to have minimum dimensions of 12 feet wide and 25 feet long, with a minimum vertical clearance of 14 feet. **Table 16** summarizes the proposed number of loading spaces for each Berkeley Forge Project building and compares it to the City Code requirements.

**Table 16: Loading Requirements**

| Building | Size (KSF)[1] | Proposed Loading Spaces [1] | Required Loading Spaces[2] |
|---|---|---|---|
| A1 | 103.2 | 2 | 5 |
| A2 | 147.2 | 2 | 6 |
| A3 | 107.3 | 2 | 5 |
| B1 | 116.0 | 2 | 5 |
| B2 | 98.2 | 2 | 5 |
| C1 | 216.7 | 3 | 9 |
| C2 | 92.2 | 2 | 4 |
| Shed | 9.58 | 0 | 0 |
| **Total** | **873.2** | **15** | **39** |

Notes:
1. Per Project site plan dated April 7, 2023.
2. Berkeley Municipal Code Section 23.322.100 requires one loading space for the first 10,000 square feet in manufacturing districts, with one additional loading space for each additional 25,000 square feet.

Source: Fehr & Peers, 2023.

The Berkeley Forge Project proposes two or three loading spaces per building with each loading space at least 60 feet long. The City Code requires between four and nine loading spaces per building. Since the Berkeley Forge Project buildings propose fewer on-site truck loading spaces than required by City Code, the Project is seeking a Conditional Use Permit, unless the proposed M-RD district identifies reduced loading standards. Fehr & Peers evaluated the truck loading needs of the Project uses and summarized the findings in a memorandum provided as **Appendix H**. A review of truck loading requirements for similar specific uses (R&D/office) in nearby jurisdictions indicates that the proposed loadings spaces and their dimensions could meet the loading needs of the Project buildings.

## 7.8 Summary of Recommendations

The following improvements are recommended to improve access and circulation in the Project area. The final circulation plans for the Project will be refined in coordination with the City of Berkeley and designed to meet City standards:

- **Recommendation 1:** Coordinate with Caltrans and the City of Berkeley to evaluate the feasibility of upstream metering signals on northbound West Frontage Road, northbound and/or southbound Eastshore Highway upstream of the roundabouts. If approved, the Berkeley Forge Project shall provide fair share contributions to the design and implementation of the improvements as part of the entitlement process for the Project.
- **Recommendation 2:** Implement the following intersection controls at the intersections in the Project area:

- Camelia Street/Second Street – Stop signs on all approaches
- Camelia Street/Third Street – Stop signs on all approaches
- Page Street/Third Street – Stop signs on all approaches
- Page Street/Eastshore Highway – Stop signs on all approaches
- Page Street/Second Street – Stop signs on all approaches
- Garage Driveways: stop signs on the garage approaches

- **Recommendation 3:** Ensure all vehicles exiting the Garage A driveway on Third Street would turn right only by angling the driveway to the south and/or providing physical features, such as bulb-outs, to prohibit left-turns out of the driveway. Ensure that Third Street adjacent to Garage A would continue to provide at least 26 feet width to accommodate fire apparatus.
- **Recommendation 4:** If gates are provided at the garage driveways, ensure that entering vehicle queues for typical operating conditions can be accommodated within the garage with minimal queue spillbacks onto the adjacent sidewalks, bicycle facilities, or streets.
- **Recommendation 5:** Review final Project site plan to ensure that trucks can navigate through the site and access the loading docks for each Project building.
- **Recommendation 6:** Designate all on-street spaces along the west side of Second Street between Gilman and Page Streets as either passenger (white curb) or commercial (yellow curb) loading spaces. Designate the on-street parking spaces on Camelia and Page Streets for short-term (30 minute) visitor parking and controlled by parking meters.
- **Recommendation 7:** Coordinate the final design of the Second Street with the City of Berkeley's Public Works and Fire Departments.
- **Recommendation 8:** Ensure pedestrian access for the existing 1306 Third Street building by designating an ADA-compliant pedestrian walkway along Third Street between Gilman Street and the 1306 Third Street building adjacent to Building A1 ensuring adequate sight distance between trucks using the Building A1 loading docks and pedestrian along the walkway.
- **Recommendation 9:** At the midblock crosswalks on Second Street (between Gilman and Camelia Streets) provide high-visibility crosswalk markings, nighttime pedestrian-scale lighting, advanced "Yield Here to Pedestrians" signs and yield lines at the crosswalk, and a potential raised crosswalk if approved by City of Berkeley.
- **Recommendation 10:** Coordinate with UPRR to explore allowing emergency vehicle access only at the recently closed at-grade railroad crossing on Camelia Street.
- **Recommendation 11:** Ensure all Project parking facilities would meet the City's requirements for EV capable stations and EV charging stations.
- **Recommendation 12:** Ensure all Project buildings would meet the minimum short-term bicycle parking recommended by the *City of Berkeley Bicycle Plan*.



# Appendix A
# Streetlight Data Intersection Volumes



| Gilman & Second | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day Type | Time | NORTHBOUND | | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | | Total |
| | | NBL | NBT | NBR | EBL | EBT | EBR | SBL | SBT | SBR | WBL | WBL2 | WBT | WBR | |
| 1: Weekday (Tu-Th) | 00: 6:00am-6:15am | 1 | 2 | 0 | 24 | 57 | 1 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 122 |
| 1: Weekday (Tu-Th) | 01: 6:15am-6:30am | 0 | 2 | 0 | 8 | 59 | 1 | 0 | 0 | 0 | 0 | 0 | 59 | 0 | 129 |
| 1: Weekday (Tu-Th) | 02: 6:30am-6:45am | 0 | 2 | 0 | 4 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 69 | 0 | 149 |
| 1: Weekday (Tu-Th) | 03: 6:45am-7:00am | 1 | 1 | 0 | 6 | 76 | 1 | 0 | 0 | 0 | 0 | 0 | 70 | 0 | 155 |
| 1: Weekday (Tu-Th) | 04: 7:00am-7:15am | 1 | 1 | 0 | 4 | 96 | 2 | 0 | 0 | 0 | 0 | 0 | 113 | 0 | 217 |
| 1: Weekday (Tu-Th) | 05: 7:15am-7:30am | 1 | 2 | 0 | 3 | 97 | 2 | 0 | 0 | 0 | 0 | 0 | 107 | 0 | 212 |
| 1: Weekday (Tu-Th) | 06: 7:30am-7:45am | 0 | 3 | 0 | 3 | 133 | 2 | 0 | 0 | 0 | 0 | 0 | 109 | 1 | 251 |
| 1: Weekday (Tu-Th) | 07: 7:45am-8:00am | 1 | 3 | 1 | 5 | 97 | 3 | 0 | 0 | 0 | 0 | 0 | 137 | 1 | 248 |
| 1: Weekday (Tu-Th) | 08: 8:00am-8:15am | 2 | 3 | 0 | 7 | 104 | 3 | 0 | 0 | 0 | 0 | 0 | 135 | 1 | 255 |
| 1: Weekday (Tu-Th) | 09: 8:15am-8:30am | 2 | 2 | 0 | 10 | 92 | 4 | 0 | 0 | 0 | 0 | 0 | 154 | 2 | 266 |
| 1: Weekday (Tu-Th) | 10: 8:30am-8:45am | 1 | 2 | 0 | 17 | 107 | 3 | 0 | 0 | 0 | 0 | 0 | 153 | 3 | 286 |
| 1: Weekday (Tu-Th) | 11: 8:45am-9:00am | 2 | 3 | 0 | 11 | 125 | 3 | 0 | 0 | 0 | 0 | 0 | 128 | 3 | 275 |
| 1: Weekday (Tu-Th) | 12: 9:00am-9:15am | 2 | 4 | 0 | 8 | 117 | 3 | 0 | 0 | 0 | 0 | 0 | 120 | 2 | 256 |
| 1: Weekday (Tu-Th) | 13: 9:15am-9:30am | 1 | 3 | 1 | 10 | 115 | 2 | 0 | 0 | 0 | 0 | 0 | 112 | 2 | 246 |
| 1: Weekday (Tu-Th) | 14: 9:30am-9:45am | 3 | 3 | 0 | 10 | 104 | 2 | 0 | 0 | 0 | 0 | 0 | 113 | 1 | 236 |
| 1: Weekday (Tu-Th) | 15: 9:45am-10:00am | 3 | 3 | 0 | 8 | 111 | 2 | 0 | 0 | 0 | 0 | 0 | 109 | 1 | 237 |
| 1: Weekday (Tu-Th) | 16: 3:00pm-3:15pm | 3 | 4 | 0 | 8 | 102 | 1 | 0 | 0 | 0 | 0 | 0 | 140 | 3 | 261 |
| 1: Weekday (Tu-Th) | 17: 3:15pm-3:30pm | 4 | 6 | 1 | 7 | 89 | 1 | 0 | 0 | 0 | 0 | 0 | 135 | 3 | 246 |
| 1: Weekday (Tu-Th) | 18: 3:30pm-3:45pm | 5 | 5 | 1 | 7 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 157 | 3 | 278 |
| 1: Weekday (Tu-Th) | 19: 3:45pm-4:00pm | 4 | 3 | 0 | 7 | 121 | 0 | 0 | 0 | 0 | 0 | 0 | 160 | 2 | 297 |
| 1: Weekday (Tu-Th) | 20: 4:00pm-4:15pm | 4 | 2 | 0 | 6 | 91 | 0 | 0 | 0 | 0 | 0 | 0 | 174 | 2 | 279 |
| 1: Weekday (Tu-Th) | 21: 4:15pm-4:30pm | 3 | 3 | 1 | 6 | 89 | 1 | 0 | 0 | 0 | 0 | 0 | 150 | 2 | 255 |
| 1: Weekday (Tu-Th) | 22: 4:30pm-4:45pm | 4 | 4 | 0 | 7 | 110 | 0 | 0 | 0 | 0 | 0 | 0 | 155 | 2 | 282 |
| 1: Weekday (Tu-Th) | 23: 4:45pm-5:00pm | 6 | 4 | 0 | 9 | 105 | 1 | 0 | 0 | 0 | 0 | 0 | 184 | 2 | 311 |
| 1: Weekday (Tu-Th) | 24: 5:00pm-5:15pm | 4 | 3 | 1 | 6 | 118 | 1 | 0 | 0 | 0 | 0 | 0 | 192 | 1 | 326 |
| 1: Weekday (Tu-Th) | 25: 5:15pm-5:30pm | 4 | 2 | 1 | 4 | 134 | 0 | 0 | 0 | 0 | 0 | 0 | 208 | 1 | 354 |
| 1: Weekday (Tu-Th) | 26: 5:30pm-5:45pm | 4 | 2 | 0 | 6 | 132 | 1 | 0 | 0 | 0 | 0 | 0 | 177 | 1 | 323 |
| 1: Weekday (Tu-Th) | 27: 5:45pm-6:00pm | 4 | 3 | 0 | 4 | 119 | 0 | 0 | 0 | 0 | 0 | 0 | 175 | 0 | 305 |
| 1: Weekday (Tu-Th) | 28: 6:00pm-6:15pm | 4 | 4 | 0 | 2 | 112 | 0 | 0 | 0 | 0 | 0 | 0 | 193 | 0 | 315 |
| 1: Weekday (Tu-Th) | 29: 6:15pm-6:30pm | 4 | 4 | 0 | 2 | 134 | 0 | 0 | 0 | 0 | 0 | 0 | 167 | 0 | 311 |
| 1: Weekday (Tu-Th) | 30: 6:30pm-6:45pm | 3 | 4 | 0 | 3 | 113 | 0 | 0 | 0 | 0 | 0 | 0 | 147 | 0 | 270 |
| 1: Weekday (Tu-Th) | 31: 6:45pm-7:00pm | 3 | 4 | 0 | 3 | 113 | 0 | 0 | 0 | 0 | 0 | 0 | 148 | 0 | 271 |
| Peak Hour AM | 8:15am-9:15am | 7 | 11 | - | 46 | 441 | 13 | - | - | - | - | - | 555 | 10 | 1,083 |
| Peak Hour PM | 4:45pm-5:45pm | 18 | 11 | 2 | 25 | 489 | 3 | - | - | - | - | - | 761 | 5 | 1,314 |

Note: Data collected by Streetlight for February 1st-March 15th, April 1st-June 1st and September 1st-November 15th, 2019. AM and PM peak hours are highlighted in green.

| Gilman & Fourth | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day Type | Time | NORTHBOUND | | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | | Total |
| | | NBL | NBT | NBR | EBL | EBT | EBR | SBL | SBT | SBR | WBL | WBL2 | WBT | WBR | |
| 1: Weekday (Tu-Th) | 00: 6:00am-6:15am | 3 | 0 | 0 | 1 | 35 | 19 | 0 | 1 | 1 | 0 | 0 | 34 | 0 | 94 |
| 1: Weekday (Tu-Th) | 01: 6:15am-6:30am | 6 | 0 | 0 | 1 | 49 | 11 | 0 | 1 | 1 | 0 | 0 | 53 | 0 | 122 |
| 1: Weekday (Tu-Th) | 02: 6:30am-6:45am | 9 | 0 | 0 | 1 | 65 | 7 | 0 | 2 | 1 | 0 | 0 | 59 | 0 | 144 |
| 1: Weekday (Tu-Th) | 03: 6:45am-7:00am | 6 | 0 | 0 | 1 | 63 | 10 | 0 | 2 | 0 | 0 | 0 | 63 | 0 | 145 |
| 1: Weekday (Tu-Th) | 04: 7:00am-7:15am | 3 | 1 | 0 | 0 | 80 | 21 | 0 | 2 | 1 | 1 | 0 | 112 | 0 | 221 |
| 1: Weekday (Tu-Th) | 05: 7:15am-7:30am | 3 | 1 | 0 | 1 | 80 | 17 | 0 | 2 | 1 | 2 | 0 | 107 | 0 | 214 |
| 1: Weekday (Tu-Th) | 06: 7:30am-7:45am | 4 | 1 | 0 | 1 | 114 | 20 | 0 | 4 | 2 | 3 | 0 | 103 | 0 | 252 |
| 1: Weekday (Tu-Th) | 07: 7:45am-8:00am | 4 | 2 | 1 | 1 | 89 | 13 | 0 | 3 | 2 | 4 | 0 | 137 | 0 | 256 |
| 1: Weekday (Tu-Th) | 08: 8:00am-8:15am | 4 | 3 | 1 | 2 | 92 | 11 | 0 | 3 | 2 | 3 | 0 | 136 | 0 | 257 |
| 1: Weekday (Tu-Th) | 09: 8:15am-8:30am | 5 | 3 | 1 | 3 | 84 | 11 | 0 | 3 | 2 | 2 | 0 | 154 | 0 | 268 |
| 1: Weekday (Tu-Th) | 10: 8:30am-8:45am | 4 | 2 | 1 | 3 | 96 | 13 | 0 | 3 | 3 | 2 | 0 | 149 | 0 | 276 |
| 1: Weekday (Tu-Th) | 11: 8:45am-9:00am | 6 | 1 | 1 | 2 | 106 | 17 | 0 | 3 | 3 | 2 | 0 | 126 | 0 | 267 |
| 1: Weekday (Tu-Th) | 12: 9:00am-9:15am | 5 | 1 | 1 | 2 | 102 | 15 | 0 | 2 | 4 | 2 | 0 | 115 | 0 | 249 |
| 1: Weekday (Tu-Th) | 13: 9:15am-9:30am | 6 | 1 | 2 | 2 | 96 | 14 | 0 | 2 | 5 | 2 | 0 | 109 | 0 | 239 |
| 1: Weekday (Tu-Th) | 14: 9:30am-9:45am | 4 | 2 | 1 | 2 | 95 | 13 | 0 | 1 | 3 | 2 | 0 | 106 | 0 | 229 |
| 1: Weekday (Tu-Th) | 15: 9:45am-10:00am | 2 | 1 | 1 | 1 | 98 | 15 | 0 | 0 | 2 | 2 | 0 | 108 | 0 | 230 |
| 1: Weekday (Tu-Th) | 16: 3:00pm-3:15pm | 12 | 2 | 3 | 3 | 97 | 6 | 0 | 1 | 5 | 3 | 0 | 134 | 0 | 266 |
| 1: Weekday (Tu-Th) | 17: 3:15pm-3:30pm | 14 | 2 | 3 | 3 | 87 | 5 | 0 | 1 | 5 | 3 | 0 | 120 | 0 | 243 |
| 1: Weekday (Tu-Th) | 18: 3:30pm-3:45pm | 18 | 2 | 3 | 3 | 92 | 7 | 0 | 1 | 5 | 2 | 0 | 141 | 1 | 275 |
| 1: Weekday (Tu-Th) | 19: 3:45pm-4:00pm | 14 | 2 | 4 | 2 | 113 | 6 | 0 | 1 | 5 | 1 | 0 | 153 | 0 | 301 |
| 1: Weekday (Tu-Th) | 20: 4:00pm-4:15pm | 18 | 2 | 4 | 2 | 89 | 6 | 0 | 1 | 4 | 1 | 0 | 158 | 0 | 285 |
| 1: Weekday (Tu-Th) | 21: 4:15pm-4:30pm | 14 | 2 | 4 | 2 | 84 | 5 | 0 | 1 | 4 | 1 | 0 | 133 | 0 | 250 |
| 1: Weekday (Tu-Th) | 22: 4:30pm-4:45pm | 13 | 2 | 3 | 2 | 107 | 5 | 0 | 1 | 5 | 1 | 0 | 143 | 0 | 282 |
| 1: Weekday (Tu-Th) | 23: 4:45pm-5:00pm | 13 | 3 | 3 | 2 | 104 | 7 | 0 | 1 | 3 | 2 | 0 | 180 | 1 | 319 |
| 1: Weekday (Tu-Th) | 24: 5:00pm-5:15pm | 18 | 4 | 4 | 3 | 117 | 6 | 0 | 1 | 3 | 2 | 0 | 183 | 1 | 342 |
| 1: Weekday (Tu-Th) | 25: 5:15pm-5:30pm | 14 | 4 | 5 | 5 | 123 | 6 | 0 | 1 | 4 | 1 | 0 | 187 | 1 | 351 |
| 1: Weekday (Tu-Th) | 26: 5:30pm-5:45pm | 13 | 3 | 5 | 4 | 121 | 7 | 0 | 2 | 4 | 1 | 0 | 166 | 2 | 328 |
| 1: Weekday (Tu-Th) | 27: 5:45pm-6:00pm | 21 | 4 | 5 | 2 | 118 | 5 | 0 | 2 | 3 | 2 | 0 | 156 | 2 | 320 |
| 1: Weekday (Tu-Th) | 28: 6:00pm-6:15pm | 21 | 3 | 4 | 2 | 111 | 4 | 0 | 1 | 2 | 1 | 0 | 172 | 1 | 322 |
| 1: Weekday (Tu-Th) | 29: 6:15pm-6:30pm | 19 | 3 | 3 | 2 | 125 | 6 | 0 | 1 | 2 | 1 | 0 | 149 | 0 | 311 |
| 1: Weekday (Tu-Th) | 30: 6:30pm-6:45pm | 12 | 2 | 3 | 3 | 111 | 4 | 0 | 0 | 3 | 2 | 0 | 134 | 0 | 274 |
| 1: Weekday (Tu-Th) | 31: 6:45pm-7:00pm | 10 | 2 | 2 | 3 | 110 | 3 | 0 | 0 | 5 | 1 | 0 | 137 | 0 | 273 |
| Peak Hour AM | 8:00am-9:00am | 19 | 9 | 4 | 10 | 378 | 52 | - | 12 | 10 | 9 | - | 565 | - | 1,068 |
| Peak Hour PM | 5:00pm-6:00pm | 66 | 15 | 19 | 14 | 479 | 24 | - | 6 | 14 | 6 | - | 692 | 6 | 1,341 |

Note: Data collected by Streetlight for February 1st-March 15th, April 1st-June 1st and September 1st-November 15th, 2019. AM and PM peak hours are highlighted in green.

| Gilman & Sixth | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day Type | Time | NORTHBOUND | | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | | Total |
| | | NBL | NBT | NBR | EBL | EBT | EBR | SBL | SBT | SBR | WBL | WBL2 | WBT | WBR | |
| 1: Weekday (Tu-Th) | 00: 6:00am-6:15am | 1 | 0 | 0 | 2 | 28 | 3 | 0 | 2 | 4 | 1 | 0 | 27 | 0 | 68 |
| 1: Weekday (Tu-Th) | 01: 6:15am-6:30am | 1 | 1 | 1 | 4 | 34 | 4 | 0 | 4 | 4 | 1 | 0 | 44 | 0 | 98 |
| 1: Weekday (Tu-Th) | 02: 6:30am-6:45am | 1 | 1 | 1 | 3 | 41 | 7 | 0 | 5 | 4 | 1 | 0 | 54 | 0 | 118 |
| 1: Weekday (Tu-Th) | 03: 6:45am-7:00am | 3 | 1 | 1 | 3 | 46 | 8 | 0 | 5 | 4 | 1 | 0 | 60 | 0 | 132 |
| 1: Weekday (Tu-Th) | 04: 7:00am-7:15am | 5 | 0 | 1 | 1 | 70 | 6 | 0 | 10 | 8 | 3 | 0 | 102 | 0 | 206 |
| 1: Weekday (Tu-Th) | 05: 7:15am-7:30am | 4 | 0 | 1 | 2 | 70 | 8 | 0 | 25 | 16 | 5 | 0 | 94 | 0 | 225 |
| 1: Weekday (Tu-Th) | 06: 7:30am-7:45am | 4 | 1 | 2 | 2 | 96 | 15 | 0 | 28 | 19 | 6 | 0 | 86 | 0 | 259 |
| 1: Weekday (Tu-Th) | 07: 7:45am-8:00am | 5 | 3 | 2 | 3 | 74 | 12 | 0 | 24 | 28 | 8 | 0 | 115 | 0 | 274 |
| 1: Weekday (Tu-Th) | 08: 8:00am-8:15am | 8 | 6 | 3 | 4 | 75 | 12 | 1 | 47 | 19 | 10 | 0 | 120 | 0 | 305 |
| 1: Weekday (Tu-Th) | 09: 8:15am-8:30am | 16 | 7 | 4 | 6 | 62 | 12 | 1 | 29 | 12 | 12 | 0 | 135 | 0 | 296 |
| 1: Weekday (Tu-Th) | 10: 8:30am-8:45am | 12 | 5 | 4 | 7 | 64 | 12 | 1 | 26 | 15 | 13 | 0 | 132 | 0 | 291 |
| 1: Weekday (Tu-Th) | 11: 8:45am-9:00am | 11 | 4 | 3 | 6 | 81 | 14 | 2 | 21 | 15 | 16 | 0 | 112 | 1 | 286 |
| 1: Weekday (Tu-Th) | 12: 9:00am-9:15am | 11 | 5 | 4 | 7 | 75 | 11 | 1 | 18 | 13 | 10 | 0 | 91 | 1 | 247 |
| 1: Weekday (Tu-Th) | 13: 9:15am-9:30am | 9 | 4 | 4 | 5 | 77 | 10 | 1 | 18 | 13 | 6 | 0 | 87 | 1 | 235 |
| 1: Weekday (Tu-Th) | 14: 9:30am-9:45am | 9 | 6 | 3 | 5 | 77 | 11 | 1 | 20 | 13 | 4 | 0 | 83 | 1 | 233 |
| 1: Weekday (Tu-Th) | 15: 9:45am-10:00am | 9 | 6 | 3 | 5 | 73 | 11 | 0 | 14 | 11 | 4 | 0 | 86 | 1 | 223 |
| 1: Weekday (Tu-Th) | 16: 3:00pm-3:15pm | 24 | 12 | 7 | 7 | 83 | 8 | 2 | 6 | 9 | 6 | 0 | 87 | 1 | 252 |
| 1: Weekday (Tu-Th) | 17: 3:15pm-3:30pm | 27 | 18 | 8 | 8 | 79 | 7 | 1 | 5 | 7 | 5 | 0 | 82 | 1 | 248 |
| 1: Weekday (Tu-Th) | 18: 3:30pm-3:45pm | 36 | 17 | 9 | 7 | 76 | 8 | 1 | 7 | 8 | 4 | 0 | 100 | 1 | 274 |
| 1: Weekday (Tu-Th) | 19: 3:45pm-4:00pm | 41 | 20 | 9 | 9 | 105 | 7 | 1 | 8 | 9 | 4 | 0 | 101 | 1 | 315 |
| 1: Weekday (Tu-Th) | 20: 4:00pm-4:15pm | 37 | 22 | 9 | 10 | 82 | 7 | 0 | 7 | 9 | 3 | 0 | 109 | 2 | 297 |
| 1: Weekday (Tu-Th) | 21: 4:15pm-4:30pm | 39 | 26 | 9 | 9 | 71 | 7 | 1 | 9 | 8 | 3 | 0 | 81 | 2 | 265 |
| 1: Weekday (Tu-Th) | 22: 4:30pm-4:45pm | 37 | 29 | 10 | 8 | 88 | 8 | 1 | 7 | 10 | 4 | 0 | 95 | 3 | 300 |
| 1: Weekday (Tu-Th) | 23: 4:45pm-5:00pm | 43 | 26 | 12 | 7 | 92 | 9 | 1 | 9 | 9 | 5 | 0 | 117 | 2 | 332 |
| 1: Weekday (Tu-Th) | 24: 5:00pm-5:15pm | 53 | 33 | 13 | 8 | 99 | 9 | 1 | 12 | 9 | 6 | 0 | 113 | 3 | 359 |
| 1: Weekday (Tu-Th) | 25: 5:15pm-5:30pm | 47 | 34 | 16 | 10 | 110 | 10 | 1 | 11 | 8 | 7 | 0 | 120 | 3 | 377 |
| 1: Weekday (Tu-Th) | 26: 5:30pm-5:45pm | 56 | 42 | 14 | 11 | 101 | 11 | 1 | 12 | 6 | 6 | 0 | 92 | 3 | 355 |
| 1: Weekday (Tu-Th) | 27: 5:45pm-6:00pm | 49 | 47 | 14 | 12 | 106 | 10 | 1 | 12 | 6 | 6 | 0 | 95 | 2 | 360 |
| 1: Weekday (Tu-Th) | 28: 6:00pm-6:15pm | 49 | 35 | 16 | 12 | 94 | 8 | 2 | 10 | 7 | 6 | 0 | 104 | 3 | 346 |
| 1: Weekday (Tu-Th) | 29: 6:15pm-6:30pm | 34 | 29 | 10 | 12 | 110 | 8 | 1 | 9 | 7 | 6 | 0 | 93 | 2 | 321 |
| 1: Weekday (Tu-Th) | 30: 6:30pm-6:45pm | 28 | 29 | 9 | 12 | 100 | 9 | 0 | 9 | 8 | 5 | 0 | 93 | 2 | 304 |
| 1: Weekday (Tu-Th) | 31: 6:45pm-7:00pm | 29 | 17 | 8 | 10 | 91 | 10 | 2 | 8 | 8 | 4 | 0 | 93 | 1 | 281 |
| Peak Hour AM | 8:00am-9:00am | 47 | 22 | 14 | 23 | 282 | 50 | 5 | 123 | 61 | 51 | - | 499 | 1 | 1,178 |
| Peak Hour PM | 5:00pm-6:00pm | 205 | 156 | 57 | 41 | 416 | 40 | 4 | 47 | 29 | 25 | - | 420 | 11 | 1,451 |

Note: Data collected by Streetlight for February 1st-March 15th, April 1st-June 1st and September 1st-November 15th, 2019. AM and PM peak hours are highlighted in green.

| Gilman & San Pablo | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day Type | Time | NORTHBOUND | | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | | Total |
| | | NBL | NBT | NBR | EBL | EBT | EBR | SBL | SBT | SBR | WBL | WBL2 | WBT | WBR | |
| 1: Weekday (Tu-Th) | 00: 6:00am-6:15am | 5 | 17 | 1 | 4 | 4 | 6 | 3 | 78 | 10 | 1 | 0 | 17 | 0 | 146 |
| 1: Weekday (Tu-Th) | 01: 6:15am-6:30am | 3 | 24 | 1 | 4 | 7 | 10 | 6 | 143 | 13 | 1 | 0 | 31 | 1 | 244 |
| 1: Weekday (Tu-Th) | 02: 6:30am-6:45am | 2 | 27 | 1 | 3 | 9 | 15 | 11 | 182 | 27 | 2 | 0 | 32 | 1 | 312 |
| 1: Weekday (Tu-Th) | 03: 6:45am-7:00am | 2 | 23 | 0 | 7 | 9 | 14 | 11 | 165 | 37 | 4 | 0 | 28 | 1 | 301 |
| 1: Weekday (Tu-Th) | 04: 7:00am-7:15am | 3 | 24 | 0 | 9 | 14 | 14 | 13 | 263 | 33 | 4 | 0 | 73 | 3 | 453 |
| 1: Weekday (Tu-Th) | 05: 7:15am-7:30am | 6 | 30 | 0 | 8 | 25 | 14 | 23 | 315 | 45 | 4 | 0 | 56 | 5 | 531 |
| 1: Weekday (Tu-Th) | 06: 7:30am-7:45am | 10 | 38 | 2 | 9 | 59 | 15 | 25 | 373 | 43 | 5 | 0 | 52 | 8 | 639 |
| 1: Weekday (Tu-Th) | 07: 7:45am-8:00am | 12 | 55 | 4 | 11 | 30 | 11 | 26 | 329 | 41 | 5 | 0 | 75 | 9 | 608 |
| 1: Weekday (Tu-Th) | 08: 8:00am-8:15am | 14 | 71 | 2 | 9 | 21 | 12 | 24 | 330 | 30 | 4 | 0 | 99 | 9 | 625 |
| 1: Weekday (Tu-Th) | 09: 8:15am-8:30am | 17 | 78 | 1 | 8 | 27 | 15 | 24 | 306 | 27 | 5 | 0 | 114 | 12 | 634 |
| 1: Weekday (Tu-Th) | 10: 8:30am-8:45am | 31 | 95 | 2 | 9 | 26 | 18 | 17 | 295 | 28 | 9 | 0 | 76 | 19 | 625 |
| 1: Weekday (Tu-Th) | 11: 8:45am-9:00am | 22 | 71 | 3 | 16 | 34 | 16 | 14 | 281 | 27 | 12 | 0 | 87 | 15 | 598 |
| 1: Weekday (Tu-Th) | 12: 9:00am-9:15am | 17 | 76 | 2 | 17 | 29 | 18 | 13 | 238 | 24 | 9 | 0 | 59 | 9 | 511 |
| 1: Weekday (Tu-Th) | 13: 9:15am-9:30am | 19 | 72 | 2 | 14 | 24 | 20 | 12 | 226 | 23 | 7 | 0 | 49 | 7 | 475 |
| 1: Weekday (Tu-Th) | 14: 9:30am-9:45am | 15 | 80 | 1 | 14 | 27 | 24 | 10 | 206 | 24 | 6 | 0 | 57 | 5 | 469 |
| 1: Weekday (Tu-Th) | 15: 9:45am-10:00am | 16 | 69 | 2 | 12 | 17 | 18 | 11 | 179 | 22 | 5 | 0 | 59 | 6 | 416 |
| 1: Weekday (Tu-Th) | 16: 3:00pm-3:15pm | 20 | 168 | 5 | 19 | 42 | 16 | 11 | 132 | 18 | 9 | 0 | 46 | 19 | 505 |
| 1: Weekday (Tu-Th) | 17: 3:15pm-3:30pm | 22 | 182 | 5 | 25 | 35 | 17 | 12 | 151 | 20 | 7 | 0 | 47 | 24 | 547 |
| 1: Weekday (Tu-Th) | 18: 3:30pm-3:45pm | 23 | 220 | 4 | 20 | 32 | 24 | 13 | 146 | 18 | 6 | 0 | 57 | 32 | 595 |
| 1: Weekday (Tu-Th) | 19: 3:45pm-4:00pm | 24 | 233 | 7 | 17 | 53 | 17 | 17 | 138 | 16 | 6 | 0 | 64 | 39 | 631 |
| 1: Weekday (Tu-Th) | 20: 4:00pm-4:15pm | 31 | 225 | 7 | 22 | 49 | 18 | 12 | 139 | 17 | 6 | 0 | 60 | 42 | 628 |
| 1: Weekday (Tu-Th) | 21: 4:15pm-4:30pm | 28 | 238 | 7 | 18 | 41 | 15 | 16 | 143 | 18 | 5 | 0 | 43 | 28 | 600 |
| 1: Weekday (Tu-Th) | 22: 4:30pm-4:45pm | 27 | 236 | 7 | 24 | 51 | 16 | 10 | 152 | 17 | 6 | 0 | 57 | 29 | 632 |
| 1: Weekday (Tu-Th) | 23: 4:45pm-5:00pm | 48 | 221 | 6 | 23 | 54 | 16 | 10 | 161 | 21 | 6 | 0 | 54 | 30 | 650 |
| 1: Weekday (Tu-Th) | 24: 5:00pm-5:15pm | 36 | 223 | 7 | 22 | 80 | 19 | 13 | 159 | 23 | 8 | 0 | 52 | 23 | 665 |
| 1: Weekday (Tu-Th) | 25: 5:15pm-5:30pm | 33 | 249 | 7 | 28 | 72 | 15 | 15 | 149 | 24 | 15 | 0 | 77 | 34 | 718 |
| 1: Weekday (Tu-Th) | 26: 5:30pm-5:45pm | 38 | 256 | 7 | 23 | 65 | 15 | 16 | 141 | 18 | 10 | 0 | 56 | 31 | 676 |
| 1: Weekday (Tu-Th) | 27: 5:45pm-6:00pm | 30 | 258 | 9 | 28 | 86 | 14 | 12 | 135 | 14 | 7 | 0 | 58 | 27 | 678 |
| 1: Weekday (Tu-Th) | 28: 6:00pm-6:15pm | 36 | 235 | 11 | 22 | 75 | 17 | 11 | 151 | 18 | 7 | 0 | 53 | 24 | 660 |
| 1: Weekday (Tu-Th) | 29: 6:15pm-6:30pm | 31 | 224 | 10 | 20 | 69 | 18 | 10 | 150 | 18 | 10 | 0 | 47 | 27 | 634 |
| 1: Weekday (Tu-Th) | 30: 6:30pm-6:45pm | 19 | 215 | 8 | 24 | 71 | 18 | 11 | 129 | 20 | 9 | 0 | 40 | 20 | 584 |
| 1: Weekday (Tu-Th) | 31: 6:45pm-7:00pm | 24 | 176 | 6 | 24 | 55 | 17 | 13 | 117 | 20 | 5 | 0 | 56 | 17 | 530 |
| Peak Hour AM | 7:30am-8:30am | 53 | 242 | 9 | 37 | 137 | 53 | 99 | 1,338 | 141 | 19 | - | 340 | 38 | 2,506 |
| Peak Hour PM | 5:00pm-6:00pm | 137 | 986 | 30 | 101 | 303 | 63 | 56 | 584 | 79 | 40 | - | 243 | 115 | 2,737 |

Note: Data collected by Streetlight for February 1st-March 15th, April 1st-June 1st and September 1st-November 15th, 2019. AM and PM peak hours are highlighted in green.

| Camelia & Second | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day Type | Time | NORTHBOUND | | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | | Total |
| | | NBL | NBT | NBR | EBL | EBT | EBR | SBL | SBT | SBR | WBL | WBL2 | WBT | WBR | |
| 1: Weekday (Tu-Th) | 00: 6:00am-6:15am | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 7 |
| 1: Weekday (Tu-Th) | 01: 6:15am-6:30am | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 5 |
| 1: Weekday (Tu-Th) | 02: 6:30am-6:45am | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 6 |
| 1: Weekday (Tu-Th) | 03: 6:45am-7:00am | 0 | 4 | 2 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 10 |
| 1: Weekday (Tu-Th) | 04: 7:00am-7:15am | 0 | 4 | 3 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 12 |
| 1: Weekday (Tu-Th) | 05: 7:15am-7:30am | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 11 |
| 1: Weekday (Tu-Th) | 06: 7:30am-7:45am | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 11 |
| 1: Weekday (Tu-Th) | 07: 7:45am-8:00am | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 13 |
| 1: Weekday (Tu-Th) | 08: 8:00am-8:15am | 0 | 6 | 2 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 14 |
| 1: Weekday (Tu-Th) | 09: 8:15am-8:30am | 0 | 5 | 3 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 14 |
| 1: Weekday (Tu-Th) | 10: 8:30am-8:45am | 0 | 5 | 2 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 1 | 14 |
| 1: Weekday (Tu-Th) | 11: 8:45am-9:00am | 0 | 6 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 13 |
| 1: Weekday (Tu-Th) | 12: 9:00am-9:15am | 0 | 7 | 3 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 2 | 17 |
| 1: Weekday (Tu-Th) | 13: 9:15am-9:30am | 0 | 7 | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 16 |
| 1: Weekday (Tu-Th) | 14: 9:30am-9:45am | 0 | 7 | 3 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 15 |
| 1: Weekday (Tu-Th) | 15: 9:45am-10:00am | 0 | 7 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 1 | 15 |
| 1: Weekday (Tu-Th) | 16: 3:00pm-3:15pm | 0 | 10 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 17 |
| 1: Weekday (Tu-Th) | 17: 3:15pm-3:30pm | 0 | 9 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 15 |
| 1: Weekday (Tu-Th) | 18: 3:30pm-3:45pm | 0 | 9 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 18 |
| 1: Weekday (Tu-Th) | 19: 3:45pm-4:00pm | 0 | 10 | 4 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 18 |
| 1: Weekday (Tu-Th) | 20: 4:00pm-4:15pm | 0 | 9 | 4 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 18 |
| 1: Weekday (Tu-Th) | 21: 4:15pm-4:30pm | 0 | 7 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 2 | 15 |
| 1: Weekday (Tu-Th) | 22: 4:30pm-4:45pm | 0 | 8 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 3 | 18 |
| 1: Weekday (Tu-Th) | 23: 4:45pm-5:00pm | 0 | 11 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 17 |
| 1: Weekday (Tu-Th) | 24: 5:00pm-5:15pm | 0 | 9 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 15 |
| 1: Weekday (Tu-Th) | 25: 5:15pm-5:30pm | 0 | 8 | 3 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 16 |
| 1: Weekday (Tu-Th) | 26: 5:30pm-5:45pm | 0 | 7 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 2 | 15 |
| 1: Weekday (Tu-Th) | 27: 5:45pm-6:00pm | 0 | 7 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 13 |
| 1: Weekday (Tu-Th) | 28: 6:00pm-6:15pm | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 10 |
| 1: Weekday (Tu-Th) | 29: 6:15pm-6:30pm | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 11 |
| 1: Weekday (Tu-Th) | 30: 6:30pm-6:45pm | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 9 |
| 1: Weekday (Tu-Th) | 31: 6:45pm-7:00pm | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 10 |
| Peak Hour AM | 9:00am-0:00am | - | 28 | 12 | - | - | - | 1 | 16 | - | 1 | - | - | 5 | 63 |
| Peak Hour PM | 3:15pm-4:15pm | - | 37 | 12 | - | - | - | - | 10 | - | - | - | - | 10 | 69 |

Note: Data collected by Streetlight for February 1st-March 15th, April 1st-June 1st and September 1st-November 15th, 2019. AM and PM peak hours are highlighted in green.

| Page & Eastshore | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day Type | Time | NORTHBOUND | | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | | Total |
| | | NBL | NBT | NBR | EBL | EBT | EBR | SBL | SBT | SBR | WBL | WBL2 | WBT | WBR | |
| 1: Weekday (Tu-Th) | 00: 6:00am-6:15am | 0 | 46 | 2 | 0 | 0 | 0 | 0 | 89 | 0 | 0 | 0 | 0 | 0 | 137 |
| 1: Weekday (Tu-Th) | 01: 6:15am-6:30am | 0 | 41 | 1 | 0 | 0 | 0 | 0 | 71 | 0 | 0 | 0 | 0 | 0 | 113 |
| 1: Weekday (Tu-Th) | 02: 6:30am-6:45am | 0 | 49 | 1 | 0 | 0 | 0 | 0 | 75 | 0 | 0 | 0 | 0 | 0 | 125 |
| 1: Weekday (Tu-Th) | 03: 6:45am-7:00am | 0 | 52 | 2 | 0 | 0 | 0 | 0 | 86 | 0 | 0 | 0 | 0 | 0 | 140 |
| 1: Weekday (Tu-Th) | 04: 7:00am-7:15am | 0 | 62 | 4 | 0 | 0 | 0 | 0 | 98 | 0 | 0 | 0 | 0 | 0 | 164 |
| 1: Weekday (Tu-Th) | 05: 7:15am-7:30am | 0 | 58 | 4 | 0 | 0 | 0 | 1 | 101 | 0 | 0 | 0 | 0 | 0 | 164 |
| 1: Weekday (Tu-Th) | 06: 7:30am-7:45am | 0 | 77 | 2 | 0 | 0 | 0 | 2 | 100 | 0 | 0 | 0 | 0 | 0 | 181 |
| 1: Weekday (Tu-Th) | 07: 7:45am-8:00am | 0 | 59 | 1 | 0 | 0 | 0 | 1 | 136 | 0 | 0 | 0 | 0 | 0 | 197 |
| 1: Weekday (Tu-Th) | 08: 8:00am-8:15am | 0 | 68 | 1 | 0 | 0 | 0 | 1 | 127 | 0 | 1 | 0 | 0 | 0 | 198 |
| 1: Weekday (Tu-Th) | 09: 8:15am-8:30am | 0 | 72 | 2 | 0 | 0 | 0 | 1 | 133 | 0 | 1 | 0 | 0 | 0 | 209 |
| 1: Weekday (Tu-Th) | 10: 8:30am-8:45am | 0 | 72 | 3 | 0 | 0 | 0 | 2 | 121 | 0 | 1 | 0 | 0 | 0 | 199 |
| 1: Weekday (Tu-Th) | 11: 8:45am-9:00am | 0 | 77 | 3 | 0 | 0 | 0 | 2 | 114 | 0 | 1 | 0 | 0 | 0 | 197 |
| 1: Weekday (Tu-Th) | 12: 9:00am-9:15am | 0 | 80 | 3 | 0 | 0 | 0 | 3 | 117 | 0 | 1 | 0 | 0 | 0 | 204 |
| 1: Weekday (Tu-Th) | 13: 9:15am-9:30am | 0 | 65 | 4 | 0 | 0 | 0 | 2 | 115 | 0 | 0 | 0 | 0 | 0 | 186 |
| 1: Weekday (Tu-Th) | 14: 9:30am-9:45am | 0 | 74 | 4 | 0 | 0 | 0 | 0 | 105 | 0 | 0 | 0 | 0 | 0 | 183 |
| 1: Weekday (Tu-Th) | 15: 9:45am-10:00am | 0 | 73 | 4 | 0 | 0 | 0 | 0 | 107 | 0 | 0 | 0 | 0 | 0 | 184 |
| 1: Weekday (Tu-Th) | 16: 3:00pm-3:15pm | 0 | 152 | 6 | 0 | 0 | 0 | 2 | 66 | 0 | 0 | 0 | 0 | 1 | 227 |
| 1: Weekday (Tu-Th) | 17: 3:15pm-3:30pm | 0 | 128 | 4 | 0 | 0 | 0 | 1 | 74 | 0 | 0 | 0 | 0 | 1 | 208 |
| 1: Weekday (Tu-Th) | 18: 3:30pm-3:45pm | 0 | 133 | 4 | 0 | 0 | 0 | 0 | 87 | 0 | 0 | 0 | 0 | 1 | 225 |
| 1: Weekday (Tu-Th) | 19: 3:45pm-4:00pm | 0 | 152 | 5 | 0 | 0 | 0 | 0 | 71 | 0 | 0 | 0 | 0 | 1 | 229 |
| 1: Weekday (Tu-Th) | 20: 4:00pm-4:15pm | 0 | 136 | 3 | 0 | 0 | 0 | 0 | 66 | 0 | 0 | 0 | 0 | 0 | 205 |
| 1: Weekday (Tu-Th) | 21: 4:15pm-4:30pm | 0 | 149 | 2 | 0 | 0 | 0 | 1 | 68 | 0 | 0 | 0 | 0 | 1 | 221 |
| 1: Weekday (Tu-Th) | 22: 4:30pm-4:45pm | 0 | 162 | 4 | 0 | 0 | 0 | 1 | 77 | 0 | 0 | 0 | 0 | 2 | 246 |
| 1: Weekday (Tu-Th) | 23: 4:45pm-5:00pm | 0 | 169 | 5 | 0 | 0 | 0 | 2 | 89 | 0 | 0 | 0 | 0 | 3 | 268 |
| 1: Weekday (Tu-Th) | 24: 5:00pm-5:15pm | 0 | 158 | 4 | 0 | 0 | 0 | 1 | 82 | 0 | 0 | 0 | 0 | 2 | 247 |
| 1: Weekday (Tu-Th) | 25: 5:15pm-5:30pm | 0 | 163 | 4 | 0 | 0 | 0 | 0 | 84 | 0 | 0 | 0 | 0 | 2 | 253 |
| 1: Weekday (Tu-Th) | 26: 5:30pm-5:45pm | 0 | 144 | 4 | 0 | 0 | 0 | 0 | 75 | 0 | 0 | 0 | 0 | 2 | 225 |
| 1: Weekday (Tu-Th) | 27: 5:45pm-6:00pm | 0 | 148 | 3 | 0 | 0 | 0 | 0 | 66 | 0 | 0 | 0 | 0 | 1 | 218 |
| 1: Weekday (Tu-Th) | 28: 6:00pm-6:15pm | 0 | 148 | 2 | 0 | 0 | 0 | 0 | 69 | 0 | 0 | 0 | 0 | 0 | 219 |
| 1: Weekday (Tu-Th) | 29: 6:15pm-6:30pm | 0 | 159 | 2 | 0 | 0 | 0 | 0 | 69 | 0 | 0 | 0 | 0 | 0 | 230 |
| 1: Weekday (Tu-Th) | 30: 6:30pm-6:45pm | 0 | 132 | 2 | 0 | 0 | 0 | 0 | 63 | 0 | 0 | 0 | 0 | 0 | 197 |
| 1: Weekday (Tu-Th) | 31: 6:45pm-7:00pm | 0 | 123 | 3 | 0 | 0 | 0 | 0 | 52 | 0 | 0 | 0 | 0 | 0 | 178 |
| Peak Hour AM | 8:15am-9:15am | - | 301 | 11 | - | - | - | 8 | 485 | - | 4 | - | - | - | 809 |
| Peak Hour PM | 4:30pm-5:30pm | - | 652 | 17 | - | - | - | 4 | 332 | - | - | - | - | 9 | 1,014 |

Note: Data collected by Streetlight for February 1st-March 15th, April 1st-June 1st and September 1st-November 15th, 2019. AM and PM peak hours are highlighted in green.

| Page & Second | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day Type | Time | NORTHBOUND | | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | | Total |
| | | NBL | NBT | NBR | EBL | EBT | EBR | SBL | SBT | SBR | WBL | WBL2 | WBT | WBR | |
| 1: Weekday (Tu-Th) | 00: 6:00am-6:15am | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 |
| 1: Weekday (Tu-Th) | 01: 6:15am-6:30am | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 |
| 1: Weekday (Tu-Th) | 02: 6:30am-6:45am | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 6 |
| 1: Weekday (Tu-Th) | 03: 6:45am-7:00am | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 8 |
| 1: Weekday (Tu-Th) | 04: 7:00am-7:15am | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 12 |
| 1: Weekday (Tu-Th) | 05: 7:15am-7:30am | 0 | 1 | 0 | 4 | 0 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 11 |
| 1: Weekday (Tu-Th) | 06: 7:30am-7:45am | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 11 |
| 1: Weekday (Tu-Th) | 07: 7:45am-8:00am | 0 | 5 | 0 | 1 | 0 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 14 |
| 1: Weekday (Tu-Th) | 08: 8:00am-8:15am | 0 | 6 | 0 | 1 | 0 | 1 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 15 |
| 1: Weekday (Tu-Th) | 09: 8:15am-8:30am | 0 | 4 | 0 | 4 | 0 | 1 | 0 | 5 | 2 | 0 | 0 | 0 | 0 | 16 |
| 1: Weekday (Tu-Th) | 10: 8:30am-8:45am | 0 | 3 | 0 | 4 | 0 | 1 | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 14 |
| 1: Weekday (Tu-Th) | 11: 8:45am-9:00am | 0 | 5 | 0 | 5 | 0 | 1 | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 17 |
| 1: Weekday (Tu-Th) | 12: 9:00am-9:15am | 0 | 4 | 0 | 4 | 0 | 2 | 0 | 7 | 1 | 0 | 0 | 0 | 0 | 18 |
| 1: Weekday (Tu-Th) | 13: 9:15am-9:30am | 0 | 4 | 0 | 6 | 0 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 17 |
| 1: Weekday (Tu-Th) | 14: 9:30am-9:45am | 0 | 4 | 0 | 5 | 0 | 1 | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 16 |
| 1: Weekday (Tu-Th) | 15: 9:45am-10:00am | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 13 |
| 1: Weekday (Tu-Th) | 16: 3:00pm-3:15pm | 1 | 9 | 0 | 7 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 22 |
| 1: Weekday (Tu-Th) | 17: 3:15pm-3:30pm | 1 | 8 | 0 | 5 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 18 |
| 1: Weekday (Tu-Th) | 18: 3:30pm-3:45pm | 1 | 7 | 0 | 5 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 17 |
| 1: Weekday (Tu-Th) | 19: 3:45pm-4:00pm | 0 | 8 | 0 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 16 |
| 1: Weekday (Tu-Th) | 20: 4:00pm-4:15pm | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 14 |
| 1: Weekday (Tu-Th) | 21: 4:15pm-4:30pm | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 12 |
| 1: Weekday (Tu-Th) | 22: 4:30pm-4:45pm | 1 | 4 | 0 | 6 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 16 |
| 1: Weekday (Tu-Th) | 23: 4:45pm-5:00pm | 2 | 5 | 0 | 8 | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 20 |
| 1: Weekday (Tu-Th) | 24: 5:00pm-5:15pm | 1 | 5 | 0 | 6 | 0 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 16 |
| 1: Weekday (Tu-Th) | 25: 5:15pm-5:30pm | 1 | 5 | 0 | 5 | 0 | 1 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 17 |
| 1: Weekday (Tu-Th) | 26: 5:30pm-5:45pm | 0 | 6 | 0 | 5 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 16 |
| 1: Weekday (Tu-Th) | 27: 5:45pm-6:00pm | 0 | 6 | 0 | 4 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 14 |
| 1: Weekday (Tu-Th) | 28: 6:00pm-6:15pm | 0 | 5 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 11 |
| 1: Weekday (Tu-Th) | 29: 6:15pm-6:30pm | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 9 |
| 1: Weekday (Tu-Th) | 30: 6:30pm-6:45pm | 0 | 4 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 9 |
| 1: Weekday (Tu-Th) | 31: 6:45pm-7:00pm | 0 | 3 | 0 | 4 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 9 |
| Peak Hour AM | 8:45am-9:45am | - | 17 | - | 20 | - | 6 | - | 22 | 3 | - | - | - | - | 68 |
| Peak Hour PM | 3:00pm-4:00pm | 3 | 32 | - | 22 | - | 3 | - | 13 | - | - | - | - | - | 73 |

Note: Data collected by Streetlight for February 1st-March 15th, April 1st-June 1st and September 1st-November 15th, 2019. AM and PM peak hours are highlighted in green.

| Cedar & Eastshore | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day Type | Time | NORTHBOUND | | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | | Total |
| | | NBL | NBT | NBR | EBL | EBT | EBR | SBL | SBT | SBR | WBL | WBL2 | WBT | WBR | |
| 1: Weekday (Tu-Th) | 00: 6:00am-6:15am | 0 | 45 | 15 | 0 | 0 | 0 | 6 | 63 | 0 | 0 | 0 | 0 | 0 | 129 |
| 1: Weekday (Tu-Th) | 01: 6:15am-6:30am | 0 | 40 | 17 | 0 | 0 | 0 | 5 | 58 | 0 | 0 | 0 | 0 | 1 | 121 |
| 1: Weekday (Tu-Th) | 02: 6:30am-6:45am | 0 | 47 | 14 | 0 | 0 | 0 | 3 | 72 | 0 | 0 | 0 | 0 | 1 | 137 |
| 1: Weekday (Tu-Th) | 03: 6:45am-7:00am | 0 | 53 | 14 | 0 | 0 | 0 | 4 | 77 | 0 | 0 | 0 | 0 | 1 | 149 |
| 1: Weekday (Tu-Th) | 04: 7:00am-7:15am | 0 | 62 | 31 | 0 | 0 | 0 | 6 | 82 | 0 | 0 | 0 | 0 | 1 | 182 |
| 1: Weekday (Tu-Th) | 05: 7:15am-7:30am | 0 | 61 | 30 | 0 | 0 | 0 | 8 | 78 | 0 | 0 | 0 | 0 | 1 | 178 |
| 1: Weekday (Tu-Th) | 06: 7:30am-7:45am | 0 | 80 | 63 | 0 | 0 | 0 | 11 | 82 | 0 | 0 | 0 | 0 | 1 | 237 |
| 1: Weekday (Tu-Th) | 07: 7:45am-8:00am | 0 | 63 | 56 | 0 | 0 | 0 | 14 | 119 | 0 | 0 | 0 | 0 | 2 | 254 |
| 1: Weekday (Tu-Th) | 08: 8:00am-8:15am | 0 | 65 | 35 | 0 | 0 | 0 | 21 | 103 | 0 | 0 | 0 | 0 | 3 | 227 |
| 1: Weekday (Tu-Th) | 09: 8:15am-8:30am | 0 | 73 | 40 | 0 | 0 | 0 | 14 | 115 | 0 | 0 | 0 | 0 | 3 | 245 |
| 1: Weekday (Tu-Th) | 10: 8:30am-8:45am | 0 | 68 | 42 | 0 | 0 | 0 | 15 | 103 | 0 | 0 | 0 | 0 | 3 | 231 |
| 1: Weekday (Tu-Th) | 11: 8:45am-9:00am | 0 | 78 | 39 | 0 | 0 | 0 | 14 | 102 | 0 | 0 | 0 | 0 | 3 | 236 |
| 1: Weekday (Tu-Th) | 12: 9:00am-9:15am | 0 | 79 | 30 | 0 | 0 | 0 | 13 | 99 | 0 | 1 | 0 | 0 | 2 | 224 |
| 1: Weekday (Tu-Th) | 13: 9:15am-9:30am | 0 | 70 | 25 | 0 | 0 | 0 | 14 | 98 | 0 | 1 | 0 | 0 | 2 | 210 |
| 1: Weekday (Tu-Th) | 14: 9:30am-9:45am | 0 | 73 | 29 | 0 | 0 | 0 | 10 | 91 | 0 | 0 | 0 | 0 | 3 | 206 |
| 1: Weekday (Tu-Th) | 15: 9:45am-10:00am | 0 | 78 | 24 | 0 | 0 | 0 | 9 | 92 | 0 | 0 | 0 | 0 | 3 | 206 |
| 1: Weekday (Tu-Th) | 16: 3:00pm-3:15pm | 0 | 149 | 18 | 0 | 0 | 0 | 7 | 57 | 0 | 0 | 0 | 0 | 6 | 237 |
| 1: Weekday (Tu-Th) | 17: 3:15pm-3:30pm | 0 | 125 | 19 | 0 | 0 | 0 | 8 | 61 | 0 | 0 | 0 | 0 | 7 | 220 |
| 1: Weekday (Tu-Th) | 18: 3:30pm-3:45pm | 0 | 127 | 24 | 0 | 0 | 0 | 9 | 74 | 0 | 1 | 0 | 0 | 8 | 243 |
| 1: Weekday (Tu-Th) | 19: 3:45pm-4:00pm | 0 | 144 | 23 | 0 | 0 | 0 | 7 | 65 | 0 | 1 | 0 | 0 | 8 | 248 |
| 1: Weekday (Tu-Th) | 20: 4:00pm-4:15pm | 0 | 133 | 13 | 0 | 0 | 0 | 6 | 56 | 0 | 0 | 0 | 0 | 7 | 215 |
| 1: Weekday (Tu-Th) | 21: 4:15pm-4:30pm | 0 | 143 | 22 | 0 | 0 | 0 | 6 | 64 | 0 | 0 | 0 | 0 | 6 | 241 |
| 1: Weekday (Tu-Th) | 22: 4:30pm-4:45pm | 0 | 153 | 21 | 0 | 0 | 0 | 10 | 65 | 0 | 1 | 0 | 0 | 6 | 256 |
| 1: Weekday (Tu-Th) | 23: 4:45pm-5:00pm | 0 | 174 | 21 | 0 | 0 | 0 | 21 | 66 | 0 | 0 | 0 | 0 | 6 | 288 |
| 1: Weekday (Tu-Th) | 24: 5:00pm-5:15pm | 0 | 150 | 19 | 0 | 0 | 0 | 14 | 71 | 0 | 0 | 0 | 0 | 6 | 260 |
| 1: Weekday (Tu-Th) | 25: 5:15pm-5:30pm | 0 | 155 | 18 | 0 | 0 | 0 | 10 | 74 | 0 | 0 | 0 | 0 | 6 | 263 |
| 1: Weekday (Tu-Th) | 26: 5:30pm-5:45pm | 0 | 145 | 20 | 0 | 0 | 0 | 7 | 67 | 0 | 0 | 0 | 0 | 5 | 244 |
| 1: Weekday (Tu-Th) | 27: 5:45pm-6:00pm | 0 | 139 | 22 | 0 | 0 | 0 | 5 | 61 | 0 | 0 | 0 | 0 | 5 | 232 |
| 1: Weekday (Tu-Th) | 28: 6:00pm-6:15pm | 0 | 140 | 21 | 0 | 0 | 0 | 5 | 63 | 0 | 0 | 0 | 0 | 7 | 236 |
| 1: Weekday (Tu-Th) | 29: 6:15pm-6:30pm | 0 | 148 | 21 | 0 | 0 | 0 | 5 | 61 | 0 | 0 | 0 | 0 | 8 | 243 |
| 1: Weekday (Tu-Th) | 30: 6:30pm-6:45pm | 0 | 126 | 24 | 0 | 0 | 0 | 5 | 57 | 0 | 1 | 0 | 0 | 7 | 220 |
| 1: Weekday (Tu-Th) | 31: 6:45pm-7:00pm | 0 | 118 | 29 | 0 | 0 | 0 | 5 | 48 | 0 | 0 | 0 | 0 | 5 | 205 |
| Peak Hour AM | 7:30am-8:30am | - | 281 | 194 | - | - | - | 60 | 419 | - | - | - | - | 9 | 963 |
| Peak Hour PM | 4:30pm-5:30pm | - | 632 | 79 | - | - | - | 55 | 276 | - | 1 | - | - | 24 | 1,067 |

