

I-80 CORRIDOR STUDY TECHNICAL REPORT

Appendix E

Accident Locations and Operational Deficiencies

PREPARED FOR
NEVADA DEPARTMENT OF TRANSPORTATION



Interstate 80 Corridor Study

Final Technical Memorandum 5: Traffic Volume, Accident Locations and Operational Deficiencies

West Verdi (SR 425) Interchange to
West McCarran Boulevard (SR 651) and
East McCarran Boulevard (SR 650) to
Wadsworth-Pyramid (SR 427) Interchange
Washoe and Storey Counties, Nevada

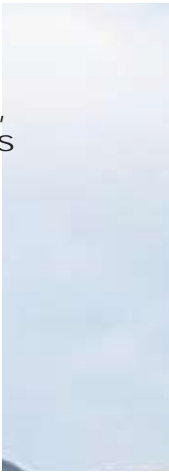
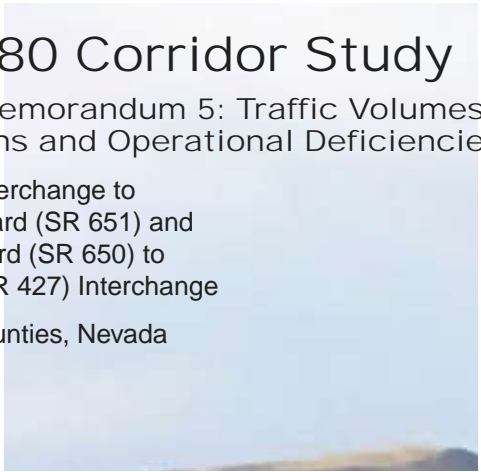




Interstate 80 Corridor Study

Final Technical Memorandum 5: Traffic Volumes, Accident Locations and Operational Deficiencies

West Verdi (SR 425) Interchange to
West McCarran Boulevard (SR 651) and
East McCarran Boulevard (SR 650) to
Wadsworth-Pyramid (SR 427) Interchange
Washoe and Storey Counties, Nevada



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JACOBS

Prepared for:
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1. Introduction

The I-80 Corridor Study area encompasses I-80 west from the California stateline to the West McCarran Boulevard (SR 651) Interchange in the City of Reno, and I-80 east from the East McCarran Boulevard (SR650) Interchange in the City of Sparks to east of the Wadsworth-Pyramid (SR 427) Interchange near the City of Fernley. The intention of the study is to provide decision makers within the I-80 Corridor an action plan that will define future transportation needs along the corridor. The study is intended to provide participating agencies with a range of workable and cost effective transportation alternatives that address current and future needs along the corridor. These alternatives will be assessed for socioeconomic, community, environmental, and monetary impacts of implementing a range of needed projects addressing existing and projected transportation problems.

2. Document Purpose

The information presented in this memorandum involved collection, assembly, review, compilation, and verification of available data. More specifically, this memo reviews and analyzes high crash locations when compared to similar facility types, peak hour traffic volumes, and traffic operational conditions in the form of turning movements. Available physical and operational data along the corridor was obtained from the following local and/or state agencies:

- California Department of Transportation (Caltrans)
- City of Reno
- City of Sparks
- Nevada Department of Transportation (NDOT)
- Regional Transportation Commission of Washoe County (RTC)
- Storey County
- Washoe County

3. Safety Analysis

The collection and analysis of crash data is fundamental to the development of measures that improve overall traffic safety. Historical data is useful in determining why crashes occur, helping to identify crash prone locations, determining which countermeasures should be implemented, and assisting in the evaluation of countermeasure effectiveness. A measure that relates the number of crashes to traffic volume usually provides a better indication of problem locations.

A traffic safety and accident analysis of three years of data (January 1, 2004 through December 31, 2006) was conducted for the east and west segments of I-80. The crash reports prepared by the law enforcement officers at the scene of a crash were used as the basis for preparing the data. Each crash is recorded as an entry in a collision database that includes information such as time, date, location, type of crash, severity, and contributing factor.

In the three year study period a total of 1,791 crashes were reported. While thirteen of the total crashes were fatal, there were 458 injury crashes and 1,319 property damage only (PDO) crashes. Figure 1 presents a summary of crashes by crash severity throughout the entire study area.

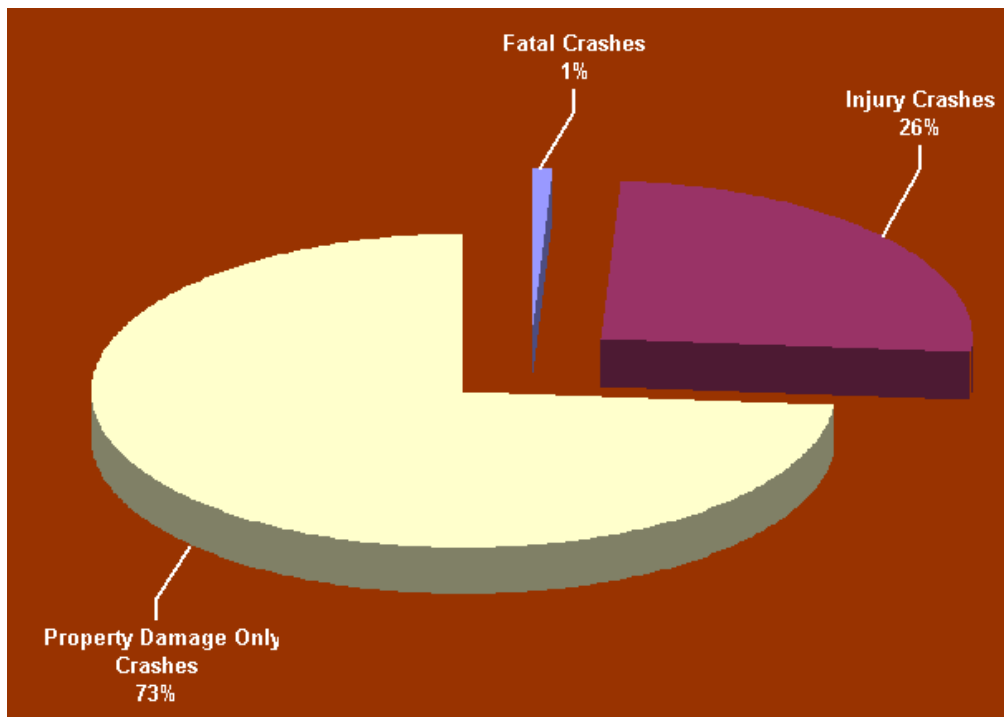


Figure 1. Study Area Summary of Crashes

It is important to note that some of the crash records in the database are incomplete. While some of them have a missing location field, others didn't have information pertaining to the contributing factor of a crash. Incomplete crash records were not considered for the crash rate analysis.

Crash records were sorted by milepost to identify high accident locations within the study area. Figure 2 illustrates fatal, injury and PDO crashes by mile marker along the I-80 study corridor.

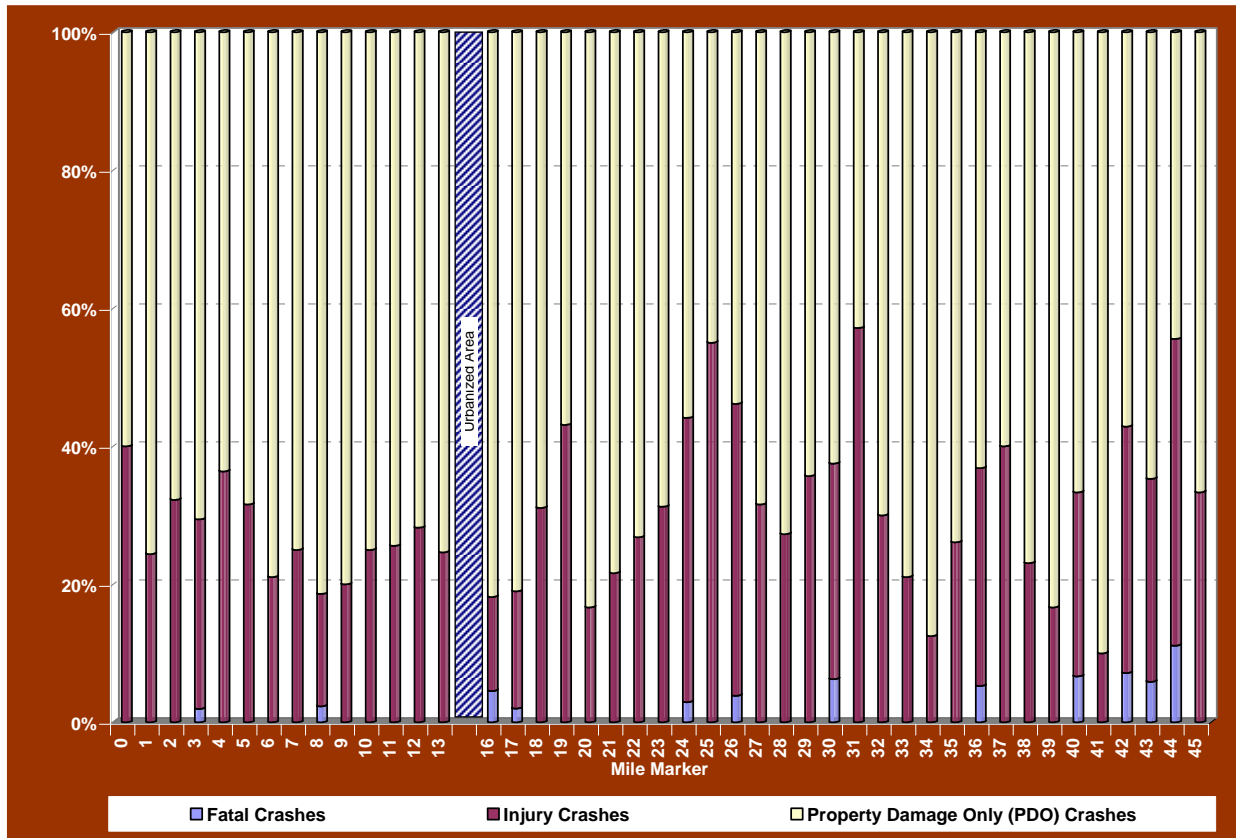


Figure 2. I-80 Corridor Crashes by Severity

3.1 Crash Rates

Crash rates are measured in crashes per million vehicles entering the study freeway segment. Crash rates determine the magnitude of the crash problem at a particular location based on both the total number of incidents and the traffic volume entering that study segment. They are calculated using the following equation:

$$Crash\ Rate = Cr = \left(\frac{A \times 1,000,000}{N \times AADT \times 365} \right)$$

where, A = no. of reported crashes

N = no. of years (3)

$AADT$ = average annual daily traffic

The annual average daily traffic (AADT) data at the following count stations, obtained from NDOT's Traffic Information Access (TRINA) system was used for the crash rate calculations:

- Traffic Count Station 311120, located on I-80, 1 mile east of the Nevada/California stateline

- Traffic Count Station 310804, located on I-80, between West Verdi Interchange and the Verdi Interchange
- Traffic Count Station 310805, located on I-80, between Garson Interchange and the East Verdi Interchange
- Traffic Count Station 310671, located on I-80, between East Verdi Interchange and the Mogul Interchange
- Traffic Count Station 310806, located on I-80, 0.1 miles east of the Westbound off-ramp of the Mogul Interchange
- Traffic Count Station 310671, located on I-80, between West 4th Street Interchange and the Robb Drive Interchange
- Traffic Count Station 310937, located on I-80, 0.5 miles west of the West McCarran Boulevard Interchange
- Traffic Count Station 311220, located on I-80, 0.5 miles east of Pyramid Highway Interchange
- Traffic Count Station 310810, located on I-80, at Sparks Boulevard Interchange
- Traffic Count Station 310620, located on I-80, 0.1 miles west of the Vista Boulevard Interchange
- Traffic Count Station 311110, located on I-80, 0.9 miles east of Vista Interchange
- Traffic Count Station 310070, located on I-80, 0.2 miles east of the Lockwood Interchange
- Traffic Count Station 310071, located on I-80, 0.5 miles east of the Mustang Interchange
- Traffic Count Station 310078, located on I-80, 0.2 miles east of the Patrick Interchange
- Traffic Count Station 312290, located on I-80, 1.1 miles east of Tracy Clark Interchange
- Traffic Count Station 310811, located on I-80, between Thisbe-Derby Dam Interchange and the Orchard Interchange
- Traffic Count Station 310812, located on I-80, between Orchard Interchange and the Painted Rock Interchange
- Traffic Count Station 311110, located on I-80, 0.9 miles east of Vista Interchange

AADT values from the year 2006 were used for the eastern and western segments of I-80 respectively.

Figure 3 shows the crash rates by mile marker along the I-80 corridor.

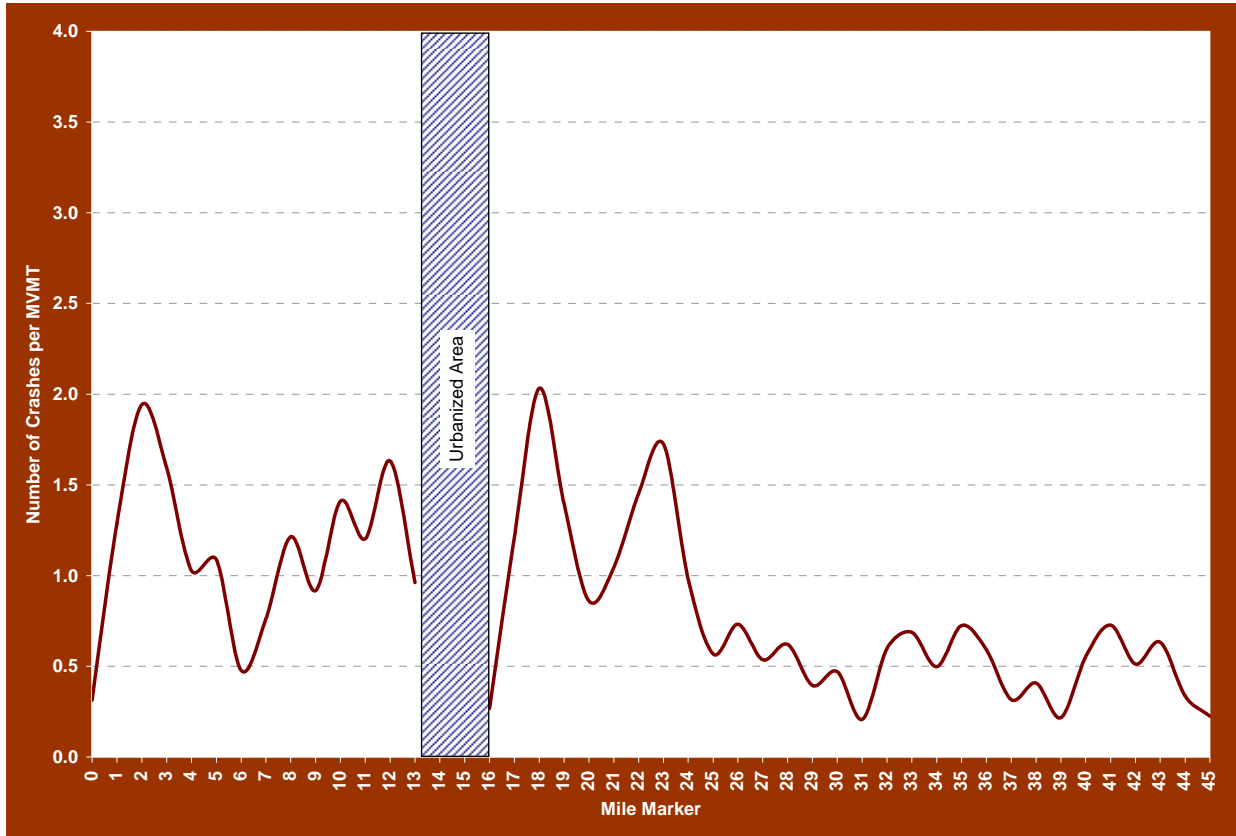


Figure 3. Crash Rates by Mile Marker along the I-80 Study Corridor

4. High Crash Locations - NDOT 5% Report

Section 148(c)(1)(D) of Title 23 U.S.C. requires States to annually submit a report to the FHWA that describes not less than 5 percent of locations exhibiting the most severe safety needs. Because Nevada has significant urban population centers in Las Vegas and Reno-Sparks-Carson City and large rural areas, with very different safety needs, NDOT produced both urban and rural 5 percent lists of High Crash Locations (HCL).

Figures 4 and 5 illustrate NDOT’s study area for identifying HCL on rural highways.

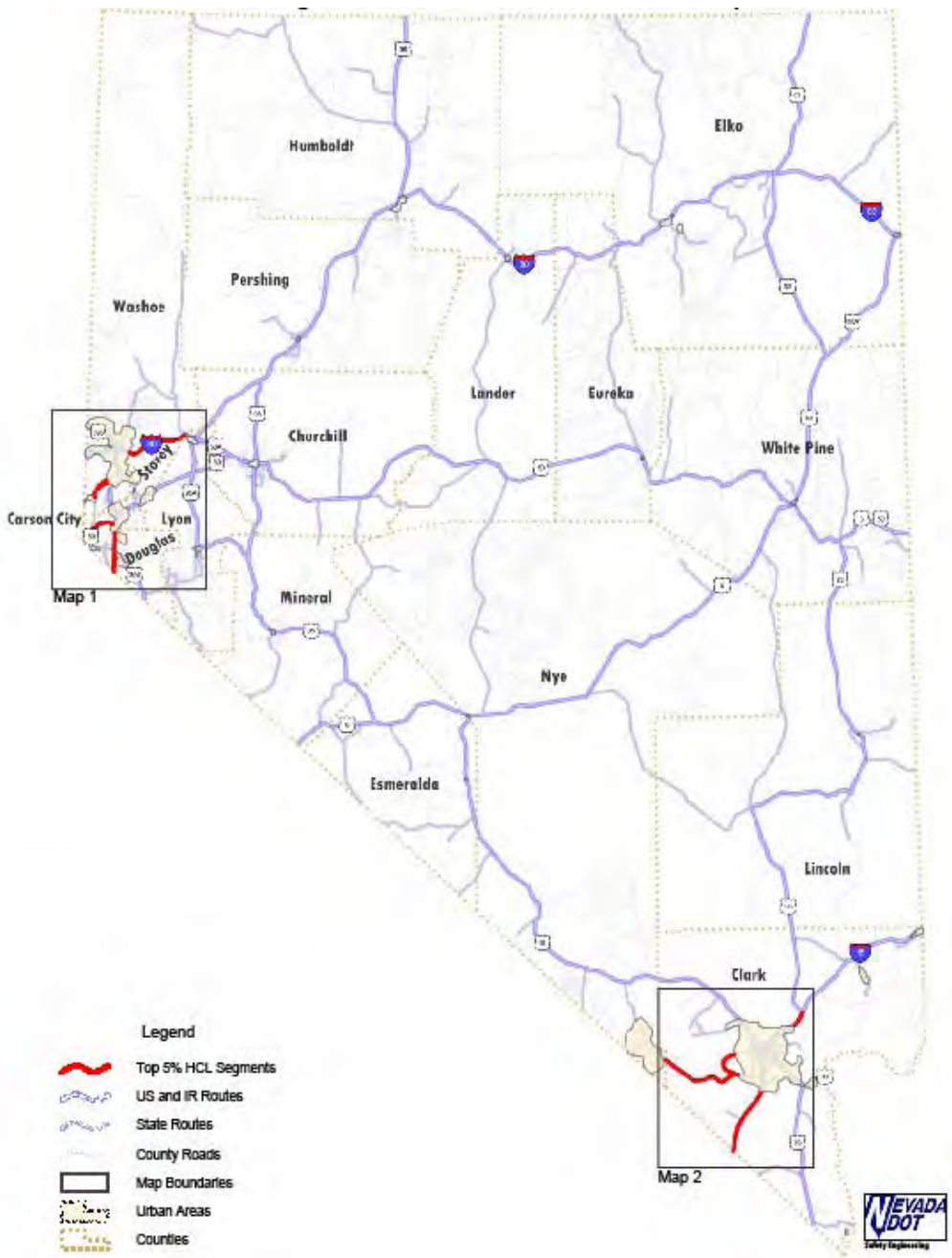


Figure 4. Study Area Summary of Crashes

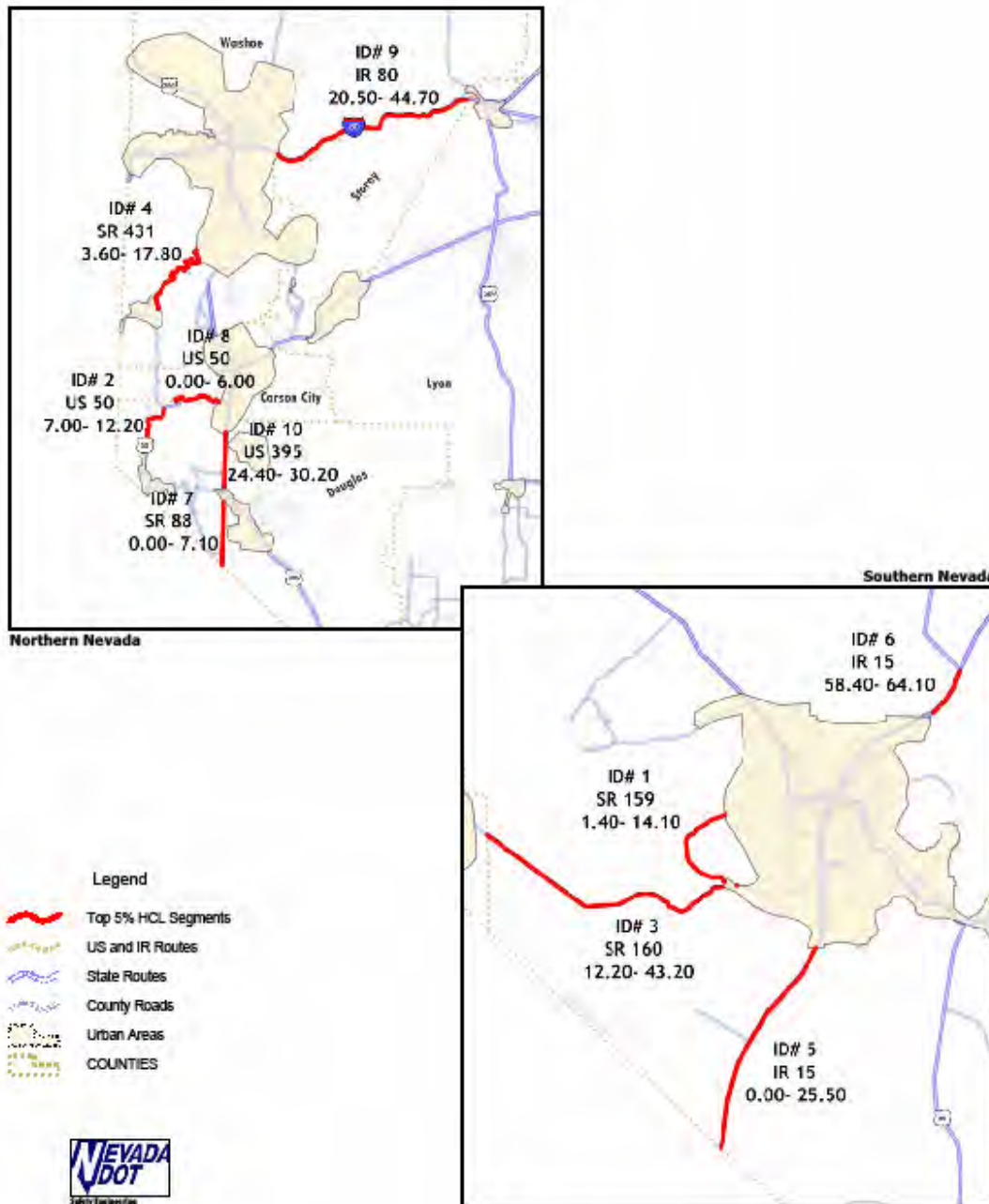


Figure 5. Study Area Summary of Crashes

NDOT used 2003-2006 crash data in the development of this report. The urban analysis utilized the most recent HCL data list using 2004-2006 crash data. This data was filtered so that only fatal and injury crash data was used at locations within urban boundaries.

The high crash location that was identified within this corridor study area is the section of I-80 that lies between the easterly urban limits of the Reno-Sparks area and Fernley (MP 20.5 to 44.7). Tables 1 and 2 summarize findings from NDOT's 5% report.

