FINAL TRAFFIC OPERATIONS ANALYSIS REPORT

# I-8o / Hiddenbrooke / <br> American Canyon Interchange 

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FehrłPeers


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## Chapter 1. Introduction

The primary goal of the I-80/Hiddenbrooke Parkway Interchange Operational Improvements Project (Project) is to improve local street traffic operations in conjunction with build-out of the Hiddenbrooke Community. The improvements involve conversion of existing interchange access and frontage road intersections along Hiddenbrooke Parkway from side-street stop control to roundabouts.

## Report Purpose

The purpose of this report is to present existing and opening year (2024) conditions of the interchange access intersections. It describes the existing transportation infrastructure, including the roadway system, and bicycle and pedestrian facilities. The existing operational characteristics are described, as well as methods used to evaluate intersection conditions. This report also presents opening year conditions with and without the project. Finally, the report evaluates both roundabout and traffic signal control alternatives for the interchange access intersections. The results in this report serve as the basis for the traffic operations section of the Permit Engineering Evaluation Report (PEER).

## Project Background

Development of the Hiddenbrooke Community began with the designation of Sky Valley (now known as Hiddenbrooke) as a specific planning area by the City of Vallejo Planning Commission in August 1985. A Draft Specific Area Plan (SAP), prepared in March 1986, served as the subject for an environmental review that resulted in the Sky Valley Draft Environmental Impact Report dated May 1986. After receiving public comment, a revised Draft SAP was developed, a revised Draft EIR was prepared, and a Final EIR was certified on April 28, 1987.

As part of the original planning and environmental process described above for the Hiddenbrooke Community, traffic studies were prepared that indicated the need for improvements to the I80/Hiddenbrooke Parkway - American Canyon Road interchange upon build-out of the Hiddenbrooke community. The City and developer of the Hiddenbrooke community executed an agreement for improvements to the interchange. The City of Vallejo collected fees to make improvements to the interchange. Traffic studies conducted in recent years indicate the interchange access intersections would operate at LOS F conditions by 2035 if improvements are not made.

After years of extensive community engagement with the Hiddenbrooke community that included three community workshops and a mail-in community survey conducted by the Hiddenbrooke Property Owners Association (HPOA), roundabouts were identified as the preferred improvement option for the interchange by Hiddenbrooke community residents. On September 11, 2018, the Vallejo City Council approved roundabouts as the preferred alternative and directed City staff to proceed with project implementation.

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## Project Description

The purpose of the project is to accomplish the following specific objectives:

- Relieve congestion and improve the flow of traffic on Hiddenbrooke Parkway
- Provide for safe and reliable operation of intersections at the I-80/Hiddenbrooke Parkway American Canyon Road interchange
- Provide improvements consistent with local planning documents and state standards

The project would have two roundabouts, one at the I-80 westbound interchange access intersection and one at the $1-80$ eastbound interchange access intersection. The roundabout at the $1-80$ westbound interchange access intersection is a 4-leg roundabout comprised of the I-80 westbound ramps, Hiddenbrooke Parkway, and American Canyon Road legs. The roundabout at the $\mathrm{I}-80$ eastbound interchange access intersection is a 6-leg roundabout that incorporates Hiddenbrooke Parkway, the I-80 eastbound ramps, and McGary Road. McGary Road is a frontage road that parallels I-80 and is located approximately 80 feet south of the I-80 eastbound interchange access intersection. This configuration of roundabouts is very similar to improvements planned for the I-80/Gilman Street interchange ${ }^{1}$ in Berkeley.

A California Legal 65 -foot semi-truck was used for the turning analysis in the preliminary design of the roundabouts on both sides of the interchange.

## Project Alternatives

Chapter 5 provides an evaluation of alternative intersection control options for the project. Alternatives that are evaluated include installing roundabouts or widening the intersections and installing traffic signals. The roundabout evaluation was performed by Reid Middleton and the traffic signal evaluation was performed by Fehr \& Peers.

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## Chapter 2.Analysis Methodology

This chapter describes the study area and the methods used to analyze the transportation facilities.

## Study Area

The transportation analysis study area is divided into a local street network and a freeway network. The local street network extends along American Canyon Road from the I-80 westbound ramps to McGary Road. The freeway network extends along l-80 just to the east and west of American Canyon. Figure 1 shows the intersections, and freeway segments in the study area.

The study intersections are listed below.

1. Hiddenbrooke Parkway-American Canyon Road / I-80 Westbound Ramps
2. Hiddenbrooke Parkway-American Canyon Road / I-80 Eastbound Ramps
3. Hiddenbrooke Parkway / McGary Road

The freeway study segments are listed below.

Eastbound I-80
A. American Canyon Road Off-Ramp
B. American Canyon Road Off- to On-Ramp
C. American Canyon Road On-Ramp

## Westbound I-80

D. American Canyon Road Off-Ramp
E. American Canyon Road Off- to On-Ramp
F. American Canyon Road On-Ramp

No new study intersections or freeway study segments are added under the analysis of Construction Year Conditions. The study intersections geometry and intersection control are modified under the Build Alternatives, as described in detail later in this report. No changes are planned for the freeway study segments along I-80 under the Build Alternatives or under future analysis years.



American Canyon Road / I-80 Westbound Ramps

2
American Canyon Road / I-80 Eastbound Ramps

3 Hiddenbrooke Parkway/ McGary Road

## Westbound I-80

D American Canyon Road Off-Ramp
E American Canyon Road Off- to On-Ramp
F American Canyon Road On-Ramp

Figure 1
Study Area

## Data Collection

Intersection turning movement counts were collected between 7:00 to 9:00 AM and 4:00 to 6:00 PM on Wednesday, March 11, 2020. The peak period counts included heavy vehicles, bicycles, and pedestrians. In addition, 24 -hour roadway counts were collected on American Canyon Road north of I-80, Hiddenbrooke Parkway south of I-80, and McGary Road east of Hiddenbrooke Parkway. 2020 counts were compared to previously collected counts from 2015 to ensure that 2020 counts were not underrepresented due to the six-county Bay Area's shelter in place order which took effect March 16, 2020. As in 2015, the peak hours based on intersection counts are between 7:30 to 8:30 AM and 4:45 to 5:45 PM. With the exception of vehicles traveling to or from the Hiddenbrooke neighborhood to the south and the park-and-ride facility on McGary Road (open in 2015 but closed in 2020), counts taken in 2020 were similar or higher than those conducted in 2015. Intersection turning movement counts are summarized in Appendix B.

The network-wide peak hour factors were 0.93 and 0.98 during the morning and evening peak hours. The average network heavy vehicle percentages were 3 and 1 percent during the morning and evening peak hours, respectively.

Existing lane configurations, turn pocket lengths, intersection spacing, and posted speed limits were confirmed in the field. The intersection and roadway configuration for the Build Alternatives was provided by Mark Thomas and are shown in Figure 2 and Figure 3.

Freeway mainline volumes were obtained from the Caltrans Performance Measurement System (PeMS). The data were averaged across midweek weekdays (Tuesdays, Wednesdays, and Thursdays) during February 2020. The morning peak hour occurred from 8:00 to 9:00 AM, and the evening peak hour occurred from 5:00 to 6:00 PM. The freeway mainline peak hour factors were derived from PeMS data while ramp peak hour factors were derived from existing turning movement counts at the ramp intersections. Mainline peak hour heavy vehicle percentages were assumed to be the same as the daily percentage of 6 percent as reported in the Caltrans Annual Average Daily Truck Traffic publication². Ramp heavy vehicle percentages were also based on existing turning movement counts at ramp intersections.

[^1]
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Figure 3
Roundabout Alternative Configuration

## 2024 Opening Year Travel Demand Forecasts

The methodology for developing intersection and ramp forecasts for the 2024 opening year scenario is summarized below.

- The 2024 forecasts are developed by adding the growth in traffic at the three study intersections, between 2020 and 2024, to traffic counts collected in 2020.
- To identify the growth in traffic to 2024, the growth in trips through 2040 was identified using the most recent version of the Napa-Solano travel demand model. Model outputs are provided in


## Appendix C.

- Since the Napa-Solano travel demand model does not include trips from the recently approved Watson Ranch Specific Plan (WRSP) in American Canyon that would add trips to the interchange, the estimated trips generated by WRSP were added to the 2040 forecasts.
- The increment of growth from the American Canyon Road leg (i.e., north side) of the interchange, to 2024, was determined by estimating the proportional rate of growth over four years by pivoting from the 2020 counts and 2040 forecasts.
- The 2024 forecasts assume all of the remaining residential growth in the Hiddenbrooke community would be completed by 2024, and those trips represent the increment of growth from the Hiddenbrooke Parkway leg (i.e., south side) of the intersection by 2024. Hiddenbrooke trip generation is summarized in Appendix $\mathbf{D}$.

The methodology for developing freeway mainline forecasts for the 2024 opening year scenario is summarized below.

- The 2024 forecasts are developed by adding the growth in traffic at the six freeway mainline segments, between 2020 and 2024, to the 2020 PeMS mainline volumes.
- To identify the growth in traffic to 2024, the mainline growth through 2040 was identified using the most recent version of the Napa-Solano travel demand model.
- The increment of mainline growth to 2024 , was determined by estimating the proportional rate of growth over four years by pivoting from the 2020 PeMS data and 2040 forecasts.


## Traffic Operations Analysis

## Stop-Controlled and Signalized Intersections

The study intersections were analyzed using the performance measures of intersection delay and level of service (LOS). LOS is a qualitative measure of traffic operating conditions that assigns a letter rating, from A (the best) to $F$ (the worst). These ratings represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. The descriptions of letter ratings and the delay thresholds for signalized and unsignalized intersections are provided in Table 1. Although the HCM does not define the LOS delay thresholds for roundabouts, the thresholds for unsignalized intersections are assumed to

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apply. For unsignalized intersections with some movements uncontrolled, the intersection LOS is determined by the controlled movement with the highest delay.

Table 1. Intersection LOS Thresholds

| LOS | Description | Delay ${ }^{1}$ |  |
| :---: | :---: | :---: | :---: |
|  |  | Signalized | Unsignalized |
| A | Operations with very low delay occurring with favorable progression and/or short cycle length. | $\leq 10$ | $\leq 10$ |
| B | Operations with low delay occurring with good progression and/or short cycle lengths. | > 10 to 20 | $>10$ to 15 |
| C | Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear. | > 20 to 35 | $>15$ to 25 |
| D | Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable. | > 35 to 55 | >25 to 35 |
| E | Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. | > 55 to 80 | > 35 to 50 |
| F | Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths. | $\begin{gathered} >80 \text { or } \\ \mathrm{v} / \mathrm{c}>1^{2} \end{gathered}$ | $\begin{gathered} >50 \text { or } \\ v / c>1^{2} \end{gathered}$ |
| Notes: | lay is reported in seconds per vehicle. <br> lume-to-capacity ratio is greater than 1 (demand exceeds capacity). <br> way Capacity Manual (Transportation Research Board, 2010) |  |  |

Intersection operations were analyzed under AM and PM peak period conditions (7:00 to 9:00 AM and 4:00 to 6:00 PM) using the SimTraffic microsimulation software. Traffic simulation analysis allows for the direct modeling of vehicle interactions, delays due to queues that block turn pockets or adjacent lanes, and congestion that either constrains vehicles from reaching downstream intersections or causes queues that create additional delay at upstream intersections. The SimTraffic software was applied consistent with the methodology presented in the Highway Capacity Manual, 6th Edition (Transportation Research Board, 2016). The analysis results are an average of ten model runs using different random seed values. Intersection delay and LOS are based on the SimTraffic results.

## Simulation Model Development

Development of the street network and traffic volumes that comprise the SimTraffic simulation models required the input of geometric, traffic control and traffic flow data, each of which is described in this section. An overview of the micro-simulation model development process is described below.

Roadway geometric data (traffic lanes, turn pockets, etc.) were gathered using aerial photographs and field observations. Lane configurations were initially taken from aerial photographs and were then confirmed or revised based on field observations.

The posted speed limits for streets in the study area were collected during field observations. Maximum vehicle speeds in the model are consistent with posted speed limits, although random speed variability is assigned to each vehicle, causing them to drive above or below the speed limit, to mimic prevailing driver behavior.

For each peak period, the analysis period is one hour with a 15 -minute seeding period. The volume inputs vary each 15 minutes based on the traffic counts. The peak hour was determined based on the highest consecutive four 15 -minute interval period based on the overall network volume. The routing decisions for the analysis period are based on the peak hour volumes. When developing the peak hour volumes, the volumes were balanced between intersections to reduce unexpected changes in through volumes between adjacent intersections. Where balancing was performed, the volumes were balanced to the higher volume to provide for a conservative analysis.

The SimTraffic models were validated to existing conditions using criteria developed by Fehr \& Peers. A number of iterations were required to successively adjust the default simulation parameters for driver behavior until the model was validated to observed conditions.

Because micro-simulation models like SimTraffic rely on the random arrival of vehicles, multiple runs are needed to provide a reasonable level of statistical accuracy and validity. The models are run up to twenty times (each using a different random seed number). Starting with the first ten runs, runs that are clear outliers are reviewed to determine if coding errors are present. If no obvious error is found, the run is discarded and replaced with a subsequent run. This process is repeated until ten acceptable runs remain. The final results are based on an average of the ten acceptable runs.

During calibration of a microsimulation model, individual components are adjusted to match collected and field-observed data. Calibration of a model is necessary to ensure that the model provides a visually accurate depiction of the field-observed condition and that model outputs can be trusted to inform the best possible analysis.

Adjustments to the SimTraffic models focus on the model components related to driver behavior including yielding right-of-way at intersections, driver performance such as aggressiveness, vehicle fleet mix, and vehicle performance.

During validation, the SimTraffic model output is compared against field data to determine if the output is within acceptable levels. Specifically, the vehicles served on each intersection approach are compared to the counted volumes at the corresponding approach to ensure that modeled volumes are within five percent of counted demand volume. Additionally, modeled queue lengths are compared to observed queue lengths to ensure the model is accurately reflecting existing conditions.

## Roundabout Analysis

Reid Middleton performed a quantitative delay and LOS analysis for the roundabout. The design vehicle movements (CA-Legal) were calculated with 6 -in tire clearance to all mountable curbs, 12-in tire clearance to vertical curb and gutters and 0 -in tire clearance to all truck apron curbs. In addition, an STAA-Standard truck, is accommodated on the on/off ramps of this interchange. Due to the conservative nature of AutoTURN, these offsets will ensure the design vehicle will easily negotiate the intersection. Limited pedestrian and bicycle facilities were provided in the current layout due to restrictions for these facilities across the bridge. A future layout showing the ultimate pedestrian and bicycle facilities is provided.

Roundabout operational analysis was performed using SIDRA, Version 8.0 and roundabout conceptual layout geometry used. Criteria LOS are the same as unsignalized intersections, as shown in Table 1. This analysis is for a 4-leg roundabout on the north side of the I-80/Hiddenbrooke Parkway interchange and a 6 -leg roundabout on the south side of the interchange.

## Freeway Analysis

Freeway operations were analyzed under AM and PM peak hour conditions according to the methodology presented in the Highway Capacity Manual, 6th Edition (Transportation Research Board, 2016). As with intersections, LOS is used to describe the operating condition of freeway segments. Table $\mathbf{2}$ lists the descriptions of the letter ratings and thresholds for each category.

Table 2. Freeway LOS Thresholds

| LOS | Description | Density ${ }^{1}$ |  |
| :---: | :---: | :---: | :---: |
|  |  | Basic | Merge, Diverge and Weave |
| A | Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver. | < 11 | < 10 |
| B | Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted. | > 11 to 18 | > 10 to 20 |
| C | Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. | > 18 to 26 | > 20 to 28 |
| D | Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort. | > 26 to 35 | > 28 to 35 |
| E | Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing. | > 35 to 45 | > 35 to 43 |
| F | Represents a breakdown in flow. | > 45 or $\mathrm{v} / \mathrm{c}>1^{2}$ | $>43^{3}$ or $\mathrm{v} / \mathrm{c}>1^{2}$ |
| Notes: | 1. Density is reported in vehicles per lane per mile. <br> 2. Volume-to-capacity ratio is greater than 1 (demand exceeds capacity). <br> 3. Threshold of 43 vehicles per lane per mile applies to weave segments only. Merge and diverge segments do not have a density threshold for LOS F. |  |  |
| Source: | hway Capacity Manual (Transportation Research Board, 2016) |  |  |

The HCM method for freeway capacity analysis has the following limitations that may apply in one or more analysis scenario.

- The methodology does not account for the influence of a downstream bottleneck that causes queuing to extend into the study area.
- The methodology does not account for the influence of an upstream bottleneck that constrains traffic demand from reaching the study area.
- The capacity-enhancing effects of ramp metering and intelligent transportation system features (for example, electronic dynamic message signs) are not captured.
- The effect of the posted speed limit and enforcement practices on actual vehicle speed is not modeled.
- The effect of a ramp HOV (high-occupancy vehicle) lane on merge segment capacity is not captured.
- The effect of a mainline HOV lane on freeway segment capacity is not modeled directly.


## LOS Standards

The Level of Service (LOS) standards described below are based on policies of the respective jurisdictions.
The City of Vallejo identifies LOS E as an advisory LOS standard for intersections during peak hours. The acceptable LOS standard across the system within the jurisdiction of the Solano Transportation Authority (STA), which includes Interstate 80, is LOS E (2019 Solano County Congestion Management Program, October 2019).

## Chapter 3. Existing Conditions

The existing conditions chapter presents the operations and safety of the roadway system. The operations analysis is a detailed evaluation of individual facilities with separate discussions for intersections and freeway segments. Crash history for roadways adjacent to the proposed project are presented. The existing transit, bicycle and pedestrian systems are also discussed.

## Description of Study Facilities

The roadway study area includes American Canyon Road from the I-80 westbound ramps to Hiddenbrooke Parkway and McGary Road. The freeway network extends along I-80 just to the east and west of American Canyon.

- American Canyon Road is two-lane east-west arterial that extends from Wetlands Edge Road on the west side of American Canyon to the I-80 eastbound ramps in the study area.
- Hiddenbrooke Parkway is a two-lane east-west collector street that provides access to the Hiddenbrooke community south of the study area.
- McGary Road is a two-lane road that runs parallel to l-80 between the study area and Cordelia to the northeast. McGary Road terminates approximately 1 mile south of the study area at a private property.
- I-80 is an east-west freeway that traverses the United States from San Francisco to New York. In the study area, the freeway has four lanes in each direction and serves regional traffic between the Bay Area and the Sacramento metropolitan area.

The I-80/Hiddenbrooke Parkway interchange has slip on-ramps and off-ramps. The American Canyon Road and Hiddenbrooke Parkway intersections with the $1-80$ westbound and eastbound ramps are both all-way stop-controlled intersections. The Hiddenbrooke Parkway and McGary Road intersection is a side-street stop-controlled intersection with northbound, eastbound, and westbound traffic yielding to the southbound approach.

Figure 4 shows peak hour vehicle turning movement volumes, traffic control, and lane configurations for the study intersections. Freeway mainline peak hour volumes are shown in Table 3.


Figure 4
Peak Hour Traffic Volumes and Lane Configurations

Table 3. I-80 Mainline Peak Hour Volumes - Existing Conditions

| Segment | Volumes |  |  |
| :---: | :---: | :---: | :---: |
|  |  | AM | PM |
| A | I-80 Eastbound - American Canyon Road Off-ramp | 3,225 | 4,704 |
| B | I-80 Eastbound - American Canyon Road Off- to On-ramp | 3,062 | 4,356 |
| C | I-80 Eastbound - American Canyon Road On-ramp | 3,442 | 4,731 |
| D | I-80 Westbound - American Canyon Road Off-ramp | 4,217 | 3,769 |
| E | I-80 Westbound - American Canyon Road Off- to On-ramp | 3,981 | 3,357 |
| F | I-80 Westbound - American Canyon Road On-ramp | 4,344 | 3,540 |

Source: Fehr \& Peers, 2020

## Intersection Operations

Intersection operations were analyzed for existing (2020) conditions for both the AM and PM peak hours using SimTraffic software. Table 4 shows the intersection LOS and average delay under existing conditions, and Table 5 reports the average maximum queue length under existing conditions.

During both the AM and PM peak hours, the I-80 eastbound and westbound ramp intersections have LOS A or better conditions. Similarly, the Hiddenbrooke Parkway and McGary Road intersection operates at LOS A during the PM Peak Hour. During the AM peak hour, however, the relatively high volume of vehicles exiting the Hiddenbrooke community results in LOS D conditions for the northbound approach at the Hiddenbrooke Parkway and McGary Road intersection.

During both the AM and PM peak hours, queues under existing conditions can generally be accommodated by available storage lengths. The exception to this is the northbound approach at the American Canyon Road and I-80 eastbound ramps intersection, where queues may occasionally spill back into the Hiddenbrooke Parkway and McGary Road intersection.

Table 4. Intersection Operations - Existing Conditions

| Intersection |  | Control | LOS / Delay ${ }^{1}$ |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | AM Peak Hour | PM Peak Hour |
| 1 | Hiddenbrooke Parkway-American Canyon Road / I-80 WB Ramps |  | All-Way Stop | A / 9 | A / 9 |
| 2 | Hiddenbrooke Parkway-American Canyon Road / I-80 EB Ramps | All-Way Stop | A / 7 | A / 9 |
| 3 | Hiddenbrooke Parkway / McGary Road | Side Street Stop ${ }^{2}$ | D / 27 (NB) | A / 9 (NB) |

Notes:

1. Delay is reported in seconds per vehicle. Bold and underline font indicate LOS F conditions; that is, volume exceeds capacity.
2. The highest controlled movement delay is reported for side street stop-controlled intersection.

Source: Fehr \& Peers, 2020

Table 5. Average Maximum Queue Length - Existing Conditions

|  | Intersection | Approach | Storage Length | Queue Length |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | AM Peak Hour | PM Peak Hour |
| 1 | Hiddenbrooke Parkway-American Canyon Road / I-80 WB Ramps | Northbound | 440 | 80 | 80 |
|  |  | Southbound | >1,040 | 100 | 120 |
|  |  | Westbound | 1,220 | 60 | 100 |
| 2 | Hiddenbrooke Parkway-American Canyon Road / I-80 EB Ramps | Northbound | 60 | 80 | 80 |
|  |  | Southbound | 440 | 80 | 120 |
|  |  | Eastbound | 1,020 | 60 | 100 |
| 3 | Hiddenbrooke Parkway / McGary Road | Northbound | >900 | 260 | 80 |
|  |  | Southbound | 60 | 20 | 20 |
|  |  | Westbound | >620 | 60 | 40 |
|  |  | Eastbound | >1,020 | 20 | 20 |

[^2]
## Freeway Operations

Freeway operations were analyzed for existing (2020) conditions during the AM and PM peak hours using HCM methodologies. Table 6 presents freeway operations under existing conditions for I-80 at the Hiddenbrooke Parkway interchange. During the both the AM and PM peak hours, all eastbound and westbound freeway study segments would operate at LOS C or better conditions.

Table 6. Freeway Operations - Existing Conditions

| Segment | Facility Type | LOS / Density ${ }^{1}$ |  |
| :---: | :---: | :---: | :---: |
|  |  | AM Peak Hour | PM Peak Hour |
| I-80 Eastbound - American Canyon Road Off-ramp | Diverge | B / 13 | C / 19 |
| I-80 Eastbound - American Canyon Road Off- to On-ramp | Basic | B / 12 | B / 17 |
| I-80 Eastbound - American Canyon Road On-ramp | Merge | B / 14 | C / 20 |
| I-80 Westbound - American Canyon Road Off-ramp | Diverge | C / 17 | C / 15 |
| I-80 Westbound - American Canyon Road Off- to On-ramp | Basic | B / 15 | B / 13 |
| I-80 Westbound - American Canyon Road On-ramp | Merge | C / 18 | B / 14 |

Notes:

1. Density is reported in passenger car equivalents per lane per mile.

Source: Fehr \& Peers, 2020

## Roadway Safety

City of Vallejo staff provided collision data that they queried from the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS) database of collisions in the study area. Table 7 lists the collisions by type on American Canyon Road and Hiddenbrooke Road at or near the I-80 ramps. The collisions occurred between January 1, 2017 and December 31, 2019. During the three-year period, one injury collision occurred at the intersection of the $1-80$ westbound ramps and American Canyon Road. This collision involved a single vehicle that was involved with a fixed object and overturned.

Table 7. Collision History - American Canyon Road / Hiddenbrooke Parkway

| Collision Type | Intersection |  |  |
| :---: | :---: | :---: | :---: |
|  | I-80 <br> Westbound | I-80 <br> Eastbound | McGary Road |
| Fixed Object | 1 | 0 | 0 |

Notes: Collisions occurred from January 1, 2017 through December 31, 2019.
Source: SWITRS, City of Vallejo
Table 8 shows reported collisions for the I-80 freeway mainline from the TASAS database for October 1, 2016 through September 20, 2019. The collisions are separately shown for the portion of I-80 in Napa County, west of the interchange, from Postmile 7.400 to 8.003 , and for the portion of I-80 in Solano County, east of the interchange, from Postmile 8.004 to 8.549 . For the three-year period, a total of 69 collisions were reported in this 1.15 -mile segment of I-80, with no fatalities involved in the reported collisions. This data summary includes collisions on the freeway segment and the ramps. During the three-year period, two collisions were reported at the eastbound off-ramp at Postmile 7.974 and three collisions occurred at the eastbound on-ramp at Postmile 8.355. No collisions were reported at the westbound ramps.