Note: Data collected by Streetlight for February 1st-March 15th, April 1st-June 1st and September 1st-November 15th, 2019. AM and PM peak hours are highlighted in green.

| Cedar & Second | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day Type | Time | NORTHBOUND | | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | | Total |
| | | NBL | NBT | NBR | EBL | EBT | EBR | SBL | SBT | SBR | WBL | WBL2 | WBT | WBR | |
| 1: Weekday (Tu-Th) | 00: 6:00am-6:15am | 0 | 0 | 0 | 0 | 24 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 26 |
| 1: Weekday (Tu-Th) | 01: 6:15am-6:30am | 0 | 0 | 0 | 0 | 26 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 28 |
| 1: Weekday (Tu-Th) | 02: 6:30am-6:45am | 0 | 0 | 0 | 0 | 17 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 19 |
| 1: Weekday (Tu-Th) | 03: 6:45am-7:00am | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 24 |
| 1: Weekday (Tu-Th) | 04: 7:00am-7:15am | 0 | 0 | 0 | 1 | 39 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 44 |
| 1: Weekday (Tu-Th) | 05: 7:15am-7:30am | 0 | 0 | 0 | 1 | 42 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 2 | 49 |
| 1: Weekday (Tu-Th) | 06: 7:30am-7:45am | 0 | 0 | 0 | 1 | 83 | 0 | 4 | 0 | 0 | 0 | 0 | 2 | 1 | 91 |
| 1: Weekday (Tu-Th) | 07: 7:45am-8:00am | 0 | 0 | 0 | 1 | 75 | 0 | 7 | 0 | 0 | 0 | 0 | 3 | 1 | 87 |
| 1: Weekday (Tu-Th) | 08: 8:00am-8:15am | 0 | 0 | 0 | 1 | 63 | 0 | 10 | 0 | 0 | 0 | 0 | 3 | 1 | 78 |
| 1: Weekday (Tu-Th) | 09: 8:15am-8:30am | 0 | 0 | 0 | 0 | 53 | 0 | 9 | 0 | 0 | 0 | 0 | 4 | 1 | 67 |
| 1: Weekday (Tu-Th) | 10: 8:30am-8:45am | 0 | 0 | 0 | 0 | 60 | 0 | 6 | 0 | 0 | 0 | 0 | 6 | 1 | 73 |
| 1: Weekday (Tu-Th) | 11: 8:45am-9:00am | 0 | 0 | 0 | 0 | 55 | 0 | 6 | 0 | 0 | 0 | 0 | 6 | 2 | 69 |
| 1: Weekday (Tu-Th) | 12: 9:00am-9:15am | 0 | 0 | 0 | 0 | 44 | 0 | 6 | 0 | 0 | 0 | 0 | 4 | 1 | 55 |
| 1: Weekday (Tu-Th) | 13: 9:15am-9:30am | 0 | 0 | 0 | 0 | 40 | 0 | 6 | 0 | 0 | 0 | 0 | 5 | 2 | 53 |
| 1: Weekday (Tu-Th) | 14: 9:30am-9:45am | 0 | 0 | 0 | 1 | 44 | 0 | 6 | 0 | 0 | 0 | 0 | 6 | 1 | 58 |
| 1: Weekday (Tu-Th) | 15: 9:45am-10:00am | 0 | 0 | 0 | 0 | 38 | 0 | 5 | 0 | 0 | 0 | 0 | 5 | 1 | 49 |
| 1: Weekday (Tu-Th) | 16: 3:00pm-3:15pm | 0 | 0 | 0 | 0 | 28 | 0 | 3 | 0 | 0 | 0 | 0 | 8 | 3 | 42 |
| 1: Weekday (Tu-Th) | 17: 3:15pm-3:30pm | 0 | 0 | 0 | 0 | 32 | 0 | 4 | 0 | 0 | 0 | 0 | 8 | 4 | 48 |
| 1: Weekday (Tu-Th) | 18: 3:30pm-3:45pm | 0 | 0 | 0 | 1 | 36 | 0 | 5 | 0 | 0 | 0 | 0 | 10 | 4 | 56 |
| 1: Weekday (Tu-Th) | 19: 3:45pm-4:00pm | 0 | 0 | 0 | 1 | 31 | 0 | 4 | 0 | 0 | 0 | 0 | 12 | 3 | 51 |
| 1: Weekday (Tu-Th) | 20: 4:00pm-4:15pm | 0 | 0 | 0 | 1 | 20 | 0 | 3 | 0 | 0 | 0 | 0 | 10 | 3 | 37 |
| 1: Weekday (Tu-Th) | 21: 4:15pm-4:30pm | 0 | 0 | 0 | 0 | 31 | 0 | 4 | 0 | 0 | 0 | 0 | 9 | 3 | 47 |
| 1: Weekday (Tu-Th) | 22: 4:30pm-4:45pm | 0 | 0 | 0 | 0 | 35 | 0 | 5 | 0 | 0 | 0 | 0 | 8 | 4 | 52 |
| 1: Weekday (Tu-Th) | 23: 4:45pm-5:00pm | 0 | 0 | 0 | 0 | 48 | 0 | 5 | 0 | 0 | 0 | 0 | 9 | 4 | 66 |
| 1: Weekday (Tu-Th) | 24: 5:00pm-5:15pm | 0 | 0 | 0 | 0 | 36 | 0 | 4 | 0 | 0 | 0 | 0 | 8 | 4 | 52 |
| 1: Weekday (Tu-Th) | 25: 5:15pm-5:30pm | 0 | 0 | 0 | 0 | 32 | 0 | 3 | 0 | 0 | 0 | 0 | 8 | 3 | 46 |
| 1: Weekday (Tu-Th) | 26: 5:30pm-5:45pm | 0 | 0 | 0 | 0 | 28 | 0 | 3 | 0 | 0 | 0 | 0 | 7 | 3 | 41 |
| 1: Weekday (Tu-Th) | 27: 5:45pm-6:00pm | 0 | 0 | 0 | 0 | 29 | 0 | 3 | 0 | 0 | 0 | 0 | 6 | 2 | 40 |
| 1: Weekday (Tu-Th) | 28: 6:00pm-6:15pm | 0 | 0 | 0 | 0 | 35 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 2 | 45 |
| 1: Weekday (Tu-Th) | 29: 6:15pm-6:30pm | 0 | 0 | 0 | 0 | 35 | 0 | 1 | 0 | 0 | 0 | 0 | 9 | 2 | 47 |
| 1: Weekday (Tu-Th) | 30: 6:30pm-6:45pm | 0 | 0 | 0 | 0 | 33 | 0 | 2 | 0 | 0 | 0 | 0 | 9 | 1 | 45 |
| 1: Weekday (Tu-Th) | 31: 6:45pm-7:00pm | 0 | 0 | 0 | 0 | 38 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 1 | 46 |
| Peak Hour AM | 7:30am-8:30am | - | - | - | 3 | 274 | - | 30 | - | - | - | - | 12 | 4 | 323 |
| Peak Hour PM | 4:15pm-5:15pm | - | - | - | - | 150 | - | 18 | - | - | - | - | 34 | 15 | 217 |

Note: Data collected by Streetlight for February 1st-March 15th, April 1st-June 1st and September 1st-November 15th, 2019. AM and PM peak hours are highlighted in green.

| Cedar & Fourth | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day Type | Time | NORTHBOUND | | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | | Total |
| | | NBL | NBT | NBR | EBL | EBT | EBR | SBL | SBT | SBR | WBL | WBL2 | WBT | WBR | |
| 1: Weekday (Tu-Th) | 00: 6:00am-6:15am | 0 | 1 | 0 | 2 | 8 | 8 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 24 |
| 1: Weekday (Tu-Th) | 01: 6:15am-6:30am | 0 | 1 | 0 | 3 | 10 | 9 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 28 |
| 1: Weekday (Tu-Th) | 02: 6:30am-6:45am | 0 | 1 | 0 | 3 | 11 | 6 | 0 | 6 | 0 | 2 | 0 | 1 | 0 | 30 |
| 1: Weekday (Tu-Th) | 03: 6:45am-7:00am | 1 | 2 | 1 | 4 | 15 | 5 | 0 | 9 | 0 | 3 | 0 | 1 | 0 | 41 |
| 1: Weekday (Tu-Th) | 04: 7:00am-7:15am | 0 | 2 | 2 | 7 | 25 | 5 | 0 | 10 | 0 | 3 | 0 | 2 | 1 | 57 |
| 1: Weekday (Tu-Th) | 05: 7:15am-7:30am | 0 | 4 | 2 | 6 | 34 | 4 | 0 | 14 | 0 | 2 | 0 | 3 | 1 | 70 |
| 1: Weekday (Tu-Th) | 06: 7:30am-7:45am | 0 | 4 | 3 | 4 | 75 | 7 | 0 | 16 | 0 | 4 | 0 | 3 | 0 | 116 |
| 1: Weekday (Tu-Th) | 07: 7:45am-8:00am | 1 | 5 | 4 | 3 | 71 | 10 | 0 | 25 | 0 | 8 | 0 | 4 | 0 | 131 |
| 1: Weekday (Tu-Th) | 08: 8:00am-8:15am | 1 | 10 | 3 | 5 | 60 | 11 | 0 | 19 | 0 | 10 | 0 | 4 | 1 | 124 |
| 1: Weekday (Tu-Th) | 09: 8:15am-8:30am | 1 | 21 | 6 | 8 | 45 | 13 | 1 | 23 | 0 | 17 | 0 | 5 | 1 | 141 |
| 1: Weekday (Tu-Th) | 10: 8:30am-8:45am | 0 | 12 | 7 | 7 | 45 | 12 | 1 | 16 | 0 | 11 | 0 | 7 | 2 | 120 |
| 1: Weekday (Tu-Th) | 11: 8:45am-9:00am | 1 | 9 | 5 | 5 | 43 | 10 | 2 | 17 | 0 | 9 | 0 | 6 | 2 | 109 |
| 1: Weekday (Tu-Th) | 12: 9:00am-9:15am | 1 | 7 | 5 | 3 | 37 | 11 | 1 | 17 | 0 | 6 | 0 | 5 | 1 | 94 |
| 1: Weekday (Tu-Th) | 13: 9:15am-9:30am | 1 | 8 | 5 | 4 | 29 | 12 | 2 | 14 | 0 | 6 | 0 | 7 | 1 | 89 |
| 1: Weekday (Tu-Th) | 14: 9:30am-9:45am | 1 | 6 | 4 | 3 | 33 | 11 | 1 | 13 | 0 | 8 | 0 | 6 | 1 | 87 |
| 1: Weekday (Tu-Th) | 15: 9:45am-10:00am | 0 | 6 | 4 | 4 | 24 | 9 | 1 | 13 | 0 | 9 | 0 | 6 | 1 | 77 |
| 1: Weekday (Tu-Th) | 16: 3:00pm-3:15pm | 4 | 19 | 7 | 2 | 22 | 3 | 1 | 11 | 0 | 7 | 0 | 9 | 1 | 86 |
| 1: Weekday (Tu-Th) | 17: 3:15pm-3:30pm | 4 | 14 | 7 | 3 | 33 | 4 | 2 | 11 | 0 | 7 | 0 | 7 | 2 | 94 |
| 1: Weekday (Tu-Th) | 18: 3:30pm-3:45pm | 4 | 13 | 8 | 4 | 32 | 4 | 2 | 11 | 0 | 6 | 0 | 9 | 2 | 95 |
| 1: Weekday (Tu-Th) | 19: 3:45pm-4:00pm | 4 | 14 | 8 | 3 | 28 | 3 | 2 | 10 | 0 | 5 | 0 | 10 | 2 | 89 |
| 1: Weekday (Tu-Th) | 20: 4:00pm-4:15pm | 3 | 13 | 6 | 3 | 23 | 2 | 2 | 8 | 0 | 6 | 0 | 10 | 2 | 78 |
| 1: Weekday (Tu-Th) | 21: 4:15pm-4:30pm | 2 | 13 | 5 | 3 | 32 | 3 | 2 | 8 | 0 | 7 | 0 | 9 | 2 | 86 |
| 1: Weekday (Tu-Th) | 22: 4:30pm-4:45pm | 3 | 13 | 9 | 2 | 35 | 4 | 3 | 8 | 0 | 6 | 0 | 11 | 2 | 96 |
| 1: Weekday (Tu-Th) | 23: 4:45pm-5:00pm | 3 | 16 | 12 | 1 | 54 | 3 | 4 | 8 | 0 | 7 | 0 | 9 | 1 | 118 |
| 1: Weekday (Tu-Th) | 24: 5:00pm-5:15pm | 4 | 24 | 12 | 1 | 38 | 3 | 3 | 8 | 0 | 7 | 0 | 7 | 2 | 109 |
| 1: Weekday (Tu-Th) | 25: 5:15pm-5:30pm | 3 | 23 | 9 | 1 | 32 | 4 | 3 | 9 | 0 | 5 | 0 | 7 | 1 | 97 |
| 1: Weekday (Tu-Th) | 26: 5:30pm-5:45pm | 2 | 21 | 12 | 1 | 34 | 3 | 2 | 11 | 0 | 5 | 0 | 7 | 1 | 99 |
| 1: Weekday (Tu-Th) | 27: 5:45pm-6:00pm | 2 | 25 | 11 | 1 | 31 | 2 | 2 | 10 | 0 | 6 | 0 | 7 | 1 | 98 |
| 1: Weekday (Tu-Th) | 28: 6:00pm-6:15pm | 2 | 17 | 9 | 2 | 36 | 2 | 1 | 7 | 0 | 5 | 0 | 7 | 1 | 89 |
| 1: Weekday (Tu-Th) | 29: 6:15pm-6:30pm | 2 | 15 | 8 | 2 | 37 | 2 | 2 | 8 | 0 | 5 | 0 | 9 | 1 | 91 |
| 1: Weekday (Tu-Th) | 30: 6:30pm-6:45pm | 2 | 12 | 5 | 2 | 33 | 2 | 2 | 7 | 0 | 5 | 0 | 7 | 0 | 77 |
| 1: Weekday (Tu-Th) | 31: 6:45pm-7:00pm | 1 | 11 | 4 | 1 | 41 | 1 | 1 | 6 | 0 | 4 | 0 | 4 | 0 | 74 |
| Peak Hour AM | 7:45am-8:45am | 3 | 48 | 20 | 23 | 221 | 46 | 2 | 83 | - | 46 | - | 20 | 4 | 516 |
| Peak Hour PM | 4:45pm-5:45pm | 12 | 84 | 45 | 4 | 158 | 13 | 12 | 36 | - | 24 | - | 30 | 5 | 423 |

Note: Data collected by Streetlight for February 1st-March 15th, April 1st-June 1st and September 1st-November 15th, 2019. AM and PM peak hours are highlighted in green.

| Cedar & Sixth | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day Type | Time | NORTHBOUND | | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | | Total |
| | | NBL | NBT | NBR | EBL | EBT | EBR | SBL | SBT | SBR | WBL | WBL2 | WBT | WBR | |
| 1: Weekday (Tu-Th) | 00: 6:00am-6:15am | 0 | 1 | 0 | 0 | 4 | 1 | 0 | 5 | 0 | 5 | 0 | 2 | 0 | 18 |
| 1: Weekday (Tu-Th) | 01: 6:15am-6:30am | 0 | 1 | 0 | 0 | 7 | 2 | 2 | 8 | 0 | 9 | 0 | 2 | 0 | 31 |
| 1: Weekday (Tu-Th) | 02: 6:30am-6:45am | 0 | 1 | 0 | 0 | 9 | 1 | 4 | 10 | 0 | 5 | 0 | 3 | 0 | 33 |
| 1: Weekday (Tu-Th) | 03: 6:45am-7:00am | 1 | 2 | 1 | 0 | 13 | 1 | 4 | 12 | 1 | 4 | 0 | 4 | 0 | 43 |
| 1: Weekday (Tu-Th) | 04: 7:00am-7:15am | 1 | 4 | 3 | 0 | 21 | 2 | 6 | 14 | 1 | 7 | 0 | 6 | 0 | 65 |
| 1: Weekday (Tu-Th) | 05: 7:15am-7:30am | 2 | 5 | 4 | 0 | 30 | 3 | 17 | 22 | 1 | 19 | 0 | 6 | 1 | 110 |
| 1: Weekday (Tu-Th) | 06: 7:30am-7:45am | 1 | 6 | 6 | 0 | 63 | 4 | 13 | 49 | 2 | 24 | 0 | 8 | 3 | 179 |
| 1: Weekday (Tu-Th) | 07: 7:45am-8:00am | 0 | 8 | 6 | 1 | 56 | 8 | 10 | 42 | 2 | 34 | 0 | 13 | 3 | 183 |
| 1: Weekday (Tu-Th) | 08: 8:00am-8:15am | 0 | 13 | 7 | 0 | 38 | 18 | 11 | 61 | 1 | 32 | 0 | 17 | 4 | 202 |
| 1: Weekday (Tu-Th) | 09: 8:15am-8:30am | 0 | 19 | 9 | 0 | 39 | 10 | 12 | 46 | 1 | 30 | 0 | 26 | 7 | 199 |
| 1: Weekday (Tu-Th) | 10: 8:30am-8:45am | 1 | 17 | 10 | 1 | 49 | 6 | 11 | 44 | 1 | 25 | 0 | 17 | 10 | 192 |
| 1: Weekday (Tu-Th) | 11: 8:45am-9:00am | 1 | 16 | 8 | 2 | 40 | 4 | 7 | 46 | 1 | 22 | 0 | 23 | 8 | 178 |
| 1: Weekday (Tu-Th) | 12: 9:00am-9:15am | 1 | 17 | 6 | 1 | 30 | 4 | 5 | 33 | 1 | 16 | 0 | 14 | 7 | 135 |
| 1: Weekday (Tu-Th) | 13: 9:15am-9:30am | 2 | 16 | 5 | 0 | 29 | 3 | 4 | 26 | 1 | 18 | 0 | 16 | 7 | 127 |
| 1: Weekday (Tu-Th) | 14: 9:30am-9:45am | 1 | 16 | 4 | 0 | 28 | 2 | 5 | 31 | 2 | 19 | 0 | 20 | 5 | 133 |
| 1: Weekday (Tu-Th) | 15: 9:45am-10:00am | 2 | 18 | 6 | 0 | 29 | 2 | 4 | 32 | 1 | 18 | 0 | 22 | 5 | 139 |
| 1: Weekday (Tu-Th) | 16: 3:00pm-3:15pm | 1 | 32 | 8 | 2 | 28 | 3 | 4 | 22 | 0 | 17 | 0 | 18 | 7 | 142 |
| 1: Weekday (Tu-Th) | 17: 3:15pm-3:30pm | 0 | 38 | 7 | 2 | 38 | 3 | 5 | 18 | 1 | 16 | 0 | 17 | 9 | 154 |
| 1: Weekday (Tu-Th) | 18: 3:30pm-3:45pm | 1 | 58 | 8 | 2 | 39 | 3 | 6 | 21 | 1 | 11 | 0 | 21 | 11 | 182 |
| 1: Weekday (Tu-Th) | 19: 3:45pm-4:00pm | 1 | 54 | 9 | 3 | 37 | 4 | 6 | 24 | 0 | 10 | 0 | 17 | 12 | 177 |
| 1: Weekday (Tu-Th) | 20: 4:00pm-4:15pm | 2 | 54 | 10 | 3 | 30 | 4 | 5 | 20 | 0 | 12 | 0 | 16 | 13 | 169 |
| 1: Weekday (Tu-Th) | 21: 4:15pm-4:30pm | 2 | 60 | 10 | 4 | 34 | 5 | 5 | 17 | 0 | 13 | 0 | 20 | 13 | 183 |
| 1: Weekday (Tu-Th) | 22: 4:30pm-4:45pm | 2 | 67 | 9 | 6 | 41 | 5 | 5 | 19 | 1 | 12 | 0 | 18 | 11 | 196 |
| 1: Weekday (Tu-Th) | 23: 4:45pm-5:00pm | 3 | 65 | 11 | 6 | 69 | 4 | 6 | 23 | 2 | 11 | 0 | 16 | 14 | 230 |
| 1: Weekday (Tu-Th) | 24: 5:00pm-5:15pm | 2 | 73 | 17 | 5 | 55 | 3 | 5 | 29 | 1 | 15 | 0 | 18 | 18 | 241 |
| 1: Weekday (Tu-Th) | 25: 5:15pm-5:30pm | 1 | 84 | 13 | 4 | 43 | 5 | 5 | 31 | 0 | 14 | 0 | 13 | 19 | 232 |
| 1: Weekday (Tu-Th) | 26: 5:30pm-5:45pm | 2 | 96 | 10 | 6 | 43 | 6 | 7 | 31 | 0 | 12 | 0 | 12 | 23 | 248 |
| 1: Weekday (Tu-Th) | 27: 5:45pm-6:00pm | 2 | 90 | 10 | 5 | 40 | 4 | 6 | 28 | 0 | 11 | 0 | 16 | 16 | 228 |
| 1: Weekday (Tu-Th) | 28: 6:00pm-6:15pm | 3 | 91 | 10 | 4 | 44 | 4 | 5 | 25 | 0 | 9 | 0 | 14 | 15 | 224 |
| 1: Weekday (Tu-Th) | 29: 6:15pm-6:30pm | 2 | 65 | 10 | 4 | 45 | 5 | 5 | 17 | 0 | 9 | 0 | 13 | 13 | 188 |
| 1: Weekday (Tu-Th) | 30: 6:30pm-6:45pm | 1 | 58 | 8 | 3 | 33 | 5 | 5 | 17 | 0 | 10 | 0 | 12 | 11 | 163 |
| 1: Weekday (Tu-Th) | 31: 6:45pm-7:00pm | 1 | 42 | 7 | 2 | 43 | 5 | 5 | 15 | 0 | 19 | 0 | 9 | 12 | 160 |
| Peak Hour AM | 7:45am-8:45am | 1 | 57 | 32 | 2 | 182 | 42 | 44 | 193 | 5 | 121 | - | 73 | 24 | 776 |
| Peak Hour PM | 4:45pm-5:45pm | 8 | 318 | 51 | 21 | 210 | 18 | 23 | 114 | 3 | 52 | - | 59 | 74 | 951 |

Note: Data collected by Streetlight for February 1st-March 15th, April 1st-June 1st and September 1st-November 15th, 2019. AM and PM peak hours are highlighted in green.

| San Pablo & Cedar | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day Type | Time | NORTHBOUND | | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | | Total |
| | | NBL | NBT | NBR | EBL | EBT | EBR | SBL | SBT | SBR | WBL | WBL2 | WBT | WBR | |
| 1: Weekday (Tu-Th) | 00: 6:00am-6:15am | 1 | 19 | 1 | 0 | 3 | 1 | 5 | 83 | 0 | 2 | 0 | 3 | 1 | 119 |
| 1: Weekday (Tu-Th) | 01: 6:15am-6:30am | 2 | 33 | 2 | 0 | 5 | 1 | 10 | 134 | 1 | 2 | 0 | 4 | 1 | 195 |
| 1: Weekday (Tu-Th) | 02: 6:30am-6:45am | 1 | 34 | 2 | 0 | 7 | 1 | 11 | 194 | 2 | 3 | 0 | 4 | 0 | 259 |
| 1: Weekday (Tu-Th) | 03: 6:45am-7:00am | 1 | 29 | 3 | 0 | 15 | 2 | 16 | 186 | 2 | 4 | 0 | 8 | 1 | 267 |
| 1: Weekday (Tu-Th) | 04: 7:00am-7:15am | 1 | 27 | 4 | 0 | 27 | 2 | 38 | 241 | 3 | 6 | 0 | 8 | 1 | 358 |
| 1: Weekday (Tu-Th) | 05: 7:15am-7:30am | 1 | 38 | 8 | 2 | 49 | 3 | 22 | 318 | 3 | 10 | 0 | 12 | 2 | 468 |
| 1: Weekday (Tu-Th) | 06: 7:30am-7:45am | 2 | 55 | 18 | 3 | 100 | 4 | 22 | 372 | 4 | 10 | 0 | 17 | 3 | 610 |
| 1: Weekday (Tu-Th) | 07: 7:45am-8:00am | 3 | 82 | 23 | 3 | 88 | 4 | 36 | 337 | 4 | 18 | 0 | 29 | 5 | 632 |
| 1: Weekday (Tu-Th) | 08: 8:00am-8:15am | 3 | 88 | 13 | 3 | 72 | 6 | 40 | 372 | 6 | 29 | 0 | 39 | 8 | 679 |
| 1: Weekday (Tu-Th) | 09: 8:15am-8:30am | 6 | 95 | 11 | 2 | 67 | 8 | 37 | 273 | 6 | 41 | 0 | 78 | 21 | 645 |
| 1: Weekday (Tu-Th) | 10: 8:30am-8:45am | 9 | 127 | 16 | 2 | 109 | 9 | 38 | 319 | 6 | 14 | 0 | 28 | 7 | 684 |
| 1: Weekday (Tu-Th) | 11: 8:45am-9:00am | 8 | 102 | 11 | 2 | 49 | 9 | 44 | 308 | 5 | 10 | 0 | 28 | 7 | 583 |
| 1: Weekday (Tu-Th) | 12: 9:00am-9:15am | 7 | 97 | 9 | 2 | 42 | 8 | 40 | 241 | 6 | 13 | 0 | 19 | 7 | 491 |
| 1: Weekday (Tu-Th) | 13: 9:15am-9:30am | 6 | 106 | 8 | 1 | 50 | 5 | 38 | 246 | 8 | 10 | 0 | 19 | 6 | 503 |
| 1: Weekday (Tu-Th) | 14: 9:30am-9:45am | 5 | 88 | 10 | 1 | 47 | 5 | 34 | 220 | 7 | 25 | 0 | 48 | 16 | 506 |
| 1: Weekday (Tu-Th) | 15: 9:45am-10:00am | 4 | 82 | 10 | 1 | 38 | 5 | 26 | 185 | 6 | 24 | 0 | 43 | 15 | 439 |
| 1: Weekday (Tu-Th) | 16: 3:00pm-3:15pm | 6 | 177 | 20 | 5 | 39 | 6 | 23 | 147 | 5 | 20 | 0 | 49 | 24 | 521 |
| 1: Weekday (Tu-Th) | 17: 3:15pm-3:30pm | 8 | 210 | 22 | 6 | 52 | 5 | 29 | 169 | 6 | 24 | 0 | 58 | 29 | 618 |
| 1: Weekday (Tu-Th) | 18: 3:30pm-3:45pm | 7 | 240 | 25 | 5 | 59 | 5 | 28 | 170 | 6 | 38 | 0 | 61 | 36 | 680 |
| 1: Weekday (Tu-Th) | 19: 3:45pm-4:00pm | 9 | 267 | 22 | 7 | 57 | 4 | 28 | 165 | 5 | 12 | 0 | 22 | 17 | 615 |
| 1: Weekday (Tu-Th) | 20: 4:00pm-4:15pm | 8 | 248 | 19 | 6 | 46 | 4 | 25 | 160 | 4 | 27 | 0 | 49 | 51 | 647 |
| 1: Weekday (Tu-Th) | 21: 4:15pm-4:30pm | 9 | 247 | 19 | 5 | 45 | 4 | 28 | 157 | 3 | 16 | 0 | 49 | 39 | 621 |
| 1: Weekday (Tu-Th) | 22: 4:30pm-4:45pm | 10 | 264 | 23 | 5 | 53 | 4 | 24 | 165 | 5 | 19 | 0 | 48 | 37 | 657 |
| 1: Weekday (Tu-Th) | 23: 4:45pm-5:00pm | 11 | 263 | 26 | 6 | 92 | 4 | 43 | 161 | 5 | 26 | 0 | 54 | 56 | 747 |
| 1: Weekday (Tu-Th) | 24: 5:00pm-5:15pm | 10 | 253 | 17 | 6 | 88 | 4 | 30 | 177 | 6 | 23 | 0 | 56 | 58 | 728 |
| 1: Weekday (Tu-Th) | 25: 5:15pm-5:30pm | 10 | 271 | 16 | 7 | 71 | 4 | 33 | 176 | 5 | 19 | 0 | 62 | 55 | 729 |
| 1: Weekday (Tu-Th) | 26: 5:30pm-5:45pm | 11 | 301 | 20 | 9 | 66 | 4 | 38 | 167 | 4 | 12 | 0 | 25 | 23 | 680 |
| 1: Weekday (Tu-Th) | 27: 5:45pm-6:00pm | 10 | 292 | 31 | 8 | 70 | 5 | 25 | 159 | 4 | 11 | 0 | 21 | 19 | 655 |
| 1: Weekday (Tu-Th) | 28: 6:00pm-6:15pm | 9 | 279 | 32 | 7 | 75 | 5 | 31 | 178 | 3 | 31 | 0 | 48 | 41 | 739 |
| 1: Weekday (Tu-Th) | 29: 6:15pm-6:30pm | 9 | 256 | 17 | 7 | 60 | 5 | 28 | 164 | 4 | 27 | 0 | 43 | 42 | 662 |
| 1: Weekday (Tu-Th) | 30: 6:30pm-6:45pm | 7 | 236 | 18 | 5 | 57 | 5 | 22 | 161 | 4 | 7 | 0 | 14 | 17 | 553 |
| 1: Weekday (Tu-Th) | 31: 6:45pm-7:00pm | 5 | 207 | 20 | 6 | 58 | 7 | 22 | 146 | 3 | 8 | 0 | 21 | 13 | 516 |
| Peak Hour AM | 7:45am-8:45am | 21 | 392 | 63 | 10 | 336 | 27 | 151 | 1,301 | 22 | 102 | - | 174 | 41 | 2,640 |
| Peak Hour PM | 4:45pm-5:45pm | 42 | 1,088 | 79 | 28 | 317 | 16 | 144 | 681 | 20 | 80 | - | 197 | 192 | 2,884 |

Note: Data collected by Streetlight for February 1st-March 15th, April 1st-June 1st and September 1st-November 15th, 2019. AM and PM peak hours are highlighted in green.

# Appendix B
# Level of Service Calculation Sheets (Synchro)



| Intersection | |
|---|---|
| Int Delay, s/veh | 219.8 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 71 | 4 | 269 | 639 | 0 | 0 | 0 | 0 | 403 | 38 | 508 |
| Future Vol, veh/h | 0 | 71 | 4 | 269 | 639 | 0 | 0 | 0 | 0 | 403 | 38 | 508 |
| Conflicting Peds, #/hr | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | Stop |
| Storage Length | - | - | - | - | - | - | - | - | - | 0 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 0 | 71 | 4 | 269 | 639 | 0 | 0 | 0 | 0 | 403 | 38 | 508 |

| Major/Minor | Major1 | | | Major2 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 0 | 0 | 75 | 0 | 0 | 1250 | 1252 | 320 |
| Stage 1 | - | - | - | - | - | - | 1177 | 1177 | - |
| Stage 2 | - | - | - | - | - | - | 73 | 75 | - |
| Critical Hdwy | - | - | - | 4.145 | - | - | 6.645 | 6.545 | 6.945 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.845 | 5.545 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.445 | 5.545 | - |
| Follow-up Hdwy | - | - | - | 2.2285 | - | - | 3.5285 | 4.0285 | 3.3285 |
| Pot Cap-1 Maneuver | 0 | - | - | 1516 | - | 0 | ~ 176 | 171 | 674 |
| Stage 1 | 0 | - | - | - | - | 0 | ~ 254 | 262 | - |
| Stage 2 | 0 | - | - | - | - | 0 | 947 | 830 | - |
| Platoon blocked, % | | - | - | | - | | | | |
| Mov Cap-1 Maneuver | - | - | - | 1516 | - | - | ~ 128 | 0 | 674 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 128 | 0 | - |
| Stage 1 | - | - | - | - | - | - | ~ 254 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 687 | 0 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.8 | $ 444.7 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBT | EBR | WBL | WBT | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 1516 | - | 128 | 379 |
| HCM Lane V/C Ratio | - | - | 0.177 | - | 2.099 | 1.795 |
| HCM Control Delay (s) | - | - | 7.9 | 0.6 | $ 576.5 | $ 392.6 |
| HCM Lane LOS | - | - | A | A | F | F |
| HCM 95th %tile Q(veh) | - | - | 0.6 | - | 22.1 | 43.5 |

Notes

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

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 42 | 432 | 0 | 0 | 876 | 292 | 32 | 3 | 384 | 0 | 0 | 0 |
| Future Vol, veh/h | 42 | 432 | 0 | 0 | 876 | 292 | 32 | 3 | 384 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 5 | 0 | 4 | 4 | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 1 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | 40 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 42 | 432 | 0 | 0 | 876 | 292 | 32 | 3 | 384 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1173 | 0 | - | - | - | 0 | 955 | 1689 | 216 |
| Stage 1 | - | - | - | - | - | - | 516 | 516 | - |
| Stage 2 | - | - | - | - | - | - | 439 | 1173 | - |
| Critical Hdwy | 4.16 | - | - | - | - | - | 6.86 | 6.56 | 6.96 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.86 | 5.56 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.86 | 5.56 | - |
| Follow-up Hdwy | 2.23 | - | - | - | - | - | 3.53 | 4.03 | 3.33 |
| Pot Cap-1 Maneuver | 586 | - | 0 | 0 | - | - | 255 | 92 | 786 |
| Stage 1 | - | - | 0 | 0 | - | - | 561 | 530 | - |
| Stage 2 | - | - | 0 | 0 | - | - | 614 | 262 | - |
| Platoon blocked, % | | - | | | - | - | | | |
| Mov Cap-1 Maneuver | 586 | - | - | - | - | - | 231 | 0 | 786 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 231 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 508 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 613 | 0 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 1.5 | 0 | 14.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | WBT | WBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 231 | 786 | 586 | - | - | - |
| HCM Lane V/C Ratio | 0.145 | 0.49 | 0.072 | - | - | - |
| HCM Control Delay (s) | 23.2 | 13.9 | 11.6 | 0.5 | - | - |
| HCM Lane LOS | C | B | B | A | - | - |
| HCM 95th %tile Q(veh) | 0.5 | 2.7 | 0.2 | - | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 46 | 601 | 13 | 0 | 725 | 10 | 7 | 11 | 0 | 0 | 0 | 0 |
| Future Vol, veh/h | 46 | 601 | 13 | 0 | 725 | 10 | 7 | 11 | 0 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 3 | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 3 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 80 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 46 | 601 | 13 | 0 | 725 | 10 | 7 | 11 | 0 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 738 | 0 | 0 | 616 | 0 | 0 | 1434 | 1440 | 312 |
| Stage 1 | - | - | - | - | - | - | 702 | 702 | - |
| Stage 2 | - | - | - | - | - | - | 732 | 738 | - |
| Critical Hdwy | 4.145 | - | - | 4.145 | - | - | 6.645 | 6.545 | 6.945 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.845 | 5.545 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.445 | 5.545 | - |
| Follow-up Hdwy | 2.2285 | - | - | 2.2285 | - | - | 3.5285 | 4.0285 | 3.3285 |
| Pot Cap-1 Maneuver | 860 | - | - | 956 | - | - | 135 | 131 | 682 |
| Stage 1 | - | - | - | - | - | - | 451 | 438 | - |
| Stage 2 | - | - | - | - | - | - | 473 | 421 | - |
| Platoon blocked, % | | - | - | | - | - | | | |
| Mov Cap-1 Maneuver | 860 | - | - | 954 | - | - | 124 | 0 | 679 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 124 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 414 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 472 | 0 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0.9 | 0 | 38.9 |
| HCM LOS | | | E |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 124 | 860 | - | - | 954 | - | - |
| HCM Lane V/C Ratio | 0.145 | 0.053 | - | - | - | - | - |
| HCM Control Delay (s) | 38.9 | 9.4 | 0.3 | - | 0 | - | - |
| HCM Lane LOS | E | A | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0.5 | 0.2 | - | - | 0 | - | - |

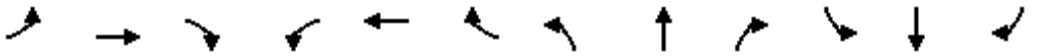
| Intersection | |
|---|---|
| Int Delay, s/veh | 1.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 10 | 538 | 52 | 9 | 735 | 0 | 19 | 9 | 4 | 0 | 12 | 10 |
| Future Vol, veh/h | 10 | 538 | 52 | 9 | 735 | 0 | 19 | 9 | 4 | 0 | 12 | 10 |
| Conflicting Peds, #/hr | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 8 | 8 | 0 | 5 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 70 | - | - | 70 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 10 | 538 | 52 | 9 | 735 | 0 | 19 | 9 | 4 | 0 | 12 | 10 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 740 | 0 | 0 | 595 | 0 | 0 | 1332 | 1321 | 551 | 1357 | 1373 | 745 |
| Stage 1 | - | - | - | - | - | - | 563 | 563 | - | 758 | 758 | - |
| Stage 2 | - | - | - | - | - | - | 769 | 758 | - | 599 | 615 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Follow-up Hdwy | 2.227 | - | - | 2.227 | - | - | 3.527 | 4.027 | 3.327 | 3.527 | 4.027 | 3.327 |
| Pot Cap-1 Maneuver | 862 | - | - | 976 | - | - | 131 | 156 | 532 | 126 | 145 | 412 |
| Stage 1 | - | - | - | - | - | - | 509 | 507 | - | 398 | 414 | - |
| Stage 2 | - | - | - | - | - | - | 392 | 414 | - | 487 | 481 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 858 | - | - | 971 | - | - | 115 | 149 | 525 | 115 | 139 | 408 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 115 | 149 | - | 115 | 139 | - |
| Stage 1 | - | - | - | - | - | - | 498 | 496 | - | 389 | 405 | - |
| Stage 2 | - | - | - | - | - | - | 363 | 405 | - | 463 | 470 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.2 | 0.1 | 39.1 | 25.4 |
| HCM LOS | | | E | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 137 | 858 | - | - | 971 | - | - | 198 |
| HCM Lane V/C Ratio | 0.234 | 0.012 | - | - | 0.009 | - | - | 0.111 |
| HCM Control Delay (s) | 39.1 | 9.2 | 0 | - | 8.7 | 0 | - | 25.4 |
| HCM Lane LOS | E | A | A | - | A | A | - | D |
| HCM 95th %tile Q(veh) | 0.9 | 0 | - | - | 0 | - | - | 0.4 |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 23 | 332 | 50 | 51 | 549 | 1 | 47 | 22 | 14 | 5 | 123 | 61 |
| Future Volume (veh/h) | 23 | 332 | 50 | 51 | 549 | 1 | 47 | 22 | 14 | 5 | 123 | 61 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.95 | 0.99 | | 0.95 | 0.99 | | 0.97 | 0.99 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 23 | 332 | 50 | 51 | 549 | 1 | 47 | 22 | 14 | 5 | 123 | 61 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 637 | 1159 | 175 | 764 | 1372 | 2 | 153 | 151 | 96 | 273 | 166 | 82 |
| Arrive On Green | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| Sat Flow, veh/h | 846 | 1564 | 236 | 985 | 1851 | 3 | 1180 | 1046 | 666 | 1349 | 1148 | 570 |
| Grp Volume(v), veh/h | 23 | 0 | 382 | 51 | 0 | 550 | 47 | 0 | 36 | 5 | 0 | 184 |
| Grp Sat Flow(s),veh/h/ln | 846 | 0 | 1799 | 985 | 0 | 1855 | 1180 | 0 | 1712 | 1349 | 0 | 1718 |
| Q Serve(g_s), s | 0.7 | 0.0 | 4.9 | 1.3 | 0.0 | 7.6 | 2.8 | 0.0 | 1.3 | 0.2 | 0.0 | 7.2 |
| Cycle Q Clear(g_c), s | 8.4 | 0.0 | 4.9 | 6.1 | 0.0 | 7.6 | 10.0 | 0.0 | 1.3 | 1.5 | 0.0 | 7.2 |
| Prop In Lane | 1.00 | | 0.13 | 1.00 | | 0.00 | 1.00 | | 0.39 | 1.00 | | 0.33 |
| Lane Grp Cap(c), veh/h | 637 | 0 | 1333 | 764 | 0 | 1374 | 153 | 0 | 248 | 273 | 0 | 249 |
| V/C Ratio(X) | 0.04 | 0.00 | 0.29 | 0.07 | 0.00 | 0.40 | 0.31 | 0.00 | 0.15 | 0.02 | 0.00 | 0.74 |
| Avail Cap(c_a), veh/h | 637 | 0 | 1333 | 764 | 0 | 1374 | 302 | 0 | 465 | 444 | 0 | 466 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 0.56 | 0.00 | 0.56 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 4.9 | 0.0 | 3.0 | 4.0 | 0.0 | 3.3 | 33.4 | 0.0 | 26.1 | 26.8 | 0.0 | 28.7 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.5 | 0.1 | 0.0 | 0.5 | 1.1 | 0.0 | 0.3 | 0.0 | 0.0 | 4.3 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.1 | 0.0 | 1.3 | 0.2 | 0.0 | 1.9 | 0.8 | 0.0 | 0.5 | 0.1 | 0.0 | 3.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 5.0 | 0.0 | 3.5 | 4.1 | 0.0 | 3.8 | 34.6 | 0.0 | 26.4 | 26.8 | 0.0 | 33.0 |
| LnGrp LOS | A | A | A | A | A | A | C | A | C | C | A | C |
| Approach Vol, veh/h | | 405 | | | 601 | | | 83 | | | 189 | |
| Approach Delay, s/veh | | 3.6 | | | 3.8 | | | 31.0 | | | 32.8 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Timer - Assigned Phs | | 2 | | 4 | | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | | 55.9 | | 14.1 | | 55.9 | | 14.1 | | | | |
| Change Period (Y+Rc), s | | 4.0 | | 4.0 | | 4.0 | | 4.0 | | | | |
| Max Green Setting (Gmax), s | | 43.0 | | 19.0 | | 43.0 | | 19.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 10.4 | | 9.2 | | 9.6 | | 12.0 | | | | |
| Green Ext Time (p_c), s | | 2.8 | | 0.7 | | 4.3 | | 0.1 | | | | |

| Intersection Summary | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCM 6th Ctrl Delay | | | 9.8 | | | | | | | | | |
| HCM 6th LOS | | | A | | | | | | | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 37 | 137 | 53 | 19 | 340 | 38 | 53 | 242 | 9 | 99 | 1338 | 141 |
| Future Volume (veh/h) | 37 | 137 | 53 | 19 | 340 | 38 | 53 | 242 | 9 | 99 | 1338 | 141 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.96 | 0.99 | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 37 | 137 | 53 | 19 | 340 | 38 | 53 | 242 | 9 | 99 | 1338 | 141 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 147 | 504 | 199 | 59 | 439 | 48 | 67 | 1643 | 61 | 127 | 1629 | 171 |
| Arrive On Green | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.04 | 0.48 | 0.48 | 0.07 | 0.51 | 0.51 |
| Sat Flow, veh/h | 316 | 1809 | 715 | 41 | 1579 | 171 | 1767 | 3460 | 128 | 1767 | 3203 | 335 |
| Grp Volume(v), veh/h | 114 | 0 | 113 | 397 | 0 | 0 | 53 | 123 | 128 | 99 | 732 | 747 |
| Grp Sat Flow(s),veh/h/ln | 1320 | 0 | 1520 | 1791 | 0 | 0 | 1767 | 1763 | 1825 | 1767 | 1763 | 1776 |
| Q Serve(g_s), s | 0.0 | 0.0 | 4.6 | 4.8 | 0.0 | 0.0 | 2.4 | 3.1 | 3.2 | 4.4 | 27.9 | 28.5 |
| Cycle Q Clear(g_c), s | 3.8 | 0.0 | 4.6 | 16.3 | 0.0 | 0.0 | 2.4 | 3.1 | 3.2 | 4.4 | 27.9 | 28.5 |
| Prop In Lane | 0.32 | | 0.47 | 0.05 | | 0.10 | 1.00 | | 0.07 | 1.00 | | 0.19 |
| Lane Grp Cap(c), veh/h | 427 | 0 | 423 | 546 | 0 | 0 | 67 | 837 | 867 | 127 | 897 | 903 |
| V/C Ratio(X) | 0.27 | 0.00 | 0.27 | 0.73 | 0.00 | 0.00 | 0.79 | 0.15 | 0.15 | 0.78 | 0.82 | 0.83 |
| Avail Cap(c_a), veh/h | 522 | 0 | 523 | 661 | 0 | 0 | 243 | 837 | 867 | 243 | 897 | 903 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.97 | 0.00 | 0.97 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 22.2 | 0.0 | 22.5 | 26.7 | 0.0 | 0.0 | 38.2 | 11.8 | 11.9 | 36.5 | 16.5 | 16.7 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.1 | 2.3 | 0.0 | 0.0 | 7.4 | 0.4 | 0.4 | 3.9 | 8.1 | 8.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.6 | 0.0 | 1.6 | 7.2 | 0.0 | 0.0 | 1.2 | 1.3 | 1.3 | 2.0 | 12.4 | 12.8 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 22.3 | 0.0 | 22.6 | 29.0 | 0.0 | 0.0 | 45.6 | 12.2 | 12.2 | 40.4 | 24.7 | 25.2 |
| LnGrp LOS | C | A | C | C | A | A | D | B | B | D | C | C |
| Approach Vol, veh/h | | 227 | | | 397 | | | 304 | | | 1578 | |
| Approach Delay, s/veh | | 22.5 | | | 29.0 | | | 18.0 | | | 25.9 | |
| Approach LOS | | C | | | C | | | B | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 7.5 | 45.2 | | 27.3 | 10.2 | 42.5 | | 27.3 |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 5.0 | 4.5 | 4.5 | | 5.0 |
| Max Green Setting (Gmax), s | 11.0 | 27.5 | | 27.5 | 11.0 | 27.5 | | 27.5 |
| Max Q Clear Time (g_c+I1), s | 4.4 | 30.5 | | 18.3 | 6.4 | 5.2 | | 6.6 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 1.2 | 0.0 | 2.0 | | 0.9 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 25.1 |
| HCM 6th LOS | C |

**Notes**

User approved pedestrian interval to be less than phase max green.

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 5 | 28 | 12 | 1 | 16 |
| Future Vol, veh/h | 1 | 5 | 28 | 12 | 1 | 16 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | Stop | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 1 | 5 | 28 | 12 | 1 | 16 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 62 | 44 | 0 | 0 | 45 | 0 |
| Stage 1 | 39 | - | - | - | - | - |
| Stage 2 | 23 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.13 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.227 | - |
| Pot Cap-1 Maneuver | 944 | 1026 | - | - | 1557 | - |
| Stage 1 | 983 | - | - | - | - | - |
| Stage 2 | 1000 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 934 | 1016 | - | - | 1550 | - |
| Mov Cap-2 Maneuver | 934 | - | - | - | - | - |
| Stage 1 | 978 | - | - | - | - | - |
| Stage 2 | 994 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 8.6 | 0 | 0.4 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 1001 | 1550 | - |
| HCM Lane V/C Ratio | - | - | 0.006 | 0.001 | - |
| HCM Control Delay (s) | - | - | 8.6 | 7.3 | 0 |
| HCM Lane LOS | - | - | A | A | A |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 4 | 0 | 59 | 11 | 8 | 300 |
| Future Vol, veh/h | 4 | 0 | 59 | 11 | 8 | 300 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 4 | 0 | 59 | 11 | 8 | 300 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 391 | 75 | 0 | 0 | 75 | 0 |
| Stage 1 | 70 | - | - | - | - | - |
| Stage 2 | 321 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.13 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.227 | - |
| Pot Cap-1 Maneuver | 613 | 986 | - | - | 1518 | - |
| Stage 1 | 953 | - | - | - | - | - |
| Stage 2 | 735 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 603 | 977 | - | - | 1511 | - |
| Mov Cap-2 Maneuver | 603 | - | - | - | - | - |
| Stage 1 | 948 | - | - | - | - | - |
| Stage 2 | 727 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 11 | 0 | 0.2 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 603 | 1511 | - |
| HCM Lane V/C Ratio | - | - | 0.007 | 0.005 | - |
| HCM Control Delay (s) | - | - | 11 | 7.4 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 | - |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 7.1 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 20 | 0 | 6 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 22 | 3 |
| Future Vol, veh/h | 20 | 0 | 6 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 22 | 3 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 20 | 0 | 6 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 22 | 3 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 7.2 | 0 | 7.1 | 7 |
| HCM LOS | A | - | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 0% | 77% | 0% | 0% |
| Vol Thru, % | 100% | 0% | 100% | 88% |
| Vol Right, % | 0% | 23% | 0% | 12% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 17 | 26 | 0 | 25 |
| LT Vol | 0 | 20 | 0 | 0 |
| Through Vol | 17 | 0 | 0 | 22 |
| RT Vol | 0 | 6 | 0 | 3 |
| Lane Flow Rate | 17 | 26 | 0 | 25 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.019 | 0.029 | 0 | 0.027 |
| Departure Headway (Hd) | 3.998 | 4.021 | 4.026 | 3.92 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 897 | 892 | 0 | 915 |
| Service Time | 2.014 | 2.039 | 2.049 | 1.935 |
| HCM Lane V/C Ratio | 0.019 | 0.029 | 0 | 0.027 |
| HCM Control Delay | 7.1 | 7.2 | 7 | 7 |
| HCM Lane LOS | A | A | N | A |
| HCM 95th-tile Q | 0.1 | 0.1 | 0 | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 6 | 9 | 71 | 194 | 60 | 254 |
| Future Vol, veh/h | 6 | 9 | 71 | 194 | 60 | 254 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 6 | 9 | 71 | 194 | 60 | 254 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 552 | 178 | 0 | 0 | 270 | 0 |
| Stage 1 | 173 | - | - | - | - | - |
| Stage 2 | 379 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.13 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.227 | - |
| Pot Cap-1 Maneuver | 495 | 865 | - | - | 1288 | - |
| Stage 1 | 857 | - | - | - | - | - |
| Stage 2 | 692 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 464 | 857 | - | - | 1282 | - |
| Mov Cap-2 Maneuver | 464 | - | - | - | - | - |
| Stage 1 | 853 | - | - | - | - | - |
| Stage 2 | 651 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 10.8 | 0 | 1.5 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 640 | 1282 | - |
| HCM Lane V/C Ratio | - | - | 0.023 | 0.047 | - |
| HCM Control Delay (s) | - | - | 10.8 | 7.9 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.2 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 274 | 12 | 4 | 30 | 5 |
| Future Vol, veh/h | 3 | 274 | 12 | 4 | 30 | 5 |
| Conflicting Peds, #/hr | 5 | 0 | 0 | 5 | 5 | 5 |
| 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 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 274 | 12 | 4 | 30 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 21 | 0 | - | 0 | 304 | 24 |
| Stage 1 | - | - | - | - | 19 | - |
| Stage 2 | - | - | - | - | 285 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1595 | - | - | - | 688 | 1052 |
| Stage 1 | - | - | - | - | 1004 | - |
| Stage 2 | - | - | - | - | 763 | - |
| Platoon blocked, % | | | - | - | - | |
| Mov Cap-1 Maneuver | 1587 | - | - | - | 680 | 1042 |
| Mov Cap-2 Maneuver | - | - | - | - | 680 | - |
| Stage 1 | - | - | - | - | 997 | - |
| Stage 2 | - | - | - | - | 759 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 10.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1587 | - | - | - | 716 |
| HCM Lane V/C Ratio | 0.002 | - | - | - | 0.049 |
| HCM Control Delay (s) | 7.3 | 0 | - | - | 10.3 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.2 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 9.1 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 23 | 221 | 46 | 46 | 20 | 4 | 3 | 48 | 20 | 2 | 83 | 5 |
| Future Vol, veh/h | 23 | 221 | 46 | 46 | 20 | 4 | 3 | 48 | 20 | 2 | 83 | 5 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 23 | 221 | 46 | 46 | 20 | 4 | 3 | 48 | 20 | 2 | 83 | 5 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 9.7 | 8.3 | 8.2 | 8.5 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 4% | 8% | 66% | 2% |
| Vol Thru, % | 68% | 76% | 29% | 92% |
| Vol Right, % | 28% | 16% | 6% | 6% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 71 | 290 | 70 | 90 |
| LT Vol | 3 | 23 | 46 | 2 |
| Through Vol | 48 | 221 | 20 | 83 |
| RT Vol | 20 | 46 | 4 | 5 |
| Lane Flow Rate | 71 | 290 | 70 | 90 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.093 | 0.349 | 0.092 | 0.12 |
| Departure Headway (Hd) | 4.705 | 4.327 | 4.737 | 4.81 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 760 | 832 | 756 | 744 |
| Service Time | 2.741 | 2.35 | 2.769 | 2.846 |
| HCM Lane V/C Ratio | 0.093 | 0.349 | 0.093 | 0.121 |
| HCM Control Delay | 8.2 | 9.7 | 8.3 | 8.5 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 0.3 | 1.6 | 0.3 | 0.4 |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 2 | 182 | 42 | 121 | 73 | 24 | 1 | 57 | 32 | 44 | 193 | 5 |
| Future Volume (veh/h) | 2 | 182 | 42 | 121 | 73 | 24 | 1 | 57 | 32 | 44 | 193 | 5 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.96 | 0.99 | | 0.96 | 0.99 | | 0.95 | 0.98 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 2 | 182 | 42 | 121 | 73 | 24 | 1 | 57 | 32 | 44 | 193 | 5 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 62 | 485 | 111 | 338 | 191 | 54 | 505 | 441 | 248 | 593 | 725 | 19 |
| Arrive On Green | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Sat Flow, veh/h | 3 | 1456 | 333 | 735 | 574 | 162 | 1171 | 1103 | 619 | 1288 | 1812 | 47 |
| Grp Volume(v), veh/h | 226 | 0 | 0 | 218 | 0 | 0 | 1 | 0 | 89 | 44 | 0 | 198 |
| Grp Sat Flow(s),veh/h/ln | 1793 | 0 | 0 | 1470 | 0 | 0 | 1171 | 0 | 1722 | 1288 | 0 | 1859 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 1.3 | 0.0 | 4.3 |
| Cycle Q Clear(g_c), s | 5.8 | 0.0 | 0.0 | 5.7 | 0.0 | 0.0 | 4.3 | 0.0 | 2.0 | 3.3 | 0.0 | 4.3 |
| Prop In Lane | 0.01 | | 0.19 | 0.56 | | 0.11 | 1.00 | | 0.36 | 1.00 | | 0.03 |
| Lane Grp Cap(c), veh/h | 658 | 0 | 0 | 583 | 0 | 0 | 505 | 0 | 689 | 593 | 0 | 744 |
| V/C Ratio(X) | 0.34 | 0.00 | 0.00 | 0.37 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.07 | 0.00 | 0.27 |
| Avail Cap(c_a), veh/h | 896 | 0 | 0 | 765 | 0 | 0 | 505 | 0 | 689 | 593 | 0 | 744 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 0.91 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 15.3 | 0.0 | 0.0 | 15.2 | 0.0 | 0.0 | 13.5 | 0.0 | 11.4 | 12.4 | 0.0 | 12.1 |
| Incr Delay (d2), s/veh | 0.3 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.1 | 0.0 | 0.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.2 | 0.0 | 0.0 | 2.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.4 | 0.0 | 1.6 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 15.6 | 0.0 | 0.0 | 15.6 | 0.0 | 0.0 | 13.5 | 0.0 | 11.8 | 12.5 | 0.0 | 12.3 |
| LnGrp LOS | B | A | A | B | A | A | B | A | B | B | A | B |
| Approach Vol, veh/h | | 226 | | | 218 | | | 90 | | | 242 | |
| Approach Delay, s/veh | | 15.6 | | | 15.6 | | | 11.8 | | | 12.3 | |
| Approach LOS | | B | | | B | | | B | | | B | |

| Timer - Assigned Phs | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 24.0 | 28.0 | 24.0 | 28.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 28.0 | 24.0 | 28.0 | 24.0 |
| Max Q Clear Time (g_c+I1), s | 7.7 | 6.3 | 7.8 | 6.3 |
| Green Ext Time (p_c), s | 1.3 | 1.1 | 1.2 | 0.4 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 14.1 |
| HCM 6th LOS | B |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 10 | 336 | 27 | 102 | 174 | 41 | 21 | 392 | 63 | 151 | 1301 | 22 |
| Future Volume (veh/h) | 10 | 336 | 27 | 102 | 174 | 41 | 21 | 392 | 63 | 151 | 1301 | 22 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.96 | 0.99 | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.96 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 10 | 336 | 27 | 102 | 174 | 41 | 21 | 392 | 63 | 151 | 1301 | 22 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 51 | 435 | 34 | 248 | 376 | 89 | 42 | 1424 | 226 | 186 | 1960 | 33 |
| Arrive On Green | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.02 | 0.47 | 0.47 | 0.10 | 0.55 | 0.55 |
| Sat Flow, veh/h | 18 | 1678 | 132 | 1010 | 1451 | 342 | 1781 | 3046 | 485 | 1781 | 3573 | 60 |
| Grp Volume(v), veh/h | 373 | 0 | 0 | 102 | 0 | 215 | 21 | 227 | 228 | 151 | 647 | 676 |
| Grp Sat Flow(s),veh/h/ln | 1829 | 0 | 0 | 1010 | 0 | 1793 | 1781 | 1777 | 1754 | 1781 | 1777 | 1856 |
| Q Serve(g_s), s | 2.3 | 0.0 | 0.0 | 0.7 | 0.0 | 8.1 | 0.9 | 6.2 | 6.4 | 6.6 | 20.7 | 20.7 |
| Cycle Q Clear(g_c), s | 15.1 | 0.0 | 0.0 | 15.8 | 0.0 | 8.1 | 0.9 | 6.2 | 6.4 | 6.6 | 20.7 | 20.7 |
| Prop In Lane | 0.03 | | 0.07 | 1.00 | | 0.19 | 1.00 | | 0.28 | 1.00 | | 0.03 |
| Lane Grp Cap(c), veh/h | 520 | 0 | 0 | 248 | 0 | 465 | 42 | 830 | 820 | 186 | 975 | 1018 |
| V/C Ratio(X) | 0.72 | 0.00 | 0.00 | 0.41 | 0.00 | 0.46 | 0.51 | 0.27 | 0.28 | 0.81 | 0.66 | 0.66 |
| Avail Cap(c_a), veh/h | 854 | 0 | 0 | 434 | 0 | 795 | 278 | 830 | 820 | 234 | 975 | 1018 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.96 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 27.5 | 0.0 | 0.0 | 28.1 | 0.0 | 24.9 | 38.6 | 13.0 | 13.0 | 35.0 | 12.8 | 12.8 |
| Incr Delay (d2), s/veh | 0.7 | 0.0 | 0.0 | 0.4 | 0.0 | 0.3 | 3.5 | 0.8 | 0.8 | 12.5 | 3.6 | 3.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 6.6 | 0.0 | 0.0 | 1.8 | 0.0 | 3.4 | 0.4 | 2.6 | 2.6 | 3.5 | 8.5 | 8.8 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 28.2 | 0.0 | 0.0 | 28.5 | 0.0 | 25.2 | 42.1 | 13.8 | 13.9 | 47.6 | 16.4 | 16.2 |
| LnGrp LOS | C | A | A | C | A | C | D | B | B | D | B | B |
| Approach Vol, veh/h | | 373 | | | 317 | | | 476 | | | 1474 | |
| Approach Delay, s/veh | | 28.2 | | | 26.3 | | | 15.1 | | | 19.5 | |
| Approach LOS | | C | | | C | | | B | | | B | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 6.4 | 48.4 | | 25.2 | 12.9 | 41.9 | | 25.2 |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | | 4.5 |
| Max Green Setting (Gmax), s | 12.5 | 18.5 | | 35.5 | 10.5 | 20.5 | | 35.5 |
| Max Q Clear Time (g_c+I1), s | 2.9 | 22.7 | | 17.8 | 8.6 | 8.4 | | 17.1 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 1.1 | 0.0 | 3.0 | | 1.5 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 20.8 |
| HCM 6th LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 13.3 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 29 | 12 | 1115 | 32 | 3 | 46 |
| Future Vol, veh/h | 29 | 12 | 1115 | 32 | 3 | 46 |
| Conflicting Peds, #/hr | 0 | 1 | 1 | 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 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 29 | 12 | 1115 | 32 | 3 | 46 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 42 | 0 | 2282 | 36 |
| Stage 1 | - | - | - | - | 36 | - |
| Stage 2 | - | - | - | - | 2246 | - |
| Critical Hdwy | - | - | 4.145 | - | 6.645 | 6.245 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.445 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.845 | - |
| Follow-up Hdwy | - | - | 2.2285 | - | 3.5285 | 3.3285 |
| Pot Cap-1 Maneuver | - | - | 1559 | - | 38 | 1033 |
| Stage 1 | - | - | - | - | 983 | - |
| Stage 2 | - | - | - | - | 66 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1558 | - | 10 | 1032 |
| Mov Cap-2 Maneuver | - | - | - | - | 10 | - |
| Stage 1 | - | - | - | - | 982 | - |
| Stage 2 | - | - | - | - | 18 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 12.5 | 43.2 |
| HCM LOS | | | E |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 142 | - | - | 1558 | - |
| HCM Lane V/C Ratio | 0.345 | - | - | 0.716 | - |
| HCM Control Delay (s) | 43.2 | - | - | 12.9 | 0.1 |
| HCM Lane LOS | E | - | - | B | A |
| HCM 95th %tile Q(veh) | 1.4 | - | - | 6.7 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 138.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↰↑↱ | | | ↰↑↱ | | | ↰ | ↱ | | ↰↑↱ | |
| Traffic Vol, veh/h | 26 | 593 | 197 | 3 | 707 | 30 | 39 | 1 | 19 | 51 | 108 | 422 |
| Future Vol, veh/h | 26 | 593 | 197 | 3 | 707 | 30 | 39 | 1 | 19 | 51 | 108 | 422 |
| Conflicting Peds, #/hr | 1 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | 40 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 26 | 593 | 197 | 3 | 707 | 30 | 39 | 1 | 19 | 51 | 108 | 422 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 738 | 0 | 0 | 792 | 0 | 0 | 1160 | 1490 | 397 | 1078 | 1573 | 370 |
| Stage 1 | - | - | - | - | - | - | 746 | 746 | - | 729 | 729 | - |
| Stage 2 | - | - | - | - | - | - | 414 | 744 | - | 349 | 844 | - |
| Critical Hdwy | 4.16 | - | - | 4.16 | - | - | 7.56 | 6.56 | 6.96 | 7.56 | 6.56 | 6.96 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.56 | 5.56 | - | 6.56 | 5.56 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.56 | 5.56 | - | 6.56 | 5.56 | - |
| Follow-up Hdwy | 2.23 | - | - | 2.23 | - | - | 3.53 | 4.03 | 3.33 | 3.53 | 4.03 | 3.33 |
| Pot Cap-1 Maneuver | 857 | - | - | 818 | - | - | 149 | 122 | 600 | 172 | 108 | 624 |
| Stage 1 | - | - | - | - | - | - | 369 | 416 | - | 378 | 424 | - |
| Stage 2 | - | - | - | - | - | - | 584 | 417 | - | 638 | 375 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 856 | - | - | 816 | - | - | - | 114 | 599 | 158 | ~ 101 | 623 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | - | 114 | - | 158 | ~ 101 | - |
| Stage 1 | - | - | - | - | - | - | 348 | 392 | - | 356 | 421 | - |
| Stage 2 | - | - | - | - | - | - | 139 | 414 | - | 582 | 353 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.4 | 0 | | $ 521.9 |
| HCM LOS | | | - | F |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | 599 | 856 | - | - | 816 | - | - | 281 |
| HCM Lane V/C Ratio | - | 0.032 | 0.03 | - | - | 0.004 | - | - | 2.068 |
| HCM Control Delay (s) | - | 11.2 | 9.3 | 0.2 | - | 9.4 | 0 | - | $ 521.9 |
| HCM Lane LOS | - | B | A | A | - | A | A | - | F |
| HCM 95th %tile Q(veh) | - | 0.1 | 0.1 | - | - | 0 | - | - | 42.6 |