Table 1. Top 5% Rural Segments Weighted by Crash Density

| Map ID | County | Route | Length (Miles) | Total Crashes | Fatal Crashes | Injury Crashes | Weighted Crash Rate |
|--------|-------------|------------------------------|----------------|---------------|---------------|----------------|---------------------|
| 1 | Clark | SR 159 (MP 1.4 to 14.1) | 12.8 | 161 | 7 | 45 | 6.96 |
| 2 | Douglas | US 50 (MP 7.0 to 12.2) | 12.8 | 114 | 2 | 18 | 6.25 |
| 3 | Clark | SR 160 (MP 12.2 to 43.2) | 31.2 | 299 | 23 | 71 | 5.61 |
| 4 | Washoe | SR 431 (MP 3.6 to 17.8) | 13.6 | 229 | 3 | 52 | 5.58 |
| 5 | Clark | IR 15N (MP 0.0 to 25.5) | 25.5 | 436 | 13 | 77 | 5.41 |
| 6 | Clark | IR 15N (MP 58.4 to 64.1) | 5.7 | 56 | 4 | 7 | 4.56 |
| 7 | Douglas | SR 88 (MP 0.0 to 7.1) | 7.1 | 91 | 2 | 17 | 4.22 |
| 8 | Carson City | US 50 (MP 0.0 to 6.0) | 6.1 | 143 | 2 | 12 | 3.95 |
| 9 | Washoe | IR 80E (MP 20.5 to 44.7) | 24.1 | 250 | 7 | 47 | 3.65 |
| 10 | Douglas | US 395N (MP 24.4 to 30.2) | 6.1 | 78 | 3 | 7 | 3.63 |

Table 2. Top 5% Rural Segments – Comparison to Overall Network

| Totals | Length (Miles) | Total Crashes | Fatal Crashes | Injury Crashes | Weighted Crash Rate |
|--|----------------|---------------|---------------|----------------|---------------------|
| Analyzed Rural Routes | 6,164 | 9,885 | 272 | 1,896 | 0.56 |
| Top 10 segments | 137 | 1,857 | 66 | 353 | 5.10 |
| Top 10 segments % of Analyzed Rural Routes | 2% | 19% | 24% | 19% | - |

5. Identification of High Crash Locations along the Corridor

Crash Severity Methodology was used to identify and priority rank HCLs on I-80 along the limits of this corridor study. Crash Severity Methodology takes the severity of crashes into consideration. A weighting factor is applied to crashes based on their severity to calculate weighted crash count (WCC) for each location. Crash severities are often classified by National Safety Council (NSC) within the following categories:

- Fatal crashes – one or more deaths
- A-type injury crashes – incapacitating
- B-type injury crashes – non-incapacitating
- C-type injury crashes – probable injury
- PDO crashes – property damage only (no injury)

NDOT considers crashes involving only fatalities, type A injuries (the most severe type), and type B injuries to identify the statewide HCLs in their 5% report. NDOT calculates the WCC for rural areas as follows:

$$(\# \text{ of fatal crashes } *4) + (\# \text{ of type A injury crashes } *2) + (\# \text{ of type B injury crashes}) = \text{WCC}$$

In this study, type C injury and PDO crashes were also taken into consideration in identifying HCLs. NDOT's 5% Report does not include weight factors for type C injury and PDO crashes. For the purposes of this study, type C injury crashes were weighted as half of type B, and PDO crashes were weighted as half of type C injury crashes. Based on these assumptions, fatal crashes are weighted 16 times more than PDO crashes. The three types of injury crashes were combined into one "injury" category and were given a weighting factor of 4. Average weight of the three injury types are higher than 4, however it was decided to use a lower value due to the fact that majority of the injury crashes are type-C. The weighted crash count, therefore, is calculated as follows:

$$(\# \text{ of fatal crashes } *16) + (\# \text{ of injury crashes } *4) + (\# \text{ of PDO crashes}) = \text{WCC}$$

A weighted crash rate (WCR) for each mile marker based on weighted crash counts were then calculated as follows. Figure 6 shows the results graphically.

$$\text{WeightedCrash Rate} = \text{WCR} = \left(\frac{\text{WCC} \times 1,000,000}{N \times \text{AADT} \times 365} \right)$$

where, WCC = weighted crash count

N = no. of years (3)

AADT = average annual daily traffic

The locations along the corridor is priority ranked based on the calculated weighted crash rates. Table 1 shows this ranking along with weighted crash counts and the number of crashes by severity.

Weighted crash rate of 2.0 was selected as the cutoff point for priority locations. In other words, those locations that exceeded a WCR of 2.0 were identified as HCLs. Based on this criterion; the top 16 locations in Table 3 are the HCLs along the corridor.

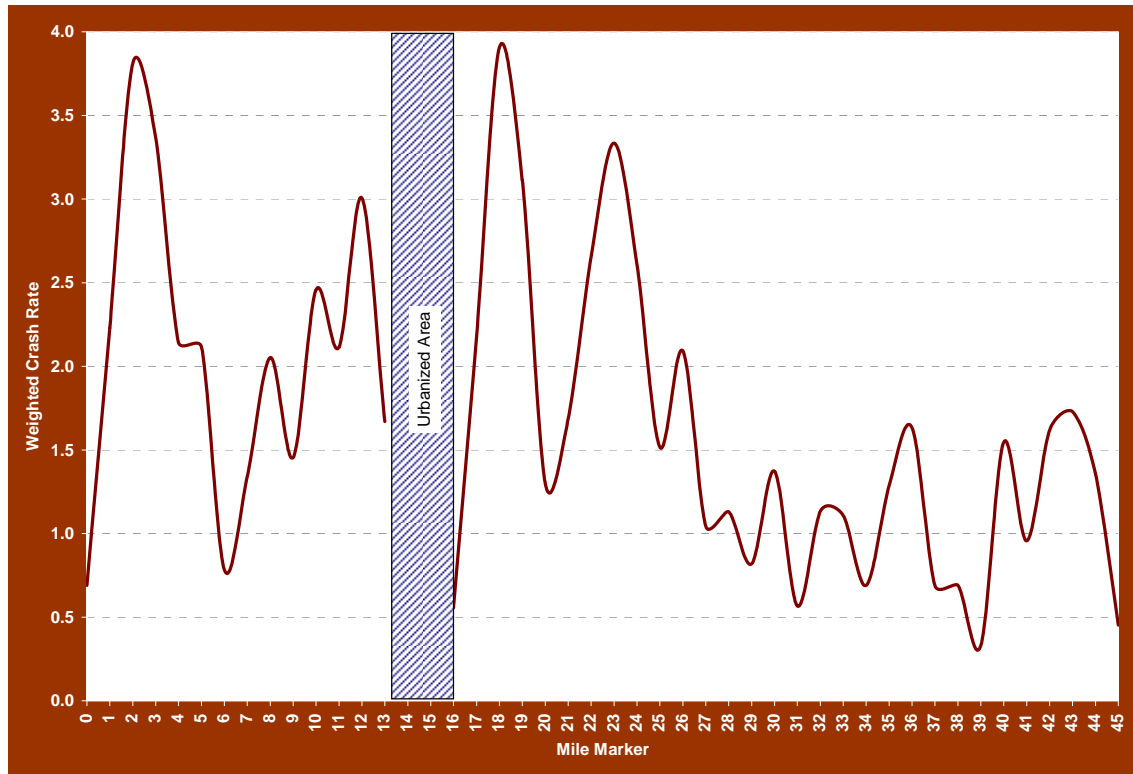


Figure 6. Weighted Crash Rates by Mile Marker along the I-80 Study Corridor

Following are observations and recommendations based on the results of the priority ranking analysis:

- All locations except for mile markers 0, 6, 7 and 9 fall in the high priority list for the west section of the corridor. A roadway safety audit (RSA) is recommended for the entire west section of the corridor (i.e. from California Stateline to West McCarran Boulevard interchange in the City of Reno)
- Based on the results shown in Table 3, the section from East McCarran Boulevard in City of Sparks to mile marker 26 (just west of Patrick Interchange) is the section where majority of the HCLs are. A road safety audit is recommended from East McCarran Boulevard to Patrick Interchange for the east section of the study corridor.
- A separate engineering study is recommended that will conduct a detailed analysis of each HCL listed in this Technical Memorandum to identify probable causes of the crashes and identify possible countermeasures to reduce both crashes and limit their severity. This study should develop statistical summaries of the crash data by various characteristics such as contributing factors, environmental conditions, time of day etc. Results of the RSAs should be part of this study.

Table 3. Identification of High Crash Locations

| Mile Marker | Number of Crashes (2004 to 2006) | | | | Weighted Crash Rate (WCR) | Priority Rank |
|-------------|----------------------------------|----------------|-------------|----------------------------|---------------------------|---------------|
| | Fatal Crashes | Injury Crashes | PDO Crashes | Weighted Crash Count (WCC) | | |
| 18 | 0 | 32 | 71 | 199 | 3.91 | 1 |
| 2 | 0 | 20 | 42 | 122 | 3.81 | 2 |
| 3 | 1 | 14 | 36 | 108 | 3.37 | 3 |
| 23 | 0 | 15 | 33 | 93 | 3.33 | 4 |
| 19 | 0 | 25 | 33 | 133 | 3.11 | 5 |
| 12 | 0 | 33 | 84 | 216 | 3.01 | 6 |
| 22 | 0 | 11 | 30 | 74 | 2.65 | 7 |
| 24 | 1 | 14 | 19 | 91 | 2.61 | 8 |
| 10 | 0 | 20 | 60 | 140 | 2.46 | 9 |
| 1 | 0 | 10 | 31 | 71 | 2.23 | 10 |
| 17 | 2 | 17 | 81 | 181 | 2.18 | 11 |
| 4 | 0 | 12 | 21 | 69 | 2.14 | 12 |
| 11 | 0 | 22 | 64 | 152 | 2.11 | 13 |
| 5 | 0 | 12 | 26 | 74 | 2.11 | 14 |
| 26 | 1 | 11 | 14 | 74 | 2.09 | 15 |
| 8 | 1 | 7 | 35 | 79 | 2.05 | 16 |
| 43 | 1 | 5 | 11 | 47 | 1.73 | 17 |
| 21 | 0 | 8 | 29 | 61 | 1.69 | 18 |
| 13 | 0 | 17 | 52 | 120 | 1.67 | 19 |
| 36 | 1 | 6 | 12 | 52 | 1.63 | 20 |
| 42 | 1 | 5 | 8 | 44 | 1.62 | 21 |
| 40 | 1 | 4 | 10 | 42 | 1.54 | 22 |
| 25 | 0 | 11 | 9 | 53 | 1.52 | 23 |
| 9 | 0 | 7 | 28 | 56 | 1.45 | 24 |
| 30 | 1 | 5 | 10 | 46 | 1.37 | 25 |
| 44 | 1 | 4 | 4 | 36 | 1.36 | 26 |
| 7 | 0 | 8 | 24 | 56 | 1.34 | 27 |
| 20 | 0 | 5 | 25 | 45 | 1.30 | 28 |
| 35 | 0 | 6 | 17 | 41 | 1.29 | 29 |
| 32 | 0 | 6 | 14 | 38 | 1.13 | 30 |
| 28 | 0 | 6 | 16 | 40 | 1.13 | 31 |
| 33 | 0 | 4 | 15 | 31 | 1.11 | 32 |
| 27 | 0 | 6 | 13 | 37 | 1.04 | 33 |
| 41 | 0 | 2 | 18 | 26 | 0.96 | 34 |
| 29 | 0 | 5 | 9 | 29 | 0.82 | 35 |
| 6 | 0 | 4 | 15 | 31 | 0.78 | 36 |
| 0 | 0 | 4 | 6 | 22 | 0.69 | 37 |
| 34 | 0 | 2 | 14 | 22 | 0.69 | 38 |
| 37 | 0 | 4 | 6 | 22 | 0.69 | 39 |
| 38 | 0 | 3 | 10 | 22 | 0.69 | 40 |
| 31 | 0 | 4 | 3 | 19 | 0.57 | 41 |
| 16 | 1 | 3 | 18 | 46 | 0.56 | 42 |
| 45 | 0 | 2 | 4 | 12 | 0.45 | 43 |
| 39 | 0 | 1 | 5 | 9 | 0.33 | 44 |

Source: Jacobs, 2009

6. Travel Time Runs

Travel time runs were conducted using the floating car method, in which the driver of a survey vehicle “floats” with the traffic by attempting to safely pass as many vehicles that have passed the test vehicle.

Travel time runs were conducted during the morning and afternoon peak periods on all roadway segments on September 24, 2007 and September 25, 2007. Five runs were made in each direction during each peak period, for a total of ten runs per peak period. During the travel time runs, the Haicom BT GPS equipment recorded position and time at one-second intervals into a Dell Personal Digital Assistant (PDA) using Bluetooth technology. The data is saved through a customized travel speed program developed by Carter & Burgess, Inc. The driver of the test vehicle drove at the speed limit if no other cars were present. While the first four travel time runs were made floating with the general traffic, the fifth and final run in each direction was made trailing a heavy vehicle to collect speed and travel time data for trucks.

The mapped roadway network was used to process the travel time runs. I-80 segments in both directions were created between the beginning and ending points and the mapped roadway network was used to calculate travel time.

The travel time information and associated congestion indices were formatted into tables and graphs in ArcMap. ArcMap is GIS software that allows the reader a quick, easy-to-understand graphical reference. ArcMap reads the study data files, stored in geodatabases, and presents the information graphically. ArcMap allows the user to group and summarize data for specific purposes.

The 1-second data points are color coded according to the criteria for free-flow, stable, and congested conditions. These 1-second points can be used to determine at what point along a segment a traveler experiences delays or congestion.

The data in the figures and tables in this report provide information for AM and PM travel time runs. When congestion occurs during only one time period, the user can study the detailed information to determine the cause of the delay.

Due to free flow conditions in the rural sections of I-80 study area, there was not much of a difference in speeds between the runs floating with general traffic and the runs made trailing heavy vehicles. Figures 7 and 8 illustrate this for vehicles traveling east, in the west corridor during the AM peak hour. Figures 9 to 15 illustrate the speeds of all vehicles for the remaining seven scenarios.

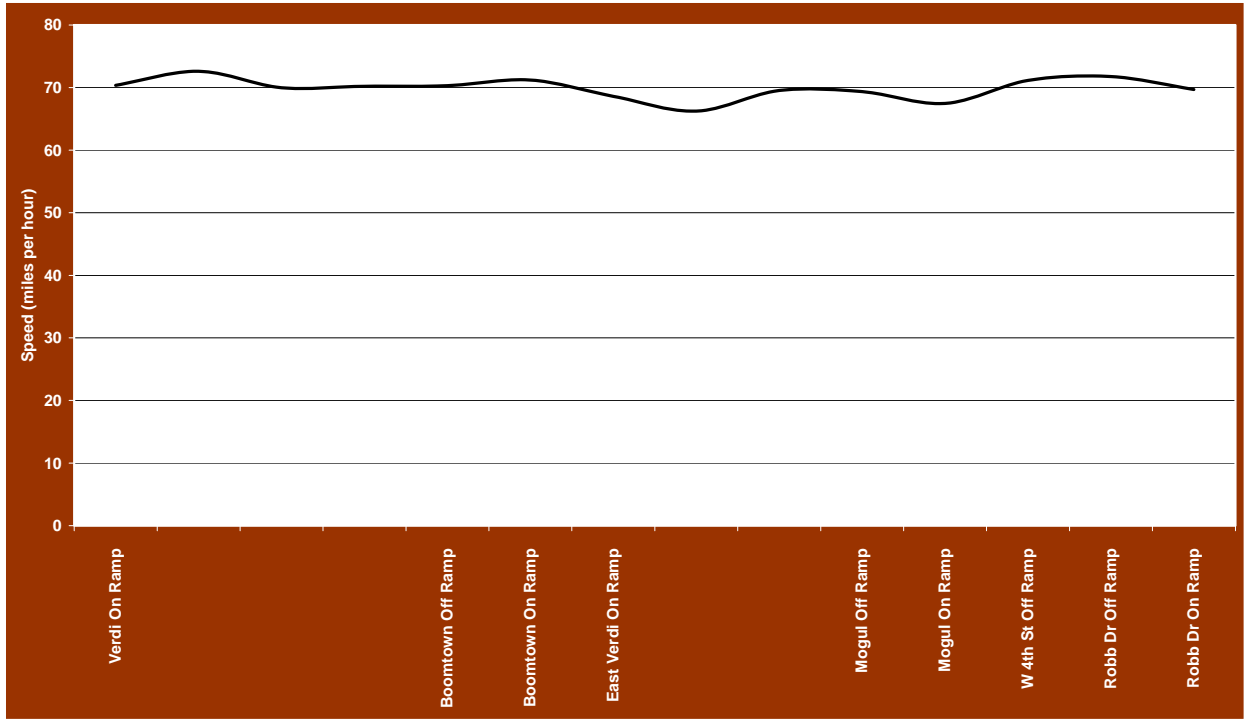


Figure 7. I-80 West Corridor - All Vehicles Eastbound Speeds (AM Peak Hour)

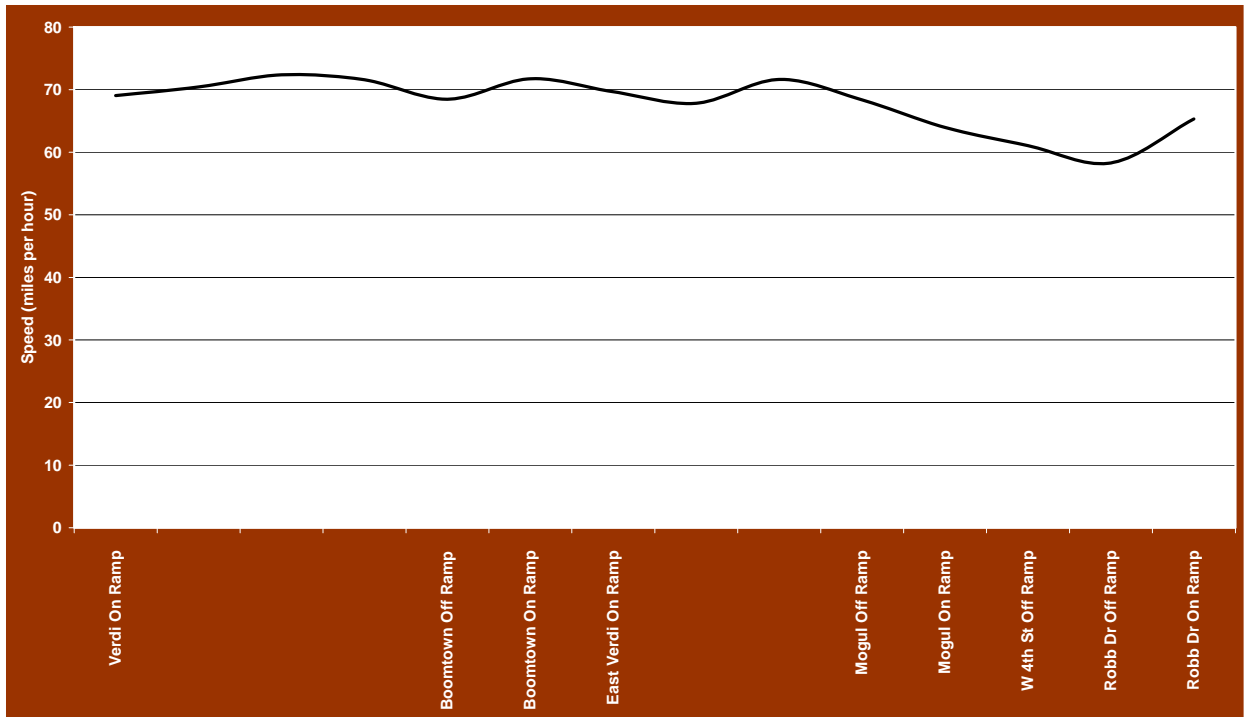


Figure 8. I-80 West Corridor - Trucks Only Eastbound Speeds (AM Peak Hour)

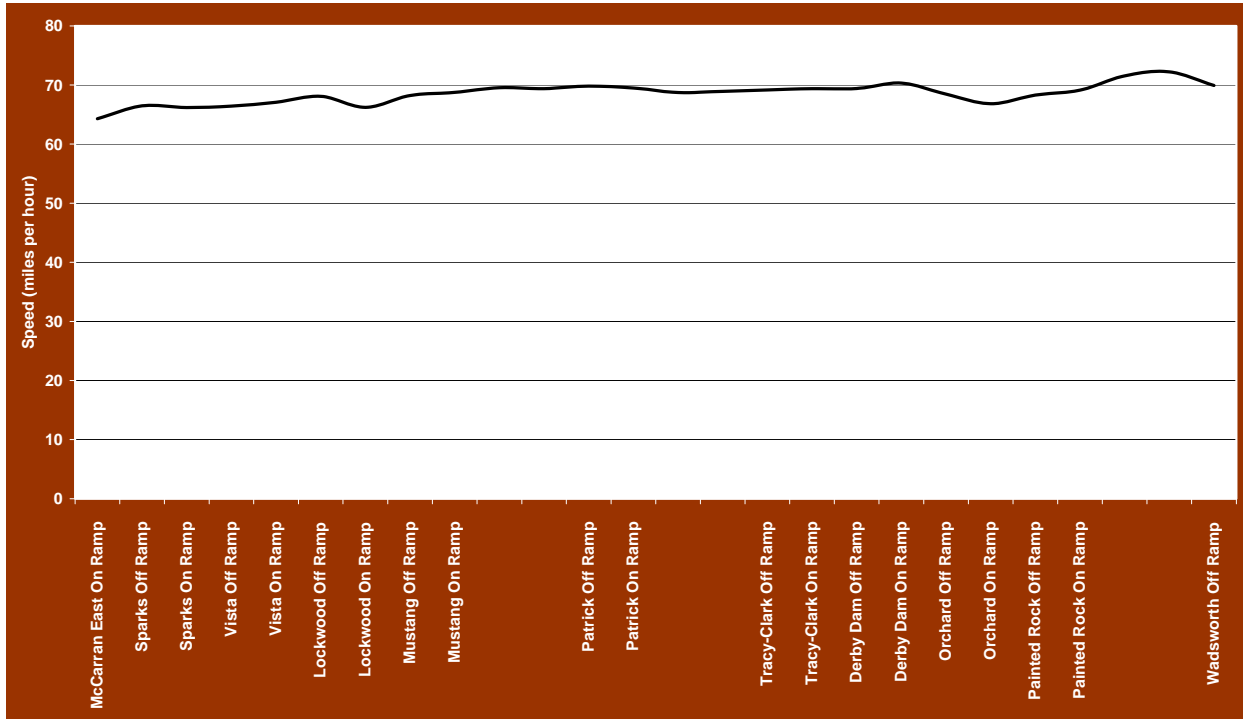


Figure 9. I-80 East Corridor - Eastbound Average Speeds (AM Peak Hour)

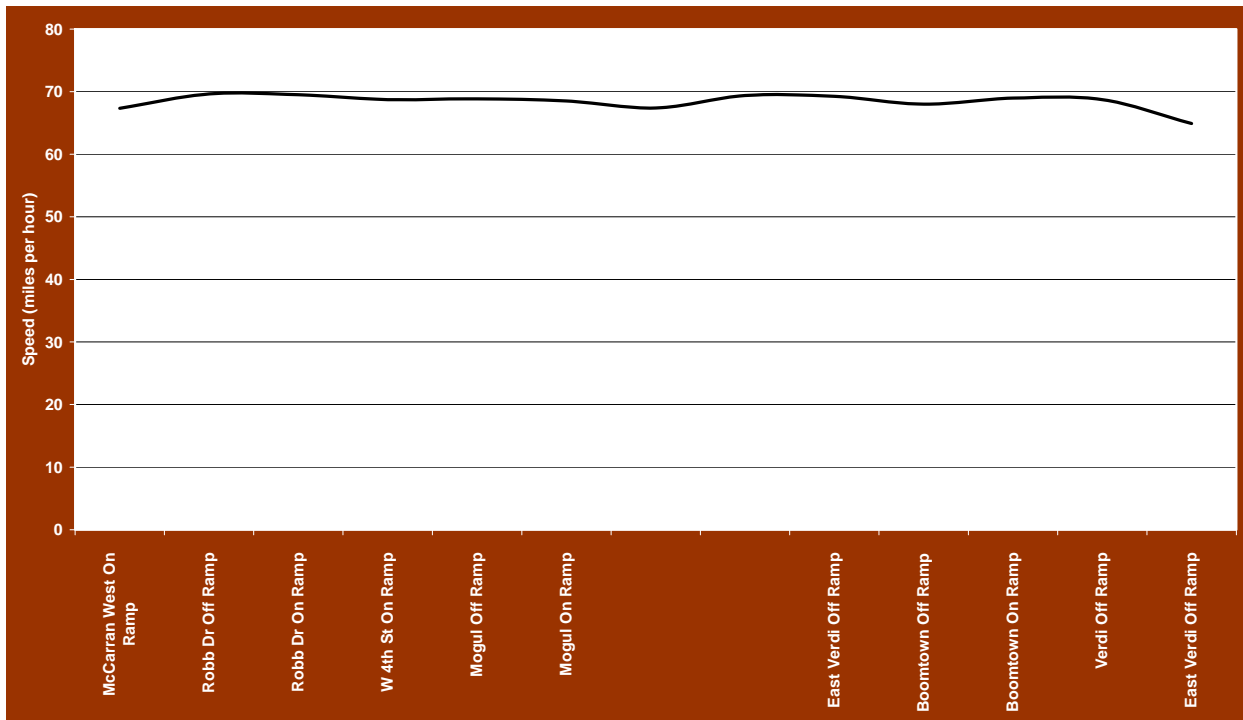


Figure 10. I-80 West Corridor - Westbound Average Speeds (AM Peak Hour)

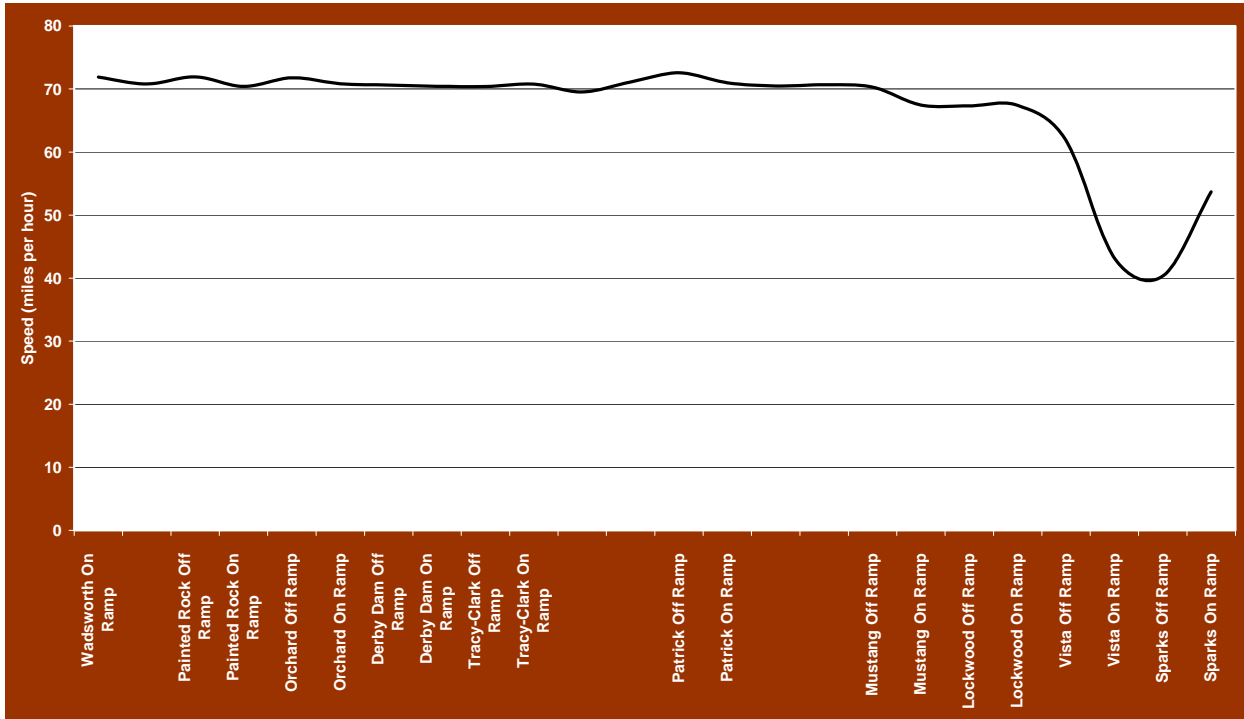


Figure 11. I-80 East Corridor - Westbound Speeds (AM Peak Hour)