For the segment of I-80 in Napa County to the west of the interchange, the actual total collision rate of 0.34 is well below the statewide average rate of 0.70 for comparable freeway facilities. The actual collision rate for Fatal and Injury collisions (F\&l) of 0.06 is substantially below the statewide average rate of 0.23 for F\&l collisions on comparable freeway facilities.

For the segment of I-80 in Solano County to the east of the interchange, the actual total collision rate of 0.48 is well below the statewide average rate of 0.70 for comparable freeway facilities. The actual collision rate for Fatal and Injury collisions (F\&l) of 0.20 is below the statewide average rate of 0.23 for F\&l collisions on comparable freeway facilities.

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Table 8. Collision History - I-80 Mainline and Ramps

| Location | Postmiles | Total Collisions | Total Fatalities | MVM | Actual Collision Rate ${ }^{1}$ |  |  | Average Collision Rate ${ }^{1}$ |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | F | F\&1 | Total | F | F\&l | Total |
| Napa County - west of interchange | PM 7.400-8.803 | 30 | 0 | 88.10 | 0.0 | 0.06 | 0.34 | 0.006 | 0.23 | 0.70 |
| Solano County - east of interchange | PM 8.004-8.549 | 39 | 0 | 81.07 | 0.0 | 0.20 | 0.48 | 0.006 | 0.23 | 0.70 |

Notes: The collision rate is in collisions per million vehicle-miles. "F" refers to the fatality collision rate, and "F\&l" refers to the fatality and injury collision rate.
Source: Caltrans TASAS Table B, October 1, 2016 through September 30, 2019.

## Multimodal Facilities

SolTrans provides public transportation service to the southern Solano County cities of Vallejo and Benicia. However, while one express route (Route R) travels along I-80 adjacent to the Hiddenbrooke Community, it remains on the highway and does not make stops within the study area.

Bicycle facilities in the project study area primarily serve recreational bicycling during off-peak periods. McGary Road provides a connection between the Solano Bikeway southwest of the study area and Cordelia to the northeast. East of Hiddenbrooke Parkway, McGary Road has Class II bicycle lanes on both sides of the road. West of Hiddenbrooke Parkway, bicyclists on McGary Road share the road with vehicle traffic.

The Ridge Trail is a mixed-use path that begins just south of McGary Road and continues along the west side of Hiddenbrooke Parkway into the Hiddenbrooke community. It provides a connection for bicyclists to Class II bike lanes within the community, and for people walking to a network of nearby trails. During the PM peak hour, four bicycles per hour were observed traveling along McGary Road and between McGary Road and Hiddenbrooke Parkway. No bicyclists were present during the AM peak hour.

With the exception of the Ridge Trail described above, there are no sidewalks, crosswalks, or other facilities for people walking in the study area. No pedestrians were counted crossing at any of the study intersections during the AM and PM peak hours.

## FehrłPeers

## Chapter 4. Opening Year 2024

This chapter presents opening year (2024) forecasts and operations of the roadway system under no project conditions.

## 2024 Opening Year Forecasts

Figure 5 shows peak hour vehicle turning movement volumes, traffic control, and lane configurations for the study intersections for opening year (2024) conditions. Freeway mainline peak hour volumes are shown in Table 9. These volumes represent traffic demand volumes from projected regional and local growth in the study area. The traffic volumes for the two project alternatives are the same as for the no project alternative.

Compared to existing conditions, opening year volumes show an increase of approximately 140 to 240 vehicles at each intersection during the AM and PM peak hours. I-80 mainline volumes are similar to existing conditions with showing only slight increases. The largest increases, of approximately 100 vehicles, occur on the two mainline segments after the westbound and eastbound on-ramps during the AM peak hour.

Table 9. I-80 Mainline Peak Hour Volumes - 2024 Opening Year Conditions

| Segment | Volumes |  |  |
| :---: | :---: | :---: | :---: |
|  |  | AM | PM |
| A | I-80 Eastbound - American Canyon Road Off-ramp | 3,293 | 4,768 |
| B | I-80 Eastbound - American Canyon Road Off- to On-ramp | 3,083 | 4,358 |
| C | I-80 Eastbound - American Canyon Road On-ramp | 3,543 | 4,798 |
| D | I-80 Westbound - American Canyon Road Off-ramp | 4,275 | 3,855 |
| E | I-80 Westbound - American Canyon Road Off- to On-ramp | 3,985 | 3,385 |
| F | I-80 Westbound - American Canyon Road On-ramp | 4,445 | 3,625 |

Source: Fehr \& Peers, 2020


## 2024 No Project Conditions

Intersection and freeway operations were analyzed for opening year 2024 conditions for both the AM and PM peak hours. Table 10 shows the intersection LOS and average delay under 2024 no project conditions, and Table 11 reports the average maximum queue length under 2024 no project conditions.

## Intersection Operations

Under 2024 no project conditions, the projected increase in vehicle traffic would be similar or slightly degrade operations at both ramp intersections during the AM and PM peak hours, and at Hiddenbrooke Parkway and McGary Road during the PM peak hour. However, during the AM peak hour, delays would increase substantially for the northbound approach at Hiddenbrooke Parkway and McGary Road, with average delays increasing to over 80 seconds per vehicle. Similarly, average queue lengths would slightly increase at most approaches, but would more than double for the northbound approach at Hiddenbrooke Parkway and McGary Road, increasing from 260 feet to 680 feet.

Table 10. Intersection Operations - 2024 No Project Conditions

| Intersection |  | Control | LOS / Delay ${ }^{1}$ |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | AM Peak Hour | PM Peak Hour |
| 1 | Hiddenbrooke Parkway-American Canyon Road / I-80 WB Ramps |  | All-Way Stop | B / 11 | B / 10 |
| 2 | Hiddenbrooke Parkway-American Canyon Road / I-80 EB Ramps | All-Way Stop | A / 9 | B / 12 |
| 3 | Hiddenbrooke Parkway / McGary Road | Side Street Stop ${ }^{2}$ | F/>80 (NB) | B / 11 (NB) |

Notes:

[^3]Table 11. Average Maximum Queue Length - 2024 No Project Conditions

| Intersection |  | Approach | Storage <br> Length | Queue Length |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | AM Peak Hour |  | PM Peak Hour |
| 1 | Hiddenbrooke Parkway-American Canyon Road / I-80 WB Ramps |  | Northbound | 440 | 120 | 80 |
|  |  | Southbound | >1,040 | 180 | 160 |
|  |  | Westbound | 1,220 | 80 | 120 |
| 2 | Hiddenbrooke Parkway-American Canyon Road / I-80 EB Ramps | Northbound | 60 | 80 | 80 |
|  |  | Southbound | 440 | 120 | 220 |
|  |  | Eastbound | 1,020 | 80 | 140 |
| 3 | Hiddenbrooke Parkway / McGary Road | Northbound | >900 | 680 | 120 |
|  |  | Southbound | 60 | 20 | 40 |
|  |  | Westbound | > 620 | 60 | 40 |
|  |  | Eastbound | >1,020 | 40 | 20 |

[^4]
## Freeway Operations

Freeway operations under 2024 conditions during the AM and PM peak hours would be similar to existing conditions, because the increase in mainline volumes is relatively small. During the both the AM and PM peak hours, all eastbound and westbound freeway study segments would operate at LOS C or better conditions. Table 12 presents freeway operations results under 2024 conditions for I-80 at the Hiddenbrooke Parkway interchange.

Table 12. Freeway Operations - 2024 Conditions

| Segment |  | Facility Type | LOS / Density ${ }^{1}$ |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | AM Peak Hour | PM Peak Hour |
| A | I-80 Eastbound - American Canyon Road Off-ramp |  | Diverge | B / 13 | C / 19 |
| B | I-80 Eastbound - American Canyon Road Off- to On-ramp | Basic | B / 12 | B / 17 |
| C | I-80 Eastbound - American Canyon Road On-ramp | Merge | B / 15 | C / 20 |
| D | I-80 Westbound - American Canyon Road Off-ramp | Diverge | C / 17 | C / 15 |
| E | I-80 Westbound - American Canyon Road Off- to On-ramp | Basic | B / 15 | B / 13 |
| F | I-80 Westbound - American Canyon Road On-ramp | Merge | C / 18 | B / 15 |

Notes: Density is reported in passenger car equivalents per lane per mile
Source: Fehr \& Peers, 2020

## Chapter 5. Intersection Control Evaluation

This chapter presents intersection operations results for opening year 2024 conditions for the two intersection control alternatives - signalization and roundabouts. Freeway operations for both project scenarios would be consistent with the results described for the no project scenario in Chapter 4.

## Description of Traffic Control Alternatives

There are two intersection control alternatives under consideration for the I-80/Hiddenbrooke Parkway American Canyon ramps. Signalization would implement signal controls at the I-80 eastbound and westbound ramps intersections, and widen the off-ramps to provide exclusive right turn lanes, as shown above in. The roundabouts alternative would convert the three existing intersections into two roundabouts, as shown above in.

## 2024 Conditions with Traffic Signals and Ramp Widening

The 2024 signalized conditions scenario would implement signal controls at the I-80/Hiddenbrooke Parkway - American Canyon Road eastbound and westbound ramps intersections. Intersection operations were analyzed using 2024 volumes for both the AM and PM peak hours. Table 13 shows the intersection LOS and average delay, and Table 14 reports the average maximum queue length. Full results are presented in Appendix E.

Signalizing and widening the ramp intersections would improve operations during the AM peak period for the northbound approach at Hiddenbrooke Parkway and McGary Road from LOS F to LOS B, with delays decreasing from over 80 seconds to 15 seconds. Operations at the ramp intersections would slightly degrade with signalization. The intersection at the westbound ramps would degrade from LOS B to Los C, representing an increase in the average delay of $12-16$ seconds. Average delays at the eastbound ramp intersections would increase by $1-2$ seconds.

Average maximum queues under signalized conditions would decrease at the Hiddenbrooke Parkway and McGary Road intersection. Queues along American Canyon Road at the ramp intersections double in some cases but would still be accommodated within the available storage lengths. Queues on the I-80 eastbound and westbound ramps would increase during the AM peak period slightly but would still be accommodated on the ramp. During the PM peak period, westbound queues would increase by approximately 20 feet, and westbound queues would decrease by approximately 40 feet.

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Table 13. Intersection Operations - 2024 with Traffic Signals Conditions

| Intersection |  | Control | LOS / Delay ${ }^{1}$ |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | AM Peak Hour | PM Peak Hour |
| 1 | Hiddenbrooke Parkway-American Canyon Road / I-80 WB Ramps |  | Signalized | C / 23 | C / 26 |
| 2 | Hiddenbrooke Parkway-American Canyon Road / I-80 EB Ramps | Signalized | A / 10 | B / 14 |
| 3 | Hiddenbrooke Parkway / McGary Road | Side Street Stop ${ }^{2}$ | B / 15 (NB) | A / 10 (NB) |

Notes:

1. Delay is reported in seconds per vehicle. Bold and underline font indicate LOS F conditions; that is, volume exceeds capacity.
2. The highest controlled movement delay is reported for side street stop-controlled intersection.

Source: Fehr \& Peers, 2020

Table 14. Average Maximum Queue Length - 2024 with Traffic Signals Conditions

| Intersection |  | Approach | Storage Length | Queue Length |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | AM <br> Peak <br> Hour |  | PM <br> Peak <br> Hour |
| 1 | Hiddenbrooke Parkway-American Canyon Road / I-80 WB Ramps |  | Northbound American Canyon Road | 440 | 320 | 220 |
|  |  | Southbound American Canyon Road | >1,040 | 340 | 360 |
|  |  | Westbound I-80 Off-Ramp | 1,220 | 100 | 140 |
| 2 | Hiddenbrooke Parkway-American <br> Road / I-80 EB Ramps | Northbound Hiddenbrooke Parkway | 40 | 80 | 60 |
|  |  | Southbound American Canyon Road | 440 | 40 | 280 |
|  |  | Eastbound I-80 Off-Ramp | 1,020 | 140 | 100 |
| 3 | Hiddenbrooke Parkway / McGary Road | Northbound Hiddenbrooke Parkway | >900 | 260 | 140 |
|  |  | Southbound Hiddenbrooke Parkway | 40 | 20 | 40 |
|  |  | Westbound McGary Road | > 620 | 60 | 40 |
|  |  | Eastbound McGary Road | >1,020 | 40 | 40 |

[^5]
## 2024 Conditions with Roundabouts

The 2024 roundabout conditions scenario would convert the three existing intersections into two roundabouts. Intersection operations were analyzed using 2024 volumes for both the AM and PM peak hours. Table 15 summarizes the intersection LOS and average delay, and Table 16 reports the average maximum queue length. Full results are provided in Appendix A.

Both the I-80/Hiddenbrooke Parkway interchange roundabouts would easily accommodate 2024 AM and PM peak hour volumes, operating at LOS A and with average maximum queue lengths well under the available storage lengths. Overall, the roundabout alternative provides better operations compared to both no project and signalized scenarios.

Table 15. Intersection Operations - 2024 with Roundabout Conditions


Table 16. Average Maximum Queue Length - 2024 with Roundabout Conditions

| Intersection |  | Approach | Storage Length | Queue Length |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | AM Peak Hour |  | PM Peak Hour |
| 1 | Hiddenbrooke ParkwayAmerican Canyon Road / I80 WB Ramps |  | Northbound American Canyon Road | 440 | 0 | 0 |
|  |  | Southbound American Canyon Road | >1,040 | 60 | 60 |
|  |  | Westbound I-80 Off-Ramp | 1,220 | 60 | 60 |
| 2 | Hiddenbrooke ParkwayAmerican Canyon Road / I80 EB Ramps | Northbound Hiddenbrooke Parkway | >900 | 60 | 20 |
|  |  | Southbound American Canyon Road | 400 | 40 | 60 |
|  |  | Eastbound I-80 Off-Ramp | 1,020 | 20 | 60 |
|  |  | Eastbound McGary Road | > 620 | 0 | 0 |
|  |  | Westbound McGary Road | >1,020 | 0 | 0 |

Notes: Storage length and average maximum queue length are reported in feet.
Source: Fehr \& Peers, 2020

## Chapter 6.VMT Assessment

On September 27, 2013, Governor Jerry Brown signed SB 743 into law, which initiated a process to change transportation impact analyses completed in support of CEQA documentation. SB 743 eliminates level of service (LOS) as a basis for determining significant transportation impacts under CEQA and provides a new performance metric, vehicle miles traveled (VMT). To help lead agencies with SB 743 implementation, the Governor's Office of Planning and Research (OPR) produced a Technical Advisory ${ }^{3}$.

The first step of a VMT assessment is to determine what type of analysis, if any, is needed. The OPR Technical Advisory recommend a series of screening factors to consider to quickly determine if a proposed project is expected to cause a less than significant VMT impact without conducting a detailed study. These screening criteria are relevant to assess if a VMT analysis would be applicable for the proposed Project.

For transportation projects, OPR indicates that "projects that would not likely lead to a substantial or measurable increase in vehicle travel" should not require an induced travel analysis and may be presumed to have a less than significant transportation impact under CEQA. The following transportation project types are identified by OPR as ones that would not likely lead to a substantial or measurable increase in vehicle travel.

- Installation of roundabouts or traffic circle
- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features

For Cumulative Conditions, OPR's Technical Advisory states that a project that is below the VMT impact thresholds and does not have a VMT impact under baseline conditions would also not have a cumulative impact as long as it is aligned with long-term State environmental goals, such as reducing GHG emissions, and relevant plans, such as the MTC RTP/SCS. For baseline conditions, the Project is screened out from further VMT analysis based on the type of transportation project. The proposed operational improvements are generally consistent with both state and regional goals.

Based on the OPR screening criteria, the installation of roundabouts or traffic signals is presumed to have a less than significant VMT impact and is screened out from further VMT analysis. The VMT thresholds and screening criteria applied in this study are based on OPR guidance.

[^6]
## Chapter 7. Conclusions

The I-80/Hiddenbrooke Parkway-American Canyon Road interchange is the only access point for the Hiddenbrooke Community and provides access to and from the City of American Canyon via American Canyon Road. The current configuration of the interchange, given the close proximity of the two-way frontage road (McGary Road) that parallels the south side of I-80, causes operational issues during the AM peak hour that will be exacerbated by build-out of the Hiddenbrooke Community and approved projects in American Canyon.

Currently, stop-control signs are implemented on the minor approaches/streets that intersect with Hiddenbrooke Parkway-American Canyon Road within the vicinity of the project, including the I-80 eastbound and westbound ramps, and the frontage road immediately south of the interchange. The frontage road intersection, which is immediately adjacent to the I-80 eastbound off-ramp intersection, experiences queues and delays during the AM peak hour that will increase over time and exceed the City's advisory standard of LOS E.

The original EIR prepared for the Hiddenbrooke Community indicated the need for improvements to the I80/Hiddenbrooke Parkway-American Canyon Road interchange upon build-out of the Hiddenbrooke Community. The City and developer of the Hiddenbrooke Community executed an agreement for improvements to the interchange. The City of Vallejo have since collected fees to make improvements to the interchange. Traffic studies conducted in recent years for the City of Vallejo confirm the interchange access intersections would operate at LOS F conditions by 2035 if improvements are not made. After considering numerous interchange alternatives, roundabouts and traffic signals were identified as the best available options.

Two alternatives - a multilane roundabout design alternative and aa signalized intersection alternative that would also widen the two off-ramps - were developed and evaluated for existing (2020) and opening year (2024) weekday peak hour conditions in Chapter 5. The analysis indicates that roundabouts would perform measurably better than the alternative with traffic signals and ramp widening. Operations at the off-ramp intersections would slightly degrade with signalization under opening year (2024) conditions compared to no project conditions. Additionally, the alternative with traffic signals and ramp widening would not address potential future operational issues associated with the proximity of the McGary Road frontage intersection to the eastbound off-ramp intersection.

The two roundabout intersections would operate at LOS A conditions during both peak hours for opening year (2024) conditions, making roundabouts the superior operational improvement at the 1 80/Hiddenbrooke Parkway-American Canyon Road interchange. The installation of roundabouts would have a less than significant transportation impact under CEQA.

## Fehr $\wp$ Peers

## Appendix A: <br> Roundabout Validation <br> Report

Fehrł Peers

# I-80/Hiddenbrooke Interchange Roundabouts <br> Vallejo, CA 

Roundabout<br>Validation Report<br>June 2020

# Roundabout Validation Report 

I-80/Hiddenbrooke Interchange Roundabouts Vallejo, CA

The engineering material and data contained in this report were prepared under the supervision and direction of the undersigned, whose seal as a registered professional engineer is affixed below.


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## Design Notes

| Project Title: | I-80/Hiddenbrooke Interchange Roundabouts | Design Phase <br> $(\%):$ | $\mathbf{3 0 \%}$ |
| :--- | :--- | :--- | :--- |
| Owner: | City of Vallejo, CA | Date: | June 2020 |
| Client: | Fehr \& Peers |  |  |

## Introduction/Initial Design Assumptions

Reid Middleton (RM) was contracted by Fehr \& Peers to provide a Horizontal Geometric Design for two single lane roundabouts at the I-80/Hiddenbrooke Interchange in Vallejo, California.

RM designed the horizontal geometrics of these roundabouts as seen in Figures 1-4. The design vehicle movements (CA-Legal) were calculated with 6-in tire clearance to all mountable curbs, 12 -in tire clearance to vertical curb and gutters and 0 -in tire clearance to all truck apron curbs. In addition, an STAA-Standard truck, is accommodated on the on/off ramps of this interchange. Due to the conservative nature of AutoturnTM, these offsets will ensure the design vehicle will easily negotiate the intersection. A copy of the truck turning movements can be seen in Appendix B.

Limited pedestrian and bicycle facilities were provided in the current layout due to restrictions for these facilities across the bridge. A future layout showing the ultimate pedestrian and bicycle facilities is provided.

## I-80/Hiddenbrooke Parkway Roundabout Interchange Performance

Roundabout operational analysis was performed using SIDRA, Version 8.0 and roundabout conceptual layout geometry used. Criteria for Level of Service (LOS) are shown in Table 1. This analysis is for a 4-leg roundabout on the north side of the I-80/Hiddenbrooke Parkway interchange and a $6-l e g$ roundabout on the south side of the interchange. A summary of the analysis results can be found in Appendix A

For the purpose of this analysis Hiddenbrooke Parkway and American Canyon Road are northsouth roadways; I-80 and McGary Road are east-west roadways.

Table 1. Roundabout LOS Criteria

| Level of <br> Service | Stop-Sign \& Roundabout <br> Intersection Average Delay Per <br> Vehicle (sec/veh) |
| :---: | :---: |
| A | $\leq 10$ |
| B | $>10$ and $\leq 15$ |
| C | $>15$ and $\leq 25$ |
| D | $>25$ and $\leq 35$ |
| E | $>35$ and $\leq 50$ |
| F | $>50$ |

Both I-80/Hiddenbrooke Parkway interchange roundabouts easily accommodate the 2020 AM and PM peak hour volumes with reserve capacity for future growth (See Tables 2 and 3). The highest volume/capacity (v/c) ratio is 0.36 on the $4-\mathrm{leg}$ roundabout and 0.36 on the $6-\mathrm{leg}$ roundabout. A roundabout approach nears maximum capacity when the $\mathrm{v} / \mathrm{c}$ ratio exceeds 0.85 .

Table 2. 2020 American Canyon Road//-80 WB Ramps 4-Leg Roundabout Peak Hour Performance

| Approach | AM Peak Hour |  |  | PM Peak Hour |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Ave Delay <br> (sec/veh) | $95 \%$ <br> Queue <br> (Feet) | v/c | Ave Delay <br> (sec/veh) | $95 \%$ <br> Queue <br> (Feet) | v/c |
| Northbound <br> American Canyon Road | $4.2-\mathrm{A}$ | 0 | 0.27 | $3.6-\mathrm{A}$ | 0 | 0.14 |
| Southbound <br> American Canyon Road | $4.4-\mathrm{A}$ | 34 | 0.34 | $3.9-\mathrm{A}$ | 31 | 0.31 |
| Westbound <br> I-80 Off-Ramp | $8.7-\mathrm{A}$ | 27 | 0.23 | $8.7-\mathrm{A}$ | 43 | 0.36 |
| Intersection: | $5.3-\mathrm{A}$ | -- | -- | $5.8-\mathrm{A}$ | -- | -- |

Table 3. 2020 Hiddenbrooke Parkway/American Canyon Road/l-80 EB Ramps/McGary Road 6-Leg Roundabout Peak Hour Performance

| Approach | AM Peak Hour |  |  | PM Peak Hour |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Ave Delay <br> (sec/veh) | $95 \%$ <br> Queue <br> (Feet) | v/c | Ave Delay <br> (sec/veh) | $95 \%$ <br> Queue <br> (Feet) | v/c |
| Northbound <br> Hiddenbrooke Parkway | $3.8-\mathrm{A}$ | 36 | 0.36 | $3.7-\mathrm{A}$ | 16 | 0.17 |
| Southbound <br> American Canyon Road | $8.0-\mathrm{A}$ | 27 | 0.21 | $6.8-\mathrm{A}$ | 40 | 0.30 |
| Eastbound <br> I-80 Off-Ramp | $3.6-\mathrm{A}$ | 12 | 0.14 | $3.6-\mathrm{A}$ | 36 | 0.32 |
| Eastbound <br> McGary Road | $6.2-\mathrm{A}$ | 1 | 0.01 | $9.5-\mathrm{A}$ | 2 | 0.02 |
| Westbound <br> McGary Road | $7.9-\mathrm{A}$ | 4 | 0.03 | $7.7-\mathrm{A}$ | 1 | 0.01 |
| Intersection: | $5.4-\mathrm{A}$ | -- | -- | $5.2-\mathrm{A}$ | -- | -- |

Both I-80/Hiddenbrooke Parkway interchange roundabouts easily accommodate the 2024 AM and PM peak hour volumes with reserve capacity for future growth (See Tables 4 and 5). The highest volume/capacity ( $\mathrm{v} / \mathrm{c}$ ) ratio is 0.46 on the $4-\mathrm{leg}$ roundabout and 0.45 on the $6-\mathrm{leg}$ roundabout. A roundabout approach nears maximum capacity when the $\mathrm{v} / \mathrm{c}$ ratio exceeds 0.85 .

Table 4. 2024 American Canyon Road/l-80 WB Ramps 4-Leg Roundabout Peak Hour Performance

| Approach | AM Peak Hour |  |  | PM Peak Hour |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Ave Delay <br> (sec/veh) | $95 \%$ <br> Queue <br> (Feet) | v/c | Ave Delay <br> (sec/veh) | $95 \%$ <br> Queue <br> (Feet) | v/c |
| Northbound <br> American Canyon Road | $4.2-\mathrm{A}$ | 0 | 0.33 | $3.6-\mathrm{A}$ | 0 | 0.18 |
| Southbound <br> American Canyon Road | $5.4-\mathrm{A}$ | 48 | 0.46 | $4.3-\mathrm{A}$ | 54 | 0.45 |
| Westbound <br> I-80 Off-Ramp | $10.4-\mathrm{B}$ | 60 | 0.37 | $9.1-\mathrm{A}$ | 54 | 0.43 |
| Intersection: | $6.3-\mathrm{A}$ | -- | -- | $5.9-\mathrm{A}$ | -- | -- |

Table 5. 2024 Hiddenbrooke Parkway/American Canyon Road/l-80 EB Ramps/McGary Road 6-Leg Roundabout Peak Hour Performance

| Approach | AM Peak Hour |  |  | PM Peak Hour |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Ave Delay <br> (sec/veh) | $95 \%$ <br> Queue <br> (Feet) | v/c | Ave Delay <br> (sec/veh) | $95 \%$ <br> Queue <br> (Feet) | v/c |
| Northbound <br> Hiddenbrooke Parkway | $4.5-\mathrm{A}$ | 57 | 0.45 | $4.1-\mathrm{A}$ | 23 | 0.22 |
| Southbound <br> American Canyon Road | $7.7-\mathrm{A}$ | 40 | 0.27 | $6.7-\mathrm{A}$ | 53 | 0.35 |
| Eastbound <br> I-80 Off-Ramp | $4.3-\mathrm{A}$ | 18 | 0.19 | $4.2-\mathrm{A}$ | 51 | 0.40 |
| Eastbound <br> McGary Road | $9.0-\mathrm{A}$ | 1 | 0.01 | $12.1-\mathrm{B}$ | 3 | 0.02 |
| Westbound <br> McGary Road | $10.8-\mathrm{B}$ | 9 | 0.06 | $8.6-\mathrm{A}$ | 4 | 0.03 |
| Intersection: | $5.9-\mathrm{A}$ | -- | -- | $5.5-\mathrm{A}$ | -- | -- |

Both I-80/Hiddenbrooke Parkway interchange roundabouts easily accommodate the 2035 AM and PM peak hour volumes with reserve capacity for additional growth (See Tables 6 and 7). The highest volume/capacity ( $\mathrm{v} / \mathrm{c}$ ) ratio is 0.70 on the $4-\mathrm{leg}$ roundabout and 0.45 on the $6-\mathrm{leg}$ roundabout.