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

| Intersection | |
|---|---|
| Int Delay, s/veh | 38.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 592 | 12 | 176 | 176 | 0 | 0 | 0 | 0 | 326 | 6 | 227 |
| Future Vol, veh/h | 0 | 592 | 12 | 176 | 176 | 0 | 0 | 0 | 0 | 326 | 6 | 227 |
| Conflicting Peds, #/hr | 9 | 0 | 1 | 1 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | Stop |
| Storage Length | - | - | - | - | - | - | - | - | - | 0 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 0 | 592 | 12 | 176 | 176 | 0 | 0 | 0 | 0 | 326 | 6 | 227 |

| Major/Minor | Major1 | | | Major2 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 0 | 0 | 605 | 0 | 0 | 1126 | 1133 | 88 |
| Stage 1 | - | - | - | - | - | - | 528 | 528 | - |
| Stage 2 | - | - | - | - | - | - | 598 | 605 | - |
| Critical Hdwy | - | - | - | 4.145 | - | - | 6.645 | 6.545 | 6.945 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.845 | 5.545 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.445 | 5.545 | - |
| Follow-up Hdwy | - | - | - | 2.2285 | - | - | 3.5285 | 4.0285 | 3.3285 |
| Pot Cap-1 Maneuver | 0 | - | - | 965 | - | 0 | ~ 211 | 201 | 950 |
| Stage 1 | 0 | - | - | - | - | 0 | 555 | 525 | - |
| Stage 2 | 0 | - | - | - | - | 0 | 546 | 484 | - |
| Platoon blocked, % | | - | - | | - | | | | |
| Mov Cap-1 Maneuver | - | - | - | 965 | - | - | ~ 168 | 0 | 950 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 168 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 555 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 436 | 0 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 4.9 | 101.8 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBT | EBR | WBL | WBT | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 965 | - | 168 | 510 |
| HCM Lane V/C Ratio | - | - | 0.182 | - | 1.294 | 0.67 |
| HCM Control Delay (s) | - | - | 9.6 | 0.3 | 222.3 | 25.2 |
| HCM Lane LOS | - | - | A | A | F | D |
| HCM 95th %tile Q(veh) | - | - | 0.7 | - | 12.6 | 4.9 |

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

| Intersection | |
|---|---|
| Int Delay, s/veh | 13.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 399 | 519 | 0 | 0 | 331 | 722 | 21 | 3 | 89 | 0 | 0 | 0 |
| Future Vol, veh/h | 399 | 519 | 0 | 0 | 331 | 722 | 21 | 3 | 89 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 6 | 0 | 3 | 3 | 0 | 6 | 0 | 0 | 1 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | 40 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 399 | 519 | 0 | 0 | 331 | 722 | 21 | 3 | 89 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1059 | 0 | - | - | - | 0 | 1483 | 2376 | 261 |
| Stage 1 | - | - | - | - | - | - | 1317 | 1317 | - |
| Stage 2 | - | - | - | - | - | - | 166 | 1059 | - |
| Critical Hdwy | 4.16 | - | - | - | - | - | 6.86 | 6.56 | 6.96 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.86 | 5.56 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.86 | 5.56 | - |
| Follow-up Hdwy | 2.23 | - | - | - | - | - | 3.53 | 4.03 | 3.33 |
| Pot Cap-1 Maneuver | 647 | - | 0 | 0 | - | - | 115 | 34 | 735 |
| Stage 1 | - | - | 0 | 0 | - | - | 213 | 223 | - |
| Stage 2 | - | - | 0 | 0 | - | - | 843 | 297 | - |
| Platoon blocked, % | | - | | | - | - | | | |
| Mov Cap-1 Maneuver | 647 | - | - | - | - | - | ~ 15 | 0 | 734 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 15 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 28 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 843 | 0 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 10.2 | 0 | 162.9 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | WBT | WBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 15 | 734 | 647 | - | - | - |
| HCM Lane V/C Ratio | 1.5 | 0.123 | 0.617 | - | - | - |
| HCM Control Delay (s) | $ 775.4 | 10.6 | 19.1 | 3.3 | - | - |
| HCM Lane LOS | F | B | C | A | - | - |
| HCM 95th %tile Q(veh) | 3.4 | 0.4 | 4.2 | - | - | - |

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

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 25 | 489 | 3 | 0 | 921 | 5 | 18 | 11 | 2 | 0 | 0 | 0 |
| Future Vol, veh/h | 25 | 489 | 3 | 0 | 921 | 5 | 18 | 11 | 2 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 2 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 80 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 25 | 489 | 3 | 0 | 921 | 5 | 18 | 11 | 2 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 928 | 0 | 0 | 494 | 0 | 0 | 1467 | 1471 | 248 |
| Stage 1 | - | - | - | - | - | - | 543 | 543 | - |
| Stage 2 | - | - | - | - | - | - | 924 | 928 | - |
| Critical Hdwy | 4.145 | - | - | 4.145 | - | - | 6.645 | 6.545 | 6.945 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.845 | 5.545 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.445 | 5.545 | - |
| Follow-up Hdwy | 2.2285 | - | - | 2.2285 | - | - | 3.5285 | 4.0285 | 3.3285 |
| Pot Cap-1 Maneuver | 730 | - | - | 1062 | - | - | 128 | 126 | 750 |
| Stage 1 | - | - | - | - | - | - | 545 | 517 | - |
| Stage 2 | - | - | - | - | - | - | 383 | 344 | - |
| Platoon blocked, % | | - | - | | - | - | | | |
| Mov Cap-1 Maneuver | 730 | - | - | 1060 | - | - | 122 | 0 | 749 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 122 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 518 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 383 | 0 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0.7 | 0 | 40.1 |
| HCM LOS | | | E |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 133 | 730 | - | - | 1060 | - | - |
| HCM Lane V/C Ratio | 0.233 | 0.034 | - | - | - | - | - |
| HCM Control Delay (s) | 40.1 | 10.1 | 0.2 | - | 0 | - | - |
| HCM Lane LOS | E | B | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0.9 | 0.1 | - | - | 0 | - | - |

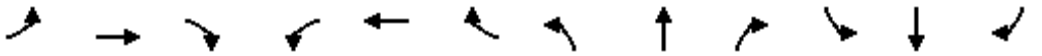
| Intersection | |
|---|---|
| Int Delay, s/veh | 6.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↰ | ↱ | | ↰ | ↱ | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 14 | 479 | 24 | 6 | 832 | 6 | 66 | 15 | 19 | 0 | 6 | 14 |
| Future Vol, veh/h | 14 | 479 | 24 | 6 | 832 | 6 | 66 | 15 | 19 | 0 | 6 | 14 |
| Conflicting Peds, #/hr | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 70 | - | - | 70 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 14 | 479 | 24 | 6 | 832 | 6 | 66 | 15 | 19 | 0 | 6 | 14 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 843 | 0 | 0 | 508 | 0 | 0 | 1374 | 1367 | 489 | 1390 | 1385 | 842 |
| Stage 1 | - | - | - | - | - | - | 512 | 512 | - | 849 | 849 | - |
| Stage 2 | - | - | - | - | - | - | 862 | 855 | - | 541 | 536 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 7.13 | 6.53 | 6.23 | 7.13 | 6.53 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.13 | 5.53 | - | 6.13 | 5.53 | - |
| Follow-up Hdwy | 2.227 | - | - | 2.227 | - | - | 3.527 | 4.027 | 3.327 | 3.527 | 4.027 | 3.327 |
| Pot Cap-1 Maneuver | 789 | - | - | 1052 | - | - | 122 | 146 | 577 | 119 | 143 | 363 |
| Stage 1 | - | - | - | - | - | - | 543 | 535 | - | 354 | 376 | - |
| Stage 2 | - | - | - | - | - | - | 348 | 373 | - | 523 | 522 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 785 | - | - | 1047 | - | - | 109 | 139 | 572 | 102 | 137 | 360 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 109 | 139 | - | 102 | 137 | - |
| Stage 1 | - | - | - | - | - | - | 527 | 519 | - | 343 | 370 | - |
| Stage 2 | - | - | - | - | - | - | 324 | 367 | - | 476 | 506 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0.1 | 85.6 | 21.2 |
| HCM LOS | | | F | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 134 | 785 | - | - | 1047 | - | - | 242 |
| HCM Lane V/C Ratio | 0.746 | 0.018 | - | - | 0.006 | - | - | 0.083 |
| HCM Control Delay (s) | 85.6 | 9.7 | 0 | - | 8.5 | 0 | - | 21.2 |
| HCM Lane LOS | F | A | A | - | A | A | - | C |
| HCM 95th %tile Q(veh) | 4.4 | 0.1 | - | - | 0 | - | - | 0.3 |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 41 | 416 | 40 | 25 | 490 | 11 | 205 | 156 | 57 | 4 | 47 | 29 |
| Future Volume (veh/h) | 41 | 416 | 40 | 25 | 490 | 11 | 205 | 156 | 57 | 4 | 47 | 29 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.95 | 0.99 | | 0.95 | 0.99 | | 0.98 | 1.00 | | 0.96 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 41 | 416 | 40 | 25 | 490 | 11 | 205 | 156 | 57 | 4 | 47 | 29 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 571 | 1106 | 106 | 602 | 1204 | 27 | 347 | 300 | 110 | 237 | 246 | 152 |
| Arrive On Green | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| Sat Flow, veh/h | 886 | 1658 | 159 | 922 | 1805 | 41 | 1301 | 1287 | 470 | 1155 | 1056 | 652 |
| Grp Volume(v), veh/h | 41 | 0 | 456 | 25 | 0 | 501 | 205 | 0 | 213 | 4 | 0 | 76 |
| Grp Sat Flow(s),veh/h/ln | 886 | 0 | 1817 | 922 | 0 | 1846 | 1301 | 0 | 1758 | 1155 | 0 | 1708 |
| Q Serve(g_s), s | 1.8 | 0.0 | 8.9 | 1.0 | 0.0 | 9.9 | 12.0 | 0.0 | 8.5 | 0.2 | 0.0 | 2.9 |
| Cycle Q Clear(g_c), s | 11.7 | 0.0 | 8.9 | 9.9 | 0.0 | 9.9 | 14.9 | 0.0 | 8.5 | 8.7 | 0.0 | 2.9 |
| Prop In Lane | 1.00 | | 0.09 | 1.00 | | 0.02 | 1.00 | | 0.27 | 1.00 | | 0.38 |
| Lane Grp Cap(c), veh/h | 571 | 0 | 1212 | 602 | 0 | 1231 | 347 | 0 | 409 | 237 | 0 | 398 |
| V/C Ratio(X) | 0.07 | 0.00 | 0.38 | 0.04 | 0.00 | 0.41 | 0.59 | 0.00 | 0.52 | 0.02 | 0.00 | 0.19 |
| Avail Cap(c_a), veh/h | 571 | 0 | 1212 | 602 | 0 | 1231 | 580 | 0 | 725 | 444 | 0 | 704 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 0.52 | 0.00 | 0.52 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 8.8 | 0.0 | 5.9 | 8.1 | 0.0 | 6.1 | 30.6 | 0.0 | 26.8 | 30.6 | 0.0 | 24.6 |
| Incr Delay (d2), s/veh | 0.2 | 0.0 | 0.9 | 0.1 | 0.0 | 0.5 | 1.6 | 0.0 | 1.0 | 0.0 | 0.0 | 0.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.4 | 0.0 | 3.0 | 0.2 | 0.0 | 3.3 | 3.8 | 0.0 | 3.5 | 0.1 | 0.0 | 1.2 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 9.0 | 0.0 | 6.8 | 8.2 | 0.0 | 6.6 | 32.2 | 0.0 | 27.8 | 30.6 | 0.0 | 24.9 |
| LnGrp LOS | A | A | A | A | A | A | C | A | C | C | A | C |
| Approach Vol, veh/h | | 497 | | | 526 | | | 418 | | | 80 | |
| Approach Delay, s/veh | | 7.0 | | | 6.7 | | | 30.0 | | | 25.2 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Timer - Assigned Phs | | 2 | | 4 | | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | | 57.4 | | 22.6 | | 57.4 | | 22.6 | | | | |
| Change Period (Y+Rc), s | | 4.0 | | 4.0 | | 4.0 | | 4.0 | | | | |
| Max Green Setting (Gmax), s | | 39.0 | | 33.0 | | 39.0 | | 33.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 13.7 | | 10.7 | | 11.9 | | 16.9 | | | | |
| Green Ext Time (p_c), s | | 3.3 | | 0.3 | | 3.6 | | 1.7 | | | | |

| Intersection Summary | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCM 6th Ctrl Delay | | | 14.2 | | | | | | | | | |
| HCM 6th LOS | | | B | | | | | | | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 101 | 303 | 63 | 40 | 243 | 115 | 137 | 986 | 30 | 56 | 584 | 79 |
| Future Volume (veh/h) | 101 | 303 | 63 | 40 | 243 | 115 | 137 | 986 | 30 | 56 | 584 | 79 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.96 | 0.99 | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 101 | 303 | 63 | 40 | 243 | 115 | 137 | 986 | 30 | 56 | 584 | 79 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 173 | 494 | 105 | 69 | 285 | 126 | 172 | 1720 | 52 | 73 | 1355 | 183 |
| Arrive On Green | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.10 | 0.49 | 0.49 | 0.04 | 0.44 | 0.44 |
| Sat Flow, veh/h | 351 | 1594 | 340 | 80 | 919 | 406 | 1767 | 3487 | 106 | 1767 | 3099 | 418 |
| Grp Volume(v), veh/h | 169 | 0 | 298 | 398 | 0 | 0 | 137 | 498 | 518 | 56 | 331 | 332 |
| Grp Sat Flow(s),veh/h/ln | 676 | 0 | 1610 | 1405 | 0 | 0 | 1767 | 1763 | 1830 | 1767 | 1763 | 1754 |
| Q Serve(g_s), s | 0.0 | 0.0 | 14.1 | 11.0 | 0.0 | 0.0 | 6.8 | 18.0 | 18.0 | 2.8 | 11.7 | 11.8 |
| Cycle Q Clear(g_c), s | 23.2 | 0.0 | 14.1 | 25.1 | 0.0 | 0.0 | 6.8 | 18.0 | 18.0 | 2.8 | 11.7 | 11.8 |
| Prop In Lane | 0.60 | | 0.21 | 0.10 | | 0.29 | 1.00 | | 0.06 | 1.00 | | 0.24 |
| Lane Grp Cap(c), veh/h | 273 | 0 | 499 | 479 | 0 | 0 | 172 | 869 | 903 | 73 | 771 | 767 |
| V/C Ratio(X) | 0.62 | 0.00 | 0.60 | 0.83 | 0.00 | 0.00 | 0.80 | 0.57 | 0.57 | 0.77 | 0.43 | 0.43 |
| Avail Cap(c_a), veh/h | 323 | 0 | 564 | 544 | 0 | 0 | 275 | 869 | 903 | 334 | 771 | 767 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.94 | 0.00 | 0.94 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 28.2 | 0.0 | 26.3 | 29.9 | 0.0 | 0.0 | 39.8 | 16.1 | 16.1 | 42.7 | 17.5 | 17.6 |
| Incr Delay (d2), s/veh | 1.2 | 0.0 | 0.7 | 8.4 | 0.0 | 0.0 | 11.3 | 2.7 | 2.6 | 20.8 | 1.7 | 1.8 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.4 | 0.0 | 5.4 | 9.4 | 0.0 | 0.0 | 3.5 | 7.6 | 7.9 | 1.7 | 5.0 | 5.0 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 29.4 | 0.0 | 27.0 | 38.3 | 0.0 | 0.0 | 51.0 | 18.9 | 18.8 | 63.5 | 19.3 | 19.3 |
| LnGrp LOS | C | A | C | D | A | A | D | B | B | E | B | B |
| Approach Vol, veh/h | | 467 | | | 398 | | | 1153 | | | 719 | |
| Approach Delay, s/veh | | 27.9 | | | 38.3 | | | 22.6 | | | 22.8 | |
| Approach LOS | | C | | | D | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 13.3 | 43.9 | | 32.9 | 8.2 | 48.9 | | 32.9 |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 5.0 | 4.5 | 4.5 | | 5.0 |
| Max Green Setting (Gmax), s | 4.8 | 30.5 | | 31.5 | 17.0 | 27.5 | | 31.5 |
| Max Q Clear Time (g_c+I1), s | 8.8 | 13.8 | | 27.1 | 4.8 | 20.0 | | 25.2 |
| Green Ext Time (p_c), s | 0.2 | 5.4 | | 0.8 | 0.1 | 4.8 | | 1.2 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 25.8 |
| HCM 6th LOS | C |

**Notes**

User approved pedestrian interval to be less than phase max green.

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.2 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 10 | 37 | 12 | 0 | 10 |
| Future Vol, veh/h | 0 | 10 | 37 | 12 | 0 | 10 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | Stop | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 0 | 10 | 37 | 12 | 0 | 10 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 63 | 53 | 0 | 0 | 54 | 0 |
| Stage 1 | 48 | - | - | - | - | - |
| Stage 2 | 15 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.13 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.227 | - |
| Pot Cap-1 Maneuver | 943 | 1014 | - | - | 1545 | - |
| Stage 1 | 974 | - | - | - | - | - |
| Stage 2 | 1008 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 934 | 1004 | - | - | 1538 | - |
| Mov Cap-2 Maneuver | 934 | - | - | - | - | - |
| Stage 1 | 969 | - | - | - | - | - |
| Stage 2 | 1003 | - | - | - | - | - |

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

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 1004 | 1538 | - |
| HCM Lane V/C Ratio | - | - | 0.01 | - | - |
| HCM Control Delay (s) | - | - | 8.6 | 0 | - |
| HCM Lane LOS | - | - | A | A | - |
| HCM 95th %tile Q(veh) | - | - | 0 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 4 | 9 | 219 | 17 | 4 | 101 |
| Future Vol, veh/h | 4 | 9 | 219 | 17 | 4 | 101 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 4 | 9 | 219 | 17 | 4 | 101 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 347 | 238 | 0 | 0 | 241 | 0 |
| Stage 1 | 233 | - | - | - | - | - |
| Stage 2 | 114 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.13 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.227 | - |
| Pot Cap-1 Maneuver | 650 | 801 | - | - | 1320 | - |
| Stage 1 | 806 | - | - | - | - | - |
| Stage 2 | 911 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 642 | 793 | - | - | 1314 | - |
| Mov Cap-2 Maneuver | 642 | - | - | - | - | - |
| Stage 1 | 802 | - | - | - | - | - |
| Stage 2 | 904 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 10 | 0 | 0.3 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 739 | 1314 | - |
| HCM Lane V/C Ratio | - | - | 0.018 | 0.003 | - |
| HCM Control Delay (s) | - | - | 10 | 7.7 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0 | - |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 7.2 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 22 | 0 | 3 | 0 | 0 | 0 | 3 | 32 | 0 | 0 | 13 | 0 |
| Future Vol, veh/h | 22 | 0 | 3 | 0 | 0 | 0 | 3 | 32 | 0 | 0 | 13 | 0 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 22 | 0 | 3 | 0 | 0 | 0 | 3 | 32 | 0 | 0 | 13 | 0 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 7.3 | 0 | 7.2 | 7.1 |
| HCM LOS | A | - | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 9% | 88% | 0% | 0% |
| Vol Thru, % | 91% | 0% | 100% | 100% |
| Vol Right, % | 0% | 12% | 0% | 0% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 35 | 25 | 0 | 13 |
| LT Vol | 3 | 22 | 0 | 0 |
| Through Vol | 32 | 0 | 0 | 13 |
| RT Vol | 0 | 3 | 0 | 0 |
| Lane Flow Rate | 35 | 25 | 0 | 13 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.039 | 0.029 | 0 | 0.014 |
| Departure Headway (Hd) | 4.005 | 4.122 | 4.037 | 4.004 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 896 | 870 | 0 | 895 |
| Service Time | 2.02 | 2.141 | 2.062 | 2.024 |
| HCM Lane V/C Ratio | 0.039 | 0.029 | 0 | 0.015 |
| HCM Control Delay | 7.2 | 7.3 | 7.1 | 7.1 |
| HCM Lane LOS | A | A | N | A |
| HCM 95th-tile Q | 0.1 | 0.1 | 0 | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 24 | 222 | 79 | 55 | 56 |
| Future Vol, veh/h | 1 | 24 | 222 | 79 | 55 | 56 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 24 | 222 | 79 | 55 | 56 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 438 | 272 | 0 | 0 | 306 | 0 |
| Stage 1 | 267 | - | - | - | - | - |
| Stage 2 | 171 | - | - | - | - | - |
| 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 | 576 | 767 | - | - | 1255 | - |
| Stage 1 | 778 | - | - | - | - | - |
| Stage 2 | 859 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 544 | 760 | - | - | 1249 | - |
| Mov Cap-2 Maneuver | 544 | - | - | - | - | - |
| Stage 1 | 774 | - | - | - | - | - |
| Stage 2 | 816 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 10 | 0 | 4 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 748 | 1249 | - |
| HCM Lane V/C Ratio | - | - | 0.033 | 0.044 | - |
| HCM Control Delay (s) | - | - | 10 | 8 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.1 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 150 | 34 | 15 | 18 | 5 |
| Future Vol, veh/h | 5 | 150 | 34 | 15 | 18 | 5 |
| Conflicting Peds, #/hr | 5 | 0 | 0 | 5 | 5 | 5 |
| 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 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 150 | 34 | 15 | 18 | 5 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 54 | 0 | - | 0 | 212 | 52 |
| Stage 1 | - | - | - | - | 47 | - |
| Stage 2 | - | - | - | - | 165 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1551 | - | - | - | 776 | 1016 |
| Stage 1 | - | - | - | - | 975 | - |
| Stage 2 | - | - | - | - | 864 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1544 | - | - | - | 765 | 1006 |
| Mov Cap-2 Maneuver | - | - | - | - | 765 | - |
| Stage 1 | - | - | - | - | 966 | - |
| Stage 2 | - | - | - | - | 860 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.2 | 0 | 9.6 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1544 | - | - | - | 807 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.029 |
| HCM Control Delay (s) | 7.3 | 0 | - | - | 9.6 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 8.3 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 4 | 158 | 13 | 24 | 30 | 5 | 12 | 84 | 45 | 12 | 36 | 5 |
| Future Vol, veh/h | 4 | 158 | 13 | 24 | 30 | 5 | 12 | 84 | 45 | 12 | 36 | 5 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 4 | 158 | 13 | 24 | 30 | 5 | 12 | 84 | 45 | 12 | 36 | 5 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 8.6 | 8 | 8.3 | 8 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 9% | 2% | 41% | 23% |
| Vol Thru, % | 60% | 90% | 51% | 68% |
| Vol Right, % | 32% | 7% | 8% | 9% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 141 | 175 | 59 | 53 |
| LT Vol | 12 | 4 | 24 | 12 |
| Through Vol | 84 | 158 | 30 | 36 |
| RT Vol | 45 | 13 | 5 | 5 |
| Lane Flow Rate | 141 | 175 | 59 | 53 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.171 | 0.214 | 0.075 | 0.068 |
| Departure Headway (Hd) | 4.362 | 4.406 | 4.604 | 4.623 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 823 | 816 | 779 | 776 |
| Service Time | 2.38 | 2.425 | 2.628 | 2.645 |
| HCM Lane V/C Ratio | 0.171 | 0.214 | 0.076 | 0.068 |
| HCM Control Delay | 8.3 | 8.6 | 8 | 8 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 0.6 | 0.8 | 0.2 | 0.2 |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 21 | 210 | 18 | 52 | 59 | 74 | 8 | 318 | 51 | 23 | 114 | 3 |
| Future Volume (veh/h) | 21 | 210 | 18 | 52 | 59 | 74 | 8 | 318 | 51 | 23 | 114 | 3 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.98 | | 0.95 | 0.99 | | 0.95 | 0.99 | | 0.96 | 1.00 | | 0.96 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 21 | 210 | 18 | 52 | 59 | 74 | 8 | 318 | 51 | 23 | 114 | 3 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 82 | 493 | 40 | 170 | 190 | 192 | 626 | 697 | 112 | 418 | 808 | 21 |
| Arrive On Green | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| Sat Flow, veh/h | 70 | 1602 | 130 | 321 | 617 | 625 | 1259 | 1561 | 250 | 1008 | 1811 | 48 |
| Grp Volume(v), veh/h | 249 | 0 | 0 | 185 | 0 | 0 | 8 | 0 | 369 | 23 | 0 | 117 |
| Grp Sat Flow(s),veh/h/ln | 1803 | 0 | 0 | 1563 | 0 | 0 | 1259 | 0 | 1811 | 1008 | 0 | 1859 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 9.2 | 1.1 | 0.0 | 2.4 |
| Cycle Q Clear(g_c), s | 7.1 | 0.0 | 0.0 | 5.4 | 0.0 | 0.0 | 2.7 | 0.0 | 9.2 | 10.3 | 0.0 | 2.4 |
| Prop In Lane | 0.08 | | 0.07 | 0.28 | | 0.40 | 1.00 | | 0.14 | 1.00 | | 0.03 |
| Lane Grp Cap(c), veh/h | 615 | 0 | 0 | 552 | 0 | 0 | 626 | 0 | 808 | 418 | 0 | 829 |
| V/C Ratio(X) | 0.41 | 0.00 | 0.00 | 0.34 | 0.00 | 0.00 | 0.01 | 0.00 | 0.46 | 0.06 | 0.00 | 0.14 |
| Avail Cap(c_a), veh/h | 832 | 0 | 0 | 732 | 0 | 0 | 626 | 0 | 808 | 418 | 0 | 829 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 0.59 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 18.0 | 0.0 | 0.0 | 17.5 | 0.0 | 0.0 | 11.4 | 0.0 | 12.5 | 16.1 | 0.0 | 10.6 |
| Incr Delay (d2), s/veh | 0.4 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 1.9 | 0.1 | 0.0 | 0.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.8 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.1 | 0.0 | 3.7 | 0.2 | 0.0 | 0.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 18.5 | 0.0 | 0.0 | 17.7 | 0.0 | 0.0 | 11.5 | 0.0 | 14.4 | 16.1 | 0.0 | 10.7 |
| LnGrp LOS | B | A | A | B | A | A | B | A | B | B | A | B |
| Approach Vol, veh/h | | 249 | | | 185 | | | 377 | | | 140 | |
| Approach Delay, s/veh | | 18.5 | | | 17.7 | | | 14.3 | | | 11.6 | |
| Approach LOS | | B | | | B | | | B | | | B | |

| Timer - Assigned Phs | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 24.0 | 33.0 | 24.0 | 33.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 28.0 | 29.0 | 28.0 | 29.0 |
| Max Q Clear Time (g_c+I1), s | 9.1 | 12.3 | 7.4 | 11.2 |
| Green Ext Time (p_c), s | 1.3 | 0.6 | 1.1 | 2.1 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 15.7 |
| HCM 6th LOS | B |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 28 | 317 | 16 | 80 | 197 | 192 | 42 | 1088 | 79 | 144 | 681 | 20 |
| Future Volume (veh/h) | 28 | 317 | 16 | 80 | 197 | 192 | 42 | 1088 | 79 | 144 | 681 | 20 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.97 | 1.00 | | 0.97 | 1.00 | | 0.95 | 1.00 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 28 | 317 | 16 | 80 | 197 | 192 | 42 | 1088 | 79 | 144 | 681 | 20 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 56 | 379 | 18 | 211 | 260 | 254 | 64 | 1491 | 108 | 177 | 1791 | 53 |
| Arrive On Green | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.04 | 0.45 | 0.45 | 0.10 | 0.51 | 0.51 |
| Sat Flow, veh/h | 42 | 1242 | 60 | 1047 | 853 | 832 | 1781 | 3346 | 243 | 1781 | 3519 | 103 |
| Grp Volume(v), veh/h | 361 | 0 | 0 | 80 | 0 | 389 | 42 | 577 | 590 | 144 | 344 | 357 |
| Grp Sat Flow(s),veh/h/ln | 1345 | 0 | 0 | 1047 | 0 | 1685 | 1781 | 1777 | 1812 | 1781 | 1777 | 1846 |
| Q Serve(g_s), s | 5.5 | 0.0 | 0.0 | 0.0 | 0.0 | 18.8 | 2.1 | 24.0 | 24.1 | 7.1 | 10.6 | 10.6 |
| Cycle Q Clear(g_c), s | 24.2 | 0.0 | 0.0 | 18.8 | 0.0 | 18.8 | 2.1 | 24.0 | 24.1 | 7.1 | 10.6 | 10.6 |
| Prop In Lane | 0.08 | | 0.04 | 1.00 | | 0.49 | 1.00 | | 0.13 | 1.00 | | 0.06 |
| Lane Grp Cap(c), veh/h | 453 | 0 | 0 | 211 | 0 | 514 | 64 | 792 | 807 | 177 | 904 | 939 |
| V/C Ratio(X) | 0.80 | 0.00 | 0.00 | 0.38 | 0.00 | 0.76 | 0.65 | 0.73 | 0.73 | 0.81 | 0.38 | 0.38 |
| Avail Cap(c_a), veh/h | 647 | 0 | 0 | 328 | 0 | 702 | 287 | 792 | 807 | 247 | 904 | 939 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.91 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 28.7 | 0.0 | 0.0 | 28.3 | 0.0 | 28.3 | 42.8 | 20.5 | 20.5 | 39.7 | 13.5 | 13.5 |
| Incr Delay (d2), s/veh | 2.6 | 0.0 | 0.0 | 0.4 | 0.0 | 1.9 | 4.1 | 5.8 | 5.8 | 9.3 | 1.2 | 1.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 7.8 | 0.0 | 0.0 | 1.6 | 0.0 | 7.7 | 1.0 | 10.9 | 11.1 | 3.6 | 4.4 | 4.6 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 31.3 | 0.0 | 0.0 | 28.7 | 0.0 | 30.2 | 46.9 | 26.3 | 26.2 | 49.0 | 14.7 | 14.6 |
| LnGrp LOS | C | A | A | C | A | C | D | C | C | D | B | B |
| Approach Vol, veh/h | | 361 | | | 469 | | | 1209 | | | 845 | |
| Approach Delay, s/veh | | 31.3 | | | 29.9 | | | 27.0 | | | 20.5 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 7.8 | 50.3 | | 31.9 | 13.4 | 44.6 | | 31.9 |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | | 4.5 |
| Max Green Setting (Gmax), s | 4.5 | 24.5 | | 37.5 | 12.5 | 26.5 | | 37.5 |
| Max Q Clear Time (g_c+I1), s | 4.1 | 12.6 | | 20.8 | 9.1 | 26.1 | | 26.2 |
| Green Ext Time (p_c), s | 0.0 | 4.7 | | 1.9 | 0.1 | 0.4 | | 1.2 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 26.1 |
| HCM 6th LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 11 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 79 | 17 | 242 | 151 | 36 | 525 |
| Future Vol, veh/h | 79 | 17 | 242 | 151 | 36 | 525 |
| Conflicting Peds, #/hr | 0 | 9 | 9 | 0 | 2 | 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 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 79 | 17 | 242 | 151 | 36 | 525 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 105 | 0 | 659 | 97 |
| Stage 1 | - | - | - | - | 97 | - |
| Stage 2 | - | - | - | - | 562 | - |
| Critical Hdwy | - | - | 4.145 | - | 6.645 | 6.245 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.445 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.845 | - |
| Follow-up Hdwy | - | - | 2.2285 | - | 3.5285 | 3.3285 |
| Pot Cap-1 Maneuver | - | - | 1479 | - | 410 | 956 |
| Stage 1 | - | - | - | - | 924 | - |
| Stage 2 | - | - | - | - | 533 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1466 | - | 333 | 948 |
| Mov Cap-2 Maneuver | - | - | - | - | 333 | - |
| Stage 1 | - | - | - | - | 916 | - |
| Stage 2 | - | - | - | - | 436 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 5 | 17.1 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 848 | - | - | 1466 | - |
| HCM Lane V/C Ratio | 0.662 | - | - | 0.165 | - |
| HCM Control Delay (s) | 17.1 | - | - | 7.9 | 0.2 |
| HCM Lane LOS | C | - | - | A | A |
| HCM 95th %tile Q(veh) | 5.1 | - | - | 0.6 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 52.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 92 | 426 | 90 | 3 | 860 | 89 | 104 | 64 | 60 | 21 | 12 | 89 |
| Future Vol, veh/h | 92 | 426 | 90 | 3 | 860 | 89 | 104 | 64 | 60 | 21 | 12 | 89 |
| Conflicting Peds, #/hr | 6 | 0 | 4 | 4 | 0 | 6 | 0 | 0 | 1 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | 40 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 92 | 426 | 90 | 3 | 860 | 89 | 104 | 64 | 60 | 21 | 12 | 89 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 955 | 0 | 0 | 520 | 0 | 0 | 1101 | 1620 | 263 | 1347 | 1621 | 481 |
| Stage 1 | - | - | - | - | - | - | 659 | 659 | - | 917 | 917 | - |
| Stage 2 | - | - | - | - | - | - | 442 | 961 | - | 430 | 704 | - |
| Critical Hdwy | 4.16 | - | - | 4.16 | - | - | 7.56 | 6.56 | 6.96 | 7.56 | 6.56 | 6.96 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.56 | 5.56 | - | 6.56 | 5.56 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.56 | 5.56 | - | 6.56 | 5.56 | - |
| Follow-up Hdwy | 2.23 | - | - | 2.23 | - | - | 3.53 | 4.03 | 3.33 | 3.53 | 4.03 | 3.33 |
| Pot Cap-1 Maneuver | 709 | - | - | 1035 | - | - | 165 | 101 | 732 | 109 | 101 | 528 |
| Stage 1 | - | - | - | - | - | - | 417 | 456 | - | 291 | 347 | - |
| Stage 2 | - | - | - | - | - | - | 562 | 331 | - | 571 | 435 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 705 | - | - | 1031 | - | - | 104 | 81 | 729 | 30 | 81 | 525 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 104 | 81 | - | 30 | 81 | - |
| Stage 1 | - | - | - | - | - | - | 338 | 370 | - | 235 | 343 | - |
| Stage 2 | - | - | - | - | - | - | 448 | 327 | - | 352 | 353 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 2.1 | 0 | $ 348.9 | 156 |
| HCM LOS | | | F | F |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 94 | 729 | 705 | - | - | 1031 | - | - | 120 |
| HCM Lane V/C Ratio | 1.787 | 0.082 | 0.13 | - | - | 0.003 | - | - | 1.017 |
| HCM Control Delay (s) | $ 469.8 | 10.4 | 10.9 | 0.7 | - | 8.5 | 0 | - | 156 |
| HCM Lane LOS | F | B | B | A | - | A | A | - | F |
| HCM 95th %tile Q(veh) | 13.8 | 0.3 | 0.4 | - | - | 0 | - | - | 6.9 |

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



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 23 | 342 | 50 | 79 | 569 | 1 | 47 | 22 | 17 | 5 | 123 | 61 |
| Future Volume (veh/h) | 23 | 342 | 50 | 79 | 569 | 1 | 47 | 22 | 17 | 5 | 123 | 61 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.95 | 1.00 | | 0.95 | 0.99 | | 0.97 | 0.99 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 23 | 342 | 50 | 79 | 569 | 1 | 47 | 22 | 17 | 5 | 123 | 61 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 621 | 1161 | 170 | 654 | 1369 | 2 | 155 | 140 | 108 | 273 | 168 | 83 |
| Arrive On Green | 0.24 | 0.24 | 0.24 | 0.74 | 0.74 | 0.74 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| Sat Flow, veh/h | 831 | 1571 | 230 | 981 | 1852 | 3 | 1180 | 957 | 739 | 1345 | 1149 | 570 |
| Grp Volume(v), veh/h | 23 | 0 | 392 | 79 | 0 | 570 | 47 | 0 | 39 | 5 | 0 | 184 |
| Grp Sat Flow(s),veh/h/ln | 831 | 0 | 1801 | 981 | 0 | 1855 | 1180 | 0 | 1696 | 1345 | 0 | 1718 |
| Q Serve(g_s), s | 1.6 | 0.0 | 12.4 | 2.7 | 0.0 | 8.1 | 2.8 | 0.0 | 1.4 | 0.2 | 0.0 | 7.2 |
| Cycle Q Clear(g_c), s | 9.7 | 0.0 | 12.4 | 15.1 | 0.0 | 8.1 | 9.9 | 0.0 | 1.4 | 1.6 | 0.0 | 7.2 |
| Prop In Lane | 1.00 | | 0.13 | 1.00 | | 0.00 | 1.00 | | 0.44 | 1.00 | | 0.33 |
| Lane Grp Cap(c), veh/h | 621 | 0 | 1331 | 654 | 0 | 1371 | 155 | 0 | 248 | 273 | 0 | 252 |
| V/C Ratio(X) | 0.04 | 0.00 | 0.29 | 0.12 | 0.00 | 0.42 | 0.30 | 0.00 | 0.16 | 0.02 | 0.00 | 0.73 |
| Avail Cap(c_a), veh/h | 621 | 0 | 1331 | 654 | 0 | 1371 | 302 | 0 | 460 | 441 | 0 | 466 |
| HCM Platoon Ratio | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.86 | 0.00 | 0.86 | 0.52 | 0.00 | 0.52 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 13.8 | 0.0 | 11.6 | 7.3 | 0.0 | 3.4 | 33.3 | 0.0 | 26.1 | 26.8 | 0.0 | 28.6 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.5 | 0.2 | 0.0 | 0.5 | 1.1 | 0.0 | 0.3 | 0.0 | 0.0 | 4.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.3 | 0.0 | 6.0 | 0.5 | 0.0 | 2.0 | 0.8 | 0.0 | 0.6 | 0.1 | 0.0 | 3.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 13.9 | 0.0 | 12.1 | 7.5 | 0.0 | 3.9 | 34.4 | 0.0 | 26.4 | 26.8 | 0.0 | 32.6 |
| LnGrp LOS | B | A | B | A | A | A | C | A | C | C | A | C |
| Approach Vol, veh/h | | 415 | | | 649 | | | 86 | | | 189 | |
| Approach Delay, s/veh | | 12.2 | | | 4.4 | | | 30.8 | | | 32.5 | |
| Approach LOS | | B | | | A | | | C | | | C | |

| Timer - Assigned Phs | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 55.7 | 14.3 | 55.7 | 14.3 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 43.0 | 19.0 | 43.0 | 19.0 |
| Max Q Clear Time (g_c+I1), s | 14.4 | 9.2 | 17.1 | 11.9 |
| Green Ext Time (p_c), s | 2.8 | 0.7 | 4.5 | 0.1 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 12.4 |
| HCM 6th LOS | B |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 44 | 139 | 57 | 22 | 365 | 40 | 60 | 268 | 13 | 102 | 1378 | 157 |
| Future Volume (veh/h) | 44 | 139 | 57 | 22 | 365 | 40 | 60 | 268 | 13 | 102 | 1378 | 157 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.96 | 0.99 | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 44 | 139 | 57 | 22 | 365 | 40 | 60 | 268 | 13 | 102 | 1378 | 157 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 159 | 474 | 203 | 61 | 456 | 48 | 77 | 1577 | 76 | 130 | 1563 | 177 |
| Arrive On Green | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.04 | 0.46 | 0.46 | 0.07 | 0.49 | 0.49 |
| Sat Flow, veh/h | 337 | 1639 | 703 | 46 | 1575 | 168 | 1767 | 3414 | 165 | 1767 | 3174 | 359 |
| Grp Volume(v), veh/h | 116 | 0 | 124 | 427 | 0 | 0 | 60 | 138 | 143 | 102 | 760 | 775 |
| Grp Sat Flow(s),veh/h/ln | 1154 | 0 | 1524 | 1789 | 0 | 0 | 1767 | 1763 | 1816 | 1767 | 1763 | 1770 |
| Q Serve(g_s), s | 0.0 | 0.0 | 5.0 | 6.4 | 0.0 | 0.0 | 2.7 | 3.6 | 3.7 | 4.5 | 30.8 | 31.6 |
| Cycle Q Clear(g_c), s | 4.4 | 0.0 | 5.0 | 17.7 | 0.0 | 0.0 | 2.7 | 3.6 | 3.7 | 4.5 | 30.8 | 31.6 |
| Prop In Lane | 0.38 | | 0.46 | 0.05 | | 0.09 | 1.00 | | 0.09 | 1.00 | | 0.20 |
| Lane Grp Cap(c), veh/h | 396 | 0 | 441 | 565 | 0 | 0 | 77 | 814 | 839 | 130 | 868 | 871 |
| V/C Ratio(X) | 0.29 | 0.00 | 0.28 | 0.76 | 0.00 | 0.00 | 0.78 | 0.17 | 0.17 | 0.78 | 0.88 | 0.89 |
| Avail Cap(c_a), veh/h | 471 | 0 | 524 | 661 | 0 | 0 | 243 | 814 | 839 | 243 | 868 | 871 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.96 | 0.00 | 0.96 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 21.6 | 0.0 | 22.0 | 26.4 | 0.0 | 0.0 | 37.9 | 12.6 | 12.6 | 36.4 | 18.1 | 18.3 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.1 | 3.3 | 0.0 | 0.0 | 6.4 | 0.4 | 0.4 | 3.8 | 12.0 | 13.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.6 | 0.0 | 1.8 | 7.9 | 0.0 | 0.0 | 1.3 | 1.5 | 1.5 | 2.1 | 14.4 | 15.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 21.7 | 0.0 | 22.1 | 29.8 | 0.0 | 0.0 | 44.2 | 13.0 | 13.0 | 40.3 | 30.1 | 31.5 |
| LnGrp LOS | C | A | C | C | A | A | D | B | B | D | C | C |
| Approach Vol, veh/h | | 240 | | | 427 | | | 341 | | | 1637 | |
| Approach Delay, s/veh | | 21.9 | | | 29.8 | | | 18.5 | | | 31.4 | |
| Approach LOS | | C | | | C | | | B | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 8.0 | 43.9 | | 28.1 | 10.4 | 41.5 | | 28.1 |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 5.0 | 4.5 | 4.5 | | 5.0 |
| Max Green Setting (Gmax), s | 11.0 | 27.5 | | 27.5 | 11.0 | 27.5 | | 27.5 |
| Max Q Clear Time (g_c+I1), s | 4.7 | 33.6 | | 19.7 | 6.5 | 5.7 | | 7.0 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 1.2 | 0.0 | 2.3 | | 1.0 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 28.6 |
| HCM 6th LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 402 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 402 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | Stop | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 402 |

| Major/Minor | Minor1 | | Major2 | |
|---|---|---|---|---|
| Conflicting Flow All | 211 | - | 5 | 0 |
| Stage 1 | 5 | - | - | - |
| Stage 2 | 206 | - | - | - |
| Critical Hdwy | 6.84 | - | 4.16 | - |
| Critical Hdwy Stg 1 | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - |
| Follow-up Hdwy | 3.52 | - | 2.23 | - |
| Pot Cap-1 Maneuver | 758 | 0 | 1608 | - |
| Stage 1 | - | 0 | - | - |
| Stage 2 | 808 | 0 | - | - |
| Platoon blocked, % | | | | - |
| Mov Cap-1 Maneuver | 754 | - | 1600 | - |
| Mov Cap-2 Maneuver | 754 | - | - | - |
| Stage 1 | - | - | - | - |
| Stage 2 | 808 | - | - | - |

