Appendix E

Truckee 2040 General Plan
Future Transportation Analysis

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MEMO

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TO: Kim Untermoser, Ascent Environmental

FROM: Gordon Shaw and Leslie Suen, LSC

SUBJECT: TRUCKEE 2040 GENERAL PLAN FUTURE TRANSPORTATION ANALYSIS

This document presents the traffic analysis of the buildout of the existing 2025 General Plan description and compares it to the buildout of the proposed 2040 General Plan. The transportation metrics used in the comparison include intersection traffic volumes, roadway traffic volumes, intersection and roadway Level of Service (LOS), and vehicle miles traveled (VMT). Additionally, mitigation measures are defined for any element that does not meet current standards.

FUTURE CONDITIONS

The following section summarizes future traffic conditions within the Study Area. It includes an analysis of future full buildout conditions on Truckee's key roadways and at several important intersections within the Town as well as conditions in the SR 267 corridor in Placer County, upon build out of the following two land use alternatives:

- The Existing 2025 Truckee General Plan
- The Proposed 2040 Truckee General Plan

The roadway classifications are defined in Table 1 and location of all study segments are show in Figure 1 while the classifications and jurisdictions of each study roadway segment are detailed in Table 2.
The study intersections are shown in Figure 2.

The discussion below describes the steps that were followed in estimating the transportation impacts that would result from the proposed project for the 2040 cumulative traffic condition. Initially, the 2040

No Build condition is estimated, which assumes the build out of the 2025 General Plan. Next, the Proposed General Plan is assessed to determine the traffic that will be generated, as measured in P.M. peak hour vehicle trip ends and daily vehicle trip ends. The traffic generated by both alternatives is then analyzed to identify the impact on intersection and roadway Level of Service (LOS). In addition, impacts and recommended improvements with regards to pedestrian/bicycle and transit access are discussed.

No Build Alternative: Build Out of Existing 2025 Truckee General Plan

Traffic Volumes

The model-generated turning-movement volumes were converted to design volumes using the following formula:

Future Design Traffic Volumes = 2040 Model-Generated Traffic Volumes
-2018 Model-Generated Traffic Volumes
+2018 Design Traffic Volumes

The turning movement volumes resulting from the build out of the existing 2025 Truckee General Plan are shown in Table 3. The PM peak-hour and Average Daily Traffic (ADT) resulting on the study roadways upon build out of the existing General Plan are shown in Table 4.

Level of Service

Intersection LOS conditions for the 32 study intersections were evaluated using the methodologies documented in the Highway Capacity Manual 6th Edition (HCM), as applied in the Synchro Software package. Computer output of detailed LOS calculations for all intersections is provided in Appendix A of this report. Table 5 and Figure 3 provides a summary of the future LOS at each of the study intersections resulting from the buildout of the existing 2025 General Plan.

Roadway volumes at all the study roadway segments were compared to the applicable LOS standard, Town of Truckee or Placer County. Based on the *Martis Valley Community Plan* (December 16, 2003) the LOS Standard for SR 267 in the County is no worse than LOS E.

Discussion of SR 267 Bypass Directional Roadway Capacity

Consistent with previous traffic studies conducted in the area (such as those prepared for Placer County regarding the Martis Valley General Plan and for the Town of Truckee regarding the Railyard Master Plan), the capacity of the SR 267 "Bypass" section between I-80 and Brockway Road was based upon Highway Capacity Manual (HCM) 7th Edition methodology for uninterrupted facilities. This approach reflects the fact that local studies (such as the Level of Service Criteria Study prepared for the Nevada County Transportation Commissions by Prism Engineering in 2001) have found that observed traffic volumes on rural highways in Nevada County are substantially greater than the capacity identified under the Rural Two-Lane Roadway methodology presented in the HCM. This methodology is based upon the

assumption that drivers have an expectation to be able to pass slower drivers, which is not the common expectation for travel around the Truckee / Tahoe region during a peak summer day. The HCM Urban Streets methodology is also not appropriate, as it requires the presence of traffic signals within the corridor segment, while the issue of the capacity of the 267 Bypass focuses on the segment between the existing traffic signals.

In the absence of a HCM methodology specifically applicable to the Bypass, the capacity has been estimated based upon a base volume from the HCM Freeway methodology. Thanks to the excellent design parameters of the Bypass (wide travel lanes and shoulders, absence of intersecting roadways or driveways), as well as absence of pedestrians and very low bicycle volumes, this roadway segment most closely functions as one freeway travel lane in each direction. As shown in Table 6, attached, the capacity of this segment (LOS E/F boundary) as well as the LOS D capacity (LOS D/E boundary) was calculated as follows.

1. A base volume of 2,250 vehicles per hour per lane, per Chapter 12 of HCM 7th Edition, for a free flow speed of 55 miles per hour.

2. Per the factors identified in HCM, no factors need be applied to reflect limited lane width or shoulder width.

3. An adjustment is appropriate regarding the relatively high impact of trucks on traffic flow. Based upon Caltrans counts, it is estimated that 3 percent of total traffic consists of trucks during peak traffic periods. This would equal 68 of the base 2,250 vehicles.

4. Per Exhibit 12-25 of HCM, a truck in rolling terrain has a Passenger Car Equivalence (PCE) of 3.0. Trucks therefore have equivalent impact of 204 vehicles. Subtracting the difference (204 minus 68) from the base volume of 2,250 yields 2,114 vehicles per hour per lane.

5. It is also appropriate to apply a "Peak Hour Factor" (PHF) to reflect variation in traffic levels within the hour. This is calculated by dividing the average 15-minute volume within the peak hour by the highest 15-minute volume. A review of peak summer PM peak-hour traffic counts indicates an observed PHF of 0.98. Multiplying 2,114 by this factor (0.98) yields 2,072 vehicles per hour per lane.

6. This value represents the upper end of LOS E / lower end of LOS F boundary. HCM indicates that LOS F conditions represent those conditions found when demand (traffic volume) equals or exceeds capacity. For instance, the two-lane Highway section of Chapter 12 – Highway Concepts states that "LOS F represents heavily congested flow with traffic demand exceeding capacity". In addition, HCM also indicates that "The highest volume attainable under LOS E defines the capacity of the highway" . These definitions indicate that the LOS E/F boundary occurs when the volume/capacity ratio equals 1.0.

The Town of Truckee's LOS standard for roadways outside of the downtown area is LOS D (i.e., LOS E conditions do not attain the standard). It is therefore necessary to factor down the LOS E/F capacity to reflect the upper end of LOS D (the D/E boundary). LOS ranges are defined such that a 10 percent change in the Volume/Capacity (V/C) ratio reflects a full LOS. It is therefore appropriate to multiply the LOS E capacity by 0.90 to identify the LOS D maximum flow rate of 1,865. Rounding results in the final volume of 1,860.

Vehicle Miles Traveled (VMT)

VMT is a newer metric used in transportation analysis to count all the miles vehicles travel in a given area for a given time frame. For this analysis, "Truckee VMT" is defined as the total VMT generated by land uses in the Town of Truckee, including both the portions of the trip within the town as well as beyond the town limits to the other end of the trip (consistent with CEQA guidelines). It does not include trips passing completely through Truckee, such as through trips on I-80 that do not stop. It is analyzed for a total peak summer day.

VMT in Truckee is calculated based on the TransCAD model, which is a PM peak-hour model. Beyond the Town of Truckee, the model area also includes the Martis Valley and Northstar portions of Placer County as well as some nearby portions of unincorporated Nevada County. The vehicle trips for each TAZ from the model are multiplied by the distance between each origin/destination TAZ pair and summed to define the total VMT within the model area. For CEQA analysis the trip doesn't end at the Town boundary or the Model boundary, it should extend to the entire length of the trip. Therefore, the trips that travel out of the model area need an extended trip length. As shown in Table 7, these trips are between Truckee and External Model locations. The extended trip length was calculated using Streetlight data (which is based on anonymized tracking of cellphone and Bluetooth-enabled devices in vehicles) as described in the *Truckee VMT Guidelines Memo* (LSC, June 11, 2020). Based on this data, a trip length for those trips extending external to the Town was determined. Note that the extended trip length was also increased to account for vehicle-trips that include an intermediate stop. Trips as defined in the Streetlight data have a trip end when the device does not move for more than five minutes. However, some trips generated in Truckee (such as a trip from a lodging unit in Truckee and a primary residence in the Bay Area) can include a short stop along the way for fueling or a meal break. To reflect the full trip length, device home location data was analyzed and used to increase the base Streetlight trip length (again as described in *Truckee VMT Guidelines Memo*). Finally, it is necessary to factor the PM peak-hour to daily VMT. This was done using the ratio of daily to peak-hour Streetlight data, resulting in 2,070,418 daily VMT as shown in Table 7.

Proposed Project: Build Out of Proposed 2040 Truckee General Plan

Traffic Volumes

The turning -movement volumes resulting from the build out of the Proposed Truckee General Plan are shown in Table 8. The PM peak-hour and Average Daily Traffic (ADT) resulting on the study roadways upon build out of the Proposed Truckee General Plan are shown in Table 9.

Level of Service

Intersection LOS conditions for the 32 study intersections with the turning-movement volumes from the Proposed Truckee General Plan were evaluated using the methodologies documented in the Highway Capacity Manual 6th Edition (HCM), as applied in the Synchro Software package. Computer output of detailed LOS calculations for all intersections is provided in Appendix B of this report.

Table 10 and Figure 4 provides a summary of the future LOS at each of the study intersections resulting from the buildout of the proposed General Plan.

VMT

VMT was calculated for the proposed General Plan in the same way as for the existing General Plan described above. The total daily VMT for the proposed General Plan is 2,098,036 as shown on the right side of Table 7.

Level of Service Impacts

Town of Truckee LOS standards are shown in Table 11. Tables 5 and 10 provides a summary of the existing LOS at each of the study intersections, while Tables 12 and 13 depict the mitigated LOS for each scenario. Computer output of detailed LOS mitigation calculations for all intersections is provided Appendix C and D, for the existing General Plan and proposed General Plan, respectively.

No Build Alternative: Build Out of the Existing 2025 General Plan

As Table 5 indicates, under this alternative, intersection LOS thresholds will be exceeded at nine locations. The locations are as follows:

- Intersection 3 - I-80 WB On/Off Ramp/Donner Pass Road
- Intersection 5 - SR 89 South/Frates Lane/Donner Pass Road
- Intersection 16 - I-80 WB Off Ramp/Truckee Way
- Intersection 18 - Truckee Way/Pioneer Trail
- Intersection 22 - I-80 WB On/Off Ramp/SR 89 North
- Intersection 23 - I-80 EB On/Off Ramp/SR 267
- Intersection 29 - SR 267/Brockway Road/Soaring Way
- Intersection 30 - SR 267/Schaffer Mill Road/Truckee Airport Road
- Intersection 32 - SR 267/Highlands View Road

As Table 4 indicates, under this alternative, roadway LOS will not be exceeded at any locations.

Proposed Project: Build Out of the 2040 Proposed General Plan

As Table 9 indicates, under this alternative, intersection LOS thresholds will be exceeded at the same nine locations as under the no build (existing general plan) scenario.

As Table 10 indicates, under this alternative, roadway LOS will not be exceeded at any locations.

LOS Mitigation Measures

Future conditions cause some intersections in the study area fall below LOS standards. The following discusses required mitigation measures.

No Build Alternative: Build Out of the existing 2025 General Plan

The mitigation measures identified in Table 12 would mitigate intersection LOS impacts. Several mitigation options are provided for some intersections. Some of these mitigation measures go against Town policies such as two east bound through lanes at Donner Pass Road/SR 89 South/Frates Ln. These are shown for informational purposes and can be removed as needed in the final version of this report.

Proposed Project: Build Out of the 2040 Proposed General Plan

The mitigation measures identified in Table 13 would result in mitigating intersection LOS impacts. The same mitigations measures shown for the existing general plan will work with the proposed general plan volumes.

Vehicle Miles Traveled (VMT) Impacts

The total daily VMT for the proposed General Plan is 2,098,036 or an increase of 27,617 daily VMT over the existing General Plan. This equates to a 1.3 percent increase in daily VMT. The results are summarized in Table 6.

Transit Operations Impacts

The development envisioned in the 2040 General Plan would increase overall population. Combined with auto disincentive goals and policies, the Plan would increase the demand for public transit services. Existing transit programs operated by the Town and Placer County typically function well below capacity, indicating that there is adequate available capacity to accommodate the growth in demand.

Another potential impact is an increase in delays along transit routes. Table 13 presents the LOS and delays at key intersections with buildout of the proposed plan after mitigation. This indicates that the following delays will impact transit services at peak times:

- Even with provision of a 2-lane roundabout at DPR/Frates Lake / SR 89 South, delays of several minutes are forecast to occur at peak times. This would delay both the existing Truckee TART fixed

route as well as the Placer TART 89 route. The Placer TART 89 route, with a 2-hour round-trip cycle length for the route between Tahoe City and Truckee, has adequate available time to accommodate this delay without impacting schedules. The existing Truckee TART route has less available time, indicating that these delays would either cause the route to operate behind schedule at peak traffic times, or require a revision of the route to reduce running time along some other portion of the route. There are portions of this route with very low ridership that could be modified to provide adequate running time. In addition, there is the potential for some existing fixed route service area to be replaced by microtransit services.

- The Placer TART 267 and Truckee TART route would be impacted by the long delays as peak times at the Bridge/West River Street intersection, as shown in Table 10. Again, there is sufficient time to accommodate this on the Placer TART route. In addition, the Town is currently finalizing plans to construct a transit center in the Railyard balloon track area. This would provide an opportunity for the 267 route to use the 267 Bypass rather than Bridge Street to travel to/from the transit center, as well as the potential for the Truckee TART route to use the 267 Bypass to travel between Brockway Road and downtown.

In addition, the Plan also includes goals, policies and actions to expand transit services and facilities, including the following:

- Goal M-3: Transit. Promote a safe and efficient local and regional transit system, including bus, van, shuttles, and rail, to reduce congestion, improve the environment, and provide viable alternatives to the automobile. Integrate bicycle and disabled access into the system.
- Policy M-3.1 - Transit Features Access. Require new development to incorporate features that accommodate allow for and maximize transit access and use, including shelters, and safe routes to transit stops, and ADA improvements, and ensure that right-of-way for future transit access is reserved in plans for new growth areas.
- Policy M-3.3 - Mode Transfer Facilities. Encourage the development of facilities for convenient transfers between different modes of transport, especially to provide connections to rail and intercity bus service.
- Policy M-3.10 - Inter-Regional Transit Services. Collaborate with regional partners to expand the provision of inter-regional transit services to and from the Lake Tahoe Basin, and the ski areas, and summer recreation destinations, and public lands, as funding permits.
- Action M-3.A - Long Range Transit Plan. Maintain, implement, and update Truckee's Long Range Transit Plan that anticipates a series of improvements and expansion plans and capital facilities. *(Abridged)*
- Action M-3.B - Funding Mechanisms for Transit. Work with neighboring jurisdictions to develop funding mechanisms to address future shortfalls in available funding for on-going transit, and to support adequate transit service for the Town's population as it grows.
- Action M-3.C - Funding for Transit Services. Pursue all available sources of funding for capital and operating costs of transit services, including consideration of funding through major developers such as the assessment districts formed for the Coldstream Specific Plan, Joerger Ranch Specific Plan, and the Railyard Master Plan.
- Action M-8.B - Consolidate Transit Programs. Work with adjacent jurisdictions to further consolidate transit programs to improve the regional TART public transit program
- Action M-3.I - Dedicated Ski-Resort Commute Lane - Work closely with Caltrans, CHP, Placer County, NCTC, and others to analyze and implement a bus-only lane or similar mechanism on SR 89

and SR 267, for ski resort travel during peak winter congestion (typically weekends). This might entail a third center or edge lane for buses and vans, shoulder travel, or other options.

Overall, these policies would improve public transit services and their ability to serve a greater proportion of overall travel. Beyond the Mobility Element, the 2040 General Plan includes land use policies that encourage higher density development within existing activity centers and key corridors (such as Donner Pass Road). This result in a pattern of transit demand that is easier and more cost-effective for transit to serve.

Bicycle and Pedestrian Operations Impacts

The impacts of the proposed 2040 General Plan on bicycle and pedestrian conditions are as follows:

- Growth associated with the implementation of the 2040 General Plan would slightly increase traffic levels that bicyclists and pedestrians need to negotiate. Summing the total volumes for the study roadway segments, the Plan will increase traffic activity by 1.4 percent. Growth in population will also increase the level of bicycle and pedestrian activity, which together will result in a modest increase in interaction between bicyclists/pedestrians and motor vehicle traffic.

- The policy to allow traffic LOS to reach/exceed LOS F in the downtown area, along with the provision of signals on Bridge Street at West River Street and at DPR will improve pedestrian and bicycle conditions by slowing traffic speeds and providing protected crossing on all intersection legs.

- The 2040 General Plan also includes a long list of goals, policies and actions that would enhance the bicycle/pedestrian network. Key among these are the following:
    - Goal M-2: Pedestrian and Bicycle Facilities. Provide a safe, comprehensive, and integrated system of trails, sidewalks, and bikeways as a key component of the circulation system. Integrate this system with available transit opportunities, and higher density, mixed-use development.
    - Policy M-2.1 - Truckee Trails and Bikeways Master Plan. Maintain, implement, and update the Truckee Trails and Bikeways Master Plan to continue to expand the Town's inter-connected system of bikeways, trails, and sidewalks throughout the community that is accessible to all users, including children, persons with disabilities, and seniors.
    - Policy M-2.2 - Truckee River Legacy Trail. Give special priority to completion of the Truckee River Legacy Trail as the main west-to-east cross-town "artery" of the Town's trail network, with other trails connecting to it.
    - Policy M-2.3 - Safe and Continuous Routes. Link new trails and bikeways with established bikeways, parks and open space areas to provide safe and continuous routes, especially near mobile home parks and multifamily apartments, to serve disadvantaged populations.
    - Policy M-2.4 - Regional Trail Connections. Work with surrounding jurisdictions and recreation districts to connect Truckee's trails and bikeways to surrounding regional trails.
    - Policy M-2.5 - Bicycle and Pedestrian Roadway Improvements. Use roadway, roundabout, and intersection improvements as an opportunity to improve bicycle and pedestrian facilities and connections, where feasible.
    - Policy M-2.6 - State Highway Bicycle Routes. Support and encourage the provision of bicycle routes along State highways, especially State Route 89 complimenting improvements to the Legacy Trail, Truckee River Trail and Mini-Mousehole; and on SR 267 to compliment

and connect to trails and bikeways in the Martis Valley and the airport/Brockway areas of Truckee.

- **Policy M-2.8 - Separate Bicycle and Pedestrian Traffic.** Provide facilities that separate bicycle and pedestrian traffic from vehicular traffic when it is feasible to do so.
- **Policy M-2.12 - Electric-Assist Bike Infrastructure.** Ensure adequate infrastructure for electric-assist bikes such as charging stations in new and redeveloped commercial and multi-family residential projects and Town facilities and a regional bike share program. Encourage other agencies and major employers to install e-bike charging stations. Consider the appropriateness of e-bikes on major multi-use bikeways and trails.
- **Action M-2.A - Update Trails and Bikeways Master Plan.** Update the Trails and Bikeways Master Plan to continue to expand the Town's inter-connected system of bikeways, trails, and sidewalks. (*Abridged)*
- **Action M-2.B - Fund Implementation of the Trails and Bikeways Master Plan.** Use the annual budgeting process and capital improvement projects list (CIP) to effectively implement the policies, programs and improvements detailed in the Trails and Bikeways Master Plan as construction funds are available and on-going maintenance funds are assured.
- **Action M-2.C - Funding to Maintain Key Trails and Bikeways.** Use the funds from Measure R (or subsequent tax measures), development-provided assessment district funding, development agreement funding and other on-going sources of maintenance funding to maintain key trails and bikeways in all seasons. Renew Measure R to continue as a source for maintenance.
- **Action M-2.E - Bicycle and Pedestrian Roadway Improvements.** Improve bicycle and pedestrian facilities and connections as part of Capital Improvement Projects for roadway, roundabout, and intersection improvements, where feasible.
- **Action M-2 - New Pedestrian and Bicycle Facilities.** Identify and implement new pedestrian and bicycle facilities beyond those identified in the Trails and Bikeways Master Plan and Downtown Streetscape Plan. These facilities may include, but not be limited to, pedestrian and bicycle facilities along Donner Pass Road in the Gateway Area and between Cold Stream Road and South Shore Drive, along Highway 89 South, and along West River Street.
- **Action M-2.J - Downtown Bike and Pedestrian Connections.** Implement the Downtown streetscapes as part of the Downtown Plan to complete sidewalks and pedestrian and bike connections on Jibboom, Bridge, Church, West River, and other Downtown streets resulting in a "Complete Street" cross section accommodating all modes and users.

The implementation of these policies and actions will substantially expand the non-motorized transportation network throughout Truckee. In sum, implementation of these goals, policies and actions would result in an overall bicycle/pedestrian environment improved over current conditions, even given the slight increase in traffic activity.

Attachments

Tables 1 – 13

Figures 1 – 4

Appendix A – D

Table 1 - Roadway Classification Definitions

Roadway Type	Function and Design Factors	Access	Lanes
Freeway	The function of a freeway is to provide for inter-regional and intra-regional travel. Freeways serve high speed traffic and are full access controlled with no at grade crossings interrupting the flow of traffic. Vehicle speeds and daily traffic volumes are very high. Interchanges typically connect to major or minor arterials. Interstate 80 is the only freeway in Truckee.	Access is limited and provided via interchanges.	2 to 6 lanes
Major Arterials (State Highways)	Major arterials, similar to freeways, provide for high mobility inter-regional and intra-regional travel. Major arterials however, are usually partial access controlled with a minimum number of intersections (primarily with other arterials or freeways). Examples of major arterials in Truckee include SR 89 and SR 267.	Should be limited to intersections with freeways and arterials; in rural areas, may have some access to parcels	2 to 6 lanes
Minor Arterials	Minor arterials typically provide more land access than do major arterials, while still providing adequate mobility for accommodating longer distance trips. Minor arterials should have Class II bike lanes. Examples in Truckee include Donner Pass Road and Glenshire Drive.	Can intersect with any facility, though access to local roads and driveways is generally minimized	2 to 4 lanes
Major Collectors	Major collectors serve the more important intra-county travel corridors and traffic generators not served by major or minor arterials. Major collectors may have Class II bike lanes. Major collectors include roadways such as Alder Creek Drive, Donner Lake Road, Lausanne Way, and the Northwoods Boulevard loop.	Access is not restricted	2 lanes
Minor Collector	The function of minor collector roadways is to accumulate traffic from local roads and provide connectivity to higher class major collectors and major and minor arterials. Minor collectors may have Class II bike lanes. Examples of minor collectors include Dorchester Drive, Martis Valley Road, South Shore Drive, and Rainbow Drive.	Access is not restricted	2 lanes
Local	Local roads can be private or public and primarily provide land access functions (e.g., to residence, business, or other abutting property) and include cul-de-sacs. Their design and control facilitates the movement of vehicles onto and off the street system from land parcels. Through movement is difficult and is discouraged by both design and control of facility. Vehicle speeds are typically very low. Most neighborhood residential roads are considered local roads.	Access is not restricted	2 lanes

Source: LSC Transportation Consultants, Inc.

Table 2: Truckee General Plan -Study Roadway Segments

#	Roadway Segment	Jurisdiction	Classification
1	Donner Pass Road at the western Town limit	Town of Truckee	Minor Arterial
2	Donner Pass Road immediately west of Cold Stream Road	Town of Truckee	Minor Arterial
3	Northwood Boulevard immediately north of Donner Pass Road	Town of Truckee	Minor Arterial
4	Northwoods Boulevard immediately south of Northwoods Boulevard	Town of Truckee	Minor Arterial
5	Donner Pass Road immediately west of SR 89 South	Town of Truckee	Minor Arterial
6	Deerfield Drive immediately west of SR 89 South	Town of Truckee	Collector
7	West River Street immediately east of SR 89 South	Town of Truckee	Major Arterial
8	SR 89 South immediately south of West River Street	Town of Truckee	Major Arterial
9	SR 89 South immediately north of West River Street	Town of Truckee	Major Arterial
10	Donner Pass Road immediately east of the Central I-80 Interchange	Town of Truckee	Minor Arterial
11	McIver Undercrossing	Town of Truckee	Minor Arterial - Downtown
12	Bridge Street over the Truckee River	Town of Truckee	Minor Arterial - Downtown
13	Donner Pass Road immediately west of Bridge Street	Town of Truckee	Minor Arterial - Downtown
14	West River Street immediately west of Bridge Street	Town of Truckee	Minor Arterial - Downtown
15	Brockway Road immediately east of Palisades Road	Town of Truckee	Minor Arterial
16	Glenshire Drive immediately east of Donner Pass Road	Town of Truckee	Minor Arterial
17	Glenshire Drive immediately east of Martis Peak Road	Town of Truckee	Collector
18	Donner Pass Road immediately north of Pioneer Trail	Town of Truckee	Minor Arterial
19	Pioneer Trail immediately west of Donner Pass Road	Town of Truckee	Collector
20	SR 89 North, at the Town limit	Town of Truckee	Major Arterial
21	SR 89 North between Alder Drive and Donner Pass Road	Town of Truckee	Major Arterial
22	SR 267 immediately south of I-80	Town of Truckee	Major Arterial
23	SR 267 at the Truckee/Placer County line	Town of Truckee/Placer County	Major Arterial
24	SR 267 between Airport Road and Northstar	Placer County	Major Arterial
25	Alder Creek Road immediately west of SR 89	Town of Truckee	Collector
26	Brockway Road immediately west of SR 267	Town of Truckee	Minor Arterial
27	Airport Road immediately east of SR 267	Placer County	Collector
28	Schaffer Mill Road immediately west of SR 267	Placer County	Collector

Source: LSC Transportation Consultants, Inc.