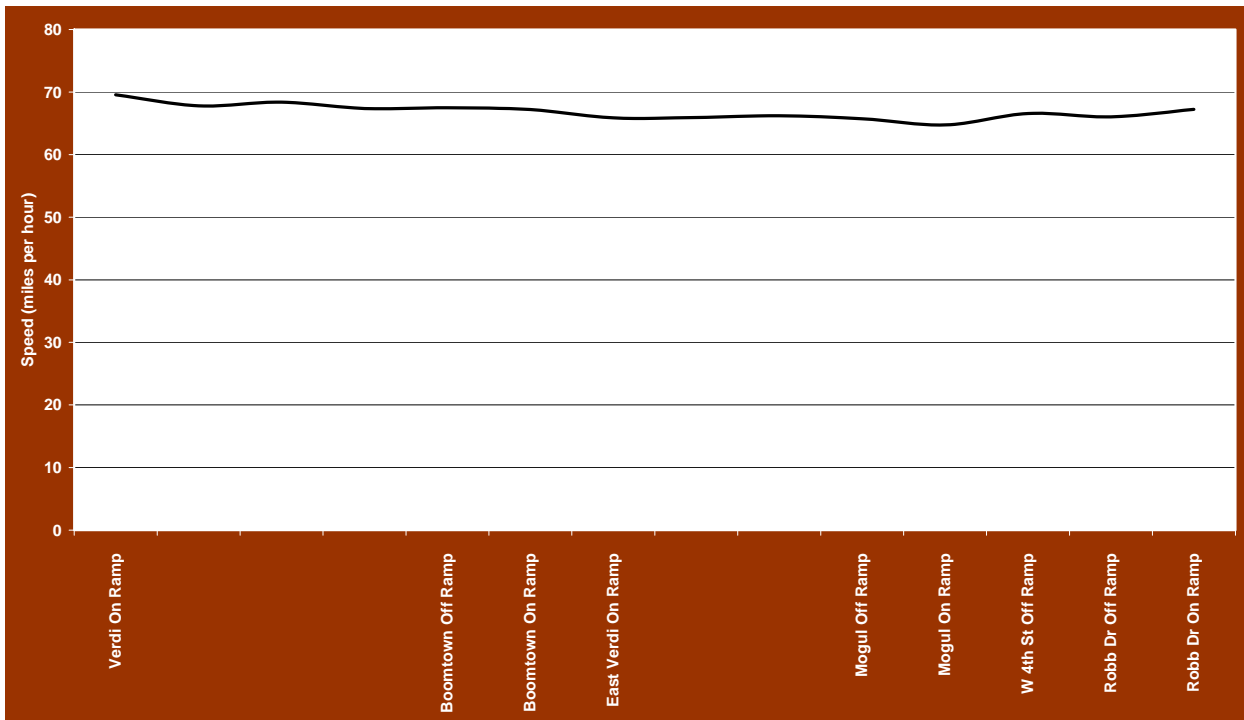


Figure 12. I-80 West Corridor - Eastbound Speeds (PM Peak Hour)

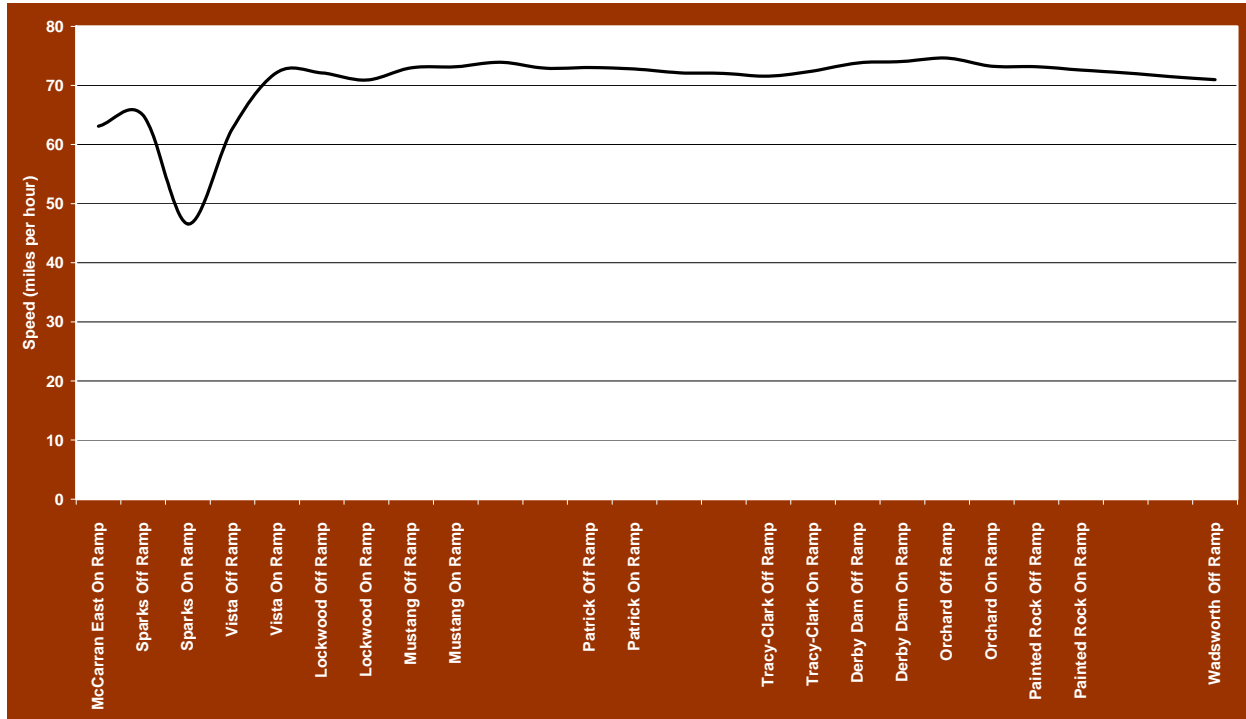


Figure 13. I-80 East Corridor - Eastbound Speeds (PM Peak Hour)

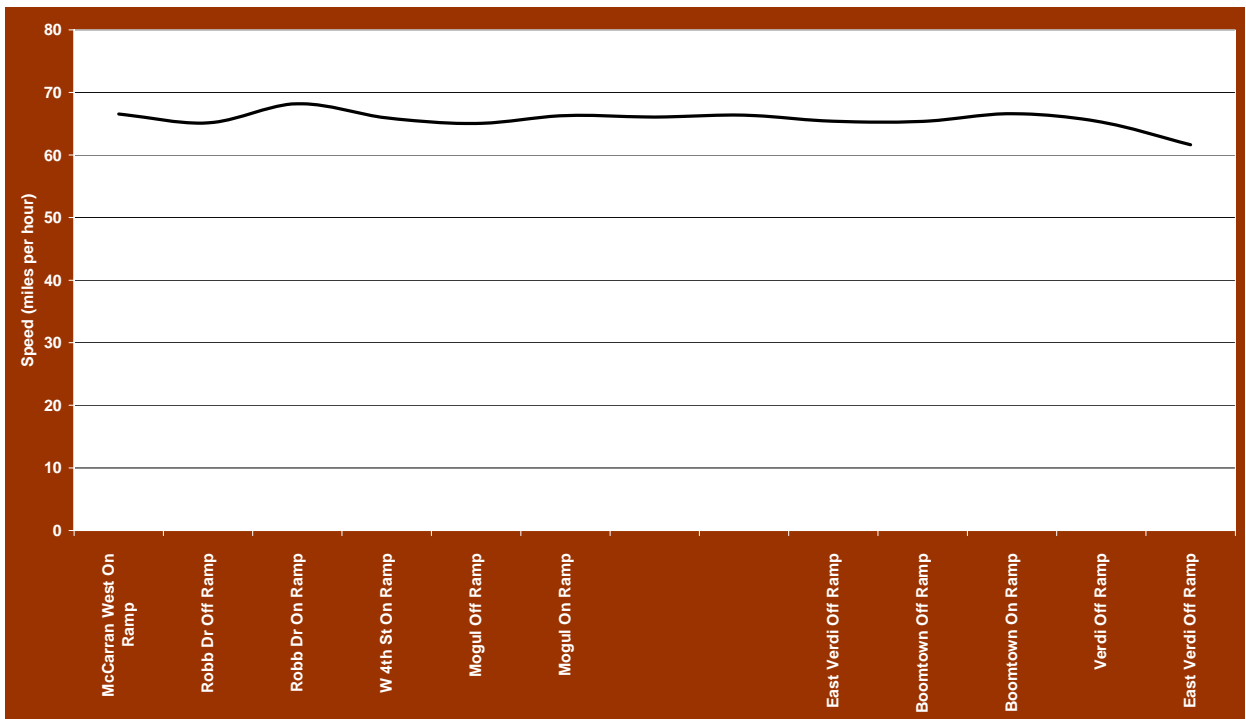


Figure 14. I-80 West Corridor - Westbound Speeds (PM Peak Hour)

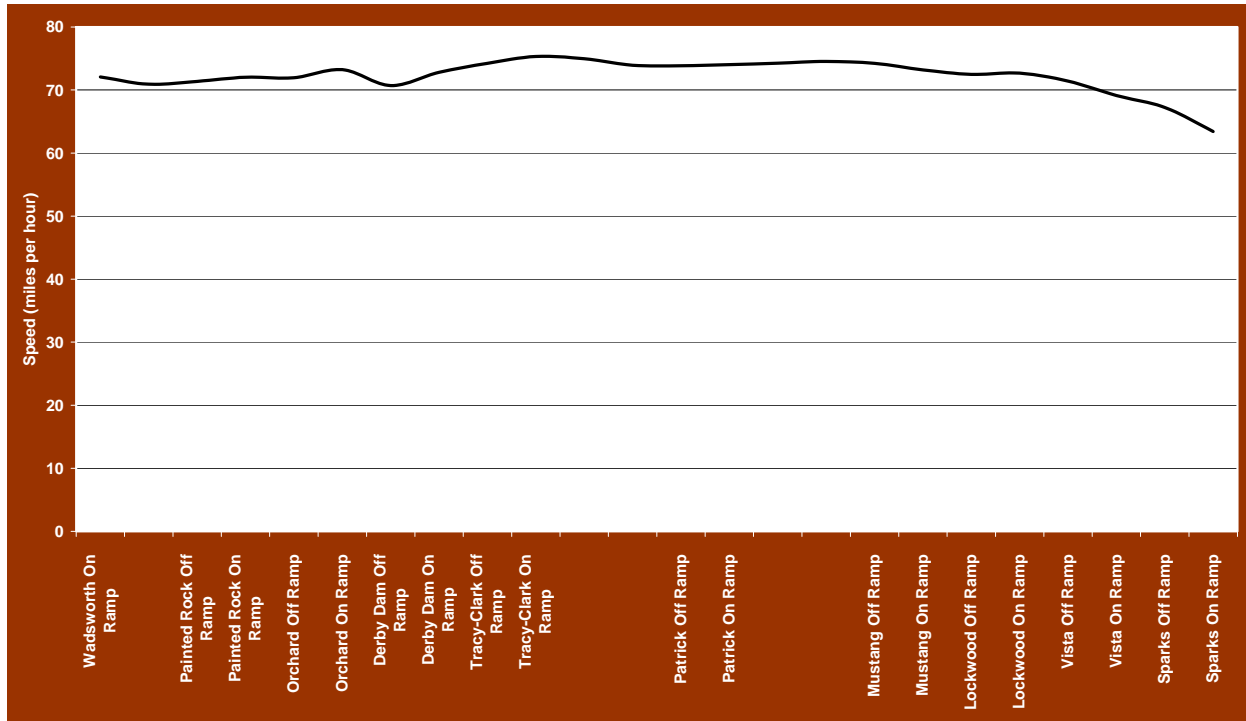


Figure 15. I-80 East Corridor - Westbound Speeds (PM Peak Hour)

7. Existing Traffic Operational Analysis

Year 2007 AM and PM peak hour turning movement volumes at the study intersections were provided in Technical Memorandum 1 along with the lane geometry information. Using these data, an operational analysis was conducted to assess the existing levels of service at the study intersections. The analysis was conducted using methodologies outlined in the Highway Capacity Manual (HCM), 2000 edition published by Transportation Research Board. Trafficware's Synchro 7.0 software was used. Synchro can calculate LOS according to HCM procedures.

Table 4 shows the intersection level of service criteria defined by HCM. To determine intersection LOS for the study intersections, control delay for each intersection was extracted from Synchro output and compared to the criteria shown in Table 4. Level of service of D or better were considered as satisfactory/acceptable.

Table 4. Level of Service Criteria for Intersections

| LOS | Control Delay per Vehicle (in seconds) | |
|-----|--|----------------------------|
| | Signalized Intersections | Unsignalized Intersections |
| A | 0-10 | 0-10 |
| B | >10-20 | >10-15 |
| C | >20-35 | >15-25 |
| D | >35-55 | >25-35 |
| E | >55-80 | >35-50 |
| F | >80 | >50 |

Source: Highway Capacity Manual 2000, Transportation Research Board

The existing conditions capacity analyses results for the AM and PM peak hours for the study intersections are summarized in Table 5. For signalized intersections, the analyses used the cycle lengths provided by City of Reno and City of Sparks; and reported in Technical Memorandum 1. Peak hour factors of 0.88 and 0.92 as recommended in HCM were used for rural and urban intersections respectively. Within the limits of this corridor, the unsignalized intersections are generally located in rural areas; while the signalized intersections are located in urban cities of Reno and Sparks.

Analysis worksheets are provided in the Appendix A.

Following are few observations and recommendations from the analysis results:

- All of the unsignalized study intersections operate satisfactorily (C or better) during both AM and PM peak hours.
- Intersection of McCarran Boulevard West with I-80 WB Ramps (Intersection # 13) operates at unacceptable level of service (LOS E) during PM peak hour. Providing an additional northbound left turn lane would improve the operations at this location.
- Intersection of Vista Boulevard with I-80 EB Ramps operates at unacceptable level of service (LOS F) during PM peak hour. This is due to heavy eastbound left turn movement from the eastbound off-ramp. Provision of an additional eastbound left turn lane at this approach would increase the LOS to acceptable levels.

- Rest of the signalized intersections operate at acceptable levels of service (D or better) during both AM and PM peak hours.

Table 5. Existing Traffic Operational Analysis Results

| Intersection Number and Name | Control | AM Peak Hour | | PM Peak Hour | |
|--|------------|-------------------------|-----|-------------------------|-----|
| | | Control Delay (sec/veh) | LOS | Control Delay (sec/veh) | LOS |
| 1. I-80 WB Off-Ramp and Gold Ranch Road at Exit 2 - West Verdi Interchange | TWSC | 10.2 | B | 11.0 | B |
| 2. I-80 EB Ramps and Gold Ranch Road at Exit 2 - West Verdi Interchange | TWSC | 0.8 | A | 0.5 | A |
| 3. I-80 WB Off-Ramp and S Verdi Road at Exit 3 - Verdi Interchange | TWSC | 8.5 | A | 8.6 | A |
| 4. I-80 EB On-Ramp and Crystal Park Road at Exit 3 - Verdi Interchange | NO CONTROL | 5.8 | A | 5.3 | A |
| 5A. I-80 WB Ramps and Frontage Road at Exit 4 - Boomtown/Garson Interchange | TWSC | 12.4 | B | 13.3 | B |
| 5B. Garson Road and Frontage Road at Exit 4- Boomtown/Garson Interchange | TWSC | 10.6 | B | 13.2 | B |
| 6. I-80 EB Ramps and Garson Road at Exit 4 - Boomtown/Garson Interchange | TWSC | 11.9 | B | 24.5 | C |
| 7. I-80 WB Off-Ramp / EB On-Ramp and Old Highway 40 at Exit 5 - East Verdi Interchange | NO CONTROL | 0.0 | A | 0.0 | A |
| 8. I-80 WB Ramps and West 4 th Street at Exit 7 - Mogul Interchange | TWSC | 8.7 | A | 9.7 | A |
| 9. I-80 EB Ramps and Mogul Road at Exit 7 - Mogul Interchange | TWSC | 11.6 | B | 9.1 | A |
| 10. I-80 WB On-Ramp and West 4 th Street at Exit 8 - West 4th Interchange | TWSC | 9.2 | A | 9.7 | A |
| 11. I-80 EB Off-Ramp and West 4 th Street at Exit 8 - West 4th Interchange | TWSC | 9.1 | A | 9.5 | A |
| 12. I-80 WB Ramps and Robb Dr at Exit 9- Robb Interchange | TWSC | 10.4 | B | 23.6 | C |
| 13. I-80 WB Ramps and McCarran Boulevard West at Exit 10 - McCarran West Interchange | SIGNAL | 24.3 | C | 71.9 | E |
| 14. I-80 EB Ramps and McCarran Boulevard West at Exit 10 - McCarran West Interchange | SIGNAL | 13.2 | B | 30.8 | C |
| 15. I-80 WB Ramps and McCarran Boulevard East at Exit 19 - McCarran East Interchange | SIGNAL | 20.7 | C | 40.2 | D |
| 16. I-80 EB Ramps and McCarran Boulevard East at Exit 19 - McCarran East Interchange | SIGNAL | 30.6 | C | 31.8 | C |
| 17. I-80 WB Ramps and Sparks Boulevard at Exit 20 - Sparks Interchange | SIGNAL | 21.8 | C | 30.3 | C |
| 18. I-80 EB Ramps and Sparks Boulevard at Exit 20 - Sparks Interchange | SIGNAL | 23.3 | C | 40.1 | D |
| 19. I-80 WB Ramps and Vista Boulevard at Exit 21 - Vista Interchange | SIGNAL | 20.4 | C | 41.9 | D |
| 20. I-80 EB Ramps and Vista Boulevard at Exit 21 - Vista Interchange | SIGNAL | 29.8 | C | 111.1 | F |
| 21. I-80 WB Ramps and Canyon Road at Exit 22 - Lockwood Interchange | NO CONTROL | 6.8 | A | 6.7 | A |
| 22. I-80 EB Ramps and Canyon Road at Exit 22 - Lockwood Interchange | TWSC | 9.4 | A | 9.3 | A |
| 23A. I-80 WB Off-Ramp and Canyon Park at Exit 23 - Mustang Interchange | TWSC | 8.8 | A | 8.6 | A |
| 23B. I-80 WB On Ramp and Canyon Park Road at Exit 23 - Mustang Interchange | NO CONTROL | 7.5 | A | 7.3 | A |

Table 5 Continued. Existing Traffic Operational Analysis Results

| Intersection Number and Name | Control | AM Peak Hour | | PM Peak Hour | |
|--|------------|-------------------------|-----|-------------------------|-----|
| | | Control Delay (sec/veh) | LOS | Control Delay (sec/veh) | LOS |
| 24A. I-80 EB On Ramp and Mustang Road at Exit 23 - Mustang Interchange | YIELD | 4.3 | A | 4.4 | A |
| 24B. I-80 EB Off-Ramp and Mustang Road at Exit 23 - Mustang Interchange | AWSC | 8.1 | A | 7.7 | A |
| 25. I-80 WB Ramps and NV Highway 655 at Exit 28 - Patrick Interchange | NO CONTROL | 0.0 | A | 0.0 | A |
| 26. I-80 EB Ramps and Waltham Way at Exit 28 - Patrick Interchange | NO CONTROL | 0.0 | A | 0.0 | A |
| 27. I-80 WB Ramps and Clark Station Road at Exit 32 - Tracy / Clark Interchange | NO CONTROL | 0.0 | A | 0.0 | A |
| 28A. I-80 EB On Ramp and Wunotoo Road at Exit 32 - Tracy / Clark Interchange | TWSC | 9.7 | A | 10.5 | B |
| 28B. I-80 EB Off Ramp and Wunotoo Road at Exit 32 - Tracy / Clark Interchange | TWSC | 13.1 | B | 11.7 | B |
| 29. I-80 WB Ramps and Derby Dam Road at Exit 36 - Thisbe / Derby Dam Interchange | TWSC | 8.8 | A | 8.9 | A |
| 30A. I-80 EB Off Ramp and Derby Dam Road at Exit 36 - Thisbe / Derby Dam Interchange | TWSC | 8.5 | A | 8.5 | A |
| 30B. I-80 EB On Ramp and Derby Dam Road at Exit 36 - Thisbe / Derby Dam Interchange | YIELD | 7.1 | A | 7.1 | A |
| 31. I-80 WB Ramps and Roadside Rest Road at Exit 38 - Orchard Interchange | TWSC | 8.8 | A | 8.8 | A |
| 32. I-80 EB Ramps and Roadside Rest Road at Exit 38 - Orchard Interchange | TWSC | 8.8 | A | 8.7 | A |
| 33. I-80 WB Ramps and Canal Road at Exit 40 - Painted Rock Interchange | TWSC | 8.8 | A | 8.7 | A |
| 34. I-80 EB Ramps and Canal Road at Exit 40 - Painted Rock Interchange | TWSC | 8.7 | A | 8.8 | A |
| 35. I-80 WB Ramps and Main Street at Exit 43 - Wadsworth Pyramid Lake Interchange | TWSC | 8.6 | A | 8.9 | A |
| 36. I-80 EB Ramps and Main Street at Exit 43 - Wadsworth Pyramid Lake Interchange | AWSC | 7.3 | A | 7.6 | A |

Note: For signalized intersections, LOS shown is for the overall intersection. For unsignalized intersections, LOS shown is for the approach with the worst delay.