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

| Minor Lane/Major Mvmt | WBLn1 | SBL | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 1600 | - |
| HCM Lane V/C Ratio | - | - | - |
| HCM Control Delay (s) | 0 | 0 | - |
| HCM Lane LOS | A | A | - |
| HCM 95th %tile Q(veh) | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 9.1 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 312 | 33 | 77 | 11 | 0 | 0 |
| Future Vol, veh/h | 312 | 33 | 77 | 11 | 0 | 0 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 312 | 33 | 77 | 11 | 0 | 0 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 94 | 93 | 0 | 0 | 93 | 0 |
| Stage 1 | 88 | - | - | - | - | - |
| Stage 2 | 6 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.13 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.227 | - |
| Pot Cap-1 Maneuver | 906 | 964 | - | - | 1495 | - |
| Stage 1 | 935 | - | - | - | - | - |
| Stage 2 | 1017 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 897 | 955 | - | - | 1488 | - |
| Mov Cap-2 Maneuver | 897 | - | - | - | - | - |
| Stage 1 | 930 | - | - | - | - | - |
| Stage 2 | 1012 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 11.4 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 902 | 1488 | - |
| HCM Lane V/C Ratio | - | - | 0.382 | - | - |
| HCM Control Delay (s) | - | - | 11.4 | 0 | - |
| HCM Lane LOS | - | - | B | A | - |
| HCM 95th %tile Q(veh) | - | - | 1.8 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 10.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 26 | 0 | 0 | 0 | 28 | 0 | 0 | 1 | 99 | 316 |
| Future Vol, veh/h | 0 | 0 | 26 | 0 | 0 | 0 | 28 | 0 | 0 | 1 | 99 | 316 |
| Conflicting Peds, #/hr | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | 0 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 26 | 0 | 0 | 0 | 28 | 0 | 0 | 1 | 99 | 316 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 0 | 0 | 31 | 0 | 0 | 232 | 19 | 23 | 19 | 32 | 6 |
| Stage 1 | - | - | - | - | - | - | 18 | 18 | - | 1 | 1 | - |
| Stage 2 | - | - | - | - | - | - | 214 | 1 | - | 18 | 31 | - |
| Critical Hdwy | - | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | - | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 0 | - | - | 1582 | - | 0 | 723 | 875 | 1054 | 995 | 861 | 1077 |
| Stage 1 | 0 | - | - | - | - | 0 | 1001 | 880 | - | 1022 | 895 | - |
| Stage 2 | 0 | - | - | - | - | 0 | 788 | 895 | - | 1001 | 869 | - |
| Platoon blocked, % | | - | - | | - | | | | | | | |
| Mov Cap-1 Maneuver | - | - | - | 1574 | - | - | 461 | 871 | 1044 | 990 | 857 | 1072 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 461 | 871 | - | 990 | 857 | - |
| Stage 1 | - | - | - | - | - | - | 1001 | 876 | - | 1022 | 895 | - |
| Stage 2 | - | - | - | - | - | - | 492 | 895 | - | 996 | 865 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 13.3 | 11 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 461 | - | - | 1574 | - | 990 | 1011 |
| HCM Lane V/C Ratio | 0.061 | - | - | - | - | 0.001 | 0.41 |
| HCM Control Delay (s) | 13.3 | - | - | 0 | - | 8.6 | 11 |
| HCM Lane LOS | B | - | - | A | - | A | B |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 0 | - | 0 | 2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.8 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 46 | 9 | 89 | 194 | 60 | 254 |
| Future Vol, veh/h | 46 | 9 | 89 | 194 | 60 | 254 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 46 | 9 | 89 | 194 | 60 | 254 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 570 | 196 | 0 | 0 | 288 | 0 |
| Stage 1 | 191 | - | - | - | - | - |
| Stage 2 | 379 | - | - | - | - | - |
| 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 | 483 | 845 | - | - | 1274 | - |
| Stage 1 | 841 | - | - | - | - | - |
| Stage 2 | 692 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 452 | 837 | - | - | 1268 | - |
| Mov Cap-2 Maneuver | 452 | - | - | - | - | - |
| Stage 1 | 837 | - | - | - | - | - |
| Stage 2 | 651 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.3 | 0 | 1.5 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 489 | 1268 | - |
| HCM Lane V/C Ratio | - | - | 0.112 | 0.047 | - |
| HCM Control Delay (s) | - | - | 13.3 | 8 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.4 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.9 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 274 | 14 | 4 | 69 | 43 |
| Future Vol, veh/h | 3 | 274 | 14 | 4 | 69 | 43 |
| Conflicting Peds, #/hr | 5 | 0 | 0 | 5 | 5 | 5 |
| 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 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 3 | 274 | 14 | 4 | 69 | 43 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 23 | 0 | - | 0 | 306 | 26 |
| Stage 1 | - | - | - | - | 21 | - |
| Stage 2 | - | - | - | - | 285 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1592 | - | - | - | 686 | 1050 |
| Stage 1 | - | - | - | - | 1002 | - |
| Stage 2 | - | - | - | - | 763 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1584 | - | - | - | 678 | 1040 |
| Mov Cap-2 Maneuver | - | - | - | - | 678 | - |
| Stage 1 | - | - | - | - | 995 | - |
| Stage 2 | - | - | - | - | 759 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 10.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1584 | - | - | - | 783 |
| HCM Lane V/C Ratio | 0.002 | - | - | - | 0.143 |
| HCM Control Delay (s) | 7.3 | 0 | - | - | 10.4 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.5 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 9.5 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 23 | 221 | 85 | 54 | 22 | 4 | 3 | 49 | 23 | 2 | 103 | 5 |
| Future Vol, veh/h | 23 | 221 | 85 | 54 | 22 | 4 | 3 | 49 | 23 | 2 | 103 | 5 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 23 | 221 | 85 | 54 | 22 | 4 | 3 | 49 | 23 | 2 | 103 | 5 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 10.2 | 8.5 | 8.4 | 8.9 |
| HCM LOS | B | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 4% | 7% | 68% | 2% |
| Vol Thru, % | 65% | 67% | 27% | 94% |
| Vol Right, % | 31% | 26% | 5% | 5% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 75 | 329 | 80 | 110 |
| LT Vol | 3 | 23 | 54 | 2 |
| Through Vol | 49 | 221 | 22 | 103 |
| RT Vol | 23 | 85 | 4 | 5 |
| Lane Flow Rate | 75 | 329 | 80 | 110 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.101 | 0.397 | 0.108 | 0.151 |
| Departure Headway (Hd) | 4.835 | 4.347 | 4.86 | 4.937 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 739 | 826 | 735 | 725 |
| Service Time | 2.882 | 2.379 | 2.904 | 2.981 |
| HCM Lane V/C Ratio | 0.101 | 0.398 | 0.109 | 0.152 |
| HCM Control Delay | 8.4 | 10.2 | 8.5 | 8.9 |
| HCM Lane LOS | A | B | A | A |
| HCM 95th-tile Q | 0.3 | 1.9 | 0.4 | 0.5 |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 2 | 185 | 42 | 137 | 79 | 24 | 1 | 60 | 42 | 44 | 217 | 9 |
| Future Volume (veh/h) | 2 | 185 | 42 | 137 | 79 | 24 | 1 | 60 | 42 | 44 | 217 | 9 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.95 | 0.99 | | 0.95 | 0.99 | | 0.96 | 0.99 | | 0.96 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 2 | 185 | 42 | 137 | 79 | 24 | 1 | 60 | 42 | 44 | 217 | 9 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 57 | 449 | 101 | 312 | 168 | 44 | 533 | 448 | 313 | 635 | 794 | 33 |
| Arrive On Green | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| Sat Flow, veh/h | 3 | 1458 | 328 | 732 | 546 | 142 | 1144 | 1003 | 702 | 1276 | 1779 | 74 |
| Grp Volume(v), veh/h | 229 | 0 | 0 | 240 | 0 | 0 | 1 | 0 | 102 | 44 | 0 | 226 |
| Grp Sat Flow(s),veh/h/ln | 1790 | 0 | 0 | 1420 | 0 | 0 | 1144 | 0 | 1705 | 1276 | 0 | 1853 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 1.8 | 0.0 | 0.0 | 0.0 | 0.0 | 2.3 | 1.4 | 0.0 | 5.0 |
| Cycle Q Clear(g_c), s | 6.6 | 0.0 | 0.0 | 8.4 | 0.0 | 0.0 | 5.0 | 0.0 | 2.3 | 3.7 | 0.0 | 5.0 |
| Prop In Lane | 0.01 | | 0.18 | 0.57 | | 0.10 | 1.00 | | 0.41 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 606 | 0 | 0 | 524 | 0 | 0 | 533 | 0 | 761 | 635 | 0 | 827 |
| V/C Ratio(X) | 0.38 | 0.00 | 0.00 | 0.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.07 | 0.00 | 0.27 |
| Avail Cap(c_a), veh/h | 826 | 0 | 0 | 689 | 0 | 0 | 533 | 0 | 761 | 635 | 0 | 827 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 0.92 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 17.9 | 0.0 | 0.0 | 18.3 | 0.0 | 0.0 | 12.9 | 0.0 | 10.6 | 11.7 | 0.0 | 11.4 |
| Incr Delay (d2), s/veh | 0.4 | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.6 | 0.0 | 0.0 | 2.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.4 | 0.0 | 1.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 18.3 | 0.0 | 0.0 | 18.9 | 0.0 | 0.0 | 12.9 | 0.0 | 11.0 | 11.7 | 0.0 | 11.5 |
| LnGrp LOS | B | A | A | B | A | A | B | A | B | B | A | B |
| Approach Vol, veh/h | | 229 | | | 240 | | | 103 | | | 270 | |
| Approach Delay, s/veh | | 18.3 | | | 18.9 | | | 11.0 | | | 11.6 | |
| Approach LOS | | B | | | B | | | B | | | B | |

| Timer - Assigned Phs | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 24.0 | 33.0 | 24.0 | 33.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 28.0 | 29.0 | 28.0 | 29.0 |
| Max Q Clear Time (g_c+I1), s | 8.6 | 7.0 | 10.4 | 7.0 |
| Green Ext Time (p_c), s | 1.2 | 1.4 | 1.4 | 0.5 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 15.4 |
| HCM 6th LOS | B |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 19 | 340 | 27 | 103 | 188 | 43 | 23 | 418 | 64 | 153 | 1340 | 28 |
| Future Volume (veh/h) | 19 | 340 | 27 | 103 | 188 | 43 | 23 | 418 | 64 | 153 | 1340 | 28 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.96 | 0.99 | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.96 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 19 | 340 | 27 | 103 | 188 | 43 | 23 | 418 | 64 | 153 | 1340 | 28 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 59 | 442 | 34 | 254 | 392 | 90 | 45 | 1401 | 213 | 189 | 1911 | 40 |
| Arrive On Green | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.03 | 0.46 | 0.46 | 0.11 | 0.54 | 0.54 |
| Sat Flow, veh/h | 43 | 1644 | 127 | 1006 | 1461 | 334 | 1781 | 3069 | 466 | 1781 | 3555 | 74 |
| Grp Volume(v), veh/h | 386 | 0 | 0 | 103 | 0 | 231 | 23 | 240 | 242 | 153 | 669 | 699 |
| Grp Sat Flow(s),veh/h/ln | 1814 | 0 | 0 | 1006 | 0 | 1795 | 1781 | 1777 | 1758 | 1781 | 1777 | 1853 |
| Q Serve(g_s), s | 4.7 | 0.0 | 0.0 | 0.4 | 0.0 | 8.6 | 1.0 | 6.8 | 6.9 | 6.7 | 22.3 | 22.4 |
| Cycle Q Clear(g_c), s | 15.7 | 0.0 | 0.0 | 16.1 | 0.0 | 8.6 | 1.0 | 6.8 | 6.9 | 6.7 | 22.3 | 22.4 |
| Prop In Lane | 0.05 | | 0.07 | 1.00 | | 0.19 | 1.00 | | 0.26 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 535 | 0 | 0 | 254 | 0 | 482 | 45 | 811 | 802 | 189 | 955 | 996 |
| V/C Ratio(X) | 0.72 | 0.00 | 0.00 | 0.41 | 0.00 | 0.48 | 0.52 | 0.30 | 0.30 | 0.81 | 0.70 | 0.70 |
| Avail Cap(c_a), veh/h | 847 | 0 | 0 | 430 | 0 | 796 | 278 | 811 | 802 | 234 | 955 | 996 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.95 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 27.1 | 0.0 | 0.0 | 27.5 | 0.0 | 24.6 | 38.5 | 13.7 | 13.7 | 35.0 | 13.7 | 13.7 |
| Incr Delay (d2), s/veh | 1.8 | 0.0 | 0.0 | 1.0 | 0.0 | 0.7 | 8.9 | 0.9 | 1.0 | 15.6 | 4.3 | 4.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 6.9 | 0.0 | 0.0 | 1.9 | 0.0 | 3.7 | 0.6 | 2.8 | 2.9 | 3.7 | 9.3 | 9.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 28.9 | 0.0 | 0.0 | 28.6 | 0.0 | 25.3 | 47.5 | 14.6 | 14.7 | 50.6 | 18.0 | 17.9 |
| LnGrp LOS | C | A | A | C | A | C | D | B | B | D | B | B |
| Approach Vol, veh/h | | 386 | | | 334 | | | 505 | | | 1521 | |
| Approach Delay, s/veh | | 28.9 | | | 26.3 | | | 16.1 | | | 21.2 | |
| Approach LOS | | C | | | C | | | B | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 6.5 | 47.5 | | 26.0 | 13.0 | 41.0 | | 26.0 |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | | 4.5 |
| Max Green Setting (Gmax), s | 12.5 | 18.5 | | 35.5 | 10.5 | 20.5 | | 35.5 |
| Max Q Clear Time (g_c+I1), s | 3.0 | 24.4 | | 18.1 | 8.7 | 8.9 | | 17.7 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 1.8 | 0.1 | 2.3 | | 2.4 |

| Intersection Summary | | |
|---|---|---|
| HCM 6th Ctrl Delay | 22.0 | |
| HCM 6th LOS | C | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 41 | 438 | 40 | 31 | 506 | 11 | 205 | 156 | 77 | 4 | 47 | 29 |
| Future Volume (veh/h) | 41 | 438 | 40 | 31 | 506 | 11 | 205 | 156 | 77 | 4 | 47 | 29 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.95 | 0.99 | | 0.95 | 0.99 | | 0.98 | 1.00 | | 0.96 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 41 | 438 | 40 | 31 | 506 | 11 | 205 | 156 | 77 | 4 | 47 | 29 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 558 | 1110 | 101 | 584 | 1203 | 26 | 348 | 272 | 134 | 221 | 247 | 153 |
| Arrive On Green | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| Sat Flow, veh/h | 873 | 1666 | 152 | 904 | 1807 | 39 | 1301 | 1163 | 574 | 1134 | 1056 | 652 |
| Grp Volume(v), veh/h | 41 | 0 | 478 | 31 | 0 | 517 | 205 | 0 | 233 | 4 | 0 | 76 |
| Grp Sat Flow(s),veh/h/ln | 873 | 0 | 1819 | 904 | 0 | 1846 | 1301 | 0 | 1736 | 1134 | 0 | 1708 |
| Q Serve(g_s), s | 1.8 | 0.0 | 9.5 | 1.3 | 0.0 | 10.4 | 12.0 | 0.0 | 9.5 | 0.3 | 0.0 | 2.9 |
| Cycle Q Clear(g_c), s | 12.2 | 0.0 | 9.5 | 10.8 | 0.0 | 10.4 | 14.8 | 0.0 | 9.5 | 9.7 | 0.0 | 2.9 |
| Prop In Lane | 1.00 | | 0.08 | 1.00 | | 0.02 | 1.00 | | 0.33 | 1.00 | | 0.38 |
| Lane Grp Cap(c), veh/h | 558 | 0 | 1211 | 584 | 0 | 1229 | 348 | 0 | 407 | 221 | 0 | 400 |
| V/C Ratio(X) | 0.07 | 0.00 | 0.39 | 0.05 | 0.00 | 0.42 | 0.59 | 0.00 | 0.57 | 0.02 | 0.00 | 0.19 |
| Avail Cap(c_a), veh/h | 558 | 0 | 1211 | 584 | 0 | 1229 | 580 | 0 | 716 | 423 | 0 | 704 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.09 | 0.00 | 0.09 | 0.46 | 0.00 | 0.46 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 9.0 | 0.0 | 6.1 | 8.5 | 0.0 | 6.2 | 30.5 | 0.0 | 27.1 | 31.4 | 0.0 | 24.6 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.5 | 1.6 | 0.0 | 1.3 | 0.0 | 0.0 | 0.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.3 | 0.0 | 3.0 | 0.2 | 0.0 | 3.4 | 3.8 | 0.0 | 3.9 | 0.1 | 0.0 | 1.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 9.1 | 0.0 | 6.1 | 8.6 | 0.0 | 6.7 | 32.1 | 0.0 | 28.4 | 31.4 | 0.0 | 24.8 |
| LnGrp LOS | A | A | A | A | A | A | C | A | C | C | A | C |
| Approach Vol, veh/h | | 519 | | | 548 | | | 438 | | | 80 | |
| Approach Delay, s/veh | | 6.4 | | | 6.8 | | | 30.1 | | | 25.1 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Timer - Assigned Phs | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 57.3 | 22.7 | 57.3 | 22.7 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 39.0 | 33.0 | 39.0 | 33.0 |
| Max Q Clear Time (g_c+I1), s | 14.2 | 11.7 | 12.8 | 16.8 |
| Green Ext Time (p_c), s | 3.5 | 0.3 | 3.8 | 1.9 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 14.0 |
| HCM 6th LOS | B |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 117 | 322 | 70 | 45 | 247 | 116 | 144 | 1029 | 38 | 59 | 610 | 90 |
| Future Volume (veh/h) | 117 | 322 | 70 | 45 | 247 | 116 | 144 | 1029 | 38 | 59 | 610 | 90 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.96 | 0.99 | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 117 | 322 | 70 | 45 | 247 | 116 | 144 | 1029 | 38 | 59 | 610 | 90 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 187 | 497 | 110 | 72 | 287 | 125 | 180 | 1614 | 60 | 77 | 1249 | 184 |
| Arrive On Green | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.10 | 0.47 | 0.47 | 0.04 | 0.41 | 0.41 |
| Sat Flow, veh/h | 355 | 1488 | 330 | 82 | 859 | 374 | 1767 | 3460 | 128 | 1767 | 3058 | 450 |
| Grp Volume(v), veh/h | 167 | 0 | 342 | 408 | 0 | 0 | 144 | 524 | 543 | 59 | 351 | 349 |
| Grp Sat Flow(s),veh/h/ln | 560 | 0 | 1613 | 1314 | 0 | 0 | 1767 | 1763 | 1825 | 1767 | 1763 | 1745 |
| Q Serve(g_s), s | 0.6 | 0.0 | 16.1 | 11.6 | 0.0 | 0.0 | 7.2 | 20.3 | 20.3 | 3.0 | 13.2 | 13.3 |
| Cycle Q Clear(g_c), s | 28.3 | 0.0 | 16.1 | 27.7 | 0.0 | 0.0 | 7.2 | 20.3 | 20.3 | 3.0 | 13.2 | 13.3 |
| Prop In Lane | 0.70 | | 0.20 | 0.11 | | 0.28 | 1.00 | | 0.07 | 1.00 | | 0.26 |
| Lane Grp Cap(c), veh/h | 255 | 0 | 539 | 484 | 0 | 0 | 180 | 822 | 851 | 77 | 720 | 713 |
| V/C Ratio(X) | 0.65 | 0.00 | 0.63 | 0.84 | 0.00 | 0.00 | 0.80 | 0.64 | 0.64 | 0.76 | 0.49 | 0.49 |
| Avail Cap(c_a), veh/h | 255 | 0 | 539 | 509 | 0 | 0 | 275 | 822 | 851 | 334 | 720 | 713 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.93 | 0.00 | 0.93 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 28.6 | 0.0 | 25.3 | 29.0 | 0.0 | 0.0 | 39.5 | 18.2 | 18.2 | 42.6 | 19.7 | 19.7 |
| Incr Delay (d2), s/veh | 4.4 | 0.0 | 1.7 | 11.0 | 0.0 | 0.0 | 12.2 | 3.8 | 3.6 | 19.7 | 2.4 | 2.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.8 | 0.0 | 6.3 | 10.0 | 0.0 | 0.0 | 3.7 | 8.8 | 9.1 | 1.7 | 5.8 | 5.8 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 33.1 | 0.0 | 27.1 | 40.1 | 0.0 | 0.0 | 51.7 | 22.0 | 21.9 | 62.2 | 22.0 | 22.1 |
| LnGrp LOS | C | A | C | D | A | A | D | C | C | E | C | C |
| Approach Vol, veh/h | | 509 | | | 408 | | | 1211 | | | 759 | |
| Approach Delay, s/veh | | 29.0 | | | 40.1 | | | 25.5 | | | 25.2 | |
| Approach LOS | | C | | | D | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 13.6 | 41.3 | | 35.1 | 8.4 | 46.5 | | 35.1 |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 5.0 | 4.5 | 4.5 | | 5.0 |
| Max Green Setting (Gmax), s | 14.0 | 30.5 | | 31.5 | 17.0 | 27.5 | | 27.5 |
| Max Q Clear Time (g_c+I1), s | 9.2 | 15.3 | | 29.7 | 5.0 | 22.3 | | 30.3 |
| Green Ext Time (p_c), s | 0.2 | 5.5 | | 0.4 | 0.1 | 3.6 | | 0.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 6th Ctrl Delay | | 28.1 |
| HCM 6th LOS | | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 133 |
| Future Vol, veh/h | 0 | 0 | 0 | 0 | 0 | 133 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | Stop | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 0 | 0 | 0 | 0 | 0 | 133 |

| Major/Minor | Minor1 | | Major2 | |
|---|---|---|---|---|
| Conflicting Flow All | 77 | - | 5 | 0 |
| Stage 1 | 5 | - | - | - |
| Stage 2 | 72 | - | - | - |
| Critical Hdwy | 6.84 | - | 4.16 | - |
| Critical Hdwy Stg 1 | - | - | - | - |
| Critical Hdwy Stg 2 | 5.84 | - | - | - |
| Follow-up Hdwy | 3.52 | - | 2.23 | - |
| Pot Cap-1 Maneuver | 917 | 0 | 1608 | - |
| Stage 1 | - | 0 | - | - |
| Stage 2 | 942 | 0 | - | - |
| Platoon blocked, % | | | | - |
| Mov Cap-1 Maneuver | 912 | - | 1600 | - |
| Mov Cap-2 Maneuver | 912 | - | - | - |
| Stage 1 | - | - | - | - |
| Stage 2 | 942 | - | - | - |

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

| Minor Lane/Major Mvmt | WBLn1 | SBL | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 1600 | - |
| HCM Lane V/C Ratio | - | - | - |
| HCM Control Delay (s) | 0 | 0 | - |
| HCM Lane LOS | A | A | - |
| HCM 95th %tile Q(veh) | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 4.1 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 109 | 56 | 299 | 17 | 0 | 0 |
| Future Vol, veh/h | 109 | 56 | 299 | 17 | 0 | 0 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 109 | 56 | 299 | 17 | 0 | 0 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 319 | 318 | 0 | 0 | 321 | 0 |
| Stage 1 | 313 | - | - | - | - | - |
| Stage 2 | 6 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.13 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.227 | - |
| Pot Cap-1 Maneuver | 674 | 723 | - | - | 1233 | - |
| Stage 1 | 741 | - | - | - | - | - |
| Stage 2 | 1017 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 667 | 716 | - | - | 1227 | - |
| Mov Cap-2 Maneuver | 667 | - | - | - | - | - |
| Stage 1 | 737 | - | - | - | - | - |
| Stage 2 | 1012 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 11.9 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 683 | 1227 | - |
| HCM Lane V/C Ratio | - | - | 0.242 | - | - |
| HCM Control Delay (s) | - | - | 11.9 | 0 | - |
| HCM Lane LOS | - | - | B | A | - |
| HCM 95th %tile Q(veh) | - | - | 0.9 | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 8.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 25 | 0 | 0 | 0 | 40 | 0 | 0 | 0 | 31 | 115 |
| Future Vol, veh/h | 0 | 0 | 25 | 0 | 0 | 0 | 40 | 0 | 0 | 0 | 31 | 115 |
| Conflicting Peds, #/hr | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | 0 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 25 | 0 | 0 | 0 | 40 | 0 | 0 | 0 | 31 | 115 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 0 | 0 | 30 | 0 | 0 | 97 | 19 | 23 | 19 | 31 | 6 |
| Stage 1 | - | - | - | - | - | - | 18 | 18 | - | 1 | 1 | - |
| Stage 2 | - | - | - | - | - | - | 79 | 1 | - | 18 | 30 | - |
| Critical Hdwy | - | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.12 | 5.52 | - |
| Follow-up Hdwy | - | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 0 | - | - | 1583 | - | 0 | 885 | 875 | 1054 | 995 | 862 | 1077 |
| Stage 1 | 0 | - | - | - | - | 0 | 1001 | 880 | - | 1022 | 895 | - |
| Stage 2 | 0 | - | - | - | - | 0 | 930 | 895 | - | 1001 | 870 | - |
| Platoon blocked, % | | - | - | | - | | | | | | | |
| Mov Cap-1 Maneuver | - | - | - | 1575 | - | - | 761 | 871 | 1044 | 990 | 858 | 1072 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 761 | 871 | - | 990 | 858 | - |
| Stage 1 | - | - | - | - | - | - | 1001 | 876 | - | 1022 | 895 | - |
| Stage 2 | - | - | - | - | - | - | 798 | 895 | - | 996 | 866 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 10 | 9.1 |
| HCM LOS | | | B | A |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 761 | - | - | 1575 | - | - | 1018 |
| HCM Lane V/C Ratio | 0.053 | - | - | - | - | - | 0.143 |
| HCM Control Delay (s) | 10 | - | - | 0 | - | 0 | 9.1 |
| HCM Lane LOS | B | - | - | A | - | A | A |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 0 | - | - | 0.5 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 10 | 24 | 302 | 79 | 55 | 56 |
| Future Vol, veh/h | 10 | 24 | 302 | 79 | 55 | 56 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 10 | 24 | 302 | 79 | 55 | 56 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 518 | 352 | 0 | 0 | 386 | 0 |
| Stage 1 | 347 | - | - | - | - | - |
| Stage 2 | 171 | - | - | - | - | - |
| 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 | 518 | 692 | - | - | 1172 | - |
| Stage 1 | 716 | - | - | - | - | - |
| Stage 2 | 859 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 488 | 685 | - | - | 1166 | - |
| Mov Cap-2 Maneuver | 488 | - | - | - | - | - |
| Stage 1 | 712 | - | - | - | - | - |
| Stage 2 | 813 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 11.2 | 0 | 4.1 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 612 | 1166 | - |
| HCM Lane V/C Ratio | - | - | 0.056 | 0.047 | - |
| HCM Control Delay (s) | - | - | 11.2 | 8.2 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.2 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.7 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 150 | 36 | 15 | 29 | 12 |
| Future Vol, veh/h | 5 | 150 | 36 | 15 | 29 | 12 |
| Conflicting Peds, #/hr | 5 | 0 | 0 | 5 | 5 | 5 |
| 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 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 5 | 150 | 36 | 15 | 29 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 56 | 0 | - | 0 | 214 | 54 |
| Stage 1 | - | - | - | - | 49 | - |
| Stage 2 | - | - | - | - | 165 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1549 | - | - | - | 774 | 1013 |
| Stage 1 | - | - | - | - | 973 | - |
| Stage 2 | - | - | - | - | 864 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1542 | - | - | - | 763 | 1003 |
| Mov Cap-2 Maneuver | - | - | - | - | 763 | - |
| Stage 1 | - | - | - | - | 964 | - |
| Stage 2 | - | - | - | - | 860 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.2 | 0 | 9.6 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1542 | - | - | - | 820 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.05 |
| HCM Control Delay (s) | 7.3 | 0 | - | - | 9.6 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.2 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 8.6 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 4 | 158 | 24 | 28 | 32 | 5 | 12 | 104 | 54 | 12 | 40 | 5 |
| Future Vol, veh/h | 4 | 158 | 24 | 28 | 32 | 5 | 12 | 104 | 54 | 12 | 40 | 5 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 4 | 158 | 24 | 28 | 32 | 5 | 12 | 104 | 54 | 12 | 40 | 5 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 8.8 | 8.2 | 8.6 | 8.1 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 7% | 2% | 43% | 21% |
| Vol Thru, % | 61% | 85% | 49% | 70% |
| Vol Right, % | 32% | 13% | 8% | 9% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 170 | 186 | 65 | 57 |
| LT Vol | 12 | 4 | 28 | 12 |
| Through Vol | 104 | 158 | 32 | 40 |
| RT Vol | 54 | 24 | 5 | 5 |
| Lane Flow Rate | 170 | 186 | 65 | 57 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.208 | 0.23 | 0.085 | 0.074 |
| Departure Headway (Hd) | 4.41 | 4.461 | 4.71 | 4.703 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 814 | 805 | 760 | 762 |
| Service Time | 2.434 | 2.485 | 2.74 | 2.733 |
| HCM Lane V/C Ratio | 0.209 | 0.231 | 0.086 | 0.075 |
| HCM Control Delay | 8.6 | 8.8 | 8.2 | 8.1 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 0.8 | 0.9 | 0.3 | 0.2 |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 23 | 217 | 18 | 62 | 63 | 74 | 8 | 336 | 76 | 23 | 118 | 5 |
| Future Volume (veh/h) | 23 | 217 | 18 | 62 | 63 | 74 | 8 | 336 | 76 | 23 | 118 | 5 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.98 | | 0.95 | 0.99 | | 0.95 | 0.99 | | 0.96 | 1.00 | | 0.96 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 23 | 217 | 18 | 62 | 63 | 74 | 8 | 336 | 76 | 23 | 118 | 5 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 84 | 491 | 39 | 187 | 188 | 179 | 620 | 652 | 148 | 383 | 793 | 34 |
| Arrive On Green | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| Sat Flow, veh/h | 77 | 1598 | 126 | 372 | 610 | 581 | 1253 | 1462 | 331 | 970 | 1777 | 75 |
| Grp Volume(v), veh/h | 258 | 0 | 0 | 199 | 0 | 0 | 8 | 0 | 412 | 23 | 0 | 123 |
| Grp Sat Flow(s),veh/h/ln | 1800 | 0 | 0 | 1563 | 0 | 0 | 1253 | 0 | 1793 | 970 | 0 | 1853 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 10.7 | 1.1 | 0.0 | 2.6 |
| Cycle Q Clear(g_c), s | 7.3 | 0.0 | 0.0 | 5.8 | 0.0 | 0.0 | 2.8 | 0.0 | 10.7 | 11.9 | 0.0 | 2.6 |
| Prop In Lane | 0.09 | | 0.07 | 0.31 | | 0.37 | 1.00 | | 0.18 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 614 | 0 | 0 | 553 | 0 | 0 | 620 | 0 | 800 | 383 | 0 | 827 |
| V/C Ratio(X) | 0.42 | 0.00 | 0.00 | 0.36 | 0.00 | 0.00 | 0.01 | 0.00 | 0.52 | 0.06 | 0.00 | 0.15 |
| Avail Cap(c_a), veh/h | 831 | 0 | 0 | 731 | 0 | 0 | 620 | 0 | 800 | 383 | 0 | 827 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 0.65 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 18.1 | 0.0 | 0.0 | 17.6 | 0.0 | 0.0 | 11.5 | 0.0 | 12.9 | 17.2 | 0.0 | 10.7 |
| Incr Delay (d2), s/veh | 0.5 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 2.4 | 0.1 | 0.0 | 0.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.0 | 0.0 | 0.0 | 2.2 | 0.0 | 0.0 | 0.1 | 0.0 | 4.3 | 0.2 | 0.0 | 1.0 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 18.6 | 0.0 | 0.0 | 17.9 | 0.0 | 0.0 | 11.5 | 0.0 | 15.3 | 17.3 | 0.0 | 10.8 |
| LnGrp LOS | B | A | A | B | A | A | B | A | B | B | A | B |
| Approach Vol, veh/h | | 258 | | | 199 | | | 420 | | | 146 | |
| Approach Delay, s/veh | | 18.6 | | | 17.9 | | | 15.2 | | | 11.8 | |
| Approach LOS | | B | | | B | | | B | | | B | |

| Timer - Assigned Phs | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 24.0 | 33.0 | 24.0 | 33.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 28.0 | 29.0 | 28.0 | 29.0 |
| Max Q Clear Time (g_c+I1), s | 9.3 | 13.9 | 7.8 | 12.7 |
| Green Ext Time (p_c), s | 1.4 | 0.6 | 1.2 | 2.4 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 16.1 |
| HCM 6th LOS | B |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 40 | 336 | 17 | 81 | 201 | 195 | 44 | 1131 | 80 | 147 | 708 | 28 |
| Future Volume (veh/h) | 40 | 336 | 17 | 81 | 201 | 195 | 44 | 1131 | 80 | 147 | 708 | 28 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.97 | 1.00 | | 0.97 | 1.00 | | 0.95 | 1.00 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 40 | 336 | 17 | 81 | 201 | 195 | 44 | 1131 | 80 | 147 | 708 | 28 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 65 | 384 | 18 | 208 | 281 | 272 | 66 | 1409 | 100 | 181 | 1686 | 67 |
| Arrive On Green | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.04 | 0.42 | 0.42 | 0.10 | 0.48 | 0.48 |
| Sat Flow, veh/h | 64 | 1170 | 56 | 1028 | 856 | 831 | 1781 | 3352 | 237 | 1781 | 3477 | 137 |
| Grp Volume(v), veh/h | 393 | 0 | 0 | 81 | 0 | 396 | 44 | 599 | 612 | 147 | 362 | 374 |
| Grp Sat Flow(s),veh/h/ln | 1290 | 0 | 0 | 1028 | 0 | 1687 | 1781 | 1777 | 1812 | 1781 | 1777 | 1838 |
| Q Serve(g_s), s | 8.9 | 0.0 | 0.0 | 0.0 | 0.0 | 18.5 | 2.2 | 26.5 | 26.6 | 7.3 | 11.8 | 11.9 |
| Cycle Q Clear(g_c), s | 27.5 | 0.0 | 0.0 | 18.9 | 0.0 | 18.5 | 2.2 | 26.5 | 26.6 | 7.3 | 11.8 | 11.9 |
| Prop In Lane | 0.10 | | 0.04 | 1.00 | | 0.49 | 1.00 | | 0.13 | 1.00 | | 0.07 |
| Lane Grp Cap(c), veh/h | 467 | 0 | 0 | 208 | 0 | 553 | 66 | 747 | 762 | 181 | 862 | 891 |
| V/C Ratio(X) | 0.84 | 0.00 | 0.00 | 0.39 | 0.00 | 0.72 | 0.67 | 0.80 | 0.80 | 0.81 | 0.42 | 0.42 |
| Avail Cap(c_a), veh/h | 470 | 0 | 0 | 299 | 0 | 703 | 287 | 747 | 762 | 247 | 862 | 891 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.90 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 28.8 | 0.0 | 0.0 | 26.7 | 0.0 | 26.6 | 42.8 | 22.8 | 22.8 | 39.6 | 15.0 | 15.0 |
| Incr Delay (d2), s/veh | 11.7 | 0.0 | 0.0 | 1.2 | 0.0 | 2.5 | 11.0 | 8.9 | 8.8 | 13.5 | 1.5 | 1.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 9.8 | 0.0 | 0.0 | 1.6 | 0.0 | 7.7 | 1.2 | 12.5 | 12.8 | 3.9 | 5.0 | 5.2 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 40.6 | 0.0 | 0.0 | 27.9 | 0.0 | 29.1 | 53.8 | 31.7 | 31.6 | 53.1 | 16.5 | 16.4 |
| LnGrp LOS | D | A | A | C | A | C | D | C | C | D | B | B |
| Approach Vol, veh/h | | 393 | | | 477 | | | 1255 | | | 883 | |
| Approach Delay, s/veh | | 40.6 | | | 28.9 | | | 32.4 | | | 22.6 | |
| Approach LOS | | D | | | C | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 7.8 | 48.1 | | 34.0 | 13.6 | 42.3 | | 34.0 |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | | 4.5 |
| Max Green Setting (Gmax), s | 4.5 | 24.5 | | 37.5 | 12.5 | 26.5 | | 29.7 |
| Max Q Clear Time (g_c+I1), s | 4.2 | 13.9 | | 20.9 | 9.3 | 28.6 | | 29.5 |
| Green Ext Time (p_c), s | 0.0 | 3.6 | | 2.9 | 0.1 | 0.0 | | 0.1 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 30.0 |
| HCM 6th LOS | C |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 23 | 360 | 50 | 79 | 665 | 1 | 47 | 22 | 20 | 5 | 123 | 61 |
| Future Volume (veh/h) | 23 | 360 | 50 | 79 | 665 | 1 | 47 | 22 | 20 | 5 | 123 | 61 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.95 | 1.00 | | 0.95 | 0.99 | | 0.97 | 0.99 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 23 | 360 | 50 | 79 | 665 | 1 | 47 | 22 | 20 | 5 | 123 | 61 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 553 | 1168 | 162 | 635 | 1366 | 2 | 157 | 131 | 119 | 272 | 170 | 84 |
| Arrive On Green | 0.24 | 0.24 | 0.24 | 0.74 | 0.74 | 0.74 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| Sat Flow, veh/h | 761 | 1583 | 220 | 965 | 1852 | 3 | 1180 | 881 | 801 | 1342 | 1149 | 570 |
| Grp Volume(v), veh/h | 23 | 0 | 410 | 79 | 0 | 666 | 47 | 0 | 42 | 5 | 0 | 184 |
| Grp Sat Flow(s),veh/h/ln | 761 | 0 | 1803 | 965 | 0 | 1855 | 1180 | 0 | 1683 | 1342 | 0 | 1718 |
| Q Serve(g_s), s | 1.7 | 0.0 | 13.0 | 2.8 | 0.0 | 10.3 | 2.8 | 0.0 | 1.5 | 0.2 | 0.0 | 7.2 |
| Cycle Q Clear(g_c), s | 12.0 | 0.0 | 13.0 | 15.8 | 0.0 | 10.3 | 9.9 | 0.0 | 1.5 | 1.8 | 0.0 | 7.2 |
| Prop In Lane | 1.00 | | 0.12 | 1.00 | | 0.00 | 1.00 | | 0.48 | 1.00 | | 0.33 |
| Lane Grp Cap(c), veh/h | 553 | 0 | 1330 | 635 | 0 | 1368 | 157 | 0 | 249 | 272 | 0 | 255 |
| V/C Ratio(X) | 0.04 | 0.00 | 0.31 | 0.12 | 0.00 | 0.49 | 0.30 | 0.00 | 0.17 | 0.02 | 0.00 | 0.72 |
| Avail Cap(c_a), veh/h | 553 | 0 | 1330 | 635 | 0 | 1368 | 303 | 0 | 457 | 438 | 0 | 466 |
| HCM Platoon Ratio | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.91 | 0.00 | 0.91 | 0.47 | 0.00 | 0.47 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 15.7 | 0.0 | 11.9 | 7.7 | 0.0 | 3.8 | 33.2 | 0.0 | 26.0 | 26.8 | 0.0 | 28.4 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.5 | 0.2 | 0.0 | 0.6 | 1.1 | 0.0 | 0.3 | 0.0 | 0.0 | 3.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.4 | 0.0 | 6.3 | 0.5 | 0.0 | 2.5 | 0.8 | 0.0 | 0.6 | 0.1 | 0.0 | 3.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 15.8 | 0.0 | 12.4 | 7.9 | 0.0 | 4.3 | 34.2 | 0.0 | 26.4 | 26.8 | 0.0 | 32.3 |
| LnGrp LOS | B | A | B | A | A | A | C | A | C | C | A | C |
| Approach Vol, veh/h | | 433 | | | 745 | | | 89 | | | 189 | |
| Approach Delay, s/veh | | 12.6 | | | 4.7 | | | 30.5 | | | 32.2 | |
| Approach LOS | | B | | | A | | | C | | | C | |

| Timer - Assigned Phs | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 55.6 | 14.4 | 55.6 | 14.4 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 43.0 | 19.0 | 43.0 | 19.0 |
| Max Q Clear Time (g_c+I1), s | 15.0 | 9.2 | 17.8 | 11.9 |
| Green Ext Time (p_c), s | 2.9 | 0.7 | 5.4 | 0.1 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 12.2 |
| HCM 6th LOS | B |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 55 | 149 | 57 | 22 | 409 | 40 | 60 | 268 | 13 | 102 | 1378 | 209 |
| Future Volume (veh/h) | 55 | 149 | 57 | 22 | 409 | 40 | 60 | 268 | 13 | 102 | 1378 | 209 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.96 | 0.99 | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 55 | 149 | 57 | 22 | 409 | 40 | 60 | 268 | 13 | 102 | 1378 | 209 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 173 | 457 | 187 | 60 | 487 | 46 | 77 | 1525 | 74 | 130 | 1457 | 218 |
| Arrive On Green | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.04 | 0.45 | 0.45 | 0.07 | 0.48 | 0.48 |
| Sat Flow, veh/h | 351 | 1503 | 614 | 42 | 1601 | 152 | 1767 | 3414 | 165 | 1767 | 3052 | 457 |
| Grp Volume(v), veh/h | 117 | 0 | 144 | 471 | 0 | 0 | 60 | 138 | 143 | 102 | 788 | 799 |
| Grp Sat Flow(s),veh/h/ln | 921 | 0 | 1546 | 1795 | 0 | 0 | 1767 | 1763 | 1816 | 1767 | 1763 | 1746 |
| Q Serve(g_s), s | 0.0 | 0.0 | 5.7 | 7.6 | 0.0 | 0.0 | 2.7 | 3.7 | 3.8 | 4.5 | 33.8 | 35.3 |
| Cycle Q Clear(g_c), s | 6.7 | 0.0 | 5.7 | 19.7 | 0.0 | 0.0 | 2.7 | 3.7 | 3.8 | 4.5 | 33.8 | 35.3 |
| Prop In Lane | 0.47 | | 0.40 | 0.05 | | 0.08 | 1.00 | | 0.09 | 1.00 | | 0.26 |
| Lane Grp Cap(c), veh/h | 346 | 0 | 471 | 593 | 0 | 0 | 77 | 788 | 811 | 130 | 841 | 833 |
| V/C Ratio(X) | 0.34 | 0.00 | 0.31 | 0.79 | 0.00 | 0.00 | 0.78 | 0.17 | 0.18 | 0.78 | 0.94 | 0.96 |
| Avail Cap(c_a), veh/h | 396 | 0 | 532 | 663 | 0 | 0 | 243 | 788 | 811 | 243 | 841 | 833 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.96 | 0.00 | 0.96 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 21.1 | 0.0 | 21.3 | 26.2 | 0.0 | 0.0 | 37.9 | 13.3 | 13.3 | 36.4 | 19.8 | 20.2 |
| Incr Delay (d2), s/veh | 0.2 | 0.0 | 0.1 | 5.2 | 0.0 | 0.0 | 6.4 | 0.5 | 0.5 | 3.8 | 19.0 | 22.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.7 | 0.0 | 2.0 | 9.0 | 0.0 | 0.0 | 1.3 | 1.5 | 1.6 | 2.1 | 17.2 | 18.5 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 21.3 | 0.0 | 21.5 | 31.3 | 0.0 | 0.0 | 44.2 | 13.8 | 13.8 | 40.3 | 38.7 | 42.8 |
| LnGrp LOS | C | A | C | C | A | A | D | B | B | D | D | D |
| Approach Vol, veh/h | | 261 | | | 471 | | | 341 | | | 1689 | |
| Approach Delay, s/veh | | 21.4 | | | 31.3 | | | 19.1 | | | 40.8 | |
| Approach LOS | | C | | | C | | | B | | | D | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 8.0 | 42.7 | | 29.4 | 10.4 | 40.2 | | 29.4 |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 5.0 | 4.5 | 4.5 | | 5.0 |
| Max Green Setting (Gmax), s | 11.0 | 27.5 | | 27.5 | 11.0 | 27.5 | | 27.5 |
| Max Q Clear Time (g_c+I1), s | 4.7 | 37.3 | | 21.7 | 6.5 | 5.8 | | 8.7 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 1.1 | 0.0 | 2.3 | | 1.1 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 34.7 |
| HCM 6th LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.5 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 62 | 0 | 0 | 79 | 177 | 732 |
| Future Vol, veh/h | 62 | 0 | 0 | 79 | 177 | 732 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | 0 | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 62 | 0 | 0 | 79 | 177 | 732 |

| Major/Minor | Minor1 | | Major2 | |
|---|---|---|---|---|
| Conflicting Flow All | 1096 | - | 5 | 0 |
| Stage 1 | 5 | - | - | - |
| Stage 2 | 1091 | - | - | - |
| Critical Hdwy | 6.42 | - | 4.13 | - |
| Critical Hdwy Stg 1 | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - |
| Follow-up Hdwy | 3.518 | - | 2.227 | - |
| Pot Cap-1 Maneuver | 236 | 0 | 1610 | - |
| Stage 1 | - | 0 | - | - |
| Stage 2 | 322 | 0 | - | - |
| Platoon blocked, % | | | | - |
| Mov Cap-1 Maneuver | 191 | - | 1602 | - |
| Mov Cap-2 Maneuver | 191 | - | - | - |
| Stage 1 | - | - | - | - |
| Stage 2 | 262 | - | - | - |

| Approach | WB | SB |
|---|---|---|
| HCM Control Delay, s | 32.7 | 1.5 |
| HCM LOS | D | |

| Minor Lane/Major Mvmt | WBLn1 | SBL | SBT |
|---|---|---|---|
| Capacity (veh/h) | 191 | 1602 | - |
| HCM Lane V/C Ratio | 0.325 | 0.11 | - |
| HCM Control Delay (s) | 32.7 | 7.5 | 0 |
| HCM Lane LOS | D | A | A |
| HCM 95th %tile Q(veh) | 1.3 | 0.4 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 10.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 314 | 158 | 121 | 50 | 0 | 5 |
| Future Vol, veh/h | 314 | 158 | 121 | 50 | 0 | 5 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 314 | 158 | 121 | 50 | 0 | 5 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 161 | 156 | 0 | 0 | 176 | 0 |
| Stage 1 | 151 | - | - | - | - | - |
| Stage 2 | 10 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.13 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.227 | - |
| Pot Cap-1 Maneuver | 830 | 890 | - | - | 1394 | - |
| Stage 1 | 877 | - | - | - | - | - |
| Stage 2 | 1013 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 822 | 882 | - | - | 1387 | - |
| Mov Cap-2 Maneuver | 822 | - | - | - | - | - |
| Stage 1 | 873 | - | - | - | - | - |
| Stage 2 | 1008 | - | - | - | - | - |

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

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 841 | 1387 | - |
| HCM Lane V/C Ratio | - | - | 0.561 | - | - |
| HCM Control Delay (s) | - | - | 14.6 | 0 | - |
| HCM Lane LOS | - | - | B | A | - |
| HCM 95th %tile Q(veh) | - | - | 3.6 | 0 | - |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 17.6 |
| Intersection LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 18 | 13 | 29 | 4 | 35 | 0 | 37 | 89 | 51 | 143 | 120 | 437 |
| Future Vol, veh/h | 18 | 13 | 29 | 4 | 35 | 0 | 37 | 89 | 51 | 143 | 120 | 437 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 18 | 13 | 29 | 4 | 35 | 0 | 37 | 89 | 51 | 143 | 120 | 437 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 9.3 | 9.4 | 9.3 | 20.9 |
| HCM LOS | A | A | A | C |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 21% | 30% | 10% | 20% |
| Vol Thru, % | 50% | 22% | 90% | 17% |
| Vol Right, % | 29% | 48% | 0% | 62% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 177 | 60 | 39 | 700 |
| LT Vol | 37 | 18 | 4 | 143 |
| Through Vol | 89 | 13 | 35 | 120 |
| RT Vol | 51 | 29 | 0 | 437 |
| Lane Flow Rate | 177 | 60 | 39 | 700 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.234 | 0.093 | 0.064 | 0.794 |
| Departure Headway (Hd) | 4.769 | 5.593 | 5.888 | 4.082 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 749 | 635 | 603 | 882 |
| Service Time | 2.825 | 3.68 | 3.978 | 2.115 |
| HCM Lane V/C Ratio | 0.236 | 0.094 | 0.065 | 0.794 |
| HCM Control Delay | 9.3 | 9.3 | 9.4 | 20.9 |
| HCM Lane LOS | A | A | A | C |
| HCM 95th-tile Q | 0.9 | 0.3 | 0.2 | 8.4 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.1 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 47 | 32 | 149 | 225 | 64 | 256 |
| Future Vol, veh/h | 47 | 32 | 149 | 225 | 64 | 256 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 47 | 32 | 149 | 225 | 64 | 256 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 656 | 272 | 0 | 0 | 379 | 0 |
| Stage 1 | 267 | - | - | - | - | - |
| Stage 2 | 389 | - | - | - | - | - |
| 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 | 430 | 767 | - | - | 1179 | - |
| Stage 1 | 778 | - | - | - | - | - |
| Stage 2 | 685 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 399 | 760 | - | - | 1173 | - |
| Mov Cap-2 Maneuver | 399 | - | - | - | - | - |
| Stage 1 | 774 | - | - | - | - | - |
| Stage 2 | 638 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.7 | 0 | 1.6 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 494 | 1173 | - |
| HCM Lane V/C Ratio | - | - | 0.16 | 0.055 | - |
| HCM Control Delay (s) | - | - | 13.7 | 8.2 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.6 | 0.2 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.3 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 34 | 278 | 37 | 121 | 96 | 44 |
| Future Vol, veh/h | 34 | 278 | 37 | 121 | 96 | 44 |
| Conflicting Peds, #/hr | 5 | 0 | 0 | 5 | 5 | 5 |
| 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 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 34 | 278 | 37 | 121 | 96 | 44 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 163 | 0 | - | 0 | 454 | 108 |
| Stage 1 | - | - | - | - | 103 | - |
| Stage 2 | - | - | - | - | 351 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1416 | - | - | - | 564 | 946 |
| Stage 1 | - | - | - | - | 921 | - |
| Stage 2 | - | - | - | - | 713 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1409 | - | - | - | 542 | 937 |
| Mov Cap-2 Maneuver | - | - | - | - | 542 | - |
| Stage 1 | - | - | - | - | 890 | - |
| Stage 2 | - | - | - | - | 709 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.8 | 0 | 12.4 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1409 | - | - | - | 625 |
| HCM Lane V/C Ratio | 0.024 | - | - | - | 0.224 |
| HCM Control Delay (s) | 7.6 | 0 | - | - | 12.4 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 0.9 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 10.5 |
| Intersection LOS | B |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 23 | 249 | 88 | 54 | 147 | 4 | 18 | 49 | 23 | 2 | 103 | 5 |
| Future Vol, veh/h | 23 | 249 | 88 | 54 | 147 | 4 | 18 | 49 | 23 | 2 | 103 | 5 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 23 | 249 | 88 | 54 | 147 | 4 | 18 | 49 | 23 | 2 | 103 | 5 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 11.5 | 9.9 | 9.2 | 9.5 |
| HCM LOS | B | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 20% | 6% | 26% | 2% |
| Vol Thru, % | 54% | 69% | 72% | 94% |
| Vol Right, % | 26% | 24% | 2% | 5% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 90 | 360 | 205 | 110 |
| LT Vol | 18 | 23 | 54 | 2 |
| Through Vol | 49 | 249 | 147 | 103 |
| RT Vol | 23 | 88 | 4 | 5 |
| Lane Flow Rate | 90 | 360 | 205 | 110 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.132 | 0.458 | 0.28 | 0.163 |
| Departure Headway (Hd) | 5.289 | 4.577 | 4.916 | 5.344 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 670 | 781 | 724 | 663 |
| Service Time | 3.386 | 2.638 | 2.989 | 3.437 |
| HCM Lane V/C Ratio | 0.134 | 0.461 | 0.283 | 0.166 |
| HCM Control Delay | 9.2 | 11.5 | 9.9 | 9.5 |
| HCM Lane LOS | A | B | A | A |
| HCM 95th-tile Q | 0.5 | 2.4 | 1.1 | 0.6 |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 5 | 203 | 49 | 137 | 167 | 24 | 38 | 60 | 42 | 44 | 217 | 9 |
| Future Volume (veh/h) | 5 | 203 | 49 | 137 | 167 | 24 | 38 | 60 | 42 | 44 | 217 | 9 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.95 | 0.99 | | 0.95 | 0.99 | | 0.96 | 0.99 | | 0.96 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 5 | 203 | 49 | 137 | 167 | 24 | 38 | 60 | 42 | 44 | 217 | 9 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 59 | 441 | 105 | 246 | 266 | 34 | 533 | 448 | 313 | 635 | 794 | 33 |
| Arrive On Green | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| Sat Flow, veh/h | 9 | 1433 | 340 | 544 | 865 | 111 | 1144 | 1003 | 702 | 1276 | 1779 | 74 |
| Grp Volume(v), veh/h | 257 | 0 | 0 | 328 | 0 | 0 | 38 | 0 | 102 | 44 | 0 | 226 |
| Grp Sat Flow(s),veh/h/ln | 1783 | 0 | 0 | 1520 | 0 | 0 | 1144 | 0 | 1705 | 1276 | 0 | 1853 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 4.3 | 0.0 | 0.0 | 1.4 | 0.0 | 2.3 | 1.4 | 0.0 | 5.0 |
| Cycle Q Clear(g_c), s | 7.6 | 0.0 | 0.0 | 11.8 | 0.0 | 0.0 | 6.4 | 0.0 | 2.3 | 3.7 | 0.0 | 5.0 |
| Prop In Lane | 0.02 | | 0.19 | 0.42 | | 0.07 | 1.00 | | 0.41 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 605 | 0 | 0 | 546 | 0 | 0 | 533 | 0 | 761 | 635 | 0 | 827 |
| V/C Ratio(X) | 0.42 | 0.00 | 0.00 | 0.60 | 0.00 | 0.00 | 0.07 | 0.00 | 0.13 | 0.07 | 0.00 | 0.27 |
| Avail Cap(c_a), veh/h | 823 | 0 | 0 | 723 | 0 | 0 | 533 | 0 | 761 | 635 | 0 | 827 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 0.88 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 18.2 | 0.0 | 0.0 | 19.4 | 0.0 | 0.0 | 13.4 | 0.0 | 10.6 | 11.7 | 0.0 | 11.4 |
| Incr Delay (d2), s/veh | 0.5 | 0.0 | 0.0 | 0.9 | 0.0 | 0.0 | 0.3 | 0.0 | 0.4 | 0.0 | 0.0 | 0.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.0 | 0.0 | 0.0 | 4.1 | 0.0 | 0.0 | 0.4 | 0.0 | 0.8 | 0.4 | 0.0 | 1.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 18.7 | 0.0 | 0.0 | 20.4 | 0.0 | 0.0 | 13.6 | 0.0 | 11.0 | 11.7 | 0.0 | 11.5 |
| LnGrp LOS | B | A | A | C | A | A | B | A | B | B | A | B |
| Approach Vol, veh/h | | 257 | | | 328 | | | 140 | | | 270 | |
| Approach Delay, s/veh | | 18.7 | | | 20.4 | | | 11.7 | | | 11.6 | |
| Approach LOS | | B | | | C | | | B | | | B | |

| Timer - Assigned Phs | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 24.0 | 33.0 | 24.0 | 33.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 28.0 | 29.0 | 28.0 | 29.0 |
| Max Q Clear Time (g_c+I1), s | 9.6 | 7.0 | 13.8 | 8.4 |
| Green Ext Time (p_c), s | 1.4 | 1.4 | 1.8 | 0.6 |

| Intersection Summary | | |
|---|---|---|
| HCM 6th Ctrl Delay | 16.3 | |
| HCM 6th LOS | B | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 19 | 350 | 35 | 103 | 232 | 43 | 67 | 418 | 64 | 153 | 1340 | 28 |
| Future Volume (veh/h) | 19 | 350 | 35 | 103 | 232 | 43 | 67 | 418 | 64 | 153 | 1340 | 28 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.96 | 1.00 | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 19 | 350 | 35 | 103 | 232 | 43 | 67 | 418 | 64 | 153 | 1340 | 28 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 58 | 444 | 43 | 250 | 421 | 78 | 87 | 1378 | 209 | 189 | 1800 | 38 |
| Arrive On Green | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.05 | 0.45 | 0.45 | 0.11 | 0.51 | 0.51 |
| Sat Flow, veh/h | 40 | 1609 | 156 | 996 | 1524 | 282 | 1781 | 3069 | 466 | 1781 | 3555 | 74 |
| Grp Volume(v), veh/h | 404 | 0 | 0 | 103 | 0 | 275 | 67 | 240 | 242 | 153 | 669 | 699 |
| Grp Sat Flow(s),veh/h/ln | 1806 | 0 | 0 | 996 | 0 | 1807 | 1781 | 1777 | 1758 | 1781 | 1777 | 1853 |
| Q Serve(g_s), s | 5.2 | 0.0 | 0.0 | 0.4 | 0.0 | 10.4 | 3.0 | 6.9 | 7.0 | 6.7 | 23.9 | 23.9 |
| Cycle Q Clear(g_c), s | 16.6 | 0.0 | 0.0 | 17.0 | 0.0 | 10.4 | 3.0 | 6.9 | 7.0 | 6.7 | 23.9 | 23.9 |
| Prop In Lane | 0.05 | | 0.09 | 1.00 | | 0.16 | 1.00 | | 0.26 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 546 | 0 | 0 | 250 | 0 | 499 | 87 | 798 | 789 | 189 | 900 | 938 |
| V/C Ratio(X) | 0.74 | 0.00 | 0.00 | 0.41 | 0.00 | 0.55 | 0.77 | 0.30 | 0.31 | 0.81 | 0.74 | 0.74 |
| Avail Cap(c_a), veh/h | 844 | 0 | 0 | 417 | 0 | 802 | 278 | 798 | 789 | 234 | 900 | 938 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.94 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 26.9 | 0.0 | 0.0 | 27.3 | 0.0 | 24.7 | 37.6 | 14.0 | 14.1 | 35.0 | 15.6 | 15.6 |
| Incr Delay (d2), s/veh | 1.9 | 0.0 | 0.0 | 1.1 | 0.0 | 1.0 | 13.3 | 1.0 | 1.0 | 15.6 | 5.5 | 5.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 7.3 | 0.0 | 0.0 | 1.9 | 0.0 | 4.5 | 1.6 | 2.9 | 2.9 | 3.7 | 10.3 | 10.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 28.8 | 0.0 | 0.0 | 28.4 | 0.0 | 25.7 | 51.0 | 15.0 | 15.1 | 50.6 | 21.2 | 21.0 |
| LnGrp LOS | C | A | A | C | A | C | D | B | B | D | C | C |
| Approach Vol, veh/h | | 404 | | | 378 | | | 549 | | | 1521 | |
| Approach Delay, s/veh | | 28.8 | | | 26.4 | | | 19.4 | | | 24.1 | |
| Approach LOS | | C | | | C | | | B | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 8.4 | 45.0 | | 26.6 | 13.0 | 40.4 | | 26.6 | | | | |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | | 4.5 | | | | |
| Max Green Setting (Gmax), s | 12.5 | 18.5 | | 35.5 | 10.5 | 20.5 | | 35.5 | | | | |
| Max Q Clear Time (g_c+I1), s | 5.0 | 25.9 | | 19.0 | 8.7 | 9.0 | | 18.6 | | | | |
| Green Ext Time (p_c), s | 0.1 | 0.0 | | 2.0 | 0.1 | 2.3 | | 2.5 | | | | |

| Intersection Summary | | |
|---|---|---|
| HCM 6th Ctrl Delay | 24.1 | |
| HCM 6th LOS | C | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 41 | 520 | 40 | 31 | 524 | 11 | 205 | 156 | 90 | 4 | 47 | 29 |
| Future Volume (veh/h) | 41 | 520 | 40 | 31 | 524 | 11 | 205 | 156 | 90 | 4 | 47 | 29 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.95 | 1.00 | | 0.95 | 0.99 | | 0.98 | 1.00 | | 0.96 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 41 | 520 | 40 | 31 | 524 | 11 | 205 | 156 | 90 | 4 | 47 | 29 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 544 | 1126 | 87 | 426 | 1202 | 25 | 350 | 257 | 148 | 211 | 248 | 153 |
| Arrive On Green | 0.22 | 0.22 | 0.22 | 0.66 | 0.66 | 0.66 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| Sat Flow, veh/h | 859 | 1694 | 130 | 843 | 1808 | 38 | 1301 | 1094 | 631 | 1121 | 1056 | 652 |
| Grp Volume(v), veh/h | 41 | 0 | 560 | 31 | 0 | 535 | 205 | 0 | 246 | 4 | 0 | 76 |
| Grp Sat Flow(s),veh/h/ln | 859 | 0 | 1824 | 843 | 0 | 1846 | 1301 | 0 | 1725 | 1121 | 0 | 1708 |
| Q Serve(g_s), s | 3.2 | 0.0 | 21.3 | 1.8 | 0.0 | 10.9 | 12.0 | 0.0 | 10.2 | 0.3 | 0.0 | 2.9 |
| Cycle Q Clear(g_c), s | 14.1 | 0.0 | 21.3 | 23.2 | 0.0 | 10.9 | 14.8 | 0.0 | 10.2 | 10.4 | 0.0 | 2.9 |
| Prop In Lane | 1.00 | | 0.07 | 1.00 | | 0.02 | 1.00 | | 0.37 | 1.00 | | 0.38 |
| Lane Grp Cap(c), veh/h | 544 | 0 | 1213 | 426 | 0 | 1228 | 350 | 0 | 405 | 211 | 0 | 401 |
| V/C Ratio(X) | 0.08 | 0.00 | 0.46 | 0.07 | 0.00 | 0.44 | 0.59 | 0.00 | 0.61 | 0.02 | 0.00 | 0.19 |
| Avail Cap(c_a), veh/h | 544 | 0 | 1213 | 426 | 0 | 1228 | 580 | 0 | 711 | 410 | 0 | 704 |
| HCM Platoon Ratio | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.90 | 0.00 | 0.90 | 0.45 | 0.00 | 0.45 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 20.6 | 0.0 | 18.8 | 15.0 | 0.0 | 6.3 | 30.4 | 0.0 | 27.3 | 32.0 | 0.0 | 24.5 |
| Incr Delay (d2), s/veh | 0.2 | 0.0 | 1.1 | 0.1 | 0.0 | 0.5 | 1.6 | 0.0 | 1.5 | 0.0 | 0.0 | 0.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.8 | 0.0 | 10.6 | 0.4 | 0.0 | 3.6 | 3.8 | 0.0 | 4.2 | 0.1 | 0.0 | 1.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 20.8 | 0.0 | 19.9 | 15.2 | 0.0 | 6.8 | 32.0 | 0.0 | 28.8 | 32.0 | 0.0 | 24.7 |
| LnGrp LOS | C | A | B | B | A | A | C | A | C | C | A | C |
| Approach Vol, veh/h | | 601 | | | 566 | | | 451 | | | 80 | |
| Approach Delay, s/veh | | 20.0 | | | 7.3 | | | 30.2 | | | 25.1 | |
| Approach LOS | | B | | | A | | | C | | | C | |

| Timer - Assigned Phs | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 57.2 | 22.8 | 57.2 | 22.8 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 39.0 | 33.0 | 39.0 | 33.0 |
| Max Q Clear Time (g_c+I1), s | 23.3 | 12.4 | 25.2 | 16.8 |
| Green Ext Time (p_c), s | 3.6 | 0.3 | 3.1 | 2.0 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 18.7 |
| HCM 6th LOS | B |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 168 | 366 | 70 | 45 | 255 | 116 | 144 | 1029 | 38 | 59 | 610 | 100 |
| Future Volume (veh/h) | 168 | 366 | 70 | 45 | 255 | 116 | 144 | 1029 | 38 | 59 | 610 | 100 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.96 | 1.00 | | 0.96 | 1.00 | | 0.95 | 1.00 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 |
| Adj Flow Rate, veh/h | 168 | 366 | 70 | 45 | 255 | 116 | 144 | 1029 | 38 | 59 | 610 | 100 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Cap, veh/h | 191 | 479 | 92 | 64 | 256 | 107 | 180 | 1560 | 58 | 77 | 1181 | 193 |
| Arrive On Green | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.10 | 0.45 | 0.45 | 0.04 | 0.39 | 0.39 |
| Sat Flow, veh/h | 317 | 1368 | 262 | 55 | 732 | 304 | 1767 | 3460 | 128 | 1767 | 3005 | 491 |
| Grp Volume(v), veh/h | 168 | 0 | 436 | 416 | 0 | 0 | 144 | 524 | 543 | 59 | 357 | 353 |
| Grp Sat Flow(s),veh/h/ln | 317 | 0 | 1629 | 1091 | 0 | 0 | 1767 | 1763 | 1825 | 1767 | 1763 | 1734 |
| Q Serve(g_s), s | 0.0 | 0.0 | 21.4 | 10.1 | 0.0 | 0.0 | 7.2 | 20.9 | 20.9 | 3.0 | 13.9 | 14.0 |
| Cycle Q Clear(g_c), s | 31.5 | 0.0 | 21.4 | 31.5 | 0.0 | 0.0 | 7.2 | 20.9 | 20.9 | 3.0 | 13.9 | 14.0 |
| Prop In Lane | 1.00 | | 0.16 | 0.11 | | 0.28 | 1.00 | | 0.07 | 1.00 | | 0.28 |
| Lane Grp Cap(c), veh/h | 191 | 0 | 570 | 426 | 0 | 0 | 180 | 795 | 822 | 77 | 693 | 681 |
| V/C Ratio(X) | 0.88 | 0.00 | 0.76 | 0.98 | 0.00 | 0.00 | 0.80 | 0.66 | 0.66 | 0.76 | 0.52 | 0.52 |
| Avail Cap(c_a), veh/h | 191 | 0 | 570 | 426 | 0 | 0 | 275 | 795 | 822 | 334 | 693 | 681 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.89 | 0.00 | 0.89 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 34.6 | 0.0 | 26.0 | 30.0 | 0.0 | 0.0 | 39.5 | 19.3 | 19.3 | 42.6 | 20.8 | 20.8 |
| Incr Delay (d2), s/veh | 30.5 | 0.0 | 4.9 | 37.0 | 0.0 | 0.0 | 12.2 | 4.3 | 4.1 | 19.7 | 2.7 | 2.8 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 5.4 | 0.0 | 8.9 | 13.6 | 0.0 | 0.0 | 3.7 | 9.2 | 9.5 | 1.7 | 6.1 | 6.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 65.1 | 0.0 | 30.9 | 67.0 | 0.0 | 0.0 | 51.7 | 23.6 | 23.5 | 62.2 | 23.5 | 23.6 |
| LnGrp LOS | E | A | C | E | A | A | D | C | C | E | C | C |
| Approach Vol, veh/h | | 604 | | | 416 | | | 1211 | | | 769 | |
| Approach Delay, s/veh | | 40.4 | | | 67.0 | | | 26.9 | | | 26.5 | |
| Approach LOS | | D | | | E | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 13.6 | 39.9 | | 36.5 | 8.4 | 45.1 | | 36.5 |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 5.0 | 4.5 | 4.5 | | 5.0 |
| Max Green Setting (Gmax), s | 14.0 | 30.5 | | 31.5 | 17.0 | 27.5 | | 31.5 |
| Max Q Clear Time (g_c+I1), s | 9.2 | 16.0 | | 33.5 | 5.0 | 22.9 | | 33.5 |
| Green Ext Time (p_c), s | 0.2 | 5.4 | | 0.0 | 0.1 | 3.2 | | 0.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 6th Ctrl Delay | | 35.1 |
| HCM 6th LOS | | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 274 | 0 | 0 | 15 | 33 | 221 |
| Future Vol, veh/h | 274 | 0 | 0 | 15 | 33 | 221 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | 0 | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 274 | 0 | 0 | 15 | 33 | 221 |