Table 3: Truckee General Plan - Future (2040) Intersection Traffic Volumes - Existing 2025 General Plan

		Northbound			Southbound			Eastbound			Westbound			
#	Intersection	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
1	Donner Pass Road/South Shore Drive	59	0	110	0	0	0	0	157	57	99	230	0	712
2	I-80 EB On/Off Ramp/ Cold Stream Road/Donner Pass Road	55	102	88	109	49	7	203	247	46	206	484	185	1,781
3	I-80 WB On/Off Ramp /Donner Pass Road	218	1	56	0	0	0	0	517	29	9	658	0	1,488
4	Donner Pass Road/Northwoods Blvd	2	2	7	243	0	354	311	369	3	2	435	250	1,978
5	SR 89 South/Donner Pass Road	263	105	302	44	90	74	119	434	376	332	375	66	2,580
6	I-80 WB On/Off Ramp/SR 89 South	270	528	0	0	772	80	0	0	0	181	3	425	2,259
7	I-80 EB On/Off Ramp /SR 89 South	28	616	518	320	661	0	94	1	284	0	0	0	2,522
8	SR 89 South/Deerfield Drive	223	870	0	0	550	493	409	1	46	0	0	0	2,592
9	SR 89 South/W River Street	0	653	232	202	725	0	0	0	0	123	0	207	2,142
10	W River Street/McIver Crossing	2	0	3	295	0	225	161	413	3	3	170	180	1,455
11	Donner Pass Road/McIver Crossing	272	0	131	0	0	0	0	582	276	207	465	0	1,933
12	Donner Pass Road/Bridge Street	263	123	376	13	164	47	51	227	282	284	172	26	2,028
13	W River Street/Bridge Street	450	491	30	42	599	45	165	33	720	25	11	78	2,689
14	Truckee Way/Glenshire Drive	5	0	221	0	0	0	0	558	299	375	351	0	1,809
15	Truckee Way/Stockrest Springs	5	677	18	37	701	42	38	0	6	61	1	38	1,624
16	I-80 EB Off Ramp /Truckee Way	0	859	0	0	527	0	313	0	219	0	0	0	1,918
17	I-80 WB On Ramp /Truckee Way	149	1,015	0	0	493	320	0	0	0	0	0	0	1,977
18	Truckee Way/Pioneer Trail	295	740	34	17	559	292	369	13	318	51	14	20	2,722
19	SR 89 North/Truckee Way	540	402	67	10	261	246	232	111	636	93	76	15	2,689
20	SR 89 North/Rainbow Drive	0	355	182	2	119	0	0	0	0	100	0	8	766
21	SR 89 North/Alder Creek Road	4	188	42	1	69	10	29	39	41	28	20	6	477
22	I-80 WB On/Off Ramp /SR 89 North	488	746	0	0	978	59	0	0	0	306	7	215	2,799
23	I-80 EB On/Off Ramp /SR 89 North	0	1,170	653	477	791	0	84	0	351	0	0	0	3,526
24	Glenshire Drive/Church Street Extension	6	0	5	0	0	0	0	1,000	5	149	839	0	2,004
25	Glenshire Drive/Dorchester Drive	0	0	0	65	0	194	304	297	0	0	169	55	1,084
26	Glenshire Drive/Whitehorse Road; Martis Peak Road	9	82	6	6	131	14	10	34	9	12	29	12	354
27	Brockway Road/Palisades Drive	161	0	138	0	0	0	0	772	315	69	580	0	2,035
28	Brockway Road/Martis Valley Road	77	6	147	46	11	19	16	534	101	174	513	47	1,691
29	SR 267/Brockway Road/Soaring Way	281	1,122	104	274	906	267	358	208	261	79	258	384	4,502
30	SR 267/Schaffer Mill Road/Truckee Airport Road	20	1,162	93	13	1,073	154	338	129	89	29	10	94	3,204
31	SR 267/Northstar Drive	82	994	0	0	951	179	314	0	93	0	0	0	2,613
32	SR 267/Highlands View Road	33	1,204	0	0	773	50	45	0	21	0	0	0	2,126

Source: LSC Transportation Consultants, Inc.

Table 4: Truckee General Plan - Future Roadway ADT and Level of Service - Existing 2025 General Plan

#	Roadway Segment	LOS Threshold	Maximum Allowable Peak-Hour Volume per Lane to Obtain LOS Threshold	Peak-Hour Peak-Direction Volume	LOS Threshold Exceeded?	Peak-Hour Two-Way Volume	ADT Factor	ADT	Maximum Allowable Two-Way ADT to Obtain LOS Threshold	LOS Threshold Exceeded?
1	Donner Pass Road at the western Town limit	D	1,420	289	No	503	10.0	5,030	-	-
2	Donner Pass Road immediately west of Cold Stream Road	D	1,420	546	No	1,042	10.9	11,400	-	-
3	Northwood Boulevard immediately north of Donner Pass Road	D	1,420	597	No	1,160	11.9	13,820	-	-
4	Northwoods Boulevard immediately south of Northwoods Blvd	D	1,420	915	No	1,647	11.7	19,230	-	-
5	Donner Pass Road immediately west of SR 89 South	D	1,420	929	No	1,641	11.0	17,980	-	-
6	Deerfield Drive immediately west of SR 89 South	D	890	716	No	1,172	11.4	13,370	-	-
7	West River Street immediately east of SR 89 South	D	1,420	434	No	764	11.5	8,760	-	-
8	SR 89 South immediately south of West River Street	D	1,890	885	No	1,733	11.5	19,860	-	-
9	SR 89 South immediately north of West River Street	D	1,890	927	No	1,787	11.5	20,480	-	-
10	Donner Pass Road immediately east of the Central I-80 Interchange	D	1,420	858	No	1,595	11.9	18,910	-	-
11	McIver Undercrossing	E	1,600	520	No	861	11.5	9,870	-	-
12	Bridge Street over the Truckee River	E	1,600	1,344	No	2,315	11.7	27,200	-	-
13	Donner Pass Road immediately west of Bridge Street	E	1,600	560	No	1,042	14.0	14,620	-	-
14	West River Street immediately west of Bridge Street	E	1,600	918	No	1,424	10.2	14,510	-	-
15	Brockway Road immediately east of Palisades Road	D	1,420	910	No	1,559	12.7	19,800	-	-
16	Glenshire Drive immediately east of Donner Pass Road	D	1,420	674	No	900	12.9	11,640	-	-
17	Glenshire Drive immediately east of Martis Peak Road	D	890	53	No	99	10.6	1,050	-	-
18	Donner Pass Road immediately north of Pioneer Trail	D	1,420	1,129	No	1,997	13.1	26,260	-	-
19	Pioneer Trail immediately west of Donner Pass Road	D	890	700	No	1,301	13.1	17,110	-	-
20	SR 89 North, at the Town limit	D	1,420	223	No	303	12.6	3,810	-	-
21	SR 89 North between Alder Drive and Donner Pass Road	D	1,420	649	No	1,166	14.5	16,890	-	-
22	SR 267 immediately south of I-80	D	1,860	1,823	No	2,965	11.6	34,520	-	-
23	SR 267 at the Truckee/Placer County line	D	1,860	1,594	No	2,834	11.6	33,000	40,000	No
24	SR 267 between Airport Road and Northstar	E	-	1,308	-	2,438	11.6	28,390	40,000	No
25	Alder Creek Road immediately west of SR 89	D	890	109	No	143	11.3	1,610	-	-
26	Brockway Road immediately west of SR 267	D	1,420	827	No	1,633	12.7	20,730	-	-
27	Airport Road immediately east of SR 267	D	-	235	-	368	11.6	4,280	13,740	No
28	Schaffer Mill Road immediately west of SR 267	D	-	556	-	740	11.6	8,620	13,740	No

Source: LSC Transportation Consultants, Inc.

Table 5: Truckee General Plan - Future PM Peak-Hour Intersection Level of Service - Existing 2025 General Plan

#	Intersection	Control Type	Movement	Regulation Area	LOS Threshold[1,2,3]	Delay (sec/veh)	LOS	Worst Movement	Worst Movement Vol	Vehicle Hours of Delay
1	Donner Pass Road/South Shore Drive	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	16.1	C	NBL	59	0.26
2	I-80 EB On/Off Ramp/Cold Stream Road/Donner Pass Rd	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F[4]	-	**C**	-	-	-
3	I-80 WB On/Off Ramp/Donner Pass Road	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	**OVF**	**F**	NBL	218	15.32
4	Donner Pass Road/Northwoods Blvd	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	53.9	D	-	-	-
5	SR 89 South/Frates Lane/Donner Pass Road	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	**71.3**	**E**	-	**-**	-
6	I-80 WB On/Off Ramp/SR 89 South	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F	20.9	C	WBR	425	2.47
7	I-80 EB On/Off Ramp /SR 89 South	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F	16.2	C	NB TR	1,134	5.10
8	SR 89 South/Deerfield Drive	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	15.0	B	-	-	-
9	SR 89 South/W River Street	Signalized	Total Intersection	Placer County not TRPA	D	28.5	C	-	-	-
10	W River Street/McIver Crossing	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	**143.8**	**F**	SB LT	295	11.78
11	Donner Pass Road/McIver Crossing	Roundabout	Worst Movement	Downtown Town of Truckee - Other	E	25.2	D	EB TR	858	6.01
12	Donner Pass Road/Bridge Street	Signalized	Total Intersection	Downtown Town of Truckee - No Standard	-	52.5	D	-	-	-
13	W River Street/Bridge Street	Signalized	Total Intersection	Downtown Town of Truckee - No Standard	-	134	F	-	-	-
14	Truckee Way/Glenshire Drive	TWSC	Worst Movement	Downtown Town of Truckee - Other	E	225.2	F	NBL	5	0.31
15	Truckee Way/Stockrest Springs	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F	12.0	B	SB LTR	780	2.60
16	I-80 EB Off Ramp/Truckee Way	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	**OVF**	**F**	EB	532	108.90
17	I-80 WB On Ramp/Truckee Way	Free	Worst Movement	Town of Truckee - Not Downtown	F	0.0	A	NB	1,164	0.00
18	Truckee Way/Pioneer Trail	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F	**139.0**	**F**	NB LTR	1,069	41.28
19	SR 89 North/Truckee Way	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F	15.3	C	WB LTR	184	0.78
20	SR 89 North/Rainbow Drive	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	15.5	C	WB LR	108	0.47
21	SR 89 North/Alder Creek Road	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	12.1	B	WB LT	48	0.16
22	I-80 WB On/Off Ramp/SR 89 North	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	**116**	**F**	-	**-**	**-**
23	I-80 EB On/Off Ramp/SR 267	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	**98.4**	**F**	-	**-**	**-**
24	Glenshire Drive/Church Street Extension	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	160.0	F	NB LR	11	0.49
25	Glenshire Drive/Dorchester Drive	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	38.2	E	SB LR	259	2.75
26	Glenshire Drive/Whitehorse Road/Martis Peak Road	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	11.0	B	EB LTR	53	0.16
27	Brockway Road/Palisades Drive	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	8.3	A	-	-	**-**
28	Brockway Road/Martis Valley Road	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F	12.8	B	EB LTR	651	2.31
29	SR 267/Brockway Road/Soaring Way	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	**171**	**F**	-	**-**	**-**
30	SR 267/Schaffer Mill Road/Truckee Airport Road	Signalized	Total Intersection	Placer County not TRPA	D	**OVF**	**F**	-	**-**	**-**
31	SR 267/Northstar Drive	Signalized	Total Intersection	Placer County not TRPA	D	31.7	C	-	-	**-**
32	SR 267/Highlands View Road	TWSC	Worst Movement	Placer County not TRPA	D	**OVF**	**F**	EBL	**-**	**-**

BOLD text indicates that LOS standard is exceeded.

OVF = Overflow. Overflow indicates a delay greater than 200 seconds per vehicle, which cannot be accurately calculated using HCM methodology.

TWSC = Two-Way Stop-Control; AWSC = All-Way Stop-Control

NOTE 1: Level of service for signalized intersections is reported for the total intersection.

NOTE 2: Level of service for roundabouts and other unsignalized intersections is reported for the worst movement.

NOTE 3: Level of service threshold for unsignalized intersections (not including roundabouts) in the Town of Truckee outside of downtown are exceeded if Level of Service is F and 4 hours of vehicle delay is exceeded.

NOTE 4: Level of service for the DPR/Coldstream Roundabout calculated using SIDRA Roundabout LOS Method to include geometric delay. LOS is based on degree of saturation, not delay.

Source: LSC Transportation Consultants, Inc.

Table 6: Capacity Analysis for SR 267 Bypass

Based upon Highway Capacity Manual (7th Edition) factors for Uninterrupted Roadways and SR 267-Specific

Peak-Hour Capacity of Freeway per Lane	2,250	vehicles per hour per lane (Exhibit 12-4, HCM 7th Edition)
Lane Width	12	feet
Shoulder Width	6	feet
Lane Width Adjustment	1.0	
Percent Trucks	3.0%	Caltrans counts
Number of Trucks per Hour	68	trucks per hour
Passenger Car Equivalents per Truck	3.0	for rolling terrain (Exhibit 12-25, HCM 7th Edition)
Passenger Car Equivalents Generated by Trucks	204	passenger cars
Capacity with Reduction for Trucks	2,114	vehicles per hour per lane
Peak Hour Factor	0.98	Counts conducted 8/1/18 4-5 PM
LOS E Capacity	2,072	vehicles per hour per lane
LOS D Capacity (90 percent of LOS E)	1,865	vehicles per hour per lane
Rounded to Nearest 10	1,860	vehicles per hour per lane

SR 267 Bypass Capacity for Truckee 2040 GP.xlsx

Table 7: Truckee Daily Vehicle-Miles of Travel

Trips between	Average Trip Length	Daily VMT	
		Existing 2018	Proposed General Plan
Truckee - Truckee	4.1	313,284	496,732
Truckee - Placer County Model Area	7.9	108,961	121,214
Truckee - Nevada County Model Area	7.8	20,406	16,089
Truckee - External to the Model Area	23.3	1,184,445	1,464,001
Total	-	1,627,096	2,098,036
Service Population	-	38,278	54,863
VMT per Service Population		42.5	38.2

Source: Truckee TransCAD Model and Streetlight Data

Table 8: Truckee General Plan - Future (2040) Intersection Traffic Volumes - Proposed 2040 General Plan

#	Intersection	Northbound			Southbound			Eastbound			Westbound			Total
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	Donner Pass Road/South Shore Drive	52	0	114	0	0	0	0	162	51	102	233	0	714
2	I-80 EB On/Off Ramp/ Cold Stream Road/Donner Pass Rd	56	105	89	106	49	9	215	257	47	207	501	186	1,827
3	I-80 WB On/Off Ramp /Donner Pass Road	221	1	58	0	0	0	0	523	30	9	673	0	1,515
4	Donner Pass Road/Northwoods Blvd	2	2	7	239	0	357	312	379	3	2	451	249	2,003
5	SR 89 South/Donner Pass Road	277	111	314	44	101	77	120	437	388	346	380	67	2,662
6	I-80 WB On/Off Ramp/SR 89 South	272	559	0	0	808	81	0	0	0	181	3	440	2,344
7	I-80 EB On/Off Ramp /SR 89 South	28	650	531	329	704	0	94	1	288	0	0	0	2,625
8	SR 89 South/Deerfield Drive	226	897	0	0	571	503	415	7	48	0	0	0	2,667
9	SR 89 South/W River Street	0	655	235	219	729	0	0	0	0	124	0	235	2,197
10	W River Street/McIver Crossing	2	0	3	299	0	258	172	437	3	3	184	182	1,543
11	Donner Pass Road/McIver Crossing	282	0	133	0	0	0	0	591	279	210	492	0	1,987
12	Donner Pass Road/Bridge Street	260	122	394	13	163	47	51	228	279	286	177	24	2,044
13	W River Street/Bridge Street	462	491	29	42	597	45	178	33	731	24	12	78	2,722
14	Truckee Way/Glenshire Drive	5	0	214	0	0	0	0	582	295	366	363	0	1,825
15	Truckee Way/Stockrest Springs	4	681	32	62	694	42	38	1	6	72	1	62	1,695
16	I-80 WB Off Ramp /Truckee Way	0	886	0	0	544	0	321	0	220	0	0	0	1,971
17	I-80 EB On Ramp /Truckee Way	152	1,048	0	0	510	333	0	0	0	0	0	0	2,043
18	Truckee Way/Pioneer Trail	315	752	35	17	566	303	381	13	340	51	14	19	2,806
19	SR 89 North/Truckee Way	553	405	66	10	269	251	242	111	650	93	76	15	2,741
20	SR 89 North/Rainbow Drive	0	354	180	2	119	0	0	0	0	98	0	8	761
21	SR 89 North/Alder Creek Road	3	189	41	1	70	10	29	39	40	27	19	6	474
22	I-80 WB On/Off Ramp /SR 89 North	499	753	0	0	995	65	0	0	0	306	7	223	2,848
23	I-80 EB On/Off Ramp /SR 89 North	0	1,188	652	486	800	0	84	0	353	0	0	0	3,563
24	Glenshire Drive/Church Street Extension	6	0	5	0	0	0	0	988	5	143	832	0	1,979
25	Glenshire Drive/Dorchester Drive	0	0	0	62	0	166	280	307	0	0	182	53	1,050
26	Glenshire Drive/Whitehorse Road; Martis Peak Road	9	82	6	6	131	14	10	24	9	12	16	12	331
27	Brockway Road/Palisades Drive	159	0	137	0	0	0	0	777	312	67	585	0	2,037
28	Brockway Road/Martis Valley Road	77	6	146	46	10	20	16	538	101	173	515	47	1,695
29	SR 267/Brockway Road/Soaring Way	282	1,134	103	277	911	269	361	208	264	78	257	388	4,532
30	SR 267/Schaffer Mill Road/Truckee Airport Road	20	1,169	92	13	1,079	153	339	129	89	29	10	95	3,217
31	SR 267/Northstar Drive	82	1,000	0	0	957	179	314	0	92	0	0	0	2,624
32	SR 267/Highlands View Road	33	1,210	0	0	779	50	44	0	21	0	0	0	2,137

Source: LSC Transportation Consultants, Inc.

Table 9: Truckee General Plan - Future (2040) PM Peak-Hour Intersection Level of Service - Proposed 2040 General Plan

#	Intersection	Control Type	Movement	Regulation Area	LOS Threshold[1,2,3]	Delay (sec/veh)	LOS	Worst Movement Dir	Worst Movement Vol	Vehicle Hours of Delay
1	Donner Pass Road/South Shore Drive	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	16.1	C	NBL	52	0.23
2	I-80 EB On/Off Ramp/Cold Stream Road/Donner Pass Rd	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F[4]	-	D	-	-	-
3	I-80 WB On/Off Ramp/Donner Pass Road	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	**OVF**	**F**	NBL	280	22.01
4	Donner Pass Road/Northwoods Blvd	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	53.8	D	-	-	-
5	SR 89 South/Frates Lane/Donner Pass Road	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	**75.5**	**E**	-	**-**	-
6	I-80 WB On/Off Ramp/SR 89 South	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F	24.6	C	WBR	440	3.01
7	I-80 EB On/Off Ramp /SR 89 South	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F	18.0	C	NB TR	1,181	5.91
8	SR 89 South/Deerfield Drive	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	15.7	B	-	-	-
9	SR 89 South/W River Street	Signalized	Total Intersection	Placer County not TRPA	D	29.2	C	-	-	-
10	W River Street/McIver Crossing	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	**190.3**	**F**	SB LT	299	15.81
11	Donner Pass Road/McIver Crossing	Roundabout	Worst Movement	Downtown Town of Truckee - Other	E	26.9	D	EB TR	870	6.50
12	Donner Pass Road/Bridge Street	Signalized	Total Intersection	Downtown Town of Truckee - No Standard	-	51	D	-	-	-
13	W River Street/Bridge Street	Signalized	Total Intersection	Downtown Town of Truckee - No Standard	-	95	F	-	-	-
14	Truckee Way/Glenshire Drive	TWSC	Worst Movement	Downtown Town of Truckee - Other	E	225.2	F	NBL	5	0.6
15	Truckee Way/Stockrest Springs	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F	12.8	B	SB LTR	798	2.84
16	I-80 EB Off Ramp/Truckee Way	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	**OVF**	**F**	EBL	321	75.69
17	I-80 WB On Ramp/Truckee Way	Free	Worst Movement	Town of Truckee - Not Downtown	F	0.0	A	NB	1,200	0.00
18	Truckee Way/Pioneer Trail	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F	**162.2**	**F**	NB LTR	886	39.92
19	SR 89 North/Truckee Way	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F	15.9	C	WB LTR	184	0.81
20	SR 89 North/Rainbow Drive	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	15.4	C	WB LR	106	0.45
21	SR 89 North/Alder Creek Road	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	12.1	B	WB LT	52	0.17
22	I-80 WB On/Off Ramp/SR 89 North	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	**122.9**	**F**	-	**-**	-
23	I-80 EB On/Off Ramp/SR 267	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	**103.8**	**F**	-	**-**	-
24	Glenshire Drive/Church Street Extension	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	138.4	F	NB LR	11	0.42
25	Glenshire Drive/Dorchester Drive	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	32	D	SB LR	228	2.03
26	Glenshire Drive/Whitehorse Road/Martis Peak Road	TWSC	Worst Movement	Town of Truckee - Not Downtown	F	10.8	B	EB LTR	43	0.13
27	Brockway Road/Palisades Drive	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	8.3	A	-	-	**-**
28	Brockway Road/Martis Valley Road	Roundabout	Worst Movement	Town of Truckee - Not Downtown	F	12.9	B	EB LTR	655	2.35
29	SR 267/Brockway Road/Soaring Way	Signalized	Total Intersection	Town of Truckee - Not Downtown	D	**175.1**	**F**	-	**-**	**-**
30	SR 267/Schaffer Mill Road/Truckee Airport Road	Signalized	Total Intersection	Placer County not TRPA	D	**OVF**	**F**	-	**-**	**-**
31	SR 267/Northstar Drive	Signalized	Total Intersection	Placer County not TRPA	D	32.7	C	-	-	**-**
32	SR 267/Highlands View Road	TWSC	Worst Movement	Placer County not TRPA	D	**OVF**	**F**	EBL	**-**	**-**

BOLD text indicates that LOS standard is exceeded.

TWSC = Two-Way Stop-Control; AWSC = All-Way Stop-Control

NOTE 1: Level of service for signalized intersections is reported for the total intersection.

NOTE 2: Level of service for roundabouts and other unsignalized intersections is reported for the worst movement.

NOTE 3: Level of service threshold for unsignalized intersections (not including roundabouts) in the Town of Truckee outside of downtown are exceeded if Level of Service is F and 4 hours of vehicle delay is exceeded.

NOTE 4: Level of service for the DPR/Coldstream Roundabout calculated using SIDRA Roundabout LOS Method to include geometric delay. LOS is based on degree of saturation, not delay.

Source: LSC Transportation Consultants, Inc.

Table 10: Truckee General Plan - Future (2040) Roadway ADT and Level of Service - Proposed 2040 General Plan

#	Roadway Segment	LOS Threshold	Maximum Allowable Peak-Hour Volume per Lane to Obtain LOS Threshold	Peak-Hour Peak-Direction Volume	LOS Threshold Exceeded?	Peak-Hour Two-Way Volume	ADT Factor	ADT	Maximum Allowable Two-Way ADT to Obtain LOS Threshold	LOS Threshold Exceeded?
1	Donner Pass Road at the western Town limit	D	1,420	285	No	498	10.0	4,980	-	-
2	Donner Pass Road immediately west of Cold Stream Road	D	1,420	566	No	1,085	10.9	11,880	-	-
3	Northwood Boulevard immediately north of Donner Pass Road	D	1,420	596	No	1,159	11.9	13,810	-	-
4	Northwoods Boulevard immediately south of Northwoods Blvd	D	1,420	904	No	1,627	11.7	18,990	-	-
5	Donner Pass Road immediately west of SR 89 South	D	1,420	945	No	1,679	11.0	18,390	-	-
6	Deerfield Drive immediately west of SR 89 South	D	890	729	No	1,199	11.4	13,680	-	-
7	West River Street immediately east of SR 89 South	D	1,420	454	No	813	11.5	9,320	-	-
8	SR 89 South immediately south of West River Street	D	1,890	890	No	1,743	11.5	19,980	-	-
9	SR 89 South immediately north of West River Street	D	1,890	948	No	1,838	11.5	21,070	-	-
10	Donner Pass Road immediately east of the Central I-80 Interchange	D	1,420	870	No	1,644	11.9	19,490	-	-
11	McIver Undercrossing	E	1,600	557	No	911	11.5	10,440	-	-
12	Bridge Street over the Truckee River	E	1,600	1,352	No	2,334	11.7	27,420	-	-
13	Donner Pass Road immediately west of Bridge Street	E	1,600	558	No	1,042	14.0	14,620	-	-
14	West River Street immediately west of Bridge Street	E	1,600	942	No	1,461	10.2	14,890	-	-
15	Brockway Road immediately east of Palisades Road	D	1,420	914	No	1,566	12.7	19,880	-	-
16	Glenshire Drive immediately east of Donner Pass Road	D	1,420	661	No	880	12.9	11,390	-	-
17	Glenshire Drive immediately east of Martis Peak Road	D	890	40	No	76	10.6	810	-	-
18	Donner Pass Road immediately north of Pioneer Trail	D	1,420	1,152	No	2,038	13.1	26,800	-	-
19	Pioneer Trail immediately west of Donner Pass Road	D	890	734	No	1,366	13.1	17,960	-	-
20	SR 89 North, at the Town limit	D	1,420	224	No	305	12.6	3,840	-	-
21	SR 89 North between Alder Drive and Donner Pass Road	D	1,420	662	No	1,192	14.5	17,270	-	-
22	SR 267 immediately south of I-80	D	1,860	1,840	No	2,993	11.6	34,850	-	-
23	SR 267 at the Truckee/Placer County line	D	1,860	1,603	No	2,848	11.6	33,160	40,000	No
24	SR 267 between Airport Road and Northstar	E	-	1,314	-	2,450	11.6	28,530	40,000	No
25	Alder Creek Road immediately west of SR 89	D	890	108	No	140	11.3	1,580	-	-
26	Brockway Road immediately west of SR 267	D	1,420	833	No	1,641	12.7	20,840	-	-
27	Airport Road immediately east of SR 267	D	-	234	-	368	11.6	4,280	13,740	No
28	Schaffer Mill Road immediately west of SR 267	D	-	557	-	740	11.6	8,620	13,740	No

Source: LSC Transportation Consultants, Inc.