TWSC = Two Way Stop Control, AWSC = All Way Stop Control

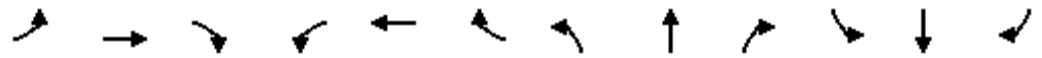
Source: Jacobs, June 2009

HCM Signalized Intersection Capacity Analysis 13: I-80 WB On Ramp & McCarran Blvd West



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|-----------------------------------|---------------------|------|-------|------|----------------------|-------|-------|------|------|------|-------|------|--|
| Lane Configurations | | | | ↙ | ↖ | ↗ | ↘ | ↑↑ | | | ↑↑ | | |
| Volume (vph) | 0 | 0 | 0 | 322 | 1 | 304 | 137 | 474 | 0 | 0 | 1249 | 95 | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | |
| Total Lost time (s) | | | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 0.88 | 1.00 | 0.95 | | | 0.95 | | |
| Fr _t | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.99 | | |
| Fl _t Protected | | | | 0.95 | 0.95 | 1.00 | 0.95 | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | | | | 1681 | 1686 | 2787 | 1770 | 3539 | | | 3502 | | |
| Fl _t Permitted | | | | 0.95 | 0.95 | 1.00 | 0.95 | 1.00 | | | 1.00 | | |
| Satd. Flow (perm) | | | | 1681 | 1686 | 2787 | 1770 | 3539 | | | 3502 | | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | |
| Adj. Flow (vph) | 0 | 0 | 0 | 350 | 1 | 330 | 149 | 515 | 0 | 0 | 1358 | 103 | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | |
| Lane Group Flow (vph) | 0 | 0 | 0 | 175 | 176 | 330 | 149 | 515 | 0 | 0 | 1456 | 0 | |
| Turn Type | | | | Perm | | Perm | Prot | | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 5 | | | 6 | | |
| Permitted Phases | | | | 8 | | 8 | | | | | | | |
| Actuated Green, G (s) | | | | 17.6 | 17.6 | 17.6 | 16.3 | 75.4 | | | 64.1 | | |
| Effective Green, g (s) | | | | 17.6 | 17.6 | 17.6 | 16.3 | 75.4 | | | 64.1 | | |
| Actuated g/C Ratio | | | | 0.16 | 0.16 | 0.16 | 0.15 | 0.69 | | | 0.58 | | |
| Clearance Time (s) | | | | 4.0 | 4.0 | 4.0 | 4.0 | | | | 4.0 | | |
| Vehicle Extension (s) | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | 3.0 | | |
| Lane Grp Cap (vph) | | | | 269 | 270 | 446 | 262 | 2426 | | | 2041 | | |
| v/s Ratio Prot | | | | | | | c0.08 | 0.15 | | | c0.42 | | |
| v/s Ratio Perm | | | | 0.10 | 0.10 | c0.12 | | | | | | | |
| v/c Ratio | | | | 0.65 | 0.65 | 0.74 | 0.57 | 0.21 | | | 0.71 | | |
| Uniform Delay, d ₁ | | | | 43.3 | 43.3 | 44.0 | 43.6 | 6.4 | | | 16.4 | | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.97 | 0.21 | | | 1.00 | | |
| Incremental Delay, d ₂ | | | | 5.5 | 5.5 | 6.3 | 2.7 | 0.0 | | | 2.2 | | |
| Delay (s) | | | | 48.9 | 48.9 | 50.4 | 44.8 | 1.4 | | | 18.6 | | |
| Level of Service | | | | D | D | D | D | A | | | B | | |
| Approach Delay (s) | | 0.0 | | | 49.6 | | | 11.1 | | | 18.6 | | |
| Approach LOS | | A | | | D | | | B | | | B | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM Average Control Delay | | | 24.3 | | HCM Level of Service | | | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.69 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 110.0 | | Sum of lost time (s) | | | | | 12.0 | | | |
| Intersection Capacity Utilization | | | 64.1% | | ICU Level of Service | | | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c | Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis 14: I-80 EB Off Ramp & McCarran Blvd West



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|-------|------|------|------|------|------|------|-------|-------|------|
| Lane Configurations | | ↕ | ↗ | | | | | ↑↑ | ↗ | ↖↗ | ↑↑ | |
| Volume (vph) | 51 | 1 | 251 | 0 | 0 | 0 | 0 | 635 | 483 | 429 | 1029 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | | | | 0.95 | 1.00 | 0.97 | 0.95 | |
| Frt | | 1.00 | 0.85 | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | | 0.95 | 1.00 | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1776 | 1583 | | | | | 3539 | 1583 | 3433 | 3539 | |
| Flt Permitted | | 0.95 | 1.00 | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 1776 | 1583 | | | | | 3539 | 1583 | 3433 | 3539 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 55 | 1 | 273 | 0 | 0 | 0 | 0 | 690 | 525 | 466 | 1118 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 243 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 56 | 273 | 0 | 0 | 0 | 0 | 690 | 282 | 466 | 1118 | 0 |
| Turn Type | Perm | | Free | | | | | | Perm | Prot | | |
| Protected Phases | | 4 | | | | | | 2 | | 1 | 6 | 1 |
| Permitted Phases | 4 | | Free | | | | | | 2 | | | |
| Actuated Green, G (s) | | 17.6 | 110.0 | | | | | 59.1 | 59.1 | 21.3 | 84.4 | |
| Effective Green, g (s) | | 17.6 | 110.0 | | | | | 59.1 | 59.1 | 21.3 | 84.4 | |
| Actuated g/C Ratio | | 0.16 | 1.00 | | | | | 0.54 | 0.54 | 0.19 | 0.77 | |
| Clearance Time (s) | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 | | |
| Vehicle Extension (s) | | 3.0 | | | | | | 3.0 | 3.0 | 3.0 | | |
| Lane Grp Cap (vph) | | 284 | 1583 | | | | | 1901 | 851 | 665 | 2715 | |
| v/s Ratio Prot | | | | | | | | 0.19 | | c0.14 | c0.32 | |
| v/s Ratio Perm | | 0.03 | c0.17 | | | | | | 0.18 | | | |
| v/c Ratio | | 0.20 | 0.17 | | | | | 0.36 | 0.33 | 0.70 | 0.41 | |
| Uniform Delay, d1 | | 40.1 | 0.0 | | | | | 14.6 | 14.3 | 41.4 | 4.4 | |
| Progression Factor | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.94 | 0.26 | |
| Incremental Delay, d2 | | 0.3 | 0.2 | | | | | 0.5 | 1.0 | 2.4 | 0.1 | |
| Delay (s) | | 40.4 | 0.2 | | | | | 15.2 | 15.4 | 41.3 | 1.2 | |
| Level of Service | | D | A | | | | | B | B | D | A | |
| Approach Delay (s) | | 7.1 | | | 0.0 | | | 15.3 | | | 13.0 | |
| Approach LOS | | A | | | A | | | B | | | B | |

| Intersection Summary | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 13.2 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.41 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 4.0 |
| Intersection Capacity Utilization | 64.1% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

15: Victorian Ave & McCarran Blvd East



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|--------|------|--------|-------|--------|------|-------|------|------|------|-------|------|
| Lane Configurations | ↖ | | ↗ | | ↕ | ↗ | ↖ | ↕ | | | ↕ | ↗ |
| Volume (vph) | 14 | 0 | 93 | 190 | 10 | 65 | 39 | 721 | 0 | 0 | 1780 | 12 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frt | 1.00 | | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | 0.95 | | 1.00 | | 0.95 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1770 | | 1583 | | 3379 | 1583 | 1770 | 5085 | | | 5080 | |
| Flt Permitted | 0.27 | | 1.00 | | 0.95 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | 500 | | 1583 | | 3379 | 1583 | 1770 | 5085 | | | 5080 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 15 | 0 | 101 | 207 | 11 | 71 | 42 | 784 | 0 | 0 | 1935 | 13 |
| RTOR Reduction (vph) | 0 | 0 | 90 | 0 | 0 | 64 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 15 | 0 | 11 | 0 | 218 | 7 | 42 | 784 | 0 | 0 | 1948 | 0 |
| Turn Type | custom | | custom | Split | | Perm | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | | | 8 | | | | | | |
| Actuated Green, G (s) | 14.9 | | 14.9 | | 14.3 | 14.3 | 7.1 | 98.8 | | | 87.7 | |
| Effective Green, g (s) | 14.9 | | 14.9 | | 14.3 | 14.3 | 7.1 | 98.8 | | | 87.7 | |
| Actuated g/C Ratio | 0.11 | | 0.11 | | 0.10 | 0.10 | 0.05 | 0.71 | | | 0.63 | |
| Clearance Time (s) | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | 53 | | 168 | | 345 | 162 | 90 | 3589 | | | 3182 | |
| v/s Ratio Prot | | | | | c0.06 | | c0.02 | 0.15 | | | c0.38 | |
| v/s Ratio Perm | c0.03 | | 0.01 | | | 0.00 | | | | | | |
| v/c Ratio | 0.28 | | 0.06 | | 1.14dl | 0.04 | 0.47 | 0.22 | | | 0.61 | |
| Uniform Delay, d1 | 57.6 | | 56.3 | | 60.3 | 56.7 | 64.6 | 7.2 | | | 15.8 | |
| Progression Factor | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 2.9 | | 0.2 | | 3.7 | 0.1 | 3.8 | 0.1 | | | 0.9 | |
| Delay (s) | 60.6 | | 56.4 | | 64.1 | 56.8 | 68.4 | 7.3 | | | 16.7 | |
| Level of Service | E | | E | | E | E | E | A | | | B | |
| Approach Delay (s) | | 57.0 | | | 62.3 | | | 10.4 | | | 16.7 | |
| Approach LOS | | E | | | E | | | B | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 20.7 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.57 | | |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) | 16.0 |
| Intersection Capacity Utilization | 60.9% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis 16: I-80 EB Off Ramp & McCarran Blvd East



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|-------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations | ↖↗ | ↖ | ↗ | | | | | ↑↑↑ | | ↖ | ↑↑ | |
| Volume (vph) | 259 | 1 | 464 | 0 | 0 | 0 | 0 | 672 | 161 | 84 | 1446 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | | | | | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | 1.00 | | | | | 0.91 | | 1.00 | 0.95 | |
| Frt | 1.00 | 1.00 | 0.85 | | | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 0.95 | 1.00 | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 3221 | 1615 | 1583 | | | | | 4938 | | 1770 | 3539 | |
| Flt Permitted | 0.95 | 0.95 | 1.00 | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 3221 | 1615 | 1583 | | | | | 4938 | | 1770 | 3539 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 282 | 1 | 504 | 0 | 0 | 0 | 0 | 730 | 175 | 91 | 1572 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 189 | 94 | 490 | 0 | 0 | 0 | 0 | 880 | 0 | 91 | 1572 | 0 |
| Turn Type | Perm | | Perm | | | | | | Prot | | | |
| Protected Phases | | | 4 | | | | 2 | | 1 | | 6 | |
| Permitted Phases | 4 | | 4 | | | | | | | | | |
| Actuated Green, G (s) | 48.6 | 48.6 | 48.6 | | | | | 67.6 | | 11.8 | 83.4 | |
| Effective Green, g (s) | 48.6 | 48.6 | 48.6 | | | | | 67.6 | | 11.8 | 83.4 | |
| Actuated g/C Ratio | 0.35 | 0.35 | 0.35 | | | | | 0.48 | | 0.08 | 0.60 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | | | | | 4.0 | | 4.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | | | | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 1118 | 561 | 550 | | | | | 2384 | | 149 | 2108 | |
| v/s Ratio Prot | | | | | | | | 0.18 | | 0.05 | c0.44 | |
| v/s Ratio Perm | 0.06 | 0.06 | c0.31 | | | | | | | | | |
| v/c Ratio | 0.17 | 0.17 | 0.89 | | | | | 0.37 | | 0.61 | 0.75 | |
| Uniform Delay, d1 | 31.7 | 31.7 | 43.2 | | | | | 22.8 | | 61.9 | 20.6 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | | | | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.1 | 0.1 | 16.5 | | | | | 0.4 | | 7.2 | 2.5 | |
| Delay (s) | 31.8 | 31.8 | 59.7 | | | | | 23.2 | | 69.1 | 23.0 | |
| Level of Service | C | C | E | | | | | C | | E | C | |
| Approach Delay (s) | | 49.7 | | | 0.0 | | | 23.2 | | | 25.6 | |
| Approach LOS | | D | | | A | | | C | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 30.6 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.80 | | |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 75.4% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

17: I-80 WB On Ramp & Sparks Blvd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|------|------|------|------|-------|------|------|------|--------|------|
| Lane Configurations | | | | | ↕ | ↗ | ↖ | ↑↑ | | | ↑↔ | |
| Volume (vph) | 0 | 0 | 0 | 67 | 1 | 61 | 94 | 472 | 0 | 0 | 695 | 889 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | | | | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | 1.00 | 1.00 | 0.95 | | | 0.95 | |
| Fr _t | | | | | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.92 | |
| Fl _t Protected | | | | | 0.95 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | | 1775 | 1583 | 1770 | 3539 | | | 3241 | |
| Fl _t Permitted | | | | | 0.95 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | | 1775 | 1583 | 1770 | 3539 | | | 3241 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 0 | 0 | 73 | 1 | 66 | 102 | 513 | 0 | 0 | 755 | 966 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 51 | 0 | 0 | 0 | 0 | 195 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 74 | 15 | 102 | 513 | 0 | 0 | 1526 | 0 |
| Turn Type | | | | Perm | Perm | Prot | | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2.5 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | | 25.8 | 25.8 | 8.7 | 76.2 | | | 63.5 | |
| Effective Green, g (s) | | | | | 25.8 | 25.8 | 8.7 | 76.2 | | | 63.5 | |
| Actuated g/C Ratio | | | | | 0.23 | 0.23 | 0.08 | 0.69 | | | 0.58 | |
| Clearance Time (s) | | | | | 4.0 | 4.0 | 4.0 | | | | 4.0 | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | | | | 3.0 | |
| Lane Grp Cap (vph) | | | | | 416 | 371 | 140 | 2452 | | | 1871 | |
| v/s Ratio Prot | | | | | | | c0.06 | 0.14 | | | c0.47 | |
| v/s Ratio Perm | | | | | 0.04 | 0.01 | | | | | | |
| v/c Ratio | | | | | 0.18 | 0.04 | 0.73 | 0.21 | | | 0.86dr | |
| Uniform Delay, d ₁ | | | | | 33.6 | 32.5 | 49.5 | 6.1 | | | 18.6 | |
| Progression Factor | | | | | 1.00 | 1.00 | 1.20 | 0.91 | | | 1.00 | |
| Incremental Delay, d ₂ | | | | | 0.2 | 0.0 | 15.1 | 0.0 | | | 4.1 | |
| Delay (s) | | | | | 33.8 | 32.6 | 74.5 | 5.5 | | | 22.6 | |
| Level of Service | | | | | C | C | E | A | | | C | |
| Approach Delay (s) | | 0.0 | | | 33.2 | | | 17.0 | | | 22.6 | |
| Approach LOS | | A | | | C | | | B | | | C | |

Intersection Summary

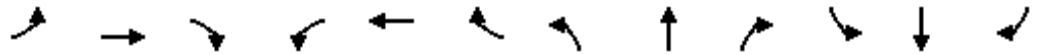
| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 21.8 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.64 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 66.8% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

18: I-80 EB Off Ramp & Sparks Blvd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|------|------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 396 | 2 | 199 | 0 | 0 | 0 | 0 | 205 | 15 | 54 | 679 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | | | | | | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 0.95 | 0.95 | | | | | | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.90 | | | | | | 0.99 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 0.99 | | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1681 | 1563 | | | | | | 3504 | | 1770 | 3539 | |
| Flt Permitted | 0.95 | 0.99 | | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1681 | 1563 | | | | | | 3504 | | 1770 | 3539 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 430 | 2 | 216 | 0 | 0 | 0 | 0 | 223 | 16 | 59 | 738 | 0 |
| RTOR Reduction (vph) | 0 | 76 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 335 | 237 | 0 | 0 | 0 | 0 | 0 | 235 | 0 | 59 | 738 | 0 |
| Turn Type | Perm | | | | | | Prot | | | | | |
| Protected Phases | | 4 | | | | | | 2 | | 1 | 6 | 1 |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 25.8 | 25.8 | | | | | | 63.5 | | 8.7 | 76.2 | |
| Effective Green, g (s) | 25.8 | 25.8 | | | | | | 63.5 | | 8.7 | 76.2 | |
| Actuated g/C Ratio | 0.23 | 0.23 | | | | | | 0.58 | | 0.08 | 0.69 | |
| Clearance Time (s) | 4.0 | 4.0 | | | | | | 4.0 | | 4.0 | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | | | | | 3.0 | | 3.0 | | |
| Lane Grp Cap (vph) | 394 | 367 | | | | | | 2023 | | 140 | 2452 | |
| v/s Ratio Prot | | | | | | | | 0.07 | | c0.03 | c0.21 | |
| v/s Ratio Perm | c0.20 | 0.15 | | | | | | | | | | |
| v/c Ratio | 0.85 | 0.65 | | | | | | 0.12 | | 0.42 | 0.30 | |
| Uniform Delay, d1 | 40.3 | 38.0 | | | | | | 10.5 | | 48.3 | 6.6 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.00 | | 0.76 | 0.50 | |
| Incremental Delay, d2 | 15.9 | 3.9 | | | | | | 0.1 | | 1.3 | 0.0 | |
| Delay (s) | 56.2 | 41.9 | | | | | | 10.7 | | 37.7 | 3.3 | |
| Level of Service | E | D | | | | | | B | | D | A | |
| Approach Delay (s) | | 49.3 | | | 0.0 | | | 10.7 | | | 5.9 | |
| Approach LOS | | D | | | A | | | B | | | A | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 23.3 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.46 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 66.8% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

19: I-80 WB On Ramp & Vista Blvd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|------|------|------|------|-------|------|------|------|-------|------|
| Lane Configurations | | | | | ↕ | | ↗ | ↕ | | | ↕ | ↗ |
| Volume (vph) | 0 | 0 | 0 | 133 | 0 | 114 | 97 | 809 | 0 | 0 | 710 | 937 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | | 0.95 | |
| Fr _t | | | | | 0.94 | | 1.00 | 1.00 | | | 0.91 | |
| Fl _t Protected | | | | | 0.97 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | | 1701 | | 1770 | 3539 | | | 3237 | |
| Fl _t Permitted | | | | | 0.97 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | | 1701 | | 1770 | 3539 | | | 3237 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 0 | 0 | 145 | 0 | 124 | 105 | 879 | 0 | 0 | 772 | 1018 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 163 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 244 | 0 | 105 | 879 | 0 | 0 | 1627 | 0 |
| Turn Type | | | | Perm | | | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | | | | 8 | | | | | | | | |
| Actuated Green, G (s) | | | | | 22.7 | | 11.6 | 99.3 | | | 83.7 | |
| Effective Green, g (s) | | | | | 22.7 | | 11.6 | 99.3 | | | 83.7 | |
| Actuated g/C Ratio | | | | | 0.17 | | 0.09 | 0.76 | | | 0.64 | |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | | | | | 3.0 | | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | | 297 | | 158 | 2703 | | | 2084 | |
| v/s Ratio Prot | | | | | | | c0.06 | 0.25 | | | c0.50 | |
| v/s Ratio Perm | | | | | 0.14 | | | | | | | |
| v/c Ratio | | | | | 0.82 | | 0.66 | 0.33 | | | 0.78 | |
| Uniform Delay, d ₁ | | | | | 51.7 | | 57.3 | 4.8 | | | 16.6 | |
| Progression Factor | | | | | 1.00 | | 1.15 | 0.14 | | | 1.00 | |
| Incremental Delay, d ₂ | | | | | 16.5 | | 8.5 | 0.3 | | | 3.0 | |
| Delay (s) | | | | | 68.3 | | 74.7 | 1.0 | | | 19.6 | |
| Level of Service | | | | | E | | E | A | | | B | |
| Approach Delay (s) | | 0.0 | | | 68.3 | | | 8.8 | | | 19.6 | |
| Approach LOS | | A | | | E | | | A | | | B | |

| Intersection Summary | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 20.4 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.78 | | |
| Actuated Cycle Length (s) | 130.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 79.5% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

20: I-80 EB Off Ramp & Vista Blvd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|-------|-------|------|
| Lane Configurations | | ↕ | ↗ | | | | | ↕↗ | | ↗ | ↕↕ | |
| Volume (vph) | 614 | 2 | 104 | 0 | 0 | 0 | 0 | 263 | 77 | 139 | 708 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 4.0 | 4.0 | | | | | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | | | | 0.95 | | 1.00 | 0.95 | |
| Frt | | 1.00 | 0.85 | | | | | 0.97 | | 1.00 | 1.00 | |
| Flt Protected | | 0.95 | 1.00 | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1774 | 1583 | | | | | 3419 | | 1770 | 3539 | |
| Flt Permitted | | 0.95 | 1.00 | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 1774 | 1583 | | | | | 3419 | | 1770 | 3539 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 667 | 2 | 113 | 0 | 0 | 0 | 0 | 286 | 84 | 151 | 770 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 36 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 669 | 77 | 0 | 0 | 0 | 0 | 352 | 0 | 151 | 770 | 0 |
| Turn Type | Perm | | Perm | | | | | | | Prot | | |
| Protected Phases | | 4 | | | | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | | | | | | | | | |
| Actuated Green, G (s) | | 60.4 | 60.4 | | | | | 36.6 | | 21.0 | 61.6 | |
| Effective Green, g (s) | | 60.4 | 60.4 | | | | | 36.6 | | 21.0 | 61.6 | |
| Actuated g/C Ratio | | 0.46 | 0.46 | | | | | 0.28 | | 0.16 | 0.47 | |
| Clearance Time (s) | | 4.0 | 4.0 | | | | | 4.0 | | 4.0 | 4.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 824 | 735 | | | | | 963 | | 286 | 1677 | |
| v/s Ratio Prot | | | | | | | | 0.10 | | c0.09 | c0.22 | |
| v/s Ratio Perm | | 0.38 | 0.05 | | | | | | | | | |
| v/c Ratio | | 0.81 | 0.10 | | | | | 0.37 | | 0.53 | 0.46 | |
| Uniform Delay, d1 | | 29.9 | 19.6 | | | | | 37.4 | | 50.0 | 23.0 | |
| Progression Factor | | 1.00 | 1.00 | | | | | 1.00 | | 0.89 | 0.78 | |
| Incremental Delay, d2 | | 6.1 | 0.1 | | | | | 1.1 | | 1.1 | 0.5 | |
| Delay (s) | | 36.0 | 19.6 | | | | | 38.5 | | 45.3 | 18.6 | |
| Level of Service | | D | B | | | | | D | | D | B | |
| Approach Delay (s) | | 33.7 | | | 0.0 | | | 38.5 | | | 23.0 | |
| Approach LOS | | C | | | A | | | D | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 29.8 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.66 | | |
| Actuated Cycle Length (s) | 130.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 79.5% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

1: I-80 WB Off Ramp & Gold Ranch Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|------|------|------|------|------|------|-----|
| Lane Configurations | | | | | ↔ | ↔ | | ↔ | | | ↔ | | |
| Volume (veh/h) | 0 | 0 | 0 | 8 | 117 | 20 | 2 | 35 | 0 | 0 | 38 | 30 | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | |
| Hourly flow rate (vph) | 0 | 0 | 0 | 9 | 133 | 23 | 2 | 40 | 0 | 0 | 43 | 34 | |
| Pedestrians | | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | |
| vC, conflicting volume | 133 | | | 0 | | | | 207 | 151 | 0 | 171 | 151 | 133 |
| vC1, stage 1 conf vol | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | |
| vCu, unblocked vol | 133 | | | 0 | | | | 207 | 151 | 0 | 171 | 151 | 133 |
| tC, single (s) | 4.1 | | | 4.1 | | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 99 | | | | 100 | 95 | 100 | 100 | 94 | 96 |
| cM capacity (veh/h) | 1452 | | | 1623 | | | | 688 | 736 | 1085 | 756 | 736 | 916 |
| Direction, Lane # | WB 1 | WB 2 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 142 | 23 | 42 | 77 | | | | | | | | | |
| Volume Left | 9 | 0 | 2 | 0 | | | | | | | | | |
| Volume Right | 0 | 23 | 0 | 34 | | | | | | | | | |
| cSH | 1623 | 1700 | 734 | 806 | | | | | | | | | |
| Volume to Capacity | 0.01 | 0.01 | 0.06 | 0.10 | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 5 | 8 | | | | | | | | | |
| Control Delay (s) | 0.5 | 0.0 | 10.2 | 9.9 | | | | | | | | | |
| Lane LOS | A | | B | A | | | | | | | | | |
| Approach Delay (s) | 0.4 | | 10.2 | 9.9 | | | | | | | | | |
| Approach LOS | | | B | A | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| Average Delay | | | 4.5 | | | | | | | | | | |
| Intersection Capacity Utilization | | | 17.1% | ICU Level of Service | A | | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

2: I-80 EB On Ramp & Gold Ranch Rd



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------------|-------------|------|----------------------|------|------|
| Lane Configurations | | | | ↕ | ↕ | |
| Volume (veh/h) | 0 | 0 | 4 | 34 | 6 | 54 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 5 | 39 | 7 | 61 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 85 | 38 | 7 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 85 | 38 | 7 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 100 | 100 | | | |
| cM capacity (veh/h) | 914 | 1035 | 1614 | | | |
| Direction, Lane # | NB 1 | SB 1 | | | | |
| Volume Total | 43 | 68 | | | | |
| Volume Left | 5 | 0 | | | | |
| Volume Right | 0 | 61 | | | | |
| cSH | 1614 | 1700 | | | | |
| Volume to Capacity | 0.00 | 0.04 | | | | |
| Queue Length 95th (ft) | 0 | 0 | | | | |
| Control Delay (s) | 0.8 | 0.0 | | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.8 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.3 | | | |
| Intersection Capacity Utilization | | | 8.5% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

3: I-80 WB Off Ramp & S. Verdi Rd



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | ↶ | ↷ | ↶ | | | ↶ |
| Volume (veh/h) | 3 | 6 | 1 | 0 | 0 | 24 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 3 | 7 | 1 | 0 | 0 | 27 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 28 | 1 | | | 1 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 28 | 1 | | | 1 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 99 | | | 100 | |
| cM capacity (veh/h) | 986 | 1083 | | | 1622 | |

| Direction, Lane # | WB 1 | WB 2 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 3 | 7 | 1 | 27 |
| Volume Left | 3 | 0 | 0 | 0 |
| Volume Right | 0 | 7 | 0 | 0 |
| cSH | 986 | 1083 | 1700 | 1700 |
| Volume to Capacity | 0.00 | 0.01 | 0.00 | 0.02 |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 |
| Control Delay (s) | 8.7 | 8.3 | 0.0 | 0.0 |
| Lane LOS | A | A | | |
| Approach Delay (s) | 8.5 | | 0.0 | 0.0 |
| Approach LOS | A | | | |

| Intersection Summary | | | |
|-----------------------------------|--|-------|------------------------|
| Average Delay | | 2.2 | |
| Intersection Capacity Utilization | | 13.3% | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis






















4: I-80 EB On Ramp & Crystal Park Rd



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|-------------|-------------|-------|------|----------------------|------|
| Lane Configurations | | | ↔ | | | ↔ |
| Volume (veh/h) | 0 | 0 | 1 | 6 | 23 | 6 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 1 | 7 | 26 | 7 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 64 | 5 | | | 8 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 64 | 5 | | | 8 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 98 | |
| cM capacity (veh/h) | 927 | 1079 | | | 1612 | |
| Direction, Lane # | NB 1 | SB 1 | | | | |
| Volume Total | 8 | 33 | | | | |
| Volume Left | 0 | 26 | | | | |
| Volume Right | 7 | 0 | | | | |
| cSH | 1700 | 1612 | | | | |
| Volume to Capacity | 0.00 | 0.02 | | | | |
| Queue Length 95th (ft) | 0 | 1 | | | | |
| Control Delay (s) | 0.0 | 5.8 | | | | |
| Lane LOS | | A | | | | |
| Approach Delay (s) | 0.0 | 5.8 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 4.7 | | | |
| Intersection Capacity Utilization | | | 11.6% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

5: Frontage Rd & Cabela Dr

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|--|---|---|---|---|--|---|---|---|--|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | |  |  | | |  |  | |   | |
| Volume (veh/h) | 10 | 10 | 10 | 10 | 10 | 10 | 20 | 321 | 114 | 10 | 61 | 10 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 11 | 11 | 11 | 11 | 11 | 11 | 23 | 365 | 130 | 11 | 69 | 11 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 525 | 508 | 75 | 525 | 514 | 365 | 81 | | | 365 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 525 | 508 | 75 | 525 | 514 | 365 | 81 | | | 365 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 97 | 98 | 99 | 97 | 97 | 98 | 99 | | | 99 | | |
| cM capacity (veh/h) | 438 | 456 | 986 | 441 | 453 | 680 | 1517 | | | 1194 | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | NB 1 | NB 2 | SB 1 | | | | |
| Volume Total | 11 | 8 | 15 | 11 | 23 | 388 | 130 | 92 | | | | |
| Volume Left | 11 | 0 | 0 | 11 | 0 | 23 | 0 | 11 | | | | |
| Volume Right | 0 | 0 | 11 | 0 | 11 | 0 | 130 | 11 | | | | |
| cSH | 438 | 456 | 764 | 441 | 544 | 1517 | 1700 | 1194 | | | | |
| Volume to Capacity | 0.03 | 0.02 | 0.02 | 0.03 | 0.04 | 0.01 | 0.08 | 0.01 | | | | |
| Queue Length 95th (ft) | 2 | 1 | 2 | 2 | 3 | 1 | 0 | 1 | | | | |
| Control Delay (s) | 13.4 | 13.0 | 9.8 | 13.4 | 11.9 | 0.6 | 0.0 | 1.1 | | | | |
| Lane LOS | B | B | A | B | B | A | | A | | | | |
| Approach Delay (s) | 11.7 | | | 12.4 | | 0.4 | | 1.1 | | | | |
| Approach LOS | B | | | B | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.7 | | | | | | | | | |
| Intersection Capacity Utilization | | | 34.5% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