| Major/Minor | Minor1 | | Major2 | |
|---|---|---|---|---|
| Conflicting Flow All | 297 | - | 5 | 0 |
| Stage 1 | 5 | - | - | - |
| Stage 2 | 292 | - | - | - |
| Critical Hdwy | 6.42 | - | 4.13 | - |
| Critical Hdwy Stg 1 | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - |
| Follow-up Hdwy | 3.518 | - | 2.227 | - |
| Pot Cap-1 Maneuver | 694 | 0 | 1610 | - |
| Stage 1 | - | 0 | - | - |
| Stage 2 | 758 | 0 | - | - |
| Platoon blocked, % | | | | - |
| Mov Cap-1 Maneuver | 675 | - | 1602 | - |
| Mov Cap-2 Maneuver | 675 | - | - | - |
| Stage 1 | - | - | - | - |
| Stage 2 | 741 | - | - | - |

| Approach | WB | SB |
|---|---|---|
| HCM Control Delay, s | 13.9 | 0.9 |
| HCM LOS | B | |

| Minor Lane/Major Mvmt | WBLn1 | SBL | SBT |
|---|---|---|---|
| Capacity (veh/h) | 675 | 1602 | - |
| HCM Lane V/C Ratio | 0.406 | 0.021 | - |
| HCM Control Delay (s) | 13.9 | 7.3 | 0 |
| HCM Lane LOS | B | A | A |
| HCM 95th %tile Q(veh) | 2 | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 26.3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 117 | 516 | 307 | 24 | 0 | 19 |
| Future Vol, veh/h | 117 | 516 | 307 | 24 | 0 | 19 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 3 | 3 |
| Mvmt Flow | 117 | 516 | 307 | 24 | 0 | 19 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 348 | 329 | 0 | 0 | 336 | 0 |
| Stage 1 | 324 | - | - | - | - | - |
| Stage 2 | 24 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.13 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.227 | - |
| Pot Cap-1 Maneuver | 649 | 712 | - | - | 1218 | - |
| Stage 1 | 733 | - | - | - | - | - |
| Stage 2 | 999 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 643 | 705 | - | - | 1212 | - |
| Mov Cap-2 Maneuver | 643 | - | - | - | - | - |
| Stage 1 | 729 | - | - | - | - | - |
| Stage 2 | 994 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 40.9 | 0 | 0 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 693 | 1212 | - |
| HCM Lane V/C Ratio | - | - | 0.913 | - | - |
| HCM Control Delay (s) | - | - | 40.9 | 0 | - |
| HCM Lane LOS | - | - | E | A | - |
| HCM 95th %tile Q(veh) | - | - | 12.1 | 0 | - |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 12.6 |
| Intersection LOS | B |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 4 | 3 | 34 | 17 | 157 | 0 | 43 | 17 | 10 | 27 | 130 | 387 |
| Future Vol, veh/h | 4 | 3 | 34 | 17 | 157 | 0 | 43 | 17 | 10 | 27 | 130 | 387 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 4 | 3 | 34 | 17 | 157 | 0 | 43 | 17 | 10 | 27 | 130 | 387 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 8.5 | 10.3 | 8.8 | 14.2 |
| HCM LOS | A | B | A | B |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 61% | 10% | 10% | 5% |
| Vol Thru, % | 24% | 7% | 90% | 24% |
| Vol Right, % | 14% | 83% | 0% | 71% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 70 | 41 | 174 | 544 |
| LT Vol | 43 | 4 | 17 | 27 |
| Through Vol | 17 | 3 | 157 | 130 |
| RT Vol | 10 | 34 | 0 | 387 |
| Lane Flow Rate | 70 | 41 | 174 | 544 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.1 | 0.058 | 0.258 | 0.631 |
| Departure Headway (Hd) | 5.126 | 5.051 | 5.329 | 4.179 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 693 | 699 | 668 | 860 |
| Service Time | 3.203 | 3.151 | 3.414 | 2.222 |
| HCM Lane V/C Ratio | 0.101 | 0.059 | 0.26 | 0.633 |
| HCM Control Delay | 8.8 | 8.5 | 10.3 | 14.2 |
| HCM Lane LOS | A | A | B | B |
| HCM 95th-tile Q | 0.3 | 0.2 | 1 | 4.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 15 | 27 | 314 | 85 | 72 | 66 |
| Future Vol, veh/h | 15 | 27 | 314 | 85 | 72 | 66 |
| Conflicting Peds, #/hr | 5 | 5 | 0 | 5 | 5 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 15 | 27 | 314 | 85 | 72 | 66 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 577 | 367 | 0 | 0 | 404 | 0 |
| Stage 1 | 362 | - | - | - | - | - |
| Stage 2 | 215 | - | - | - | - | - |
| 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 | 478 | 678 | - | - | 1155 | - |
| Stage 1 | 704 | - | - | - | - | - |
| Stage 2 | 821 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 443 | 672 | - | - | 1150 | - |
| Mov Cap-2 Maneuver | 443 | - | - | - | - | - |
| Stage 1 | 700 | - | - | - | - | - |
| Stage 2 | 764 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 11.9 | 0 | 4.4 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 567 | 1150 | - |
| HCM Lane V/C Ratio | - | - | 0.074 | 0.063 | - |
| HCM Control Delay (s) | - | - | 11.9 | 8.3 | 0 |
| HCM Lane LOS | - | - | B | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.2 | 0.2 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 4.7 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 11 | 167 | 39 | 38 | 149 | 17 |
| Future Vol, veh/h | 11 | 167 | 39 | 38 | 149 | 17 |
| Conflicting Peds, #/hr | 5 | 0 | 0 | 5 | 5 | 5 |
| 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 | 100 | 100 | 100 | 100 | 100 | 100 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 11 | 167 | 39 | 38 | 149 | 17 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 82 | 0 | - | 0 | 257 | 68 |
| Stage 1 | - | - | - | - | 63 | - |
| Stage 2 | - | - | - | - | 194 | - |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 1515 | - | - | - | 732 | 995 |
| Stage 1 | - | - | - | - | 960 | - |
| Stage 2 | - | - | - | - | 839 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1508 | - | - | - | 719 | 986 |
| Mov Cap-2 Maneuver | - | - | - | - | 719 | - |
| Stage 1 | - | - | - | - | 948 | - |
| Stage 2 | - | - | - | - | 835 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.5 | 0 | 11.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1508 | - | - | - | 740 |
| HCM Lane V/C Ratio | 0.007 | - | - | - | 0.224 |
| HCM Control Delay (s) | 7.4 | 0 | - | - | 11.3 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.9 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 9.8 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 4 | 280 | 39 | 28 | 55 | 5 | 15 | 104 | 54 | 12 | 40 | 5 |
| Future Vol, veh/h | 4 | 280 | 39 | 28 | 55 | 5 | 15 | 104 | 54 | 12 | 40 | 5 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 4 | 280 | 39 | 28 | 55 | 5 | 15 | 104 | 54 | 12 | 40 | 5 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 10.7 | 8.6 | 9.3 | 8.6 |
| HCM LOS | B | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 9% | 1% | 32% | 21% |
| Vol Thru, % | 60% | 87% | 62% | 70% |
| Vol Right, % | 31% | 12% | 6% | 9% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 173 | 323 | 88 | 57 |
| LT Vol | 15 | 4 | 28 | 12 |
| Through Vol | 104 | 280 | 55 | 40 |
| RT Vol | 54 | 39 | 5 | 5 |
| Lane Flow Rate | 173 | 323 | 88 | 57 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.231 | 0.407 | 0.12 | 0.081 |
| Departure Headway (Hd) | 4.799 | 4.537 | 4.907 | 5.115 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 744 | 791 | 727 | 696 |
| Service Time | 2.852 | 2.581 | 2.964 | 3.179 |
| HCM Lane V/C Ratio | 0.233 | 0.408 | 0.121 | 0.082 |
| HCM Control Delay | 9.3 | 10.7 | 8.6 | 8.6 |
| HCM Lane LOS | A | B | A | A |
| HCM 95th-tile Q | 0.9 | 2 | 0.4 | 0.3 |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 36 | 297 | 47 | 62 | 79 | 74 | 15 | 336 | 76 | 23 | 118 | 5 |
| Future Volume (veh/h) | 36 | 297 | 47 | 62 | 79 | 74 | 15 | 336 | 76 | 23 | 118 | 5 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.98 | | 0.95 | 0.99 | | 0.95 | 0.99 | | 0.96 | 1.00 | | 0.96 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 36 | 297 | 47 | 62 | 79 | 74 | 15 | 336 | 76 | 23 | 118 | 5 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 90 | 447 | 67 | 169 | 207 | 160 | 620 | 652 | 148 | 383 | 793 | 34 |
| Arrive On Green | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| Sat Flow, veh/h | 95 | 1453 | 218 | 316 | 673 | 519 | 1253 | 1462 | 331 | 970 | 1777 | 75 |
| Grp Volume(v), veh/h | 380 | 0 | 0 | 215 | 0 | 0 | 15 | 0 | 412 | 23 | 0 | 123 |
| Grp Sat Flow(s),veh/h/ln | 1766 | 0 | 0 | 1509 | 0 | 0 | 1253 | 0 | 1793 | 970 | 0 | 1853 |
| Q Serve(g_s), s | 3.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 0.0 | 10.7 | 1.1 | 0.0 | 2.6 |
| Cycle Q Clear(g_c), s | 12.1 | 0.0 | 0.0 | 6.7 | 0.0 | 0.0 | 3.0 | 0.0 | 10.7 | 11.9 | 0.0 | 2.6 |
| Prop In Lane | 0.09 | | 0.12 | 0.29 | | 0.34 | 1.00 | | 0.18 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 604 | 0 | 0 | 536 | 0 | 0 | 620 | 0 | 800 | 383 | 0 | 827 |
| V/C Ratio(X) | 0.63 | 0.00 | 0.00 | 0.40 | 0.00 | 0.00 | 0.02 | 0.00 | 0.52 | 0.06 | 0.00 | 0.15 |
| Avail Cap(c_a), veh/h | 817 | 0 | 0 | 710 | 0 | 0 | 620 | 0 | 800 | 383 | 0 | 827 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 0.74 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 19.7 | 0.0 | 0.0 | 17.8 | 0.0 | 0.0 | 11.6 | 0.0 | 12.9 | 17.2 | 0.0 | 10.7 |
| Incr Delay (d2), s/veh | 1.1 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.1 | 0.0 | 2.4 | 0.1 | 0.0 | 0.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 4.8 | 0.0 | 0.0 | 2.4 | 0.0 | 0.0 | 0.1 | 0.0 | 4.3 | 0.2 | 0.0 | 1.0 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 20.8 | 0.0 | 0.0 | 18.2 | 0.0 | 0.0 | 11.6 | 0.0 | 15.3 | 17.3 | 0.0 | 10.8 |
| LnGrp LOS | C | A | A | B | A | A | B | A | B | B | A | B |
| Approach Vol, veh/h | | 380 | | | 215 | | | 427 | | | 146 | |
| Approach Delay, s/veh | | 20.8 | | | 18.2 | | | 15.2 | | | 11.8 | |
| Approach LOS | | C | | | B | | | B | | | B | |

| Timer - Assigned Phs | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 24.0 | 33.0 | 24.0 | 33.0 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 28.0 | 29.0 | 28.0 | 29.0 |
| Max Q Clear Time (g_c+I1), s | 14.1 | 13.9 | 8.7 | 12.7 |
| Green Ext Time (p_c), s | 2.0 | 0.6 | 1.3 | 2.4 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 17.1 |
| HCM 6th LOS | B |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 40 | 380 | 53 | 81 | 209 | 195 | 52 | 1131 | 80 | 147 | 708 | 28 |
| Future Volume (veh/h) | 40 | 380 | 53 | 81 | 209 | 195 | 52 | 1131 | 80 | 147 | 708 | 28 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.97 | 1.00 | | 0.97 | 1.00 | | 0.95 | 1.00 | | 0.95 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 40 | 380 | 53 | 81 | 209 | 195 | 52 | 1131 | 80 | 147 | 708 | 28 |
| Peak Hour Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 67 | 441 | 59 | 220 | 320 | 298 | 72 | 1285 | 91 | 181 | 1545 | 61 |
| Arrive On Green | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.04 | 0.38 | 0.38 | 0.10 | 0.44 | 0.44 |
| Sat Flow, veh/h | 65 | 1208 | 161 | 955 | 876 | 817 | 1781 | 3351 | 237 | 1781 | 3476 | 137 |
| Grp Volume(v), veh/h | 473 | 0 | 0 | 81 | 0 | 404 | 52 | 599 | 612 | 147 | 362 | 374 |
| Grp Sat Flow(s),veh/h/ln | 1434 | 0 | 0 | 955 | 0 | 1692 | 1781 | 1777 | 1811 | 1781 | 1777 | 1837 |
| Q Serve(g_s), s | 11.2 | 0.0 | 0.0 | 0.0 | 0.0 | 17.9 | 2.6 | 28.2 | 28.3 | 7.3 | 12.8 | 12.8 |
| Cycle Q Clear(g_c), s | 29.2 | 0.0 | 0.0 | 20.3 | 0.0 | 17.9 | 2.6 | 28.2 | 28.3 | 7.3 | 12.8 | 12.8 |
| Prop In Lane | 0.08 | | 0.11 | 1.00 | | 0.48 | 1.00 | | 0.13 | 1.00 | | 0.07 |
| Lane Grp Cap(c), veh/h | 567 | 0 | 0 | 220 | 0 | 618 | 72 | 681 | 694 | 181 | 790 | 817 |
| V/C Ratio(X) | 0.83 | 0.00 | 0.00 | 0.37 | 0.00 | 0.65 | 0.72 | 0.88 | 0.88 | 0.81 | 0.46 | 0.46 |
| Avail Cap(c_a), veh/h | 654 | 0 | 0 | 269 | 0 | 705 | 287 | 681 | 694 | 247 | 790 | 817 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.75 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 27.0 | 0.0 | 0.0 | 24.6 | 0.0 | 23.8 | 42.7 | 25.8 | 25.8 | 39.6 | 17.4 | 17.4 |
| Incr Delay (d2), s/veh | 6.3 | 0.0 | 0.0 | 1.0 | 0.0 | 1.8 | 12.8 | 15.1 | 15.0 | 13.5 | 1.9 | 1.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 10.6 | 0.0 | 0.0 | 1.5 | 0.0 | 7.3 | 1.4 | 14.4 | 14.7 | 3.9 | 5.5 | 5.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 33.3 | 0.0 | 0.0 | 25.6 | 0.0 | 25.6 | 55.4 | 40.9 | 40.9 | 53.1 | 19.3 | 19.3 |
| LnGrp LOS | C | A | A | C | A | C | E | D | D | D | B | B |
| Approach Vol, veh/h | | 473 | | | 485 | | | 1263 | | | 883 | |
| Approach Delay, s/veh | | 33.3 | | | 25.6 | | | 41.5 | | | 24.9 | |
| Approach LOS | | C | | | C | | | D | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 8.1 | 44.5 | | 37.4 | 13.6 | 39.0 | | 37.4 |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | | 4.5 |
| Max Green Setting (Gmax), s | 4.5 | 24.5 | | 37.5 | 12.5 | 26.5 | | 37.5 |
| Max Q Clear Time (g_c+I1), s | 4.6 | 14.8 | | 22.3 | 9.3 | 30.3 | | 31.2 |
| Green Ext Time (p_c), s | 0.1 | 3.4 | | 2.9 | 0.1 | 0.0 | | 1.7 |

| Intersection Summary | | |
|---|---|---|
| HCM 6th Ctrl Delay | | 33.0 |
| HCM 6th LOS | | C |

# Appendix C
# Signal Warrant Calculation Sheets



FEHR PEERS

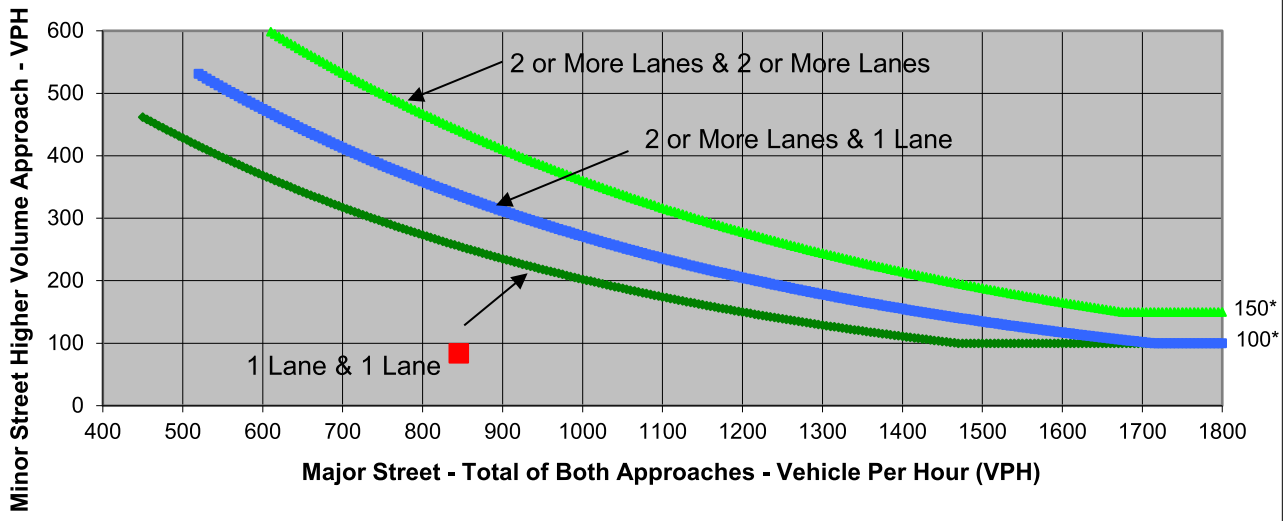
| | | | |
|---|---|---|---|
| Major Street | Gilman WB at Second | Project | Gilman Gateway |
| Minor Street | Gilman EB LT | Scenario | Near-Term Plus Project |
| | | Peak Hour | AM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | 0 | 0 | 84 | 0 |
| Through | 0 | 805 | 0 | 0 |
| Right | 0 | 40 | 0 | 0 |
| Total | 0 | 845 | 84 | 0 |

Major Street Direction

| | |
|---|---|
| x | North/South |
| | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Gilman WB at Second | Gilman EB LT | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **845** | **84** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

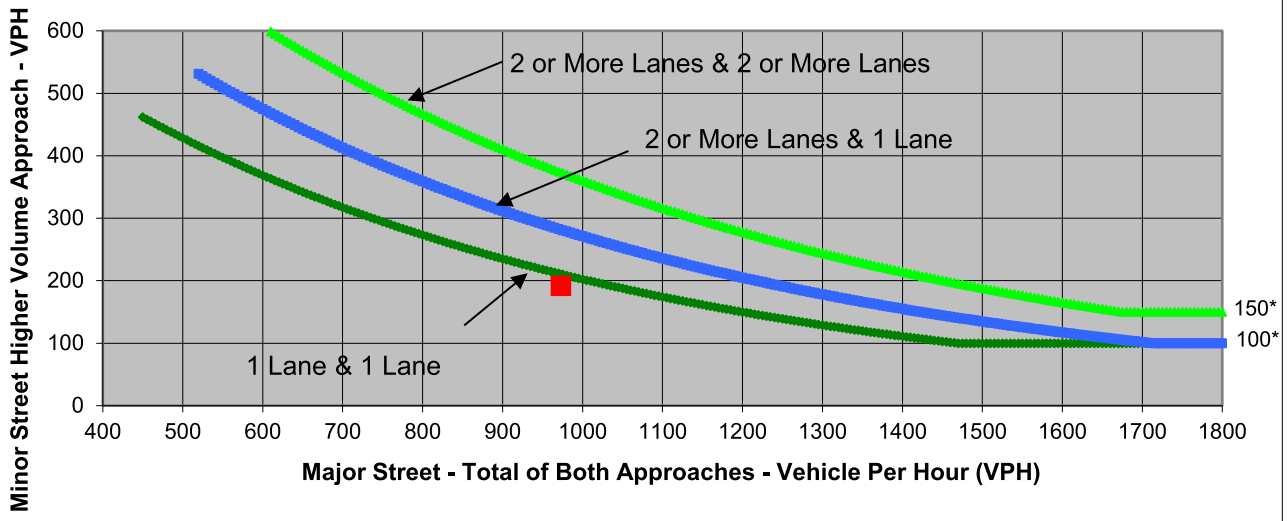
| | | | |
|---|---|---|---|
| Major Street | Gilman WB at Second | Project | Gilman Gateway |
| Minor Street | Gilman EB LT | Scenario | Near-Term Plus Project |
| | | Peak Hour | PM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | 0 | 0 | 192 | 0 |
| Through | 0 | 875 | 0 | 0 |
| Right | 0 | 98 | 0 | 0 |
| Total | 0 | 973 | 192 | 0 |

Major Street Direction

| | |
|---|---|
| x | North/South |
| | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Gilman WB at Second | Gilman EB LT | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **973** | **192** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

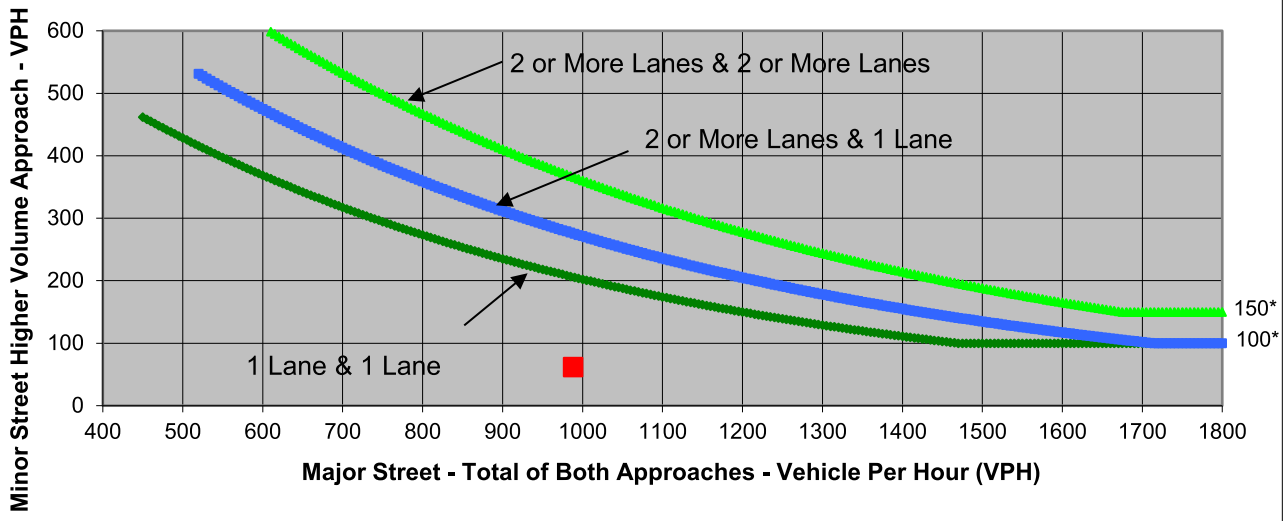
| | | | |
|---|---|---|---|
| Major Street | Second Street | Project | Gilman Gateway |
| Minor Street | Camelia Street | Scenario | Near-Term Plus Project |
| | | Peak Hour | AM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | 0 | 177 | 0 | 62 |
| Through | 0 | 732 | 0 | 0 |
| Right | 79 | 0 | 0 | 0 |
| Total | 79 | 909 | 0 | 62 |

Major Street Direction

| | |
|---|---|
| x | North/South |
| | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Second Street | Camelia Street | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **988** | **62** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

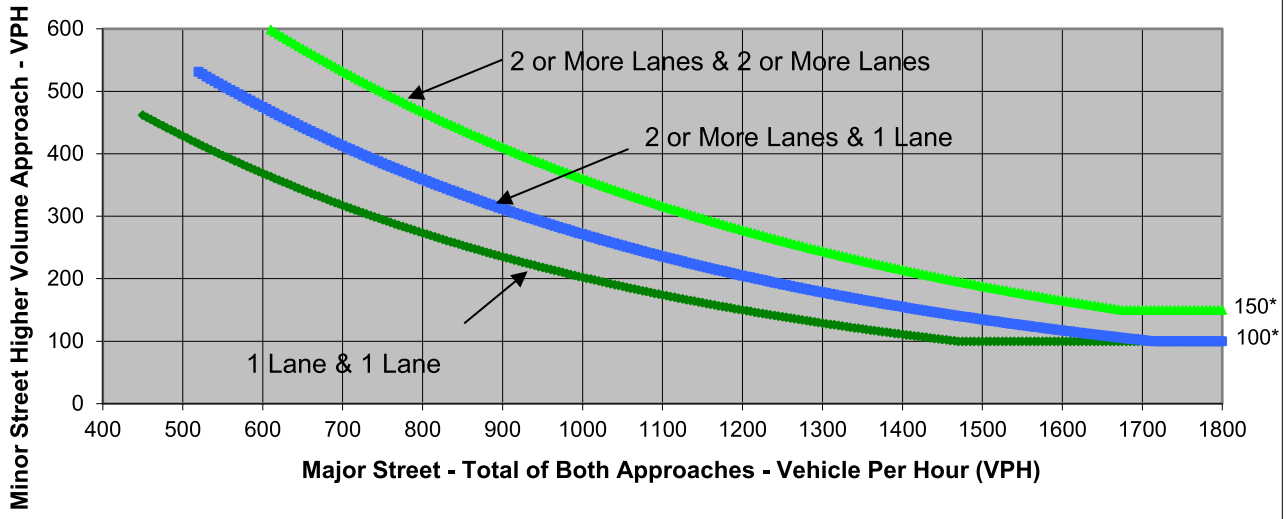
| | | | |
|---|---|---|---|
| Major Street | Second Street | Project | Gilman Gateway |
| Minor Street | Camelia Street | Scenario | Near-Term Plus Project |
| | | Peak Hour | PM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | 0 | 33 | 0 | 274 |
| Through | 0 | 221 | 0 | 0 |
| Right | 15 | 0 | 0 | 0 |
| Total | 15 | 254 | 0 | 274 |

Major Street Direction

| | |
|---|---|
| x | North/South |
| | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Second Street | Camelia Street | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **269** | **274** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

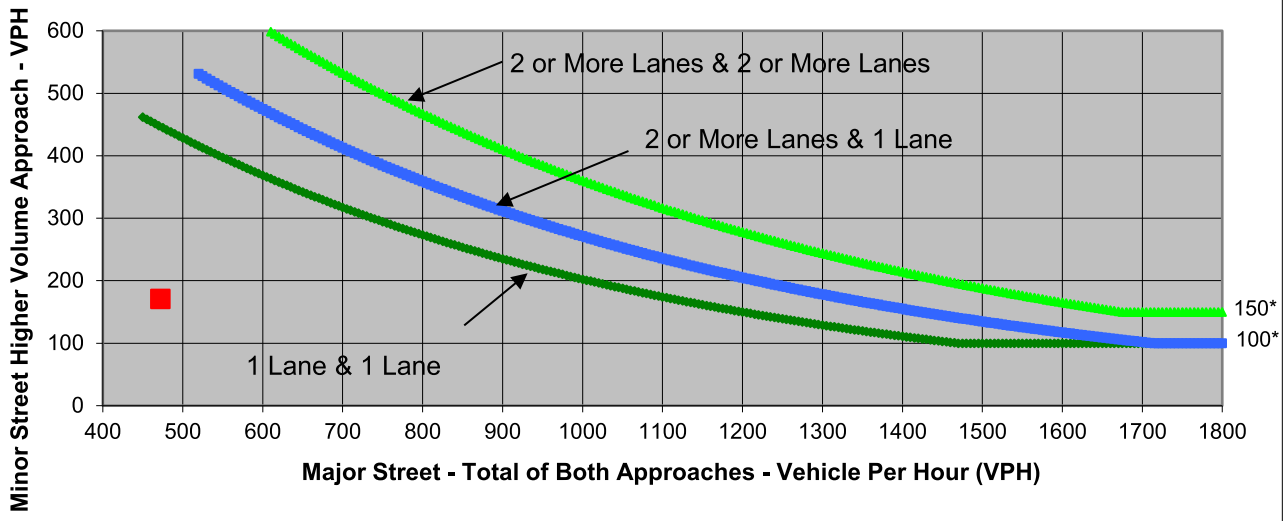
| | | | |
|---|---|---|---|
| Major Street | Page St | Project | Gilman Gateway |
| Minor Street | Eastshore Hwy | Scenario | Near-Term Plus Project |
| | | Peak Hour | AM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | | 0 | | 158 |
| Through | 121 | 5 | | |
| Right | 50 | | | 314 |
| Total | 171 | 5 | 0 | 472 |

Major Street Direction

| | |
|---|---|
| | North/South |
| x | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Page St | Eastshore Hwy | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **472** | **171** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

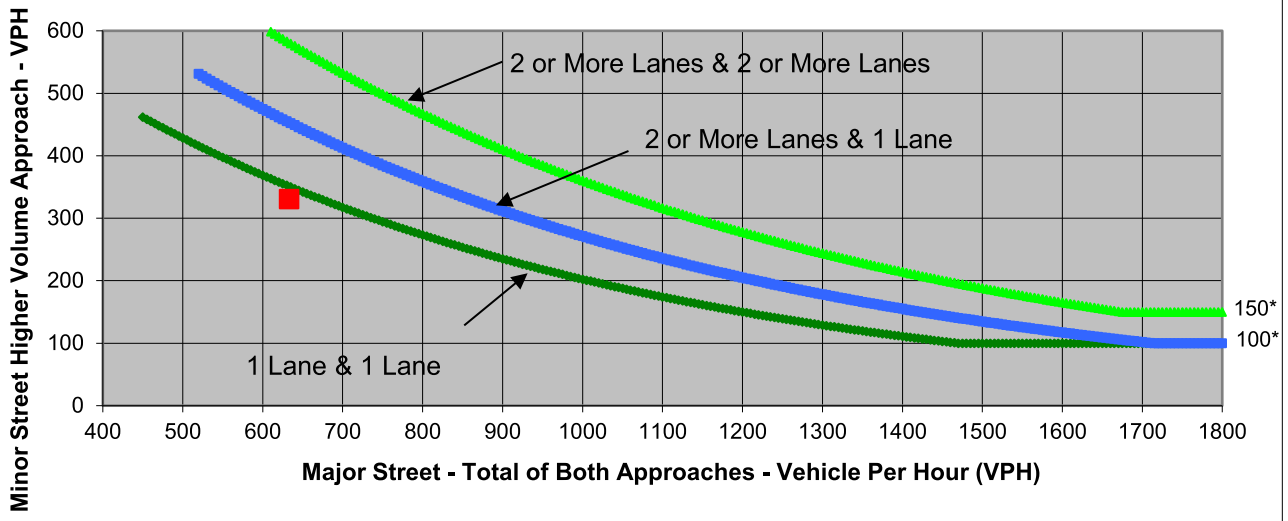
| | | | |
|---|---|---|---|
| Major Street | Page St | Project | Gilman Gateway |
| Minor Street | Eastshore Hwy | Scenario | Near-Term Plus Project |
| | | Peak Hour | PM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | | 0 | | 117 |
| Through | 307 | 19 | | |
| Right | 24 | | | 516 |
| Total | 331 | 19 | 0 | 633 |

Major Street Direction

| | |
|---|---|
| | North/South |
| x | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Page St | Eastshore Hwy | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **633** | **331** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

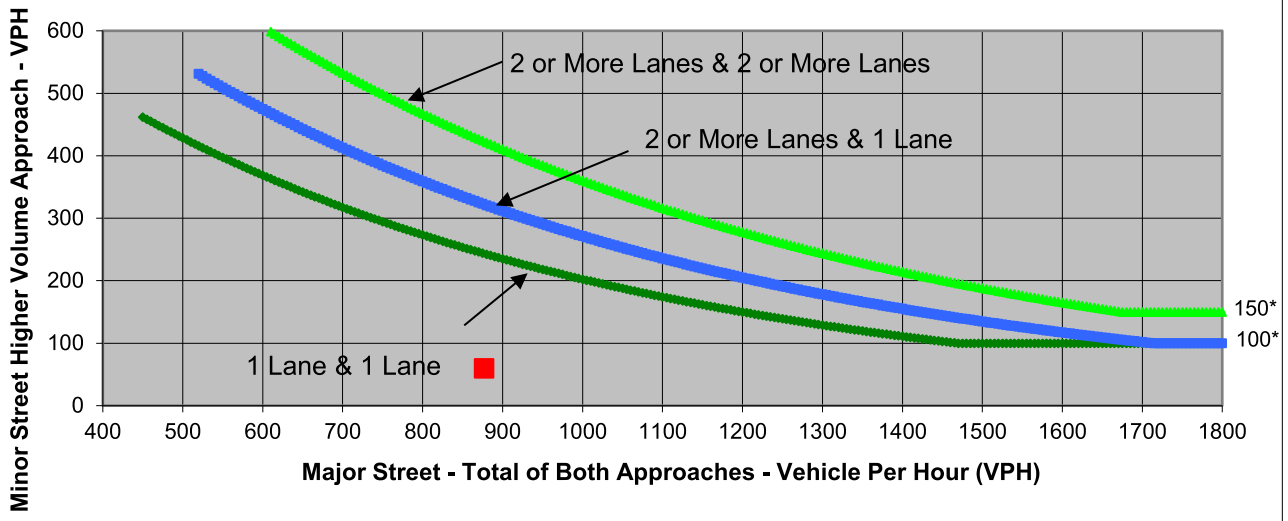
| | | | |
|---|---|---|---|
| Major Street | Second Street | Project | Gilman Gateway |
| Minor Street | Page St | Scenario | Near-Term Plus Project |
| | | Peak Hour | AM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | 37 | 143 | 18 | 0 |
| Through | 89 | 120 | 13 | 35 |
| Right | 51 | 437 | 29 | 4 |
| Total | 177 | 700 | 60 | 39 |

Major Street Direction

| | |
|---|---|
| x | North/South |
| | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Second Street | Page St | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **877** | **60** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

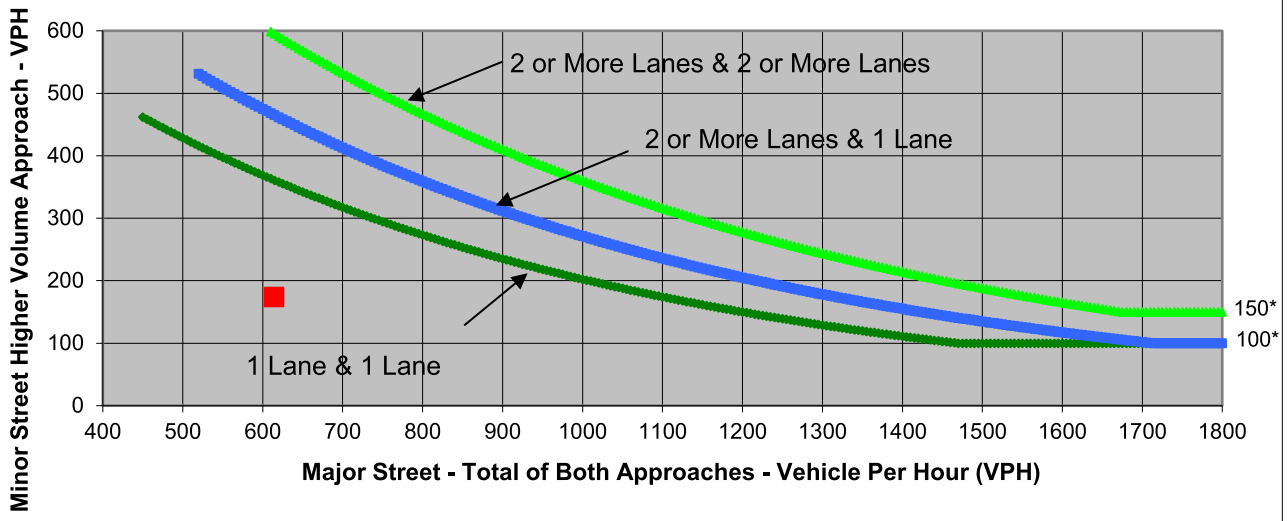
| | | | |
|---|---|---|---|
| Major Street | Second Street | Project | Gilman Gateway |
| Minor Street | Page St | Scenario | Near-Term Plus Project |
| | | Peak Hour | PM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | 43 | 27 | 4 | 17 |
| Through | 17 | 130 | 3 | 157 |
| Right | 10 | 387 | 34 | 0 |
| Total | 70 | 544 | 41 | 174 |

Major Street Direction

| | |
|---|---|
| x | North/South |
| | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Second Street | Page St | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **614** | **174** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

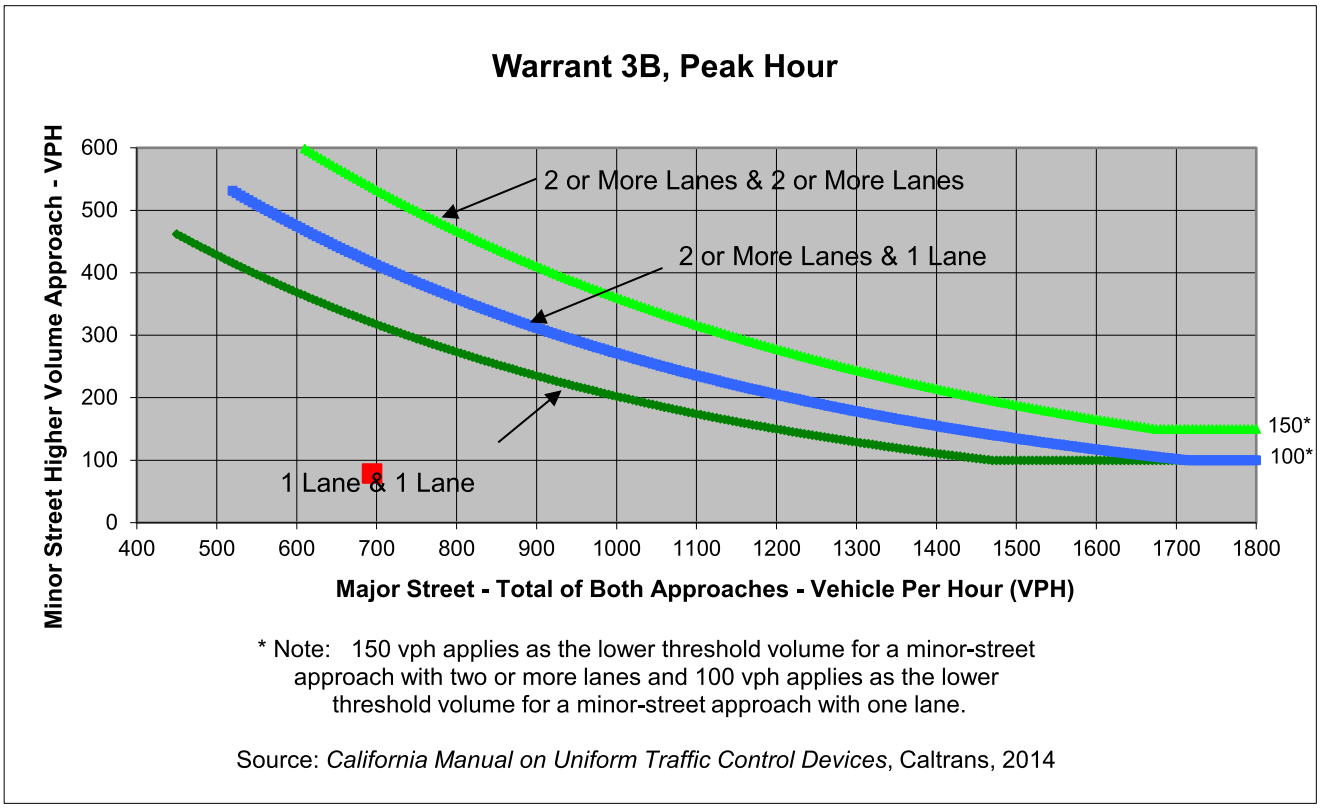
| | | | |
|---|---|---|---|
| Major Street | Eastshore Hwy | Project | Gilman Gateway |
| Minor Street | Cedar Street | Scenario | Near-Term Plus Project |
| | | Peak Hour | AM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | | 64 | | 32 |
| Through | 149 | 256 | | 0 |
| Right | 225 | 0 | | 47 |
| Total | 374 | 320 | 0 | 79 |

Major Street Direction

| | |
|---|---|
| x | North/South |
| | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Eastshore Hwy | Cedar Street | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **694** | **79** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

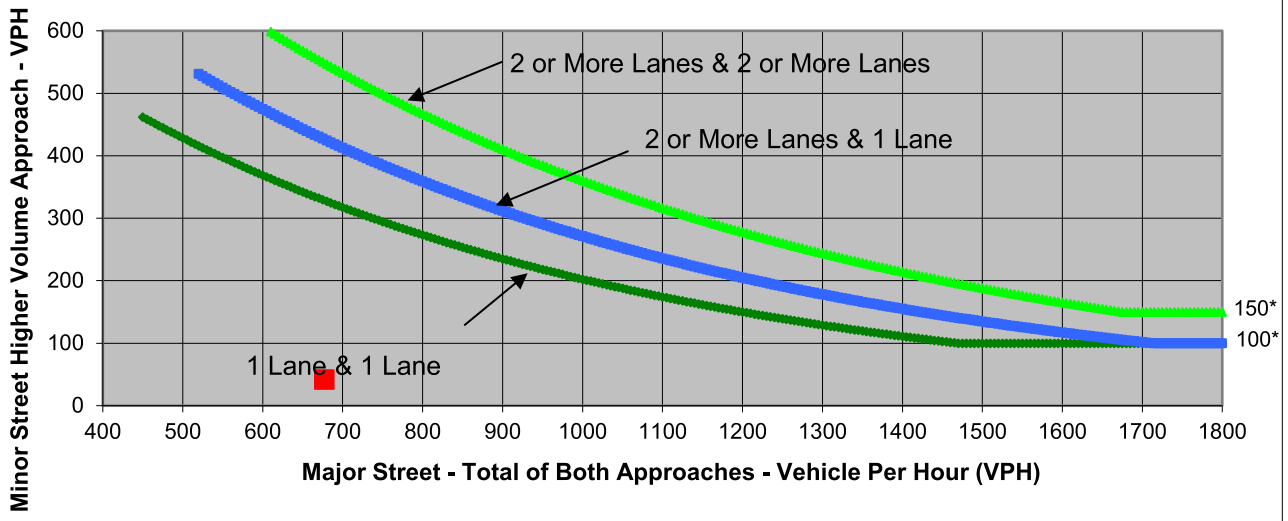
| | | | |
|---|---|---|---|
| Major Street | Eastshore Hwy | Project | Gilman Gateway |
| Minor Street | Cedar Street | Scenario | Near-Term Plus Project |
| | | Peak Hour | PM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | | 72 | | 27 |
| Through | 314 | 66 | | 0 |
| Right | 225 | 0 | | 15 |
| Total | 539 | 138 | 0 | 42 |

Major Street Direction

| | |
|---|---|
| x | North/South |
| | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Eastshore Hwy | Cedar Street | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **677** | **42** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

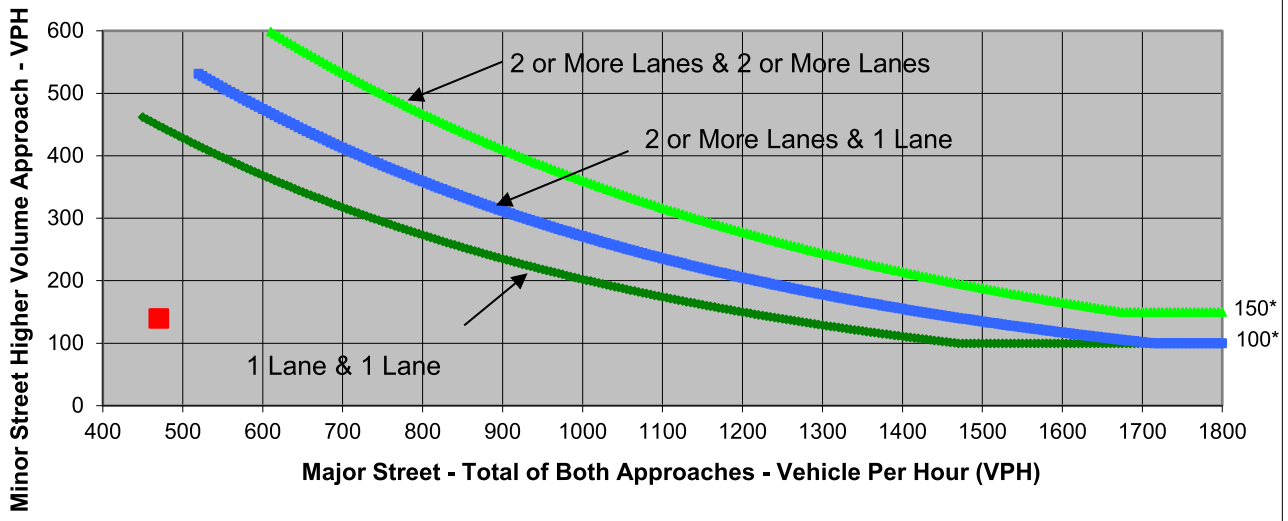
| | | | |
|---|---|---|---|
| Major Street | Cedar Street | Project | Gilman Gateway |
| Minor Street | Second Street | Scenario | Near-Term Plus Project |
| | | Peak Hour | AM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | | 44 | 34 | |
| Through | | 0 | 278 | 37 |
| Right | | 96 | 0 | 121 |
| Total | 0 | 140 | 312 | 158 |

Major Street Direction

| | |
|---|---|
| | North/South |
| x | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Cedar Street | Second Street | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **470** | **140** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

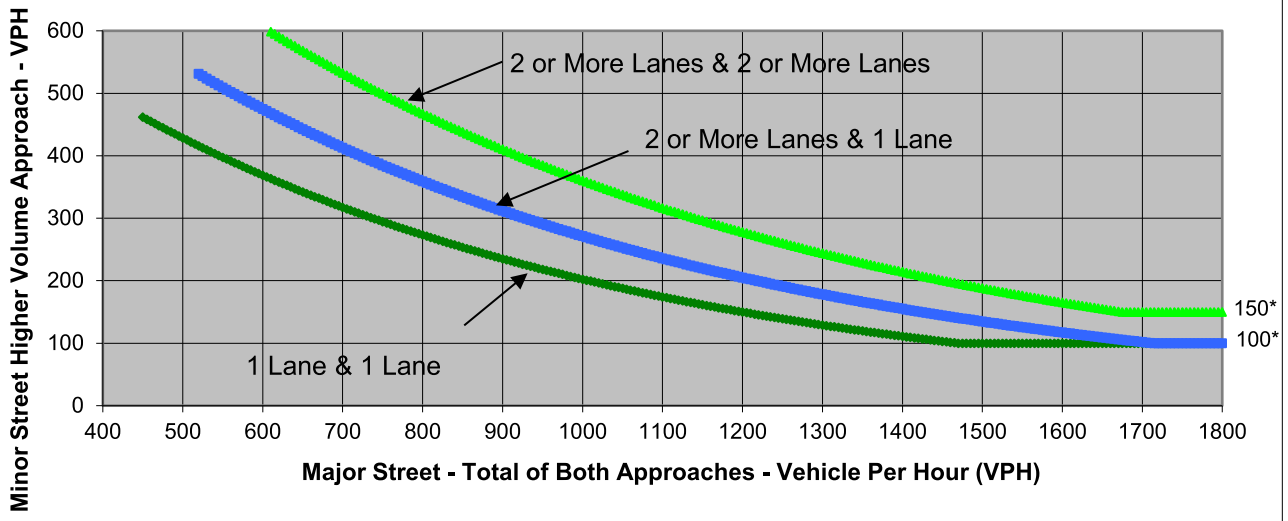
| | | | |
|---|---|---|---|
| Major Street | Cedar Street | Project | Gilman Gateway |
| Minor Street | Second Street | Scenario | Near-Term Plus Project |
| | | Peak Hour | PM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | | 149 | 11 | 0 |
| Through | | 0 | 167 | 39 |
| Right | | 17 | 0 | 38 |
| Total | 0 | 166 | 178 | 77 |

Major Street Direction

| | |
|---|---|
| | North/South |
| x | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Cedar Street | Second Street | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **255** | **166** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

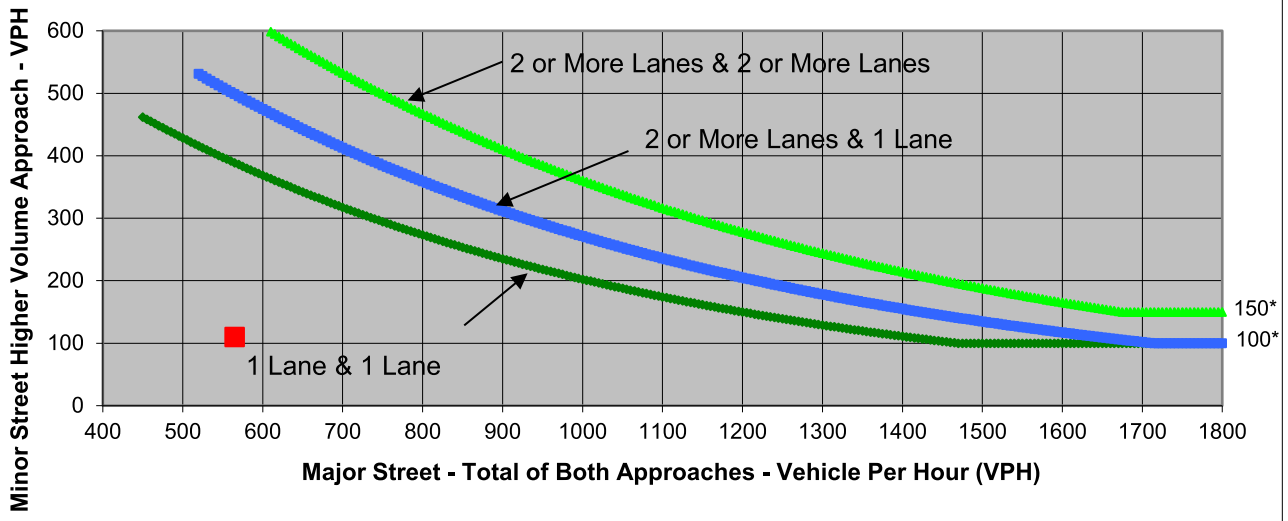
| | | | |
|---|---|---|---|
| Major Street | Cedar Street | Project | Gilman Gateway |
| Minor Street | Fourth Street | Scenario | Near-Term Plus Project |
| | | Peak Hour | AM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | 18 | 2 | 23 | 54 |
| Through | 49 | 103 | 249 | 147 |
| Right | 23 | 5 | 88 | 4 |
| Total | 90 | 110 | 360 | 205 |

Major Street Direction

| | |
|---|---|
| | North/South |
| x | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Cedar Street | Fourth Street | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **565** | **110** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

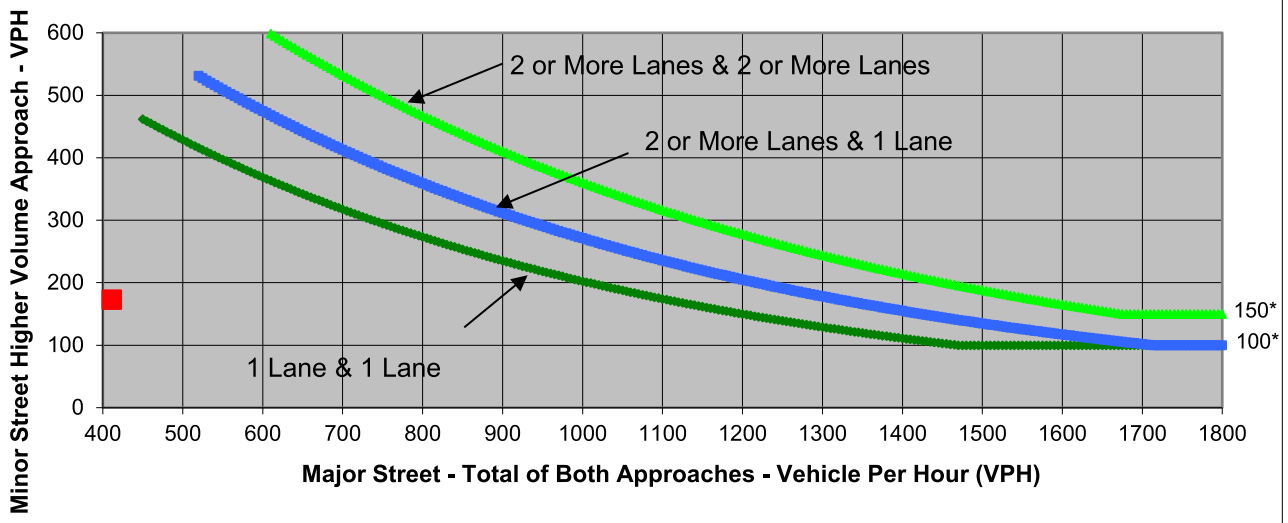
| | | | |
|---|---|---|---|
| Major Street | Cedar Street | Project | Gilman Gateway |
| Minor Street | Fourth Street | Scenario | Near-Term Plus Project |
| | | Peak Hour | PM |

Turn Movement Volumes

| | NB | SB | EB | WB |
|---|---|---|---|---|
| Left | 15 | 12 | 4 | 28 |
| Through | 104 | 40 | 280 | 55 |
| Right | 54 | 5 | 39 | 5 |
| Total | 173 | 57 | 323 | 88 |

Major Street Direction

| | |
|---|---|
| | North/South |
| x | East/West |




* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

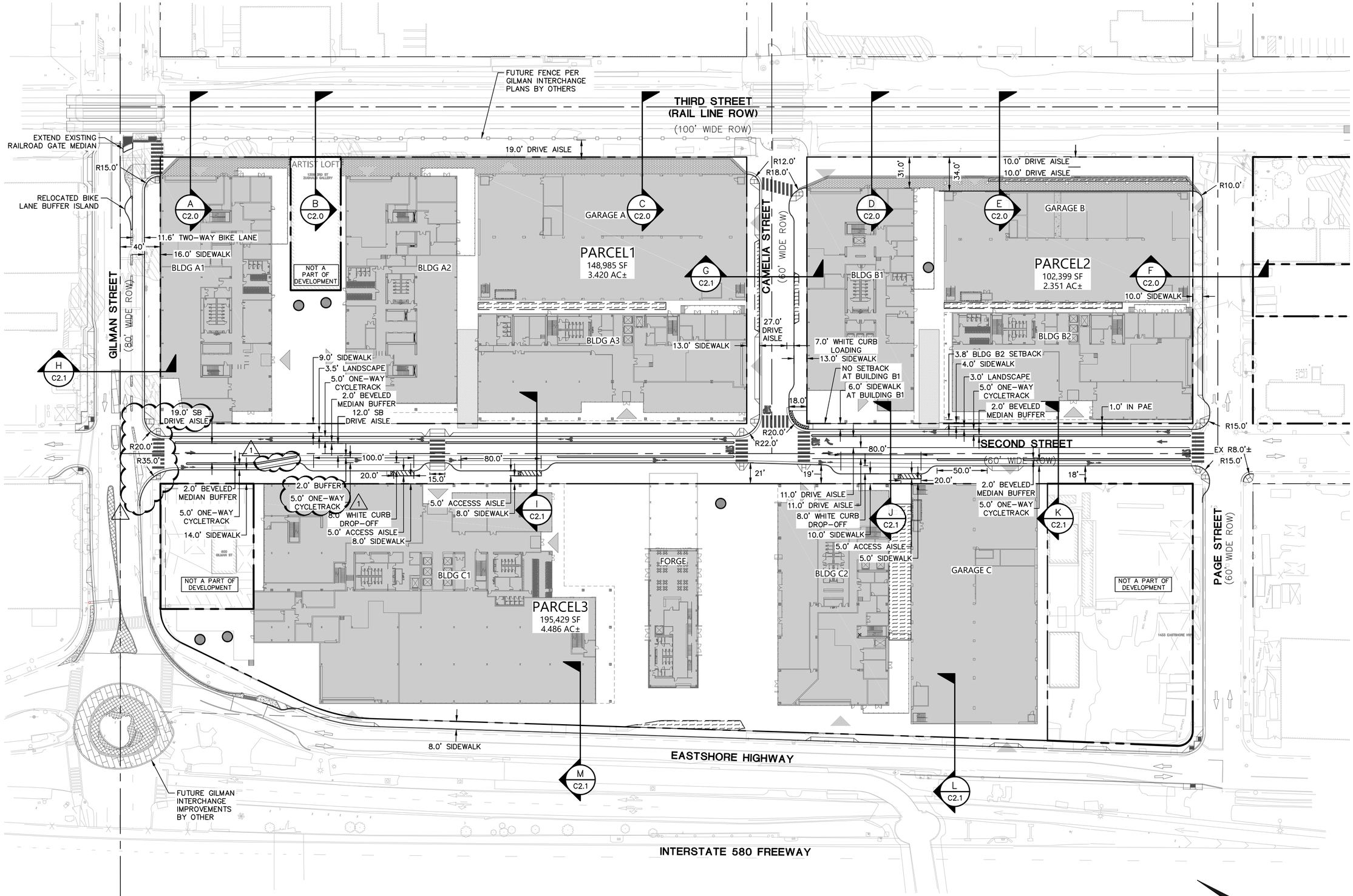
Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

| | Major Street | Minor Street | Warrant Met |
|---|---|---|---|
| | Cedar Street | Fourth Street | |
| **Number of Approach Lanes** | **1** | **1** | **NO** |
| **Traffic Volume (VPH) *** | **411** | **173** | |