Table 6. 2035 American Canyon Road//-80 WB Ramps 4-Leg Roundabout Peak Hour Performance

| Approach | AM Peak Hour |  |  | PM Peak Hour |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Ave Delay <br> (sec/veh) | $95 \%$ <br> Queue <br> (Feet) | v/c | Ave Delay <br> (sec/veh) | $95 \%$ <br> Queue <br> (Feet) | v/c |
| Northbound <br> American Canyon Road | $4.3-\mathrm{A}$ | 0 | 0.28 | $3.4-\mathrm{A}$ | 0 | 0.19 |
| Southbound <br> American Canyon Road | $6.5-\mathrm{A}$ | 147 | 0.70 | $5.0-\mathrm{A}$ | 113 | 0.65 |
| Eastbound <br> I-80 Off-Ramp | $9.2-\mathrm{A}$ | 29 | 0.25 | $9.2-\mathrm{A}$ | 69 | 0.50 |
| Intersection: | $6.3-\mathrm{A}$ | -- | -- | $6.1-\mathrm{A}$ | -- | -- |

Table 7. 2035 Hiddenbrooke Parkway/American Canyon Road/l-80 EB Ramps/McGary Road 6-Leg Roundabout Peak Hour Performance

| Approach | AM Peak Hour |  |  | PM Peak Hour |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Ave Delay <br> (sec/veh) | $95 \%$ <br> Queue <br> (Feet) | v/c | Ave Delay <br> (sec/veh) | $95 \%$ <br> Queee <br> (Feet) | v/c |
| Northbound <br> Hiddenbrooke Parkway | $5.7-\mathrm{A}$ | 70 | 0.45 | $4.5-\mathrm{A}$ | 24 | 0.21 |
| Southbound <br> American Canyon Road | $8.1-\mathrm{A}$ | 58 | 0.37 | $6.7-\mathrm{A}$ | 60 | 0.38 |
| Eastbound <br> I-80 Off-Ramp | $4.7-\mathrm{A}$ | 15 | 0.14 | $5.0-\mathrm{A}$ | 54 | 0.40 |
| Eastbound <br> McGary Road | $9.6-\mathrm{A}$ | 2 | 0.01 | $12.9-\mathrm{B}$ | 5 | 0.03 |
| Westbound <br> McGary Road | $11.8-\mathrm{B}$ | 10 | 0.06 | $9.4-\mathrm{A}$ | 3 | 0.02 |
| Intersection: | $6.9-\mathrm{A}$ | -- | -- | $5.9-\mathrm{A}$ | -- | -- |

## APPENDIX A <br> (Traffic DAtA)

## SITE LAYOUT

Site: 1 [2035 PM PH I-80 Ramps-American Canyon Rd (SIDRA) DG]
I-80 Ramps/American Canyon Road/Hiddenbrooke Parkway 2035 PM Peak Hour (DG)
Single-Lane, 4-Leg (SIDRA)
Site Category: (None)
Roundabout


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## MOVEMENT SUMMARY

## Site: 1 [2020 AM PH I-80 Ramps-American Canyon Rd (SIDRA) DG]

I-80 Ramps/American Canyon Road/Hiddenbrooke Parkway
2020 AM Peak Hour (DG)
Single-Lane, 4-Leg (SIDRA)
Site Category: (None)
Roundabout

Movement Performance - Vehicles


Site Level of Service (LOS) Method: Delay \& v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c>1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: H:\25St $1151015 \mathrm{I}-80$ and Hiddenbrooke RB (Fehr and Peers)\Traffic\I-80 - Hiddenbrooke Parkway Interchange_wrm.sip8

## MOVEMENT SUMMARY

## Fite: 1 [2020 PM PH I-80 Ramps-American Canyon Rd (SIDRA) DG]

I-80 Ramps/American Canyon Road/Hiddenbrooke Parkway
2020 PM Peak Hour (DG)
Single-Lane, 4-Leg (SIDRA)
Site Category: (None)
Roundabout

Movement Performance - Vehicles


Site Level of Service (LOS) Method: Delay \& v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS $F$ will result if $v / c>1$ irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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## MOVEMENT SUMMARY

## Vite: 1 [2024 AM PH I-80 Ramps-American Canyon Rd (SIDRA) DG]

I-80 Ramps/American Canyon Road/Hiddenbrooke Parkway
2024 AM Peak Hour (DG)
Single-Lane, 4-Leg (SIDRA)
Site Category: (None)
Roundabout

Movement Performance - Vehicles

| Mov ID |  | Demand Total veh/h | ows HV $\%$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance ft | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed mph |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| South: NB American Canyon Rd |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 413 | 2.0 | 0.328 | 5.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.46 | 0.00 | 35.5 |
| 8 | T1 | 152 | 2.0 | 0.328 | 0.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.46 | 0.00 | 29.6 |
| Appr |  | 565 | 2.0 | 0.328 | 4.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.46 | 0.00 | 33.7 |
| East: WB I-80 Off-Ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 76 | 2.0 | 0.369 | 14.9 | LOS B | 1.9 | 48.0 | 0.57 | 0.78 | 0.57 | 38.2 |
| 6 | T1 | 33 | 2.0 | 0.369 | 9.9 | LOS A | 1.9 | 48.0 | 0.57 | 0.78 | 0.57 | 43.9 |
| 16 | R2 | 272 | 2.0 | 0.369 | 9.2 | LOS A | 1.9 | 48.0 | 0.57 | 0.78 | 0.57 | 36.5 |
| Approach |  | 380 | 2.0 | 0.369 | 10.4 | LOS B | 1.9 | 48.0 | 0.57 | 0.78 | 0.57 | 37.3 |
| North: SB American Canyon Rd |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | T1 | 424 | 2.0 | 0.453 | 5.4 | LOS A | 2.4 | 59.8 | 0.54 | 0.62 | 0.55 | 30.0 |
| 14 | R2 | 76 | 2.0 | 0.453 | 5.6 | LOS A | 2.4 | 59.8 | 0.54 | 0.62 | 0.55 | 36.3 |
| Appr |  | 500 | 2.0 | 0.453 | 5.4 | LOS A | 2.4 | 59.8 | 0.54 | 0.62 | 0.55 | 31.2 |
| All Ve | icles | 1446 | 2.0 | 0.453 | 6.3 | LOS A | 2.4 | 59.8 | 0.34 | 0.60 | 0.34 | 33.9 |

Site Level of Service (LOS) Method: Delay \& v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS $F$ will result if $v / c>1$ irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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## MOVEMENT SUMMARY

## Vite: 1 [2024 PM PH I-80 Ramps-American Canyon Rd (SIDRA) DG]

I-80 Ramps/American Canyon Road/Hiddenbrooke Parkway
2024 PM Peak Hour (DG)
Single-Lane, 4-Leg (SIDRA)
Site Category: (None)
Roundabout

Movement Performance - Vehicles

| Mov ID | Turn | Demand Flows |  | Deg. | Average Delay sec | Level of Service | 95\% Back of Queue |  | Prop. Queued | Effective Stop Rate | Aver. No. Average Cycles Speed mph |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Total veh/h | $\begin{aligned} & \text { HV } \\ & \% \end{aligned}$ | Satn v/c |  |  | Vehicles veh | Distance ft |  |  |  |  |
| South: NB American Canyon Rd 0 |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 185 | 2.0 | 0.176 | 5.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.42 | 0.00 | 36.1 |
| 8 | T1 | 120 | 2.0 | 0.176 | 0.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.42 | 0.00 | 30.0 |
| Approa |  | 304 | 2.0 | 0.176 | 3.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.42 | 0.00 | 33.4 |
| East: WB I-80 Off-Ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 109 | 2.0 | 0.425 | 13.5 | LOS B | 2.1 | 54.4 | 0.43 | 0.69 | 0.43 | 39.2 |
| 6 | T1 | 11 | 2.0 | 0.425 | 8.6 | LOS A | 2.1 | 54.4 | 0.43 | 0.69 | 0.43 | 44.8 |
| 16 | R2 | 391 | 2.0 | 0.425 | 7.9 | LOS A | 2.1 | 54.4 | 0.43 | 0.69 | 0.43 | 37.1 |
| Approa |  | 511 | 2.0 | 0.425 | 9.1 | LOS A | 2.1 | 54.4 | 0.43 | 0.69 | 0.43 | 37.6 |
| North: SB American Canyon Rd |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | T1 | 489 | 2.0 | 0.446 | 4.3 | LOS A | 2.1 | 53.5 | 0.40 | 0.48 | 0.40 | 30.5 |
| 14 | R2 | 65 | 2.0 | 0.446 | 4.5 | LOS A | 2.1 | 53.5 | 0.40 | 0.48 | 0.40 | 36.8 |
| Approa |  | 554 | 2.0 | 0.446 | 4.3 | LOS A | 2.1 | 53.5 | 0.40 | 0.48 | 0.40 | 31.4 |
| All Ve | icles | 1370 | 2.0 | 0.446 | 5.9 | LOS A | 2.1 | 54.4 | 0.32 | 0.55 | 0.32 | 34.3 |

Site Level of Service (LOS) Method: Delay \& v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS $F$ will result if $v / c>1$ irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: H:\25St $1151015 \mathrm{I}-80$ and Hiddenbrooke RB (Fehr and Peers)\Traffic\I-80 - Hiddenbrooke Parkway Interchange_wrm.sip8

## MOVEMENT SUMMARY

## Site: 1 [2035 AM PH I-80 Ramps-American Canyon Rd (SIDRA) DG]

I-80 Ramps/American Canyon Road/Hiddenbrooke Parkway
2035 AM Peak Hour (DG)
Single-Lane, 4-Leg (SIDRA)
Site Category: (None)
Roundabout

Movement Performance - Vehicles

| Mov ID |  | Demand Total veh/h | ows HV $\%$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance ft | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed mph |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| South: NB American Canyon Rd |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 364 | 2.0 | 0.280 | 5.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.47 | 0.00 | 35.4 |
| 8 | T1 | 118 | 2.0 | 0.280 | 0.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.47 | 0.00 | 29.5 |
| Appr |  | 483 | 2.0 | 0.280 | 4.3 | LOS A | 0.0 | 0.0 | 0.00 | 0.47 | 0.00 | 33.8 |
| East: WB I-80 Off-Ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 36 | 2.0 | 0.253 | 14.1 | LOS B | 1.1 | 29.2 | 0.48 | 0.72 | 0.48 | 39.3 |
| 6 | T1 | 5 | 2.0 | 0.253 | 9.2 | LOS A | 1.1 | 29.2 | 0.48 | 0.72 | 0.48 | 44.9 |
| 16 | R2 | 232 | 2.0 | 0.253 | 8.5 | LOS A | 1.1 | 29.2 | 0.48 | 0.72 | 0.48 | 37.2 |
| Approach |  | 273 | 2.0 | 0.253 | 9.2 | LOS A | 1.1 | 29.2 | 0.48 | 0.72 | 0.48 | 37.5 |
| North: SB American Canyon Rd |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | T1 | 604 | 2.0 | 0.699 | 6.5 | LOS A | 5.8 | 147.1 | 0.61 | 0.73 | 0.73 | 29.7 |
| 14 | R2 | 235 | 2.0 | 0.699 | 6.7 | LOS A | 5.8 | 147.1 | 0.61 | 0.73 | 0.73 | 36.0 |
| Approach |  | 839 | 2.0 | 0.699 | 6.5 | LOS A | 5.8 | 147.1 | 0.61 | 0.73 | 0.73 | 31.7 |
| All Vehicles |  | 1595 | 2.0 | 0.699 | 6.3 | LOS A | 5.8 | 147.1 | 0.40 | 0.65 | 0.47 | 33.4 |

Site Level of Service (LOS) Method: Delay \& v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and $\mathrm{v} / \mathrm{c}$ ratio (degree of saturation) per movement.
LOS F will result if $\mathrm{v} / \mathrm{c}>1$ irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: H:|25St|151015 I-80 and Hiddenbrooke RB (Fehr and Peers) TTrafficll-80 - Hiddenbrooke Parkway Interchange_wrm.sip8

## MOVEMENT SUMMARY

## Fite: 1 [2035 PM PH I-80 Ramps-American Canyon Rd (SIDRA) DG]

I-80 Ramps/American Canyon Road/Hiddenbrooke Parkway
2035 PM Peak Hour (DG)
Single-Lane, 4-Leg (SIDRA)
Site Category: (None)
Roundabout

Movement Performance - Vehicles


Site Level of Service (LOS) Method: Delay \& v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS $F$ will result if $v / c>1$ irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: H:\25St $1151015 \mathrm{I}-80$ and Hiddenbrooke RB (Fehr and Peers)\Traffic\I-80 - Hiddenbrooke Parkway Interchange_wrm.sip8

## SITE LAYOUT

Site: 1 [2035 PM PH I-80 Ramps-Hiddenbrooke Pkwy-McGary Rd (SIDRA) DG]
I-80 Ramps/Hiddenbrooke Parkway/McGary Road 2035 PM Peak Hour (DG)
Single-Lane, 6-Leg (SIDRA)
Site Category: (None)
Roundabout


## MOVEMENT SUMMARY

## Site: 1 [2020 AM PH I-80 Ramps-Hiddenbrooke Pkwy-McGary Rd (SIDRA) DG]

I-80 Ramps/Hiddenbrooke Parkway/McGary Road
2020 AM Peak Hour (DG)
Single-Lane, 6-Leg (SIDRA)
Site Category: (None)
Roundabout

Movement Performance - Vehicles

| $\begin{aligned} & \text { Mov } \\ & \hline \text { ID } \end{aligned}$ |  | Demand Flows |  | Deg. <br> Satn <br> v/c | Average Delay sec | Level of Service | 95\% Back of Queue |  | Prop. Queued | Effective Stop Rate |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ |  |  |  | Vehicles veh | Distance ft |  |  | Cycles | Speed mph |
| South: NB Hiddenbrooke Parkway |  |  |  |  |  |  |  |  |  |  |  |  |
| 3b | L3 | 1 | 2.0 | 0.358 | 12.5 | LOS B | 1.5 | 38.4 | 0.40 | 0.44 | 0.40 | 36.0 |
| 8 | T1 | 366 | 2.0 | 0.358 | 3.7 | LOS A | 1.5 | 38.4 | 0.40 | 0.44 | 0.40 | 33.7 |
| 18 | R2 | 78 | 2.0 | 0.358 | 4.2 | LOS A | 1.5 | 38.4 | 0.40 | 0.44 | 0.40 | 32.2 |
| 18b | R3 | 8 | 2.0 | 0.358 | 5.2 | LOS A | 1.5 | 38.4 | 0.40 | 0.44 | 0.40 | 33.7 |
| Appro | ch | 453 | 2.0 | 0.358 | 3.8 | LOS A | 1.5 | 38.4 | 0.40 | 0.44 | 0.40 | 33.5 |
| SouthEast: WB McGary Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3bx | L3 | 4 | 2.0 | 0.034 | 14.4 | LOS B | 0.2 | 4.5 | 0.62 | 0.63 | 0.62 | 36.6 |
| 3 x | L2 | 1 | 2.0 | 0.034 | 13.2 | LOS B | 0.2 | 4.5 | 0.62 | 0.63 | 0.62 | 36.1 |
| 18ax | R1 | 21 | 2.0 | 0.034 | 6.4 | LOS A | 0.2 | 4.5 | 0.62 | 0.63 | 0.62 | 35.6 |
| 18bx | R3 | 5 | 2.0 | 0.034 | 7.1 | LOS A | 0.2 | 4.5 | 0.62 | 0.63 | 0.62 | 33.3 |
| Appro |  | 32 | 2.0 | 0.034 | 7.9 | LOS A | 0.2 | 4.5 | 0.62 | 0.63 | 0.62 | 35.4 |
| North: SB American Canyon Rd |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 323 | 2.0 | 0.213 | 8.7 | LOS A | 1.1 | 27.4 | 0.05 | 0.59 | 0.05 | 32.2 |
| 7a | L1 | 2 | 2.0 | 0.213 | 8.7 | LOS A | 1.1 | 27.4 | 0.05 | 0.59 | 0.05 | 33.4 |
| 4 | T1 | 39 | 2.0 | 0.213 | 2.4 | LOS A | 1.1 | 27.4 | 0.05 | 0.59 | 0.05 | 32.3 |
| 14a | R1 | 1 | 2.0 | 0.213 | 3.2 | LOS A | 1.1 | 27.4 | 0.05 | 0.59 | 0.05 | 33.4 |
| Appro |  | 365 | 2.0 | 0.213 | 8.0 | LOS A | 1.1 | 27.4 | 0.05 | 0.59 | 0.05 | 32.3 |
| West: EB I-80 Off-Ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | L2 | 77 | 2.0 | 0.137 | 6.0 | LOS A | 0.5 | 11.7 | 0.31 | 0.45 | 0.31 | 29.5 |
| 2 | T1 | 7 | 2.0 | 0.137 | 0.8 | LOS A | 0.5 | 11.7 | 0.31 | 0.45 | 0.31 | 28.1 |
| 12a | R1 | 3 | 2.0 | 0.137 | 4.0 | LOS A | 0.5 | 11.7 | 0.31 | 0.45 | 0.31 | 30.3 |
| 12 | R2 | 89 | 2.0 | 0.137 | 1.7 | LOS A | 0.5 | 11.7 | 0.31 | 0.45 | 0.31 | 28.2 |
| 12b | R3 | 1 | 32.0 | 0.137 | 5.4 | LOS A | 0.5 | 11.7 | 0.31 | 0.45 | 0.31 | 28.5 |
| Appro |  | 177 | 2.2 | 0.137 | 3.6 | LOS A | 0.5 | 11.7 | 0.31 | 0.45 | 0.31 | 28.8 |
| SouthWest: EB McGary Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 ax | L1 | 1 | 2.0 | 0.004 | 10.0 | LOS B | 0.0 | 0.4 | 0.42 | 0.52 | 0.42 | 36.4 |
| 12ax | R1 | 1 | 2.0 | 0.004 | 4.6 | LOS A | 0.0 | 0.4 | 0.42 | 0.52 | 0.42 | 35.5 |
| 12x | R2 | 1 | 2.0 | 0.004 | 5.1 | LOS A | 0.0 | 0.4 | 0.42 | 0.52 | 0.42 | 35.4 |
| 12bx | R3 | 1 | 2.0 | 0.004 | 5.3 | LOS A | 0.0 | 0.4 | 0.42 | 0.52 | 0.42 | 34.9 |
| Approach |  | 4 | 2.0 | 0.004 | 6.2 | LOS A | 0.0 | 0.4 | 0.42 | 0.52 | 0.42 | 35.6 |
| All Ve | icles | 1032 | 2.0 | 0.358 | 5.4 | LOS A | 1.5 | 38.4 | 0.27 | 0.50 | 0.27 | 32.3 |

Site Level of Service (LOS) Method: Delay \& v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and $\mathrm{v} / \mathrm{c}$ ratio (degree of saturation) per movement.
LOS F will result if $\mathrm{v} / \mathrm{c}>1$ irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: H: $225 \mathrm{St\mid 151015} \mathrm{I}-80$ and Hiddenbrooke RB (Fehr and Peers) Trafficl I-80 - Hiddenbrooke Parkway Interchange_wrm.sip8

## MOVEMENT SUMMARY

## G Site: 1 [2020 PM PH I-80 Ramps-Hiddenbrooke Pkwy-McGary Rd (SIDRA) DG]

I-80 Ramps/Hiddenbrooke Parkway/McGary Road
2020 PM Peak Hour (DG)
Single-Lane, 6-Leg (SIDRA)
Site Category: (None)
Roundabout

Movement Performance - Vehicles

| $\begin{aligned} & \text { Mov } \\ & \hline \text { ID } \end{aligned}$ |  | Demand Flows |  | Deg. <br> Satn <br> v/c | Average Delay sec | Level of Service | 95\% Back of Queue |  | Prop. Queued | Effective Stop Rate |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ |  |  |  | Vehicles veh | Distance ft |  |  | Cycles | Speed mph |
| South: NB Hiddenbrooke Parkway |  |  |  |  |  |  |  |  |  |  |  |  |
| 3b | L3 | 1 | 2.0 | 0.168 | 12.3 | LOS B | 0.6 | 15.9 | 0.37 | 0.43 | 0.37 | 36.2 |
| 8 | T1 | 152 | 2.0 | 0.168 | 3.5 | LOS A | 0.6 | 15.9 | 0.37 | 0.43 | 0.37 | 33.9 |
| 18 | R2 | 50 | 2.0 | 0.168 | 4.0 | LOS A | 0.6 | 15.9 | 0.37 | 0.43 | 0.37 | 32.4 |
| 18b | R3 | 7 | 2.0 | 0.168 | 5.0 | LOS A | 0.6 | 15.9 | 0.37 | 0.43 | 0.37 | 33.9 |
| Appro | ch | 210 | 2.0 | 0.168 | 3.7 | LOS A | 0.6 | 15.9 | 0.37 | 0.43 | 0.37 | 33.5 |
| SouthEast: WB McGary Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3bx | L3 | 7 | 2.0 | 0.020 | 12.9 | LOS B | 0.1 | 2.0 | 0.46 | 0.59 | 0.46 | 36.6 |
| 3 x | L2 | 1 | 2.0 | 0.020 | 11.7 | LOS B | 0.1 | 2.0 | 0.46 | 0.59 | 0.46 | 36.1 |
| 18ax | R1 | 13 | 2.0 | 0.020 | 4.9 | LOS A | 0.1 | 2.0 | 0.46 | 0.59 | 0.46 | 35.5 |
| 18bx | R3 | 1 | 2.0 | 0.020 | 5.6 | LOS A | 0.1 | 2.0 | 0.46 | 0.59 | 0.46 | 33.3 |
| Appro |  | 22 | 2.0 | 0.020 | 7.7 | LOS A | 0.1 | 2.0 | 0.46 | 0.59 | 0.46 | 35.8 |
| North: SB American Canyon Rd |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 351 | 2.0 | 0.296 | 8.7 | LOS A | 1.6 | 39.5 | 0.06 | 0.54 | 0.06 | 32.8 |
| 7a | L1 | 1 | 2.0 | 0.296 | 8.7 | LOS A | 1.6 | 39.5 | 0.06 | 0.54 | 0.06 | 34.0 |
| 4 | T1 | 153 | 2.0 | 0.296 | 2.4 | LOS A | 1.6 | 39.5 | 0.06 | 0.54 | 0.06 | 32.8 |
| 14a | R1 | 2 | 2.0 | 0.296 | 3.2 | LOS A | 1.6 | 39.5 | 0.06 | 0.54 | 0.06 | 33.9 |
| Appro |  | 508 | 2.0 | 0.296 | 6.8 | LOS A | 1.6 | 39.5 | 0.06 | 0.54 | 0.06 | 32.8 |
| West: EB I-80 Off-Ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | L2 | 83 | 2.0 | 0.317 | 6.8 | LOS A | 1.4 | 35.5 | 0.45 | 0.52 | 0.45 | 29.7 |
| 2 | T1 | 2 | 2.0 | 0.317 | 1.7 | LOS A | 1.4 | 35.5 | 0.45 | 0.52 | 0.45 | 28.3 |
| 12a | R1 | 4 | 2.0 | 0.317 | 4.8 | LOS A | 1.4 | 35.5 | 0.45 | 0.52 | 0.45 | 30.5 |
| 12 | R2 | 278 | 2.0 | 0.317 | 2.6 | LOS A | 1.4 | 35.5 | 0.45 | 0.52 | 0.45 | 28.4 |
| 12b | R3 | 11 | 32.0 | 0.317 | 6.5 | LOS A | 1.4 | 35.5 | 0.45 | 0.52 | 0.45 | 28.6 |
| Appro |  | 378 | 2.9 | 0.317 | 3.6 | LOS A | 1.4 | 35.5 | 0.45 | 0.52 | 0.45 | 28.7 |
| SouthWest: EB McGary Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 ax | L1 | 3 | 2.0 | 0.007 | 12.0 | LOS B | 0.0 | 1.0 | 0.63 | 0.60 | 0.63 | 34.8 |
| 12ax | R1 | 1 | 2.0 | 0.007 | 6.5 | LOS A | 0.0 | 1.0 | 0.63 | 0.60 | 0.63 | 33.8 |
| 12x | R2 | 1 | 2.0 | 0.007 | 7.1 | LOS A | 0.0 | 1.0 | 0.63 | 0.60 | 0.63 | 34.0 |
| 12bx | R3 | 1 | 2.0 | 0.007 | 7.2 | LOS A | 0.0 | 1.0 | 0.63 | 0.60 | 0.63 | 33.5 |
| Approach |  | 7 | 2.0 | 0.007 | 9.5 | LOS A | 0.0 | 1.0 | 0.63 | 0.60 | 0.63 | 34.3 |
| All Ve | icles | 1124 | 2.3 | 0.317 | 5.2 | LOS A | 1.6 | 39.5 | 0.26 | 0.52 | 0.26 | 31.6 |