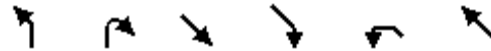
6: I-80 EB Off Ramp & Garson Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | | | | ↑ | | | ↔ | |
| Volume (veh/h) | 153 | 2 | 1 | 0 | 0 | 0 | 0 | 7 | 34 | 78 | 16 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 174 | 2 | 1 | 0 | 0 | 0 | 0 | 8 | 39 | 89 | 18 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 223 | 242 | 18 | 225 | 223 | 27 | 18 | | | 47 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 223 | 242 | 18 | 225 | 223 | 27 | 18 | | | 47 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 75 | 100 | 100 | 100 | 100 | 100 | 100 | | | 94 | | |
| cM capacity (veh/h) | 701 | 622 | 1060 | 696 | 638 | 1048 | 1599 | | | 1561 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 177 | 47 | 107 | | | | | | | | | |
| Volume Left | 174 | 0 | 89 | | | | | | | | | |
| Volume Right | 1 | 39 | 0 | | | | | | | | | |
| cSH | 702 | 1700 | 1561 | | | | | | | | | |
| Volume to Capacity | 0.25 | 0.03 | 0.06 | | | | | | | | | |
| Queue Length 95th (ft) | 25 | 0 | 5 | | | | | | | | | |
| Control Delay (s) | 11.9 | 0.0 | 6.3 | | | | | | | | | |
| Lane LOS | B | | A | | | | | | | | | |
| Approach Delay (s) | 11.9 | 0.0 | 6.3 | | | | | | | | | |
| Approach LOS | B | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 8.4 | | | | | | | | | |
| Intersection Capacity Utilization | | | 27.1% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

7: I-80 EB On Ramp & Old Hwy 40



| Movement | NBL | NBR | SET | SER | NWL | NWT |
|-----------------------------------|-------------|-------------|-------|------|----------------------|------|
| Lane Configurations | | | | ↗ | | ↖ |
| Volume (veh/h) | 0 | 0 | 0 | 259 | 0 | 153 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 0 | 294 | 0 | 174 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 174 | 0 | | | 294 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 174 | 0 | | | 294 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 816 | 1085 | | | 1267 | |
| Direction, Lane # | SE 1 | NW 1 | | | | |
| Volume Total | 294 | 174 | | | | |
| Volume Left | 0 | 0 | | | | |
| Volume Right | 294 | 0 | | | | |
| cSH | 1700 | 1700 | | | | |
| Volume to Capacity | 0.17 | 0.10 | | | | |
| Queue Length 95th (ft) | 0 | 0 | | | | |
| Control Delay (s) | 0.0 | 0.0 | | | | |
| Lane LOS | | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 19.4% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

8: Silva Ranch Rd & W 4th St

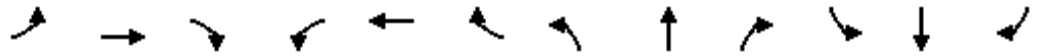


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | ↔ | | ↔ | |
| Volume (veh/h) | 1 | 54 | 17 | 1 | 1 | 1 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 1 | 61 | 19 | 1 | 1 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 20 | | | | 84 | 20 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 20 | | | | 84 | 20 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 100 | 100 |
| cM capacity (veh/h) | 1596 | | | | 918 | 1058 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|------------------------|------|------|------|
| Volume Total | 62 | 20 | 2 |
| Volume Left | 1 | 0 | 1 |
| Volume Right | 0 | 1 | 1 |
| cSH | 1596 | 1700 | 983 |
| Volume to Capacity | 0.00 | 0.01 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.1 | 0.0 | 8.7 |
| Lane LOS | A | | A |
| Approach Delay (s) | 0.1 | 0.0 | 8.7 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|-----------------------------------|--|-------|----------------------|
| Average Delay | | 0.3 | |
| Intersection Capacity Utilization | | 13.6% | ICU Level of Service |
| Analysis Period (min) | | 15 | A |

HCM Unsignalized Intersection Capacity Analysis 9: I-80 EB Off Ramp & Mogul/Silva Ranch



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | | | | ↕ | | | ↕ | |
| Volume (veh/h) | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 3 | 200 | 7 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 3 | 227 | 8 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 466 | 468 | 8 | 468 | 466 | 4 | 8 | | | 6 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 466 | 468 | 8 | 468 | 466 | 4 | 8 | | | 6 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | | | 86 | | |
| cM capacity (veh/h) | 452 | 423 | 1074 | 449 | 424 | 1080 | 1612 | | | 1615 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 3 | 6 | 235 | | | | | | | | | |
| Volume Left | 1 | 0 | 227 | | | | | | | | | |
| Volume Right | 1 | 3 | 0 | | | | | | | | | |
| cSH | 545 | 1700 | 1615 | | | | | | | | | |
| Volume to Capacity | 0.01 | 0.00 | 0.14 | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 12 | | | | | | | | | |
| Control Delay (s) | 11.6 | 0.0 | 7.4 | | | | | | | | | |
| Lane LOS | B | | A | | | | | | | | | |
| Approach Delay (s) | 11.6 | 0.0 | 7.4 | | | | | | | | | |
| Approach LOS | B | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 7.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 28.1% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

10: I-80 WB On Ramp & W 4th St



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|-------------|-------------|-------|------|----------------------|------|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 0 | 0 | 116 | 9 | 3 | 1 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 132 | 10 | 3 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 142 | | | | 137 | 137 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 142 | | | | 137 | 137 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 100 | 100 |
| cM capacity (veh/h) | 1441 | | | | 856 | 912 |
| Direction, Lane # | WB 1 | SB 1 | | | | |
| Volume Total | 142 | 5 | | | | |
| Volume Left | 0 | 3 | | | | |
| Volume Right | 10 | 1 | | | | |
| cSH | 1700 | 870 | | | | |
| Volume to Capacity | 0.08 | 0.01 | | | | |
| Queue Length 95th (ft) | 0 | 0 | | | | |
| Control Delay (s) | 0.0 | 9.2 | | | | |
| Lane LOS | | A | | | | |
| Approach Delay (s) | 0.0 | 9.2 | | | | |
| Approach LOS | | A | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.3 | | | |
| Intersection Capacity Utilization | | | 16.7% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

11: I-80 EB Off Ramp & W th St



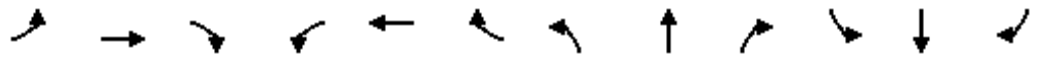
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | ↑ | | ↗ | ↘ | |
| Volume (veh/h) | 0 | 93 | 0 | 125 | 3 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 106 | 0 | 142 | 3 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 142 | | | | 106 | 0 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 142 | | | | 106 | 0 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 100 | 100 |
| cM capacity (veh/h) | 1441 | | | | 892 | 1085 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|------------------------|------|------|------|
| Volume Total | 106 | 142 | 3 |
| Volume Left | 0 | 0 | 3 |
| Volume Right | 0 | 142 | 0 |
| cSH | 1700 | 1700 | 892 |
| Volume to Capacity | 0.06 | 0.08 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.0 | 9.1 |
| Lane LOS | | | A |
| Approach Delay (s) | 0.0 | 0.0 | 9.1 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|-----------------------------------|--|-------|------------------------|
| Average Delay | | 0.1 | |
| Intersection Capacity Utilization | | 14.9% | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

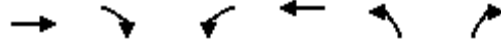
HCM Unsignalized Intersection Capacity Analysis

12: I-80 WB On Ramp & Robb Dr



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|-------------|----------------------|-------------|-------------|-------------|------|------|------|------|
| Lane Configurations | | | | | ↖ | ↗ | ↖ | ↑ | | | ↗ | ↖ |
| Volume (veh/h) | 0 | 0 | 0 | 5 | 1 | 325 | 1 | 111 | 0 | 0 | 1635 | 149 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 0 | 6 | 1 | 369 | 1 | 126 | 0 | 0 | 1858 | 169 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1987 | 1986 | 929 | 1057 | 1986 | 126 | 1858 | | | 126 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1987 | 1986 | 929 | 1057 | 1986 | 126 | 1858 | | | 126 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 100 | 97 | 98 | 59 | 100 | | | 100 | | |
| cM capacity (veh/h) | 21 | 60 | 269 | 179 | 60 | 901 | 322 | | | 1458 | | |
| Direction, Lane # | WB 1 | WB 2 | WB 3 | NB 1 | NB 2 | SB 1 | SB 2 | SB 3 | | | | |
| Volume Total | 7 | 185 | 185 | 1 | 126 | 929 | 929 | 169 | | | | |
| Volume Left | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | | | | |
| Volume Right | 0 | 185 | 185 | 0 | 0 | 0 | 0 | 169 | | | | |
| cSH | 135 | 901 | 901 | 322 | 1700 | 1700 | 1700 | 1700 | | | | |
| Volume to Capacity | 0.05 | 0.21 | 0.21 | 0.00 | 0.07 | 0.55 | 0.55 | 0.10 | | | | |
| Queue Length 95th (ft) | 4 | 19 | 19 | 0 | 0 | 0 | 0 | 0 | | | | |
| Control Delay (s) | 33.2 | 10.0 | 10.0 | 16.2 | 0.0 | 0.0 | 0.0 | 0.0 | | | | |
| Lane LOS | D | B | B | C | | | | | | | | |
| Approach Delay (s) | 10.4 | | | 0.1 | | 0.0 | | | | | | |
| Approach LOS | B | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 55.2% | | ICU Level of Service | | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 21: Canyon Rd & I-80 WB Off/On Ramps



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | → | | | ← | | ↗ |
| Volume (veh/h) | 12 | 16 | 165 | 21 | 0 | 11 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 14 | 18 | 188 | 24 | 0 | 12 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 32 | | 422 | 23 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 32 | | 422 | 23 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 88 | | 100 | 99 |
| cM capacity (veh/h) | | | 1580 | | 519 | 1054 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|------------------------|------|------|------|
| Volume Total | 32 | 211 | 12 |
| Volume Left | 0 | 188 | 0 |
| Volume Right | 18 | 0 | 12 |
| cSH | 1700 | 1580 | 1054 |
| Volume to Capacity | 0.02 | 0.12 | 0.01 |
| Queue Length 95th (ft) | 0 | 10 | 1 |
| Control Delay (s) | 0.0 | 6.8 | 8.5 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 6.8 | 8.5 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|-----------------------------------|-------|-----|------------------------|
| Average Delay | | 6.1 | |
| Intersection Capacity Utilization | 20.2% | | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis

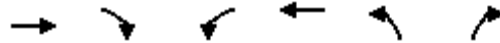
22: I-80 EB Off Ramp & Canyon Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | | | | ↑ | | | ↔ | |
| Volume (veh/h) | 26 | 4 | 47 | 0 | 0 | 0 | 0 | 163 | 5 | 13 | 6 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 30 | 5 | 53 | 0 | 0 | 0 | 0 | 185 | 6 | 15 | 7 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 224 | 227 | 7 | 280 | 224 | 188 | 7 | | | 191 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 224 | 227 | 7 | 280 | 224 | 188 | 7 | | | 191 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 96 | 99 | 95 | 100 | 100 | 100 | 100 | | | 99 | | |
| cM capacity (veh/h) | 725 | 665 | 1076 | 630 | 667 | 854 | 1614 | | | 1383 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 88 | 191 | 22 | | | | | | | | | |
| Volume Left | 30 | 0 | 15 | | | | | | | | | |
| Volume Right | 53 | 6 | 0 | | | | | | | | | |
| cSH | 900 | 1700 | 1383 | | | | | | | | | |
| Volume to Capacity | 0.10 | 0.11 | 0.01 | | | | | | | | | |
| Queue Length 95th (ft) | 8 | 0 | 1 | | | | | | | | | |
| Control Delay (s) | 9.4 | 0.0 | 5.2 | | | | | | | | | |
| Lane LOS | A | | A | | | | | | | | | |
| Approach Delay (s) | 9.4 | 0.0 | 5.2 | | | | | | | | | |
| Approach LOS | A | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.1 | | | | | | | | | |
| Intersection Capacity Utilization | | | 23.0% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

23: Canyon Rd & I-80 WB Off Ramp



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | ↑ | | | ↑ | ↘ | |
| Volume (veh/h) | 17 | 0 | 0 | 16 | 35 | 5 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 19 | 0 | 0 | 18 | 40 | 6 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 19 | | 38 | 19 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 19 | | 38 | 19 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 96 | 99 |
| cM capacity (veh/h) | | | 1597 | | 975 | 1059 |
| Direction, Lane # | | | | | | |
| | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 19 | 18 | 45 | | | |
| Volume Left | 0 | 0 | 40 | | | |
| Volume Right | 0 | 0 | 6 | | | |
| cSH | 1700 | 1700 | 985 | | | |
| Volume to Capacity | 0.01 | 0.01 | 0.05 | | | |
| Queue Length 95th (ft) | 0 | 0 | 4 | | | |
| Control Delay (s) | 0.0 | 0.0 | 8.8 | | | |
| Lane LOS | | | A | | | |
| Approach Delay (s) | 0.0 | 0.0 | 8.8 | | | |
| Approach LOS | | | A | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 4.8 | | | |
| Intersection Capacity Utilization | | | 13.3% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

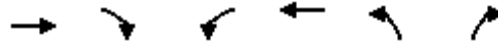
24: Mustang Rd & I-80 EB On Ramp



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|-------------|-------------|------|----------------------|------|------|
| Lane Configurations | | ↶ | ↷ | | | |
| Volume (veh/h) | 54 | 43 | 54 | 8 | 0 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 61 | 49 | 61 | 9 | 0 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 61 | | | | 238 | 66 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 61 | | | | 238 | 66 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 96 | | | | 100 | 100 |
| cM capacity (veh/h) | 1542 | | | | 721 | 998 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 110 | 70 | | | | |
| Volume Left | 61 | 0 | | | | |
| Volume Right | 0 | 9 | | | | |
| cSH | 1542 | 1700 | | | | |
| Volume to Capacity | 0.04 | 0.04 | | | | |
| Queue Length 95th (ft) | 3 | 0 | | | | |
| Control Delay (s) | 4.3 | 0.0 | | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 4.3 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 2.6 | | | | |
| Intersection Capacity Utilization | | 15.3% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis

25: NV Hwy 655 & I-80 WB On Ramp



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | ↗ | | ↖ | | |
| Volume (veh/h) | 0 | 52 | 0 | 24 | 0 | 0 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 59 | 0 | 27 | 0 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 59 | | 27 | 0 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 59 | | 27 | 0 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1545 | | 988 | 1085 |

| Direction, Lane # | EB 1 | WB 1 |
|------------------------|------|------|
| Volume Total | 59 | 27 |
| Volume Left | 0 | 0 |
| Volume Right | 59 | 0 |
| cSH | 1700 | 1700 |
| Volume to Capacity | 0.03 | 0.02 |
| Queue Length 95th (ft) | 0 | 0 |
| Control Delay (s) | 0.0 | 0.0 |
| Lane LOS | | |
| Approach Delay (s) | 0.0 | 0.0 |
| Approach LOS | | |

| Intersection Summary | | | |
|-----------------------------------|------|----------------------|---|
| Average Delay | | 0.0 | |
| Intersection Capacity Utilization | 6.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis 27: I-80 WB Off Ramp & I-80 WB On Ramp



| Movement | NBL | NBR | NET | NER | SWL | SWT |
|-----------------------------------|-------------|-------------|------|------|----------------------|------|
| Lane Configurations | | ↑ | | | | ↑ |
| Volume (veh/h) | 0 | 24 | 0 | 0 | 0 | 52 |
| Sign Control | Free | | Stop | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 27 | 0 | 0 | 0 | 59 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 59 | | 27 | 0 | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 59 | | 27 | 0 | | |
| tC, single (s) | 4.1 | | 6.4 | 6.2 | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | 3.5 | 3.3 | | |
| p0 queue free % | 100 | | 100 | 100 | | |
| cM capacity (veh/h) | 1545 | | 988 | 1085 | | |
| Direction, Lane # | NB 1 | SW 1 | | | | |
| Volume Total | 27 | 59 | | | | |
| Volume Left | 0 | 0 | | | | |
| Volume Right | 0 | 59 | | | | |
| cSH | 1700 | 1700 | | | | |
| Volume to Capacity | 0.02 | 0.03 | | | | |
| Queue Length 95th (ft) | 0 | 0 | | | | |
| Control Delay (s) | 0.0 | 0.0 | | | | |
| Lane LOS | | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 6.7% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

28: Wunotoo Rd & Clark Station Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | | | | ↕ | | | ↕ | |
| Volume (veh/h) | 50 | 1 | 106 | 0 | 0 | 0 | 2 | 80 | 14 | 1 | 38 | 1 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 57 | 1 | 120 | 0 | 0 | 0 | 2 | 91 | 16 | 1 | 43 | 1 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 149 | 157 | 44 | 270 | 150 | 99 | 44 | | | 107 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 149 | 157 | 44 | 270 | 150 | 99 | 44 | | | 107 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 93 | 100 | 88 | 100 | 100 | 100 | 100 | | | 100 | | |
| cM capacity (veh/h) | 817 | 733 | 1026 | 600 | 740 | 957 | 1564 | | | 1484 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 178 | 109 | 45 | | | | | | | | | |
| Volume Left | 57 | 2 | 1 | | | | | | | | | |
| Volume Right | 120 | 16 | 1 | | | | | | | | | |
| cSH | 947 | 1564 | 1484 | | | | | | | | | |
| Volume to Capacity | 0.19 | 0.00 | 0.00 | | | | | | | | | |
| Queue Length 95th (ft) | 17 | 0 | 0 | | | | | | | | | |
| Control Delay (s) | 9.7 | 0.2 | 0.2 | | | | | | | | | |
| Lane LOS | A | A | A | | | | | | | | | |
| Approach Delay (s) | 9.7 | 0.2 | 0.2 | | | | | | | | | |
| Approach LOS | A | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 5.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 22.0% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | | | ↕ | ↕ | |
| Volume (veh/h) | 0 | 0 | 1 | 1 | 1 | 0 |
| Sign Control | Stop | | | Stop | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 1 | 1 | 1 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 2 | 0 | 2 | 2 | 0 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 2 | 0 | 2 | 2 | 0 | |
| tC, single (s) | 6.5 | 6.2 | 7.1 | 6.5 | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 4.0 | 3.3 | 3.5 | 4.0 | 2.2 | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | |
| cM capacity (veh/h) | 893 | 1085 | 1019 | 893 | 1623 | |

| Direction, Lane # | WB 1 | NB 1 |
|------------------------|------|------|
| Volume Total | 2 | 1 |
| Volume Left | 1 | 1 |
| Volume Right | 0 | 0 |
| cSH | 952 | 1623 |
| Volume to Capacity | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 |
| Control Delay (s) | 8.8 | 7.2 |
| Lane LOS | A | A |
| Approach Delay (s) | 8.8 | 7.2 |
| Approach LOS | A | |

| Intersection Summary | | | |
|-----------------------------------|-------|----------------------|---|
| Average Delay | | 8.3 | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

HCM Unsignalized Intersection Capacity Analysis

30: Derby Dam & I-80 EB Off Ramp

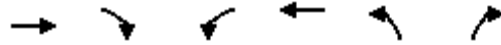


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | ↑ | ↑ | | ↑ | ↑ |
| Volume (veh/h) | 0 | 1 | 1 | 0 | 5 | 1 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 1 | 1 | 0 | 6 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 1 | | | | 2 | 1 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1 | | | | 2 | 1 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 99 | 100 |
| cM capacity (veh/h) | 1622 | | | | 1020 | 1083 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 |
|------------------------|------|------|------|------|
| Volume Total | 1 | 1 | 6 | 1 |
| Volume Left | 0 | 0 | 6 | 0 |
| Volume Right | 0 | 0 | 0 | 1 |
| cSH | 1700 | 1700 | 1020 | 1083 |
| Volume to Capacity | 0.00 | 0.00 | 0.01 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.0 | 8.5 | 8.3 |
| Lane LOS | | | A | A |
| Approach Delay (s) | 0.0 | 0.0 | 8.5 | |
| Approach LOS | | | A | |

| Intersection Summary | | | |
|-----------------------------------|--|-------|----------------------|
| Average Delay | | 6.4 | |
| Intersection Capacity Utilization | | 13.3% | ICU Level of Service |
| Analysis Period (min) | | 15 | A |

HCM Unsignalized Intersection Capacity Analysis 31: I-80 WB On Ramp & Roadside Rest Rd

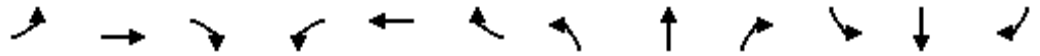


| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | | | ↔ | ↔ | |
| Volume (veh/h) | 0 | 0 | 1 | 1 | 1 | 0 |
| Sign Control | Stop | | | Stop | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 1 | 1 | 1 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 2 | 0 | 2 | 2 | 0 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 2 | 0 | 2 | 2 | 0 | |
| tC, single (s) | 6.5 | 6.2 | 7.1 | 6.5 | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 4.0 | 3.3 | 3.5 | 4.0 | 2.2 | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | |
| cM capacity (veh/h) | 893 | 1085 | 1019 | 893 | 1623 | |

| Direction, Lane # | WB 1 | NB 1 |
|------------------------|------|------|
| Volume Total | 2 | 1 |
| Volume Left | 1 | 1 |
| Volume Right | 0 | 0 |
| cSH | 952 | 1623 |
| Volume to Capacity | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 |
| Control Delay (s) | 8.8 | 7.2 |
| Lane LOS | A | A |
| Approach Delay (s) | 8.8 | 7.2 |
| Approach LOS | A | |

| Intersection Summary | | | |
|-----------------------------------|-------|----------------------|---|
| Average Delay | | 8.3 | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | | 15 | |

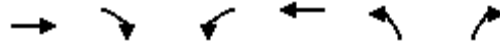
HCM Unsignalized Intersection Capacity Analysis 32: I-80 EB Off Ramp & Roadside Rest Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | | | | ↔ | | | ↔ | |
| Volume (veh/h) | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 5 | 6 | 1 | 7 | 5 | 2 | 1 | | | 2 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 5 | 6 | 1 | 7 | 5 | 2 | 1 | | | 2 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | | | 100 | | |
| cM capacity (veh/h) | 1015 | 889 | 1083 | 1009 | 890 | 1083 | 1622 | | | 1620 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 5 | 2 | 2 | | | | | | | | | |
| Volume Left | 1 | 0 | 1 | | | | | | | | | |
| Volume Right | 1 | 1 | 0 | | | | | | | | | |
| cSH | 962 | 1700 | 1620 | | | | | | | | | |
| Volume to Capacity | 0.00 | 0.00 | 0.00 | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | | | | | | | | | |
| Control Delay (s) | 8.8 | 0.0 | 3.6 | | | | | | | | | |
| Lane LOS | A | | A | | | | | | | | | |
| Approach Delay (s) | 8.8 | 0.0 | 3.6 | | | | | | | | | |
| Approach LOS | A | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 5.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 13.3% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

33: I-80 WB On Ramp & Canal Rd



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | | | ↕ | ↕ | |
| Volume (veh/h) | 0 | 0 | 4 | 1 | 8 | 0 |
| Sign Control | Stop | | | Stop | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 5 | 1 | 9 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 18 | 0 | 18 | 18 | 0 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 18 | 0 | 18 | 18 | 0 | |
| tC, single (s) | 6.5 | 6.2 | 7.1 | 6.5 | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 4.0 | 3.3 | 3.5 | 4.0 | 2.2 | |
| p0 queue free % | 100 | 100 | 100 | 100 | 99 | |
| cM capacity (veh/h) | 871 | 1085 | 992 | 871 | 1623 | |

| Direction, Lane # | WB 1 | NB 1 |
|------------------------|------|------|
| Volume Total | 6 | 9 |
| Volume Left | 5 | 9 |
| Volume Right | 0 | 0 |
| cSH | 965 | 1623 |
| Volume to Capacity | 0.01 | 0.01 |
| Queue Length 95th (ft) | 0 | 0 |
| Control Delay (s) | 8.8 | 7.2 |
| Lane LOS | A | A |
| Approach Delay (s) | 8.8 | 7.2 |
| Approach LOS | A | |

| Intersection Summary | | | |
|-----------------------------------|-------|----------------------|---|
| Average Delay | | 7.8 | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis

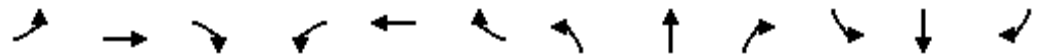
34: I-80 EB Off Ramp & Canal Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | | | | ↑ | | | ↔ | |
| Volume (veh/h) | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 8 | 2 | 2 | 2 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 9 | 2 | 2 | 2 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 17 | 18 | 2 | 19 | 17 | 10 | 2 | | | 11 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 17 | 18 | 2 | 19 | 17 | 10 | 2 | | | 11 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | | | 100 | | |
| cM capacity (veh/h) | 997 | 875 | 1082 | 992 | 876 | 1071 | 1620 | | | 1608 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 3 | 11 | 5 | | | | | | | | | |
| Volume Left | 1 | 0 | 2 | | | | | | | | | |
| Volume Right | 1 | 2 | 0 | | | | | | | | | |
| cSH | 977 | 1700 | 1608 | | | | | | | | | |
| Volume to Capacity | 0.00 | 0.01 | 0.00 | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | | | | | | | | | |
| Control Delay (s) | 8.7 | 0.0 | 3.6 | | | | | | | | | |
| Lane LOS | A | | A | | | | | | | | | |
| Approach Delay (s) | 8.7 | 0.0 | 3.6 | | | | | | | | | |
| Approach LOS | A | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 2.4 | | | | | | | | | |
| Intersection Capacity Utilization | | | 13.3% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