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

# Appendix D
# Berkeley Forge Project Site Plan






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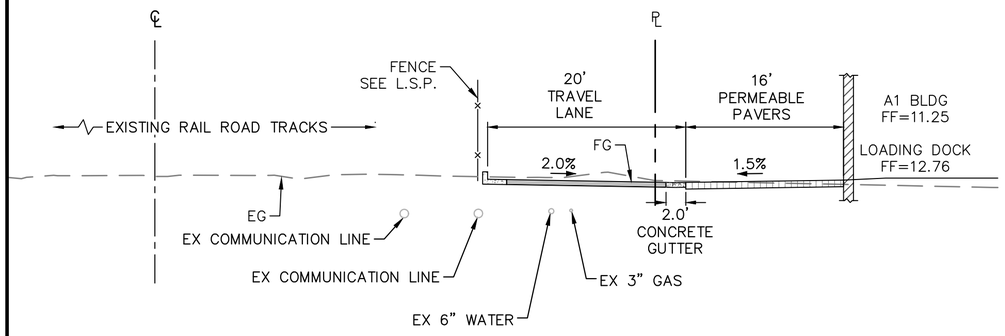
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SITE PLAN

| No. | Revisions |
|---|---|

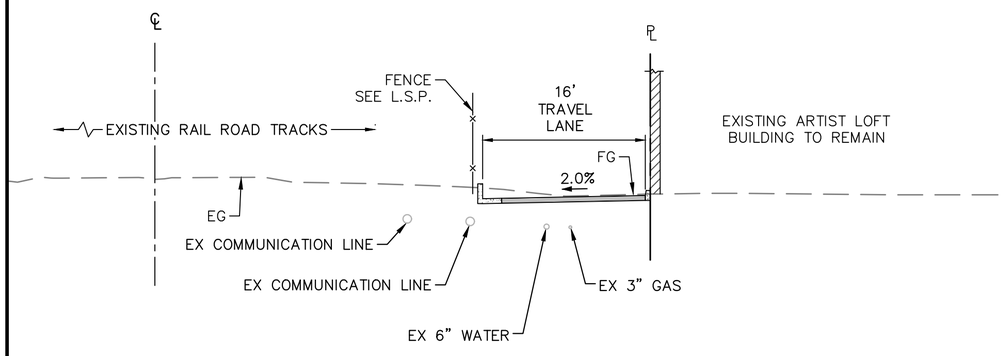
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Design: JCL
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Approved: MAO
Job No: 20221157

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C1.00
1 OF 7



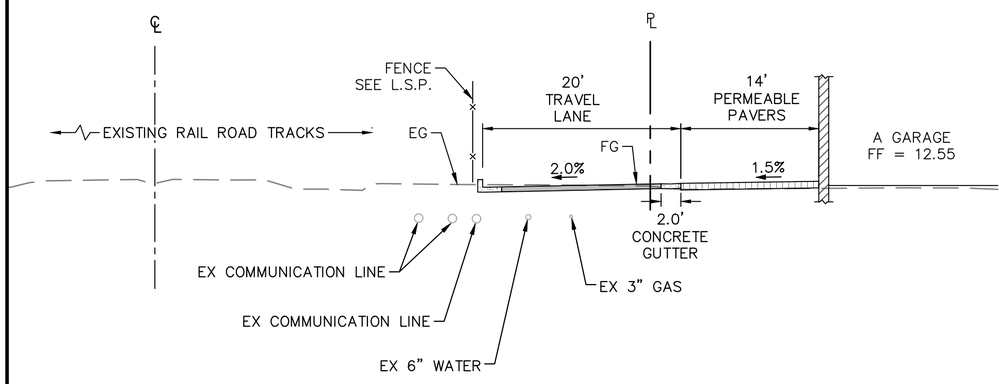

## SECTION A – THIRD STREET

SCALE: 1" = 10'



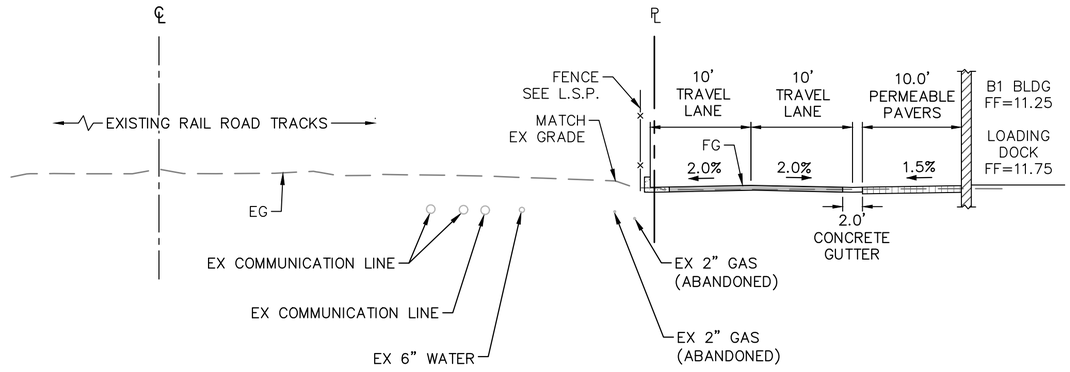

## SECTION B – THIRD STREET

SCALE: 1" = 10'



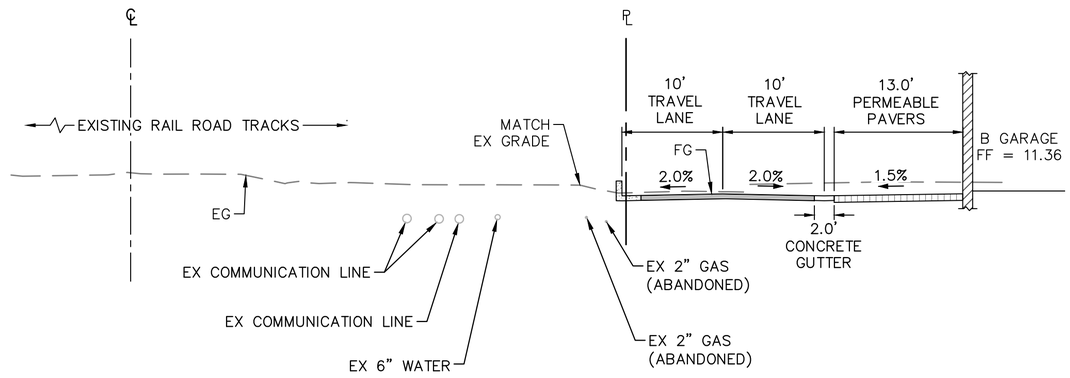

## SECTION C – THIRD STREET

SCALE: 1" = 10'



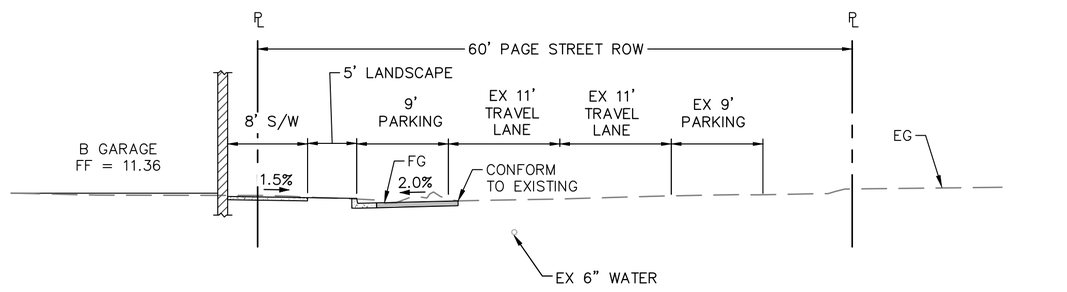

## SECTION D – THIRD STREET

SCALE: 1" = 10'



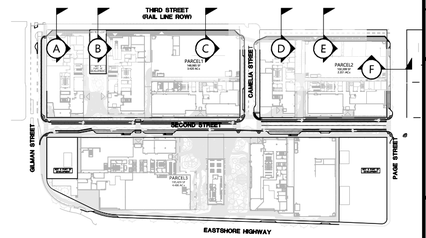

## SECTION E – THIRD STREET

SCALE: 1" = 10'




## SECTION F – PAGE STREET

SCALE: 1" = 10'




KEY MAP
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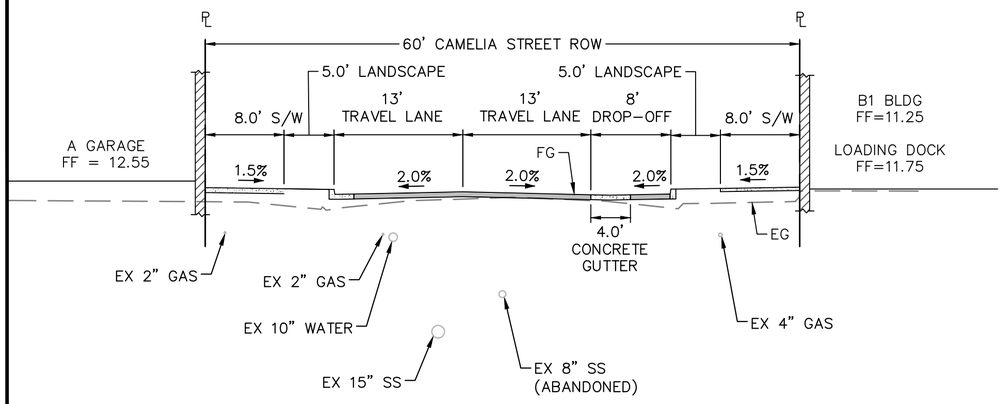
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# SITE SECTIONS

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|---|---|
| | |

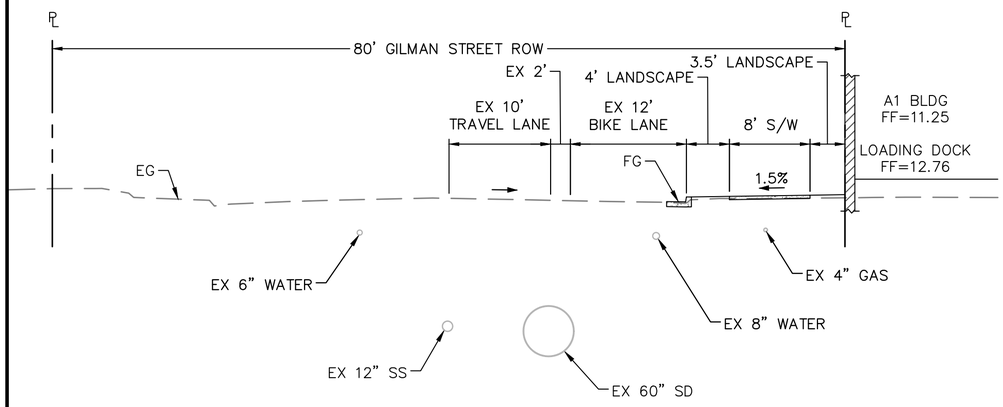
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2 OF 7



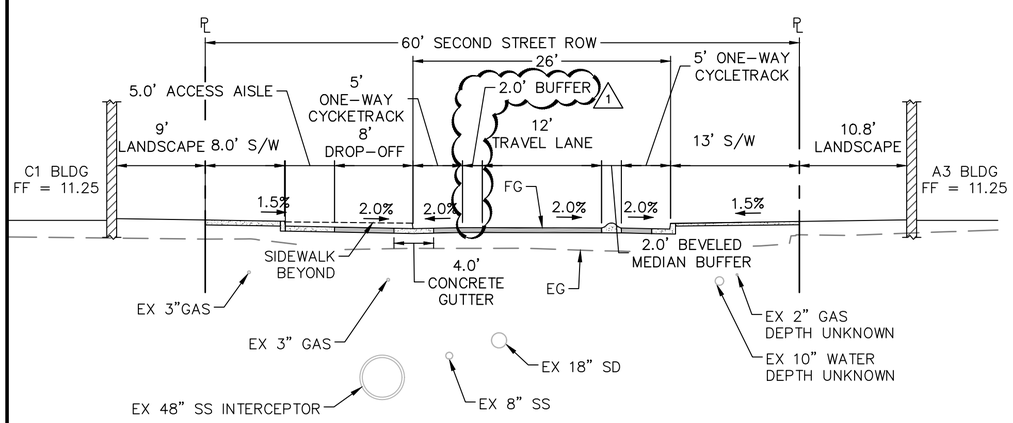

## SECTION G – CAMELIA STREET

SCALE: 1" = 10'



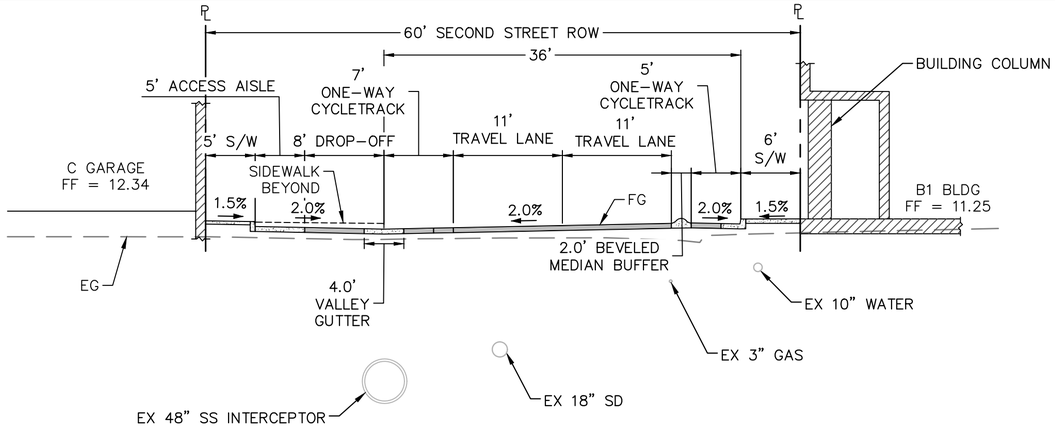

## SECTION H – GILMAN STREET

SCALE: 1" = 10'



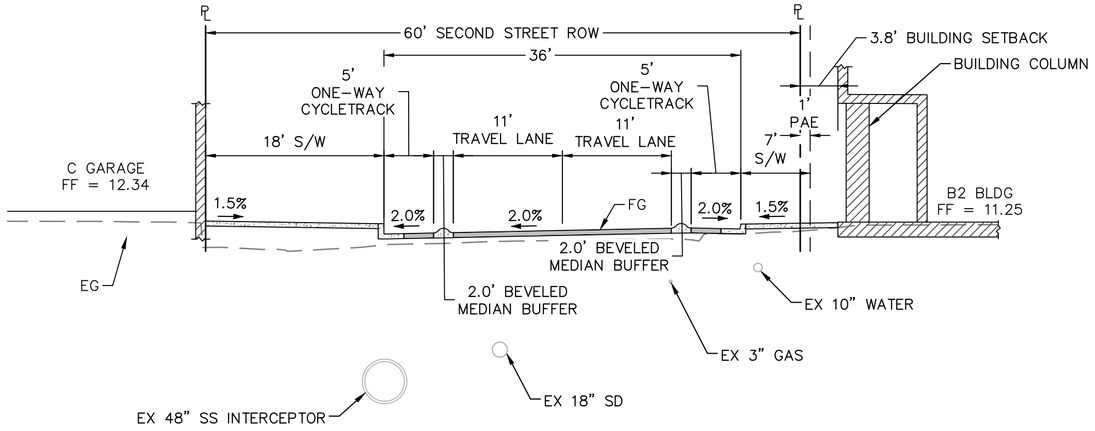

## SECTION I – SECOND STREET

SCALE: 1" = 10'



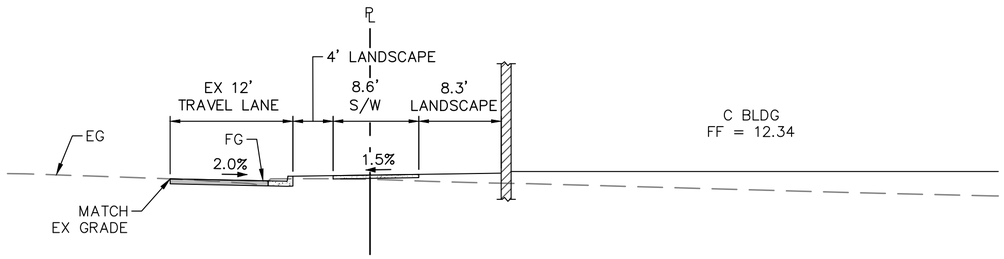

## SECTION J – SECOND STREET

SCALE: 1" = 10'



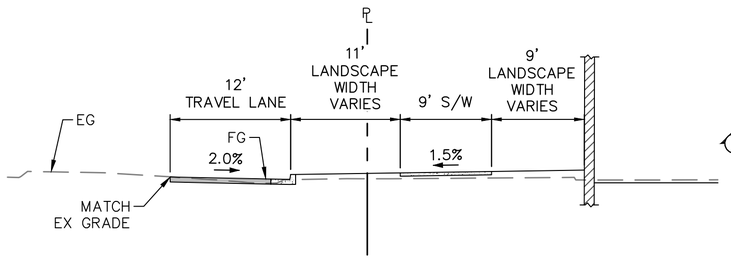

## SECTION K – SECOND STREET

SCALE: 1" = 10'



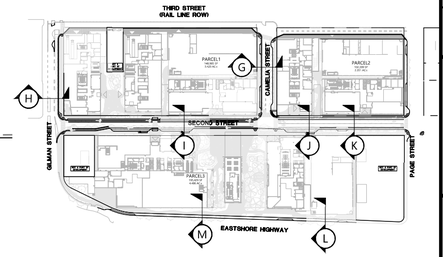

## SECTION L – EASTSHORE HWY

SCALE: 1" = 10'




## SECTION M – EASTSHORE HWY

SCALE: 1" = 10'




KEY MAP
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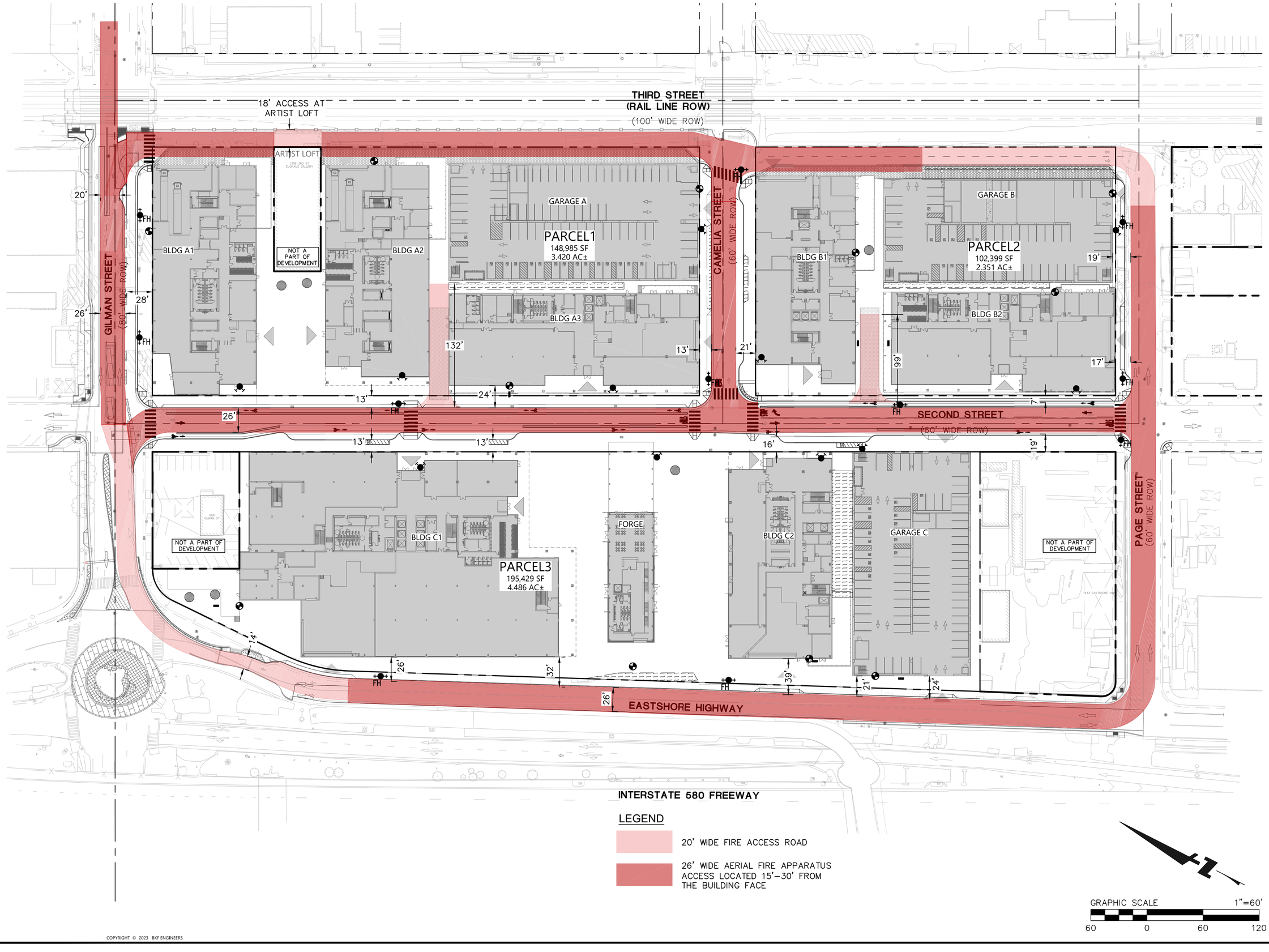
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| | |

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Approved: MAO
Job No: 20221157

Drawing Number:
**C2.01**
3 OF 7




LEGEND

20' WIDE FIRE ACCESS ROAD

26' WIDE AERIAL FIRE APPARATUS ACCESS LOCATED 15'–30' FROM THE BUILDING FACE

GRAPHIC SCALE 1"=60'

60 0 60 120

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# FIRE ACCESS

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|---|---|

Date: 12/13/2023
Scale: 1" = 60'
Design: JCL
Drawn: RAB
Approved: MAO
Job No: 20221157

Drawing Number:
**C3.00**
4 OF 7

THIRD STREET
(RAIL LINE ROW)
(100' WIDE ROW)

ARTIST LOFT
1306 3RD ST
ZUSHAUS GALLERY

GILMAN STREET
(80' WIDE ROW)

CAMELIA STREET
(60' WIDE ROW)

SECOND STREET
(60' WIDE ROW)

PAGE STREET
(60' WIDE ROW)

EASTSHORE HIGHWAY

INTERSTATE 580 FREEWAY

BLDG A1
BLDG A2
BLDG A3
GARAGE A
PARCEL1
148,985 SF
3.420 AC±

BLDG B1
BLDG B2
GARAGE B
PARCEL2
102,399 SF
2.351 AC±

BLDG C1
PARCEL3
195,429 SF
4.486 AC±

FORGE
BLDG C2
GARAGE C

NOT A PART OF DEVELOPMENT

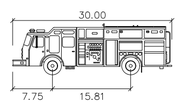
708'
469'
179'
68'
337'
344'
223'
218'
237'
165'
16'
204'
295'
407'

FH

8" WATER
6" WATER
12" WATER

## LEGEND

- FDC
- FIRE HYDRANT
- EXISTING WATER LINE
- W — PROPOSED WATER LINE
- DISTANCE BETWEEN FIRE HYDRANTS
- 150' MAX. HOSE PULL DISTANCE FROM FIRE ACCESS ROAD




| Berkeley – Engine | feet |
|---|---|
| Width | : 9.50 |
| Track | : 8.50 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 37.9 |

GRAPHIC SCALE 1"=60'
60 0 60 120

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# FIRE TRUCK TURNING

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|---|---|

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Drawn: RAB
Approved: MAO
Job No: 20221157

Drawing Number:
**C3.01**
5 OF 7

THIRD STREET
(RAIL LINE ROW)
(100' WIDE ROW)

GILMAN STREET
(80' WIDE ROW)

CAMELIA STREET
(60' WIDE ROW)

SECOND STREET
(60' WIDE ROW)

PAGE STREET
(60' WIDE ROW)

EASTSHORE HIGHWAY

INTERSTATE 580 FREEWAY

ARTIST LOFT
1308 3RD ST
ZUSHAUS GALLERY

NOT A PART OF DEVELOPMENT

BLDG A1

BLDG A2

GARAGE A

PARCEL1
148,985 SF
3.420 AC±

BLDG A3

62' DW

18.0'

BLDG B1

GARAGE B

PARCEL2
102,399 SF
2.351 AC±

BLDG B2

67' DW

EX 8.0' PARKING

EX 8.0' PARKING

600 GILMAN ST

NOT A PART OF DEVELOPMENT

BLDG C1

PARCEL3
195,429 SF
4.486 AC±

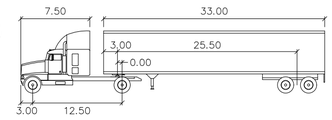
FORGE

BLDG C2

GARAGE C

NOT A PART OF DEVELOPMENT

1433 EASTSHORE HWY




WB–40

feet

| | | | |
|---|---|---|---|
| Tractor Width | : 8.00 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 8.00 | Steering Angle | : 20.3 |
| Tractor Track | : 8.00 | Articulating Angle | : 70.0 |
| Trailer Track | : 8.00 | | |

GRAPHIC SCALE 1"=60'

60 0 60 120

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Job No: 20221157

Drawing Number:
**C4.00**
6 OF 7

THIRD STREET
(RAIL LINE ROW)
(100' WIDE ROW)

GILMAN STREET
(80' WIDE ROW)

CAMELIA STREET
(60' WIDE ROW)

SECOND STREET
(60' WIDE ROW)

PAGE STREET
(60' WIDE ROW)

EASTSHORE HIGHWAY

INTERSTATE 580 FREEWAY

ARTIST LOFT
1308 3RD ST
ZUSHAUS GALLERY

NOT A PART OF DEVELOPMENT

BLDG A1

BLDG A2

GARAGE A

PARCEL1
148,985 SF
3.420 AC±

BLDG A3

BLDG B1

GARAGE B

PARCEL2
102,399 SF
2.351 AC±

BLDG B2

EX 8.0' PARKING

EX 8.0' PARKING

NOT A PART OF DEVELOPMENT

BLDG C1

PARCEL3
195,429 SF
4.486 AC±

FORGE

BLDG C2

GARAGE C

NOT A PART OF DEVELOPMENT

1433 EASTSHORE HWY

62' DWY

62' DWY

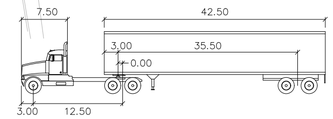
18.0'

1.4'

1.6'

1

WB-50 ARTICULATED BUS




WB-50

| | feet | | |
|---|---|---|---|
| Tractor Width | : 8.00 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 8.50 | Steering Angle | : 17.7 |
| Tractor Track | : 8.00 | Articulating Angle | : 70.0 |
| Trailer Track | : 8.50 | | |

GRAPHIC SCALE 1"=60'

60 0 60 120

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|---|---|

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Job No: 20221157

Drawing Number:
**C4.01**
7 OF 7

# Appendix E
# TDM Plan



FEHR PEERS

# Memorandum

Date: October 23, 2023

To: Gilman Gateway Rezone Project Team

From: Sam Tabibnia, Fehr & Peers

**Subject: Gilman Gateway Rezone Project – Transportation Demand Management Plan**

*OK21-0480*

This memorandum details the Transportation Demand Management (TDM) plan for the proposed Gilman Gateway Rezone Project in West Berkeley. The implementation of this TDM Plan would ensure that the Project would have a less-than-significant impact on vehicle miles traveled (VMT). In addition to reducing the VMT, the TDM Plan would also reduce the automobile trip generation and parking demand through measures that discourage the use of single-occupant automobiles and encourage the use of other travel modes.

This memorandum briefly describes the Project, lists the mandatory TDM strategies that the Project shall implement, estimates the effectiveness of the TDM Plan for reducing VMT, and describes the monitoring and evaluation requirements of the TDM Plan.

## Project Description

The proposed Gilman Gateway Rezone Project would result in a maximum of just over 1,000,000 square feet of new R&D/office uses in the area bound by Gilman Street to the north, Union Pacific railroad tracks to the east, Page Street to the south, and Eastshore Highway to the west.

The Berkeley Forge Project is the primary component of the Gilman Gateway Rezone Project, which would consist of about 890,000 square feet of new R&D/office uses in multiple buildings. The Berkeley Forge Project would also provide about 1,876 parking spaces in three garages in the Project area. Each Berkeley Forge Project would also provide long-term bicycle parking within the building and short-term bicycle parking near the main entrance of the building. The Project would provide sidewalks along Project frontages and walkways within each Project block to connect the various buildings, garages, and open spaces in the Project area.

## Mandatory TDM Strategies

This section describes the strategies that would be implemented in the Project area, as well as Project features that would reduce the automobile trips and associated VMT generated by the Project. Some of these strategies would be directly implemented by the Project and others would be implemented by individual tenants. The TDM strategies include both one-time physical infrastructure improvements and on-going operational strategies. Physical improvements would be implemented as part of the Project and thus are anticipated to have a one-time capital cost. Some level of ongoing maintenance cost may also be required for certain measures. Operational strategies provide on-going incentives and support for the use of non-auto transportation modes. These TDM measures have monthly or annual costs and would require on-going management.

The TDM Plan, which would be implemented at the time of the occupancy of the first phase of the Project, would include the following strategies:

A. *BART Shuttle* - Provide shuttle service between the Project area, the North Berkeley BART station, and the Berkeley Amtrak station during weekday peak commute periods (6:00 AM to 10:00 AM and 3:00 PM to 7:00 PM). The Project would also explore the feasibility, and if feasible, will coordinate the shuttle service with existing shuttle services, and/or other employers in West Berkeley. Shuttle service would be adjusted based on ridership.

B. *Bus Service Extension* - Coordinate with AC Transit to explore the potential to either extend existing bus service or provide new bus service through or near the Project area (Note that since the characteristics of a potential bus service extension, such as service frequency and/or destinations served, cannot be known at this time, the potential effects of bus service expansion on reducing VMT cannot be quantified and therefore not included in the total VMT reduction of the TDM Plan).

C. *Bicycle Amenities and Monitoring* - Provide bike lockers, showers, personal lockers, and a repair station throughout the Project area to encourage bicycling. The Project shall monitor the usage of these facilities and provide additional bicycle parking, if necessary.

D. *Bike Share Station* - Coordinate with City of Berkeley, and/or other regional agencies to facilitate the potential installation of a BayWheels bikeshare in the Project area.

E. *Carpool and Rideshare Matching Assistance* - Offer carpool/ride-matching services, such as ComoVee, or 511.org RideShare, to air employees interested in forming commute carpools.

F. *Preferential Parking for Carpoolers* - Provide preferential carpool parking, including free parking for carpoolers if employees are charged for on-site parking. Carpool parking spaces not occupied by 10:00 AM would be available to other vehicles.

G. *Transit Fare Subsidy* - Require tenants to provide full or partial transit subsidy to Project employees. Tenants may offer one of the following to employees that request it:[1]

- A monthly commuter check (or alternatively Clipper Card, which is accepted by BART, AC Transit, and other major transit providers in the Bay Area)
- Subsidized AC Transit bus pass
- Subsidized Capital Corridor monthly ticket

H. *Pre-Tax Commuter Benefits* - Require tenants to provide pre-tax commuter benefits, such as WageWorks, for Project employees. This strategy allows employees to deduct monthly transit passes or other amount using up to $300 pre-tax dollars.[2] This can help to lower payroll taxes and allows employees to save on transit.

I. *TDM Marketing and Education* – Regularly provide Project tenants and employees information about various transportation options in the area and the TDM strategies provided by the Project. The main lobby of each major Project building shall provide all the information on transportation options including:

- *Transit Routes* – Promote the use of transit by providing user-focused maps. These maps provide employees with wayfinding to nearby transit stops and transit-accessible destinations.
- *Real-time Transit Information System* – Consider installing real-time transit information, such as TransitScreen, in a visible location in the main lobby of each major building to provide employees and visitors with up-to-date shuttle and transit arrival and departure times.
- *Transit Fare Discounts* – Provide information about local discounted fare options offered by BART, AC Transit, and Capital Corridor, including discounts for youth, elderly, persons with disabilities, and Medicare cardholders.
- *Car Sharing* – Promote accessible car sharing programs, such as Zipcar, and Getaround by informing employees of nearby car sharing locations and applicable membership information.
- *Ridesharing* – Provide employees with phone numbers and contact information for ride sharing options including Uber, Lyft, and local taxicab services.
- *Carpooling* – Provide employees with phone numbers and contact information for carpool matching services such as the Metropolitan Transportation Commission's 511 RideMatching.

  *Walking and Biking Events* – Provide information about local biking and walking events as events are planned.

[1] This analysis assumes that a transit fare subsidy of about $2.50 per employee per weekday (value to rider, not cost to employer) will be available to all site employees.

[2] Department of the Treasury Internal Revenue Service, Publication 15-B, *Employer's Tax Guide to Fringe Benefits 2023*, page 20 (https://www.irs.gov/pub/irs-pdf/p15b.pdf)

- *Bikeshare/Scooters* – Educate employees about nearby bike sharing station locations and membership information.
- *Bay Area Commuter Benefits Program* - Provide information on the Bay Area Commuter Benefits Program to all building tenants. As of September 30, 2014, Bay Area employers with 50 or more full-time employees within the Bay Area Air Quality Management District (Air District) geographic boundaries are required to register and offer commuter benefits to their employees in order to comply with Air District Regulation 14, Rule 1, also known as the Bay Area Commuter Benefits Program. Employers must select one of four Commuter Benefit options to offer their employees: a pre-tax benefit, an employer-provided subsidy, employer-provided transit, or an alternative commute benefit. (Information about Commute Benefits Program is at 511.org/employers/commuter/overview.)

Operational TDM strategies are most effective for people who commute to and from a site on a regular basis, especially during weekday peak commute periods when transit service peaks and is most conveniently available. Thus, these strategies are generally targeted at office workers. Visitors are not directly targeted because they would visit the Project too infrequently to be aware of the TDM benefits or to make them cost-effective. However, some of the strategies, especially the ones that would improve the infrastructure, would also benefit the site visitors.

## VMT Reduction Estimates

**Table 1** summarizes the estimated effectiveness of the TDM Plan components in reducing the Project VMT. The effectiveness of the strategies is primarily based on the Alameda CTC VMT Reduction Calculator Tool,[3] which is a tool that accounts for the particular location of a development project and quantifies the effects of various strategies in reducing VMT consistent with the research compiled in the *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity, Designed for Local Governments, Communities, and Project Developers* (California Air Pollution Control Officers Association [CAPCOA], December 2021). The CAPCOA publication is a resource for local agencies to quantify the benefit, in terms of reduced travel demand, of implementing various TDM strategies.

As described in the Project Transportation Impact Analysis report, the Home-Work VMT per Worker generated by the Project without a TDM Plan is about five percent over the threshold of significance. As shown in Table 1, this TDM Plan is estimated to reduce the Project-generated VMT by between six and ten percent, which would be more than the five percent reduction needed to reduce the home-work VMT per worker for the Project to below the threshold of significance. Thus, with the implementation of the TDM Plan, the Project impact on VMT would be less-than-significant level.

[3] See https://www.alamedactc.org/planning/sb743-vmt/ for more information.

**Table 1: TDM Plan VMT Reduction Estimates**

| TDM Strategy | Description | Estimated VMT Reduction[1] |
|---|---|---|
| BART Shuttle | Provide peak commute period shuttle service to BART and Amtrak | 3% - 6% |
| Bus Service Extension | Extend AC Transit bus service into the Project area | N/A[2] |
| Bicycle Amenities | Provide secure bicycle parking, showers and lockers, and repair station | <1% |
| Bike Share | Allow and facilitate installation of a potential BayWheels bikeshare station in the Project area | |
| Carpool and Ride-Matching Assistance | Assist Project area employees in forming carpools and provide preferential carpool parking spaces | 1% |
| Transit Fare Subsidy | Require tenants to provide a monthly transit subsidy to employees | 1% - 2%[3] |
| Pre-Tax Commuter Benefits | Require tenants to provide pre-tax commuter benefits to employees | |
| Marketing and Education | Active marketing and education of employees on various commuting options | N/A[4] |
| | ***Total Estimated Vehicle Trip Generation*** | **6% – 10%** |

Notes:
1. Primarily based on the results of the Alameda CTC VMT Reduction Calculator Tool
2. Since the characteristics of a potential bus service extension, such as service frequency and/or destinations served, cannot be known at this time, effectiveness of this strategy cannot be quantified at this time.
3. Assuming a transit subsidy of about $2.50 per day per employee (value to transit user and not necessarily the cost) available to all employees.
4. The effectiveness of this strategy cannot be quantified at this time. This does not necessarily imply that the strategy is ineffective. It only demonstrates that existing literature does not provide a robust methodology for calculating its effectiveness. In addition, many strategies are complementary to each other and isolating their specific effectiveness may not be feasible.

Source: Fehr & Peers, 2023.

## Monitoring and Evaluation

This TDM program shall include regular periodic evaluation of the program to assess the effectiveness of the various strategies implemented. The Project shall submit an annual compliance report after the completion of the first phase of the Berkeley Forge Project for review and approval by the City.

The annual report shall consist of the following:

1. A description of the TDM measures and services provided in the Project area, to the extent feasible the level of use or participation for each measure, such as shuttle ridership, and compliance with the required measures in the TDM plan.
2. Results of an annual employee survey that quantify the mode split for Project area employees, the perception of the TDM plan by the Project area employees. The survey results should focus on the weekday daytime employees only.
3. Summary of weekday daily and AM and PM peak period traffic counts conducted at the Project parking garages.
4. Estimated VMT reduction achieved by the Project based on the collected data.

If the TDM Plan does not meet the required VMT reduction goal, then the annual report shall also outline the additional measures that would be implemented in the coming year to meet the required VMT reduction goal.

If timely reports are not submitted and/or the annual reports indicate that the Project has failed to implement the TDM Plan, the Project will be considered in violation of the Conditions of Approval. The Project shall not be considered in violation if the TDM Plan is implemented but the estimated reduction goals are not achieved. If in three successive years the Project is found to meet the stated TDM goal, additional surveys and monitoring shall be suspended until the next phase of the Project is occupied or such a time as the City deems they are needed.

Please contact Sam Tabibnia (stabibnia@fehrandpeers.com or 510-834-3200) with questions or comments.

# Appendix F
# Level of Service Calculation Sheets (SIDRA)



# SIDRA Calculations
# Near-Term No Project Conditions

FEHR PEERS

# LANE SUMMARY

## Site: 101 [Western Roundabout (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout west of I-80
Site Category: (None)
Roundabout

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: W Frontage Rd | | | | | | | | | | | | | | | |
| Lane 1 d | 50 | 2.0 | 50 | 2.0 | 552 | 0.091 | 100 | 7.6 | LOS A | 0.1 | 3.4 | Full | 1600 | 0.0 | 0.0 |
| Approach | 50 | 2.0 | 50 | 2.0 | | 0.091 | | 7.6 | LOS A | 0.1 | 3.4 | | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 275 | 3.0 | 275 | 3.0 | 1376 | 0.200 | 100 | 3.7 | LOS A | 0.4 | 9.6 | Short | 60 | 0.0 | NA |
| Lane 2 d | 641 | 3.0 | 641 | 3.0 | 1376 | 0.466 | 100 | 5.2 | LOS A | 1.3 | 33.6 | Full | 200 | 0.0 | 0.0 |
| Approach | 916 | 3.0 | 916 | 3.0 | | 0.466 | | 4.7 | LOS A | 1.3 | 33.6 | | | | |
| North: I-80 off-ramp | | | | | | | | | | | | | | | |
| Lane 1 d | 536 | 2.0 | 536 | 2.0 | 602 | 0.890 | 100 | 39.5 | LOS E | 4.6 | 116.2 | Full | 1600 | 0.0 | 0.0 |
| Lane 2 | 508 | 2.0 | 508 | 2.0 | 540 | 0.941 | 100 | 51.3 | LOS F | 5.6 | 141.7 | Full | 1600 | 0.0 | 0.0 |
| Approach | 1044 | 2.0 | 1044 | 2.0 | | 0.941 | | 45.2 | LOS E | 5.6 | 141.7 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 d | 41 | 3.0 | 41 | 3.0 | 222 | 0.185 | 100 | 20.7 | LOS C | 0.2 | 4.9 | Full | 200 | 0.0 | 0.0 |
| Approach | 41 | 3.0 | 41 | 3.0 | | 0.185 | | 20.7 | LOS C | 0.2 | 4.9 | | | | |
| All Vehicles | 2051 | 2.5 | 2051 | 2.5 | | 0.941 | | 25.7 | LOS D | 5.6 | 141.7 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.
d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: W Frontage Rd

| Mov. From S To Exit: | L2 W | R2 E | R3 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 3 | 45 | 2 | 50 | 2.0 | 552 | 0.091 | 100 | NA | NA |
| Approach | 3 | 45 | 2 | 50 | 2.0 | | 0.091 | | | |

East: Gilman St

| Mov. From E To Exit: | L3 SE | L2 S | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 275 | - | - | 275 | 3.0 | 1376 | 0.200 | 100 | 0.0 | 2 |
| Lane 2 | - | 623 | 18 | 641 | 3.0 | 1376 | 0.466 | 100 | NA | NA |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 275 | 623 | 18 | 916 | 3.0 | | | 0.466 | | | |
| North: I-80 off-ramp | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | L1 SE | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 498 | 38 | - | - | 536 | 2.0 | 602 | 0.890 | 100 | NA | NA |
| Lane 2 | - | - | 494 | 14 | 508 | 2.0 | 540 | 0.941 | 100 | NA | NA |
| Approach | 498 | 38 | 494 | 14 | 1044 | 2.0 | | 0.941 | | | |
| West: Gilman St | | | | | | | | | | | |
| Mov. From W To Exit: | T1 E | R1 SE | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 27 | 2 | 12 | 41 | 3.0 | | 222 | 0.185 | 100 | NA | NA |
| Approach | 27 | 2 | 12 | 41 | 3.0 | | | 0.185 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 2051 | 2.5 | 0.941 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: W Frontage Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: I-80 off-ramp | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 102 [Eastern Roundabout (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout east of I-80
Site Category: (None)
Roundabout

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 d | 110 | 2.0 | 110 | 2.0 | 393 | 0.280 | 100 | 14.0 | LOS B | 0.4 | 10.7 | Full | 1600 | 0.0 | 0.0 |
| Approach | 110 | 2.0 | 110 | 2.0 | | 0.280 | | 14.0 | LOS B | 0.4 | 10.7 | | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 d | 529 | 3.0 | 529 | 3.0 | 1213 | 0.436 | 100 | 7.3 | LOS A | 1.0 | 25.1 | Full | 200 | 0.0 | 0.0 |
| Lane 2 | 188 | 3.0 | 188 | 3.0 | 1146 | 0.164 | 100 | 4.5 | LOS A | 0.3 | 7.0 | Short | 80 | 0.0 | NA |
| Approach | 717 | 3.0 | 717 | 3.0 | | 0.436 | | 6.6 | LOS A | 1.0 | 25.1 | | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 d | 582 | 2.0 | 582 | 2.0 | 638 | 0.913 | 100 | 41.5 | LOS E | 5.3 | 135.2 | Full | 1600 | 0.0 | 0.0 |
| Approach | 582 | 2.0 | 582 | 2.0 | | 0.913 | | 41.5 | LOS E | 5.3 | 135.2 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 d | 570 | 3.0 | 570 | 3.0 | 1127 | 0.506 | 100 | 8.8 | LOS A | 1.4 | 36.0 | Full | 200 | 0.0 | 0.0 |
| Approach | 570 | 3.0 | 570 | 3.0 | | 0.506 | | 8.8 | LOS A | 1.4 | 36.0 | | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | | | | | | |
| Lane 1 d | 422 | 2.0 | 422 | 2.0 | 617 | 0.684 | 100 | 20.6 | LOS C | 2.3 | 57.8 | Full | 1600 | 0.0 | 0.0 |
| Approach | 422 | 2.0 | 422 | 2.0 | | 0.684 | | 20.6 | LOS C | 2.3 | 57.8 | | | | |
| All Vehicles | 2401 | 2.5 | 2401 | 2.5 | | 0.913 | | 18.4 | LOS C | 5.3 | 135.2 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.
d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Eastshore Highway

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 47 | 17 | 46 | 110 | 2.0 | 393 | 0.280 | 100 | NA | NA |
| Approach | 47 | 17 | 46 | 110 | 2.0 | | 0.280 | | | |

East: Gilman St

| Mov. From E To Exit: | U E | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 3 | 526 | - | 529 | 3.0 | 1213 | 0.436 | 100 | NA | NA |
| Lane 2 | - | - | 188 | 188 | 3.0 | 1146 | 0.164 | 100 | 0.0 | 1 |
| Approach | 3 | 526 | 188 | 717 | 3.0 | | 0.436 | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | |
| Mov. From NE To Exit: | L3 E | R1 W | R3 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 160 | 311 | 111 | 582 | 2.0 | 638 | 0.913 | 100 | NA | NA |
| Approach | 160 | 311 | 111 | 582 | 2.0 | | 0.913 | | | |
| West: Gilman St | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 42 | 528 | 570 | 3.0 | | 1127 | 0.506 | 100 | NA | NA |
| Approach | 42 | 528 | 570 | 3.0 | | | 0.506 | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | |
| Mov. From SW To Exit: | L3 W | L1 N | R1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 32 | 3 | 387 | 422 | 2.0 | 617 | 0.684 | 100 | NA | NA |
| Approach | 32 | 3 | 387 | 422 | 2.0 | | 0.684 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 2401 | 2.5 | 0.913 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length | Percent Opng in Lane | Opposing Flow Rate | Critical Gap | Follow-up Headway | Lane Flow Rate | Capacity | Deg. Satn | Min. Delay | Merge Delay |
|---|---|---|---|---|---|---|---|---|---|---|
| | ft | % | veh/h pcu/h | sec | sec | veh/h | veh/h | v/c | sec | sec |

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand | Residual Queued Demand | Time for Residual Demand to Clear | Duration of Oversatn |
|---|---|---|---|---|
| | veh | veh | sec | sec |
| South: Eastshore Highway | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Eastshore Highway | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: I-80 Off-ramp | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

# LANE SUMMARY

## Site: 103 [Gilman/Second (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 749 | 3.0 | 749 | 3.0 | 1900 | 0.394 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 200 | 0.0 | 0.0 |
| Approach | 749 | 3.0 | 749 | 3.0 | | 0.394 | | 0.0 | NA | 0.0 | 0.0 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 84 | 3.0 | 84 | 3.0 | 849 | 0.099 | 100 | 5.2 | LOS A | 0.2 | 4.0 | Short | 100 | 0.0 | NA |
| Lane 2 | 1032 | 3.0 | 1032 | 3.0 | 1722 | 0.599 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 200 | 0.0 | 0.0 |
| Approach | 1116 | 3.0 | 1116 | 3.0 | | 0.599 | | 0.4 | NA | 0.2 | 4.0 | | | | |
| All Vehicles | 1865 | 3.0 | 1865 | 3.0 | | 0.599 | | 0.3 | NA | 0.2 | 4.0 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

East: Gilman St

| Mov. From E To Exit: | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 709 | 40 | 749 | 3.0 | 1900 | 0.394 | 100 | NA | NA |
| Approach | 709 | 40 | 749 | 3.0 | | 0.394 | | | |

West: Gilman St

| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 84 | - | - | 84 | 3.0 | 849 | 0.099 | 100 | 0.0 | 2 |
| Lane 2 | - | 624 | 408 | 1032 | 3.0 | 1722 | 0.599 | 100 | NA | NA |
| Approach | 84 | 624 | 408 | 1116 | 3.0 | | 0.599 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1865 | 3.0 | 0.599 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| | Opposing Flow Rate | Critical Gap | Follow-up Headway | Capacity | Deg. Satn | Min. Delay | Merge Delay |
|---|---|---|---|---|---|---|---|

| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | | | | Lane Flow Rate veh/h | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | veh/h | pcu/h | sec | sec | veh/h | veh/h | v/c | sec | sec |

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 104 [Gilman/Third (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 735 | 3.0 | 735 | 3.0 | 1918 | 0.383 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 735 | 3.0 | 735 | 3.0 | | 0.383 | | 0.1 | NA | 0.0 | 0.0 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 601 | 3.0 | 601 | 3.0 | 1845 | 0.326 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 601 | 3.0 | 601 | 3.0 | | 0.326 | | 0.1 | NA | 0.0 | 0.0 | | | | |
| All Vehicles | 1336 | 3.0 | 1336 | 3.0 | | 0.383 | | 0.1 | NA | 0.0 | 0.0 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

East: Gilman St

| Mov. From E To Exit: | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 735 | 735 | 3.0 | 1918 | 0.383 | 100 | NA | NA |
| Approach | 735 | 735 | 3.0 | | 0.383 | | | |

West: Gilman St

| Mov. From W To Exit: | T1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 601 | 601 | 3.0 | 1845 | 0.326 | 100 | NA | NA |
| Approach | 601 | 601 | 3.0 | | 0.326 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1336 | 3.0 | 0.383 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 105 [Gilman/Fourth (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Gilman/Fourth
Site Category: (None)
Signals - Actuated Coordinated Cycle Time = 50 seconds (Network Optimum Cycle Time - Minimum Delay)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | 36 | 3.0 | 36 | 3.0 | 322 | 0.112 | 100 | 12.3 | LOS B | 0.4 | 9.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 36 | 3.0 | 36 | 3.0 | | 0.112 | | 12.3 | LOS B | 0.4 | 9.0 | | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 704 | 3.0 | 704 | 3.0 | 1000 | 0.705 | 100 | 11.4 | LOS B | 8.4 | 214.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 704 | 3.0 | 704 | 3.0 | | 0.705 | | 11.4 | LOS B | 8.4 | 214.0 | | | | |
| North: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | 24 | 3.0 | 24 | 3.0 | 378 | 0.063 | 100 | 9.2 | LOS A | 0.2 | 4.9 | Full | 1600 | 0.0 | 0.0 |
| Approach | 24 | 3.0 | 24 | 3.0 | | 0.063 | | 9.2 | LOS A | 0.2 | 4.9 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 677 | 3.0 | 677 | 3.0 | 1215 | 0.557 | 100 | 6.8 | LOS A | 6.0 | 153.5 | Full | 1600 | 0.0 | 0.0 |
| Approach | 677 | 3.0 | 677 | 3.0 | | 0.557 | | 6.8 | LOS A | 6.0 | 153.5 | | | | |
| All Vehicles | 1441 | 3.0 | 1441 | 3.0 | | 0.705 | | 9.2 | LOS A | 8.4 | 214.0 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

South: Fourth St

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 21 | 10 | 5 | 36 | 3.0 | 322 | 0.112 | 100 | NA | NA |
| Approach | 21 | 10 | 5 | 36 | 3.0 | | 0.112 | | | |

East: Gilman St

| Mov. From E To Exit: | L2 S | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 86 | 618 | 704 | 3.0 | 1000 | 0.705 | 100 | NA | NA |
| Approach | 86 | 618 | 704 | 3.0 | | 0.705 | | | |

North: Fourth St

| Mov. From N To Exit: | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 13 | 11 | 24 | 3.0 | 378 | 0.063 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 13 | 11 | 24 | 3.0 | | | 0.063 | | | |
| West: Gilman St | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 11 | 595 | 72 | 677 | 3.0 | 1215 | 0.557 | 100 | NA | NA |
| Approach | 11 | 595 | 72 | 677 | 3.0 | | 0.557 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1441 | 3.0 | 0.705 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Fourth St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Fourth St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# QUEUE ANALYSIS

## Site: 101 [Western Roundabout (Site Folder: Proposed Design)]

**Network: N101 [AM Peak (Network Folder: General)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

Roundabout west of I-80
Site Category: (None)
Roundabout

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: W Frontage Rd | | | | | | | | | | | | | | | |
| Lane 1 | | 0.091 | 1.000 | 0.0 | 3.4 | 8.4 | 3.3 | 8.1 | 2.7 | 4.9 | 0.00 | 0.01 | 0.0 | NA | NA |
| Approach | | 0.091 | | | 3.4 | 8.4 | 3.3 | 8.1 | 2.7 | 4.9 | 0.00 | 0.01 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.200 | 1.000 | 0.0 | 9.6 | 23.9 | 7.7 | 19.2 | 7.2 | 13.1 | 0.16 | 0.40 | NA | 0.0 | 2 |
| Lane 2 | | 0.466 | 1.000 | 0.0 | 33.6 | 83.4 | 18.0 | 44.6 | 23.7 | 42.9 | 0.17 | 0.42 | 0.0 | NA | NA |
| Approach | | 0.466 | | | 33.6 | 83.4 | 18.0 | 44.6 | 23.7 | 42.9 | 0.17 | 0.42 | | | |
| North: I-80 off-ramp | | | | | | | | | | | | | | | |
| Lane 1 | | 0.890 | 1.000 | 63.3 | 116.2 | 288.8 | 91.7 | 227.9 | 149.4 | 271.0 | 0.07 | 0.18 | 0.0 | NA | NA |
| Lane 2 | | 0.941 | 1.000 | 85.5 | 141.7 | 352.1 | 116.2 | 288.7 | 183.8 | 333.4 | 0.09 | 0.22 | 0.0 | NA | NA |
| Approach | | 0.941 | | | 141.7 | 352.1 | 116.2 | 288.7 | 183.8 | 333.4 | 0.09 | 0.22 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.185 | 1.000 | 0.0 | 4.9 | 12.2 | 4.7 | 11.8 | 6.0 | 11.0 | 0.02 | 0.06 | 0.0 | NA | NA |
| Approach | | 0.185 | | | 4.9 | 12.2 | 4.7 | 11.8 | 6.0 | 11.0 | 0.02 | 0.06 | | | |
| Intersection | | 0.941 | | | 141.7 | 352.1 | 116.2 | 288.7 | 183.8 | 333.4 | 0.17 | 0.42 | | | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: W Frontage Rd | | | | | | | | | | | | | | | |
| Lane 1 | | 0.091 | 1.000 | 0.0 | 0.1 | 0.3 | 0.1 | 0.3 | 0.1 | 0.2 | 0.00 | 0.01 | 0.0 | NA | NA |
| Approach | | 0.091 | | | 0.1 | 0.3 | 0.1 | 0.3 | 0.1 | 0.2 | 0.00 | 0.01 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.200 | 1.000 | 0.0 | 0.4 | 0.9 | 0.3 | 0.7 | 0.3 | 0.5 | 0.16 | 0.40 | NA | 0.0 | 2 |
| Lane 2 | | 0.466 | 1.000 | 0.0 | 1.3 | 3.3 | 0.7 | 1.7 | 0.9 | 1.7 | 0.17 | 0.42 | 0.0 | NA | NA |
| Approach | | 0.466 | | | 1.3 | 3.3 | 0.7 | 1.7 | 0.9 | 1.7 | 0.17 | 0.42 | | | |
| North: I-80 off-ramp | | | | | | | | | | | | | | | |
| Lane 1 | | 0.890 | 1.000 | 2.5 | 4.6 | 11.4 | 3.6 | 9.0 | 5.9 | 10.7 | 0.07 | 0.18 | 0.0 | NA | NA |
| Lane 2 | | 0.941 | 1.000 | 3.4 | 5.6 | 13.9 | 4.6 | 11.4 | 7.2 | 13.1 | 0.09 | 0.22 | 0.0 | NA | NA |
| Approach | | 0.941 | | | 5.6 | 13.9 | 4.6 | 11.4 | 7.2 | 13.1 | 0.09 | 0.22 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.185 | 1.000 | 0.0 | 0.2 | 0.5 | 0.2 | 0.5 | 0.2 | 0.4 | 0.02 | 0.06 | 0.0 | NA | NA |
| Approach | | 0.185 | | | 0.2 | 0.5 | 0.2 | 0.5 | 0.2 | 0.4 | 0.02 | 0.06 | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Intersection | 0.941 | 5.6 | 13.9 | 4.6 | 11.4 | 7.2 | 13.1 | 0.17 | 0.42 | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| There are no Continuous Lanes at this Site. | | | | | | | | | | | | | |

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# QUEUE ANALYSIS

## Site: 102 [Eastern Roundabout (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout east of I-80
Site Category: (None)
Roundabout

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 0.280 | 1.000 | 0.6 | 10.7 | 26.6 | 10.1 | 25.2 | 10.9 | 19.7 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | | 0.280 | | | 10.7 | 26.6 | 10.1 | 25.2 | 10.9 | 19.7 | 0.01 | 0.02 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.436 | 1.000 | 0.0 | 25.1 | 62.5 | 15.4 | 38.4 | 27.4 | 49.7 | 0.13 | 0.31 | 0.0 | NA | NA |
| Lane 2 | | 0.164 | 1.000 | 0.0 | 7.0 | 17.4 | 6.0 | 14.9 | 6.1 | 11.0 | 0.09 | 0.22 | NA | 0.0 | 1 |
| Approach | | 0.436 | | | 25.1 | 62.5 | 15.4 | 38.4 | 27.4 | 49.7 | 0.13 | 0.31 | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 0.913 | 1.000 | 74.2 | 135.2 | 335.9 | 103.7 | 257.7 | 170.4 | 309.2 | 0.08 | 0.21 | 0.0 | NA | NA |
| Approach | | 0.913 | | | 135.2 | 335.9 | 103.7 | 257.7 | 170.4 | 309.2 | 0.08 | 0.21 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.506 | 1.000 | 0.0 | 36.0 | 89.5 | 20.6 | 51.3 | 35.5 | 64.4 | 0.18 | 0.45 | 0.0 | NA | NA |
| Approach | | 0.506 | | | 36.0 | 89.5 | 20.6 | 51.3 | 35.5 | 64.4 | 0.18 | 0.45 | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | | | | | | |
| Lane 1 | | 0.684 | 1.000 | 19.6 | 57.8 | 143.5 | 44.7 | 111.1 | 61.4 | 111.4 | 0.04 | 0.09 | 0.0 | NA | NA |
| Approach | | 0.684 | | | 57.8 | 143.5 | 44.7 | 111.1 | 61.4 | 111.4 | 0.04 | 0.09 | | | |
| Intersection | | 0.913 | | | 135.2 | 335.9 | 103.7 | 257.7 | 170.4 | 309.2 | 0.18 | 0.45 | | | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 0.280 | 1.000 | 0.0 | 0.4 | 1.0 | 0.4 | 1.0 | 0.4 | 0.8 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | | 0.280 | | | 0.4 | 1.0 | 0.4 | 1.0 | 0.4 | 0.8 | 0.01 | 0.02 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.436 | 1.000 | 0.0 | 1.0 | 2.4 | 0.6 | 1.5 | 1.1 | 1.9 | 0.13 | 0.31 | 0.0 | NA | NA |
| Lane 2 | | 0.164 | 1.000 | 0.0 | 0.3 | 0.7 | 0.2 | 0.6 | 0.2 | 0.4 | 0.09 | 0.22 | NA | 0.0 | 1 |
| Approach | | 0.436 | | | 1.0 | 2.4 | 0.6 | 1.5 | 1.1 | 1.9 | 0.13 | 0.31 | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 0.913 | 1.000 | 2.9 | 5.3 | 13.2 | 4.1 | 10.1 | 6.7 | 12.2 | 0.08 | 0.21 | 0.0 | NA | NA |
| Approach | | 0.913 | | | 5.3 | 13.2 | 4.1 | 10.1 | 6.7 | 12.2 | 0.08 | 0.21 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.506 | 1.000 | 0.0 | 1.4 | 3.5 | 0.8 | 2.0 | 1.4 | 2.5 | 0.18 | 0.45 | 0.0 | NA | NA |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 0.506 | | | 1.4 | 3.5 | 0.8 | 2.0 | 1.4 | 2.5 | 0.18 | 0.45 | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | | | | | |
| Lane 1 | 0.684 | 1.000 | 0.8 | 2.3 | 5.7 | 1.8 | 4.4 | 2.4 | 4.4 | 0.04 | 0.09 | 0.0 | NA | NA |
| Approach | 0.684 | | | 2.3 | 5.7 | 1.8 | 4.4 | 2.4 | 4.4 | 0.04 | 0.09 | | | |
| Intersection | 0.913 | | | 5.3 | 13.2 | 4.1 | 10.1 | 6.7 | 12.2 | 0.18 | 0.45 | | | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |

There are no Continuous Lanes at this Site.