Table 11: Truckee General Plan - General Plan LOS Standards

Roadway Element	Relevant LOS Standard	Source	Notes
Intersections			
Signalized Intersections within Town of Truckee and Outside Downtown Study Area	D	Truckee 2040 General Plan and Downtown Specific Plan	Applies to total intersection delay.
Unsignalized Intersections including roundabouts within Town of Truckee and Outside Downtown Study Area	Not to reach LOS F and not to exceed a cumulative vehicle delay of four vehicle hours	Truckee 2040 General Plan and Downtown Specific Plan	Applies to individual turning movements. Both conditions shall be met for traffic operations to be considered unacceptable.
Intersections within Town of Truckee and Inside Downtown Study Area - excluding Bridge Street/Donner Pass Road and Bridge Street/West River Street	E	Truckee 2040 General Plan and Downtown Specific Plan	Applies to individual turning movements.
Bridge Street/Donner Pass Road and Bridge Street/West River Street	None	Truckee 2040 General Plan and Downtown Specific Plan	No Level of Service standards shall apply to these intersections contained within the Downtown area
Intersections within Placer County on County Roads	D	Placer County Conservation Program Draft EIS/EIR (Dec 2018)	Roads shall maintain LOS D or better during peak hour, and LOS C or better at all other times. These standards shall apply to all County roadway segments and intersections, unless otherwise addressed in an adopted specific plan or community plan.
Intersections within Placer County and ½ mile of a State Highway outside of TRPA	D	Placer County General Plan (May 2013)	LOS to be no worse than specified in the Placer County Congestion Management Program (CMP) for the state highway system
Intersections within Placer County more than ½ mile from a Highway outside of TRPA	C	Placer County General Plan (May 2013)	--
Roadways			
Highways within the Town of Truckee	D	Town of Truckee General Plan and NCTC Level of Service Criteria Study	Capacity of 1,890 peak-hour vehicles per hour per lane.
SR 267 Specific Capacity	D	Town of Truckee General Plan Updated for HCM 7th Edition	Capacity of 1,860 peak-hour vehicles per hour per lane.
Road Segments within the Town of Truckee Outside Downtown Study Area	D	Truckee 2040 General Plan and Downtown Specific Plan	
Minor Arterials within the Town of Truckee In the Downtown Study Area	E	LSC	Capacity of 1,600 peak-hour vehicles per hour per lane.
Highways within Placer County outside of TRPA	D	Placer County General Plan FEIR (1994)	Capacity of 7,750 ADT per lane for level terrain and 5,700 ADT per land for rolling terrain.
Low Access Arterals Roadways within Placer County outside of TRPA	C or LOS D if within ½ mile of a highway	Placer County General Plan FEIR (1994)	Capacity of 6,870 per lane for LOS D
Highway 267 in Placer County	E	Martis Valley Community Plan (2003)	Capacity of 10,000 ADT per lane for LOS E

Source: LSC Transportation Consultants, Inc.

Table 12: Truckee General Plan - Mitigated Intersection Level of Service - Existing 2025 General Plan

#	Intersection	Unmitigated Control Type	Mitigation	Type of Delay	LOS Thresholds	LOS Threshold Exceeded?	Intersection LOS		Worst Movement Dir	Worst Movement Vol	Vehicle Hours of Delay
							Delay (sec/veh)	LOS			
3	I-80 WB On/Off Ramp /Donner Pass Road	TWSC	1-Lane Roundabout	Worst Movement	F	No	13.9	B	WB LT	667	2.58
5	SR 89 South/Frates Lane/Donner Pass Road	Signalized	Signal with 2 EBT lanes	Total Intersection	D	No	48.1	D	-	-	-
		Signalized	1-Lane Roundabout	Worst Movement	F	**Yes**	147.3	F	EB LTR	929	38.01
		Signalized	2-Lane Roundabout	Worst Movement	F	No	44.0	E	WB LT	707	8.64
10	W River Street/McIver Crossing	TWSC	1-Lane Roundabout	Worst Movement	F	No	14.3	B	EB LTR	577	2.29
15	Truckee Way/Stockrest Springs	Roundabout	Adding EBL traffic from Intx 16 - no EBL scenario	Worst Movement	F	No	32.5	D	SB LTR	1,101	9.94
16	I-80 EB Off Ramp /Truckee Way	TWSC	TWSC prohibit EBL - send traffic to the intx 15 roundabout	Worst Movement	F	**Yes**	95.6	F	EBR	532	14.13
			TWSC with TWLTL for EBL	Worst Movement	F	**Yes**	178.5	F	EBL	313	15.52
			1-Lane Roundabout	Worst Movement	F	No	43.0	E	NBT	859	10.26
			2-Lane Roundabout w/ 2 NB receiving lanes	Worst Movement	F	No	15.8	C	EB LT	532	2.33
18	Truckee Way/Pioneer Trail	Roundabout	1-lane Roundabout w/ EBR and SBR bypass	Worst Movement	F	**Yes**	138.8	F	NB LTR	1,069	41.22
			2-Lane Roundabout	Worst Movement	F	No	12.6	B	WB LTR	85	0.30
22	I-80 WB On/Off Ramp/SR 89 North	Signalized	Signal with 2 NBT and 2 SBT lanes	Total Intersection	D	No	53.3	D	-	-	-
			1-Lane Roundabout	Worst Movement	F	**Yes**	OVF	F	SB LTR	1,037	118.82
			2-Lane Roundabout	Worst Movement	F	No	36.6	E	SB LT	978	9.94
23	I-80 EB On/Off Ramp/SR 267	Signalized	Signal with 2 NBT and 2 SBT lanes	Total Intersection	D	No	38.5	D	-	-	-
			1-Lane Roundabout	Worst Movement	F	**Yes**	OVF	F	NB LTR	1,823	130.09
			2-Lane Roundabout	Worst Movement	F	**Yes**	152.4	F	NB TR	1,823	77.17
			2-Lane Roundabout - w NBR bypass	Worst Movement	F	**Yes**	54.8	F	EB TR	351	5.34
			2-Lane Roundabout - w NBR and EBR bypass	Worst Movement	F	No	25.1	D	NB TR	1,823	12.71
29	SR 267/Brockway Road/Soaring Way	Signalized	Signal with 2 NBT and 2 SBT lanes	Total Intersection	D	**Yes**	60.7	E	-	-	-
			Signal with 2 NBT, 2 SBT and 2 EBL lanes	Total Intersection	D	No	46.6	D	-	-	-
			2-Lane Roundabout	Worst Movement	F	**Yes**	OVF	F	WB LT	337	29.50
			2-Lane Roundabout - w WBR bypass	Worst Movement	F	**Yes**	OVF	F	EB LT	566	48.30
			2-Lane Roundabout - w WBR and EBR bypass	Worst Movement	F	**Yes**	OVF	F	EB LT	566	33.03
			3-Lane Roundabout	Worst Movement	F	-	LOS not available at this time				
30	SR 267/Schaffer Mill Road/Truckee Airport Road	Signalized	Signal with 1 NBT, 1 NBTR and 2 SBT lanes	Total Intersection	D	**Yes**	OVF	F	-	-	-
			Signal with 1 NBT, 1 NBTR and 2 SBT lanes, seperate EBL, EBTR	Total Intersection	D	No	31.1	C	-	-	-
			Signal with 1 NBT, 1 NBTR and 2 SBT lanes, seperate EBL, EBT, EBR	Total Intersection	D	No	26.9	C	-	-	-
31	SR 267/Northstar Drive	Signalized	Signal with additional EBL Traffic from Intx 32	Total Intersection	D	No	35.6	D	-	-	-
32	SR 267/Highlands View Road	TWSC	TWSC - move EBL volumes to Intx 31 Northstar Dr Signal Not Warranted	Worst Movement	D	No	15.5	C	-	-	-

BOLD text indicates that LOS standard is exceeded.

OVF = Overflow. Overflow indicates a delay greater than 200 seconds per vehicle, which cannot be accurately calculated using HCM methodology.

TWSC = Two-Way Stop-Control; AWSC = All-Way Stop-Control

NOTE 1: Level of service for signalized intersections is reported for the total intersection.

NOTE 2: Level of service for roundabouts and other unsignalized intersections is reported for the worst movement.

Source: LSC Transportation Consultants, Inc.

Table 13: Truckee General Plan - Mitigated Intersection Level of Service - Proposed 2040 General Plan

#	Intersection	Unmitigated Control Type	Mitigation	Type of Delay	Proposed LOS Thresholds	Proposed LOS Threshold Exceeded?	Intersection LOS		Worst Movement Dir	Worst Movement Vol	Vehicle Hours of Delay
							Delay (sec/veh)	LOS			
3	I-80 WB On/Off Ramp/ Donner Pass Road	TWSC	1-Lane Roundabout	Worst Movement	F	No	14.6	B	WB LT	682	2.77
5	SR 89 South/Frates Lane/Donner Pass Road	Signalized	Signal with 2 EBT lanes	Total Intersection	D	No	52.3	D	-	-	-
			1-Lane Roundabout	Worst Movement	F[3]	**Yes**	-	F	-	-	-
			2-Lane Roundabout	Worst Movement	F[3]	No	-	B	-	-	-
10	W River Street/McIver Crossing	TWSC	1-Lane Roundabout	Worst Movement	F	No	14.3	B	EB LTR	612	2.43
15	Truckee Way/Stockrest Springs	Roundabout	Adding EBL traffic from Intx 16 - no EBL scenario	Worst Movement	F	No	39.4	E	SB LTR	1,119	12.25
16	I-80 EB Off Ramp/ Truckee Way	TWSC	TWSC prohibit EBL - send traffic to the intx 15 roundabout	Worst Movement	F	**Yes**	110.9	F	EBR	541	16.67
			TWSC with TWLTL for EBL	Worst Movement	F	**Yes**	**OVF**	**F**	EBL	321	18.89
			1-Lane Roundabout	Worst Movement	F	No	36.4	E	NBT	886	8.96
			2-Lane Roundabout w/ 2 NB receiving lanes	Worst Movement	F	No	16.9	C	EB LR	541	2.54
18	Truckee Way/Pioneer Trail	Roundabout	1-lane Roundabout w/ EBR and SBR bypass	Worst Movement	F	**Yes**	162.2	F	NB LTR	1,102	49.65
			2-Lane Roundabout	Worst Movement	F	No	13.2	B	WB LTR	84	0.31
22	I-80 WB On/Off Ramp/SR 89 North	Signalized	Signal with 2 NBT and 2 SBT lanes	Total Intersection	D	**Yes**	56.1	E	-	-	-
			1-Lane Roundabout	Worst Movement	F	**Yes**	**OVF**	**F**	SB LTR	1,060	129.91
			2-Lane Roundabout	Worst Movement	F	No	34.9	D	SB LT	995	9.65
23	I-80 EB On/Off Ramp/SR 267	Signalized	Signal with 2 NBT and 2 SBT lanes	Total Intersection	D	No	40.5	D	-	-	-
			1-Lane Roundabout	Worst Movement	F	**Yes**	**OVF**	**F**	NB LTR	1,840	426.93
			2-Lane Roundabout	Worst Movement	F	**Yes**	162.6	F	NB TR	1,188	53.66
			2-Lane Roundabout - w NBR bypass	Worst Movement	F	**Yes**	59.5	F	EB TR	353	5.83
			2-Lane Roundabout - w NBR and EBR bypass	Worst Movement	F	No	27.2	D	NB LT	1,188	8.98
29	SR 267/Brockway Road/Soaring Way	Signalized	Signal with 2 NBT and 2 SBT lanes	Total Intersection	D	**Yes**	62.4	E	-	-	-
			Signal with 2 NBT, 2 SBT and 2 EBL lanes	Total Intersection	D	No	48.0	D	-	-	-
			2-Lane Roundabout	Worst Movement	F	**Yes**	**OVF**	**F**	WB LT	335	29.96
			2-Lane Roundabout - w WBR bypass	Worst Movement	F	**Yes**	**OVF**	**F**	EB LT	569	49.93
			2-Lane Roundabout - w WBR and EBR bypass	Worst Movement	F	**Yes**	**OVF**	**F**	EB LT	569	34.41
			3-Lane Roundabout	Worst Movement	F	-	LOS not available at this time				
30	SR 267/Schaffer Mill Road/Truckee Airport Road	Signalized	Signal with 1 NBT, 1 NBTR and 2 SBT lanes	Total Intersection	D	**Yes**	**OVF**	**F**	-	-	-
			Signal with 1 NBT, 1 NBTR and 2 SBT lanes, seperate EBL, EBTR	Total Intersection	D	No	31.3	C	-	-	-
			Signal with 1 NBT, 1 NBTR and 2 SBT lanes, seperate EBL, EBT, EBR	Total Intersection	D	No	27.1	C	-	-	-
31	SR 267/Northstar Drive	Signalized	Signal with additional EBL Traffic from Intx 32	Total Intersection	D	No	42.0	D	-	-	-
32	SR 267/Highlands View Road	TWSC	TWSC - move EBL volumes to Intx 31 Northstar Dr Signal Not Warranted	Worst Movement	D	No	15.6	C	-	-	-

BOLD text indicates that LOS standard is exceeded.

OVF = Overflow. Overflow indicates a delay greater than 200 seconds per vehicle, which cannot be accurately calculated using HCM methodology.

TWSC = Two-Way Stop-Control; AWSC = All-Way Stop-Control

NOTE 1: Level of service for signalized intersections is reported for the total intersection.

NOTE 2: Level of service for roundabouts and other unsignalized intersections is reported for the worst movement.

NOTE 3: Level of service for the SR 89 South/Frates Lane/Donner Pass Road Roundabout calculated using SIDRA Roundabout LOS Method to include geometric delay. LOS is based on degree of saturation, not delay.

Source: LSC Transportation Consultants, Inc.

Figure 1

Truckee General Plan - Study Roadway Segments

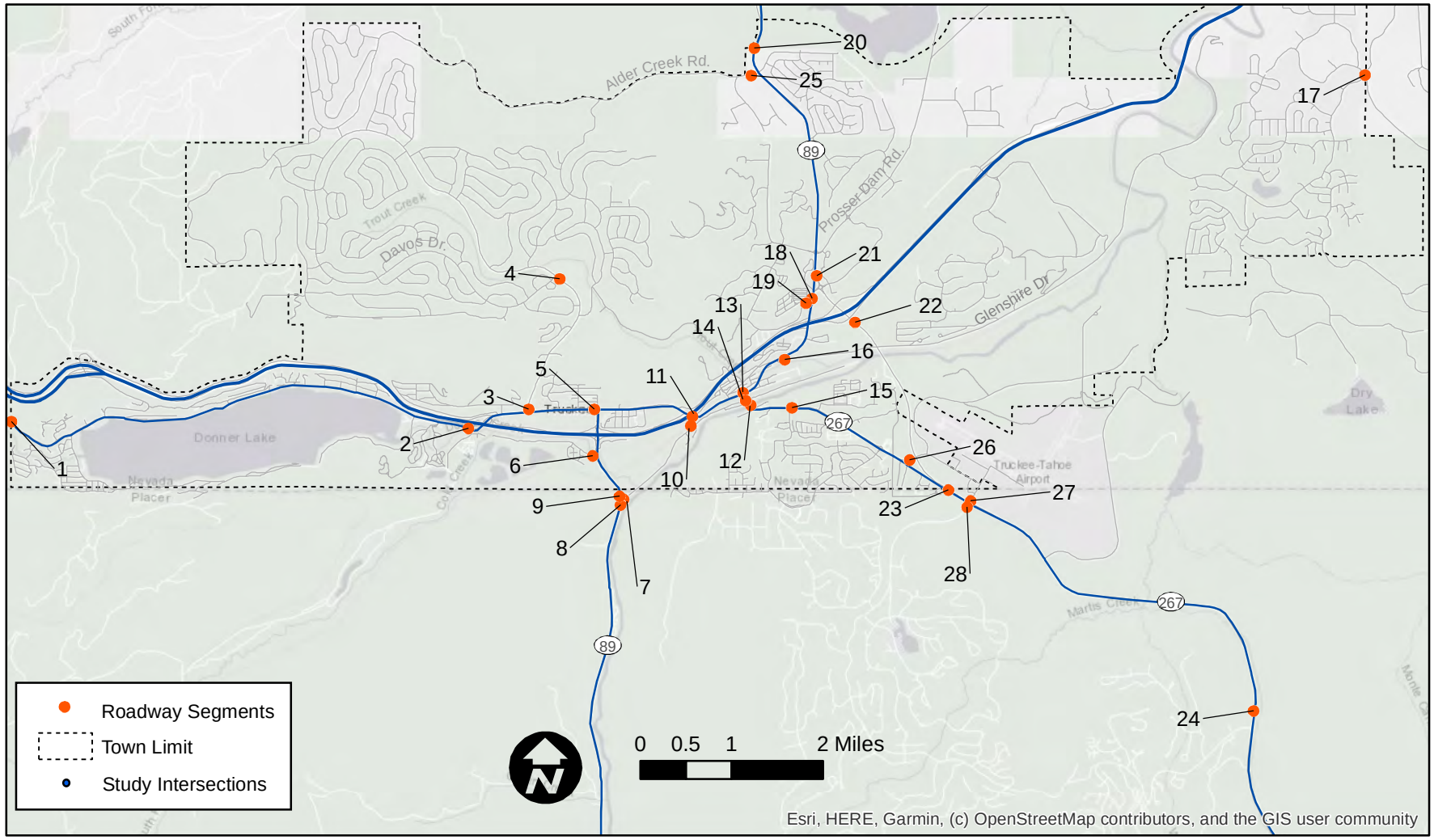


Figure 2
Study Intersections

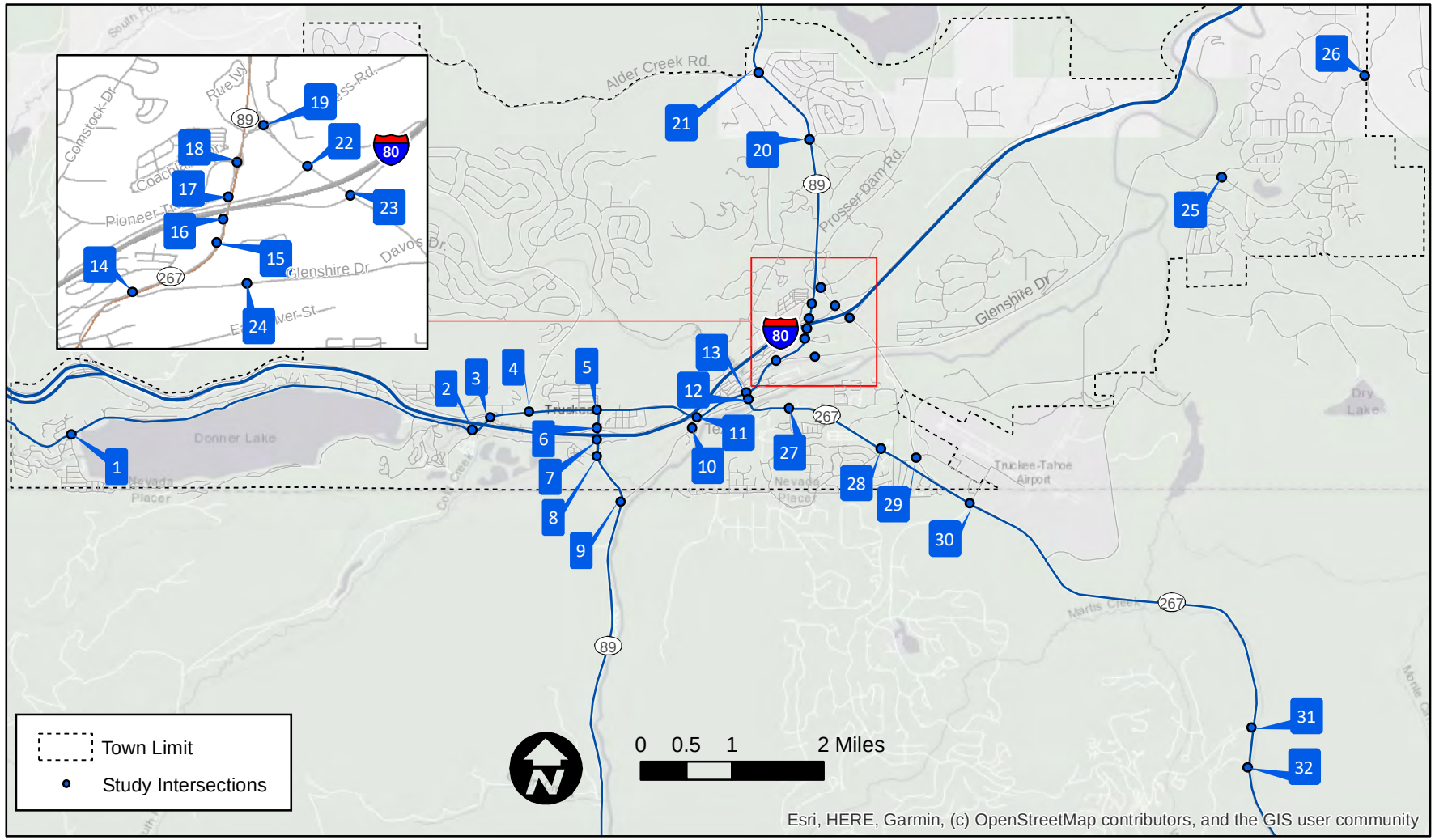


Figure 3
Existing General Plan Unmitigated Summer PM Peak Hour LOS

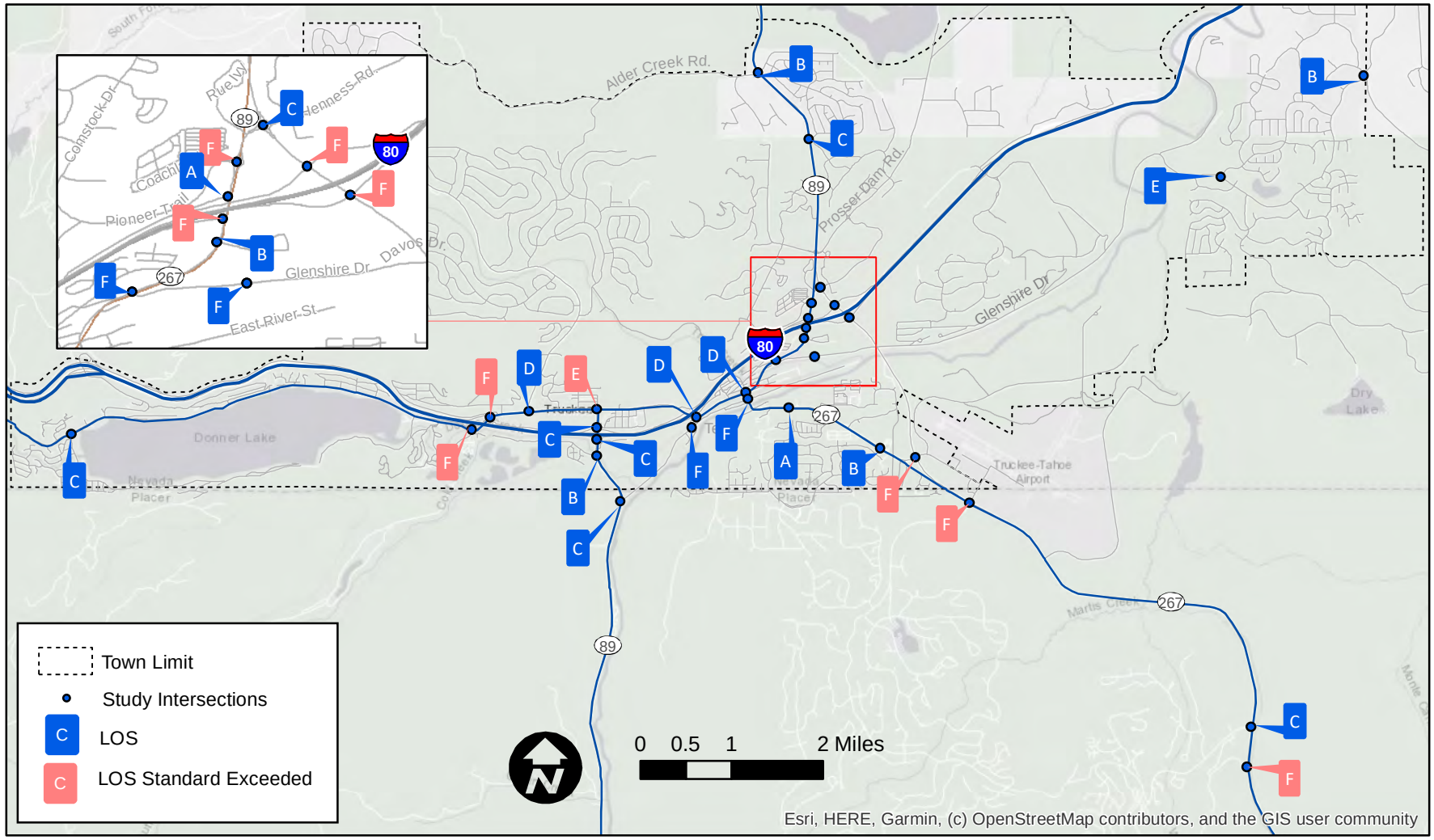
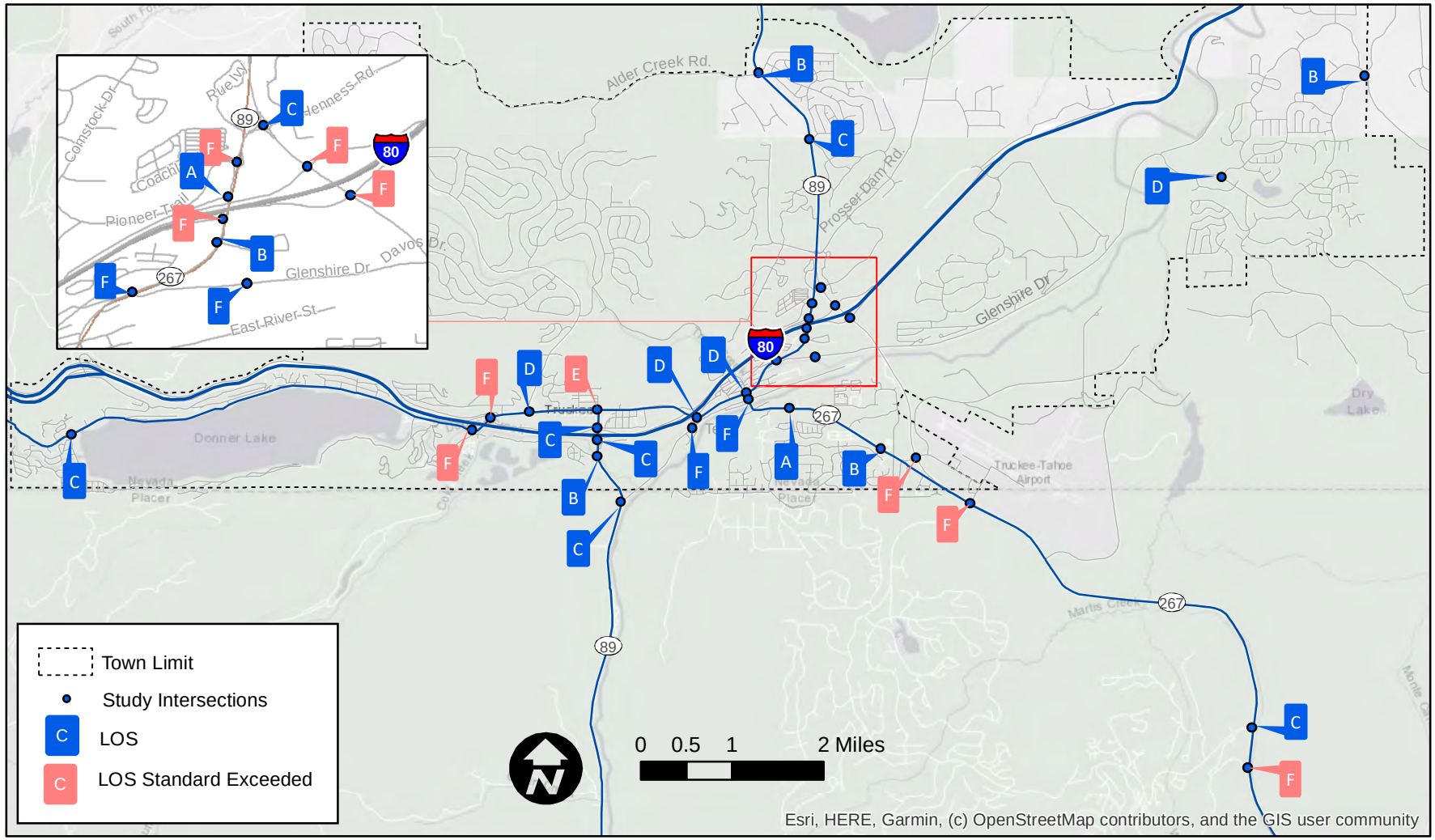