Site Level of Service (LOS) Method: Delay \& v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and $\mathrm{v} / \mathrm{c}$ ratio (degree of saturation) per movement.
LOS F will result if $\mathrm{v} / \mathrm{c}>1$ irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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## MOVEMENT SUMMARY

## Site: 1 [2024 AM PH I-80 Ramps-Hiddenbrooke Pkwy-McGary Rd (SIDRA) DG]

I-80 Ramps/Hiddenbrooke Parkway/McGary Road
2024 AM Peak Hour (DG)
Single-Lane, 6-Leg (SIDRA)
Site Category: (None)
Roundabout

Movement Performance - Vehicles

| Mov ID | Turn | Deman Total veh/h | Flows HV $\%$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance ft | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed mph |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| South: NB Hiddenbrooke Parkway |  |  |  |  |  |  |  |  |  |  |  |  |
| 3b | L3 | 1 | 2.0 | 0.447 | 13.2 | LOS B | 2.2 | 57.0 | 0.52 | 0.52 | 0.52 | 35.6 |
| 8 | T1 | 429 | 2.0 | 0.447 | 4.4 | LOS A | 2.2 | 57.0 | 0.52 | 0.52 | 0.52 | 33.4 |
| 18 | R2 | 92 | 2.0 | 0.447 | 4.9 | LOS A | 2.2 | 57.0 | 0.52 | 0.52 | 0.52 | 31.9 |
| 18b | R3 | 11 | 2.0 | 0.447 | 5.8 | LOS A | 2.2 | 57.0 | 0.52 | 0.52 | 0.52 | 33.4 |
| Appr |  | 534 | 2.0 | 0.447 | 4.5 | LOS A | 2.2 | 57.0 | 0.52 | 0.52 | 0.52 | 33.1 |
| SouthEast: WB McGary Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3bx | L3 | 11 | 2.0 | 0.060 | 16.6 | LOS C | 0.4 | 9.1 | 0.75 | 0.73 | 0.75 | 35.1 |
| 3 x | L2 | 1 | 2.0 | 0.060 | 15.3 | LOS C | 0.4 | 9.1 | 0.75 | 0.73 | 0.75 | 34.6 |
| 18ax | R1 | 25 | 2.0 | 0.060 | 8.5 | LOS A | 0.4 | 9.1 | 0.75 | 0.73 | 0.75 | 34.1 |
| 18bx | R3 | 8 | 2.0 | 0.060 | 9.3 | LOS A | 0.4 | 9.1 | 0.75 | 0.73 | 0.75 | 31.8 |
| Appr |  | 45 | 2.0 | 0.060 | 10.8 | LOS B | 0.4 | 9.1 | 0.75 | 0.73 | 0.75 | 34.0 |
| North: SB American Canyon Rd |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 380 | 2.0 | 0.272 | 8.7 | LOS A | 1.6 | 39.9 | 0.08 | 0.57 | 0.08 | 32.3 |
| 7a | L1 | 5 | 2.0 | 0.272 | 8.7 | LOS A | 1.6 | 39.9 | 0.08 | 0.57 | 0.08 | 33.5 |
| 4 | T1 | 65 | 2.0 | 0.272 | 2.4 | LOS A | 1.6 | 39.9 | 0.08 | 0.57 | 0.08 | 32.3 |
| 14a | R1 | 5 | 2.0 | 0.272 | 3.2 | LOS A | 1.6 | 39.9 | 0.08 | 0.57 | 0.08 | 33.5 |
| Appr |  | 457 | 2.0 | 0.272 | 7.7 | LOS A | 1.6 | 39.9 | 0.08 | 0.57 | 0.08 | 32.4 |
| West: EB I-80 Off-Ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | L2 | 109 | 2.0 | 0.187 | 6.4 | LOS A | 0.7 | 18.2 | 0.38 | 0.51 | 0.38 | 29.3 |
| 2 | T1 | 11 | 2.0 | 0.187 | 1.2 | LOS A | 0.7 | 18.2 | 0.38 | 0.51 | 0.38 | 27.9 |
| 12a | R1 | 5 | 2.0 | 0.187 | 4.4 | LOS A | 0.7 | 18.2 | 0.38 | 0.51 | 0.38 | 30.1 |
| 12 | R2 | 98 | 2.0 | 0.187 | 2.1 | LOS A | 0.7 | 18.2 | 0.38 | 0.51 | 0.38 | 28.0 |
| 12b | R3 | 5 | 32.0 | 0.187 | 5.9 | LOS A | 0.7 | 18.2 | 0.38 | 0.51 | 0.38 | 28.3 |
| Appr |  | 228 | 2.7 | 0.187 | 4.3 | LOS A | 0.7 | 18.2 | 0.38 | 0.51 | 0.38 | 28.7 |
| SouthWest: EB McGary Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 ax | L1 | 9 | 2.0 | 0.012 | 10.7 | LOS B | 0.1 | 1.4 | 0.50 | 0.61 | 0.50 | 35.0 |
| 12ax | R1 | 2 | 2.0 | 0.012 | 5.2 | LOS A | 0.1 | 1.4 | 0.50 | 0.61 | 0.50 | 34.1 |
| 12x | R2 | 1 | 2.0 | 0.012 | 5.8 | LOS A | 0.1 | 1.4 | 0.50 | 0.61 | 0.50 | 34.2 |
| 12bx | R3 | 1 | 2.0 | 0.012 | 5.9 | LOS A | 0.1 | 1.4 | 0.50 | 0.61 | 0.50 | 33.7 |
| Approach |  | 13 | 2.0 | 0.012 | 9.0 | LOS A | 0.1 | 1.4 | 0.50 | 0.61 | 0.50 | 34.7 |
| All Vehicles |  | 1276 | 2.1 | 0.447 | 5.9 | LOS A | 2.2 | 57.0 | 0.35 | 0.55 | 0.35 | 32.1 |

Site Level of Service (LOS) Method: Delay \& v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and $\mathrm{v} / \mathrm{c}$ ratio (degree of saturation) per movement.
LOS F will result if $\mathrm{v} / \mathrm{c}>1$ irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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## MOVEMENT SUMMARY

## G Site: 1 [2024 PM PH I-80 Ramps-Hiddenbrooke Pkwy-McGary Rd (SIDRA) DG]

I-80 Ramps/Hiddenbrooke Parkway/McGary Road
2024 PM Peak Hour (DG)
Single-Lane, 6-Leg (SIDRA)
Site Category: (None)
Roundabout

Movement Performance - Vehicles

| $\begin{aligned} & \text { Mov } \\ & \hline \text { ID } \end{aligned}$ |  | Demand Flows |  | Deg. <br> Satn <br> v/c | Average Delay sec | Level of Service | 95\% Back of Queue |  | Prop. Queued | Effective Stop Rate |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ |  |  |  | Vehicles veh | Distance ft |  |  | Cycles | Speed mph |
| South: NB Hiddenbrooke Parkway |  |  |  |  |  |  |  |  |  |  |  |  |
| 3b | L3 | 1 | 2.0 | 0.219 | 12.7 | LOS B | 0.9 | 23.2 | 0.43 | 0.48 | 0.43 | 35.9 |
| 8 | T1 | 191 | 2.0 | 0.219 | 3.9 | LOS A | 0.9 | 23.2 | 0.43 | 0.48 | 0.43 | 33.7 |
| 18 | R2 | 59 | 2.0 | 0.219 | 4.4 | LOS A | 0.9 | 23.2 | 0.43 | 0.48 | 0.43 | 32.2 |
| 18b | R3 | 11 | 2.0 | 0.219 | 5.4 | LOS A | 0.9 | 23.2 | 0.43 | 0.48 | 0.43 | 33.7 |
| Appro | ch | 262 | 2.0 | 0.219 | 4.1 | LOS A | 0.9 | 23.2 | 0.43 | 0.48 | 0.43 | 33.4 |
| SouthEast: WB McGary Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3bx | L3 | 11 | 2.0 | 0.033 | 13.7 | LOS B | 0.2 | 3.9 | 0.54 | 0.64 | 0.54 | 36.2 |
| 3 x | L2 | 1 | 2.0 | 0.033 | 12.4 | LOS B | 0.2 | 3.9 | 0.54 | 0.64 | 0.54 | 35.7 |
| 18ax | R1 | 17 | 2.0 | 0.033 | 5.7 | LOS A | 0.2 | 3.9 | 0.54 | 0.64 | 0.54 | 35.2 |
| 18bx | R3 | 4 | 2.0 | 0.033 | 6.4 | LOS A | 0.2 | 3.9 | 0.54 | 0.64 | 0.54 | 32.9 |
| Appro |  | 34 | 2.0 | 0.033 | 8.6 | LOS A | 0.2 | 3.9 | 0.54 | 0.64 | 0.54 | 35.2 |
| North: SB American Canyon Rd |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 402 | 2.0 | 0.353 | 8.7 | LOS A | 2.1 | 52.6 | 0.08 | 0.53 | 0.08 | 32.8 |
| 7a | L1 | 1 | 2.0 | 0.353 | 8.7 | LOS A | 2.1 | 52.6 | 0.08 | 0.53 | 0.08 | 34.0 |
| 4 | T1 | 191 | 2.0 | 0.353 | 2.4 | LOS A | 2.1 | 52.6 | 0.08 | 0.53 | 0.08 | 32.8 |
| 14a | R1 | 3 | 2.0 | 0.353 | 3.2 | LOS A | 2.1 | 52.6 | 0.08 | 0.53 | 0.08 | 33.9 |
| Appro |  | 598 | 2.0 | 0.353 | 6.7 | LOS A | 2.1 | 52.6 | 0.08 | 0.53 | 0.08 | 32.8 |
| West: EB I-80 Off-Ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | L2 | 87 | 2.0 | 0.396 | 7.6 | LOS A | 2.0 | 51.2 | 0.55 | 0.60 | 0.55 | 29.5 |
| 2 | T1 | 11 | 2.0 | 0.396 | 2.4 | LOS A | 2.0 | 51.2 | 0.55 | 0.60 | 0.55 | 28.1 |
| 12a | R1 | 5 | 2.0 | 0.396 | 5.5 | LOS A | 2.0 | 51.2 | 0.55 | 0.60 | 0.55 | 30.3 |
| 12 | R2 | 329 | 2.0 | 0.396 | 3.3 | LOS A | 2.0 | 51.2 | 0.55 | 0.60 | 0.55 | 28.2 |
| 12b | R3 | 13 | 32.0 | 0.396 | 7.4 | LOS A | 2.0 | 51.2 | 0.55 | 0.60 | 0.55 | 28.5 |
| Appro |  | 446 | 2.9 | 0.396 | 4.2 | LOS A | 2.0 | 51.2 | 0.55 | 0.60 | 0.55 | 28.5 |
| SouthWest: EB McGary Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 ax | L1 | 9 | 2.0 | 0.017 | 13.8 | LOS B | 0.1 | 2.6 | 0.74 | 0.67 | 0.74 | 33.5 |
| 12ax | R1 | 2 | 2.0 | 0.017 | 8.4 | LOS A | 0.1 | 2.6 | 0.74 | 0.67 | 0.74 | 32.4 |
| 12x | R2 | 1 | 2.0 | 0.017 | 9.0 | LOS A | 0.1 | 2.6 | 0.74 | 0.67 | 0.74 | 32.8 |
| 12bx | R3 | 1 | 2.0 | 0.017 | 9.1 | LOS A | 0.1 | 2.6 | 0.74 | 0.67 | 0.74 | 32.3 |
| Approach |  | 13 | 2.0 | 0.017 | 12.1 | LOS B | 0.1 | 2.6 | 0.74 | 0.67 | 0.74 | 33.2 |
| All Ve | icles | 1352 | 2.3 | 0.396 | 5.5 | LOS A | 2.1 | 52.6 | 0.32 | 0.55 | 0.32 | 31.5 |

Site Level of Service (LOS) Method: Delay \& v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and $\mathrm{v} / \mathrm{c}$ ratio (degree of saturation) per movement.
LOS F will result if $\mathrm{v} / \mathrm{c}>1$ irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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## MOVEMENT SUMMARY

## Site: 1 [2035 AM PH I-80 Ramps-Hiddenbrooke Pkwy-McGary Rd (SIDRA) DG]

I-80 Ramps/Hiddenbrooke Parkway/McGary Road
2035 AM Peak Hour (DG)
Single-Lane, 6-Leg (SIDRA)
Site Category: (None)
Roundabout

Movement Performance - Vehicles

| Mov ID | Turn | Deman Total veh/h | Flows HV $\%$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance ft | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed mph |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| South: NB Hiddenbrooke Parkway |  |  |  |  |  |  |  |  |  |  |  |  |
| 3b | L3 | 2 | 2.0 | 0.467 | 14.4 | LOS B | 2.7 | 69.8 | 0.61 | 0.67 | 0.65 | 35.2 |
| 8 | T1 | 400 | 2.0 | 0.467 | 5.6 | LOS A | 2.7 | 69.8 | 0.61 | 0.67 | 0.65 | 33.1 |
| 18 | R2 | 110 | 2.0 | 0.467 | 6.1 | LOS A | 2.7 | 69.8 | 0.61 | 0.67 | 0.65 | 31.5 |
| 18b | R3 | 7 | 2.0 | 0.467 | 7.1 | LOS A | 2.7 | 69.8 | 0.61 | 0.67 | 0.65 | 33.1 |
| Appr |  | 518 | 2.0 | 0.467 | 5.7 | LOS A | 2.7 | 69.8 | 0.61 | 0.67 | 0.65 | 32.8 |
| SouthEast: WB McGary Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3bx | L3 | 3 | 2.0 | 0.059 | 18.8 | LOS C | 0.4 | 9.7 | 0.83 | 0.75 | 0.83 | 34.5 |
| 3 x | L2 | 1 | 2.0 | 0.059 | 17.5 | LOS C | 0.4 | 9.7 | 0.83 | 0.75 | 0.83 | 34.1 |
| 18ax | R1 | 26 | 2.0 | 0.059 | 10.7 | LOS B | 0.4 | 9.7 | 0.83 | 0.75 | 0.83 | 33.6 |
| 18bx | R3 | 7 | 2.0 | 0.059 | 11.5 | LOS B | 0.4 | 9.7 | 0.83 | 0.75 | 0.83 | 31.2 |
| Appr |  | 37 | 2.0 | 0.059 | 11.8 | LOS B | 0.4 | 9.7 | 0.83 | 0.75 | 0.83 | 33.3 |
| North: SB American Canyon Rd |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 580 | 2.0 | 0.369 | 8.7 | LOS A | 2.3 | 58.1 | 0.06 | 0.59 | 0.06 | 32.1 |
| 7a | L1 | 4 | 2.0 | 0.369 | 8.7 | LOS A | 2.3 | 58.1 | 0.06 | 0.59 | 0.06 | 33.3 |
| 4 | T1 | 51 | 2.0 | 0.369 | 2.4 | LOS A | 2.3 | 58.1 | 0.06 | 0.59 | 0.06 | 32.2 |
| 14a | R1 | 4 | 2.0 | 0.369 | 3.2 | LOS A | 2.3 | 58.1 | 0.06 | 0.59 | 0.06 | 33.3 |
| Appr |  | 640 | 2.0 | 0.369 | 8.1 | LOS A | 2.3 | 58.1 | 0.06 | 0.59 | 0.06 | 32.2 |
| West: EB I-80 Off-Ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | L2 | 49 | 2.0 | 0.136 | 7.2 | LOS A | 0.6 | 14.9 | 0.48 | 0.55 | 0.48 | 29.6 |
| 2 | T1 | 5 | 2.0 | 0.136 | 2.0 | LOS A | 0.6 | 14.9 | 0.48 | 0.55 | 0.48 | 28.2 |
| 12a | R1 | 7 | 2.0 | 0.136 | 5.2 | LOS A | 0.6 | 14.9 | 0.48 | 0.55 | 0.48 | 30.3 |
| 12 | R2 | 83 | 2.0 | 0.136 | 2.9 | LOS A | 0.6 | 14.9 | 0.48 | 0.55 | 0.48 | 28.2 |
| 12b | R3 | 7 | 32.0 | 0.136 | 6.9 | LOS A | 0.6 | 14.9 | 0.48 | 0.55 | 0.48 | 28.5 |
| Appr |  | 150 | 3.3 | 0.136 | 4.6 | LOS A | 0.6 | 14.9 | 0.48 | 0.55 | 0.48 | 28.8 |
| SouthWest: EB McGary Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 ax | L1 | 9 | 2.0 | 0.013 | 11.3 | LOS B | 0.1 | 1.5 | 0.55 | 0.62 | 0.55 | 34.8 |
| 12ax | R1 | 2 | 2.0 | 0.013 | 5.8 | LOS A | 0.1 | 1.5 | 0.55 | 0.62 | 0.55 | 33.8 |
| 12x | R2 | 1 | 2.0 | 0.013 | 6.4 | LOS A | 0.1 | 1.5 | 0.55 | 0.62 | 0.55 | 33.9 |
| 12bx | R3 | 1 | 2.0 | 0.013 | 6.5 | LOS A | 0.1 | 1.5 | 0.55 | 0.62 | 0.55 | 33.5 |
| Approach |  | 13 | 2.0 | 0.013 | 9.6 | LOS A | 0.1 | 1.5 | 0.55 | 0.62 | 0.55 | 34.4 |
| All Vehicles |  | 1359 | 2.1 | 0.467 | 6.9 | LOS A | 2.7 | 69.8 | 0.34 | 0.62 | 0.36 | 32.1 |

Site Level of Service (LOS) Method: Delay \& v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if $\mathrm{v} / \mathrm{c}>1$ irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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## MOVEMENT SUMMARY

## G Site: 1 [2035 PM PH I-80 Ramps-Hiddenbrooke Pkwy-McGary Rd (SIDRA) DG]

I-80 Ramps/Hiddenbrooke Parkway/McGary Road
2035 PM Peak Hour (DG)
Single-Lane, 6-Leg (SIDRA)
Site Category: (None)
Roundabout

Movement Performance - Vehicles

| $\begin{aligned} & \text { Mov } \\ & \hline \text { ID } \end{aligned}$ |  | Demand Flows |  | Deg. <br> Satn <br> v/c | Average Delay sec | Level of Service | 95\% Back of Queue |  | Prop. Queued | Effective Stop Rate |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ |  |  |  | Vehicles veh | Distance ft |  |  | Cycles | Speed mph |
| South: NB Hiddenbrooke Parkway |  |  |  |  |  |  |  |  |  |  |  |  |
| 3b | L3 | 1 | 2.0 | 0.211 | 13.1 | LOS B | 0.9 | 23.9 | 0.49 | 0.52 | 0.49 | 35.7 |
| 8 | T1 | 180 | 2.0 | 0.211 | 4.3 | LOS A | 0.9 | 23.9 | 0.49 | 0.52 | 0.49 | 33.5 |
| 18 | R2 | 54 | 2.0 | 0.211 | 4.8 | LOS A | 0.9 | 23.9 | 0.49 | 0.52 | 0.49 | 31.9 |
| 18b | R3 | 3 | 2.0 | 0.211 | 5.8 | LOS A | 0.9 | 23.9 | 0.49 | 0.52 | 0.49 | 33.5 |
| Appro | ch | 239 | 2.0 | 0.211 | 4.5 | LOS A | 0.9 | 23.9 | 0.49 | 0.52 | 0.49 | 33.2 |
| SouthEast: WB McGary Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 bx | L3 | 7 | 2.0 | 0.019 | 14.1 | LOS B | 0.1 | 2.4 | 0.58 | 0.63 | 0.58 | 35.8 |
| 3 x | L2 | 1 | 2.0 | 0.019 | 12.9 | LOS B | 0.1 | 2.4 | 0.58 | 0.63 | 0.58 | 35.3 |
| 18ax | R1 | 9 | 2.0 | 0.019 | 6.1 | LOS A | 0.1 | 2.4 | 0.58 | 0.63 | 0.58 | 34.8 |
| 18bx | R3 | 2 | 2.0 | 0.019 | 6.8 | LOS A | 0.1 | 2.4 | 0.58 | 0.63 | 0.58 | 32.5 |
| Appro |  | 18 | 2.0 | 0.019 | 9.4 | LOS A | 0.1 | 2.4 | 0.58 | 0.63 | 0.58 | 34.9 |
| North: SB American Canyon Rd |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 447 | 2.0 | 0.383 | 8.7 | LOS A | 2.4 | 59.7 | 0.07 | 0.54 | 0.07 | 32.9 |
| 7a | L1 | 4 | 2.0 | 0.383 | 8.7 | LOS A | 2.4 | 59.7 | 0.07 | 0.54 | 0.07 | 34.0 |
| 4 | T1 | 199 | 2.0 | 0.383 | 2.4 | LOS A | 2.4 | 59.7 | 0.07 | 0.54 | 0.07 | 32.8 |
| 14a | R1 | 9 | 2.0 | 0.383 | 3.2 | LOS A | 2.4 | 59.7 | 0.07 | 0.54 | 0.07 | 34.0 |
| Appro |  | 659 | 2.0 | 0.383 | 6.7 | LOS A | 2.4 | 59.7 | 0.07 | 0.54 | 0.07 | 32.9 |
| West: EB I-80 Off-Ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | L2 | 116 | 2.0 | 0.401 | 8.0 | LOS A | 2.1 | 53.7 | 0.59 | 0.65 | 0.59 | 29.3 |
| 2 | T1 | 5 | 2.0 | 0.401 | 2.8 | LOS A | 2.1 | 53.7 | 0.59 | 0.65 | 0.59 | 27.8 |
| 12a | R1 | 7 | 2.0 | 0.401 | 5.9 | LOS A | 2.1 | 53.7 | 0.59 | 0.65 | 0.59 | 30.0 |
| 12 | R2 | 295 | 2.0 | 0.401 | 3.7 | LOS A | 2.1 | 53.7 | 0.59 | 0.65 | 0.59 | 27.9 |
| 12b | R3 | 13 | 32.0 | 0.401 | 7.9 | LOS A | 2.1 | 53.7 | 0.59 | 0.65 | 0.59 | 28.2 |
| Appro |  | 436 | 2.9 | 0.401 | 5.0 | LOS A | 2.1 | 53.7 | 0.59 | 0.65 | 0.59 | 28.3 |
| SouthWest: EB McGary Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 ax | L1 | 16 | 2.0 | 0.033 | 14.6 | LOS B | 0.2 | 5.2 | 0.77 | 0.72 | 0.77 | 33.2 |
| 12ax | R1 | 5 | 2.0 | 0.033 | 9.1 | LOS A | 0.2 | 5.2 | 0.77 | 0.72 | 0.77 | 32.0 |
| 12x | R2 | 1 | 2.0 | 0.033 | 9.7 | LOS A | 0.2 | 5.2 | 0.77 | 0.72 | 0.77 | 32.4 |
| 12bx | R3 | 1 | 2.0 | 0.033 | 9.8 | LOS A | 0.2 | 5.2 | 0.77 | 0.72 | 0.77 | 32.0 |
| Approach |  | 24 | 2.0 | 0.033 | 12.9 | LOS B | 0.2 | 5.2 | 0.77 | 0.72 | 0.77 | 32.8 |
| All Ve | icles | 1376 | 2.3 | 0.401 | 5.9 | LOS A | 2.4 | 59.7 | 0.32 | 0.57 | 0.32 | 31.5 |

Site Level of Service (LOS) Method: Delay \& v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if $\mathrm{v} / \mathrm{c}>1$ irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: REID MIDDLETON INC | Processed: Friday, June 26, 2020 10:39:44 AM
Project: H: $225 \mathrm{St\mid 151015} \mathrm{I}-80$ and Hiddenbrooke RB (Fehr and Peers) Trafficl I-80 - Hiddenbrooke Parkway Interchange_wrm.sip8

## Appendix B <br> (ROUndABOUT Supporting Figures)



CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


STAA Standard Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


CA-Legal Turning Movements


STAA Standard Turning Movements


CA-Legal Turning Movements (Future Configuration)


CA-Legal Turning Movements (Future Configuration)


CA-Legal Turning Movements (Future Configuration)


CA-Legal Turning Movements (Future Configuration)
Figure B-12

# I-80/Hiddenbrooke Interchange Roundabouts <br> I-80 Westbound Roundabout <br> Vallejo, CA <br> January 2016 

Northbound Southbound Westbound

|  | Radius (ft) | Speed (mph) | Radius (ft) | Speed (mph) | Radius (ft) | Speed (mph) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| R1 | 153 | 24 | 139 | 23 | 139 | 23 |
| R2 | 64 | 16 | 190 | 25 | 59 | 16 |
| R3 $^{*}$ | - | 25 | - | - | - | 25 |
| R4 | 45 | 15 | - | - | 45 | 15 |
| R5 | - | - | 100 | 21 | 174 | 25 |

* R3 speed = lesser of [speed-radius table value] or [R2+Acceleration*Distance to Crosswalk) $+2 \%$ superelevation assumed for R1, R3, and R5 movements
$-2 \%$ superelevation assumed for R2 and R4 movements