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# QUEUE ANALYSIS

## Site: 103 [Gilman/Second (Site Folder: Proposed Design)]

## Network: N101 [AM Peak (Network Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.394 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.394 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.099 | 1.000 | 0.0 | 4.0 | 10.0 | 3.8 | 9.5 | 3.1 | 5.6 | 0.04 | 0.10 | NA | 0.0 | 2 |
| Lane 2 | Y | 0.599 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.599 | | | 4.0 | 10.0 | 3.8 | 9.5 | 3.1 | 5.6 | 0.00 | 0.00 | | | |
| Intersection | | 0.599 | | | 4.0 | 10.0 | 3.8 | 9.5 | 3.1 | 5.6 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.394 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.394 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.099 | 1.000 | 0.0 | 0.2 | 0.4 | 0.1 | 0.4 | 0.1 | 0.2 | 0.04 | 0.10 | NA | 0.0 | 2 |
| Lane 2 | Y | 0.599 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.599 | | | 0.2 | 0.4 | 0.1 | 0.4 | 0.1 | 0.2 | 0.00 | 0.00 | | | |
| Intersection | | 0.599 | | | 0.2 | 0.4 | 0.1 | 0.4 | 0.1 | 0.2 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| East: Gilman St | | | | | | | | | | | | | |
| Lane 1 | 0.394 | 39.8 | 0.0 | 4.81 | 280.7 | 17.6 | 0.42 | 4.39 | 6.3 | 8.8 | 18.8 | 19.3 | LOS C |
| West: Gilman St | | | | | | | | | | | | | |
| Lane 2 | 0.599 | 39.6 | 0.0 | 3.49 | 202.4 | 17.6 | 0.42 | 3.06 | 8.7 | 12.1 | 26.1 | 26.7 | LOS D |

Midblock Effective Detection Zone Length = 7 ft

# QUEUE ANALYSIS

## Site: 104 [Gilman/Third (Site Folder: Proposed Design)]

## Network: N101 [AM Peak (Network Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.383 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.383 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.326 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.326 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| Intersection | | 0.383 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.383 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.383 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.326 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.326 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| Intersection | | 0.383 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| East: Gilman St | | | | | | | | | | | | | |
| Lane 1 | 0.383 | 39.8 | 0.1 | 4.90 | 286.1 | 17.6 | 0.42 | 4.48 | 6.1 | 8.6 | 18.5 | 18.9 | LOS C |
| West: Gilman St | | | | | | | | | | | | | |
| Lane 1 | 0.326 | 39.9 | 0.1 | 5.99 | 350.2 | 17.6 | 0.42 | 5.57 | 5.0 | 7.0 | 15.1 | 15.4 | LOS B |

Midblock Effective Detection Zone Length = 7 ft

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# QUEUE ANALYSIS

## Site: 105 [Gilman/Fourth (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Gilman/Fourth
Site Category: (None)
Signals - Actuated Coordinated Cycle Time = 50 seconds (Network Optimum Cycle Time - Minimum Delay)

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Green (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.112 | 1.000 | 0.8 | 9.0 | 14.7 | 8.9 | 14.5 | 3.1 | 6.6 | 0.01 | 0.01 | 0.0 | NA | NA |
| Approach | | 0.112 | | | 9.0 | 14.7 | 8.9 | 14.5 | 3.1 | 6.6 | 0.01 | 0.01 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.705 | 1.000 | 28.4 | 214.0 | 349.3 | 132.9 | 216.9 | 57.1 | 119.2 | 0.13 | 0.22 | 0.0 | NA | NA |
| Approach | | 0.705 | | | 214.0 | 349.3 | 132.9 | 216.9 | 57.1 | 119.2 | 0.13 | 0.22 | | | |
| North: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.063 | 1.000 | 0.5 | 4.9 | 8.0 | 4.9 | 7.9 | 1.6 | 3.3 | 0.00 | 0.01 | 0.0 | NA | NA |
| Approach | | 0.063 | | | 4.9 | 8.0 | 4.9 | 7.9 | 1.6 | 3.3 | 0.00 | 0.01 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.557 | 1.000 | 17.2 | 153.5 | 250.5 | 103.0 | 168.2 | 33.0 | 68.9 | 0.10 | 0.16 | 0.0 | NA | NA |
| Approach | | 0.557 | | | 153.5 | 250.5 | 103.0 | 168.2 | 33.0 | 68.9 | 0.10 | 0.16 | | | |
| Intersection | | 0.705 | | | 214.0 | 349.3 | 132.9 | 216.9 | 57.1 | 119.2 | 0.13 | 0.22 | | | |

Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Green (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.112 | 1.000 | 0.0 | 0.4 | 0.6 | 0.3 | 0.6 | 0.1 | 0.3 | 0.01 | 0.01 | 0.0 | NA | NA |
| Approach | | 0.112 | | | 0.4 | 0.6 | 0.3 | 0.6 | 0.1 | 0.3 | 0.01 | 0.01 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.705 | 1.000 | 1.1 | 8.4 | 13.6 | 5.2 | 8.5 | 2.2 | 4.7 | 0.13 | 0.22 | 0.0 | NA | NA |
| Approach | | 0.705 | | | 8.4 | 13.6 | 5.2 | 8.5 | 2.2 | 4.7 | 0.13 | 0.22 | | | |
| North: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.063 | 1.000 | 0.0 | 0.2 | 0.3 | 0.2 | 0.3 | 0.1 | 0.1 | 0.00 | 0.01 | 0.0 | NA | NA |
| Approach | | 0.063 | | | 0.2 | 0.3 | 0.2 | 0.3 | 0.1 | 0.1 | 0.00 | 0.01 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.557 | 1.000 | 0.7 | 6.0 | 9.8 | 4.0 | 6.6 | 1.3 | 2.7 | 0.10 | 0.16 | 0.0 | NA | NA |
| Approach | | 0.557 | | | 6.0 | 9.8 | 4.0 | 6.6 | 1.3 | 2.7 | 0.10 | 0.16 | | | |
| Intersection | | 0.705 | | | 8.4 | 13.6 | 5.2 | 8.5 | 2.2 | 4.7 | 0.13 | 0.22 | | | |

Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity Formula: Traditional M1.

Short Lanes are not included in determining Queue Storage Ratios.

## Continuous Lane Performance

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| There are no Continuous Lanes at this Site. | | | | | | | | | | | | | |

## Pedestrian Queues

| Mov ID | Description | Dem. Flow | AVERAGE BACK OF QUEUE [ Ped | Dist ] |
|---|---|---|---|---|
| | | ped/h | ped | ft |
| South: Fourth St | | | | |
| 2P | Full | 30 | 0.0 | 0.1 |
| East: Gilman St | | | | |
| 8P | Full | 10 | 0.0 | 0.0 |
| North: Fourth St | | | | |
| 6P | Full | 20 | 0.0 | 0.1 |
| West: Gilman St | | | | |
| 4P | Full | 10 | 0.0 | 0.0 |
| All Pedestrians | | 70 | 0.0 | 0.1 |

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# LANE SUMMARY

## Site: 101 [Western Roundabout (Site Folder: Proposed Design)]

Network: N101 [PM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout west of I-80
Site Category: (None)
Roundabout

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: W Frontage Rd | | | | | | | | | | | | | | | |
| Lane 1 d | 563 | 2.0 | 563 | 2.0 | 610 | 0.923 | 100 | 43.6 | LOS E | 5.9 | 149.7 | Full | 1600 | -12.4 N3 | 0.0 |
| Approach | 563 | 2.0 | 563 | 2.0 | | 0.923 | | 43.6 | LOS E | 5.9 | 149.7 | | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 d | 183 | 3.0 | 183 | 3.0 | 1333 | 0.137 | 100 | 3.7 | LOS A | 0.2 | 6.1 | Short | 60 | 0.0 | NA |
| Lane 2 | 178 | 3.0 | 178 | 3.0 | 1333 | 0.134 | 100 | 3.7 | LOS A | 0.2 | 5.9 | Full | 200 | 0.0 | 0.0 |
| Approach | 361 | 3.0 | 361 | 3.0 | | 0.137 | | 3.7 | LOS A | 0.2 | 6.1 | | | | |
| North: I-80 off-ramp | | | | | | | | | | | | | | | |
| Lane 1 d | 359 | 2.0 | 359 | 2.0 | 845 | 0.425 | 100 | 8.9 | LOS A | 0.8 | 20.9 | Short | 600 | -13.1 N3 | NA |
| Lane 2 | 227 | 2.0 | 227 | 2.0 | 902 | 0.252 | 100 | 6.6 | LOS A | 0.4 | 10.8 | Full | 1600 | 0.0 | 0.0 |
| Approach | 586 | 2.0 | 586 | 2.0 | | 0.425 | | 8.0 | LOS A | 0.8 | 20.9 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 d | 96 | 3.0 | 96 | 3.0 | 591 | 0.162 | 100 | 7.4 | LOS A | 0.2 | 5.1 | Full | 200 | -11.0 N3 | 0.0 |
| Approach | 96 | 3.0 | 96 | 3.0 | | 0.162 | | 7.4 | LOS A | 0.2 | 5.1 | | | | |
| All Vehicles | 1606 | 2.3 | 1606 | 2.3 | | 0.923 | | 19.5 | LOS C | 5.9 | 149.7 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.
d Dominant lane on roundabout approach
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

**Approach Lane Flows (veh/h)**

| South: W Frontage Rd | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mov. From S To Exit: | L2 W | R2 E | R3 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 36 | 517 | 10 | 563 | 2.0 | 610 | 0.923 | 100 | NA | NA |
| Approach | 36 | 517 | 10 | 563 | 2.0 | | 0.923 | | | |

| East: Gilman St | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mov. From E To Exit: | L3 SE | L2 S | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 183 | - | - | 183 | 3.0 | 1333 | 0.137 | 100 | 0.0 | 2 |
| Lane 2 | - | 110 | 68 | 178 | 3.0 | 1333 | 0.134 | 100 | NA | NA |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 183 | 110 | 68 | 361 | 3.0 | | | 0.137 | | | |
| North: I-80 off-ramp | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | L1 SE | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 353 | 6 | - | - | 359 | 2.0 | 845 | 0.425 | 100 | 0.0 | 2 |
| Lane 2 | - | - | 140 | 87 | 227 | 2.0 | 902 | 0.252 | 100 | NA | NA |
| Approach | 353 | 6 | 140 | 87 | 586 | 2.0 | | 0.425 | | | |
| West: Gilman St | | | | | | | | | | | |
| Mov. From W To Exit: | T1 E | R1 SE | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 77 | 2 | 17 | 96 | 3.0 | | 591 | 0.162 | 100 | NA | NA |
| Approach | 77 | 2 | 17 | 96 | 3.0 | | | 0.162 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1606 | 2.3 | 0.923 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: W Frontage Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: I-80 off-ramp | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 102 [Eastern Roundabout (Site Folder: Proposed Design)]

Network: N101 [PM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout east of I-80
Site Category: (None)
Roundabout

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 d | 355 | 2.0 | 355 | 2.0 | 413 | 0.859 | 100 | 46.2 | LOS E | 3.0 | 75.5 | Full | 1600 | 0.0 | 0.0 |
| Approach | 355 | 2.0 | 355 | 2.0 | | 0.859 | | 46.2 | LOS E | 3.0 | 75.5 | | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 258 | 3.0 | 258 | 3.0 | 711 | 0.363 | 100 | 9.7 | LOS A | 0.7 | 16.9 | Full | 200 | 0.0 | 11.6 8 |
| Lane 2 d | 612 | 3.0 | 612 | 3.0 | 776 | 0.789 | 100 | 23.1 | LOS C | 3.9 | 99.2 | Short | 80 | 0.0 | NA |
| Approach | 870 | 3.0 | 870 | 3.0 | | 0.789 | | 19.1 | LOS C | 3.9 | 99.2 | | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 d | 124 | 2.0 | 124 | 2.0 | 352 | 0.352 | 100 | 17.3 | LOS C | 0.5 | 12.3 | Full | 1600 | 0.0 | 0.0 |
| Approach | 124 | 2.0 | 124 | 2.0 | | 0.352 | | 17.3 | LOS C | 0.5 | 12.3 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 d | 947 | 3.0 | 947 | 3.0 | 1289 | 0.735 | 100 | 11.4 | LOS B | 4.1 | 104.5 | Full | 200 | 0.0 | 13.3 |
| Approach | 947 | 3.0 | 947 | 3.0 | | 0.735 | | 11.4 | LOS B | 4.1 | 104.5 | | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | | | | | | |
| Lane 1 d | 119 | 2.0 | 119 | 2.0 | 470 | 0.253 | 100 | 11.5 | LOS B | 0.4 | 9.7 | Full | 1600 | 0.0 | 0.0 |
| Approach | 119 | 2.0 | 119 | 2.0 | | 0.253 | | 11.5 | LOS B | 0.4 | 9.7 | | | | |
| All Vehicles | 2415 | 2.8 | 2415 | 2.8 | | 0.859 | | 19.6 | LOS C | 4.1 | 104.5 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.
8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.
d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Eastshore Highway

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 59 | 143 | 153 | 355 | 2.0 | 413 | 0.859 | 100 | NA | NA |
| Approach | 59 | 143 | 153 | 355 | 2.0 | | 0.859 | | | |

East: Gilman St

| Mov. | U | T1 | R2 | Total | %HV |
|---|---|---|---|---|---|

| From E<br>To Exit: | E | W | N | | | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 3 | 255 | - | 258 | 3.0 | 711 | 0.363 | 100 | NA | NA |
| Lane 2 | - | - | 612 | 612 | 3.0 | 776 | 0.789 | 100 | 100.0 | 1 |
| Approach | 3 | 255 | 612 | 870 | 3.0 | | 0.789 | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | |
| Mov.<br>From NE<br>To Exit: | L3<br>E | R1<br>W | R3<br>N | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 35 | 26 | 63 | 124 | 2.0 | 352 | 0.352 | 100 | NA | NA |
| Approach | 35 | 26 | 63 | 124 | 2.0 | | 0.352 | | | |
| West: Gilman St | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | L2<br>N | T1<br>E | Total | %HV | | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 399 | 548 | 947 | 3.0 | | 1289 | 0.735 | 100 | NA | NA |
| Approach | 399 | 548 | 947 | 3.0 | | | 0.735 | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | |
| Mov.<br>From SW<br>To Exit: | L3<br>W | L1<br>N | R1<br>E | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 21 | 3 | 95 | 119 | 2.0 | 470 | 0.253 | 100 | NA | NA |
| Approach | 21 | 3 | 95 | 119 | 2.0 | | 0.253 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 2415 | 2.8 | 0.859 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length | Percent Opng in Lane | Opposing Flow Rate | Critical Gap | Follow-up Headway | Lane Flow Rate | Capacity | Deg. Satn | Min. Delay | Merge Delay |
|---|---|---|---|---|---|---|---|---|---|---|
| | ft | % | veh/h pcu/h | sec | sec | veh/h | veh/h | v/c | sec | sec |

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| South: Eastshore Highway | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Eastshore Highway | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: I-80 Off-ramp | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

# LANE SUMMARY

## Site: 103 [Gilman/Second (Site Folder: Proposed Design)]

## Network: N101 [PM Peak (Network Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 955 | 3.0 | 955 | 3.0 | 1686 | 0.566 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 200 | -10.5 N3 | 0.0 |
| Approach | 955 | 3.0 | 955 | 3.0 | | 0.566 | | 0.0 | NA | 0.0 | 0.0 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 192 | 3.0 | 192 | 3.0 | 708 | 0.271 | 100 | 8.3 | LOS A | 0.5 | 13.0 | Short | 100 | 0.0 | NA |
| Lane 2 | 642 | 3.0 | 642 | 3.0 | 1779 | 0.361 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 200 | 0.0 | 0.0 |
| Approach | 834 | 3.0 | 834 | 3.0 | | 0.361 | | 1.9 | NA | 0.5 | 13.0 | | | | |
| All Vehicles | 1789 | 3.0 | 1789 | 3.0 | | 0.566 | | 0.9 | NA | 0.5 | 13.0 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

**Approach Lane Flows (veh/h)**

East: Gilman St

| Mov. From E To Exit: | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 857 | 98 | 955 | 3.0 | 1686 | 0.566 | 100 | NA | NA |
| Approach | 857 | 98 | 955 | 3.0 | | 0.566 | | | |

West: Gilman St

| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 192 | - | - | 192 | 3.0 | 708 | 0.271 | 100 | 0.0 | 2 |
| Lane 2 | - | 510 | 132 | 642 | 3.0 | 1779 | 0.361 | 100 | NA | NA |
| Approach | 192 | 510 | 132 | 834 | 3.0 | | 0.361 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1789 | 3.0 | 0.566 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length | Percent Opng in Lane | Opposing Flow Rate | Critical Gap | Follow-up Headway | Lane Flow Rate | Capacity | Deg. Satn | Min. Delay | Merge Delay |
|---|---|---|---|---|---|---|---|---|---|---|
| | ft | % | veh/h pcu/h | sec | sec | veh/h | veh/h | v/c | sec | sec |
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand | Residual Queued Demand | Time for Residual Demand to Clear | Duration of Oversatn |
|---|---|---|---|---|
| | veh | veh | sec | sec |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 104 [Gilman/Third (Site Folder: Proposed Design)]

Network: N101 [PM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 926 | 3.0 | 926 | 3.0 | 1918 | 0.483 | 100 | 0.2 | LOS A | 0.0 | 0.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 926 | 3.0 | 926 | 3.0 | | 0.483 | | 0.2 | NA | 0.0 | 0.0 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 491 | 3.0 | 491 | 3.0 | 1845 | 0.266 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 491 | 3.0 | 491 | 3.0 | | 0.266 | | 0.1 | NA | 0.0 | 0.0 | | | | |
| All Vehicles | 1417 | 3.0 | 1417 | 3.0 | | 0.483 | | 0.1 | NA | 0.0 | 0.0 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

East: Gilman St

| Mov. From E To Exit: | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 926 | 926 | 3.0 | 1918 | 0.483 | 100 | NA | NA |
| Approach | 926 | 926 | 3.0 | | 0.483 | | | |

West: Gilman St

| Mov. From W To Exit: | T1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 491 | 491 | 3.0 | 1845 | 0.266 | 100 | NA | NA |
| Approach | 491 | 491 | 3.0 | | 0.266 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1417 | 3.0 | 0.483 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 105 [Gilman/Fourth (Site Folder: Proposed Design)]

Network: N101 [PM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Gilman/Fourth
Site Category: (None)
Signals - Actuated Coordinated Cycle Time = 50 seconds (Network Optimum Cycle Time - Minimum Delay)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | 130 | 3.0 | 130 | 3.0 | 354 | 0.368 | 100 | 19.0 | LOS B | 1.6 | 41.9 | Full | 1600 | 0.0 | 0.0 |
| Approach | 130 | 3.0 | 130 | 3.0 | | 0.368 | | 19.0 | LOS B | 1.6 | 41.9 | | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 935 | 3.0 | 935 | 3.0 | 1165 | 0.803 | 100 | 13.3 | LOS B | 12.5 | 319.5 | Full | 1600 | 0.0 | 0.0 |
| Approach | 935 | 3.0 | 935 | 3.0 | | 0.803 | | 13.3 | LOS B | 12.5 | 319.5 | | | | |
| North: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | 22 | 3.0 | 22 | 3.0 | 466 | 0.047 | 100 | 6.9 | LOS A | 0.2 | 4.2 | Full | 1600 | 0.0 | 0.0 |
| Approach | 22 | 3.0 | 22 | 3.0 | | 0.047 | | 6.9 | LOS A | 0.2 | 4.2 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 583 | 3.0 | 583 | 3.0 | 1111 | 0.524 | 100 | 8.4 | LOS A | 5.6 | 144.4 | Full | 1600 | 0.0 | 0.0 |
| Approach | 583 | 3.0 | 583 | 3.0 | | 0.524 | | 8.4 | LOS A | 5.6 | 144.4 | | | | |
| All Vehicles | 1670 | 3.0 | 1670 | 3.0 | | 0.803 | | 12.0 | LOS B | 12.5 | 319.5 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

| South: Fourth St | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 88 | 16 | 26 | 130 | 3.0 | 354 | 0.368 | 100 | NA | NA |
| Approach | 88 | 16 | 26 | 130 | 3.0 | | 0.368 | | | |
| East: Gilman St | | | | | | | | | | |
| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 9 | 920 | 7 | 935 | 3.0 | 1165 | 0.803 | 100 | NA | NA |
| Approach | 9 | 920 | 7 | 935 | 3.0 | | 0.803 | | | |
| North: Fourth St | | | | | | | | | | |
| Mov. From N To Exit: | T1 S | R2 W | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 7 | 15 | 22 | 3.0 | | 466 | 0.047 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 7 | 15 | 22 | 3.0 | | | 0.047 | | | |
| West: Gilman St | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 15 | 539 | 28 | 583 | 3.0 | 1111 | 0.524 | 100 | NA | NA |
| Approach | 15 | 539 | 28 | 583 | 3.0 | | 0.524 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1670 | 3.0 | 0.803 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length | Percent Opng in Lane | Opposing Flow Rate | Critical Gap | Follow-up Headway | Lane Flow Rate | Capacity | Deg. Satn | Min. Delay | Merge Delay |
|---|---|---|---|---|---|---|---|---|---|---|
| | ft | % | veh/h pcu/h | sec | sec | veh/h | veh/h | v/c | sec | sec |

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Fourth St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Fourth St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# QUEUE ANALYSIS

## Site: 101 [Western Roundabout (Site Folder: Proposed Design)]

Network: N101 [PM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout west of I-80
Site Category: (None)
Roundabout

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: W Frontage Rd | | | | | | | | | | | | | | | |
| Lane 1 | | 0.923 | 1.000 | 77.1 | 149.7 | 372.1 | 107.4 | 266.9 | 173.3 | 314.4 | 0.09 | 0.23 | 0.0 | NA | NA |
| Approach | | 0.923 | | | 149.7 | 372.1 | 107.4 | 266.9 | 173.3 | 314.4 | 0.09 | 0.23 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.137 | 1.000 | 0.0 | 6.1 | 15.1 | 5.3 | 13.1 | 4.8 | 8.8 | 0.10 | 0.25 | NA | 0.0 | 2 |
| Lane 2 | | 0.134 | 1.000 | 0.0 | 5.9 | 14.6 | 5.1 | 12.7 | 4.7 | 8.4 | 0.03 | 0.07 | 0.0 | NA | NA |
| Approach | | 0.137 | | | 6.1 | 15.1 | 5.3 | 13.1 | 4.8 | 8.8 | 0.03 | 0.07 | | | |
| North: I-80 off-ramp | | | | | | | | | | | | | | | |
| Lane 1 | | 0.425 | 1.000 | 2.3 | 20.9 | 51.8 | 15.0 | 37.2 | 22.5 | 40.8 | 0.03 | 0.09 | NA | 0.0 | 2 |
| Lane 2 | | 0.252 | 1.000 | 0.0 | 10.8 | 26.7 | 8.9 | 22.1 | 10.5 | 19.0 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | | 0.425 | | | 20.9 | 51.8 | 15.0 | 37.2 | 22.5 | 40.8 | 0.01 | 0.02 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.162 | 1.000 | 0.0 | 5.1 | 12.6 | 4.6 | 11.5 | 5.0 | 9.2 | 0.03 | 0.06 | 0.0 | NA | NA |
| Approach | | 0.162 | | | 5.1 | 12.6 | 4.6 | 11.5 | 5.0 | 9.2 | 0.03 | 0.06 | | | |
| Intersection | | 0.923 | | | 149.7 | 372.1 | 107.4 | 266.9 | 173.3 | 314.4 | 0.09 | 0.23 | | | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: W Frontage Rd | | | | | | | | | | | | | | | |
| Lane 1 | | 0.923 | 1.000 | 3.0 | 5.9 | 14.6 | 4.2 | 10.5 | 6.8 | 12.4 | 0.09 | 0.23 | 0.0 | NA | NA |
| Approach | | 0.923 | | | 5.9 | 14.6 | 4.2 | 10.5 | 6.8 | 12.4 | 0.09 | 0.23 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.137 | 1.000 | 0.0 | 0.2 | 0.6 | 0.2 | 0.5 | 0.2 | 0.3 | 0.10 | 0.25 | NA | 0.0 | 2 |
| Lane 2 | | 0.134 | 1.000 | 0.0 | 0.2 | 0.6 | 0.2 | 0.5 | 0.2 | 0.3 | 0.03 | 0.07 | 0.0 | NA | NA |
| Approach | | 0.137 | | | 0.2 | 0.6 | 0.2 | 0.5 | 0.2 | 0.3 | 0.03 | 0.07 | | | |
| North: I-80 off-ramp | | | | | | | | | | | | | | | |
| Lane 1 | | 0.425 | 1.000 | 0.1 | 0.8 | 2.0 | 0.6 | 1.5 | 0.9 | 1.6 | 0.03 | 0.09 | NA | 0.0 | 2 |
| Lane 2 | | 0.252 | 1.000 | 0.0 | 0.4 | 1.1 | 0.4 | 0.9 | 0.4 | 0.7 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | | 0.425 | | | 0.8 | 2.0 | 0.6 | 1.5 | 0.9 | 1.6 | 0.01 | 0.02 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.162 | 1.000 | 0.0 | 0.2 | 0.5 | 0.2 | 0.5 | 0.2 | 0.4 | 0.03 | 0.06 | 0.0 | NA | NA |
| Approach | | 0.162 | | | 0.2 | 0.5 | 0.2 | 0.5 | 0.2 | 0.4 | 0.03 | 0.06 | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Intersection | 0.923 | 5.9 | 14.6 | 4.2 | 10.5 | 6.8 | 12.4 | 0.09 | 0.23 | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| There are no Continuous Lanes at this Site. | | | | | | | | | | | | | |

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# QUEUE ANALYSIS

## Site: 102 [Eastern Roundabout (Site Folder: Proposed Design)]

## Network: N101 [PM Peak (Network Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

Roundabout east of I-80
Site Category: (None)
Roundabout

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 0.859 | 1.000 | 37.9 | 75.5 | 187.6 | 67.3 | 167.3 | 115.7 | 209.8 | 0.05 | 0.12 | 0.0 | NA | NA |
| Approach | | 0.859 | | | 75.5 | 187.6 | 67.3 | 167.3 | 115.7 | 209.8 | 0.05 | 0.12 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.363 | 1.000 | 1.6 | 16.9 | 42.0 | 13.9 | 34.6 | 17.8 | 32.2 | 0.08 | 0.21 | 11.6 | NA | NA |
| Lane 2 | | 0.789 | 1.000 | 40.7 | 99.2 | 246.6 | 66.8 | 166.0 | 100.6 | 182.5 | 1.24 | 3.08 | NA | 100.0 | 1 |
| Approach | | 0.789 | | | 99.2 | 246.6 | 66.8 | 166.0 | 100.6 | 182.5 | 0.08 | 0.21 | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 0.352 | 1.000 | 1.7 | 12.3 | 30.5 | 11.9 | 29.6 | 15.2 | 27.5 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | | 0.352 | | | 12.3 | 30.5 | 11.9 | 29.6 | 15.2 | 27.5 | 0.01 | 0.02 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.735 | 1.000 | 0.0 | 104.5 | 259.8 | 30.7 | 76.3 | 76.5 | 138.7 | 0.52 | 1.30 | 13.3 | NA | NA |
| Approach | | 0.735 | | | 104.5 | 259.8 | 30.7 | 76.3 | 76.5 | 138.7 | 0.52 | 1.30 | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | | | | | | |
| Lane 1 | | 0.253 | 1.000 | 0.0 | 9.7 | 24.2 | 8.9 | 22.0 | 9.6 | 17.5 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | | 0.253 | | | 9.7 | 24.2 | 8.9 | 22.0 | 9.6 | 17.5 | 0.01 | 0.02 | | | |
| Intersection | | 0.859 | | | 104.5 | 259.8 | 67.3 | 167.3 | 115.7 | 209.8 | 0.52 | 1.30 | | | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 0.859 | 1.000 | 1.5 | 3.0 | 7.4 | 2.6 | 6.6 | 4.6 | 8.3 | 0.05 | 0.12 | 0.0 | NA | NA |
| Approach | | 0.859 | | | 3.0 | 7.4 | 2.6 | 6.6 | 4.6 | 8.3 | 0.05 | 0.12 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.363 | 1.000 | 0.1 | 0.7 | 1.6 | 0.5 | 1.4 | 0.7 | 1.3 | 0.08 | 0.21 | 11.6 | NA | NA |
| Lane 2 | | 0.789 | 1.000 | 1.6 | 3.9 | 9.6 | 2.6 | 6.5 | 3.9 | 7.1 | 1.24 | 3.08 | NA | 100.0 | 1 |
| Approach | | 0.789 | | | 3.9 | 9.6 | 2.6 | 6.5 | 3.9 | 7.1 | 0.08 | 0.21 | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 0.352 | 1.000 | 0.1 | 0.5 | 1.2 | 0.5 | 1.2 | 0.6 | 1.1 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | | 0.352 | | | 0.5 | 1.2 | 0.5 | 1.2 | 0.6 | 1.1 | 0.01 | 0.02 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.735 | 1.000 | 0.0 | 4.1 | 10.1 | 1.2 | 3.0 | 3.0 | 5.4 | 0.52 | 1.30 | 13.3 | NA | NA |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 0.735 | | | 4.1 | 10.1 | 1.2 | 3.0 | 3.0 | 5.4 | 0.52 | 1.30 | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | | | | | |
| Lane 1 | 0.253 | 1.000 | 0.0 | 0.4 | 1.0 | 0.3 | 0.9 | 0.4 | 0.7 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | 0.253 | | | 0.4 | 1.0 | 0.3 | 0.9 | 0.4 | 0.7 | 0.01 | 0.02 | | | |
| Intersection | 0.859 | | | 4.1 | 10.1 | 2.6 | 6.6 | 4.6 | 8.3 | 0.52 | 1.30 | | | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |

There are no Continuous Lanes at this Site.

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# QUEUE ANALYSIS

## Site: 103 [Gilman/Second (Site Folder: Proposed Design)]

## Network: N101 [PM Peak (Network Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.566 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.566 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.271 | 1.000 | 1.4 | 13.0 | 32.2 | 11.6 | 28.7 | 11.3 | 20.5 | 0.13 | 0.32 | NA | 0.0 | 2 |
| Lane 2 | Y | 0.361 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.361 | | | 13.0 | 32.2 | 11.6 | 28.7 | 11.3 | 20.5 | 0.00 | 0.00 | | | |
| Intersection | | 0.566 | | | 13.0 | 32.2 | 11.6 | 28.7 | 11.3 | 20.5 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.566 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.566 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.271 | 1.000 | 0.1 | 0.5 | 1.3 | 0.5 | 1.1 | 0.4 | 0.8 | 0.13 | 0.32 | NA | 0.0 | 2 |
| Lane 2 | Y | 0.361 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.361 | | | 0.5 | 1.3 | 0.5 | 1.1 | 0.4 | 0.8 | 0.00 | 0.00 | | | |
| Intersection | | 0.566 | | | 0.5 | 1.3 | 0.5 | 1.1 | 0.4 | 0.8 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| East: Gilman St | | | | | | | | | | | | | |
| Lane 1 | 0.566 | 39.6 | 0.0 | 3.77 | 218.9 | 17.6 | 0.42 | 3.35 | 8.0 | 11.2 | 24.1 | 24.7 | LOS C |
| West: Gilman St | | | | | | | | | | | | | |
| Lane 2 | 0.361 | 39.8 | 0.0 | 5.61 | 327.6 | 17.6 | 0.42 | 5.19 | 5.4 | 7.5 | 16.1 | 16.5 | LOS B |

Midblock Effective Detection Zone Length = 7 ft

# QUEUE ANALYSIS

## Site: 104 [Gilman/Third (Site Folder: Proposed Design)]

## Network: N101 [PM Peak (Network Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.483 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.483 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.266 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.266 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| Intersection | | 0.483 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.483 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.483 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.266 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.266 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| Intersection | | 0.483 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| East: Gilman St | | | | | | | | | | | | | |
| Lane 1 | 0.483 | 39.7 | 0.2 | 3.89 | 226.6 | 17.6 | 0.42 | 3.47 | 7.8 | 10.8 | 23.3 | 23.9 | LOS C |
| West: Gilman St | | | | | | | | | | | | | |
| Lane 1 | 0.266 | 39.9 | 0.1 | 7.33 | 429.0 | 17.6 | 0.42 | 6.91 | 4.1 | 5.7 | 12.3 | 12.6 | LOS B |

Midblock Effective Detection Zone Length = 7 ft

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# QUEUE ANALYSIS

## Site: 105 [Gilman/Fourth (Site Folder: Proposed Design)]

Network: N101 [PM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Gilman/Fourth
Site Category: (None)
Signals - Actuated Coordinated Cycle Time = 50 seconds (Network Optimum Cycle Time - Minimum Delay)

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Green (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.368 | 1.000 | 3.8 | 41.9 | 68.4 | 38.9 | 63.5 | 17.6 | 36.7 | 0.03 | 0.04 | 0.0 | NA | NA |
| Approach | | 0.368 | | | 41.9 | 68.4 | 38.9 | 63.5 | 17.6 | 36.7 | 0.03 | 0.04 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.803 | 1.000 | 50.8 | 319.5 | 521.4 | 181.4 | 296.1 | 88.7 | 185.3 | 0.20 | 0.33 | 0.0 | NA | NA |
| Approach | | 0.803 | | | 319.5 | 521.4 | 181.4 | 296.1 | 88.7 | 185.3 | 0.20 | 0.33 | | | |
| North: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.047 | 1.000 | 0.4 | 4.2 | 6.9 | 4.1 | 6.7 | 1.1 | 2.2 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.047 | | | 4.2 | 6.9 | 4.1 | 6.7 | 1.1 | 2.2 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.524 | 1.000 | 14.3 | 144.4 | 235.6 | 103.3 | 168.6 | 34.6 | 72.4 | 0.09 | 0.15 | 0.0 | NA | NA |
| Approach | | 0.524 | | | 144.4 | 235.6 | 103.3 | 168.6 | 34.6 | 72.4 | 0.09 | 0.15 | | | |
| Intersection | | 0.803 | | | 319.5 | 521.4 | 181.4 | 296.1 | 88.7 | 185.3 | 0.20 | 0.33 | | | |

Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Green (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.368 | 1.000 | 0.1 | 1.6 | 2.7 | 1.5 | 2.5 | 0.7 | 1.4 | 0.03 | 0.04 | 0.0 | NA | NA |
| Approach | | 0.368 | | | 1.6 | 2.7 | 1.5 | 2.5 | 0.7 | 1.4 | 0.03 | 0.04 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.803 | 1.000 | 2.0 | 12.5 | 20.4 | 7.1 | 11.6 | 3.5 | 7.2 | 0.20 | 0.33 | 0.0 | NA | NA |
| Approach | | 0.803 | | | 12.5 | 20.4 | 7.1 | 11.6 | 3.5 | 7.2 | 0.20 | 0.33 | | | |
| North: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.047 | 1.000 | 0.0 | 0.2 | 0.3 | 0.2 | 0.3 | 0.0 | 0.1 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.047 | | | 0.2 | 0.3 | 0.2 | 0.3 | 0.0 | 0.1 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.524 | 1.000 | 0.6 | 5.6 | 9.2 | 4.0 | 6.6 | 1.4 | 2.8 | 0.09 | 0.15 | 0.0 | NA | NA |
| Approach | | 0.524 | | | 5.6 | 9.2 | 4.0 | 6.6 | 1.4 | 2.8 | 0.09 | 0.15 | | | |
| Intersection | | 0.803 | | | 12.5 | 20.4 | 7.1 | 11.6 | 3.5 | 7.2 | 0.20 | 0.33 | | | |

Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity Formula: Traditional M1.

Short Lanes are not included in determining Queue Storage Ratios.

## Continuous Lane Performance

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| There are no Continuous Lanes at this Site. | | | | | | | | | | | | | |

## Pedestrian Queues

| Mov ID | Description | Dem. Flow | AVERAGE BACK OF QUEUE [ Ped | Dist ] |
|---|---|---|---|---|
| | | ped/h | ped | ft |
| South: Fourth St | | | | |
| 2P | Full | 40 | 0.0 | 0.1 |
| East: Gilman St | | | | |
| 8P | Full | 20 | 0.0 | 0.1 |
| North: Fourth St | | | | |
| 6P | Full | 30 | 0.0 | 0.1 |
| West: Gilman St | | | | |
| 4P | Full | 20 | 0.0 | 0.1 |
| All Pedestrians | | 110 | 0.0 | 0.1 |

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# SIDRA Calculations
# Near-Term Plus Project Conditions

FEHR PEERS

# LANE SUMMARY

## Site: 101 [Western Roundabout (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout west of I-80
Site Category: (None)
Roundabout

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: W Frontage Rd | | | | | | | | | | | | | | | |
| Lane 1 d | 50 | 2.0 | 50 | 2.0 | 491 | 0.102 | 100 | 8.6 | LOS A | 0.1 | 3.7 | Full | 1600 | -1.6 N3 | 0.0 |
| Approach | 50 | 2.0 | 50 | 2.0 | | 0.102 | | 8.6 | LOS A | 0.1 | 3.7 | | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 337 | 3.0 | 326 | 3.0 | 1375 | 0.237 | 100 | 3.9 | LOS A | 0.5 | 12.0 | Short | 60 | 0.0 | NA |
| Lane 2 d | 641 | 3.0 | 621 | 3.0 | 1375 | 0.451 | 100 | 5.1 | LOS A | 1.2 | 31.6 | Full | 200 | 0.0 | 0.0 |
| Approach | 978 | 3.0 | 947 | 3.0 | | 0.451 | | 4.7 | LOS A | 1.2 | 31.6 | | | | |
| North: I-80 off-ramp | | | | | | | | | | | | | | | |
| Lane 1 d | 736 | 2.0 | 736 | 2.0 | 574 | 1.281 | 100 | 158.8 | LOS F | 24.0 | 610.6 | Short | 600 | -1.8 N3 | NA |
| Lane 2 | 508 | 2.0 | 508 | 2.0 | 523 | 0.970 | 100 | 58.5 | LOS F | 6.3 | 159.9 | Full | 1600 | 0.0 | 3.5 8 |
| Approach | 1244 | 2.0 | 1244 | 2.0 | | 1.281 | | 117.8 | LOS F | 24.0 | 610.6 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 d | 41 | 3.0 | 41 | 3.0 | 203 | 0.202 | 100 | 23.0 | LOS C | 0.2 | 5.2 | Full | 200 | -1.2 N3 | 0.0 |
| Approach | 41 | 3.0 | 41 | 3.0 | | 0.202 | | 23.0 | LOS C | 0.2 | 5.2 | | | | |
| All Vehicles | 2313 | 2.4 | 2282 | 2.5 | | 1.281 | | 66.8 | LOS F | 24.0 | 610.6 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.
8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.
d Dominant lane on roundabout approach
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

**Approach Lane Flows (veh/h)**

South: W Frontage Rd

| Mov. From S To Exit: | L2 W | R2 E | R3 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 3 | 45 | 2 | 50 | 2.0 | 491 | 0.102 | 100 | NA | NA |
| Approach | 3 | 45 | 2 | 50 | 2.0 | | 0.102 | | | |

East: Gilman St

| Mov. From E To Exit: | L3 SE | L2 S | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 326 | - | - | 326 | 3.0 | 1375 | 0.237 | 100 | 0.0 | 2 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 2 | - | 603 | 17 | 621 | 3.0 | | 1375 | 0.451 | 100 | NA | NA |
| Approach | 326 | 603 | 17 | 947 | 3.0 | | | 0.451 | | | |
| North: I-80 off-ramp | | | | | | | | | | | |
| Mov.<br>From N<br>To Exit: | L2<br><br>E | L1<br><br>SE | T1<br><br>S | R2<br><br>W | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 732 | 4 | - | - | 736 | 2.0 | 574 | 1.281 | 100 | 52.1 | 2 |
| Lane 2 | - | - | 494 | 14 | 508 | 2.0 | 523 | 0.970 | 100 | NA | NA |
| Approach | 732 | 4 | 494 | 14 | 1244 | 2.0 | | 1.281 | | | |
| West: Gilman St | | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | T1<br><br>E | R1<br><br>SE | R2<br><br>S | Total | %HV | | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 27 | 2 | 12 | 41 | 3.0 | | 203 | 0.202 | 100 | NA | NA |
| Approach | 27 | 2 | 12 | 41 | 3.0 | | | 0.202 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 2282 | 2.5 | 1.281 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length | Percent Opng in Lane | Opposing Flow Rate | Critical Gap | Follow-up Headway | Lane Flow Rate | Capacity | Deg. Satn | Min. Delay | Merge Delay |
|---|---|---|---|---|---|---|---|---|---|---|
| | ft | % | veh/h | pcu/h | sec | sec | veh/h | veh/h | v/c | sec | sec |

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| South: W Frontage Rd | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: I-80 off-ramp | | | | |
| Lane 1 | 0.0 | 40.4 | 253.0 | NA |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 102 [Eastern Roundabout (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout east of I-80
Site Category: (None)
Roundabout

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 d | 250 | 2.0 | 250 | 2.0 | 299 | 0.837 | 100 | 54.8 | LOS F | 2.2 | 55.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 250 | 2.0 | 250 | 2.0 | | 0.837 | | 54.8 | LOS F | 2.2 | 55.0 | | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 d | 625 | 3.0 | 625 | 3.0 | 1108 | 0.564 | 100 | 10.0 | LOS B | 1.7 | 42.9 | Full | 200 | 0.0 | 0.0 |
| Lane 2 | 188 | 3.0 | 188 | 3.0 | 1040 | 0.181 | 100 | 5.1 | LOS A | 0.3 | 7.6 | Short | 80 | 0.0 | NA |
| Approach | 813 | 3.0 | 813 | 3.0 | | 0.564 | | 8.9 | LOS A | 1.7 | 42.9 | | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 d | 582 | 2.0 | 582 | 2.0 | 533 | 1.093 | 100 | 91.8 | LOS F | 11.0 | 279.7 | Full | 1600 | 0.0 | 0.0 |
| Approach | 582 | 2.0 | 582 | 2.0 | | 1.093 | | 91.8 | LOS F | 11.0 | 279.7 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 d | 804 | 3.0 | 645 | 3.2 | 1028 | 0.627 | 100 | 12.1 | LOS B | 2.8 | 72.6 | Full | 200 | 0.0 | 2.0 |
| Approach | 804 | 3.0 | 645 | 3.2 | | 0.627 | | 12.1 | LOS B | 2.8 | 72.6 | | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | | | | | | |
| Lane 1 d | 612 | 2.0 | 612 | 2.0 | 520 | 1.176 | 100 | 121.1 | LOS F | 15.8 | 401.9 | Full | 1600 | 0.0 | 0.0 |
| Approach | 612 | 2.0 | 612 | 2.0 | | 1.176 | | 121.1 | LOS F | 15.8 | 401.9 | | | | |
| All Vehicles | 3061 | 2.5 | 2902 | 2.7 | | 1.176 | | 53.8 | LOS F | 15.8 | 401.9 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.
d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Eastshore Highway

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 109 | 68 | 73 | 250 | 2.0 | 299 | 0.837 | 100 | NA | NA |
| Approach | 109 | 68 | 73 | 250 | 2.0 | | 0.837 | | | |

East: Gilman St

| Mov. From E To Exit: | U E | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 99 | 526 | - | 625 | 3.0 | 1108 | 0.564 | 100 | NA | NA |
| Lane 2 | - | - | 188 | 188 | 3.0 | 1040 | 0.181 | 100 | 0.0 | 1 |
| Approach | 99 | 526 | 188 | 813 | 3.0 | | 0.564 | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | |
| Mov. From NE To Exit: | L3 E | R1 W | R3 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 160 | 311 | 111 | 582 | 2.0 | 533 | 1.093 | 100 | NA | NA |
| Approach | 160 | 311 | 111 | 582 | 2.0 | | 1.093 | | | |
| West: Gilman St | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 34 | 611 | 645 | 3.2 | | 1028 | 0.627 | 100 | NA | NA |
| Approach | 34 | 611 | 645 | 3.2 | | | 0.627 | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | |
| Mov. From SW To Exit: | L3 W | L1 N | R1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 32 | 3 | 577 | 612 | 2.0 | 520 | 1.176 | 100 | NA | NA |
| Approach | 32 | 3 | 577 | 612 | 2.0 | | 1.176 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 2902 | 2.7 | 1.176 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length | Percent Opng in Lane | Opposing Flow Rate | Critical Gap | Follow-up Headway | Lane Flow Rate | Capacity | Deg. Satn | Min. Delay | Merge Delay |
|---|---|---|---|---|---|---|---|---|---|---|
| | ft | % | veh/h pcu/h | sec | sec | veh/h | veh/h | v/c | sec | sec |

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand | Residual Queued Demand | Time for Residual Demand to Clear | Duration of Oversatn |
|---|---|---|---|---|
| | veh | veh | sec | sec |
| South: Eastshore Highway | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Eastshore Highway | | | | |
| Lane 1 | 0.0 | 12.4 | 83.6 | NA |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: I-80 Off-ramp | | | | |
| Lane 1 | 0.0 | 22.9 | 158.5 | NA |

# LANE SUMMARY

## Site: 103 [Gilman/Second (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Stop (Two-Way)

### Lane Use and Performance

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 845 | 3.0 | 845 | 3.0 | 1902 | 0.444 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 200 | 0.0 | 0.0 |
| Approach | 845 | 3.0 | 845 | 3.0 | | 0.444 | | 0.0 | NA | 0.0 | 0.0 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 84 | 3.0 | 71 | 3.2 | 780 | 0.092 | 100 | 5.5 | LOS A | 0.1 | 3.7 | Short | 100 | 0.0 | NA |
| Lane 2 | 1579 | 3.0 | 1343 | 3.2 | 1664 | 0.807 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 200 | 0.0 | 0.0 |
| Approach | 1663 | 3.0 | 1415 | 3.2 | | 0.807 | | 0.4 | NA | 0.1 | 3.7 | | | | |
| All Vehicles | 2508 | 3.0 | 2260 | 3.3 | | 0.807 | | 0.3 | NA | 0.1 | 3.7 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

### Approach Lane Flows (veh/h)

East: Gilman St

| Mov. From E To Exit: | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 805 | 40 | 845 | 3.0 | 1902 | 0.444 | 100 | NA | NA |
| Approach | 805 | 40 | 845 | 3.0 | | 0.444 | | | |

West: Gilman St

| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 71 | - | - | 71 | 3.2 | 780 | 0.092 | 100 | 0.0 | 2 |
| Lane 2 | - | 546 | 797 | 1343 | 3.2 | 1664 | 0.807 | 100 | NA | NA |
| Approach | 71 | 546 | 797 | 1415 | 3.2 | | 0.807 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 2260 | 3.3 | 0.807 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

### Merge Analysis

| | Opposing Flow Rate | Critical Gap | Follow-up Headway | Capacity | Deg. Satn | Min. Delay | Merge Delay |
|---|---|---|---|---|---|---|---|

| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | | | | Lane Flow Rate veh/h | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | veh/h | pcu/h | sec | sec | veh/h | veh/h | v/c | sec | sec |

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 104 [Gilman/Third (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Stop (Two-Way)

### Lane Use and Performance

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 831 | 3.0 | 831 | 3.0 | 1918 | 0.433 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 831 | 3.0 | 831 | 3.0 | | 0.433 | | 0.1 | NA | 0.0 | 0.0 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 619 | 3.0 | 527 | 3.2 | 1842 | 0.286 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 619 | 3.0 | 527 | 3.2 | | 0.286 | | 0.1 | NA | 0.0 | 0.0 | | | | |
| All Vehicles | 1450 | 3.0 | 1358 | 3.2 | | 0.433 | | 0.1 | NA | 0.0 | 0.0 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

### Approach Lane Flows (veh/h)

East: Gilman St

| Mov. From E To Exit: | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 831 | 831 | 3.0 | 1918 | 0.433 | 100 | NA | NA |
| Approach | 831 | 831 | 3.0 | | 0.433 | | | |

West: Gilman St

| Mov. From W To Exit: | T1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 527 | 527 | 3.2 | 1842 | 0.286 | 100 | NA | NA |
| Approach | 527 | 527 | 3.2 | | 0.286 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1358 | 3.2 | 0.433 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

### Merge Analysis

| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 105 [Gilman/Fourth (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Gilman/Fourth
Site Category: (None)
Signals - Actuated Coordinated Cycle Time = 60 seconds (Network Optimum Cycle Time - Minimum Delay)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | 36 | 3.0 | 36 | 3.0 | 268 | 0.134 | 100 | 17.7 | LOS B | 0.5 | 12.5 | Full | 1600 | 0.0 | 0.0 |
| Approach | 36 | 3.0 | 36 | 3.0 | | 0.134 | | 17.7 | LOS B | 0.5 | 12.5 | | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 935 | 3.0 | 935 | 3.0 | 1290 | 0.725 | 100 | 9.1 | LOS A | 11.5 | 294.7 | Full | 1600 | 0.0 | 0.0 |
| Approach | 935 | 3.0 | 935 | 3.0 | | 0.725 | | 9.1 | LOS A | 11.5 | 294.7 | | | | |
| North: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | 24 | 3.0 | 24 | 3.0 | 315 | 0.076 | 100 | 11.6 | LOS B | 0.2 | 5.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 24 | 3.0 | 24 | 3.0 | | 0.076 | | 11.6 | LOS B | 0.2 | 5.6 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 697 | 3.0 | 604 | 3.1 | 1291 | 0.468 | 100 | 5.6 | LOS A | 5.2 | 133.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 697 | 3.0 | 604 | 3.1 | | 0.468 | | 5.6 | LOS A | 5.2 | 133.6 | | | | |
| All Vehicles | 1691 | 3.0 | 1599 | 3.2 | | 0.725 | | 8.0 | LOS A | 11.5 | 294.7 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

South: Fourth St

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 21 | 10 | 5 | 36 | 3.0 | 268 | 0.134 | 100 | NA | NA |
| Approach | 21 | 10 | 5 | 36 | 3.0 | | 0.134 | | | |

East: Gilman St

| Mov. From E To Exit: | L2 S | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 16 | 918 | 935 | 3.0 | 1290 | 0.725 | 100 | NA | NA |
| Approach | 16 | 918 | 935 | 3.0 | | 0.725 | | | |

North: Fourth St

| Mov. From N To Exit: | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 13 | 11 | 24 | 3.0 | 315 | 0.076 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 13 | 11 | 24 | 3.0 | | | 0.076 | | | |
| West: Gilman St | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 9 | 532 | 62 | 604 | 3.1 | 1291 | 0.468 | 100 | NA | NA |
| Approach | 9 | 532 | 62 | 604 | 3.1 | | 0.468 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1599 | 3.2 | 0.725 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length | Percent Opng in Lane | Opposing Flow Rate | Critical Gap | Follow-up Headway | Lane Flow Rate | Capacity | Deg. Satn | Min. Delay | Merge Delay |
|---|---|---|---|---|---|---|---|---|---|---|
| | ft | % | veh/h pcu/h | sec | sec | veh/h | veh/h | v/c | sec | sec |

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Fourth St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Fourth St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: W:\Oakland N Drive\Projects\2022\OK22-0480.00_Gilman_Gateway_Tranportation_Planning\Analysis\SIDRA\PP AM\Gilman_Gateway_AM_PP.sip9

# QUEUE ANALYSIS

## Site: 101 [Western Roundabout (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout west of I-80
Site Category: (None)
Roundabout

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: W Frontage Rd | | | | | | | | | | | | | | | |
| Lane 1 | | 0.102 | 1.000 | 0.0 | 3.7 | 9.1 | 3.5 | 8.8 | 3.0 | 5.5 | 0.00 | 0.01 | 0.0 | NA | NA |
| Approach | | 0.102 | | | 3.7 | 9.1 | 3.5 | 8.8 | 3.0 | 5.5 | 0.00 | 0.01 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.237 | 1.000 | 0.0 | 12.0 | 29.8 | 9.1 | 22.7 | 9.0 | 16.4 | 0.20 | 0.50 | NA | 0.0 | 2 |
| Lane 2 | | 0.451 | 1.000 | 0.0 | 31.6 | 78.6 | 17.4 | 43.2 | 22.5 | 40.9 | 0.16 | 0.39 | 0.0 | NA | NA |
| Approach | | 0.451 | | | 31.6 | 78.6 | 17.4 | 43.2 | 22.5 | 40.9 | 0.16 | 0.39 | | | |
| North: I-80 off-ramp | | | | | | | | | | | | | | | |
| Lane 1 | | 1.281 | 1.000 | 547.2 | 610.6 | 1517.5 | 587.2 | 1459.4 | - [1] | 1495.9 | 1.02 | 2.53 | NA | 52.1 | 2 |
| Lane 2 | | 0.970 | 1.000 | 102.5 | 159.9 | 397.4 | 134.0 | 333.1 | 209.5 | 380.1 | 0.10 | 0.25 | 3.5 | NA | NA |
| Approach | | 1.281 | | | 610.6 | 1517.5 | 587.2 | 1459.4 | - [1] | 1495.9 | 0.10 | 0.25 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.202 | 1.000 | 0.2 | 5.2 | 13.0 | 5.1 | 12.8 | 6.7 | 12.1 | 0.03 | 0.06 | 0.0 | NA | NA |
| Approach | | 0.202 | | | 5.2 | 13.0 | 5.1 | 12.8 | 6.7 | 12.1 | 0.03 | 0.06 | | | |
| Intersection | | 1.281 | | | 610.6 | 1517.5 | 587.2 | 1459.4 | - [1] | 1495.9 | 0.16 | 0.39 | | | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.
[1] Cycle-Average Queue is not given as it is larger than the Back of Queue because the delay estimate includes a large delay experienced after the analysis period in oversaturated conditions.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: W Frontage Rd | | | | | | | | | | | | | | | |
| Lane 1 | | 0.102 | 1.000 | 0.0 | 0.1 | 0.4 | 0.1 | 0.3 | 0.1 | 0.2 | 0.00 | 0.01 | 0.0 | NA | NA |
| Approach | | 0.102 | | | 0.1 | 0.4 | 0.1 | 0.3 | 0.1 | 0.2 | 0.00 | 0.01 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.237 | 1.000 | 0.0 | 0.5 | 1.2 | 0.4 | 0.9 | 0.4 | 0.6 | 0.20 | 0.50 | NA | 0.0 | 2 |
| Lane 2 | | 0.451 | 1.000 | 0.0 | 1.2 | 3.1 | 0.7 | 1.7 | 0.9 | 1.6 | 0.16 | 0.39 | 0.0 | NA | NA |
| Approach | | 0.451 | | | 1.2 | 3.1 | 0.7 | 1.7 | 0.9 | 1.6 | 0.16 | 0.39 | | | |
| North: I-80 off-ramp | | | | | | | | | | | | | | | |
| Lane 1 | | 1.281 | 1.000 | 21.5 | 24.0 | 59.7 | 23.1 | 57.5 | - [1] | 58.9 | 1.02 | 2.53 | NA | 52.1 | 2 |
| Lane 2 | | 0.970 | 1.000 | 4.0 | 6.3 | 15.6 | 5.3 | 13.1 | 8.2 | 15.0 | 0.10 | 0.25 | 3.5 | NA | NA |
| Approach | | 1.281 | | | 24.0 | 59.7 | 23.1 | 57.5 | - [1] | 58.9 | 0.10 | 0.25 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.202 | 1.000 | 0.0 | 0.2 | 0.5 | 0.2 | 0.5 | 0.3 | 0.5 | 0.03 | 0.06 | 0.0 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Approach | 0.202 | 0.2 | 0.5 | 0.2 | 0.5 | 0.3 | 0.5 | 0.03 | 0.06 |
| Intersection | 1.281 | 24.0 | 59.7 | 23.1 | 57.5 | - [1] | 58.9 | 0.16 | 0.39 |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

[1] Cycle-Average Queue is not given as it is larger than the Back of Queue because the delay estimate includes a large delay experienced after the analysis period in oversaturated conditions.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| There are no Continuous Lanes at this Site. | | | | | | | | | | | | | |

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# QUEUE ANALYSIS

## Site: 102 [Eastern Roundabout (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout east of I-80
Site Category: (None)
Roundabout

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 0.837 | 1.000 | 27.2 | 55.0 | 136.6 | 54.3 | 134.9 | 96.6 | 175.3 | 0.03 | 0.09 | 0.0 | NA | NA |
| Approach | | 0.837 | | | 55.0 | 136.6 | 54.3 | 134.9 | 96.6 | 175.3 | 0.03 | 0.09 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.564 | 1.000 | 4.0 | 42.9 | 106.7 | 23.8 | 59.0 | 44.5 | 80.7 | 0.21 | 0.53 | 0.0 | NA | NA |
| Lane 2 | | 0.181 | 1.000 | 0.0 | 7.6 | 18.9 | 6.5 | 16.2 | 6.8 | 12.4 | 0.09 | 0.24 | NA | 0.0 | 1 |
| Approach | | 0.564 | | | 42.9 | 106.7 | 23.8 | 59.0 | 44.5 | 80.7 | 0.21 | 0.53 | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 1.093 | 1.000 | 222.0 | 279.7 | 695.2 | 256.2 | 636.7 | - [1] | 683.8 | 0.17 | 0.43 | 0.0 | NA | NA |
| Approach | | 1.093 | | | 279.7 | 695.2 | 256.2 | 636.7 | - [1] | 683.8 | 0.17 | 0.43 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.627 | 1.000 | 14.5 | 72.6 | 180.5 | 39.7 | 98.7 | 55.4 | 100.5 | 0.36 | 0.90 | 2.0 | NA | NA |
| Approach | | 0.627 | | | 72.6 | 180.5 | 39.7 | 98.7 | 55.4 | 100.5 | 0.36 | 0.90 | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | | | | | | |
| Lane 1 | | 1.176 | 1.000 | 336.0 | 401.9 | 998.9 | 378.0 | 939.4 | - [1] | 948.3 | 0.25 | 0.62 | 0.0 | NA | NA |
| Approach | | 1.176 | | | 401.9 | 998.9 | 378.0 | 939.4 | - [1] | 948.3 | 0.25 | 0.62 | | | |
| Intersection | | 1.176 | | | 401.9 | 998.9 | 378.0 | 939.4 | - [1] | 948.3 | 0.36 | 0.90 | | | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.
[1] Cycle-Average Queue is not given as it is larger than the Back of Queue because the delay estimate includes a large delay experienced after the analysis period in oversaturated conditions.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 0.837 | 1.000 | 1.1 | 2.2 | 5.4 | 2.1 | 5.3 | 3.8 | 6.9 | 0.03 | 0.09 | 0.0 | NA | NA |
| Approach | | 0.837 | | | 2.2 | 5.4 | 2.1 | 5.3 | 3.8 | 6.9 | 0.03 | 0.09 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.564 | 1.000 | 0.2 | 1.7 | 4.2 | 0.9 | 2.3 | 1.7 | 3.2 | 0.21 | 0.53 | 0.0 | NA | NA |
| Lane 2 | | 0.181 | 1.000 | 0.0 | 0.3 | 0.7 | 0.3 | 0.6 | 0.3 | 0.5 | 0.09 | 0.24 | NA | 0.0 | 1 |
| Approach | | 0.564 | | | 1.7 | 4.2 | 0.9 | 2.3 | 1.7 | 3.2 | 0.21 | 0.53 | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 1.093 | 1.000 | 8.7 | 11.0 | 27.4 | 10.1 | 25.1 | - [1] | 26.9 | 0.17 | 0.43 | 0.0 | NA | NA |
| Approach | | 1.093 | | | 11.0 | 27.4 | 10.1 | 25.1 | - [1] | 26.9 | 0.17 | 0.43 | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| West: Gilman St | | | | | | | | | | | | | | |
| Lane 1 | 0.627 | 1.000 | 0.6 | 2.8 | 7.0 | 1.5 | 3.8 | 2.2 | 3.9 | 0.36 | 0.90 | 2.0 | NA | NA |
| Approach | 0.627 | | | 2.8 | 7.0 | 1.5 | 3.8 | 2.2 | 3.9 | 0.36 | 0.90 | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | | | | | |
| Lane 1 | 1.176 | 1.000 | 13.2 | 15.8 | 39.3 | 14.9 | 37.0 | - [1] | 37.3 | 0.25 | 0.62 | 0.0 | NA | NA |
| Approach | 1.176 | | | 15.8 | 39.3 | 14.9 | 37.0 | - [1] | 37.3 | 0.25 | 0.62 | | | |
| Intersection | 1.176 | | | 15.8 | 39.3 | 14.9 | 37.0 | - [1] | 37.3 | 0.36 | 0.90 | | | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.
[1] Cycle-Average Queue is not given as it is larger than the Back of Queue because the delay estimate includes a large delay experienced after the analysis period in oversaturated conditions.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |

There are no Continuous Lanes at this Site.