35: I-80 WB On Ramp & Main St



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|-------------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | ↔ | | | ↕ | | | ↑ | ↗ |
| Volume (veh/h) | 0 | 0 | 0 | 1 | 1 | 12 | 2 | 29 | 0 | 0 | 11 | 35 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 0 | 1 | 1 | 14 | 2 | 33 | 0 | 0 | 12 | 40 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | None | | | None | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 64 | 50 | 12 | 50 | 90 | 33 | 52 | | | 33 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 64 | 50 | 12 | 50 | 90 | 33 | 52 | | | 33 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | 99 | 100 | | | 100 | | |
| cM capacity (veh/h) | 916 | 840 | 1068 | 949 | 799 | 1041 | 1554 | | | 1579 | | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | SB 2 | | | | | | | | |
| Volume Total | 16 | 35 | 12 | 40 | | | | | | | | |
| Volume Left | 1 | 2 | 0 | 0 | | | | | | | | |
| Volume Right | 14 | 0 | 0 | 40 | | | | | | | | |
| cSH | 1012 | 1554 | 1700 | 1700 | | | | | | | | |
| Volume to Capacity | 0.02 | 0.00 | 0.01 | 0.02 | | | | | | | | |
| Queue Length 95th (ft) | 1 | 0 | 0 | 0 | | | | | | | | |
| Control Delay (s) | 8.6 | 0.5 | 0.0 | 0.0 | | | | | | | | |
| Lane LOS | A | A | | | | | | | | | | |
| Approach Delay (s) | 8.6 | 0.5 | 0.0 | | | | | | | | | |
| Approach LOS | A | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.5 | | | | | | | | | |
| Intersection Capacity Utilization | | 20.0% | | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

36: I-80 EB Off Ramp & Main St



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | | | | ↔ | | | ↔ | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 27 | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 6 | 11 | 1 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 31 | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 7 | 12 | 1 | 0 |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total (vph) | 34 | 10 | 14 | | | | | | | | | |
| Volume Left (vph) | 31 | 0 | 13 | | | | | | | | | |
| Volume Right (vph) | 2 | 7 | 0 | | | | | | | | | |
| Hadj (s) | 0.17 | -0.37 | 0.22 | | | | | | | | | |
| Departure Headway (s) | 4.1 | 3.6 | 4.2 | | | | | | | | | |
| Degree Utilization, x | 0.04 | 0.01 | 0.02 | | | | | | | | | |
| Capacity (veh/h) | 862 | 980 | 845 | | | | | | | | | |
| Control Delay (s) | 7.3 | 6.7 | 7.3 | | | | | | | | | |
| Approach Delay (s) | 7.3 | 6.7 | 7.3 | | | | | | | | | |
| Approach LOS | A | A | A | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 7.2 | | | | | | | | | |
| HCM Level of Service | | | A | | | | | | | | | |
| Intersection Capacity Utilization | | | 17.3% | ICU Level of Service | | | | | | | | A |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

52: Frontage Rd & Garson Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|-------------|-------------|----------------------|-------------|-------------|------|------|------|------|
| Lane Configurations | | ↔↑ | ↗ | | ↔↑ | | | ↗ | ↗ | | ↔↑ | |
| Volume (veh/h) | 22 | 25 | 19 | 17 | 1 | 65 | 2 | 136 | 13 | 37 | 41 | 1 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 25 | 28 | 22 | 19 | 1 | 74 | 2 | 155 | 15 | 42 | 47 | 1 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 291 | 290 | 47 | 305 | 291 | 155 | 48 | | | 155 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 291 | 290 | 47 | 305 | 291 | 155 | 48 | | | 155 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 96 | 95 | 98 | 97 | 100 | 92 | 100 | | | 97 | | |
| cM capacity (veh/h) | 591 | 601 | 1022 | 597 | 600 | 891 | 1560 | | | 1426 | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | NB 1 | NB 2 | SB 1 | | | | |
| Volume Total | 34 | 19 | 22 | 20 | 74 | 157 | 15 | 90 | | | | |
| Volume Left | 25 | 0 | 0 | 19 | 0 | 2 | 0 | 42 | | | | |
| Volume Right | 0 | 0 | 22 | 0 | 74 | 0 | 15 | 1 | | | | |
| cSH | 594 | 601 | 1022 | 597 | 888 | 1560 | 1700 | 1426 | | | | |
| Volume to Capacity | 0.06 | 0.03 | 0.02 | 0.03 | 0.08 | 0.00 | 0.01 | 0.03 | | | | |
| Queue Length 95th (ft) | 5 | 2 | 2 | 3 | 7 | 0 | 0 | 2 | | | | |
| Control Delay (s) | 11.4 | 11.2 | 8.6 | 11.2 | 9.4 | 0.1 | 0.0 | 3.7 | | | | |
| Lane LOS | B | B | A | B | A | A | | A | | | | |
| Approach Delay (s) | 10.6 | | | 9.8 | | 0.1 | | 3.7 | | | | |
| Approach LOS | B | | | A | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 4.8 | | | | | | | | | |
| Intersection Capacity Utilization | | | 29.4% | | | ICU Level of Service | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

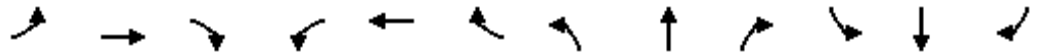
HCM Unsignalized Intersection Capacity Analysis

232: Canyon Park & I-80 WB On Ramp



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|------------|------|----------------------|------|
| Lane Configurations | ↔ | | ↔ | | | |
| Sign Control | Yield | | Yield Stop | | | |
| Volume (vph) | 11 | 8 | 22 | 59 | 0 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 12 | 9 | 25 | 67 | 0 | 0 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total (vph) | 22 | 92 | | | | |
| Volume Left (vph) | 0 | 25 | | | | |
| Volume Right (vph) | 9 | 0 | | | | |
| Hadj (s) | -0.22 | 0.09 | | | | |
| Departure Headway (s) | 3.8 | 4.0 | | | | |
| Degree Utilization, x | 0.02 | 0.10 | | | | |
| Capacity (veh/h) | 948 | 893 | | | | |
| Control Delay (s) | 6.9 | 7.5 | | | | |
| Approach Delay (s) | 6.9 | 7.5 | | | | |
| Approach LOS | A | A | | | | |
| Intersection Summary | | | | | | |
| Delay | | | 7.3 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 14.3% | | ICU Level of Service | |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 242: I-80 EB Off Ramp & Mustang Ranch Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|----------------------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 45 | 99 | 3 | 1 | 1 | 59 | 0 | 1 | 1 | 38 | 1 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 51 | 112 | 3 | 1 | 1 | 67 | 0 | 1 | 1 | 43 | 1 | 0 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total (vph) | 167 | 69 | 2 | 44 | | | | | | | | |
| Volume Left (vph) | 51 | 1 | 0 | 43 | | | | | | | | |
| Volume Right (vph) | 3 | 67 | 1 | 0 | | | | | | | | |
| Hadj (s) | 0.08 | -0.54 | -0.27 | 0.23 | | | | | | | | |
| Departure Headway (s) | 4.2 | 3.6 | 4.2 | 4.6 | | | | | | | | |
| Degree Utilization, x | 0.19 | 0.07 | 0.00 | 0.06 | | | | | | | | |
| Capacity (veh/h) | 851 | 966 | 802 | 728 | | | | | | | | |
| Control Delay (s) | 8.1 | 6.9 | 7.2 | 7.9 | | | | | | | | |
| Approach Delay (s) | 8.1 | 6.9 | 7.2 | 7.9 | | | | | | | | |
| Approach LOS | A | A | A | A | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 7.8 | | | | | | | | | |
| HCM Level of Service | | | A | | | | | | | | | |
| Intersection Capacity Utilization | | | 30.0% | ICU Level of Service | A | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

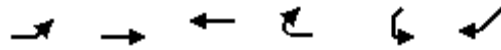
282: I-80 EB Off Ramp & Wunotoo Rd



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 188 | 9 | 0 | 4 | 7 | 0 |
| Sign Control | Free | | | Stop | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 214 | 10 | 0 | 5 | 8 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 0 | | 431 | 427 | 427 | 0 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 0 | | 431 | 427 | 427 | 0 |
| tC, single (s) | 4.1 | | 7.1 | 6.5 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | 3.5 | 4.0 | 4.0 | 3.3 |
| p0 queue free % | 87 | | 100 | 99 | 98 | 100 |
| cM capacity (veh/h) | 1623 | | 474 | 451 | 451 | 1085 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | SB 1 | | |
| Volume Total | 214 | 10 | 5 | 8 | | |
| Volume Left | 214 | 0 | 0 | 0 | | |
| Volume Right | 0 | 10 | 0 | 0 | | |
| cSH | 1623 | 1700 | 451 | 451 | | |
| Volume to Capacity | 0.13 | 0.01 | 0.01 | 0.02 | | |
| Queue Length 95th (ft) | 11 | 0 | 1 | 1 | | |
| Control Delay (s) | 7.6 | 0.0 | 13.1 | 13.1 | | |
| Lane LOS | A | | B | B | | |
| Approach Delay (s) | 7.2 | | 13.1 | 13.1 | | |
| Approach LOS | | | B | B | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 7.5 | | | |
| Intersection Capacity Utilization | | | 20.4% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

302: Derby Dam & I-80 EB On Ramp



| Movement | EBL | EBT | WBT | WBR | SWL | SWR |
|-----------------------------------|------|------|------|----------------------|------|------|
| Lane Configurations | | ↕ | ↑ | | | |
| Sign Control | | Stop | Stop | | Stop | |
| Volume (vph) | 5 | 1 | 1 | 0 | 0 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 6 | 1 | 1 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total (vph) | 7 | 1 | | | | |
| Volume Left (vph) | 6 | 0 | | | | |
| Volume Right (vph) | 0 | 0 | | | | |
| Hadj (s) | 0.20 | 0.03 | | | | |
| Departure Headway (s) | 4.1 | 3.9 | | | | |
| Degree Utilization, x | 0.01 | 0.00 | | | | |
| Capacity (veh/h) | 874 | 908 | | | | |
| Control Delay (s) | 7.1 | 6.9 | | | | |
| Approach Delay (s) | 7.1 | 6.9 | | | | |
| Approach LOS | A | A | | | | |
| Intersection Summary | | | | | | |
| Delay | | | 7.1 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 7.7% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis 13: I-80 WB On Ramp & McCarran Blvd West



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|-------|-------|------|------|------|-------|------|
| Lane Configurations | | | | ↙ | ↖ | ↗ | ↘ | ↕ | | | ↕ | ↘ |
| Volume (vph) | 0 | 0 | 0 | 476 | 1 | 905 | 389 | 1115 | 0 | 0 | 1276 | 106 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | 0.95 | 0.95 | 0.88 | 1.00 | 0.95 | | | 0.95 | |
| Frt | | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.99 | |
| Flt Protected | | | | 0.95 | 0.95 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1681 | 1686 | 2787 | 1770 | 3539 | | | 3499 | |
| Flt Permitted | | | | 0.95 | 0.95 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1681 | 1686 | 2787 | 1770 | 3539 | | | 3499 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 0 | 0 | 517 | 1 | 984 | 423 | 1212 | 0 | 0 | 1387 | 115 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 258 | 260 | 984 | 423 | 1212 | 0 | 0 | 1496 | 0 |
| Turn Type | | | | Perm | | Perm | Prot | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 5 | | | 6 | |
| Permitted Phases | | | | 8 | | 8 | | | | | | |
| Actuated Green, G (s) | | | | 34.0 | 34.0 | 34.0 | 22.0 | 68.0 | | | 42.0 | |
| Effective Green, g (s) | | | | 34.0 | 34.0 | 34.0 | 22.0 | 68.0 | | | 42.0 | |
| Actuated g/C Ratio | | | | 0.31 | 0.31 | 0.31 | 0.20 | 0.62 | | | 0.38 | |
| Clearance Time (s) | | | | 4.0 | 4.0 | 4.0 | 4.0 | | | | 4.0 | |
| Vehicle Extension (s) | | | | 3.0 | 3.0 | 3.0 | 3.0 | | | | 3.0 | |
| Lane Grp Cap (vph) | | | | 520 | 521 | 861 | 354 | 2188 | | | 1336 | |
| v/s Ratio Prot | | | | | | | c0.24 | 0.34 | | | c0.43 | |
| v/s Ratio Perm | | | | 0.15 | 0.15 | c0.35 | | | | | | |
| v/c Ratio | | | | 0.50 | 0.50 | 1.14 | 1.19 | 0.55 | | | 1.12 | |
| Uniform Delay, d1 | | | | 31.0 | 31.0 | 38.0 | 44.0 | 12.2 | | | 34.0 | |
| Progression Factor | | | | 1.00 | 1.00 | 1.00 | 0.57 | 0.15 | | | 1.00 | |
| Incremental Delay, d2 | | | | 0.7 | 0.8 | 78.1 | 99.1 | 0.1 | | | 64.6 | |
| Delay (s) | | | | 31.8 | 31.8 | 116.1 | 124.0 | 1.9 | | | 98.6 | |
| Level of Service | | | | C | C | F | F | A | | | F | |
| Approach Delay (s) | | 0.0 | | | 87.0 | | | 33.5 | | | 98.6 | |
| Approach LOS | | A | | | F | | | C | | | F | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 71.9 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 1.14 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 83.4% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis 14: I-80 EB Off Ramp & McCarran Blvd West



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|-------|------|------|------|------|-------|------|-------|------|------|
| Lane Configurations | | ↕ | ↗ | | | | | ↕↕ | ↗ | ↖↖ | ↕↕ | |
| Volume (vph) | 159 | 1 | 233 | 0 | 0 | 0 | 0 | 1429 | 422 | 405 | 1208 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | | | | 0.95 | 1.00 | 0.97 | 0.95 | |
| Frt | | 1.00 | 0.85 | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | | 0.95 | 1.00 | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1775 | 1583 | | | | | 3539 | 1583 | 3433 | 3539 | |
| Flt Permitted | | 0.95 | 1.00 | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 1775 | 1583 | | | | | 3539 | 1583 | 3433 | 3539 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 173 | 1 | 253 | 0 | 0 | 0 | 0 | 1553 | 459 | 440 | 1313 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 202 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 174 | 253 | 0 | 0 | 0 | 0 | 1553 | 257 | 440 | 1313 | 0 |
| Turn Type | Perm | | Free | | | | | | Perm | Prot | | |
| Protected Phases | | 4 | | | | | | 2 | | 1 | 6 | 1 |
| Permitted Phases | 4 | | Free | | | | | | 2 | | | |
| Actuated Green, G (s) | | 34.0 | 110.0 | | | | | 50.0 | 50.0 | 14.0 | 56.0 | |
| Effective Green, g (s) | | 34.0 | 110.0 | | | | | 50.0 | 50.0 | 14.0 | 56.0 | |
| Actuated g/C Ratio | | 0.31 | 1.00 | | | | | 0.45 | 0.45 | 0.13 | 0.51 | |
| Clearance Time (s) | | 4.0 | | | | | | 4.0 | 4.0 | 4.0 | | |
| Vehicle Extension (s) | | 3.0 | | | | | | 3.0 | 3.0 | 3.0 | | |
| Lane Grp Cap (vph) | | 549 | 1583 | | | | | 1609 | 720 | 437 | 1802 | |
| v/s Ratio Prot | | | | | | | | c0.44 | | c0.13 | 0.37 | |
| v/s Ratio Perm | | 0.10 | 0.16 | | | | | | 0.16 | | | |
| v/c Ratio | | 0.32 | 0.16 | | | | | 0.97 | 0.36 | 1.01 | 0.73 | |
| Uniform Delay, d1 | | 29.1 | 0.0 | | | | | 29.2 | 19.5 | 48.0 | 21.1 | |
| Progression Factor | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | 0.83 | 0.55 | |
| Incremental Delay, d2 | | 0.3 | 0.2 | | | | | 15.6 | 1.4 | 26.1 | 0.5 | |
| Delay (s) | | 29.4 | 0.2 | | | | | 44.7 | 20.9 | 65.8 | 12.1 | |
| Level of Service | | C | A | | | | | D | C | E | B | |
| Approach Delay (s) | | 12.1 | | | 0.0 | | | 39.3 | | | 25.6 | |
| Approach LOS | | B | | | A | | | D | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 30.8 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.75 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 83.4% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

15: Victorian Ave & McCarran Blvd East

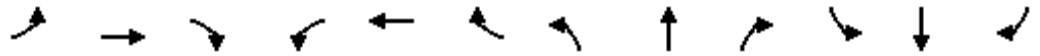


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|--------|------|--------|-------|-------|------|------|-------|------|------|------|------|
| Lane Configurations | ↖ | | ↗ | | ↕ | ↗ | ↖ | ↕ | | | ↕ | ↗ |
| Volume (vph) | 42 | 0 | 76 | 95 | 43 | 161 | 198 | 2058 | 0 | 0 | 1396 | 44 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | 1.00 | | 1.00 | | 0.95 | 1.00 | 1.00 | 0.91 | | | 0.91 | |
| Frt | 1.00 | | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | | | 1.00 | |
| Flt Protected | 0.95 | | 1.00 | | 0.97 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | 1770 | | 1583 | | 3422 | 1583 | 1770 | 5085 | | | 5062 | |
| Flt Permitted | 0.10 | | 1.00 | | 0.97 | 1.00 | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | 179 | | 1583 | | 3422 | 1583 | 1770 | 5085 | | | 5062 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 46 | 0 | 83 | 103 | 47 | 175 | 215 | 2237 | 0 | 0 | 1517 | 48 |
| RTOR Reduction (vph) | 0 | 0 | 60 | 0 | 0 | 161 | 0 | 0 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 46 | 0 | 23 | 0 | 150 | 14 | 215 | 2237 | 0 | 0 | 1563 | 0 |
| Turn Type | custom | | custom | Split | | Perm | Prot | | | | | |
| Protected Phases | | | | 8 | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | | | 8 | | | | | | |
| Actuated Green, G (s) | 41.6 | | 41.6 | | 11.9 | 11.9 | 22.2 | 84.5 | | | 58.3 | |
| Effective Green, g (s) | 41.6 | | 41.6 | | 11.9 | 11.9 | 22.2 | 84.5 | | | 58.3 | |
| Actuated g/C Ratio | 0.28 | | 0.28 | | 0.08 | 0.08 | 0.15 | 0.56 | | | 0.39 | |
| Clearance Time (s) | 4.0 | | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | 3.0 | | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | 50 | | 439 | | 271 | 126 | 262 | 2865 | | | 1967 | |
| v/s Ratio Prot | | | | | c0.04 | | 0.12 | c0.44 | | | 0.31 | |
| v/s Ratio Perm | c0.26 | | 0.01 | | | 0.01 | | | | | | |
| v/c Ratio | 0.92 | | 0.05 | | 0.55 | 0.11 | 0.82 | 0.78 | | | 0.79 | |
| Uniform Delay, d1 | 52.6 | | 39.7 | | 66.5 | 64.1 | 62.0 | 25.5 | | | 40.6 | |
| Progression Factor | 1.00 | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 97.4 | | 0.0 | | 2.4 | 0.4 | 18.3 | 2.2 | | | 3.4 | |
| Delay (s) | 150.0 | | 39.8 | | 68.9 | 64.5 | 80.2 | 27.7 | | | 44.0 | |
| Level of Service | F | | D | | E | E | F | C | | | D | |
| Approach Delay (s) | | 79.1 | | | 66.6 | | | 32.3 | | | 44.0 | |
| Approach LOS | | E | | | E | | | C | | | D | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 40.2 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.81 | | |
| Actuated Cycle Length (s) | 150.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 63.1% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis 16: I-80 EB Off Ramp & McCarran Blvd East



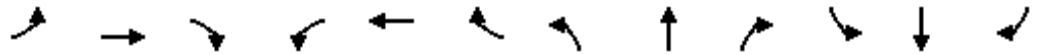
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|------|-------|------|-------|-------|------|
| Lane Configurations | ↖↗ | ↖ | ↗ | | | | | ↑↑↑ | | ↖ | ↑↑ | |
| Volume (vph) | 953 | 1 | 194 | 0 | 0 | 0 | 0 | 1504 | 252 | 105 | 1031 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | | | | | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 0.91 | 0.91 | 1.00 | | | | | 0.91 | | 1.00 | 0.95 | |
| Frt | 1.00 | 1.00 | 0.85 | | | | | 0.98 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 0.95 | 1.00 | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 3221 | 1615 | 1583 | | | | | 4976 | | 1770 | 3539 | |
| Flt Permitted | 0.95 | 0.95 | 1.00 | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 3221 | 1615 | 1583 | | | | | 4976 | | 1770 | 3539 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 1036 | 1 | 211 | 0 | 0 | 0 | 0 | 1635 | 274 | 114 | 1121 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 74 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 694 | 343 | 137 | 0 | 0 | 0 | 0 | 1896 | 0 | 114 | 1121 | 0 |
| Turn Type | Perm | | Perm | | | | | | | Prot | | |
| Protected Phases | | 4 | | | | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | | | | | | | | | |
| Actuated Green, G (s) | 40.6 | 40.6 | 40.6 | | | | | 83.2 | | 14.2 | 101.4 | |
| Effective Green, g (s) | 40.6 | 40.6 | 40.6 | | | | | 83.2 | | 14.2 | 101.4 | |
| Actuated g/C Ratio | 0.27 | 0.27 | 0.27 | | | | | 0.55 | | 0.09 | 0.68 | |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | | | | | 4.0 | | 4.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | | | | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 872 | 437 | 428 | | | | | 2760 | | 168 | 2392 | |
| v/s Ratio Prot | | | | | | | | c0.38 | | c0.06 | 0.32 | |
| v/s Ratio Perm | c0.22 | 0.21 | 0.09 | | | | | | | | | |
| v/c Ratio | 0.80 | 0.78 | 0.32 | | | | | 0.69 | | 0.68 | 0.47 | |
| Uniform Delay, d1 | 50.8 | 50.7 | 43.7 | | | | | 24.0 | | 65.7 | 11.5 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | | | | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 5.1 | 9.0 | 0.4 | | | | | 1.4 | | 10.4 | 0.7 | |
| Delay (s) | 55.9 | 59.6 | 44.1 | | | | | 25.4 | | 76.1 | 12.2 | |
| Level of Service | E | E | D | | | | | C | | E | B | |
| Approach Delay (s) | | 54.9 | | | 0.0 | | | 25.4 | | | 18.1 | |
| Approach LOS | | D | | | A | | | C | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 31.8 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.72 | | |
| Actuated Cycle Length (s) | 150.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 68.6% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

17: I-80 WB On Ramp & Sparks Blvd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|-----------------------------------|------|------|-------|------|----------------------|-------|-------|-------|------|------|------|------|--|
| Lane Configurations | | | | | ↕ | ↗ | ↖ | ↑↑ | | | ↑↔ | | |
| Volume (vph) | 0 | 0 | 0 | 8 | 1 | 69 | 402 | 1320 | 0 | 0 | 196 | 638 | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | |
| Total Lost time (s) | | | | | 4.0 | 4.0 | 4.0 | 4.0 | | | 4.0 | | |
| Lane Util. Factor | | | | | 1.00 | 1.00 | 1.00 | 0.95 | | | 0.95 | | |
| Frt | | | | | 1.00 | 0.85 | 1.00 | 1.00 | | | 0.89 | | |
| Flt Protected | | | | | 0.96 | 1.00 | 0.95 | 1.00 | | | 1.00 | | |
| Satd. Flow (prot) | | | | | 1783 | 1583 | 1770 | 3539 | | | 3133 | | |
| Flt Permitted | | | | | 0.96 | 1.00 | 0.95 | 1.00 | | | 1.00 | | |
| Satd. Flow (perm) | | | | | 1783 | 1583 | 1770 | 3539 | | | 3133 | | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | |
| Adj. Flow (vph) | 0 | 0 | 0 | 9 | 1 | 75 | 437 | 1435 | 0 | 0 | 213 | 693 | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 394 | 0 | |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 10 | 48 | 437 | 1435 | 0 | 0 | 512 | 0 | |
| Turn Type | | | | Perm | | Perm | Prot | | | | | | |
| Protected Phases | | | | | 8 | | 5 | 2 5 | | | 6 | | |
| Permitted Phases | | | | 8 | | 8 | | | | | | | |
| Actuated Green, G (s) | | | | | 44.0 | 44.0 | 43.4 | 88.0 | | | 40.6 | | |
| Effective Green, g (s) | | | | | 44.0 | 44.0 | 43.4 | 88.0 | | | 40.6 | | |
| Actuated g/C Ratio | | | | | 0.31 | 0.31 | 0.31 | 0.63 | | | 0.29 | | |
| Clearance Time (s) | | | | | 4.0 | 4.0 | 4.0 | | | | 4.0 | | |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | 3.0 | | | | 3.0 | | |
| Lane Grp Cap (vph) | | | | | 560 | 498 | 549 | 2225 | | | 909 | | |
| v/s Ratio Prot | | | | | | | c0.25 | c0.41 | | | 0.16 | | |
| v/s Ratio Perm | | | | | 0.01 | c0.03 | | | | | | | |
| v/c Ratio | | | | | 0.02 | 0.10 | 0.80 | 0.64 | | | 0.56 | | |
| Uniform Delay, d1 | | | | | 33.1 | 33.9 | 44.2 | 16.2 | | | 42.2 | | |
| Progression Factor | | | | | 1.00 | 1.00 | 1.01 | 0.87 | | | 1.00 | | |
| Incremental Delay, d2 | | | | | 0.0 | 0.1 | 6.5 | 0.5 | | | 2.5 | | |
| Delay (s) | | | | | 33.1 | 34.0 | 51.0 | 14.7 | | | 44.7 | | |
| Level of Service | | | | | C | C | D | B | | | D | | |
| Approach Delay (s) | | 0.0 | | | 33.9 | | | 23.2 | | | 44.7 | | |
| Approach LOS | | A | | | C | | | C | | | D | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.3 | | HCM Level of Service | | | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.52 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 140.0 | | Sum of lost time (s) | | | | | | 12.0 | | |
| Intersection Capacity Utilization | | | 62.6% | | ICU Level of Service | | | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