Figure 4

Proposed General Plan Unmitigated Summer PM Peak Hour LOS



Appendix A

EXISTING GENERAL PLAN LOS OUTPUT

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	157	57	99	230	59	110
Future Vol, veh/h	157	57	99	230	59	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	120	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	171	62	108	250	64	120

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	233	0	668	202
Stage 1	-	-	-	-	202	-
Stage 2	-	-	-	-	466	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1335	-	423	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1335	-	389	839
Mov Cap-2 Maneuver	-	-	-	-	389	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	389	839	-	-	1335	-
HCM Lane V/C Ratio	0.165	0.143	-	-	0.081	-
HCM Control Delay (s)	16.1	10	-	-	7.9	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	0.5	-	-	0.3	-

LANE SUMMARY

Site: 2 [Truckee General Plan (Site Folder: General)]

Intersection 2: I-80 EB On/Off Ramp/ Cold Stream Road/Donner Pass Rd Roundabout
Site Category: Existing General Plan
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Coldstream Rd													
Lane 1[d]	266	3.0	957	0.278	100	7.5	LOS A	1.4	35.7	Full	1600	0.0	0.0
Approach	266	3.0		0.278		7.5	LOS A	1.4	35.7				
East: Donner Pass Rd													
Lane 1[d]	951	3.0	1132	0.841	100	10.9	LOS C	10.6	272.1	Full	1600	0.0	0.0
Approach	951	3.0		0.841		10.9	LOS C	10.6	272.1				
North: I-80 Ramps													
Lane 1[d]	179	3.0	704	0.255	100	11.5	LOS A	1.6	40.5	Full	1600	0.0	0.0
Approach	179	3.0		0.255		11.5	LOS A	1.6	40.5				
West: Donner Pass Rd													
Lane 1[d]	539	3.0	1109	0.486	100	7.9	LOS A	2.6	66.8	Full	1600	0.0	0.0
Approach	539	3.0		0.486		7.9	LOS A	2.6	66.8				
Intersection	1936	3.0		0.841		9.7	LOS C	10.6	272.1				

Site Level of Service (LOS) Method: Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on degree of saturation per lane.
Intersection and Approach LOS values are based on worst degree of saturation for any lane.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Intersection	
Int Delay, s/veh	37.6

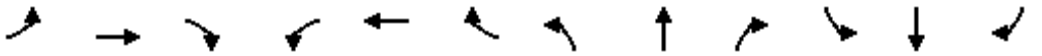
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	517	29	9	658	218	56
Future Vol, veh/h	517	29	9	658	218	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	562	32	10	715	237	61

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	594	0	1313	578
Stage 1	-	-	-	-	578	-
Stage 2	-	-	-	-	735	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	982	-	~ 175	516
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	474	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	982	-	~ 172	516
Mov Cap-2 Maneuver	-	-	-	-	~ 172	-
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	466	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	203.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	172	516	-	-	982	-
HCM Lane V/C Ratio	1.378	0.118	-	-	0.01	-
HCM Control Delay (s)	253	12.9	-	-	8.7	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	14.3	0.4	-	-	0	-

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	311	369	3	2	435	250	2	2	7	243	0	354
Future Volume (veh/h)	311	369	3	2	435	250	2	2	7	243	0	354
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	338	401	3	2	473	272	2	2	8	264	0	385
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	321	742	6	410	748	634	135	93	634	180	0	634
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.00	0.40
Sat Flow, veh/h	715	1854	14	981	1870	1585	0	233	1585	0	0	1585
Grp Volume(v), veh/h	338	0	404	2	473	272	4	0	8	264	0	385
Grp Sat Flow(s),veh/h/ln	715	0	1868	981	1870	1585	233	0	1585	0	0	1585
Q Serve(g_s), s	7.9	0.0	6.6	0.1	8.1	5.0	0.0	0.0	0.1	0.0	0.0	7.7
Cycle Q Clear(g_c), s	16.0	0.0	6.6	6.7	8.1	5.0	16.0	0.0	0.1	16.0	0.0	7.7
Prop In Lane	1.00		0.01	1.00		1.00	0.50		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	321	0	747	410	748	634	228	0	634	180	0	634
V/C Ratio(X)	1.05	0.00	0.54	0.00	0.63	0.43	0.02	0.00	0.01	1.47	0.00	0.61
Avail Cap(c_a), veh/h	321	0	747	410	748	634	228	0	634	180	0	634
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.3	0.0	9.2	11.7	9.6	8.7	9.7	0.0	7.2	20.0	0.0	9.5
Incr Delay (d2), s/veh	64.9	0.0	2.8	0.0	4.0	2.1	0.1	0.0	0.0	237.8	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	0.0	2.5	0.0	3.2	1.6	0.0	0.0	0.0	13.4	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	83.2	0.0	12.0	11.8	13.7	10.8	9.8	0.0	7.3	257.8	0.0	13.8
LnGrp LOS	F	A	B	B	B	B	A	A	A	F	A	B
Approach Vol, veh/h		742			747			12			649	
Approach Delay, s/veh		44.4			12.6			8.1			113.0	
Approach LOS		D			B			A			F	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.0		20.0		20.0		20.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0				
Max Q Clear Time (g_c+I1), s		18.0		10.1		18.0		18.0				
Green Ext Time (p_c), s		0.0		2.1		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			53.9									
HCM 6th LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	434	376	332	375	66	263	105	302	44	90	74
Future Volume (veh/h)	119	434	376	332	375	66	263	105	302	44	90	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	129	472	409	361	408	72	286	114	328	48	98	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	374	634	334	555	471	356	374	317	155	318	266
Arrive On Green	0.09	0.20	0.20	0.19	0.30	0.30	0.20	0.20	0.20	0.21	0.21	0.21
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	728	1498	1253
Grp Volume(v), veh/h	129	472	409	361	408	72	286	114	328	121	0	105
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1834	0	1645
Q Serve(g_s), s	5.7	16.0	16.0	15.0	15.7	2.7	12.2	4.2	16.0	4.4	0.0	4.3
Cycle Q Clear(g_c), s	5.7	16.0	16.0	15.0	15.7	2.7	12.2	4.2	16.0	4.4	0.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.40		0.76
Lane Grp Cap(c), veh/h	161	374	634	334	555	471	356	374	317	390	0	350
V/C Ratio(X)	0.80	1.26	0.65	1.08	0.73	0.15	0.80	0.30	1.03	0.31	0.00	0.30
Avail Cap(c_a), veh/h	178	374	634	334	555	471	356	374	317	390	0	350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.7	32.0	19.2	32.5	25.3	20.7	30.5	27.3	32.0	26.6	0.0	26.5
Incr Delay (d2), s/veh	20.5	137.7	2.3	72.5	5.0	0.1	12.5	0.5	59.8	2.1	0.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	21.3	8.3	13.0	7.4	1.0	6.3	1.9	11.2	2.1	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.2	169.7	21.5	105.0	30.3	20.9	43.0	27.7	91.8	28.6	0.0	28.7
LnGrp LOS	E	F	C	F	C	C	D	C	F	C	A	C
Approach Vol, veh/h		1010			841			728			226	
Approach Delay, s/veh		95.1			61.6			62.6			28.7	
Approach LOS		F			E			E			C	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	21.0	11.3	27.7	20.0	19.0	20.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	8.0	23.0	16.0	15.0	16.0
Max Q Clear Time (g_c+I1), s	6.4	7.7	17.7	18.0	17.0	18.0
Green Ext Time (p_c), s	0.9	0.0	1.3	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	71.3
HCM 6th LOS	E

Intersection	
Intersection Delay, s/veh	11.1
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	0	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	0	662	867	926
Demand Flow Rate, veh/h	0	675	884	945
Vehicles Circulating, veh/h	1057	884	0	503
Vehicles Exiting, veh/h	391	0	1057	1056
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	0.0	17.9	5.5	11.4
Approach LOS	-	C	A	B

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	R	LT	TR	LT	TR
Assumed Moves	LT	R	LT	TR	LT	TR
RT Channelized						
Lane Util	0.302	0.698	0.469	0.531	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	204	471	415	469	444	501
Cap Entry Lane, veh/h	599	670	1350	1420	850	926
Entry HV Adj Factor	0.980	0.981	0.981	0.979	0.980	0.980
Flow Entry, veh/h	200	462	407	459	435	491
Cap Entry, veh/h	587	657	1325	1391	833	907
V/C Ratio	0.341	0.703	0.307	0.330	0.522	0.541
Control Delay, s/veh	11.0	20.9	5.5	5.5	11.6	11.2
LOS	B	C	A	A	B	B
95th %tile Queue, veh	2	6	1	1	3	3

Intersection	
Intersection Delay, s/veh	12.0
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	2	0	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	412	0	1263	1066
Demand Flow Rate, veh/h	420	0	1288	1087
Vehicles Circulating, veh/h	1087	818	460	31
Vehicles Exiting, veh/h	31	930	1047	787
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	13.4	0.0	16.1	6.6
Approach LOS	B	-	C	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LTR	R	LT	TR	LT	TR
Assumed Moves	LTR	R	LT	TR	LT	TR
RT Channelized						
Lane Util	0.469	0.531	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	197	223	605	683	511	576
Cap Entry Lane, veh/h	497	564	884	960	1312	1383
Entry HV Adj Factor	0.983	0.979	0.981	0.980	0.980	0.981
Flow Entry, veh/h	194	218	593	669	501	565
Cap Entry, veh/h	488	552	867	941	1286	1356
V/C Ratio	0.397	0.396	0.684	0.711	0.390	0.416
Control Delay, s/veh	14.1	12.7	16.1	16.2	6.5	6.6
LOS	B	B	C	C	A	A
95th %tile Queue, veh	2	2	6	6	2	2



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	409	46	223	870	550	493
Future Volume (veh/h)	409	46	223	870	550	493
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	445	50	242	946	598	536
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1382	634	318	1421	1421	634
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	3456	1585	496	3647	3647	1585
Grp Volume(v), veh/h	445	50	242	946	598	536
Grp Sat Flow(s),veh/h/ln	1728	1585	496	1777	1777	1585
Q Serve(g_s), s	3.5	0.8	11.1	8.7	4.9	12.3
Cycle Q Clear(g_c), s	3.5	0.8	16.0	8.7	4.9	12.3
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	1382	634	318	1421	1421	634
V/C Ratio(X)	0.32	0.08	0.76	0.67	0.42	0.85
Avail Cap(c_a), veh/h	1382	634	318	1421	1421	634
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	7.4	16.8	9.8	8.7	10.9
Incr Delay (d2), s/veh	0.6	0.2	15.7	2.5	0.9	13.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.2	3.4	2.9	1.5	5.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.9	7.7	32.5	12.3	9.6	23.9
LnGrp LOS	A	A	C	B	A	C
Approach Vol, veh/h	495			1188	1134	
Approach Delay, s/veh	8.8			16.4	16.4	
Approach LOS	A			B	B	

Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	20.0			20.0	20.0
Change Period (Y+Rc), s	4.0			4.0	4.0
Max Green Setting (Gmax), s	16.0			16.0	16.0
Max Q Clear Time (g_c+I1), s	14.3			18.0	5.5
Green Ext Time (p_c), s	1.1			0.0	1.4

Intersection Summary		
HCM 6th Ctrl Delay	15.0	
HCM 6th LOS	B	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	123	207	653	232	202	725
Future Volume (veh/h)	123	207	653	232	202	725
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	134	225	710	252	220	788
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	713	634	1421	634	326	748
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1781	1585	3647	1585	584	1870
Grp Volume(v), veh/h	134	225	710	252	220	788
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	584	1870
Q Serve(g_s), s	2.0	4.0	6.0	4.5	10.0	16.0
Cycle Q Clear(g_c), s	2.0	4.0	6.0	4.5	16.0	16.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	713	634	1421	634	326	748
V/C Ratio(X)	0.19	0.35	0.50	0.40	0.67	1.05
Avail Cap(c_a), veh/h	713	634	1421	634	326	748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.8	8.4	9.0	8.6	16.7	12.0
Incr Delay (d2), s/veh	0.6	1.6	1.3	1.9	10.7	47.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.3	1.9	1.5	2.8	14.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.4	9.9	10.3	10.4	27.3	59.8
LnGrp LOS	A	A	B	B	C	F
Approach Vol, veh/h	359		962			1008
Approach Delay, s/veh	9.4		10.3			52.7
Approach LOS	A		B			D

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	20.0		20.0		20.0
Change Period (Y+Rc), s	4.0		4.0		4.0
Max Green Setting (Gmax), s	16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s	18.0		6.0		8.0
Green Ext Time (p_c), s	0.0		0.9		3.5

Intersection Summary	
HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	32.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	161	413	3	3	170	180	2	0	3	295	0	225
Future Vol, veh/h	161	413	3	3	170	180	2	0	3	295	0	225
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	120	-	-	-	-	-	-	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	179	459	3	3	189	200	2	0	3	328	0	250

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	389	0	0	462	0	0	1114	1214	461	1115	1115	289
Stage 1	-	-	-	-	-	-	819	819	-	295	295	-
Stage 2	-	-	-	-	-	-	295	395	-	820	820	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1170	-	-	1099	-	-	185	182	600	~ 185	208	750
Stage 1	-	-	-	-	-	-	369	389	-	713	669	-
Stage 2	-	-	-	-	-	-	713	605	-	369	389	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1170	-	-	1099	-	-	109	154	600	~ 162	176	750
Mov Cap-2 Maneuver	-	-	-	-	-	-	109	154	-	~ 282	300	-
Stage 1	-	-	-	-	-	-	313	329	-	604	666	-
Stage 2	-	-	-	-	-	-	473	603	-	~ 311	329	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	0.1	22.3	86.9
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	214	1170	-	-	1099	-	-	282	750
HCM Lane V/C Ratio	0.026	0.153	-	-	0.003	-	-	1.162	0.333
HCM Control Delay (s)	22.3	8.6	-	-	8.3	0	-	143.8	12.2
HCM Lane LOS	C	A	-	-	A	A	-	F	B
HCM 95th %tile Q(veh)	0.1	0.5	-	-	0	-	-	14.3	1.5

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

Intersection	
Intersection Delay, s/veh	20.4
Intersection LOS	C

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	933	730	438
Demand Flow Rate, veh/h	952	745	447
Vehicles Circulating, veh/h	229	302	646
Vehicles Exiting, veh/h	817	791	535
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	25.2	16.6	16.5
Approach LOS	D	C	C

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	952	745	447
Cap Entry Lane, veh/h	1092	1014	714
Entry HV Adj Factor	0.980	0.980	0.980
Flow Entry, veh/h	933	730	438
Cap Entry, veh/h	1071	994	700
V/C Ratio	0.871	0.735	0.626
Control Delay, s/veh	25.2	16.6	16.5
LOS	D	C	C
95th %tile Queue, veh	12	7	4

HCM 6th Edition methodology does not support clustered intersections.

HCM 6th Edition methodology does not support clustered intersections.

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3134	3088	3030	3157	3058	3092
Vehs Exited	2936	2978	2933	3013	2953	2962
Starting Vehs	104	107	125	112	122	114
Ending Vehs	302	217	222	256	227	243
Travel Distance (mi)	2272	2295	2253	2318	2262	2280
Travel Time (hr)	378.2	317.3	307.6	258.6	223.5	297.0
Total Delay (hr)	297.8	236.2	228.1	176.4	143.4	216.4
Total Stops	5316	5071	4510	4855	4474	4848
Fuel Used (gal)	139.3	126.5	123.0	113.2	104.0	121.2

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3134	3088	3030	3157	3058	3092
Vehs Exited	2936	2978	2933	3013	2953	2962
Starting Vehs	104	107	125	112	122	114
Ending Vehs	302	217	222	256	227	243
Travel Distance (mi)	2272	2295	2253	2318	2262	2280
Travel Time (hr)	378.2	317.3	307.6	258.6	223.5	297.0
Total Delay (hr)	297.8	236.2	228.1	176.4	143.4	216.4
Total Stops	5316	5071	4510	4855	4474	4848
Fuel Used (gal)	139.3	126.5	123.0	113.2	104.0	121.2

10: External Performance by approach

Approach	WB	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.8	0.8
Total Del/Veh (s)	6.9	6.9
Avg Speed (mph)	22	22
Vehicles Entered	395	395
Vehicles Exited	392	392
Hourly Exit Rate	392	392
Input Volume	506	506
% of Volume	77	77

11: External Performance by approach

Approach	WB	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.1	0.1
Total Del/Veh (s)	1.0	1.0
Avg Speed (mph)	28	28
Vehicles Entered	408	408
Vehicles Exited	406	406
Hourly Exit Rate	406	406
Input Volume	482	482
% of Volume	84	84

12: Bridge St & Donner Pass Rd/Truckee Way Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	15.1	4.5
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	355.4	339.4	359.8
Total Delay (hr)	1.3	6.0	7.7	4.3	1.4	0.2	1.4	0.6	1.0	0.2	2.5	0.5
Total Del/Veh (s)	91.0	94.2	95.8	54.5	30.7	22.2	25.4	21.1	11.3	66.0	67.7	50.7
Avg Speed (mph)	5	5	4	6	9	10	6	7	9	1	1	1
Vehicles Entered	50	226	288	281	165	29	201	104	323	12	133	38
Vehicles Exited	49	221	282	281	165	29	204	105	324	12	132	38
Hourly Exit Rate	49	221	282	281	165	29	204	105	324	12	132	38
Input Volume	51	227	282	284	172	26	263	123	376	13	164	47
% of Volume	96	97	100	99	96	112	78	85	86	92	80	81

12: Bridge St & Donner Pass Rd/Truckee Way Performance by movement

Movement	All
Denied Delay (hr)	21.0
Denied Del/Veh (s)	40.1
Total Delay (hr)	27.3
Total Del/Veh (s)	52.5
Avg Speed (mph)	5
Vehicles Entered	1850
Vehicles Exited	1842
Hourly Exit Rate	1842
Input Volume	2028
% of Volume	91

13: Bridge St & West River St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	1.1	1.1	1.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	6.3	1.3	22.1	1.7	0.6	0.2	10.5	6.4	0.4	0.8	5.0	0.3
Total Del/Veh (s)	136.0	132.3	106.5	238.2	236.7	6.3	105.4	62.2	56.5	69.5	28.9	23.1
Avg Speed (mph)	9	9	11	3	3	22	3	5	5	3	5	6
Vehicles Entered	163	34	732	25	9	84	351	364	25	40	614	40
Vehicles Exited	153	32	694	24	9	85	345	363	24	41	612	41
Hourly Exit Rate	153	32	694	24	9	85	345	363	24	41	612	41
Input Volume	165	33	720	25	11	78	450	491	30	42	643	45
% of Volume	93	97	96	96	82	109	77	74	80	98	95	91

13: Bridge St & West River St Performance by movement

Movement	All
Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.5
Total Delay (hr)	55.5
Total Del/Veh (s)	79.1
Avg Speed (mph)	8
Vehicles Entered	2481
Vehicles Exited	2423
Hourly Exit Rate	2423
Input Volume	2733
% of Volume	89

27: External Performance by approach

Approach	EB	All
Denied Delay (hr)	0.0	0.0
Denied Del/Veh (s)	0.0	0.0
Total Delay (hr)	0.9	0.9
Total Del/Veh (s)	2.6	2.6
Avg Speed (mph)	32	32
Vehicles Entered	1287	1287
Vehicles Exited	1284	1284
Hourly Exit Rate	1284	1284
Input Volume	1344	1344
% of Volume	96	96

Total Zone Performance

Denied Delay (hr)	21.3
Denied Del/Veh (s)	59.3
Total Delay (hr)	84.6
Total Del/Veh (s)	133.5
Avg Speed (mph)	11
Vehicles Entered	1257
Vehicles Exited	2124
Hourly Exit Rate	2124
Input Volume	7093
% of Volume	30

Intersection: 12: Bridge St & Donner Pass Rd/Truckee Way

Movement	EB	EB	B42	WB	WB	B77	NB	NB	SB
Directions Served	LT	R	T	L	TR	T	L	TR	LTR
Maximum Queue (ft)	636	192	308	125	495	47	206	239	115
Average Queue (ft)	417	176	106	113	237	2	93	124	91
95th Queue (ft)	859	230	458	144	524	30	178	229	110
Link Distance (ft)	730		925		611	241	232	232	
Upstream Blk Time (%)	21				1		0	1	
Queuing Penalty (veh)	0				0		1	5	
Storage Bay Dist (ft)		167		100					
Storage Blk Time (%)	18	31		39	3				
Queuing Penalty (veh)	51	87		78	9				

Intersection: 13: Bridge St & West River St

Movement	EB	EB	WB	WB	NB	NB	B47	SB	SB
Directions Served	LT	R	LT	R	L	TR	T	L	TR
Maximum Queue (ft)	1953	145	162	80	124	593	1590	74	253
Average Queue (ft)	960	144	63	34	124	558	1286	36	236
95th Queue (ft)	2018	155	145	64	126	628	2119	76	266
Link Distance (ft)	2790		1114	1114		492	1534		232
Upstream Blk Time (%)	0					60	66		30
Queuing Penalty (veh)	0					0	0		222
Storage Bay Dist (ft)		120			100			50	
Storage Blk Time (%)	21	42			65	0		6	50
Queuing Penalty (veh)	148	83			338	0		38	21

Zone Summary

Zone wide Queuing Penalty: 1080

Intersection: 12: Bridge St & Donner Pass Rd/Truckee Way

Phase	1	2	4	5	6	8	10	11	12	13	14	16
Movement(s) Served	SBL	NBT	EBTL	NBL	SBT	WBTL	NBTL	WBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	6.0	37.0	23.0	26.0	17.0	23.0	47.0	23.0	23.0	6.0	37.0	23.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall	None	Min	None	None	Min	None	Min	None	None	None	Min	None
Avg. Green (s)	6.0	40.3	23.0	25.9	17.2	23.0	48.1	22.9	23.0	6.0	37.1	49.9
g/C Ratio	-0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	21	0	0	0	0	0	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0	0	0	0	0	0	0
Cycles Maxed Out (%)	58	100	97	97	100	97	100	97	97	91	100	100
Cycles with Peds (%)	0	0	0	0	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection	
Int Delay, s/veh	7.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	558	299	375	351	5	221
Future Vol, veh/h	558	299	375	351	5	221
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	240	-	0	230
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	6	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	575	308	387	362	5	228

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	883	0	1865	729
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	1136	-
Critical Hdwy	-	-	4.12	-	7.62	6.82
Critical Hdwy Stg 1	-	-	-	-	6.62	-
Critical Hdwy Stg 2	-	-	-	-	6.62	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	766	-	43	374
Stage 1	-	-	-	-	374	-
Stage 2	-	-	-	-	210	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	766	-	21	374
Mov Cap-2 Maneuver	-	-	-	-	21	-
Stage 1	-	-	-	-	374	-
Stage 2	-	-	-	-	104	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.4	32.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	21	374	-	-	766	-
HCM Lane V/C Ratio	0.245	0.609	-	-	0.505	-
HCM Control Delay (s)	225.2	28.5	-	-	14.4	-
HCM Lane LOS	F	D	-	-	B	-
HCM 95th %tile Q(veh)	0.7	3.9	-	-	2.9	-

Intersection	
Intersection Delay, s/veh	11.0
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	48	108	761	848
Demand Flow Rate, veh/h	49	110	776	865
Vehicles Circulating, veh/h	885	798	83	73
Vehicles Exiting, veh/h	53	61	851	835
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.6	8.2	10.4	12.0
Approach LOS	A	A	B	B

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	49	110	776	865
Cap Entry Lane, veh/h	560	611	1268	1281
Entry HV Adj Factor	0.980	0.982	0.981	0.980
Flow Entry, veh/h	48	108	761	848
Cap Entry, veh/h	548	600	1244	1255
V/C Ratio	0.088	0.180	0.612	0.675
Control Delay, s/veh	7.6	8.2	10.4	12.0
LOS	A	A	B	B
95th %tile Queue, veh	0	1	4	6

Intersection	
Int Delay, s/veh	122.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	313	219	0	859	527	0
Future Vol, veh/h	313	219	0	859	527	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	140	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	337	235	0	924	567	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1491	567	-	0	-	0
Stage 1	567	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 136	523	0	-	-	0
Stage 1	568	-	0	-	-	0
Stage 2	387	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 136	523	-	-	-	-
Mov Cap-2 Maneuver	~ 136	-	-	-	-	-
Stage 1	568	-	-	-	-	-
Stage 2	387	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 440.7	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	-	136	523	-
HCM Lane V/C Ratio	-	2.475	0.45	-
HCM Control Delay (s)	-	$ 736.9	17.4	-
HCM Lane LOS	-	F	C	-
HCM 95th %tile Q(veh)	-	29.4	2.3	-

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

Intersection	
Intersection Delay, s/veh	87.5
Intersection LOS	F

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	721	88	1102	895
Demand Flow Rate, veh/h	736	89	1124	913
Vehicles Circulating, veh/h	660	1476	419	378
Vehicles Exiting, veh/h	631	67	977	1187
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	71.1	18.2	138.8	44.5
Approach LOS	F	C	F	E

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	736	89	1124	913
Cap Entry Lane, veh/h	704	306	900	938
Entry HV Adj Factor	0.979	0.986	0.980	0.981
Flow Entry, veh/h	721	88	1102	895
Cap Entry, veh/h	689	302	882	920
V/C Ratio	1.046	0.291	1.249	0.973
Control Delay, s/veh	71.1	18.2	138.8	44.5
LOS	F	C	F	E
95th %tile Queue, veh	19	1	38	17

Intersection	
Intersection Delay, s/veh	12.0
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	2	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	1047	196	1082	562
Demand Flow Rate, veh/h	1068	200	1103	573
Vehicles Circulating, veh/h	402	1288	388	769
Vehicles Exiting, veh/h	940	203	1082	719
Ped Vol Crossing Leg, #/h	1	1	2	0
Ped Cap Adj	0.999	1.000	0.998	1.000
Approach Delay, s/veh	12.5	15.3	11.6	10.8
Approach LOS	B	C	B	B