Calculated R3 Speed from Acceleration and Distance to Crosswalk
FHWA Acceleration $6.9 \mathrm{ft} / \mathrm{sec}^{2} \quad$ NCHRP Report 572

|  | Beginning <br> Speed R2 <br> $(M P H)$ | R2 Speed in <br> FT/SEC | Distance <br> from R2 to <br> Crosswalk <br> $(\mathrm{ft})$ | Approx. <br> Travel Time <br> $(\mathrm{sec})$ | Speed <br> Increase <br> $(\mathrm{mph})$ | Exiting <br> Speed <br> $(\mathrm{mph})$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Northbound | 16 | 23 | 45 | 1.9 | 9 | 25 |
| Westbound | 16 | 23 | 43 | 1.8 | 9 | 25 |

# I-80/Hiddenbrooke Interchange Roundabouts <br> I-80 Eastbound Roundabout <br> Vallejo, CA <br> January 2016 

|  | Northbound |  | Southbound |  | Eastbound |  | Westbound |  | Northeastbound |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Radius (ft) | Speed (mph) | Radius (ft) | Speed (mph) | Radius (ft) | Speed (mph) | Radius (ft) | Speed (mph) | Radius (ft) | Speed (mph) |
| R1 | 116 | 22 | 139 | 23 | 102 | 21 | 103 | 21 | 131 | 23 |
| R2 | 86 | 19 | 93 | 19 | 80 | 18 | 74 | 17 | 79 | 19 |
| R3* | - | - | - | 26 | - | 25 | - | 24 | - | 25 |
| R4 | 62 | 16 | 62 | 16 | 62 | 16 | 62 | 16 | 62 | 16 |
| R5 | 69 | 18 | 153 | 24 | 58 | 17 | 60 | 17 | 85 | 20 |

* R3 speed = lesser of [speed-radius table value] or [R2+Acceleration*Distance to Crosswalk)
+2\% superelevation assumed for R1, R3, and R5 movements
$-2 \%$ superelevation assumed for R2 and R4 movements

Calculated R3 Speed from Acceleration and Distance to Crosswalk
FHWA Acceleration $6.9 \mathrm{ft} / \mathrm{sec}^{2} \quad$ NCHRP Report 572

|  | Beginning <br> Speed R2 <br> (MPH) | R2 Speed in <br> FT/SEC | Distance <br> from R2 to <br> Crosswalk <br> $(\mathrm{ft})$ | Approx. <br> Travel Time <br> $(\mathrm{sec})$ | Speed <br> Increase <br> $(\mathrm{mph})$ | Exiting <br> Speed <br> $(\mathrm{mph})$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Southbound | 19 | 28 | 43 | 1.6 | 7 | 26 |
| Eastbound | 18 | 26 | 41 | 1.6 | 7 | 25 |
| Westbound | 17 | 25 | 39 | 1.6 | 7 | 24 |
| Northeastbound | 19 | 28 | 34 | 1.2 | 6 | 25 |



Northbound


Southbound


Southbound - Current Configuration



# I-80/Hiddenbrooke Interchange Roundabouts 

## I-80 Eastbound Roundabout - Future Configuration

Vallejo, CA
January 2016

| Southbound |  |  |
| :---: | :---: | :---: |
|  | Radius (ft) | Speed (mph) |
| R1 | 116 | 22 |
| R2 | 93 | 19 |
| R3 $^{*}$ | - | 26 |
| R4 | 62 | 16 |
| R5 | 155 | 25 |

Calculated R3 Speed from Acceleration and Distance to Crosswalk
FHWA Acceleration $6.9 \mathrm{ft} / \mathrm{sec}^{2} \quad$ NCHRP Report 572

|  | Beginning <br> Speed R2 <br> (MPH) | R2 Speed in <br> FT/SEC | Distance <br> from R2 to <br> Crosswalk <br> $(\mathrm{ft})$ | Approx. <br> Travel Time <br> $(\mathrm{sec})$ | Speed <br> Increase <br> $(\mathrm{mph})$ | Exiting <br> Speed <br> $(\mathrm{mph})$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Southbound | 19 | 28 | 43 | 1.6 | 7 | 26 |



Southbound - Future Configuration

I-80 / Hiddenbrooke / American Canyon Interchange Final Traffic Operations Analysis Report - Appendices 8/19/2020

## Appendix B: Counts

FEHR $\upharpoonright$ PEERS


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| Four-Hour Count Summaries |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Interval Start |  | I-80 WB Ramps |  |  |  | I-80 WB Ramps |  |  |  | American Canyon Rd |  |  |  | American Canyon Rd |  |  |  | $\begin{gathered} \text { 15-min } \\ \text { Total } \end{gathered}$ | Rolling One Hour |
|  |  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  |  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 6:00 | AM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 45 | 0 | 24 | 14 | 0 | 0 | 0 | 35 | 2 | 122 | 0 |
| 6:15 | AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 35 | 14 | 0 | 0 | 0 | 44 | 1 | 113 | 0 |
| 6:30 | AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 10 | 0 | 37 | 17 | 0 | 0 | 0 | 47 | 3 | 115 | 0 |
| 6:45 | AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 15 | 0 | 40 | 12 | 0 | 0 | 0 | 57 | 6 | 131 | 481 |
| 7:00 | AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 16 | 0 | 36 | 14 | 0 | 0 | 0 | 51 | 4 | 122 | 481 |
| 7:15 | AM | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 18 | 0 | 58 | 21 | 0 | 0 | 0 | 68 | 10 | 178 | 546 |
| 7:30 | AM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 24 | 0 | 95 | 20 | 0 | 0 | 0 | 85 | 9 | 238 | 669 |
| 7:45 | AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 62 | 0 | 78 | 29 | 0 | 0 | 0 | 76 | 11 | 258 | 796 |
| 8:00 | AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 53 | 0 | 71 | 36 | 0 | 0 | 0 | 88 | 14 | 266 | 940 |
| 8:15 | AM | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 79 | 0 | 58 | 29 | 0 | 0 | 0 | 69 | 16 | 258 | 1,020 |
|  | AM | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 79 | 0 | 44 | 23 | 0 | 0 | 0 | 72 | 14 | 238 | 1,020 |
|  | AM | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 75 | 0 | 38 | 21 | 0 | 0 | 0 | 63 | 10 | 216 | 978 |
|  | AM | 0 | 0 | 0 | 0 | 0 | 10 | 1 | 60 | 0 | 41 | 20 | 0 | 0 | 0 | 52 | 7 | 191 | 903 |
| 9:15 | AM | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 52 | 0 | 37 | 26 | 0 | 0 | 0 | 47 | 5 | 180 | 825 |
|  | AM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 49 | 0 | 51 | 17 | 0 | 0 | 0 | 64 | 7 | 193 | 780 |
| 9:45 | AM | 0 | 0 | 0 | 0 | 0 | 8 | 2 | 49 | 0 | 47 | 23 | 0 | 0 | 0 | 49 | 7 | 185 | 749 |
| Count | Total | 0 | 0 | 0 | 0 | 0 | 72 | 8 | 705 | 0 | 790 | 336 | 0 | 0 | 0 | 967 | 126 | 3,004 | 0 |
|  | All | 0 | 0 | 0 | 0 | 0 | 17 | 1 | 218 | 0 | 302 | 114 | 0 | 0 | 0 | 318 | 50 | 1,020 | 0 |
| Peak <br> Hour | HV | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 0 |
|  | HV\% | - | - | - | - | - | 6\% | 100\% | 1\% | - | 0\% | 0\% | - | - | - | 0\% | 0\% | 1\% | 0 |

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

| Interval Start | Heavy Vehicle Totals |  |  |  |  | Bicycles |  |  |  |  | Pedestrians (Crossing Leg) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:00 AM | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:15 AM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:30 AM | 0 | 2 | 0 | 1 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 9:45 AM | 0 | 2 | 3 | 1 | 6 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Count Total | 0 | 15 | 4 | 8 | 27 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour | 0 | 4 | 1 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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Four-Hour Count Summaries - Heavy Vehicles

| Interval Start | I-80 WB Ramps |  |  |  | I-80 WB Ramps |  |  |  | American Canyon Rd |  |  |  | American Canyon Rd |  |  |  | 15-min Total | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 7 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 |
| 9:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 |
| 9:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 7 |
| 9:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 8 |
| 9:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 13 |
| Count Total | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 11 | 0 | 4 | 0 | 0 | 0 | 0 | 8 | 0 | 27 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 0 |

Four-Hour Count Summaries - Bikes

| Interval Start | I-80 WB Ramps |  |  | I-80 WB Ramps |  |  | American Canyon Rd |  |  | American Canyon Rd |  |  | 15-min <br> Total | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Eastbound |  |  | Westbound |  |  | Northbound |  |  | Southbound |  |  |  |  |
|  | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT |  |  |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 9:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 |
| Count Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Note: U-Turn volumes for bikes are included in Left-Turn, if any


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| Four-Hour Count Summaries |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Interval Start |  | I-80 WB Ramps |  |  |  | I-80 WB Ramps |  |  |  | American Canyon Rd |  |  |  | American Canyon Rd |  |  |  | $\begin{gathered} \text { 15-min } \\ \text { Total } \end{gathered}$ | Rolling One Hour |
|  |  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  |  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 2:00 | PM | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 55 | 0 | 40 | 31 | 0 | 0 | 0 | 79 | 9 | 227 | 0 |
| 2:15 | PM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 54 | 0 | 35 | 17 | 0 | 0 | 0 | 64 | 7 | 183 | 0 |
| 2:30 | PM | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 60 | 0 | 33 | 30 | 0 | 0 | 0 | 76 | 10 | 221 | 0 |
| 2:45 | PM | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 56 | 0 | 45 | 20 | 0 | 0 | 0 | 74 | 23 | 229 | 860 |
| 3:00 | PM | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 72 | 0 | 35 | 24 | 0 | 0 | 0 | 64 | 16 | 224 | 857 |
| 3:15 | PM | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 68 | 0 | 34 | 22 | 0 | 0 | 0 | 77 | 13 | 223 | 897 |
| 3:30 | PM | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 79 | 0 | 37 | 22 | 0 | 0 | 0 | 91 | 16 | 253 | 929 |
| 3:45 | PM | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 70 | 0 | 40 | 26 | 0 | 0 | 0 | 96 | 13 | 257 | 957 |
| 4:00 | PM | 0 | 0 | 0 | 0 | 0 | 7 | 2 | 61 | 0 | 33 | 17 | 0 | 0 | 0 | 102 | 15 | 237 | 970 |
| 4:15 | PM | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 82 | 0 | 31 | 16 | 0 | 0 | 0 | 73 | 18 | 236 | 983 |
| 4:30 | PM | 0 | 0 | 0 | 0 | 0 | 14 | 1 | 89 | 0 | 29 | 16 | 0 | 0 | 0 | 76 | 17 | 242 | 972 |
| 4:45 | PM | 0 | 0 | 0 | 0 | 0 | 15 | 1 | 80 | 0 | 25 | 23 | 0 | 0 | 0 | 104 | 12 | 260 | 975 |
| 5:00 | PM | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 81 | 0 | 34 | 21 | 0 | 0 | 0 | 100 | 8 | 265 | 1,003 |
| 5:15 | PM | 0 | 0 | 0 | 0 | 0 | 20 | 1 | 80 | 0 | 34 | 26 | 0 | 0 | 0 | 92 | 8 | 261 | 1,028 |
| 5:30 | PM | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 86 | 0 | 44 | 20 | 0 | 0 | 0 | 87 | 16 | 264 | 1,050 |
| 5:45 | PM | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 74 | 0 | 26 | 24 | 0 | 0 | 0 | 90 | 9 | 241 | 1,031 |
| Count | Total | 0 | 0 | 0 | 0 | 0 | 206 | 5 | 1,147 | 0 | 555 | 355 | 0 | 0 | 0 | 1,345 | 210 | 3,823 | 0 |
|  | All | 0 | 0 | 0 | 0 | 0 | 67 | 2 | 327 | 0 | 137 | 90 | 0 | 0 | 0 | 383 | 44 | 1,050 | 0 |
| Peak | HV |  | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 |
|  | HV\% | - | - | - | - | - | 0\% | 0\% | 0\% | - | 0\% | 0\% | - | - | - | 0\% | 0\% | 0\% | 0 |

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

| Interval Start | Heavy Vehicle Totals |  |  |  |  | Bicycles |  |  |  |  | Pedestrians (Crossing Leg) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 2:00 PM | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:30 PM | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:45 PM | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 PM | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:30 PM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00 PM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Count Total | 0 | 1 | 9 | 4 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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| Four-Hour Count Summaries - Heavy Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Interval Start | I-80 WB Ramps |  |  |  | I-80 WB Ramps |  |  |  | American Canyon Rd |  |  |  | American Canyon Rd |  |  |  | 15-min | Rolling One Hour |
|  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 2:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 2:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 3 | 0 |
| 2:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 7 |
| 3:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 7 |
| 3:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 3:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 |
| 3:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 4 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Count Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 3 | 0 | 0 | 0 | 3 | 1 | 14 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Four-Hour Count Summaries - Bikes

| Interval Start | I-80 WB Ramps |  |  | I-80 WB Ramps |  |  | American Canyon Rd |  |  | American Canyon Rd |  |  | 15-min Total | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Eastbound |  |  | Westbound |  |  | Northbound |  |  | Southbound |  |  |  |  |
|  | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT |  |  |
| 2:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Count Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Note: U-Turn volumes for bikes are included in Left-Turn, if any

## Hiddenbrooke Pkwy I-80 EB Ramps



Four-Hour Count Summaries

| Interval Start |  | 1-80 EB Rampsl-80 EB Ramps |  |  |  | I-80 EB Ramps |  |  |  | Hiddenbrooke Pkwy |  |  |  | Hiddenbrooke Pkwy |  |  |  | $\begin{gathered} \text { 15-min } \\ \text { Total } \end{gathered}$ | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  |  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
|  | AM | 0 | 13 | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 105 | 20 | 0 | 83 | 8 | 0 | 237 | 0 |
|  | AM | 0 | 19 | 2 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 86 | 25 | 0 | 72 | 4 | 0 | 225 | 0 |
|  | AM | 0 | 22 | 1 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 87 | 17 | 0 | 81 | 13 | 0 | 253 | 0 |
|  | AM | 0 | 17 | 1 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 68 | 13 | 0 | 61 | 14 | 0 | 205 | 920 |
|  | All | 0 | 71 | 6 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 346 | 75 | 0 | 297 | 39 | 0 | 920 | 0 |
| Peak | HV | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 8 | 0 |
|  | HV\% | - | 1\% | 50\% | 0\% | - | - | - | - | - | - | 0\% | 1\% | - | 0\% | 8\% | - | 1\% | 0 |

Note: For all three-hour count summary, see next page.

| Interval Start | Heavy Vehicle Totals |  |  |  |  | Bicycles |  |  |  |  | Pedestrians (Crossing Leg) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 1 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 2 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour | 4 | 0 | 1 | 3 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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| Four-Hour Count Summaries |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Interval Start |  | 1-80 EB Rampst-80 EB Ramps |  |  |  | I-80 EB Ramps |  |  |  | Hiddenbrooke Pkwy |  |  |  | Hiddenbrooke Pkwy |  |  |  | $\begin{gathered} \text { 15-min } \\ \text { Total } \end{gathered}$ | Rolling One Hour |
|  |  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  |  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 6:00 | AM | 0 | 5 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 2 | 0 | 35 | 1 | 0 | 83 | 0 |
| 6:15 | AM | 0 | 10 | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 7 | 0 | 43 | 1 | 0 | 111 | 0 |
| 6:30 | AM | 0 | 9 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 16 | 0 | 45 | 2 | 0 | 117 | 0 |
| 6:45 | AM | 0 | 7 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 18 | 0 | 52 | 4 | 0 | 134 | 445 |
| 7:00 | AM | 0 | 5 | 1 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 15 | 0 | 53 | 2 | 0 | 131 | 493 |
| 7:15 | AM | 0 | 12 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 66 | 17 | 0 | 60 | 8 | 0 | 172 | 554 |
| 7:30 | AM | 0 | 13 | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 105 | 20 | 0 | 83 | 8 | 0 | 237 | 674 |
| 7:45 | AM | 0 | 19 | 2 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 86 | 25 | 0 | 72 | 4 | 0 | 225 | 765 |
| 8:00 | AM | 0 | 22 | 1 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 87 | 17 | 0 | 81 | 13 | 0 | 253 | 887 |
| 8:15 | AM | 0 | 17 | 1 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 68 | 13 | 0 | 61 | 14 | 0 | 205 | 920 |
| 8:30 | AM | 0 | 17 | 1 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 12 | 0 | 67 | 10 | 0 | 195 | 878 |
|  | AM | 0 | 17 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 17 | 0 | 58 | 15 | 0 | 170 | 823 |
|  | AM | 0 | 10 | 2 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 51 | 6 | 0 | 43 | 19 | 0 | 149 | 719 |
| 9:15 | AM | 0 | 17 | 1 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 9 | 0 | 40 | 20 | 0 | 151 | 665 |
| 9:30 | AM | 0 | 23 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 7 | 0 | 57 | 11 | 0 | 167 | 637 |
| 9:45 | AM | 0 | 25 | 1 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 5 | 0 | 45 | 12 | 0 | 154 | 621 |
| Count | Total | 0 | 228 | 15 | 269 | 0 | 0 | 0 | 0 | 0 | 0 | 897 | 206 | 0 | 895 | 144 | 0 | 2,654 | 0 |
|  | All | 0 | 71 | 6 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 346 | 75 | 0 | 297 | 39 | 0 | 920 | 0 |
| Peak | HV | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 8 | 0 |
|  | HV\% | - | 1\% | 50\% | 0\% | - | - | - | - | - | - | 0\% | 1\% | - | 0\% | 8\% | - | 1\% | 0 |

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

| Interval Start | Heavy Vehicle Totals |  |  |  |  | Bicycles |  |  |  |  | Pedestrians (Crossing Leg) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 6:00 AM | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 1 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 2 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:00 AM | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:15 AM | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:30 AM | 2 | 0 | 0 | 1 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 9:45 AM | 0 | 0 | 3 | 2 | 5 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Count Total | 13 | 0 | 5 | 11 | 29 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour | 4 | 0 | 1 | 3 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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Four-Hour Count Summaries - Heavy Vehicles

| Interval Start | 1-80 EB Rampst-80 EB Ramps |  |  |  | I-80 EB Ramps |  |  |  | Hiddenbrooke Pkwy |  |  |  | Hiddenbrooke Pkwy |  |  |  | 15-min Total | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 6:00 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6:15 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 5 |
| 7:00 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 6 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 7:45 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 5 |
| 8:00 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 6 |
| 8:15 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 8 |
| 8:30 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 10 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 9:00 AM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 |
| 9:15 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 6 |
| 9:30 AM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 7 |
| 9:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 5 | 12 |
| Count Total | 0 | 1 | 7 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 7 | 4 | 0 | 29 | 0 |
| Peak Hour | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 8 | 0 |

Four-Hour Count Summaries - Bikes

| Interval Start | 1-80 EB Rampsi-80 EB Ramps |  |  | I-80 EB Ramps |  |  | Hiddenbrooke Pkwy |  |  | Hiddenbrooke Pkwy |  |  | 15-min <br> Total | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Eastbound |  |  | Westbound |  |  | Northbound |  |  | Southbound |  |  |  |  |
|  | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT |  |  |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 9:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 |
| Count Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Note: U-Turn volumes for bikes are included in Left-Turn, if any

Hiddenbrooke Pkwy I-80 EB Ramps


Four-Hour Count Summaries

| Interval Start |  | I-80 EB Rampst-80 EB Ramps |  |  |  | I-80 EB Ramps |  |  |  | Hiddenbrooke Pkwy |  |  |  | Hiddenbrooke Pkwy |  |  |  | $\begin{gathered} \text { 15-min } \\ \text { Total } \end{gathered}$ | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  |  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 4:45 | PM | 0 | 18 | 0 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 11 | 0 | 83 | 34 | 0 | 230 | 0 |
| 5:00 | PM | 0 | 15 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 14 | 0 | 86 | 35 | 0 | 239 | 0 |
| 5:15 | PM | 0 | 19 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 13 | 0 | 78 | 34 | 0 | 243 | 0 |
| 5:30 | PM | 0 | 24 | 2 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 12 | 0 | 74 | 23 | 0 | 235 | 947 |
|  | All | 0 | 76 | 2 | 221 | 0 | 0 | 0 | 0 | 0 | 0 | 151 | 50 | 0 | 321 | 126 | 0 | 947 | 0 |
| Peak | HV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | HV\% | - | 0\% | 0\% | 0\% | - | - | - | - | - | - | 0\% | 0\% | - | 0\% | 0\% | - | 0\% | 0 |

Note: For all three-hour count summary, see next page.

| Interval Start | Heavy Vehicle Totals |  |  |  |  | Bicycles |  |  |  |  | Pedestrians (Crossing Leg) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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| Four-Hour Count Summaries |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Interval Start |  | 1-80 EB Rampst-80 EB Ramps |  |  |  | I-80 EB Ramps |  |  |  | Hiddenbrooke Pkwy |  |  |  | Hiddenbrooke Pkwy |  |  |  | $\begin{gathered} \text { 15-min } \\ \text { Total } \end{gathered}$ | Rolling One Hour |
|  |  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  |  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 2:00 | PM | 0 | 18 | 4 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 52 | 6 | 0 | 64 | 28 | 0 | 196 | 0 |
| 2:15 | PM | 0 | 16 | 2 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 11 | 0 | 56 | 15 | 0 | 171 | 0 |
| 2:30 | PM | 0 | 21 | 1 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 7 | 0 | 72 | 15 | 0 | 197 | 0 |
| 2:45 | PM | 0 | 23 | 1 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 9 | 0 | 64 | 21 | 0 | 193 | 757 |
| 3:00 | PM | 0 | 19 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 6 | 0 | 56 | 21 | 0 | 184 | 745 |
| 3:15 | PM | 0 | 23 | 0 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 10 | 0 | 63 | 25 | 0 | 216 | 790 |
| 3:30 | PM | 0 | 20 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 9 | 0 | 76 | 18 | 0 | 204 | 797 |
| 3:45 | PM | 0 | 27 | 1 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 10 | 0 | 88 | 25 | 0 | 242 | 846 |
| 4:00 | PM | 0 | 17 | 1 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 11 | 0 | 80 | 26 | 0 | 214 | 876 |
| 4:15 | PM | 0 | 16 | 1 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 7 | 0 | 69 | 23 | 0 | 190 | 850 |
| 4:30 | PM | 0 | 18 | 1 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 9 | 0 | 66 | 23 | 0 | 198 | 844 |
| 4:45 | PM | 0 | 18 | 0 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 11 | 0 | 83 | 34 | 0 | 230 | 832 |
| 5:00 | PM | 0 | 15 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 14 | 0 | 86 | 35 | 0 | 239 | 857 |
| 5:15 | PM | 0 | 19 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 13 | 0 | 78 | 34 | 0 | 243 | 910 |
| 5:30 | PM | 0 | 24 | 2 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 12 | 0 | 74 | 23 | 0 | 235 | 947 |
| 5:45 | PM | 0 | 21 | 1 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 10 | 0 | 78 | 32 | 0 | 223 | 940 |
| Count | Total | 0 | 315 | 15 | 745 | 0 | 0 | 0 | 0 | 0 | 0 | 594 | 155 | 0 | 1,153 | 398 | 0 | 3,375 | 0 |
|  | All | 0 | 76 | 2 | 221 | 0 | 0 | 0 | 0 | 0 | 0 | 151 | 50 | 0 | 321 | 126 | 0 | 947 | 0 |
| Peak | HV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | HV\% | - | 0\% | 0\% | 0\% | - | - | - | - | - | - | 0\% | 0\% | - | 0\% | 0\% | - | 0\% | 0 |

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

| Interval Start | Heavy Vehicle Totals |  |  |  |  | Bicycles |  |  |  |  | Pedestrians (Crossing Leg) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 2:00 PM | 1 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:15 PM | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:30 PM | 3 | 0 | 1 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:45 PM | 1 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:30 PM | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00 PM | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Count Total | 8 | 0 | 6 | 3 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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Four-Hour Count Summaries - Heavy Vehicles

| Interval Start | 1-80 EB Rampst-80 EB Ramps |  |  |  | I-80 EB Ramps |  |  |  | Hiddenbrooke Pkwy |  |  |  | Hiddenbrooke Pkwy |  |  |  | $\begin{gathered} \text { 15-min } \\ \text { Total } \end{gathered}$ | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 2:00 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| 2:15 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 |
| 2:30 PM | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 5 | 0 |
| 2:45 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 13 |
| 3:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 3:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 3:30 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 |
| 3:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:00 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 3 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Count Total | 0 | 4 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 0 | 3 | 0 | 0 | 17 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Four-Hour Count Summaries - Bikes

| Interval Start | 1-80 EB Rampst-80 EB Ramps |  |  | I-80 EB Ramps |  |  | Hiddenbrooke Pkwy |  |  | Hiddenbrooke Pkwy |  |  | 15-min Total | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Eastbound |  |  | Westbound |  |  | Northbound |  |  | Southbound |  |  |  |  |
|  | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT |  |  |
| 2:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Count Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