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# QUEUE ANALYSIS

## Site: 103 [Gilman/Second (Site Folder: Proposed Design)]

## Network: N101 [AM Peak (Network Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.444 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.444 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.092 | 1.000 | 0.0 | 3.7 | 9.1 | 3.5 | 8.7 | 2.8 | 5.1 | 0.04 | 0.09 | NA | 0.0 | 2 |
| Lane 2 | Y | 0.807 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.807 | | | 3.7 | 9.1 | 3.5 | 8.7 | 2.8 | 5.1 | 0.00 | 0.00 | | | |
| Intersection | | 0.807 | | | 3.7 | 9.1 | 3.5 | 8.7 | 2.8 | 5.1 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.444 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.444 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.092 | 1.000 | 0.0 | 0.1 | 0.4 | 0.1 | 0.3 | 0.1 | 0.2 | 0.04 | 0.09 | NA | 0.0 | 2 |
| Lane 2 | Y | 0.807 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.807 | | | 0.1 | 0.4 | 0.1 | 0.3 | 0.1 | 0.2 | 0.00 | 0.00 | | | |
| Intersection | | 0.807 | | | 0.1 | 0.4 | 0.1 | 0.3 | 0.1 | 0.2 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| East: Gilman St | | | | | | | | | | | | | |
| Lane 1 | 0.444 | 39.8 | 0.0 | 4.26 | 248.6 | 17.6 | 0.42 | 3.84 | 7.1 | 9.9 | 21.2 | 21.8 | LOS C |
| West: Gilman St | | | | | | | | | | | | | |
| Lane 2 | 0.807 | 38.8 | 0.1 | 2.68 | 152.3 | 17.6 | 0.43 | 2.25 | 11.6 | 16.1 | 34.7 | 35.5 | LOS E |

Midblock Effective Detection Zone Length = 7 ft

# QUEUE ANALYSIS

## Site: 104 [Gilman/Third (Site Folder: Proposed Design)]

**Network: N101 [AM Peak (Network Folder: General)]**

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.433 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.433 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.286 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.286 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| Intersection | | 0.433 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.433 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.433 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.286 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.286 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| Intersection | | 0.433 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| East: Gilman St | | | | | | | | | | | | | |
| Lane 1 | 0.433 | 39.8 | 0.1 | 4.33 | 252.8 | 17.6 | 0.42 | 3.91 | 6.9 | 9.7 | 20.9 | 21.4 | LOS C |
| West: Gilman St | | | | | | | | | | | | | |
| Lane 1 | 0.286 | 39.9 | 0.1 | 6.84 | 400.0 | 17.6 | 0.42 | 6.42 | 4.4 | 6.2 | 13.2 | 13.5 | LOS B |

Midblock Effective Detection Zone Length = 7 ft

# QUEUE ANALYSIS

## Site: 105 [Gilman/Fourth (Site Folder: Proposed Design)]

Network: N101 [AM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Gilman/Fourth
Site Category: (None)
Signals - Actuated Coordinated Cycle Time = 60 seconds (Network Optimum Cycle Time - Minimum Delay)

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Green (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.134 | 1.000 | 1.0 | 12.5 | 20.3 | 12.2 | 19.9 | 4.5 | 9.4 | 0.01 | 0.01 | 0.0 | NA | NA |
| Approach | | 0.134 | | | 12.5 | 20.3 | 12.2 | 19.9 | 4.5 | 9.4 | 0.01 | 0.01 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.725 | 1.000 | 40.5 | 294.7 | 480.9 | 162.6 | 265.4 | 60.4 | 126.2 | 0.18 | 0.30 | 0.0 | NA | NA |
| Approach | | 0.725 | | | 294.7 | 480.9 | 162.6 | 265.4 | 60.4 | 126.2 | 0.18 | 0.30 | | | |
| North: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.076 | 1.000 | 0.6 | 5.6 | 9.1 | 5.5 | 9.0 | 2.0 | 4.1 | 0.00 | 0.01 | 0.0 | NA | NA |
| Approach | | 0.076 | | | 5.6 | 9.1 | 5.5 | 9.0 | 2.0 | 4.1 | 0.00 | 0.01 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.468 | 1.000 | 14.0 | 133.6 | 218.1 | 94.2 | 153.8 | 23.9 | 49.9 | 0.08 | 0.14 | 0.0 | NA | NA |
| Approach | | 0.468 | | | 133.6 | 218.1 | 94.2 | 153.8 | 23.9 | 49.9 | 0.08 | 0.14 | | | |
| Intersection | | 0.725 | | | 294.7 | 480.9 | 162.6 | 265.4 | 60.4 | 126.2 | 0.18 | 0.30 | | | |

Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Green (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.134 | 1.000 | 0.0 | 0.5 | 0.8 | 0.5 | 0.8 | 0.2 | 0.4 | 0.01 | 0.01 | 0.0 | NA | NA |
| Approach | | 0.134 | | | 0.5 | 0.8 | 0.5 | 0.8 | 0.2 | 0.4 | 0.01 | 0.01 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.725 | 1.000 | 1.6 | 11.5 | 18.8 | 6.4 | 10.4 | 2.4 | 4.9 | 0.18 | 0.30 | 0.0 | NA | NA |
| Approach | | 0.725 | | | 11.5 | 18.8 | 6.4 | 10.4 | 2.4 | 4.9 | 0.18 | 0.30 | | | |
| North: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.076 | 1.000 | 0.0 | 0.2 | 0.4 | 0.2 | 0.4 | 0.1 | 0.2 | 0.00 | 0.01 | 0.0 | NA | NA |
| Approach | | 0.076 | | | 0.2 | 0.4 | 0.2 | 0.4 | 0.1 | 0.2 | 0.00 | 0.01 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.468 | 1.000 | 0.5 | 5.2 | 8.5 | 3.7 | 6.0 | 0.9 | 1.9 | 0.08 | 0.14 | 0.0 | NA | NA |
| Approach | | 0.468 | | | 5.2 | 8.5 | 3.7 | 6.0 | 0.9 | 1.9 | 0.08 | 0.14 | | | |
| Intersection | | 0.725 | | | 11.5 | 18.8 | 6.4 | 10.4 | 2.4 | 4.9 | 0.18 | 0.30 | | | |

Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity Formula: Traditional M1.

Short Lanes are not included in determining Queue Storage Ratios.

## Continuous Lane Performance

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| There are no Continuous Lanes at this Site. | | | | | | | | | | | | | |

## Pedestrian Queues

| Mov ID | Description | Dem. Flow | AVERAGE BACK OF QUEUE [ Ped | Dist ] |
|---|---|---|---|---|
| | | ped/h | ped | ft |
| South: Fourth St | | | | |
| 2P | Full | 30 | 0.0 | 0.1 |
| East: Gilman St | | | | |
| 8P | Full | 10 | 0.0 | 0.0 |
| North: Fourth St | | | | |
| 6P | Full | 20 | 0.0 | 0.1 |
| West: Gilman St | | | | |
| 4P | Full | 10 | 0.0 | 0.0 |
| All Pedestrians | | 70 | 0.0 | 0.1 |

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# LANE SUMMARY

## Site: 101 [Western Roundabout (Site Folder: Proposed Design)]

Network: N101 [PM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout west of I-80
Site Category: (None)
Roundabout

### Lane Use and Performance

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: W Frontage Rd | | | | | | | | | | | | | | | |
| Lane 1 d | 563 | 2.0 | 563 | 2.0 | 504 | 1.118 | 100 | 101.1 | LOS F | 12.1 | 307.7 | Full | 1600 | -12.4 N7 | 0.0 |
| Approach | 563 | 2.0 | 563 | 2.0 | | 1.118 | | 101.1 | LOS F | 12.1 | 307.7 | | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 d | 452 | 3.0 | 316 | 3.4 | 1330 | 0.238 | 100 | 4.5 | LOS A | 0.5 | 11.8 | Short | 60 | 0.0 | NA |
| Lane 2 | 178 | 3.0 | 125 | 3.4 | 1330 | 0.094 | 100 | 3.4 | LOS A | 0.2 | 3.9 | Full | 200 | 0.0 | 0.0 |
| Approach | 630 | 3.0 | 441 | 3.4 | | 0.238 | | 4.2 | LOS A | 0.5 | 11.8 | | | | |
| North: I-80 off-ramp | | | | | | | | | | | | | | | |
| Lane 1 d | 403 | 2.0 | 403 | 2.0 | 785 | 0.513 | 100 | 11.2 | LOS B | 1.2 | 31.6 | Short | 600 | -13.1 N7 | NA |
| Lane 2 | 227 | 2.0 | 227 | 2.0 | 834 | 0.272 | 100 | 7.3 | LOS A | 0.5 | 11.5 | Full | 1600 | 0.0 | 0.0 |
| Approach | 630 | 2.0 | 630 | 2.0 | | 0.513 | | 9.8 | LOS A | 1.2 | 31.6 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 d | 96 | 3.0 | 96 | 3.0 | 516 | 0.186 | 100 | 8.7 | LOS A | 0.2 | 5.7 | Full | 200 | -11.0 N7 | 0.0 |
| Approach | 96 | 3.0 | 96 | 3.0 | | 0.186 | | 8.7 | LOS A | 0.2 | 5.7 | | | | |
| All Vehicles | 1919 | 2.4 | 1730 | 2.6 | | 1.118 | | 38.0 | LOS E | 12.1 | 307.7 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.
d Dominant lane on roundabout approach
N7 The capacity reduction has been determined from the queue blockage probability based on the Back of Queue value of a Site further downstream.

### Approach Lane Flows (veh/h)

South: W Frontage Rd

| Mov. From S To Exit: | L2 W | R2 E | R3 SE | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 36 | 517 | 10 | 563 | 2.0 | 504 | 1.118 | 100 | NA | NA |
| Approach | 36 | 517 | 10 | 563 | 2.0 | | 1.118 | | | |

East: Gilman St

| Mov. From E To Exit: | L3 SE | L2 S | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 316 | - | - | 316 | 3.4 | 1330 | 0.238 | 100 | 0.0 | 2 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 2 | - | 77 | 48 | 125 | 3.4 | | 1330 | 0.094 | 100 | NA | NA |
| Approach | 316 | 77 | 48 | 441 | 3.4 | | | 0.238 | | | |
| North: I-80 off-ramp | | | | | | | | | | | |
| Mov. From N To Exit: | L2 E | L1 SE | T1 S | R2 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 397 | 6 | - | - | 403 | 2.0 | 785 | 0.513 | 100 | 0.0 | 2 |
| Lane 2 | - | - | 140 | 87 | 227 | 2.0 | 834 | 0.272 | 100 | NA | NA |
| Approach | 397 | 6 | 140 | 87 | 630 | 2.0 | | 0.513 | | | |
| West: Gilman St | | | | | | | | | | | |
| Mov. From W To Exit: | T1 E | R1 SE | R2 S | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 77 | 2 | 17 | 96 | 3.0 | | 516 | 0.186 | 100 | NA | NA |
| Approach | 77 | 2 | 17 | 96 | 3.0 | | | 0.186 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1730 | 2.6 | 1.118 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: W Frontage Rd | | | | |
| Lane 1 | 0.0 | 14.9 | 106.2 | NA |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: I-80 off-ramp | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 102 [Eastern Roundabout (Site Folder: Proposed Design)]

Network: N101 [PM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout east of I-80
Site Category: (None)
Roundabout

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 d | 933 | 2.0 | 933 | 2.0 | 394 | 2.367 | 100 | 641.9 | LOS F | 69.6 | 1767.0 | Full | 1600 | 0.0 | 66.3 |
| Approach | 933 | 2.0 | 933 | 2.0 | | 2.367 | | 641.9 | LOS F | 69.6 | 1767.0 | | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 276 | 3.0 | 276 | 3.0 | 663 | 0.417 | 100 | 11.3 | LOS B | 0.8 | 21.0 | Full | 200 | 0.0 | 16.2 8 |
| Lane 2 d | 612 | 3.0 | 612 | 3.0 | 726 | 0.843 | 100 | 29.1 | LOS D | 4.4 | 113.1 | Short | 80 | 0.0 | NA |
| Approach | 888 | 3.0 | 888 | 3.0 | | 0.843 | | 23.5 | LOS C | 4.4 | 113.1 | | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 d | 124 | 2.0 | 124 | 2.0 | 326 | 0.380 | 100 | 19.5 | LOS C | 0.5 | 13.2 | Full | 1600 | 0.0 | 0.0 |
| Approach | 124 | 2.0 | 124 | 2.0 | | 0.380 | | 19.5 | LOS C | 0.5 | 13.2 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 d | 991 | 3.0 | 937 | 3.1 | 1263 | 0.742 | 100 | 12.4 | LOS B | 4.0 | 102.8 | Full | 200 | 0.0 | 12.8 |
| Approach | 991 | 3.0 | 937 | 3.1 | | 0.742 | | 12.4 | LOS B | 4.0 | 102.8 | | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | | | | | | |
| Lane 1 d | 155 | 2.0 | 155 | 2.0 | 465 | 0.333 | 100 | 13.1 | LOS B | 0.6 | 14.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 155 | 2.0 | 155 | 2.0 | | 0.333 | | 13.1 | LOS B | 0.6 | 14.1 | | | | |
| All Vehicles | 3091 | 2.6 | 3037 | 2.7 | | 2.367 | | 209.4 | LOS F | 69.6 | 1767.0 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.
8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.
d Dominant lane on roundabout approach

**Approach Lane Flows (veh/h)**

South: Eastshore Highway

| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 328 | 369 | 236 | 933 | 2.0 | 394 | 2.367 | 100 | NA | NA |
| Approach | 328 | 369 | 236 | 933 | 2.0 | | 2.367 | | | |

East: Gilman St

| Mov. | U | T1 | R2 | Total | %HV |
|---|---|---|---|---|---|

| From E<br>To Exit: | E | W | N | | | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 21 | 255 | - | 276 | 3.0 | 663 | 0.417 | 100 | NA | NA |
| Lane 2 | - | - | 612 | 612 | 3.0 | 726 | 0.843 | 100 | 100.0 | 1 |
| Approach | 21 | 255 | 612 | 888 | 3.0 | | 0.843 | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | |
| Mov.<br>From NE<br>To Exit: | L3<br>E | R1<br>W | R3<br>N | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 35 | 26 | 63 | 124 | 2.0 | 326 | 0.380 | 100 | NA | NA |
| Approach | 35 | 26 | 63 | 124 | 2.0 | | 0.380 | | | |
| West: Gilman St | | | | | | | | | | |
| Mov.<br>From W<br>To Exit: | L2<br>N | T1<br>E | Total | %HV | | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 377 | 560 | 937 | 3.1 | | 1263 | 0.742 | 100 | NA | NA |
| Approach | 377 | 560 | 937 | 3.1 | | | 0.742 | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | |
| Mov.<br>From SW<br>To Exit: | L3<br>W | L1<br>N | R1<br>E | Total | %HV | Cap.<br>veh/h | Deg.<br>Satn<br>v/c | Lane<br>Util.<br>% | Prob.<br>SL Ov.<br>% | Ov.<br>Lane<br>No. |
| Lane 1 | 21 | 3 | 131 | 155 | 2.0 | 465 | 0.333 | 100 | NA | NA |
| Approach | 21 | 3 | 131 | 155 | 2.0 | | 0.333 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 3037 | 2.7 | 2.367 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length | Percent Opng in Lane | Opposing Flow Rate | Critical Gap | Follow-up Headway | Lane Flow Rate | Capacity | Deg. Satn | Min. Delay | Merge Delay |
|---|---|---|---|---|---|---|---|---|---|---|
| | ft | % | veh/h pcu/h | sec | sec | veh/h | veh/h | v/c | sec | sec |

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand<br>veh | Residual Queued Demand<br>veh | Time for Residual Demand to Clear<br>sec | Duration of Oversatn<br>sec |
|---|---|---|---|---|
| South: Eastshore Highway | | | | |
| Lane 1 | 0.0 | 134.7 | 1230.7 | NA |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| NorthEast: Eastshore Highway | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| SouthWest: I-80 Off-ramp | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

# LANE SUMMARY

## Site: 103 [Gilman/Second (Site Folder: Proposed Design)]

## Network: N101 [PM Peak (Network Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

### Lane Use and Performance

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 973 | 3.0 | 973 | 3.0 | 1605 | 0.606 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 200 | -14.8 N7 | 0.0 |
| Approach | 973 | 3.0 | 973 | 3.0 | | 0.606 | | 0.1 | NA | 0.0 | 0.0 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 192 | 3.0 | 160 | 3.2 | 696 | 0.230 | 100 | 7.8 | LOS A | 0.4 | 10.0 | Short | 100 | 0.0 | NA |
| Lane 2 | 823 | 3.0 | 687 | 3.2 | 1753 | 0.392 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 200 | 0.0 | 0.0 |
| Approach | 1015 | 3.0 | 847 | 3.2 | | 0.392 | | 1.5 | NA | 0.4 | 10.0 | | | | |
| All Vehicles | 1988 | 3.0 | 1820 | 3.3 | | 0.606 | | 0.7 | NA | 0.4 | 10.0 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.
N7 The capacity reduction has been determined from the queue blockage probability based on the Back of Queue value of a Site further downstream.

### Approach Lane Flows (veh/h)

East: Gilman St

| Mov. From E To Exit: | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 875 | 98 | 973 | 3.0 | 1605 | 0.606 | 100 | NA | NA |
| Approach | 875 | 98 | 973 | 3.0 | | 0.606 | | | |

West: Gilman St

| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 160 | - | - | 160 | 3.2 | 696 | 0.230 | 100 | 0.0 | 2 |
| Lane 2 | - | 494 | 193 | 687 | 3.2 | 1753 | 0.392 | 100 | NA | NA |
| Approach | 160 | 494 | 193 | 847 | 3.2 | | 0.392 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1820 | 3.3 | 0.606 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

### Merge Analysis

| Exit Lane Number | Short Lane Length | Percent Opng in Lane | Opposing Flow Rate | Critical Gap | Follow-up Headway | Lane Flow Rate | Capacity | Deg. Satn | Min. Delay | Merge Delay |
|---|---|---|---|---|---|---|---|---|---|---|
| | ft | % | veh/h pcu/h | sec | sec | veh/h | veh/h | v/c | sec | sec |
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand | Residual Queued Demand | Time for Residual Demand to Clear | Duration of Oversatn |
|---|---|---|---|---|
| | veh | veh | sec | sec |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 104 [Gilman/Third (Site Folder: Proposed Design)]

Network: N101 [PM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 944 | 3.0 | 944 | 3.0 | 1918 | 0.492 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 260 | 0.0 | 0.0 |
| Approach | 944 | 3.0 | 944 | 3.0 | | 0.492 | | 0.0 | NA | 0.0 | 0.0 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 573 | 3.0 | 478 | 3.2 | 1780 | 0.269 | 100 | 0.1 | LOS A | 0.0 | 0.0 | Full | 1600 | -3.3 N3 | 0.0 |
| Approach | 573 | 3.0 | 478 | 3.2 | | 0.269 | | 0.1 | NA | 0.0 | 0.0 | | | | |
| All Vehicles | 1517 | 3.0 | 1422 | 3.2 | | 0.492 | | 0.0 | NA | 0.0 | 0.0 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

**Approach Lane Flows (veh/h)**

East: Gilman St

| Mov. From E To Exit: | T1 W | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 944 | 944 | 3.0 | 1918 | 0.492 | 100 | NA | NA |
| Approach | 944 | 944 | 3.0 | | 0.492 | | | |

West: Gilman St

| Mov. From W To Exit: | T1 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|
| Lane 1 | 478 | 478 | 3.2 | 1780 | 0.269 | 100 | NA | NA |
| Approach | 478 | 478 | 3.2 | | 0.269 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1422 | 3.2 | 0.492 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length | Percent Opng in Lane | Opposing Flow Rate | Critical Gap | Follow-up Headway | Lane Flow Rate | Capacity | Deg. Satn | Min. Delay | Merge Delay |
|---|---|---|---|---|---|---|---|---|---|---|

| | ft | % | veh/h | pcu/h | sec | sec | veh/h | veh/h | v/c | sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | |

**Variable Demand Analysis**

| | Initial Queued Demand | Residual Queued Demand | Time for Residual Demand to Clear | Duration of Oversatn |
|---|---|---|---|---|
| | veh | veh | sec | sec |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LANE SUMMARY

## Site: 105 [Gilman/Fourth (Site Folder: Proposed Design)]

Network: N101 [PM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Gilman/Fourth
Site Category: (None)
Signals - Actuated Coordinated Cycle Time = 60 seconds (Network Optimum Cycle Time - Minimum Delay)

**Lane Use and Performance**

| | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | Aver. Back Of Queue [ Veh | Dist ] ft | Lane Config | Lane Length ft | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | 130 | 3.0 | 130 | 3.0 | 343 | 0.380 | 100 | 23.0 | LOS C | 2.0 | 51.3 | Full | 1600 | 0.0 | 0.0 |
| Approach | 130 | 3.0 | 130 | 3.0 | | 0.380 | | 23.0 | LOS C | 2.0 | 51.3 | | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 954 | 3.0 | 954 | 3.0 | 1213 | 0.787 | 100 | 13.0 | LOS B | 14.1 | 362.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 954 | 3.0 | 954 | 3.0 | | 0.787 | | 13.0 | LOS B | 14.1 | 362.1 | | | | |
| North: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | 22 | 3.0 | 22 | 3.0 | 451 | 0.048 | 100 | 8.0 | LOS A | 0.2 | 4.9 | Full | 1600 | 0.0 | 0.0 |
| Approach | 22 | 3.0 | 22 | 3.0 | | 0.048 | | 8.0 | LOS A | 0.2 | 4.9 | | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | 672 | 3.0 | 578 | 3.2 | 1160 | 0.498 | 100 | 8.1 | LOS A | 6.1 | 156.2 | Full | 260 | 0.0 | 3.2 |
| Approach | 672 | 3.0 | 578 | 3.2 | | 0.498 | | 8.1 | LOS A | 6.1 | 156.2 | | | | |
| All Vehicles | 1778 | 3.0 | 1685 | 3.2 | | 0.787 | | 12.0 | LOS B | 14.1 | 362.1 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Approach Lane Flows (veh/h)**

| South: Fourth St | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mov. From S To Exit: | L2 W | T1 N | R2 E | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 88 | 16 | 26 | 130 | 3.0 | 343 | 0.380 | 100 | NA | NA |
| Approach | 88 | 16 | 26 | 130 | 3.0 | | 0.380 | | | |
| East: Gilman St | | | | | | | | | | |
| Mov. From E To Exit: | L2 S | T1 W | R2 N | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 9 | 939 | 7 | 954 | 3.0 | 1213 | 0.787 | 100 | NA | NA |
| Approach | 9 | 939 | 7 | 954 | 3.0 | | 0.787 | | | |
| North: Fourth St | | | | | | | | | | |
| Mov. From N To Exit: | T1 S | R2 W | Total | %HV | | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 7 | 15 | 22 | 3.0 | | 451 | 0.048 | 100 | NA | NA |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 7 | 15 | 22 | 3.0 | | | 0.048 | | | |
| West: Gilman St | | | | | | | | | | |
| Mov. From W To Exit: | L2 N | T1 E | R2 S | Total | %HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Prob. SL Ov. % | Ov. Lane No. |
| Lane 1 | 13 | 541 | 24 | 578 | 3.2 | 1160 | 0.498 | 100 | NA | NA |
| Approach | 13 | 541 | 24 | 578 | 3.2 | | 0.498 | | | |

| | Total | %HV | Deg.Satn (v/c) |
|---|---|---|---|
| All Vehicles | 1685 | 3.2 | 0.787 |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

**Merge Analysis**

| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap pcu/h | Follow-up Headway sec | Lane Flow Rate sec | Capacity veh/h | Deg. Satn veh/h | Min. Delay v/c | Merge Delay sec | sec |
|---|---|---|---|---|---|---|---|---|---|---|---|

There are no Exit Short Lanes for Merge Analysis at this Site.

**Variable Demand Analysis**

| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
|---|---|---|---|---|
| South: Fourth St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Fourth St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Gilman St | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

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# QUEUE ANALYSIS

## Site: 101 [Western Roundabout (Site Folder: Proposed Design)]

Network: N101 [PM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Roundabout west of I-80
Site Category: (None)
Roundabout

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: W Frontage Rd | | | | | | | | | | | | | | | |
| Lane 1 | | 1.118 | 1.000 | 243.4 | 307.7 | 764.7 | 278.9 | 693.2 | - [1] | 728.2 | 0.19 | 0.48 | 0.0 | NA | NA |
| Approach | | 1.118 | | | 307.7 | 764.7 | 278.9 | 693.2 | - [1] | 728.2 | 0.19 | 0.48 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.238 | 1.000 | 0.0 | 11.8 | 29.4 | 9.1 | 22.6 | 10.2 | 18.5 | 0.20 | 0.49 | NA | 0.0 | 2 |
| Lane 2 | | 0.094 | 1.000 | 0.0 | 3.9 | 9.8 | 3.6 | 8.9 | 3.0 | 5.4 | 0.02 | 0.05 | 0.0 | NA | NA |
| Approach | | 0.238 | | | 11.8 | 29.4 | 9.1 | 22.6 | 10.2 | 18.5 | 0.02 | 0.05 | | | |
| North: I-80 off-ramp | | | | | | | | | | | | | | | |
| Lane 1 | | 0.513 | 1.000 | 7.3 | 31.6 | 78.4 | 22.5 | 55.9 | 31.8 | 57.7 | 0.05 | 0.13 | NA | 0.0 | 2 |
| Lane 2 | | 0.272 | 1.000 | 0.0 | 11.5 | 28.6 | 9.5 | 23.6 | 11.6 | 21.1 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | | 0.513 | | | 31.6 | 78.4 | 22.5 | 55.9 | 31.8 | 57.7 | 0.01 | 0.02 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.186 | 1.000 | 0.0 | 5.7 | 14.0 | 5.2 | 12.9 | 5.9 | 10.8 | 0.03 | 0.07 | 0.0 | NA | NA |
| Approach | | 0.186 | | | 5.7 | 14.0 | 5.2 | 12.9 | 5.9 | 10.8 | 0.03 | 0.07 | | | |
| Intersection | | 1.118 | | | 307.7 | 764.7 | 278.9 | 693.2 | - [1] | 728.2 | 0.19 | 0.48 | | | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.
[1] Cycle-Average Queue is not given as it is larger than the Back of Queue because the delay estimate includes a large delay experienced after the analysis period in oversaturated conditions.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: W Frontage Rd | | | | | | | | | | | | | | | |
| Lane 1 | | 1.118 | 1.000 | 9.6 | 12.1 | 30.1 | 11.0 | 27.3 | - [1] | 28.7 | 0.19 | 0.48 | 0.0 | NA | NA |
| Approach | | 1.118 | | | 12.1 | 30.1 | 11.0 | 27.3 | - [1] | 28.7 | 0.19 | 0.48 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.238 | 1.000 | 0.0 | 0.5 | 1.1 | 0.4 | 0.9 | 0.4 | 0.7 | 0.20 | 0.49 | NA | 0.0 | 2 |
| Lane 2 | | 0.094 | 1.000 | 0.0 | 0.2 | 0.4 | 0.1 | 0.3 | 0.1 | 0.2 | 0.02 | 0.05 | 0.0 | NA | NA |
| Approach | | 0.238 | | | 0.5 | 1.1 | 0.4 | 0.9 | 0.4 | 0.7 | 0.02 | 0.05 | | | |
| North: I-80 off-ramp | | | | | | | | | | | | | | | |
| Lane 1 | | 0.513 | 1.000 | 0.3 | 1.2 | 3.1 | 0.9 | 2.2 | 1.3 | 2.3 | 0.05 | 0.13 | NA | 0.0 | 2 |
| Lane 2 | | 0.272 | 1.000 | 0.0 | 0.5 | 1.1 | 0.4 | 0.9 | 0.5 | 0.8 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | | 0.513 | | | 1.2 | 3.1 | 0.9 | 2.2 | 1.3 | 2.3 | 0.01 | 0.02 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.186 | 1.000 | 0.0 | 0.2 | 0.5 | 0.2 | 0.5 | 0.2 | 0.4 | 0.03 | 0.07 | 0.0 | NA | NA |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Approach | 0.186 | 0.2 | 0.5 | 0.2 | 0.5 | 0.2 | 0.4 | 0.03 | 0.07 |
| Intersection | 1.118 | 12.1 | 30.1 | 11.0 | 27.3 | - [1] | 28.7 | 0.19 | 0.48 |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

[1] Cycle-Average Queue is not given as it is larger than the Back of Queue because the delay estimate includes a large delay experienced after the analysis period in oversaturated conditions.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| There are no Continuous Lanes at this Site. | | | | | | | | | | | | | |

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# QUEUE ANALYSIS

## Site: 102 [Eastern Roundabout (Site Folder: Proposed Design)]

## Network: N101 [PM Peak (Network Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

Roundabout east of I-80
Site Category: (None)
Roundabout

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 2.367 | 1.000 | 1716.7 | 1767.0 | 4391.6 | 1797.0 | 4466.1 | - 1 | - 1 | 1.10 | 2.74 | 66.3 | NA | NA |
| Approach | | 2.367 | | | 1767.0 | 4391.6 | 1797.0 | 4466.1 | - 1 | - 1 | 1.10 | 2.74 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.417 | 1.000 | 3.5 | 21.0 | 52.3 | 17.5 | 43.4 | 22.1 | 40.1 | 0.11 | 0.26 | 16.2 | NA | NA |
| Lane 2 | | 0.843 | 1.000 | 51.2 | 113.1 | 281.0 | 78.7 | 195.5 | 126.5 | 229.5 | 1.41 | 3.51 | NA | 100.0 | 1 |
| Approach | | 0.843 | | | 113.1 | 281.0 | 78.7 | 195.5 | 126.5 | 229.5 | 0.11 | 0.26 | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 0.380 | 1.000 | 2.1 | 13.2 | 32.9 | 13.0 | 32.3 | 17.1 | 31.0 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | | 0.380 | | | 13.2 | 32.9 | 13.0 | 32.3 | 17.1 | 31.0 | 0.01 | 0.02 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.742 | 1.000 | 0.0 | 102.8 | 255.5 | 30.9 | 76.7 | 82.8 | 150.2 | 0.51 | 1.28 | 12.8 | NA | NA |
| Approach | | 0.742 | | | 102.8 | 255.5 | 30.9 | 76.7 | 82.8 | 150.2 | 0.51 | 1.28 | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | | | | | | |
| Lane 1 | | 0.333 | 1.000 | 1.4 | 14.1 | 35.0 | 13.0 | 32.3 | 14.4 | 26.1 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | | 0.333 | | | 14.1 | 35.0 | 13.0 | 32.3 | 14.4 | 26.1 | 0.01 | 0.02 | | | |
| Intersection | | 2.367 | | | 1767.0 | 4391.6 | 1797.0 | 4466.1 | - 1 | - 1 | 1.10 | 2.74 | | | |

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.
1 Cycle-Average Queue is not given as it is larger than the Back of Queue because the delay estimate includes a large delay experienced after the analysis period in oversaturated conditions.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 2.367 | 1.000 | 67.6 | 69.6 | 172.9 | 70.7 | 175.8 | - 1 | - 1 | 1.10 | 2.74 | 66.3 | NA | NA |
| Approach | | 2.367 | | | 69.6 | 172.9 | 70.7 | 175.8 | - 1 | - 1 | 1.10 | 2.74 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.417 | 1.000 | 0.1 | 0.8 | 2.0 | 0.7 | 1.7 | 0.9 | 1.6 | 0.11 | 0.26 | 16.2 | NA | NA |
| Lane 2 | | 0.843 | 1.000 | 2.0 | 4.4 | 11.0 | 3.1 | 7.6 | 4.9 | 9.0 | 1.41 | 3.51 | NA | 100.0 | 1 |
| Approach | | 0.843 | | | 4.4 | 11.0 | 3.1 | 7.6 | 4.9 | 9.0 | 0.11 | 0.26 | | | |
| NorthEast: Eastshore Highway | | | | | | | | | | | | | | | |
| Lane 1 | | 0.380 | 1.000 | 0.1 | 0.5 | 1.3 | 0.5 | 1.3 | 0.7 | 1.2 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | | 0.380 | | | 0.5 | 1.3 | 0.5 | 1.3 | 0.7 | 1.2 | 0.01 | 0.02 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane 1 | 0.742 | 1.000 | 0.0 | 4.0 | 10.0 | 1.2 | 3.0 | 3.2 | 5.9 | 0.51 | 1.28 | 12.8 | NA | NA |
| Approach | 0.742 | | | 4.0 | 10.0 | 1.2 | 3.0 | 3.2 | 5.9 | 0.51 | 1.28 | | | |
| SouthWest: I-80 Off-ramp | | | | | | | | | | | | | | |
| Lane 1 | 0.333 | 1.000 | 0.1 | 0.6 | 1.4 | 0.5 | 1.3 | 0.6 | 1.0 | 0.01 | 0.02 | 0.0 | NA | NA |
| Approach | 0.333 | | | 0.6 | 1.4 | 0.5 | 1.3 | 0.6 | 1.0 | 0.01 | 0.02 | | | |
| Intersection | 2.367 | | | 69.6 | 172.9 | 70.7 | 175.8 | - 1 | - 1 | 1.10 | 2.74 | | | |

Roundabout Capacity Model: US HCM 6.

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

Short Lanes are not included in determining Queue Storage Ratios.

1 Cycle-Average Queue is not given as it is larger than the Back of Queue because the delay estimate includes a large delay experienced after the analysis period in oversaturated conditions.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |

There are no Continuous Lanes at this Site.

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# QUEUE ANALYSIS

## Site: 103 [Gilman/Second (Site Folder: Proposed Design)]

## Network: N101 [PM Peak (Network Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.606 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.606 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.230 | 1.000 | 0.4 | 10.0 | 24.7 | 9.0 | 22.4 | 8.9 | 16.2 | 0.10 | 0.25 | NA | 0.0 | 2 |
| Lane 2 | Y | 0.392 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.392 | | | 10.0 | 24.7 | 9.0 | 22.4 | 8.9 | 16.2 | 0.00 | 0.00 | | | |
| Intersection | | 0.606 | | | 10.0 | 24.7 | 9.0 | 22.4 | 8.9 | 16.2 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.606 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.606 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.230 | 1.000 | 0.0 | 0.4 | 1.0 | 0.4 | 0.9 | 0.3 | 0.6 | 0.10 | 0.25 | NA | 0.0 | 2 |
| Lane 2 | Y | 0.392 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.392 | | | 0.4 | 1.0 | 0.4 | 0.9 | 0.3 | 0.6 | 0.00 | 0.00 | | | |
| Intersection | | 0.606 | | | 0.4 | 1.0 | 0.4 | 0.9 | 0.3 | 0.6 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| East: Gilman St | | | | | | | | | | | | | |
| Lane 1 | 0.606 | 39.5 | 0.1 | 3.70 | 214.4 | 17.6 | 0.42 | 3.28 | 8.2 | 11.5 | 24.6 | 25.2 | LOS C |
| West: Gilman St | | | | | | | | | | | | | |
| Lane 2 | 0.392 | 39.8 | 0.0 | 5.24 | 306.0 | 17.6 | 0.42 | 4.82 | 5.8 | 8.0 | 17.3 | 17.7 | LOS B |

Midblock Effective Detection Zone Length = 7 ft

# QUEUE ANALYSIS

## Site: 104 [Gilman/Third (Site Folder: Proposed Design)]

## Network: N101 [PM Peak (Network Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.3.210**

New Site
Site Category: (None)
Stop (Two-Way)

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Gap (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.492 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.492 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.269 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.269 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| Intersection | | 0.492 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Gap (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.492 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.492 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | Y | 0.269 | 1.000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.269 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |
| Intersection | | 0.492 | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | | | |

Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Continuous Lane Performance**

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| East: Gilman St | | | | | | | | | | | | | |
| Lane 1 | 0.492 | 39.7 | 0.0 | 3.81 | 222.3 | 17.6 | 0.42 | 3.39 | 7.9 | 11.1 | 23.8 | 24.3 | LOS C |
| West: Gilman St | | | | | | | | | | | | | |
| Lane 1 | 0.269 | 39.9 | 0.1 | 7.53 | 440.5 | 17.6 | 0.42 | 7.11 | 4.0 | 5.6 | 12.0 | 12.3 | LOS B |

Midblock Effective Detection Zone Length = 7 ft

# QUEUE ANALYSIS

## Site: 105 [Gilman/Fourth (Site Folder: Proposed Design)]

Network: N101 [PM Peak (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Gilman/Fourth
Site Category: (None)
Signals - Actuated Coordinated Cycle Time = 60 seconds (Network Optimum Cycle Time - Minimum Delay)

**Lane Queues (Distance)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (ft) | Back of Queue (ft) | | Queue at Start of Green (ft) | | Cycle-Average Queue (ft) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.380 | 1.000 | 4.4 | 51.3 | 83.7 | 47.6 | 77.6 | 21.3 | 44.5 | 0.03 | 0.05 | 0.0 | NA | NA |
| Approach | | 0.380 | | | 51.3 | 83.7 | 47.6 | 77.6 | 21.3 | 44.5 | 0.03 | 0.05 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.787 | 1.000 | 53.0 | 362.1 | 590.9 | 199.9 | 326.2 | 88.0 | 183.9 | 0.23 | 0.37 | 0.0 | NA | NA |
| Approach | | 0.787 | | | 362.1 | 590.9 | 199.9 | 326.2 | 88.0 | 183.9 | 0.23 | 0.37 | | | |
| North: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.048 | 1.000 | 0.4 | 4.9 | 8.0 | 4.7 | 7.7 | 1.2 | 2.6 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.048 | | | 4.9 | 8.0 | 4.7 | 7.7 | 1.2 | 2.6 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.498 | 1.000 | 14.8 | 156.2 | 255.0 | 111.5 | 182.0 | 33.5 | 69.9 | 0.60 | 0.98 | 3.2 | NA | NA |
| Approach | | 0.498 | | | 156.2 | 255.0 | 111.5 | 182.0 | 33.5 | 69.9 | 0.60 | 0.98 | | | |
| Intersection | | 0.787 | | | 362.1 | 590.9 | 199.9 | 326.2 | 88.0 | 183.9 | 0.60 | 0.98 | | | |

Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity Formula: Traditional M1.
Short Lanes are not included in determining Queue Storage Ratios.

**Lane Queues (Vehicles)**

| Lane Number | Contin. Lane | Deg. Satn | Prog. Factor (Queue) | Overflow Queue (veh) | Back of Queue (veh) | | Queue at Start of Green (veh) | | Cycle-Average Queue (veh) | | Queue Storage Ratio | | Prob. Block. | Prob. SL Ov. | Ov. Lane No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | v/c | | | Av. | 95% | Av. | 95% | Av. | 95% | Av. | 95% | % | % | |
| South: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.380 | 1.000 | 0.2 | 2.0 | 3.3 | 1.9 | 3.0 | 0.8 | 1.7 | 0.03 | 0.05 | 0.0 | NA | NA |
| Approach | | 0.380 | | | 2.0 | 3.3 | 1.9 | 3.0 | 0.8 | 1.7 | 0.03 | 0.05 | | | |
| East: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.787 | 1.000 | 2.1 | 14.1 | 23.1 | 7.8 | 12.7 | 3.4 | 7.2 | 0.23 | 0.37 | 0.0 | NA | NA |
| Approach | | 0.787 | | | 14.1 | 23.1 | 7.8 | 12.7 | 3.4 | 7.2 | 0.23 | 0.37 | | | |
| North: Fourth St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.048 | 1.000 | 0.0 | 0.2 | 0.3 | 0.2 | 0.3 | 0.0 | 0.1 | 0.00 | 0.00 | 0.0 | NA | NA |
| Approach | | 0.048 | | | 0.2 | 0.3 | 0.2 | 0.3 | 0.0 | 0.1 | 0.00 | 0.00 | | | |
| West: Gilman St | | | | | | | | | | | | | | | |
| Lane 1 | | 0.498 | 1.000 | 0.6 | 6.1 | 9.9 | 4.4 | 7.1 | 1.3 | 2.7 | 0.60 | 0.98 | 3.2 | NA | NA |
| Approach | | 0.498 | | | 6.1 | 9.9 | 4.4 | 7.1 | 1.3 | 2.7 | 0.60 | 0.98 | | | |
| Intersection | | 0.787 | | | 14.1 | 23.1 | 7.8 | 12.7 | 3.4 | 7.2 | 0.60 | 0.98 | | | |

Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity Formula: Traditional M1.

Short Lanes are not included in determining Queue Storage Ratios.

## Continuous Lane Performance

| Lane Number | Deg. Satn | Unint. Speed | Unint. Travel Delay | Hdwy | Spacing | Aver. Vehicle Length | Occup. Time | Space Time | Space Occup. Ratio | Time Occup. Ratio | Density | | LOS (Density Method) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | v/c | mph | sec | sec | ft | ft | sec | sec | % | % | veh/mi | pc/mi | |
| There are no Continuous Lanes at this Site. | | | | | | | | | | | | | |

## Pedestrian Queues

| Mov ID | Description | Dem. Flow | AVERAGE BACK OF QUEUE [ Ped | Dist ] |
|---|---|---|---|---|
| | | ped/h | ped | ft |
| South: Fourth St | | | | |
| 2P | Full | 40 | 0.1 | 0.2 |
| East: Gilman St | | | | |
| 8P | Full | 20 | 0.0 | 0.1 |
| North: Fourth St | | | | |
| 6P | Full | 30 | 0.0 | 0.1 |
| West: Gilman St | | | | |
| 4P | Full | 20 | 0.0 | 0.1 |
| All Pedestrians | | 110 | 0.1 | 0.2 |

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# Appendix G
# CMP Analysis



**Gilman Gateway Rezone Project**
**Alameda CTC Roadway System Analysis Summary - 2020 PM**

| Link Location | Segment Limits | | # Lanes | No Project Volume | Plus Project Volume | V/C Ratio - No Project | V/C Ratio - Plus Project | No Project LOS | Plus Project LOS | Change from LOS E or better to LOS F | LOS F and Change in V/C >3% |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Freeway Segments*** | | | | | | | | | | | |
| **I-80 Eastbound** | | | | | | | | | | | |
| Between | University Avenue | Gilman Street | 4 | 10,574 | 10,610 | 1.32 | 1.33 | F | F | - | No |
| Between | Gilman Street | Buchanan Street | 4 | 11,400 | 11,626 | 1.43 | 1.45 | F | F | - | No |
| **I-80 Westbound** | | | | | | | | | | | |
| Between | Buchanan Street | Gilman Street | 5 | 8,404 | 8,448 | 0.84 | 0.84 | D | D | No | - |
| Between | Gilman Street | University Avenue | 4 | 8,145 | 8,414 | 1.02 | 1.05 | F | F | - | No |
| ***Arterials*** | | | | | | | | | | | |
| **San Pablo Avenue (SR 123) Northbound** | | | | | | | | | | | |
| Between | University Avenue | Cedar Street | 2 | 2,089 | 2,097 | 1.31 | 1.31 | F | F | - | No |
| Between | Cedar Street | Gilman Street | 2 | 2,077 | 2,079 | 1.30 | 1.30 | F | F | - | No |
| Between | Gilman Street | Buchanan Street | 2 | 2,171 | 2,222 | 1.36 | 1.39 | F | F | - | No |
| **San Pablo Avenue (SR 123) Southbound** | | | | | | | | | | | |
| Between | Buchanan Street | Gilman Street | 2 | 1,546 | 1,556 | 0.97 | 0.97 | E | E | No | - |
| Between | Gilman Street | Cedar Street | 2 | 1,683 | 1,685 | 1.05 | 1.05 | F | F | - | No |
| Between | Cedar Street | University Avenue | 2 | 1,785 | 1,821 | 1.12 | 1.14 | F | F | - | No |
| **Ashby Avenue (SR 13) Eastbound** | | | | | | | | | | | |
| Between | I-80 | San Pablo Avenue | 2 | 831 | 835 | 0.52 | 0.52 | B | B | No | - |
| **Ashby Avenue (SR 13) Westbound** | | | | | | | | | | | |
| Between | San Pablo Avenue | I-80 | 2 | 1,075 | 1,079 | 0.67 | 0.67 | C | C | No | - |
| **Gilman Street Eastbound** | | | | | | | | | | | |
| Between | I-80 | Second Street | 2 | 917 | 1,098 | 0.57 | 0.69 | B | C | No | - |
| Between | Second Street | Sixth Street | 2 | 966 | 1,048 | 0.60 | 0.65 | C | C | No | - |
| Between | Sixth Street | San Pablo Avenue | 1 | 489 | 584 | 0.61 | 0.73 | C | C | No | - |
| Between | San Pablo Avenue | Santa Fe Avenue | 1 | 607 | 651 | 0.76 | 0.81 | D | D | No | - |
| **Gilman Street Westbound** | | | | | | | | | | | |
| Between | Santa Fe Avenue | San Pablo Avenue | 1 | 488 | 496 | 0.61 | 0.62 | C | C | No | - |
| Between | San Pablo Avenue | Sixth Street | 1 | 417 | 435 | 0.52 | 0.54 | B | B | No | - |
| Between | Sixth Street | Second Street | 2 | 998 | 1,016 | 0.62 | 0.63 | C | C | No | - |
| Between | Second Street | I-80 | 2 | 1,133 | 1,151 | 0.71 | 0.72 | C | C | No | - |
| **Buchanan Street/Marin Avenue Eastbound** | | | | | | | | | | | |
| Between | I-80 | San Pablo Avenue | 2 | 1,296 | 1,301 | 0.81 | 0.81 | D | D | No | - |
| Between | San Pablo Avenue | Masonic Avenue | 1 | 1,011 | 1,016 | 1.26 | 1.27 | F | F | - | No |
| **Marin Avenue/Buchanan Street Westbound** | | | | | | | | | | | |
| Between | Masonic Avenue | San Pablo Avenue | 1 | 978 | 983 | 1.22 | 1.23 | F | F | - | No |
| Between | San Pablo Avenue | I-80 | 2 | 1,267 | 1,272 | 0.79 | 0.80 | D | D | No | - |

*Fehr & Peers, 2023.*

**Gilman Gateway Rezone Project**
**Alameda CTC Roadway System Analysis Summary - 2040 PM**

| Link Location | Segment Limits | | # Lanes | No Project Volume | Plus Project Volume | V/C Ratio - No Project | V/C Ratio - Plus Project | No Project LOS | Plus Project LOS | Change from LOS E or better to LOS F | LOS F and Change in V/C >3% |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Freeway Segments*** | | | | | | | | | | | |
| **I-80 Eastbound** | | | | | | | | | | | |
| Between | University Avenue | Gilman Street | 4 | 11,974 | 12,010 | 1.50 | 1.50 | F | F | - | No |
| Between | Gilman Street | Buchanan Street | 4 | 12,778 | 13,004 | 1.60 | 1.63 | F | F | - | No |
| **I-80 Westbound** | | | | | | | | | | | |
| Between | Buchanan Street | Gilman Street | 5 | 10,154 | 10,198 | 1.02 | 1.02 | F | F | - | No |
| Between | Gilman Street | University Avenue | 4 | 9,597 | 9,866 | 1.20 | 1.23 | F | F | - | No |
| ***Arterials*** | | | | | | | | | | | |
| **San Pablo Avenue (SR 123) Northbound** | | | | | | | | | | | |
| Between | University Avenue | Cedar Street | 2 | 2,169 | 2,177 | 1.36 | 1.36 | F | F | - | No |
| Between | Cedar Street | Gilman Street | 2 | 2,151 | 2,153 | 1.34 | 1.35 | F | F | - | No |
| Between | Gilman Street | Buchanan Street | 2 | 2,337 | 2,388 | 1.46 | 1.49 | F | F | - | No |
| **San Pablo Avenue (SR 123) Southbound** | | | | | | | | | | | |
| Between | Buchanan Street | Gilman Street | 2 | 2,061 | 2,071 | 1.29 | 1.29 | F | F | - | No |
| Between | Gilman Street | Cedar Street | 2 | 2,039 | 2,041 | 1.27 | 1.28 | F | F | - | No |
| Between | Cedar Street | University Avenue | 2 | 1,987 | 2,023 | 1.24 | 1.26 | F | F | - | No |
| **Ashby Avenue (SR 13) Eastbound** | | | | | | | | | | | |
| Between | I-80 | San Pablo Avenue | 2 | 1,051 | 1,055 | 0.66 | 0.66 | C | C | No | - |
| **Ashby Avenue (SR 13) Westbound** | | | | | | | | | | | |
| Between | San Pablo Avenue | I-80 | 2 | 1,366 | 1,370 | 0.85 | 0.86 | D | D | No | - |
| **Gilman Street Eastbound** | | | | | | | | | | | |
| Between | I-80 | Second Street | 2 | 955 | 1,136 | 0.60 | 0.71 | C | C | No | - |
| Between | Second Street | Sixth Street | 2 | 962 | 1,044 | 0.60 | 0.65 | C | C | No | - |
| Between | Sixth Street | San Pablo Avenue | 1 | 634 | 729 | 0.79 | 0.91 | D | E | No | - |
| Between | San Pablo Avenue | Santa Fe Avenue | 1 | 681 | 725 | 0.85 | 0.91 | D | E | No | - |
| **Gilman Street Westbound** | | | | | | | | | | | |
| Between | Santa Fe Avenue | San Pablo Avenue | 1 | 594 | 602 | 0.74 | 0.75 | C | C | No | - |
| Between | San Pablo Avenue | Sixth Street | 1 | 360 | 378 | 0.45 | 0.47 | B | B | No | - |
| Between | Sixth Street | Second Street | 2 | 824 | 842 | 0.51 | 0.53 | B | B | No | - |
| Between | Second Street | I-80 | 2 | 993 | 1,011 | 0.62 | 0.63 | C | C | No | - |
| **Buchanan Street/Marin Avenue Eastbound** | | | | | | | | | | | |
| Between | I-80 | San Pablo Avenue | 2 | 1,740 | 1,745 | 1.09 | 1.09 | F | F | - | No |
| Between | San Pablo Avenue | Masonic Avenue | 1 | 1,065 | 1,070 | 1.33 | 1.34 | F | F | - | No |
| **Marin Avenue/Buchanan Street Westbound** | | | | | | | | | | | |
| Between | Masonic Avenue | San Pablo Avenue | 1 | 990 | 995 | 1.24 | 1.24 | F | F | - | No |
| Between | San Pablo Avenue | I-80 | 2 | 1,809 | 1,814 | 1.13 | 1.13 | F | F | - | No |

*Fehr & Peers, 2023.*

# Appendix H
# Loading Assessment Memorandum



FEHR PEERS

# Memorandum

Date: March 31, 2023

To: Gavin Smith, Perkins and Will

From: Sam Tabibnia, Fehr & Peers

**Subject: Berkeley Forge Project – On-Site Loading Assessment**

*OK22-0480*

The Berkeley Forge development (Project) in the City of Berkeley proposes fewer on-site truck loading spaces than required by the City of Berkeley Municipal Code. As described in this memorandum, we expect that the truck loading spaces proposed by the Project would meet the loading needs of the Project because the number of loading spaces would meet or exceed the loading requirements of nearby jurisdictions that specify loading requirements for R&D uses.

**Table 1** shows the size and the proposed number of loading spaces for each Project building. The Project would provide approximately 873,000 square feet of R&D/office uses in seven buildings. Six of the buildings would range in size from about 91,500 to 145,500 square feet and would provide two loading spaces per building. Building C1 would be about 214,200 square feet and provide three loading spaces. The seven buildings combined would provide 15 loading spaces and all loading spaces would be 60 feet long.

**Table 1** also shows the number of loading spaces required by the City of Berkeley Municipal Code, as well as the Cities of Emeryville, Richmond, and Oakland Municipal Codes, which are nearby jurisdictions that specify loading requirements for R&D or similar uses. City of Berkeley requires between four to nine loading spaces for each Project building for a total of 39 loading spaces. The City of Berkeley requirements apply to all non-residential uses in the Manufacturing districts, regardless of the specific use. In comparison, Cities of Emeryville, Richmond, and Oakland specify requirements for R&D uses. The Cities of Emeryville and Richmond require between one and three loading spaces for each Project building for a total of 13 loading spaces, and the City of Oakland requires between two and three loading spaces for each Project building for a total of 15 loading spaces.