Lane	Left	Right	Left	Left	Right	Left	Right
Designated Moves	LT	R	LTR	LT	TR	LT	TR
Assumed Moves	LT	R	LTR	L	TR	LT	TR
RT Channelized							
Lane Util	0.353	0.647	1.000	0.530	0.470	0.469	0.531
Follow-Up Headway, s	2.667	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	377	691	200	585	518	269	304
Cap Entry Lane, veh/h	933	1009	475	945	1021	665	739
Entry HV Adj Factor	0.980	0.980	0.982	0.981	0.981	0.982	0.980
Flow Entry, veh/h	370	677	196	574	508	264	298
Cap Entry, veh/h	914	988	466	925	1000	654	724
V/C Ratio	0.405	0.685	0.421	0.620	0.508	0.404	0.412
Control Delay, s/veh	8.6	14.6	15.3	13.1	9.8	11.2	10.5
LOS	A	B	C	B	A	B	B
95th %tile Queue, veh	2	6	2	4	3	2	2

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	100	8	355	182	2	119
Future Vol, veh/h	100	8	355	182	2	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	9	386	198	2	129

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	618	485	0	0	584	0
Stage 1	485	-	-	-	-	-
Stage 2	133	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	453	582	-	-	991	-
Stage 1	619	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	452	582	-	-	991	-
Mov Cap-2 Maneuver	452	-	-	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	891	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.5	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	460	991	-
HCM Lane V/C Ratio	-	-	0.255	0.002	-
HCM Control Delay (s)	-	-	15.5	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1	0	-

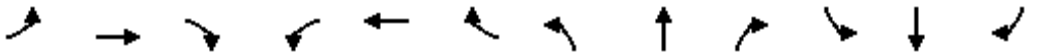
Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	39	41	28	20	6	4	188	42	1	69	10
Future Vol, veh/h	29	39	41	28	20	6	4	188	42	1	69	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	42	45	30	22	7	4	204	46	1	75	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	333	341	81	361	323	227	86	0	0	250	0	0
Stage 1	83	83	-	235	235	-	-	-	-	-	-	-
Stage 2	250	258	-	126	88	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	620	581	979	595	595	812	1510	-	-	1316	-	-
Stage 1	925	826	-	768	710	-	-	-	-	-	-	-
Stage 2	754	694	-	878	822	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	596	579	979	534	593	812	1510	-	-	1316	-	-
Mov Cap-2 Maneuver	596	579	-	534	593	-	-	-	-	-	-	-
Stage 1	922	825	-	766	708	-	-	-	-	-	-	-
Stage 2	723	692	-	794	821	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	11.8	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1510	-	-	586	979	557	812	1316	-	-
HCM Lane V/C Ratio	0.003	-	-	0.126	0.046	0.094	0.008	0.001	-	-
HCM Control Delay (s)	7.4	0	-	12	8.9	12.1	9.5	7.7	0	-
HCM Lane LOS	A	A	-	B	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0.3	0	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	306	7	215	488	746	0	0	978	59
Future Volume (veh/h)	0	0	0	306	7	215	488	746	0	0	978	59
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				315	7	222	503	769	0	0	1008	61
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				376	8	342	356	1205	0	0	731	620
Arrive On Green				0.22	0.22	0.22	0.20	0.64	0.00	0.00	0.39	0.39
Sat Flow, veh/h				1744	39	1585	1781	1870	0	0	1870	1585
Grp Volume(v), veh/h				322	0	222	503	769	0	0	1008	61
Grp Sat Flow(s),veh/h/ln				1783	0	1585	1781	1870	0	0	1870	1585
Q Serve(g_s), s				13.0	0.0	9.6	15.0	18.6	0.0	0.0	29.3	1.8
Cycle Q Clear(g_c), s				13.0	0.0	9.6	15.0	18.6	0.0	0.0	29.3	1.8
Prop In Lane				0.98		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				385	0	342	356	1205	0	0	731	620
V/C Ratio(X)				0.84	0.00	0.65	1.41	0.64	0.00	0.00	1.38	0.10
Avail Cap(c_a), veh/h				606	0	539	356	1205	0	0	731	620
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				28.2	0.0	26.8	30.0	8.1	0.0	0.0	22.8	14.5
Incr Delay (d2), s/veh				3.2	0.0	0.8	186.9	0.2	0.0	0.0	178.8	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.5	0.0	3.4	24.1	4.5	0.0	0.0	46.7	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.3	0.0	27.6	216.9	8.3	0.0	0.0	201.7	14.8
LnGrp LOS				C	A	C	F	A	A	A	F	B
Approach Vol, veh/h					544			1272			1069	
Approach Delay, s/veh					29.8			90.8			191.0	
Approach LOS					C			F			F	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	54.3		19.0	35.3		20.7						
Change Period (Y+Rc), s	6.0		4.0	6.0		4.5						
Max Green Setting (Gmax), s	39.0		15.0	18.0		25.5						
Max Q Clear Time (g_c+I1), s	20.6		17.0	31.3		15.0						
Green Ext Time (p_c), s	2.7		0.0	0.0		1.2						

Intersection Summary		
HCM 6th Ctrl Delay		116.4
HCM 6th LOS		F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	0	351	0	0	0	0	1170	653	477	791	0
Future Volume (veh/h)	84	0	351	0	0	0	0	1170	653	477	791	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	91	0	0				0	1272	710	518	860	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	123	0					0	949	804	392	1447	0
Arrive On Green	0.07	0.00	0.00				0.00	0.51	0.51	0.44	1.00	0.00
Sat Flow, veh/h	1781	0	1585				0	1870	1585	1781	1870	0
Grp Volume(v), veh/h	91	0	0				0	1272	710	518	860	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1870	1585	1781	1870	0
Q Serve(g_s), s	3.8	0.0	0.0				0.0	38.0	30.0	16.5	0.0	0.0
Cycle Q Clear(g_c), s	3.8	0.0	0.0				0.0	38.0	30.0	16.5	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	123	0					0	949	804	392	1447	0
V/C Ratio(X)	0.74	0.00					0.00	1.34	0.88	1.32	0.59	0.00
Avail Cap(c_a), veh/h	515	0					0	949	804	392	1447	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	34.3	0.0	0.0				0.0	18.5	16.5	21.0	0.0	0.0
Incr Delay (d2), s/veh	8.5	0.0	0.0				0.0	160.5	13.5	146.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0				0.0	54.3	11.1	20.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.8	0.0	0.0				0.0	179.0	30.0	167.5	0.2	0.0
LnGrp LOS	D	A					A	F	C	F	A	A
Approach Vol, veh/h		91	A					1982			1378	
Approach Delay, s/veh		42.8						125.6			63.1	
Approach LOS		D						F			E	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	20.0	44.5		10.5		64.5						
Change Period (Y+Rc), s	3.5	6.5		5.3		6.5						
Max Green Setting (Gmax), s	16.5	21.5		21.7		41.5						
Max Q Clear Time (g_c+I1), s	18.5	40.0		5.8		2.0						
Green Ext Time (p_c), s	0.0	0.0		0.3		14.2						

Intersection Summary	
HCM 6th Ctrl Delay	98.4
HCM 6th LOS	F

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1000	5	149	839	6	5
Future Vol, veh/h	1000	5	149	839	6	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1087	5	162	912	7	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1092	0	2326	1090
Stage 1	-	-	-	-	1090	-
Stage 2	-	-	-	-	1236	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	639	-	41	262
Stage 1	-	-	-	-	322	-
Stage 2	-	-	-	-	274	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	639	-	20	262
Mov Cap-2 Maneuver	-	-	-	-	20	-
Stage 1	-	-	-	-	322	-
Stage 2	-	-	-	-	133	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	160
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	34	-	-	639	-
HCM Lane V/C Ratio	0.352	-	-	0.253	-
HCM Control Delay (s)	160	-	-	12.5	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	1.1	-	-	1	-

Intersection	
Int Delay, s/veh	11.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	304	297	169	55	65	194
Future Vol, veh/h	304	297	169	55	65	194
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	330	323	184	60	71	211

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	244	0	-	0	1197	214
Stage 1	-	-	-	-	214	-
Stage 2	-	-	-	-	983	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1322	-	-	-	205	826
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	362	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1322	-	-	-	143	826
Mov Cap-2 Maneuver	-	-	-	-	143	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	362	-

Approach	EB	WB	SB
HCM Control Delay, s	4.4	0	38.2
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1322	-	-	-	376
HCM Lane V/C Ratio	0.25	-	-	-	0.749
HCM Control Delay (s)	8.6	0	-	-	38.2
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	1	-	-	-	5.9

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	34	9	12	29	12	9	82	6	6	131	14
Future Vol, veh/h	10	34	9	12	29	12	9	82	6	6	131	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	37	10	13	32	13	10	89	7	7	142	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	299	280	150	300	284	93	157	0	0	96	0	0
Stage 1	164	164	-	113	113	-	-	-	-	-	-	-
Stage 2	135	116	-	187	171	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	653	628	896	652	625	964	1423	-	-	1498	-	-
Stage 1	838	762	-	892	802	-	-	-	-	-	-	-
Stage 2	868	800	-	815	757	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	613	620	896	610	618	964	1423	-	-	1498	-	-
Mov Cap-2 Maneuver	613	620	-	610	618	-	-	-	-	-	-	-
Stage 1	832	758	-	886	796	-	-	-	-	-	-	-
Stage 2	817	794	-	763	753	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	10.9	0.7	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1423	-	-	653	670	1498	-	-
HCM Lane V/C Ratio	0.007	-	-	0.088	0.086	0.004	-	-
HCM Control Delay (s)	7.5	0	-	11	10.9	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	772	315	69	580	161	138
Future Volume (veh/h)	772	315	69	580	161	138
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	821	335	73	617	171	147
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1021	865	338	1021	323	287
Arrive On Green	0.55	0.55	0.55	0.55	0.18	0.18
Sat Flow, veh/h	1870	1585	486	1870	1781	1585
Grp Volume(v), veh/h	821	335	73	617	171	147
Grp Sat Flow(s),veh/h/ln	1870	1585	486	1870	1781	1585
Q Serve(g_s), s	10.4	3.6	4.2	6.6	2.5	2.5
Cycle Q Clear(g_c), s	10.4	3.6	14.6	6.6	2.5	2.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1021	865	338	1021	323	287
V/C Ratio(X)	0.80	0.39	0.22	0.60	0.53	0.51
Avail Cap(c_a), veh/h	1021	865	338	1021	972	865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.4	3.8	11.3	4.5	10.9	10.8
Incr Delay (d2), s/veh	4.8	0.3	0.3	1.0	1.3	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.3	0.3	0.4	0.8	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.1	4.1	11.6	5.5	12.2	12.2
LnGrp LOS	B	A	B	A	B	B
Approach Vol, veh/h	1156			690	318	
Approach Delay, s/veh	8.4			6.2	12.2	
Approach LOS	A			A	B	

Timer - Assigned Phs	2	4	8
Phs Duration (G+Y+Rc), s	9.3	20.0	20.0
Change Period (Y+Rc), s	4.0	4.0	4.0
Max Green Setting (Gmax), s	16.0	16.0	16.0
Max Q Clear Time (g_c+I1), s	4.5	12.4	16.6
Green Ext Time (p_c), s	0.8	2.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	8.3
HCM 6th LOS	A

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	685	772	242	80
Demand Flow Rate, veh/h	698	788	247	81
Vehicles Circulating, veh/h	248	106	639	821
Vehicles Exiting, veh/h	654	780	307	73
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.8	11.2	9.5	7.8
Approach LOS	B	B	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	698	788	247	81
Cap Entry Lane, veh/h	1071	1238	719	597
Entry HV Adj Factor	0.981	0.980	0.979	0.985
Flow Entry, veh/h	685	772	242	80
Cap Entry, veh/h	1051	1214	704	588
V/C Ratio	0.651	0.636	0.343	0.136
Control Delay, s/veh	12.8	11.2	9.5	7.8
LOS	B	B	A	A
95th %tile Queue, veh	5	5	2	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	358	208	261	79	258	384	281	1122	104	274	906	267
Future Volume (veh/h)	358	208	261	79	258	384	281	1122	104	274	906	267
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	381	221	278	84	274	409	299	1194	111	291	964	284
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	476	670	204	476	403	300	1063	901	105	859	728
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.17	0.57	0.57	0.06	0.46	0.46
Sat Flow, veh/h	758	1870	1585	899	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	381	221	278	84	274	409	299	1194	111	291	964	284
Grp Sat Flow(s),veh/h/ln	758	1870	1585	899	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	13.9	11.0	13.5	9.6	14.1	28.0	18.5	62.5	3.6	6.5	50.5	13.0
Cycle Q Clear(g_c), s	28.0	11.0	13.5	20.6	14.1	28.0	18.5	62.5	3.6	6.5	50.5	13.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	161	476	670	204	476	403	300	1063	901	105	859	728
V/C Ratio(X)	2.36	0.46	0.41	0.41	0.58	1.01	1.00	1.12	0.12	2.76	1.12	0.39
Avail Cap(c_a), veh/h	161	476	670	204	476	403	300	1063	901	105	859	728
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.9	34.7	22.2	43.4	35.8	41.0	45.7	23.7	11.0	51.8	29.8	19.6
Incr Delay (d2), s/veh	630.9	1.0	0.6	0.5	1.1	48.3	51.4	68.2	0.0	820.0	70.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	32.6	4.9	4.9	2.1	6.4	15.8	12.0	42.7	1.1	26.7	36.6	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	681.8	35.7	22.8	43.8	36.9	89.3	97.2	91.9	11.1	871.8	100.0	19.7
LnGrp LOS	F	D	C	D	D	F	F	F	B	F	F	B
Approach Vol, veh/h		880			767			1604			1539	
Approach Delay, s/veh		311.3			65.6			87.3			231.1	
Approach LOS		F			E			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.0	56.5		31.5	10.0	68.5		31.5
Change Period (Y+Rc), s	3.5	6.0		3.5	3.5	6.0		3.5
Max Green Setting (Gmax), s	18.5	50.5		28.0	6.5	62.5		28.0
Max Q Clear Time (g_c+I1), s	20.5	52.5		30.0	8.5	64.5		30.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	171.2
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	338	129	89	29	10	94	20	1162	93	13	1073	154
Future Volume (veh/h)	338	129	89	29	10	94	20	1162	93	13	1073	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	367	140	97	32	11	102	22	1263	101	14	1166	167
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	0	528	54	11	528	31	876	70	22	950	805
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.02	0.51	0.51	0.01	0.51	0.51
Sat Flow, veh/h	0	0	1585	0	33	1585	1781	1709	137	1781	1870	1585
Grp Volume(v), veh/h	507	0	97	43	0	102	22	0	1364	14	1166	167
Grp Sat Flow(s),veh/h/ln	0	0	1585	33	0	1585	1781	0	1846	1781	1870	1585
Q Serve(g_s), s	0.0	0.0	5.0	0.0	0.0	5.3	1.4	0.0	59.1	0.9	58.5	6.7
Cycle Q Clear(g_c), s	38.4	0.0	5.0	38.4	0.0	5.3	1.4	0.0	59.1	0.9	58.5	6.7
Prop In Lane	0.72		1.00	0.74		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	54	0	528	66	0	528	31	0	946	22	950	805
V/C Ratio(X)	9.41	0.00	0.18	0.65	0.00	0.19	0.70	0.00	1.44	0.63	1.23	0.21
Avail Cap(c_a), veh/h	54	0	528	66	0	528	124	0	946	124	950	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.6	0.0	27.3	47.7	0.0	27.4	56.3	0.0	28.1	56.6	28.4	15.6
Incr Delay (d2), s/veh	3823.0	0.0	0.1	17.1	0.0	0.1	10.2	0.0	204.6	10.2	111.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	58.7	0.0	1.8	1.6	0.0	1.9	0.7	0.0	76.3	0.5	52.2	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3880.6	0.0	27.3	64.9	0.0	27.4	66.5	0.0	232.7	66.9	140.3	15.7
LnGrp LOS	F	A	C	E	A	C	E	A	F	E	F	B
Approach Vol, veh/h		604			145			1386			1347	
Approach Delay, s/veh		3261.8			38.5			230.0			124.1	
Approach LOS		F			D			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.0	65.5		43.7	5.4	66.1		43.7
Change Period (Y+Rc), s	4.0	* 7		* 5.3	4.0	7.0		5.3
Max Green Setting (Gmax), s	8.0	* 59		* 38	8.0	58.0		37.7
Max Q Clear Time (g_c+I1), s	3.4	60.5		40.4	2.9	61.1		40.4
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	707.0
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	314	93	82	994	951	179
Future Volume (veh/h)	314	93	82	994	951	179
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	357	106	93	1130	1081	203
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	406	292	119	1289	1034	1063
Arrive On Green	0.12	0.12	0.07	0.69	0.55	0.55
Sat Flow, veh/h	3456	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	357	106	93	1130	1081	203
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1870	1870	1585
Q Serve(g_s), s	5.9	3.4	3.0	27.5	32.0	2.8
Cycle Q Clear(g_c), s	5.9	3.4	3.0	27.5	32.0	2.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	406	292	119	1289	1034	1063
V/C Ratio(X)	0.88	0.36	0.78	0.88	1.05	0.19
Avail Cap(c_a), veh/h	406	292	185	1358	1034	1063
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	20.6	26.6	7.1	12.9	3.6
Incr Delay (d2), s/veh	18.6	0.3	4.5	6.2	40.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	1.2	1.2	5.0	19.0	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.8	20.9	31.1	13.3	53.4	3.6
LnGrp LOS	D	C	C	B	F	A
Approach Vol, veh/h	463			1223	1284	
Approach Delay, s/veh	38.5			14.6	45.5	
Approach LOS	D			B	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.9	39.0				46.9	11.0
Change Period (Y+Rc), s	4.0	7.0				7.0	4.2
Max Green Setting (Gmax), s	6.0	32.0				42.0	6.8
Max Q Clear Time (g_c+I1), s	5.0	34.0				29.5	7.9
Green Ext Time (p_c), s	0.0	0.0				2.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	31.7
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	45	21	33	1204	773	50
Future Vol, veh/h	45	21	33	1204	773	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	85	690	-	-	280
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	23	36	1309	840	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2221	840	840	0	-	0
Stage 1	840	-	-	-	-	-
Stage 2	1381	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 48	365	795	-	-	0
Stage 1	424	-	-	-	-	0
Stage 2	233	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 46	365	795	-	-	-
Mov Cap-2 Maneuver	~ 46	-	-	-	-	-
Stage 1	405	-	-	-	-	-
Stage 2	233	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	203.7	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	795	-	46	365	-
HCM Lane V/C Ratio	0.045	-	1.063	0.063	-
HCM Control Delay (s)	9.7	-	291.5	15.5	-
HCM Lane LOS	A	-	F	C	-
HCM 95th %tile Q(veh)	0.1	-	4.5	0.2	-

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

Appendix B

PROPOSED GENERAL PLAN LOS OUTPUT

Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	162	51	102	233	52	114
Future Vol, veh/h	162	51	102	233	52	114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	120	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	176	55	111	253	57	124

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	231	0	679	204
Stage 1	-	-	-	-	204	-
Stage 2	-	-	-	-	475	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1337	-	417	837
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	626	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1337	-	382	837
Mov Cap-2 Maneuver	-	-	-	-	382	-
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	574	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	382	837	-	-	1337	-
HCM Lane V/C Ratio	0.148	0.148	-	-	0.083	-
HCM Control Delay (s)	16.1	10	-	-	7.9	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	0.5	-	-	0.3	-

LANE SUMMARY

Site: 2 [Truckee General Plan (Site Folder: General)]

Intersection 2: I-80 EB On/Off Ramp/ Cold Stream Road/Donner Pass Rd Roundabout
Site Category: Proposed General Plan
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Coldstream Rd													
Lane 1[d]	272	3.0	936	0.290	100	7.7	LOS A	1.5	38.3	Full	1600	0.0	0.0
Approach	272	3.0		0.290		7.7	LOS A	1.5	38.3				
East: Donner Pass Rd													
Lane 1[d]	972	3.0	1120	0.868	100	12.0	LOS D	12.3	314.1	Full	1600	0.0	0.0
Approach	972	3.0		0.868		12.0	LOS D	12.3	314.1				
North: I-80 Ramps													
Lane 1[d]	178	3.0	671	0.266	100	11.7	LOS A	1.7	43.5	Full	1600	0.0	0.0
Approach	178	3.0		0.266		11.7	LOS A	1.7	43.5				
West: Donner Pass Rd													
Lane 1[d]	564	3.0	1106	0.510	100	8.1	LOS A	2.9	74.3	Full	1600	0.0	0.0
Approach	564	3.0		0.510		8.1	LOS A	2.9	74.3				
Intersection	1986	3.0		0.868		10.3	LOS D	12.3	314.1				

Site Level of Service (LOS) Method: Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on degree of saturation per lane.
Intersection and Approach LOS values are based on worst degree of saturation for any lane.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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Intersection	
Int Delay, s/veh	41.9

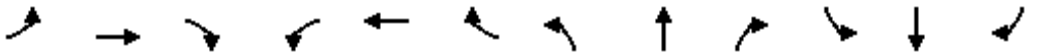
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	523	30	9	673	221	58
Future Vol, veh/h	523	30	9	673	221	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	568	33	10	732	240	63

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	601	0	1337	585
Stage 1	-	-	-	-	585	-
Stage 2	-	-	-	-	752	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	976	-	~ 169	511
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	466	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	976	-	~ 166	511
Mov Cap-2 Maneuver	-	-	-	-	~ 166	-
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	458	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	226.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	166	511	-	-	976	-
HCM Lane V/C Ratio	1.447	0.123	-	-	0.01	-
HCM Control Delay (s)	283	13	-	-	8.7	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	15.2	0.4	-	-	0	-

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	312	379	3	2	451	249	2	2	7	239	0	357
Future Volume (veh/h)	312	379	3	2	451	249	2	2	7	239	0	357
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	339	412	3	2	490	271	2	2	8	260	0	388
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	742	5	402	748	634	135	93	634	180	0	634
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.00	0.40
Sat Flow, veh/h	705	1854	14	971	1870	1585	0	233	1585	0	0	1585
Grp Volume(v), veh/h	339	0	415	2	490	271	4	0	8	260	0	388
Grp Sat Flow(s),veh/h/ln	705	0	1868	971	1870	1585	233	0	1585	0	0	1585
Q Serve(g_s), s	7.5	0.0	6.9	0.1	8.5	4.9	0.0	0.0	0.1	0.0	0.0	7.8
Cycle Q Clear(g_c), s	16.0	0.0	6.9	6.9	8.5	4.9	16.0	0.0	0.1	16.0	0.0	7.8
Prop In Lane	1.00		0.01	1.00		1.00	0.50		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	0	747	402	748	634	228	0	634	180	0	634
V/C Ratio(X)	1.09	0.00	0.56	0.00	0.65	0.43	0.02	0.00	0.01	1.44	0.00	0.61
Avail Cap(c_a), veh/h	312	0	747	402	748	634	228	0	634	180	0	634
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.4	0.0	9.3	11.9	9.8	8.7	9.7	0.0	7.2	20.0	0.0	9.5
Incr Delay (d2), s/veh	76.3	0.0	3.0	0.0	4.4	2.1	0.1	0.0	0.0	228.5	0.0	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	0.0	2.6	0.0	3.4	1.6	0.0	0.0	0.0	12.9	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.7	0.0	12.2	11.9	14.2	10.8	9.8	0.0	7.3	248.5	0.0	13.9
LnGrp LOS	F	A	B	B	B	B	A	A	A	F	A	B
Approach Vol, veh/h		754			763			12			648	
Approach Delay, s/veh		49.3			13.0			8.1			108.0	
Approach LOS		D			B			A			F	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.0		20.0		20.0		20.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0				
Max Q Clear Time (g_c+I1), s		18.0		10.5		18.0		18.0				
Green Ext Time (p_c), s		0.0		2.0		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			53.8									
HCM 6th LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	437	388	346	380	67	277	111	314	44	101	77
Future Volume (veh/h)	120	437	388	346	380	67	277	111	314	44	101	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	130	475	422	376	413	73	301	121	341	48	110	84
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	163	374	634	334	554	470	356	374	317	144	334	262
Arrive On Green	0.09	0.20	0.20	0.19	0.30	0.30	0.20	0.20	0.20	0.21	0.21	0.21
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	680	1572	1233
Grp Volume(v), veh/h	130	475	422	376	413	73	301	121	341	130	0	112
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1836	0	1649
Q Serve(g_s), s	5.7	16.0	16.0	15.0	16.0	2.7	13.0	4.4	16.0	4.8	0.0	4.6
Cycle Q Clear(g_c), s	5.7	16.0	16.0	15.0	16.0	2.7	13.0	4.4	16.0	4.8	0.0	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.37		0.75
Lane Grp Cap(c), veh/h	163	374	634	334	554	470	356	374	317	390	0	350
V/C Ratio(X)	0.80	1.27	0.67	1.13	0.75	0.16	0.84	0.32	1.08	0.33	0.00	0.32
Avail Cap(c_a), veh/h	178	374	634	334	554	470	356	374	317	390	0	350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.6	32.0	19.2	32.5	25.4	20.8	30.8	27.4	32.0	26.7	0.0	26.6
Incr Delay (d2), s/veh	20.7	140.9	2.6	87.7	5.5	0.2	16.8	0.5	72.1	2.3	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	21.6	8.6	14.4	7.6	1.0	7.0	2.0	12.3	2.3	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.3	172.9	21.8	120.2	30.9	20.9	47.6	27.9	104.1	29.0	0.0	29.0
LnGrp LOS	E	F	C	F	C	C	D	C	F	C	A	C
Approach Vol, veh/h		1027			862			763			242	
Approach Delay, s/veh		96.1			69.0			69.7			29.0	
Approach LOS		F			E			E			C	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	21.0	11.3	27.7	20.0	19.0	20.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	8.0	23.0	16.0	15.0	16.0
Max Q Clear Time (g_c+I1), s	6.8	7.7	18.0	18.0	17.0	18.0
Green Ext Time (p_c), s	0.9	0.0	1.3	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	75.5
HCM 6th LOS	E

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	0	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	0	678	904	966
Demand Flow Rate, veh/h	0	692	922	986
Vehicles Circulating, veh/h	1097	922	0	506
Vehicles Exiting, veh/h	395	0	1097	1108
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	0.0	20.7	5.6	12.0
Approach LOS	-	C	A	B

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	R	LT	TR	LT	TR
Assumed Moves	LT	R	LT	TR	LT	TR
RT Channelized						
Lane Util	0.295	0.705	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	204	488	433	489	463	523
Cap Entry Lane, veh/h	578	649	1350	1420	847	924
Entry HV Adj Factor	0.980	0.980	0.981	0.980	0.981	0.979
Flow Entry, veh/h	200	478	425	479	454	512
Cap Entry, veh/h	567	635	1324	1391	831	905
V/C Ratio	0.353	0.753	0.321	0.344	0.546	0.566
Control Delay, s/veh	11.5	24.6	5.6	5.7	12.1	11.9
LOS	B	C	A	A	B	B
95th %tile Queue, veh	2	7	1	2	3	4