## Hiddenbrooke Pkwy McGary Rd



Four-Hour Count Summaries

| Interval Start |  | McGary Rd |  |  |  | McGary Rd |  |  |  | Hiddenbrooke Pkwy |  |  |  | Hiddenbrooke Pkwy |  |  |  | $\begin{gathered} \text { 15-min } \\ \text { Total } \end{gathered}$ | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  |  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 7:3 | AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 123 | 1 | 0 | 2 | 11 | 1 | 140 | 0 |
| 7:4 | AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 108 | 4 | 0 | 1 | 19 | 0 | 138 | 0 |
| 8:00 | AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 8 | 0 | 0 | 96 | 2 | 0 | 1 | 45 | 0 | 154 | 0 |
| 8:1 | AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 77 | 0 | 0 | 1 | 44 | 0 | 125 | 557 |
|  | All | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 16 | 0 | 0 | 404 | 7 | 0 | 5 | 119 | 1 | 557 | 0 |
| Peak <br> Hour | HV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 4 | 0 |
|  | HV\% | - | 0\% | - | - | - | 0\% | - | 0\% | - | - | 0\% | 0\% | - | 20\% | 2\% | 0\% | 1\% | 0 |

Note: For all three-hour count summary, see next page.

| Interval Start | Heavy Vehicle Totals |  |  |  |  | Bicycles |  |  |  |  | Pedestrians (Crossing Leg) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour | 0 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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| Four-Hour Count Summaries |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Interval Start |  | McGary Rd |  |  |  | McGary Rd |  |  |  | Hiddenbrooke Pkwy |  |  |  | Hiddenbrooke Pkwy |  |  |  | $\begin{gathered} \text { 15-min } \\ \text { Total } \end{gathered}$ | Rolling One Hour |
|  |  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  |  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 6:00 | AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 0 | 0 | 1 | 5 | 0 | 42 | 0 |
| 6:15 | AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 47 | 0 | 0 | 0 | 9 | 0 | 57 | 0 |
| 6:30 | AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 57 | 0 | 1 | 0 | 3 | 0 | 63 | 0 |
| 6:45 | AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 60 | 0 | 0 | 1 | 10 | 1 | 75 | 237 |
| 7:00 | AM | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 60 | 1 | 0 | 1 | 10 | 1 | 76 | 271 |
| 7:15 | AM | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 81 | 1 | 0 | 0 | 17 | 0 | 104 | 318 |
| 7:30 | AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 123 | 1 | 0 | 2 | 11 | 1 | 140 | 395 |
| 7:45 | AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 108 | 4 | 0 | 1 | 19 | 0 | 138 | 458 |
| 8:00 | AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 8 | 0 | 0 | 96 | 2 | 0 | 1 | 45 | 0 | 154 | 536 |
| 8:15 | AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 77 | 0 | 0 | 1 | 44 | 0 | 125 | 557 |
|  | AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 0 | 57 | 1 | 0 | 3 | 46 | 0 | 114 | 531 |
|  | AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 52 | 0 | 0 | 4 | 32 | 0 | 94 | 487 |
|  | AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 55 | 0 | 0 | 2 | 34 | 1 | 95 | 428 |
|  | AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 49 | 1 | 1 | 2 | 36 | 0 | 92 | 395 |
|  | AM | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 51 | 0 | 0 | 1 | 32 | 1 | 90 | 371 |
| 9:45 | AM | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 4 | 1 | 0 | 45 | 0 | 0 | 3 | 30 | 0 | 86 | 363 |
| Count | Total | 0 | 7 | 0 | 0 | 0 | 17 | 0 | 41 | 1 | 1 | 1,054 | 11 | 2 | 23 | 383 | 5 | 1,545 | 0 |
|  | All | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 16 | 0 | 0 | 404 | 7 | 0 | 5 | 119 | 1 | 557 | 0 |
| Peak | HV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 4 | 0 |
|  | HV\% | - | 0\% | - | - | - | 0\% | - | 0\% | - | - | 0\% | 0\% | - | 20\% | 2\% | 0\% | 1\% | 0 |

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

| Interval Start | Heavy Vehicle Totals |  |  |  |  | Bicycles |  |  |  |  | Pedestrians (Crossing Leg) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 6:00 AM | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:00 AM | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:15 AM | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| 9:30 AM | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 9:45 AM | 0 | 0 | 3 | 0 | 3 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Count Total | 0 | 0 | 5 | 9 | 14 | 2 | 1 | 0 | 0 | 3 | 0 | 1 | 1 | 0 | 2 |
| Peak Hour | 0 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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Four-Hour Count Summaries - Heavy Vehicles

| Interval Start | McGary Rd |  |  |  | McGary Rd |  |  |  | Hiddenbrooke Pkwy |  |  |  | Hiddenbrooke Pkwy |  |  |  | 15-min Total | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 9:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| 9:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| 9:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 |
| 9:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 7 |
| Count Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 8 | 0 | 14 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 4 | 0 |

Four-Hour Count Summaries - Bikes

| Interval Start | McGary Rd |  |  | McGary Rd |  |  | Hiddenbrooke Pkwy |  |  | Hiddenbrooke Pkwy |  |  | 15-min Total | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Eastbound |  |  | Westbound |  |  | Northbound |  |  | Southbound |  |  |  |  |
|  | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT |  |  |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:30 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 9:45 AM | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 |
| Count Total | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Note: U-Turn volumes for bikes are included in Left-Turn, if any

## Hiddenbrooke Pkwy McGary Rd



Four-Hour Count Summaries

| Interval Start |  | McGary Rd |  |  |  | McGary Rd |  |  |  | Hiddenbrooke Pkwy |  |  |  | Hiddenbrooke Pkwy |  |  |  | $\begin{gathered} \text { 15-min } \\ \text { Total } \end{gathered}$ | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  |  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 4:45 | PM | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 36 | 3 | 0 | 7 | 80 | 2 | 134 | 0 |
| 5:00 | PM | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 52 | 2 | 0 | 5 | 76 | 0 | 141 | 0 |
| 5:15 | PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 49 | 1 | 0 | 4 | 87 | 1 | 145 | 0 |
| 5:30 | PM | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 49 | 0 | 0 | 8 | 76 | 1 | 139 | 559 |
|  | All | 0 | 3 | 0 | 0 | 0 | 5 | 0 | 12 | 0 | 0 | 186 | 6 | 0 | 24 | 319 | 4 | 559 | 0 |
| Peak <br> Hour | HV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | HV\% | - | 0\% | - | - | - | 0\% | - | 0\% | - | - | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | 0 |

Note: For all three-hour count summary, see next page.

| Interval Start | Heavy Vehicle Totals |  |  |  |  | Bicycles |  |  |  |  | Pedestrians (Crossing Leg) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 |

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| Four-Hour Count Summaries |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Interval Start |  | McGary Rd |  |  |  | McGary Rd |  |  |  | Hiddenbrooke Pkwy |  |  |  | Hiddenbrooke Pkwy |  |  |  | 15-min Total | Rolling One Hour |
|  |  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  |  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
|  | PM | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 52 | 0 | 0 | 5 | 46 | 1 | 110 | 0 |
|  | PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 48 | 1 | 0 | 2 | 46 | 0 | 101 | 0 |
| 2:30 | PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 0 | 0 | 2 | 53 | 1 | 102 | 0 |
| 2:4 | PM | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 47 | 1 | 0 | 3 | 50 | 0 | 107 | 420 |
| 3:00 | PM | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 42 | 1 | 0 | 3 | 61 | 1 | 113 | 423 |
| 3:1 | PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 42 | 1 | 1 | 4 | 81 | 0 | 131 | 453 |
| 3:30 | PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 43 | 0 | 0 | 3 | 53 | 5 | 107 | 458 |
| 3:4 | PM | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 0 | 44 | 1 | 0 | 4 | 71 | 1 | 128 | 479 |
| 4:00 | PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 41 | 1 | 0 | 4 | 67 | 0 | 116 | 482 |
|  | PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 35 | 1 | 0 | 4 | 62 | 1 | 107 | 458 |
|  | PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 35 | 0 | 0 | 5 | 72 | 0 | 113 | 464 |
| 4:4 | PM | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 36 | 3 | 0 | 7 | 80 | 2 | 134 | 470 |
| 5:00 | PM | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 52 | 2 | 0 | 5 | 76 | 0 | 141 | 495 |
| 5:15 | PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 49 | 1 | 0 | 4 | 87 | 1 | 145 | 533 |
| 5:30 | PM | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 49 | 0 | 0 | 8 | 76 | 1 | 139 | 559 |
| 5:4 | PM | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 0 | 33 | 0 | 0 | 3 | 81 | 0 | 125 | 550 |
| Count | Total | 0 | 10 | 1 | 2 | 0 | 13 | 1 | 42 | 0 | 0 | 694 | 13 | 1 | 66 | 1,062 | 14 | 1,919 | 0 |
|  | All | 0 | 3 | 0 | 0 | 0 | 5 | 0 | 12 | 0 | 0 | 186 | 6 | 0 | 24 | 319 | 4 | 559 | 0 |
| Peak | HV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | HV\% | - | 0\% | - | - | - | 0\% | - | 0\% | - | - | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | 0 |

Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

| Interval Start | Heavy Vehicle Totals |  |  |  |  | Bicycles |  |  |  |  | Pedestrians (Crossing Leg) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 2:00 PM | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:15 PM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:30 PM | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:45 PM | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 3:45 PM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Count Total | 0 | 0 | 8 | 2 | 10 | 3 | 1 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 |

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Four-Hour Count Summaries - Heavy Vehicles

| Interval Start | McGary Rd |  |  |  | McGary Rd |  |  |  | Hiddenbrooke Pkwy |  |  |  | Hiddenbrooke Pkwy |  |  |  | 15-min Total | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Eastbound |  |  |  | Westbound |  |  |  | Northbound |  |  |  | Southbound |  |  |  |  |  |
|  | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT |  |  |
| 2:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 2:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 3 | 0 |
| 2:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 3 | 9 |
| 3:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 3:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 3:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 3:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Count Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 2 | 0 | 10 | 0 |
| Peak Hour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Four-Hour Count Summaries - Bikes

| Interval Start | McGary Rd |  |  | McGary Rd |  |  | Hiddenbrooke Pkwy |  |  | Hiddenbrooke Pkwy |  |  | 15-min <br> Total | Rolling One Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Eastbound |  |  | Westbound |  |  | Northbound |  |  | Southbound |  |  |  |  |
|  | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT |  |  |
| 2:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:30 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 3:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 5:00 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 5:15 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| 5:30 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Count Total | 0 | 0 | 3 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 6 | 0 |
| Peak Hour | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |

Note: U-Turn volumes for bikes are included in Left-Turn, if any

PeMS - Caltrans Edition
Aggregates>Time of Day

## Flow (Veh/Hour)

13,580 Lane Points ( $98 \%$ Observed)
Mainline VDS 411793 - oppo 800' E of WB 37 Connector - I80-E Sat 02/01/2020 00:00:00 to Sat 02/29/2020 23:59:59 (Days=Tu,We,Th)


Minimum - $\quad$ Mean $\longrightarrow$ Maximum —

| Time | Minimum | Mean | Maximum | \# Lane Points | \% Observed |
| :--- | ---: | ---: | ---: | ---: | ---: |
| $00: 00$ | 57.00 | 183.58 | 544.00 | 576 | 100.0 |
| $01: 00$ | 12.00 | 27.83 | 47.00 | 576 | 100.0 |
| $02: 00$ | 0.00 | 23.75 | 43.00 | 576 | 100.0 |
| $03: 00$ | 17.00 | 37.17 | 60.00 | 576 | 100.0 |
| $04: 00$ | 23.00 | 97.00 | 259.00 | 576 | 100.0 |
| $05: 00$ | 742.00 | 976.00 | $1,146.00$ | 576 | 100.0 |
| $06: 00$ | $2,088.00$ | $2,221.25$ | $2,404.00$ | 576 | 98.6 |
| $07: 00$ | $2,995.00$ | $3,225.00$ | $3,425.00$ | 576 | 97.2 |
| $08: 00$ | $3,004.00$ | $3,166.17$ | $3,376.00$ | 576 | 100.0 |
| $09: 00$ | $2,616.00$ | $2,788.92$ | $3,000.00$ | 576 | 100.0 |
| $10: 00$ | $2,705.00$ | $2,992.83$ | $3,297.00$ | 576 | 96.5 |
| $11: 00$ | $2,567.00$ | $3,228.33$ | $3,529.00$ | 576 | 91.7 |
| $12: 00$ | $2,863.00$ | $3,520.75$ | $3,945.00$ | 576 | 91.7 |
| $13: 00$ | $2,976.00$ | $3,735.33$ | $4,408.00$ | 576 | 98.6 |
| $14: 00$ | $3,188.00$ | $4,139.17$ | $4,702.00$ | 576 | 100.0 |
| $15: 00$ | $3,280.00$ | $4,247.58$ | $4,659.00$ | 576 | 100.0 |
| $16: 00$ | $3,776.00$ | $4,633.42$ | $5,040.00$ | 576 | 100.0 |
| $17: 00$ | $4,497.00$ | $4,704.50$ | $5,001.00$ | 572 | 100.0 |
| $18: 00$ | $3,500.00$ | $3,831.08$ | $4,187.00$ | 576 | 100.0 |
| $19: 00$ | $3,209.00$ | $3,394.08$ | $3,666.00$ | 576 | 100.0 |
| $20: 00$ | $2,424.00$ | $2,931.33$ | $3,637.00$ | 576 | 97.9 |
| $21: 00$ | $2,002.00$ | $2,333.83$ | $2,853.00$ | 576 | 92.4 |
| $22: 00$ | $1,329.00$ | $1,616.58$ | $1,922.00$ | 576 | 93.8 |
| $23: 00$ | 920.00 | $1,137.92$ | $1,334.00$ | 576 | 100.0 |

PeMS - Caltrans Edition
Aggregates>Time of Day

## PeMS Report Description

Report Report link

Report Parameters

|  | orm=1\&dnode=VDS\&content=\| |
| :---: | :---: |
|  | oops\&tab=det tod\&station id= |
|  | 411793\&s_time id $=158051520$ |
|  | 0\&s time id_f=02\%2F01\%2F2 |
|  | 020\&e _time id $=1583020740$ \&e |
|  | time_id $f=02 \% 2 F 29 \% 2 F 2020$ |
|  | \&dow 2=on\&dow 3=on\&dow |
|  | $4=$ n \&q=flow\&fn $=1$ \&pct $1=25$ \&p |
|  | $\underline{\text { ct2 } 2=75}$ |
| Report generated | 06/30/2020 14:40 |
| PeMS version | caltrans_pems-19.0.0 |
| Parameter | Value |
| Quantity | Flow |
| Data | 13,820 Lane Points |
| Data Quality | 98.3\% Observed |
| Segment Type | VDS |
| Segment Name | Mainline VDS 411793 - oppo |
|  | 800' E of WB 37 Connector |
| start date | 02/01/2020 00:00:00 |
| end date | 02/29/2020 23:59:59 |

PeMS - Caltrans Edition
Aggregates>Time of Day

Flow (Veh/Hour)
13,608 Lane Points (98\% Observed)
Mainline VDS 410824-1/2 m. E of American Canyon Rd - I80-W
Sat 02/01/2020 00:00:00 to Sat 02/29/2020 23:59:59 (Days=Tu,We,Th)


Minimum - $\quad$ Mean $\longrightarrow$ Maximum $\sim^{*}$

| Time | Minimum | Mean | Maximum | \# Lane Points | \% Observed |
| :--- | ---: | ---: | ---: | ---: | ---: |
| $00: 00$ | 301.00 | 438.92 | 534.00 | 576 | 100.0 |
| $01: 00$ | 165.00 | 364.42 | 419.00 | 576 | 100.0 |
| $02: 00$ | 325.00 | 442.67 | 496.00 | 576 | 100.0 |
| $03: 00$ | 531.00 | 931.25 | $1,038.00$ | 576 | 100.0 |
| $04: 00$ | $1,877.00$ | $3,033.83$ | $3,376.00$ | 576 | 100.0 |
| $05: 00$ | $2,092.00$ | $4,048.00$ | $4,492.00$ | 576 | 100.0 |
| $06: 00$ | $1,772.00$ | $3,839.50$ | $4,572.00$ | 576 | 97.9 |
| $07: 00$ | $2,661.00$ | $4,217.00$ | $4,968.00$ | 576 | 97.2 |
| $08: 00$ | $2,781.00$ | $3,871.17$ | $4,200.00$ | 576 | 100.0 |
| $09: 00$ | $2,199.00$ | $3,380.92$ | $3,666.00$ | 576 | 99.3 |
| $10: 00$ | $2,589.00$ | $3,302.67$ | $3,597.00$ | 576 | 100.0 |
| $11: 00$ | $2,607.00$ | $3,302.67$ | $3,684.00$ | 576 | 94.4 |
| $12: 00$ | $3,059.00$ | $3,375.00$ | $3,656.00$ | 576 | 91.7 |
| $13: 00$ | $2,207.00$ | $3,276.25$ | $3,662.00$ | 576 | 98.6 |
| $14: 00$ | $2,600.00$ | $3,410.92$ | $3,984.00$ | 576 | 100.0 |
| $15: 00$ | $2,808.00$ | $3,566.58$ | $4,012.00$ | 576 | 100.0 |
| $16: 00$ | $2,966.00$ | $3,769.50$ | $4,168.00$ | 576 | 100.0 |
| $17: 00$ | $2,845.00$ | $3,674.83$ | $4,055.00$ | 572 | 100.0 |
| $18: 00$ | $2,536.00$ | $2,917.42$ | $3,240.00$ | 576 | 100.0 |
| $19: 00$ | $1,702.00$ | $2,327.33$ | $2,658.00$ | 576 | 100.0 |
| $20: 00$ | $1,219.00$ | $1,960.08$ | $2,224.00$ | 576 | 97.9 |
| $21: 00$ | $1,251.00$ | $1,655.00$ | $1,913.00$ | 576 | 92.4 |
| $22: 00$ | 730.00 | $1,170.42$ | $1,314.00$ | 576 | 93.8 |
| $23: 00$ | 618.00 | 771.42 | 891.00 | 576 | 100.0 |

PeMS - Caltrans Edition
Aggregates>Time of Day

## PeMS Report Description

Report Report link

Report Parameters

|  | orm=1\&dnode=VDS\&content=\| |
| :---: | :---: |
|  | oops\&tab=det tod\&station id= |
|  | 410824\&s time id=158051520 |
|  | 0\&s_time id f=02\%2F01\%2F2 |
|  | 020\&e time id $=1583020740$ \&e |
|  | time_id f=02\%2F29\%2F2020 |
|  | \&dow 2=on\&dow 3=0n\&dow |
|  | $4=0 n \& q=$ flow\&fn $=1$ \&pct $1=25 \& p$ |
|  | $\underline{c t 2}=75$ |
| Report generated | 06/30/2020 14:41 |
| PeMS version | caltrans_pems-19.0.0 |
| Parameter | Value |
| Quantity | Flow |
| Data | 13,820 Lane Points |
| Data Quality | 98.5\% Observed |
| Segment Type | VDS |
| Segment Name | Mainline VDS 410824-1/2 m. E of American Canyon Rd |
| start date | 02/01/2020 00:00:00 |
| end date | 02/29/2020 23:59:59 |

## Appendix C: Model Outputs

FehrłPeers

SNABM Model
2018/09/19 Version from CS (Pre-County Split)
Scenario Year 2015
AM 4 Hour Peak Period Volumes

SNABM Model
Version from CS (Pre-County Split)
Scenario Year 2015
PM 4 Hour Peak Period Volumes


SNABM Model
2018/09/19 Version from CS (Pre-County Split)
Scenario Year 2040
AM 4 Hour Peak Period Volume

SNABM Model
2018/09/19 Version from CS (Pre-County Split)
Scenario Year 2040

## Appendix D: Hiddenbrooke Trip Generation

| Trip Generation of Remaining Hiddenbrooke Land Uses |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | Amount |  | $\begin{gathered} \hline \text { ITE } \\ \text { Code } \end{gathered}$ | Trip Rates |  |  | Daily Trips | AM Pk Hour Trips |  |  | PM Pk Hour Trips |  |  |
| Land Use | Units | Quantity |  | Daily | AM | PM |  | In | Out | Total | In | Out | Total |
| ITE (Single-family Residential) | du ${ }^{1}$ | 108 | 210 | 9.44 | 0.74 | 0.99 | 1,020 | 20 | 60 | 80 | 67 | 40 | 107 |

Notes: Trip Generation, 10th Edition (Institute of Transportation Engineers) was used to develop trip generation rates.

1. $d u=d w e l l i n g ~ u n i t ~$

Source: Fehr \& Peers, 2020

## Appendix E: SimTraffic and HCS Outputs

## HCS7 Freeway Facilities Report

## Project Information

| Analyst | Fehr \& Peers | Date | $6 / 30 / 2020$ |
| :--- | :--- | :--- | :--- |
| Agency | Caltrans \& City of Vallejo | Analysis Year | 2020 |
| Jurisdiction | Caltrans | Time Period Analyzed | AM Peak Hour |
| Project Description | I-80 Hiddenbrooke TOAR | Unit | United States Customary |

Facility Global Input

| Jam Density, pc/mi/ln | 190.0 | Density at Capacity, pc/mi/ln | 45.0 |
| :--- | :--- | :--- | :--- |
| Queue Discharge Capacity Drop, \% | 7 | Total Segments | 3 |
| Total Time Periods | 1 | Time Period Duration, min | 15 |
| Facility Length, mi | 0.99 |  |  |

Facility Segment Data

| No. | Coded | Analyzed | Name | Length, ft | Lanes |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Diverge | Diverge | I-80 EB - American Canyon Road OffRamp | 1500 | 4 |
| 2 | Basic | Basic | I-80 EB - American Canyon Road Offto On-Ramp | 2220 | 4 |
| 3 | Merge | Merge | I-80 EB - American Canyon Road OnRamp | 1500 | 4 |

## Facility Segment Data

Segment 1: Diverge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c <br> Ratio |  | Speed (mi/h) |  | $\begin{aligned} & \text { Density } \\ & (\mathrm{pc} / \mathrm{mi} / \mathrm{ln}) \end{aligned}$ |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.74 | 0.943 | 0.971 | 3638 | 227 | 9600 | 2100 | 0.38 | 0.11 | 72.8 | 64.5 | 12.5 | 17.4 | B |

## Segment 2: Basic

| Time <br> Period | PHF | fHV | Flow Rate <br> (pc/h) | Capacity <br> $\mathbf{( p c / h})$ | $\mathbf{d} / \mathbf{c}$ <br> Ratio | Speed <br> $(\mathbf{m i} / \mathbf{h})$ | Density <br> $\mathbf{( p c / m i / l n )}$ | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.94 | 0.943 | 3454 | 9600 | 0.36 | 74.9 | 11.5 | B |

Segment 3: Merge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c Ratio |  | Speed (mi/h) |  | Density ( $\mathrm{pc} / \mathrm{mi} / \mathrm{ln}$ ) |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.91 | 0.943 | 0.971 | 3884 | 430 | 9600 | 2100 | 0.40 | 0.20 | 68.8 | 64.4 | 14.1 | 17.8 | B |

Facility Time Period Results

| T | Speed, mi/h | Density, pc/mi/ln | Density, veh/mi/ln | Travel Time, min | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 72.3 | 12.5 | 11.8 | 0.80 | B |
| Facility Overall Results |  |  |  |  |  |
| Space Mean Speed, mi/h |  | 72.3 | Density, veh/mi/ln |  | 11.8 |
| Avera | l Time, min | 0.80 | Density, pc/mi/ln |  | 12.5 |


| Messages |  |
| :--- | :--- |
| WARNING 1 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| WARNING 2 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| Comments |  |





## HCS7 Freeway Facilities Report

## Project Information

| Analyst | Fehr \& Peers | Date | $6 / 30 / 2020$ |
| :--- | :--- | :--- | :--- |
| Agency | Caltrans \& City of Vallejo | Analysis Year | 2020 |
| Jurisdiction | Caltrans | Time Period Analyzed | PM Peak Hour |
| Project Description | I-80 Hiddenbrooke TOAR | Unit | United States Customary |

Facility Global Input

| Jam Density, pc/mi/ln | 190.0 | Density at Capacity, pc/mi/ln | 45.0 |
| :--- | :--- | :--- | :--- |
| Queue Discharge Capacity Drop, \% | 7 | Total Segments | 3 |
| Total Time Periods | 1 | Time Period Duration, min | 15 |
| Facility Length, mi | 0.99 |  |  |

Facility Segment Data

| No. | Coded | Analyzed | Name | Length, ft | Lanes |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Diverge | Diverge | I-80 EB - American Canyon Road OffRamp | 1500 | 4 |
| 2 | Basic | Basic | I-80 EB - American Canyon Road Offto On-Ramp | 2220 | 4 |
| 3 | Merge | Merge | I-80 EB - American Canyon Road OnRamp | 1500 | 4 |

## Facility Segment Data

Segment 1: Diverge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c <br> Ratio |  | Speed (mi/h) |  | $\begin{aligned} & \text { Density } \\ & (\mathrm{pc} / \mathrm{mi} / \mathrm{ln}) \end{aligned}$ |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.87 | 0.943 | 0.971 | 5307 | 412 | 9600 | 2100 | 0.55 | 0.20 | 71.7 | 63.9 | 18.5 | 24.6 | C |

## Segment 2: Basic

| Time <br> Period | PHF | fHV | Flow Rate <br> (pc/h) | Capacity <br> $\mathbf{( p c / h})$ | $\mathbf{d} / \mathbf{c}$ <br> Ratio | Speed <br> $(\mathbf{m i} / \mathbf{h})$ | Density <br> $\mathbf{( p c / m i / I n )}$ | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.94 | 0.943 | 4914 | 9600 | 0.51 | 74.4 | 16.5 | B |

Segment 3: Merge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | $d / c$Ratio |  | Speed (mi/h) |  | Density (pc/mi/ln) |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.97 | 0.943 | 0.971 | 5317 | 403 | 9600 | 2100 | 0.55 | 0.19 | 67.9 | 63.8 | 19.6 | 22.1 | C |