18: I-80 EB Off Ramp & Sparks Blvd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|------|-------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 713 | 6 | 120 | 0 | 0 | 0 | 0 | 836 | 68 | 67 | 134 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | | | | | | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | 0.95 | 0.95 | | | | | | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.96 | | | | | | 0.99 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 0.97 | | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1681 | 1636 | | | | | | 3499 | | 1770 | 3539 | |
| Flt Permitted | 0.95 | 0.97 | | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1681 | 1636 | | | | | | 3499 | | 1770 | 3539 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 775 | 7 | 130 | 0 | 0 | 0 | 0 | 909 | 74 | 73 | 146 | 0 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 465 | 436 | 0 | 0 | 0 | 0 | 0 | 979 | 0 | 73 | 146 | 0 |
| Turn Type | Perm | | | | | | Prot | | | | | |
| Protected Phases | | 4 | | | | | | 2 | | 1 | 6 | 1 |
| Permitted Phases | 4 | | | | | | | | | | | |
| Actuated Green, G (s) | 44.0 | 44.0 | | | | | | 73.6 | | 10.4 | 51.0 | |
| Effective Green, g (s) | 44.0 | 44.0 | | | | | | 73.6 | | 10.4 | 51.0 | |
| Actuated g/C Ratio | 0.31 | 0.31 | | | | | | 0.53 | | 0.07 | 0.36 | |
| Clearance Time (s) | 4.0 | 4.0 | | | | | | 4.0 | | 4.0 | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | | | | | 3.0 | | 3.0 | | |
| Lane Grp Cap (vph) | 528 | 514 | | | | | | 1839 | | 131 | 1289 | |
| v/s Ratio Prot | | | | | | | | c0.28 | | c0.04 | 0.04 | |
| v/s Ratio Perm | c0.28 | 0.27 | | | | | | | | | | |
| v/c Ratio | 0.88 | 0.85 | | | | | | 0.53 | | 0.56 | 0.11 | |
| Uniform Delay, d1 | 45.5 | 44.9 | | | | | | 21.9 | | 62.6 | 29.5 | |
| Progression Factor | 1.00 | 1.00 | | | | | | 1.00 | | 0.92 | 0.84 | |
| Incremental Delay, d2 | 15.7 | 12.3 | | | | | | 1.1 | | 3.7 | 0.0 | |
| Delay (s) | 61.2 | 57.2 | | | | | | 23.0 | | 61.4 | 24.7 | |
| Level of Service | E | E | | | | | | C | | E | C | |
| Approach Delay (s) | | 59.3 | | | 0.0 | | | 23.0 | | | 37.0 | |
| Approach LOS | | E | | | A | | | C | | | D | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 40.1 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.65 | | |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 62.6% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

19: I-80 WB On Ramp & Vista Blvd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|-------|------|-------|------|------|------|------|------|
| Lane Configurations | | | | | ↔ | | ↗ | ↑↑ | | | ↑↑ | |
| Volume (vph) | 0 | 0 | 0 | 150 | 0 | 266 | 208 | 1837 | 0 | 0 | 369 | 1052 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 4.0 | |
| Lane Util. Factor | | | | | 1.00 | | 1.00 | 0.95 | | | 0.95 | |
| Frt | | | | | 0.91 | | 1.00 | 1.00 | | | 0.89 | |
| Flt Protected | | | | | 0.98 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | | 1672 | | 1770 | 3539 | | | 3146 | |
| Flt Permitted | | | | | 0.98 | | 0.12 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | | 1672 | | 231 | 3539 | | | 3146 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 0 | 0 | 163 | 0 | 289 | 226 | 1997 | 0 | 0 | 401 | 1143 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 288 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 430 | 0 | 226 | 1997 | 0 | 0 | 1256 | 0 |
| Turn Type | | | | Perm | | Perm | | | | | | |
| Protected Phases | | | | | 8 | | 2 | | | | 6 | |
| Permitted Phases | | | | 8 | | 2 | | | | | | |
| Actuated Green, G (s) | | | | | 25.0 | | 92.0 | 92.0 | | | 92.0 | |
| Effective Green, g (s) | | | | | 25.0 | | 92.0 | 92.0 | | | 92.0 | |
| Actuated g/C Ratio | | | | | 0.20 | | 0.74 | 0.74 | | | 0.74 | |
| Clearance Time (s) | | | | | 4.0 | | 4.0 | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | | | | | 3.0 | | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | | | | 334 | | 170 | 2605 | | | 2315 | |
| v/s Ratio Prot | | | | | | | | 0.56 | | | 0.40 | |
| v/s Ratio Perm | | | | | 0.26 | | c0.98 | | | | | |
| v/c Ratio | | | | | 1.29 | | 1.33 | 0.77 | | | 0.54 | |
| Uniform Delay, d1 | | | | | 50.0 | | 16.5 | 10.0 | | | 7.3 | |
| Progression Factor | | | | | 1.00 | | 1.44 | 1.53 | | | 1.00 | |
| Incremental Delay, d2 | | | | | 149.6 | | 162.0 | 0.8 | | | 0.9 | |
| Delay (s) | | | | | 199.6 | | 185.7 | 16.1 | | | 8.2 | |
| Level of Service | | | | | F | | F | B | | | A | |
| Approach Delay (s) | | 0.0 | | | 199.6 | | | 33.3 | | | 8.2 | |
| Approach LOS | | A | | | F | | | C | | | A | |

Intersection Summary

| | | | |
|-----------------------------------|--------|----------------------|-----|
| HCM Average Control Delay | 41.9 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 1.32 | | |
| Actuated Cycle Length (s) | 125.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 145.5% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

20: I-80 EB Off Ramp & Vista Blvd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|-------|------|------|
| Lane Configurations | | ↕ | ↗ | | | | | ↕↗ | | ↗ | ↕↕ | |
| Volume (vph) | 979 | 0 | 88 | 0 | 0 | 0 | 0 | 871 | 148 | 181 | 315 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 4.0 | 4.0 | | | | | 4.0 | | 4.0 | 4.0 | |
| Lane Util. Factor | | 1.00 | 1.00 | | | | | 0.95 | | 1.00 | 0.95 | |
| Frt | | 1.00 | 0.85 | | | | | 0.98 | | 1.00 | 1.00 | |
| Flt Protected | | 0.95 | 1.00 | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1770 | 1583 | | | | | 3462 | | 1770 | 3539 | |
| Flt Permitted | | 0.95 | 1.00 | | | | | 1.00 | | 0.15 | 1.00 | |
| Satd. Flow (perm) | | 1770 | 1583 | | | | | 3462 | | 284 | 3539 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 1064 | 0 | 96 | 0 | 0 | 0 | 0 | 947 | 161 | 197 | 342 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1064 | 68 | 0 | 0 | 0 | 0 | 1097 | 0 | 197 | 342 | 0 |
| Turn Type | Perm | | Perm | | | | | | | Perm | | |
| Protected Phases | | 4 | | | | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | | | | | | | 6 | | |
| Actuated Green, G (s) | | 54.0 | 54.0 | | | | | 63.0 | | 63.0 | 63.0 | |
| Effective Green, g (s) | | 54.0 | 54.0 | | | | | 63.0 | | 63.0 | 63.0 | |
| Actuated g/C Ratio | | 0.43 | 0.43 | | | | | 0.50 | | 0.50 | 0.50 | |
| Clearance Time (s) | | 4.0 | 4.0 | | | | | 4.0 | | 4.0 | 4.0 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 765 | 684 | | | | | 1745 | | 143 | 1784 | |
| v/s Ratio Prot | | | | | | | | 0.32 | | | 0.10 | |
| v/s Ratio Perm | | 0.60 | 0.04 | | | | | | | c0.69 | | |
| v/c Ratio | | 1.39 | 0.10 | | | | | 0.63 | | 1.38 | 0.19 | |
| Uniform Delay, d1 | | 35.5 | 21.1 | | | | | 22.5 | | 31.0 | 17.0 | |
| Progression Factor | | 1.00 | 1.00 | | | | | 1.00 | | 1.03 | 0.89 | |
| Incremental Delay, d2 | | 183.9 | 0.1 | | | | | 1.7 | | 193.7 | 0.1 | |
| Delay (s) | | 219.4 | 21.1 | | | | | 24.2 | | 225.7 | 15.3 | |
| Level of Service | | F | C | | | | | C | | F | B | |
| Approach Delay (s) | | 203.0 | | | 0.0 | | | 24.2 | | | 92.2 | |
| Approach LOS | | F | | | A | | | C | | | F | |

Intersection Summary

| | | | |
|-----------------------------------|--------|----------------------|-----|
| HCM Average Control Delay | 111.1 | HCM Level of Service | F |
| HCM Volume to Capacity ratio | 1.38 | | |
| Actuated Cycle Length (s) | 125.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 145.5% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

1: I-80 WB Off Ramp & Gold Ranch Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|-------------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | ↖ | ↗ | | ↖ | | | ↗ | |
| Volume (veh/h) | 0 | 0 | 0 | 4 | 148 | 33 | 1 | 98 | 0 | 0 | 28 | 55 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 0 | 5 | 168 | 38 | 1 | 111 | 0 | 0 | 32 | 62 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 168 | | | 0 | | | 256 | 177 | 0 | 233 | 177 | 168 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 168 | | | 0 | | | 256 | 177 | 0 | 233 | 177 | 168 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 100 | | | 100 | 84 | 100 | 100 | 96 | 93 |
| cM capacity (veh/h) | 1409 | | | 1623 | | | 624 | 714 | 1085 | 634 | 714 | 876 |
| Direction, Lane # | WB 1 | WB 2 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 173 | 38 | 112 | 94 | | | | | | | | |
| Volume Left | 5 | 0 | 1 | 0 | | | | | | | | |
| Volume Right | 0 | 38 | 0 | 62 | | | | | | | | |
| cSH | 1623 | 1700 | 713 | 814 | | | | | | | | |
| Volume to Capacity | 0.00 | 0.02 | 0.16 | 0.12 | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 14 | 10 | | | | | | | | |
| Control Delay (s) | 0.2 | 0.0 | 11.0 | 10.0 | | | | | | | | |
| Lane LOS | A | | B | B | | | | | | | | |
| Approach Delay (s) | 0.2 | | 11.0 | 10.0 | | | | | | | | |
| Approach LOS | | | B | B | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 5.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 20.6% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

2: I-80 EB On Ramp & Gold Ranch Rd



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------------|-------------|-------|----------------------|------|------|
| Lane Configurations | | | | ↕ | ↕ | |
| Volume (veh/h) | 0 | 0 | 5 | 78 | 2 | 91 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 6 | 89 | 2 | 103 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 154 | 54 | 2 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 154 | 54 | 2 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 100 | 100 | | | |
| cM capacity (veh/h) | 835 | 1013 | 1620 | | | |
| Direction, Lane # | NB 1 | SB 1 | | | | |
| Volume Total | 94 | 106 | | | | |
| Volume Left | 6 | 0 | | | | |
| Volume Right | 0 | 103 | | | | |
| cSH | 1620 | 1700 | | | | |
| Volume to Capacity | 0.00 | 0.06 | | | | |
| Queue Length 95th (ft) | 0 | 0 | | | | |
| Control Delay (s) | 0.5 | 0.0 | | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.5 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.2 | | | |
| Intersection Capacity Utilization | | | 11.5% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

3: I-80 WB Off Ramp & S. Verdi Rd



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | ↶ | ↷ | ↶ | | | ↶ |
| Volume (veh/h) | 22 | 11 | 4 | 0 | 0 | 7 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 25 | 12 | 5 | 0 | 0 | 8 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 12 | 5 | | | 5 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 12 | 5 | | | 5 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 98 | 99 | | | 100 | |
| cM capacity (veh/h) | 1007 | 1079 | | | 1617 | |

| Direction, Lane # | WB 1 | WB 2 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 25 | 12 | 5 | 8 |
| Volume Left | 25 | 0 | 0 | 0 |
| Volume Right | 0 | 12 | 0 | 0 |
| cSH | 1007 | 1079 | 1700 | 1700 |
| Volume to Capacity | 0.02 | 0.01 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 2 | 1 | 0 | 0 |
| Control Delay (s) | 8.7 | 8.4 | 0.0 | 0.0 |
| Lane LOS | A | A | | |
| Approach Delay (s) | 8.6 | | 0.0 | 0.0 |
| Approach LOS | A | | | |

| Intersection Summary | | | |
|-----------------------------------|--|-------|------------------------|
| Average Delay | | 6.4 | |
| Intersection Capacity Utilization | | 13.3% | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis






















4: I-80 EB On Ramp & Crystal Park Rd



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|-------------|-------------|-------|------|----------------------|------|
| Lane Configurations | | | ↔ | | | ↔ |
| Volume (veh/h) | 0 | 0 | 4 | 4 | 18 | 7 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 5 | 5 | 20 | 8 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 56 | 7 | | | 9 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 56 | 7 | | | 9 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 99 | |
| cM capacity (veh/h) | 940 | 1076 | | | 1611 | |
| Direction, Lane # | NB 1 | SB 1 | | | | |
| Volume Total | 9 | 28 | | | | |
| Volume Left | 0 | 20 | | | | |
| Volume Right | 5 | 0 | | | | |
| cSH | 1700 | 1611 | | | | |
| Volume to Capacity | 0.01 | 0.01 | | | | |
| Queue Length 95th (ft) | 0 | 1 | | | | |
| Control Delay (s) | 0.0 | 5.3 | | | | |
| Lane LOS | | A | | | | |
| Approach Delay (s) | 0.0 | 5.3 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 4.0 | | | |
| Intersection Capacity Utilization | | | 11.4% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

5: Frontage Rd & Cabela Dr

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|--|---|---|---|---|--|---|---|---|--|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |   | |  |  | | |  |  | |   | |
| Volume (veh/h) | 10 | 10 | 20 | 20 | 10 | 10 | 10 | 247 | 125 | 10 | 206 | 10 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 11 | 11 | 23 | 23 | 11 | 11 | 11 | 281 | 142 | 11 | 234 | 11 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 583 | 566 | 240 | 594 | 572 | 281 | 245 | | | 281 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 583 | 566 | 240 | 594 | 572 | 281 | 245 | | | 281 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 97 | 97 | 97 | 94 | 97 | 99 | 99 | | | 99 | | |
| cM capacity (veh/h) | 403 | 426 | 799 | 391 | 423 | 758 | 1321 | | | 1282 | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | NB 1 | NB 2 | SB 1 | | | | |
| Volume Total | 11 | 8 | 27 | 23 | 23 | 292 | 142 | 257 | | | | |
| Volume Left | 11 | 0 | 0 | 23 | 0 | 11 | 0 | 11 | | | | |
| Volume Right | 0 | 0 | 23 | 0 | 11 | 0 | 142 | 11 | | | | |
| cSH | 403 | 426 | 710 | 391 | 543 | 1321 | 1700 | 1282 | | | | |
| Volume to Capacity | 0.03 | 0.02 | 0.04 | 0.06 | 0.04 | 0.01 | 0.08 | 0.01 | | | | |
| Queue Length 95th (ft) | 2 | 1 | 3 | 5 | 3 | 1 | 0 | 1 | | | | |
| Control Delay (s) | 14.2 | 13.6 | 10.3 | 14.8 | 11.9 | 0.4 | 0.0 | 0.4 | | | | |
| Lane LOS | B | B | B | B | B | A | | A | | | | |
| Approach Delay (s) | 11.8 | | | 13.3 | | 0.3 | | 0.4 | | | | |
| Approach LOS | B | | | B | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.7 | | | | | | | | | |
| Intersection Capacity Utilization | | | 34.1% | | | ICU Level of Service | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

6: I-80 EB Off Ramp & Garson Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | | | | ↕ | | | ↕ | |
| Volume (veh/h) | 76 | 2 | 5 | 0 | 0 | 0 | 0 | 8 | 14 | 314 | 28 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 86 | 2 | 6 | 0 | 0 | 0 | 0 | 9 | 16 | 357 | 32 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 762 | 770 | 32 | 769 | 762 | 17 | 32 | | | 25 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 762 | 770 | 32 | 769 | 762 | 17 | 32 | | | 25 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 67 | 99 | 99 | 100 | 100 | 100 | 100 | | | 78 | | |
| cM capacity (veh/h) | 266 | 257 | 1042 | 260 | 259 | 1062 | 1580 | | | 1589 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 94 | 25 | 389 | | | | | | | | | |
| Volume Left | 86 | 0 | 357 | | | | | | | | | |
| Volume Right | 6 | 16 | 0 | | | | | | | | | |
| cSH | 278 | 1700 | 1589 | | | | | | | | | |
| Volume to Capacity | 0.34 | 0.01 | 0.22 | | | | | | | | | |
| Queue Length 95th (ft) | 36 | 0 | 22 | | | | | | | | | |
| Control Delay (s) | 24.5 | 0.0 | 7.4 | | | | | | | | | |
| Lane LOS | C | | A | | | | | | | | | |
| Approach Delay (s) | 24.5 | 0.0 | 7.4 | | | | | | | | | |
| Approach LOS | C | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 10.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 36.8% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

7: I-80 EB On Ramp & Old Hwy 40



| Movement | NBL | NBR | SET | SER | NWL | NWT |
|-----------------------------------|-------------|-------------|-------|------|----------------------|------|
| Lane Configurations | | | | ↗ | | ↖ |
| Volume (veh/h) | 0 | 0 | 0 | 322 | 0 | 209 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 0 | 366 | 0 | 238 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 238 | 0 | | | 366 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 238 | 0 | | | 366 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 751 | 1085 | | | 1193 | |
| Direction, Lane # | SE 1 | NW 1 | | | | |
| Volume Total | 366 | 238 | | | | |
| Volume Left | 0 | 0 | | | | |
| Volume Right | 366 | 0 | | | | |
| cSH | 1700 | 1700 | | | | |
| Volume to Capacity | 0.22 | 0.14 | | | | |
| Queue Length 95th (ft) | 0 | 0 | | | | |
| Control Delay (s) | 0.0 | 0.0 | | | | |
| Lane LOS | | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 23.3% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

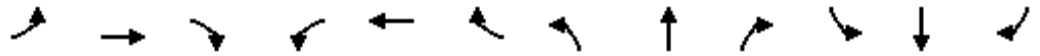
HCM Unsignalized Intersection Capacity Analysis

8: Silva Ranch Rd & W 4th St



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|-------------|-------------|-------------|------|----------------------|------|
| Lane Configurations | | ↔ | ↔ | | ↔ | |
| Volume (veh/h) | 1 | 17 | 207 | 1 | 1 | 1 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 1 | 19 | 235 | 1 | 1 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 236 | | | | 257 | 236 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 236 | | | | 257 | 236 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 100 | 100 |
| cM capacity (veh/h) | 1331 | | | | 731 | 803 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | | | |
| Volume Total | 20 | 236 | 2 | | | |
| Volume Left | 1 | 0 | 1 | | | |
| Volume Right | 0 | 1 | 1 | | | |
| cSH | 1331 | 1700 | 765 | | | |
| Volume to Capacity | 0.00 | 0.14 | 0.00 | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | | | |
| Control Delay (s) | 0.4 | 0.0 | 9.7 | | | |
| Lane LOS | A | | A | | | |
| Approach Delay (s) | 0.4 | 0.0 | 9.7 | | | |
| Approach LOS | | | A | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.1 | | | |
| Intersection Capacity Utilization | | | 21.0% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis 9: I-80 EB Off Ramp & Mogul/Silva Ranch



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | | | | ↕ | | | ↕ | |
| Volume (veh/h) | 1 | 1 | 5 | 0 | 0 | 0 | 0 | 1 | 7 | 104 | 9 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 1 | 1 | 6 | 0 | 0 | 0 | 0 | 1 | 8 | 118 | 10 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 252 | 256 | 10 | 258 | 252 | 5 | 10 | | | 9 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 252 | 256 | 10 | 258 | 252 | 5 | 10 | | | 9 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 99 | 100 | 100 | 100 | 100 | | | 93 | | |
| cM capacity (veh/h) | 662 | 601 | 1071 | 652 | 604 | 1078 | 1609 | | | 1611 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 8 | 9 | 128 | | | | | | | | | |
| Volume Left | 1 | 0 | 118 | | | | | | | | | |
| Volume Right | 6 | 8 | 0 | | | | | | | | | |
| cSH | 892 | 1700 | 1611 | | | | | | | | | |
| Volume to Capacity | 0.01 | 0.01 | 0.07 | | | | | | | | | |
| Queue Length 95th (ft) | 1 | 0 | 6 | | | | | | | | | |
| Control Delay (s) | 9.1 | 0.0 | 6.9 | | | | | | | | | |
| Lane LOS | A | | A | | | | | | | | | |
| Approach Delay (s) | 9.1 | 0.0 | 6.9 | | | | | | | | | |
| Approach LOS | A | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 6.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 22.9% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

10: I-80 WB On Ramp & W 4th St



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|-------------|-------------|-------|------|----------------------|------|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 0 | 0 | 192 | 3 | 8 | 3 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 218 | 3 | 9 | 3 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 222 | | | | 220 | 220 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 222 | | | | 220 | 220 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 99 | 100 |
| cM capacity (veh/h) | 1347 | | | | 768 | 820 |
| Direction, Lane # | WB 1 | SB 1 | | | | |
| Volume Total | 222 | 12 | | | | |
| Volume Left | 0 | 9 | | | | |
| Volume Right | 3 | 3 | | | | |
| cSH | 1700 | 782 | | | | |
| Volume to Capacity | 0.13 | 0.02 | | | | |
| Queue Length 95th (ft) | 0 | 1 | | | | |
| Control Delay (s) | 0.0 | 9.7 | | | | |
| Lane LOS | | A | | | | |
| Approach Delay (s) | 0.0 | 9.7 | | | | |
| Approach LOS | | A | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.5 | | | |
| Intersection Capacity Utilization | | | 20.3% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

11: I-80 EB Off Ramp & W th St



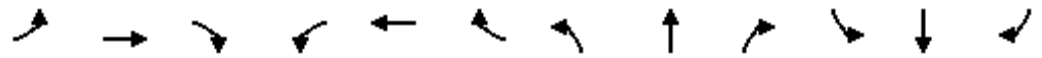
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | ↑ | | ↗ | ↘ | |
| Volume (veh/h) | 0 | 167 | 0 | 187 | 7 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 190 | 0 | 212 | 8 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 212 | | | | 190 | 0 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 212 | | | | 190 | 0 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 99 | 100 |
| cM capacity (veh/h) | 1358 | | | | 799 | 1085 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|------------------------|------|------|------|
| Volume Total | 190 | 212 | 8 |
| Volume Left | 0 | 0 | 8 |
| Volume Right | 0 | 212 | 0 |
| cSH | 1700 | 1700 | 799 |
| Volume to Capacity | 0.11 | 0.13 | 0.01 |
| Queue Length 95th (ft) | 0 | 0 | 1 |
| Control Delay (s) | 0.0 | 0.0 | 9.5 |
| Lane LOS | | | A |
| Approach Delay (s) | 0.0 | 0.0 | 9.5 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|-----------------------------------|--|-------|----------------------|
| Average Delay | | 0.2 | |
| Intersection Capacity Utilization | | 18.8% | ICU Level of Service |
| Analysis Period (min) | | 15 | A |

HCM Unsignalized Intersection Capacity Analysis

12: I-80 WB On Ramp & Robb Dr

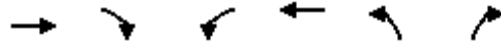


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | ↖ | ↗ | ↖ | ↑ | | | ↕ | ↗ |
| Volume (veh/h) | 0 | 0 | 0 | 6 | 1 | 1123 | 1 | 173 | 0 | 0 | 573 | 186 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 0 | 7 | 1 | 1276 | 1 | 197 | 0 | 0 | 651 | 211 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 851 | 850 | 326 | 524 | 850 | 197 | 651 | | | 197 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 851 | 850 | 326 | 524 | 850 | 197 | 651 | | | 197 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 0 | 100 | 100 | 98 | 100 | 0 | 100 | | | 100 | | |
| cM capacity (veh/h) | 0 | 296 | 670 | 435 | 296 | 812 | 931 | | | 1373 | | |

| Direction, Lane # | WB 1 | WB 2 | WB 3 | NB 1 | NB 2 | SB 1 | SB 2 | SB 3 |
|------------------------|------|------|------|------|------|------|------|------|
| Volume Total | 8 | 638 | 638 | 1 | 197 | 326 | 326 | 211 |
| Volume Left | 7 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Volume Right | 0 | 638 | 638 | 0 | 0 | 0 | 0 | 211 |
| cSH | 408 | 812 | 812 | 931 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.02 | 0.79 | 0.79 | 0.00 | 0.12 | 0.19 | 0.19 | 0.12 |
| Queue Length 95th (ft) | 1 | 201 | 201 | 0 | 0 | 0 | 0 | 0 |
| Control Delay (s) | 14.0 | 23.6 | 23.6 | 8.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | B | C | C | A | | | | |
| Approach Delay (s) | 23.6 | | | 0.1 | | 0.0 | | |
| Approach LOS | C | | | | | | | |

| Intersection Summary | | |
|-----------------------------------|-------|----------------------|
| Average Delay | | 12.9 |
| Intersection Capacity Utilization | 55.1% | ICU Level of Service |
| Analysis Period (min) | 15 | B |

HCM Unsignalized Intersection Capacity Analysis 21: Canyon Rd & I-80 WB Off/On Ramps