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	2	0	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	416	0	1314	1123
Demand Flow Rate, veh/h	424	0	1341	1145
Vehicles Circulating, veh/h	1145	856	470	31
Vehicles Exiting, veh/h	31	955	1099	825
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	14.6	0.0	17.9	6.8
Approach LOS	B	-	C	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LTR	R	LT	TR	LT	TR
Assumed Moves	LTR	R	LT	TR	LT	TR
RT Channelized						
Lane Util	0.469	0.531	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	199	225	630	711	538	607
Cap Entry Lane, veh/h	471	537	876	952	1312	1383
Entry HV Adj Factor	0.982	0.980	0.980	0.979	0.981	0.980
Flow Entry, veh/h	196	220	618	696	528	595
Cap Entry, veh/h	463	526	859	933	1287	1356
V/C Ratio	0.423	0.419	0.719	0.747	0.410	0.439
Control Delay, s/veh	15.5	13.8	17.7	18.0	6.8	6.9
LOS	C	B	C	C	A	A
95th %tile Queue, veh	2	2	6	7	2	2



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	415	48	226	897	571	503
Future Volume (veh/h)	415	48	226	897	571	503
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	451	52	246	975	621	547
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1382	634	311	1421	1421	634
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	3456	1585	481	3647	3647	1585
Grp Volume(v), veh/h	451	52	246	975	621	547
Grp Sat Flow(s),veh/h/ln	1728	1585	481	1777	1777	1585
Q Serve(g_s), s	3.6	0.8	10.9	9.1	5.1	12.6
Cycle Q Clear(g_c), s	3.6	0.8	16.0	9.1	5.1	12.6
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	1382	634	311	1421	1421	634
V/C Ratio(X)	0.33	0.08	0.79	0.69	0.44	0.86
Avail Cap(c_a), veh/h	1382	634	311	1421	1421	634
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	7.4	17.1	9.9	8.7	11.0
Incr Delay (d2), s/veh	0.6	0.3	18.3	2.7	1.0	14.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.2	3.6	3.1	1.6	5.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.9	7.7	35.4	12.6	9.7	25.5
LnGrp LOS	A	A	D	B	A	C
Approach Vol, veh/h	503			1221	1168	
Approach Delay, s/veh	8.8			17.2	17.1	
Approach LOS	A			B	B	

Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	20.0			20.0	20.0
Change Period (Y+Rc), s	4.0			4.0	4.0
Max Green Setting (Gmax), s	16.0			16.0	16.0
Max Q Clear Time (g_c+I1), s	14.6			18.0	5.6
Green Ext Time (p_c), s	0.9			0.0	1.4

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	124	235	655	235	219	729
Future Volume (veh/h)	124	235	655	235	219	729
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	135	255	712	255	238	792
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	713	634	1421	634	325	748
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1781	1585	3647	1585	581	1870
Grp Volume(v), veh/h	135	255	712	255	238	792
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	581	1870
Q Serve(g_s), s	2.0	4.6	6.0	4.6	10.0	16.0
Cycle Q Clear(g_c), s	2.0	4.6	6.0	4.6	16.0	16.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	713	634	1421	634	325	748
V/C Ratio(X)	0.19	0.40	0.50	0.40	0.73	1.06
Avail Cap(c_a), veh/h	713	634	1421	634	325	748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.8	8.6	9.0	8.6	17.0	12.0
Incr Delay (d2), s/veh	0.6	1.9	1.3	1.9	13.6	49.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.5	1.9	1.5	3.2	15.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.4	10.5	10.3	10.5	30.6	61.5
LnGrp LOS	A	B	B	B	C	F
Approach Vol, veh/h	390		967			1030
Approach Delay, s/veh	9.8		10.3			54.4
Approach LOS	A		B			D

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	20.0		20.0		20.0
Change Period (Y+Rc), s	4.0		4.0		4.0
Max Green Setting (Gmax), s	16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s	18.0		6.6		8.0
Green Ext Time (p_c), s	0.0		0.9		3.6

Intersection Summary	
HCM 6th Ctrl Delay	29.2
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	40.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	172	437	3	3	184	182	2	0	3	299	0	258
Future Vol, veh/h	172	437	3	3	184	182	2	0	3	299	0	258
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	120	-	-	-	-	-	-	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	191	486	3	3	204	202	2	0	3	332	0	287

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	406	0	0	489	0	0	1181	1282	488	1182	1182	305
Stage 1	-	-	-	-	-	-	870	870	-	311	311	-
Stage 2	-	-	-	-	-	-	311	412	-	871	871	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1153	-	-	1074	-	-	167	165	580	~ 167	190	735
Stage 1	-	-	-	-	-	-	346	369	-	699	658	-
Stage 2	-	-	-	-	-	-	699	594	-	346	368	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1153	-	-	1074	-	-	89	137	580	~ 144	158	735
Mov Cap-2 Maneuver	-	-	-	-	-	-	89	137	-	~ 260	280	-
Stage 1	-	-	-	-	-	-	289	308	-	583	655	-
Stage 2	-	-	-	-	-	-	425	592	-	~ 287	307	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.1	25.5	108.2
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	181	1153	-	-	1074	-	-	260	735
HCM Lane V/C Ratio	0.031	0.166	-	-	0.003	-	-	1.278	0.39
HCM Control Delay (s)	25.5	8.7	-	-	8.4	0	-	190.3	13
HCM Lane LOS	D	A	-	-	A	A	-	F	B
HCM 95th %tile Q(veh)	0.1	0.6	-	-	0	-	-	16.6	1.9

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

Intersection	
Intersection Delay, s/veh	22.2
Intersection LOS	C

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	945	763	452
Demand Flow Rate, veh/h	964	779	461
Vehicles Circulating, veh/h	233	313	655
Vehicles Exiting, veh/h	859	803	542
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	26.9	19.0	17.6
Approach LOS	D	C	C

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	964	779	461
Cap Entry Lane, veh/h	1088	1003	707
Entry HV Adj Factor	0.980	0.980	0.980
Flow Entry, veh/h	945	763	452
Cap Entry, veh/h	1067	983	694
V/C Ratio	0.886	0.777	0.652
Control Delay, s/veh	26.9	19.0	17.6
LOS	D	C	C
95th %tile Queue, veh	13	8	5

HCM 6th Edition methodology does not support clustered intersections.

HCM 6th Edition methodology does not support clustered intersections.

10: External Performance by approach

Approach	WB	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	7.0	7.0
Avg Speed (mph)	22	22
Vehicles Entered	394	394
Vehicles Exited	392	392
Hourly Exit Rate	392	392
Input Volume	519	519
% of Volume	76	76

11: External Performance by approach

Approach	WB	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	1.0	1.0
Avg Speed (mph)	28	28
Vehicles Entered	411	411
Vehicles Exited	410	410
Hourly Exit Rate	410	410
Input Volume	484	484
% of Volume	85	85

12: Bridge St & Donner Pass Rd/Truckee Way Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	322.1	301.5	343.5
Total Del/Veh (s)	87.6	96.6	100.8	47.8	26.8	18.1	24.7	18.6	10.0	65.0	62.6	43.4
Avg Speed (mph)	5	4	4	7	10	11	6	7	10	1	1	1
Vehicles Entered	49	229	284	287	171	24	198	99	328	12	137	42
Vehicles Exited	48	222	277	284	171	25	199	100	330	12	136	42
Hourly Exit Rate	48	222	277	284	171	25	199	100	330	12	136	42
Input Volume	51	228	279	286	177	24	260	123	394	13	163	47
% of Volume	94	97	99	99	97	104	77	81	84	92	83	89

12: Bridge St & Donner Pass Rd/Truckee Way Performance by movement

Movement	All
Denied Del/Veh (s)	35.9
Total Del/Veh (s)	51.0
Avg Speed (mph)	5
Vehicles Entered	1860
Vehicles Exited	1846
Hourly Exit Rate	1846
Input Volume	2045
% of Volume	90

13: Bridge St & West River St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.9	2.1	1.9	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	173.4	177.6	144.9	269.4	158.9	5.8	108.6	63.6	62.6	63.9	29.2	25.3
Avg Speed (mph)	8	7	9	3	4	22	3	5	5	3	5	6
Vehicles Entered	175	33	742	24	11	83	348	355	23	43	614	40
Vehicles Exited	159	30	686	25	12	84	342	356	22	43	613	40
Hourly Exit Rate	159	30	686	25	12	84	342	356	22	43	613	40
Input Volume	178	33	731	24	12	78	462	491	29	42	641	45
% of Volume	89	91	94	104	100	108	74	73	76	102	96	89

13: Bridge St & West River St Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	95.0
Avg Speed (mph)	7
Vehicles Entered	2491
Vehicles Exited	2412
Hourly Exit Rate	2412
Input Volume	2766
% of Volume	87

27: External Performance by approach

Approach	EB	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	2.5	2.5
Avg Speed (mph)	32	32
Vehicles Entered	1281	1281
Vehicles Exited	1281	1281
Hourly Exit Rate	1281	1281
Input Volume	1352	1352
% of Volume	95	95

Total Zone Performance

Denied Del/Veh (s)	52.9
Total Del/Veh (s)	148.7
Avg Speed (mph)	10
Vehicles Entered	1285
Vehicles Exited	2126
Hourly Exit Rate	2126
Input Volume	7166
% of Volume	30

Intersection: 12: Bridge St & Donner Pass Rd/Truckee Way

Movement	EB	EB	B42	B74	WB	WB	B77	NB	NB	SB
Directions Served	LT	R	T	T	L	TR	T	L	TR	LTR
Maximum Queue (ft)	692	192	270	89	124	484	56	174	233	116
Average Queue (ft)	441	173	152	19	114	218	3	84	115	91
95th Queue (ft)	875	237	701	141	144	460	41	159	216	106
Link Distance (ft)	730		925	672		611	241	232	232	
Upstream Blk Time (%)	19		9			1	0	0	1	
Queuing Penalty (veh)	0		0			0	0	0	2	
Storage Bay Dist (ft)		167			100					
Storage Blk Time (%)	18	34			38	3				
Queuing Penalty (veh)	51	95			76	9				

Intersection: 13: Bridge St & West River St

Movement	EB	EB	WB	WB	NB	NB	B47	SB	SB
Directions Served	LT	R	LT	R	L	TR	T	L	TR
Maximum Queue (ft)	2452	145	164	67	124	597	1588	74	255
Average Queue (ft)	1305	145	66	31	123	560	1326	34	237
95th Queue (ft)	2579	146	169	57	126	631	2099	74	256
Link Distance (ft)	2790		1114	1114		492	1534		232
Upstream Blk Time (%)	4					62	71		30
Queuing Penalty (veh)	0					0	0		219
Storage Bay Dist (ft)		120			100			50	
Storage Blk Time (%)	22	40			65	0		5	51
Queuing Penalty (veh)	161	84			339	2		33	22

Zone Summary

Zone wide Queuing Penalty: 1093

Intersection	
Int Delay, s/veh	7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	582	295	366	363	5	214
Future Vol, veh/h	582	295	366	363	5	214
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	240	-	0	230
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	6	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	600	304	377	374	5	221

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	904	0	1880	752
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	1128	-
Critical Hdwy	-	-	4.12	-	7.62	6.82
Critical Hdwy Stg 1	-	-	-	-	6.62	-
Critical Hdwy Stg 2	-	-	-	-	6.62	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	752	-	42	362
Stage 1	-	-	-	-	362	-
Stage 2	-	-	-	-	212	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	752	-	21	362
Mov Cap-2 Maneuver	-	-	-	-	21	-
Stage 1	-	-	-	-	362	-
Stage 2	-	-	-	-	106	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	33.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	21	362	-	-	752	-
HCM Lane V/C Ratio	0.245	0.609	-	-	0.502	-
HCM Control Delay (s)	225.2	29.3	-	-	14.5	-
HCM Lane LOS	F	D	-	-	B	-
HCM 95th %tile Q(veh)	0.7	3.8	-	-	2.8	-

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	49	146	779	867
Demand Flow Rate, veh/h	50	149	795	884
Vehicles Circulating, veh/h	917	801	111	85
Vehicles Exiting, veh/h	52	105	856	865
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.9	9.2	11.5	12.8
Approach LOS	A	A	B	B

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	50	149	795	884
Cap Entry Lane, veh/h	542	610	1232	1265
Entry HV Adj Factor	0.980	0.980	0.980	0.981
Flow Entry, veh/h	49	146	779	867
Cap Entry, veh/h	531	597	1208	1241
V/C Ratio	0.092	0.244	0.645	0.699
Control Delay, s/veh	7.9	9.2	11.5	12.8
LOS	A	A	B	B
95th %tile Queue, veh	0	1	5	6

Intersection	
Int Delay, s/veh	140.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	321	220	0	886	544	0
Future Vol, veh/h	321	220	0	886	544	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	140	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	345	237	0	953	585	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1538	585	-	0	-	0
Stage 1	585	-	-	-	-	-
Stage 2	953	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 127	511	0	-	-	0
Stage 1	557	-	0	-	-	0
Stage 2	375	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 127	511	-	-	-	-
Mov Cap-2 Maneuver	~ 127	-	-	-	-	-
Stage 1	557	-	-	-	-	-
Stage 2	375	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 511	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	-	127	511	-
HCM Lane V/C Ratio	-	2.718	0.463	-
HCM Control Delay (s)	-	$ 848.9	18	-
HCM Lane LOS	-	F	C	-
HCM 95th %tile Q(veh)	-	31.4	2.4	-

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

Intersection	
Intersection Delay, s/veh	105.3
Intersection LOS	F

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	757	87	1136	914
Demand Flow Rate, veh/h	772	88	1159	932
Vehicles Circulating, veh/h	668	1522	432	399
Vehicles Exiting, veh/h	663	68	1008	1211
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	90.5	19.3	162.2	55.1
Approach LOS	F	C	F	F

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	772	88	1159	932
Cap Entry Lane, veh/h	698	292	888	919
Entry HV Adj Factor	0.980	0.986	0.980	0.981
Flow Entry, veh/h	757	87	1136	914
Cap Entry, veh/h	684	288	870	901
V/C Ratio	1.106	0.301	1.305	1.015
Control Delay, s/veh	90.5	19.3	162.2	55.1
LOS	F	C	F	F
95th %tile Queue, veh	22	1	43	19

Intersection	
Intersection Delay, s/veh	12.6
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	2	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	1072	196	1098	576
Demand Flow Rate, veh/h	1093	200	1120	587
Vehicles Circulating, veh/h	410	1317	399	784
Vehicles Exiting, veh/h	961	202	1104	733
Ped Vol Crossing Leg, #/h	1	1	2	0
Ped Cap Adj	0.999	1.000	0.998	1.000
Approach Delay, s/veh	13.1	15.9	12.1	11.2
Approach LOS	B	C	B	B

Lane	Left	Right	Left	Left	Right	Left	Right
Designated Moves	LT	R	LTR	LT	TR	LT	TR
Assumed Moves	LT	R	LTR	L	TR	LT	TR
RT Channelized							
Lane Util	0.355	0.645	1.000	0.536	0.464	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	388	705	200	600	520	276	311
Cap Entry Lane, veh/h	926	1002	464	935	1012	656	729
Entry HV Adj Factor	0.981	0.980	0.982	0.980	0.981	0.981	0.982
Flow Entry, veh/h	381	691	196	588	510	271	305
Cap Entry, veh/h	908	982	455	915	991	644	716
V/C Ratio	0.419	0.704	0.431	0.643	0.515	0.421	0.426
Control Delay, s/veh	8.9	15.4	15.9	13.9	10.0	11.7	10.8
LOS	A	C	C	B	A	B	B
95th %tile Queue, veh	2	6	2	5	3	2	2

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	98	8	354	180	2	119
Future Vol, veh/h	98	8	354	180	2	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	9	385	196	2	129

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	616	483	0	0	581	0
Stage 1	483	-	-	-	-	-
Stage 2	133	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	454	584	-	-	993	-
Stage 1	620	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	453	584	-	-	993	-
Mov Cap-2 Maneuver	453	-	-	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	891	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.4	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	461	993	-
HCM Lane V/C Ratio	-	-	0.25	0.002	-
HCM Control Delay (s)	-	-	15.4	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1	0	-

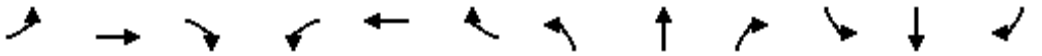
Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	39	40	27	19	6	3	189	41	1	70	10
Future Vol, veh/h	29	39	40	27	19	6	3	189	41	1	70	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	42	43	29	21	7	3	205	45	1	76	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	332	340	82	360	323	228	87	0	0	250	0	0
Stage 1	84	84	-	234	234	-	-	-	-	-	-	-
Stage 2	248	256	-	126	89	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	621	582	978	596	595	811	1509	-	-	1316	-	-
Stage 1	924	825	-	769	711	-	-	-	-	-	-	-
Stage 2	756	696	-	878	821	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	598	580	978	536	593	811	1509	-	-	1316	-	-
Mov Cap-2 Maneuver	598	580	-	536	593	-	-	-	-	-	-	-
Stage 1	922	824	-	767	710	-	-	-	-	-	-	-
Stage 2	727	695	-	795	820	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	11.8	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1509	-	-	588	978	558	811	1316	-	-
HCM Lane V/C Ratio	0.002	-	-	0.126	0.044	0.09	0.008	0.001	-	-
HCM Control Delay (s)	7.4	0	-	12	8.9	12.1	9.5	7.7	0	-
HCM Lane LOS	A	A	-	B	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0.3	0	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	306	7	223	499	753	0	0	995	65
Future Volume (veh/h)	0	0	0	306	7	223	499	753	0	0	995	65
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				315	7	230	514	776	0	0	1026	67
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				376	8	342	356	1205	0	0	731	619
Arrive On Green				0.22	0.22	0.22	0.20	0.64	0.00	0.00	0.39	0.39
Sat Flow, veh/h				1744	39	1585	1781	1870	0	0	1870	1585
Grp Volume(v), veh/h				322	0	230	514	776	0	0	1026	67
Grp Sat Flow(s),veh/h/ln				1783	0	1585	1781	1870	0	0	1870	1585
Q Serve(g_s), s				13.0	0.0	10.0	15.0	18.9	0.0	0.0	29.3	2.0
Cycle Q Clear(g_c), s				13.0	0.0	10.0	15.0	18.9	0.0	0.0	29.3	2.0
Prop In Lane				0.98		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				385	0	342	356	1205	0	0	731	619
V/C Ratio(X)				0.84	0.00	0.67	1.44	0.64	0.00	0.00	1.40	0.11
Avail Cap(c_a), veh/h				606	0	539	356	1205	0	0	731	619
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				28.1	0.0	27.0	30.0	8.1	0.0	0.0	22.8	14.5
Incr Delay (d2), s/veh				3.2	0.0	0.9	200.7	0.2	0.0	0.0	189.8	0.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.5	0.0	3.6	25.5	4.6	0.0	0.0	49.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.3	0.0	27.8	230.7	8.4	0.0	0.0	212.6	14.9
LnGrp LOS				C	A	C	F	A	A	A	F	B
Approach Vol, veh/h					552			1290			1093	
Approach Delay, s/veh					29.9			97.0			200.5	
Approach LOS					C			F			F	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	54.3		19.0	35.3		20.7						
Change Period (Y+Rc), s	6.0		4.0	6.0		4.5						
Max Green Setting (Gmax), s	39.0		15.0	18.0		25.5						
Max Q Clear Time (g_c+I1), s	20.9		17.0	31.3		15.0						
Green Ext Time (p_c), s	2.7		0.0	0.0		1.2						

Intersection Summary		
HCM 6th Ctrl Delay	122.9	
HCM 6th LOS	F	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	0	353	0	0	0	0	1188	652	486	800	0
Future Volume (veh/h)	84	0	353	0	0	0	0	1188	652	486	800	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	91	0	0				0	1291	709	528	870	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	123	0					0	949	804	392	1447	0
Arrive On Green	0.07	0.00	0.00				0.00	0.51	0.51	0.44	1.00	0.00
Sat Flow, veh/h	1781	0	1585				0	1870	1585	1781	1870	0
Grp Volume(v), veh/h	91	0	0				0	1291	709	528	870	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1870	1585	1781	1870	0
Q Serve(g_s), s	3.8	0.0	0.0				0.0	38.0	29.9	16.5	0.0	0.0
Cycle Q Clear(g_c), s	3.8	0.0	0.0				0.0	38.0	29.9	16.5	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	123	0					0	949	804	392	1447	0
V/C Ratio(X)	0.74	0.00					0.00	1.36	0.88	1.35	0.60	0.00
Avail Cap(c_a), veh/h	515	0					0	949	804	392	1447	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	34.3	0.0	0.0				0.0	18.5	16.5	21.0	0.0	0.0
Incr Delay (d2), s/veh	8.5	0.0	0.0				0.0	169.2	13.4	157.9	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0				0.0	56.6	11.0	21.3	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.8	0.0	0.0				0.0	187.7	29.8	178.9	0.2	0.0
LnGrp LOS	D	A					A	F	C	F	A	A
Approach Vol, veh/h		91	A					2000			1398	
Approach Delay, s/veh		42.8						131.8			67.7	
Approach LOS		D						F			E	

Timer - Assigned Phs	1	2	4	6
Phs Duration (G+Y+Rc), s	20.0	44.5	10.5	64.5
Change Period (Y+Rc), s	3.5	6.5	5.3	6.5
Max Green Setting (Gmax), s	16.5	21.5	21.7	41.5
Max Q Clear Time (g_c+I1), s	18.5	40.0	5.8	2.0
Green Ext Time (p_c), s	0.0	0.0	0.3	14.5

Intersection Summary	
HCM 6th Ctrl Delay	103.8
HCM 6th LOS	F

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	988	5	143	832	6	5
Future Vol, veh/h	988	5	143	832	6	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1074	5	155	904	7	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1079	0	2291	1077
Stage 1	-	-	-	-	1077	-
Stage 2	-	-	-	-	1214	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	646	-	43	266
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	281	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	646	-	22	266
Mov Cap-2 Maneuver	-	-	-	-	22	-
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	146	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	138.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	38	-	-	646	-
HCM Lane V/C Ratio	0.315	-	-	0.241	-
HCM Control Delay (s)	138.4	-	-	12.3	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	1	-	-	0.9	-

Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	280	307	182	53	62	166
Future Vol, veh/h	280	307	182	53	62	166
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	304	334	198	58	67	180

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	256	0	-	0	1169	227
Stage 1	-	-	-	-	227	-
Stage 2	-	-	-	-	942	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1309	-	-	-	213	812
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	379	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1309	-	-	-	152	812
Mov Cap-2 Maneuver	-	-	-	-	152	-
Stage 1	-	-	-	-	580	-
Stage 2	-	-	-	-	379	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	32
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1309	-	-	-	372
HCM Lane V/C Ratio	0.233	-	-	-	0.666
HCM Control Delay (s)	8.6	0	-	-	32
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.9	-	-	-	4.6

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	24	9	12	16	12	9	82	6	6	131	14
Future Vol, veh/h	10	24	9	12	16	12	9	82	6	6	131	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	26	10	13	17	13	10	89	7	7	142	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	292	280	150	295	284	93	157	0	0	96	0	0
Stage 1	164	164	-	113	113	-	-	-	-	-	-	-
Stage 2	128	116	-	182	171	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	660	628	896	657	625	964	1423	-	-	1498	-	-
Stage 1	838	762	-	892	802	-	-	-	-	-	-	-
Stage 2	876	800	-	820	757	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	632	620	896	623	618	964	1423	-	-	1498	-	-
Mov Cap-2 Maneuver	632	620	-	623	618	-	-	-	-	-	-	-
Stage 1	832	758	-	886	796	-	-	-	-	-	-	-
Stage 2	839	794	-	779	753	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	10.5	0.7	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1423	-	-	666	694	1498	-	-
HCM Lane V/C Ratio	0.007	-	-	0.07	0.063	0.004	-	-
HCM Control Delay (s)	7.5	0	-	10.8	10.5	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	777	312	67	585	159	137
Future Volume (veh/h)	777	312	67	585	159	137
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	827	332	71	622	169	146
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1022	866	337	1022	321	285
Arrive On Green	0.55	0.55	0.55	0.55	0.18	0.18
Sat Flow, veh/h	1870	1585	485	1870	1781	1585
Grp Volume(v), veh/h	827	332	71	622	169	146
Grp Sat Flow(s),veh/h/ln	1870	1585	485	1870	1781	1585
Q Serve(g_s), s	10.5	3.5	4.1	6.6	2.5	2.4
Cycle Q Clear(g_c), s	10.5	3.5	14.6	6.6	2.5	2.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1022	866	337	1022	321	285
V/C Ratio(X)	0.81	0.38	0.21	0.61	0.53	0.51
Avail Cap(c_a), veh/h	1022	866	337	1022	974	866
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.4	3.8	11.3	4.5	10.9	10.8
Incr Delay (d2), s/veh	4.9	0.3	0.3	1.0	1.3	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.3	0.3	0.4	0.8	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.3	4.1	11.6	5.6	12.2	12.3
LnGrp LOS	B	A	B	A	B	B
Approach Vol, veh/h	1159			693	315	
Approach Delay, s/veh	8.5			6.2	12.2	
Approach LOS	A			A	B	

Timer - Assigned Phs		2		4		8
Phs Duration (G+Y+Rc), s		9.3		20.0		20.0
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		4.5		12.5		16.6
Green Ext Time (p_c), s		0.8		2.2		0.0