Facility Time Period Results

| T | Speed, mi/h | Density, pc/mi/ln | Density, veh/mi/ln | Travel Time, min | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 71.6 | 18.0 | 17.0 | 0.80 | C |
| Facility Overall Results |  |  |  |  |  |
| Space Mean Speed, mi/h |  | 71.6 | Density, veh/mi/ln |  | 17.0 |
| Avera | l Time, min | 0.80 | Density, pc/mi/ln |  | 18.0 |


| Messages |  |
| :--- | :--- |
| WARNING 1 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| WARNING 2 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| Comments |  |





## HCS7 Freeway Facilities Report

## Project Information

| Analyst | Fehr \& Peers | Date | $6 / 30 / 2020$ |
| :--- | :--- | :--- | :--- |
| Agency | Caltrans \& City of Vallejo | Analysis Year | 2020 |
| Jurisdiction | Caltrans | Time Period Analyzed | AM Peak Hour |
| Project Description | I-80 Hiddenbrooke TOAR | Unit | United States Customary |

Facility Global Input

| Jam Density, pc/mi/ln | 190.0 | Density at Capacity, pc/mi/ln | 45.0 |
| :--- | :--- | :--- | :--- |
| Queue Discharge Capacity Drop, \% | 7 | Total Segments | 3 |
| Total Time Periods | 1 | Time Period Duration, min | 15 |
| Facility Length, mi | 0.93 |  |  |

Facility Segment Data

| No. | Coded | Analyzed | Name | Length, ft | Lanes |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Diverge | Diverge | I-80 WB - American Canyon Road Off- <br> Ramp | 1500 | 4 |
| 2 | Basic | Basic | I-80 WB - American Canyon Road Off- <br> to On-Ramp | 1900 | 4 |
| 3 | Merge | Merge | I-80 WB - American Canyon Road On- <br> Ramp | 1500 | 4 |

## Facility Segment Data

Segment 1: Diverge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c <br> Ratio |  | Speed (mi/h) |  | Density ( $\mathrm{pc} / \mathrm{mi} / \mathrm{ln}$ ) |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.69 | 0.943 | 0.971 | 4757 | 352 | 9600 | 2100 | 0.50 | 0.17 | 72.1 | 64.1 | 16.5 | 22.4 | C |

## Segment 2: Basic

| Time <br> Period | PHF | fHV | Flow Rate <br> (pc/h) | Capacity <br> $\mathbf{( p c / h})$ | $\mathbf{d} / \mathbf{c}$ <br> Ratio | Speed <br> $(\mathbf{m i} / \mathbf{h})$ | Density <br> $\mathbf{( p c / m i / I n )}$ | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.94 | 0.943 | 4491 | 9600 | 0.47 | 74.8 | 15.0 | B |

Segment 3: Merge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c <br> Ratio |  | Speed (mi/h) |  | Density (pc/mi/ln) |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.96 | 0.943 | 0.971 | 4880 | 389 | 9600 | 2100 | 0.51 | 0.19 | 68.2 | 64.2 | 17.9 | 20.4 | C |

Facility Time Period Results

| T | Speed, mi/h | Density, pc/mi/ln | Density, veh/mi/ln | Travel Time, min | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 71.8 | 16.4 | 15.4 | 0.80 | C |
| Facility Overall Results |  |  |  |  |  |
| Space Mean Speed, mi/h |  | 71.8 | Density, veh/mi/ln |  | 15.4 |
| Aver | lime, min | 0.80 | Density, pc/mi/ln |  | 16.4 |


| Messages |  |
| :--- | :--- |
| WARNING 1 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| WARNING 2 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| Comments |  |





## HCS7 Freeway Facilities Report

## Project Information

| Analyst | Fehr \& Peers | Date | $6 / 30 / 2020$ |
| :--- | :--- | :--- | :--- |
| Agency | Caltrans \& City of Vallejo | Analysis Year | 2020 |
| Jurisdiction | Caltrans | Time Period Analyzed | AM Peak Hour |
| Project Description | I-80 Hiddenbrooke TOAR | Unit | United States Customary |

Facility Global Input

| Jam Density, pc/mi/ln | 190.0 | Density at Capacity, pc/mi/ln | 45.0 |
| :--- | :--- | :--- | :--- |
| Queue Discharge Capacity Drop, \% | 7 | Total Segments | 3 |
| Total Time Periods | 1 | Time Period Duration, min | 15 |
| Facility Length, mi | 0.93 |  |  |

Facility Segment Data

| No. | Coded | Analyzed | Name | Length, ft | Lanes |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Diverge | Diverge | I-80 WB - American Canyon Road Off- <br> Ramp | 1500 | 4 |
| 2 | Basic | Basic | I-80 WB - American Canyon Road Off- <br> to On-Ramp | 1900 | 4 |
| 3 | Merge | Merge | I-80 WB - American Canyon Road On- <br> Ramp | 1500 | 4 |

## Facility Segment Data

Segment 1: Diverge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c <br> Ratio |  | Speed (mi/h) |  | Density ( $\mathrm{pc} / \mathrm{mi} / \mathrm{ln}$ ) |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.97 | 0.943 | 0.971 | 4252 | 437 | 9600 | 2100 | 0.44 | 0.21 | 71.9 | 63.9 | 14.8 | 20.9 | C |

## Segment 2: Basic

| Time <br> Period | PHF | fHV | Flow Rate <br> (pc/h) | Capacity <br> $\mathbf{( p c / h})$ | $\mathbf{d} / \mathbf{c}$ <br> Ratio | Speed <br> $\mathbf{( m i / h})$ | Density <br> $\mathbf{( p c / m i / l n )}$ | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.94 | 0.943 | 3787 | 9600 | 0.39 | 74.8 | 12.6 |  |

Segment 3: Merge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c <br> Ratio |  | Speed (mi/h) |  | Density (pc/mi/ln) |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.99 | 0.943 | 0.971 | 3977 | 190 | 9600 | 2100 | 0.41 | 0.09 | 69.0 | 64.7 | 14.4 | 16.7 | B |

Facility Time Period Results

| T | Speed, mi/h | Density, pc/mi/ln | Density, veh/mi/ln | Travel Time, min | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 72.0 | 13.8 | 13.1 | 0.80 | B |
| Facility Overall Results |  |  |  |  |  |
| Space Mean Speed, mi/h |  | 72.0 | Density, veh/mi/ln |  | 13.1 |
| Aver | lime, min | 0.80 | Density, pc/mi/ln |  | 13.8 |


| Messages |  |
| :--- | :--- |
| WARNING 1 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| WARNING 2 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| Comments |  |





## HCS7 Freeway Facilities Report

## Project Information

| Analyst | Fehr \& Peers | Date | $6 / 30 / 2020$ |
| :--- | :--- | :--- | :--- |
| Agency | Caltrans \& City of Vallejo | Analysis Year | 2024 |
| Jurisdiction | Caltrans | Time Period Analyzed | AM Peak Hour |
| Project Description | I-80 Hiddenbrooke TOAR | Unit | United States Customary |

Facility Global Input

| Jam Density, pc/mi/ln | 190.0 | Density at Capacity, pc/mi/ln | 45.0 |
| :--- | :--- | :--- | :--- |
| Queue Discharge Capacity Drop, \% | 7 | Total Segments | 3 |
| Total Time Periods | 1 | Time Period Duration, min | 15 |
| Facility Length, mi | 0.99 |  |  |

Facility Segment Data

| No. | Coded | Analyzed | Name | Length, ft | Lanes |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Diverge | Diverge | I-80 EB - American Canyon Road OffRamp | 1500 | 4 |
| 2 | Basic | Basic | I-80 EB - American Canyon Road Offto On-Ramp | 2220 | 4 |
| 3 | Merge | Merge | I-80 EB - American Canyon Road OnRamp | 1500 | 4 |

## Facility Segment Data

Segment 1: Diverge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c <br> Ratio |  | Speed (mi/h) |  | Density ( $\mathrm{pc} / \mathrm{mi} / \mathrm{ln}$ ) |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.76 | 0.943 | 0.971 | 3715 | 285 | 9600 | 2100 | 0.39 | 0.14 | 72.6 | 64.3 | 12.8 | 18.0 | B |

## Segment 2: Basic

| Time <br> Period | PHF | fHV | Flow Rate <br> ( $\mathbf{p c} / \mathbf{h})$ | Capacity <br> $\mathbf{( p c / h})$ | $\mathbf{d} / \mathbf{c}$ <br> Ratio | $\mathbf{S p e e d}$ <br> $\mathbf{( m i / h})$ | Density <br> $\mathbf{( p c / m i} / \mathbf{l n})$ | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.94 | 0.943 | 3478 | 9600 | 0.36 | 74.9 | 11.6 |  |

Segment 3: Merge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c <br> Ratio |  | Speed (mi/h) |  | Density ( $\mathrm{pc} / \mathrm{mi} / \mathrm{ln}$ ) |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.93 | 0.943 | 0.971 | 3987 | 509 | 9600 | 2100 | 0.42 | 0.24 | 68.6 | 64.4 | 14.5 | 18.4 | B |

Facility Time Period Results

| T | Speed, mi/h | Density, pc/mi/ln | Density, veh/mi/ln | Travel Time, min | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 72.2 | 12.8 | 12.1 | 0.80 | B |
| Facility Overall Results |  |  |  |  |  |
| Space Mean Speed, mi/h |  | 72.2 | Density, veh/mi/ln |  | 12.1 |
| Aver | lime, min | 0.80 | Density, pc/mi/ln |  | 12.8 |


| Messages |  |
| :--- | :--- |
| WARNING 1 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| WARNING 2 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| Comments |  |





## HCS7 Freeway Facilities Report

## Project Information

| Analyst | Fehr \& Peers | Date | $6 / 30 / 2020$ |
| :--- | :--- | :--- | :--- |
| Agency | Caltrans \& City of Vallejo | Analysis Year | 2024 |
| Jurisdiction | Caltrans | Time Period Analyzed | PM Peak Hour |
| Project Description | I-80 Hiddenbrooke TOAR | Unit | United States Customary |

Facility Global Input

| Jam Density, pc/mi/ln | 190.0 | Density at Capacity, pc/mi/ln | 45.0 |
| :--- | :--- | :--- | :--- |
| Queue Discharge Capacity Drop, \% | 7 | Total Segments | 3 |
| Total Time Periods | 1 | Time Period Duration, min | 15 |
| Facility Length, mi | 0.99 |  |  |

Facility Segment Data

| No. | Coded | Analyzed | Name | Length, ft | Lanes |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Diverge | Diverge | I-80 EB - American Canyon Road OffRamp | 1500 | 4 |
| 2 | Basic | Basic | I-80 EB - American Canyon Road Offto On-Ramp | 2220 | 4 |
| 3 | Merge | Merge | I-80 EB - American Canyon Road OnRamp | 1500 | 4 |

## Facility Segment Data

Segment 1: Diverge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c <br> Ratio |  | Speed (mi/h) |  | $\begin{aligned} & \text { Density } \\ & (\mathrm{pc} / \mathrm{mi} / \mathrm{ln}) \end{aligned}$ |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.89 | 0.943 | 0.971 | 5379 | 474 | 9600 | 2100 | 0.56 | 0.23 | 71.5 | 63.7 | 18.8 | 25.1 | C |

## Segment 2: Basic

| Time <br> Period | PHF | fHV | Flow Rate <br> (pc/h) | Capacity <br> $\mathbf{( p c / h})$ | $\mathbf{d} / \mathbf{c}$ <br> Ratio | Speed <br> $(\mathbf{m i} / \mathbf{h})$ | Density <br> $\mathbf{( p c / m i / l n )}$ | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.94 | 0.943 | 4916 | 9600 | 0.51 | 74.4 | 16.5 | B |

Segment 3: Merge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | $d / c$Ratio |  | Speed (mi/h) |  | Density (pc/mi/ln) |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.97 | 0.943 | 0.971 | 5383 | 467 | 9600 | 2100 | 0.56 | 0.22 | 67.8 | 63.7 | 19.8 | 22.6 | C |

Facility Time Period Results

| T | Speed, mi/h | Density, pc/mi/ln | Density, veh/mi/ln | Travel Time, min | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 71.5 | 18.1 | 17.1 | 0.80 | C |
| Facility Overall Results |  |  |  |  |  |
| Space Mean Speed, mi/h |  | 71.5 | Density, veh/mi/ln |  | 17.1 |
| Avera | lime, min | 0.80 | Density, pc/mi/ln |  | 18.1 |


| Messages |  |
| :--- | :--- |
| WARNING 1 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| WARNING 2 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| Comments |  |





## HCS7 Freeway Facilities Report

## Project Information

| Analyst | Fehr \& Peers | Date | $6 / 30 / 2020$ |
| :--- | :--- | :--- | :--- |
| Agency | Caltrans \& City of Vallejo | Analysis Year | 2024 |
| Jurisdiction | Caltrans | Time Period Analyzed | AM Peak Hour |
| Project Description | I-80 Hiddenbrooke TOAR | Unit | United States Customary |

Facility Global Input

| Jam Density, pc/mi/ln | 190.0 | Density at Capacity, pc/mi/ln | 45.0 |
| :--- | :--- | :--- | :--- |
| Queue Discharge Capacity Drop, \% | 7 | Total Segments | 3 |
| Total Time Periods | 1 | Time Period Duration, min | 15 |
| Facility Length, mi | 0.93 |  |  |

Facility Segment Data

| No. | Coded | Analyzed | Name | Length, ft | Lanes |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Diverge | Diverge | I-80 WB - American Canyon Road Off- <br> Ramp | 1500 | 4 |
| 2 | Basic | Basic | I-80 WB - American Canyon Road Off- <br> to On-Ramp | 1900 | 4 |
| 3 | Merge | Merge | I-80 WB - American Canyon Road On- <br> Ramp | 1500 | 4 |

## Facility Segment Data

Segment 1: Diverge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c <br> Ratio |  | Speed (mi/h) |  | $\begin{aligned} & \text { Density } \\ & (\mathrm{pc} / \mathrm{mi} / \mathrm{ln}) \end{aligned}$ |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.71 | 0.943 | 0.971 | 4823 | 421 | 9600 | 2100 | 0.50 | 0.20 | 71.8 | 63.9 | 16.8 | 22.9 | C |

## Segment 2: Basic

| Time <br> Period | PHF | fHV | Flow Rate <br> (pc/h) | Capacity <br> $\mathbf{( p c / h})$ | $\mathbf{d} / \mathbf{c}$ <br> Ratio | Speed <br> $(\mathbf{m i} / \mathbf{h})$ | Density <br> $\mathbf{( p c / m i / I n )}$ | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.94 | 0.943 | 4496 | 9600 | 0.47 | 74.8 | 15.0 | B |

Segment 3: Merge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | $d / c$Ratio |  | Speed (mi/h) |  | Density (pc/mi/ln) |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.96 | 0.943 | 0.971 | 4989 | 493 | 9600 | 2100 | 0.52 | 0.23 | 68.1 | 64.1 | 18.3 | 21.2 | C |

Facility Time Period Results

| T | Speed, mi/h | Density, pc/mi/ln | Density, veh/mi/ln | Travel Time, min | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 71.6 | 16.6 | 15.6 | 0.80 | C |
| Facility Overall Results |  |  |  |  |  |
| Space Mean Speed, mi/h |  | 71.6 | Density, veh/mi/ln |  | 15.6 |
| Aver | lime, min | 0.80 | Density, pc/mi/ln |  | 16.6 |


| Messages |  |
| :--- | :--- |
| WARNING 1 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
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| Comments |  |





## HCS7 Freeway Facilities Report

## Project Information

| Analyst | Fehr \& Peers | Date | $6 / 30 / 2020$ |
| :--- | :--- | :--- | :--- |
| Agency | Caltrans \& City of Vallejo | Analysis Year | 2024 |
| Jurisdiction | Caltrans | Time Period Analyzed | AM Peak Hour |
| Project Description | I-80 Hiddenbrooke TOAR | Unit | United States Customary |

Facility Global Input

| Jam Density, pc/mi/ln | 190.0 | Density at Capacity, pc/mi/ln | 45.0 |
| :--- | :--- | :--- | :--- |
| Queue Discharge Capacity Drop, \% | 7 | Total Segments | 3 |
| Total Time Periods | 1 | Time Period Duration, min | 15 |
| Facility Length, mi | 0.93 |  |  |

Facility Segment Data

| No. | Coded | Analyzed | Name | Length, ft | Lanes |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Diverge | Diverge | I-80 WB - American Canyon Road Off- <br> Ramp | 1500 | 4 |
| 2 | Basic | Basic | I-80 WB - American Canyon Road Off- <br> to On-Ramp | 1900 | 4 |
| 3 | Merge | Merge | I-80 WB - American Canyon Road On- <br> Ramp | 1500 | 4 |

## Facility Segment Data

Segment 1: Diverge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c <br> Ratio |  | Speed (mi/h) |  | $\begin{aligned} & \text { Density } \\ & (\mathrm{pc} / \mathrm{mi} / \mathrm{ln}) \end{aligned}$ |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.97 | 0.943 | 0.971 | 4349 | 499 | 9600 | 2100 | 0.45 | 0.24 | 71.6 | 63.7 | 15.2 | 21.5 | C |

## Segment 2: Basic

| Time <br> Period | PHF | fHV | Flow Rate <br> (pc/h) | Capacity <br> $\mathbf{( p c / h})$ | $\mathbf{d} / \mathbf{c}$ <br> Ratio | Speed <br> $\mathbf{( m i / h})$ | Density <br> $\mathbf{( p c / m i / l n )}$ | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.94 | 0.943 | 3819 | 9600 | 0.40 | 74.8 | 12.7 |  |

Segment 3: Merge

| Time Period | PHF |  | fHV |  | Flow Rate (pc/h) |  | Capacity (pc/h) |  | d/c <br> Ratio |  | Speed (mi/h) |  | Density ( $\mathrm{pc} / \mathrm{mi} / \mathrm{ln}$ ) |  | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | F | R | F | R | Freeway | Ramp | Freeway | Ramp | F | R | F | R | Freeway | Ramp |  |
| 1 | 0.94 | 0.99 | 0.943 | 0.971 | 4069 | 250 | 9600 | 2100 | 0.42 | 0.12 | 68.9 | 64.6 | 14.8 | 17.3 | B |

Facility Time Period Results

| T | Speed, mi/h | Density, pc/mi/ln | Density, veh/mi/ln | Travel Time, min | LOS |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 71.9 | 14.1 | 13.3 | 0.80 | C |
| Facility Overall Results |  |  |  |  |  |
| Space Mean Speed, mi/h |  | 71.9 | Density, veh/mi/ln |  | 13.3 |
| Aver | lime, min | 0.80 | Density, pc/mi/ln |  | 14.1 |


| Messages |  |
| :--- | :--- |
| WARNING 1 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| WARNING 2 | Beginning and ending the facility with a basic freeway segment is highly recommended. Use caution <br> when interpreting results of a Freeway Facility without a basic segment bounding the beginning and <br> end of the facility. |
| Comments |  |




Density Distribution
20


SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

I-80 Hiddenbrooke Interchange TOAR
Existing Conditions
AM Peak Hour

Intersection 1 American Canyon Rd/I-80 WB Ramps
All-way Stop

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn | 312 | 298 | 95.5\% | 9.1 | 0.6 | A |
|  | Through Right Turn | 116 | 120 | 103.6\% | 10.4 | 0.8 | B |
|  | Subtotal | 428 | 418 | 97.7\% | 9.5 | 0.6 | A |
| SB | Left Turn <br> Through <br> Right Turn | $\begin{gathered} 319 \\ 50 \end{gathered}$ | $\begin{gathered} 328 \\ 42 \end{gathered}$ | $\begin{gathered} 102.9 \% \\ 83.3 \% \end{gathered}$ | $\begin{gathered} 10.6 \\ 6.3 \end{gathered}$ | $\begin{aligned} & 1.2 \\ & 1.2 \end{aligned}$ | B |
|  | Right Turn |  |  |  |  |  | A |
|  | Subtotal | 369 | 370 | 100.2\% | 10.1 | 1.1 | B |
| EB | Left Turn <br> Through <br> Right Turn |  |  |  |  |  |  |
|  | Subtotal |  |  |  |  |  |  |
| WB | Left Turn | 17 | 10 | 61.3\% | 7.0 | 2.3 | A |
|  | Through | 1 | 1 | 74.4\% | 2.6 | 5.5 | A |
|  | Right Turn | 218 | 213 | 97.8\% | 4.5 | 0.5 | A |
|  | Subtotal | 236 | 224 | 95.0\% | 4.7 | 0.5 | A |
| Total |  | 1,033 | 1,012 | 98.0\% | 8.6 | 0.6 | A |

Intersection 2 American Canyon Rd/I-80 EB Ramps All-way Stop

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn |  |  |  |  |  |  |
|  | Through | 357 | 347 | 97.1\% | 7.0 | 0.3 | A |
|  | Right Turn | 77 | 73 | 95.2\% | 4.8 | 0.4 | A |
|  | Subtotal | 434 | 420 | 96.8\% | 6.6 | 0.3 | A |
| SB | Left Turn | 297 | 304 | 102.5\% | 9.5 | 0.5 | A |
|  | Through | 39 | 32 | 82.0\% | 10.3 | 0.6 | B |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal | 336 | 336 | 100.1\% | 9.6 | 0.5 | A |
| EB | Left Turn | 71 | 74 | 104.8\% | 6.2 | 0.9 | A |
|  | Through | 6 | 6 | 93.0\% | 9.3 | 4.0 | A |
|  | Right Turn | 86 | 87 | 101.7\% | 3.7 | 0.7 | A |
|  | Subtotal | 163 | 167 | 102.7\% | 5.0 | 0.7 | A |
| WB | Left Turn |  |  |  |  |  |  |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal |  |  |  |  |  |  |
| Total |  | 933 | 924 | 99.0\% | 7.4 | 0.3 | A |

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

I-80 Hiddenbrooke Interchange TOAR
Existing Conditions
AM Peak Hour

Side-street Stop

|  |  | Demand | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Direction | Movement | Volume (vph) | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn |  |  |  |  |  |  |
|  | Through | 409 | 397 | 97.0\% | 26.6 | 12.5 | D |
|  | Right Turn | 7 | 7 | 106.3\% | 12.5 | 9.0 | B |
|  | Subtotal | 416 | 404 | 97.2\% | 26.5 | 12.6 | D |
| SB | Left Turn | 5 | 4 | 81.8\% | 0.5 | 0.6 | A |
|  | Through | 119 | 114 | 96.0\% | 0.8 | 0.1 | A |
|  | Right Turn | 1 | 1 | 74.4\% | 0.0 | 0.1 | A |
|  | Subtotal | 125 | 119 | 95.2\% | 0.8 | 0.1 | A |
| EB | Left Turn | 1 | 2 | 186.0\% | 1.5 | 2.4 | A |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal | 1 | 2 | 186.0\% | 1.5 | 2.4 | A |
| WB | Left Turn | 4 | 3 | 74.4\% | 2.8 | 3.3 | A |
|  | Through |  |  |  |  |  |  |
|  | Right Turn | 24 | 21 | 88.4\% | 3.2 | 0.8 | A |
|  | Subtotal | 28 | 24 | 86.4\% | 3.4 | 0.9 | A |
| Total |  | 570 | 549 | 96.4\% | 19.7 | 8.5 | C |

SimTraffic Post-Processor
I-80 Hiddenbrooke Interchange TOAR
Average Results from 10 Runs Existing Conditions
Queue Length
AM Peak Hour

Intersection 1 American Canyon Rd/I-80 WB Ramps All-way Stop

Intersection $2 \quad$ American Canyon Rd/I-80 EB Ramps All-way Stop


SimTraffic Post-Processor
I-80 Hiddenbrooke Interchange TOAR
Average Results from 10 Runs
Queue Length

Intersection 3 Hiddenbrooke Parkway/McGary Rd
Side-street Stop

| Direction | Lane Group | Storage <br> (ft) | Average Queue (ft) |  | 95th Queue (ft) |  | Maximum Queue (ft) |  | Block Time |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Std. Dev. | Average | Std. Dev. | Average | Std. Dev. | Pocket | Upstream |
|  | Shared | 1,020 | 20 | 3 | 20 | 13 | 20 | 14 | 0\% | 0\% |
| EB |  |  |  |  |  |  |  |  |  |  |
|  | Shared | 900 | 160 | 62 | 260 | 116 | 240 | 117 | 0\% | 0\% |
| NB |  |  |  |  |  |  |  |  |  |  |
|  | Shared | 60 | 20 | 1 | 20 | 7 | 20 | 9 | 0\% | 0\% |
| SB |  |  |  |  |  |  |  |  |  |  |
| WB | Shared | 620 | 20 | 7 | 60 | 11 | 60 | 16 | 0\% | 0\% |
|  |  |  |  |  |  |  |  |  |  |  |

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Hiddenbrooke Interchange
Existing Conditions
PM Peak Hour

Intersection 1 American Canyon Rd/I-80 WB Ramps
All-way Stop

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn | 137 | 125 | 91.6\% | 8.3 | 0.6 | A |
|  | Through Right Turn | 90 | 89 | 99.3\% | 9.2 | 0.7 | A |
|  | Subtotal | 227 | 215 | 94.6\% | 8.7 | 0.6 | A |
| SB | Left Turn <br> Through | 383 | 372 | 97.1\% | 10.5 | 1.1 | B |
|  | Right Turn | 44 | 41 | 93.5\% | 5.8 | 1.6 | A |
|  | Subtotal | 427 | 413 | 96.8\% | 10.1 | 1.0 | B |
| EB | Left Turn <br> Through <br> Right Turn |  |  |  |  |  |  |
|  | Subtotal |  |  |  |  |  |  |
| WB | Left Turn | 83 | 77 | 92.6\% | 8.7 | 2.3 | A |
|  | Through | 2 | 1 | 39.2\% | 2.0 | 4.2 | A |
|  | Right Turn | 327 | 310 | 94.7\% | 6.1 | 0.8 | A |
|  | Subtotal | 412 | 387 | 94.0\% | 6.6 | 1.1 | A |
| Total |  | 1,066 | 1,015 | 95.2\% | 8.5 | 0.8 | A |