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | ↻ | | | ↻ | | ↻ |
| Volume (veh/h) | 14 | 27 | 86 | 11 | 0 | 15 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 16 | 31 | 98 | 12 | 0 | 17 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 47 | | 239 | 31 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 47 | | 239 | 31 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 94 | | 100 | 98 |
| cM capacity (veh/h) | | | 1561 | | 702 | 1043 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 47 | 110 | 17 | | | |
| Volume Left | 0 | 98 | 0 | | | |
| Volume Right | 31 | 0 | 17 | | | |
| cSH | 1700 | 1561 | 1043 | | | |
| Volume to Capacity | 0.03 | 0.06 | 0.02 | | | |
| Queue Length 95th (ft) | 0 | 5 | 1 | | | |
| Control Delay (s) | 0.0 | 6.7 | 8.5 | | | |
| Lane LOS | | A | A | | | |
| Approach Delay (s) | 0.0 | 6.7 | 8.5 | | | |
| Approach LOS | | | A | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 5.1 | | | |
| Intersection Capacity Utilization | | | 15.3% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

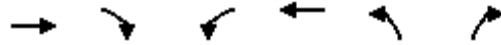
22: I-80 EB Off Ramp & Canyon Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | | | | ↑ | | | ↔ | |
| Volume (veh/h) | 22 | 1 | 139 | 0 | 0 | 0 | 0 | 91 | 9 | 2 | 12 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 25 | 1 | 158 | 0 | 0 | 0 | 0 | 103 | 10 | 2 | 14 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 127 | 132 | 14 | 285 | 127 | 109 | 14 | | | 114 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 127 | 132 | 14 | 285 | 127 | 109 | 14 | | | 114 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 97 | 100 | 85 | 100 | 100 | 100 | 100 | | | 100 | | |
| cM capacity (veh/h) | 846 | 758 | 1066 | 567 | 763 | 945 | 1605 | | | 1476 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 184 | 114 | 16 | | | | | | | | | |
| Volume Left | 25 | 0 | 2 | | | | | | | | | |
| Volume Right | 158 | 10 | 0 | | | | | | | | | |
| cSH | 1027 | 1700 | 1476 | | | | | | | | | |
| Volume to Capacity | 0.18 | 0.07 | 0.00 | | | | | | | | | |
| Queue Length 95th (ft) | 16 | 0 | 0 | | | | | | | | | |
| Control Delay (s) | 9.3 | 0.0 | 1.1 | | | | | | | | | |
| Lane LOS | A | | A | | | | | | | | | |
| Approach Delay (s) | 9.3 | 0.0 | 1.1 | | | | | | | | | |
| Approach LOS | A | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 5.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 21.9% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

23: Canyon Rd & I-80 WB Off Ramp



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | ↑ | | | ↑ | ↘ | |
| Volume (veh/h) | 25 | 0 | 0 | 1 | 10 | 6 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 28 | 0 | 0 | 1 | 11 | 7 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 28 | | 30 | 28 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 28 | | 30 | 28 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 99 | 99 |
| cM capacity (veh/h) | | | 1585 | | 985 | 1047 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|------------------------|------|------|------|
| Volume Total | 28 | 1 | 18 |
| Volume Left | 0 | 0 | 11 |
| Volume Right | 0 | 0 | 7 |
| cSH | 1700 | 1700 | 1007 |
| Volume to Capacity | 0.02 | 0.00 | 0.02 |
| Queue Length 95th (ft) | 0 | 0 | 1 |
| Control Delay (s) | 0.0 | 0.0 | 8.6 |
| Lane LOS | | | A |
| Approach Delay (s) | 0.0 | 0.0 | 8.6 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|-----------------------------------|-------|-----|----------------------|
| Average Delay | | 3.3 | |
| Intersection Capacity Utilization | 13.3% | | ICU Level of Service |
| Analysis Period (min) | | 15 | A |

HCM Unsignalized Intersection Capacity Analysis

24: Mustang Rd & I-80 EB On Ramp



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|-------------|-------------|------|----------------------|------|------|
| Lane Configurations | | ↔ | ↔ | | | |
| Volume (veh/h) | 53 | 39 | 54 | 8 | 0 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 60 | 44 | 61 | 9 | 0 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 61 | | | | 231 | 66 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 61 | | | | 231 | 66 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 96 | | | | 100 | 100 |
| cM capacity (veh/h) | 1542 | | | | 728 | 998 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 105 | 70 | | | | |
| Volume Left | 60 | 0 | | | | |
| Volume Right | 0 | 9 | | | | |
| cSH | 1542 | 1700 | | | | |
| Volume to Capacity | 0.04 | 0.04 | | | | |
| Queue Length 95th (ft) | 3 | 0 | | | | |
| Control Delay (s) | 4.4 | 0.0 | | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 4.4 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 2.6 | | | | |
| Intersection Capacity Utilization | | 15.0% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis

25: NV Hwy 655 & I-80 WB On Ramp



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | ↗ | | ↖ | | |
| Volume (veh/h) | 0 | 193 | 0 | 7 | 0 | 0 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 219 | 0 | 8 | 0 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 219 | | 8 | 0 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 219 | | 8 | 0 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 100 | 100 |
| cM capacity (veh/h) | | | 1350 | | 1013 | 1085 |

| Direction, Lane # | EB 1 | WB 1 |
|------------------------|------|------|
| Volume Total | 219 | 8 |
| Volume Left | 0 | 0 |
| Volume Right | 219 | 0 |
| cSH | 1700 | 1700 |
| Volume to Capacity | 0.13 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 |
| Control Delay (s) | 0.0 | 0.0 |
| Lane LOS | | |
| Approach Delay (s) | 0.0 | 0.0 |
| Approach LOS | | |

| Intersection Summary | | | |
|-----------------------------------|-------|----------------------|---|
| Average Delay | | 0.0 | |
| Intersection Capacity Utilization | 15.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis 27: I-80 WB Off Ramp & I-80 WB On Ramp



| Movement | NBL | NBR | NET | NER | SWL | SWT |
|-----------------------------------|-------------|-------------|-------|------|----------------------|------|
| Lane Configurations | | ↑ | | | | ↑ |
| Volume (veh/h) | 0 | 7 | 0 | 0 | 0 | 193 |
| Sign Control | Free | | Stop | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 8 | 0 | 0 | 0 | 219 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 219 | | 8 | 0 | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 219 | | 8 | 0 | | |
| tC, single (s) | 4.1 | | 6.4 | 6.2 | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | 3.5 | 3.3 | | |
| p0 queue free % | 100 | | 100 | 100 | | |
| cM capacity (veh/h) | 1350 | | 1013 | 1085 | | |
| Direction, Lane # | NB 1 | SW 1 | | | | |
| Volume Total | 8 | 219 | | | | |
| Volume Left | 0 | 0 | | | | |
| Volume Right | 0 | 219 | | | | |
| cSH | 1700 | 1700 | | | | |
| Volume to Capacity | 0.00 | 0.13 | | | | |
| Queue Length 95th (ft) | 0 | 0 | | | | |
| Control Delay (s) | 0.0 | 0.0 | | | | |
| Lane LOS | | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 13.5% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

28: Wunotoo Rd & Clark Station Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | | | | ↕ | | | ↕ | |
| Volume (veh/h) | 33 | 19 | 44 | 0 | 0 | 0 | 1 | 209 | 76 | 3 | 13 | 4 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 38 | 22 | 50 | 0 | 0 | 0 | 1 | 238 | 86 | 3 | 15 | 5 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 307 | 350 | 17 | 368 | 309 | 281 | 19 | | | 324 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 307 | 350 | 17 | 368 | 309 | 281 | 19 | | | 324 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 94 | 96 | 95 | 100 | 100 | 100 | 100 | | | 100 | | |
| cM capacity (veh/h) | 644 | 572 | 1062 | 543 | 603 | 758 | 1597 | | | 1236 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 109 | 325 | 23 | | | | | | | | | |
| Volume Left | 38 | 1 | 3 | | | | | | | | | |
| Volume Right | 50 | 86 | 5 | | | | | | | | | |
| cSH | 763 | 1597 | 1236 | | | | | | | | | |
| Volume to Capacity | 0.14 | 0.00 | 0.00 | | | | | | | | | |
| Queue Length 95th (ft) | 12 | 0 | 0 | | | | | | | | | |
| Control Delay (s) | 10.5 | 0.0 | 1.2 | | | | | | | | | |
| Lane LOS | B | A | A | | | | | | | | | |
| Approach Delay (s) | 10.5 | 0.0 | 1.2 | | | | | | | | | |
| Approach LOS | B | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 2.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 28.0% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | | | ↔ | ↔ | |
| Volume (veh/h) | 0 | 0 | 1 | 2 | 1 | 0 |
| Sign Control | Stop | | | Stop | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 1 | 2 | 1 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 2 | 0 | 2 | 2 | 0 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 2 | 0 | 2 | 2 | 0 | |
| tC, single (s) | 6.5 | 6.2 | 7.1 | 6.5 | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 4.0 | 3.3 | 3.5 | 4.0 | 2.2 | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | |
| cM capacity (veh/h) | 893 | 1085 | 1019 | 893 | 1623 | |

| Direction, Lane # | WB 1 | NB 1 |
|------------------------|------|------|
| Volume Total | 3 | 1 |
| Volume Left | 1 | 1 |
| Volume Right | 0 | 0 |
| cSH | 931 | 1623 |
| Volume to Capacity | 0.00 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 |
| Control Delay (s) | 8.9 | 7.2 |
| Lane LOS | A | A |
| Approach Delay (s) | 8.9 | 7.2 |
| Approach LOS | A | |

| Intersection Summary | | | |
|-----------------------------------|-------|----------------------|---|
| Average Delay | | 8.5 | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis

30: Derby Dam & I-80 EB Off Ramp

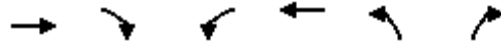


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | ↑ | ↑ | | ↑ | ↑ |
| Volume (veh/h) | 0 | 1 | 1 | 0 | 5 | 1 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 1 | 1 | 0 | 6 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 1 | | | | 2 | 1 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1 | | | | 2 | 1 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 99 | 100 |
| cM capacity (veh/h) | 1622 | | | | 1020 | 1083 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 | SB 2 |
|------------------------|------|------|------|------|
| Volume Total | 1 | 1 | 6 | 1 |
| Volume Left | 0 | 0 | 6 | 0 |
| Volume Right | 0 | 0 | 0 | 1 |
| cSH | 1700 | 1700 | 1020 | 1083 |
| Volume to Capacity | 0.00 | 0.00 | 0.01 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.0 | 8.5 | 8.3 |
| Lane LOS | | | A | A |
| Approach Delay (s) | 0.0 | 0.0 | 8.5 | |
| Approach LOS | | | A | |

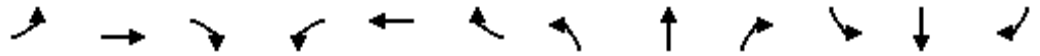
| Intersection Summary | | | |
|-----------------------------------|--|-------|------------------------|
| Average Delay | | 6.4 | |
| Intersection Capacity Utilization | | 13.3% | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis 31: I-80 WB On Ramp & Roadside Rest Rd



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------------|-------------|-------|----------------------|------|------|
| Lane Configurations | | | | ↕ | ↕ | |
| Volume (veh/h) | 0 | 0 | 1 | 1 | 1 | 0 |
| Sign Control | Stop | | | Stop | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 1 | 1 | 1 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 2 | 0 | 2 | 2 | 0 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 2 | 0 | 2 | 2 | 0 | |
| tC, single (s) | 6.5 | 6.2 | 7.1 | 6.5 | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 4.0 | 3.3 | 3.5 | 4.0 | 2.2 | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | |
| cM capacity (veh/h) | 893 | 1085 | 1019 | 893 | 1623 | |
| Direction, Lane # | WB 1 | NB 1 | | | | |
| Volume Total | 2 | 1 | | | | |
| Volume Left | 1 | 1 | | | | |
| Volume Right | 0 | 0 | | | | |
| cSH | 952 | 1623 | | | | |
| Volume to Capacity | 0.00 | 0.00 | | | | |
| Queue Length 95th (ft) | 0 | 0 | | | | |
| Control Delay (s) | 8.8 | 7.2 | | | | |
| Lane LOS | A | A | | | | |
| Approach Delay (s) | 8.8 | 7.2 | | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 8.3 | | | |
| Intersection Capacity Utilization | | | 13.3% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

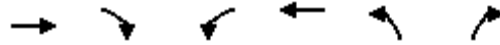
HCM Unsignalized Intersection Capacity Analysis 32: I-80 EB Off Ramp & Roadside Rest Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | | | | ↕ | | | ↕ | |
| Volume (veh/h) | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 5 | 6 | 1 | 7 | 5 | 2 | 1 | | | 2 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 5 | 6 | 1 | 7 | 5 | 2 | 1 | | | 2 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | | | 100 | | |
| cM capacity (veh/h) | 1015 | 889 | 1083 | 1010 | 890 | 1083 | 1622 | | | 1620 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 3 | 2 | 2 | | | | | | | | | |
| Volume Left | 1 | 0 | 1 | | | | | | | | | |
| Volume Right | 1 | 1 | 0 | | | | | | | | | |
| cSH | 989 | 1700 | 1620 | | | | | | | | | |
| Volume to Capacity | 0.00 | 0.00 | 0.00 | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | | | | | | | | | |
| Control Delay (s) | 8.7 | 0.0 | 3.6 | | | | | | | | | |
| Lane LOS | A | | A | | | | | | | | | |
| Approach Delay (s) | 8.7 | 0.0 | 3.6 | | | | | | | | | |
| Approach LOS | A | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 4.7 | | | | | | | | | |
| Intersection Capacity Utilization | | | 13.3% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

33: I-80 WB On Ramp & Canal Rd



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | | | ↕ | ↕ | |
| Volume (veh/h) | 0 | 0 | 4 | 1 | 4 | 0 |
| Sign Control | Stop | | | Stop | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 5 | 1 | 5 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 9 | 0 | 9 | 9 | 0 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 9 | 0 | 9 | 9 | 0 | |
| tC, single (s) | 6.5 | 6.2 | 7.1 | 6.5 | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 4.0 | 3.3 | 3.5 | 4.0 | 2.2 | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | |
| cM capacity (veh/h) | 883 | 1085 | 1007 | 883 | 1623 | |

| Direction, Lane # | WB 1 | NB 1 |
|------------------------|------|------|
| Volume Total | 6 | 5 |
| Volume Left | 5 | 5 |
| Volume Right | 0 | 0 |
| cSH | 980 | 1623 |
| Volume to Capacity | 0.01 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 |
| Control Delay (s) | 8.7 | 7.2 |
| Lane LOS | A | A |
| Approach Delay (s) | 8.7 | 7.2 |
| Approach LOS | A | |

| Intersection Summary | | | |
|-----------------------------------|-------|----------------------|---|
| Average Delay | | 8.0 | |
| Intersection Capacity Utilization | 13.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

HCM Unsignalized Intersection Capacity Analysis

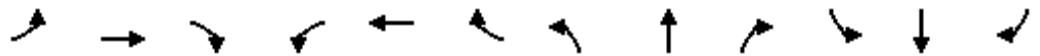
34: I-80 EB Off Ramp & Canal Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|------|------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | | | | ↑ | | | ↔ | |
| Volume (veh/h) | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 4 | 1 | 3 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 5 | 1 | 3 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 10 | 12 | 3 | 12 | 10 | 5 | 3 | | | 7 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 10 | 12 | 3 | 12 | 10 | 5 | 3 | | | 7 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | | | 100 | | |
| cM capacity (veh/h) | 1007 | 881 | 1080 | 1001 | 884 | 1079 | 1618 | | | 1614 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 5 | 7 | 5 | | | | | | | | | |
| Volume Left | 1 | 0 | 1 | | | | | | | | | |
| Volume Right | 1 | 5 | 0 | | | | | | | | | |
| cSH | 955 | 1700 | 1614 | | | | | | | | | |
| Volume to Capacity | 0.00 | 0.00 | 0.00 | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | | | | | | | | | |
| Control Delay (s) | 8.8 | 0.0 | 1.8 | | | | | | | | | |
| Lane LOS | A | | A | | | | | | | | | |
| Approach Delay (s) | 8.8 | 0.0 | 1.8 | | | | | | | | | |
| Approach LOS | A | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 13.3% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

35: I-80 WB On Ramp & Main St



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|-------------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | ↔ | | | ↔ | | | ↑ | ↗ |
| Volume (veh/h) | 0 | 0 | 0 | 2 | 1 | 14 | 1 | 69 | 0 | 0 | 21 | 33 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 0 | 0 | 2 | 1 | 16 | 1 | 78 | 0 | 0 | 24 | 38 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | None | | | None | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 121 | 105 | 24 | 105 | 142 | 78 | 61 | | | 78 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 121 | 105 | 24 | 105 | 142 | 78 | 61 | | | 78 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | 98 | 100 | | | 100 | | |
| cM capacity (veh/h) | 839 | 785 | 1053 | 875 | 749 | 982 | 1542 | | | 1520 | | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | SB 2 | | | | | | | | |
| Volume Total | 19 | 80 | 24 | 38 | | | | | | | | |
| Volume Left | 2 | 1 | 0 | 0 | | | | | | | | |
| Volume Right | 16 | 0 | 0 | 38 | | | | | | | | |
| cSH | 951 | 1542 | 1700 | 1700 | | | | | | | | |
| Volume to Capacity | 0.02 | 0.00 | 0.01 | 0.02 | | | | | | | | |
| Queue Length 95th (ft) | 2 | 0 | 0 | 0 | | | | | | | | |
| Control Delay (s) | 8.9 | 0.1 | 0.0 | 0.0 | | | | | | | | |
| Lane LOS | A | A | | | | | | | | | | |
| Approach Delay (s) | 8.9 | 0.1 | 0.0 | | | | | | | | | |
| Approach LOS | A | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.1 | | | | | | | | | |
| Intersection Capacity Utilization | | 20.4% | | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

36: I-80 EB Off Ramp & Main St



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | | | | ↔ | | | ↔ | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 68 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 1 | 19 | 1 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 77 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 1 | 22 | 1 | 0 |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total (vph) | 81 | 3 | 23 | | | | | | | | | |
| Volume Left (vph) | 77 | 0 | 22 | | | | | | | | | |
| Volume Right (vph) | 2 | 1 | 0 | | | | | | | | | |
| Hadj (s) | 0.21 | -0.17 | 0.22 | | | | | | | | | |
| Departure Headway (s) | 4.2 | 3.9 | 4.3 | | | | | | | | | |
| Degree Utilization, x | 0.09 | 0.00 | 0.03 | | | | | | | | | |
| Capacity (veh/h) | 853 | 883 | 816 | | | | | | | | | |
| Control Delay (s) | 7.6 | 7.0 | 7.4 | | | | | | | | | |
| Approach Delay (s) | 7.6 | 7.0 | 7.4 | | | | | | | | | |
| Approach LOS | A | A | A | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 7.5 | | | | | | | | | |
| HCM Level of Service | | | A | | | | | | | | | |
| Intersection Capacity Utilization | | | 18.4% | ICU Level of Service | | | | | | | | A |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

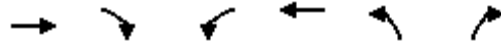
52: Frontage Rd & Garson Rd



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|------|----------------------|------|------|------|------|------|------|
| Lane Configurations | | ↔↑ | ↗ | | ↔↑ | | | ↗ | ↗ | | ↔↑ | |
| Volume (veh/h) | 21 | 21 | 31 | 59 | 1 | 34 | 1 | 92 | 16 | 59 | 240 | 1 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 24 | 24 | 35 | 67 | 1 | 39 | 1 | 105 | 18 | 67 | 273 | 1 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 515 | 514 | 273 | 526 | 515 | 105 | 274 | | | 105 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 515 | 514 | 273 | 526 | 515 | 105 | 274 | | | 105 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 95 | 95 | 95 | 84 | 100 | 96 | 100 | | | 95 | | |
| cM capacity (veh/h) | 435 | 443 | 765 | 408 | 442 | 950 | 1289 | | | 1487 | | |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | NB 1 | NB 2 | SB 1 | | | | |
| Volume Total | 32 | 16 | 35 | 68 | 39 | 106 | 18 | 341 | | | | |
| Volume Left | 24 | 0 | 0 | 67 | 0 | 1 | 0 | 67 | | | | |
| Volume Right | 0 | 0 | 35 | 0 | 39 | 0 | 18 | 1 | | | | |
| cSH | 437 | 443 | 765 | 408 | 934 | 1289 | 1700 | 1487 | | | | |
| Volume to Capacity | 0.07 | 0.04 | 0.05 | 0.17 | 0.04 | 0.00 | 0.01 | 0.05 | | | | |
| Queue Length 95th (ft) | 6 | 3 | 4 | 15 | 3 | 0 | 0 | 4 | | | | |
| Control Delay (s) | 13.9 | 13.4 | 9.9 | 15.6 | 9.0 | 0.1 | 0.0 | 1.8 | | | | |
| Lane LOS | B | B | A | C | A | A | | A | | | | |
| Approach Delay (s) | 12.1 | | | 13.2 | | 0.1 | | 1.8 | | | | |
| Approach LOS | B | | | B | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 4.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 39.2% | | | ICU Level of Service | | A | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

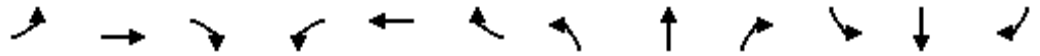
HCM Unsignalized Intersection Capacity Analysis

232: Canyon Park & I-80 WB On Ramp



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------|------|------------|------|----------------------|------|
| Lane Configurations | ↔ | | ↔ | | | |
| Sign Control | Yield | | Yield Stop | | | |
| Volume (vph) | 1 | 1 | 19 | 37 | 0 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 1 | 1 | 22 | 42 | 0 | 0 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total (vph) | 2 | 64 | | | | |
| Volume Left (vph) | 0 | 22 | | | | |
| Volume Right (vph) | 1 | 0 | | | | |
| Hadj (s) | -0.27 | 0.10 | | | | |
| Departure Headway (s) | 3.7 | 4.0 | | | | |
| Degree Utilization, x | 0.00 | 0.07 | | | | |
| Capacity (veh/h) | 968 | 894 | | | | |
| Control Delay (s) | 6.7 | 7.3 | | | | |
| Approach Delay (s) | 6.7 | 7.3 | | | | |
| Approach LOS | A | A | | | | |
| Intersection Summary | | | | | | |
| Delay | | | 7.3 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 13.0% | | ICU Level of Service | |
| Analysis Period (min) | | | 15 | | | |
| | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 242: I-80 EB Off Ramp & Mustang Ranch Rd



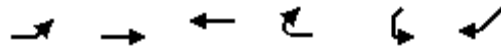
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|----------------------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 24 | 72 | 1 | 1 | 1 | 53 | 0 | 2 | 1 | 25 | 1 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 27 | 82 | 1 | 1 | 1 | 60 | 0 | 2 | 1 | 28 | 1 | 0 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total (vph) | 110 | 63 | 3 | 30 | | | | | | | | |
| Volume Left (vph) | 27 | 1 | 0 | 28 | | | | | | | | |
| Volume Right (vph) | 1 | 60 | 1 | 0 | | | | | | | | |
| Hadj (s) | 0.08 | -0.54 | -0.17 | 0.23 | | | | | | | | |
| Departure Headway (s) | 4.1 | 3.5 | 4.1 | 4.5 | | | | | | | | |
| Degree Utilization, x | 0.13 | 0.06 | 0.00 | 0.04 | | | | | | | | |
| Capacity (veh/h) | 862 | 996 | 827 | 759 | | | | | | | | |
| Control Delay (s) | 7.7 | 6.8 | 7.1 | 7.7 | | | | | | | | |
| Approach Delay (s) | 7.7 | 6.8 | 7.1 | 7.7 | | | | | | | | |
| Approach LOS | A | A | A | A | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 7.4 | | | | | | | | | |
| HCM Level of Service | | | A | | | | | | | | | |
| Intersection Capacity Utilization | | | 26.6% | ICU Level of Service | A | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

282: I-80 EB Off Ramp & Wunotoo Rd



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 37 | 1 | 0 | 222 | 8 | 0 |
| Sign Control | Free | | | Stop | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 42 | 1 | 0 | 252 | 9 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 0 | | 89 | 84 | 84 | 0 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 0 | | 89 | 84 | 84 | 0 |
| tC, single (s) | 4.1 | | 7.1 | 6.5 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | 3.5 | 4.0 | 4.0 | 3.3 |
| p0 queue free % | 97 | | 100 | 68 | 99 | 100 |
| cM capacity (veh/h) | 1623 | | 871 | 785 | 785 | 1085 |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | SB 1 | | |
| Volume Total | 42 | 1 | 252 | 9 | | |
| Volume Left | 42 | 0 | 0 | 0 | | |
| Volume Right | 0 | 1 | 0 | 0 | | |
| cSH | 1623 | 1700 | 785 | 785 | | |
| Volume to Capacity | 0.03 | 0.00 | 0.32 | 0.01 | | |
| Queue Length 95th (ft) | 2 | 0 | 35 | 1 | | |
| Control Delay (s) | 7.3 | 0.0 | 11.7 | 9.6 | | |
| Lane LOS | A | | B | A | | |
| Approach Delay (s) | 7.1 | | 11.7 | 9.6 | | |
| Approach LOS | | | B | A | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 11.0 | | | |
| Intersection Capacity Utilization | | | 21.7% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SWL | SWR |
|-----------------------------------|------|------|------|----------------------|------|------|
| Lane Configurations | | ↕ | ↑ | | | |
| Sign Control | | Stop | Stop | | Stop | |
| Volume (vph) | 5 | 1 | 1 | 0 | 0 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 6 | 1 | 1 | 0 | 0 | 0 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total (vph) | 7 | 1 | | | | |
| Volume Left (vph) | 6 | 0 | | | | |
| Volume Right (vph) | 0 | 0 | | | | |
| Hadj (s) | 0.20 | 0.03 | | | | |
| Departure Headway (s) | 4.1 | 3.9 | | | | |
| Degree Utilization, x | 0.01 | 0.00 | | | | |
| Capacity (veh/h) | 874 | 908 | | | | |
| Control Delay (s) | 7.1 | 6.9 | | | | |
| Approach Delay (s) | 7.1 | 6.9 | | | | |
| Approach LOS | A | A | | | | |
| Intersection Summary | | | | | | |
| Delay | | | 7.1 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 7.7% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

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