Intersection Summary		
HCM 6th Ctrl Delay		8.3
HCM 6th LOS		A

Intersection	
Intersection Delay, s/veh	11.5
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	689	773	241	80
Demand Flow Rate, veh/h	702	789	246	81
Vehicles Circulating, veh/h	246	106	643	822
Vehicles Exiting, veh/h	657	783	305	73
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.9	11.2	9.5	7.8
Approach LOS	B	B	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	702	789	246	81
Cap Entry Lane, veh/h	1074	1238	716	597
Entry HV Adj Factor	0.981	0.980	0.979	0.985
Flow Entry, veh/h	689	773	241	80
Cap Entry, veh/h	1053	1214	701	588
V/C Ratio	0.654	0.637	0.343	0.136
Control Delay, s/veh	12.9	11.2	9.5	7.8
LOS	B	B	A	A
95th %tile Queue, veh	5	5	2	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	361	208	264	78	257	388	282	1134	103	277	911	269
Future Volume (veh/h)	361	208	264	78	257	388	282	1134	103	277	911	269
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	384	221	281	83	273	413	300	1206	110	295	969	286
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	162	476	670	204	476	403	300	1063	901	105	859	728
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.17	0.57	0.57	0.06	0.46	0.46
Sat Flow, veh/h	756	1870	1585	896	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	384	221	281	83	273	413	300	1206	110	295	969	286
Grp Sat Flow(s),veh/h/ln	756	1870	1585	896	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	14.0	11.0	13.7	9.5	14.0	28.0	18.5	62.5	3.5	6.5	50.5	13.1
Cycle Q Clear(g_c), s	28.0	11.0	13.7	20.5	14.0	28.0	18.5	62.5	3.5	6.5	50.5	13.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	162	476	670	204	476	403	300	1063	901	105	859	728
V/C Ratio(X)	2.38	0.46	0.42	0.41	0.57	1.02	1.00	1.13	0.12	2.80	1.13	0.39
Avail Cap(c_a), veh/h	162	476	670	204	476	403	300	1063	901	105	859	728
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.8	34.7	22.3	43.3	35.8	41.0	45.8	23.7	11.0	51.8	29.8	19.6
Incr Delay (d2), s/veh	638.2	1.0	0.6	0.5	1.1	51.0	52.3	72.6	0.0	837.0	72.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	38.0	4.9	4.9	2.1	6.3	16.1	12.1	44.0	1.1	27.2	37.1	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	689.1	35.7	22.9	43.8	36.9	92.0	98.1	96.3	11.0	888.7	102.3	19.8
LnGrp LOS	F	D	C	D	D	F	F	F	B	F	F	B
Approach Vol, veh/h		886			769			1616			1550	
Approach Delay, s/veh		314.8			67.2			90.9			236.7	
Approach LOS		F			E			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.0	56.5		31.5	10.0	68.5		31.5
Change Period (Y+Rc), s	3.5	6.0		3.5	3.5	6.0		3.5
Max Green Setting (Gmax), s	18.5	50.5		28.0	6.5	62.5		28.0
Max Q Clear Time (g_c+I1), s	20.5	52.5		30.0	8.5	64.5		30.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	175.1
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	339	129	89	29	10	95	20	1169	92	13	1079	153
Future Volume (veh/h)	339	129	89	29	10	95	20	1169	92	13	1079	153
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	368	140	97	32	11	103	22	1271	100	14	1173	166
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	0	528	54	11	528	31	878	69	22	950	805
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.02	0.51	0.51	0.01	0.51	0.51
Sat Flow, veh/h	0	0	1585	0	33	1585	1781	1711	135	1781	1870	1585
Grp Volume(v), veh/h	508	0	97	43	0	103	22	0	1371	14	1173	166
Grp Sat Flow(s),veh/h/ln	0	0	1585	33	0	1585	1781	0	1846	1781	1870	1585
Q Serve(g_s), s	0.0	0.0	5.0	0.0	0.0	5.3	1.4	0.0	59.1	0.9	58.5	6.6
Cycle Q Clear(g_c), s	38.4	0.0	5.0	38.4	0.0	5.3	1.4	0.0	59.1	0.9	58.5	6.6
Prop In Lane	0.72		1.00	0.74		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	54	0	528	66	0	528	31	0	947	22	950	805
V/C Ratio(X)	9.43	0.00	0.18	0.65	0.00	0.19	0.70	0.00	1.45	0.63	1.24	0.21
Avail Cap(c_a), veh/h	54	0	528	66	0	528	124	0	947	124	950	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.6	0.0	27.3	47.7	0.0	27.4	56.3	0.0	28.1	56.6	28.4	15.6
Incr Delay (d2), s/veh	3829.9	0.0	0.1	17.1	0.0	0.1	10.2	0.0	207.8	10.2	115.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	58.9	0.0	1.8	1.6	0.0	2.0	0.7	0.0	77.1	0.5	53.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3887.6	0.0	27.3	64.9	0.0	27.5	66.5	0.0	235.8	66.9	143.4	15.6
LnGrp LOS	F	A	C	E	A	C	E	A	F	E	F	B
Approach Vol, veh/h		605			146			1393			1353	
Approach Delay, s/veh		3268.6			38.5			233.1			126.9	
Approach LOS		F			D			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.0	65.5		43.7	5.4	66.1		43.7
Change Period (Y+Rc), s	4.0	* 7		* 5.3	4.0	7.0		5.3
Max Green Setting (Gmax), s	8.0	* 59		* 38	8.0	58.0		37.7
Max Q Clear Time (g_c+I1), s	3.4	60.5		40.4	2.9	61.1		40.4
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	709.1
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	314	92	82	1000	957	179
Future Volume (veh/h)	314	92	82	1000	957	179
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	357	105	93	1136	1088	203
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	406	292	119	1289	1034	1063
Arrive On Green	0.12	0.12	0.07	0.69	0.55	0.55
Sat Flow, veh/h	3456	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	357	105	93	1136	1088	203
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1870	1870	1585
Q Serve(g_s), s	5.9	3.3	3.0	27.8	32.0	2.8
Cycle Q Clear(g_c), s	5.9	3.3	3.0	27.8	32.0	2.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	406	292	119	1289	1034	1063
V/C Ratio(X)	0.88	0.36	0.78	0.88	1.05	0.19
Avail Cap(c_a), veh/h	406	292	185	1358	1034	1063
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	20.6	26.6	7.1	12.9	3.6
Incr Delay (d2), s/veh	18.6	0.3	4.5	6.5	42.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	1.2	1.2	5.2	19.6	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.8	20.9	31.1	13.6	55.6	3.6
LnGrp LOS	D	C	C	B	F	A
Approach Vol, veh/h	462			1229	1291	
Approach Delay, s/veh	38.6			14.9	47.4	
Approach LOS	D			B	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.9	39.0				46.9	11.0
Change Period (Y+Rc), s	4.0	7.0				7.0	4.2
Max Green Setting (Gmax), s	6.0	32.0				42.0	6.8
Max Q Clear Time (g_c+I1), s	5.0	34.0				29.8	7.9
Green Ext Time (p_c), s	0.0	0.0				2.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	21	33	1210	779	50
Future Vol, veh/h	44	21	33	1210	779	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	85	690	-	-	280
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	23	36	1315	847	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2234	847	847	0	-	0
Stage 1	847	-	-	-	-	-
Stage 2	1387	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 47	362	790	-	-	0
Stage 1	420	-	-	-	-	0
Stage 2	232	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 45	362	790	-	-	-
Mov Cap-2 Maneuver	~ 45	-	-	-	-	-
Stage 1	401	-	-	-	-	-
Stage 2	232	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	204.9	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	790	-	45	362	-
HCM Lane V/C Ratio	0.045	-	1.063	0.063	-
HCM Control Delay (s)	9.8	-	295.2	15.6	-
HCM Lane LOS	A	-	F	C	-
HCM 95th %tile Q(veh)	0.1	-	4.4	0.2	-

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

Appendix C

EXISTING GENERAL PLAN MITIGATED LOS OUTPUT

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	594	725	298
Demand Flow Rate, veh/h	606	739	304
Vehicles Circulating, veh/h	10	242	573
Vehicles Exiting, veh/h	971	635	43
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.0	13.9	9.8
Approach LOS	A	B	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	606	739	304
Cap Entry Lane, veh/h	1366	1078	769
Entry HV Adj Factor	0.980	0.981	0.980
Flow Entry, veh/h	594	725	298
Cap Entry, veh/h	1338	1057	754
V/C Ratio	0.444	0.685	0.395
Control Delay, s/veh	7.0	13.9	9.8
LOS	A	B	A
95th %tile Queue, veh	2	6	2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	434	376	332	375	66	263	105	302	44	90	74
Future Volume (veh/h)	119	434	376	332	375	66	263	105	302	44	90	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	129	472	409	361	408	72	286	114	328	48	98	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	711	634	334	555	471	356	374	317	155	318	266
Arrive On Green	0.09	0.20	0.20	0.19	0.30	0.30	0.20	0.20	0.20	0.21	0.21	0.21
Sat Flow, veh/h	1781	3554	1585	1781	1870	1585	1781	1870	1585	728	1498	1253
Grp Volume(v), veh/h	129	472	409	361	408	72	286	114	328	121	0	105
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1870	1585	1834	0	1645
Q Serve(g_s), s	5.7	9.8	16.0	15.0	15.7	2.7	12.2	4.2	16.0	4.4	0.0	4.3
Cycle Q Clear(g_c), s	5.7	9.8	16.0	15.0	15.7	2.7	12.2	4.2	16.0	4.4	0.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.40		0.76
Lane Grp Cap(c), veh/h	161	711	634	334	555	471	356	374	317	390	0	350
V/C Ratio(X)	0.80	0.66	0.65	1.08	0.73	0.15	0.80	0.30	1.03	0.31	0.00	0.30
Avail Cap(c_a), veh/h	178	711	634	334	555	471	356	374	317	390	0	350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.7	29.5	19.2	32.5	25.3	20.7	30.5	27.3	32.0	26.6	0.0	26.5
Incr Delay (d2), s/veh	20.5	2.3	2.3	72.5	5.0	0.1	12.5	0.5	59.8	2.1	0.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	4.3	8.3	13.0	7.4	1.0	6.3	1.9	11.2	2.1	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.2	31.9	21.5	105.0	30.3	20.9	43.0	27.7	91.8	28.6	0.0	28.7
LnGrp LOS	E	C	C	F	C	C	D	C	F	C	A	C
Approach Vol, veh/h		1010			841			728			226	
Approach Delay, s/veh		30.7			61.6			62.6			28.7	
Approach LOS		C			E			E			C	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	21.0	11.3	27.7	20.0	19.0	20.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	8.0	23.0	16.0	15.0	16.0
Max Q Clear Time (g_c+I1), s	6.4	7.7	17.7	18.0	17.0	18.0
Green Ext Time (p_c), s	0.9	0.0	1.3	0.0	0.0	0.0

Intersection Summary		
HCM 6th Ctrl Delay		48.1
HCM 6th LOS		D

Intersection	
Intersection Delay, s/veh	10.7
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	641	392	5	578
Demand Flow Rate, veh/h	654	400	5	590
Vehicles Circulating, veh/h	338	185	986	198
Vehicles Exiting, veh/h	450	806	6	387
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	14.3	6.7	7.3	9.4
Approach LOS	B	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	654	400	5	590
Cap Entry Lane, veh/h	978	1143	505	1128
Entry HV Adj Factor	0.980	0.981	1.000	0.980
Flow Entry, veh/h	641	392	5	578
Cap Entry, veh/h	958	1120	505	1105
V/C Ratio	0.669	0.350	0.010	0.523
Control Delay, s/veh	14.3	6.7	7.3	9.4
LOS	B	A	A	A
95th %tile Queue, veh	5	2	0	3

Intersection	
Intersection Delay, s/veh	26.5
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	2
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	48	108	761	1188
Demand Flow Rate, veh/h	49	110	776	1212
Vehicles Circulating, veh/h	1232	1145	430	73
Vehicles Exiting, veh/h	53	61	851	1182
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.3	12.7	29.1	26.6
Approach LOS	B	B	D	D

Lane	Left	Left	Left	Right
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.535
Critical Headway, s	4.976	4.976	4.976	4.544
Entry Flow, veh/h	49	110	776	1212
Cap Entry Lane, veh/h	393	429	890	1329
Entry HV Adj Factor	0.980	0.982	0.981	0.980
Flow Entry, veh/h	48	108	761	1188
Cap Entry, veh/h	385	421	873	1302
V/C Ratio	0.125	0.256	0.872	0.912
Control Delay, s/veh	11.3	12.7	29.1	26.6
LOS	B	B	D	D
95th %tile Queue, veh	0	1	11	15

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Approach	EB	NB	SB
Entry Lanes	1	2	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	572	924	567
Demand Flow Rate, veh/h	584	942	578
Vehicles Circulating, veh/h	578	344	0
Vehicles Exiting, veh/h	0	818	1286
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	15.8	8.9	6.4
Approach LOS	C	A	A

Lane	Left	Left	Right	Left
Designated Moves	LR	LT	TR	T
Assumed Moves	LR	LT	TR	T
RT Channelized				
Lane Util	1.000	0.470	0.530	1.000
Follow-Up Headway, s	2.535	2.667	2.535	2.535
Critical Headway, s	4.328	4.645	4.328	4.328
Entry Flow, veh/h	584	443	499	578
Cap Entry Lane, veh/h	869	984	1060	1420
Entry HV Adj Factor	0.979	0.980	0.981	0.980
Flow Entry, veh/h	572	434	489	567
Cap Entry, veh/h	851	964	1040	1392
V/C Ratio	0.672	0.450	0.471	0.407
Control Delay, s/veh	15.8	9.0	8.9	6.4
LOS	C	A	A	A
95th %tile Queue, veh	5	2	3	2

Intersection	
Intersection Delay, s/veh	11.1
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	2	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	721	88	1102	895
Demand Flow Rate, veh/h	736	89	1124	913
Vehicles Circulating, veh/h	660	1476	419	378
Vehicles Exiting, veh/h	631	67	977	1187
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.8	12.6	12.1	9.1
Approach LOS	B	B	B	A

Lane	Left	Right	Left	Left	Right	Left	Right
Designated Moves	LT	R	LTR	LT	TR	LT	TR
Assumed Moves	LT	R	LTR	LT	TR	LT	TR
RT Channelized							
Lane Util	0.545	0.455	1.000	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	401	335	89	528	596	429	484
Cap Entry Lane, veh/h	736	810	405	918	995	953	1030
Entry HV Adj Factor	0.979	0.979	0.986	0.981	0.980	0.981	0.981
Flow Entry, veh/h	393	328	88	518	584	421	475
Cap Entry, veh/h	720	793	399	900	974	935	1010
V/C Ratio	0.545	0.413	0.220	0.575	0.599	0.450	0.470
Control Delay, s/veh	13.5	9.8	12.6	12.1	12.1	9.2	9.0
LOS	B	A	B	B	B	A	A
95th %tile Queue, veh	3	2	1	4	4	2	3

Intersection						
Intersection Delay, s/veh	20.2					
Intersection LOS	C					

Approach	EB	WB	NB	SB
Entry Lanes	0	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	0	544	1272	1069
Demand Flow Rate, veh/h	0	554	1297	1090
Vehicles Circulating, veh/h	1349	1297	0	841
Vehicles Exiting, veh/h	582	0	1349	1010
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	0.0	29.8	7.3	30.7
Approach LOS	-	D	A	D

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	TR
Assumed Moves	L	TR	LT	TR	LT	TR
RT Channelized						
Lane Util	0.579	0.421	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	321	233	610	687	512	578
Cap Entry Lane, veh/h	409	471	1350	1420	623	695
Entry HV Adj Factor	0.981	0.982	0.980	0.981	0.981	0.980
Flow Entry, veh/h	315	229	598	674	502	566
Cap Entry, veh/h	402	463	1323	1393	611	681
V/C Ratio	0.784	0.494	0.452	0.484	0.822	0.832
Control Delay, s/veh	38.6	17.6	7.2	7.4	31.5	30.0
LOS	E	C	A	A	D	D
95th %tile Queue, veh	7	3	2	3	9	9

Intersection	
Intersection Delay, s/veh	11.5
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	2	0	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	473	0	1982	1378
Demand Flow Rate, veh/h	483	0	2021	1405
Vehicles Circulating, veh/h	1405	1390	621	0
Vehicles Exiting, veh/h	0	528	877	1390
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	2.8	0.0	16.1	7.9
Approach LOS	A	-	C	A

Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right
Designated Moves	LT	TR	R	LT	TR	R	LT	TR
Assumed Moves	L	TR	R	LT	TR	R	LT	TR
RT Channelized			Free			Free		
Lane Util	1.000	0.000		0.470	0.530		0.470	0.530
Follow-Up Headway, s	2.667	2.535		2.667	2.535		2.667	2.535
Critical Headway, s	4.645	4.328	390	4.645	4.328	724	4.645	4.328
Entry Flow, veh/h	93	0	1938	610	687	1938	660	745
Cap Entry Lane, veh/h	371	430	0.980	762	838	0.980	1350	1420
Entry HV Adj Factor	0.978	1.000	382	0.980	0.981	710	0.981	0.980
Flow Entry, veh/h	91	0	1900	598	674	1900	648	730
Cap Entry, veh/h	363	430	0.201	747	822	0.374	1324	1392
V/C Ratio	0.251	0.000	0.0	0.800	0.820	0.0	0.489	0.525
Control Delay, s/veh	14.5	8.4	A	25.1	25.1	A	7.7	8.0
LOS	B	A	1	D	D	2	A	A
95th %tile Queue, veh	1	0		8	9		3	3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	358	208	261	79	258	384	281	1122	104	274	906	267
Future Volume (veh/h)	358	208	261	79	258	384	281	1122	104	274	906	267
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	381	221	278	84	274	409	299	1194	111	291	964	284
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	565	712	884	259	781	604	315	1163	519	286	1106	493
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.18	0.33	0.33	0.16	0.31	0.31
Sat Flow, veh/h	1471	1870	1585	527	2052	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	381	221	278	142	216	409	299	1194	111	291	964	284
Grp Sat Flow(s),veh/h/ln	735	1870	1585	962	1617	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	24.7	8.2	9.3	7.3	9.4	21.3	16.4	32.4	5.0	15.9	25.4	14.9
Cycle Q Clear(g_c), s	34.2	8.2	9.3	15.5	9.4	21.3	16.4	32.4	5.0	15.9	25.4	14.9
Prop In Lane	1.00		1.00	0.59		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	565	712	884	424	616	604	315	1163	519	286	1106	493
V/C Ratio(X)	0.67	0.31	0.31	0.34	0.35	0.68	0.95	1.03	0.21	1.02	0.87	0.58
Avail Cap(c_a), veh/h	580	731	900	436	632	620	315	1163	519	286	1106	493
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	21.5	11.7	24.9	21.9	25.6	40.3	33.3	24.1	41.5	32.2	28.6
Incr Delay (d2), s/veh	3.4	0.3	0.3	0.2	0.1	2.3	37.1	33.4	0.1	57.7	7.5	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.4	3.4	3.0	2.5	3.4	7.8	9.9	17.9	1.7	11.1	11.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.5	21.9	12.0	25.1	22.0	27.9	77.4	66.7	24.2	99.2	39.7	29.7
LnGrp LOS	D	C	B	C	C	C	E	F	C	F	D	C
Approach Vol, veh/h		880			767			1604			1539	
Approach Delay, s/veh		25.5			25.7			65.7			49.1	
Approach LOS		C			C			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.0	36.8		41.2	19.4	38.4		41.2
Change Period (Y+Rc), s	3.5	6.0		3.5	3.5	6.0		3.5
Max Green Setting (Gmax), s	17.5	30.8		38.7	15.9	32.4		38.7
Max Q Clear Time (g_c+I1), s	19.4	27.4		23.3	17.9	34.4		36.2
Green Ext Time (p_c), s	0.0	1.6		2.0	0.0	0.0		1.5

Intersection Summary	
HCM 6th Ctrl Delay	46.6
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	338	129	89	29	10	94	20	1162	93	13	1073	154
Future Volume (veh/h)	338	129	89	29	10	94	20	1162	93	13	1073	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	367	140	97	32	11	102	22	1263	101	14	1166	167
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	365	343	238	294	90	529	34	1498	120	24	1576	703
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.02	0.45	0.45	0.01	0.44	0.44
Sat Flow, veh/h	1280	1029	713	647	271	1585	1781	3333	266	1781	3554	1585
Grp Volume(v), veh/h	367	0	237	43	0	102	22	672	692	14	1166	167
Grp Sat Flow(s),veh/h/ln	1280	0	1742	918	0	1585	1781	1777	1822	1781	1777	1585
Q Serve(g_s), s	17.2	0.0	8.4	1.1	0.0	3.7	1.0	26.8	27.0	0.6	21.8	5.2
Cycle Q Clear(g_c), s	26.7	0.0	8.4	9.5	0.0	3.7	1.0	26.8	27.0	0.6	21.8	5.2
Prop In Lane	1.00		0.41	0.74		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	365	0	581	385	0	529	34	799	819	24	1576	703
V/C Ratio(X)	1.01	0.00	0.41	0.11	0.00	0.19	0.64	0.84	0.84	0.59	0.74	0.24
Avail Cap(c_a), veh/h	365	0	581	396	0	543	89	799	819	89	1576	703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	20.6	21.0	0.0	19.0	39.0	19.5	19.6	39.3	18.4	13.9
Incr Delay (d2), s/veh	48.8	0.0	0.2	0.0	0.0	0.1	7.1	10.4	10.4	8.3	3.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.7	0.0	3.1	0.6	0.0	1.2	0.5	11.2	11.5	0.3	7.9	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.3	0.0	20.7	21.1	0.0	19.1	46.1	29.9	30.0	47.6	21.6	14.7
LnGrp LOS	F	A	C	C	A	B	D	C	C	D	C	B
Approach Vol, veh/h		604			145			1386			1347	
Approach Delay, s/veh		58.2			19.7			30.2			21.0	
Approach LOS		E			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.5	42.5		32.0	5.1	43.0		32.0
Change Period (Y+Rc), s	4.0	* 7		* 5.3	4.0	7.0		5.3
Max Green Setting (Gmax), s	4.0	* 36		* 27	4.0	35.0		26.7
Max Q Clear Time (g_c+I1), s	3.0	23.8		11.5	2.6	29.0		28.7
Green Ext Time (p_c), s	0.0	4.1		0.3	0.0	2.8		0.0

Intersection Summary	
HCM 6th Ctrl Delay	31.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	404	93	82	994	951	179
Future Volume (veh/h)	404	93	82	994	951	179
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	459	106	93	1130	1081	203
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	406	292	119	1289	1034	1063
Arrive On Green	0.12	0.12	0.07	0.69	0.55	0.55
Sat Flow, veh/h	3456	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	459	106	93	1130	1081	203
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1870	1870	1585
Q Serve(g_s), s	6.8	3.4	3.0	27.5	32.0	2.8
Cycle Q Clear(g_c), s	6.8	3.4	3.0	27.5	32.0	2.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	406	292	119	1289	1034	1063
V/C Ratio(X)	1.13	0.36	0.78	0.88	1.05	0.19
Avail Cap(c_a), veh/h	406	292	185	1358	1034	1063
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.5	20.6	26.6	7.1	12.9	3.6
Incr Delay (d2), s/veh	85.1	0.3	4.5	6.2	40.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	1.2	1.2	5.0	19.0	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	110.6	20.9	31.1	13.3	53.4	3.6
LnGrp LOS	F	C	C	B	F	A
Approach Vol, veh/h	565			1223	1284	
Approach Delay, s/veh	93.8			14.6	45.5	
Approach LOS	F			B	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.9	39.0				46.9	11.0
Change Period (Y+Rc), s	4.0	7.0				7.0	4.2
Max Green Setting (Gmax), s	6.0	32.0				42.0	6.8
Max Q Clear Time (g_c+I1), s	5.0	34.0				29.5	8.8
Green Ext Time (p_c), s	0.0	0.0				2.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	42.1
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	21	33	1204	773	50
Future Vol, veh/h	0	21	33	1204	773	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	85	690	-	-	280
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	36	1309	840	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2221	840	840	0	-	0
Stage 1	840	-	-	-	-	-
Stage 2	1381	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	48	365	795	-	-	0
Stage 1	424	-	-	-	-	0
Stage 2	233	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	46	365	795	-	-	-
Mov Cap-2 Maneuver	46	-	-	-	-	-
Stage 1	405	-	-	-	-	-
Stage 2	233	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.5	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	795	-	-	365	-
HCM Lane V/C Ratio	0.045	-	-	0.063	-
HCM Control Delay (s)	9.7	-	0	15.5	-
HCM Lane LOS	A	-	A	C	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Appendix D

PROPOSED GENERAL PLAN MITIGATED LOS OUTPUT

Intersection	
Intersection Delay, s/veh	11.0
Intersection LOS	B

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	601	742	303
Demand Flow Rate, veh/h	613	757	309
Vehicles Circulating, veh/h	10	245	579
Vehicles Exiting, veh/h	992	643	44
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.1	14.6	10.0
Approach LOS	A	B	B

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	613	757	309
Cap Entry Lane, veh/h	1366	1075	765
Entry HV Adj Factor	0.980	0.981	0.981
Flow Entry, veh/h	601	742	303
Cap Entry, veh/h	1338	1054	750
V/C Ratio	0.449	0.704	0.404
Control Delay, s/veh	7.1	14.6	10.0
LOS	A	B	B
95th %tile Queue, veh	2	6	2

LANE SUMMARY

Site: 5 [Donner Pass/SR 89/Frates - One-Lane Roundabout (Site Folder: General)]

Future Proposed 2040 General Plan
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: SR 89													
Lane 1[d]	763	2.0	783	0.974	100	48.9	LOS E	29.2	742.2	Full	1600	0.0	0.0
Approach	763	2.0		0.974		48.9	LOS E	29.2	742.2				
East: Donner Pass Road													
Lane 1[d]	862	2.0	787	1.095	100	83.0	LOS F	50.8	1291.5	Full	1600	0.0	0.0
Approach	862	2.0		1.095		83.0	LOS F	50.8	1291.5				
North: Frates Lane													
Lane 1[d]	241	2.0	466	0.518	100	18.3	LOS A	2.8	71.2	Full	1600	0.0	0.0
Approach	241	2.0		0.518		18.3	LOS A	2.8	71.2				
West: Donner Pass Road													
Lane 1[d]	1027	2.0	801	1.282	100	154.5	LOS F	94.7	2404.7	Full	1600	0.0	18.7
Approach	1027	2.0		1.282		154.5	LOS F	94.7	2404.7				
Intersection	2893	2.0		1.282		94.0	LOS F	94.7	2404.7				

Site Level of Service (LOS) Method: Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on degree of saturation per lane.
Intersection and Approach LOS values are based on worst degree of saturation for any lane.
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

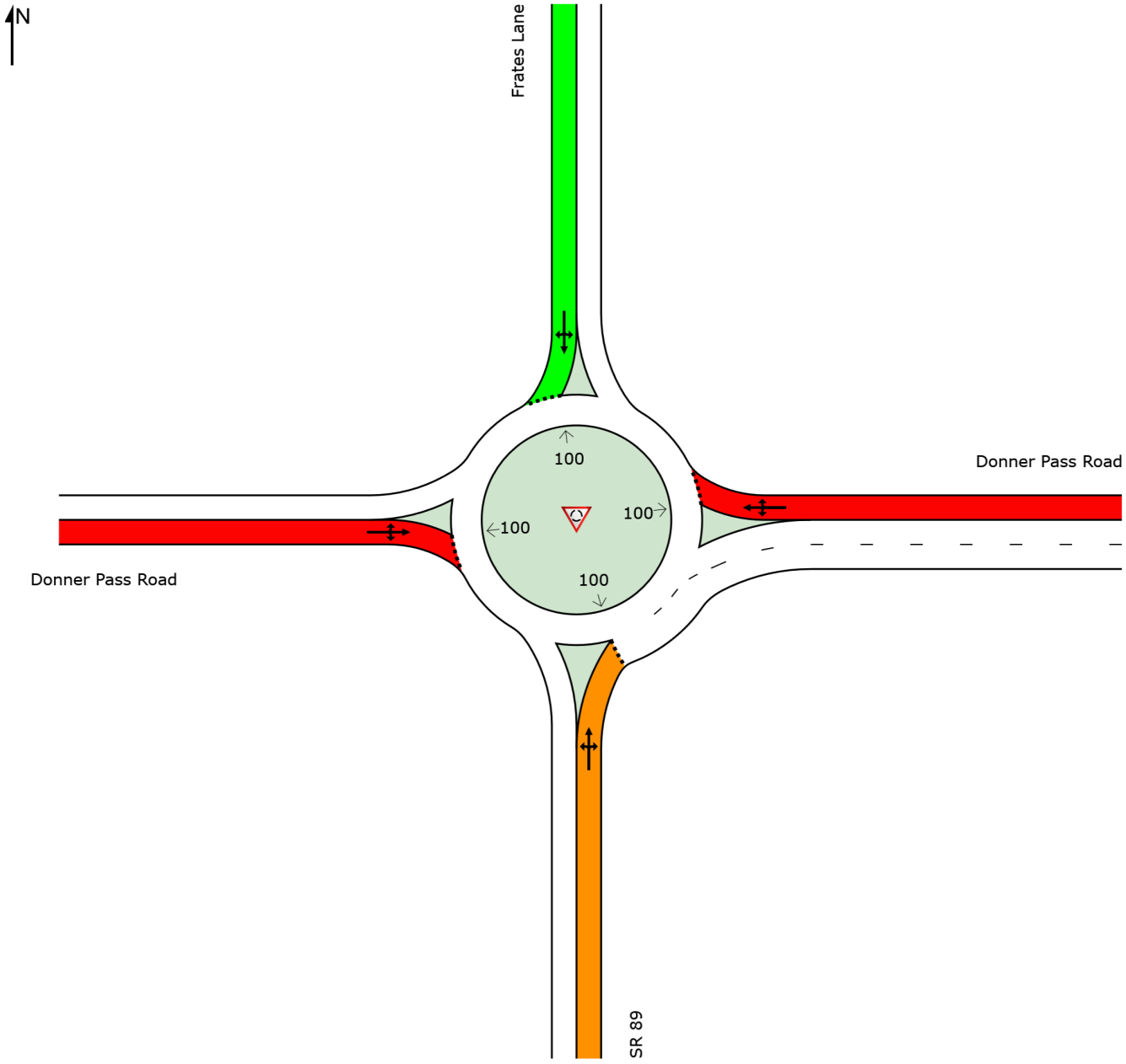
LEVEL OF SERVICE

Lane Level of Service

Site: 5 [Donner Pass/SR 89/Frates - One-Lane Roundabout (Site Folder: General)]

Future Proposed 2040 General Plan
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	E	F	A	F	F



Colour code based on Level of Service



Site Level of Service (LOS) Method: Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
Delay Model: HCM Delay Formula (Geometric Delay is not included).