Intersection 2
American Canyon Rd/I-80 EB Ramps
All-way Stop


SimTraffic Post-Processor
Hiddenbrooke Interchange
Average Results from 10 Runs
Volume and Delay by Movement

Existing Conditions
PM Peak Hour

Intersection 3
Hiddenbrooke Parkway/McGary Rd
Side-street Stop

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn |  |  |  |  |  |  |
|  | Through | 186 | 189 | 101.4\% | 8.9 | 0.8 | A |
|  | Right Turn | 6 | 6 | 104.5\% | 3.4 | 3.3 | A |
|  | Subtotal | 192 | 195 | 101.5\% | 8.7 | 0.8 | A |
| SB | Left Turn | 24 | 19 | 78.4\% | 0.7 | 0.3 | A |
|  | Through | 385 | 378 | 98.2\% | 1.2 | 0.1 | A |
|  | Right Turn | 4 | 4 | 98.0\% | 0.6 | 0.5 | A |
|  | Subtotal | 413 | 401 | 97.0\% | 1.2 | 0.1 | A |
| EB | Left Turn | 3 | 4 | 117.6\% | 3.4 | 4.0 | A |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal | 3 | 4 | 117.6\% | 3.4 | 4.0 | A |
| WB | Left Turn | 6 | 5 | 84.9\% | 3.8 | 3.5 | A |
|  | Through |  |  |  |  |  |  |
|  | Right Turn | 12 | 11 | 94.7\% | 3.7 | 2.8 | A |
|  | Subtotal | 18 | 16 | 91.5\% | 4.7 | 2.8 | A |
| Total |  | 626 | 615 | 98.3\% | 3.7 | 0.6 | A |

SimTraffic Post-Processor
Hiddenbrooke Interchange Existing Conditions

PM Peak Hour

Intersection 1
American Canyon Rd/I-80 WB Ramps
All-way Stop

Intersection 2 American Canyon Rd/I-80 EB Ramps All-way Stop


SimTraffic Post-Processor
Hiddenbrooke Interchange
Average Results from 10 Runs
Queue Length Existing Conditions PM Peak Hour

Intersection 3 Hiddenbrooke Parkway/McGary Rd
Side-street Stop


SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

I-80 Hiddenbrooke Interchange TOAR
Opening Year 2024 (No Project)
AM Peak Hour

Intersection 1 American Canyon Rd/I-80 WB Ramps
All-way Stop

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn | 380 | 348 | 91.6\% | 10.8 | 0.8 | B |
|  | Through Right Turn | 140 | 144 | 103.1\% | 11.6 | 1.3 | B |
|  | Subtotal | 520 | 492 | 94.7\% | 11.0 | 0.8 | B |
| SB | Left Turn |  |  |  |  |  |  |
|  | Through | 390 | 401 | 102.7\% | 15.1 | 2.8 | C |
|  | Right Turn | 70 | 74 | 105.3\% | 10.8 | 3.8 | B |
|  | Subtotal | 460 | 474 | 103.1\% | 14.4 | 2.9 | B |
| EB | Left Turn |  |  |  |  |  |  |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal |  |  |  |  |  |  |
| WB | Left Turn | 30 | 27 | 89.9\% | 7.9 | 1.7 | A |
|  | Through | 10 | 12 | 121.6\% | 13.0 | 2.3 | B |
|  | Right Turn | 250 | 267 | 106.7\% | 5.7 | 0.9 | A |
|  | Subtotal | 290 | 306 | 105.5\% | 6.2 | 0.9 | A |
| Total |  | 1,270 | 1,273 | 100.2\% | 11.1 | 1.3 | B |

## Intersection 2 American Canyon Rd/I-80 EB Ramps All-way Stop

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn |  |  |  |  |  |  |
|  | Through | 420 | 384 | 91.5\% | 7.4 | 0.4 | A |
|  | Right Turn | 100 | 86 | 86.3\% | 5.2 | 0.5 | A |
|  | Subtotal | 520 | 470 | 90.5\% | 7.0 | 0.4 | A |
| SB | Left Turn | 350 | 354 | 101.2\% | 11.8 | 1.6 | B |
|  | Through | 70 | 74 | 105.3\% | 12.5 | 1.6 | B |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal | 420 | 428 | 101.9\% | 11.9 | 1.6 | B |
| EB | Left Turn | 100 | 110 | 110.2\% | 7.9 | 1.6 | A |
|  | Through | 10 | 12 | 121.6\% | 11.7 | 5.3 | B |
|  | Right Turn | 100 | 109 | 108.7\% | 5.1 | 1.4 | A |
|  | Subtotal | 210 | 231 | 110.0\% | 6.8 | 1.7 | A |
| WB | Left Turn |  |  |  |  |  |  |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal |  |  |  |  |  |  |
| Total |  | 1,150 | 1,129 | 98.2\% | 8.8 | 1.0 | A |

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

I-80 Hiddenbrooke Interchange TOAR
Opening Year 2024 (No Project)
AM Peak Hour

Side-street Stop
(sec/veh)

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn |  |  |  |  |  |  |
|  | Through | 480 | 432 | 90.0\% | 90.3 | 35.2 | F |
|  | Right Turn | 10 | 14 | 144.4\% | 89.0 | 44.2 | F |
|  | Subtotal | 490 | 447 | 91.1\% | 90.2 | 35.1 | F |
| SB | Left Turn | 10 | 7 | 72.2\% | 0.7 | 0.5 | A |
|  | Through | 150 | 166 | 110.5\% | 1.2 | 0.2 | A |
|  | Right Turn | 10 | 9 | 91.2\% | 0.5 | 0.3 | A |
|  | Subtotal | 170 | 182 | 107.1\% | 1.1 | 0.2 | A |
| EB | Left Turn | 10 | 7 | 68.4\% | 4.4 | 1.9 | A |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal | 10 | 7 | 68.4\% | 4.4 | 1.9 | A |
| WB | Left Turn | 10 | 10 | 95.0\% | 5.9 | 1.2 | A |
|  | Through |  |  |  |  |  |  |
|  | Right Turn | 30 | 33 | 108.9\% | 3.7 | 0.7 | A |
|  | Subtotal | 40 | 42 | 105.5\% | 4.2 | 0.7 | A |
| Total |  | 710 | 678 | 95.4\% | 59.6 | 21.8 | F |

SimTraffic Post-Processor
I-80 Hiddenbrooke Interchange TOAR
Average Results from 10 Runs Opening Year 2024 (No Project)
Queue Length

Intersection 1 American Canyon Rd/I-80 WB Ramps All-way Stop

| Direction | Lane Group | Storage (ft) | Average Queue (ft) |  | 95th Queue (ft) |  | Maximum Queue (ft) |  | Block Time |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Std. Dev. | Average | Std. Dev. | Average | Std. Dev. | Pocket | Upstream |
| NB | Left/Through | 440 | 80 | 7 | 120 | 10 | 120 | 14 | 0\% | 0\% |
|  |  |  |  |  |  |  |  |  |  |  |
| SB | Through/Right | 1,040 | 120 | 23 | 180 | 53 | 180 | 55 | 0\% | 0\% |
|  |  |  |  |  |  |  |  |  |  |  |
|  | Left/Through | 1,220 | 60 | 9 | 80 | 17 | 80 | 23 | 5\% | 0\% |
| WB | Right Turn | 40 |  | 4 |  | 11 | 80 | 14 | 27\% | 0\% |
|  |  |  |  |  |  |  |  |  |  |  |

Intersection 2 American Canyon Rd/I-80 EB Ramps All-way Stop


SimTraffic Post-Processor
I-80 Hiddenbrooke Interchange TOAR
Average Results from 10 Runs
Queue Length Opening Year 2024 (No Project) AM Peak Hour

Intersection $3 \quad$ Hiddenbrooke Parkway/McGary Rd
Side-street Stop


SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

I-80 Hiddenbrooke Interchange TOAR
Opening Year 2024 (No Project)
PM Peak Hour

Intersection 1 American Canyon Rd/I-80 WB Ramps
All-way Stop

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn | 170 | 161 | 94.5\% | 9.5 | 0.9 | A |
|  | Through Right Turn | 110 | 108 | 98.0\% | 10.3 | 0.9 | B |
|  | Subtotal | 280 | 269 | 95.9\% | 9.8 | 0.8 | A |
| SB | Left Turn |  |  |  |  |  |  |
|  | Through | 450 | 447 | 99.4\% | 12.9 | 2.0 | B |
|  | Right Turn | 60 | 49 | 81.0\% | 8.4 | 1.9 | A |
|  | Subtotal | 510 | 496 | 97.2\% | 12.4 | 2.0 | B |
| EB | Left Turn |  |  |  |  |  |  |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal |  |  |  |  |  |  |
| WB | Left Turn | 100 | 95 | 95.3\% | 9.6 | 1.8 | A |
|  | Through | 10 | 10 | 98.0\% | 10.6 | 4.1 | B |
|  | Right Turn | 360 | 358 | 99.3\% | 8.0 | 1.9 | A |
|  | Subtotal | 470 | 463 | 98.4\% | 8.4 | 1.7 | A |
| Total |  | 1,260 | 1,227 | 97.4\% | 10.4 | 1.4 | B |

## Intersection 2 American Canyon Rd/I-80 EB Ramps All-way Stop

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn |  |  |  |  |  |  |
|  | Through | 200 | 194 | 97.2\% | 6.6 | 0.3 | A |
|  | Right Turn | 60 | 64 | 107.1\% | 4.4 | 0.4 | A |
|  | Subtotal | 260 | 259 | 99.5\% | 6.1 | 0.3 | A |
| SB | Left Turn | 370 | 359 | 97.2\% | 17.1 | 6.1 | C |
|  | Through | 180 | 176 | 97.6\% | 18.6 | 5.5 | C |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal | 550 | 535 | 97.3\% | 17.6 | 5.8 | C |
| EB | Left Turn | 80 | 78 | 97.5\% | 10.5 | 1.3 | B |
|  | Through | 10 | 7 | 74.5\% | 11.3 | 6.6 | B |
|  | Right Turn | 320 | 309 | 96.7\% | 8.9 | 3.1 | A |
|  | Subtotal | 410 | 395 | 96.3\% | 9.3 | 2.5 | A |
| WB | Left Turn |  |  |  |  |  |  |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal |  |  |  |  |  |  |
| Total |  | 1,220 | 1,189 | 97.4\% | 12.3 | 3.2 | B |

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

I-80 Hiddenbrooke Interchange TOAR
Opening Year 2024 (No Project)
PM Peak Hour

Intersection 3
Hiddenbrooke Parkway/McGary Rd
Side-street Stop

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn |  |  |  |  |  |  |
|  | Through | 230 | 233 | 101.2\% | 11.2 | 2.1 | B |
|  | Right Turn | 10 | 9 | 90.2\% | 5.8 | 7.8 | A |
|  | Subtotal | 240 | 242 | 100.8\% | 11.0 | 2.0 | B |
| SB | Left Turn | 30 | 40 | 132.0\% | 0.9 | 0.2 | A |
|  | Through | 460 | 435 | 94.5\% | 1.3 | 0.1 | A |
|  | Right Turn | 10 | 9 | 90.2\% | 0.8 | 0.3 | A |
|  | Subtotal | 500 | 483 | 96.7\% | 1.2 | 0.1 | A |
| EB | Left Turn | 10 | 6 | 62.7\% | 5.7 | 4.6 | A |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal | 10 | 6 | 62.7\% | 5.7 | 4.6 | A |
| WB | Left Turn | 10 | 7 | 66.6\% | 4.5 | 2.6 | A |
|  | Through |  |  |  |  |  |  |
|  | Right Turn | 20 | 18 | 92.1\% | 6.5 | 3.1 | A |
|  | Subtotal | 30 | 25 | 83.6\% | 6.2 | 2.1 | A |
| Total |  | 780 | 757 | 97.0\% | 4.6 | 1.0 | A |

SimTraffic Post-Processor
I-80 Hiddenbrooke Interchange TOAR
Average Results from 10 Runs Opening Year 2024 (No Project)
Queue Length

Intersection 1 American Canyon Rd/I-80 WB Ramps All-way Stop

| Direction | Lane Group | Storage (ft) | Average Queue (ft) |  | 95th Queue (ft) |  | Maximum Queue (ft) |  | Block Time |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Std. Dev. | Average | Std. Dev. | Average | Std. Dev. | Pocket | Upstream |
| NB | Left/Through | 440 | 60 | 8 | 80 | 14 | 80 | 12 | 0\% | 0\% |
|  |  |  |  |  |  |  |  |  |  |  |
| SB | Through/Right | 1,040 | 100 | 15 | 160 | 41 | 180 | 51 | 0\% | 0\% |
|  |  |  |  |  |  |  |  |  |  |  |
| WB | Left/Through | 1,220 | 80 | 13 | 120 | 56 | 140 | 78 | 11\% | 0\% |
|  | Right Turn | 40 |  | 3 | 60 | 6 |  | 9 | 37\% | 0\% |
|  |  |  |  |  |  |  |  |  |  |  |

Intersection 2 American Canyon Rd/I-80 EB Ramps All-way Stop


SimTraffic Post-Processor
I-80 Hiddenbrooke Interchange TOAR
Average Results from 10 Runs
Queue Length
Opening Year 2024 (No Project) PM Peak Hour

Intersection 3 Hiddenbrooke Parkway/McGary Rd
Side-street Stop


SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

I-80 Hiddenbrooke Interchange TOAR
Opening Year 2024 (Signalized)
AM Peak Hour

Intersection 1 American Canyon Rd/I-80 WB Ramps
Signal

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn | 380 | 364 | 95.7\% | 30.0 | 2.7 | C |
|  | Through Right Turn | 140 | 145 | 103.4\% | 11.0 | 2.8 | B |
|  | Subtotal | 520 | 508 | 97.8\% | 24.5 | 2.6 | C |
| SB | Left Turn <br> Through | 390 | 376 | 96.5\% | 33.6 | 2.7 | C |
|  | Right Turn | 70 | 66 | 93.9\% | 7.9 | 2.0 | A |
|  | Subtotal | 460 | 442 | 96.1\% | 29.8 | 2.7 | C |
| EB | Left Turn <br> Through <br> Right Turn |  |  |  |  |  |  |
|  | Subtotal |  |  |  |  |  |  |
| WB | Left Turn | 30 | 29 | 97.5\% | 39.6 | 9.2 | D |
|  | Through | 10 | 9 | 91.2\% | 42.2 | 18.1 | D |
|  | Right Turn | 250 | 258 | 103.1\% | 6.8 | 1.2 | A |
|  | Subtotal | 290 | 296 | 102.1\% | 11.0 | 1.6 | B |
| Total |  | 1,270 | 1,246 | 98.1\% | 23.2 | 1.5 | C |

Intersection 2 American Canyon Rd/I-80 EB Ramps Signal

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn |  |  |  |  |  |  |
|  | Through | 420 | 412 | 98.0\% | 6.5 | 0.5 | A |
|  | Right Turn | 100 | 92 | 91.6\% | 4.7 | 1.1 | A |
|  | Subtotal | 520 | 503 | 96.8\% | 6.2 | 0.6 | A |
| SB | Left Turn | 350 | 337 | 96.3\% | 6.0 | 0.7 | A |
|  | Through | 70 | 69 | 98.3\% | 12.1 | 8.9 | B |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal | 420 | 406 | 96.6\% | 6.9 | 1.7 | A |
| EB | Left Turn | 100 | 96 | 96.1\% | 37.6 | 5.3 | D |
|  | Through | 10 | 10 | 95.0\% | 47.9 | 17.4 | D |
|  | Right Turn | 100 | 92 | 92.0\% | 5.9 | 2.0 | A |
|  | Subtotal | 210 | 198 | 94.1\% | 23.2 | 2.8 | C |
| WB | Left Turn |  |  |  |  |  |  |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal |  |  |  |  |  |  |
| Total |  | 1,150 | 1,107 | 96.2\% | 9.5 | 1.0 | A |

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

I-80 Hiddenbrooke Interchange TOAR
Opening Year 2024 (Signalized)
AM Peak Hour

Intersection 3
Hiddenbrooke Parkway/McGary Rd
Side-street Stop

|  |  | Demand | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Direction | Movement | Volume (vph) | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn |  |  |  |  |  |  |
|  | Through | 480 | 463 | 96.5\% | 15.2 | 2.2 | C |
|  | Right Turn | 10 | 9 | 87.4\% | 0.3 | 0.1 | A |
|  | Subtotal | 490 | 472 | 96.3\% | 15.0 | 2.3 | B |
| SB | Left Turn | 10 | 10 | 102.6\% | 3.5 | 5.6 | A |
|  | Through | 150 | 141 | 94.2\% | 0.7 | 0.1 | A |
|  | Right Turn | 10 | 8 | 76.0\% | 0.2 | 0.2 | A |
|  | Subtotal | 170 | 159 | 93.7\% | 0.9 | 0.3 | A |
| EB | Left Turn | 10 | 10 | 98.8\% | 10.4 | 9.9 | B |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal | 10 | 10 | 98.8\% | 10.4 | 9.9 | B |
| WB | Left Turn | 10 | 10 | 98.8\% | 8.3 | 4.0 | A |
|  | Through |  |  |  |  |  |  |
|  | Right Turn | 30 | 29 | 95.0\% | 7.1 | 5.3 | A |
|  | Subtotal | 40 | 38 | 96.0\% | 7.4 | 4.0 | A |
| Total |  | 710 | 679 | 95.7\% | 11.2 | 1.9 | B |

SimTraffic Post-Processor
I-80 Hiddenbrooke Interchange TOAR
Average Results from 10 Runs Opening Year 2024 (Signalized)
Queue Length
AM Peak Hour

Intersection 1 American Canyon Rd/I-80 WB Ramps Signal

Intersection 2 American Canyon Rd/I-80 EB Ramps Signal


SimTraffic Post-Processor
I-80 Hiddenbrooke Interchange TOAR
Average Results from 10 Runs Opening Year 2024 (Signalized)
Queue Length
AM Peak Hour

Intersection 3 Hiddenbrooke Parkway/McGary Rd
Side-street Stop

|  |  | Storage | Average | ueue (ft) | 95th Q | ue (ft) | Maximum | Queue (ft) |  | Time |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Direction | Lane Group | (ft) | Average | Std. Dev. | Average | Std. Dev. | Average | Std. Dev. | Pocket | Upstream |
|  | Shared | 1,020 | 20 | 4 | 40 | 11 | 40 | 12 | 0\% | 0\% |
| EB |  |  |  |  |  |  |  |  |  |  |
|  | Left/Through | 900 | 160 | 29 | 260 | 39 | 260 | 30 | 0\% | 0\% |
|  | Through/Right | 900 | 20 | 7 | 40 | 17 | 60 | 19 | 0\% | 0\% |
| NB |  |  |  |  |  |  |  |  |  |  |
|  | Shared | 40 | 20 | 4 | 20 | 15 | 20 | 16 | 0\% | 1\% |
| SB |  |  |  |  |  |  |  |  |  |  |
| WB | Shared | 620 | 40 | 5 | 60 | 5 | 60 | 11 | 0\% | 0\% |
|  |  |  |  |  |  |  |  |  |  |  |

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

I-80 Hiddenbrooke Interchange TOAR
Opening Year 2024 (Signalized)
PM Peak Hour

Intersection 1 American Canyon Rd/I-80 WB Ramps Signal

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn | 170 | 156 | 91.8\% | 34.8 | 3.7 | C |
|  | Through Right Turn | 110 | 114 | 104.1\% | 13.4 | 3.8 | B |
|  | Subtotal | 280 | 270 | 96.6\% | 25.7 | 3.1 | C |
| SB | Left Turn |  |  |  |  |  |  |
|  | Through | 450 | 426 | 94.6\% | 40.5 | 15.9 | D |
|  | Right Turn | 60 | 59 | 98.7\% | 7.7 | 6.8 | A |
|  | Subtotal | 510 | 485 | 95.1\% | 36.6 | 15.6 | D |
| EB | Left Turn |  |  |  |  |  |  |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal |  |  |  |  |  |  |
| WB | Left Turn | 100 | 103 | 103.1\% | 35.4 | 4.7 | D |
|  | Through | 10 | 7 | 70.6\% | 30.9 | 21.9 | C |
|  | Right Turn | 360 | 372 | 103.3\% | 9.0 | 1.5 | A |
|  | Subtotal | 470 | 482 | 102.6\% | 15.1 | 1.2 | B |
| Total |  | 1,260 | 1,238 | 98.2\% | 25.8 | 6.1 | C |

Intersection 2 American Canyon Rd/I-80 EB Ramps Signal


SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

I-80 Hiddenbrooke Interchange TOAR
Opening Year 2024 (Signalized)
PM Peak Hour

Intersection 3
Hiddenbrooke Parkway/McGary Rd
Side-street Stop

| Direction | Movement | Demand Volume (vph) | Served Volume (vph) |  | Total Delay (sec/veh) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Percent | Average | Std. Dev. | LOS |
| NB | Left Turn |  |  |  |  |  |  |
|  | Through | 230 | 226 | 98.2\% | 10.3 | 2.7 | B |
|  | Right Turn | 10 | 11 | 113.7\% | 0.3 | 0.3 | A |
|  | Subtotal | 240 | 237 | 98.8\% | 9.8 | 2.6 | A |
| SB | Left Turn | 30 | 32 | 107.1\% | 1.5 | 1.0 | A |
|  | Through | 460 | 464 | 100.8\% | 0.9 | 0.1 | A |
|  | Right Turn | 10 | 10 | 101.9\% | 0.3 | 0.3 | A |
|  | Subtotal | 500 | 506 | 101.2\% | 0.9 | 0.1 | A |
| EB | Left Turn | 10 | 7 | 66.6\% | 5.6 | 3.6 | A |
|  | Through |  |  |  |  |  |  |
|  | Right Turn |  |  |  |  |  |  |
|  | Subtotal | 10 | 7 | 66.6\% | 5.6 | 3.6 | A |
| WB | Left Turn | 10 | 9 | 90.2\% | 8.6 | 5.5 | A |
|  | Through |  |  |  |  |  |  |
|  | Right Turn | 20 | 21 | 105.8\% | 3.3 | 1.0 | A |
|  | Subtotal | 30 | 30 | 100.6\% | 5.1 | 2.0 | A |
| Total |  | 780 | 780 | 100.0\% | 3.8 | 0.8 | A |

SimTraffic Post-Processor
I-80 Hiddenbrooke Interchange TOAR
Average Results from 10 Runs Opening Year 2024 (Signalized)
Queue Length

Intersection 1 American Canyon Rd/l-80 WB Ramps

| Direction | Lane Group | Storage (ft) | Average Queue (ft) |  | 95th Queue (ft) |  | Maximum Queue (ft) |  | Block Time |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Average | Std. Dev. | Average | Std. Dev. | Average | Std. Dev. | Pocket | Upstream |
| NB | Left/Through | 440 | 140 | 17 | 220 | 44 | 200 | 34 | 0\% | 0\% |
|  |  |  |  |  |  |  |  |  |  |  |
| SB | Through | 1,040 | 280 | 86 | 360 | 122 | 360 | 140 | 7\% | 0\% |
|  | Right Turn | 320 | 40 | 29 | 120 | 115 | 140 | 140 | 0\% | 0\% |
|  |  |  |  |  |  |  |  |  |  |  |
| WB | Left/Through | 1,220 | 80 | 11 | 140 | 37 | 140 | 43 | 0\% | 0\% |
|  | Right Turn | 220 | 80 | 15 | 140 | 38 | 140 | 52 | 0\% | 0\% |
|  |  |  |  |  |  |  |  |  |  |  |

Intersection 2 American Canyon Rd/I-80 EB Ramps


SimTraffic Post-Processor
I-80 Hiddenbrooke Interchange TOAR
Average Results from 10 Runs Opening Year 2024 (Signalized)
Queue Length
PM Peak Hour

Intersection 3 Hiddenbrooke Parkway/McGary Rd
Side-street Stop



[^0]:    ${ }^{1}$ Project Study Report-Project Development Support (PSR-PDS) for I-80 at Gilman Street Interchange, Caltrans District 4, September 2, 2014.

[^1]:    ${ }^{2}$ Caltrans 2018 Annual Average Daily Truck Traffic. Downloaded by Fehr \& Peers June 2020. https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/census/aadt/2018-truck-aadta11y.xlsx

[^2]:    Notes: Storage length and average maximum queue length are reported in feet.
    Source: Fehr \& Peers, 2020

[^3]:    Delay is reported in seconds per vehicle. Bold and underline font indicate LOS F conditions; that is, volume exceeds capacity. The highest controlled movement delay is reported for side street stop-controlled intersection.
    Source: Fehr \& Peers, 2020

[^4]:    Notes: Storage length and average maximum queue length are reported in feet.
    Source: Fehr \& Peers, 2020

[^5]:    Notes: Storage length and average maximum queue length are reported in feet.
    Source: Fehr \& Peers, 2020

[^6]:    ${ }^{3}$ Governor's Office of Planning and Research, Technical Advisory on Evaluating Transportation Impacts in CEQA, 2018.