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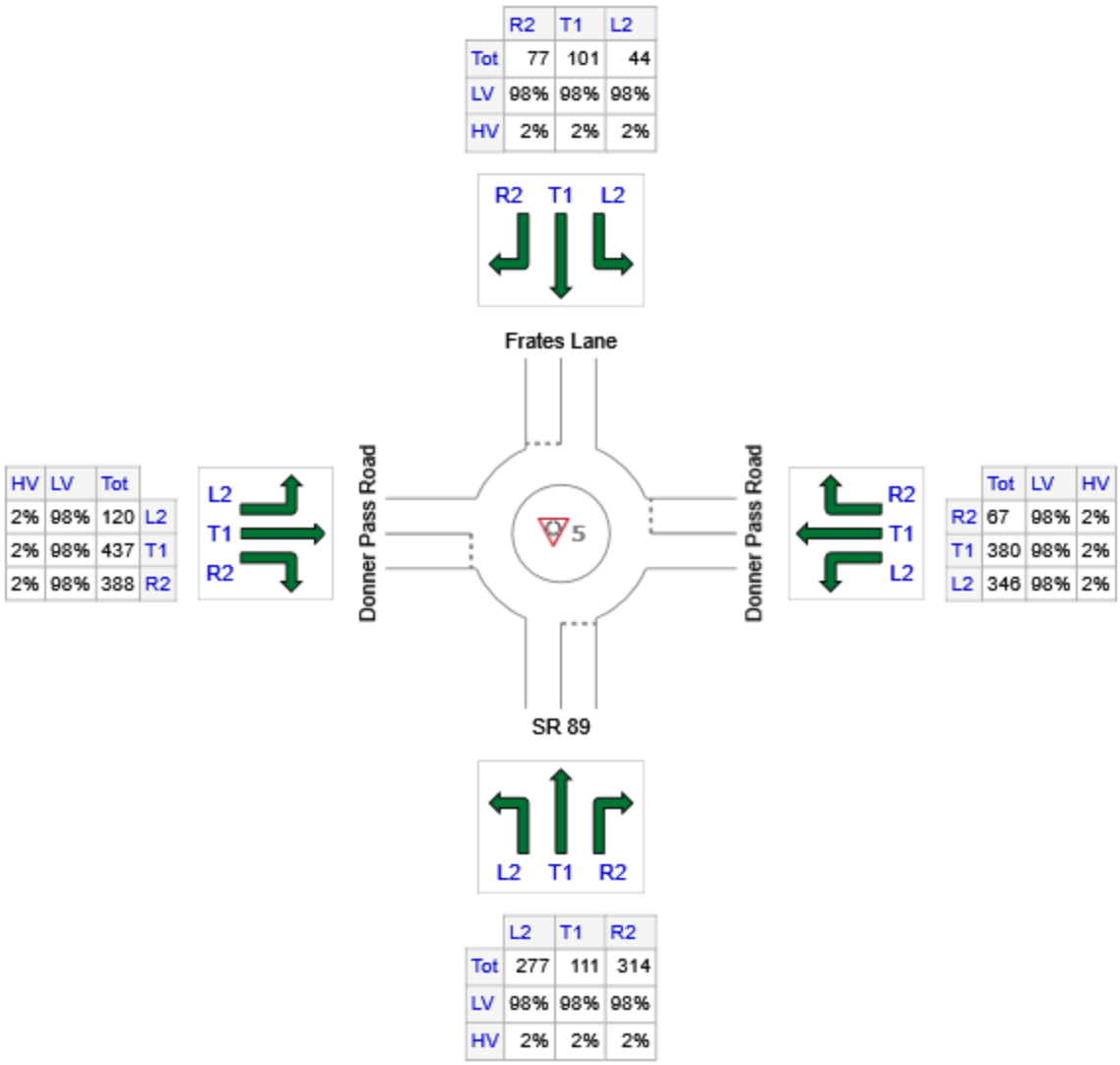
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 5 [Donner Pass/SR 89/Frates (Site Folder: General)]

Future Proposed 2040 General Plan
Site Category: (None)
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: SR 89	702	688	14
E: Donner Pass Road	793	777	16
N: Frates Lane	222	218	4
W: Donner Pass Road	945	926	19
Total	2662	2609	53

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LANE SUMMARY

Site: 5 [Donner Pass/SR 89/Frates (Site Folder: General)]

Future Proposed 2040 General Plan
Site Category: (None)
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: SR 89													
Lane 1	363	2.0	717	0.506	100	12.6	LOS A	3.2	80.7	Full	1600	0.0	0.0
Lane 2[d]	400	2.0	790	0.506	100	11.7	LOS A	3.2	81.4	Full	1600	0.0	0.0
Approach	763	2.0		0.506		12.1	LOS A	3.2	81.4				
East: Donner Pass Road													
Lane 1	412	2.0	788	0.522	100	12.1	LOS A	3.6	91.5	Full	1600	0.0	0.0
Lane 2[d]	450	2.0	863	0.522	100	11.3	LOS A	3.6	92.1	Full	1600	0.0	0.0
Approach	862	2.0		0.522		11.6	LOS A	3.6	92.1				
North: Frates Lane													
Lane 1	113	2.0	476	0.237	100	11.1	LOS A	0.8	21.1	Full	1600	0.0	0.0
Lane 2[d]	128	2.0	541	0.237	100	9.9	LOS A	0.8	21.1	Full	1600	0.0	0.0
Approach	241	2.0		0.237		10.5	LOS A	0.8	21.1				
West: Donner Pass Road													
Lane 1	491	2.0	802	0.612	100	14.4	LOS B	5.3	135.9	Full	1600	0.0	0.0
Lane 2[d]	536	2.0	876	0.612	100	13.4	LOS B	5.4	138.3	Full	1600	0.0	0.0
Approach	1027	2.0		0.612		13.9	LOS B	5.4	138.3				
Intersection	2893	2.0		0.612		12.5	LOS B	5.4	138.3				

Site Level of Service (LOS) Method: Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on degree of saturation per lane.
Intersection and Approach LOS values are based on worst degree of saturation for any lane.
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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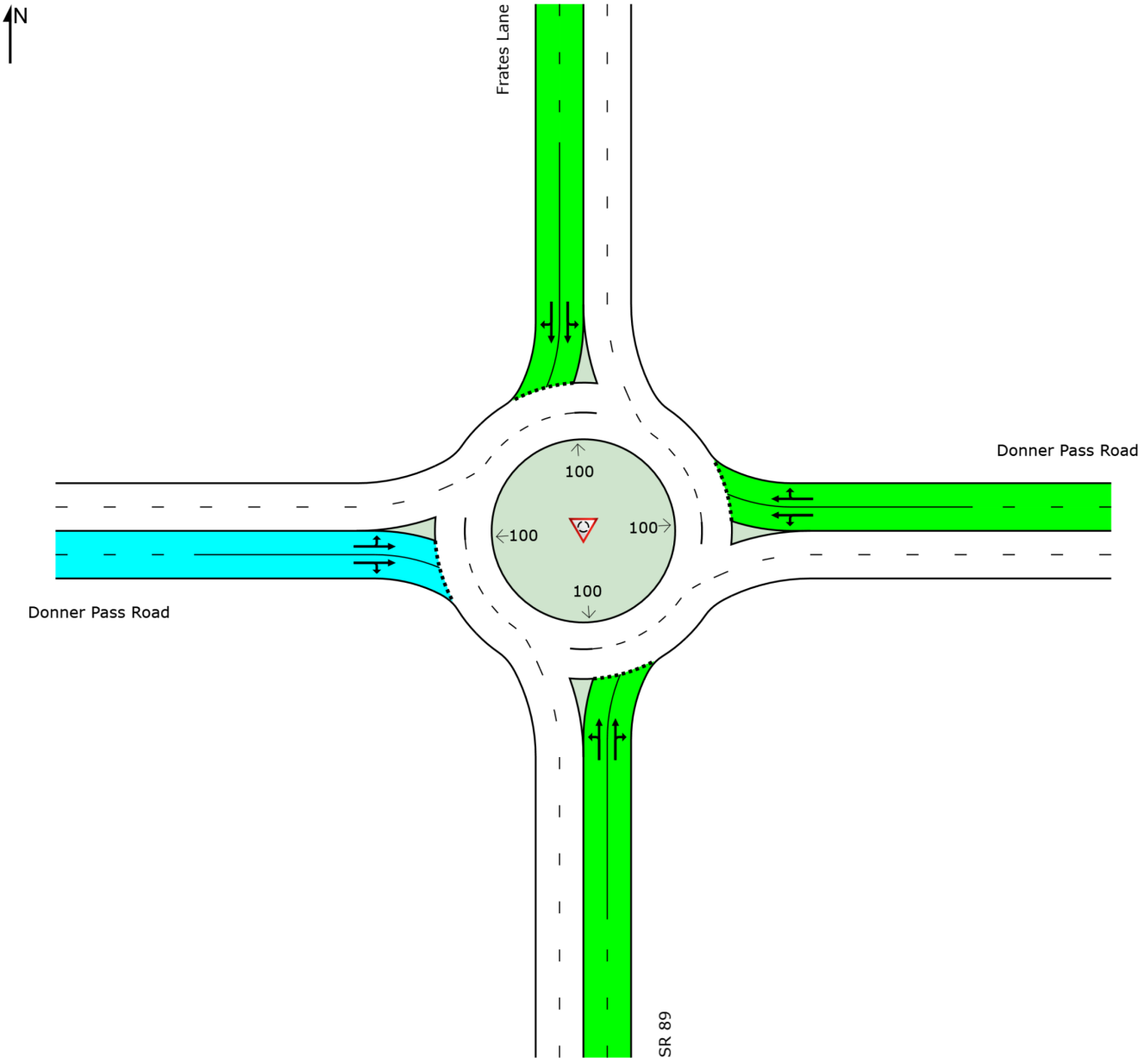
LEVEL OF SERVICE

Lane Level of Service

Site: 5 [Donner Pass/SR 89/Frates (Site Folder: General)]

Future Proposed 2040 General Plan
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	B	B



Colour code based on Level of Service



Site Level of Service (LOS) Method: Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Roundabout Level of Service Method: Same as Sign Control
Delay Model: HCM Delay Formula (Geometric Delay is not included).

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Intersection	
Intersection Delay, s/veh	10.7
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	641	392	5	578
Demand Flow Rate, veh/h	654	400	5	590
Vehicles Circulating, veh/h	338	185	986	198
Vehicles Exiting, veh/h	450	806	6	387
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	14.3	6.7	7.3	9.4
Approach LOS	B	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	654	400	5	590
Cap Entry Lane, veh/h	978	1143	505	1128
Entry HV Adj Factor	0.980	0.981	1.000	0.980
Flow Entry, veh/h	641	392	5	578
Cap Entry, veh/h	958	1120	505	1105
V/C Ratio	0.669	0.350	0.010	0.523
Control Delay, s/veh	14.3	6.7	7.3	9.4
LOS	B	A	A	A
95th %tile Queue, veh	5	2	0	3

Intersection	
Intersection Delay, s/veh	36.6
Intersection LOS	E

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	49	146	779	1216
Demand Flow Rate, veh/h	50	149	795	1240
Vehicles Circulating, veh/h	1273	1157	467	85
Vehicles Exiting, veh/h	52	105	856	1221
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.9	15.0	38.0	39.4
Approach LOS	B	C	E	E

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	50	149	795	1240
Cap Entry Lane, veh/h	377	424	857	1265
Entry HV Adj Factor	0.980	0.980	0.980	0.981
Flow Entry, veh/h	49	146	779	1216
Cap Entry, veh/h	369	415	840	1241
V/C Ratio	0.133	0.351	0.928	0.980
Control Delay, s/veh	11.9	15.0	38.0	39.4
LOS	B	C	E	E
95th %tile Queue, veh	0	2	14	20

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Approach	EB	NB	SB
Entry Lanes	1	2	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	582	953	585
Demand Flow Rate, veh/h	594	972	597
Vehicles Circulating, veh/h	597	352	0
Vehicles Exiting, veh/h	0	839	1324
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	16.9	9.3	6.5
Approach LOS	C	A	A

Lane	Left	Left	Right	Left
Designated Moves	LR	LT	TR	T
Assumed Moves	LR	LT	TR	T
RT Channelized				
Lane Util	1.000	0.470	0.530	1.000
Follow-Up Headway, s	2.535	2.667	2.535	2.535
Critical Headway, s	4.328	4.645	4.328	4.328
Entry Flow, veh/h	594	457	515	597
Cap Entry Lane, veh/h	855	976	1053	1420
Entry HV Adj Factor	0.980	0.980	0.981	0.980
Flow Entry, veh/h	582	448	505	585
Cap Entry, veh/h	838	957	1033	1392
V/C Ratio	0.695	0.468	0.489	0.420
Control Delay, s/veh	16.9	9.4	9.2	6.5
LOS	C	A	A	A
95th %tile Queue, veh	6	3	3	2

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	2	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	757	87	1136	914
Demand Flow Rate, veh/h	772	88	1159	932
Vehicles Circulating, veh/h	668	1522	432	399
Vehicles Exiting, veh/h	663	68	1008	1211
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.5	13.2	12.9	9.6
Approach LOS	B	B	B	A

Lane	Left	Right	Left	Left	Right	Left	Right
Designated Moves	LT	R	LTR	LT	TR	LT	TR
Assumed Moves	LT	R	LTR	LT	TR	LT	TR
RT Channelized							
Lane Util	0.536	0.464	1.000	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	414	358	88	545	614	438	494
Cap Entry Lane, veh/h	730	805	389	907	984	935	1012
Entry HV Adj Factor	0.980	0.980	0.986	0.979	0.980	0.981	0.981
Flow Entry, veh/h	406	351	87	534	602	430	485
Cap Entry, veh/h	716	789	384	888	964	917	992
V/C Ratio	0.567	0.445	0.226	0.601	0.624	0.468	0.488
Control Delay, s/veh	14.2	10.4	13.2	13.0	12.8	9.7	9.5
LOS	B	B	B	B	B	A	A
95th %tile Queue, veh	4	2	1	4	5	3	3

Intersection	
Intersection Delay, s/veh	21.8
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	0	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	0	552	1290	1093
Demand Flow Rate, veh/h	0	563	1316	1115
Vehicles Circulating, veh/h	1368	1316	0	852
Vehicles Exiting, veh/h	599	0	1368	1027
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	0.0	31.3	7.4	34.0
Approach LOS	-	D	A	D

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	TR
Assumed Moves	L	TR	LT	TR	LT	TR
RT Channelized						
Lane Util	0.570	0.430	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	321	242	619	697	524	591
Cap Entry Lane, veh/h	402	464	1350	1420	616	688
Entry HV Adj Factor	0.981	0.979	0.980	0.981	0.981	0.981
Flow Entry, veh/h	315	237	607	684	514	580
Cap Entry, veh/h	395	454	1323	1394	605	675
V/C Ratio	0.798	0.522	0.459	0.491	0.850	0.859
Control Delay, s/veh	40.7	18.9	7.3	7.5	34.9	33.3
LOS	E	C	A	A	D	D
95th %tile Queue, veh	7	3	2	3	9	10

Intersection	
Intersection Delay, s/veh	12.3
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	2	0	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	475	0	2000	1398
Demand Flow Rate, veh/h	485	0	2040	1426
Vehicles Circulating, veh/h	1426	1410	632	0
Vehicles Exiting, veh/h	0	539	887	1410
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	2.8	0.0	17.5	8.0
Approach LOS	A	-	C	A

Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right
Designated Moves	LT	TR	R	LT	TR	R	LT	TR
Assumed Moves	L	TR	R	LT	TR	R	LT	TR
RT Channelized			Free			Free		
Lane Util	1.000	0.000		0.470	0.530		0.470	0.530
Follow-Up Headway, s	2.667	2.535		2.667	2.535		2.667	2.535
Critical Headway, s	4.645	4.328	392	4.645	4.328	723	4.645	4.328
Entry Flow, veh/h	93	0	1938	619	698	1938	670	756
Cap Entry Lane, veh/h	364	423	0.980	755	830	0.980	1350	1420
Entry HV Adj Factor	0.978	1.000	384	0.980	0.980	709	0.980	0.980
Flow Entry, veh/h	91	0	1900	607	684	1900	657	741
Cap Entry, veh/h	356	423	0.202	740	814	0.373	1323	1391
V/C Ratio	0.256	0.000	0.0	0.820	0.841	0.0	0.496	0.532
Control Delay, s/veh	14.8	8.5	A	27.1	27.2	A	7.9	8.2
LOS	B	A	1	D	D	2	A	A
95th %tile Queue, veh	1	0		9	10		3	3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	361	208	264	78	257	388	282	1134	103	277	911	269
Future Volume (veh/h)	361	208	264	78	257	388	282	1134	103	277	911	269
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	384	221	281	83	273	413	300	1206	110	295	969	286
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	566	714	885	258	785	605	314	1162	518	286	1104	492
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.18	0.33	0.33	0.16	0.31	0.31
Sat Flow, veh/h	1466	1870	1585	524	2057	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	384	221	281	142	214	413	300	1206	110	295	969	286
Grp Sat Flow(s),veh/h/ln	733	1870	1585	965	1617	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	25.1	8.2	9.4	7.2	9.4	21.6	16.5	32.4	5.0	15.9	25.6	15.0
Cycle Q Clear(g_c), s	34.4	8.2	9.4	15.4	9.4	21.6	16.5	32.4	5.0	15.9	25.6	15.0
Prop In Lane	1.00		1.00	0.59		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	566	714	885	426	617	605	314	1162	518	286	1104	492
V/C Ratio(X)	0.68	0.31	0.32	0.33	0.35	0.68	0.95	1.04	0.21	1.03	0.88	0.58
Avail Cap(c_a), veh/h	579	730	899	436	631	619	314	1162	518	286	1104	492
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	21.5	11.8	24.8	21.9	25.6	40.4	33.4	24.1	41.6	32.4	28.7
Incr Delay (d2), s/veh	3.5	0.3	0.3	0.2	0.1	2.4	38.2	36.9	0.1	61.9	7.9	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.5	3.4	3.0	2.5	3.4	7.9	10.1	18.5	1.7	11.4	11.2	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.6	21.8	12.1	25.0	22.0	28.1	78.6	70.2	24.2	103.5	40.3	29.9
LnGrp LOS	D	C	B	C	C	C	E	F	C	F	D	C
Approach Vol, veh/h		886			769			1616			1550	
Approach Delay, s/veh		25.6			25.8			68.7			50.4	
Approach LOS		C			C			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.0	36.8		41.3	19.4	38.4		41.3
Change Period (Y+Rc), s	3.5	6.0		3.5	3.5	6.0		3.5
Max Green Setting (Gmax), s	17.5	30.8		38.7	15.9	32.4		38.7
Max Q Clear Time (g_c+I1), s	19.5	27.6		23.6	17.9	34.4		36.4
Green Ext Time (p_c), s	0.0	1.5		2.0	0.0	0.0		1.4

Intersection Summary	
HCM 6th Ctrl Delay	48.0
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	339	129	89	29	10	95	20	1169	92	13	1079	153
Future Volume (veh/h)	339	129	89	29	10	95	20	1169	92	13	1079	153
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	368	140	97	32	11	103	22	1271	100	14	1173	166
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	364	343	238	294	90	529	34	1500	118	24	1576	703
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.02	0.45	0.45	0.01	0.44	0.44
Sat Flow, veh/h	1279	1029	713	647	271	1585	1781	3338	262	1781	3554	1585
Grp Volume(v), veh/h	368	0	237	43	0	103	22	675	696	14	1173	166
Grp Sat Flow(s),veh/h/ln	1279	0	1742	918	0	1585	1781	1777	1823	1781	1777	1585
Q Serve(g_s), s	17.2	0.0	8.4	1.1	0.0	3.7	1.0	27.0	27.2	0.6	21.9	5.2
Cycle Q Clear(g_c), s	26.7	0.0	8.4	9.5	0.0	3.7	1.0	27.0	27.2	0.6	21.9	5.2
Prop In Lane	1.00		0.41	0.74		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	364	0	581	385	0	529	34	799	819	24	1576	703
V/C Ratio(X)	1.01	0.00	0.41	0.11	0.00	0.19	0.64	0.85	0.85	0.59	0.74	0.24
Avail Cap(c_a), veh/h	364	0	581	396	0	543	89	799	819	89	1576	703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	20.6	21.0	0.0	19.0	39.0	19.6	19.6	39.3	18.5	13.8
Incr Delay (d2), s/veh	49.7	0.0	0.2	0.0	0.0	0.1	7.1	10.7	10.7	8.3	3.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.8	0.0	3.1	0.6	0.0	1.2	0.5	11.3	11.7	0.3	8.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	83.2	0.0	20.7	21.1	0.0	19.1	46.1	30.3	30.3	47.6	21.7	14.6
LnGrp LOS	F	A	C	C	A	B	D	C	C	D	C	B
Approach Vol, veh/h		605			146			1393			1353	
Approach Delay, s/veh		58.7			19.7			30.5			21.1	
Approach LOS		E			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.5	42.5		32.0	5.1	43.0		32.0
Change Period (Y+Rc), s	4.0	* 7		* 5.3	4.0	7.0		5.3
Max Green Setting (Gmax), s	4.0	* 36		* 27	4.0	35.0		26.7
Max Q Clear Time (g_c+I1), s	3.0	23.9		11.5	2.6	29.2		28.7
Green Ext Time (p_c), s	0.0	4.1		0.3	0.0	2.7		0.0

Intersection Summary		
HCM 6th Ctrl Delay	31.3	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	403	93	82	994	951	179
Future Volume (veh/h)	403	93	82	994	951	179
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	458	106	93	1130	1081	203
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	406	292	119	1289	1034	1063
Arrive On Green	0.12	0.12	0.07	0.69	0.55	0.55
Sat Flow, veh/h	3456	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	458	106	93	1130	1081	203
Grp Sat Flow(s),veh/h/ln	1728	1585	1781	1870	1870	1585
Q Serve(g_s), s	6.8	3.4	3.0	27.5	32.0	2.8
Cycle Q Clear(g_c), s	6.8	3.4	3.0	27.5	32.0	2.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	406	292	119	1289	1034	1063
V/C Ratio(X)	1.13	0.36	0.78	0.88	1.05	0.19
Avail Cap(c_a), veh/h	406	292	185	1358	1034	1063
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.5	20.6	26.6	7.1	12.9	3.6
Incr Delay (d2), s/veh	84.2	0.3	4.5	6.2	40.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	1.2	1.2	5.0	19.0	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	109.7	20.9	31.1	13.3	53.4	3.6
LnGrp LOS	F	C	C	B	F	A
Approach Vol, veh/h	564			1223	1284	
Approach Delay, s/veh	93.0			14.6	45.5	
Approach LOS	F			B	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.9	39.0				46.9	11.0
Change Period (Y+Rc), s	4.0	7.0				7.0	4.2
Max Green Setting (Gmax), s	6.0	32.0				42.0	6.8
Max Q Clear Time (g_c+I1), s	5.0	34.0				29.5	8.8
Green Ext Time (p_c), s	0.0	0.0				2.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	42.0
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	21	33	1210	779	50
Future Vol, veh/h	0	21	33	1210	779	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	85	690	-	-	280
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	36	1315	847	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2234	847	847	0	-	0
Stage 1	847	-	-	-	-	-
Stage 2	1387	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	47	362	790	-	-	0
Stage 1	420	-	-	-	-	0
Stage 2	232	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	45	362	790	-	-	-
Mov Cap-2 Maneuver	45	-	-	-	-	-
Stage 1	401	-	-	-	-	-
Stage 2	232	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.6	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	790	-	-	362	-
HCM Lane V/C Ratio	0.045	-	-	0.063	-
HCM Control Delay (s)	9.8	-	0	15.6	-
HCM Lane LOS	A	-	A	C	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-